


NONINDIGENOUS MARINE SPECIES AT WAIKÎKÎ AND HAWAI`I KAI, O`AHU, HAWAI`I

October 2002

COVER

Aerial views of Waikîkî and Hawai`i Kai. Images from National Oceanic and Atmospheric Administration's Biogeography web site at http://biogeo.nos.noaa.gov/projects/mapping/pacific/.

NONINDIGENOUS MARINE SPECIES AT WAIKÎKÎ AND HAWAI`I KAI, O`AHU, HAWAI`I

Final Report prepared for the David and Lucile Packard Foundation and the State of Hawai`i Department of Land and Natural Resources Division of Aquatic Resources

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EXECUTIVE SUMMARY

Surveys of the marine algae, invertebrates and reef fishes of Waikîkî and the Kuapâ Pond and Maunalua Bay areas of Hawai`i Kai were conducted with the objective of the presence and impact of nonindigenous (introduced) marine organisms. Findings were compared with historical records of species reported in these locations and with the results of similar studies conducted in Hawai`i and the Pacific. Observations and collections were made at 15 stations at Waikîkî in January 2001 and at five stations in Kuapâ Pond-Maunalua Bay in February 2002 at 5 stations. A comprehensive literature review of published papers and books and unpublished reports was conducted to develop listings of previous species reports, and the marine invertebrates, fish, mollusk and algae collections at Bishop Museum were queried for information regarding all organisms that had been collected from these areas. The assembled data were developed into a relational data bases used to determine the percent component of the total biota that is nonindigenous or cryptogenic, the number of new reports versus the number of previous reports not found, and a chronology of first reports of introductions.

A total of 925 taxa including 749 species were observed or collected in Waikîkî, and 384 taxa including 317 species at Kuapâ Pond-Maunalua Bay. Of these 52 species designated introduced or cryptogenic (collectively termed NIS) were identified at Waikîkî, for an NIS component of 6.9% of the total species identified for the 15 stations. By comparison 58 NIS were observed or collected at Kuapâ Pond-Maunalua Bay amounting to an NIS component of total species of 18%. Forty-six of the 52 NIS were new reports for Waikîkî, and 56 of the 58 NIS new for Kuapâ Pond-Maunalua Bay sites. However, all but three species, hydroids collected from Waikîkî designated cryptogenic, were previously reported elsewhere in Hawai`i, with first reports mostly in Pearl Harbor, Honolulu Harbor or Kane`ohe Bay. The high incidence of first reports for Waikîkî and the Hawai`i Kai area in this study are clearly effort related, since these were the first comprehensive sampling efforts that have been conducted at these locations.

At Waikîkî there was little indication of differences in spatial distributions among the 15 stations for the total identified biota, major taxonomic groups of invertebrate or fish species in any or total NIS. However total algal species and algal NIS showed a clear association nearshore stations, especially in the vicinity of the beachfront from the Waikîkî Aquarium to San Souci, where the invasive nonindigenous algae *Acanthophora spicifera, Gracilaria salicornia* and *Hypnea musciformis* cover the reef flat and dominate the biota. This area is the most environmentally disturbed at Waikîkî, but overall the benthic environment is highly degraded from the coral reef community that was described early in the 20th century, with few reef corals remaining in very abundance. Overall, the Waikîkî reef has been highly impacted from continual deposition of beach sand along the shoreline that has moved offshore and buried or otherwise impacted reef surfaces, resulting in a mostly sand covered bottom that was dominated by a widespread coverage of the brown alga *Dictyopteris australis* at the time of our survey. Regarding non-algal NIS that are considered invasive, the mostly widely occurring invertebrate was the stomatopod *Gonodactylaceus falcatus*, which occurred in low abundance at five stations and the most prominent was the octocoral *Carijoa riisei*, which covers the interior surfaces of the shipwreck that

was placed offshore in 30 m depth as a viewing site for the tourist submarine Atlantis. The invasive fish *Lutjanus kasmira* is also abundant at this site, and a single invasive grouper *Cephalopholis argus* was sighted at one other station.

In contrast to the relatively low proportion of the total biota composed of NIS that was found at Waikîkî, the 18% overall value determined for Kuapâ Pond-Maunalua Bay is equivalent to what has been found for harbors and the semi-enclosed Kane`ohe Bay elsewhere on O`ahu. However when the distribution of total fauna and NIS are examined in terms of location and environmental characteristics, the results correspond to the a previously determined pattern of high incidence of nonindigenous species in harbors or enclosed areas compared to open water reef environments. The two stations in or adjacent to Kuapâ Pond showed relatively low numbers of total species and high numbers of NIS, resulting in a NIS component of 40% at the Kuapâ site, the highest value that has been determined in Hawai`i. By contrast, the single coral reef station sampled in Maunalua Bay showed an NIS component of only 4%. Nearshore sites in Maunalua Bay showed intermediate NIS component values of 14-17%, and these were the locations dominated by the most widespread invasive nonindigenous species in the area, the algae *Avrainvillea amaldepha*. The other notable invasive species was the octocoral *Carijoa riisei*, which monopolizes the surfaces of bridge pilings and other hard surfaces under the bridge that covers the outlet for Kuapâ Pond Marina 1, the original outflow for the Kuapâ Pond system.

The study results are consistent with previous findings by studies in both tropical and temperate marine systems and in temperate terrestrial communities that have indicated reduced invasion success in communities with greater species richness. This suggests that, along with measures to prevent or inhibit new introductions of nonindigenous marine species, a primary management tool for limiting the proliferation and impact of these introductions is implement measures that continue or restore high diversity marine communities.

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I. INTRODUCTION

A. Nonindigenous marine species in the Indo-Pacific and Hawai`i

Nonindigenous marine species introductions and their impacts on native populations in the Indo-Pacific and the Hawaiian Islands have been reviewed in Coles et al. 1999b, 2002a and 2002b. In summary, previous studies focused in the Hawaiian Islands, but including surveys conducted at Johnston Atoll, Guam and at ports on the North Queensland, Australia coast, have shown contrasting patterns between harbors and bays on O`ahu compared to Hawaiian coral reefs or harbors and reefs in more tropical areas in the Pacific. Substantial portions of the total biota in O`ahu harbors and Kane`ohe Bay are composed of nonindigenous species, but these organisms comprise only a minor part of the total biota on coral reef areas in the Hawaiian Islands and Johnston Atoll or reefs and ports in Guam or North Queensland. Moreover, with the important exception of introduced algae in Hawai`i there have few instances of nonindigenous marine species in these regions becoming invasive, i.e. proliferating and dominating habitats at the expense of native organisms and communities. This contrasts with numerous instances of invasive nonindigenous marine species in temperate latitudes (See Carlton 1985; Carlton and Geller 1993; Ruiz et al. 1997 for reviews) with serious negative impacts such as have occurred in San Francisco Bay (Carlton 1979, Carlton et al. 1990; Cohen and Carlton 1995; Cohen et al. 1995; Gosliner 1995; Mills and Sommer 1995; Daehler and Strong 1996; Greenberg et al. 1996; Grozholz and Ruiz 1999; Thompson and Luoma 1999; Cohen 1999).

Waikîkî is an open coastal, coral reef environment that lies near to the many of the O`ahu south shore harbors. Waikîkî was the site of the first Hawaiian marine laboratory and was one of the earliest areas in Hawai`i systematically sampled for marine organisms, with 98 type specimens and 1031 lots in the Bishop Museum invertebrate collection having been collected from this location. Marine biology as a science in Hawai`i essentially began in the 1920s with taxonomic descriptions and ecological studies conducted by C. H. Edmondson at the Hawai`i Marine Laboratory adjacent to the present Waikîkî Aquarium (Edmondson 1921; Edmondson 1928; Edmondson 1930; Edmondson 1933a; Edmondson 1946; Edmondson 1954; Edmondson 1962). His survey and mapping of reef corals on the Waikîkî Reef adjacent to the aquarium in 1925 (Edmondson 1928) provides a baseline of comparison of present conditions with those that existed at the time of completion of the Ala Wai Canal and prior to periodic replenishment of beach sand along the Waikîkî shoreline.

A survey of macroalgae species composition and recruitment was conducted on the Waikîkî reef in 1923-24 by Neal (1930), and a number of marine biological studies were conducted in the 1960s and 1970s. These included surveys of macroalgae (Doty 1969; Doty 1971; Littler 1971; Harger 1972; AECOS Inc. 1987; Glenn, et al. 1990; OI Consultants Inc. 1991; Bailey-Brock et al. 1994; Morgan, et al. 1998; Smith et al. in press), reef fish (Oishi 1974; State of Hawai`i - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) 1975; Anon. 1977; State of Hawai`i - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) 1977) and a study of distributions of algal, coral macroinvertebrates and reef fish in relation to Waikîkî beach erosion (Chave) et al. 1973). Subsequent information on Waikîkî marine biota is mostly available from surveys of baseline conditions and impacts of corals and fishes from sand replenishment (Belt Collins & Assoc. 1987; Marine Research Consultants 1990; Brock 1991; OI Consultants Inc. 1991; Ziemann 1991) or the artificial

reef structures and activities associated with operation of tourist submarines (AECOS Inc. 1987; Bailey-Brock et al. 1994; State of Hawai`i - Dept. Land and Natural Resources (DLNR) 1994; Brock 1995; Marine Research Consultants 1997; Brock and Kam 1998). Comprehensive studies have been made of benthic sediment infauna offshore of the Ala Wai (McCarthy 1996; McCarthy et al. 2000)as part of the Mamala Bay sewage outfall evaluation (Laws and Ziemann 1995). Recent studies have reported on introduced algae on the Waikîkî reef (Nishimura 2000; Smith et al. 2002) and a recently discovered stinging cubomedusae (Matsumoto et al. 2002) at the Waikîkî Natatorium. A study is underway to evaluate the feasibility of removing introduced invasive marine algae from Waikîkî (http://www.hawaii.edu/ssri/hcri/reports.htm).

Kuapâ Pond was dredged from the sites of Hawaiian fishponds in early 1959 (Guinther 2001) transforming the pond and its embayments into marinas and channels.. Prior to that time there was only one outlet from the pond to Maunalua Bay, at the location of the present “Marina Unit 1” channel near the Portlock small boat-launching ramp. The present main channel from Lunalilo Marina was opened as part of the marina construction and since that time has served as the main access channel. Environmental conditions in Kuapâ Pond and Maunalua Bay prior to opening the channel were described by (Marine Advisors 1961) who determined that salinities within the pond ranged above 37^{o}/oo, 3^{o}/oo higher than in Maunalua Bay, and increased toward the head of Marina Unit 1. This hypersalinity in Kuapâ Pond was attributed to high evaporation within the semi-enclosed system. Turbidity was very high in both the pond and along the Maunalua Bay shoreline adjacent to the channel, with a Secchi Disk depth of only 15 cm for water flowing out of the pond on a falling tide and approximately 40 cm within the pond itself.

Measurements made twelve years later (Sakoda 1975) indicated that the opening of the second channel promoted increased circulation from Kuapâ Pond, shown by decreased salinities, which ranged 32-34^{o}/oo below the surface layer throughout the marinas except following heavy storms. Turbidity was substantially less than measured in 1961, with a Secchi Disk depth of over 1 m near the exit of Marina Unit 1 and about 0.6 m within Marina Unit 2. Environmental conditions are therefore indicated to have been changed by the opening of the main Hawai`i Kai Marina channel from a hyperhaline, highly turbid environment to conditions more typical of harbors on O`ahu.

Information available for the biological communities of Kuapâ Pond is limited to five species of invertebrates reported by (Guinther 2001) in the vicinity of the Peninsula development at the head of Kaimala Marina. Some information is available for Maunalua Bay (State of Hawai`i 1974; Environmental Consultants Inc. 1975; State of Hawai`i - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) 1977), and recently an infestation of the introduced marine algae *Avrainvillea amadelpha* has been reported by (Smith et al. 2002) in shallow areas of Maunalua Bay and elsewhere along O`ahu’s southeast shore. Therefore virtually no biological information for Kuapâ Ponds has been available and no comprehensive survey of the marine biota has been conducted in Maunalua Bay.

The present study presents the first comprehensive study of algae, invertebrates and fishes that occur off Waikîkî and in the area of Kuapâ Pond-Maunalua Bay, and is also the first to determine the presence and impact of nonindigenous marine species at these locations. The surveys, conducted in January 2001 at Waikîkî and February 2002 at Kuapâ Pond-Maunalua Bay, also enable a comparison the relative composition of nonindigenous species to total identified species for these locations with similar studies

conducted elsewhere on the Island of O`ahu, on other Hawaiian Islands and at Johnston Atoll.

B. Historical Perspective

1. Waikîkî

The Waikîkî District is probably the most famous area in the Hawaiian Islands and is virtually synonymous with the image of Hawai`i as perceived by non-residents. The Waikîkî *ahupua`a*, or land division extending from the mountain to the sea, covered the area from the district of Kou, the old name for Honolulu, to Maunalua, now called Hawai`i Kai (Napoka 1986; Kanahele 1995). It was therefore far larger than the present area referred to as Waikîkî, which is the coastal area and remnant of the marshland that was drained by the construction of the Ala Wai Canal. The present Waikîkî extends from Kapiolani Park and Sans Souci area at the western base of Mount Le`ahi (Diamond Head) to the eastern shore of the Ala Wai Canal where it flows through Ala Wai Yacht Harbor into the sea. The Ala Wai Canal receives the drainages of Pâlolo, Mânoa and Kanahâ Streams that originally discharged into the Waikîkî marsh, which was in turn drained by three outlet streams. The mouth of the largest of these outlets, Pi`inaio Stream, reached the ocean at approximately the present location of the Ala Wai Canal. Two other *mulliwai* outlets provided periodic drainage, one at Apuakehau Stream, which reached the shore between the present sites of the Royal Hawaiian and Moana Hotels (Napoku 1986) and Ku`ekaunahi Stream at the marsh's eastern end, which discharged between the present Kapahulu Avenue and Kuhio Beach (Hibbard and Franzen 1986; Napoka 1986).

Because of the abundant water providing the capacity for growing taro and raising fish in fishponds and easy access to the ocean and fishing from its beaches, Waikîkî was one of the first areas populated by Hawaiians after their initial settlements on the windward side of O`ahu at Kane`ohe and Kailua. It has been verified to have been inhabited by 1100 AD and may have had a significant settlement as early as 600 AD (Kanahele 1995). It was a major population center when the Maui chief Kahekili invaded O`ahu in 1779, using its beaches as the landing site for thousands of men and hundreds of canoes (Kanahele, 1995). It was also the landing site for Captain George Vancouver in 1792, who along with his surgeon Archibald Menzies, was highly impressed with the sophistication of dams and levees that had been built to create the ponds to utilize the water system for culturing the variety of crops and fish that were grown in abundance. However, Menzies noted that the area was thinly inhabited and many houses abandoned, which may have been due to the series of wars in the preceding decade that had followed Kehekili's invasion, or perhaps due to diseases that could have been introduced following the first European arrivals (Kanahele 1995).

Waikîkî was also the site of the second invasion of O`ahu, led by Kamehameha in 1794 with a reported 1,200 canoes transporting some 10,000 warriors. After conquering O`ahu and bringing most of the Hawaiian Islands under his control, Kamehameha established his first capital and residence in Waikîkî between the sites of the present Moana and Royal Hawaiian Hotels (Kanahele, 1995). He moved his capital to the island of Hawai`i in 1796 and then returned it to Waikîkî in 1804 before again moving it to Honolulu in 1809 to be close to Honolulu Harbor and the developing population center of the islands. This marked the end of nearly 400 years of Waikîkî as the capital of O`ahu and some six interrupted

years as the capital of Hawai`i. It was also the beginning of decline in population for the district through movement into Honolulu and mortality from the many diseases that decimated Hawaiians during the 1800s. By 1828 two foreign visitors remarked on the deterioration of the taro fields of Waikîkî through lack of maintenance that had resulted in blocking of canals, breakdown of dikes and infestation of taro beds by bulrushes (Kanahele, 1995). However, in the same year Andrew Bloxum, naturalist of the H. M. S. *Blonde* noted that the entire distance from Honolulu to Waikîkî was the site of "several hundred" fishponds extending a mile inward from the shore, in which fish were thriving and harvested. That these also went into disuse is indicated an estimate that only 30 fishponds still existed in Waikîkî by the 1860s and only 15 fishponds still remained when they were counted in 1920 (Kanahele, 1995).

After the establishment of private property rights by the Great Mahele of 1850, usage of the taro ponds and fishponds of Waikîkî was transferred to Chinese farmers through leasehold agreements, and rice cultivation became the primary activity up till the end of the 19th century. These ponds were mostly located on the upland side of Waikîkî in the area of the present Ala Wai canal. Fish cultivation was continued in fishponds near the shore, and this was supplemented by the raising of ducks. The agricultural utilization of Waikîkî thus became drastically changed from the highly productive and organized system based on taro culture that had sustained a major Hawaiian population for about 1000 years and marked the end of a way of life, similar to what was occurring throughout the Hawaiian Islands.

Royalty and lesser chiefs owned much of the land in Waikîkî, and many built homes in an idyllic setting that provided an escape from the bustling and dusty streets of Honolulu. Kapi`olani Park, the first public park to serve Honolulu, was opened in 1877 with 170 acres of open space, including a race track and polo field. (Strassen-McLaughlin 1986). This marked the beginning of Waikîkî as a resort area, and the first commercial enterprise was the establishment of a public bathhouse at Ulukou in 1881, near the present site of the Moana Hotel, which could be reached on the Waikîkî Road that had been leveled, widened and resurfaced in the early 1860s. While making Waikîkî more accessible, the road created problems by interfering with the drainage from the marshland, taro and rice fields and duck ponds, resulting in accumulating wastes and foul smells from the duck ponds. Accessibility of Waikîkî was further increased by the completion of the Honolulu Tramway in 1889, and Waikîkî's first beachside hotel, the Park Beach, was opened in 1888 at the present location of the Elk's Club. A second hotel followed nearby at San Souci in 1893, marking the beginning of a new era for Waikîkî that would be focused on commercial development and radically increasing property values. Both hotels closed before the end of the century, but in 1901 the Moana Hotel opened and has remained in continuous operation ever since. It remained the preeminent Waikîkî resort destination until opening of the Royal Hawaiian Hotel in 1927, and the two structures dominated the Waikîkî beach and skyline until the completion of the Ilikai Hotel in 1963.

The environment of Waikîkî and its nearshore waters has been highly impacted by two major anthropogenic factors, the dredging of the Ala Wai Canal and periodic massive deposition of sand on Waikîkî beaches to replace sand lost to offshore areas. Prior to construction of the Ala Wai approximately 85% of modern Waikîkî was under water (Hibbard and Franzen 1986). One vision, which was to come to dominate the Waikîkî landscape, was to drain and fill these wetlands, increasing the area available for development. The first such effort was conducted by the U.S. Army in 1910-11 by filling a

portion of fish ponds that existed in the area of the present Fort Derussy, which was purchased between 1904 and 1910 by fee simple condemnation (Hibbard and Franzen 1986). Also in 1911 a fishpond was filled by a private developer, subdivided and sold as the Beach Walk tract. However, these effects of these efforts were minor in comparison to those of construction of the Ala Wai Canal. First proposed by the president of the Territorial Board of Health L. H. Pinkham in 1906 in a report that can only be interpreted as promotional (Pinkham 1906) he stated that the Waikîkî district was (capitals his) "INCAPABLE OF EFFECTUAL DRAINAGE AND IS IN AN UNSANITARY AND DANGEROUS CONDITION" and that drainage would "TRANSFORM IT INTO AN ABSOLUTELY SANITARY, BEAUTIFUL AND UNIQUE DISTRICT". The plan originally proposed by (Pinkham 1906) was to have three unobstructed outlets to the ocean, one utilizing Pi`inaio Stream, at the location of the present Ala Wai Yacht harbor discharge point one at Ku`ekaunahi Stream at the marsh's eastern end and the third near the center of Kapiolani Park.

Pinkam continued to promote his plan after he was appointed territorial governor in 1913, and dredge and fill operations began in 1921 for a three-mile long, 250-foot wide channel dredged to 10-25 feet deep. The Ala Wai Canal was completed in 1928 and forever changed the configuration and character of Waikîkî. Contrary to the original plan, the channel was constructed with only one outlet and has remained a stagnant pond with some of the highest bacterial and heavy metal concentrations that have been measured in Hawai`i (Glenn and McMurtry 1995; McMurtry et al. 1995), defeating the stated original purpose of improving drainage and sanitary conditions for the water and its discharge. Furthermore, sedimentation from runoff in tributary streams has caused rapid shoaling in the Ala Wai Canal, requiring dredging of heavy-metal laden sediments in 1966 and 1971, with another dredging soon to be conducted, and hyper-eutrophic conditions in the water column (Harris 1972, Laws et al. 1993) cause anoxia at night. Construction of the Ala Wai Canal did accomplish the second objective however, of creating over 400 acres of what has become some of the world's most valuable real estate, at the loss of the beautiful waterscape gardens that existed in the areas of the present Honolulu Zoo and *"Ainahau"*, the former residence of Princess Kaiulani (Hibbard and Franzen 1986), and the agricultural livelihood of the farmers utilizing the former wetland waterways (Nakamura 1975; Lee Unpub.report).

The other major anthropogenic activity and the one that has had the most impact on Waikîkî's nearshore marine environment has been the long-term effort to maintain the districts shoreline and beaches. Nineteenth century photographs taken along the shoreline (Hibbard and Franzen 1986) indicate that Waikîkî's beaches were wide and more or less continuous from Diamond Head to Kalia. A review of the history of Waikîkî Beach erosion control (U.S. Army Corps of Engineers 1992) stated that, prior to the late 1800's, Waikîkî was a continuous sandy strand. Beachside homes and hotels proliferated toward the end of that century, and many of these, e.g. the Castle estate "*Kainalu*" which later became the Elks Club, were built at the shoreline or even jutting out over the water, requiring hard surfacing of the shore. Seawalls to prevent resulting shoreline erosion began to appear in the 1880s and were numerous by the late 1910s, and by 1972 at least 92 structures, including piers, seawalls and groins, had been built along the Waikîkî shoreline (U. S. Army Corps of Engineers 1992). By 1927, it was perceived by the Engineering Association of Hawai`i that seawalls were the major source of destruction of Waikîkî's beaches through their reflection of wave energy, which further eroded beaches down current of the walls, requiring further seawall construction. The report also concluded that beach replenishment and groin

construction could be used to rebuild the beach. By 1930, a total of 11 groins had been from Fort Derussy to the Royal Hawaiian Hotel, but only one was successful in capturing and retaining a significant volume of sand (U. S. Army - Corps of Engineers 1992). A cribwall about 100 m offshore was constructed at Kuhio Beach in 1938 in an attempt to shelter and retain sand in an area north of one of these groins.

Continued beach erosion and the emphasis on tourism development following World War II prompted the proposal of the Waikîkî Beach Erosion Control Project in 1948, completed 1951-57. The plan included the placement of 385,000 cu. yds. of sand between the Natatorium and the west side of the Royal Hawaiian Hotel and, despite the negative impacts indicated by earlier seawall construction, building of 1200 feet of terrace wall along Kuhio Park with groins at either end. Completion of the terrace wall promoted further erosion on its seaward side, prompting the placement of additional 18,750 cu. yds. of sand and the construction of an extension of the 1938 cribwall to connect the two groins 300 feet offshore. An additional 500 cu. yds of sand was placed at Fort Derussy beach in 1981 and 2,500 cu yds. at Kuhio Beach in 1991 (U. S. Army - Corps of Engineers 1992).

The history of Waikîkî is therefore one of continuing and increasing modification of a environment that previously was typically natural, then agriculturally modified wetlands onshore and a pristine coral reef offshore. C. H. Edmondson did the classical study on Hawaiian reef corals and associated organisms using corals collected just offshore of the Waikîkî Aquarium, where he reported 23 coral "species, varieties and forms …well represented on the reef." (Edmondson 1928) prior to completion of Ala Wai Canal or the beginning of beach sand deposition. The continued movement of beach sand offshore in the next 50 years can be assumed to have heavily impacted corals and associated biota, and by the early 1970s the reef in the area was algal-dominated (Doty 1969, 1971; Littler 1971; Harger 1972). By 1991 only nine species of hard coral were found on the Waikîkî reef from Fort Derussy to the Natatorium and only four of these were listed as common on any of four transects (OI Consultants Inc. 1991).

Waikîkî was the original location of University of Hawai`i's Hawai`i Marine Laboratory near the present Waikîkî Aquarium and was the collection area for much of the early identifications and descriptions of Hawaiian marine invertebrates by C. H. Edmondson and other researchers. Despite the early importance of Waikîkî in the development of marine biology in Hawai`i little work has been completed there in the last 30 years, and no previous study has comprehensively examined the marine biota, especially in regard to nonindigenous species. The present study describes the surveys completed in January 2001 and compares the findings with earlier reports of marine organisms collected or observed at Waikîkî.

2. Hawai`i Kai

Hawai`i Kai is the present name for area surrounding the salt-water ponds and harbor adjacent to Maunalua bay. The Hawaiian name for the harbor and bay is Koko, however the area was earlier referred to as *Kohelepelepe* (the traveling vagina) and was changed to Koko under the influence of Christian missionaries. Koko was the name of a small canoe landing at the Wai`alae side of *Kohelepelepe*. Kuapâ Pond is another modern name that appears on all maps after 1851 and literally

means fishpond wall. The pond's name was originally *Keahapua-o-Maunalua*, meaning the mass of young fishes at Maunalua (Takemoto et al. 1975).

Kuapâ Pond was formed by the emergence of Koko Head and Koko Crater, which created the eastern end of what is now Maunalua Bay. Previously the pond was probably an elongate bay open to the southwest that was enclosed by the development of a sandbar across the front. The pond once covered over 520 acres and was the largest *loko Kuapâ* or enclosed fishpond in the Hawaiian Islands. Its water was brackish and fed by a brackish spring at the Honolulu end. By 1921 the pond was reduced to about 300 acres with 125 acres of swampland resulting from sedimentation. The pond was in commercial use for fish production up until 1960, after which it was dredged and highly modified for the development of the Hawai`i Kai housing complex and marina (Sakoda 1975).

The adjacent Maunalua Bay played an important role in the early post-European history of Hawai`i, since it was the landing spot of the two ships of Nathaniel Portlock in 1786, the first English vessels to reach Hawai'i after Captain Cook. Portlock (1789) described the difficulty obtaining water at this arid site and eventually sent a boat to obtain water and other supplies at Waikîkî. After conquest of O`ahu by King Kamehameha in 1794, ownership of most of the land surrounding Maunalua Bay and Kuapâ Pond passed through a series of Hawaiian royals, finally becoming part of the crown lands of Princess Bernice Bishop in 1883. During that time population and usage of the area decreased substantially. In 1821 the explorer Gilbert Mathison reported about 100 huts in the area used by fishermen. In 1826 the missionary Levi Chamberlain reported 65 students at the school at Maunalua. Four years later the number of students enrolled had dropped to 19. Population continued to decrease steadily at Maunalua with 99 people among 38 households reported in 1855, 16 households in 1860, six households in 1870 and only four households in 1880. These reductions undoubtedly were due mostly to the mortality, disease and migration to Honolulu that occurred throughout O`ahu in the late 1800s, but reduced fish production capacity at the Kuapâ pond may have played a role. Between the time of Portlock's landing in 1786 and the arrival of the missionaries in the 1820s sand bars were built that enclosed the pond and interfered with the free flow of water between the pond and the sea (Takemoto et al. 1975; Strump 1981).

Population at Maunalua began to recover in the late 1900s and was reported as 16 households in 1890. By 1900 it was the site of a big fishing complex and ranch employing Hawaiians and Chinese (Takemoto et al. 1975), and in 1914 the Marconi Wireless Telegraph Company opened a wireless receiving station on Koko Head which linked the Hawaiian Islands with the Mainland and the Orient. Accommodations built for the wireless station staff were later converted in 1927 to the Lunalilo Home for poor, aged and infirm people of Hawaiian birth. In 1931 the Kalaniana`ole Highway was completed to the area, providing more ready access to Honolulu, and by 1959 the area produced 60% of O`ahu's flowers, pigs and Manoa lettuce (Strump 1981). The environment and character of the area were soon to change however, with the signing of a lease in 1961 by Henry J. Kaiser with the Bishop Estate and the subsequent development of Hawai`i Kai. The houses, condominiums, shopping centers and marina of Hawai`i Kai and its approaches are today a major population center of Honolulu, with some of the most sought after and expensive housing in Hawai`i.

Kuapâ Pond and the nearshore area of Maunalua Bay therefore show the same progression as Waikîkî

from a naturally occurring inland water body heavily utilized by Hawaiians during pre-European contact followed by a period of decline in population and usage. This was then followed by intensive alteration of the natural environment associated with urbanization, development and massive population increase in the last 30 years. Only a few studies have been made of the marine and brackish water biota in the area or of the impacts of this massive development on the marine environment and none of the presence or impact of nonindigenous species. This report describes the surveys completed in February 2002.

II. METHODS

A. Literature Search

A variety of sources of information on the environmental conditions and biological communities of Waikîkî, Kuapâ Pond (Hawai`i Kai) and Maunalua Bay were examined. Literature consulted included published papers in the open scientific literature, taxonomy-based monographs and books, unpublished reports for environmental studies in the harbors, and newspaper and magazine articles that were concerned with the development or environmental and biological communities of the harbors. Resources that were consulted in this search were the libraries of Bishop Museum, the University of Hawaii, Mânoa and Hawai`i Institute of Marine Biology and AECOS Inc. Annotated bibliographies of all the literature assembled are presented in Appendix A.

B. Bishop Museum Collections

Bishop Museum collections databases for algae, invertebrates, malacology and ichthyology were reviewed for all marine or estuarine organisms indicated to have been collected in Waikîkî, Kuapâ Pond and Maunalua Bay. The retrieved data were assembled into a combined database for containing taxa identity, taxonomic authority, collection location and date, collector and collector's notes, when available. This information is included with the general listing of all taxa for the study developed from all sources and presented in Appendix B.

C. Field Surveys

Samples were collected from 15 sites at Waikîkî (Figure 1) and five sites in the Hawai`i Kai area, two within Kuapâ Pond and three in Maunalua Bay (Figure 2) using methods previously employed on nonindigenous species surveys in Hawai`i, Midway and Johnston Atoll. Sampling station locations, dates, coordinates and depths are summarized in Table 1.

The sampling and analysis process for benthic organisms is summarized in Figure 3. Collections and observations were made by two experienced investigators sampling as large a variety of habitats as possible at each station while snorkeling or using Scuba. One diver recorded the identities of abundant invertebrate macrofauna and macroalgae and all fishes swimming in the area, The second diver sampled organisms from hard surfaces and sediments from the intertidal zone to the base of the reef. Macro-

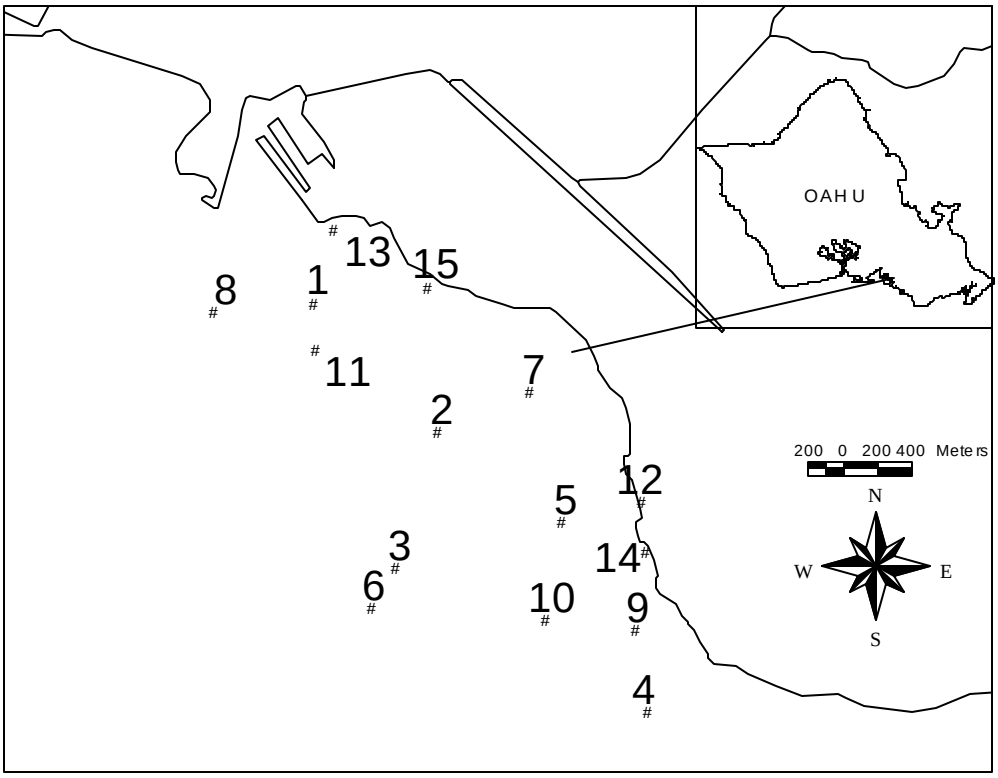

Figure 1. Station locations off Waikîkî.

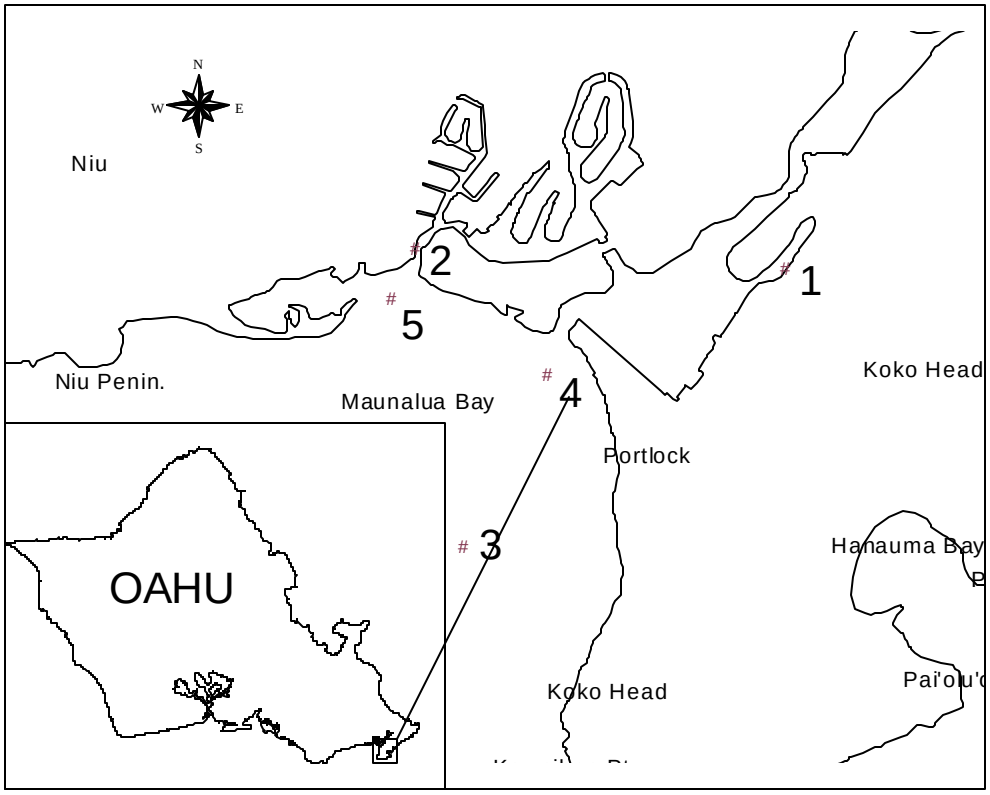

Figure 2. Station locations at Hawai`i Kai.

Table 1. Station coordinates and sampling information for Waikîkî and Kuapâ Pond - Maunalua Bay sites.

		Fouling		Sediment		WGS84					
		Sampling	Depth	Sampling	Depth	Latitude N			Longitude W		
Station	Location	Date	(m)	Date	(m)	Deg	Min	Sec	Deg	Min	Sec
Waikîkî											
1	Kaiser's Wreck	15-Jan-01	1.5-5.5	6-Dec-01	5.5	21	16	35.5	157	50	26.4
2	Outside Pop's	15-Jan-01	6	4-Dec-01	6.0	21	16	10.8	157	50	1.3
3	Atlantis Sub	17-Jan-01	10	6-Dec-01	10.0	21	15	44.8	157	50	9.9
4	Tongg's Wreck	17-Jan-01	4	4-Dec-01	4.0	21	15	17.4	157	49	19
5	Aquarium Outside Reef	17-Jan-01	3	4-Dec-01	3.0	21	15	53.5	157	49	36.3
6	100' Wreck	18-Jan-01	20-30	4-Dec-01	33.5	21	15	37.6	157	50	15.3
7	Canoes	18-Jan-01	3.5	4-Dec-01	3.5	21	16	18.3	157	49	42.5
8	Ala Wai Buoy	18-Jan-01	16.5	6-Dec-01	16.5	21	16	34.0	157	50	46.7
9	Elks Club	22-Jan-01	1.5	4-Dec-01	1.0	21	15	32.9	157	49	21.6
10	Kapua Channel	22-Jan-01	5	4-Dec-01	5.0	21	15	34.8	157	49	39.7
11	Kaiser's Channel	22-Jan-01	10-12	6-Dec-01	14.0	21	16	26.5	157	50	26.1
12	Aquarium Reef	23-Jan-01	0-5	6-Dec-01	2.0	21	15	57.2	157	49	20.3
13	Kahanamoku Reef	23-Jan-01	0.5	6-Dec-01	1	21	16	49.4	157	50	22.2
14	Kaimana Beach Reef	24-Jan-01	0.25-3	6-Dec-01	2.0	21	15	44.3	157	49	19.2
15	Fort DeRussy	24-Jan-01	0.5-1.5	6-Dec-01	0.5	21	16	38.4	157	50	3.1
Kuapâ Pond – Maunalua Bay											
1	Marina Floating Dock	5-Feb-02	0-2	None		21	17	13.8	157	42	11.8
2	Marina Outlet Bridge	5-Feb-02	0-1	None		21	17	17.8	157	43	17.6
3	Channel Marker 1	6-Feb-02	4	None		21	16	28.0	157	43	9.7
4	Koko Marina Nearshore	6-Feb-02	1.5	None		21	16	56.5	157	42	54.4
5	Kuli`ou`ou Nearshore	6-Feb-02	0.5	None		21	17	9.7	157	43	21.8

organisms were collected by hand, hard surfaces were scraped with a chisel, and several liters of coral rubble were placed in an 80 µm mesh bag and transported back to the laboratory for later inspection and removal of cryptic organisms. When present at a survey site, whole macroalgae plants were collected and preserved in 70% ethanol, and epiphytic organisms were later rinsed from the algae and preserved in ethanol for future processing. Collected organisms and substratum, which range 4-8 liters in total volume for each station, were inspected on site, and selected hydroids, anemones and tunicates were removed and relaxed in a solution of Epsom salts and seawater before preserving in 5% formalin. The remaining organisms were preserved on site in 70% alcohol before returning the samples to the laboratory for sorting and identification of organisms.

Sediment dwelling organisms were sampled at each Waikîkî station, using cores 12.5 cm diameter by15 cm deep pushed into the substratum. Sediments obtained were sieved through a 0.5 mm mesh screen and the organisms retained by the screen, which were placed in plastic bags and preserved in 70% alcohol until processing.

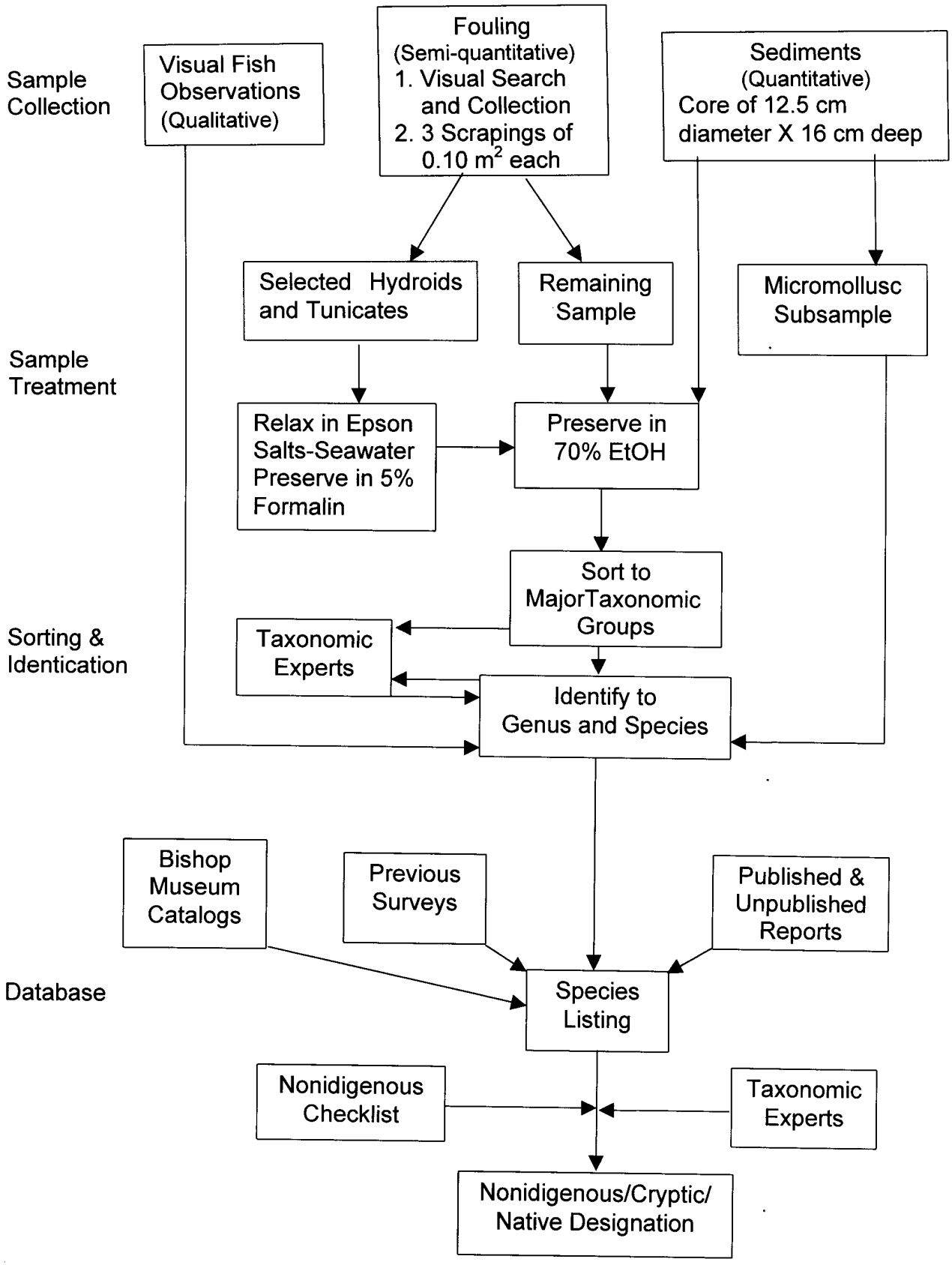

Figure 3. Methodology summary.

Specimens collected were sorted and identified to species or the lowest practicable taxa, using dissecting or compound microscope magnification when necessary. Identifications were made using descriptions available in Reef and Shore Fauna of Hawai`i Sections 1 to 4 (published), 5 and 6 (unpublished), various taxonomic references, and voucher specimens in the Bishop Museum collections. Specimens from various groups were sent to taxonomic experts for final identifications (see Acknowledgments).

D. Data Analysis

All organisms identified from the field study were entered on an Access database relational with the databases for previous literature reports and museum collections of organisms from Pearl Harbor. The combined information was used to track the occurrence of species chronologically from the time of the first available reports for Kane`ohe Bay.

The Sorenson's Index of percent similarity, based on presence-absence of species at station pairs, was used to measure the degree of association among stations. By this index, the more species two stations share relative to their total species complements, the greater their ecological similarity. Based on a matrix of Sorensen Index values, cluster analysis was used to arrange stations into groups or clusters. Intercluster distances were calculated using an unweighted pair group average method. In this analysis, similar stations will form clusters distinct from other stations. These clusters are arranged in a hierarchical, treelike structure called a dendrogram. Calculation of the similarity measures and cluster analysis were performed using the Multi-Variate Statistical Package, ver. 3.1 (Kovach 1993).

III. RESULTS

A. Waikîkî

1. Station Locations and Descriptions

Station 1 (Latitude 21°16'35.5", Longitude 157°50'26.4")
Kaiser's Wreck. Small boat wreck site on coral reef in 1.5 to 5.5 m depth at channel edge; moderate coral coverage (5-10%), mostly of *Pocillopora meandrina*, with coral cobbles and rubble on flat bottom along channel.

Station 2 (Latitude 21°16'10.8", Longitude 1157°50'1.3")
Outside Pop's. Flat scoured reef in 6 m depth; sparse coral and abundant coverage of brown macroalgae *Dictyopteris australis* on sand covered bottom.

Station 3 (Latitude 21°15'44.8", Longitude 157°50'9.9")
Atlantis Submarine. Artificial reef at Atlantis Submarine site in 20 m depth; Concrete pilings and cinder block stacks lie on bottom in flat reef and sand area. Coverage of <1% live coral and dead coral cobbles/pebbles on coarse sand grades into higher coral coverage to 10% at 23 m depth.

Station 4 (Latitude 21°15'17.4", Longitude 157°49'19"
Tongg's Wreck. Off Diamond Head wreck at Tongg's surfing site in 4 m depth; iron debris from wreck rubble lying on flat scoured reef surrounded by loose sand; abundant *Dictyopteris australis*; and sparse coral.

Station 5 (Latitude 21°15'53.5", Longitude 157°49'36.
Aquarium Outside Reef. Fossil reef off Waikîkî Aquarium in about 3 m depth. Virtually no coral, bottom is heavily scoured and partly covered with sand; moderate three-dimensional relief from ledges; abundant *Dictyopteris australis*.

Station 6 (Latitude 21°15'37.6", Longitude 157°50'15.3")
Atlantis Wreck. Hull of 53-m long metal vessel sunk at the site in 1989 to provide an artificial reef to attract marine life for viewing from the Atlantis Submarine. The vessel stands upright in 20-30 m depth on a sandy flat bottom with loose dead coral cobbles, mostly of small branches of *Porites compressa* and very little live coral. The hull has abundant oysters and sparse coral and a prolific growth of the nonindigenous octocoral *Carijoa riisei* abundant in interior spaces.

Station 7 (Latitude 21°28' 42.3', Longitude 157°49'42.5"
Canoes. Outside of "Canoes" surf site in 3.5 m depth. Barren, sand scoured reef with heavy *Dictyopteris australis* coverage and very little coral, surrounded by sand with much sand accumulated on reef. High water turbidity at time of survey from surf-suspended sand.

Station 8 (Latitude 21°16'34.0", Longitude 157°50'46.7")
Ala Wai Buoy. Red Ala Wai entrance buoy #2 anchored in 16.5 m depth with very little fouling on buoy and none on chain. Bottom substratum at buoy is hard & smooth fossil reef with light fine sand; cobble size rubble with small outcrops increases with distance away from the buoy anchor site.

Station 9 (Latitude 21°15'32.9", Longitude 157°49'21.6")
Elks Club. Emergent reef area rising to above water surface off Elks Club in1.5 m depth with flat coarse sand bottom and cobbles interspersed among dead reef.

Station 10 (Latitude 21°15'34.8", Longitude 157°49'39.7")
Kapua Channel. Flat, low relief line of scoured reefs among sand channels in 5 m depth; reefs highly scoured with light sand cover; abundant *Dichtyopteris australis* and sparse *Pocillopora meandrina* with ca. 1% cover.

Station 11 (Latitude 21°16'26.5", Longitude 157°50'26.1")
Kaiser's Channel. East side of channel on reef with moderate (ca. 10%) coral cover with *Porites lobata* heads to 1.5 m diameter in 10 m depth on reef, to 12 m in sand channel. This reef showed the highest coral cover and most pristine conditions of any site on the survey.

Station 12 (Latitude 21°15'57.2", Longitude 157°49'20.3")
Aquarium Reef. Reef area immediately offshore of Waikîkî Aquarium. Substratum is a shallow consolidated limestone reef 0-0.25 m deep from the beach to 25 m from shore that is separated from an offshore reef by a sand channel ca. 5 m deep. The Aquarium discharge pipe extends across the inshore reef to the channel and discharges warm effluent at ca. 3 m depth. On the nearshore reef coral is very scarce and macroalgae is very abundant and dominated by nonindigenous *Gracilaria salicornia* and *Acanthophora spicifera*, which accumulate in large deposits along the shoreline seawall. On the offshore reef intermittent corals, mostly *Porites lobata* and *Pocillopora meandrina,* occur, but the substratum is still virtually covered by a variety of macroalgal species, including *G. salicornia* and *A. spicifera* to 300 m offshore, after which the sandy bottom becomes dominated by *Dictyopteris australis.*

Station 13 (Latitude 21°16'49.4", Longitude157°50'22.2")
Kahanamoku Reef. Location of the Hilton Lagoon where a basalt boulder groin separates a 0.5 m deep swimming area from open water. The lagoon bottom is coarse sand cobbles with boulders with heavy *Acanthophora spicifera* growth. A narrow reef 1 m deep extends across the mouth of lagoon that is heavily covered with algae, especially *Dichtyopteris australis* and *Ulva reticulata.*

Station 14 (Latitude 21°15'44.3", Longitude 157°49'19.2")
Kaimana Beach Reef. Shore groins and nearshore reef near the Outrigger Canoe Club. Shallow (<0.25 m) reef flat nearshore grades out to reef with good relief (up to 3m depth) 100 m offshore. Reef surface is covered with abundant algae dominated by nonindigenous *Acanthophora*

spicifera, Gracilaria salicornia and *Ulva reticulata*. This ranks with Station 12 (Waikîkî Aquarium) as the most disturbed areas surveyed, with very little live coral.

Station 15 (Latitude 21°16'38.4", Longitude 157°50'3.1")
Fort DeRussy. Jetty at the southeast end of Fort DeRussy Beach Park to about 100 m from shore. Fresh water influence from storm drains indicated by heavy growth of *Ulva reticulata, Ulva lactuca* that with nonindigenous *Hypnea musciformis* occur along with other abundant macro-algae species. Seaward of storm drain jetty depth increases to 1.5 m and algae are less abundant on coarse sand bottom having cobble/boulder rubble and some corals (<1%), but algae dominates on coral rubble outcrops.

2. Benthic and Fish Surveys – All Reports

A total of 925 taxa with 749 named species were collected or observed at the 15 stations off Waikîkî in January 2001 (Appendices B and C). By comparison, 1070 taxa including 966 named species were previously reported in published or unpublished literature or in Bishop Museum collections from 1921 to 2001. Of the 925 taxa found on the present surveys, 725 taxa with 634 named species were new reports for Waikîkî, but only 21 species were new reports for Hawai`i. Taxa reports are listed by station in Appendix C and summarized by major taxonomic group at each station in Table 2.

Table 2. Distributions of total taxa and major taxonomic groups among Waikîkî Stations, 2001

		Station														
Taxon	**Total**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Cyanophyta	2	-	-	-	1	-	-	-	-	-	-	-	1	1	-	-
Chlorophyta	25	3	1	1	1	2	2	3	2	4	3	2	8	7	10	12
Phaeophyta	15	1	2	2	2	3	1	2	1	3	1	-	7	6	5	10
Rhodophyta	125	22	23	13	15	15	8	17	24	26	15	12	34	29	29	36
Spermatophyta	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Porifera	31	10	7	1	6	11	4	7	3	1	4	-	5	7	3	1
Cnidaria	37	10	7	7	4	5	11	6	8	5	8	9	3	3	3	5
Polychaeta	58	25	23	18	18	29	24	27	24	25	27	30	19	22	21	25
Sipunculida	7	4	3	-	2	5	3	3	6	4	5	4	2	3	2	2
Gastropoda	187	47	17	23	7	9	39	73	53	42	76	57	31	28	30	26
Bivalvia	47	9	9	12	9	10	18	18	15	11	22	15	3	9	4	3
Cephalopoda	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Crustacea	212	63	65	47	57	65	52	63	66	69	85	88	64	55	62	56
Ectoprocta	39	1	9	4	2	3	8	-	11	-	13	12	1	1	-	-
Echinodermata	32	13	8	7	10	7	8	10	8	6	11	6	4	9	6	5
Ascidiacea	17	3	2	6	4	2	3	6	4	2	4	2	1	1	1	-
Osteichthyes	88	35	20	33	30	15	29	15	8	14	8	30	24	10	17	13
Reptilia	1	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-
Total	925	247	196	174	168	181	211	250	233	212	282	269	207	192	193	194

The distribution of taxa for major phylogenetic groups among the 15 stations is shown graphically for 16 groups in Figure 4. With the exception of macroalgae, which showed higher numbers of taxa at the shoreline stations 12 to 15, there were no apparent distribution patterns for any major taxonomic group. The Polychaeta had the greatest number of taxa, approaching 80 per stations at Stations 7 and 10, followed by macroalgae, peracarids and decapods, each of which had more than 40 taxa for at least one station. Total combined taxa ranged from 174 at Station 3 to 282 at Station 10 and also showed no apparent distribution pattern with depth or distance offshore.

Sorensen Similarity Coefficients were calculated using presence-absence of all identified taxa among the 15 stations, and a dendrograph summarizing these results is shown in Figure 5. Although grouping similarities are less than 50%, three clusters are suggested for the stations that correspond with depth and distance off offshore. Cluster A includes seven stations (1, 2, 4, 5, 7, 10, 11), which were at intermediate depths of mostly 1 to 6 m and intermediate distances offshore over a predominantly sandy bottom. Cluster B includes 5 nearshore stations (9, 12, 13, 14, 15) dominated by macroalgae, including introduced species. Cluster C contains three offshore stations (3, 6, 8) at 16.5 to 30 m with little coral and a coarse sand or rocky bottom.

3. Comparison with Previous Studies – All Taxa

Table 3 lists the numbers of taxa and named species by major taxonomic group for all previous reports, including Bishop Museum collections and the present survey. Although the present study found nearly as many taxa and named species as all previous studies at Waikîkî combined, a total of only 345 total taxa (1070 previous-725 not found) were found in common between the present study and all previous reports, resulting in an average finding of only 33% of previous reported taxa. For groups with 20 or more taxa in the present study, the finding rates were quite consistent at around 30%, except for Porifera where only 20% of previously reported taxa were recollected and Cnidaria, which had a recollection value of 50%. By comparison, the proportions of the taxa and species found in the present study that had previously been reported averaged 37% for total taxa and 47% for named species. These percentages range wider by group, with around 86% of the fishes down to 3% of the total taxa of sponges and bryozoans in the present study having been previously reported or present in Bishop Museum collections.

4. Nonindigenous and Cryptogenic Species

Species previously reported in Hawai`i were categorized as native, nonindigenous or cryptogenic (i. e. of uncertain origin but with indications of being introduced) according to the designations in (Carlton and Eldredge In prep.) and (Coles et al. 1997; Coles et al. 1999a). For brevity, the term NIS is used hereinafter to refer to combined nonindigenous and cryptogenic species. For species new to Hawai`i, status was assigned using the criteria presented by Chapman (1988) and Chapman and Carlton (1991) and described in Coles et al. (1997; 1999a.) These criteria include new appearances in the region, association with known dispersal mechanisms or other introduced species and disjunct geographic distributions. Taxonomic specialists were also consulted for their input in assessing the status of newly reported species.

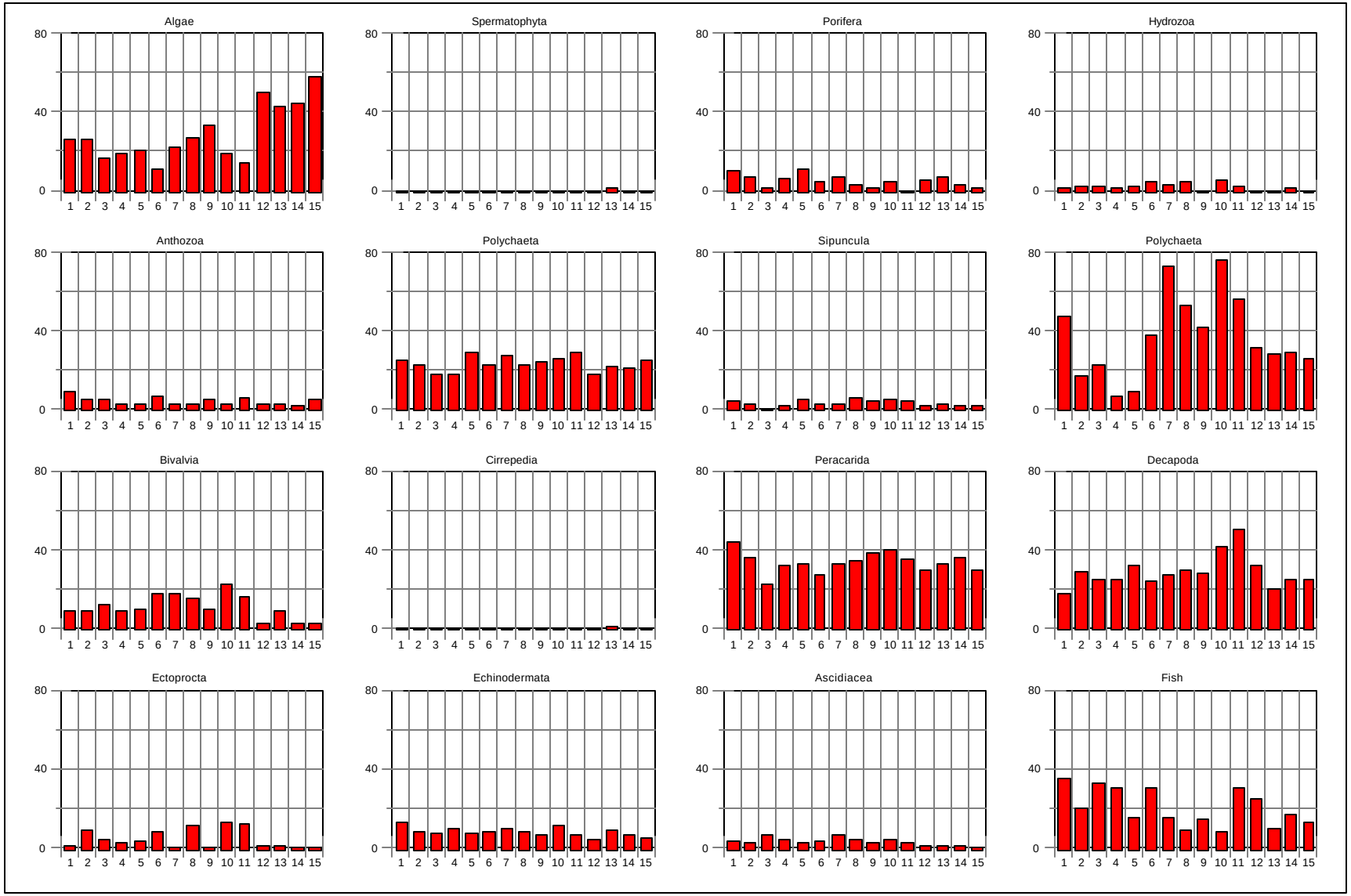

Figure 4. Distributions of major taxonomic groups observed or collected at Waikîkî, 2001

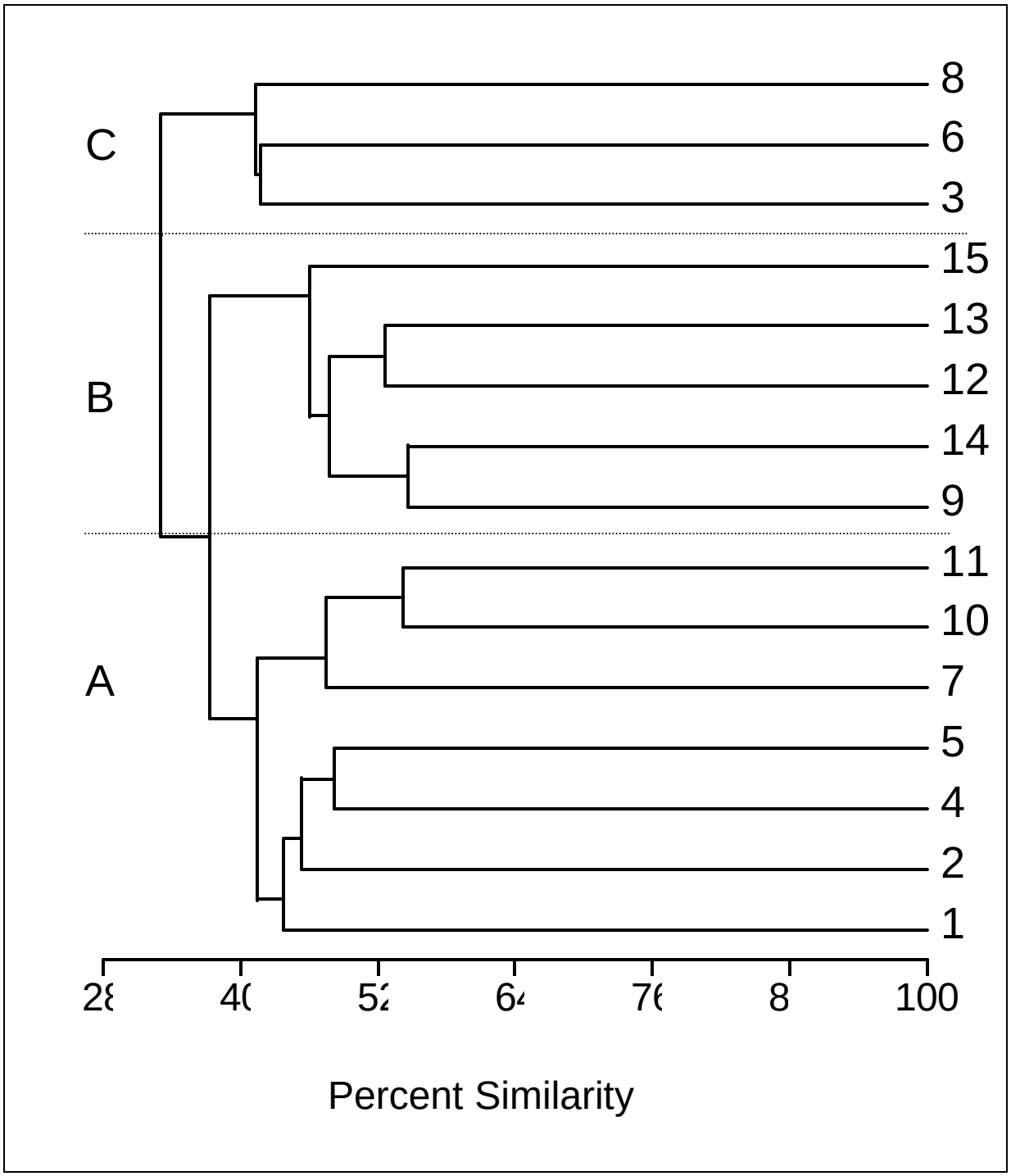

Figure 5. Dendrograph of similarity analysis for Waikîkî stations based on presence-absence of all taxa of algae, invertebrates and fishes.

Table 3. Numbers of taxa and named species in major taxonomic groups previously reported and by the present study for Waikîkî.

Taxa	All Taxa Prev. Reports	Named Taxa Prev. Reports	All Taxa Pres. Study	Named Taxa Pres. Study	Previous Taxa Not Found	New* Taxa Pres. Study	Named New* Taxa Pres. Study	% Prev. Taxa Recollected	% Pres. Taxa Prev. Reported	% Pres. Named Taxa Previously Reported
Algae	237	196	167	149	162	92	84	31.6	44.9	63.5
Spermatophyta	0	0	1	1	0	1	1	0	0	0
Porifera	5	3	31	11	4	30	20	20.0	3.2	9.7
Cnidaria	24	22	37	32	11	24	19	54.2	35.1	40.5
Platyhelminthes	2	2	0	0	2	0	0	0.0	0	0
Nemertea	1	1	0	0	1	0	0	0.0	0	0
Polychaeta	25	18	58	35	16	49	26	36.0	15.5	29.3
Sipunculida	5	3	7	7	2	4	4	60.0	42.9	71.4
Mollusca	268	248	235	200	190	157	126	29.1	33.2	40.0
Crustacea	222	205	212	161	157	147	97	29.3	30.7	38.7
Bryozoa	4	3	39	22	3	38	21	25.0	2.6	5.1
Brachiopoda	1	1	0	0	1	0	0	0	0	0
Hemichordata	1	1	0	0	1	0	0	0	0	0
Echinodermata	56	49	32	30	34	10	8	39.3	68.8	90.6
Ascidiacea	2	2	17	14	1	16	13	50.0	5.9	5.9
Fish	216	211	88	86	140	12	10	35.2	86.4	92.0
Reptilia	1	1	1	1	0	0	0	100	100	100
Total	1070	966	925	749	725	580	429	32.2	37.3	47.1

* "New" = new record for Waikîkî

Of the 749 named species identified for Waikîkî in this study, 19 were categorized as cryptogenic and 33 as nonindigenous for a total of 52 NIS, or 6.9% of the total species identified. The NIS are listed in Table 4 and their distributions by major taxonomic group and by station are summarized in Table 5. The greatest numbers of NIS were in the Hydrozoa (11 species) followed by the Crustacea (8 species) comprised of four amphipods, an isopod, a tanaid and two decapods, the Mollusca (8 species) with five gastropods and three bivalves and the Ascidiacea with seven species. No apparent pattern occurred in the distributions of these species within any of these groups or for total NIS, which ranged from six to 20 species per station, with no correlation indicated for NIS numbers with depth or location, either offshore or along shore. However, the dendrograph of Sorensen similarity coefficients using presence-absence data for the 52 NIS at the 15 stations (Figure 6) indicates three clusters, with the strongest association shown for Cluster C, composed of the shoreline stations 12, 13, 14 and 15. A subcluster of over 85% similarity is indicated for Stations 12 (Aquarium Reef) and 14 (Kaimana Beach Reef), the two most disturbed areas on the survey. Inspection of the NIS species distributions in Table 4 indicates that the unique aspect of these four stations was the presence of two or three species of introduced algae and of the introduced stomatopod *Gonodactylaceus falcatus*. Nonindigenous algae, especially *Gracilaria salicornia,* were extremely abundant at Stations 12 and 14, where these species occurred in dense accumulations.

5. Invasive Species

Following criteria in Coles and Eldredge (2002) and Coles et al. (2002), only 8 of the 52 NIS found at Waikîkî were considered invasive or potentially invasive species defined as known, recent introductions to Hawai`i that are apparently uncontrolled by environmental conditions or biotic factors. These invasives may monopolize habitats, displace native organism and/or degrade the environment. The distribution of these invasive species is shown in Figure 7. By far the most apparent and having the greatest impact were the red *algae Acanthophora spicifera, Gracilaria salicornia* and *Hypnea musciformis*, which were all found in great abundance at the three or four shoreline stations from Kahanomoku Reef area to Kaimanu Beach. Abundance was especially great along the shore at the Waikîkî Aquarium, where *Gracilaria salicornia* virtually covered the shoreline below the seawall. The most widely distributed invasive invertebrate, *Gonodactylaceus falcatus*, also occurred at these shoreline stations as well as further offshore at Stations 1 (Kaiser's Wreck) and 9 (Elk's Club). The only other invasive invertebrate, the octocoral *Carijoa riisei*, occurred at only one site, Station 6 (Atlantis Submarine Wreck) where it was extremely abundant, virtually covering surfaces in subdued light within the ship's hull at depths greater than 25 m. The fish *Lutjanus kasmira* was also abundant at this site, and less so not far away at Station 3, the Atlantis submarine artificial reef. The other invasive fish, *Cephalopholis argus* occurred only at Station 1 (Kaiser's Wreck) where only one individual was seen.

Table 4. Station records for cryptogenic and introduced species collected or observed at Waikîkî in January 2000.

			Station														
Taxon/Ordrw	Species	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RHODOPHYTA	*Hypnea musciformis*	Introduced		x	x									x	x		x
	Gracilaria salicornia	Introduced												x	x	x	
	Acanthophora spicifera	Introduced												x	x	x	x
PORIFERA	*Callyspongia diffusa*	Cryptogenic													x		
	Chalinidae n. sp. (purple)	Cryptogenic	x														
	Gelliodes fibrosa	Introduced				x											
	Dysidea arenaria	Cryptogenic		x		x											
	Dysidea avara	Cryptogenic	x				x										
HYDROZOA	*Eudendrium sp.*	Cryptogenic						x									
	Antennella secundaria	Cryptogenic		x	x					x		x					
	Pennaria disticha	Introduced	x														
	Anthohebella parasitica	Cryptogenic								x							
	Halopteris polymorpha	Cryptogenic						x									
	Plumularia strictocarpa	Cryptogenic							x	x			x				
	Sertularella areyi	Cryptogenic										x					
	Tridentata humpferi	Cryptogenic							x			x	x				
	Tridentata ligulata	Cryptogenic					x	x									
	Tridentata turbinata	Cryptogenic		x	x					x		x					
	Synthecium megathecum	Introduced				x	x										
ANTHOZOA	*Carijoa riisei*	Introduced	x				x	x									
	Diadumene leucolena	Introduced															x
POLYCHAETA	*Armandia intermedia*	Cryptogenic							x								
	Capitella sp.	Cryptogenic	x	x				x									x
	Branchiomma nigromaculata	Cryptogenic		x			x			x							x
	Hydroides crucigera	Introduced											x				
GASTROPODA	*Diodora ruppelli*	Introduced							x	x		x					
	Hipponix australis	Cryptogenic	x			x		x		x	x		x				
	Crepidula aculeata	Introduced		x	x				x	x		x			x		
	Eualetes tulipa	Introduced			x				x		x	x	x	x	x		x
	Hinemoa indica	Introduced							x	x							x
BIVALVIA	*Anomia nobilis*	Introduced						x		x		x					
	Chama fibula	Cryptogenic													x		
	Hiatella arctica	Introduced	x	x			x	x	x			x	x				
AMPHIPODA	*Ericthonius brasiliensis*	Introduced	x	x		x	x	x		x		x	x	x	x	x	
	Leucothoe micronesiae	Introduced					x			x		x					
	Paraleucothoe cf. flindersi	Introduced		x		x	x		x			x	x				
	Podocerus brasiliensis	Introduced	x	x		x					x	x					x
ISOPODA	*Mesanthura sp.*	Introduced	x	x					x		x	x	x	x	x	x	x
TANAIDACEA	*Leptochelia dubia*	Cryptogenic	x	x	x	x	x	x	x	x	x	x	x	x		x	x
DECAPODA	*Gonodactylaceus falcatus*	Introduced								x				x		x	x
	Pilumnus oahuensis	Introduced	x		x	x	x	x	x			x	x				
ECYOPROCTA	*Savignyella lafontii*	Introduced										x					
	Watersipora edmondsoni	Introduced	x	x			x					x			x		
ASCIDIACEA	*Didemnum candidum*	Introduced			x												
	Diplosoma listerianum	Introduced		x				x			x						
	Polyclinum constellatum	Introduced						x									
	Phallusia nigra	Introduced							x								
	Botrylloides simodensis	Introduced										x					
	Symplegma brakenhielmi	Introduced						x	x	x		x					
	Microcosmus exasperatus	Introduced					x		x								
OSTEICHTHYES	*Cephalopholis argus*	Introduced	x														
	Lutjanus kasmira	Introduced			x			x									
	Total		14	15	9	9	13	15	15	15	6	20	11	8	10	6	11

Table 5. Numbers of nonindigenous and cryptogenic species by station at Waikîkî.

	Station															
Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
ALGAE		1	1									3	3	2	2	3
PORIFERA	2	1		2	1								1			5
HYDROZOA	1	2	2	1	2	3	2	4		4	2					11
ANTHOZOA	1				1	1									1	2
POLYCHAETA	1	2			1	1	1	1			1				2	4
GASTROPODA	1	1	2	1		1	4	4	2	3	2	1	2		2	5
BIVALVIA	1	1			1	2	1	1		2	1		1			3
CRUSTACEA	5	5	2	5	6	3	4	4	3	7	5	4	2	4	4	8
ECTOPROCTA	1	1			1					2			1			2
ASCIDIACEA		1	1		1	3	3	1	1	2						7
FISH	1		1			1										2
Total	14	15	9	9	13	15	15	15	6	20	11	8	10	6	11	52

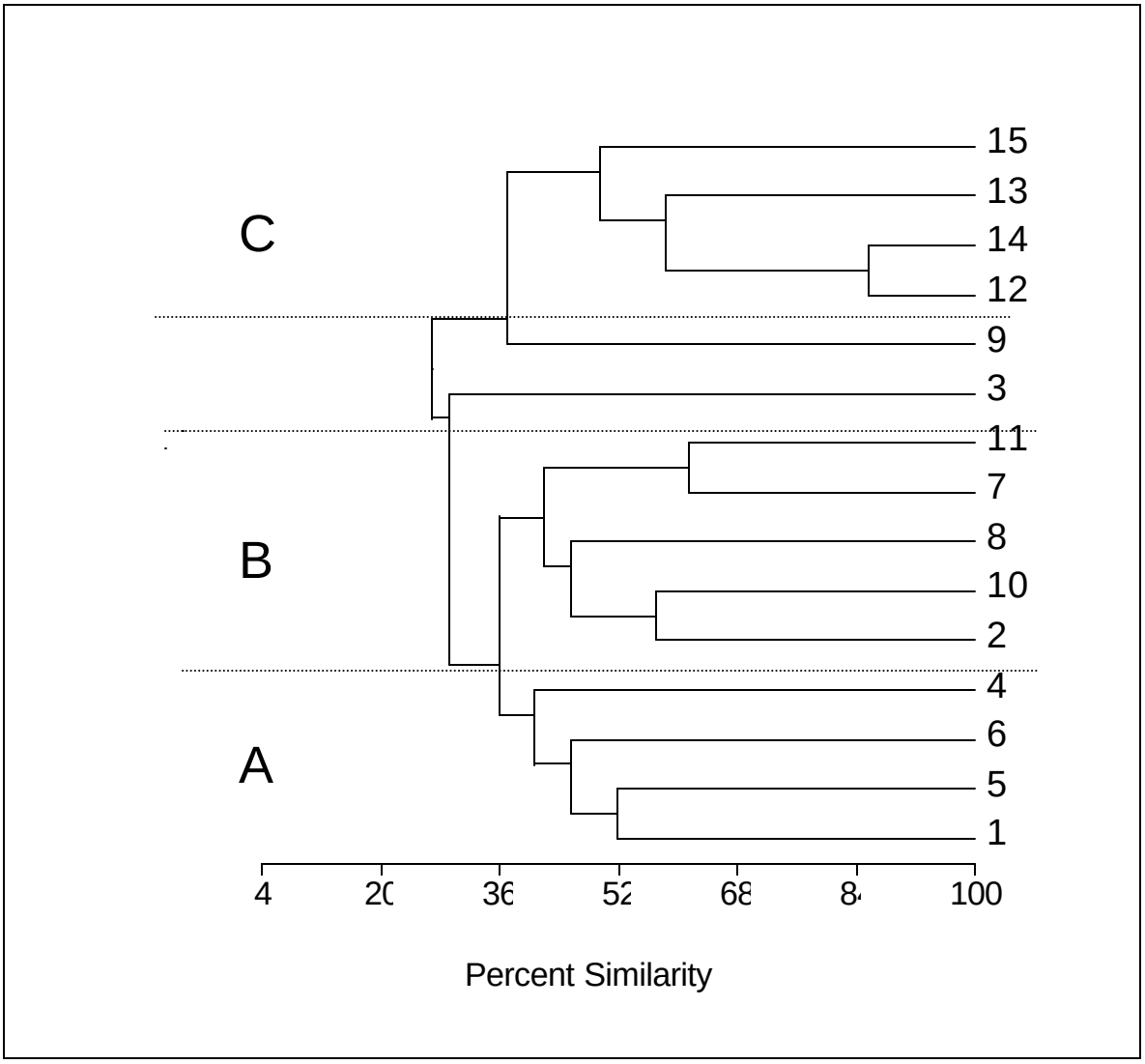

Figure 6. Dendrograph of similarity analysis for nonindigenous species distributions among stations.

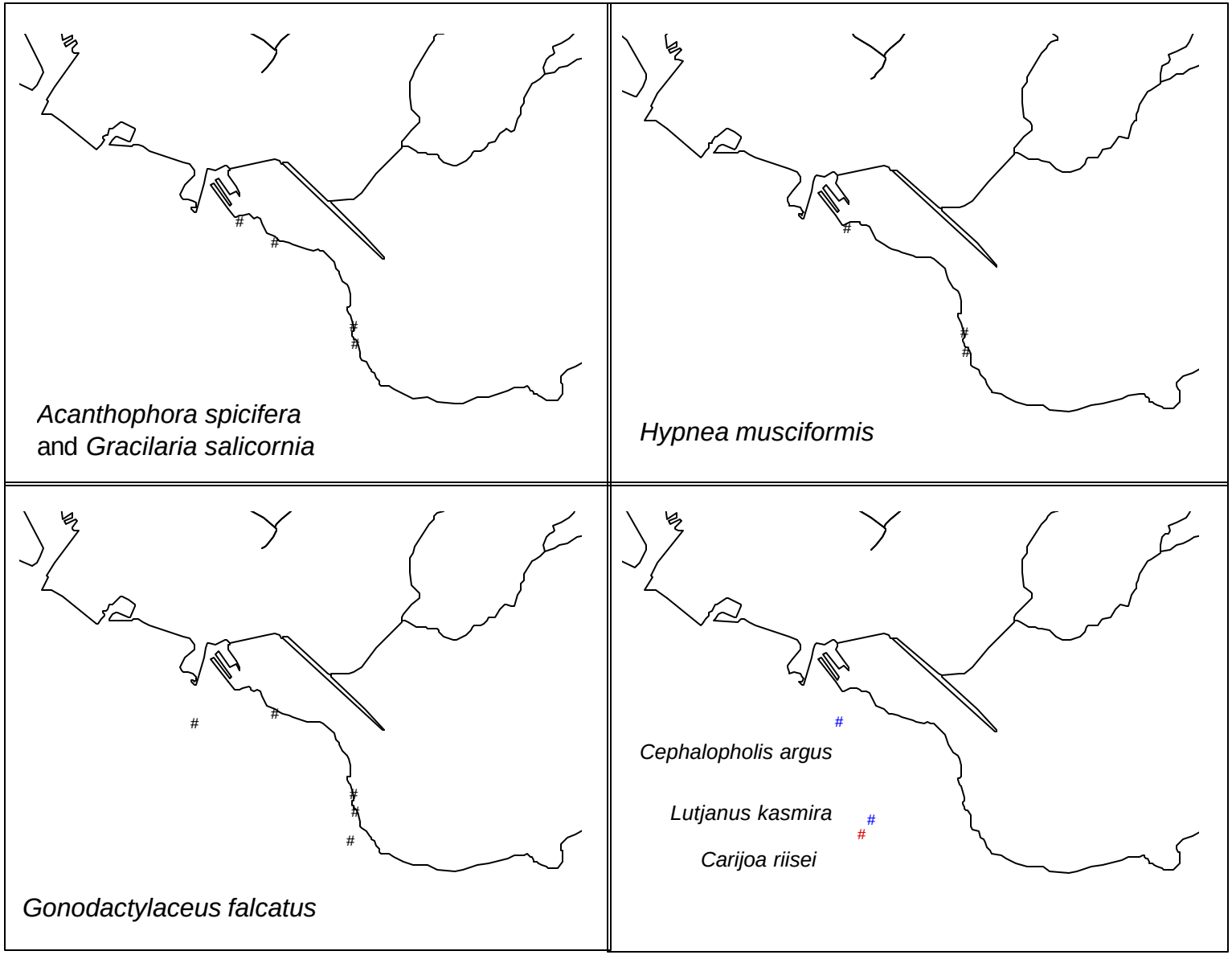

Figure 7. Locations of invasive marine species off Waikîkî.

6. Comparison with Previous Waikîkî NIS Reports

Of the 52 NIS observed or collected on this study, only six were previously reported for Waikîkî, the earliest being the bivalve *Hipponix australis* in 1915, and the most recent *Cephalopholis argus* in 1989. An additional eight NIS were reported from previous studies, for a total of 60 NIS overall for Waikîkî since the first available reports in 1900. Forty-six of the NIS found in the present study were first reports for Waikîkî, but only three of these, all hydrozoans, were first reports for Hawai`i (Table 6) and have been given cryptogenic status. Twenty-six, 33 and 40 of the 46 new reports for Waikîkî have previously been collected or observed in Pearl Harbor, O`ahu's commercial and public harbors or Kane`ohe Bay, respectively. Dates and site information for first introductions of these species is given in Appendix D . Other than cryptogenic hydroids that were first identified as part of this project and a related one in Kane`ohe Bay (Coles et al. 2002), all but eight first Hawaiian reports for these 46 new Waikîkî species occurred from 1913 to 1987, with all those after that time coming from intensive studies O`ahu's harbors by the present authors.

The patterns of first Hawaiian reports by decade for NIS found in this study and new reports for all species for Waikîkî are compared in Figures 8 and 9. The peak indicated for both NIS (all cryptogenic) and total species indicated for >2000 (Figure 8) is clearly related to the effort of the present study and results in one of the lowest New NIS:New Total Species ratios found for any decade (Figure 9). By contrast, the high ratio found for the 1990s reflects the fact that numerous NIS were found elsewhere in Hawai`i during that decade when very little sampling activity or observations were being made off Waikîkî. The other ratio peak corresponds to the 1970s, indicative of a period when many new introductions are known to have occurred or were first reported, e.g. three species of algae, one octocoral, one polychaete, two gastropods, and two ascideans. Twenty-five of the 51 new NIS were first reported in Hawai`i before 1970, suggesting that introductions have been relatively continuous throughout the last century, with no peaks indicated for any decade.

Table 6. Cryptogenic and nonindigenous species newly reported for Waikîkî and Hawai`i Kai, and previous reports in Pearl Harbor, O`ahu commercial harbors and Kane`ohe Bay.

			New Reports		Previously Reported		
Taxon/Order	Species	Status	Waikîkî	Hawai`i Kai	Pearl Harbor	O`ahu Harbors	Kane`ohe Bay
Porifera	*Callyspongia diffusa*	Cryptogenic	x		x	x	x
Porifera	*Chalinidae* n. sp. (purple)	Cryptogenic	x			x	x
Porifera	*Dysidea arenaria*	Cryptogenic	x		x	x	x
Porifera	*Dysidea avara*	Cryptogenic	x		x	x	x
Hydrozoa	*Antennella secundaria*	Cryptogenic	x				x
Hydrozoa	*Anthohebella parasitica*	Cryptogenic	x				
Hydrozoa	*Eudendrium* sp.	Cryptogenic	x	x			
Hydrozoa	*Halopteris polymorpha*	Cryptogenic	x				x
Hydrozoa	*Plumularia strictocarpa*	Cryptogenic	x			.	x
Hydrozoa	*Sertularella areyi*	Cryptogenic	x				x
Hydrozoa	*Tridentata humpferi*	Cryptogenic	x				x
Hydrozoa	*Tridentata ligulata*	Cryptogenic	x	x			
Hydrozoa	*Tridentata turbinata*	Cryptogenic	x	x			
Polychaeta	*Armandia intermedia*	Cryptogenic	x			x	x
Polychaeta	*Branchiomma nigromaculata*	Cryptogenic	x		x	x	x
Polychaeta	*Capitella* sp. cf. *capitata*	Cryptogenic	x				x
Mollusca	*Chama fibula*	Cryptogenic	x		x	x	x
Pericarida	*Leptochelia dubia*	Cryptogenic	x			x	x
	Total Cryptogenic		18	3	5	8	13
Rhodophyta	*Hypnea musciformis*	Introduced	x				x
Porifera	*Gelliodes fibrosa*	Introduced	x		x	x	x
Hydrozoa	*Pennaria disticha*	Introduced	x		x	x	x
Hydrozoa	*Synthecium megathecum*	Introduced	x			x	x
Anthozoa	*Carijoa riisei*	Introduced	x		x	x	x
Anthozoa	*Diadumene leucolena*	Introduced	x		x	x	
Polychaeta	*Hydroides crucigera*	Introduced	x				x
Mollusca	*Anomia nobilis*	Introduced	x		x	x	x
Mollusca	*Crepidula aculeata*	Introduced	x		x	x	x
Mollusca	*Diodora ruppelli*	Introduced	x		x	x	x
Mollusca	*Eualetes tulipa*	Introduced	x		x	x	x
Mollusca	*Hiatella arctica*	Introduced	x			x	x
Mollusca	*Hinemoa indica*	Introduced	x		x	x	x
Pericarida	*Leucothoe micronesiae*	Introduced	x			x	x
Pericarida	*Mesanthura* sp.	Introduced	x			x	x
Pericarida	*Paraleucothoe cf. flindersi*	Introduced	x		x	x	x
Pericarida	*Podocerus brasiliensis*	Introduced	x		x	x	x
Decapoda	*Gonodactylaceus falcatus*	Introduced	x		x	x	x
Decapoda	*Pilumnus oahuensis*	Introduced	x		x	x	x
Ectoprocta	*Savignyella lafontii*	Introduced	x		x	x	x
Ectoprocta	*Watersipora edmondsoni*	Introduced	x		x	x	x
Ascidiacea	*Botrylloides simodensis*	Introduced	x		x	x	x
Ascidiacea	*Didemnum candidum*	Introduced	x			x	x
Ascidiacea	*Diplosoma listerianum*	Introduced	x		x	x	x
Ascidiacea	*Microcosmus exasperatus*	Introduced	x		x	x	x
Ascidiacea	*Phallusia nigra*	Introduced	x		x	x	x
Ascidiacea	*Polyclinum constellatum*	Introduced	x		x		x
Ascidiacea	*Symplegma brakenhielmi*	Introduced	x		x	x	x
	Total Nonindigenous		28	0	21	25	27
	Total NIS		46	3	26	33	40

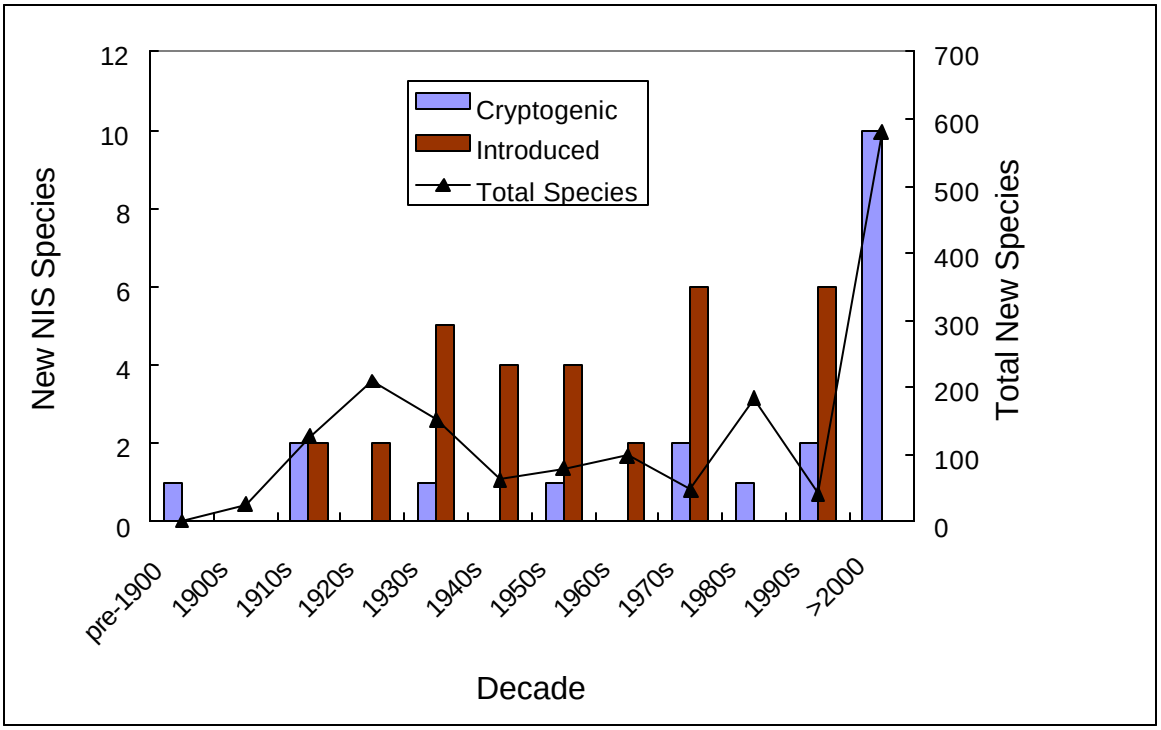

Figure 8. Numbers of first reports of nonindigenous, cryptogenic and total species for Waikîkî by decade.

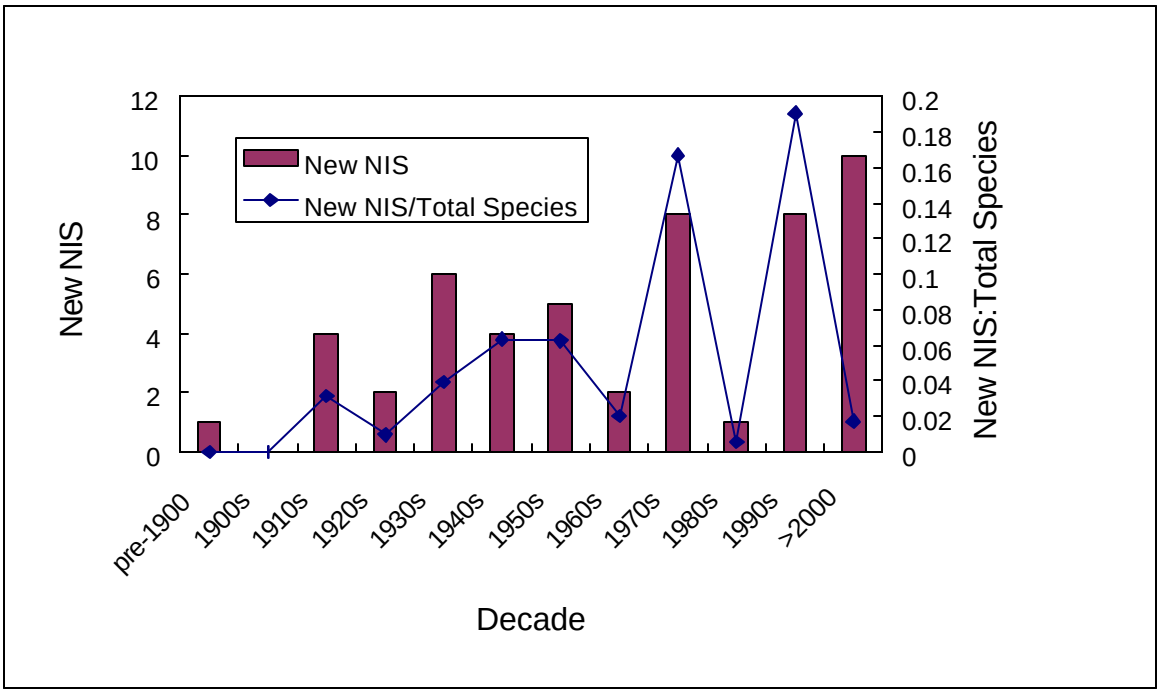

Figure 9. Comparison of first NIS reports to total first species reports for Waikîkî by decade.

B. Hawai`i Kai

1. Station Locations and Descriptions

Station 1 (Latitude 21°17'13.8", Longitude 157°42'11.8")
Marina Floating Dock. Floating docks and concrete headwall in upper Lunalilo Marina in 2 m depth with fine clay deep sediment bottom. Water very turbid with salinity of 31°/oo. Surfaces moderately fouled with suspension feeders commonly found in O`ahu harbors.

Station 2 (Latitude 21°17'17.8", Longitude 157°43'17.6")
Marina Outlet Bridge. Bridge pilings and bottom under original channel from Kuapâ Pond at Marina Unit No. 1, and adjacent mangrove area. Pilings and hard bottom surfaces in shaded areas under the bridge are heavily covered with abundant nonindigenous octocoral *Carijoa riisei* growing up to within the intertidal zone, where colonies were air-exposed at low tide.

Station 3 (Latitude 21°16'28.0, Longitude 157°43'9.7")
Channel Marker 1. Scoured reef in 4-5 m depth surrounded by coarse sand and supporting moderate live coral cover of ca. 10%. Marker piling and numerous metal and concrete posts lying on bottom at channel side of the reef provide artificial settlement surfaces.

Station 4 (Latitude 21°16'56.5", Longitude 157°42'54.4")
Koko Marina Nearshore. Approximately 250 m from bridge and main channel to Hawai`i Kai marinas. Substratum is sand and rubble reef in ca 1.5 m depth and supports some growth of the seagrass *Halophila hawaiiana*, but most of benthic coverage is very abundant nonindigenous algae *Avrainvillea amadelpha* growing in sand and among a small reef supporting the coral *Pavona varians*.

Station 5 (Latitude 21°17'9.7", Longitude 157°43'21.8")
Kuli`ou`ou Nearshore. Area approximately 300 m from Marina Unit No. 1 bridge and Portlock boat launching ramp in channel outside of Paiko Lagoon. Substratum is shallow (ca. 10 cm depth) consolidated limestone reef flat outside of a sand channel. The reef flat supports abundant growth of nonindigenous *Gracilaria salicornia, Hypnea musciformis*, and *Avrainvillea amadelpha* is abundant in sandy areas with sparse seagrass *Halophila hawaiiana,* along with propogules of *Rhizophora mangle* mangrove in early stages of growth.

2. Benthic and Fish Surveys – All Reports

A total of 384 taxa with 317 named species were collected or observed at the 5 stations in Kuapâ Pond or Maunalua Bay in February 2002 (Appendix E). Previously, only 91 taxa with 85 named species were reported in published or unpublished literature or in Bishop Museum collections from 1928 to 2001. Of the 384 taxa found on the present surveys, 362 taxa with 294 named species were new reports for Hawai`i Kai, but only two species, the amphipod *Perioculodes* sp. and the ectoproct *Costazia costazii* were new reports for Hawai`i. Taxa reports are listed by station in Appendix F and summarized by major taxonomic group at each station in Table 7.

Table 7. Distributions of total taxa and major taxonomic groups among Kuapâ Pond and Maunalua Bay stations, 2002.

	Station				
Taxon	1	2	3	4	5
Chlorophyta	0	4	5	5	4
Phaeophyta	0	0	2	0	3
Rhodophyta	8	19	39	18	16
Spermatophyta	0	1	0	1	2
Porifera	7	2	0	0	1
Hydrozoa	0	2	3	3	0
Anthozoa	0	1	7	2	0
Polychaeta	18	19	14	17	10
Sipuncula	1	0	4	2	1
Gastropoda	4	8	53	16	0
Bivalvia	14	21	123	41	4
Polyplacophora	1	0	1	1	0
Cirrepedia	4	2	0	0	1
Pericarida	25	15	26	27	14
Decapoda	6	16	24	11	6
Ectoprocta	8	2	10	11	0
Echinodermata	1	3	4	2	1
Osteichthyes	0	6	19	2	0
Total Taxa	89	101	202	117	54

The distribution of taxa for major phylogenetic groups among the 15 stations is shown graphically for 16 groups in Figure 10. Total combined taxa ranged from 54 at Station 5 (Kuli`ou`ou Nearshore) to maximum of 202 at Station 3 (Channel Marker 1) on the only coral reef site surveyed in this study. Peak values are indicated at the Station 3 site for algae, gastropods, bivalves, decapods and fish. By taxonomic group, the bivalves had the greatest number of taxa, approaching 125 per station at Station 3, followed by gastropods, macroalgae, peracarids and decapods.

Sorensen Similarity Coefficients were calculated using presence-absence of all identified taxa among the 15 stations, and a dendrograph summarizing these results is shown in Figure 11. Although grouping similarities are less than 40%, the stations cluster according to their environmental similarity, with the greatest similarity shown between the Stations 1 and 2, i.e. Kuapâ Pond and its outflow, followed by the two nearshore Maunalua Bay Stations 4 and 5. Separate from these was Station 3, with its more diverse coral reef species assemblages.

3. Comparison with Previous Studies – All Taxa

Table 8 lists the numbers of taxa and named species by major taxonomic groups for all previous reports including Bishop Museum collections and for the present survey. Of the total 384 taxa found in the present study only 315 total taxa (384 previous-69 not found) were found in

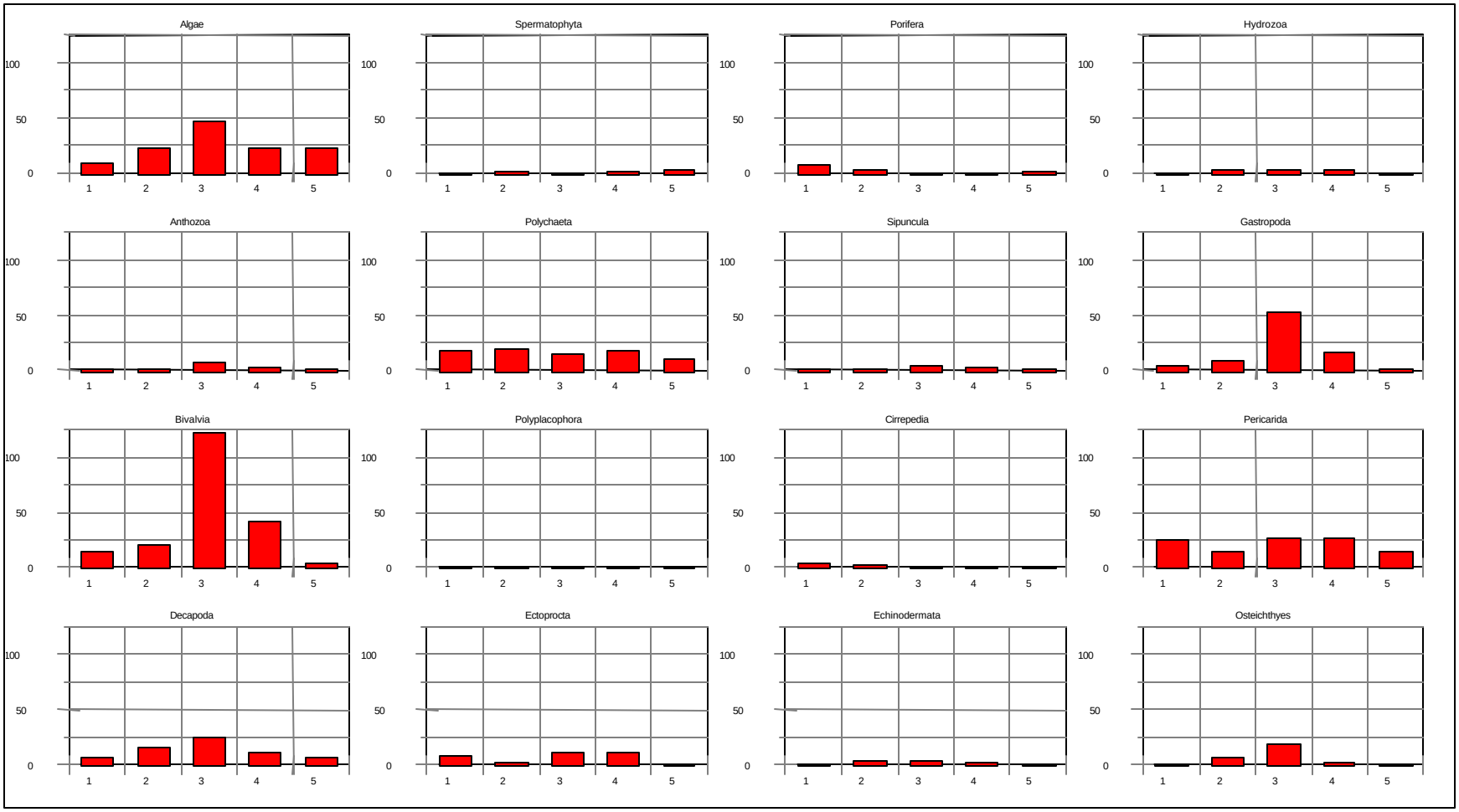

Figure 10. Distributions of major taxonomic groups observed or collected in Kuapâ Pond or Maunalua Bay, 2002

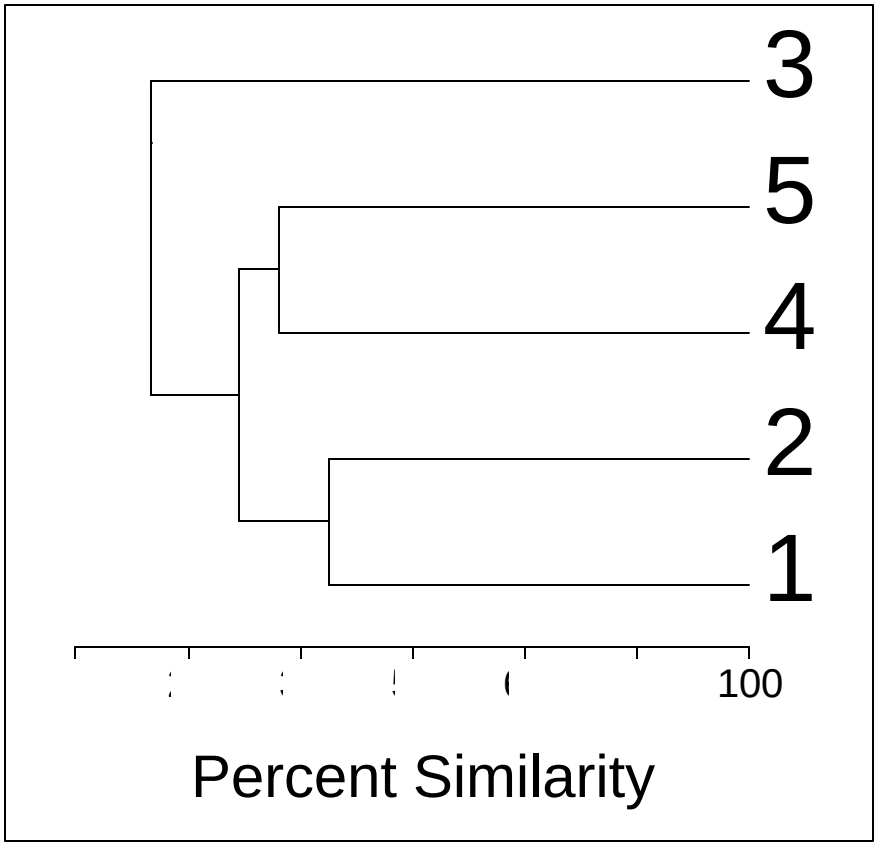

Figure 11. Dendrograph of similarity analysis for Kuapâ Pond-Maunalua Bay stations based on presence-absence of all taxa of algae, invertebrates and fishes.

common between the present study and all previous reports. Only 91 taxa with 85 named species had been previously reported for the study area, and only 24% of previous taxa were encountered in the present study. An even lower percentage of the taxa or named species (6-7%) collected in this study had previously been reported. Except for fish, groups with 20 or more taxa in the present study had consistently low previous report percentages, ranging 0-6% by total taxa or named species

4. Nonindigenous and Cryptogenic Species

Of the 384 named species identified for the Hawai`i Kai vicinity in this study, 10 were categorized as cryptogenic and 48 as introduced for a total of 58 NIS, or 15.1 % of the total species identified. The NIS are listed in Table 9 and their distributions by major taxonomic group and by station are summarized in Table 10. The greatest numbers of NIS were in the Crustacea (14 species) comprised of eight amphipods, four barnacles, one tanaid and one decapod. Most of the remaining major groups had three to eight NIS, with most occurring for polychaetes, ascidians and sponges. A distinct pattern occurred in distributions of these species within these groups and for total NIS, with maximum numbers (27-36) at the Kuapâ Pond stations and the fewest numbers (8-9) at the Maunalua Bay Stations 3 and 5. The Kuapâ Pond stations were also the lowest in

Table 8. Numbers of taxa and named species in major taxonomic groups previously reported and by the present study for Kuapâ Pond and Maunalua Bay.

Taxon	All Taxa Prev. Reports	Named Taxa Prev. Reports	All Taxa Pres. Study	Named Taxa Pres. Study	Previous Taxa Not Found	New* Taxa Pres. Study	Named New* Taxa Present Study	% Prev. Taxa Recollected	% Pres. Taxa Prev. Reported	% Pres. Named Taxa Previously Reported
Algae			53	46		53	46		0	0
Spermatophyta			2	2		2	2		0	0
Porifera			8	6		8	6		0	0
Cnidaria	16	15	16	15	9	9	8	44	44	50
Polychaeta	3	2	38	23	2	37	22	33	3	5
Sipunculida			5	5		5	5		0	0
Mollusca	2	2	88	70	1	87	68	50	1	1
Crustacea	18	15	108	94	15	105	91	17	3	6
Bryozoa			22	15		22	15		0	0
Echinodermata	8	8	8	7	5	5	4	38	38	38
Ascidiacea			13	13		13	13		0	0
Fish	44	43	23	21	37	16	14	16	30	35
Total	91	85	384	317	69	362	294	24	6	7

* "New" = new record for Hawai`i Kai

Table 9. Station records for cryptogenic and introduced species collected or observed at Kuapâ Pond and Maunalua Bay in February, 2002.

			Station				
Taxon/Order	Species	Status	1	2	3	4	5
CHLOROPHYTA	*Avrainvillea amadelpha*	Introduced		x		x	x
RHODOPHYTA	*Acanthophora spicifera*	Introduced	x	x			x
	Hypnea musciformis	Introduced					x
	Gracilaria salicornia	Introduced		x		x	x
MAGNOLIOPHYTA	*Rhizophora mangle*	Introduced		x			x
PORIFERA	*Suberites zeteki*	Introduced	x				
	Zygomycale parishii	Introduced		x			
	Chalinidae n. sp. (purple)	Cryptogenic	x				
	Sigmadocia caerulea	Introduced	x				x
	Toxiclona sp.	Cryptogenic	x				
	Gelliodes fibrosa	Introduced	x	x			
HYDROZOA	*Obelia bidentata*	Introduced		x			
	Obelia dichotoma	Introduced				x	
	Pennaria disticha	Introduced		x	x		
	Plumularia strictocarpa	Cryptogenic			x	x	
	Tridentata humpferi	Cryptogenic			x		
ANTHOZOA	*Carijoa riisei*	Introduced		x			
POLYCHAETA	*Armandia intermedia*	Cryptogenic				x	
	Capitella sp. cf, *capitata*	Cryptogenic				x	
	Branchiomma nigromaculata	Cryptogenic	x	x		x	
	Eulalia sanguinea	Introduced	x				
	Sabellastarte spectabilis	Introduced	x	x		x	x
	Hydroides dirampha	Introduced	x	x			
	Serpula vermicularis	Cryptogenic	x				
	Pomatoleios kraussii	Introduced	x				
MOLLUSCA	*Crepidula aculeata*	Introduced		x	x	x	
	Eualetes tulipa	Introduced		x			
	Hinemoa i ndica	Introduced				x	
	Anomia nobilis	Introduced	x	x			
	Hiatella arctica	Introduced	x	x	x	x	
CIRRIPEDIA	*Balanus amphitrite*	Introduced	x	x			x
	Balanus eburneus	Introduced	x				
	Balanus reticulatus	Introduced	x	x			
	Chthamalus proteus	Introduced	x				
AMPHIPODA	*Corophium ascherusicum*	Introduced	x				
	Corophium baconi	Introduced	x				
	Corophium insidiosum	Introduced	x	x			
	Ericthonius brasiliensis	Introduced	x	x	x	x	
	Photis hawaiensis	Cryptogenic				x	
	Paraleucothoe cf. flindersi	Introduced	x				
	Elasmopus rapax	Introduced	x	x			
	Podocerus brasiliensis	Introduced	x	x	x	x	
TANAIDACEA	*Leptochelia dubia*	Cryptogenic	x	x			
DECAPODA	*Gonodactylaceus falcatus*	Introduced		x		x	x
ECTOPROCTA	*Bugula dentata*	Introduced	x				
	Bugula neritina	Introduced	x				
	Schizoporella cf. errata	Introduced	x		x		
	Watersipora edmondsoni	Introduced				x	
	Amathia distans	Introduced	x			x	
ASCIDIACEA	*Didemnum perlucidum*	Introduced		x			
	Ascidia sydneiensis	Introduced	x				
	Phallusia nigra	Introduced	x				
	Eusynstyela hartmeyeri	Introduced	x				
	Polyandrocarpa sagamiensis	Introduced	x				
	Styela canopus	Introduced					x
	Herdmania pallida	Introduced	x	x			
	Microcosmus exasperatus	Introduced	x	x			
FISH	*Lutjanus fulvus*			x			
	Total		36	27	8	16	9

Table 10. Numbers of nonindigenous and cryptogenic species by station at Kuapâ Pond and Maunalua Bay.

	Station					
Taxon	1	2	3	4	5	Total
ALGAE	1	3	-	2	4	4
MAGNOLIOPHYTA	-	1	-	-	1	1
PORIFERA	5	5	-	-	1	6
HYDROZOA	-	2	3	2	-	5
ANTHOZOA	-	1	-	-	-	1
POLYCHAETA	6	3	-	4	1	8
GASTROPODA	-	2	1	2	-	3
BIVALVIA	2	2	1	1	-	2
CRUSTACEA	12	8	2	4	2	14
ECTOPROCTA	4	-	1	2	-	5
ASCIDIACEA	6	3	-	-	1	8
FISH	-	1	-	-	-	1
Total	36	31	8	17	10	58

total species, resulting in percentage of total taxa that were NIS ranging as high as 38.2% at Station 1 and 26.7% at Station 2. By contrast the coral reef Station 3 showed a NIS component of only 3.9%. Stations 4 and 5 showed similar NIS components of 13.7% and 16.7% respectively.

The dendrograph of Sorensen similarity coefficients for presence-absence of NIS (Figure 12) indicates two clusters with a strong association between Stations 1 and 2 at nearly 70% similarity and 15 NIS species in common. Stations 3, 4 and 5 are weakly associated at about 50% similarity. No NIS species occurred at all three stations and only four or five occurred between station pairs. The pattern clearly demonstrates the dominant influence of NIS in Kuapâ Pond and its outflow that was indicated in Table 10.

5. Invasive Species

The distributions of invasive species are shown in Figures 13 and 14. Four species of invasive algae occurred in the area, and the most widespread of these was the green alga *Avrainvillea amadelpha* which occurred at nearshore sites in Maunalua Bay and just outside the Hawai`i Kai Marina 1 outflow channel. This alga dominates soft bottoms in shallow water along much of the southeastern O`ahu coastline and is believed to be displacing native Hawaiian seagrass (Smith et al. 2002). The other three invasive algae species found are common throughout O`ahu. The most widespread of these in this area was *Acanthophora spicifera*, found at three stations in Kuapâ Pond and Maunalua Bay, followed by *Gracilaria salicornia* at these sites and *Hypnea musciformis* one station in Maunalua Bay. No invasive or introduced algae occurred at the coral reef Station 3.

The most widely distributed invasive invertebrate, *Gonodactylaceus falcatus*, occurred at the same locations as *Avrainvillea amadelpha* at nearshore sites in Maunalua Bay and just outside of Kuapâ Pond (Figure 14). However the greatest abundance and invasive impact by a marine

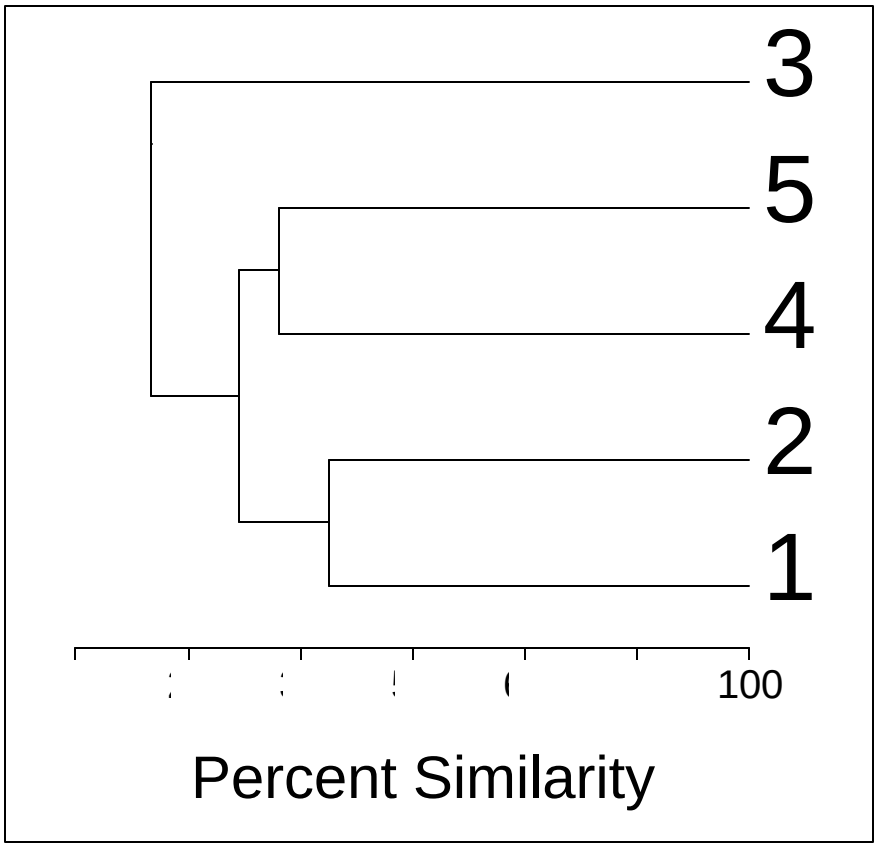

Figure 12. Dendrograph of similarity analysis for nonindigenous species distributions among stations.

invertebrate was by the octocoral *Carijoa riisei* at the single site where it was found, under the Hawai`i Kai Marina 1 Bridge. Normally this species is restricted to depths of 5 m or more under turbid or low light conditions. However, at the bridge site it occurs as shallow as the intertidal zone and was first observed there aerially exposed during a low tide. It is extremely abundant on all hard surfaces under the bridge under low light conditions where it virtually covers all surfaces of the bridge pillars.

The other invasive species occurred at only one site each. The intertidal barnacle *Chthamalus proteus* was found at Station 1 in Kuapâ Pond and the fish *Lutjanus fulvus* at Station 2 in the Marina 1 outflow area. Both are frequently occurring species through the Hawaiian Islands.

6. Comparison with Previous Hawai`i Kai Area NIS Reports

Of the 58 NIS observed or collected on this study (Table 11), only two, the green alga *Avrainvillea amadelpha* and the polychaete *Sabellastarte spectabilis,* were previously reported in Kuapâ Pond or Maunalua Bay, and only three other introduced species, all fish, had been previously reported for these locations. Also, no new species for Hawai`i were found in the present study which might

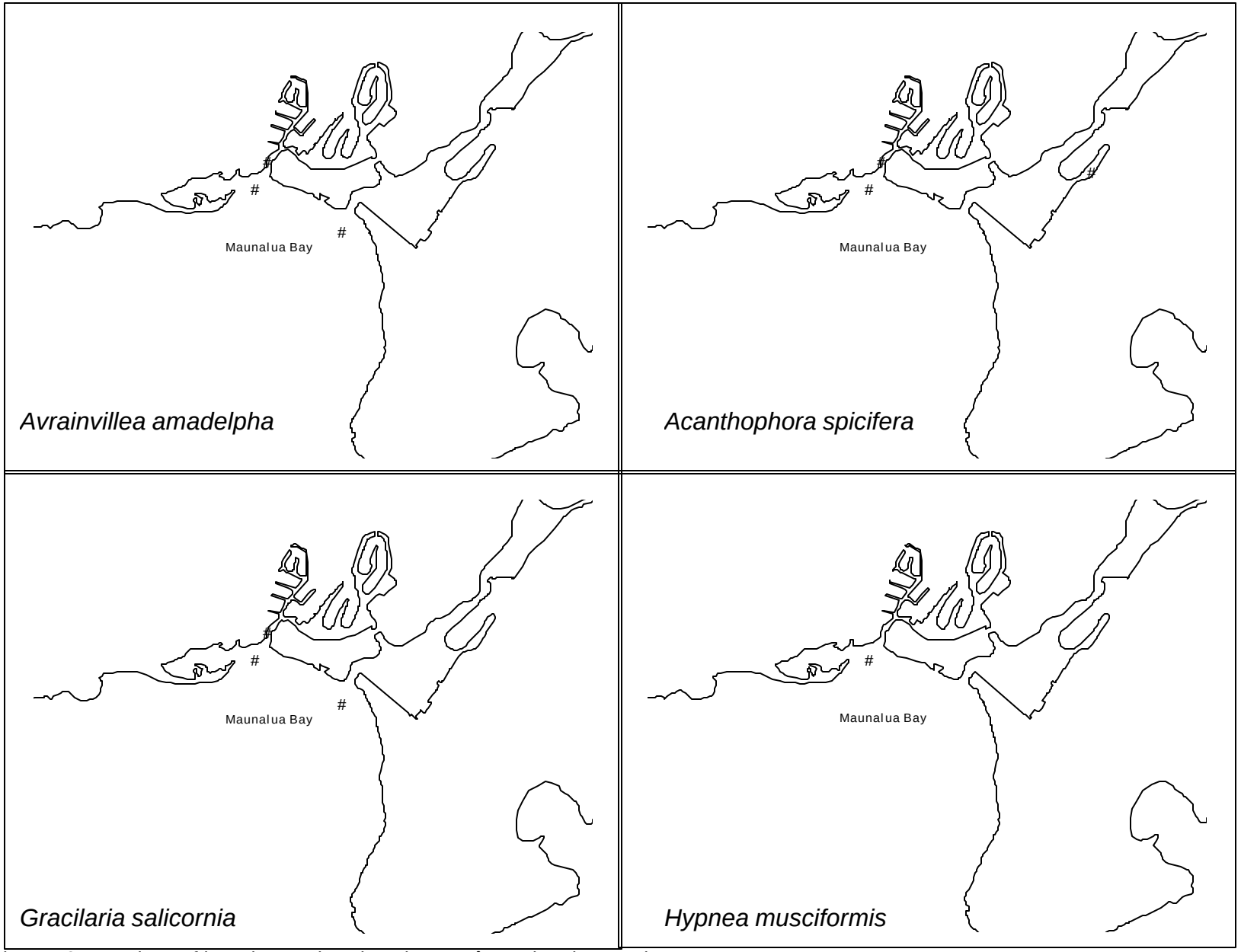

Figure 13. Locations of invasive marine algae in Kuapâ Pond and Maunalua Bay

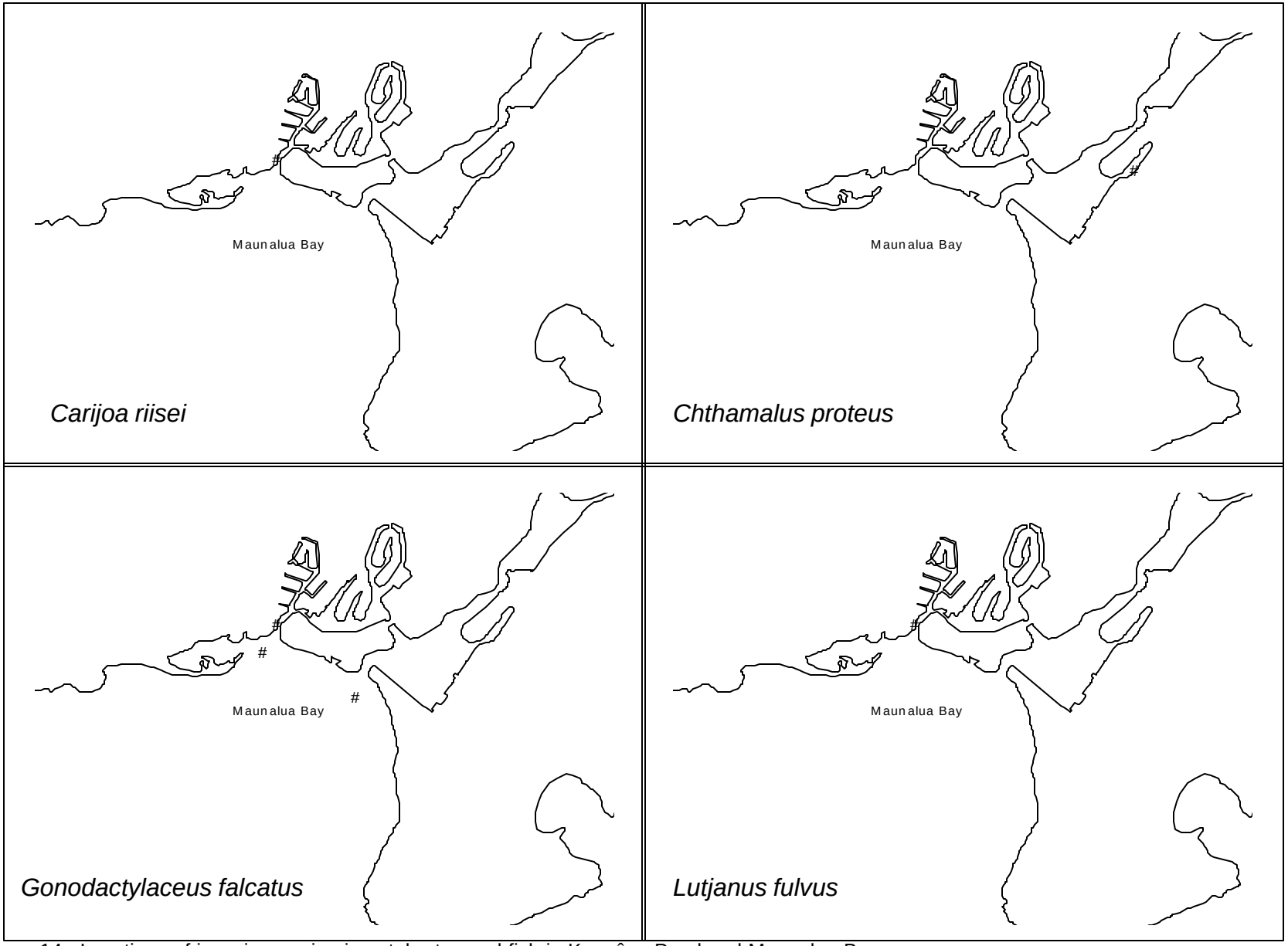

Figure 14 . Locations of invasive marine invertebrates and fish in Kuapâ Pond and Maunalua Bay.

Table 11. NIS newly reported for Kuapâ Pond and Maunalua Bay, and previous reports in Pearl Harbor, O`ahu commercial harbors and Kane`ohe Bay.

			New Reports		Previously Reported		
Taxa	Species	Status	Kuapâ Pond	Maunalua Bay	Pearl Harbor	O`ahu Harbors	Kane`ohe Bay
Porifera	*Chalinidae n. sp. (purple)*	Cryptogenic	x			x	x
Hydrozoa	*Plumularia strictocarpa*	Cryptogenic		x			x
Hydrozoa	*Tridentata humpferi*	Cryptogenic	x				x
Polychaeta	*Armandia intermedia*	Cryptogenic		x		x	x
Polychaeta	*Branchiomma nigromaculata*	Cryptogenic	x	x	x	x	x
Polychaeta	*Capitella* sp. cf. *capitata*	Cryptogenic		x			x
Polychaeta	*Serpula vermicularis*	Cryptogenic	x		x		
Pericarida	*Photis hawaiensis*	Cryptogenic		x		x	x
Pericarida	*Leptochelia dubia*	Cryptogenic	x		x	x	x
	Total Cryptogenic		5	5	3	5	8
Rhodophyta	*Acanthophora spicifera*	Introduced	x	x	x	x	x
Rhodophyta	*Gracilaria salicornia*	Introduced		x	x		x
Rhodophyta	*Hypnea musciformis*	Introduced		x			x
Magnoliphyta	*Rhizophora mangle*	Introduced	x	x	x	x	x
Porifera	*Suberites zeteki*	Introduced	x		x	x	x
Porifera	*Zygomacale parishii*	Introduced	x	x	x	x	x
Porifera	*Sigmadocia caerulea*	Introduced	x		x	x	x
Porifera	*Gelliodes fibrosa*	Introduced	x		x	x	x
Hydrozoa	*Pennaria disticha*	Introduced	x	x	x	x	x
Hydrozoa	*Obelia bidentata*	Introduced	x	x	x		x
Hydrozoa	*Obelia dichotoma*	Introduced		x	x		x
Anthozoa	*Carijoa riisei*	Introduced	x		x	x	x
Polychaeta	*Eulalia sanguinea*	Introduced	x	x	x		x
Polychaeta	*Hydroides dirampha*	Introduced	x	x		x	
Polychaeta	*Pomatoleios kraussi*	Introduced	x		x	x	
Polychaeta	*Sabellastarte spectabilis*	Introduced	x	x	x	x	x
Mollusca	*Anomia nobilis*	Introduced	x		x	x	x
Mollusca	*Crepidula aculeata*	Introduced	x	x	x	x	x
Mollusca	*Eualetes tulipa*	Introduced	x		x	x	x
Mollusca	*Hiatella arctica*	Introduced	x	x	x	x	x
Mollusca	*Hinemoa indica*	Introduced		x	x	x	x
Cirripedia	*Balanus amphitrite*	Introduced	x	x	x	x	x
Cirripedia	*Balanus eburneus*	Introduced	x		x	x	x
Cirripedia	*Balanus reticulatus*	Introduced	x			x	
Cirripedia	*Chthamalus proteus*	Introduced	x		x	x	x
Pericarida	*Corophium ascheruscium*	Introduced	x			x	
Pericarida	*Corophium baconi*	Introduced	x			x	
Pericarida	*Corophium insidiosum*	Introduced	x				
Pericarida	*Ericthonius brasiliensis*	Introduced	x	x	x	x	x
Pericarida	*Paraleucothoe cf. flindersi*	Introduced	x		x	x	x
Pericarida	*Elasmopus rapax*	Introduced	x			x	
Pericarida	*Podocerus brasiliensis*	Introduced	x	x		x	x
Decapoda	*Gonodactylaceus falcatus*	Introduced	x	x	x	x	x
Ectoprocta	*Amathia distans*	Introduced	x	x	x	x	x
Ectoprocta	*Bugula dentata*	Introduced	x			x	
Ectoprocta	*Bugula neritina*	Introduced	x		x	x	x
Ectoprocta	*Schizoporella cf. errata*	Introduced	x	x	x	x	x
Ectoprocta	*Watersipora edmondsoni*	Introduced		x	x	x	x
Ascidiacea	*Ascidia sydneiensis*	Introduced	x		x	x	x
Ascidiacea	*Didemnum perlucidum*	Introduced		x	x	x	x
Ascidiacea	*Eusynstylea hartmeyeri*	Introduced	x		x		x
Ascidiacea	*Herdmania pallida*	Introduced		x	x		x
Ascidiacea	*Microcosmus exasperatus*	Introduced	x		x	x	x
Ascidiacea	*Phallusia nigra*	Introduced	x		x	x	x
Ascidiacea	*Polyandrocarpa sagamiensis*	Introduced			x	x	x
Ascidiacea	*Styela canopus*	Introduced	x		x	x	x
Fish	*Lutjanus fulvus*	Introduced		x	x	x	x
	Total Nonindigenous		38	24	38	39	39
	Total NIS		43	29	41	44	47

be assigned cryptogenic status. Of the 56 cryptogenic and nonindigenous species that are first reports for the study area, most (47 species) were observed or collected in or near Kuapâ Pond at Stations 1 and 2, with the remainder at the three stations in Maunalua Bay. All species except the green alga *Avrainvillea amadelpha* have been previously reported in Pearl Harbor (41 species), O`ahu's commercial or public harbors (44 species) or in Kane`ohe Bay (47 species), indicating that these introductions are well established and widespread components of the O`ahu marine community. Dates and site information for first introductions of these species is given in Appendix G. Similar to findings for Waikîkî, other than three cryptogenic hydroids that were first collected in Kane`ohe Bay in 1999-200 (Coles et al. 2002), all but nine first Hawaiian reports for these 56 new reports for Hawai`i Kai occurred from 1852 to 1987, with all those after that time coming from intensive studies in O`ahu's harbors by the present authors.

IV. DISCUSSION

The results of these surveys are consistent with a pattern that has emerged from studies conducted in Hawaiian waters over the past seven years, which has indicated a contrasting incidence of occurrences of introduced and cryptogenic species in harbors and embayments compared with areas in open waters such as coral reefs. NIS in Pearl Harbor were found to be 23% of the total identified taxa (Coles et al. 1999a), O`ahu five commercial and public harbors combined showed NIS to be 17% of the total species (Coles et al. 1999b) and the NIS component in Kane`ohe Bay was 19% (Coles et al. 2002). By contrast, few NIS occur on isolated Hawaiian coral reefs and other open water areas throughout the Hawaiian chain. Studies by the same investigators in coral reef environments at Kaho`olawe Island, Midway and Johnston Atolls and French Frigate Shoals have shown the NIS component of the total identified biota to be 1.5% or less (Coles et al. 1998, 2001; DeFelice et al. 1998, 2002). In the present study, NIS comprised only about 7% of the total named species for the 15 Waikîkî stations that are located on a coral reef area, albeit one highly stressed by sand movement and other undefined anthropogenic influences. By contrast, the two stations in or adjacent to Kuapâ Pond in the Hawai`i Kai area showed NIS to comprise 27-40% of the total biota, the highest values that have been determined for any study in Hawai`i, while the single station on the coral reef in Maunalua Bay showed a NIS component of only about 4%.

This relatively low NIS proportion of the total biota at Waikîkî and Hawai`i Kai should not be interpreted as indicating that their marine communities are not impacted by introduced marine species. In fact, the shoreline area in the vicinity of the Waikîkî Aquarium is one of the areas most inundated by introduced algae of any that have been surveyed and is virtually covered in many areas by *Gracilaria salicornia, Hypnea musciformis,* and *Acanthophora spicifera*. Similarly, nearshore sandy areas of Maunalua Bay are highly dominated by the introduced alga *Avrainvillea amadelpha*, which is displacing the native seagrass *Halophila hawaiiana* from its normal habitat. Although *A. spicifera* and *G. salicornia* have been in O`ahu's water since the 1950s and *H. musciformis* since 1974, and *A. amadelpha* was first noted at Kahe Point in 1981 and in Maunalua Bay in 1985, the incidence and impact of these invasive algae is apparently increasing. With the exception of *A. spicifera*, which proliferated earlier, these and other invasive algal species have become more common and prolific throughout many of the Hawaiian Islands in the last decade and are a serious disturbance and space competitors in many Hawaiian coral reef locations (Smith et al. 2002).

The introduced stomatopod *Gonodactylaceus falcatus* was the most widely distributed invasive invertebrate in both study areas, occurring in low abundance at four stations off Waikîkî and three stations in Maunalua Bay. This species was first reported in Hawai`i at Waikîkî and in Kane`ohe Bay in 1954 by Kinzie (1968) *as Gonodactylus falcatus* and is believed to have displaced the native stomatopod *Pseudosquilla ciliata* from its former coral rubble habitat. No *P. ciliata* were found in the present study, and it was infrequently found among 25 stations sampled in Kane`ohe Bay (Coles et al. 2002), indicating that its displacement by *G. falcatus* continues in both areas where *G. falcatus* was first reported.

Although it was encountered at only two sites in these surveys, the introduced octocoral *Carijoa riisei* was by far the most invasive invertebrate in those limited habitats where it occurred. At Waikîkî, it virtually covered all interior surfaces of the wrecked vessel with its prolific colonies growing up to 20 cm long, and it showed similar size and density on the bridge pilings in the Kuapâ Pond Marina 1 discharge channel. Formerly considered to be limited to greater depths, it occurs into the intertidal zone on the Kuapâ Pond channel pilings, its growth probably stimulated by the low light conditions under the bridge and the moderate current that flows through the channel. Although formerly considered a benign introduction in Hawai`i from the Caribbean (Coles and Eldredge 2002) it is now indicated to be detrimental to the propagation of commercially valuable black coral (*Antipatharia* sp.) in the Maui black coral beds where its growth has been observed to smother black coral trees at depths >100 m (R. Grigg, pers. comm.).

There is no indication from these results that the rate of introduction of nonindigenous species has been increasing at Waikîkî or the Hawai`i Kai area in the last few decades. Although 46 of the 52 NIS for Waikîkî and 56 of the 58 NIS for Kuapâ Pond–Maunalua Bay were new reports for these areas, nearly all of these species were previously reported elsewhere in Hawaii, some as early as the mid 1880s or early 1900s. Of the 46 new reports for Waikîkî, eight were hydroids new to Hawai`i designated cryptogenic, and of the remainder most had been reported elsewhere in Hawai`i prior to 1988. None of the 56 new NIS reports for Kuapâ Pond-Maunalua Bay were new to Hawai`i, and all but nine have been previously reported elsewhere in Hawai`i. The high incidence of new NIS reports for both areas of the present study is therefore clearly related to sampling effort, with the present study having been the first in these locations to conduct comprehensive observations and collection of a full complement of marine algae, invertebrates and fishes.

Findings for other studies for introduced marine species in temperate and tropical oceans and seas have been previously summarized and compared with the information for the Hawaiian Islands and Johnston Atoll (Coles et al. 1999b, 2002, Coles and Eldredge 2002), and data for numbers of nonindigenous species found on the present surveys is included with these comparisons in Table 12. The values for Waikîkî and Kuapâ Pond-Maunalua Bay are about half the 70-80 species found for O`ahu's harbors and Kane`ohe Bay and over ten times the 25 species that were determine on isolated Hawaiian coral reefs and islands and at Johnston Atoll. Comparing worldwide, the present results approximate the numbers of nonindigenous species found on surveys in Guam and temperate areas in Australia, but are substantially greater than numbers from ports in tropical North Queensland. Overall, the present results correspond to a pattern of decreasing occurrence of nonindigenous species with tropical conditions and/or coral reef environments. Numbers >100 occur only in temperate regions and numbers <20 only for the tropical ports of North Queensland or isolated coral reef communities exposed to open oceanic conditions in the Hawaiian Islands or Johnston Atoll. The nonindigenous species number for Waikîkî and Maunalua Bay are the highest that have been determined for exposed coral reef areas in Hawai`i and may be related to the long history of the areas to anthropogenic stress and their proximity to harbors and other sources of species introduction. These values are

comparable to those found for Guam, but the Guam studies also found high total taxa values of 682 for the Apra Harbor study and 4,635 for the island wide study. This resulted in nonindigenous component values of only 4% and 0.8% respectively for Guam, indicating that nonindigenous species comprise a relatively low proportion of the diverse Guam marine fauna, despite the high degree of shipping activity that has occurred in Apra harbor.

Table 12. Numbers of introduced marine species found in various world locations.

Location	Introduced Species	Source
Mediterranean Sea	240	Ruiz et al. 1997
San Francisco Bay	234	Cohen and Carlton 1998
Chesapeake Bay	116	Ruiz et al. 1997
Puget Sound	39	Mills et al 1997
Hawaiian Islands (Introduced + Cryptogenic)	294	Eldredge and Carlton 2002.
Pearl Harbor, Hawai`i	69	Coles et al. 1997, 1999a
South and West O`ahu Harbors,	73	Coles et al. 1999b
Kane`ohe Bay	82	Coles et al. 2002
Kuapâ Pond-Maunalua Bay	48	Present Study
Waikîkî	33	Present Study
Kaho`olawe Island	3	Coles et al. 1998
Midway Atoll	4	DeFelice et al 1998
French Frigate Shoals	2	DeFelice et al 2002
Johnston Atoll	5	Coles et al. 2001
Australia		
Victoria (Australia)	80	Hilliard et al. 1997
New South Wales	43	Hilliard et al. 1997
South Australia.	36	Hilliard et al. 1997
Tasmania	33	Hilliard et al. 1997
Freemantle Port, Western Australia	33	Hewitt 2002
Newcastle Port, New South Wales	25	Hewitt 2002
Eden Port, New South Wales	24	Hewitt 2002
Port Hedland, Western Australia	16	Hewitt 2002
Bunbury Port, Western Australia	12	Hewitt 2002
Mackay Port, N. Queensland	12	Hewitt 2002
Hay Point Port, N. Queensland	10	Hewitt et al. 1998, 2002
Darwin Port, Northern Territories	5	Hewitt 2002
Lucinda Port, N. Queensland,	2	Hoedt et al. 2001
Mourilyan Port, N. Queensland,	2	Hoedt et al. 2000
Abbott Point Port, N. Queensland,	0	Hoedt et al. 2000
Guam		
Apra Harbor	27	Paulay et al. unpublished report
Island wide	40	Paulay et al. 2002

V. CONCLUSIONS AND MANAGEMENT CONSIDERATIONS

With exception of invasive marine algae, the results of this study indicate no serious impact of nonindigenous species on the marine environments of Waikîkî or Maunalua Bay. No new invasive species were indicated, and those nonindigenous species that were found occurred in low numbers, with the exception of the three species of introduced algae along the Waikîkî shore, the introduced green alga in Maunalua Bay, and the introduced octocoral at the Waikîkî Atlantis wreck and on bridge pilings at the Kuapâ Marine 1 channel. As part of a Hawai`i Coral Reef Initiative (HCRI) project to evaluate methods for control of invasive marine algae (http://www.hawaii.edu/ssri/hcri/projects/algae/eradication.htm# ) an invasive algae cleanup effort was conducted in August 2002, and a similar effort was conducted in Kane`ohe Bay in October. Continuation of the HCRI project in fiscal year 2002-2003 will provide the opportunity to determine whether control or eradication of these invasive algae species is feasible. The introduced octocoral at the Kuapâ Pond Marina 1 bridge is a unique circumstance determined by the special environmental characteristics of its local habitat, and there is no indication that this species has spread to nearby reefs. It does, however, provide an opportunity to evaluate the effectiveness of mechanical removal and determine rates of regrowth under apparently optimal conditions for this species, which may provide useful information for its control elsewhere.

As discussed in a previous report (Coles et al. 2002), eradication of established nonindigenous species has been effective in very limited circumstances where newly arrived populations have been discovered early and quickly isolated (Kaiser 2000; Willan et al. 2000). The best management approach is to establish programs that prevent or inhibit release of introduced species into the environment (Bax et al. 2001), and to maintain diversity of the resident biotic communities to restrict the establishment and proliferation of introductions that do arrive (Coles et al. 2002). The coral reef environment of Waikîkî is highly degraded from the conditions described by Edmondson (1928), when 19 species of corals in high abundance were mapped on the reef off the Waikîkî Aquarium, in contrast to the three species in very low abundance found there by the present study. It is therefore not surprising that more nonindigenous species were found at Waikîkî than at any previous coral reef site exposed to open ocean conditions, and it is possible that the high diversity of the remaining taxonomic groups, totaling nearly 750 named species, has helped to prevent an even higher penetration of nonindigenous organisms. Maintaining or restoring conditions that favor the continuation of diverse reef systems should therefore be considered a primary objective for resisting the impacts of nonindigenous species.

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VII. ACKNOWLEDGMENTS

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Fish: Mr. Arnold Suzumoto, Bishop Museum

APPENDIX A

Annotated Bibliographies of Literature for

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AECOS Inc. (1991). Waikiki Aquarium Zone-of-Mixing Analysis. Honolulu, University of Hawaii, Waikiki Aquarium.

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AECOS Inc. (1999). Water clarity in the waters off Waikiki from turbidity and Secchi disk readings. Kailua, HI, CMD**:** 8 pp.

Anderson, B. D. (1982). Coral community structure at Hunauma Bay, Oahu, Hawaii, a model for coral reef management. International Symposium on Utilization of Coastal Ecosystems:Planning, Pollution and Productivity, Rio Grande (Brazil).

A conceptual model of Hawaiian coral community structure was developed to predict the effects of pollution on species diversity, composition and succession. The model was tested and it was found that the onshore-offshore allergenic sequence of corals developed in response to environmental stress and instability recapitulates the temporal sequence of autogenic succession. Sediment is a major pollutant in Hawaii. The model was tested on sediment stressed reefs at Hanauma Bay (control) and at Waikiki(test reef). Increased sediment cover was correlated with decreased coral cover, increased algal cover in shallow water and decreased cover in deeper water. Coral species diversity(Shannon-Weaver index) increased with moderate sedimentation dueto suppressed interspecific competition and then delined with increased sedimentation. The Pielou Evenness index was decreased by sediment stress.

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Seven specimens of squirrelfish, *Sargocentron punctatissimum* Cuvier and Valenciennes, collected from Allen Davis Beach Park, Oahu, Hawaii, developed lymphocystis lesions while being maintained at the Waikiki Aquarium. Four other reef fish species collected and held with the squirrelfish did not develop lymphocystis disease. This is the first documentation of lymphocystis from a member of the Holocentridae from Pacific waters and the second report of lymphocystis from a marine fish species collected in Hawaiian waters.

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Fifty-seven species of hermatypic corals have been maintained and grown in high-nutrient seawater at the Waikiki Aquarium, Honolulu, Hawaii. In this study we document the chemical conditions of aquarium water in terms of dissolved nutrients and carbon. Aquarium water is characterized by concentrations of inorganic nutrients that are high relative to most natural reef ecosystems: SiO_3 similar to 200 mu M; PO_4 similar to 0.6 mu M; NO_3 similar to 5 mu M; NH_4 similar to 2 mu M. In contrast, concentrations of organic nutrients are lower than most tropical surface ocean waters: DOP similar to 0.1 mu M and DON similar to 4 mu M. The incoming well-water servicing the facility has low pH, creating over-saturation of carbon dioxide. The coral communities in aquaria took up inorganic nutrients and released organic nutrients. Rates of nutrient uptake into aquaria coral communities were similar to nutrient uptake by natural reef communities. Coral growth rates were near the upper rates reported from the field, demonstrating corals can and do flourish in relatively high-nutrient water. The growth of corals does not appear to be inhibited at concentrations of nitrogen up to 5 mu M. Statements implying that corals can only grow in low nutrient oligotrophic seawater are therefore over-simplifications of processes that govern growth of these organisms. Some basic guidelines are given for maintenance of coral communities in aquaria.

Bailey-Brock, J., R. Brock and A. Kam (1994). Coral growth on a sunken vessel serving as an artificial reef in Hawaii. Bull. of Mar. Sci. 55: 1326.

Distribution and growth of corals on a sunken vessel serving as a submarine tour destination was followed for 509 days. The steel vessel was gutted, holes were cut in the hull, it was filled with gravel and sunk at a 33 m depth off Waikiki, Oahu. Two hermatypic corals, *Pocillopora meandrina* and *Porites lobata* grow on the super structure (18 m depth), decks (20 m depth), upper hull (20-26 m depths) and on steel cable. Below 26 m there are encrusting bryozoans, oysters, and coralline algae, but corals are rare. The surrounding substratum slopes from 30-36 m and includes sand, coral rubble and rock, and the corals *P. meandrina, P. lobata* and *Montipora verrucosa*. The largest of the 249 *P. meandrina* measured 129-299 cm^2 and the smallest 5-28 cm^2. *Porites lobata* was uncommon and *M. verrucosa* was not found on the vessel. Corals growing on horizontal and vertical surfaces reached similar sizes although the largest were on the horizontal surface of the decks. Corals reached these sizes in 509 days,

indicating a rapid growth rate. Size classes could not be determined but it is assumed that all but the smallest corals are recruits from the 1989 spawning. The site receives strong tidal currents and is heavily grazed by fishes. Rapid coral growth may be promoted by the metal substrate, strong water motion and grazing pressure. Similar results have been found for *P. meandrina* on another artificial reef.

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The data to date suggest that the fish communities rapidly established themselves on thr initial artificial reef such that species numbers were at equilibrium in about one year. The abundance and biomass of the fish on the reef appears to fluctuate over time. Fishing roughly removes in one day that which should be removed in one year if the fishing were to be conducted on a biologically susatinable basis. The apparent shortfall in capture fishery resources is made up by the continual arrival of individuals of the targeted fish species seeking the habitat vacated by the fish removed through fishing activities. Benthic community development on the artificial reef has not proceeded to the extent necessary to support the high biomass found in the fish community.

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The most marked patterns of distribution and abundance observed in this study were revealed by the measures of coral cover, abundance of fishes and fish species, and algal cover. The first three of these measures show a high degree of correlation; and the values are all high at the stations outside of the reef crest. This pattern is especially marked in the case of corals; all values of more than 10% cover occur outside the reef crest. Per cent cover of algae showed almost the opposite pattern; values were high inside the reef crest. Dry weights of algae showed high values on or near the reef flat. Sponges, echinoderms and molluscs were also common in these areas. Values of every measure of abundance and diversity of each group of organisms were considerably lower at sand substrates, while values of fish species and individuals were greatest at areas

containing live coral. The abundance of invertebrate species did not seem to be consistently related to the presence of live coral. Analysis of the species compostion at the different stations indicates that in the case of both fishes and algae, stations could be grouped into a reef flat community and a reef slope community. There was a distinct flat-bottom community of algae, and the extent of the reef slope community of fishes closely approximated areas of high coral abundance.

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Crow, G. L., C. G. Lowe and B. M. Wetherbee (1996). Shark records from longline fishing programs in Hawai'i with comments on Pacific Ocean distributions. Pac. Sci. 50: 382-392.

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Captive whitetip reef sharks, *Triaenodon obesus,* at Sea Life Park (SLP) Hawaii, Waimanalo, Hawaii develop goitre, whereas, T. *obesus* at the Waikiki Aquarium (WAQ), Honolulu, Hawaii do not develop goitre. To determine the effects of natural concentrations of iodine on the reduction of goitre, two sharks from SLP with goitre were placed in an enclosed coastal lagoon with natural seawater. Using ultrasound measurements the two goitres were initially 11.4 cm and 14.6 cm in depth and after 3 months decreased to 4.7 cm and 5.7 cm. Radioimmunoassay analysis of the thyroid hormone T_3 sera concentrations were initially 0.22 ng/ml and 0.33 g/ml and increased to 1.84 ng/ml after being placed in the lagoon. Sera T_4 were initially 0.93 ng/ml and 0.99 ng/ml and increased dramatically to 17 ng/ml and 56 ng/ml. Over the six month sampling period, two resident sharks in the lagoon with normal thyroids had sera T_3 concentrations from 0.89 ng/ml to 1.1 ng/ml, and sera T_4 concentrations from 3.1 ng/ml to 7.9 ng/ml. The hypothyroid condition in the SLP goitred-sharks is likely linked to the low environmental iodide (<0.005 mu M), and high nitrate (111 mu M) of SLP water. The WAQ well-water facility was characterized by anoxic water with high iodide (0.60 mu M), total iodine (1.90 mu M), and typical nitrate (24.6 mu M) concentrations of interstitial groundwater. The difference of iodide concentration of SLP and WAQ tank water (<0.005 mu M versus 0.60 mu M) was directly related to the hydrogeology of the well-water sources. To avoid goitre in marine aquarium systems, we recommend maintaining iodide concentrations of at least 0.15 mu M.

Doty, M. S. (1969). The standing crops of benthic frondose algae at Waikiki Beach, 1966-1969. Hawaii Botanical Society Paper 11: 282.

Raw data tabulation with some summary information on standing crops of dominant algal species off the Waikiki Natatorium.

Doty, M. S. (1971). The productivity of benthic frondose algae at Waikiki Beach, 1967-1968. Hawaii Botanical Society Paper 22: 119.

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Survey of corals occurring on Waikiki reef off the Aquarium and classical experiments on tolerances of Hawaiian corals to environmental stresses, including temperature, salinity, air exposure and light. Twenty three species of corals were found along a 600 foot length of the aquarium reef from the shoreline to the lithothamnion ridge.

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Edmondson, C. H. (1933a). Reef and Shore Fauna of Hawaii. Honolulu, Bishop Museum Special Publ. no. 22, 1st ed.

A general descriptive study of the fauna found in the reefs and shores of the Hawaiian Islands.

Edmondson, C. H. (1946). Reef and Shore Fauna of Hawaii. Honolulu, Bishop Museum Spec. Publ. 22, 2nd ed.

A revised edition of the earlier 1933 edition. More complete data, new figures and keys was added to several sections and the nomenclature was brought up to date to conform with intervening investigations.

Edmondson, C. H. (1954). Hawaiian Portunidae. Occas. Papers B. P. Bishop Mus. 21(12): 217-274.

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Edward K. Noda & Assoc. Inc. (1992). Ala Wai Canal improvement, Honolulu, Oahu, Hawaii. Honolulu, State of Hawaii, Dept. Land and Natural Resources, Div. of Water and Land Development.

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Assessing the impact of the Kapahulu storm drain system on the quality of water at Kuhio Beach and the health of swimmers using the beach

Glenn, E. P., C. M. Smith and M. S. Doty (1990). Influence of antecedent water temperatures on standing crop of a *Sargassum* spp.-dominated reef flat in Hawaii. Mar. Biol. 105: 323-328.

The standing crop of seaweeds was estimated monthly over a 22 mo. period from 1971 to 1973 on a reef at Waikiki, Honolulu, Hawaii. Wet and dry standing crops averaged 1.2 and 0.26 kg m^2, respectively. Approximately 70% of the total biomass was contributed by a single species, *Sargassum polyphyllum* , and the remainder was contributed by 29 other species. The size of the total standing crop and of *S. polyphyllum* in particular was highly correlated with antecedent water temperatures. The highest correlation was with temperatures recorded 3 to 4 wk prior to the estimate of standing crop. Approximately 65% of the variability of the standing crop on the reef was explained by this single variable. Multiple linear-regression analyses did not uncover further significant environmental factors related to the *S. polyphyllum* standing crop.

Glenn, C. R. and G. M. McMurtry (1995). Scientific studies and history of the Ala Wai Canal. and artificial tropical estuary in Honolulu. Pac. Sci. 49(4): 307-318.

The Ala Wai Canal is an artificial estuary created in the 1920s to drain coastal wetlands borderin the present tourist are of Waikiki. Today it is polluted and hypereutrophic and receives high levels of nutrients that sustains primary production rates rivaling the highest in the world.The canal traps sediments from Manoa and Plalolo streams that have formed two large sills that restrict seawater exchange. This restricted flow and high input of organic matter from streams has resulted in severe oxygen depletion behind the sills.

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Description of algal community composition off Waikiki Natatorium in 1971. Algae

coverage found to be maximal in about 8 m depth, dominated in winter months by *Dictyopteris australis*, which decreases in summer due to wave surge and sand scour. Species list of 54 species given, mention that algae were observed to cover and kill corals.

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Harris, C. L. (1972). Primary production in a small tropical estuary. Honolulu, Hawaii Inst. Geophysics.

Measurement of physical parameters, turbidity, particulate matter, chlorophyll and planktonic primary production at three stations in the Ala Wai Canal over 13 months in 1970-71 and occasionally at one station in Ala Wai Yacht Harbor. High production rates, high chlorophyll and particulate concentrations and turbidity decreased with approach to Yacht Harbor. Production primarily light limited except at Yacht Harbor. Percentage of suspended particulate matter that was living increased from 8% near Yacht Harbor to 30% at head of the canal.

Hibbard, D. and D. Franzen (1986). The View from Diamond Head. Honolulu, Editions Limited.

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Law and Wilson (1949). Waikiki Beach improvement study. Honolulu, Board of Parks and Recreation: 13.

Report to enlist support for dredging, sand dumping and other alterations that were to change Waikiki water front to approxiamtely the present day configuration, with Ala Moana Park, Magic island, the Ala Wai Yacht Harbor entrance and enlarged beaches at Waikiki.

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Gross photosynthetic rates in the Ala Wai are about 5.5 g C /sq. m daily, and increase by a factor of three from the mouth to the head of the estuary. Photosynthesis appears to be limited only by light availability and phytoplankton concentrations. Allocthonous imports of organic carbon exceed photosynthetic rates by about 60%. Respiration

consumes about 70% of total carbon input, 18% accumulates in sediments and 12% is flushed out the canal's mouth. Sedimentation occursat about 7-8 cu. m per year and has greatly altered the canal's bathymetry. Concentrations of particulate carbon, particulate nitrogen and chlorophyll a are comparable to values measured in the early 1970s. Surface waters are supersaturated with oxygen during the day and undersaturated at night, and subsurface waters undergo even greater diurnal fluctuations due to poor oxygen exchange with the atmosphere.

Laws, E. A. and D. A. Ziemann (1995). Effects of Sewage Discharges and Stream Runoff on Phytoplankton Communities and Water Quality in Mamala Bay.

Lee, H. (Unpub.report). The Waikiki reclamation project. Honolulu: 23.
Description of the setting and construction of the Ala Wai Canal in 1921-28, and the sociological effect on the farmers and residents of the area.

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Description of coralline algae occurring on the reef off the Waikiki Natatorium and the ecology of their environment. Sixteen taxa were described, 7 of which are important reef formers, dominated by *Hydrolithon reinboldii*.

Marine Advisors (1968). Sand survey at Waikiki end of the Honolulu Harbor channel entrance. Honolulu, Department of Transportation, Harbors Division.

Marine Research Consultants (1990). Waikiki Beach restoration projects: assessment of coral reef community structure at the site of sand replenishment, Waikiki, Oahu, Hawaii. Honolulu, O.I. Consultants, Inc.

Marine Research Consultants (1997). Assessment of water quality and marine community structure in the vicinity of the Voyager Submarine Hawai`i Dive Site, Honolulu. Honolulu, Voyager Submarines Hawai`i.

Matsumoto, G. I., G. Crow, . L. and P. F. S. Cornelius (2002). Discovery of the cubomedusae *Carybdea sivickisi* (Cubozoa:Carybdeidae) in Hawaiian Islands. Bish. Mus. Occ. Pap. 69:44-46.

McCarthy, S. A. (1996). Patterns of spatial and temporal variabiliity in Hawaiian soft bottom benthos. Dept of Oceanography. Honolulu, University of Hawaii: 239.
Temporal and spatial variability in shallow (10-20m), tropical, soft-bottom communities of Mamala Bay, Hawaii are examined. Benthic samples were obtained monthly for twenty-five months to examine seasonal variations. Samples were obtained every ten days for three months to examine lunar periodicity and runoff impact. Small scale spatial variability was examined by comparing samples from the crest and trough of sedimentary ripples and from sand and rubble. Larger scale spatial patterns were examined during August 1993 and February 1994 by sampling at 10 and 20m depth offshore the Ala Wai Canal. Significant variations exist in density of major taxa, but dominant taxa are stable. Dominance of a few groups is especially evident in polychaetes (Syllidae and Pisionidae). Macrofauna densities range from 4,910 to 47,425 indiv/m^2 with biomass ranging from 47 to 1091 mg/$m^{2.}$ The dominant taxa, density and biomass of soft bottom communities are consistent with data from other shallow tropical and subtropical areas. There is no evidence that large wave events and runoff influence density or community composition on short time scales. Significant within-month fluctuations in density of major taxonomic groups exist, with evidence of lunar periodicity in the arthropods (primarily ostracods). There are significant between-year differences in density of macrofauna: it is possible this

reflects a pattern spanning several years related to the 1991-1994 ENSO event. Small scale (<30m) differences exist between crest and trough of sedimentary ripples and sand and rubble. Higher densities of syllids and copepods are associated with the crest of ripples. Higher densities, taxonomic richness and biomass are present within rubble. On a larger scale, along a 3.0 km transect eastward from the Ala Wai Canal, community density, biomass and community dominance are similar. Ala Wai sites were consistently more diverse than Waikiki sites. There is no evidence that runoff from the Ala Wai has a negative impact or is an important structuring mechanism for adjacent soft-bottom shallow communities. Community composition appears to be related to sediment type. Moderately and poorly sorted sediments support more diverse communities than well sorted sediments.

McCarthy, S. A., E. A. Laws, W. A. Estabrooks, J. H. Bailey-Brock and E. A. Kay (2000). Inter-annual variability in Hawaiian shallow-water soft-bottom macrobenthic communitiesadjacent to a eutrophic estuary. Estuarine, Coast. Shelf Sci. 50: 245-258.

Temporal and spatial variability in shallow (10-20m), tropical, soft-bottom communities was examined over a period of twenty-five months (November 1992-November 1994) offshore of the Ala Wai canal, a tropical estuary on the south shoore of O'ahu Hawaii. to examine seasonal variations. Despite significant temporal variations in the density of major taxonomic groups at the four stations examinned, there was no evidence of a regular seasonal signal in the density fluctuations. Although all stations showed a steady decline in mean density during the unusually dry period in the spring of 1993, there was no evidence taht observed macofaunal density fluctuations (maximum and minmum) were associated with periods of increased runoff. Intensive macrobenthic sampling after a large runoff event showed no evidence that the event influenced the density or community macrobenthic composition of the benthos over a two month period. Total macrofaunal density ranged from 4,910 to 47,425 indiv/m^2 with biomass ranging from 47 to 1091 mg/m^2 AFDW, values consistent with those of other tropical and subtropical studies. A significant between year difference in the density of total macrrofauna was observed, perhaps associated with the 1991-1994 El Nino Southern oscillation (ENSO) event and the corresponding decreased rainfall in Hawaii.

McMurtry, G. M., A. Snidvongs and C. R. Glenn (1995). Modeling sediment accumulation and soil erosion with ^{137}Cs and ^{210}Pb in the Ala Wai Canal and central Honolulu watershed, Hawai'i. Pac. Sci. 49(4): 412-451.

Analyses indicate Ala Wai collects sediment at a mean rate of 3100 tons per year, with about 80% of the sediment composed of detrital clays and 20% of marine authigenic and biogenous phases. This equates to a physical annual denudation rate for the central O'ahu of six mg per cm. sq. , at the low end of previous estimates. At this rate the average time to fill the canal would be 60 years if little sediment escapes. The fill time for the central section receiving Manoa-Palolo Stream runoff would only be 40 years.

Morens, D. M., K. K. Roll and R. S. Fujioka (1994). Microbiological characterization of the water and sediment in Kapahulu storm drain system and at Kuhio Beach. Project completion report. Assessing the impact of the Kapahulu storm drain system on the quality of water at Kuhio Beach and the health of swimmers using the beach, University of Hawaii, Water Resources Research Center, Manoa.

Project completion report assesses the impact of the Kapahulu storm drain system on the quality of water at Kuhio Beach and the health of swimmers using the beach

Morgan, C. L., J. H. Barry, Jr and M. J. Cruickshank (1998). Characterization of marine aggregates off Waikiki, O'ahu, Hawai'i. Mar. Georesour. Geotechnol. 16: 75-94.

Researchers at the University of Hawai'i at Manoa have been working for the past several years to develop the necessary techniques for finding and quantitatively characterizing offshore unconsolidated carbonate deposits with potential for beach nourishment and use in construction aggregates for tropical island communities. This article examines

particular results of this research, with special attention given to the area offshore from Waikiki Beach. Acoustic surveying, water-jet probing to measure the thickness of unconsolidated material and three different sampling methods were used in this study. Two separate seismic systems were used for the subbottom profiling survey, a Datasonics Bubble-Pulser registered system and a broad-band, frequency-modulated ("chirp") prototype system. The following conclusions were reached. (1) Many different types of sediment underlie tropical island carbonate sand deposits and serve as refusing horizons to jet probing. Examples include consolidated or unconsolidated reef debris, beach rock, cemented sand, and various types of conglomerates formed from rhodoliths (coralline algae) or reef detritus. (2) Massive coral growth over clastic deposits is not a common offshore feature in this area, though it does occur in some areas off the Reef Runway. (3) Matrices of the coral Porites compressa, in-filled with sand, may have acoustic properties similar to those of the sand bodies. Such deposits may be difficult to distinguish from unconsolidated deposits from seismic records alone. (4) Significant new prospects for offshore aggregates were found in the insular shelf offshore from Southern O'ahu. A total of 5,100,000 m^3 were mapped off Waikiki. The Makua Shelf deposits in this area presently appear to be the best prospects for commercial development

Nakamura, B. S. (1975). The story of Waikiki and the "reclamation" project. Dept. of History. Honolulu, Univ. of Hawaii.

The basis of what Waikiki has become in the latter half of the 20th entury was laid in the 1920s when the decade-long Waikiki "reclamation" project changed the ecology of Waikiki. Waikiki was once a viable and important agriculture and aquaculture area which was destroyed by profit-seeking capitalist entrepeneurs under the subterfuge of "drainage" and "sanitation."

Napoka, N. (1986). The seat of power. The View from Diamond Head. D. Hibbard and D. Franzen. Honolulu, Editions Limited**:** 2-7.

Pre-European contact Hawaiian historical summary.

Neal, M. C. (1930). Hawaiian marine algae. Bishop Museum Bulletin 67: 1-84.

Description of algal collected and identified from a survey conducted off the Waikiki Aquarium in 1923-24

Nishimura, N. J. (2000). Assessment of genetic variability in the invasive red alga *Gracilaria salicornia* using multi-locus DNA fingerprinting. Department of Botany. Honululu, University of Hawaii.

Oceanic Institute (1972). The environmental impacts of the proposed construction (Phase I) for the Ala Wai Boat Harbor, Oceanic Institute, Makapuu Point**:** 46 +.

OI Consultants Inc. (1991). Baseline surveys of nearshore water quality and coral reef communities at Waikiki, Oahu, Hawaii, OI Consultants, Inc., Waimanalo**:** 37 pp.

Corals, exposed invertebrates, and fishes were surveyed at 16 stations off Waikiki on 6-9 August 1990. Sampling stations were located along four transect lines extending perpendicular to shore, at the 10, 20, 40, and 60 foot depth contours. This offshore area can be divided into two main physiographic zones. From the shoreline to the 25-foot contour are extensive sand flats with few exposed marine animals. However, protruding through the sand are numerous rounded limestone ridges, upon which benthic organisms can settle without being subjected to the scouring action of wave-driven sand. Offshore, at depth's below 25 feet, is a flat limestone surface with scattered rubble and sand. Like the sand flats near shore, the limestone platform is also rather barren of benthic animals. However, those few areas of substantial vertical relief harbor comparatively dense aggregations of benthic animals and fish. The dominant coral species at Waikiki are *Porites lobata* and *Pocillopora meandrina*, which together account for about 96 percent of all measured coral coverage. Average coral coverage is highest at the mid-depth (20

and 40 m) stations along the northwest transacts (III and IV). Coral diversity showed few clear spatial trends. However the highest diversity was observed along transect IV, near the Hilton channel. The exposed limestone ridges are more abundant along the northwest transacts and provide a greater degree of vertical relief and more solid substrate for coral growth. Areas of shifting sand were more prevalent along transacts I and II. This sand apparently limits colonization by corals and other sessile organisms. Of the algae surveyed, the blue-green alga *Lyngbya majuscula* and the brown alga *Sargassum echinocarpum* were most common. The former dominated the deep limestone flats and the latter was common on shallow limestone ridges, especially along transect II. The abundance of reef fish varied in proportion to coral coverage, with areas of little vertical relief having lower coral coverage and fewer fish. The lack of larger, older individuals of fish species preferred by fishermen suggests considerable fishing pressure in this area. In summary, it appears that the dominant environmental factor shaping the nearshore benthic and reef fish communities off Waikiki is the movement of sand, much of which could have been deposited during prior beach replenishment projects. The proposed sand replenishment project is not likely to qualitatively alter these conditions, and hence will probably result in no identifiable changes to biotic structure.

Oishi, F. G. (1974). Fish survey at Diamond Head, Honolulu.

Paul, J. H., J. B. Rose, S. C. Jiang, L. P, X. Xhou and C. Kellogg (1997). Coliphage and indigenous phage in Mamala Bay, Oahu, Hawaii. Appl. Environ.l Microbiol. 63: 133-138.

Public concern over the discharge of primarily treated sewage by two offshore outfalls in Mamala Bay, Oahu, prompted a multidisciplinary study to determine the impact of such activities on the water quality in the bay and at adjacent recreational beaches. As part of this study, we determined the abundance of coliphage as an indicator of fecal pollution along with total viral direct counts and phages infective for *Vibrio parahaemoltyicus* 16 at stations in Mamala Bay in four quarterly samplings over 13 months. Coliphage (< 1 to 1.2 x 10^3/liter) were found during each quarterly sampling along an offshore transect to the Sand Island waste treatment facility outfall. The nonpoint coastal stations (Pearl Harbor, Ala Wai Canal, and Ke'ehi Lagoon) had high levels of coliphage during the storm event sampling in February 1994 but much lower levels or none when sampled during dry weather. Coliphage were absent at all samplings at Waikiki Beach and at the control station off Diamond Head. Viral direct counts in eutrophic coastal stations (Pearl Harbor, Ke'ehi Lagoon, Ala Moana Beach, and Ala Wai canal) averaged 10 super(9)/liter, while counts at offshore stations ranged from 9 x 10^7 to 1 x 10^9 viruses/liter, values similar to those for other marine environments. Vibriophage were found mainly in eutrophic coastal environments (Ala Wai Canal, Pearl Harbor, and Ke'ehi Lagoon) and at the Sand Island Transect stations D1 and D2. The greatest abundance was found during the storm event (February 1994) sampling. These results suggest that the Sand Island outfall influenced the water quality of the immediate surrounding waters but had little effect on the quality of the recreational beaches. Nonpoint discharge sources appeared to be more important in the distribution of fecal indicators in the coastal zone.

Pinkham, L. E. (1906). Reclamation of the Waikiki District. Honolulu, Territory of Hawaii Board of Health: 36.

First proposal and plans for dredging the Ala Wai Canal to divert water from marshes and ponds of Waikiki and eliminate two stream mouths from Waikiki Beach. Original plan was to have two mounths for the canal one at present discharge point and one near present Natatorium.

Roll, K. K. and R. S. Fujioka (1994). Microbiological characterization of the water and sediment in Kapahulu storm drain system and at Kuhio Beach, University of Hawaii, Water Resources Research Center, Manoa.

Smith, J. E., C. L. Hunter and C. M. Smith (2002). Distribution and reproductive characteristics of

nonindigenous and invasive marine algae in Hawaii. Pac. Sci. 53: 299-315.

Quantitative and quallitative surveys were conducted on five of the Hawaiian Islands to determine the current distribution of non-indigenous algae (NIA) and to assess the level of impact that these algae pose to Hawaii's ecosystems. Maps were generated to examine the spread of these organisms from initial sites of introduction and to assimilate information regarding habitat characteristics that appear to make some sites more susceptible to invasion than others. Blooms of native invasive algae were also documented when encountered. The potential for vegatative propogation via fragmentation was examined experimentally as a mode of reproduction for four of the most common species of NIA in Hawaii. This research has demonstrated that each of these algal species has a distinctive distribution and reproduction at present and reproductive strategies appear to vary among species. More research is needed to further understand the competive strategies and unique characteristics that allow these non-indigenous species to become highly successful in the Hawaiian Islands.

Snyder, J. O. (1904). A catalogue of the shore fishes collected by the steamer Albatross about the Hawaiian Islands in 1902, U.S. Fish Commission.

Lists and describes in detail the fishes caught on cruise in 1902. 26 new species described. Includes a number of good drawings.

State of Hawaii - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) (1970). Fish survey off Waikiki, Honolulu, State of Hawaii, Department of Land and Natural Resources, Division of Fish & Game, Honolulu.

State of Hawaii - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) (1973). Fish survey at Ala Wai, Honolulu, State of Hawaii, Department of Land and Natural Resources, Division of Fish & Game, Honolulu.

State of Hawaii - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) (1975). Fish survey at Diamond Head, Honolulu, State of Hawaii, Department of Land and Natural Resources, Division of Fish & Game, Honolulu.

State of Hawaii - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) (1977). Fish survey at Waikiki, Diamond Head, Oahu, State of Hawaii, Department of Land and Natural Resources, Division of Fish & Game, Honolulu.

State of Hawaii - Dept. Land and Natural Resources (DLNR) (1994). Final report on the relationship between fish feeding, artificial reefs and the risk from sharks on inshore recreational users at Waikiki Beach, Oahu: 16 pp.

This study was intended to answer the following questions: 1. Is there a correlation between artificial reefs, fish feeding and chumming and sharks in the Waikiki area? 2. Do sharks, attracted by artificial reefs, fish feeding and chumming, pose a risk to ocean users in the Waikiki area? Despite the fact that there was no indication whatsoever that sharks were attracted by artificial reefs or fish feeding at those reefs in the Waikiki area, the report recommends ceasing feeding and moving reefs and submarine operations from the area. The results did indicate that fish feeding increased fish abundnces in the feeding area by 31% in number and 54% in biomass, with a simultaneous decrease of 17% in number and 44% in biomass at anearby control site.

Strassen-McLaughlin, M. (1986). Victorian Waikiki-the playground of royalty. The View From Diamond Head. D. Hibbard and D. Franzen. Honolulu, Editions Limited: 8-41.

Illustrated history of Waikiki in latter 19th century.

U. S. Army - Corps of Engineers (1963). Cooperative beach erosion control study, Waikiki Beach Oahu, Hawaii. Honolulu, U. S. Army Corps of Engineers, Pac. Ocean Div.

"The district engineer finds that the present sand beach at Waikiki, Oahu, Hawaii, is

eroding with resulting loss of recreational beach areas to the communnity and public at large....He concludes that the most practical plan of improvement would involve the placement of 10,800 linear feet of new beach; the construction of new groins and the removal or modification of existing groins; and the extension of existing storm drains."

U. S. Army - Corps of Engineers (1973). Final EIS, Beach erosion control improvements, Waikiki Beach Oahu, Hawaii. Honolulu, U. S. Army Corps of Engineers, Pac. Ocean Div. : 13.

Plan to place 46,000 cu. yds of sand in the area between the Natatorium and the Queen's Surf Pavilion to add about about 132,000 sq. ft. of beach sand for an increase in beach area of 73%, In addition three new groins were to be constructed and the Natatorium demolished.

U. S. Army - Corps of Engineers (1992). Waikiki Beach erosion control, island of Oahu, Hawaii. reevaluation reporrt. Honolulu, U. S. Army Corps of Engineers, Pac. Ocean Div. : 21.

Only two reaches, Fort DeRussy and Kuhio Beach, of the Waikiki Beach Erosion Project had been completed to date, and the results of the reevaluation study indicated that only the shoreline from the Fort DeRussy Groin to Kuhio Beach had sufficient economic benefits to warrant continued Federal interest. Therefore deauthorization of the project was recommended.

Walker, J. R. (1973). Surfing assessment, Ala Wai Small Boat Harbor, Oahu, Hawaii, University of Hawaii, James K. K. Look Laboratory Ocean Engineering, Honolulu: 38.

Wang, N. and F. Gerritsen (1995). Nearshore circulation and dredged material transport at Waikiki Beach. Coast. Eng. 24: 315-341.

The possibility of using offshore sand deposits as a source of material was recently studied as part of a beach nourishment project at Waikiki Beach, Hawaii. The borrow site is located approximately 1100 meters off the beach. A finite difference model of water circulation and fine particle transport is used to study dredge-induced far field turbidity concentrations. The influence of the dredging pit at the borrow site on the stability of the nearshore ocean bottom and on the beach is analyzed using the Bailard sediment transport model in the onshore-offshore direction. Model results show that effects of the dredging operation on the beach would be negligible. A maximum sediment accumulation on the ocean bottom of 0.3 kg/m^2 (or equivalently, a 0.2 mm thick layer) is predicted for one day of operation, which is considered acceptable.

Willan, R. C., B. C. Russell, N. B. Murfet, K. L. Moore, F. R. McEnnulty, S. K. Horner, C. L. Hewitt, G. M. Dally, M. L. Campbell and S. T. Bourke (2000). Outbreak of *Mytilopsis sallei* (Recluz, 1849) (Bivalvia: Dressenidae) in Australia. Molluscan Res. 20((2)): 25-30.

Ziemann, D. A. (1991). Baseline surveys of nearshore water quality and coral reef communities at Waikiki, Oahu, Hawaii. Makapuu Point, Oahu, Hawaii, OI Consultants, Inc.

Ziemann, D. A. (1992). Biological and water quality environment. Ala Wai Canal Improvement, Draft Environmental Assessment: 11.

Kuapâ Pond – Maunalua Bay References

Brock, R. E. (1988). Green turtles (*Chelonia mydas*) at Hawai`i Kai, Hawaii: an analysis of the impacts with the development of a ferry system**:** 26.

Brock, R. E. (1988). Biological assessment for the proposed intra-island ferry system: Hawai`i Kai terminal, Environmental Assessment Co.**:** 41.

Brock, R. E. (1989). Green turtles (*Chelonia mydas*) at Hawai`i Kai, Hawaii: An analysis of impacts with the development of a ferry system, Environmental Assessment Co.**:** 33.

Brock, J. A. (2000). Necropsy and liver histopathology for fish sampled in the vicinity of the Sand Island Ocean Outfall and in Maunalua Bay, O`ahu, Hawai`i, September 2000. Honolulu, Water Resources Research Center, University of Hawai`i at Manoa**:** 19 p.

Brostoff, W. N. (1989). *Avrainvillea amadelpha* (Codiales, Chlorophyta) from Oahu, Hawaii. Pac. Sci. 43: 166-169.

First report of the nonindigenous green algae *Avrainvillea amadelpha* in 1981 at Kahe Point and Maunalua Bay, and later in 1987-88 from the Hawai`i Kai intertidal area. Previously reported from Mauritius to the Philippines.

Ekern, P. C. and P. Fan (1983). Mineralogy of sediments in three estuaries on O`ahu, Hawai`i. Honolulu, Water Resources Research Center, University of Hawai`i at Manoa**:** 25 p.

Environmental Consultants Inc. (1975). Preliminary environmental impact studies on the marine environment at Maunalua Bay, Environmental Consultants, Inc., Kane`ohe**:** 65.

Water quality in Maunalua Bay is heavily influenced by the Hawai`i Kai Marina and some areas of the bay have high nutrient and turbidity levels. Inside the reef the wate is almost perpetually turbid. Moving from east to west the bottom rises from a 10 foot depth to a shallow limestone reef platform for approxoimately the first half of the transect along which small coral heads are found. Further on lies a 3 foot deep wave washed area with little coral but extensive algae coverage. Few fish were observed there because of lack of cover and wave action on the reef platform. There appears to be a gradient of decreasing species diversity of fish from the offshore sampling sites to the marina entrance. Abandance of fish correlates directly with cover and live coral distribution. An area of impressive coral bottom, developed prior to present day poor water quality, is found along the western margin of the boat channel in the general area of marker "3".

Guinther, E. (2001). Environmental assessment for relocation of the drainline "N" outlet structure at The Peninsula (TMK: 3-9-08: 010) in Hawai`i Kai, east O`ahu, AECOS Consultants, Kane`ohe**:** 14.

Small list of invertebrates on sea wall and brief description of environmental conditions at head of Kaimala Marina at Hawai`i Kai.

Henry, B. (1959). A geographical study of the central Maunalua region, Island of Oahu, State of Hawaii. Department of Geography. Honolulu, University of Hawai**:** 82.

Kentron Hawai`i Ltd. (1975). A planning and environmental impact study of the Hawai`i kai to downtown marine bus system. Honolulu, Parsons Brinkerhoff-Hirota Associates.

Brief description of environmenal conditions in the vicinity of the proposed jetfoil terminal in Kuapâ Pond.

Krock, H.-J. and E. B. Guinther (1992). Hawai`i Kai Marina, evaluation of odor problems and fish kill events, AECOS, Inc., Kailua.

Leber, K. M. (1995). Significance of fish size-at-release on enhancement of striped mullet

fisheries in Hawaii. J. World Aquacult. Soc. 26: 143-153.

A tag-release-recapture study was conducted to evaluate size-at-release impacts upon recruitment of cultured, juvenile striped mullet, *Mugil cephalus* released in inshore habitats of Oahu, Hawaii, USA. A total of 43,206 tagged fish were released into Maunalua Bay and 456 recovered, skewed in favor of fish that were larger at time of release.

Marine Advisors, I. (1961). Oceanographic aspects, Kaiser Hawai`i Kai Marina. Honolulu, Kaiser Hawai`i Kai Development Co.: 32 pp.

Baseline information on oceanographic conditions, including temperature, salinity and currents in Kuapâ Pond and nearshore Maunalua Bay prior to opening of main boat channel to Lunalilo Marina. Water wothin the pond was hypersaline to 37 ppt and highly turbid.

Marine Advisors, I. (1961). Water characteristic study: Kaiser Hawaii-Kai Marina. Honolulu, Kaiser Hawai`i Kai Development Co.: 32 pp.

Portlock, N. (1789). A Voyage Around the World; but More Particularly to the North-west Coast of America: Performed in 1785, 1786, 1787 and 1788 in the King George and Queen Charlotte, Captains Portlock and Dixon. London, Stockdale and Goulding.

Autobiographical description of experiences of the first European captain and crew to make a landing on the Island of Oahu, which occurred at a site later named "Portlock" in 1786 at Maunalua Bay.

Sakoda, E. T. (1975). The marine geology and sedimentology of Hawai`i Kai, Kuapâ Pond, and adjacent Maunalua Bay. Geophysics, University of Hawaii, Manoa: 71.

Description of geological and oceanographic conditions in Kuapâ Pond and Maunalua Bay following opening of main channel from Lunalilo Marina, with brief historical notes. Salinity had been reduced from hypersaline conditions reported in 1961 to 32 ppt and turbidity reduced, apparently from increased circulation provided by the two channels now allowing water movement and discharge from the marinas.

Smith, J. E., C. L. Hunter and C. M. Smith (2002). Distribution and reproductive characteristics of nonindigenous and invasive marine algae in Hawaii. Pac. Sci.

Report of the nonindigenous green algae *Avrainvillea amadelpha* having spread from Koko Head, where it was first reported in 1981, to Kahala, Oahu and competing for habitat with the native Hawaiian seagrass *Halophila hawaiiana.*

State of Hawai`i (1974). Fish surveys at Maunalua Bay and Waianae artificial reef. Honolulu, Department of Land and Natural Resources, Division of Fish & Game.

State of Hawai`i - Dept. Land and Natural Resources - Div. Fish & Game (DF&G) (1977). Fish survey of Maunalua Bay, Oahu, State of Hawaii, Department of Land and Natural Resources, Division of Fish & Game, Honolulu.

Strump, J. B. (1981). Our Hawai`i Kai. A history of Hawai`i Kai and Maunalua. Honolulu, Self published: 97.

Historical account of places of interest in the Hawai`i Kai Maunalua Bay area from pre-European contact to 1981.

Sunn Low Tom and Hara, I. (1974). Final report of the investigation of Hawai`i Kai Marina waters. Honolulu, Kaiser-Aetna.

Takemoto, A. H., P. K. Joerger, et al. (1975). Historical/cultural essay on the Kuapâ Pond area. Honolulu, U. S Army Corps of Engineers: 78 pp.

History and archeological findings for Kuapâ Pond Maunalua area.

U.S. Army Engineer District Honolulu (1975). Final environmental impact statement for Department of the Army permit applications in the Hawai`i Kai Marina, Oahu, Hawaii, U.S. Army Engineer District, Honolulu, Ft. Shafter**:** 52.

APPENDIX B

Listing of Marine Organisms Reported for All Studies at Waikîkî

ALGAE

Division CYANOPHYTA

Order OSCILLATORIALES

Family OSCILLATORIACEAE

***Hydrocoleum cantharidosmum* Gomont**

1953 BPBM 589662

***Hydrocoleum comoides* (Harv.) Gomont**

1952 BPBM 551191

***Hydrocoleum glutinosum* (Agardh) Gomont**

1951 BPBM 589624

1953 BPBM 589634

***Hydrocoleum lyngbyaceum* (Kütz.) Gomont**

1952 BPBM 551236

1968 BPBM 589631

***Lyngbya lutea* Gomont**

1952 BPBM 551316

***Lyngbya majuscula* (Dillwyn) Harv**

1953 BPBM 589697

1953 BPBM 589691.2

1953 BPBM 589693

1954 BPBM 589698

1964 BPBM 589707

1966 Doty 1971

1971 Harger 1972

1971 Glenn et al 1990

1974 BPBM 518929

1987 AECOS 1987

1990 OI Consultants 1991

1992 U. S. Army C. of E. 1992

2001 present study

***Microcoleus lyngbyaceous* (Kütz.) Crouan**

1959 BPBM 587718

***Phormidium crosbyamum* Tilden**

1952 BPBM 552649

1953 BPBM 589171

***Phormidium submembranaceum* Gomont**

1953 BPBM 589173

***Schizothrix calcicola* (C. Agardh.) Gomont**

1966 BPBM 589195

1967 BPBM 524677

1971 Harger 1972

***Spirulina subsalsa* Gomont**

1955 BPBM 92621

Family PHORMIDIACEAE

***Symploca hydnoides* (Harv.) Kütz.**

1923 Neal 1930

1923 BPBM 526366

1953 BPBM 92635

1953 BPBM 590147

1971 Glenn et al 1990

1971 Harger 1972

***Symploca laete-viridis* Gomont**

1951 BPBM 590161

***Symploca* sp.**

2001 present study

Order CHROOCOCCALES

Family ENTOPHYSALIDACEAE

***Entophysalis crustacea* (J.Agardh) Drouet & Daily**

1952 BPBM 550941

Order NOSTOCALES

Family NOSTOCACEAE

***Hormothamnium enteromorphoides* Grunow**

1953 BPBM 589392

***Nodularia hawaiiensis* Tilden**

1908 BPBM 92580

1908 BPBM 589114

Family RIVULARIACEAE

***Calothrix aeruginea* Bornet & Flahault**

1952 BPBM 570686

1952 BPBM 550436

1953 BPBM 637736

***Calothrix confervicola* Bornet & Flahault**

1965 BPBM 451118

1966 BPBM 451117

***Calothrix scopulorum* (Weber & Mohr) C.Agardh**

1952 BPBM 550521

Family SCYTONEMATACEAE

***Plectonema terebrans* Gomont**

1952 BPBM 552878

Division CHLOROPHYTA

Order ULVALES

Family ULVACEAE

***Enteromorpha intestinalis* (L.) Link**

1908 BPBM 525700

***Enteromorpha lingulata* J.Agardh**

1946 BPBM 546091

***Enteromorpha prolifera* (Müll.) J.Agardh**

1908 BPBM 516410

***Enteromorpha* sp.**

1923 Neal 1930

1966 Doty 1971

1987 AECOS 1987

1990 OI Consultants 1991

***Ulva fasciata* Delile**

1909 BPBM 525010

1923 Neal 1930

1924 BPBM 516809

1966 Doty 1971

2001 present study

***Ulva lactuca* Linn.**

2001 present study

***Ulva reticulata* Forss.**

1909 BPBM 525006

1924 BPBM 188448

1945 BPBM 627985

1964 BPBM 522933

1966 Doty 1971

1971 Glenn et al 1990

2001 present study

***Ulva* sp.**

1990 OI Consultants 1991

Order CLADOPHORALES

Family ANADYLOMENACEAE

***Microdictyon japonicum* Setch.**

2001 present study

***Microdictyon setchellianum* M.Howe**

1923 Neal 1930 (as *Microdictyon umbulicatum*)
1966 Doty 1969
1966 Doty 1971
1971 Harger 1972
2001 present study

***Microdictyon umbilicatum* (Vall.) Zan.**

2001 present study

Family BOODLEAECEAE

***Boodlea composita* (Harv.) Brand**

1944 BPBM 624410
1944 BPBM 628153
1949 BPBM 524697
1949 BPBM 515378
1963 BPBM 524694
1970 BPBM 636593

***Struvea anastomosans* (Harv.) Picc. & Grunov ex Picc.**

1972 BPBM 636594

Family VALONIACEAE

***Microdyctyon setchellianum* Howe**

1971 Glenn et al 1990

***Valonia aegagropila* C. Agardh**

1966 Doty 1969
1966 Doty 1971
1969 BPBM 636592
1971 Glenn et al 1990
2001 present study

***Valonia* sp.**

1990 OI Consultants 1991

***Valonia ventricosa* J.Agardh**

1959 BPBM 516855

Family SIPHONOCLADACEAE

***Dictyosphaeria cavernosa* (Forss.) Boergesen**

1903 BPBM 525113
1923 Neal 1930 (as *Dictyosphaeria favulosa*)
1944 BPBM 628129
1954 BPBM 524428
1966 Doty 1969
1966 Doty 1971
1971 Glenn et al 1990
2001 present study

***Dictyosphaeria versluysii* Weber Bosse**

1966 Doty 1971
1966 Doty 1969
2001 present study

***Phyllodictyon anastomosans* (Harv.) Kraft & Wynne**

2001 present study

***Ventricaria ventricosa* (J.Agardh) Olsen & West**

2001 present study

Order BRYOPSIDALES

Family BRYOPSIDACEAE

***Trichosolen oahuensis* (Egerod) Taylor**

1958 BPBM 502059
1959 BPBM 524581
1959 BPBM 524577
1959 BPBM 524582

Family CODIACEAE

***Codium arabicum* Kütz**

1903 BPBM 524879
1903 BPBM 525115
1966 Doty 1971
1983 BPBM 628016
2001 present study

***Codium edule* P. C. Silva**

1903 BPBM 524880
1940 BPBM 515775
1943 BPBM 624451
1954 BPBM 515820
1966 Doty 1971
1966 Doty 1969
1971 Glenn et al 1990
1983 BPBM 624452
2001 present study

***Codium reediae* P.C.Silva**

1954 BPBM 531118
1954 BPBM 516056

Family DERBESIACEAE

***Derbesia* sp.**

2001 present study

Family CAULERPACEAE

***Caulerpa ambigua* Okamura**

1955 BPBM 515933
1955 BPBM 515932
1986 BPBM 653052

***Caulerpa racemosa* (Forss.) J.Agardh**

2001 present study

***Caulerpa serrulata* (Forssk.) J.Agardh**

1923 BPBM 92691

***Caulerpa sertularioides* (Gmel.) Howe**

2001 present study

***Caulerpa* sp.**

1923 Neal 1930
1990 OI Consultants 1991

***Caulerpa webbiana* Mont.**

1923 BPBM 515457
1950 BPBM 515452

***Caulerpella ambigua* (Okamura)**

2001 present study

Family HALIMEDACEAE

***Halimeda discoidea* Decne.**

1951 BPBM 546959
1951 BPBM 546957
1955 BPBM 516426
1966 Doty 1971
1966 Doty 1969

1971 Harger 1972
1971 Glenn et al 1990
1981 AECOS 1981
1988 BPBM 557625
2001 present study

***Halimeda gracilis* Harv. ex J.Agardh**

2001 present study

***Halimeda opuntia* (L.) J.V.Lamour**

1987 AECOS 1987

***Halimeda* sp.**

1990 OI Consultants 1991

Family UDOTEACEAE

***Udotea javensis* (Mont.) A.Gepp & E.Gepp**

1970 BPBM 636588

Order DASYCLADALES

Family DASYCLADALCEAE

***Bornetella sphaerica* (Zanardini) Solms**

1954 BPBM 524392
1971 Harger 1972
1972 BPBM 636591
2001 present study

***Neomeris annulata* Dickie**

1923 Neal 1930
1971 Harger 1972
1987 AECOS 1987
1990 BPBM 648501
1990 OI Consultants 1991
1996 BPBM 644714
2001 present study

***Neomeris vanbosseae* M.Howe**

1989 BPBM 629398
2001 present study

Family ACETABULARIACEAE

***Acetabularia clavata* Yamada**

1954 BPBM 524397

***Acetabularia parvula* Solms**

1944 BPBM 516317
1952 BPBM 524477
1952 BPBM 515360
1954 BPBM 524396

Order PRASIOLALES

Family PRASIOLACEAE

Cladophora seriacea* (Hudson) Kütz as *C. nitida

1908 BPBM 516047

***Cladophora patula* Sakai**

1908 BPBM 190138
1966 Doty 1971

***Cladophora socialis* Kütz.**

2001 present study

***Cladophora* sp.**

2001 present study

***Cladophora vagabunda* (L.) van den Hoek**

1908 BPBM 529982
1908 BPBM 516817
1908 BPBM 529998
1908 BPBM 529996

1908 BPBM 529997
1908 BPBM 516812
1923 BPBM 190124
1943 BPBM 628118
1987 BPBM 628089

***Cladophoropsis adhaerens* Gilbert**

1966 Doty 1971
1990 BPBM 648441

***Cladophoropsis herpestica* (Mont.) M.Howe**

1943 BPBM 628166
1987 BPBM 628120

***Cladophoropsis luxurians* Gilbert**

1966 Doty 1969
1966 Doty 1971
1971 Glenn et al 1990
1971 Harger 1972

***Cladophoropsis membranacea* (C.Agardh) Børgesen**

1946 BPBM 628018
1990 BPBM 652238
2001 present study

***Cladophoropsis* sp.**

2001 present study

Division PHAEOPHYTA

Order ECTOCARPALES

Family ECTOCARPACEAE

***Feldmannia indica* (Sond.) Womersley & A.Bailey**

1956 BPBM 600486
1956 BPBM 600483
1956 BPBM 600485
1956 BPBM 600487

***Feldmannia lebelii* (Aresch. ex. P.L.Crouan & H.M.Crouan) Hamel**

2001 present study

***Hincksia breviarticulata* (J.Agardh) P.C.Silva**

1969 BPBM 636345
1984 BPBM 628054

***Hincksia indica* (Sond.) J.Tanaka**

2001 present study

***Hincksia mitchelliae* (Harv.) P.C.Silva**

1990 BPBM 648450

***Hincksia sandriana* (Zanardini) P.C.Silva**

1990 BPBM 648449

Family RALFSIACEAE

***Mesospora pangoensis* (Setch.) Chihara & J.Tanaka**

1958 BPBM 529202

***Ralfsia expansa* (J.Agardh) J.Agardh**

1958 BPBM 513677
1958 BPBM 513700
1958 BPBM 489435

***Ralfsia* sp.**

1990 OI Consultants 1991

Order CHORDARIALES

Family CHORDARIACEAE

***Nemacystus decipiens* (Suringar) Kuckkuck**

1971 BPBM 513713
1971 Glenn et al 1990

Order SCYTOSIPHONALES

Family SCYTOSIPHONACEAE

Chnoospora implexa **Hering ex J.Agardh**

1963 BPBM 522548

1970 BPBM 636353

Chnoospora minima **(Hering) Papenf.**

1955 BPBM 523860

1955 BPBM 522575

1955 BPBM 515124

1963 BPBM 515123

Chnoospora pannosa **J.Agardh**

1908 BPBM 513443

Colpomenia sinuosa **(Mertens ex Roth) Derbes and Soller**

1923 Neal 1930

1923 Neal 1930

1944 BPBM 624374

1954 BPBM 523169

1959 BPBM 513385

1963 BPBM 91996

1963 BPBM 513361

1966 Doty 1971

1968 BPBM 636347

1971 Glenn et al 1990

1971 Harger 1972

2001 present study

Order SPHACELARIALES

Family SPHACELARIACEAE

Sphacelaria furcigera **Kütz**

1956 BPBM 600493

1987 AECOS 1987

Sphacelaria novae-hollandiae **Sond**

2001 present study

Sphacelaria rigidula **Kütz.**

1958 BPBM 522415

1958 BPBM 522419

1989 BPBM 559727

2001 present study

Sphacelaria tribuloides **Menegh.**

1963 BPBM 513873

1969 BPBM 636346

Sphacelaria **sp.**

1923 Neal 1930

1966 Doty 1971

Order DICTYOTALES

Family DICTYOTACEAE

Dictyopteris australis **(Sond.) Askenasy**

1950 BPBM 513306

1950 BPBM 513299

1955 BPBM 513123

1955 BPBM 513315

1955 BPBM 513297

1955 BPBM 513137

1955 BPBM 513321

1966 Doty 1971

1966 Doty 1969

1971 Glenn et al 1990

1971 Harger 1972
2001 present study

***Dictyopteris plagiogramma* (Mont.) Vickers**

1908 BPBM 513287
1955 BPBM 513356
1955 BPBM 513138
1955 BPBM 513350
1963 BPBM 513339
1966 Doty 1969
1966 Doty 1971
1971 Glenn et al 1990
1971 Harger 1972
1981 AECOS 1981

***Dictyopteris repens* (Okamura) Børgesen**

1988 BPBM 630026
2001 present study

***Dictyopteris* sp.**

1990 OI Consultants 1991

***Dictyota acutiloba* J. Agardh**

1924 BPBM 91444
1924 BPBM 91446
1943 BPBM 624388
1944 BPBM 628145
1955 BPBM 513124
1955 BPBM 513135
1966 Doty 1969
1966 Doty 1971
1971 Harger 1972
1971 Glenn et al 1990
1987 AECOS 1987
2001 present study

***Dictyota bartayresii* J. V. Lamour.**

1987 AECOS 1987

Dictyota ceylanica

2001 present study

***Dictyota crenulata* J.Agardh**

1923 Neal 1930
1955 BPBM 513121
1955 BPBM 513134
1966 Doty 1971
1971 Glenn et al 1990

***Dictyota divaricata* J. V. Lamour.**

1954 BPBM 523937
1955 BPBM 513136
1955 BPBM 513122
1962 BPBM 523942
1963 BPBM 513217
1971 Glenn et al 1990
1989 BPBM 560855

***Dictyota friabilis* Setch**

1952 BPBM 513238
1954 BPBM 523944
1962 BPBM 513251
1962 BPBM 523943
1971 Harger 1972
1989 BPBM 522068
2001 present study

***Dictyota sandvicensis* Kütz**

1987 AECOS 1987
1987 AECOS 1987
2001 present study

***Dictyota* sp.**

1923 Neal 1930
1966 Doty 1971
1990 OI Consultants 1991

***Lobophora variegata* (J.V.Lamour.) Womersley**

1923 BPBM 188619
1923 Neal 1930 (as *Zonaria variegata*)
1954 BPBM 524016
1958 BPBM 522620
1962 BPBM 522618
1962 BPBM 522619
1966 Doty 1971
1971 Harger 1972
1971 Glenn et al 1990
2001 present study

***Padina australis* Hauck**

1962 BPBM 513716
1966 Doty 1969
1988 BPBM 523876
1988 BPBM 523877
1988 BPBM 523878
1988 BPBM 628838

***Padina crassa* Yamada**

1954 BPBM 600478
1954 BPBM 522256
1954 BPBM 522259
1955 BPBM 522260
1962 BPBM 522179
1966 Doty 1971
1971 Glenn et al 1990

***Padina japonica* Yamada**

1966 Doty 1971
1966 Doty 1969
1971 Harger 1972
1971 Glenn et al 1990

***Padina sanctae-crucis* Børgesen**

2001 present study

***Padina* sp.**

1923 Neal 1930
1990 OI Consultants 1991

***Padina thivjii* Doty & Newhouse**

1966 Doty 1971
1966 Doty 1969
1971 Glenn et al 1990

***Stypopodium hawaiiensis* (Doty & Newhouse) I.A.Abbott**

1955 BPBM 487944
1955 BPBM 487943
1958 BPBM 487947
1958 BPBM 522422
2001 present study

***Zonaria hawaiiensis* Doty and Newhouse**

1966 Doty 1971

1971 Glenn et al 1990

***Zonaria variegata* (J.V.Lamour.) Womersley**

1966 Doty 1969

Order FUCALES

Family SARGASSACEAE

***Sargassum echinocarpum* J. Agardh**

1923 Neal 1930

1924 BPBM 91442

1924 BPBM 91447

1944 BPBM 628051

1954 BPBM 523847

1966 Doty 1971

1966 Doty 1969

1971 Glenn et al 1990

1975 BPBM 516097

1992 U. S. Army C. of E. 1992

2001 present study

***Sargassum obtusifolium* J. Agardh**

1923 BPBM 188704

1960 BPBM 523566

1963 BPBM 504502

1966 Doty 1969

1966 Doty 1971

1971 Glenn et al 1990

1975 BPBM 512606

2001 present study

***Sargassum polyphyllum* J. Agardh.**

1923 Neal 1930

1924 BPBM 91443

1944 BPBM 628037

1944 BPBM 628148

1966 Doty 1969

1966 Doty 1971

1971 Glenn et al 1990

1976 BPBM 504510

2001 present study

***Sargassum* sp.**

1990 OI Consultants 1991

***Turbinaria ornata* (Turner) J. Agardh**

1923 Neal 1930

1954 BPBM 513902

1966 Doty 1971

1966 Doty 1969

1971 Glenn et al 1990

1975 BPBM 515300

1990 OI Consultants 1991

2001 present study

Division RHODOPHYTA

Order NEMALIALES

Family ACROCHAETIACEAE

***Acrochaetium robustum* Børgesen**

1956 BPBM 600488

***Acrochaetium seriatum* Børgesen**

2001 present study

Family NEMALIACEAE

***Trichoglea subnuda* Howe, 1934**

1966 Doty 1971

Family BONNEMAISONIACEAE

***Asparagopsis taxiformis* (Delile) Trerisan**

1976 BPBM 517210
1983 BPBM 519400
1990 OI Consultants 1991
2001 present study

Family LIAGORACEAE

***Liagora fragilis* Zanardini**

1946 BPBM 613274

***Liagora* sp.**

1923 Neal 1930
1971 Harger 1972
1990 OI Consultants 1991
2001 present study

Family GALAXAURACEAE

***Actinotrichia fragilis* (Forssk.) Børgesen**

1908 BPBM 188896
1908 BPBM 188898

***Galaxaura apiculata* Kjellman**

1966 Doty 1971

***Galaxaura marginata* (Ellis & Sol.) J.V.Lamour.**

1944 BPBM 613354
1961 BPBM 525194
1963 BPBM 519585
1964 BPBM 517852
1974 BPBM 525107
2001 present study

***Galaxaura obtusata* (Ellis & Sol.) J.V.Lamour.**

2001 present study

***Galaxaura rugosa* (Ellis & Sol.) J. V. Lamour.**

1923 BPBM 519532
1933 BPBM 189836
1933 BPBM 517697
1944 BPBM 613318
1944 BPBM 613309
1944 BPBM 613315
1946 BPBM 613321
1946 BPBM 613317
1952 BPBM 517863
1952 BPBM 517862
1952 BPBM 517856
1983 BPBM 519488
2001 present study

***Galaxaura subfruticulosa* Kjellm.**

1966 Doty 1971

Galaxaura subverticillata Kjellm.

1946 BPBM 613333
2001 present study

***Galaxaura* sp.**

1923 Neal 1930
1966 Doty 1971
1971 Harger 1972

***Scinaia hormoaides* Setch.l**
1971 Harger 1972
***Tricleocarpa fragilis* (L.) Huisman & R.A.Towns.**
1933 BPBM 189838
1959 BPBM 519588
2001 present study
Family HELMINTHOCLADIACEAE
***Trichogloea requienii* (Mont.) Kütz**
2001 present study
Order GELIDIALES
Family GELIDIACEAE
***Gelidium crinale* (Turner) Gaillon**
1941 BPBM 638712
***Gelidium pusillum* (Stackh.) Le Jolis**
2001 present study
***Gelidium rigidum* (Vahl) Grev.**
1946 BPBM 590191
***Pterocladiella caerulescens* (Kütz.) Santel. & Hommers.**
1923 BPBM 106495
1963 BPBM 518206
1978 BPBM 521665
1983 BPBM 524828
2001 present study
***Pterocladiella caloglossoides* (M.Howe) Santel.**
2001 present study
***Pterocladiella capillacea* (J.F.Gmel.) Santel. & Hommers.**
1966 Doty 1971
2001 present study
***Pterocladiella* sp.**
2001 present study
Family GELIDIELLACEAE
***Gelidiella acerosa* (Forrskal) Feld. & Hamel**
1971 Harger 1972
***Gelidiella antipai* Celán**
2001 present study
***Gelidiella machrisiana* E.Y.Dawson**
2001 present study
Order CORALLINALES
Family CORALLINACEAE
***Amphiroa beauvoisii* J.V.Lamour.**
2001 present study
***Amphiroa rigida* J.V.Lamour.**
1944 BPBM 510211
1952 BPBM 510176
2001 present study
***Amphiroa valonioides* Yendo**
2001 present study
***Amphiroa* sp.**
1923 Neal 1930
***Corallina elongata* Ellis & Sol.**
2001 present study
***Corallina* sp.**
1971 Harger 1972
***Haliptilon subulatum* (Ellis & Sol.) Johansen**
1951 BPBM 594089

***Hydrolithon breviclavum* (Foslie) Foslie**

1968 Littler 1971

1981 AECOS 1981

***Hydrolithon reinboldii* (Weber Bosse & Foslie) Foslie**

1968 Littler 1971

1969 BPBM 518711

1987 AECOS 1987

***Hydrolithon* sp,**

2001 present study

1990 OI Consultants 1991

***Jania adhaerens* J.V.Lamour.**

1923 BPBM 189287

1923 BPBM 189286

2001 present study

***Jania micrarthrodia* J.V.Lamour.**

2001 present study

***Jania pumila* J.V.Lamour.**

1933 BPBM 190171

1933 BPBM 189809

1944 BPBM 510210

1971 BPBM 510198

2001 present study

***Jania* sp. (blank)**

1923 Neal 1930

2001 present study

***Lithothamnion* sp.**

1968 Littler 1971

***Neogoniolithon frutescens* (Foslie) Setch. & Mason**

1968 Littler 1971

***Neogoniolithon* sp. (Foslie) Setch. & Mason**

1990 OI Consultants 1991

***Porolithon gardineri* (Foslie) Foslie**

1968 Littler 1971

***Porolithon onkodes* (Heydrich) Foslie**

1968 Littler 1971

2001 present study

***Porolithon* sp. (blank)**

1990 OI Consultants 1991

Family SPOROLITHACEAE

***Sporolithon erythraeum* (Rothpletz) Kylin**

1968 Littler 1971

1981 AECOS 1981

Order CRYPTONEMIALES

Family DUMONTIACEAE

***Gibsmithia hawaiiensis* Doty**

1985 BPBM 590106

Family RHIZOPHYLLIDACEAE

***Portieria hornemannii* (Lyngb.) P.C.Silva**

1923 BPBM 189819

1933 BPBM 189831

1941 BPBM 188969

1943 BPBM 188968

1944 BPBM 638830

1951 BPBM 459777

1964 BPBM 517411

1966 Doty 1971 (as Chondococcus hornemannii)

1970 BPBM 525050
1974 BPBM 525118
1987 AECOS 1987 *as* ***Desmia hornemanni*** **Lyngbe**
1992 BPBM 638790
2001 present study

Family PEYSSONNELIACEA E

Peyssonnelia rubra **(Grev.) J. Agardh**
1971 Harger 1972
1987 AECOS 1987
1990 OI Consultants 1991

Peyssonnelia **sp.**
1923 Neal 1930
2001 present study

Family HALYMENIACEAE

Cryptonemia yendoi **Weber Bosse**
1968 BPB M 517850
1983 BPBM 523225

Grateloupia filicina **J. V. Lamour.) C. Agardh**
1950 BPBM 519755

Grateloupia phuquocensis **Tanaka & P.H.Ho**
1959 BPBM 493324

Halymenia formosa **(Harv. ex Kütz)**
1966 Doty 1971
1987 BPBM 617945

Order GIGARTINALES

Family PLOCAMIACEAE

Plocamium sandvicense **J.Agardh**
1983 BPBM 571065

Plocamium **sp.**
1990 OI Consultants 1991

Family CAULACANTHACEAE

Caulacanthus ustulatus **(Mertens) Kütz.**
2001 present study

Family HYPNEACEA E

Hypnea cervicornis **J. Agardh**
1944 BPBM 638886
1963 BPBM 520166
1966 Doty 1971
1971 Glenn et al 1990
2001 present study

Hypnea musciformis **(Wulfen) J. Agardh** **Introduced**
2001 present study

Hypnea nidifica **J. Agardh**
1923 Neal 1930

Hypnea pannosa **J.Agardh**
2001 present study

Hypnea spinella **(C.Agardh) Kütz.**
2001 present study

Hypnea valentiae **(Turner) Mont.**
2001 present study

Hypneocolax stellaris **Børgesen**
2001 present study

Hypnea **sp.**
1966 Doty 1971
1990 OI Consultants 1991

Order GRACILARIALES

Family GRACILARIACEAE

***Gracilaria bursapastoris* (J. F.Gmel.) P. C.Silva**

2001 present study

***Gracilaria coronopifolia* J.Agardh**

1908 BPBM 518554
1908 BPBM 189031
1908 BPBM 189030
1908 BPBM 518553
1946 BPBM 617916
1968 BPBM 636191
1972 BPBM 636206
2001 present study

***Gracilaria edulis* (S. A. Gmel.) P. C. Silva**

1966 Doty 1969

***Gracilaria parvispora* I.A.Abbott**

1963 BPBM 562155

***Gracilaria salicornia* (C. Agardh, 1820)** **Introduced**

1976 BPBM 561871
1977 BPBM 561872
1978 BPBM 636784
1978 BPBM 636783
1984 BPBM 623638
1985 BPBM 523665
2001 present s tudy
2001 present study

Order RHODYMENIALES

Family RHODYMENIACEAE

***Botryocladia skottsbergii* (Børgesen) Levring**

1973 BPBM 517456
1975 BPBM 518935
1979 BPBM 517229
2001 present study

***Chrysymenia glebosa* I.A.Abbott & Littler**

1956 BPBM 517599
1967 BPBM 517387
1968 BPBM 517598
2001 present study

***Chrysymenia okamurae* Yamada & Segawa**

1967 BPBM 517682
2001 present study

***Chrysymenia procumbens* Weber Bosse**

1959 BPBM 585638

***Coelothrix irregularis* (Harv.) Børgesen**

1955 BPBM 502614
2001 present study

***Gelidiopsis inticata* (C.Agardh) Vickers**

2001 present study

***Gelidiopsis intricata* (C.Agardh) Vickers**

1951 BPBM 521890
1951 BPBM 521888

***Gelidiopsis scoparia* (Mont. & Millardet) De Toni**

1955 BPBM 523170
1955 BPBM 525226
1955 BPBM 525569
1955 BPBM 523440

1955 BPBM 517949
1971 Harger 1972
2001 present study

***Halichrysis coalescens* (Farl.) A.Millar & R.E.Norris**

1942 BPBM 638798
1961 BPBM 488060
1963 BPBM 488062
1966 BPBM 488063
1967 BPBM 524463
1968 BPBM 517614
1968 BPBM 517613
1968 BPBM 489248
1969 BPBM 490768
1969 BPBM 509820
1983 BPBM 523172
2001 present study

***Rhodymenia leptophylla* J.Agardh**

2001 present study

***Rhodymenia* sp.**

2001 present study

Family CHAMPIACEAE

***Champia compressa* Harv.**

1900 BPBM 188822
1908 BPBM 188821
1908 BPBM 188820
1908 BPBM 188819

***Champia parvula* (C. Agardh) Harv.**

1908 BPBM 188823
1946 BPBM 517646
1971 Glenn et al 1990
2001 present study

Family LOMENTARIACEAE

***Lomentaria hakodatensis* Yendo**

2001 present study

Order CERAMIALES

Family CERAMIACEAE

***Aglaothamnion boergesenii* (Aponte & Ballantine) L'Hardy-Halos & Rueness**

2001 present study

***Aglaothamnion cordatum* (Børgesen) Feldm.-Maz.**

2001 present study

***Aglaothamnion* sp.**

2001 present study

***Anotrichium secundum* (Harv. ex J.Agardh) Furnari**

2001 present study

***Anotrichium tenue* (C.Agardh) Nägeli**

2001 present study

***Antithamnion antillanum* Børgesen**

1965 BPBM 472396

***Antithamnionella breviramosa* (E.Y.Dawson) Wollaston**

2001 present study

***Antithamnionella graeffei* (Grunow) Athanas.**

2001 present study

***Centroceras clavulatum* (C. Agardh) Mont.**

1908 BPBM 188782
1908 BPBM 188785
1908 BPBM 188781

1908 BPBM 188786
1908 BPB M 188784
1908 BPBM 188783
1908 BPBM 517466
1923 Neal 1930 (as *Ceramium clavulatum*)
1923 BPBM 188779
1923 BPBM 530679
1934 BPBM 188777
1943 BPBM 188757
1944 BPBM 517274
1944 BPBM 517276
1944 BPBM 517275
1946 BPBM 517470
1946 BPBM 516961
1963 BPBM 91956
2001 present study

***Centroceras corallophiloides* R.E.Norris**

2001 present study

***Ceramium aduncum* Nakamura**

2001 present study

***Ceramium borneense* Weber Bosse**

2001 present study

***Ceramium cingulum* Meneses**

2001 present study

***Ceramium clarionensis* Setch. And N. L. Gardner**

2001 present study

***Ceramium dumosertum* R.E.Norris & I.A.Abbott**

2001 present study

***Ceramium fimbriatum* Setch. and N. L. Gardner**

1990 BPBM 626663
2001 present study

***Ceramium flaccidum* (Kütz) Ardissone**

1900 BPBM 188788
1908 BPBM 188759
2001 present study

***Ceramium hanaense* R.E.Norris & I.A.Abbott**

2001 present study

***Ceramium macilentum* J.Agardh**

2001 present study

***Ceramium* sp.**

no date Doty 1971
1923 Neal 1930
2001 present study

***Ceramium tranquillum* I.Meneses**

2001 present study

***Ceramium vagans* P.C.Silva**

2001 present study

***Crouania mageshimensis* Itono**

2001 present study

***Crouania minutissima* Yamada**

1954 BPBM 600473
2001 present study

***Diplothamnion jolyi* van den Hoek**

2001 present study

***Falkenbergia hillebrandii* (Ardiss.) Falkenb.**

2001 present study

***Gloiocladia iyoensis* (Okamura) R.E.Norris**

2001 present study

***Griffithsia h*eteromorpha Kütz**

2001 present study

***Griffithsia metcalfii* Tseng**

2001 present study

***Griffithsia ovalis* Harv.**

1966 Doty 1971

***Griffithsia schousboei* Mont.**

2001 present study

***Griffithsia subcylindrica* Okamura**

1944 BPBM 590049

***Griffithsia* sp.**

1923 Neal 1930

1966 Doty 1971

2001 present study

***Haloplegma duperreyi* Mont.**

2001 present study

***Ossiella pacifica* A.Millar & I.A.Abbott**

2001 present study

***Spyridia filamentosa* (Wulfen) Harv.**

1923 BPBM 189710

1923 BPBM 189720

1944 BPBM 638724

1966 Doty 1971

1966 Doty 1969

1971 Glenn et al 1990

1971 Harger 1972

1987 BPBM 653403

2001 present study

***Tiffaniella saccorhiza* (Setch. & N.L.Gardner) Doty & Meñez**

1959 BPBM 189747

1959 BPBM 521857

1986 BPBM 525255

2001 present study

Family DELESSERIACEAE

***Dotyella hawaiiensis* (Doty & Wainwr.) Womersley & Shepley**

1989 BPBM 549141

1990 BPBM 637410

2001 present study

***Dotyella irregularis* I.A.Abbott**

2001 present study

***Hypoglossum caloglossoides* M.J.Wynne & Kraft**

1979 BPBM 451522

***Hypoglossum simulans* M.J.Wynne, Price & Ballantine**

2001 present study

***Hypoglossum* sp.**

2001 present study

***Martensia fragilis* Harv.**

1925 BPBM 189529

1951 BPBM 521292

1951 BPBM 521324

1955 BPBM 525559

1973 BPBM 525567

1973 BPBM 523339

1973 BPBM 525578

2001 present study

***Neomartensia flabelliformis* (Harv. ex J. Agardh) Yoshide & Mikami**

2001 present study

***Taenioma perpusillum* J. Agardh (J. Agardh)**

1990 BPBM 525147

Family DASYACEAE

***Dasya corymbifera* J.Agardh**

1923 BPBM 188961
1924 BPBM 188954
1979 BPBM 553816
1980 BPBM 553821
1980 BPBM 554833
1980 BPBM 554831
1980 BPBM 554832
1980 BPBM 553836

***Dasya iridescens* (Schlech) A.Millar & I.A.Abbott**

1943 BPBM 528262
1943 BPBM 188963
1951 BPBM 517793
1954 BPBM 525030
1965 BPBM 508006
2001 present study

***Dasya kristeniae* I.A.Abbott**

2001 present study

***Dasya murrayana* I.A.Abbott & A.Millar**

2001 present study

***Dasya* sp.**

1923 Neal 1930
2001 present study

***Heterosiphonia crispella* (C.Agardh) M.J.Wynne**

2001 present study

Family RHODOMELACEAE

***Acanthophora pacifica* (Setch.) Kraft**

2001 present study

***Acanthophora spicifera* (Vahl) Boerg** **Introduced**

1952 BPBM 517169
1954 BPBM 525031
1963 BPBM 517157
1966 Doty 1969
1966 Doty 1971
1971 Harger 1972
1971 Glenn et al 1990
1983 BPBM 524713
1990 OI Consultants 1991
1998 BPBM 654965
2001 present study

***Ahnfeltiopsis concinna* (J.Agardh) P.C.Silva & De Cew**

1958 BPBM 520005
1973 BPBM 517119

***Ahnfeltiopsis flabelliformis* (Harv.) Masuda**

1944 BPBM 518521
1951 BPBM 519967
1954 BPBM 518519
1958 BPBM 521972
1958 BPBM 525560
1958 BPBM 523347

***Ahnfeltiopsis pygmaea* (J.Agardh) R.E.Norris**

1958 BPBM 523258

1958 BPBM 520002

***Amansia glomerata* C. Agardh**

1966 Doty 1971

1971 Harger 1972

2001 present study

Chondria apiculata

1963 BPBM 585689

Chondria attenuata

1958 BPBM 585687

1958 BPBM 585685

***Chondria dangeardii* E.Y.Dawson**

2001 present study

***Chondria polyrhiza* Collins & Herv.**

2001 present study

***Chondria simpliciuscula* Weber Bosse**

2001 present study

***Cruoriella dubyi* P.Crouan & H.Crouan**

1954 BPBM 512098

***Exophyllum wentii* Weber Bosse**

1957 BPBM 517714

1957 BPBM 517711

***Herposiphonia arcuata* Hollenb.**

1986 BPBM 653837

2001 present study

***Herposiphonia crassa* Hollenb.**

2001 present study

***Herposiphonia delicatula* Hollenb.**

1986 BPBM 519644

2001 present study

***Herposiphonia nuda* Hollenb**

2001 present study

***Herposiphonia obscura* Hollenb.**

2001 present study

***Herposiphonia parca* Setch.**

1986 BPBM 653835

2001 present study

***Herposiphonia* sp.**

1923 Neal 1930

1971 Harger 1972

2001 present study

***Laurencia cartilaginea* Yamada**

1908 BPBM 189344

1908 BPBM 189342

1908 BPBM 189341

***Laurencia majuscula* (Harv.) Lucas**

1944 BPBM 638853

2001 present study

***Laurencia mariannensis* Yamada**

1966 Doty 1971

***Laurencia nidifica* C. Agardh**

1923 Neal 1930

1955 BPBM 520267

1966 BPBM 520243

1966 BPBM 520259

1966 BPBM 520246
1966 BPBM 520251
1966 BPBM 520235
1966 BPBM 520244
1966 BPBM 520257
1966 BPBM 520258
1966 BPBM 520260
1966 BPBM 524457
1966 BPBM 520250
1966 BPBM 524456
1971 Harger 1972
2001 present study

***Laurencia obtusa* (Huds.) J.V.Lamour.**
1908 BPBM 520368

***Laurencia parvipapillata* Tseng**
1966 Doty 1971
2001 present study

Laurencia surculigera
1971 Glenn et al 1990

***Laurencia* sp.**
1923 Neal 1930
1966 Doty 1969
1971 Harger 1972
2001 present study

***Melanamansia fimbrifolia* R.E.Norris**
1974 BPBM 519038

***Melanamansia glomerata* (C.Agardh) R.E.Norris**
1908 BPBM 188922
1908 BPBM 188923
1908 BPBM 188916
1908 BPBM 188921
1942 BPBM 188915
1942 BPBM 188913
1943 BPBM 188914
1968 BPBM 517519

***Neosiphonia hawaiiensis* (Hollenb.) I.A.Abbott**
2001 present study

***Neosiphonia sphaerocarpa* (Børgesen) M.S Kim & I.K.Lee**
2001 present study

***Neosiphonia subtilissima* (Mont.) M.S.Kim & I.K.Lee**
2001 present study

***Neosiphonia* sp.**
2001 present study

***Osmundaria obtusiloba* (C.Agardh) R.E.Norris**
1908 BPBM 531708
1908 BPBM 188927
1908 BPBM 188926

***Polysiphonia exilis* Harv.**
2001 present study

***Polysiphonia hawaiiensis* Hollenb.**
1943 BPBM 594629
1943 BPBM 594648
1961 BPBM 594657
1962 BPBM 594618
1962 BPBM 594650
1965 BPBM 594634

1965 BPBM 594645
1965 BPBM 594655
1965 BPBM 600441

***Polysiphonia howei* Hollenberg**

2001 present study

***Polysiphonia pentamera* Hollenb.**

1990 BPBM 525075

***Polysiphonia savatieri* Hariot**

1962 BPBM 594723
1965 BPBM 594716
1990 BPBM 635529

***Polysiphonia sparsa* (Setch.) Hollenb.**

1942 BPBM 588057

***Polysiphonia sphaerocarpa* Børgesen**

1956 BPBM 587319
1958 BPBM 587310
1962 BPBM 587364
1962 BPBM 587366
1962 BPBM 587332
1962 BPBM 587365
1964 BPBM 587412

***Polysiphonia tongatensis* Harv.**

1962 BPBM 587473

***Polysiphonia* sp.**

1923 Neal 1930
1971 Harger 1972
2001 present study

***Spirocladia hodgsoniae* I.A.Abbott**

2001 present study

***Tolypiocladia glomerulata* (C. Agardh) Schmitz**

1971 Harger 1972
1987 AECOS 1987
2001 present study

***Ululania stellata* Apt & Schlech**

2001 present study

Order TETRASPORALES

Family PALMELLACEAE

***Palmophyllum crassum* (Naccari) Rabenhorst**

1971 Harger 1972

Order DICTYOSIPHONALES

Family PUNCTARIACEAE

***Rosenvingea intricata* (J. Agardh) Børgesen**

1955 BPBM 513679
1963 BPBM 513694
1966 Doty 1971
1969 BPBM 636354
1990 BPBM 557805

PLANTAE

Class MAGNOLIOPHYTA

Order HYDROCHARITALES

Family HYDROCHARITACEAE

***Halophila hawaiiana* Doty & B.Stone**

2001 present study

ANIMALIA

Phylum PORIFERA

Class CALCAREA

Subclass CALCINEA

Order CLATHRINIDA

Family LEUCETTIDAE

***Leucetta* sp.**

1963 BPBM-C 178

Family UNID. CALCAREA

Calcarea sp. blue

2001 present study

Calcarea sp. pineapple

2001 present study

Calcarea sp. pink

2001 present study

Calcarea sp. yellow

2001 present study

Class DEMOSPONGIAE

Subclass HOMOSCLEROMORPHA

Order HOMOSCLEROPHORIDA

Family PLAKINIDAE

***Oscarella* sp.**

2001 present study

Subclass TETRACTINOMORPHA

Order HADROMERIDA

Family CHONDRILLIDAE

***Chondrosia chucalla* de Laubenfels, 1936**

2001 present study

Family SPIRASTRELLIDAE

***Spheciospongia vagabunda* (Ridley, 1884)**

2001 present study

***Spirastrella keaukaha* de Laubenfels, 1951**

2001 present study

Family TETHYIDAE

***Tethya diploderma* Schmidt, 1870**

1928 BPBM-C 205

***Tethya* sp.**

2001 present study

Subclass CERACTINOMORPHA

Order POECILOSCLERIDA

Suborder MICROCIONINA

Family MICROCIONIDAE

***Clathria* sp.2**

2001 present study

***Clathria* sp.3**

2001 present study

Suborder MYXILLINA

Family ANCHINOIDAE

***Phorbas* sp.**

2001 present study

Family COELOSPHAERIDAE

***Lissodendoryx hawaiiana* (de Laubenfels, 1950)**

2001 present study

Family TEDANIIDAE

***Tedania* n.sp.**

2001 present study

***Tedania reticulata* Thiele, 1903** **Cryptogenic**

1963 BPBM-C 174 (as Tedania ignis)

***Tedania* sp.**

1963 BPBM-C 177

Family DESMACIDIDAE

***Iotrochota protea* (de Laubenfels, 1950)**

1990 OI Consultants 1991

2001 present study

Order HAPLOSCLERIDA

Family CALLYSPONGIIDAE

***Callyspongia diffusa* (Ridley, 1884)** **Cryptogenic**

2001 present study

***Callyspongia* sp.1**

2001 present study

***Callyspongia* sp.2**

2001 present study

Family CHALINIDAE

***Adocia* sp.**

2001 present study

***Haliclona* sp.**

2001 present study

Chalinidae n.sp. (purple) **Cryptogenic**

2001 present study

Family NIPHATIDAE

***Gelliodes fibrosa* (Wilson, 1925)** **Introduced**

2001 present study

Order DICTYOCERATIDA

Family THORECTIDAE

***Cacospongia* sp.**

2001 present study

***Hyrtios* sp.**

2001 present study

Family SPONGIIDAE

Hippospongia metachromia

2001 present study

***Spongia oceania* de Laubenfels, 1950**

2001 present study

Order DENDROCERATIDA

Family DYSIDEIDAE

***Dysidea arenaria* Bergquist, 1965** **Cryptogenic**

2001 present study

***Dysidea avara* (Schmidt, 1862)** **Cryptogenic**

2001 present study

***Dysidea* sp.1**

2001 present study

***Dysidea* sp.2**

2001 present study

Family DICTYODENDRILLIDAE

***Dictyodendrilla* sp.**

2001 present study

Phylum CNIDARIA

Class HYDROZOA

Order HYDROIDA

Family AGALOPHENIIDAE

Lytocarpia phyteuma **(Kirchenpauer, 1876)** **New HI Record**

2001 present study

Family EUDENDRIIDAE

Eudendrium **sp.** **Cryptogenic**

2001 present study

Family HALOPTERIDIDAE

Antennella secundaria **(Gmelin, 1791)** **Cryptogenic**

2001 present study

Family HALOCORDYLIDAE

Pennaria disticha **(Goldfuss, 1820)** **Introduced**

2001 present study

Family LAFOEIDAE

Anthohebella parasitica **(Ciamician, 1880)** **Cryptogenic**

2001 present study

Family PLUMULARIIDAE

Halopteris polymorpha **(Billard, 1913)** **Cryptogenic**

2001 present study

Halopteris **sp.**

2001 present study

Plumularia strictocarpa **Pictect, 1893** **Cryptogenic**

2001 present study

Family SERTULARIIDAE

Dynamena quadridentata (Ellis & Solander, 1786) **New HI Record**

2001 present study

Sertularella areyi **Nutting, 1904** **Cryptogenic**

2001 present study

Tridentata distans **(Lamouroux, 1816)** **New HI Record**

2001 present study

Tridentata humpferi **Broch, 1914** **Cryptogenic**

2001 present study

Tridentata ligulata **(Thornely, 1904)** **Cryptogenic, New HI Record**

2001 present study

Tridentata turbinata **(J. V. Lamour., 1816)** **Cryptogenic**

2001 present study

Family SYNTHECIIDAE

Synthecium megathecum **(Billard, 1924)** **Introduced**

2001 present study

Class ANTHOZOA

Subclass OCTOCORALLIA

Order ALCYONACEA

Family CLAVULARIIDAE

Carijoa riisei **(Duchassaing & Michelotti, 1860)** **Introduced**

2001 present study

Family XENIIDAE

Anthelia edmondsoni **(Verrill, 1928)**

1990 OI Consultants 1991

2001 present study

Anthelia **sp.**

1972 Chave et al. 1973

1981 AECOS 1981

Subclass HEXACORALLIA

Order ACTINIARIA

Family ACTINIIDAE

***Anthopleura nigrescens* (Verrill, 1928)**

2001 present study

Family ALICIIDAE

***Triactis producta* Klunzinger, 1877**

2001 present study

Family DIADUMENIDAE

Diadumene leucolena (Verrill, 1866) **Introduced**

2001 present study

Order SCLERACTINIA

Family ACROPORIDAE

***Montipora capitata* (Dana, 1846)**

1928 Edmondson 1928 (as *Montipora verrucosa*)

1981 AECOS 1981 (as *Montipora verrucosa*)

1987 AECOS 1987 (as *Montipora verrucosa*)

1990 Bailey-Bock et al. 1994 (as *Montipora verrucosa*)

1990 OI Consultants 1991 (as *Montipora verrucosa*)

2001 present study

***Montipora flabellata* Studer, 1902**

1928 Edmondson 1928

1987 AECOS 1987

***Montipora patula* Verrill, 1864**

1928 Edmondson 1928

1990 OI Consultants 1991

2001 present study

***Montipora verrilli* Vaughan, 1907**

1928 Edmondson 1928

Family AGARICIIDAE

***Pavona duerdeni* Vaughan, 1907**

no date BPBM-SC 221

1928 Edmondson 1928

1990 OI Consultants 1991

***Pavona varians* Verrill, 1864**

1928 Edmondson 1928

1987 AECOS 1987

1990 OI Consultants 1991

2001 present study

Family DENDROPHYLLIIDAE

***Tubastraea coccinea* Lesson, 1829**

2001 present study

Family FAVIIDAE

***Cyphastrea ocellina* (Dana, 1846)**

1928 Edmondson 1928

1990 OI Consultants 1991

2001 present study

***Favia hawaiiensis* Vaughan, 1907**

1904 BPBM-SC 246

***Leptastrea bottae* Milne Edwards & Haime, 1849**

1904 BPBM-SC 226 (as *Leptastrea agassizi*)

1904 BPBM-SC 229 (as *Leptastrea agassizi*)

1904 BPBM-SC 227 (as *Leptastrea agassizi*)

1904 BPBM-SC 228 (as *Leptastrea agassizi*)

1928 Edmondson 1928 (as *Leptastrea agassizi*)

2001 present study

***Leptastrea purpurea* Dana, 1846**

1928 Edmondson 1928 (as *Favia hawaiiensis*)
1987 AECOS 1987
1990 OI Consultants 1991
2001 present study

Family FUNGIIDAE

***Fungia scutaria* Lamarck, 1801**

1928 Edmondson 1928

Family POCILLOPORIDAE

***Pocillopora damicornis* (Linnaeus, 1758)**

no date BPBM-SC 148
1928 Edmondson 1928 (as *P. caespitosa*)
2001 present study

***Pocillopora eydouxi* Milne Edwards & Haime, 1849**

1990 OI Consultants 1991
2001 present study

***Pocillopora lingulata* Dana, 1846**

no date BPBM-SC 260
1928 Edmondson 1928

***Pocillopora meandrina* Dana, 1846**

1928 Edmondson 1928
1972 Chave et al. 1973
1981 AECOS 1981
1987 AECOS 1987
1990 OI Consultants 1991
1990 Bailey-Bock et al. 1994
1992 U. S. Army C. of E. 1992
2001 present study

Family PORITIDAE

***Porites brighami* Vaughan, 1907**

1990 OI Consultants 1991

***Porites compressa* Dana, 1846**

1972 Chave et al. 1973
1981 AECOS 1981
1990 OI Consultants 1991

***Porites evermanni* Vaughan, 1907**

1928 Edmondson 1928
2001 present study

***Porites lobata* Dana, 1846**

1928 Edmondson 1928
1972 Chave et al. 1973
1981 AECOS 1981
1987 AECOS 1987
1990 Bailey-Bock et al. 1994
1990 OI Consultants 1991
1992 U. S. Army C. of E. 1992
2001 present study

***Porites* sp.**

no date BPBM-SC 130

Family SIDASTREIDAE

***Psammocora* sp.**

2001 present study

***Psammocora stellata* Verrill, 1864**

1928 Edmondson 1928

Order ZOANTHIDEA

Family ZOANTHIDAE

***Palythoa tuberculosa* (Esper, 1791)**

1990 OI Consultants 1991

2001 present study

***Zoanthus* sp.**

2001 present study

Subclass CERIANTIPATHARIA

Order ANTIPATHARIA

Family ANTIPATHIDAE

***Cirrhipathes* sp.**

2001 present study

Phylum PLATYHELMINTHES

Class TURBELLARIA

Order POLYCLADIDA

Suborder ACOTYLEA

Family EUPLANIDAE

***Taenioplana teredini* Hyman, 1944** **Introduced**

1942 BPBM-F 109

1943 BPBM-F 112

1943 BPBM-F 110

1943 BPBM-F 111

1944 BPBM-F 113

1944 BPBM-F 116

1944 BPBM-F 115

Family STYLOCHOPLANIDAE

***Stylochoplana inquilina* Hyman, 1950**

1948 BPBM-F 125

1948 BPBM-F 127

1949 BPBM-F 126

1950 BPBM-F 123

1950 BPBM-F 124

Phylum NEMERTEA

Class ANOPLA

Order HETERONEMERTEA

Family BASEODISCIDAE

***Baseodiscus univittatus* (Coe, 1906)**

no date BPBM-G 174

Phylum ANNELIDA

Class POLYCHAETA

Family POLYNOIDAE

***Hololepidella nigropunctata* (Horst, 1915)**

1929 BPBM-R 1500

1929 BPBM-R 1499

1929 BPBM-R 1498

1971 BPBM-R 562

***Hololepidella* sp.**

1965 BPBM-R 279

1965 BPBM-R 281

***Iphione muricata* (Savigny, 1818)**

1945 BPBM-R 925

2001 present study

***Lepidasthenia alba* (Treadwell, 1906)**

1946 BPBM-R 480

Lepidonototus havaicus

2001 present study

***Thormora atrata* (Treadwell, 1940)**
2001 present study
unid. Polynoidae
2001 present study
Family CHRYSOPETALIDAE
***Paleanotus* sp.**
2001 present study
Family AMPHINOMIDAE
***Chloeia flava* (Pallas, 1766)**
2001 present study
***Eurythoe complanata* (Pallas, 1766)**
1921 BPBM-R 245 (as *Eurythoe pacifica*)
1922 BPBM-R 1425
1927 BPBM-R 1079 (as *Eurythoe pacifica*)
1927 BPBM-R 1426
1937 BPBM-R 1428
1946 BPBM-R 357
1946 BPBM-R 339
1947 BPBM-R 335
1947 BPBM-R 358
2001 present study
***Pherecardia striata* (Kinberg, 1857)**
1946 BPBM-R 359
1946 BPBM-R 345
2001 present study
Family PISIONIDAE
***Pisione africana* Day, 1963**
2001 present study
Family PHYLLODOCIDAE
***Phyllodoce* (*Anaitides*) *madeirensis* (Langerhans, 1880)**
2001 present study
***Phyllodoce* (*Anaitides*) *parva* (Hartmann-Schroder, 1965)**
2001 present study
***Phyllodoce* (*Phyllodoce*) *hiatti* Hartman, 1966**
2001 present study
***Phyllodoce* (*Phyllodoce*) sp.**
2001 present study
***Phyllodoce* sp.**
no date BPBM-R 1484
unid. Phyllodocidae
2001 present study
Family HESIONIDAE
unid. Hesionidae
2001 present study
Family SYLLIDAE
***Autolytus* sp.**
2001 present study
***Branchiosyllis exilis* (Gravier, 1900)**
2001 present study
***Haplosyllis spongicola* (Grube, 1855)**
2001 present study
***Trypanosyllis* sp.**
2001 present study
***Trypanosyllis zebra* (Grube, 1860)**
2001 present study

***Typosyllis prolifera* Krohn, 1852**

2001 present study

***Typosyllis* sp.**

2001 present study

***Typosyllis* sp.1**

2001 present study

Syllidae sp.3

2001 present study

unid. Syllidae

2001 present study

Family NEREIDIDAE

***Ceratonereis tentaculata* Kinberg, 1866**

2001 present study

***Neanthes succinea* Frey and Leuckart, 1847** **Introduced**

1945 BPBM-R 1022 (as *Nereis succinea*)

***Nereis* sp.**

no date BPBM-R 1476

no date BPBM-R 1473

1921 BPBM-R 1469

Nereididae sp.3

2001 present study

unid. Nereididae

2001 present study

Family EUNICIDAE

***Eunice afra* Peters, 1854**

2001 present study

***Eunice antennata* (Savigny, 1820)**

1921 BPBM-R 243

1946 BPBM-R 433

1947 BPBM-R 425

2001 present study

***Eunice cariboea* (Grube, 1856)**

2001 present study

***Eunice filamentosa* Grube, 1856**

2001 present study

***Eunice* sp.**

no date BPBM-R 1460 (as *Leodice* sp.)

1923 BPBM-R 1456 (as *Leodice* sp.)

1928 BPBM-R 1462 (as *Leodice* sp.)

1929 BPBM-R 1465 (as *Leodice* sp.)

1929 BPBM-R 1464 (as *Leodice* sp.)

1929 BPBM-R 1466 (as *Leodice* sp.)

***Lysidice ninetta* Audouin and Milne Edwards, 1833**

1923 BPBM-R 1526

2001 present study

***Lysidice* sp.**

1929 BPBM-R 1447

***Lysidice* sp.1**

2001 present study

***Marphysa sanguinea* Montagu, 1815**

no date BPBM-R 416

***Nematonereis unicornis* Schmarda, 1861**

2001 present study

***Oenone* sp.** **New HI Record**

2001 present study

***Palola siciliensis* (Grube, 1840)**

1945 BPBM-R 1066
1946 BPBM-R 393
2001 present study

Family DORVILLEIDAE

***Dorvillea moniloceras* (Moore, 1909)**

no date BPBM-R 810
1928 BPBM-R 816
1929 BPBM-R 815
1930 BPBM-R 814
1930 BPBM-R 812
1946 BPBM-R 387
1946 BPBM-R 385

***Dorvillea* sp.**

2001 present study

Family SPIONIDAE

unid. Spionidae

2001 present study

Family MAGELONIDAE

***Magelona* sp.**

2001 present study

Family CIRRATULIDAE

***Cirratulus* sp.**

no date BPBM-R 1455
no date BPBM-R 1453
no date BPBM-R 1452
1929 BPBM-R 1450

***Cirriformia punctata* (Grube, 1856)**

2001 present study

***Cirriformia* sp.**

2001 present study

Family CHAETOPTERIDAE

***Phyllochaetopterus verrilli* Treadwell, 1943**

2001 present study

Family OPHELIIDAE

***Armandia intermedia* Fauvel, 1902** **Cryptogenic**

2001 present study

***Polyophthalmus pictus* Dujardin, 1839**

2001 present study

Family CAPITELLIDAE

***Capitella* sp. (Fabricus, 1780)** **Cryptogenic**

2001 present study

Family MALDANIDAE

***Axiothella quadrimaculata* Augenev, 1914** **New HI Record**

2001 present study

Family TEREBELLIDAE

***Loimia medusa* (Savigny, 1818)**

1987 AECOS 1987
2001 present study

***Nicolea gracilibranchis* (Grube, 1878)**

1946 BPBM-R 546
2001 present study

Terebellides stroemi **New HI Record**

2001 present study

Family SABELLIDAE

***Branchiomma nigromaculata* (Baird, 1865)** **Cryptogenic**

2001 present study

***Hypsicomus phaeotaenia* (Schmarda, 1861)**

2001 present study

unid. Sabellidae

2001 present study

Family SERPULIDAE

***Ficopomatus* sp.**

1943 BPBM-R 1124 (as *Mercierella* sp.)

***Hydroides crucigera* (Morch, 1863)** **Introduced**

2001 present study

***Hydroides dirampha* (Morch, 1863)** **Introduced**

1937 BPBM-R 1092 (as *Hydroides lunulifera*)

1943 BPBM-R 1097 (as *Hydroides lunulifera*)

***Protula atypha* Bush, 1904**

1937 BPBM-R 1413

1937 BPBM-R 1412

1937 BPBM-R 1414

1937 BPBM-R 1411

***Spirobranchus giganteus corniculatus* (Grube, 1862)**

2001 present study

2001 present study

***Vermiliopsis multiannulata* (Moore, 1923)**

1937 BPBM-R 1302 (as *Vermiliopsis hawaiiensis*)

1937 BPBM-R 1299 (as *Vermiliopsis hawaiiensis*)

1938 BPBM-R 1303 (as *Vermiliopsis hawaiiensis*)

***Vermiliopsis torquata* Treadwell, 1943**

1937 BPBM-R 1319

1937 BPBM-R 1314

1938 BPBM-R 1320

2001 present study

Family SPIRORBIDAE

***Nidificaria dalestraughanae* (Vine, 1972)**

no date BPBM-R 637 (as *Pileolaria dalestraughanae*)

unid. Spirorbidae

2001 present study

Phylum SIPUNCULA

Class PHASCOLOSOMATIDEA

Order ASPIDOSIPHONIFORMES

Family ASPIDOSIPHONIDAE

***Aspidosiphon* (*Parspidosiphon*) *steenstrupii* Diesing, 1859**

2001 present study

***Aspidosiphon elegans* (Chamisso and Eysenhardt, 1821)**

2001 present study

***Lithacrosiphon cristatus cristatus* (Sluiter, 1902)**

2001 present study

Order PHASCOLOSOMATIFORMES

Family PHASCOLOSOMATIDAE

***Antillesoma antillarum* (Grube and Oersted, 1858)**

1927 BPBM-N 130 (as *Phascolosoma antillarum*)

2001 present study

***Phascolosoma nigrescens* Keferstein, 1865**

1921 BPBM-N 138

2001 present study

***Phascolosoma scolops* Selenka & de Man, 1883**
2001 present study
***Phascolosoma* sp.**
1963 BPBM-N 104
***Phascolosoma stephensoni* (Stephen, 1942)**
no date BPBM-N 178
1921 BPBM-N 177
2001 present study

Class SIPUNCULIDEA
Order SIPUNCLULIFORMES
Family SIPUNCULIDAE
***Sipunculus* sp.**
1963 BPBM-N 105

Phylum MOLLUSCA
Class GASTROPODA
Subclass PROSOBRANCHIA
Order ARCHAEOGASTROPODA
Family SCISSURELLIDAE
***Sinezona insignis* (Smith, 1910)**
2001 present study
Family FISSURELLIDAE (DIODORINAE)
***Diodora granifera* (Pease, 1861)**
1933 BPBM 225796
1936 BPBM 225800
2001 present study
***Diodora octagona* (Reeve, 1850)**
2001 present study
***Diodora ruppelli* (Sowerby, 1834)** **Introduced**
2001 present study
Family FISSURELLIDAE (EMARGINULINAE)
***Tugali oblonga* (Pease, 1861)**
1935 BPBM 225978 (as *Hemitoma oblonga*)
Family PHASIANELLIDAE
***Tricolia* (*Hiloa*) *variabilis* (Pease, 1861)**
1917 BPBM 227922
1936 BPBM 227916
1939 BPBM 227923
2001 present study
Family SKENEIDAE
***Cyclostremiscus emeryi* (Ladd, 1966)**
2001 present study
***Lophocochlias minutissimus* (Pilsbry, 1921)**
2001 present study
Family STOMATELLIDAE
***Synaptocochlea concinna* (Gould, 1845)**
2001 present study
Family TROCHIDAE (ENCYCLINAE)
***Euchelus gemmatus* (Gould, 1845)**
1916 BPBM 226698
1916 BPBM 226697
1936 BPBM 226704
2001 present study
***Gibbula marmorea* (Pease, 1861)**
1936 BPBM 226968
2001 present study

Family TROCHIDAE (TROCHINAE)

***Alcyna ocellata* Hickman & McLean, 1995**

2001 present study

***Alcyna subangulata* Hickman & McLean, 1995**

2001 present study

***Thalotia ocellata* (Adams, 1861)**

1917 BPBM 226982
1935 BPBM 226983
1936 BPBM 226974

***Thalotia subangulata* (Pease, 1861)**

1936 BPBM 226987

***Trochus intextus* Kiener, 1850**

1935 BPBM 227210
1939 BPBM 227969
1943 BPBM 240175
2001 present study

Family TURBINIDAE (COLLONINAE)

***Leptothyra candida* (Pease, 1861)**

1939 BPBM 227834

***Leptothyra rubricincta* (Mighels, 1845)**

1936 BPBM 227862
2001 present study

***Leptothyra verruca* (Gould, 1845)**

1917 BPBM 227881
1936 BPBM 227886
1936 BPBM 227876
1936 BPBM 227889
1939 BPBM 227970
2001 present study

Family TURBINIDAE (TURBININAE)

***Turbo sandwicensis* Pease, 1861**

1923 BPBM 227654
1943 BPBM 240177
2001 present study

***Turbo* sp.**

2001 present study

Family NERITIDAE (NERITINAE)

***Nerita picea* (Recluz, 1841)**

1923 BPBM 228136

***Theodoxus cariosus* (Wood, 1828)**

1912 BPBM 64293 (as *Neritina cariosa*)

***Theodoxus neglectus* (Pease, 1868)**

1958 BPBM 205250 (as *Nerita neglecta*)

***Theodoxus vespertinus* (Sowerby, 1849)**

1909 BPBM 64306 (as *Neritina vespertina*)

Family NERITIDAE (SMARAGDIINAE)

***Smaragdia bryanae* Pilsbry, 1917**

2001 present study

Order NEOTAENIOGLOSSA

Suborder DISCOPODA

Family CERITHIIDAE

***Bittium impendens* (Hedley, 1899)**

1936 BPBM 229431
2001 present study

***Bittium parcum* (Gould, 1861)**

1936 BPBM 229441

***Bittium zebrum* (Kiener, 1841)**
1936 BPBM 229458
2001 present study
***Cerithium atromarginatum* Dautzenberg and Bouge, 1933**
1936 BPBM 229477
2001 present study
***Cerithium boeticum* Pease, 1860**
2001 present study
***Cerithium columna* Sowerby, 1834**
2001 present study
***Cerithium echinatum* New record: Houbrick, 1992**
2001 present study
***Cerithium egenum* Gould, 1849**
1936 BPBM 229494
2001 present study
Cerithium hawaiiensis Tinker, 1952
1962 BPBM 217862
***Cerithium interstriatum* Sowerby, 1855**
1936 BPBM 229504
2001 present study
***Cerithium mutatum* Sowerby, 1834**
1935 BPBM 229510
***Cerithium nesioticum* Pilsbry and Vanatta, 1905**
1936 BPBM 229558
2001 present study
***Cerithium placidum* Gould, 1861**
1916 BPBM 229517
1936 BPBM 229569
***Cerithium* sp.**
2001 present study
***Cerithium zebrum* Kiener, 1884**
2001 present study
***Ittibittium parcum* (Gould, 1861)**
1962 BPBM 217862 as *Cerithium hawaiiensis*
2001 present study
***Pleisotrochus luteus* (Gould, 1861)**
2001 present study
***Rhinoclavis articulata* (Adams and Reeve, 1850)**
1916 BPBM 229562
1935 BPBM 229566
***Rhinoclavis fasciata* (Bruguière, 1792)**
1918 BPBM 229518

Family DIALIDAE

***Cerithidium diplax* (Watson, 1886)**
2001 present study
***Cerithidium perparvulum* (Watson, 1886)**
1915 BPBM 229350
2001 present study
***Diala scopulorum* (Watson, 1886)**
1916 BPBM 229358
***Diala semistriata* (Philippi, 1845)**
2001 present study
***Diala varia* Adams, 1861**
1917 BPBM 229359
1936 BPBM 229362

Family MODULIDAE

***Modulus tectum* (Gmelin, 1791)**

1916 BPBM 229328
1936 BPBM 229336
2001 present study

Family OBTORTIONIDAE

***Finella pupoides* Adams, 1860**

1916 BPBM 229371
1935 BPBM 229374

Family PLANAXIDAE

***Planaxis suturalis* Smith, 1872**

1936 BPBM 229310

Family PLESIOTROCHIDAE

***Plesiotrochus luteus* (Gould, 1861)**

1914 BPBM 229931
1936 BPBM 229935

Family LITTORINIDAE (LITTORININAE)

***Littoraria pintado* (Wood, 1828)**

1923 BPBM 228518 (as *Littorina pintado*)
1923 BPBM 228519 (as *Littorina pintado*)

***Littoraria scabra* (Linnaeus, 1758)**

1913 BPBM 63605 (as *Littorina scabra*)

***Nodilittorina hawaiensis* Rosewater & Kadolsky, 1981**

1923 BPBM 228557 (as *Nodilittorina picta*)
1924 BPBM 228562 (as *Nodilittorina picta*)

Family CINGULOPSIDAE

***Rufodardanula ponderi* Kay, 1979**

2001 present study

Family EATONIELLIDAE

***Eatoniella* (*Dardaniopsis*) *pigmenta* Kay, 1979**

2001 present study

Family ASSIMENEIDAE

***Assiminea nitida* (Pease, 1865)**

1917 BPBM 44016

Family BARLEEIDAE

***Barleeia calcarea* Kay, 1979**

2001 present study

***Barleeia* sp.**

1936 BPBM 230899

Family CAECIDAE

***Caecum sepimentum* de Folin, 1867**

1917 BPBM 229225
2001 present study

Family RISSOIDAE (RISSOINAE)

***Alvinia isolata* (Laseron, 1956)**

2001 present study

***Parashiela beetsi* Ladd, 1966**

2001 present study

***Pusillina marmorata* Ponder, 1985**

2001 present study

***Sansonia kenneyi* (Ladd, 1966)**

2001 present study

***Vitricithna marmorata* (Hedley, 1907)**

1936 BPBM 230878

Family RISSOIDAE (RISSOININAE)

***Merelina granulosa* (Pease, 1862)**
1936 BPBM 228931

***Merelina hewa* Kay, 1979**
1936 BPBM 228937

***Pyramidelloides gracilis* Ponder, 1985**
2001 present study

***Rissoina ambigua* (Gould, 1849)**
1936 BPBM 228829
2001 present study

***Rissoina cerithiiformis* Tryon, 1887**
2001 present study

***Rissoina imbricata* Gould, 1861**
2001 present study

***Rissoina miltozona* Tomlin, 1915**
1917 BPBM 228834
1936 BPBM 228843

***Rissoina pulchella* (Brazier, 1877)**
1915 BPBM 228849
2001 present study

***Rissoina triticea* Pease, 1861**
2001 present study

***Rissoina turricula* Pease, 1861**
1936 BPBM 228860

***Schwartziella ephamilla* (Watson, 1886)**
1917 BPBM 228916 as ***Rissoina bryani***
2001 present study

***Schwartziella gracilis* (Pease, 1861)**
1936 BPBM 228867

***Schwartziella triticea* Pease, 1861**
1936 BPBM 228879
1936 BPBM 228882

***Zebina bidentata* (Philippi, 1845)**
2001 present study

***Zebina imbricata* (Gould, 1861)**
1936 BPBM 228885
2001 present study

***Zebina semiplicata* (Pease, 1862)**
1936 BPBM 228903

***Zebina* sp.**
2001 present study

***Zebina tridentata* (Michaud, 1830)**
1916 BPBM 228889
1936 BPBM 228895
2001 present study

Family STROMBIDAE

***Strombus dentatus* Linnaeus, 1759**
1916 BPBM 230903

***Strombus helli* Kiener, 1843**
1916 BPBM 230908
1935 BPBM 230911

***Strombus maculatus* Sowerby, 1842**
1924 BPBM 230931
1935 BPBM 230917
2001 present study

Family HIPPONICIDAE

***Hipponix* (*Antisabia*) *foliaceus* (Quoy and Gaimard, 1835)**

1935 BPBM 231292
1935 BPBM 231309 (as *Hipponix foliaceus*)
2001 present study

***Hipponix* (*Cochlear*) *imbricatus* Gould, 1846**

1935 BPBM 231306
1936 BPBM 231308

***Hipponix* (*Pilosabia*) *pilosus* (Deshayes, 1832)**

1935 BPBM 231313
2001 present study

***Hipponix australis* Lamarck, 1819** **Cryptogenic**

1915 BPBM 231317 (as *Sabia conica*)
1916 BPBM 231318 (as *Sabia conica*)
1924 BPBM 231325 (as *Sabia conica*)
2001 present study

***Hipponix* sp.**

1972 Chave et al. 1973
1981 AECOS 1981

Family VANIKORIDAE

***Vanikoro acuta* (Recluz, 1844)**

2001 present study

***Vanikoro imbricata* Pease, 1861**

1939 BPBM 231493

***Vanikoro* sp.**

1935 BPBM 231502
2001 present study

Family CALYPTRAEIDAE

***Cheilea equestris* (Linnaeus, 1758)**

1935 BPBM 231361
1936 BPBM 231363

***Crepidula aculeata* (Gmelin, 1791)** **Introduced**

2001 present study

***Crepidula* sp.**

1958 BPBM 205274

***Crucibulum* sp.**

1958 BPBM 205275

Family VERMETIDAE

***Dendropoma platypus* Mörch, 1861**

1935 BPBM 229144
1936 BPBM 229151

***Dendropoma rhyssoconcha* Hadfield and Kay, 1972**

2001 present study

***Dendropoma* sp.**

2001 present study

***Eualetes tulipa* (Chenu, 1843)** **Introduced**

2001 present study

***Petaloconchus calodium* Dall, 1922**

1935 BPBM 229150

***Petaloconchus keenae* Hadfield and Kay, 1972**

2001 present study

***Vermetus* sp.**

2001 present study

Family CYPRAEIDAE

***Cypraea caputserpentis* Linnaeus, 1758**
1923 BPBM 231725
2001 present study
***Cypraea fimbriata* Gmelin, 1791**
1935 BPBM 231688
1936 BPBM 231691
2001 present study
***Cypraea gaskoini* Reeve, 1846**
1936 BPBM 231700
***Cypraea granulata* Pease, 1863**
1936 BPBM 231707
***Cypraea helvola* Linnaeus, 1758**
1932 BPBM 197228
1935 BPBM 231766
1936 BPBM 231770
2001 present study
***Cypraea isabella* Linnaeus, 1758**
1916 BPBM 231779
1936 BPBM 231795
2001 present study
***Cypraea leviathan* Schilder and Schilder, 1938**
1916 BPBM 231805
1936 BPBM 231810
***Cypraea maculifera* Schilder, 1932**
1916 BPBM 231815
1936 BPBM 231832
***Cypraea poraria* Linnaeus, 1758**
1936 BPBM 231870
***Cypraea schilderorum* (Iredale, 1939)**
1936 BPBM 231908
***Cypraea semiplota* Mighels, 1845**
1916 BPBM 231878
1930 BPBM 69193
1939 BPBM 231888
***Cypraea sulcidentata* Gray, 1824**
1936 BPBM 231902
***Cypraea teres* Gmelin, 1791**
1923 BPBM 231914
1936 BPBM 231920
***Cypraea tessellata* Swainson, 1822**
1916 BPBM 231925
***Cypraea tigris* Linnaeus, 1758**
1946 BPBM 233340
1990 OI Consultants 1991
***Cypraea vitellus* Linnaeus, 1758**
1945 BPBM 231937
***Cypraea* sp.**
2001 present study

Family ERATOIDAE

***Erato sandwicensis* Pease, 1860**
2001 present study

Family TRIVIIDAE

***Trivia edgari* Shaw, 1909**
1916 BPBM 231583
1935 BPBM 231588
1936 BPBM 231581

1936 BPBM 231590
2001 present study

***Trivia exigua* Gray, 1831**
1936 BPBM 231577

***Trivia globosa* pilula Kiener, 1843**
1936 BPBM 231580

Trivia hordacea Kiener, 1845
1936 BPBM 231600 (as *Trivia* cf. *hordacea*)
2001 present study

***Trivia pellucida* Reeve, 1846**
1916 BPBM 231606
1936 BPBM 231608
2001 present study

***Trivia* sp.**
2001 present study

Family NATICIDAE (NATICINAE)

***Natica gualteriana* Récluz, 1844**
1924 BPBM 233469
1935 BPBM 233475

Family NATICIDAE (POLINICINAE)

***Polinices peselephanti* (Link, 1807)**
1935 BPBM 233485

***Polinices simiae* (Deshayes in Deshayes and Edwards, 1838)**
1935 BPBM 233490 (as *Mammilla simiae*)

***Polinices tumidus* (Swainson, 1840)**
1916 BPBM 233493
1935 BPBM 233499

Family NATICIDAE (SININAE)

***Eunaticina margaritaeformis* Dall, 1924**
1935 BPBM 233455

Family BURSIDAE

***Bursa cruentata* Sowerby, 1841**
1939 BPBM 233964

***Bursa granularis* (Röding, 1798)**
1936 BPBM 233957

***Bursa rosa* (Perry, 1811)**
1916 BPBM 233989
1935 BPBM 233993

***Bursa* sp.**
2001 present study

Family CASSIDAE (CASSINAE)

***Cassis cornuta* (Linnaeus, 1758)**
1917 BPBM 233783
1935 BPBM 233784
1946 BPBM 233785
1987 AECOS 1987
2001 present study

Family CASSIDAE (PHALINAE)

***Casmaria ponderosa* (Gmelin, 1791)**
1916 BPBM 233778
1935 BPBM 233781

***Phalium* (*Semicassis*) *umbilicatum* (Pease, 1861)**
1916 BPBM 233786
1935 BPBM 233787

Family RANELLIDAE (CYMATIINAE)

***Cymatium* (*Cymatium*) *nicobaricum* (Röding, 1798)**

1923 BPBM 233896

***Cymatium* (*Gutturnium*) *muricinum* (Röding, 1798)**

1924 BPBM 233914

1936 BPBM 233920

***Cymatium* (*Septa*) *aquatile* (Reeve, 1844)**

2001 present study

***Cymatium* (*Septa*) *gemmatum* (Reeve, 1844)**

1925 BPBM 233971

***Cymatium* (*Septa*) *intermedius* (Pease, 1869)**

1923 BPBM 233938

1935 BPBM 233941

2001 present study

***Cymatium* (*Septa*) *rubeculum* (Linnaeus, 1758)**

1936 BPBM 233946

***Cymatium* (*Septa*) *vespacium* (Lamarck, 1822)**

1935 BPBM 233972

***Cymatium* sp.**

1958 BPBM 205273

2001 present study

Family RANELLIDAE (RANELLINAE)

***Gyrineum pusillum* (Broderip, 1832)**

1935 BPBM 233986

1936 BPBM 233982

2001 present study

Family TONNIDAE

Malea pomum (Linnaeus, 1758)

1935 BPBM 234405

Suborder PTENOGLOSSA

Family CERITHIOPSIDAE

***Cerithiopsis arga* Kay, 1979**

1917 BPBM 229939

1935 BPBM 229950

1935 BPBM 229943

1936 BPBM 229949

1936 BPBM 229941

1936 BPBM 229965

2001 present study

***Joculator granata* Kay, 1979**

1936 BPBM 229973

1939 BPBM 229968

2001 present study

***Joculator turrigera* (Watson, 1886)**

1917 BPBM 229951

1935 BPBM 229956

1936 BPBM 229983

1936 BPBM 229954

2001 present study

***Joculator uveanum* (Melvill and Standen, 1896)**

2001 present study

***Joculator* sp.**

2001 present study

Family TRIPHORIDAE (INIFORINAE)

***Iniforis aemulans* (Hinds, 1843)**

1917 BPBM 230018
1935 BPBM 230005
1936 BPBM 230011
1936 BPBM 230003
2001 present study

***Iniforis concors* (Hinds, 1843)**

1917 BPBM 230024
1936 BPBM 230027

***Iniforis hinuhinu* Kay, 1979**

1917 BPBM 230036
1917 BPBM 230035
1935 BPBM 230032
1936 BPBM 230038

***Iniforis* sp.**

2001 present study

Family TRIPHORIDAE (MASTONIINAE)

***Cautor intermissa* (Laseron, 1958)**

1936 BPBM 230051
2001 present study

***Cautor minima* (Pease, 1871)**

1936 BPBM 230056
2001 present study

***Cautor similis* (Pease, 1871)**

1936 BPBM 230068
1936 BPBM 230065
1936 BPBM 230078
1939 BPBM 230064
2001 present study

***Mastonia cingulifera* (Pease, 1861)**

1936 BPBM 230090
1939 BPBM 230094
2001 present study

***Mastonia gracilis* (Pease, 1871)**

1936 BPBM 230101
1936 BPBM 230103
2001 present study

***Mastonia troglodytes* (Hervier, 1897)**

1936 BPBM 230106

***Viriola abbotti* (Baker and Spicer, 1935)**

1936 BPBM 230117
2001 present study

***Viriola bayani* Jousseaume, 1884**

1935 BPBM 230122

***Viriola cancellata* Hinds, 1843**

1935 BPBM 230123

***Viriola fallax* Kay, 1979**

1917 BPBM 230162
1917 BPBM 230166
1917 BPBM 230135
1936 BPBM 230164
1936 BPBM 230168

***Viriola flammulata* (Pease, 1871)**

1936 BPBM 230126
1937 BPBM 230130

***Viriola incisa* (Pease, 1861)**

1917 BPBM 230146
1917 BPBM 230134
1936 BPBM 230158
1936 BPBM 230140
1936 BPBM 230151
2001 present study

***Viriola* sp.**

2001 present study

Family TRIPHORIDAE (METAXIINAE)

***Metaxia albicephala* Kay, 1979**

1917 BPBM 229994
1936 BPBM 229993

***Metaxia brunnicephala* Kay, 1979**

1936 BPBM 230000
2001 present study

***Metaxia* sp.**

1935 BPBM 230002

***Metaxia tricarinata* (Pease, 1861)**

1936 BPBM 230001

Family TRIPHORIDAE (TRIPHORINAE)

***Triphora bicolor* (Pease, 1868)**

1935 BPBM 230175
1936 BPBM 230174
1936 BPBM 230171

***Triphora chrysolitha* Kay, 1979**

1917 BPBM 230177
1935 BPBM 230178
1936 BPBM 230181

***Triphora coralina* (Laseron, 1958)**

1917 BPBM 230187
1936 BPBM 230191
2001 present study

***Triphora lutea* (Kosuge, 1962)**

1935 BPBM 230198

Triphora oryza

1917 BPBM 230376

***Triphora pallida* (Pease, 1871)**

1936 BPBM 230203
1939 BPBM 230208
2001 present study

***Triphora peasi* (Jousseaume, 1884)**

1935 BPBM 230215
1936 BPBM 230220
2001 present study

***Triphora tessellata* (Kosuge, 1963)**

1917 BPBM 230229
1917 BPBM 230233

***Triphora thaanumi* Kay, 1979**

1939 BPBM 230240

***Triphora tuberculata* (Pease, 1871)**

1935 BPBM 230248
1936 BPBM 230247
1936 BPBM 230245

***Triphora* sp.**

2001 present study

Family EPITONIIDAE

***Epitonium alatum* (Sowerby, 1844)**

1917 BPBM 230381

***Epitonium perplexum* (Deshayes, 1863)**

1936 BPBM 230398

***Epitonium* sp.**

1936 BPBM 230411

***Opalia* (*Nodiscala*) *attenuata* (Pease, 1861)**

1939 BPBM 230405

Family JANTHINIDAE

***Janthina fragilis* Lamarck, 1801**

1914 BPBM 64075

1914 BPBM 64083

***Janthina globosa* Swainson, 1822**

1914 BPBM 64088

Family EULIMIDAE

***Balcis acanthyllis* (Watson, 1886)**

2001 present study

***Balcis aciculata* (Pease, 1861)**

1935 BPBM 230683

1936 BPBM 230727

1936 BPBM 230536

1936 BPBM 230724

1936 BPBM 230549

2001 present study

***Balcis brunnimaculata* Kay, 1979**

1936 BPBM 230636

1936 BPBM 230722

2001 present study

***Balcis bryani* (Pilsbry, 1917)**

1936 BPBM 230555

1936 BPBM 230726

1937 BPBM 230554

Balcis* cf. *subpellucida

1936 BPBM 230607

***Balcis conoidalis* (Sowerby, 1865)**

1936 BPBM 230728

2001 present study

***Balcis cumingii* (Adams, 1854)**

1936 BPBM 230729

1936 BPBM 230574

1936 BPBM 230573

***Balcis inflexa* (Pease, 1868)**

2001 present study

***Balcis kanaka* (Pilsbry, 1917)**

1936 BPBM 230584

1936 BPBM 230581

1936 BPBM 230730

2001 present study

***Balcis solidula* (Adams and Reeve, 1848)**

1936 BPBM 230604

1936 BPBM 230731

1936 BPBM 230605

***Balcis thaanumi* (Pilsbry, 1917)**

1936 BPBM 230725

***Balcis* sp.**

1936 BPBM 230732

2001 present study

***Echineulima mittrei* Petit, 1851**

1931 BPBM 230666

***Eulima metcalfei* (Adams, 1853)**

1936 BPBM 230622 (as *Balcis metcalfei*)

1936 BPBM 230723

1936 BPBM 230631

2001 present study

***Pulicochlea calimaris* Ponder and Gooding, 1979**

1971 BPBM 207064

***Scaleonostoma subulata* (Broderip, 1832)**

2001 present study

Family LITIOPIDAE

***Styliferina goniochila* (Adams, 1860)**

2001 present study

Order NEOGASTROPODA

Family BUCCINIDAE

***Caducifer decapitata* (Reeve, 1844)**

1917 BPBM 235875

1936 BPBM 240933

1936 BPBM 235881

2001 present study

***Caducifer nebulosa* (Gould, 1860)**

1935 BPBM 236566

1936 BPBM 236568

2001 present study

***Clivipollia costata* (Pease, 1860)**

1916 BPBM 237393

***Engina albocincta* Pease, 1860**

1916 BPBM 235886

2001 present study

***Prodotia ignea* (Gmelin, 1791)**

1925 BPBM 215719 as *Pisania igenagemel*

2001 present study

***Prodotia iostomus* (Gray, 1834)**

1935 BPBM 235918

1936 BPBM 235920

2001 present study

Family COLUMBELLIDAE

***Anachis miser* (Sowerby, 1844)**

1916 BPBM 236459

1923 BPBM 236464

1923 BPBM 236463

1935 BPBM 236468

***Euplica livescens* (Reeve, 1859)**

1936 BPBM 236478

***Euplica varians* (Sowerby, 1832)**

1936 BPBM 236494

***Mitrella bella* (Reeve, 1859)**

1916 BPBM 236498

1935 BPBM 236500

***Mitrella fusiformis* (Pease, 1868)**

1917 BPBM 236502

1936 BPBM 236511

Mitrella loyaltensis **(Hervier, 1900)**

2001 present study

Mitrella margarita **(Reeve, 1859)**

1935 BPBM 236521

1936 BPBM 236523

Mitrella rorida **(Reeve, 1859)**

1936 BPBM 236530

2001 present study

Seminella peasei **(von Martens & Langkaval, 1871)**

2001 present study

Seminella smithi **(Angas, 1877)**

1917 BPBM 236537

1936 BPBM 236541

Seminella virginea **(Gould, 1860)**

1917 BPBM 236547

1936 BPBM 236557

Family CORALLIOPHILIDAE

Coralliobia fimbriata **(Adams, 1854)**

1935 BPBM 235934

Coralliophila erosa **(Röding, 1798)**

1924 BPBM 235767

Coralliophila violacea **(Kiener, 1836)**

1935 BPBM 235778

1936 BPBM 235780

Quoyula madreporarum **(Sowerby, 1834)**

1923 BPBM 235950

1935 BPBM 235953

1936 BPBM 235955

Family FASCIOLARIIDAE

Fusinus sandvicensis **(Sowerby, 1880)**

1916 BPBM 237399

1935 BPBM 237403

Peristernia chlorostoma **(Sowerby, 1825)**

1923 BPBM 237421

2001 present study

Family MURICIDAE

Aspella producta **(Pease, 1861)**

1936 BPBM 234496

1936 BPBM 234504

2001 present study

Chicoreus insularum **(Pilsbry, 1921)**

1916 BPBM 225567 (as *Chicoreus torrefactus insularum*)

1916 BPBM 225568 (as *Chicoreus torrefactus insularum*)

Favartia garrettii **(Pease, 1869)**

1936 BPBM 234511

2001 present study

Homolocantha anatomica **(Perry, 1811)**

1916 BPBM 225582 (as *Murex pele*)

1935 BPBM 225583 (as *Murex pele*)

2001 present study

Muricodrupa funiculus **(Wood, 1828)**

1916 BPBM 234520

1924 BPBM 234526

***Vitularia miliaris* (Gmelin, 1791)**

1916 BPBM 234533
1935 BPBM 234536
2001 present study

Family NASSARIIDAE

***Nassarius crematus* (Hinds, 1844)**

1916 BPBM 236966
1935 BPBM 236972

***Nassarius gaudiosus* (Hinds, 1844)**

1936 BPBM 236981

***Nassarius hirtus* (Kiener, 1834)**

1915 BPBM 236985

***Nassarius papillosus* (Linnaeus, 1758)**

1935 BPBM 236997

***Nassarius pauperus* (Gould, 1850)**

1916 BPBM 237000
1935 BPBM 237002

Family THAIDIDAE

***Drupa* (*Drupa*) *ricina* (Linnaeus, 1758)**

2001 present study

***Drupa* (*Ricinella*) *rubusidaeus* Röding, 1798**

1935 BPBM 234611
2001 present study

***Drupella elata* Blainville, 1832**

1936 BPBM 234622
2001 present study

***Drupella ochrostoma* (Blainville, 1832)**

1916 BPBM 234628
1935 BPBM 234640
1936 BPBM 234642
2001 present study

***Maculotriton bracteatus* (Hinds, 1844)**

1936 BPBM 234666
2001 present study

***Maculotriton serriale* (Deschayes, 1834)**

2001 present study

***Morula dumosa* (Conrad, 1837)**

1936 BPBM 234714

***Morula foliacea* (Conrad, 1837)**

1924 BPBM 234722
1936 BPBM 234729

***Morula funiculata* (Reeve, 1846)**

1935 BPBM 234693
1936 BPBM 234688
1936 BPBM 234695

***Morula* sp.**

2001 present study

***Morula uva* (Röding, 1798)**

1923 BPBM 234779
1936 BPBM 234784
2001 present study

***Nassa serta* (Bruguière, 1789)**

1916 BPBM 234795
1936 BPBM 234805

***Vexilla fusconigra* Pease, 1860**

1914 BPBM 64982 (as *Usilla fusconigra*)

Vexilla vexillum **(Gmelin, 1791)**

1936 BPBM 234887

Family COSTELLARIIDAE

Vexillum (Costellaria) diutenera **(Hervier, 1898)**

2001 present study

Vexillum (Costellaria) felistratum **(Sowerby, 1874)**

1961 BPBM 219989

Vexillum (Costellaria) pacificum **(Reeve, 1845)**

1916 BPBM 238124

1980 BPBM 243337

1980 BPBM 243334

1985 BPBM 243393

Vexillum (Costellaria) wolfei **Cernohorsky, 1978**

1985 BPBM 243543

Vexillum (Costellaria) xenium **(Pilsbry, 1921)**

1916 BPBM 238128

Vexillum (Pusia) approximatum **(Pease, 1860)**

1936 BPBM 238129

1980 BPBM 243564

Vexillum (Pusia) cancellarioides **(Anton, 1839)**

1936 BPBM 238139

1936 BPBM 238136

Vexillum (Pusia) lautum **(Reeve, 1845)**

2001 present study

Vexillum (Pusia) rubrum **(Broderip, 1836)**

2001 present study

Vexillum (Pusia) tuberosum **(Reeve, 1845)**

1936 BPBM 238152

Vexillum (Pusia) tusum **(Reeve, 1845)**

2001 present study

Family MARGINELLIDAE

Cystiscus huna **Kay, 1979**

2001 present study

Granula sandwicensis **(Pease, 1860)**

2001 present study

Granulina vitrea **(Laseron, 1957)**

2001 present study

Volvarina fusiformis **(Hinds, 1844)**

2001 present study

Family MITRIDAE (IMBRICARIINAE)

Cancilla (Domiporta) granatina **(Lamarck, 1811)**

1916 BPBM 238028

Imbricaria olivaeformis **(Swainson, 1821)**

1935 BPBM 238034

Imbricaria punctata **(Swainson, 1821)**

1935 BPBM 238415

Neocancilla clathrus **(Gmelin, 1791)**

1980 BPBM 242229

1985 BPBM 242340

Neocancilla Waikîkîensis **Pilsbry, 1921**

1980 BPBM 242401

1985 BPBM 242496

Scabricola (Swainsonia) newcombii **(Pease, 1869)**

1916 BPBM 238058

Subcancilla flammea **(Quoy and Gaimard, 1833)**

1985 BPBM 242753

***Subcancilla foveolata* (Dunker, 1858)**
1985 BPBM 242895

Family MITRIDAE (MITRINAE)

***Mitra (Mitra) coffea* Schubert and Wagner, 1829**
2001 present study

***Mitra (Mitra) mitra* (Linnaeus, 1758)**
1987 AECOS 1987

***Mitra (Nebularia) avenacea* Reeve, 1845**
1917 BPBM 225447

***Mitra (Nebularia) luctuosa* Adams, 1853**
2001 present study

***Mitra (Nebularia) tricaonica* Reeve, 1844**
1935 BPBM 238049
2001 present study

***Mitra (Strigatella) assimilis* Pease, 1868**
1939 BPBM 238069
2001 present study

***Mitra (Strigatella) pellisserpentis* Reeve, 1844**
1931 BPBM 238115
1936 BPBM 238109

***Mitra (Strigatella)* sp.**
2001 present study

***Mitra (Strigatella) typha* Reeve, 1845**
2001 present study

Mitra tiarella
1916 BPBM 238155

Family OLIVIDAE

***Oliva paxillus sandwicensis* Pease, 1860**
1935 BPBM 237707

Family CONIDAE

***Conus distans* Hwass in Bruguière, 1792**
1987 AECOS 1987

***Conus imperialis* Linnaeus, 1758**
1913 BPBM 60755

***Conus lividus* Hwass 1792**
1987 AECOS 1987

***Conus pulicarius* Hwass 1792**
2001 present study

***Conus sponsalis* Hwass 1792**
2001 present study

***Conus striatus* Linnaeus, 1758**
1987 AECOS 1987

***Conus textile* Linnaeus, 1758**
1915 BPBM 239129

***Conus* sp.**
2001 present study

Family TEREBRIDAE

***Hastula albula* Menke, 1843**
1984 BPBM 245618

***Hastula matheroniana* (Deshayes, 1859)**
1984 BPBM 245747

***Hastula nitida* (Hinds, 1844)**
1984 BPBM 248410
1985 BPBM 248425 astrcta

***Hastula philippiana* (Deshayes, 1859)** **New HI Record**
2001 present study

***Hastula swainsonii* (Deshayes, 1857)**
1985 BPBM 245881
***Terebra achates* Weaver, 1960**
1984 BPBM 245904
***Terebra babylonia* Lamarck, 1822**
1980 BPBM 245469
***Terebra columelares* Hinds, 1844**
1985 BPBM 248234
***Terebra maculata* (Linnaeus, 1758)**
1987 AECOS 1987
***Terebra penicillata* Hinds, 1844**
1987 AECOS 1987
***Terebra pertusa* (Born, 1778)**
1980 BPBM 245479
Family TURRIDAE (CLAVININAE)
***Carinapex minutissima* (Garret, 1873)**
2001 present study
***Clavus (Tylotiella) mighelsi* Kay, 1979**
2001 present study
Family TURRIDAE (DAPHNELLINAE)
***Daphnella* sp.**
2001 present study
***Daphnella* sp. 3**
1980 BPBM 240149
1980 BPBM 240148
***Daphnella* sp. 5**
1980 BPBM 240156
***Daphnella* sp. 7**
1980 BPBM 240163
***Kermia aniani* Kay, 1979**
2001 present study
***Kermia* sp. 2**
1981 BPBM 240127
1981 BPBM 240128
1981 BPBM 240122
***Tritonoturris* sp.1**
1982 BPBM 240165
Family TURRIDAE (MANGELIINAE)
***Etrema acricula* Hedley, 1922**
2001 present study
***Lienardia mighelsi* Iredale and Tomlin, 1917**
2001 present study
Family TURRIDAE (MITROLUMININAE)
***Lovellona peaseana* Finlay, 1927**
1980 BPBM 224010
2001 present study
***Mitrolumna metula* (Hinds, 1843)**
1980 BPBM 224039
2001 present study
***Mitrolumna* sp.**
2001 present study
Family TURRIDAE (TURRINAE)
***Gemmula congener unilineata* Powell, 1967**
1964 BPBM 8929
***Gemmula interpolata* Powell, 1967**
1980 BPBM 223526

Gemmula monilifera **(Pease, 1861)**
1980 BPBM 223635
1980 BPBM 223636
1980 BPBM 223658
1980 BPBM 223634
1980 BPBM 223641
1984 BPBM 223593
1985 BPBM 223619
Turridrupa astricta astricta **(Reeve, 1843)** **New HI Record**
2001 present study
Turridrupa bijubata **(Reeve, 1843)**
2001 present study
Turridrupa **sp.**
2001 present study
Turridrupa weaveri **Powell, 1967**
1980 BPBM 223733
Xenuroturris kingae **Powell, 1964**
2001 present study

Order HETEROSTROPHA

Family ORBITESTELLIDAE
Orbitestella regina **Kay, 1979**
2001 present study

Family ARCHITECTONICIDAE
Architectonica perspectiva **(Linnaeus, 1758)**
1915 BPBM 229011
Heliacus sterkii **(Pilsbry and Vanatta, 1908)**
1936 BPBM 229078
Philippia oxytropis **Adams, 1855**
1916 BPBM 229036
1916 BPBM 229041
1936 BPBM 229039
2001 present study

Family RISSOELLIDAE
Rissoella confusa confusa **Ponder and Yoo, 1977**
2001 present study
Rissoella longispira **Kay, 1979**
2001 present study

Family PYRAMIDELLIDAE
Herviera gliriella **(Melvill and Standen, 1896)**
2001 present study
Herviera patricia **Pilsbry, 1918**
2001 present study
Hinemoa indica **(Melvill, 1896)** **Introduced**
2001 present study
Odostomia gulicki **Pilsbry, 1918**
2001 present study
Odostomia oxia **Watson, 1886**
2001 present study
Odostomia stearnsiella **Pilsbry, 1918**
2001 present study
Pyramidella sulcata **Adams, 1854**
1958 BPBM 205272
Syrnola lacteola **(Preston, 1904)**
2001 present study
Turbonilla lirata **(Adams, 1855)**
2001 present study

***Turbonilla* sp.**
1985 BPBM 244592

Subclass OPISTOBRANCHIA
Order CEPHALASPIDEA
Family BULLIDAE
***Bulla vernicosa* Gould, 1859**
2001 present study
Family APLUSTRIDAE
***Hydatina physis* (Linnaeus, 1758)**
1932 BPBM 199897
Family HAMINEIDAE
***Atys semistriata* Pease, 1860**
2001 present study
***Diniatys dentifer* (Adams, 1850)**
2001 present study
***Haminoea curta* (Adams, 1850)**
2001 present study
***Haminoea galba* Pease, 1861**
2001 present study
***Haminoea* sp.**
2001 present study
Family SCAPHANDRIDAE
***Cylichna pusilla* (Pease, 1860)**
2001 present study
Order ANASPIDEA
Family APLYSIIDAE (APLYSIINAE)
***Aplysia parvula* Guilding 1863**
2001 present study
***Aplysia* sp.**
2001 present study
Family APLYSIIDAE (NOTARCHIINAE)
***Stylocheilus longicaudatus* (Quoy and Gaimard, 1824)**
1987 AECOS 1987 (as *Stylocheilus lineatus*)
2001 present study
Order SACOGLOSSA
Family JULIIDAE
***Julia exquisita* Gould, 1862**
2001 present study
Order NUDIBRANCHIA
Family PHYLLIDIIDAE
***Phyllidia varicosa* Lamarck, 1801**
2001 present study
Family DORIDIDAE (DISCODORIDINAE)
***Discodoris fragilis* (Alder and Hancock, 1866)**
2001 present study
Family DORIDIDAE (HALGERDINAE)
***Halgerda* sp.**
2001 present study
Family FACELINIDAE
***Facelinella*? sp.**
2001 present study
Subclass PULMONATA
Order BASOMMATOPHORA

Family SIPHONARIIDAE

Williamia radiata **(Pease, 1861)**

2001 present study

Class BIVALVIA

Family MYTILIDAE

Brachidontes crebristriatus **(Conrad, 1837)**

2001 present study

Crenella **sp.**

2001 present study

Lithophaga **sp.**

2001 present study

Modiolus matris **(Pilsbry, 1921)**

2001 present study

Musculus aviarius **Dall, Bartsch, and Rehder, 1938**

2001 present study

Septifer bryanae **(Pilsbry, 1921)**

2001 present study

Family ARCIDAE (ARCINAE)

Arca ventricosa **Lamarck, 1819**

2001 present study

Barbatia (Acar) divaricata **(Sowerby, 1833)**

2001 present study

Barbatia nuttingi **(Dall, Bartsch, and Rehder, 1938)**

2001 present study

Barbatia **sp.**

2001 present study

Barbatia tenella **Reeve, 1844**

2001 present study

Family ISOGNOMONIDAE

Isognomon californicum **(Conrad, 1837)**

2001 present study

Isognomon incisum **(Conrad, 1837)**

2001 present study

Isognomon legumen **(Gmelin, 1791)**

2001 present study

Isognomon perna **(Linnaeus, 1767)**

2001 present study

Isognomon **sp.**

1972 Chave et al. 1973

2001 present study

Family MALLEIDAE

Malleus regula **(Forskå, 1775)**

2001 present study

Malleus **sp.**

2001 present study

Family PTERIIDAE

Pinctada margaritifera **(Linnaeus, 1758)**

2001 present study

Pinctada **sp.**

2001 present study

Family PINNIDAE

Pinna **sp.**

2001 present study

Family LIMIDAE

Lima fragilis **Chemnitz, 1784**

2001 present study

Lima **sp.**

2001 present study

Family OSTREIDAE

Dendostrea sandvicensis **(Sowerby, 1871)**

1958 BPBM 205284 (as *Ostrea kupua*)

2001 present study

Ostrea laysana **Dall, Bartsch, and Rehder, 1938**

1958 BPBM 205248

Ostrea **sp.**

1958 BPBM 205280

1958 BPBM 205249

Family PECTINIDAE

Laevichlamys irregularis **(Sowerby, 1842)**

2001 present study

Family PROPEAMUSIIDAE

Chlamydella **sp.**

2001 present study

Family SPONDYLIDAE

Spondylus cuneus **Reeve, 1856** **New HI Record**

2001 present study

Spondylus linguafelis **Sowerby, 1847**

2001 present study

Spondylus **sp.**

2001 present study

Spondylus tenebrosus **Reeve, 1856**

1923 BPBM 208459

1924 BPBM 208460

1990 OI Consultants 1991

Spondylus violacescens **Lamarck, 1819**

2001 present study

Family ANOMIIDAE

Anomia nobilis **Reeve, 1859** **Introduced**

2001 present study

Family CHAMIDAE

Chama fibula **Reeve, 1846** **Cryptogenic**

2001 present study

Family GASTROCHAENIDAE

Gastrochaena (Rocellaria) kanaka **Dall, Bartsch, and Rehder, 1938**

2001 present study

Family HIATELLIDAE

Hiatella arctica **(Linnaeus, 1767)** **Introduced**

2001 present study

Family GALEOMMATIDAE

Leiochasmea elongata **Preston, 1908**

2001 present study

Leiochasmea **sp.**

2001 present study

Family LASAEIDAE

Kellia hawaiensis **Dall, Bartsch, and Rehder, 1938**

2001 present study

Lasaea hawaiensis **Dall, Bartsch, & Rehder, 1938**

2001 present study

***Nesobornia bartschi* Chavan, 1969**
2001 present study
Family CARDIIDAE
***Fragum (Fragum) mundum* (Reeve, 1845)**
2001 present study
Family CARDITIDAE
***Cardita aviculina* Lamarck, 1819**
2001 present study
Family SEMELIDAE
***Semelangulus crebrimaculatus* Sowerby, 1867**
2001 present study
Family TELLINIDAE
***Tellina (Quidnipagus) palatam* Iredale, 1929**
1958 BPBM 205247 (as *Quidnipagus palatam*)
Family MESODESMATIDAE
***Rochefortina sandwichensis* Hayami & Kase, 1993**
2001 present study
Class CEPHALOPODA
Order OCTOPODA
Family OCTOPODIDAE
***Octopus cyanea* Gray, 1849**
1965 Banner 1968
2001 present study
Class POLYPLACOPHORA
Order CHITONID
Family CHITONIDAE
***Rhyssoplax linsleyi* Burghardt, 1973**
2001 present study
***Rhyssoplax* sp.**
2001 present study
Family ISCHNOCHITONIDAE
***Ischnochiton petaloides* Gould, 1846**
2001 present study
***Ischnochiton* sp.**
2001 present study
Phylum ARTHROPODA
Class PYCNOGONIDA
Order PANTOPODA
Family AMMOTHEIDAE
***Ammothella biunguiculata* (Dohrn, 1881)**
1932 BPBM-S 4698
1942 BPBM-S 7223
Class MAXILLOPODA
Subclass CIRRIPEDIA
Order THORACICA
Family BALANIDAE
***Balanus* sp.**
1941 BPBM-B 311
1943 BPBM-B 309
***Chelonibia testudinaria* (Linnaeus, 1758)**
1913 BPBM-B 248
Family CHTHAMALIDAE
***Nesochthamalus intertextus* (Darwin, 1854)**
1929 BPBM-B 265
2001 present study

Family KOLEOLEPADIDAE

***Koleolepas* sp.**

1950 BPBM-B 367

Family LEPADIDAE

***Trilasmis fissum hawaiense* Pilsbry, 1928**

1949 BPBM-B 360 (as *Trilasmis fissum*)

Class OSTRACODA

Order MYODOCOPIDA

Family CYLINDROLEBERIDIDAE

***Parasterope* sp.**

2001 present study

Order PODOCOPINA

Family CYPRIDIDAE

***Cypridina* sp.**

2001 present study

Subclass PODOCOPA

Order

Family UNID. PODOCOPA

unid. Podocopa

2001 present study

Class MALACOSTRACA

Subclass HOPLOCARIDA

Order STOMATOPODA

Family CORONIDIDAE

***Paravisquilla sinuosa* (Edmondson, 1921)**

1921 BPBM-S 526 (as *Coronida sinuosa*)

Family GONODACTYLIDAE

***Gonodactylaceus falcatus* (Forsskå, 1775)** **Introduced**

2001 present study

***Gonodactylellus hendersoni* (Manning, 1967)**

2001 present study

Family HARPIOSQUILLIDAE

***Alima alba* (Bigelow, 1893)**

1921 BPBM-S 517 (as *Squilla alba*)

Family LYSIOSQUILLIDAE

***Lysiosquillina maculata* (Fabricuis, 1793)**

1937 BPBM-S 4296 (as *Lysiosquilla maculatus*)

Family ODONTODACTYLIDAE

***Odontodactylus brevirostris* (Miers, 1884)**

1916 BPBM-S 103 (as *Odontodactylus hansenii*)

1917 BPBM-S 104 (as *Odontodactylus hansenii*)

Family PROTOSQUILLIDAE

***Echinosquilla guerini* (White, 1861)**

1916 BPBM-S 108 (as *Pseudosquilla guerinii*)

1963 BPBM-S 6933 (as *Gonodactylus guerinii*)

Family PSEUDOSQUILLIDAE

***Pseudosquilla ciliata* (Fabricius, 1787)**

1921 BPBM-S 479

1921 BPBM-S 486

1922 BPBM-S 2189

1922 BPBM-S 716

***Pseudosquilla* sp.**

1927 BPBM-S 2849

***Pseudosquillisma oculata* (Brulle , 1837)**

1921 BPBM-S 518 (as *Pseudosquilla oculata*)
1921 BPBM-S 516 (as *Pseudosquilla oculata*)
1921 BPBM-S 520 (as *Pseudosquilla oculata*)
1921 BPBM-S 519 (as *Pseudosquilla oculata*)
1921 BPBM-S 515 (as *Pseudosquilla oculata*)
1923 BPBM-S 2276 (as *Pseudosquilla oculata*)
1923 BPBM-S 1030 (as *Pseudosquilla oculata*)
1930 BPBM-S 3146 (as *Pseudosquilla oculata*)
2001 present study

Subclass EUMALACOSTRACA
Superorder PERACARIDA
Order AMPHIPODA
Suborder GAMMARIDEA
Family AMPHILOCHIDAE

***Amphilochus kailua* Barnard, 1970**

1964 BPBM-S 7248

***Amphilochus likelike* Barnard, 1970**

2001 present study

***Amphilochus menehune* Barnard, 1970**

2001 present study

Family AMPITHOIDAE

***Ampithoe kaneohe* Barnard, 1970**

1964 BPBM-S 7254

***Ampithoe ramondi* Audouin, 1826**

2001 present study

***Ampithoe waialua* Barnard, 1970**

2001 present study

***Paragrubia vorax* Chevreux, 1901**

1943 BPBM-S 5980
2001 present study

Family ANAMIXIDAE

***Anamixis moana* Thomas, 1997**

2001 present study

Family AORIDAE

***Bemlos aequimanus* Schellenberg, 1938**

2001 present study

***Bemlos intermedius* Schellenberg, 1938**

2001 present study

***Bemlos macromanus* Shoemaker, 1925**

2001 present study

***Bemlos pualani* Barnard, 1970**

2001 present study

***Bemlos waipio* Barnard, 1970**

2001 present study

***Bemlos* sp.**

2001 present study

***Bemlos* sp.1**

2001 present study

Family COLOMASTIGIDAE

***Colomastix kapiolani* Barnard, 1970**

2001 present study

***Colomastix lunalilo* Barnard, 1970**

2001 present study

Family COROPHIIDAE

***Corophium ascherusicum* Costa, 1853** **Introduced**

1943 BPBM-S 6019

***Ericthonius brasiliensis* (Dana, 1853)** **Introduced**

1943 BPBM-S 5946

2001 present study

***Ericthonius* sp.**

2001 present study

Family CYPROIDEIDAE

***Moolapheonoides coocoo* Barnard, 1974** **New HI Record**

2001 present study

Family DEXAMINIDAE

***Paradexamine (Wailele) maunaloa* Barnard, 1970**

2001 present study

Family EUSIRIDAE

***Eusiroides diplonyx* Walker, 1904**

2001 present study

Family ISAEIDAE

***Chevalia aviculae* Walker, 1904**

2001 present study

***Gammaropsis alamoana* Barnard, 1970**

2001 present study

***Gammaropsis atlantica-afra* complex**

2001 present study

***Gammaropsis pali* Barnard, 1970**

2001 present study

***Photis aina* Barnard, 1970**

2001 present study

Family ISCHYROCERIDAE

***Ischyrocerus oahu* Barnard, 1970**

2001 present study

***Jassa lilipuna* Barnard, 1970**

1964 BPBM-S 7288

***Jassa* sp.**

2001 present study

***Leucothoe hyhelia* Barnard, 1965**

2001 present study

***Leucothoe lihue* Barnard, 1970**

2001 present study

***Leucothoe micronesiae* Barnard, 1965** **Introduced**

2001 present study

***Leucothoe tridens* Stebbing, 1888**

2001 present study

***Leucothoe* sp.2**

2001 present study

***Leucothoides pottsi* Shoemaker, 1933**

2001 present study

***Notopoma* n.sp.**

2001 present study

***Ventojassa ventosa* Barnard, 1962**

2001 present study

Family LEUCOTHOIDAE

***Paraleucothoe* cf. *flindersi* Stebbing, 1888** **Introduced**

2001 present study

Family LILJEBORGIIDAE

Liljeborgia laniloa **Barnard, 1970**

2001 present study

Family LYSIANASSIDAE

Lysianassa ewa **Barnard, 1970**

2001 present study

Family MELITIDAE

Ceradocus hawaiiensis **Barnard, 1955**

2001 present study

Elasmopus **cf. *pseudoaffinis***

2001 present study

Elasmopus hawaiiensis **Schellenberg, 1938**

2001 present study

Elasmopus hooheno **Barnard, 1970**

2001 present study

Elasmopus molokai **Barnard, 1970**

2001 present study **New HI Record**

Elasmopus **sp.**

2001 present study

Maera kaiulani **Barnard, 1970**

2001 present study

Maera pacifica **Schellenberg, 1938**

2001 present study

Maera quadrimana **(Dana, 1853)**

2001 present study

Maera serrata **Schellenberg, 1938**

2001 present study

Maera **sp.3**

2001 present study

Mallacoota insignis **(Chevreux, 1901)**

1943 BPBM-S 6000 (as *Maera insignis*)

1944 BPBM-S 6001 (as *Maera insignis*)

2001 present study

Melita **sp.1**

2001 present study

Family OEDICEROTODAE

Kanaloa manoa **Barnard, 1970**

2001 present study

Family PHLIANTIDAE

Pereionotus alaniphlias **Barnard, 1970**

1967 BPBM-S 7295 (as *Palinnotus alaniphlias*)

2001 present study

Family PHOXOCEPHALIDAE

unid. Phoxocephalidae

2001 present study

Family PLEUSTIDAE

Tepidopleustes honomu **Barnard, 1970**

2001 present study

Family PODOCERIDAE

Podocerus brasiliensis **Dana, 1853** **Introduced**

2001 present study

Podocerus hanapepe **Barnard, 1970**

1967 BPBM-S 7299

Podocerus talegus lawai **(Barnard, 1970)**

2001 present study

Family SEBIDAE

***Seba ekepuu* Barnard, 1970**

2001 present study

Family STENOTHOIDAE

***Stenothoe haleloke* Barnard, 1970**

1967 BPBM-S 7302

2001 present study

***Stenothoe valida-gallensis* complex**

2001 present study

Family TALITROIDAE

***Hyale honoluluensis* Schellenberg, 1938**

2001 present study

***Hyale laie* Barnard, 1970**

2001 present study

***Hyale* sp.**

2001 present study

Suborder CAPRELLIDEA

Family CAPRELLIDAE

***Caprella danilevskii* Czerniavskii, 1868**

no date BPBM-S 5246

no date BPBM-S 5243

no date BPBM-S 5245

no date BPBM-S 5244

1921 BPBM-S 5236

1923 BPBM-S 5239

1923 BPBM-S 5238

1923 BPBM-S 5241

1923 BPBM-S 5237

1942 BPBM-S 5247

1942 BPBM-S 5248

***Caprella scaura* Templeton, 1836** **Introduced**

1943 BPBM-S 5254

1943 BPBM-S 5253

***Hemiaegina minuta* Mayer, 1890**

1923 BPBM-S 5259

Order ISOPODA

Suborder ANTHURIDEA

Family ANTHURIDAE

***Apanthura inornata* Miller and Menzies, 1952**

2001 present study

***Mesanthura hieroglyphica* Miller and Menzies, 1952**

2001 present study

***Mesanthura* sp.** **Introduced**

2001 present study

***Pendanthura* sp.**

2001 present study

Family PARANTHURIDAE

***Paranthura ostergaardi* Miller and Menzies, 1952**

1939 BPBM-S 5784

***Paranthura* sp.**

2001 present study

Suborder FLABELLIFERA

Family CIROLANIDAE

***Cirolana parva* Hansen, 1890**

2001 present study

Metacirolana sphaeromiformia
2001 present study
Family LIMNORIIDAE
***Limnoria* sp.**
2001 present study
Family SPHAEROMATIDAE
***Neonaesa rugosa* Harrison and Holdich, 1982**
2001 present study
Suborder ASELLOTA
Family JANIRIDAE
***Bagatus algicola* Miller, 1941**
1939 BPBM-S 5053
***Carpias algicola Miller*, 1941**
2001 present study
Family JOEROPSIDAE
***Joeropsis hawaiiensis* Miller, 1941**
2001 present study
Family MUNNIDAE
***Munna acarina* Miller, 1941**
2001 present study
Family PLEUROCOPIDAE
***Pleurocope* sp.**
2001 present study
Family STENETRIIDAE
***Stenetrium medi pacifica* Miller, 1941**
2001 present study
Suborder VALVIFERA
Family IDOTEIDAE
***Colidotea edmondsoni* Miller, 1940**
1939 BPBM-S 5049
2001 present study
Order TANAIDACEA
Suborder APSEUDOMORPHA
Family APSEUDIDAE
***Apseudes* sp.A**
2001 present study
***Apseudes tropicalis* Miller, 1940**
1938 BPBM-S 5044
2001 present study
***Apseudomorpha oahuensis* Miller, 1940**
2001 present study
***Apseudomorpha* sp.A**
2001 present study
***Parapseudes neglectus* Miller, 1940**
2001 present study
***Paratanais* sp.A**
2001 present study
***Pseudoleptochelia* sp.A**
2001 present study
***Synapseudes minutus* Miller, 1940**
1938 BPBM-S 5046
2001 present study
***Tanais vanis* Miller, 1940**
1938 BPBM-S 5042
2001 present study

***Zeuxo seurati* (Nobili, 1906)**
1938 BPBM-S 5041 (as *Tanias insularis*)
2001 present study
Family PSEUDOZUXIDAE
***Leptochelia dubia* Kroyer, 1842** **Cryptogenic**
2001 present study
***Leptochelia* sp.A**
2001 present study
***Leptochelia* sp.B**
2001 present study
Superorder EUCARIDA
Order DECAPODA
Suborder DENDROBRANCHIATA
Family PENAEIDAE
***Melicertus marginatus* (Randall, 1840)**
1952 BPBM-S 5782 (as *Penaeus marginatus*)
***Metapenaeopsis velutina* (Dana, 1852)**
1916 BPBM-S 122 (as *Metapenaeus velutinus*)
1949 BPBM-S 5464 (as *Metapenaeus velutinus*)
Metapenaeus richtersii
1948 BPBM-S 5357
Suborder PLEOCYEMATA
Infraorder STENOPODIDEA
Family STENOPODIDAE
***Stenopus hispidus* (Olivier, 1811)**
1917 BPBM-S 127
1923 BPBM-S 1031
1923 BPBM-S 1589
1924 BPBM-S 2429
1927 BPBM-S 2842
1930 BPBM-S 3134
Infraorder CARIDEA
Family OPLOPHORIDAE
***Oplophorus gracilirostris* Milne Edwards, 1881**
1952 BPBM-S 5781
Family STYLODACTYLIDAE
***Neostylodactylus* sp.**
2001 present study
Family BRESILIIDAE
***Discias* cf. *exul* Kemp, 1920**
2001 present study
Family GNATHOPHYLLIDAE
***Gnathophyllum americanum* Guérin-Menéville, 1856**
1923 BPBM-S 1032 (as *Gnathophyllum fasciolatum*)
1930 BPBM-S 3138
1934 BPBM-S 3848
***Levicaris mammillata* (Edmondson, 1931)**
1931 BPBM-S 3436 (as *Gnathyphylloides mammillata*)
Family PALAEMONIDAE (PALAEMONINAE)
***Macrobrachium grandimanus* Randall, 1840**
1926 BPBM-S 2638
***Palaemon debilis* (Dana, 1852)**
1927 BPBM-S 2791

***Palaemon pacificus* (Stimpson, 1860)**

1924 BPBM-S 2578

1929 BPBM-S 3523

Family PALAEMONIDAE (PONTONIINAE)

***Exoclimenella maldivensis* Duris & Bruce, 1995** **New HI Record**

2001 present study

***Harpiliopsis depressa* (Stimpson, 1860)**

1921 BPBM-S 483 (as *Harpiliopsis depressus*)

1927 BPBM-S 2702 (as *Harpiliopsis depressus*)

1927 BPBM-S 2790 (as *Harpiliopsis depressus*)

1928 BPBM-S 3529 (as *Harpiliopsis depressus*)

1930 BPBM-S 3136 (as *Harpiliopsis depressus*)

1948 BPBM-S 5349 (as *Harpiliopsis depressus*)

***Onycocaris quadratophthalma* (Balss, 1921)**

1937 BPBM-S 4393

1937 BPBM-S 4392

1953 BPBM-S 5858

***Palaemonella rotumana* (Borradaile, 1898)**

2001 present study

***Periclimenaeus* sp.1**

2001 present study

***Periclimenaeus* sp.2**

2001 present study

***Periclimenaeus tridentatus* (Miers, 1884)**

1930 BPBM-S 3528

1930 BPBM-S 3493

1930 BPBM-S 3494

***Periclimenes amymone* Deman, 1902** **New HI Record**

2001 present study

***Periclimenes* cf. *watamuae* Bruce, 1976**

2001 present study

***Periclimenes ensifrons* (Dana, 1852)** **New HI Record**

2001 present study

***Periclimenes grandis* (Stimpson, 1860)**

1945 BPBM-S 5107

***Pontonia medipacifica* Edmondson, 1935**

1922 BPBM-S 942 (as *Cymopolia medipacifica*)

1923 BPBM-S 3266 (as *Palicus medipacifica*)

***Vir orientalis* (Dana, 1852)**

no date BPBM-S 933 (as *Brachycarpus biunguiculatus*)

1921 BPBM-S 1540 (as *Brachycarpus biunguiculatus*)

1923 BPBM-S 1534 (as *Palaemonella orientalis*)

1927 BPBM-S 2879 (as *Palaemonella orientalis*)

1928 BPBM-S 3031 (as *Palaemonella orientalis*)

1928 BPBM-S 3032 (as *Brachycarpus biunguiculatus*)

1930 BPBM-S 3522 (as *Brachycarpus biunguiculatus*)

1930 BPBM-S 3524 (as *Palaemonella orientalis*)

2001 present study

Family ALPHEIDAE

***Alpheopsis aequalis* Coutiere, 1896**

1927 BPBM-S 2705

1938 BPBM-S 6497

***Alpheus albatrossae* (Banner, 1953)**

2001 present study

***Alpheus brevipes* Stimpson, 1860**

1916 BPBM-S 163
1937 BPBM-S 6464
1938 BPBM-S 6463
2001 present study

***Alpheus clypeatus* Coutiere, 1905**

1922 BPBM-S 754
1927 BPBM-S 2797
1938 BPBM-S 6479
1938 BPBM-S 6478
2001 present study

***Alpheus coetivensis* Coutiere, 1908**

2001 present study

***Alpheus collumianus* Stimpson, 1860**

1922 BPBM-S 756
1926 BPBM-S 2644
1927 BPBM-S 2793
1938 BPBM-S 6433
2001 present study

***Alpheus deuteropus* Hilgendorf, 1878**

1924 BPBM-S 2426
1927 BPBM-S 2800
1927 BPBM-S 2933
2001 present study

***Alpheus diadema* Dana, 1852**

1922 BPBM-S 2934 (as *Alpheus insignis*)
1922 BPBM-S 758 (as *Alpheus insignis*)
1926 BPBM-S 2643 (as *Alpheus insignis*)
1927 BPBM-S 2795 (as *Alpheus insignis*)
1927 BPBM-S 2767 (as *Alpheus insignis*)
1927 BPBM-S 2709 (as *Alpheus insignis*)
1927 BPBM-S 2911 (as *Alpheus insignis*)
1927 BPBM-S 2897 (as *Alpheus insignis*)
1927 BPBM-S 2847 (as *Alpheus insignis*)
1928 BPBM-S 2929 (as *Alpheus insignis*)
1938 BPBM-S 6408 (as *Alpheus insignis*)
1938 BPBM-S 6407 (as *Alpheus insignis*)
2001 present study

***Alpheus gracilipes* Stimpson, 1860**

2001 present study

***Alpheus gracilis* Heller, 1861**

1922 BPBM-S 2935
1922 BPBM-S 755
1924 BPBM-S 2428
1927 BPBM-S 2794
1927 BPBM-S 2769
1927 BPBM-S 2913
1927 BPBM-S 2845
1927 BPBM-S 2899
1927 BPBM-S 2708
1937 BPBM-S 6424
1938 BPBM-S 6423
2001 present study

***Alpheus leptochirus* Coutiere, 1905**

2001 present study

***Alpheus lobidens* de Haan, 1849**

1922 BPBM-S 757 (as *Alpheus crassimanus*)
1927 BPBM-S 2846 (as *Alpheus crassimanus*)
1927 BPBM-S 2770 (as *Alpheus crassimanus*)
1927 BPBM-S 2912 (as *Alpheus crassimanus*)
1938 BPBM-S 6446 (as *Alpheus crassimanus*)
1938 BPBM-S 6447 (as *Alpheus crassimanus*)
1938 BPBM-S 6445 (as *Alpheus crassimanus*)
1938 BPBM-S 6444 (as *Alpheus crassimanus*)
2001 present study

***Alpheus lottini* Guérin, 1829**

no date BPBM-S 6428 (as *Alpheus ventrosus*)
1922 BPBM-S 753 (as *Alpheus ventrosus*)
1924 BPBM-S 2425 (as *Alpheus ventrosus*)
1927 BPBM-S 2706 (as *Alpheus ventrosus*)
1927 BPBM-S 2799 (as *Alpheus ventrosus*)
1945 BPBM-S 5148 (as *Alpheus ventrosus*)

***Alpheus oahuensis* (Banner, 1953)**

2001 present study

***Alpheus pacificus* Dana, 1852**

1922 BPBM-S 3033
1926 BPBM-S 2642
1927 BPBM-S 2766
1927 BPBM-S 2707
1927 BPBM-S 2796
1927 BPBM-S 2898
1927 BPBM-S 2844
1928 BPBM-S 3021
1938 BPBM-S 6457
1938 BPBM-S 6458

***Alpheus paracrinatus* Miers, 1881**

1938 BPBM-S 6471
2001 present study

***Alpheus paradentipes* Coutiere, 1905**

2001 present study

***Alpheus paralcyone* Coutiere, 1905**

2001 present study

***Alpheus pseudopugnax* (Banner, 1953)**

2001 present study

***Alpheus pugnax* Dana, 1852**

2001 present study

***Alpheus* sp.**

1916 BPBM-S 162 (as *Crangon* sp.)

***Metalpheus hawaiiensis* (Edmondson, 1925)**

2001 present study

***Metalpheus paragracilis* Coutiere, 1897**

1922 BPBM-S 760 (as *Alpheus paragracilis*)
1922 BPBM-S 2936 (as *Alpheus paragracilis*)
1926 BPBM-S 2639 (as *Alpheus paragracilis*)
1927 BPBM-S 2914 (as *Alpheus paragracilis*)
1927 BPBM-S 2900 (as *Alpheus paragracilis*)
1927 BPBM-S 2768 (as *Alpheus paragracilis*)
1927 BPBM-S 2798 (as *Alpheus paragracilis*)
1928 BPBM-S 2930 (as *Alpheus paragracilis*)
1938 BPBM-S 6395 (as *Alpheus paragracilis*)
1938 BPBM-S 6394 (as *Alpheus paragracilis*)

1938 BPBM-S 6393 (as *Alpheus paragracilis*)
2001 present study

***Metalpheus rostratipes* (Pocock, 1890)**
2001 present study

***Salmoneus brevirostris* (Edmondson, 1930)**
1927 BPBM-S 2848 (as *Jousseaumea brevirostris*)
1930 BPBM-S 3335 (as *Jousseaumea brevirostris*)

***Salmoneus mauiensis* (Edmondson, 1930)**
1930 BPBM-S 3496 (as *Jousseaumea mauiensis*)

***Synalpheus biunguiculatus* (Stimpson, 1860)**
2001 present study

***Synalpheus charon* (Heller, 1861)**
no date BPBM-S 6482
no date BPBM-S 6484
no date BPBM-S 6483
1922 BPBM-S 761
1938 BPBM-S 6481

***Synalpheus paraneomeris* Coutiere, 1905**
no date BPBM-S 6492
1922 BPBM-S 765
1922 BPBM-S 2937
1927 BPBM-S 2801
1927 BPBM-S 2704
1938 BPBM-S 6491
2001 present study

***Synalpheus streptodactylus* Coutiere, 1905**
2001 present study

Family HIPPOLYTIDAE

Hippolyte edmondsoni
2001 present study

***Hippolyte* sp.**
1924 BPBM-S 2424
1930 BPBM-S 3139

***Hippolyte* sp.1**
2001 present study

***Hippolyte ventricosa* H.Milne Edwards, 1837**
1921 BPBM-S 2621 (as *Hippolyte acuta*)
1929 BPBM-S 3503 (as *Hippolyte acuta*)
1938 BPBM-S 4450 (as *Hippolyte acuta*)

***Latreutes pymoeus* (Nobile, 1804)** **New HI Record**
2001 present study

***Lysmata ternatensis* de Man, 1902**
2001 present study

***Lysmata trisetacea* (Heller, 1861)**
1921 BPBM-S 932 (as *Hippolysmata paucidens*)
1922 BPBM-S 762 (as *Hippolysmata paucidens*)
1926 BPBM-S 2640 (as *Hippolysmata paucidens*)
1927 BPBM-S 2802 (as *Hippolysmata paucidens*)
1927 BPBM-S 2703 (as *Hippolysmata paucidens*)
1930 BPBM-S 3137 (as *Hippolysmata paucidens*)
1930 BPBM-S 3515 (as *Hippolysmata paucidens*)

***Saron marmoratus* (Olivier, 1811)**
1922 BPBM-S 764
1922 BPBM-S 712
1927 BPBM-S 2789
1930 BPBM-S 3135
2001 present study

***Thor amboinensis* (de Man, 1888)**

2001 present study

***Thorina maldivensis* (Borradaile, 1915)**

1922 BPBM-S 763 (as *Thor maldivensis*)
1927 BPBM-S 2792 (as *Thor maldivensis*)
1928 BPBM-S 2931 (as *Thor maldivensis*)
1945 BPBM-S 5104 (as *Thor maldivensis*)
2001 present study

Family OGYRIDIDAE

***Ogyrides* sp.**

2001 present study

Family PROCESSIDAE

***Nikoides steinii* (Edmondson, 1935)**

1923 BPBM-S 1531
2001 present study

***Processa hawaiensis* (Dana, 1852)**

2001 present study

Suborder REPTANTIA

Infraorder BRACHYURA

Family LATREILLIIDAE

***Latreillia* sp.**

2001 present study

Family RANINIDAE

***Lyreidus tridentatus* De Haan, 1841**

1959 BPBM-S 6797

Family CRYPTOCHIRIDAE

***Hapalocarcinus marsupialis* Stimpson, 1859**

1923 BPBM-S 2274
1924 BPBM-S 2423
1926 BPBM-S 2641
1927 BPBM-S 2701
1930 BPBM-S 3207
1930 BPBM-S 3132
1937 BPBM-S 4287
1939 BPBM-S 4434

***Troglocarcinus (Favicola) minutus* (Edmondson, 1933)**

1924 BPBM-S 2244 (as *Troglocarcinus minutus*)
1924 BPBM-S 3671 (as *Troglocarcinus minutus*)
1924 BPBM-S 2179 (as *Troglocarcinus minutus*)
1926 BPBM-S 2646 (as *Troglocarcinus minutus*)
1930 BPBM-S 3100 (as *Troglocarcinus minutus*)
1930 BPBM-S 3508 (as *Troglocarcinus minutus*)
1931 BPBM-S 3584 (as *Troglocarcinus minutus*)

Family GRAPSIDAE

***Geograpsus crinipes* (Dana, 1852)**

1930 BPBM-S 3149

Grapsus grapsus

1922 BPBM-S 744

***Metopograpsus messor* (Forsskå, 1775)**

no date BPBM-S 945
1922 BPBM-S 1586
1928 BPBM-S 3023

***Metopograpsus thukuhar* (Owen, 1893)**

no date BPBM-S 6246

***Pachygrapsus minutus* A.Milne Edwards, 1873**

2001 present study

***Pachygrapsus plicatus* (A.Milne Edwards, 1873)**

1923 BPBM-S 1569
1927 BPBM-S 2762
1927 BPBM-S 2860
1927 BPBM-S 2684
1927 BPBM-S 2896
1929 BPBM-S 3203
1930 BPBM-S 3085

***Percnon abbreviatum* (Dana, 1851)**

1921 BPBM-S 558
1923 BPBM-S 1578
1927 BPBM-S 2681
1927 BPBM-S 2772

***Percnon planissimum* (Herbst, 1904)**

no date BPBM-S 2248
1922 BPBM-S 1019
1923 BPBM-S 1577
1924 BPBM-S 2573
1927 BPBM-S 2758
1927 BPBM-S 2680
2001 present study

***Plagusia tuberculata* (Lamarck, 1818)**

1923 BPBM-S 1579 (as *Plagusia depressa*)
1930 BPBM-S 3103 (as *Plagusia depressa*)

***Planes cyaneus* Dana, 1851**

1923 BPBM-S 1562

***Sesarma (Holometopus) obtusifrons* (Dana, 1851)**

1922 BPBM-S 1018
1924 BPBM-S 2277
1929 BPBM-S 3204
1930 BPBM-S 3125

Family OCYPODIDAE

***Ocypode ceratophthalmus* (Pallas, 1772)**

1927 BPBM-S 2895
1927 BPBM-S 3267

Family PALICIDAE

***Exopalicus maculatus* (Edmondson, 1930)**

1930 BPBM-S 3337 (as *Palicus maculatus*)
2001 present study

Family PORTUNIDAE

***Carupa tenuipes* Dana, 1851**

1921 BPBM-S 490 (as *Carupa laeviuscula*)
1921 BPBM-S 484 (as *Carupa laeviuscula*)
1921 BPBM-S 557 (as *Carupa laeviuscula*)
1922 BPBM-S 656 (as *Carupa laeviuscula*)
1922 BPBM-S 738 (as *Carupa laeviuscula*)
1928 BPBM-S 3025 (as *Carupa laeviuscula*)
1930 BPBM-S 3115 (as *Carupa laeviuscula*)
1945 BPBM-S 5099 (as *Carupa laeviuscula*)
2001 present study

***Catoptrus inaequalis* (Rathbun, 1906)**

1921 BPBM-S 1013 (as *Goniocaphrys inaequalis*)
1921 BPBM-S 481 (as *Goniocaphrys inaequalis*)
1927 BPBM-S 2787 (as *Goniocaphrys inaequalis*)
1930 BPBM-S 3127 (as *Goniocaphrys inaequalis*)

***Catoptrus nitidus* Milne Edwards, 1870**

2001 present study

***Charybdis (Charybdis)* sp.**

no date BPBM-S 2668

***Coelocarcinus foliatus* Edmondson, 1930**

1927 BPBM-S 2664

***Goniosupradens erythrodactyla* (Lamarck, 1818)**

no date BPBM-S 1583 (as *Charybdis erythrodactylis*)

Libystes villosus

1949 BPBM-S 5501

***Lissocarcinus laevis* Miers, 1886**

1949 BPBM-S 5462

1949 BPBM-S 5455

***Lissocarcinus orbicularis* Dana, 1852**

1927 BPBM-S 2679

1927 BPBM-S 2779

1930 BPBM-S 3129

1931 BPBM-S 3553

***Lupocyclus quinquedentatus* Rathbun, 1906**

1916 BPBM-S 424

1959 BPBM-S 6662

***Portunus granulatus* (Milne Edwards, 1834)**

1916 BPBM-S 410

1922 BPBM-S 710

1948 BPBM-S 5342

1948 BPBM-S 5347

1949 BPBM-S 5473

***Portunus longispinosus* (Dana, 1852)**

1923 BPBM-S 1557

***Portunus macrophthalmus* Rathbun, 1906**

1916 BPBM-S 407

1917 BPBM-S 409

1917 BPBM-S 408

1917 BPBM-S 406

1949 BPBM-S 5469

2001 present study

Portunus *orbicularis* (Richers, 1880)

1959 BPBM-S 6726

***Portunus pubescens* (Dana, 1852)**

no date BPBM-S 1581

1922 BPBM-S 1020

1924 BPBM-S 2178

1924 BPBM-S 2571

1926 BPBM-S 2647

1930 BPBM-S 3092

***Portunus sanguinolentus hawaiiensis* (Herbst, 1783)**

no date AECOS 1987 (as *Portunus sanguinolentus*)

***Thalamita auauensis* (Rathbun, 1906)**

1916 BPBM-S 392

1916 BPBM-S 386

1917 BPBM-S 403

1917 BPBM-S 387

1917 BPBM-S 393

1959 BPBM-S 6734

***Thalamita dakini* Montgomerey, 1931**

1927 BPBM-S 2694 (as *Thalamita medipacifica*)
1928 BPBM-S 3026 (as *Thalamita medipacifica*)

***Thalamita edwardsi* Borridaile, 1900**

no date BPBM-S 2263
1917 BPBM-S 925
1922 BPBM-S 1591
1924 BPBM-S 2570
1927 BPBM-S 2867
1927 BPBM-S 2759
1927 BPBM-S 2693
1927 BPBM-S 2803
1928 BPBM-S 3027
1928 BPBM-S 3057
1928 BPBM-S 3016
1930 BPBM-S 3093
2001 present study

***Thalamita integra* Dana, 1852**

1930 BPBM-S 3075

***Thalamita picta* Stimpson, 1858**

1921 BPBM-S 1014
1921 BPBM-S 909
1922 BPBM-S 706
1923 BPBM-S 1551
1924 BPBM-S 2184
1927 BPBM-S 2695
1927 BPBM-S 2760
1928 BPBM-S 3017
1930 BPBM-S 3120
1953 BPBM-S 5857

***Thalamita* sp.**

1917 BPBM-S 5859
1927 BPBM-S 5861
1927 BPBM-S 2894
1959 BPBM-S 6744

***Thalamita* sp. juv.**

2001 present study

***Thalamita spinifera* Borradaile, 1903**

1916 BPBM-S 398
1917 BPBM-S 394
1917 BPBM-S 395
1917 BPBM-S 397

***Thalamitoides quadridens* Milne Edwards, 1869**

2001 present study

Family CARPILIIDAE

***Carpilius convexus* (Forsskå, 1775)**

1922 BPBM-S 1582
1924 BPBM-S 2572
1927 BPBM-S 2866
1927 BPBM-S 2761
1930 BPBM-S 3076

***Carpilius* sp.**

1963 BPBM-S 6892

Family GONEPLACIDAE

***Pseudozius caystrus* (Adams and White, 1848)**

1929 BPBM-S 5202

1930 BPBM-S 3099

Family PILUMNIDAE

***Pilumnus longicornis* Hilgendorf, 1878**

1945 BPBM-S 5095
2001 present study

***Pilumnus nuttingi* Rathbun, 1906**

1917 BPBM-S 318
1917 BPBM-S 316
1917 BPBM-S 317
1949 BPBM-S 5468

***Pilumnus oahuensis* Edmondson, 1931** **Introduced**

2001 present study

***Pilumnus planes* Edmondson, 1931**

1921 BPBM-S 555

***Pilumnus taeniola* Rathbun, 1906**

1945 BPBM-S 5094

Family TRAPEZIIDAE

***Domecia hispida* Eydoux and Souleyet, 1842**

no date BPBM-S 2261
1923 BPBM-S 1588
1927 BPBM-S 2788
2001 present study

***Jonesius triunguiculatus* (Borradaile, 1902)**

2001 present study

***Trapezia cymodoce* (Herbst, 1799)**

1927 BPBM-S 2771
1927 BPBM-S 2700
1930 BPBM-S 3078
1938 BPBM-S 4406
1939 BPBM-S 4422
1939 BPBM-S 4432
1948 BPBM-S 5346

***Trapezia digitalis* Latreille, 1825**

no date BPBM-S 2265
1921 BPBM-S 559
1923 BPBM-S 1555
1945 BPBM-S 5091

***Trapezia ferruginea* Latreille, 1825**

2001 present study

***Trapezia flavopunctata* Eydoux and Souleyet, 1842**

1945 BPBM-S 5092

***Trapezia intermedia* Miers, 1886**

1914 BPBM-S 1574
1921 BPBM-S 567
1921 BPBM-S 906
1922 BPBM-S 742
1945 BPBM-S 5090

***Trapezia rufopunctata* (Herbst, 1799)**

1921 BPBM-S 566
1921 BPBM-S 908
1945 BPBM-S 5089
1948 BPBM-S 5345

***Trapezia* sp. juv.**

2001 present study

***Trapezia tigrina* Eydoux and Souleyet, 1842**

no date BPBM-S 2264 (as *Trapezia maculata*)

1923 BPBM-S 1568 (as *Trapezia maculata*)

Family ATELECYCLIDAE

***Kraussia rugulosa* (Krauss, 1843)**

1921 BPBM-S 477

1922 BPBM-S 725

1927 BPBM-S 2692

Family XANTHIDAE

***Actaea nodulosa* (White, 1947)**

no date BPBM-S 6599

1917 BPBM-S 284

1917 BPBM-S 285

1917 BPBM-S 286

1917 BPBM-S 289

1917 BPBM-S 288

1949 BPBM-S 5499

1949 BPBM-S 5389

1963 BPBM-S 6903

2001 present study

***Actaea* sp.**

1963 BPBM-S 6893

***Actaea superciliaris* Odhner, 1925**

1921 BPBM-S 549

1921 BPBM-S 1545

2001 present study

***Actumnus obesus* Dana, 1852**

no date BPBM-S 6600

1916 BPBM-S 295

1916 BPBM-S 296

1917 BPBM-S 294

1917 BPBM-S 293

1917 BPBM-S 292

1917 BPBM-S 290

1917 BPBM-S 291

***Chlorodiella nigra* (Forsskå, 1775)**

no date BPBM-S 2254 (as *Chlorodiella niger*)

1922 BPBM-S 714 (as *Chlorodiella niger*)

1927 BPBM-S 2752 (as *Chlorodiella niger*)

1927 BPBM-S 2775 (as *Chlorodiella niger*)

1927 BPBM-S 2864 (as *Chlorodiella niger*)

1927 BPBM-S 2892 (as *Chlorodiella niger*)

1929 BPBM-S 5039 (as *Chlorodiella niger*)

1930 BPBM-S 3079 (as *Chlorodiella niger*)

1945 BPBM-S 5103 (as *Chlorodiella niger*)

***Chlorodiella* sp.**

2001 present study

***Etisus electra* (Herbst, 1801)**

1922 BPBM-S 709

1927 BPBM-S 2696

1930 BPBM-S 3098

***Etisus* sp.**

2001 present study

***Leptodius exaratus* (Milne Edwards, 1834)**

1922 BPBM-S 1015

1922 BPBM-S 910

1922 BPBM-S 707
1923 BPBM-S 1543
1923 BPBM-S 1068
1924 BPBM-S 2422
1927 BPBM-S 2888
1927 BPBM-S 2691
1927 BPBM-S 2889
1929 BPBM-S 3205
1930 BPBM-S 3126
1930 BPBM-S 3091

***Leptodius sanguineus* (Milne Edwards, 1834)**

no date BPBM-S 2250
1924 BPBM-S 2568
1924 BPBM-S 2182
1927 BPBM-S 2689
1927 BPBM-S 2857
1927 BPBM-S 2690
1927 BPBM-S 2764
1928 BPBM-S 3056
1928 BPBM-S 3013
1930 BPBM-S 3101
1930 BPBM-S 3095
1940 BPBM-S 4849

***Leptodius* sp.**

1921 BPBM-S 912 (as *Xantho* sp.)

***Leptodius waialuanus* Rathbun, 1906**

1921 BPBM-S 911
1923 BPBM-S 1542

***Liocarpilodes biunguis* (Rathbun, 1906)**

1921 BPBM-S 562 (as *Zozymodes biunguis*)
1927 BPBM-S 2757 (as *Zoozymodes biunguis*)
1927 BPBM-S 2865 (as *Zoozymodes biunguis*)
1928 BPBM-S 2932 (as *Zoozymodes biunguis*)
1930 BPBM-S 3122 (as *Zoozymodes biunguis*)
2001 present study

***Liocarpilodes integerrimus* Dana, 1852**

1921 BPBM-S 920
2001 present study

***Liomera bella* (Dana, 1852)**

no date BPBM-S 2247 (as *Carpilodes bellus*)
1923 BPBM-S 1554 (as *Carpilodes bellus*)
1927 BPBM-S 2862 (as *Carpilodes vaillantianus*)
1927 BPBM-S 2685 (as *Carpilodes vaillantianus*)
1927 BPBM-S 2893 (as *Carpilodes vaillantianus*)
1927 BPBM-S 2750 (as *Carpilodes vaillantianus*)
1929 BPBM-S 3549 (as *Carpilodes vaillantianus*)
1930 BPBM-S 3081 (as *Carpilodes vaillantianus*)
2001 present study

***Liomera rubra* (Milne Edwards, 1865)**

1917 BPBM-S 298 (as *Carpilodes ruber*)
1945 BPBM-S 5098 (as *Carpilodes ruber*)
2001 present study

***Liomera rugata* (Milne Edwards, 1834)**

no date BPBM-S 2245 (as *Carpilodes rugatus*)
1921 BPBM-S 553 (as *Carpilodes rugatus*)
1923 BPBM-S 1553 (as *Carpilodes rugatus*)

1939 BPBM-S 4425 (as *Carpilodes rugatus*)
2001 present study

***Liomera supernodosa* Rathbun, 1906**
no date BPBM-S 2246 (as *Carpilodes supernodosus*)
1921 BPBM-S 565 (as *Carpilodes supernodosus*)
1922 BPBM-S 737 (as *Carpilodes supernodosus*)
1927 BPBM-S 2686 (as *Carpilodes supernodosus*)
1930 BPBM-S 3128 (as *Carpilodes supernodosus*)

***Liomera virgata* (Rathbun, 1906)**
1917 BPBM-S 300 (as *Carpilodes virgatus*)
1917 BPBM-S 299 (as *Carpilodes virgatus*)

***Lophozozymus dodone* (Herbst, 1801)**
no date BPBM-S 2258
1923 BPBM-S 1510
1927 BPBM-S 2755
1927 BPBM-S 2861
1927 BPBM-S 2677
1930 BPBM-S 3087

Lophozozymus intonsus
1930 BPBM-S 3145

***Lophozozymus pulchellus* Milne Edwards, 1867**
no date BPBM-S 2257
1922 BPBM-S 944
1963 BPBM-S 6906

***Lybia edmondsoni* Takeda and Miyake, 1970**
1917 BPBM-S 349 (as *Lybia tesselata*)
1921 BPBM-S 734 (as *Lybia tesselata*)

***Macromedaeus crassimanus* (Milne Edwards, 1867)**
no date BPBM-S 2253 (as *Xantho crassimanus*)
1921 BPBM-S 1544 (as *Xantho crassimanus*)
1923 BPBM-S 1552 (as *Xantho crassimanus*)
1924 BPBM-S 2569 (as *Xantho crassimanus*)
1927 BPBM-S 2697 (as *Xantho crassimanus*)
1927 BPBM-S 2890 (as *Xantho crassimanus*)
1929 BPBM-S 3550 (as *Xantho crassimanus*)
1929 BPBM-S 3201 (as *Xantho crassimanus*)
1930 BPBM-S 3080 (as *Xanthias crassimanus*)

***Macromedaeus quinquedentatus* (Krauss, 1843)**
1921 BPBM-S 921 (as *Xantho quinquedentata*)

Meda*eus elegans* Milne Edwards, 1867
1921 BPBM-S 913
1922 BPBM-S 708
1923 BPBM-S 1558
1923 BPBM-S 2267
1927 BPBM-S 2688
1927 BPBM-S 2763
1927 BPBM-S 2780
1928 BPBM-S 3028
1930 BPBM-S 3096
2001 present study

***Medaeus ornatus* Dana, 1852**
1917 BPBM-S 369
1921 BPBM-S 915
1945 BPBM-S 5102

***Neoxanthops angustus* (Rathbun, 1906)**
1963 BPBM-S 6905 (as *Cycloxanthops angustus*)

Paractaea rufopunctata **Guinot, 1969**

1922 BPBM-S 720 (as *Actaea rufopuncta*)
1930 BPBM-S 3117 (as *Actaea rufopuncta*)

Paramedaeus simplex **(Milne Edwards, 1873)**

1921 BPBM-S 914 (as *Medaeus simplex*)
1928 BPBM-S 3029 (as *Medaeus simplex*)
1930 BPBM-S 3097 (as *Medaeus simplex*)
2001 present study

Paramedaeus **sp.**

2001 present study

Paraxanthias notatus **(Dana, 1852)**

no date BPBM-S 2670
no date BPBM-S 2251
1916 BPBM-S 950
1923 BPBM-S 1512
1927 BPBM-S 2756
1927 BPBM-S 2856
1927 BPBM-S 2774
1927 BPBM-S 2910
1928 BPBM-S 3035
1930 BPBM-S 3068
2001 present study

Phymodius monticulosus **(Dana, 1852)**

1927 BPBM-S 2751 (as *Carpilodes monticulosus*)
1927 BPBM-S 2687 (as *Carpilodes monticulosus*)
1927 BPBM-S 2777 (as *Carpilodes monticulosus*)
1928 BPBM-S 3019 (as *Carpilodes monticulosus*)
1930 BPBM-S 3082 (as *Carpilodes monticulosus*)

Phymodius nitidus **(Dana, 1852)**

1916 BPBM-S 949
1921 BPBM-S 552
1921 BPBM-S 916
1923 BPBM-S 1567
1927 BPBM-S 2753
1927 BPBM-S 2773
1927 BPBM-S 2698
1927 BPBM-S 2858
1930 BPBM-S 3069
1939 BPBM-S 4424
2001 present study

Phymodius ungulatus **(Milne Edwards, 1834)**

no date BPBM-S 2262
1923 BPBM-S 1571
1927 BPBM-S 2859
1927 BPBM-S 2754
1927 BPBM-S 2805
1930 BPBM-S 3077
2001 present study

Pilodius areolatus **(Milne Edwards, 1834)**

no date BPBM-S 2255 (as *Chlorodopsis areolata*)
1921 BPBM-S 550 (as *Chlorodopsis areolata*)
1923 BPBM-S 1566 (as *Chlorodopsis areolata*)
1927 BPBM-S 2855 (as *Chlorodopsis areolata*)
1927 BPBM-S 2891 (as *Chlorodopsis areolata*)
1927 BPBM-S 2748 (as *Chlorodopsis areolata*)
1927 BPBM-S 2699 (as *Chlorodopsis areolata*)

1927 BPBM-S 2804 (as *Chlorodopsis areolata*)
1930 BPBM-S 3070 (as *Chlorodopsis areolata*)
2001 present study

***Pilodius flavus* Rathbun, 1893**

1917 BPBM-S 348
1963 BPBM-S 6904
2001 present study

***Platypodia actaeoides* (Milne Edwards , 1867)**

1923 BPBM-S 1580
1925 BPBM-S 2259

***Platypodia eydouxii* (Milne Edwards, 1865)**

no date BPBM-S 1576
no date BPBM-S 3022
no date BPBM-S 2260
1921 BPBM-S 551
1924 BPBM-S 2574
1927 BPBM-S 2676
1927 BPBM-S 2749
1927 BPBM-S 2776
1927 BPBM-S 2854
1928 BPBM-S 3034
1930 BPBM-S 3074
1930 BPBM-S 3102
1939 BPBM-S 4428
2001 present study

***Platypodia semigranosa* (Heller, 1861)**

1917 BPBM-S 337
1922 BPBM-S 703
1922 BPBM-S 530
1945 BPBM-S 5093
2001 present study

***Platypodia* sp.**

2001 present study

***Polydectus cupulifer* Latreille, 1825**

1921 BPBM-S 733
1923 BPBM-S 1556
1923 BPBM-S 2268
1927 BPBM-S 2843
1927 BPBM-S 2678
1927 BPBM-S 2765
1928 BPBM-S 3121

***Pseudoliomera remota* (Rathbun, 1907)**

2001 present study

***Pseudoliomera* sp.**

2001 present study

***Pseudoliomera speciosa* (Dana, 1852)**

no date BPBM-S 2256 (as *Actaea speciosa*)
1923 BPBM-S 1570 (as *Actaea speciosa*)

***Pseudoliomera variolosa* (Borradaile, 1902)**

1924 BPBM-S 2183 (as *Actaea variolosa*)
1928 BPBM-S 3030 (as *Actaea variolosa*)
1930 BPBM-S 3089 (as *Actaea variolosa*)
1932 BPBM-S 3654 (as *Actaea variolosa*)
1945 BPBM-S 5153 (as *Actaea variolosa*)
2001 present study

***Tweedieia laysani* (Rathbun, 1906)**

1921 BPBM-S 485 (as *Phymodius laysani*)
1921 BPBM-S 488 (as *Phymodius laysani*)
1921 BPBM-S 935 (as *Phymodius laysani*)
1921 BPBM-S 561 (as *Phymodius laysani*)
1922 BPBM-S 722 (as *Phymodius laysani*)
1922 BPBM-S 655 (as *Phymodius laysani*)
1922 BPBM-S 1016 (as *Phymodius laysani*)
1927 BPBM-S 2782 (as *Phymodius laysani*)
1930 BPBM-S 3340 (as *Phymodius laysani*)
2001 present study

***Xanthias canaliculatus* Rathbun, 1906**

no date BPBM-S 2252
1921 BPBM-S 554
1923 BPBM-S 1573
1927 BPBM-S 2783
1927 BPBM-S 2671
1930 BPBM-S 3088
2001 present study

***Xanthias latifrons* (de Man, 1888)**

1916 BPBM-S 342
1917 BPBM-S 343
1949 BPBM-S 5470
1963 BPBM-S 6902
2001 present study

***Zozymus* sp.**

2001 present study

Family DROMIIDAE

***Cryptodromiopsis tridens* (Lewinsohn, 1984)**

1921 BPBM-S 568
1921 BPBM-S 569
1922 BPBM-S 715
1945 BPBM-S 5097
1948 BPBM-S 5350
2001 present study

***Dromidia unidentata hawaiiensis* Edmondson, 1922**

1921 BPBM-S 571 (as *Dromidia unidentata*)
1929 BPBM-S 3542 (as *Dromidia unidentata*)

Family DYNOMENIIDAE

***Dynomene hispida* Guérin-Menéville, 1832**

1921 BPBM-S 480
1921 BPBM-S 11866
1923 BPBM-S 1587
1927 BPBM-S 2883
1928 BPBM-S 3024
1930 BPBM-S 3131
2001 present study

***Dynomene praedator* Milne Edwards, 1879**

1921 BPBM-S 572
1922 BPBM-S 739
1945 BPBM-S 5096

Family MAJIDAE

***Acanthophrys* sp.**

1917 BPBM-S 422
1917 BPBM-S 423

***Achaeus* sp.**

2001 present study

***Huenia proteus* De Haan, 1839**

1949 BPBM-S 5463

***Hyastenus tenuicornis* (Pocock , 1895)**

1917 BPBM-S 918
1949 BPBM-S 5471
2001 present study

***Lambracheaus ramifer* Alcock, 1895**

1917 BPBM-S 919

***Menaethius monoceros* (Latreille, 1825)**

1921 BPBM-S 751
1921 BPBM-S 922
1922 BPBM-S 723
1923 BPBM-S 2273
1923 BPBM-S 1559
1927 BPBM-S 2673
1927 BPBM-S 2785
1930 BPBM-S 3090
1944 BPBM-S 5079
2001 present study

***Micippa parca* Alcock, 1895**

1917 BPBM-S 426

***Micippa* sp.**

2001 present study

***Oncinopus* sp.**

2001 present study

***Perinea tumida* Dana, 1852**

1921 BPBM-S 482
1923 BPBM-S 1561
1923 BPBM-S 2269
1927 BPBM-S 2778
1930 BPBM-S 3551
1932 BPBM-S 3655
1945 BPBM-S 5105
2001 present study

***Schizophorida hilensis* Rathbun, 1906**

1922 BPBM-S 657 (as *Schizophrys hilensis*)
1923 BPBM-S 1560 (as *Schizophrys hilensis*)
1924 BPBM-S 2181 (as *Schizophrys hilensis*)
1927 BPBM-S 2674 (as *Schizophrys hilensis*)
1928 BPBM-S 3060 (as *Schizophrys hilensis*)
1930 BPBM-S 3072 (as *Schizophrys hilensis*)
2001 present study

***Simocarcinus simplex* (Dana, 1852)**

1917 BPBM-S 428
1922 BPBM-S 721
1923 BPBM-S 2270
1923 BPBM-S 1563
1927 BPBM-S 2672
1927 BPBM-S 2784
1927 BPBM-S 2863
1928 BPBM-S 3014
1928 BPBM-S 3058
1930 BPBM-S 3071
1945 BPBM-S 5100

2001 present study

Family PARTHENOPIDAE

***Daldorfia horrida (*Linnaeus, 1758)**

1921 BPBM-S 556
1921 BPBM-S 487
1923 BPBM-S 1572
1926 BPBM-S 2851
1929 BPBM-S 3202
1959 BPBM-S 6667

***Daldorfia rathbunae* de Man, 1902**

1917 BPBM-S 452

***Parthenope (Pseudolambrus) calappoides* (Adams and White, 1848)**

1945 BPBM-S 5101

***Parthenope (Pseudolambrus)* sp.**

1916 BPBM-S 450 (as *Pseudolambrus* sp.)
1949 BPBM-S 11973 (as *Pseudolambrus* sp.)

***Rhinolambrus lamelligera* (White, 1847)**

1949 BPBM-S 5466 as *Parthenope lamelligera*

***Parthenope* sp.**

1963 BPBM-S 6898

unid. Parthenopidae sp.1

2001 present study

unid. Parthenopidae sp.2

2001 present study

Family AETHRIDAE

***Actaeomorpha erosa* Miers , 1878**

1922 BPBM-S 941
2001 present study

***Aethra edentata* Edmondson, 1951**

1963 BPBM-S 6996

Family CALAPPIDAE

***Calappa calappa* (Linnaeus, 1758)**

1963 BPBM-S 6917

***Calappa gallus* (Herbst, 1803)**

1916 BPBM-S 446
1922 BPBM-S 1585
1944 BPBM-S 5078
1963 BPBM-S 6900

***Calappa hepatica* (Linnaeus, 1758)**

1922 BPBM-S 1584
1948 BPBM-S 5378
1949 BPBM-S 5390

***Calappa* sp.**

no date BPBM-S 447
1916 BPBM-S 448
1949 BPBM-S 5465

***Cycloes marisrubri* Galil & Clark, 1996**

1917 BPBM-S 917 (as *Cycloes granulosa*)
1948 BPBM-S 5356 (as *Cryptosoma granulosum*)
1949 BPBM-S 5472 (as *Cryptosoma granulosum*)
1949 BPBM-S 5500 (as *Cryptosoma granulosum*)

***Mursia spinimanus* Rathbun, 1906**

1959 BPBM-S 6747

Family LEUCOSIIDAE

***Heteronucia spinifera* Edmondson, 1951**

1945 BPBM-S 5185

***Myra brevimana* (Alcock, 1896)**

1917 BPBM-S 455 (as *Persophona brevimana*)

1917 BPBM-S 454 (as *Persophona brevimana*)

***Nucia speciosa* Dana, 1852**

1921 BPBM-S 489

1921 BPBM-S 560

1922 BPBM-S 719

1927 BPBM-S 2675

1930 BPBM-S 3116

1963 BPBM-S 6915

***Nucia* sp.**

2001 present study

***Oreotlos lagarodes* Tan and Ng, 1995**

1917 BPBM-S 456

1927 BPBM-S 2786

Infraorder THALASSINIDEA

Family CALLIANASSIDAE

***Callianassa (Callichirus) articulata* Rathbun, 1906**

1941 BPBM-S 4678

Dehaan, 1841

1931 BPBM-S 4595 (as *Callianassa oahuensis*)

***Callianassa* sp.**

1927 BPBM-S 2710

1951 BPBM-S 6140

1972 Chave et al. 1973

1981 AECOS 1981

1995 AECOS 1995

***Neocallichirus indicus* (De Man, 1905)**

1916 BPBM-S 4608 (as *Callianassa variabilis*)

1922 BPBM-S 4609 (as *Callianassa variabilis*)

1922 BPBM-S 4610 (as *Callianassa variabilis*)

1927 BPBM-S 4611 (as *Callianassa variabilis*)

1929 BPBM-S 4612 (as *Callianassa variabilis*)

1930 BPBM-S 4613 (as *Callianassa variabilis*)

Infraorder PALINURIDEA

Family SCYLLARIDAE

***Scyllarides haanii* deHaan, 1841**

1923 BPBM-S 1110 (as *Pagurus haani*)

1930 BPBM-S 3153 (as *Pagurus haani*)

Infraorder ANOMURA

Family DIOGENIDAE

***Calcinus elegans* Milne Edwards, 1836**

1922 BPBM-S 1090

1922 BPBM-S 1088

1923 BPBM-S 1084

1923 BPBM-S 2275

1927 BPBM-S 2682

1928 BPBM-S 3059

1928 BPBM-S 3015

1930 BPBM-S 3084

1930 BPBM-S 3118

2001 present study

***Calcinus gaimardii* Milne Edwards, 1848**

1923 BPBM-S 3906 (as *Calcinus terrae-reginae*)

***Calcinus guamensis* Wooster, 1982**

2001 present study

***Calcinus laevimanus* (Randall, 1839)**

1921 BPBM-S 1082 (as *Calcinus herbsti*)
1922 BPBM-S 1081 (as *Calcinus herbsti*)
1923 BPBM-S 1078 (as *Calcinus herbsti*)
1924 BPBM-S 2576 (as *Calcinus herbsti*)
1930 BPBM-S 3083 (as *Calcinus herbsti*)

***Calcinus latens* (Randall, 1839)**

1923 BPBM-S 1093
1923 BPBM-S 4718
1923 BPBM-S 4717
1927 BPBM-S 2683
1930 BPBM-S 3123
1945 BPBM-S 5193
2001 present study

***Calcinus laurentae* Haig & McLauchlin, 1983**

2001 present study

***Ciliopagurus strigatus* (Herbst, 1804)**

1917 BPBM-S 215 (as *Aniculus strigatus*)
1921 BPBM-S 1095 (as *Aniculus strigatus*)

***Clibanarius zebra* (Dana, 1852)**

1923 BPBM-S 1098
1924 BPBM-S 2577

***Dardanus deformis* Milne Edwards, 1836**

1921 BPBM-S 1109 (as *Pagurus deformis*)
1923 BPBM-S 1108 (as *Pagurus deformis*)
1924 BPBM-S 2575 (as *Pagurus deformis*)
1944 BPBM-S 5076 (as *Pagurus deformis*)

***Dardanus megistos* (Herbst, 1804)**

no date BPBM-S 195 (as *Pagurus megistos*)

Family PAGURIDAE

Anapagrides reesei

2001 present study

Catapaguroides setosus

1949 BPBM-S 5512 (as *Cestopagurus setosus*)

***Micropagurus devaneyi* McLaughlin, 1986**

2001 present study

Pagurixus festinus

2001 present study

***Pygmaeopagurus hadrochirus* McLaughlin, 1986**

2001 present study

***Pylopaguropsis keijii* McLaughlin & Haig, 1989**

1945 BPBM-S 5195
2001 present study

Family GALATHEIDAE

***Galathea* sp.**

1917 BPBM-S 142

***Galathea spinosorostris* Dana, 1852**

1917 BPBM-S 144
1917 BPBM-S 143
1921 BPBM-S 924
2001 present study

Phylladiorhynchus integrirostris
1945 BPBM-S 5106
Family PORCELLANIDAE
***Pachycheles pisoides* (Heller, 1865)**
1921 BPBM-S 927
1923 BPBM-S 2272
1927 BPBM-S 2781
1930 BPBM-S 3130
***Petrolisthes coccineus* (Owen, 1839)**
1921 BPBM-S 907
1923 BPBM-S 2271
***Petrolisthes* sp.**
2001 present study
Family ALBUNEIDAE
***Albunea speciosa* Dana, 1852**
1923 BPBM-S 1541
1923 BPBM-S 3142
1948 BPBM-S 5348
1948 BPBM-S 5343
Family HIPPIDAE
***Hippa pacifica* (Dana, 1852)**
1921 BPBM-S 727
1922 BPBM-S 1017
1923 BPBM-S 1514
1927 BPBM-S 2901
1928 BPBM-S 3020
1929 BPBM-S 3509
1930 BPBM-S 3133

Phylum ECTOPROCTA
Class GYMNOLAEMATA
Order CHEILOSTOMATA
Suborder ANASCA
Family BEANIIDAE
***Beania discodermiae* (Ortmann, 1890)**
2001 present study
Family CELLEPORIDAE
***Celleporaria aperta* (Hincks, 1882)**
2001 present study
***Celleporaria fusca* (Busk, 1854)**
2001 present study
***Celleporaria pilaefera* (Canu and Bassler, 1929)**
2001 present study
***Celleporaria* sp.**
2001 present study
***Celleporaria* sp.1**
2001 present study
***Celleporaria* sp.2**
2001 present study
***Celleporaria vagans* (Busk, 1881)**
2001 present study
***Schismopora* sp.**
2001 present study
Family CRIBRILINIDAE
***Cribrilaria radiata* Moll, 1803**
2001 present study
Family CHORIZOPORIDAE

Rhamphostomella argentea **(Hincks, 1881)**
2001 present study
Synnotum aegyptiacum **(Audouin, 1826)**
2001 present study
Family CLEIDOCHASMATIDAE
Cleidochasma porcellanum **(Busk, 1860)**
2001 present study
Scrupocellaria sinuosa **Canu and Bassler, 1927**
2001 present study
Family CREPIDACANTHIDAE
Crepidacantha crinispina **Levinsen, 1909** **New HI Record**
2001 present study
Family HIPPOPODINIDAE
Cosciniopsis**? sp.**
2001 present study
Family MARGARETTIDAE
Margaretta gracilior **Ortmann, 1892**
2001 present study
Margaretta watersi **Canu and Bassler, 1930**
2001 present study
Family MYRIOZOIDAE
Myriozoum honolulense **(Busk, 1884)**
no date BPBM-K 261
Family SAVIGNYELLIDAE
Savignyella lafontii **(Audouin, 1826)** **Introduced**
2001 present study
Family SCHIZOPORELLIDAE
Schizomavella inclusa**? (Thornely, 1906)** **New HI Record**
2001 present study
Schizoporella decorata **Canu and Bassler, 1927**
2001 present study
Schizoporella **sp.**
2001 present study
Family SERTELLIDAE
Reteporellina denticulata **(Busk, 1884)**
no date BPBM-K 265
2001 present study
Rhynchozoon **sp.**
2001 present study
Rhynchozoon tubulosum**? (Hinks, 1988)** **New HI Record**
2001 present study
Family SMITTINIDAE
Parasmittina decorata **Soule and Soule, 1973**
2001 present study
Parasmittina serrula **Soule and Soule, 1973**
2001 present study
Parasmittina **sp.**
2001 present study
Family VITTATICELLIDAE
Vittaticella**? sp.**
2001 present study
Family WATERSIPORIDAE
Watersipora edmondsoni **Soule and Soule, 1968** **Introduced**
2001 present study
Family STEGINOPORELLIDAE

***Steginoporella magnilabris* (Busk, 1854)**
no date BPBM-K 258
no date BPBM-K 263
Family AETEIDAE
***Aetea* sp.**
2001 present study
Class STENOLAEMATA
Order CYCLOSTOMATA
Suborder ARTICULATA
Family CRISIIDAE
***Crisia* sp.**
2001 present study
***Crisina radians* (Lamarck, 1816)**
2001 present study
***Crisina* sp.**
2001 present study
***Diaperoecia* sp.**
2001 present study
Family LICHENOPORIDAE
***Disporella* sp.**
2001 present study
***Lichenopora* sp.**
2001 present study
Family ONCOUSOECIIDAE
Oncousoecia sp.
no date BPBM-K 262
Family TUBULIPORIDAE
***Tubulipora* sp.**
2001 present study
***Tubulipora* sp.2**
2001 present study

Phylum BRACHIOPODA
Class ARTICULATA
Order RHYNCHONELLIDA
Family LAQUEIDAE
***Frenulina sanguinolenta* Gmelin, 1817**
no date BPBM-M 117
1945 BPBM-M 105

Phylum ECHINODERMATA
Class ASTEROIDEA
Order PAXILLOSIDA
Family ASTROPECTINIDAE
***Astropecten hawaiiensis* Doderlein, 1917**
1948 BPBM-W 1127 (as *Astropecten velitaris*)
Order VALVATIDA
Family ACANTHASTERIDAE
***Acanthaster planci* Linnaeus, 1758**
1971 BPBM-W 2232
1981 AECOS 1981
1990 OI Consultants 1991
Family ASTERINIDAE
***Asterina anomala* Clark, 1921**
1945 BPBM-W 1049
2001 present study

Family ASTEROPSEIDAE

***Asteropsis carinifera* (Lamarck, 1816)**

1945 BPBM-W 1042
2001 present study

Family OREASTERIDAE

***Culcita novaeguineae* Muller and Troschel, 1842**

1972 Chave et al. 1973
2001 present study

***Pentaceraster hawaiiensis* (Fisher, 1906)**

1971 BPBM-W 1882

Family OPHIDIASTERIDAE

***Linckia guildingi* Gray, 1840**

1971 BPBM-W 2194
1971 BPBM-W 2196
1987 AECOS 1987 (as *Linckia diplax*)
1990 OI Consultants 1991 (as *Linckia diplax*)

***Linckia multifora* (Lamarck, 1816)**

1990 OI Consultants 1991

***Ophidiaster hemprichi* Fisher, 1906**

1945 BPBM-W 1039 (as *Ophidiaster squameus*)
1963 BPBM-W 1363
2001 present study

Class OPHIUROIDEA

Order OPHIURIDA

Family OPHIOCOMIDAE

***Ophiocoma brevipes* Peters, 1851**

1928 BPBM-W 753

***Ophiocoma dentata* Muller and Troschel, 1842**

no date BPBM-W 332
1922 BPBM-W 333
1923 BPBM-W 328

Ophiocoma dentata/brevipes

2001 present study

***Ophiocoma erinaceus* Muller and Troschel, 1842**

1945 BPBM-W 1111
1945 BPBM-W 1110
2001 present study

***Ophiocoma macroplaca* (Clark, 1915)**

2001 present study

***Ophiocoma pica* Muller and Troschel, 1842**

1945 BPBM-W 1109
2001 present study

***Ophiocoma pusilla* (Brock, 1888)**

2001 present study

***Ophiocomella sexradia* (Duncan, 1887)**

no date BPBM-W 1594
1958 BPBM-W 1597
1958 BPBM-W 1593
1958 BPBM-W 1595
1958 BPBM-W 1596
1958 BPBM-W 1599
1958 BPBM-W 1598
2001 present study

Family OPHIODERMATIDAE

***Ophiopeza clarki* Ely, 1942**

no date BPBM-W 1094 (as *Distichophis clarki*)

Family OPHIURIDAE

***Ophiura ursula* Clark, 1949**

1963 BPBM-W 1364

Family OPHIONEREIDIDAE

***Ophionereis porrecta* Lyman, 1860**

2001 present study

***Ophionereis* sp.**

2001 present study

Family OPHIOTRICHIDAE

***Macrophiothrix demessa* (Lyman, 1861)**

1922 BPBM-W 362 (as *Ophiothrix demessa*)

2001 present study

Family AMPHIURIDAE

***Amphipholis squamata* (Delle Chiaje, 1828)**

no date BPBM-W 2481

1930 BPBM-W 769

2001 present study

***Amphiura immira* Ely, 1942**

2001 present study

Family OPHIACTIDAE

***Ophiactis lethe* Clark, 1949**

2001 present study

***Ophiactis modesta* Brock, 1888**

1945 BPBM-W 1043

***Ophiactis savignyi* (Muller and Troschel, 1842)**

1922 BPBM-W 371

2001 present study

***Ophiactis* sp. (red-spotted)**

2001 present study

Class ECHINOIDEA

Order CIDAROIDA

Family CIDARIDAE

***Chondrocidaris gigantea* Agassiz, 1863**

2001 present study

***Eucidaris metularia* Lamarck, 1816**

no date BPBM-W 297

1922 BPBM-W 374

1945 BPBM-W 1038

1959 BPBM-W 1280

2001 present study

Order DIADEMATOIDA

Family DIADEMATIDAE

***Astropyga radiata* (Leske, 1778)**

1949 BPBM-W 1163

***Diadema paucispinum* Agassiz, 1863**

1981 AECOS 1981

1990 OI Consultants 1991

***Echinothrix calamaris* (Pallas, 1774)**

1972 Chave et al. 1973

1981 AECOS 1981

1987 AECOS 1987

1990 OI Consultants 1991

2001 present study

***Echinothrix diadema* (Linnaeus, 1758)**

1972 Chave et al. 1973
1987 AECOS 1987
1990 OI Consultants 1991
2001 present study

Order TEMNOPLEUROIDA

Family TOXOPNEUSTIDAE

***Cyrtechinus verruculatus* (Lutken, 1864)**

1924 BPBM-W 518 (as *Lytechinus verruculatus*)
1963 BPBM-W 1373

***Pseudoboletia indiana* (Michelin, 1862)**

1927 BPBM-W 623
1987 AECOS 1987
2001 present study

***Tripneustes gratilla* (Linnaeus, 1758)**

1972 Chave et al. 1973
1981 AECOS 1981
1990 OI Consultants 1991
1995 AECOS 1995
2001 present study

Order ECHINOIDA

Family ECHINOMETRIDAE

***Echinometra mathaei* (Blainville, 1825)**

1924 BPBM-W 620
1945 BPBM-W 1040
1972 Chave et al. 1973
1981 AECOS 1981
1990 OI Consultants 1991
1995 AECOS 1995
2001 present study

***Echinometra oblonga* (Blainville, 1825)**

1924 BPBM-W 621
1990 OI Consultants 1991
2001 present study

***Echinostrephus aciculatus* Agassiz, 1863**

1987 AECOS 1987
1990 OI Consultants 1991
2001 present study

***Heterocentrotus mammillatus* (Linnaeus, 1758)**

1958 BPBM-W 1247
1990 OI Consultants 1991

Family ECHINONEIDAE

***Echinoneus* sp.**

1963 BPBM-W 1372

Order CLYPEASTEROIDA

Family CLYPEASTERIDAE

***Clypeaster (Rhaphidoclypus) reticulatus* (Linnaeus, 1758)**

1959 BPBM-W 1328

***Clypeaster* sp.**

1963 BPBM-W 1370

Family FIBULARIIDAE

***Mortonia australis* (Desmoulins, 1837)**

no date BPBM-W 1141 (as *Fibularia australis*)
1923 BPBM-W 513

***Mortonia* sp.**

1963 BPBM-W 1371 (as *Fibularia* sp.)

Order SPATANGOIDA

Family BRISSIDAE

***Brissus* sp.**

1963 BPBM-W 1369

***Metalia* sp.**

1963 BPBM-W 1361

Family LOVENIIDAE

***Lovenia hawaiiensis* Mortensen, 1950**

1959 BPBM-W 1333

1959 BPBM-W 1332

Class HOLOTHUROIDEA

Order ASPIDOCHIROTIDA

Family HOLOTHURIIDAE

***Actinopyga mauritiana* (Quoy and Gaimard, 1833)**

no date BPBM-W 445

1922 BPBM-W 399

2001 present study

***Actinopyga obesa* (Selenka, 1867)**

1990 OI Consultants 1991

***Bohadschia paradoxa* (Selenka, 1867)**

1922 BPBM-W 453

1971 BPBM-W 2082

***Bohadschia* sp.**

1971 BPBM-W 2086

***Holothuria (Halodeima) atra* Jaeger, 1833**

1972 Chave et al. 1973

1981 AECOS 1981

1987 AECOS 1987

1990 OI Consultants 1991

2001 present study

***Holothuria (Lessonothuria) pardalis* Selenka, 1867**

1922 BPBM-W 457

2001 present study

***Holothuria (Mertensiothuria) leucospilota* (Brandt, 1835)**

1922 BPBM-W 447

***Holothuria (Microthele) whitmaei* Bell, 1887**

1987 AECOS 1987 (as *Holothuria nobilis*)

1990 OI Consultants 1991 (as *Holothuria nobilis*)

***Holothuria (Platyperona) difficilis* Semper, 1868**

2001 present study

***Holothuria (Semperothuria) cinerascens* (Brandt, 1835)**

no date BPBM-W 431

1922 BPBM-W 409

***Holothuria (Stauropora) pervicax* Selenka, 1867**

1922 BPBM-W 433

***Holothuria (Thymiosycia) arenicola* Semper, 1868**

no date BPBM-W 432

2001 present study

***Holothuria (Thymiosycia) impatiens* (Forsskå, 1775)**

1922 BPBM-W 446

***Holothuria* sp.**

1979 BPBM-W 2750

Order APODIDA

Family SYNAPTIDAE

***Chiridota hawaiiensis* Fisher, 1907**

1922 BPBM-W 472 (as *Chiridota rigida*)

***Euapta godeffroyi* (Semper, 1868)**
1959 BPBM-W 2874
***Polyplectana kefersteinii* (Selenka, 1867)**
1922 BPBM-W 471

Phylum HEMICHORDATA
Class ENTEROPNEUSTA
Family PTYCHODERIDAE
***Ptychodera flava laysanica* Spengel, 1903**
no date BPBM-X 37 (as *Ptychodera laysani*)

Phylum CHORDATA
Class ASCIDIACEA
Order ENTEROGONA
Suborder APLOUSOBRANCHIA
Family DIDEMNIDAE
***Didemnum candidum* Savigny, 1816** **Introduced**
2001 present study
***Didemnum edmondsoni* Eldredge, 1967**
2001 present study
***Didemnum moseleyi* (Herdman, 1886)**
2001 present study
***Didemnum pele* Eldredge, 1967**
1963 BPBM-Y 200
2001 present study
***Didemnum psammatodes* (Sluiter, 1895)**
2001 present study
***Diplosoma listerianum* (Milne Edwards, 1841)** **Introduced**
2001 present study
***Trididemnum savignii* (Herdman, 1886)**
2001 present study
pink didemnid
2001 present study
white didemnid
2001 present study
Family POLYCLINIDAE
***Polyclinum constellatum* Savigny, 1816** **Introduced**
2001 present study
Family BRANCHIOSTOMIDAE
***Epigonichthys* sp.**
2001 present study
Suborder PHLEBOBRANCHIA
Family ASCIDIIDAE
***Ascidia interrupta* Heller, 1878**
1987 AECOS 1987
***Phallusia nigra* Savigny, 1816** **Introduced**
2001 present study
Order PLEUROGONA
Suborder STOLIDOBRANCHIA
Family STYELIDAE
***Botrylloides simodensis* Saito & Watanabe, 1981** **Introduced**
2001 present study
***Cnemidocarpa areolata* (Heller, 1878)**
2001 present study
***Polycarpa aurita* (Sluiter, 1890)**
2001 present study
***Symplegma brakenhielmi* (Michaelsen, 1904)** **Introduced**
2001 present study

***Symplegma* sp.**
2001 present study
Family PYURIDAE
***Microcosmus exasperatus* Heller, 1878** **Introduced**
2001 present study
Class CHONDRICHTHYES
Subclass ELASMOBRANCHII
Order CARCHARHINIFORMES
Family CARCHARHINIDAE
***Triaenodon obesus* (Rüppell, 1837)**
1987 AECOS 1987
2001 present study
Order SQUALIFORMES
Family DALATIIDAE
***Isistius brasiliensis* (Cuvier, 1824)**
1966 BPBM 7880
Class OSTEICHTHYES
Subclass ACTINOPTERYGII
Order ANGUILLIFORMES
Suborder MURAENOIDEI
Family MURAENIDAE
***Echidna nebulosa* (Ahl, 1789)**
1000 AECOS 1987
***Echidna polyzona* (Richardson, 1844)**
1927 BPBM 7889
1975 BPBM 7890
***Gymnomuraena zebra* (Shaw, 1797)**
1981 AECOS 1981
***Gymnothorax elegans* Bliss, 1883**
1970 BPBM 7891
***Gymnothorax eurostus* (Abbott, 1860)**
2001 present study
***Gymnothorax flavimarginatus* (Rüppell, 1830)**
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study
***Gymnothorax melatremus* Schultz, 1953**
1969 BPBM 7892
***Gymnothorax meleagris* (Shaw and Nodder, 1795)**
1924 BPBM 7893
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study
***Gymnothorax nudivomer* (Playfair and Günther, 1867)**
1970 BPBM 7894
***Gymnothorax steindachneri* Jordan and Evermann, 1903**
1987 AECOS 1987
1989 Brock and Kam 1998
***Gymnothorax undulatus* (Lacepède, 1803)**
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
***Uropterygius inornatus* Gosline, 1958**

1954 BPBM 7895

***Uropterygius macrocephalus* (Bleeker, 1865)**

1996 BPBM 7896

Suborder CONGROIDEI

Family OPHICHTHIDAE

***Myrichthys maculosus* (Cuvier, 1817)**

1987 AECOS 1987

Family CONGRIDAE

***Ariosoma marginatum* Vaillant & Sauvage, 1*875* as *A. bowersi* (Jenkins, 1903)**

1969 BPBM 7897

Order CLUPEIFORMES

Family CLUPEIDAE

***Herklotsichthys quadrimaculatus* (Rüppell, 1837)** **Introduced**

1996 BPBM 7898

Family ENGRAULIDAE

***Encrasicholina purpurea* (Fowler, 1900)**

1996 BPBM 7888

Order SILURIFORMES

Family CLARIIDAE

***Clarias fuscus* (Lacepède, 1803)**

1900 BPBM 7882

Family ICTALURIDAE

***Amiurus* sp.**

1000 BPBM 7881

Order AULOPIFORMES

Suborder AULOPOIDEI

Family CHLOROPHTHALMIDAE

***Chlorophthalmus proridens* Gilbert and Cramer, 1897**

1982 BPBM 7883

Suborder ALEPISAUROIDEI

Family SYNODONTIDAE

***Saurida flamma* Waples, 1981**

1989 Brock and Kam 1998

***Saurida gracilis* (Quoy and Gaimard, 1824)**

2001 present study

***Synodus variegatus* (Lacepède, 1803)**

1989 Brock and Kam 1998

Order OPHIDIIFORMES

Family CARAPIDAE

***Encheliophis homei* (Richardson, 1846) as *Carapus homei* (Richardson, 1846)**

1915 BPBM 7884

Order LOPHIIFORMES

Suborder ANTENNARIOIDEI

Family ANTENNARIIDAE

***Antennarius drombus* Jordan and Evermann, 1903**

1923 BPBM 7899

1965 BPBM 7900

***Antennarius moluccensis* Bleeker, 1855**

1972 BPBM 7901

Order CYPRINODONTIFORMES

Family POECILIIDAE

***Poecilia latipinna* (Lesueur, 1821)** **Introduced**

1938 BPBM 7902

Order BELONIFORMES

Suborder EXOCOETOIDEI

Family HEMIRAMPHIDAE

Hyporhamphus actus pacificus* (Steindachner, 1900*) as H. pacificus

1989 Brock and Kam 1998

Order BERYCIFORMES

Suborder BERCOIDEI

Family HOLOCENTRIDAE

***Myripristis amaena* (Castelnau, 1873)**

1987 AECOS 1987

1989 Brock and Kam 1998

***Myripristis berndti* Jordan and Evermann, 1903**

1989 Brock and Kam 1998

2001 present study

***Myripristis kuntee* Cuvier, 1831**

1989 Brock and Kam 1998

***Myripristis* sp.**

2001 present study

***Sargocentron diadema* (Lacepède, 1802)**

1989 Brock and Kam 1998 (as *Adioryx diadema*)

***Sargocentron* sp.**

1996 BPBM 7903

***Sargocentron xantherythrum* (Jordan and Evermann, 1903)**

1989 Brock and Kam 1998 (as *Adioryx xantherythrus*)

Order SYNGNATHIFORMES

Suborder AULOSTOMOIDEI

Family AULOSTOMIDAE

***Aulostomus chinensis* (Linnaeus, 1766)**

1000 BPBM 7904

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

Family FISTULARIIDAE

***Fistularia commersonii* Rüppell, 1836**

1931 BPBM 7905 (as *F. petimba*)

1989 Brock and Kam 1998

2001 present study

***Fistularia petimba* Lacepède, 1803**

1922 BPBM 7906

Suborder SYNGNATHOIDEI

Family SYNGNATHIDAE

***Corythoichthys balli* Fowler, 1925**

1924 BPBM 7908

1924 BPBM 7907

***Ichthyocampus edmondsoni* Pietschmann, 1930**

1923 BPBM 7909

***Micrognathus* sp.**

1922 BPBM 7910

Order SCORPAENIFORMES

Suborder SCORPAENOIDEI

Family SCORPAENIDAE

***Pterois sphex* Jordan and Evermann, 1903**

2001 present study

***Scorpaenodes kelloggi* (Jenkins, 1903)**

1969 BPBM 7911

***Scorpaenodes parvipinnis* (Garrett, 1864)**

1969 BPBM 7912

***Scorpaenopsis brevifrons* Eschmeyer and Randall, 1975**
1951 BPBM 7913
***Scorpaenopsis cacopsis* Jenkins, 1901**
1989 Brock and Kam 1998
***Scorpaenopsis diabolus* Cuvier, 1829**
1944 BPBM 7914
1989 Brock and Kam 1998
Scorpaenopsis diabolus* Cuvier, 1829 as *Scorpaenopsis gibbosa
1923 BPBM 7915
1927 BPBM 7916
***Sebastapistes ballieui* (Sauvage, 1875)**
1916 BPBM 7917
1969 BPBM 7918
***Sebastapistes coniorta* Jenkins, 1903**
1916 BPBM 7919
1928 BPBM 7920
***Sebastapistes galactacma* Jenkins, 1903**
1916 BPBM 7921
1969 BPBM 7922
***Taenianotus triacanthus* Lacepède, 1802**
1989 Brock and Kam 1998

Family CARACANTHIDAE

***Caracanthus typicus* Kroyer, 1845**
1969 BPBM 7923

Suborder DACTYLOPTEROIDEI

Family DACTYLOPTERIDAE

***Dactyloptena orientalis* (Cuvier, 1829)**
1965 BPBM 7885

Order PERCIFORMES

Suborder PERCOIDEI

Family KUHLIIDAE

***Kuhlia sandvicensis* (Steindachner, 1876)**
1938 BPBM 7924
1972 Chave et al. 1973

Family PRIACANTHIDAE

***Heteropriacanthus cruentatus* (Lacepède, 1801)**
1989 Brock and Kam 1998 (as *Priacanthus cruentatus*)
***Priacanthus meeki* Jenkins, 1904**
1989 Brock and Kam 1998

Family APOGONIDAE

***Apogon erythrinus* Snyder, 1904**
1969 BPBM 7925
***Apogon kallopterus* Bleeker, 1856**
1989 Brock and Kam 1998
2001 present study

Family MALACANTHIDAE

***Malacanthus brevirostis* Guichenot, 1859 as *Malacanthus hoedtii* Bleeker, 1859**
1987 AECOS 1987
1990 OI Consultants 1991

Family CARANGIDAE

***Carangoides orthogrammus* (Jordan and Gilbert, 1882)**
1987 AECOS 1987
1989 Brock and Kam 1998
***Caranx ignobilis* (Forsskå, 1775)**
1989 Brock and Kam 1998

***Caranx lugubris* Poey, 1860**

1989 Brock and Kam 1998

***Caranx melampygus* Cuvier, 1833**

1987 AECOS 1987
1989 Brock and Kam 1998
2001 present study

***Decapterus macarellus* (Cuvier, 1833)**

1987 AECOS 1987
1989 Brock and Kam 1998
1994 State of Hawai`i 1994

***Elagatis bipinnulata* (Bennett, 1840)**

1989 Brock and Kam 1998

***Gnathanodon speciosus* (Forsskå, 1775)**

1987 AECOS 1987

***Scomberoides lysan* (Forsskå, 1775)**

1981 AECOS 1981
1989 Brock and Kam 1998

***Seriola dumerili* (Risso, 1810)**

1989 Brock and Kam 1998

Family LUTJANIDAE

***Aphareus furca* (Lacepède, 1802)**

1989 Brock and Kam 1998

***Aprion virescens* Valenciennes, 1830**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998

***Lutjanus fulvus* (Forster, 1801)** **Introduced**

1990 OI Consultants 1991

***Lutjanus kasmira* (Forsskå, 1775)** **Introduced**

1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawaii 1994
2001 present study

Family LETHRINIDAE

***Monotaxis grandoculis* (Forsskå, 1775)**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

Family MULLIDAE

***Mulloidichthys flavolineatus* (Lacepède, 1801)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawaii 1994
2001 present study

***Mulloidichthys pflugeri* (Steindachner, 1900)**

1989 Brock and Kam 1998

***Mulloidichthys vanicolensis* (Valenciennes, 1831)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Parupeneus bifasciatus* (Lacepède, 1802)**

1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Parupeneus cyclostomus* (Lacepède, 1801)**

1989 Brock and Kam 1998

***Parupeneus multifasciatus* (Quoy and Gaimard, 1825)**

1972 Chave et al. 1973
1981 AECOS 1981
1987 AECOS 1987
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Parupeneus pleurostigma* (Bennett, 1831)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Parupeneus porphyreus* (Jenkins, 1902)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Upeneus arge* Jordan and Evermann, 1903**

1972 Chave et al. 1973
2001 present study

Family CHAETODONTIDAE

***Chaetodon auriga* Forsskå, 1775**

1987 AECOS 1987
1989 Brock and Kam 1998
2001 present study

***Chaetodon ephippium* Cuvier, 1831**

1989 Brock and Kam 1998

***Chaetodon fremblii* Bennett, 1828**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chaetodon kleinii* Bloch, 1790**

1987 AECOS 1987
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Chaetodon lunula* (Lacepède, 1803)**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chaetodon miliaris* Quoy and Gaimard, 1824**

1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Chaetodon multicinctus* Garrett, 1863**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chaetodon ornatissimus* Solander, 1831**

1989 Brock and Kam 1998
1990 OI Consultants 1991

***Chaetodon quadrimaculatus* Gray, 1831**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chaetodon unimaculatus* Bloch, 1787**

1990 OI Consultants 1991

***Forcipiger flavissimus* Jordan and McGregor, 1898**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Forcipiger longirostris* (Broussonet, 1782)**

1989 Brock and Kam 1998

***Hemitaurichthys polylepis* (Bleeker, 1857)**

1987 AECOS 1987
1989 Brock and Kam 1998
2001 present study

***Hemitaurichthys thompsoni* Fowler, 1923**

1989 Brock and Kam 1998

***Hemitaurichthys zoster* (Bennett, 1831)**

1987 AECOS 1987

***Heniochus diphreutes* Jordan, 1903**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

Family POMACANTHIDAE

***Centropyge fisheri* (Snyder, 1904)**

1969 BPBM 7926
1987 AECOS 1987
1989 Brock and Kam 1998

***Centropyge loriculus* (Günther, 1860)**

1990 OI Consultants 1991

***Centropyge potteri* Jordan and Metz, 1912**

1969 BPBM 7927
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994

***Desmoholacanthus arcuatus* (Gray, 1831)**

2001 present study

Family POMACENTRIDAE

***Abudefduf abdominalis* (Quoy and Gaimard, 1824)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Abudefduf sordidus* (Forsskå, 1775)**

2001 present study

Abudefduf vaigiensis (Quoy and Gaimard, 1825)

2001 present study

***Chromis agilis* Smith, 1960**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chromis hanui* Randall and Swerdloff, 1973**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chromis ovalis* (Steindachner, 1900)**

1981 AECOS 1981
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chromis vanderbilti* (Fowler, 1941)**

1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Chromis verater* Jordan and Metz, 1912**

1987 AECOS 1987
1989 Brock and Kam 1998
2001 present study

***Dascyllus albisella* Gill, 1862**

1969 BPBM 7928
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Plectroglyphidodon imparipennis* (Vaillant and Sauvage, 1875)**

1990 OI Consultants 1991
2001 present study

***Plectroglyphidodon johnstonianus* Fowler and Ball, 1924**

1981 AECOS 1981
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Plectroglyphidodon sindonis* (Jordan and Evermann, 1903)**

2001 present study

***Stegastes fasciolatus* (Ogilby, 1889)**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

Family CIRRHITIDAE

***Cirrhitops fasciatus* (Bennett, 1828)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Cirrhitus pinnulatus* (Schneider, 1801)**

1990 OI Consultants 1991
2001 present study

***Oxycirrhites typus* Bleeker, 1857**

1989 Brock and Kam 1998

***Paracirrhites arcatus* (Cuvier, 1829)**

1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Paracirrhites forsteri* (Bloch, 1801)**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

Family SERRANIDAE

***Caesioperca thompsoni* Fowler, 1923**

1987 AECOS 1987 (as C. bimacula)

***Cephalopholisargus* Bloch and Schneider, 1801** **Introduced**

1989 Brock and Kam 1998
2001 present study

***Plectranthias nanus* Randall, 1980**

1969 BPBM 7929

***Pseudanthias thompsoni* (Fowler, 1923)**

1989 Brock and Kam 1998

***Suttonia lineata* Gosline, 1960**

1969 BPBM 7930

Suborder MUGILOIDEI

Family MUGILIDAE

***Mugil cephalus* Linnaeus, 1758**

1922 BPBM 7932
1922 BPBM 7931
1938 BPBM 7933

Suborder LABROIDEI

Family LABRIDAE

***Anampses chrysocephalus* Randall, 1958**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Anampses cuvier* Quoy and Gaimard, 1824**

1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Bodianus bilunulatus* (Lacepède, 1802)**

1969 BPBM 7934
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

Bodian*us bimaculatus* Allen, 1973

1987 AECOS 1987 (as *Cheilinus bimaculatus*)
1989 Brock and Kam 1998 (as *Cheilinus bimaculatus*)
1990 OI Consultants 1991 (as *Cheilinus bimaculatus*)

***Cheilio inermis* (Forsskå, 1775)**

1969 BPBM 7935
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Coris ballieui* Vaillant and Sauvage, 1875**

1967 BPBM 7937
1987 AECOS 1987 (as Coris flavovittatus)
1999 BPBM 7936

***Coris flavovittata* (Bennett, 1829)**

1987 AECOS 1987

1989 Brock and Kam 1998

***Coris gaimard* (Quoy and Gaimard, 1824)**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Coris venusta* Vaillant and Sauvage, 1875**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Gomphosus varius* Lacepède, 1801**

1990 OI Consultants 1991

2001 present study

***Halichoeres ornatissimus* (Garrett, 1863)**

1990 OI Consultants 1991

2001 present study

***Labroides phthirophagus* Randall, 1958**

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Macropharyngodon geoffroyi* (Quoy and Gaimard, 1824)**

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Novaculichthys taeniourus* (Lacepède, 1801)**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Novaculichthys woodi* Jenkins, 1900**

1950 BPBM 7938

***Oxycheilinus bimaculatus* (Valenciennes, 1840)**

1969 BPBM 7939

***Oxycheilinus unifasciatus* (Streets, 1877)**

2001 present study

***Pseudocheilinus octotaenia* Jenkins, 1901**

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Pseudojuloides cerasinus* (Snyder, 1904)**

1969 BPBM 7940

1972 Chave et al. 1973

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Stethojulis balteata* (Quoy and Gaimard, 1824)**

1969 BPBM 7941

1972 Chave et al. 1973

1981 AECOS 1981

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Thalassoma ballieui* (Vaillant and Sauvage, 1875)**

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Thalassoma duperrey* (Quoy and Gaimard, 1824)**

1972 Chave et al. 1973
1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Thalassoma lutescens* (Lay and Bennett, 1839)**

1923 BPBM 7942
1989 Brock and Kam 1998

***Thalassoma trilobatum* (Lacepède, 1801)**

1990 OI Consultants 1991

Family SCARIDAE

***Calotomus carolinus* (Valenciennes, 1839)**

1989 Brock and Kam 1998

***Calotomus zonarchus* (Jenkins, 1903)**

1987 AECOS 1987

***Chlorurus sordidus* (Forsskå, 1775)**

1989 Brock and Kam 1998 (as Scarus sordidus)
1990 OI Consultants 1991 (as Scarus sordidus)
2001 present study

***Scarus dubius* Bennett, 1828**

1981 AECOS 1981

***Scarus perspicillatus* Steindachner, 1879**

1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991

***Scarus psittacus* Forsskå, 1775**

1989 Brock and Kam 1998

***Scarus rubroviolaceus* Bleeker, 1849**

1989 Brock and Kam 1998
1990 OI Consultants 1991

***Scarus* sp.**

2001 present study

Suborder TRACHINOIDEI

Family PINGUIPEDIDAE

***Parapercis schauinslandi* (Steindachner, 1900)**

1972 Chave et al. 1973
1987 AECOS 1987
1989 Brock and Kam 1998

Suborder BLENNIOIDEI

Family TRIPTERYGIIDAE

***Enneapterygius atriceps* (Jenkins, 1904)**

1923 BPBM 7943
1923 BPBM 7944

Family BLENNIIDAE

***Blenniella gibbifrons* (Quoy and Gaimard, 1824)**

1924 BPBM 7945

***Exallias brevis* (Kner, 1868)**

1965 BPBM 7946

***Plagiotremus ewaensis* (Brock, 1948)**

1987 AECOS 1987
1989 Brock and Kam 1998

Suborder GOBIOIDEI

Family ELEOTRIDAE

***Eleotris sandwicensis* Vaillant and Sauvage, 1875**

1938 BPBM 7947

Family GOBIIDAE

***Bathygobius cocosensis* (Bleeker, 1854)**

1938 BPBM 7949

1939 BPBM 7948

***Bathygobius cotticeps* (Steindachner, 1879)**

1938 BPB M 7951

1998 BPBM 7950

***Eviota epiphanes* Jenkins, 1903**

1927 BPBM 7954

1938 BPBM 7953

1939 BPBM 7952

***Kelloggella oligolepis* (Jenkins, 1903)**

1938 BPBM 7956

1939 BPBM 7955

***Priolepis* sp.**

1939 BPBM 7957

Suborder ACANTHUROIDEI

Family ZANCLIDAE

***Zanclus cornutus* (Linnaeus, 1758)**

1981 AECOS 1981

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

Family ACANTHURIDAE

***Acanthurus achilles* Shaw, 1803**

1990 OI Consultants 1991

2001 present study

***Acanthurus blochii* Valenciennes, 1835**

1981 AECOS 1981 (as *Acanthurus mata*)

1989 Brock and Kam 1998 (as *Acanthurus mata*)

1990 OI Consultants 1991 (as *Acanthurus mata*)

2001 present study

***Acanthurus dussumieri* Valenciennes, 1835**

1990 OI Consultants 1991

1994 State of Hawai`i 1994

2001 present study

***Acanthurus leucopareius* (Jenkins, 1903)**

1989 Brock and Kam 1998

2001 present study

***Acanthurus nigrofuscus* (Forsskå, 1775)**

1981 AECOS 1981

1989 Brock and Kam 1998

1990 OI Consultants 1991

1994 State of Hawai`i 1994

2001 present study

***Acanthurus nigroris* Valenciennes, 1835**

1981 AECOS 1981

1981 AECOS 1981

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Acanthurus olivaceus* Bloch and Schneider, 1801**

1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Acanthurus triostegus* (Linnaeus, 1758)**

1981 AECOS 1981
1990 OI Consultants 1991
2001 present study

***Acanthurus xanthopterus* Valenciennes, 1835**

1994 State of Hawai`i 1994

***Ctenochaetus strigosus* (Bennett, 1828)**

1972 Chave et al. 1973
1981 AECOS 1981
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Naso brevirostris* (Valenciennes, 1835)**

1972 Chave et al. 1973
1989 Brock and Kam 1998

***Naso hexacanthus* (Bleeker, 1855)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Naso lituratus* (Forster and Schneider, 1801)**

1965 BPBM 7958
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
1994 State of Hawai`i 1994
2001 present study

***Naso unicornis* (Forsskå, 1775)**

1972 Chave et al. 1973
1981 AECOS 1981
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Zebrasoma flavescens* (Bennett, 1828)**

1981 AECOS 1981
1987 AECOS 1987
1989 Brock and Kam 1998
1990 OI Consultants 1991
2001 present study

***Zebrasoma veliferum* (Bloch, 1797)**

1989 Brock and Kam 1998

Suborder SCOMBROIDEI

Family ISTIOPHORIDAE

***Tetrapturus audax* (Philippi, 1887)**

1987 AECOS 1987

Family SCOMBRIDAE

***Acanthocybium solandri* (Cuvier, 1831)**

1989 Brock and Kam 1998

***Euthynnus affinis* (Cantor, 1849)**

1987 AECOS 1987

1989 Brock and Kam 1998

***Thunnus albacares* (Bonnaterre, 1788)**

1989 Brock and Kam 1998

Order PLEURONECTIFORMES

Suborder PLEURONECTOIDEI

Family SOLEIDAE

***Aseraggodes* sp.**

1952 BPBM 7886

***Aseraggodes therese* Randall, 1996**

1996 BPBM 7887

Order TETRAODONTIFORMES

Suborder BALISTOIDEI

Family BALISTIDAE

***Melichthys niger* (Bloch, 1786)**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

1994 State of Hawai`i 1994

2001 present study

***Melichthys vidua* (Solander, 1844)**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Rhinecanthus aculeatus* (Linnaeus, 1758)**

1990 OI Consultants 1991

***Rhinecanthus rectangulus* (Bloch and Schneider, 1801)**

1989 Brock and Kam 1998

2001 present study

***Sufflamen bursa* (Bloch and Schneider, 1801)**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

1994 State of Hawai`i 1994

2001 present study

***Sufflamen fraenatus* (Latrielle, 1804)**

1989 Brock and Kam 1998

1990 OI Consultants 1991

1994 State of Hawai`i 1994

***Xanthichthys auromarginatus* (Bennett, 1831)**

1987 AECOS 1987

Family MONACANTHIDAE

***Aluterus monoceros* (Linnaeus, 1758)**

1989 Brock and Kam 1998

***Aluterus scriptus* (Osbeck, 1765)**

1989 Brock and Kam 1998

1994 State of Hawai`i 1994

***Cantherhines dumerilii* (Hollard, 1854)**

1989 Brock and Kam 1998

2001 present study

***Cantherhines sandwichiensis* (Quoy and Gaimard, 1824)**

1987 AECOS 1987

1989 Brock and Kam 1998

2001 present study

***Cantherhines verecundus* Jordan, 1925**

1987 AECOS 1987

***Pervagor spilosoma* (Lay and Bennett, 1839)**

1981 AECOS 1981

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

Family OSTRACIIDAE

***Lactoria fornasini* (Bianconi, 1846)**

1989 Brock and Kam 1998

***Ostracion cubicus* Linnaeus, 1758**

1989 Brock and Kam 1998

Ostracion meleagris

1969 BPBM 7959

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Ostracion meleagris* camurum Jenkins, 1901**

2001 present study

***Ostracion whitleyi* Fowler, 1931**

1989 Brock and Kam 1998

Suborder TETRAODONTOIDEI

Family TETRAODONTIDAE

***Arothron hispidus* (Linneaus, 1758)**

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Arothron meleagris* (Lacepède, 1798)**

1989 Brock and Kam 1998

***Canthigaster coronata* (Vaillant and Sauvage, 1875)**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

***Canthigaster epilampra* (Jenkins, 1903)**

1989 Brock and Kam 1998

***Canthigaster jactator* (Jenkins, 1901)**

1981 AECOS 1981

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

2001 present study

Family DIODONTIDAE

***Diodon holocanthus* Linnaeus, 1758**

1987 AECOS 1987

1989 Brock and Kam 1998

1990 OI Consultants 1991

***Diodon hystrix* Linnaeus, 1758**

1989 Brock and Kam 1998

2001 present study

APPENDIX C

Station Records for Algae, Invertebrates and Fishes Collected or Observed in Waikîkî during 2001

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CYANOPHYTA	OSCILLATORIACEAE	*Lyngbya majuscula*												x	x		
CYANOPHYTA	PHORMIDIACEAE	*Symploca sp.*				x											
CHLOROPHYTA	ULVACEAE	*Ulva fasciata*															x
CHLOROPHYTA	ULVACEAE	*Ulva lactuca*															x
CHLOROPHYTA	ULVACEAE	*Ulva reticulata*	x											x	x	x	x
CHLOROPHYTA	ANADYLOMENACEAE	*Microdictyon japonicum*												x			
CHLOROPHYTA	ANADYLOMENACEAE	*Microdictyon setchellianum*									x	x					
CHLOROPHYTA	ANADYLOMENACEAE	*Microdictyon umbilicatum*														x	
CHLOROPHYTA	VALONIACEAE	*Valonia aegagropila*														x	
CHLOROPHYTA	SIPHONOCLADACEAE	*Dictyosphaeria cavernosa*							x			x		x	x	x	x
CHLOROPHYTA	SIPHONOCLADACEAE	*Dictyosphaeria versluysii*												x			x
CHLOROPHYTA	SIPHONOCLADACEAE	*Phyllodictyon anastomosans*	x														
CHLOROPHYTA	SIPHONOCLADACEAE	*Ventricaria ventricosa*												x			
CHLOROPHYTA	CODIACEAE	*Codium arabicum*												x		x	x
CHLOROPHYTA	CODIACEAE	*Codium edule*													x		x
CHLOROPHYTA	DERBESIACEAE	*Derbesia sp.*									x						
CHLOROPHYTA	CAULERPACEAE	*Caulerpa racemosa*															x
CHLOROPHYTA	CAULERPACEAE	*Caulerpa sertularioides*											x				
CHLOROPHYTA	CAULERPACEAE	*Caulerpella ambigua*															x
CHLOROPHYTA	HALIMEDACEAE	*Halimeda discoidea*												x	x	x	
CHLOROPHYTA	HALIMEDACEAE	*Halimeda gracilis*														x	
CHLOROPHYTA	DASYCLADALCEAE	*Bornetella sphaerica*							x								x
CHLOROPHYTA	DASYCLADALCEAE	*Neomeris annulata*			x				x	x			x				
CHLOROPHYTA	DASYCLADALCEAE	*Neomeris vanbosseae*							x								
CHLOROPHYTA	PRASIOLACEAE	*Cladophora socialis*								x							
CHLOROPHYTA	PRASIOLACEAE	*Cladophora sp.*						x									x
CHLOROPHYTA	PRASIOLACEAE	*Cladophoropsis membranacea*													x		
CHLOROPHYTA	PRASIOLACEAE	*Cladophoropsis sp.*					x		x		x			x		x	x
PHAEOPHYTA	ECTOCARPACEAE	*Feldmannia lebelii*															x
PHAEOPHYTA	ECTOCARPACEAE	*Hincksia indica*								x							
PHAEOPHYTA	SCYTOSIPHONACEAE	*Colpomenia sinuosa*												x	x	x	x

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PHAEOPHYTA	SPHACELARIACEAE	*Sphacelaria novae-hollandiae*															x
PHAEOPHYTA	SPHACELARIACEAE	*Sphacelaria rigidula*	x						x								
PHAEOPHYTA	DICTYOTACEAE	*Dictyopteris australis*		x		x	x		x		x	x			x	x	x
PHAEOPHYTA	DICTYOTACEAE	*Dictyopteris repens*	x		x			x		x			x		x	x	
PHAEOPHYTA	DICTYOTACEAE	*Dictyota acutiloba*					x							x	x	x	x
PHAEOPHYTA	DICTYOTACEAE	*Dictyota ceylanica*		x	x						x			x		x	
PHAEOPHYTA	DICTYOTACEAE	*Dictyota friabilis*					x	x			x			x	x	x	
PHAEOPHYTA	DICTYOTACEAE	*Dictyota sandvicensis*															x
PHAEOPHYTA	DICTYOTACEAE	*Lobophora variegata*												x			x
PHAEOPHYTA	DICTYOTACEAE	*Padina sanctae-crucis*								x				x		x	x
PHAEOPHYTA	DICTYOTACEAE	*Stypopodium hawaiiensis*															x
PHAEOPHYTA	SARGASSACEAE	*Sargassum echinocarpum*		x	x		x					x			x		x
PHAEOPHYTA	SARGASSACEAE	*Sargassum obtusifolium*				x											
PHAEOPHYTA	SARGASSACEAE	*Sargassum polyphyllum*							x					x	x	x	x
PHAEOPHYTA	SARGASSACEAE	*Turbinaria ornata*				x					x			x	x		x
RHODOPHYTA	ACROCHAETIACEAE	*Acrochaetium seriatum*															x
RHODOPHYTA	BONNEMAISONIACEAE	*Asparagopsis taxiformis*											x	x	x	x	x
RHODOPHYTA	LIAGORACEAE	*Liagora sp.*								x							x
RHODOPHYTA	GALAXAURACEAE	*Galaxaura marginata*									x						
RHODOPHYTA	GALAXAURACEAE	*Galaxaura obtusata*												x			
RHODOPHYTA	GALAXAURACEAE	*Galaxaura rugosa*												x			x
RHODOPHYTA	GALAXAURACEAE	*Galaxaura subverticillata*							x								
RHODOPHYTA	GALAXAURACEAE	*Tricleocarpa fragilis*												x			
RHODOPHYTA	HELMINTHOCLADIACEAE	*Trichogloea requienii*															x
RHODOPHYTA	GELIDIACEAE	*Gelidium pusillum*	x														
RHODOPHYTA	GELIDIACEAE	*Pterocladiella caerulescens*				x											
RHODOPHYTA	GELIDIACEAE	*Pterocladiella caloglossoides*															x
RHODOPHYTA	GELIDIACEAE	*Pterocladiella capillacea*															x
RHODOPHYTA	GELIDIACEAE	*Pterocladiella sp.*									x						
RHODOPHYTA	GELIDIELLACEAE	*Gelidiella antipai*	x														

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RHODOPHYTA	GELIDIELLACEAE	*Gelidiella machrisiana*		x									x		x		
RHODOPHYTA	CORALLINACEAE	*Amphiroa beauvoisii*		x													
RHODOPHYTA	CORALLINACEAE	*Amphiroa rigida*													x		
RHODOPHYTA	CORALLINACEAE	*Amphiroa valonioides*										x				x	
RHODOPHYTA	CORALLINACEAE	*Corallina elongata*							x								
RHODOPHYTA	CORALLINACEAE	*Hydrolithon sp,*												x			
RHODOPHYTA	CORALLINACEAE	*Jania adhaerens*	x			x	x								x		x
RHODOPHYTA	CORALLINACEAE	*Jania micrarthrodia*					x			x	x				x		x
RHODOPHYTA	CORALLINACEAE	*Jania pumila*		x					x	x						x	
RHODOPHYTA	CORALLINACEAE	*Jania sp.*												x			
RHODOPHYTA	CORALLINACEAE	*Porolithon onkodes*				x			x		x					x	x
RHODOPHYTA	RHIZOPHYLLIDACEAE	*Portieria hornemannii*									x			x		x	x
RHODOPHYTA	PEYSSONNELIACEAE	*Peyssonnelia sp.*											x				
RHODOPHYTA	CAULACANTHACEAE	*Caulacanthus ustulatus*									x						
RHODOPHYTA	HYPNEACEAE	*Hypnea cervicornis*													x		
RHODOPHYTA	HYPNEACEAE	*Hypnea musciformis*		x	x									x	x		x
RHODOPHYTA	HYPNEACEAE	*Hypnea pannosa*					x			x			x			x	
RHODOPHYTA	HYPNEACEAE	*Hypnea spinella*		x			x				x	x					x
RHODOPHYTA	HYPNEACEAE	*Hypnea valentiae*						x									
RHODOPHYTA	HYPNEACEAE	*Hypneocolax stellaris*												x			
RHODOPHYTA	GRACILARIACEAE	*Gracilaria bursapastoris*														x	
RHODOPHYTA	GRACILARIACEAE	*Gracilaria coronopifolia*													x	x	
RHODOPHYTA	GRACILARIACEAE	*Gracilaria salicornia*												x	x	x	
RHODOPHYTA	RHODYMENIACEAE	*Botryocladia skottsbergii*										x		x			x
RHODOPHYTA	RHODYMENIACEAE	*Chrysymenia glebosa*	x				x					x					
RHODOPHYTA	RHODYMENIACEAE	*Chrysymenia okamurae*							x				x				
RHODOPHYTA	RHODYMENIACEAE	*Coelothrix irregularis*	x									x					
RHODOPHYTA	RHODYMENIACEAE	*Gelidiopsis inticata*												x			
RHODOPHYTA	RHODYMENIACEAE	*Gelidiopsis scoparia*					x		x								
RHODOPHYTA	RHODYMENIACEAE	*Halichrysis coalescens*		x													
RHODOPHYTA	RHODYMENIACEAE	*Rhodymenia leptophylla*	x				x										

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RHODOPHYTA	RHODYMENIACEAE	*Rhodymenia sp.*								x							
RHODOPHYTA	CHAMPIACEAE	*Champia parvula*		x						x	x			x	x		x
RHODOPHYTA	LOMENTARIACEAE	*Lomentaria hakodatensis*		x							x	x	x				
RHODOPHYTA	CERAMIACEAE	*Aglaothamnion boergesenii*				x									x		
RHODOPHYTA	CERAMIACEAE	*Aglaothamnion cordatum*			x			x		x		x					
RHODOPHYTA	CERAMIACEAE	*Aglaothamnion sp.*									x						
RHODOPHYTA	CERAMIACEAE	*Anotrichium secundum*														x	
RHODOPHYTA	CERAMIACEAE	*Anotrichium tenue*												x			
RHODOPHYTA	CERAMIACEAE	*Antithamnionella breviramosa*							x								
RHODOPHYTA	CERAMIACEAE	*Antithamnionella graeffei*						x									
RHODOPHYTA	CERAMIACEAE	*Centroceras c lavulatum*													x		x
RHODOPHYTA	CERAMIACEAE	*Centroceras corallophiloides*				x											
RHODOPHYTA	CERAMIACEAE	*Ceramium aduncum*														x	x
RHODOPHYTA	CERAMIACEAE	*Ceramium borneense*							x		x						
RHODOPHYTA	CERAMIACEAE	*Ceramium cingulum*	x	x							x					x	
RHODOPHYTA	CERAMIACEAE	*Ceramium clarionensis*		x		x						x		x	x		
RHODOPHYTA	CERAMIACEAE	*Ceramium dumosertum*								x	x					x	x
RHODOPHYTA	CERAMIACEAE	*Ceramium fimbriatum*												x	x		x
RHODOPHYTA	CERAMIACEAE	*Ceramium flaccidum*			x							x		x	x	x	
RHODOPHYTA	CERAMIACEAE	*Ceramium hanaense*	x		x	x	x										
RHODOPHYTA	CERAMIACEAE	*Ceramium macilentum*															x
RHODOPHYTA	CERAMIACEAE	*Ceramium sp.*			x		x	x							x		x
RHODOPHYTA	CERAMIACEAE	*Ceramium tranquillum*								x							
RHODOPHYTA	CERAMIACEAE	*Ceramium vagans*									x						
RHODOPHYTA	CERAMIACEAE	*Crouania mageshimensis*	x			x	x		x	x	x					x	
RHODOPHYTA	CERAMIACEAE	*Crouania minutissima*	x				x								x		
RHODOPHYTA	CERAMIACEAE	*Diplothamnion jolyi*			x			x		x		x	x				
RHODOPHYTA	CERAMIACEAE	*Falkenbergia hillebrandii*	x	x		x	x		x	x		x		x	x	x	
RHODOPHYTA	CERAMIACEAE	*Gloiocladia iyoensis*	x								x						
RHODOPHYTA	CERAMIACEAE	*Griffithsia heteromorpha*									x			x			x
RHODOPHYTA	CERAMIACEAE	*Griffithsia metcalfii*					x										

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RHODOPHYTA	CERAMIACEAE	*Griffithsia schousboei*	x														
RHODOPHYTA	CERAMIACEAE	*Griffithsia sp.*				x											
RHODOPHYTA	CERAMIACEAE	*Haloplegma duperreyi*		x		x								x	x		
RHODOPHYTA	CERAMIACEAE	*Ossiella pacifica*	x	x		x	x										
RHODOPHYTA	CERAMIACEAE	*Spyridia filamentosa*		x	x					x				x	x	x	
RHODOPHYTA	CERAMIACEAE	*Tiffaniella saccorhiza*	x	x	x			x						x			
RHODOPHYTA	DELESSERIACEAE	*Dotyella hawaiiensis*		x					x	x							
RHODOPHYTA	DELESSERIACEAE	*Dotyella irregularis*										x			x		
RHODOPHYTA	DELESSERIACEAE	*Hypoglossum simulans*	x	x				x									
RHODOPHYTA	DELESSERIACEAE	*Hypoglossum sp.*									x						
RHODOPHYTA	DELESSERIACEAE	*Martensia fragilis*	x												x		x
RHODOPHYTA	DELESSERIACEAE	*Neomartensia flabelliformis*								x		x					
RHODOPHYTA	DASYACEAE	*Dasya iridescens*								x			x	x		x	
RHODOPHYTA	DASYACEAE	*Dasya kristeniae*	x	x					x	x							x
RHODOPHYTA	DASYACEAE	*Dasya murrayana*				x											
RHODOPHYTA	DASYACEAE	*Dasya sp.*									x						
RHODOPHYTA	DASYACEAE	*Heterosiphonia crispella*									x						x
RHODOPHYTA	RHODOMELACEAE	*Acanthophora pacifica*							x		x						
RHODOPHYTA	RHODOMELACEAE	*Acanthophora spicifera*												x	x	x	x
RHODOPHYTA	RHODOMELACEAE	*Amansia glomerata*	x	x		x				x			x	x	x	x	
RHODOPHYTA	RHODOMELACEAE	*Chondria dangeardii*												x	x		
RHODOPHYTA	RHODOMELACEAE	*Chondria polyrhiza*	x													x	x
RHODOPHYTA	RHODOMELACEAE	*Chondria simpliciuscula*		x						x	x					x	x
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia arcuata*							x							x	
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia crassa*			x						x			x			x
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia delicatula*									x						
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia nuda*														x	
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia obscura*												x			
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia parca*		x			x										
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia sp.*													x		
RHODOPHYTA	RHODOMELACEAE	*Laurencia majuscula*			x												x

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RHODOPHYTA	RHODOMELACEAE	*Laurencia nidifica*	x			x											
RHODOPHYTA	RHODOMELACEAE	*Laurencia parvipapillata*		x										x		x	x
RHODOPHYTA	RHODOMELACEAE	*Laurencia sp.*											x	x	x		
RHODOPHYTA	RHODOMELACEAE	*Neosiphonia hawaiiensis*															x
RHODOPHYTA	RHODOMELACEAE	*Neosiphonia sp.*								x							
RHODOPHYTA	RHODOMELACEAE	*Neosiphonia sphaerocarpa*															x
RHODOPHYTA	RHODOMELACEAE	*Neosiphonia subtilissima*														x	
RHODOPHYTA	RHODOMELACEAE	*Polysiphonia exilis*						x									
RHODOPHYTA	RHODOMELACEAE	*Polysiphonia howei*	x														
RHODOPHYTA	RHODOMELACEAE	*Polysiphonia sp.*			x					x		x		x	x		
RHODOPHYTA	RHODOMELACEAE	*Spirocladia hodgsoniae*										x					
RHODOPHYTA	RHODOMELACEAE	*Tolypiocladia glomerulata*		x	x					x	x		x	x		x	
RHODOPHYTA	RHODOMELACEAE	*Ululania stellata*									x			x	x	x	x
		Total Algae	26	26	16	19	20	11	22	27	33	19	14	50	43	44	58
MAGNOLIOPHYTA	HYDROCHARITACEAE	*Halophila hawaiiana*													x		
PORIFERA	UNID. CALCAREA	*Calcarea sp. blue*	x	x		x	x		x			x				x	
PORIFERA	UNID. CALCAREA	*Calcarea sp. pineapple*						x									
PORIFERA	UNID. CALCAREA	*Calcarea sp. pink*	x						x							x	
PORIFERA	UNID. CALCAREA	*Calcarea sp. yellow*	x						x								
PORIFERA	PLAKINIDAE	*Oscarella sp.*	x														
PORIFERA	CHONDRILLIDAE	*Chondrosia chucalla*	x	x			x		x					x	x		
PORIFERA	SPIRASTRELLIDAE	*Spheciospongia vagabunda*		x			x			x							
PORIFERA	SPIRASTRELLIDAE	*Spirastrella keaukaha*													x		
PORIFERA	TETHYIDAE	*Tethya sp.*												x			
PORIFERA	MICROCIONIDAE	*Clathria sp.2*		x			x	x		x				x			
PORIFERA	MICROCIONIDAE	*Clathria sp.3*															x
PORIFERA	ANCHINOIDAE	*Phorbas sp.*										x					
PORIFERA	COELOSPHAERIDAE	*Lissodendoryx hawaiiana*												x	x		
PORIFERA	TEDANIIDAE	*Tedania n.sp.*				x										x	
PORIFERA	DESMACIDIDAE	*Iotrochota protea*						x									
PORIFERA	CALLYSPONGIIDAE	*Callyspongia diffusa*													x		

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PORIFERA	CALLYSPONGIIDAE	*Callyspongia sp.1*			x		x		x					x	x		
PORIFERA	CALLYSPONGIIDAE	*Callyspongia sp.2*		x				x	x			x					
PORIFERA	CHALINIDAE	*Adocia sp.*				x	x								x		
PORIFERA	CHALINIDAE	*Chalinidae n.sp. (purple)*	x														
PORIFERA	CHALINIDAE	*Haliclona sp.*				x											
PORIFERA	NIPHATIDAE	*Gelliodes fibrosa*				x											
PORIFERA	THORECTIDAE	*Cacospongia sp.*					x										
PORIFERA	THORECTIDAE	*Hyrtios sp.*	x				x				x						
PORIFERA	SPONGIIDAE	*Hippospongia metachromia*	x	x					x			x			x		
PORIFERA	SPONGIIDAE	*Spongia oceania*					x										
PORIFERA	DYSIDEIDAE	*Dysidea arenaria*		x		x											
PORIFERA	DYSIDEIDAE	*Dysidea avara*	x				x										
PORIFERA	DYSIDEIDAE	*Dysidea sp.1*	x														
PORIFERA	DYSIDEIDAE	*Dysidea sp.2*					x										
PORIFERA	DICTYODENDRILLIDAE	*Dictyodendrilla sp.*								x							
		Total Porifera	10	7	1	6	11	4	7	3	1	4	0	5	7	3	1
HYDROZOA	AGALOPHENIIDAE	*Lytocarpia phyteuma*						x									
HYDROZOA	EUDENDRIIDAE	*Eudendrium sp.*						x									
HYDROZOA	HALOPTERIDIDAE	*Antennella secundaria*		x	x					x		x					
HYDROZOA	HALOCORDYLIDAE	*Pennaria disticha*	x														
HYDROZOA	LAFOEIDAE	*Anthohebella parasitica*								x							
HYDROZOA	PLUMULARIIDAE	*Halopteris polymorpha*						x									
HYDROZOA	PLUMULARIIDAE	*Halopteris sp.*							x								
HYDROZOA	PLUMULARIIDAE	*Plumularia strictocarpa*							x	x			x				
HYDROZOA	SERTULARIIDAE	*Dynamena quadridentata*															
HYDROZOA	SERTULARIIDAE	*Sertularella areyi*										x					
HYDROZOA	SERTULARIIDAE	*Tridentata distans*										x				x	
HYDROZOA	SERTULARIIDAE	*Tridentata humpferi*							x			x	x				
HYDROZOA	SERTULARIIDAE	*Tridentata ligulata*					x	x									
HYDROZOA	SERTULARIIDAE	*Tridentata turbinata*		x	x					x		x					
HYDROZOA	SYNTHECIIDAE	*Synthecium megathecum*				x	x										

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Total Hydrozoa	1	2	2	1	2	4	3	4	0	5	2	0	0	1	0
CNIDARIA	CLAVULARIIDAE	*Carijoa riisei*						x									
CNIDARIA	XENIIDAE	*Anthelia edmondsoni*							x		x						
CNIDARIA	ACTINIIDAE	*Anthopleura nigrescens*									x						
CNIDARIA	ALICIIDAE	*Triactis producta*						x									
CNIDARIA	DIADUMENIDAE	*Diadumene leucolena*															x
CNIDARIA	ACROPORIDAE	*Montipora capitata*	x	x				x		x		x	x				
CNIDARIA	ACROPORIDAE	*Montipora patula*	x	x									x	x	x		
CNIDARIA	AGARICIIDAE	*Pavona varians*			x												
CNIDARIA	DENDROPHYLLIIDAE	*Tubastraea coccinea*	x														
CNIDARIA	FAVIIDAE	*Cyphastrea ocellina*															x
CNIDARIA	FAVIIDAE	*Leptastrea bottae*									x						
CNIDARIA	FAVIIDA E	*Leptastrea purpurea*			x								x				
CNIDARIA	POCILLOPORIDAE	*Pocillopora damicornis*	x											x	x		
CNIDARIA	POCILLOPORIDAE	*Pocillopora eydouxi*	x		x			x					x	x			
CNIDARIA	POCILLOPORIDAE	*Pocillopora meandrina*	x	x	x	x	x	x	x	x	x	x	x		x	x	x
CNIDARIA	PORITIDAE	*Porites evermanni*		x													
CNIDARIA	PORITIDAE	*Porites lobata*	x	x	x	x	x	x	x	x	x	x	x			x	x
CNIDARIA	SIDASTREIDAE	*Psammocora sp.*															x
CNIDARIA	ZOANTHIDAE	*Palythoa tuberculosa*				x											
CNIDARIA	ZOANTHIDAE	*Zoanthus sp.*	x														
CNIDARIA	ANTIPATHIDAE	*Cirrhipathes sp.*						x									
		Total Anthozoa	8	5	5	3	2	7	3	3	5	3	6	3	3	2	5
POLYCHAETA	POLYNOIDAE	*Iphione muricata*									x	x	x				
POLYCHAETA	POLYNOIDAE	*Lepidonototus havaicus*										x					
POLYCHAETA	POLYNOIDAE	*Thormora atrata*	x	x				x		x			x		x		
POLYCHAETA	POLYNOIDAE	*unid. Polynoidae*										x					
POLYCHAETA	CHRYSOPETALIDAE	*Paleanotus sp.*		x	x	x		x	x			x	x				
POLYCHAETA	AMPHINOMIDAE	*Chloeia flava*						x					x				
POLYCHAETA	AMPHINOMIDAE	*Eurythoe complanata*			x		x	x		x	x	x		x	x	x	
POLYCHAETA	AMPHINOMIDAE	*Pherecardia striata*					x					x	x				

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
POLYCHAETA	PISIONIDAE	*Pisione africana*					x										
POLYCHAETA	PHYLLODOCIDAE	*Phyllodoce (Anaitides) madeirensis*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	PHYLLODOCIDAE	*Phyllodoce (Anaitides) parva*	x			x	x		x				x				
POLYCHAETA	PHYLLODOCIDAE	*Phyllodoce (Phyllodoce) hiatti*					x	x	x						x		
POLYCHAETA	PHYLLODOCIDAE	*Phyllodoce (Phyllodoce) sp.*					x										
POLYCHAETA	PHYLLODOCIDAE	*unid. Phyllodocidae*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	HESIONIDAE	*unid. Hesionidae*							x								
POLYCHAETA	SYLLIDAE	*Autolytus sp.*	x														
POLYCHAETA	SYLLIDAE	*Branchiosyllis exilis*				x	x					x			x		
POLYCHAETA	SYLLIDAE	*Haplosyllis spongicola*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	SYLLIDAE	*Syllidae sp.3*									x						
POLYCHAETA	SYLLIDAE	*Trypanosyllis sp.*	x	x	x				x				x			x	
POLYCHAETA	SYLLIDAE	*Trypanosyllis zebra*		x	x	x	x	x	x	x		x	x	x	x	x	x
POLYCHAETA	SYLLIDAE	*Typosyllis prolifera*	x		x		x	x		x				x		x	
POLYCHAETA	SYLLIDAE	*Typosyllis sp.*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	SYLLIDAE	*Typosyllis sp.1*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	SYLLIDAE	*unid. Syllidae*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	NEREIDIDAE	*Ceratonereis tentaculata*					x										x
POLYCHAETA	NEREIDIDAE	*Nereididae sp.3*															x
POLYCHAETA	NEREIDIDAE	*unid. Nereididae*	x	x	x	x	x		x	x	x	x	x	x	x	x	x
POLYCHAETA	EUNICIDAE	*Eunice afra*													x		
POLYCHAETA	EUNICIDAE	*Eunice antennata*	x	x	x			x	x	x	x	x	x	x	x	x	
POLYCHAETA	EUNICIDAE	*Eunice cariboea*	x	x		x	x		x	x	x	x	x	x		x	x
POLYCHAETA	EUNICIDAE	*Eunice filamentosa*							x		x					x	
POLYCHAETA	EUNICIDAE	*Lysidice ninetta*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	EUNICIDAE	*Lysidice sp.1*					x				x			x	x		
POLYCHAETA	EUNICIDAE	*Nematonereis unicornis*	x	x		x	x	x	x	x	x	x	x	x	x	x	x
POLYCHAETA	EUNICIDAE	*Oenone sp.*						x			x						
POLYCHAETA	EUNICIDAE	*Palola siciliensis*								x			x				
POLYCHAETA	DORVILLEIDAE	*Dorvillea sp.*	x	x	x	x	x	x	x		x	x	x	x	x	x	x
POLYCHAETA	SPIONIDAE	*unid. Spionidae*	x	x	x					x	x	x	x			x	x

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
POLYCHAETA	MAGELONIDAE	*Magelona sp.*		x													
POLYCHAETA	CIRRATULIDA E	*Cirriformia punctata*					x		x								x
POLYCHAETA	CIRRATULIDAE	*Cirriformia sp.*				x					x				x	x	x
POLYCHAETA	CHAETOPTERIDAE	*Phyllochaetopterus verrilli*					x	x									
POLYCHAETA	OPHELIIDAE	*Armandia intermedia*							x								
POLYCHAETA	OPHELIIDAE	*Polyophthalmus pictus*	x	x		x	x	x	x	x		x	x		x		x
POLYCHAETA	CAPITELLIDAE	*Capitella sp.*	x	x				x									x
POLYCHAETA	MALDANIDAE	*Axiothella quadrimaculata*	x	x	x				x	x	x	x	x	x		x	x
POLYCHAETA	TEREBELLIDAE	*Loimia medusa*									x			x			
POLYCHAETA	TEREBEL LIDAE	*Nicolea gracilibranchis*	x					x	x		x	x	x				x
POLYCHAETA	TEREBELLIDAE	*Terebellides stroemi*							x								
POLYCHAETA	SABELLIDAE	*Branchiomma nigromaculata*		x			x			x							x
POLYCHAETA	SABELLIDAE	*Hypsicomus phaeotaenia*					x		x	x	x	x	x		x		
POLYCHAETA	SABELLIDAE	*unid. Sabellidae*	x				x	x	x	x					x		x
POLYCHAETA	SERPULIDAE	*Hydroides crucigera*											x				
POLYCHAETA	SERPULIDAE	*Spirobranchus giganteus corniculatus*	x	x	x	x	x			x		x	x				
POLYCHAETA	SERPULIDAE	*Vermiliopsis torquata*	x								x	x	x			x	x
POLYCHAETA	SPIRORBIDAE	*unid. Spirorbidae*											x				x
		Total Polychaeta	25	23	18	18	29	23	27	23	24	26	29	18	22	21	25
SIPUNCULA	ASPIDOSIPHONIDAE	*Aspidosiphon (Parspidosiphon) steenstrupii*	x	x		x	x			x		x			x		x
SIPUNCULA	ASPIDOSIPHONIDAE	*Aspidosiphon elegans*	x	x			x	x	x	x	x	x		x			
SIPUNCULA	ASPIDOSIPHONIDAE	*Lithacrosiphon cristatus cristatus*								x			x				
SIPUNCULA	PHASCOLOSOMATIDAE	*Antillesoma antillarum*									x						
SIPUNCULA	PHASCOLOSOMATIDAE	*Phascolosoma nigrescens*	x				x	x	x	x		x	x				
SIPUNCULA	PHASCOLOSOMATIDAE	*Phascolosoma scolops*		x		x	x	x	x	x	x	x	x	x	x	x	
SIPUNCULA	PHASCOLOSOMATIDAE	*Phascolosoma stephensoni*	x				x			x	x	x	x		x	x	x
		Total Sipuncula	4	3	0	2	5	3	3	6	4	5	4	2	3	2	2
GASTROPODA	SCISSURELLIDAE	*Sinezona insignis*	x						x		x			x		x	x
GASTROPODA	FISSURELLIDAE (DIODORINAE)	*Diodora granifera*	x	x			x		x		x	x		x	x	x	

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	FISSURELLIDAE (DIODORINAE)	*Diodora octagona*						x		x		x					
GASTROPODA	FISSURELLIDAE (DIODORINAE)	*Diodora ruppelli*							x	x		x					
GASTROPODA	PHASIANELLIDAE	*Tricolia (Hiloa) variabilis*	x	x		x	x	x	x	x	x	x	x	x	x	x	
GASTROPODA	SKENEIDAE	*Cyclostremiscus emeryi*	x													x	
GASTROPODA	SKENEIDAE	*Lophocochlias minutissimus*	x					x		x	x						
GASTROPODA	STOMATELLIDAE	*Synaptocochlea concinna*	x			x			x		x				x	x	
GASTROPODA	TROCHIDAE (ENCYCLINAE)	*Euchelus gemmatus*	x		x					x	x	x	x		x		x
GASTROPODA	TROCHIDAE (ENCYCLINAE)	*Gibbula marmorea*	x		x				x		x	x	x	x		x	
GASTROPODA	TROCHIDAE (TROCHINAE)	*Alcyna ocellata*	x							x	x	x	x	x	x	x	x
GASTROPODA	TROCHIDAE (TROCHINAE)	*Alcyna subangulata*									x						x
GASTROPODA	TROCHIDAE (TROCHINAE)	*Trochus intextus*							x		x	x	x				
GASTROPODA	TURBINIDAE (COLLONINAE)	*Leptothyra rubricincta*	x						x	x	x	x		x	x	x	
GASTROPODA	TURBINIDAE (COLLONINAE)	*Leptothyra verruca*	x				x				x	x					
GASTROPODA	TURBINIDAE (TURBININAE)	*Turbo sandwicensis*	x								x		x				
GASTROPODA	TURBINIDAE (TURBININAE)	*Turbo sp.*										x					
GASTROPODA	NERITIDAE (SMARAGDIINAE)	*Smaragdia bryanae*														x	
GASTROPODA	CERITHIIDAE	*Bittium impendens*						x	x			x	x				x
GASTROPODA	CERITHIIDAE	*Cerithium atromarginatum*							x	x							
GASTROPODA	CERITHIIDAE	*Cerithium boeticum*	x		x												
GASTROPODA	CERITHIIDAE	*Cerithium columna*							x								
GASTROPODA	CERITHIIDAE	*Cerithium echinatum*						x					x				
GASTROPODA	CERITHIIDAE	*Cerithium egenum*										x	x				
GASTROPODA	CERITHIIDAE	*Cerithium interstriatum*										x	x				
GASTROPODA	CERITHIIDAE	*Cerithium nesioticum*												x	x		x
GASTROPODA	CERITHIIDAE	*Cerithium sp.*										x					
GASTROPODA	CERITHIIDAE	*Cerithium zebrum*									x			x		x	
GASTROPODA	CERITHIIDAE	*Ittibittium parcum*		x					x			x	x	x		x	x

TAXA	FAMILY	Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	CERITHIIDAE	*Pleisotrochus luteus*								x			x				
GASTROPODA	DIALIDAE	*Cerithidium diplax*				x				x							
GASTROPODA	DIALIDAE	*Cerithidium perparvulum*						x				x	x				
GASTROPODA	DIALIDAE	*Diala semistriata*						x		x							
GASTROPODA	MODULIDAE	*Modulus tectum*										x					
GASTROPODA	CINGULOPSIDAE	*Rufodardanula ponderi*	x														
GASTROPODA	EATONIELLIDAE	*Eatoniella (Dardaniopsis) pigmenta*													x		x
GASTROPODA	BARLEEIDAE	*Barleeia calcarea*												x			
GASTROPODA	CAECIDAE	*Caecum sepimentum*	x					x	x	x	x	x	x				
GASTROPODA	RISSOIDAE (RISSOINAE)	*Alvinia isolata*	x								x						
GASTROPODA	RISSOIDAE (RISSOINAE)	*Parashiela beetsi*								x							
GASTROPODA	RISSOIDAE (RISSOINAE)	*Pusillina marmorata*						x	x	x		x	x				
GASTROPODA	RISSOIDAE (RISSOINAE)	*Sansonia kenneyi*						x									
GASTROPODA	RISSOIDAE (RISSOININAE)	*Pyramidelloides gracilis*										x					
GASTROPODA	RISSOIDAE (RISSOININAE)	*Rissoina ambigua*							x		x	x	x		x		
GASTROPODA	RISSOIDAE (RISSOININAE)	*Rissoina cerithiiformis*	x					x	x			x	x	x	x		x
GASTROPODA	RISSOIDAE (RISSOININAE)	*Rissoina imbricata*										x					
GASTROPODA	RISSOIDAE (RISSOININAE)	*Rissoina pulchella*								x							
GASTROPODA	RISSOIDAE (RISSOININAE)	*Rissoina triticea*	x						x		x	x					
GASTROPODA	RISSOIDAE (RISSOININAE)	*Schwartziella ephamilla*						x		x		x	x				
GASTROPODA	RISSOIDAE (RISSOININAE)	*Zebina bidentata*							x	x							
GASTROPODA	RISSOIDAE (RISSOININAE)	*Zebina sp.*							x	x	x					x	
GASTROPODA	RISSOIDAE (RISSOININAE)	*Zebina tridentata*		x					x			x	x		x	x	
GASTROPODA	STROMBIDAE	*Strombus maculatus*						x									
GASTROPODA	HIPPONICIDAE	*Hipponix (Antisabia) foliaceus*					x		x		x	x		x	x	x	x
GASTROPODA	HIPPONICIDAE	*Hipponix (Pilosabia) pilosus*		x					x	x	x				x	x	x
GASTROPODA	HIPPONICIDAE	*Hipponix australis*	x			x		x		x	x		x				
GASTROPODA	VANIKORIDAE	*Vanikoro acuta*							x								
GASTROPODA	VANIKORIDAE	*Vanikoro sp.*										x					

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	CALYPTRAEIDAE	*Crepidula aculeata*		x	x				x	x		x			x		
GASTROPODA	VERMETIDAE	*Dendropoma rhyssoconcha*							x								
GASTROPODA	VERMETIDAE	*Dendropoma sp.*					x	x	x	x	x		x	x		x	x
GASTROPODA	VERMETIDAE	*Eualetes tulipa*			x				x		x	x	x	x	x		x
GASTROPODA	VERMETIDAE	*Petaloconchus keenae*										x		x			
GASTROPODA	VERMETIDAE	*Vermetus sp.*									x		x			x	
GASTROPODA	CYPRAEIDAE	*Cypraea caputserpentis*									x						
GASTROPODA	CYPRAEIDAE	*Cypraea fimbriata*					x		x		x						
GASTROPODA	CYPRAEIDAE	*Cypraea helvola*				x				x							
GASTROPODA	CYPRAEIDAE	*Cypraea isabella*	x						x								
GASTROPODA	CYPRAEIDAE	*Cypraea sp.*							x								
GASTROPODA	ERATOIDAE	*Erato sandwicensis*	x	x		x	x		x			x	x				
GASTROPODA	TRIVIIDAE	*Trivia edgari*			x												
GASTROPODA	TRIVIIDAE	*Trivia hordacea*					x						x	x			
GASTROPODA	TRIVIIDAE	*Trivia pellucida*		x						x				x			
GASTROPODA	TRIVIIDAE	*Trivia sp.*							x					x			
GASTROPODA	BURSIDAE	*Bursa sp.*										x					
GASTROPODA	CASSIDAE (CASSINAE)	*Cassis cornuta*								x							
GASTROPODA	RANELLIDAE (CYMATIINAE)	*Cymatium (Septa) aquatile*						x									
GASTROPODA	RANELLIDAE (CYMATIINAE)	*Cymatium (Septa) intermedius*			x				x								
GASTROPODA	RANELLIDAE (CYMATIINAE)	*Cymatium sp.*											x				
GASTROPODA	RANELLIDAE (RANELLINAE)	*Gyrineum pusillum*							x								
GASTROPODA	CERITHIOPSIDAE	*Cerithiopsis arga*							x								
GASTROPODA	CERITHIOPSIDAE	*Joculator granata*							x								
GASTROPODA	CERITHIOPSIDAE	*Joculator sp.*							x			x					
GASTROPODA	CERITHIOPSIDAE	*Joculator turrigera*							x								
GASTROPODA	CERITHIOPSIDAE	*Joculator uveanum*							x								
GASTROPODA	TRIPHORIDAE (INIFORINAE)	*Iniforis aemulans*			x				x	x		x			x		
GASTROPODA	TRIPHORIDAE (INIFORINAE)	*Iniforis sp.*										x					

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Cautor intermissa*														x	
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Cautor minima*										x					
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Cautor similis*						x									
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Mastonia cingulifera*	x					x	x			x					
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Mastonia gracilis*									x						
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Viriola abbotti*										x					
GASTROPO DA	TRIPHORIDAE (MASTONIINAE)	*Viriola incisa*	x					x		x		x					
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Viriola sp.*						x	x	x		x					
GASTROPODA	TRIPHORIDAE (METAXIINAE)	*Metaxia brunnicephala*	x					x		x		x					
GASTROPODA	TRIPHORIDAE (TRIPHORINAE)	*Triphora coralina*						x	x			x					
GASTROPODA	TRIPHORIDAE (TRIPHORINAE)	*Triphora pallida*							x			x					
GASTROPODA	TRIPHORIDAE (TRIPHORINAE)	*Triphora peasi*							x								
GASTROPODA	TRIPHORIDAE (TRIPHORINAE)	*Triphora sp.*							x						x		
GASTROPODA	EULIMIDA E	*Balcis acanthyllis*	x					x		x		x					
GASTROPODA	EULIMIDAE	*Balcis aciculata*									x	x					
GASTROPODA	EULIMIDAE	*Balcis brunnimaculata*										x					
GASTROPODA	EULIMIDAE	*Balcis conoidalis*	x										x				
GASTROPODA	EULIMIDAE	*Balcis inflexa*	x							x				x			
GASTROPODA	EULIMIDAE	*Balcis kanaka*															x
GASTROPODA	EULIMIDAE	*Balcis sp.*									x						
GASTROPODA	EULIMIDAE	*Eulima metcalfei*							x			x					
GASTROPODA	EULIMIDAE	*Scaleonostoma subulata*										x					
GASTROPODA	LITIOPIDAE	*Styliferina goniochila*	x					x	x			x	x				
GASTROPODA	BUCCINIDAE	*Caducifer decapitata*	x						x			x	x				
GASTROPODA	BUCCINIDAE	*Caducifer nebulosa*										x	x				
GASTROPODA	BUCCINIDAE	*Engina albocincta*								x							
GASTROPODA	BUCCINIDAE	*Prodotia ignea*														x	

TAXA	FAMILY	Species	Station															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	BUCCINIDAE	*Prodotia iostomus*							x	x		x	x				
GASTROPODA	COLUMBELLIDAE	*Mitrella loyaltensis*			x			x	x	x		x	x				
GASTROPODA	COLUMBELLIDAE	*Mitrella rorida*										x	x				
GASTROPODA	COLUMBELLIDAE	*Seminella peasei*	x					x	x	x		x	x				
GASTROPODA	FASCIOLARIIDAE	*Peristernia chlorostoma*	x						x	x	x	x	x	x	x	x	
GASTROPODA	MURICIDAE	*Aspella producta*							x		x				x	x	
GASTROPODA	MURICIDAE	*Favartia garrettii*		x					x			x					
GASTROPODA	MURICIDAE	*Homolocantha anatomica*			x												
GASTROPODA	MURICIDAE	*Vitularia miliaris*			x												
GASTROPODA	THAIDIDAE	*Drupa (Drupa) ricina*										x					
GASTROPODA	THAIDIDAE	*Drupa (Ricinella) rubusidaeus*						x									
GASTROPODA	THAIDIDAE	*Drupella elata*			x												
GASTROPODA	THAIDIDAE	*Drupella ochrostoma*						x				x					
GASTROPODA	THAIDIDAE	*Maculotriton serriale*											x				
GASTROPODA	THAIDIDAE	*Morula sp.*			x				x								
GASTROPODA	THAIDIDAE	*Morula uva*	x											x	x		
GASTROPODA	COSTELLARIIDAE	*Vexillum (Costellaria) diutenera*								x							
GASTROPODA	COSTELLARIIDAE	*Vexillum (Pusia) lautum*	x														
GASTROPODA	COSTELLARIIDAE	*Vexillum (Pusia) rubrum*			x												
GASTROPODA	COSTELLARIIDAE	*Vexillum (Pusia) tusum*						x	x			x	x				
GASTROPODA	MARGINELLIDAE	*Cystiscus huna*	x		x												
GASTROPODA	MARGINELLIDAE	*Granula sandwicensis*		x	x				x	x	x	x	x	x		x	x
GASTROPODA	MARGINELLIDAE	*Granulina vitrea*	x	x						x							
GASTROPODA	MARGINELLIDAE	*Volvarina fusiformis*	x	x	x				x	x	x		x	x	x	x	x
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Mitra) coffea*							x								
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Nebularia) luctuosa*										x					
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Nebularia) tricaonica*							x								
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Strigatella) assimilis*												x		x	
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Strigatella) sp.*		x													
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Strigatella) typha*						x				x					
GASTROPODA	CONIDAE	*Conus pulicarius*								x							

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	CONIDAE	*Conus sp.*				x						x					
GASTROPODA	CONIDAE	*Conus sponsalis*							x								
GASTROPODA	TEREBRIDAE	*Hastula philippiana*		x													
GASTROPODA	TURRIDAE (CLAVININAE)	*Carinapex minutissima*	x		x			x	x	x		x	x				
GASTROPODA	TURRIDAE (CLAVININAE)	*Clavus (Tylotiella) mighelsi*											x				
GASTROPODA	TURRIDAE (DAPHNELLINAE)	*Daphnella sp.*						x	x								
GASTROPODA	TURRIDAE (DAPHNELLINAE)	*Kermia aniani*	x														
GASTROPODA	TURRIDAE (MANGELIINAE)	*Etrema acricula*						x	x			x	x				
GASTROPODA	TURRIDAE (MANGELIINAE)	*Lienardia mighelsi*										x	x				
GASTROPODA	TURRIDAE (MITROLUMININAE)	*Lovellona peaseana*								x		x					
GASTROPODA	TURRIDAE (MITROLUMININAE)	*Mitrolumna metula*										x	x				
GASTROPODA	TURRIDAE (MITROLUMININAE)	*Mitrolumna sp.*							x								
GASTROPODA	TURRIDAE (TURRINAE)	*Turridrupa astricta astricta*											x				
GASTROPODA	TURRIDAE (TURRINAE)	*Turridrupa bijubata*											x				
GASTROPODA	TURRIDAE (TURRINAE)	*Turridrupa sp.*											x				
GASTROPODA	TURRIDAE (TURRINAE)	*Xenuroturris kingae*			x												
GASTROPODA	ORBITESTELLIDAE	*Orbitestella regina*	x							x	x					x	x
GASTROPODA	ARCHITECTONICIDAE	*Philippia oxytropis*						x									
GASTROPODA	RISSOELLIDAE	*Rissoella confusa confusa*												x	x	x	
GASTROPODA	RISSOELLIDAE	*Rissoella longispira*	x						x		x		x				x
GASTROPODA	PYRAMIDELLIDAE	*Herviera gliriella*	x						x			x	x		x		x
GASTROPODA	PYRAMIDELLIDAE	*Herviera patricia*	x						x						x		x
GASTROPODA	PYRAMIDELLIDAE	*Hinemoa indica*							x	x							x
GASTROPODA	PYRAMIDELLIDAE	*Odostomia gulicki*													x		
GASTROPODA	PYRAMIDELLIDAE	*Odostomia oxia*												x			
GASTROPODA	PYRAMIDELLIDAE	*Odostomia stearnsiella*									x						
GASTROPODA	PYRAMIDELLIDAE	*Syrnola lacteola*										x					
GASTROPODA	PYRAMIDELLIDAE	*Turbonilla lirata*								x							
GASTROPODA	BULLIDAE	*Bulla vernicosa*	x														

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GASTROPODA	HAMINEIDAE	*Atys semistriata*		x	x			x	x	x	x	x	x			x	x
GASTROPODA	HAMINEIDAE	*Diniatys dentifer*	x	x	x			x		x			x				
GASTROPODA	HAMINEIDAE	*Haminoea curta*								x							
GASTROPODA	HAMINEIDAE	*Haminoea galba*												x			
GASTROPODA	HAMINEIDAE	*Haminoea sp.*								x			x			x	x
GASTROPODA	SCAPHANDRIDAE	*Cylichna pusilla*									x						
GASTROPODA	APLYSIIDAE (APLYSIINAE)	*Aplysia parvula*									x						
GASTROPODA	APLYSIIDAE (APLYSIINAE)	*Aplysia sp.*									x	x	x	x			x
GASTROPODA	APLYSIIDAE (NOTARCHIINAE)	*Stylocheilus longicaudatus*												x	x		x
GASTROPODA	JULIIDAE	*Julia exquisita*	x	x					x	x	x		x	x		x	x
GASTROPODA	PHYLLIDIIDAE	*Phyllidia varicosa*			x												
GASTROPODA	DORIDIDAE (DISCODORIDINAE)	*Discodoris fragilis*													x		
GASTROPODA	DORIDIDAE (HALGERDINAE)	*Halgerda sp.*						x		x			x				
GASTROPODA	FACELINIDAE	*Facelinella? sp.*	x														
GASTROPODA	SIPHONARIIDAE	*Williamia radiata*	x		x		x	x	x	x		x	x	x	x		
		Total Gastropoda	47	17	23	7	9	38	73	53	42	76	56	31	28	29	26
BIVALVIA	MYTILIDAE	*Brachidontes crebristriatus*					x		x		x						
BIVALVIA	MYTILIDAE	*Crenella sp.*				x			x			x	x				
BIVALVIA	MYTILIDAE	*Lithophaga sp.*		x	x	x	x	x	x	x		x	x				
BIVALVIA	MYTILIDAE	*Modiolus matris*		x													
BIVALVIA	MYTILIDAE	*Musculus aviarius*										x					
BIVALVIA	MYTILIDAE	*Septifer bryanae*	x	x	x	x	x	x	x	x		x	x				
BIVALVIA	ARCIDAE (ARCINAE)	*Arca ventricosa*								x		x					
BIVALVIA	ARCIDAE (ARCINAE)	*Barbatia (Acar) divaricata*		x	x			x		x	x	x	x	x			
BIVALVIA	ARCIDAE (ARCINAE)	*Barbatia nuttingi*	x						x		x				x	x	
BIVALVIA	ARCIDAE (ARCINAE)	*Barbatia sp.*							x								
BIVALVIA	ARCIDAE (ARCINAE)	*Barbatia tenella*												x			
BIVALVIA	ISOGNOMONIDAE	*Isognomon californicum*													x		
BIVALVIA	ISOGNOMONIDAE	*Isognomon incisum*					x	x					x				

TAXA	FAMILY	Species	Station															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BIVALVIA	ISOGNOMONIDAE	*Isognomon legumen*				x	x	x	x	x		x	x				
BIVALVIA	ISOGNOMONIDAE	*Isognomon perna*									x	x			x		x
BIVALVIA	ISOGNOMONIDAE	*Isognomon sp.*								x					x		
BIVALVIA	MALLEIDAE	*Malleus regula*	x		x	x	x	x	x	x		x	x				
BIVALVIA	MALLEIDAE	*Malleus sp.*	x					x									
BIVALVIA	PTERIIDAE	*Pinctada margaritifera*		x	x			x									
BIVALVIA	PTERIIDAE	*Pinctada sp.*				x			x	x		x			x		x
BIVALVIA	PINNIDAE	*Pinna sp.*						x									
BIVALVIA	LIMIDAE	*Lima fragilis*						x									
BIVALVIA	LIMIDAE	*Lima sp.*						x					x				
BIVALVIA	OSTREIDAE	*Dendostrea sandvicensis*	x	x	x	x	x	x	x	x		x					
BIVALVIA	PECTINIDAE	*Laevichlamys i rregularis*			x			x	x			x	x				
BIVALVIA	PROPEAMUSIIDAE	*Chlamydella sp.*	x						x			x	x		x		
BIVALVIA	SPONDYLIDAE	*Spondylus cuneus*			x	x			x								
BIVALVIA	SPONDYLIDAE	*Spondylus linguafelis*				x											
BIVALVIA	SPONDYLIDAE	*Spondylus sp.*						x			x		x				
BIVALVIA	SPONDYLIDAE	*Spondylus violacescens*	x		x				x								
BIVALVIA	ANOMIIDAE	*Anomia nobilis*						x		x		x					
BIVALVIA	CHAMIDAE	*Chama fibula*													x		
BIVALVIA	GASTROCHAENIDAE	*Gastrochaena (Rocellaria) kanaka*								x							
BIVALVIA	HIATELLIDAE	*Hiatella arctica*	x	x			x	x	x			x	x				
BIVALVIA	GALEOMMATIDAE	*Leiochasmea elongata*										x	x				
BIVALVIA	GALEOMMATIDAE	*Leiochasmea sp.*						x									
BIVALVIA	LASAEIDAE	*Kellia hawaiensis*										x					
BIVALVIA	LASAEIDAE	*Lasaea hawaiensis*			x				x	x	x	x	x				x
BIVALVIA	LASAEIDAE	*Nesobornia bartschi*													x		
BIVALVIA	CARDIIDAE	*Fragum (Fragum) mundum*	x	x	x				x	x		x	x			x	
BIVALVIA	CARDITIDAE	*Cardita aviculina*			x												
BIVALVIA	SEMELIDAE	*Semelangulus crebrimaculatus*								x							
BIVALVIA	MESODESMATIDAE	*Rochefortina sandwichensis*						x		x	x	x					
BIVALVIA	OCTOPODIDAE	*Octopus cyanea*											x				

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BIVALVIA	CHITONIDAE	*Rhyssoplax linsleyi*									x						
BIVALVIA	CHITONIDAE	*Rhyssoplax sp.*					x				3	x		x	x	3	
BIVALVIA	ISCHNOCHITONIDAE	*Ischnochiton petaloides*		x			x		x		x					x	
BIVALVIA	ISCHNOCHITONIDAE	*Ischnochiton sp.*									x	x					
		Total Bivalvia	9	9	12	9	10	18	18	15	10	22	16	3	9	3	3
CIRRIPEDIA	CHTHAMALIDAE	*Nesochthamalus intertextus*													x		
MALOCOSTRACA	CYLINDROLEBERIDIDAE	*Parasterope sp.*							x	x		x	x	x			
MALOCOSTRACA	CYPRIDIDAE	*Cypridina sp.*							x	x	x	x	x				
MALOCOSTRACA	UNID. PODOCOPA	*unid. Podocopa*	x					x	x		x	x	x	x	x	x	x
PERACARIDA	AMPHILOCHIDAE	*Amphilochus likelike*						x									
PERACARIDA	AMPHILOCHIDAE	*Amphilochus menehune*	x	x	x		x	x	x	x	x	x	x				
PERACARIDA	AMPITHOIDAE	*Ampithoe ramondi*	x	x		x	x			x	x				x	x	
PERACARIDA	AMPITHOIDAE	*Ampithoe waialua*		x	x					x				x			x
PERACARIDA	AMPITHOIDAE	*Paragrubia vorax*	x	x		x			x		x	x			x	x	x
PERACARIDA	ANAMIXIDAE	*Anamixis moana*	x	x	x	x	x		x	x		x	x	x		x	
PERACARIDA	AORIDAE	*Bemlos aequimanus*								x							x
PERACARIDA	AORIDAE	*Bemlos intermedius*												x	x	x	x
PERACARIDA	AORIDAE	*Bemlos macromanus*													x		
PERACARIDA	AORIDAE	*Bemlos pualani*							x								
PERACARIDA	AORIDAE	*Bemlos sp.*	x	x	x	x		x		x		x					
PERACARIDA	AORIDAE	*Bemlos sp.1*				x				x	x						x
PERACARIDA	AORIDAE	*Bemlos waipio*			x						x						
PERACARIDA	COLOMASTIGIDAE	*Colomastix kapiolani*					x										
PERACARIDA	COLOMASTIGIDAE	*Colomastix lunalilo*	x				x										
PERACARIDA	COROPHIIDAE	*Ericthonius brasiliensis*	x	x		x	x	x		x		x	x	x	x	x	
PERACARIDA	COROPHIIDAE	*Ericthonius sp.*										x					
PERACARIDA	CYPROIDEIDAE	*Moolapheonoides coocoo*											x				
PERACARIDA	DEXAMINIDAE	*Paradexamine (Wailele) maunaloa*			x					x	x						
PERACARIDA	EUSIRIDAE	*Eusiroides diplonyx*				x	x	x	x		x		x	x	x	x	x
PERACARIDA	ISAEIDAE	*Chevalia aviculae*	x	x	x	x	x	x			x	x			x	x	
PERACARIDA	ISAEIDAE	*Gammaropsis alamoana*	x	x		x	x										

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PERACARIDA	ISAEIDAE	*Gammaropsis atlantica-afra*	x	x		x	x	x	x	x	x	x	x	x	x		x
PERACARIDA	ISAEIDAE	*Gammaropsis pali*				x									x		
PERACARIDA	ISAEIDAE	*Photis aina*	x	x	x	x	x		x			x					
PERACARIDA	ISCHYROCERIDAE	*Ischyrocerus oahu*				x											
PERACARIDA	ISCHYROCERIDAE	*Jassa sp.*											x				
PERACARIDA	ISCHYROCERIDAE	*Leucothoe hyhelia*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PERACARIDA	ISCHYROCERIDAE	*Leucothoe lihue*						x									
PERACARIDA	ISCHYROCERIDAE	*Leucothoe micronesiae*					x			x		x					
PERACARIDA	ISCHYROCERIDAE	*Leucothoe sp.2*			x				x							x	
PERACARIDA	ISCHYROCERIDAE	*Leucothoe tridens*		x	x		x	x		x		x	x				
PERACARIDA	ISCHYROCERIDAE	*Leucothoides pottsi*	x	x	x	x	x		x	x	x	x	x	x		x	x
PERACARIDA	ISCHYROCERIDAE	*Notopoma n.sp.*									x	x	x				
PERACARIDA	ISCHYROCERIDAE	*Ventojassa ventosa*	x	x	x	x	x	x	x	x	x	x	x				
PERACARIDA	LEUCOTHOIDAE	*Paraleucothoe cf. flindersi*		x		x	x		x			x	x				
PERACARIDA	LILJEBORGIIDAE	*Liljeborgia laniloa*		x	x		x	x		x					x		
PERACARIDA	LYSIANASSIDAE	*Lysianassa ewa*	x	x						x	x	x				x	x
PERACARIDA	MELITIDAE	*Ceradocus hawaiiensis*			x					x						x	
PERACARIDA	MELITIDAE	*Elasmopus cf. pseudoaffinis*	x								x		x		x		x
PERACARIDA	MELITIDAE	*Elasmopus hawaiiensis*	x			x	x				x				x	x	
PERACARIDA	MELITIDAE	*Elasmopus hooheno*					x				x				x		
PERACARIDA	MELITIDAE	*Elasmopus molokai*	x	x	x			x		x	x	x	x	x		x	
PERACARIDA	MELITIDAE	*Elasmopus sp.*	x			x											
PERACARIDA	MELITIDAE	*Elasmopus spindactylus*										x					
PERACARIDA	MELITIDAE	*Maera kaiulani*							x								
PERACARIDA	MELITIDAE	*Maera pacifica*	x	x		x	x	x	x		x	x		x	x	x	x
PERACARIDA	MELITIDAE	*Maera quadrimana*	x	x		x	x	x	x		x	x	x	x	x	x	x
PERACARIDA	MELITIDAE	*Maera serrata*	x						x					x	x	x	x
PERACARIDA	MELITIDAE	*Maera sp.3*										x					
PERACARIDA	MELITIDAE	*Mallacoota insignis*	x						x		x		x	x	x	x	x
PERACARIDA	MELITIDAE	*Melita sp.1*															x
PERACARIDA	OEDICEROTODAE	*Kanaloa manoa*														x	

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PERACARIDA	PHLIANTIDAE	*Pereionotus alaniphlias*	x							x			x				
PERACARIDA	PHOXOCEPHALIDAE	*unid. Phoxocephalidae*							x								x
PERACARIDA	PLEUSTIDAE	*Tepidopleustes honomu*	x				x	x					x				
PERACARIDA	PODOCERIDAE	*Podocerus brasiliensis*	x	x		x					x	x					x
PERACARIDA	PODOCERIDAE	*Podocerus talegus lawai*											x				
PERACARIDA	SEBIDAE	*Seba ekepuu*		x				x						x			
PERACARIDA	STENOTHOIDAE	*Stenothoe haleloke*										x					
PERACARIDA	STENOTHOIDAE	*Stenothoe valida-gallensis*	x		x	x	x	x		x		x		x			
PERACARIDA	TALITROIDAE	*Hyale honoluluensis*	x								x		x	x		x	
PERACARIDA	TALITROIDAE	*Hyale laie*	x											x		x	
PERACARIDA	TALITROIDAE	*Hyale sp.*										x					
PERACARIDA	ANTHURIDAE	*Apanthura inornata*							x			x			x		
PERACARIDA	ANTHURIDAE	*Mesanthura hieroglyphica*							x	x			x	x	x		
PERACARIDA	ANTHURIDAE	*Mesanthura sp.*	x	x					x		x	x	x	x	x	x	x
PERACARIDA	ANTHURIDAE	*Pendanthura sp.*								x					x		
PERACARIDA	PARANTHURIDAE	*Paranthura sp.*	x		x	x		x	x	x	x	x		x	x	x	
PERACARIDA	CIROLANIDAE	*Cirolana parva*	x	x			x		x		x	x	x	x	x	x	
PERACARIDA	CIROLANIDAE	*Metacirolana sphaeromiformia*												x			
PERACARIDA	LIMNORIIDAE	*Limnoria sp.*															x
PERACARIDA	SPHAEROMATIDAE	*Neonaesa rugosa*	x	x	x	x		x	x	x	x	x	x	x	x	x	x
PERACARIDA	JANIRIDAE	*Carpias algicola*	x	x	x	x		x		x	x	x	x	x	x	x	x
PERACARIDA	JOEROPSIDAE	*Joeropsis hawaiiensis*	x	x	x		x	x	x	x	x	x	x	x	x	x	x
PERACARIDA	MUNNIDAE	*Munna acarina*								x		x	x				
PERACARIDA	PLEUROCOPIDAE	*Pleurocope sp.*										x					
PERACARIDA	STENETRIIDAE	*Stenetrium medipacifica*									x						
PERACARIDA	IDOTEIDAE	*Colidotea edmondsoni*							x								
PERACARIDA	APSEUDIDAE	*Apseudes sp.A*									x	x					
PERACARIDA	APSEUDIDAE	*Apseudes tropicalis*	x	x		x	x	x	x	x	x	x	x	x	x	x	x
PERACARIDA	APSEUDIDAE	*Apseudomorpha oahuensis*					x				x						
PERACARIDA	APSEUDIDAE	*Apseudomorpha sp.A*	x	x		x	x		x	x	x		x			x	x
PERACARIDA	APSEUDIDAE	*Parapseudes neglectus*	x	x				x	x	x	x		x	x	x	x	x

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PERACARIDA	TANAIDAE	*Paratanais sp.A*	x	x		x	x	x			x	x	x		x	x	x
PERACARIDA	TANAIDAE	*Pseudoleptochelia sp.A*		x									x				
PERACARIDA	APSEUDIDAE	*Synapseudes minutus*	x				x		x					x	x	x	x
PERACARIDA	TANAIDAE	*Tanais vanis*	x			x		x	x	x						x	
PERACARIDA	TANAIDAE	*Zeuxo seurati*	x	x		x	x		x		x	x	x	x	x	x	x
PERACARIDA	PSEUDOZUXIDAE	*Leptochelia dubia*	x	x	x	x	x	x	x	x	x	x	x	x		x	x
PERACARIDA	PSEUDOZUXIDAE	*Leptochelia sp.A*													x		
PERACARIDA	PSEUDOZUXIDAE	*Leptochelia sp.B*	x	x						x						x	
		Total Peracarida	44	36	22	32	33	27	33	34	38	40	35	30	33	36	30
DECAPODA	STYLODACTYLIDAE	*Neostylodactylus sp.*		x	x					x		x	x				
DECAPODA	BRESILIIDAE	*Discias cf. exul*				x							x				x
DECAPODA	GONODACTYLIDAE	*Gonodactylaceus falcatus*								x				x		x	x
DECAPODA	GONODACTYLIDAE	*Gonodactylellus hendersoni*	x	x		x			x		x	x	x	x	x	x	x
DECAPODA	PSEUDOSQUILLIDAE	*Pseudosquillisma oculata*			x					x							
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Exoclimenella maldivensis*						x									
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Palaemonella rotumana*		x				x	x						x	x	
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenaeus sp.1*	x									x	x	x			
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenaeus sp.2*		x													
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenes amymone*		x		x			x			x	x	x	x		
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenes cf. watamuae*				x											
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenes ensifrons*								x							
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Vir orientalis*										x	x				
DECAPODA	ALPHEIDAE	*Alpheus albatrossae*					x	x				x					
DECAPODA	ALPHEIDAE	*Alpheus brevipes*	x	x	x	x	x		x		x	x	x	x	x		x
DECAPODA	ALPHEIDAE	*Alpheus clypeatus*		x	x	x	x		x		x	x	x	x			x
DECAPODA	ALPHEIDAE	*Alpheus coetivensis*											x				
DECAPODA	ALPHEIDAE	*Alpheus collumianus*		x	x			x			x	x		x		x	
DECAPODA	ALPHEIDAE	*Alpheus deuteropus*														x	

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DECAPODA	ALPHEIDAE	*Alpheus diadema*							x			x		x		x	x
DECAPODA	ALPHEIDAE	*Alpheus gracilipes*							x					x	x		
DECAPODA	ALPHEIDAE	*Alpheus gracilis*				x	x		x		x	x	x	x	x		
DECAPODA	ALPHEIDAE	*Alpheus leptochirus*									x		x				
DECAPODA	ALPHEIDAE	*Alpheus lobidens*													x		x
DECAPODA	ALPHEIDAE	*Alpheus oahuensis*					x	x									
DECAPODA	ALPHEIDAE	*Alpheus paracrinatus*	x						x		x	x				x	
DECAPODA	ALPHEIDAE	*Alpheus paradentipes*								x			x				
DECAPODA	ALPHEIDAE	*Alpheus paralcyone*					x			x		x	x				
DECAPODA	ALPHEIDAE	*Alpheus pseudopugnax*										x	x				x
DECAPODA	ALPHEIDAE	*Alpheus pugnax*			x		x	x	x	x	x	x	x		x		
DECAPODA	ALPHEIDAE	*Metalpheus hawaiiensis*					x										
DECAPODA	ALPHEIDAE	*Metalpheus paragracilis*	x		x		x	x		x	x	x	x	x	x	x	x
DECAPODA	ALPHEIDAE	*Metalpheus rostratipes*					x				x	x	x		x	x	
DECAPODA	ALPHEIDAE	*Synalpheus biunguiculatus*					x		x								
DECAPODA	ALPHEIDAE	*Synalpheus paraneomeris*	x		x	x	x	x	x	x	x	x	x	x	x	x	x
DECAPODA	ALPHEIDAE	*Synalpheus streptodactylus*			x			x		x		x	x				x
DECAPODA	HIPPOLYTIDAE	*Hippolyte edmondsoni*	x	x		x	x		x		x		x	x	x	x	
DECAPODA	HIPPOLYTIDAE	*Hippolyte sp.1*												x			
DECAPODA	HIPPOLYTIDAE	*Latreutes pymoeus*												x			
DECAPODA	HIPPOLYTIDAE	*Lysmata ternatensis*		x													
DECAPODA	HIPPOLYTIDAE	*Saron marmoratus*					x					x	x		x	x	
DECAPODA	HIPPOLYTIDAE	*Thor amboinensis*								x						x	x
DECAPODA	HIPPOLYTIDAE	*Thorina maldivensis*						x									
DECAPODA	OGYRIDIDAE	*Ogyrides sp.*								x							
DECAPODA	PROCESSIDAE	*Nikoides steinii*			x				x	x							x
DECAPODA	PROCESSIDAE	*Processa hawaiensis*								x							
DECAPODA	LATREILLIIDAE	*Latreillia sp.*						x									
DECAPODA	GRAPSIDAE	*Pachygrapsus minutus*	x				x				x					x	
DECAPODA	GRAPSIDAE	*Percnon planissimum*					x		x			x					
DECAPODA	PALICIDAE	*Exopalicus maculatus*		x	x	x						x					

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DECAPODA	PORTUNIDAE	*Carupa tenuipes*		x			x					x					
DECAPODA	PORTUNIDAE	*Catoptrus nitidus*	x								x						
DECAPODA	PORTUNIDAE	*Portunus macrophthalmus*						x									
DECAPODA	PORTUNIDAE	*Thalamita edwardsi*			x											x	x
DECAPODA	PORTUNIDAE	*Thalamita sp. juv.*											x				
DECAPODA	PORTUNIDAE	*Thalamitoides quadridens*						x					x				
DECAPODA	PILUMNIDAE	*Pilumnus longicornis*		x									x				
DECAPODA	PILUMNIDAE	*Pilumnus oahuensis*	x		x	x	x	x	x			x	x				
DECAPODA	TRAPEZIIDAE	*Domecia hispida*		x	x			x					x				
DECAPODA	TRAPEZIIDAE	*Jonesius triunguiculatus*					x										
DECAPODA	TRAPEZIIDAE	*Trapezia ferruginea*								x							
DECAPODA	TRAPEZIIDAE	*Trapezia sp. juv.*				x							x				
DECAPODA	XANTHIDAE	*Actaea nodulosa*								x							
DECAPODA	XANTHIDAE	*Actaea superciliaris*		x						x							
DECAPODA	XANTHIDAE	*Chlorodiella sp.*	x	x	x	x	x	x	x		x	x	x	x	x	x	x
DECAPODA	XANTHIDAE	*Etisus sp.*									x						
DECAPODA	XANTHIDAE	*Liocarpilodes biunguis*												x			
DECAPODA	XANTHIDAE	*Liocarpilodes integerrimus*	x				x	x	x		x	x	x	x	x	x	
DECAPODA	XANTHIDAE	*Liomera bella*												x	x	x	x
DECAPODA	XANTHIDAE	*Liomera rubra*			x			x									
DECAPODA	XANTHIDAE	*Liomera rugata*									x			x			
DECAPODA	XANTHIDAE	*Medaeus elegans*										x	x	x			
DECAPODA	XANTHIDAE	*Paramedaeus simplex*							x	x						x	x
DECAPODA	XANTHIDAE	*Paramedaeus sp.*										x		x			
DECAPODA	XANTHIDAE	*Paraxanthias notatus*	x			x	x				x			x	x	x	x
DECAPODA	XANTHIDAE	*Phymodius nitidus*												x			x
DECAPODA	XANTHIDAE	*Phymodius ungulatus*									x			x	x	x	
DECAPODA	XANTHIDAE	*Pilodius areolatus*	x										x		x		x
DECAPODA	XANTHIDAE	*Pilodius flavus*	x	x	x	x											
DECAPODA	XANTHIDAE	*Platypodia eydouxii*															x
DECAPODA	XANTHIDAE	*Platypodia semigranosa*					x										

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DECAPODA	XANTHIDAE	*Platypodia sp.*									x						
DECAPODA	XANTHIDAE	*Pseudoliomera remota*					x							x	x		
DECAPODA	XANTHIDAE	*Pseudoliomera sp.*											x				
DECAPODA	XANTHIDAE	*Pseudoliomera variolosa*		x				x		x		x	x			x	
DECAPODA	XANTHIDAE	*Tweedieia laysani*					x					x					
DECAPODA	XANTHIDAE	*unid. Xanthidae*				x		x	x		x	x	x				
DECAPODA	XANTHIDAE	*Xanthias canaliculatus*		x		x						x	x				
DECAPODA	XANTHIDAE	*Xanthias latifrons*		x						x		x	x				
DECAPODA	XANTHIDAE	*Zozymus sp.*									x						
DECAPODA	DROMIIDAE	*Cryptodromiopsis tridens*		x						x							
DECAPODA	DYNOMENIIDAE	*Dynomene hispida*	x	x		x	x		x				x				
DECAPODA	MAJIDAE	*Achaeus sp.*								x							
DECAPODA	MAJIDAE	*Hyastenus tenuicornis*								x		x	x				
DECAPODA	MAJIDAE	*Menaethius monoceros*		x						x	x			x		x	
DECAPODA	MAJIDAE	*Micippa sp.*			x					x			x				
DECAPODA	MAJIDAE	*Oncinopus sp.*								x							
DECAPODA	MAJIDAE	*Perinea tumida*	x	x	x	x	x		x		x	x	x	x			x
DECAPODA	MAJIDAE	*Schizophorida hilensis*				x						x	x				x
DECAPODA	MAJIDAE	*Simocarcinus simplex*							x	x				x			
DECAPODA	PARTHENOPIDAE	*unid. Parthenopidae sp.1*			x	x											
DECAPODA	PARTHENOPIDAE	*unid. Parthenopidae sp.2*											x				
DECAPODA	AETHRIDAE	*Actaeomorpha erosa*										x					
DECAPODA	LEUCOSIIDAE	*Nucia sp.*					x	x				x					
DECAPODA	DIOGENIDAE	*Calcinus elegans*					x										
DECAPODA	DIOGENIDAE	*Calcinus guamensis*		x		x	x		x		x	x	x	x		x	x
DECAPODA	DIOGENIDAE	*Calcinus latens*							x					x			
DECAPODA	DIOGENIDAE	*Calcinus laurentae*			x			x		x			x				
DECAPODA	PAGURIDAE	*Anapagrides reesei*			x	x		x		x			x				
DECAPODA	PAGURIDAE	*Micropagurus devaneyi*		x	x								x				
DECAPODA	PAGURIDAE	*Pagurixus festinus*		x		x	x		x		x	x	x	x		x	x
DECAPODA	PAGURIDAE	*Pygmaeopagurus hadrochirus*			x								x				

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DECAPODA	PAGURIDAE	*Pylopaguropsis keijii*		x								x	x				
DECAPODA	GALATHEIDAE	*Galathea spinosorostris*		x	x			x		x		x	x				
DECAPODA	PORCELLANIDAE	*Petrolisthes sp.*	x			x	x		x		x						
		Total Decapoda	18	29	25	25	32	24	27	30	28	42	50	32	20	25	25
ECTOPROCTA	BEANIIDAE	*Beania discodermiae*								x							
ECTOPROCTA	CELLEPORIDAE	*Celleporaria aperta*											x				
ECTOPROCTA	CELLEPORIDAE	*Celleporaria fusca*		x			x										
ECTOPROCTA	CELLEPORIDAE	*Celleporaria pilaefera*					x										
ECTOPROCTA	CELLEPORIDAE	*Celleporaria sp.*		x	x	x				x		x					
ECTOPROCTA	CELLEPORIDAE	*Celleporaria sp.1*											x				
ECTOPROCTA	CELLEPORIDAE	*Celleporaria sp.2*											x				
ECTOPROCTA	CELLEPORIDAE	*Celleporaria vagans*											x				
ECTOPROCTA	CELLEPORIDAE	*Schismopora sp.*		x								x	x				
ECTOPROCTA	CRIBRILINIDAE	*Cribrilaria radiata*						x									
ECTOPROCTA	CHORIZOPORIDAE	*Rhamphostomella argentea*								x							
ECTOPROCTA	EPISTOMIIDAE	*Synnotum aegyptiacum*										x					
ECTOPROCTA	CLEIDOCHASMATIDAE	*Cleidochasma porcellanum*								x							
ECTOPROCTA	SCRUPOCELLARIIDAE	*Scrupocellaria sinuosa*						x		x			x				
ECTOPROCTA	CREPIDACANTHIDAE	*Crepidacantha crinispina*						x									
ECTOPROCTA	HIPPOPODINIDAE	*Cosciniopsis? sp.*						x									
ECTOPROCTA	MARGARETTIDAE	*Margaretta gracilior*			x							x	x				
ECTOPROCTA	MARGARETTIDAE	*Margaretta watersi*				x						x					
ECTOPROCTA	SAVIGNYELLIDAE	*Savignyella lafontii*										x					
ECTOPROCTA	SCHIZOPORELLIDAE	*Schizomavella inclusa?*			x					x		x					
ECTOPROCTA	SCHIZOPORELLIDAE	*Schizoporella decorata*										x					
ECTOPROCTA	SCHIZOPORELLIDAE	*Schizoporella sp.*								x							
ECTOPROCTA	SERTELLIDAE	*Reteporellina denticulata*															
ECTOPROCTA	SERTELLIDAE	*Rhynchozoon sp.*						x									
ECTOPROCTA	SERTELLIDAE	*Rhynchozoon tubulosum?*								x							
ECTOPROCTA	SMITTINIDAE	*Parasmittina decorata*		x													
ECTOPROCTA	SMITTINIDAE	*Parasmittina serrula*											x				

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ECTOPROCTA	SMITTINIDAE	*Parasmittina sp.*															
ECTOPROCTA	VITTATICELLIDAE	*Vittaticella? sp.*										x					
ECTOPROCTA	WATERSIPORIDAE	*Watersipora edmondsoni*	x	x			x					x			x		
ECTOPROCTA	AETEIDAE	*Aetea sp.*										x					
ECTOPROCTA	CRISIIDAE	*Crisia sp.*								x		x	x				
ECTOPROCTA	CRISINIDAE	*Crisina radians*								x							
ECTOPROCTA	CRISINIDAE	*Crisina sp.*		x				x					x				
ECTOPROCTA	DIAPEROECIIDAE	*Diaperoecia sp.*		x													
ECTOPROCTA	LICHENOPORIDAE	*Disporella sp.*		x													
ECTOPROCTA	LICHENOPORIDAE	*Lichenopora sp.*						x					x				
ECTOPROCTA	TUBULIPORIDAE	*Tubulipora sp.*		x	x			x		x		x	x				
ECTOPROCTA	TUBULIPORIDAE	*Tubulipora sp.2*												x			
		Total Ectoprocta	1	9	4	2	3	8	0	11	0	13	12	1	1	0	0
ECHINODERMATA	ASTERINIDAE	*Asterina anomala*														x	x
ECHINODERMATA	ASTEROPSEIDAE	*Asteropsis carinifera*		x													
ECHINODERMATA	OREASTERIDAE	*Culcita novaeguineae*			x												
ECHINODERMATA	OPHIDIASTERIDAE	*Ophidiaster hemprichi*							x								
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocoma dentata/brevipes*	x			x	x		x		x	x			x		
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocoma erinaceus*	x			x			x			x			x		
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocoma macroplaca*						x				x					
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocoma pica*			x							x					
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocoma pusilla*						x									
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocomella sexradia*	x								x				x	x	
ECHINODERMATA	OPHIONEREIDIDAE	*Ophionereis porrecta*	x		x			x		x							
ECHINODERMATA	OPHIONEREIDIDAE	*Ophionereis sp.*								x							
ECHINODERMATA	OPHIOTRICHIDAE	*Macrophiothrix demessa*		x	x		x	x				x					
ECHINODERMATA	AMPHIURIDAE	*Amphipholis squamata*	x		x	x		x	x		x	x		x	x	x	
ECHINODERMATA	AMPHIURIDAE	*Amphiura immira*	x				x					x					
ECHINODERMATA	OPHIACTIDAE	*Ophiactis lethe*		x		x	x		x			x					
ECHINODERMATA	OPHIACTIDAE	*Ophiactis savignyi*							x								
ECHINODERMATA	OPHIACTIDAE	*Ophiactis sp. (red-spotted)*	x					x		x							

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ECHINODERMATA	CIDARIDAE	*Chondrocidaris gigantea*											x				
ECHINODERMATA	CIDARIDAE	*Eucidaris metularia*			x		x	x		x		x	x				
ECHINODERMATA	DIADEMATIDAE	*Echinothrix calamaris*		x						x							
ECHINODERMATA	DIADEMATIDAE	*Echinothrix diadema*	x	x	x	x		x		x							
ECHINODERMATA	TOXOPNEUSTIDAE	*Pseudoboletia indiana*								x			x				
ECHINODERMATA	TOXOPNEUSTIDAE	*Tripneustes gratilla*	x	x		x			x	x		x	x		x		
ECHINODERMATA	ECHINOMETRIDAE	*Echinometra mathaei*	x	x		x			x		x		x	x	x	x	x
ECHINODERMATA	ECHINOMETRIDAE	*Echinometra oblonga*													x	x	
ECHINODERMATA	ECHINOMETRIDAE	*Echinostrephus aciculatus*	x	x								x	x				
ECHINODERMATA	HOLOTHURIIDAE	*Actinopyga mauritiana*	x						x		x			x	x		
ECHINODERMATA	HOLOTHURIIDAE	*Holothuria (Halodeima) atra*				x					x			x		x	x
ECHINODERMATA	HOLOTHURIIDAE	*Holothuria (Lessonothuria) pardalis*	x			x	x		x								x
ECHINODERMATA	HOLOTHURIIDAE	*Holothuria (Platyperona) difficilis*				x											
ECHINODERMATA	HOLOTHURIIDAE	*Holothuria (Thymiosycia) arenicola*					x								x		x
		Total Echinodermata	13	8	7	10	7	8	10	8	6	11	6	4	9	6	5
ASCIDIACEA	DIDEMNIDAE	*Didemnum candidum*			x												
ASCIDIACEA	DIDEMNIDAE	*Didemnum edmondsoni*				x			x				x				
ASCIDIACEA	DIDEMNIDAE	*Didemnum moseleyi*			x	x			x								
ASCIDIACEA	DIDEMNIDAE	*Didemnum pele*								x							
ASCIDIACEA	DIDEMNIDAE	*Didemnum psammatodes*								x							
ASCIDIACEA	DIDEMNIDAE	*Diplosoma listerianum*		x				x			x						
ASCIDIACEA	DIDEMNIDAE	*pink didemnid*	x		x												
ASCIDIACEA	DIDEMNIDAE	*Trididemnum savignii*		x							x						
ASCIDIACEA	DIDEMNIDAE	*white didemnid*	x		x							x			x	x	
ASCIDIACEA	POLYCLINIDAE	*Polyclinum constellatum*						x									
ASCIDIACEA	ASCIDIIDAE	*Phallusia nigra*							x								
ASCIDIACEA	STYELIDAE	*Botrylloides simodensis*										x					
ASCIDIACEA	STYELIDAE	*Cnemidocarpa areolata*			x												
ASCIDIACEA	STYELIDAE	*Polycarpa aurita*	x			x	x		x	x		x	x	x			
ASCIDIACEA	STYELIDAE	*Symplegma brakenhielmi*						x	x	x		x					
ASCIDIACEA	STYELIDAE	*Symplegma sp.*			x	x											

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ASCIDIACEA	PYURIDAE	*Microcosmus exasperatus*					x		x								
		Total Ascidiacea	3	2	6	4	2	3	6	4	2	4	2	1	1	1	0
HEMICHORDATA	BRANCHIOSTOMIDAE	*Epigonichthys sp.*						x		x				x			
OSTEICHTHYES	CARCHARHINIDAE	*Triaenodon obesus*	x														
OSTEICHTHYES	MURAENIDAE	*Gymnothorax eurostus*	x														
OSTEICHTHYES	MURAENIDAE	*Gymnothorax flavimarginatus*			x	x							x				x
OSTEICHTHYES	MURAENIDAE	*Gymnothorax meleagris*												x			
OSTEICHTHYES	SYNODONTIDAE	*Saurida gracilis*												x			
OSTEICHTHYES	HOLOCENTRIDAE	*Myripristis berndti*				x			x								
OSTEICHTHYES	HOLOCENTRIDAE	*Myripristis sp.*	x														
OSTEICHTHYES	AULOSTOMIDAE	*Aulostomus chinensis*	x					x						x	x		
OSTEICHTHYES	FISTULARIIDAE	*Fistularia commersonii*													x		
OSTEICHTHYES	SCORPAENIDAE	*Pterois sphex*	x														
OSTEICHTHYES	LABRIDAE	*Anampses chrysocephalus*				x		x		x							
OSTEICHTHYES	LABRIDAE	*Anampses cuvier*									x			x			
OSTEICHTHYES	LABRIDAE	*Bodianus bilunulatus*			x												
OSTEICHTHYES	LABRIDAE	*Cheilio inermis*	x	x	x		x	x				x	x			x	
OSTEICHTHYES	LABRIDAE	*Coris gaimard*		x	x		x		x								
OSTEICHTHYES	LABRIDAE	*Gomphosus varius*	x			x							x	x		x	
OSTEICHTHYES	LABRIDAE	*Halichoeres ornatissimus*	x	x		x	x				x		x	x			
OSTEICHTHYES	LABRIDAE	*Labroides phthirophagus*	x		x				x	x			x			x	
OSTEICHTHYES	LABRIDAE	*Oxycheilinus unifasciatus*			x												
OSTEICHTHYES	LABRIDAE	*Pseudocheilinus octotaenia*								x			x				
OSTEICHTHYES	LABRIDAE	*Stethojulis balteata*		x		x	x				x	x	x	x	x		x
OSTEICHTHYES	LABRIDAE	*Thalassoma duperrey*	x		x	x	x	x	x		x		x	x	x	x	
OSTEICHTHYES	SCARIDAE	*Chlorurus sordidus*											x				
OSTEICHTHYES	SCARIDAE	*Scarus sp.*	x	x	x	x		x			x		x	x	x		
OSTEICHTHYES	ZANCLIDAE	*Zanclus cornutus*	x		x	x		x		x			x	x		x	x
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus achilles*	x			x		x			x			x			
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus blochii*				x	x		x					x			
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus dussumieri*	x														x

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus leucopareius*			x	x	x							x			
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus nigrofuscus*	x	x	x	x	x	x	x	x	x		x	x		x	
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus olivaceus*		x													
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus triostegus sandvicensis*		x		x	x				x			x		x	x
OSTEICHTHYES	ACANTHURIDAE	*Ctenochaetus strigosus*	x					x									
OSTEICHTHYES	ACANTHURIDAE	*Naso hexacanthus*					x										
OSTEICHTHYES	ACANTHURIDAE	*Naso lituratus*						x					x				
OSTEICHTHYES	ACANTHURIDAE	*Naso unicornis*	x									x		x			x
OSTEICHTHYES	ACANTHURIDAE	*Zebrasoma flavescens*			x			x								x	
OSTEICHTHYES	SERRANIDAE	*Cephalopholis argus*	x														
OSTEICHTHYES	APOGONIDAE	*Apogon kallopterus*	x						x								
OSTEICHTHYES	CARANGIDAE	*Caranx melampygus*	x					x									
OSTEICHTHYES	LUTJANIDAE	*Lutjanus kasmira*			x			x									
OSTEICHTHYES	LETHRINIDAE	*Monotaxis grandoculis*			x												
OSTEICHTHYES	MULLIDAE	*Mulloidichthys flavolineatus*									x					x	
OSTEICHTHYES	MULLIDAE	*Mulloidichthys vanicolensis*			x	x								x	x	x	
OSTEICHTHYES	MULLIDAE	*Parupeneus bifasciatus*		x													
OSTEICHTHYES	MULLIDAE	*Parupeneus multifasciatus*		x	x	x	x		x		x		x		x	x	x
OSTEICHTHYES	MULLIDAE	*Parupeneus pleurostigma*		x	x								x				
OSTEICHTHYES	MULLIDAE	*Parupeneus porphyreus*	x			x								x			
OSTEICHTHYES	MULLIDAE	*Upeneus arge*												x			
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon auriga*			x											x	
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon fremblii*			x	x											
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon kleinii*						x									
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon lunula*	x		x									x		x	
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon miliaris*						x	x								
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon multicinctus*	x										x				
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon quadrimaculatus*	x	x		x		x				x	x				
OSTEICHTHYES	CHAETODONTIDAE	*Forcipiger flavissimus*			x	x		x					x				
OSTEICHTHYES	CHAETODONTIDAE	*Hemitaurichthys polylepis*						x									
OSTEICHTHYES	CHAETODONTIDAE	*Heniochus diphreutes*						x									

TAXA	FAMILY	Species	Station 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
OSTEICHTHYES	POMACANTHIDAE	*Desmoholacanthus arcuatus*			x												
OSTEICHTHYES	POMACENTRIDAE	*Abudefduf abdominalis*	x			x		x						x	x	x	x
OSTEICHTHYES	POMACENTRIDAE	*Abudefduf sordidus*												x			x
OSTEICHTHYES	POMACENTRIDAE	*Abudefduf vaigiensis*				x											
OSTEICHTHYES	POMACENTRIDAE	*Chromis agilis*	x														
OSTEICHTHYES	POMACENTRIDAE	*Chromis hanui*			x												
OSTEICHTHYES	POMACENTRIDAE	*Chromis ovalis*		x				x					x				
OSTEICHTHYES	POMACENTRIDAE	*Chromis vanderbilti*	x	x	x	x							x				
OSTEICHTHYES	POMACENTRIDAE	*Chromis verater*			x			x									
OSTEICHTHYES	POMACENTRIDAE	*Dascyllus albisella*			x			x	x	x			x				
OSTEICHTHYES	POMACENTRIDAE	*Plectroglyphidodon imparipennis*	x	x		x			x					x			
OSTEICHTHYES	POMACENTRIDAE	*Plectroglyphidodon johnstonianus*	x										x				
OSTEICHTHYES	POMACENTRIDAE	*Plectroglyphidodon sindonis*	x														
OSTEICHTHYES	POMACENTRIDAE	*Stegastes fasciolatus*			x	x	x	x	x		x		x	x	x	x	x
OSTEICHTHYES	CIRRHITIDAE	*Cirrhitops fasciatus*	x	x													
OSTEICHTHYES	CIRRHITIDAE	*Cirrhitus pinnulatus*	x														
OSTEICHTHYES	CIRRHITIDAE	*Paracirrhites arcatus*			x			x					x				
OSTEICHTHYES	CIRRHITIDAE	*Paracirrhites forsteri*				x			x		x		x				
OSTEICHTHYES	TETRAODONTIDAE	*Arothron hispidus*	x		x												x
OSTEICHTHYES	TETRAODONTIDAE	*Canthigaster coronata*			x												
OSTEICHTHYES	TETRAODONTIDAE	*Canthigaster jactator*	x	x	x		x	x	x		x	x	x		x		x
OSTEICHTHYES	DIODONTIDAE	*Diodon hystrix*				x				x		x					
OSTEICHTHYES	BALISTIDAE	*Melichthys niger*						x									
OSTEICHTHYES	BALISTIDAE	*Melichthys vidua*		x	x	x		x					x				
OSTEICHTHYES	BALISTIDAE	*Rhinecanthus rectangulus*	x	x		x	x		x		x	x	x			x	
OSTEICHTHYES	BALISTIDAE	*Sufflamen bursa*			x			x		x			x				
OSTEICHTHYES	MONACANTHIDAE	*Cantherhines dumerilii*				x											
OSTEICHTHYES	MONACANTHIDAE	*Cantherhines sandwichiensis*										x					
OSTEICHTHYES	OSTRACIIDAE	*Ostracion meleagris camurum*		x			x						x			x	x
		Total Osteichthyes	35	20	33	30	15	30	15	9	14	8	30	25	10	17	13
REPTILIA	CHELONIDAE	Total Taxa	246	196	174	168	181	210	250	232	210	282	266	207	192	191	194

APPENDIX D

Supplementary Information for Nonindigenous and Cryptogenic Species Observed or Collected at Waikîkî during 2001 Surveys

Status:

- PR, I: Previously reported, Nonindigenous
- NR, R: New report, Nonindigenous
- PR, C: Previously reported, Cryptogenic
- NR, C: New report, Cryptogenic

ID:

- EA: Eastern Atlantic
- CA: Caribbean
- WA: Western Atlantic,
- EP: Eastern Pacific
- IP: Indo-Pacific
- WIP: Western Indo-Pacific,
- RS: Red Sea,
- WW: Tropical or Temperate World Wide.

Family	Genus and Species	Status	Status Authority	1st Rept.	Source &/or Comment	Origin and/or Previous Range	ID
Macroalgae							
Rhodomelaceae	*Acanthophora spicifera*	PR, I	Doty, 1962	1952	Pearl Harbor, introduced on barge fouling	Guam-Australia (Doty, 1961)	WIP
Hypneaceae	*Hypnea musciformis*	PR, I	Russell, 1993	1974	Kane`ohe Bay, introduced into for aquaculture experiments	Florida	CA
Gracilariaceae	*Gracilaria salicornia*	PR, I	Smith et al. 2002	pre-1950	Kane`ohe Bay & Waikîkî in 1971, previously in Hilo Bay pre-1950	Philippines?	WIP
Porifera							
Callyspongiidae	*Callyspongia diffusa*	PR, I	Kelly-Borges & Defelice, ms	1947	Kane`ohe Bay (de Laubenfels, 1950)	Uncertain	
Chalinidae	Chalinidae n.sp. (purple)	PR, I	Kelly-Borges & Defelice, ms	1997	Keehi Lagoon (Coles et al. 1999b)	Uncertain	
Dysideidae	*Dysidea cf. arenaria*	PR, I	Kelly-Borges & Defelice, ms	1996	Pearl Harbor (Coles et al. 1997, 1999a)	Palau	IP
Dysideidae	*Dysidea cf. avara*	PR, I	Kelly-Borges & Defelice, ms	1948	Kane`ohe Bay (de Laubenfels, 1950)	Mediterannean, Worldwide	WW
Niphatidae	*Gelliodes fibrosa*	PR, I	Kelly-Borges & Defelice, ms	1996	Pearl Harbor (Coles et al. 1997, 1999a)	Philippines (Kelly-Borges and DeFelice, Unpublished)	WIP
Hydrozoa							
Eudendridae	*Eudendrium* sp.	NR, C	Calder, pers. comm.	2001	First Hawai`i report, present study	Tropical Worldwide	WW
Halopterididae	*Antennella secundaria*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay, Coles et al. 2002	Tropical Worldwide	WW
Lafoeidae	*Anthohebella parasitica*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay, Coles et al. 2002	Tropical Worldwide	WW
Plumulariidae	*Halopteris polymorpha*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay, Coles et al. 2002	Tropical Worldwide	WW
Halocordylidae	*Pennaria disticha*	PR, I	Carlton & Eldredge, ms	1929	Pearl Harbor, BPBM Spec D 183	European Atlantic, Worldwide (Cooke 1977)	EA
Plumulariidae	*Plumularia strictocarpa*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay, first Hawai`i report	Tropical Worldwide	WW
Sertulariidae	*Sertularella areyi*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay, Coles et al. 2002	Tropical Worldwide	WW
Sertulariidae	*Tridentata humpferi*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay, Coles et al. 2002	Tropical Worldwide	WW
Sertulariidae	*Tridentata ligulata*	NR, C	Calder, pers. comm.	2001	Present study	Tropical Worldwide	WW
Sertulariidae	*Tridentata turbinata*	NR, C	Calder, pers. comm.	2001	Present study	Tropical Worldwide	WW
Syntheciidaae	*Synthecium megathecum*	NR, C	Calder, pers. comm.	2001	Present study	Tropical Worldwide	WW
Anthozoa							
Clavulariidae	*Carijoa (Telesto) riisei*	PR, I	Carlton & Eldredge, ms	1972	Pearl Harbor, BPBM Spec D-454	Florida-Brazil (Bayer, 1961)	CA
Diadumenidae	*Diadumene leucolena*	PR, C	Carlton & Eldredge, ms	1954	Pearl and Honolulu Harbors, Ala Wai (Hiatt 1954; Cuttress 1977)	Northwest Atlantic (Carlton and Eldredge, ms)	WA
Polychaeta							
Sabellidae	*Branchiomma nigromaculata*	PR, C	Carlton & Eldredge, ms	1852	Hawaiian Islands, as *Sabella havaica* (Kinberg)	Tropical Worldwide	WW

Family	Genus and Species	Status	Status Authority	1st Rept.	Source &/or Comment	Origin and/or Previous Range	ID
Serpulidae	*Hydroides crucigera*	PR, I	Carlton & Eldredge, ms	1936	Kane`ohe Bay (Straughan 1967)	Eastern Pacific (Carlton & Eldredge, ms)	EP
Opheliidae	*Armandia intermedia*	PR, C	Carlton & Eldredge, ms	1987	Honolulu Harbor and Kane`ohe Bay	Worldwide	WW
Capitellidae	*Capitella* sp. cf *capitata*	PR, C	Carlton & Eldredge, ms	1978	Ala Wai Canal and Kane`ohe Bay (Ward, 1987)	Worldwide	WW
Gastropoda							
Fissurellidae	*Diodora ruppelli*	PR, I	Carlton & Eldredge, ms	1962	Kay (1979)	Tropical Indo-West Pacific-Red Sea (Kay, 1979)	WIP
Pyramidellidae	*Crepidula aculeata*	PR, I	Carlton & Eldredge, ms	1913	Pearl Harbor, BPBM Spec MO-231366	Worldwide (Kay, 1979)	WW
Anomiidae	*Crucibulum spinosum*	PR, I	Carlton & Eldredge, ms	1946	Honolulu Harb. (Edmondson, 1946)	Worldwide (Kay, 1979)	WW
Vermetidae	*Eualetes tulipa*	PR, I	Carlton & Eldredge, ms	1972	Kane`ohe Bay and Pearl Harbor as *Vermetus alii* (Hadfield et al. 1972)	Florida (Hadfield, pers. comm. in Carlton & Eldredge, ms)	WA
Pyramidellidae	*Hinemoa indica*	PR, C	Carlton & Eldredge, ms	1918	Waikîkî, as *Odostomia indica* (Pisbry 1918)	Indian Ocan	WIP
Hipponicidae	*Hipponix australis*	PR, C	Carlton & Eldredge, ms	pre 1979	Kay (1979) as *Sabia conica*	Throughout Indo-West Pacific	WIP
Bivalvia							
Anomiidae	*Anomia nobilis*	PR, C	Carlton & Eldredge, ms	1912	Pearl Harbor, BPBM Spec MO-68170	Japan, Indo-West Pacific	WIP
Chamidae	*Chama fibula*	PR, I	Carlton & Eldredge, ms	1915	Pearl Harbor, as Chama hendersoni (Dall, et al. 1938)	Philippines-Australia (Carlton & Eldredge, ms)	WIP
Hiatellidae	*Hiatella arctica*	PR, I	Carlton & Eldredge, ms	1938	Honolulu Harbor as *Saxicava hawaiiensis*	Worldwide	WW
Isopoda							
Anthuridae	*Mesanthura sp.*	PR, C	Carlton & Eldredge, ms	1996	Pearl Harbor (Coles et al. 1997, 1999a)		
Amphipoda							
Corophiidae	*Ericthonius brasiliensis*	PR, I	Carlton & Eldredge, ms	1935	Kane`ohe Bay (Barnard 1955)	Tropical and Temperate Worldwide (Muir, pers. comm.)	WW
Ischyroceridae	*Leucothoe micronesiae*	PR, I	Carlton & Eldredge, ms	1997	Keehi Lagoon (Coles et al. 1999b)	Indo Pacific	IP
Leucothoidae	*Paraleucothoe flindersi*	PR, C	Muir, 1997	1996	Pearl Harbor (Coles et al. 1997, 1999a)	Australia	WIP
Podoceridae	*Podocerus brasiliensis*	PR, I	Carlton & Eldredge, ms	1938	1935 in Kane`ohe Bay (Barnard 19350	Tropical and temperate wordwide	WW
Tanaidacaea							
Pseudozuxidae	*Leptochelia dubia*	PR, C	Carlton & Eldredge, ms	1939	BPBM Spec S 5048, Black Point		
Decapoda							
Gonodactylidae	*Gonodactylaceus falcatus*	PR, I	Carlton & Eldredge, ms	1954	Kane`ohe Bay and Waikîkî as *Gonodactylus falcatus* (Kinzie, 1968)	Eastern Pacific- Phillipines (Kinzie, 1968)	WIP
Pilumnidae	*Pilumnus oahuensis*	PR, I	Carlton & Eldredge, ms	1929	Pearl Harbor, BPBM Spec. S 3436	Unknown	

Family	Genus and Species	Status	Status Authority	1st Rept.	Source &/or Comment	Origin and/or Previous Range	ID
Ectoprocta							
Savignyellidae	*Savignyella lafontii*	PR, I	Carlton & Eldredge, ms	1935	Kane`ohe Bay (Edmondson and Ingram 1939)	Tropical Atlantic (Carlton & Eldredge, ms)	CA
Watersiporidae	*Watersipora edmondsoni*	PR, I	Carlton & Eldredge, ms	1966	Ala Wai (Soule and Soule, 1967)	Tropical-Subtropical Pacific (Carlton & Eldredge, ms)	IP
Acidiacea							
Didemnidae	*Didemnum candidum*	PR, I	Carlton & Eldredge, ms	1930	Pearl and Hermes Reef (Tokioka 1967)		
Didemnidae	*Diplosoma listerianum*	PR, I	Carlton & Eldredge, ms	1977	Kane`ohe Bay, Rastetter and Cooke (1979)	Worldwide (Lambert and Lambert 1998)	WW
Pyuridae	*Microcosmus exasperatus*	PR, I	Carlton & Eldredge, ms	1996	Kane`ohe Bay (Abbott et al. 1997), 1st rept. date unspecified	Tropical Worldwide (Abbott et al. 1997)	WW
Ascidiidae	*Phallusia nigra*	PR, I	Carlton & Eldredge, ms	1975	Kane`ohe Bay, BPBM Spec Y 241 as *Ascidia nigra*	Worldwide (Abbott et al. 1997)	WW
Styelidae	*Polyclinum constellatum*	PR, I	Monniot & Monniot 1997	1973	Kane`ohe Bay, BPBM Spec Y 191	Tropical Worldwide (Abbott et al. 1997; Monniot and Monniot 1997)	WW
Styelidae	*Botrylloides simodensis*	PR, I	Lambert, pers. comm.	1999	Kewalo Basin and Ala Wai Harbor	Indo-Pacific (Lambert, pers. comm)	IP
Styelidae	*Symplegma brakenhielmi*	PR, I	Carlton & Eldredge, ms	1975	Grovhoug (1976) as *S. oceania*	Temperat and tropical Pacific (Abbot et al. 1997)	IP
Osteichthyes							
Serranidae	*Cepaholophis argus*	PR, I	Maciolek, 1984; Randall, 1986	1956	Offshore Oahu and Hawai`I, for fisheries "enhancement"	Tropical Indo-Pacific (Randall, 1987)	IP
Lutjanidae	*Lutjanus fkasmira*	PR, I	Maciolek, 1984; Randall, 1987	1956	Kane`ohe Bay, in 1956 and 1960 for fisheries "enhancement"	Tropical Indo-Pacific (Randall, 1987)	IP

APPENDIX E

Listing of Marine Organisms Reported for All Studies at Kuapâ Pond-Maunalua Bay

ALGAE

Division CHLOROPHYTA

Order ULVALES

Family ULVACEAE

***Enteromorpha* sp.**

2002 present study

Order CLADOPHORALES

Family SIPHONOCLADACEAE

***Dictyosphaeria cavernosa* (Forss.) Boergesen**

2002 present study

Order BRYOPSIDALES

Family CAULERPACEAE

***Caulerpella ambigua* (Okamura)**

2002 present study

Family HALIMEDACEAE

***Halimeda discoidea* Decne.**

2002 present study

***Halimeda opuntia* (L.) J.V.Lamour**

2002 present study

***Halimeda* sp.**

2002 present study

Family UDOTEACEAE

***Avrainvillea amadelpha* (Mont.) A.Gepp & E.Gepp** **Introduced**

1955 Brostoff 1989

2002 present study

***Rhipidosiphon javensis* Mont.**

2002 present study

Order DASYCLADALES

Family DASYCLADALCEAE

***Neomeris annulata* Dickie**

2002 present study

Order PRASIOLALES

Family PRASIOLACEAE

***Cladophora* sp.**

2002 present study

Division PHAEOPHYTA

Order ECTOCARPALES

Family ECTOCARPACEAE

***Feldmannia* sp.**

2002 present study

Order DICTYOTALES

Family DICTYOTACEAE

***Dictyota sandvicensis* Kütz**

2002 present study

***Dictyota* sp.**

2002 present study

***Padina sanctae-crucis* Børgesen**

2002 present study

Division RHODOPHYTA

Order NEMALIALES

Family BONNEMAISONIACEAE

***Asparagopsis taxiformis* (Delile) Coll. and Harvey**

2002 present study

Family GALAXAURACEAE

Galaxaura rugosa (Ellis & Solander) J. V. Lamour.

2002 present study

Order GELIDIALES

Family GELIDIELLACEAE

***Gelidiella machrisiana* E.Y.Dawson**

2002 present study

Order CORALLINALES

Family CORALLINACEAE

***Amphiroa valonioides* Yendo**

2002 present study

***Jania adhaerens* J.V.Lamour.**

2002 present study

***Jania micrarthrodia* J.V.Lamour.**

2002 present study

Order CRYPTONEMIALES

Family RHIZOPHYLLIDACEAE

***Portieria hornemannii* (Lyngb.) P.C.Silva**

2002 present study

Family PEYSSONNELIACEAE

***Peyssonnelia conchicola* Picc. & Grunow**

2002 present study

Order GIGARTINALES

Family HYPNEACEAE

***Hypnea musciformis* (Wulfen) J. Agardh** **Introduced**

2002 present study

***Hypnea spinella* (C.Agardh) Kütz.**

2002 present study

Order GRACILARIALES

Family GRACILARIACEAE

***Gracilaria salicornia* (C. Agardh) E. Y. Dawson** **Introduced**

2002 present study

Order RHODYMENIALES

Family RHODYMENIACEAE

***Gelidiopsis scoparia* (Mont. & Millardet) De Toni**

2002 present study

***Halichrysis coalescens* (Farl.) A.Millar & R.E.Norris**

2002 present study

Order CERAMIALES

Family CERAMIACEAE

***Aglaothamnion boergesenii* (Aponte & Ballantine) L'Hardy-Halos & Rueness**

2002 present study

***Aglaothamnion cordatum* (Børgesen) Feldm.-Maz.**

2002 present study

***Centroceras clavulatum* (C. Agardh) Mont.**

2002 present study

***Ceramium clarionensis* Setch. and Gardner**

2002 present study

***Ceramium flaccidum* Ardiss.**

2002 present study

***Crouania minutissima* Yamada**

2002 present study

***Diplothamnion jolyi* van den Hoek**

2002 present study

***Falkenbergia hillebrandii* (Ardiss.) Falkenb.**

2002 present study

***Gloiocladia iyoensis* (Okamura) R.E.Norris**
2002 present study
***Griffithsia heteromorpha* Kütz**
2002 present study
***Lejolisea pacifica* Itono**
2002 present study
***Spyridia filamentosa* (Wulfen) Harv.**
2002 present study
***Tiffaniella saccorhiza* (Setch. & N.L.Gardner) Doty & Meñez**
2002 present study
***Wrangelia dumontii* (E.Y.Dawson) I.A.Abbott**
2002 present study

Family DELESSERIACEAE

***Dotyella hawaiiensis* (Doty & Wainwr.) Womersley & Shepley**
2002 present study
***Dotyella irregularis* I.A.Abbott**
2002 present study
***Martensia fragilis* Harv.**
2002 present study

Family DASYACEAE

***Dasya kristeniae* I.A.Abbott**
2002 present study
***Heterosiphonia crispella* (C.Agardh) M.J.Wynne**
2002 present study

Family RHODOMELACEAE

***Acanthophora spicifera* (Vahl) Børgesen** **Introduced**
2002 present study
***Chondria dangeardii* E.Y.Dawson**
2002 present study
***Chondria simpliciuscula* Weber Bosse**
2002 present study
***Herposiphonia nuda* Hollenb.**
2002 present study
***Polysiphonia* sp.**
2002 present study
***Tolypiocladia glomerulata* (C. Agardh) Schmitz**
2002 present study

PLANTAE

Division MAGNOLIOPHYTA

Order HYDROCHARITALES

Family HYDROCHARITACEAE

***Halophila hawaiiana* Doty & B.Stone**
2002 present study

Order RHIZOPHORALES

Family RHIZOPHORACEAE

***Rhizophora mangle* Linn.** **Introduced**
2002 present study

ANIMALIA

Phylum PORIFERA

Class DEMOSPONGIAE

Subclass TETRACTINOMORPHA

Order HADROMERIDA

Family SUBERITIDAE

***Suberites zeteki* de Laubenfels, 1936** **Introduced**
2002 present study

Subclass CERACTINOMORPHA
Order POECILOSCLERIDA
Suborder MYCALINA
Family MYCALIDAE
***Zygomycale parishii* (Bowerbank, 1875)** **Introduced**
2002 present study
Order HALICHONDRIDA
Family HALICHONDRIIDAE
***Halichondria* sp.**
2002 present study
Order HAPLOSCLERIDA
Family CHALINIDAE
Chalinidae n.sp. (purple) **Cryptogenic**
2002 present study
***Sigmadocia caerulea* Hechtel, 1965** **Introduced**
2002 present study
***Toxiclona* sp.** **Cryptogenic**
2002 present study
Family NIPHATIDAE
***Gelliodes fibrosa* (Wilson, 1925)** **Introduced**
2002 present study
Order DENDROCERATIDA
Family DARWINELLIDAE
***Pleraplysilla hyalina* de Laubenfels, 1950**
2002 present study

Phylum CNIDARIA
Class HYDROZOA
Order HYDROIDA
Family CAMPANULARIIDAE
***Obelia bidentata* Clarke, 1875** **Introduced**
2002 present study
***Obelia dichotoma* (Linnaeus, 1758)** **Introduced**
2002 present study
Family HALOCORDYLIDAE
***Pennaria disticha* (Goldfuss, 1820)** **Introduced**
2002 present study
Family PLUMULARIIDAE
***Halopteris* sp.**
2002 present study
***Plumularia strictocarpa* Pictect, 1893** **Cryptogenic**
2002 present study
Family SERTULARIIDAE
***Tridentata humpferi* Broch, 1914** **Cryptogenic**
2002 present study
Class ANTHOZOA
Subclass OCTOCORALLIA
Order ALCYONACEA
Family CLAVULARIIDAE
***Carijoa riisei* (Duchassaing & Michelotti, 1860)** **Introduced**
2002 present study

Subclass HEXACORALLIA

Order SCLERACTINIA

Family ACROPORIDAE

***Montipora capitata* (Dana, 1846)**

1975 Environmental Consultants 1975 (as *Montipora verrucosa*)
2002 present study

***Montipora flabellata* Studer, 1902**

1975 Environmental Consultants 1975
2002 present study

***Montipora patula* Verrill, 1864**

1975 Environmental Consultants 1975
2002 present study

Family AGARICIIDAE

***Pavona varians* Verrill, 1864**

1975 Environmental Consultants 1975
2002 present study

Family FAVIIDAE

***Cyphastrea ocellina* (Dana, 1846)**

1975 Environmental Consultants 1975

***Leptastrea bottae* Milne Edwards & Haime, 1849**

1975 Environmental Consultants 1975

***Leptastrea purpurea* Dana, 1846**

1975 Environmental Consultants 1975

Family POCILLOPORIDAE

***Pocillopora damicornis* (Linnaeus, 1758)**

1975 Environmental Consultants 1975
2002 present study

***Pocillopora eydouxi* Milne Edwards & Haime, 1849**

2002 present study

***Pocillopora meandrina* Dana, 1846**

1975 Environmental Consultants 1975
2002 present study

***Pocillopora* sp.**

1959 BPBM-SC 173

Family PORITIDAE

***Porites compressa* Dana, 1846**

1975 Environmental Consultants 1975

***Porites evermanni* Vaughan, 1907**

2002 present study

***Porites lobata* Dana, 1846**

1975 Environmental Consultants 1975
2002 present study

Family SIDASTREIDAE

***Psammocora nierstraszi* Van der Horst, 1922**

1975 Environmental Consultants 1975

***Psammocora stellata* Verrill, 1864**

1975 Environmental Consultants 1975

Order ZOANTHIDEA

Family ZOANTHIDAE

***Palythoa tuberculosa* (Esper, 1791)**

1975 Environmental Consultants 1975

***Palythoa vestitus* (Verrill, 1928)**

1966 BPBM-D 436

Phylum ANNELIDA

Class POLYCHAETA

Family POLYNOIDAE

***Iphione muricata* (Savigny, 1818)**

1983 BPBM-R 2161

***Paralepidonotus ampulliferus* (Grube, 1878)**

2002 present study

Family AMPHINOMIDAE

***Eurythoe complanata* (Pallas, 1766)**

2002 present study

Family PHYLLODOCIDAE

***Eulalia sanguinea* Oersted, 1843** **Introduced**

2002 present study

***Phyllodoce* (*Phyllodoce*) sp.**

2002 present study

unid. Phyllodocidae

2002 present study

Family SYLLIDAE

***Branchiosyllis exilis* (Gravier, 1900)**

2002 present study

***Haplosyllis spongicola* (Grube, 1855)**

2002 present study

***Myrianida crassicirrata* Hartmann-Schroder, 1965**

2002 present study

***Trypanosyllis zebra* (Grube, 1860)**

2002 present study

***Typosyllis prolifera* Krohn, 1852**

2002 present study

***Typosyllis* sp.1**

2002 present study

Syllidae sp.17

2002 present study

unid. Syllidae

2002 present study

Family NEREIDIDAE

unid. Nereididae

2002 present study

Family EUNICIDAE

***Eunice cariboea* (Grube, 1856)**

2002 present study

***Eunice filamentosa* Grube, 1856**

2002 present study

***Lysidice ninetta* Audouin and Milne Edwards, 1833**

2002 present study

***Marphysa* sp.**

1954 BPBM-R 1436

1975 Kentron Hawai`i Ltd 1975

***Nematonereis unicornis* Schmarda, 1861**

2002 present study

***Palola siciliensis* (Grube, 1840)**

2002 present study

Family LUMBRINERIDAE

***Lumbrineris* sp.**

2002 present study

Family DORVILLEIDAE

***Dorvillea* sp.**

2002 present study

Family SPIONIDAE

unid. Spionidae

2002 present study

Family CIRRATULIDAE

***Cirriformia* sp.**

2002 present study

Family OPHELIIDAE

***Armandia intermedia* Fauvel, 1902** **Cryptogenic**

2002 present study

***Polyophthalmus pictus* Dujardin, 1839**

2002 present study

Family CAPITELLIDAE

***Capitella* sp. (Fabricus, 1780)** **Cryptogenic**

2002 present study

Family MALDANIDAE

unid. Maldanidae

2002 present study

Family STERNASPIDAE

***Sternaspis* sp.**

2002 present study

Family TEREBELLIDAE

***Nicolea gracilibranchis* (Grube, 1878)**

2002 present study

***Thelepus setosus* (Quatrefages, 1865)**

2002 present study

Family SABELLIDAE

***Branchiomma nigromaculata* (Baird, 1865)** **Cryptogenic**

2002 present study

***Sabellastarte spectabilis* (Grube, 1878)** **Introduced**

2001 Guinther 2001 (as *Sabellastarte sanctjosephi*)

2002 present study

unid. Sabellidae

2002 present study

Family SERPULIDAE

***Hydroides dirampha* (Morch, 1863)** **Introduced**

2002 present study

***Pomatoleios kraussii* Baird, 1865** **Introduced**

2002 present study

***Serpula vermicularis* Linnaeus, 1767** **Cryptogenic**

2002 present study

***Spirobranchus giganteus corniculatus* (Grube, 1862)**

2002 present study

Family SPIRORBIDAE

unid. Spirorbidae

2002 present study

Phylum SIPUNCULA

Class PHASCOLOSOMATIDEA

Order ASPIDOSIPHONIFORMES

Family ASPIDOSIPHONIDAE

***Aspidosiphon (Parspidosiphon) steenstrupii* Diesing, 1859**

2002 present study

***Aspidosiphon elegans* (Chamisso and Eysenhardt, 1821)**
2002 present study
Order PHASCOLOSOMATIFORMES
Family PHASCOLOSOMATIDAE
***Phascolosoma nigrescens* Keferstein, 1865**
2002 present study
***Phascolosoma scolops* Selenka & de Man, 1883**
2002 present study
Class SIPUNCULIDEA
Order GOLFINGIIDAE
Family THEMISTIDAE
***Themiste (Langenopsis) langeniformis* Baird, 1868**
2002 present study
Phylum MOLLUSCA
Class GASTROPODA
Subclass PROSOBRANCHIA
Order ARCHAEOGASTROPODA
Family SCISSURELLIDAE
***Sinezona insignis* (Smith, 1910)**
2002 present study
Family FISSURELLIDAE (DIODORINAE)
Diodora* cf. *tongana
2002 present study
***Diodora granifera* (Pease, 1861)**
2002 present study
Family PHASIANELLIDAE
***Tricolia (Hiloa) variabilis* (Pease, 1861)**
2002 present study
Family TROCHIDAE (ENCYCLINAE)
***Euchelus gemmatus* (Gould, 1845)**
2002 present study
***Gibbula marmorea* (Pease, 1861)**
2002 present study
Family TROCHIDAE (TROCHINAE)
***Alcyna ocellata* Hickman & McLean, 1995**
2002 present study
***Trochus intextus* Kiener, 1850**
2002 present study
Family TURBINIDAE (COLLONINAE)
***Leptothyra rubricincta* (Mighels, 1845)**
2002 present study
***Leptothyra verruca* (Gould, 1845)**
2002 present study
Family TURBINIDAE (TURBININAE)
***Turbo sandwicensis* Pease, 1861**
2002 present study
Order NEOTAENIOGLOSSA
Suborder DISCOPODA
Family CERITHIIDAE
***Cerithium boeticum* Pease, 1860**
2002 present study
***Cerithium zebrum* Kiener, 1841**
2002 present study
***Ittibittium parcum* (Gould, 1861)**
2002 present study

Family FOSSARIDAE
Fossarus garrettii **Pease, 1868**
2002 present study
Family EATONIELLIDAE
Eatoniella (Dardaniopsis) pigmenta **Kay, 1979**
2002 present study
Family CAECIDAE
Caecum sepimentum **de Folin, 1867**
2002 present study
Family RISSOIDAE (RISSOINAE)
Pusillina marmorata **Ponder, 1985**
2002 present study
Family RISSOIDAE (RISSOININAE)
Rissoina cerithiiformis **Tryon, 1887**
2002 present study
Family HIPPONICIDAE
Hipponix (Antisabia) foliaceus **(Quoy and Gaimard, 1835)**
2002 present study
Hipponix (Pilosabia) pilosus **(Deshayes, 1832)**
2002 present study
Family CALYPTRAEIDAE
Crepidula aculeata **(Gmelin, 1791)** **Introduced**
2002 present study
Family VERMETIDAE
Dendropoma rhyssoconcha **Hadfield and Kay, 1972**
2002 present study
Dendropoma **sp.**
2002 present study
Eualetes tulipa **(Chenu, 1843)** **Introduced**
2002 present study
Serpulorbis variabilis **Hadfield and Kay, 1972**
2002 present study
Family CYPRAEIDAE
Cypraea isabella **Linnaeus, 1758**
2002 present study
Family ERATOIDAE
Erato sandwicensis **Pease, 1860**
2002 present study
Family TRIVIIDAE
Trivia hordacea **Kiener, 1845**
2002 present study
Family RANELLIDAE (CYMATIINAE)
Cymatium **sp.**
2002 present study
Suborder PTENOGLOSSA
Family CERITHIOPSIDAE
Joculator **sp.**
2002 present study
Family TRIPHORIDAE (INIFORINAE)
Iniforis aemulans **(Hinds, 1843)**
2002 present study
Iniforis hinuhinu **Kay, 1979**
2002 present study

Family TRIPHORIDAE (MASTONIINAE)

***Mastonia cingulifera* (Pease, 1861)**

2002 present study

***Viriola incisa* (Pease, 1861)**

2002 present study

Family TRIPHORIDAE (TRIPHORINAE)

***Triphora pallida* (Pease, 1871)**

2002 present study

***Triphora* sp.**

2002 present study

Family EPITONIIDAE

***Epitonium* sp.**

2002 present study

Family EULIMIDAE

***Balcis acanthyllis* (Watson, 1886)**

2002 present study

Order NEOGASTROPODA

Family BUCCINIDAE

***Caducifer decapitata* (Reeve, 1844)**

2002 present study

***Prodotia ignea* (Gmelin, 1791)**

2002 present study

Family COLUMBELLIDAE

***Mitrella loyaltensis* (Hervier, 1900)**

2002 present study

***Mitrella margarita* (Reeve, 1859)**

2002 present study

***Mitrella rorida* (Reeve, 1859)**

2002 present study

***Seminella peasei* (von Martens & Langkaval 1871)**

2002 present study

Family MURICIDAE

***Aspella producta* (Pease, 1861)**

2002 present study

Family THAIDIDAE

***Drupa (Drupa) ricina* (Linnaeus, 1758)**

2002 present study

***Morula* sp.**

2002 present study

Family COSTELLARIIDAE

***Vexillum (Pusia) lautum* (Reeve, 1845)**

2002 present study

Family MARGINELLIDAE

***Cystiscus huna* Kay, 1979**

2002 present study

***Granula sandwicensis* (Pease, 1860)**

2002 present study

***Volvarina fusiformis* (Hinds, 1844)**

2002 present study

Family MITRIDAE (MITRINAE)

***Mitra (Dibaphus)* sp.**

2002 present study

***Mitra (Nebularia) luctuosa* Adams, 1853**

2002 present study

***Mitra (Strigatella)* sp.**
2002 present study
Family TURRIDAE (CLAVININAE)
***Carinapex minutissima* (Garret, 1873)**
2002 present study
Order HETEROSTROPHA
Family ORBITESTELLIDAE
***Orbitestella regina* Kay, 1979**
2002 present study
Family RISSOELLIDAE
***Rissoella longispira* Kay, 1979**
2002 present study
Family PYRAMIDELLIDAE
***Hinemoa indica* (Melvill, 1896)** **Introduced**
2002 present study
***Odostomia oxia* Watson, 1886**
2002 present study
Subclass OPISTOBRANCHIA
Order CEPHALASPIDEA
Family APLUSTRIDAE
***Hydatina amplustra* (Linnaeus, 1758)**
2002 present study
Family HAMINEIDAE
***Atys semistriata* Pease, 1860**
2002 present study
***Diniatys dentifer* (Adams, 1850)**
2002 present study
***Haminoea* sp.**
2002 present study
Family SCAPHANDRIDAE
***Cylichna pusilla* (Pease, 1860)**
2002 present study
Order ANASPIDEA
Family APLYSIIDAE (NOTARCHIINAE)
***Stylocheilus longicaudatus* (Quoy and Gaimard, 1824)**
2002 present study
Order SACOGLOSSA
Family JULIIDAE
***Julia exquisita* Gould, 1862**
2002 present study
Order NUDIBRANCHIA
Family CUTHONIDAE
***Cuthona pinnifera* Baba, 1949**
2002 present study
***Cuthona* sp.**
2002 present study
Subclass PULMONATA
Order BASOMMATOPHORA
Family SIPHONARIIDAE
***Siphonaria normalis* Gould, 1846**
2002 present study
***Williamia radiata* (Pease, 1861)**
2002 present study

Class BIVALVIA

Family MYTILIDAE

***Brachidontes crebristriatus* (Conrad, 1837)**

2002 present study

***Crenella* sp.**

2002 present study

***Lithophaga* sp.**

2002 present study

***Septifer bryanae* (Pilsbry, 1921)**

2002 present study

Family ARCIDAE (ARCINAE)

***Barbatia nuttingi* (Dall, Bartsch, and Rehder, 1938)**

2002 present study

Family ISOGNOMONIDAE

***Isognomon californicum* (Conrad, 1837)**

2001 Guinther 2001

***Isognomon perna* (Linnaeus, 1767)**

2002 present study

Family MALLEIDAE

***Malleus regula* (Forskå, 1775)**

2002 present study

Family PTERIIDAE

***Pinctada* sp.**

2002 present study

Family OSTREIDAE

***Dendostrea sandvicensis* (Sowerby, 1871)**

2001 Guinther 2001 (as *Ostrea sandvicensis*)

2002 present study

Family PROPEAMUSIIDAE

***Chlamydella* sp.**

2002 present study

Family ANOMIIDAE

***Anomia nobilis* Reeve, 1859** **Introduced**

2002 present study

Family HIATELLIDAE

***Hiatella arctica* (Linnaeus, 1767)** **Introduced**

2002 present study

Family LASAEIDAE

***Lasaea hawaiensis* Dall, Bartsch, & Rehder, 1938**

2002 present study

Family SEMELIDAE

***Semelangulus* sp.**

2002 present study

Class POLYPLACOPHORA

Order CHITONID

Family CHITONIDAE

***Rhyssoplax* sp.**

2002 present study

Family ISCHNOCHITONIDAE

***Ischnochiton* sp.**

2002 present study

Phylum ARTHROPODA

Class MAXILLOPODA

Subclass CIRRIPEDIA

Order THORACICA

Family BALANIDAE

Balanus amphitrite **(Darwin, 1854)** **Introduced**

2002 present study

Balanus eburneus **Gould, 1841** **Introduced**

2002 present study

Balanus reticulatus **Utinomi, 1967** **Introduced**

2002 present study

Balanus **sp.**

2001 Guinther 2001

Family CHTHAMALIDAE

Chthamalus proteus **Dando & Southward, 1980** **Introduced**

2002 present study

Class MALACOSTRACA

Subclass HOPLOCARIDA

Order STOMATOPODA

Family GONODACTYLIDAE

Gonodactylaceus falcatus **(Forskal, 1775)** **Introduced**

2002 present study

Family PSEUDOSQUILLIDAE

Pseudosquilla ciliata **(Fabricuis, 1787)**

1953 BPBM-S 5879

Subclass EUMALACOSTRACA

Superorder PERACARIDA

Order AMPHIPODA

Suborder GAMMARIDEA

Family AMPHILOCHIDAE

Amphilochus likelike **Barnard, 1970**

2002 present study

Amphilochus menehune **Barnard, 1970**

2002 present study

Amphilochus **sp.**

2002 present study

Family AMPITHOIDAE

Ampithoe ramondi **Audouin, 1826**

2002 present study

Ampithoe waialua **Barnard, 1970**

2002 present study

Family ANAMIXIDAE

Anamixis moana **Thomas, 1997**

2002 present study

Family AORIDAE

Bemlos intermedius **Schellenberg, 1938**

2002 present study

Bemlos macromanus **Shoemaker, 1925**

2002 present study

Bemlos pualani **Barnard, 1970**

2002 present study

Bemlos **sp.1**

2002 present study

Lembos leapakahi **Barnard, 1970**

2002 present study

Family COLOMASTIGIDAE

Colomastix kapiolani **Barnard, 1970**

2002 present study

Colomastix lunalilo **Barnard, 1970**

2002 present study

Family COROPHIIDAE

Corophium ascherusicum **Costa, 1853** **Introduced**

2002 present study

Corophium baconi **Shoemaker, 1934** **Introduced**

2002 present study

Corophium insidiosum **Crawford, 1937** **Introduced**

2002 present study

Ericthonius brasiliensis **(Dana, 1853)** **Introduced**

2002 present study

Ericthonius **sp.**

2002 present study

Family EUSIRIDAE

Pontogeneia pacifica **Schellenberg, 1938**

2002 present study

Family ISAEIDAE

Gammaropsis alamoana **Barnard, 1970**

2002 present study

Photis aina **Barnard, 1970**

2002 present study

Photis hawaiensis **Barnard, 1955** **Cryptogenic**

2002 present study

Family ISCHYROCERIDAE

Jassa lilipuna **Barnard, 1970**

2002 present study

Jassa **sp.**

2002 present study

Leucothoe hyhelia **Barnard, 1965**

2002 present study

Leucothoe lihue **Barnard, 1970**

2002 present study

Leucothoe tridens **Stebbing, 1888**

2002 present study

Leucothoe **sp.2**

2002 present study

Leucothoides pottsi **Shoemaker, 1933**

2002 present study

Notopoma **n.sp.**

2002 present study

Ventojassa ventosa **Barnard, 1962**

2002 present study

Family LEUCOTHOIDAE

Paraleucothoe **cf.** ***flindersi*** **Stebbing, 1888** **Introduced**

2002 present study

Family MELITIDAE

Ceradocus hawaiiensis **Barnard, 1955**

2002 present study

Elasmopus **cf.** ***pseudoaffinis***

2002 present study

Elasmopus hooheno **Barnard, 1970**

2002 present study

***Elasmopus molokai* Barnard, 1970**
2002 present study
***Elasmopus pectenicrus* (Bate, 1862)**
2002 present study
***Elasmopus pocillimanus* (Bate, 1862)**
2002 present study
***Elasmopus rapax* Costa, 1853** **Introduced**
2002 present study
***Elasmopus* sp.**
2002 present study
***Maera pacifica* Schellenberg, 1938**
2002 present study
***Maera quadrimana* (Dana, 1853)**
2002 present study
***Mallacoota insignis* (Chevreux, 1901)**
2002 present study
***Melita appendiculata* (Say, 1818)**
2002 present study
Family OCHELESIDAE
***Ochlesis alii* Barnard, 1970**
2002 present study
Family OEDICEROTODAE
***Perioculodes* sp.**
2002 present study
Family PLEUSTIDAE
***Tepidopleustes honomu* Barnard, 1970**
2002 present study
Family PODOCERIDAE
***Podocerus brasiliensis* Dana, 1853** **Introduced**
2002 present study
***Podocerus talegus lawai* (Barnard, 1970)**
2002 present study
Family STENOTHOIDAE
***Stenothoe valida-gallensis* complex**
2002 present study
Family TALITROIDAE
***Hyale honoluluensis* Schellenberg, 1938**
2002 present study
***Hyale laie* Barnard, 1970**
2002 present study
Order ISOPODA
Suborder FLABELLIFERA
Family CYMOTHOIDAE
***Cymothoa* sp. Edmondson, 1946**
1945 BPBM-S 5117
Order TANAIDACEA
Suborder APSEUDOMORPHA
Family APSEUDIDAE
***Apseudes tropicalis* Miller, 1940**
2002 present study
***Parapseudes neglectus* Miller, 1940**
2002 present study
***Synapseudes minutus* Miller, 1940**
2002 present study
***Zeuxo seurati* (Nobili, 1906)**
2002 present study

Family PSEUDOZUXIDAE

Leptochelia dubia **Kroyer, 1842** **Cryptogenic**

2002 present study

Superorder EUCARIDA

Order DECAPODA

Suborder PLEOCYEMATA

Infraorder CARIDEA

Family BRESILIIDAE

Discias **cf. *exul* Kemp, 1920**

2002 present study

Family PALAEMONIDAE (PALAEMONINAE)

Macrobrachium grandimanus **Randall, 1840**

1940 BPBM-S 4913

Palaemon pacificus **(Stimpson, 1860)**

1953 BPBM-S 5842

Family PALAEMONIDAE (PONTONIINAE)

Onycocaris **n.sp.**

2002 present study

Onycocaris quadratophthalma **(Balss, 1921)**

1953 BPBM-S 6041

2002 present study

Palaemonella rotumana **(Borradaile, 1898)**

2002 present study

Periclimenes grandis **(Stimpson, 1860)**

2002 present study

Periclimenes **sp.**

2002 present study

Family ALPHEIDAE

Alpheus brevipes **Stimpson, 1860**

2002 present study

Alpheus clypeatus **Coutiere, 1905**

2002 present study

Alpheus gracilipes **Stimpson, 1860**

2002 present study

Alpheus lobidens **de Haan, 1849**

2002 present study

Alpheus pacificus **Dana, 1852**

1953 BPBM-S 5849

Alpheus paralcyone **Coutiere, 1905**

2002 present study

Alpheus pugnax **Dana, 1852**

2002 present study

Metalpheus paragracilis **Coutiere, 1897**

2002 present study

Metalpheus rostratipes **(Pocock, 1890)**

2002 present study

Synalpheus bituberculatus **de Man, 1910**

2002 present study

Synalpheus paraneomeris **Coutiere, 1905**

2002 present study

Synalpheus streptodactylus **Coutiere, 1905**

2002 present study

Synalpheus thai **Banner & Banner, 1966**

2002 present study

Family HIPPOLYTIDAE

***Saron marmoratus* (Olivier, 1811)**

2002 present study

***Thor paschalis* (Heller, 1862)**

2002 present study

***Thorina maldivensis* (Borradaile, 1915)**

2002 present study

Suborder REPTANTIA

Infraorder BRACHYURA

Family GRAPSIDAE

***Metopograpsus messor* (Forsskå, 1775)**

2002 present study

***Metopograpsus thukuhar* (Owen, 1893)**

2001 Guinther 2001

***Pachygrapsus plicatus* (A.Milne Edwards, 1873)**

1930 BPBM-S 3086

Family OCYPODIDAE

***Macrophthalmus telescopicus* (Owen, 1839)**

1975 Kentron Hawaii Ltd 1975

Family PORTUNIDAE

***Charybdis (Charybdis) hawaiensis* (Dana, 1851)**

1975 Kentron Hawaii Ltd 1975

***Portunus pubescens* (Dana, 1852)**

1953 BPBM-S 5853

***Thalamita crenata* (Latreille, 1829)**

1953 BPBM-S 5868
1953 BPBM-S 6084
1953 BPBM-S 5846
1953 BPBM-S 5855
1953 BPBM-S 5884
1953 BPBM-S 5876
1975 Kentron Hawaii Ltd 1975

Thalamita edwardsi

1953 BPBM-S 5869
1953 BPBM-S 5875
1953 BPBM-S 5840
1953 BPBM-S 5883
1953 BPBM-S 5856
2002 present study

***Thalamita integra* Dana, 1852**

1953 BPBM-S 5882
1953 BPBM-S 5854
1953 BPBM-S 5847
1953 BPBM-S 5874
1953 BPBM-S 6085
1953 BPBM-S 5839
1953 BPBM-S 5845
1953 BPBM-S 5867
1953 BPBM-S 6038
1953 BPBM-S 5851
2002 present study

***Thalamita* sp.**

1953 BPBM-S 5848

Family PILUMNIDAE

***Pilumnus longicornis* Hilgendorf, 1878**

2002 present study

***Pilumnus* sp.**
2002 present study
Family TRAPEZIIDAE
***Domecia hispida* Eydoux and Souleyet, 1842**
2002 present study
***Trapezia ferruginea* Latreille, 1825**
2002 present study
Family XANTHIDAE
***Chlorodiella* sp.**
2002 present study
***Leptodius sanguineus* (Milne Edwards, 1834)**
1930 BPBM-S 3094
1953 BPBM-S 5885
1953 BPBM-S 5841
***Liocarpilodes integerrimus* Dana, 1852**
2002 present study
***Liomera bella* (Dana, 1852)**
2002 present study
***Paraxanthias notatus* (Dana, 1852)**
2002 present study
***Phymodius monticulosus* (Dana, 1852)**
2002 present study
***Phymodius nitidus* (Dana, 1852)**
2002 present study
***Phymodius ungulatus* (Milne Edwards, 1834)**
2002 present study
***Platypodia eydouxii* (Milne Edwards, 1865)**
2002 present study
***Pseudoliomera remota* (Rathbun, 1907)**
2002 present study
***Pseudoliomera variolosa* (Borradaile, 1902)**
2002 present study
***Xanthias* sp.**
2002 present study
Family DYNOMENIIDAE
***Dynomene hispida* Guérin-Menéville, 1832**
2002 present study
Family MAJIDAE
***Perinea tumida* Dana, 1852**
2002 present study
***Schizophorida hilensis* Rathbun, 1906**
2002 present study
Family CALAPPIDAE
***Calappa hepatica* (Linnaeus, 1758)**
1953 BPBM-S 5886
Infraorder ANOMURA
Family DIOGENIDAE
***Calcinus guamensis* Wooster, 1982**
2002 present study
Family PAGURIDAE
***Pagurixus festinus* McLaughlin & Haig, 1984**
2002 present study
Family GALATHEIDAE
***Galathea spinosorostris* Dana, 1852**
2002 present study

Family PORCELLANIDAE

***Petrolisthes* sp.**

2002 present study

Phylum ECTOPROCTA

Class GYMNOLAEMATA

Order CHEILOSTOMATA

Suborder ANASCA

Family BEANIIDAE

***Beania discodermiae* (Ortmann, 1890)**

2002 present study

Family BUGULIDAE

***Bugula dentata* (Lamauroux, 1816)** **Introduced**

2002 present study

***Bugula neritina* (Linnaeus, 1758)** **Introduced**

2002 present study

***Costazia costazii* Osburn, 1952**

2002 present study

***Holoporella aperta* (Hincks, 1882)**

2002 present study

***Holoporella* sp.**

2002 present study

Family SCRUPOCELLARIIDAE

***Scrupocellaria sinuosa* Canu and Bassler, 1927**

2002 present study

Family HIPPOPODINIDAE

***Cosciniopsis fusca* Canu and Bassler, 1927**

2002 present study

***Hippopodina feegeensis* (Busk, 1884)**

2002 present study

Family MARGARETTIDAE

***Margaretta gracilior* Ortmann, 1892**

2002 present study

Family MICROPORELLIDAE

***Microporella orientalis* Harmer, 1957**

2002 present study

Family SCHIZOPORELLIDAE

***Schizoporella* cf. *errata* (Waters, 1878)** **Introduced**

2002 present study

***Schizoporella decorata* Canu and Bassler, 1927**

2002 present study

Family SMITTINIDAE

***Parasmittina* sp.**

2002 present study

Family TETRAPLARIIDAE

***Pollaploecium brevis* Canu and Bassler, 1927**

2002 present study

Family WATERSIPORIDAE

***Watersipora edmondsoni* Soule and Soule, 1968** **Introduced**

2002 present study

Family VESICULARIIDAE

***Amathia distans* Busk, 1886** **Introduced**

2002 present study

Family SCRUPARIIDAE

***Scruparia* sp.?**

2002 present study

Class STENOLAEMATA
Order CYCLOSTOMATA
Suborder ARTICULATA
Family CRISIIDAE
Crisia circinata **Waters, 1914**
2002 present study
Crisia **sp.**
2002 present study
Family LICHENOPORIDAE
Disporella **sp.**
2002 present study
Family TUBULIPORIDAE
Tubulipora **sp.**
2002 present study

Phylum ECHINODERMATA
Class OPHIUROIDEA
Order OPHIURIDA
Family OPHIOCOMIDAE
Ophiocoma pica **Muller and Troschel, 1842**
2002 present study
Family AMPHIURIDAE
Amphipholis squamata **(Delle Chiaje, 1828)**
2002 present study
Amphiura immira **Ely, 1942**
2002 present study
Family OPHIACTIDAE
Ophiactis savignyi **(Muller and Troschel, 1842)**
2002 present study
Ophiactis **sp. (red-spotted)**
2002 present study
Class ECHINOIDEA
Order DIADEMATOIDA
Family DIADEMATIDAE
Echinothrix calamaris **(Pallas, 1774)**
1975 Environmental Consultants 1975
2002 present study
Echinothrix diadema **(Linnaeus, 1758)**
1975 Environmental Consultants 1975
Order TEMNOPLEUROIDA
Family TOXOPNEUSTIDAE
Pseudoboletia indiana **(Michelin, 1862)**
1975 Environmental Consultants 1975
Tripneustes gratilla **(Linnaeus, 1758)**
1975 Environmental Consultants 1975
2002 present study
Order ECHINOIDA
Family ECHINOMETRIDAE
Echinometra mathaei **(Blainville, 1825)**
1975 Environmental Consultants 1975
2002 present study
Echinometra oblonga **(Blainville, 1825)**
1975 Environmental Consultants 1975
Echinostrephus aciculatus **Agassiz, 1863**
1975 Environmental Consultants 1975

Class HOLOTHUROIDEA
Order ASPIDOCHIROTIDA
Family HOLOTHURIIDAE
Holothuria (Halodeima) atra **Jaeger, 1833**
1975 Environmental Consultants 1975

Phylum CHORDATA
Class ASCIDIACEA
Order ENTEROGONA
Suborder APLOUSOBRANCHIA
Family DIDEMNIDAE
Didemnum perlucidum **Monniot, 1983** **Introduced**
2002 present study
Didemnum psammatodes
2002 present study
Tridemnum savignii **(Herdman, 1886)**
2002 present study
Suborder PHLEBOBRANCHIA
Family ASCIDIIDAE
Ascidia sydneiensis **Stimpson, 1855** **Introduced**
2002 present study
Phallusia nigra **Savigny, 1816** **Introduced**
2002 present study
Family PEROPHORIDAE
Perophora annectens **Ritter, 1893**
2002 present study
Order PLEUROGONA
Suborder STOLIDOBRANCHIA
Family STYELIDAE
Cnemidocarpa areolata **(Heller, 1878)**
2002 present study
Eusynstyela hartmeyeri **Monniot** **Introduced**
2002 present study
Polyandrocarpa sagamiensis **Tokioka, 1953** **Introduced**
2002 present study
Polycarpa aurita **(Sluiter, 1890)**
2002 present study
Styela canopus **Savigny, 1816** **Introduced**
2002 present study
Family PYURIDAE
Herdmania pallida **(Savigny, 1816)** **Introduced**
2002 present study
Microcosmus exasperatus **Heller, 1878** **Introduced**
2002 present study
Class OSTEICHTHYES
Subclass ACTINOPTERYGII
Order ANGUILLIFORMES
Suborder MURAENOIDEI
Family MURAENIDAE
Gymnothorax **sp.**
2002 present study
Muraenidae sp.
1920 BPBM-I 3371

Order GONORYNCHIFORMES
Family CHANIDAE
***Chanos chanos* (Forsskå, 1775)**
1975 Kentron Hawai`i Ltd 1975
Order OPHIDIIFORMES
Family BYTHITIDAE
***Grammonus waikiki* (Cohen, 1964)**
1995 BPBM-I 36868
Order CYPRINODONTIFORMES
Family POECILIIDAE
***Gambusia affinis* (Baird and Girard, 1853)** **Introduced**
1938 BPBM-I 5402
***Poecilia latipinna* (Lesueur, 1821)** **Introduced**
1938 BPBM-I 5422
1938 BPBM-I 5418
1938 BPBM-I 5419
1938 BPBM-I 5420
1975 Kentron Hawai`i Ltd 1975 (as *Mollienesia latipinna*)
Order SCORPAENIFORMES
Suborder DACTYLOPTEROIDEI
Family DACTYLOPTERIDAE
***Dactyloptena orientalis* (Cuvier, 1829)**
1948 BPBM-I 5528
Order PERCIFORMES
Suborder PERCOIDEI
Family KUHLIIDAE
***Kuhlia sandvicensis* (Steindachner, 1876)**
1938 BPBM-I 5447
1938 BPBM-I 5446
1975 Kentron Hawai`i Ltd 1975
2002 present study
***Kuhlia xenura* Jordan and Gilbert,**
1996 BPBM-I 37389
Family LUTjANIDAE
***Lutjanus fulvus* (Forster, 1801)** **Introduced**
2002 present study
Family MULLIDAE
***Mulloidichthys flavolineatus* (Lacepède, 1801)**
2002 present study
***Parupeneus bifasciatus* (Lacepède, 1802)**
2002 present study
***Parupeneus multifasciatus* (Quoy and Gaimard, 1825)**
2002 present study
***Parupeneus pleurostigma* (Bennett, 1831)**
2002 present study
***Parupeneus porphyreus* (Jenkins, 1902)**
2002 present study
Family CHAETODONTIDAE
***Chaetodon auriga* Forsskå, 1775**
2002 present study
***Chaetodon ornatissimus* Solander, 1831**
2002 present study
Family POMACENTRIDAE
***Abudefduf abdominalis* (Quoy and Gaimard, 1824)**
2002 present study

***Dascyllus albisella* Gill, 1862**

2002 present study

***Stegastes fasciolatus* (Ogilby, 1889)**

2002 present study

Suborder MUGILOIDEI

Family MUGILIDAE

***Moolgarda engeli* (Bleeker, 1858)** **Introduced**

1966 BPBM-I 5591

***Mugil cephalus* Linnaeus, 1758**

1938 BPBM-I 5440

1938 BPBM-I 5439

1938 BPBM-I 5438

1938 BPBM-I 5437

1975 Kentron Hawai`i Ltd 1975

Suborder LABROIDEI

Family LABRIDAE

***Cheilio inermis* (Forsskå, 1775)**

1975 Environmental Consultants 1975

***Coris gaimard* (Quoy and Gaimard, 1824)**

1975 Environmental Consultants 1975

***Gomphosus varius* Lacepède, 1801**

1975 Environmental Consultants 1975

***Labroides phthirophagus* Randall, 1958**

1975 Environmental Consultants 1975

***Macropharyngodon geoffroyi* (Quoy and Gaimard, 1824)**

1975 Environmental Consultants 1975

***Stethojulis balteata* (Quoy and Gaimard, 1824)**

1975 Environmental Consultants 1975

***Thalassoma ballieui* (Vaillant and Sauvage, 1875)**

1975 Environmental Consultants 1975

2002 present study

***Thalassoma duperrey* (Quoy and Gaimard, 1824)**

1975 Environmental Consultants 1975

2002 present study

Family SCARIDAE

***Chlorurus perspicillatus* (Steindachner, 1879)**

1975 Environmental Consultants 1975 (as *Scarus perspicullatus*)

***Chlorurus sordidus* (Forsskå, 1775)**

1975 Environmental Consultants 1975 (as *Scarus sordidus*)

***Scarus* sp.**

2002 present study

Suborder BLENNIOIDEI

Family BLENNIIDAE

***Blenniella gibbifrons* (Quoy and Gaimard, 1824)**

1975 Kentron Hawai`i Ltd 1975

***Cirripectes obscurus* (Borodin, 1927)**

1975 Environmental Consultants 1975

Suborder CALLIONYMOIDEI

Family CALLIONYMIDAE

***Synchiropus rosulentus* Randall, 1998**

1993 BPBM-I 38397

Suborder GOBIOIDEI

Family ELEOTRIDAE

***Eleotris sandwicensis* Vaillant and Sauvage, 1875**

1938 BPBM-I 5463

1938 BPBM-I 5452

1938 BPBM-I 5465
1938 BPBM-I 5451
1975 Environmental Consultants 1975

Family GOBIIDAE

***Awaous guamensis* (Valenciennes, 1837)**
1938 BPBM-I 5508

***Bathygobius cocosensis* (Bleeker, 1854)**
1938 BPBM-I 34652

Bathygobius fuscus
1938 BPBM-I 5479

***Oxyurichthys lonchotus* (Jenkins, 1903)**
1938 BPBM-I 5521

***Stenogobius hawaiiensis* Watson, 1991**
1938 BPBM-I 5517

Suborder ACANTHUROIDEI

Family ZANCLIDAE

***Zanclus cornutus* (Linnaeus, 1758)**
1975 Environmental Consultants 1975
1997 BPBM-I 38446
1997 BPBM-I 38445
2002 present study

Family ACANTHURIDAE

***Acanthurus achilles* Shaw, 1803**
1975 Environmental Consultants 1975

***Acanthurus blochii* Valenciennes, 1835**
2002 present study

***Acanthurus nigrofuscus* (Forsskå, 1775)**
1975 Environmental Consultants 1975
2002 present study

***Acanthurus nigroris* Valenciennes, 1835**
1975 Environmental Consultants 1975
2002 present study

***Acanthurus triostegus sandvicensis* Streets, 1877**
1975 Environmental Consultants 1975

***Acanthurus xanthopterus* Valenciennes, 1835**
1975 Environmental Consultants 1975

***Ctenochaetus strigosus* (Bennett, 1828)**
1975 Environmental Consultants 1975

***Naso unicornis* (Forsskå, 1775)**
1975 Environmental Consultants 1975

***Zebrasoma flavescens* (Bennett, 1828)**
1975 Environmental Consultants 1975

***Zebrasoma veliferum* (Bloch, 1797)**
1975 Environmental Consultants 1975

Order TETRAODONTIFORMES

Suborder BALISTOIDEI

Family BALISTIDAE

***Rhinecanthus rectangulus* (Bloch and Schneider, 1801)**
2002 present study

Family MONACANTHIDAE

***Pervagor spilosoma* (Lay and Bennett, 1839)**
1975 Environmental Consultants 1975

Family OSTRACIIDAE

Ostracion meleagris
2002 present study

***Ostracion meleagris camurum* Jenkins, 1901**

1975 Environmental Consultants 1975

Suborder TETRAODONTOIDEI

Family TETRAODONTIDAE

***Arothron hispidus* (Linneaus, 1758)**

1975 Environmental Consultants 1975

2002 present study

***Canthigaster coronata* (Vaillant and Sauvage, 1875)**

1975 Environmental Consultants 1975

APPENDIX F

Station Records for Algae, Invertebrates and Fishes Collected or Observed in Kuapâ Pond-Maunalua Bay in 2002

			Station				
Taxa	Family	Species	1	2	3	4	5
CHLOROPHYTA	ULVACEAE	*Enteromorpha sp.*		x			x
CHLOROPHYTA	SIPHONOCLADACEAE	*Dictyosphaeria cavernosa*		x			x
CHLOROPHYTA	CAULERPACEAE	*Caulerpella ambigua*			x	x	
CHLOROPHYTA	HALIMEDACEAE	*Halimeda discoidea*				x	
CHLOROPHYTA	HALIMEDACEAE	*Halimeda opuntia*			x	x	
CHLOROPHYTA	HALIMEDACEAE	*Halimeda sp.*		x	x	x	
CHLOROPHYTA	UDOTEACEAE	*Avrainvillea amadelpha*		x		x	x
CHLOROPHYTA	UDOTEACEAE	*Rhipidosiphon javensis*					x
CHLOROPHYTA	DASYCLADALCEAE	*Neomeris annulata*			x		
CHLOROPHYTA	PRASIOLACEAE	*Cladophora sp.*			x		
PHAEOPHYTA	ECTOCARPACEAE	*Feldmannia sp.*					x
PHAEOPHYTA	DICTYOTACEAE	*Dictyota sandvicensis*					x
PHAEOPHYTA	DICTYOTACEAE	*Dictyota sp.*			x		
PHAEOPHYTA	DICTYOTACEAE	*Padina sanctae-crucis*					x
PHAEOPHYTA	DICTYOTACEAE	*Padina sp.*			x		
RHODOPHYTA	BONNEMAISONIACEA	*Asparagopsis taxiformis*			x	x	
RHODOPHYTA	GALAXAURACEAE	*Galaxaura rugosa*			x		
RHODOPHYTA	GELIDIELLACEAE	*Gelidiella machrisiana*			x		
RHODOPHYTA	CORALLINACEAE	*Amphiroa valonioides*			x		
RHODOPHYTA	CORALLINACEAE	*Jania adhaerens*		x			
RHODOPHYTA	CORALLINACEAE	*Jania micrarthrodia*			x		
RHODOPHYTA	RHIZOPHYLLIDACEAE	*Portieria hornemannii*			x		
RHODOPHYTA	PEYSSONNELIACEAE	*Peyssonnelia conchicola*			x		
RHODOPHYTA	HYPNEACEAE	*Hypnea musciformis*					x
RHODOPHYTA	HYPNEACEAE	*Hypnea spinella*	x				
RHODOPHYTA	GRACILARIACEAE	*Gracilaria salicornia*		x		x	x
RHODOPHYTA	RHODYMENIACEAE	*Gelidiopsis scoparia*			x		
RHODOPHYTA	RHODYMENIACEAE	*Halichrysis coalescens*			x		
RHODOPHYTA	CERAMIACEAE	*Aglaothamnion boergesenii*	x				x
RHODOPHYTA	CERAMIACEAE	*Aglaothamnion cordatum*				x	
RHODOPHYTA	CERAMIACEAE	*Centroceras clavulatum*	x				
RHODOPHYTA	CERAMIACEAE	*Ceramium clarionensis*			x		
RHODOPHYTA	CERAMIACEAE	*Ceramium flaccidum*		x			
RHODOPHYTA	CERAMIACEAE	*Crouania minutissima*			x		
RHODOPHYTA	CERAMIACEAE	*Diplothamnion jolyi*			x	x	
RHODOPHYTA	CERAMIACEAE	*Falkenbergia hillebrandii*				x	x
RHODOPHYTA	CERAMIACEAE	*Gloiocladia iyoensis*			x		
RHODOPHYTA	CERAMIACEAE	*Griffithsia heteromorpha*			x		
RHODOPHYTA	CERAMIACEAE	*Lejolisea pacifica*			x		
RHODOPHYTA	CERAMIACŒAE	*Spyridia filamentosa*				x	
RHODOPHYTA	CERAMIACEAE	*Tiffaniella saccorhiza*			x	x	
RHODOPHYTA	CERAMIACEAE	*Wrangelia dumontii*		x			
RHODOPHYTA	DELESSERIACEAE	*Dotyella hawaiiensis*		x			
RHODOPHYTA	DELESSERIACEAE	*Dotyella irregularis*			x		
RHODOPHYTA	DELESSERIACEAE	*Martensia fragilis*			x		
RHODOPHYTA	DASYACEAE	*Dasya kristeniae*		x			
RHODOPHYTA	DASYACEAE	*Heterosiphonia crispella*			x		
RHODOPHYTA	RHODOMELACEAE	*Acanthophora spicifera*	x	x			x
RHODOPHYTA	RHODOMELACEAE	*Chondria dangeardii*		x			
RHODOPHYTA	RHODOMELACEAE	*Chondria simpliciuscula*				x	x
RHODOPHYTA	RHODOMELACEAE	*Herposiphonia nuda*			x		

Taxa	Family	Species	Station 1	2	3	4	5
RHODOPHYTA	RHODOMELACEAE	*Polysiphonia sp.*		x			x
RHODOPHYTA	RHODOMELACEAE	*Tolypiocladia glomerulata*			x	x	
MAGNOLIOPHYTA	HYDROCHARITACEAE	*Halophila hawaiiana*				x	x
		Total Algae	4	13	28	15	15
MAGNOLIOPHYTA	RHIZOPHORACEAE	*Rhizophora mangle*		x			x
PORIFERA	SUBERITIDAE	*Suberites zeteki*	x				
PORIFERA	MYCALIDAE	*Zygomycale parishii*		x			
PORIFERA	HALICHONDRIIDAE	*Halichondria sp.*	x				
PORIFERA	CHALINIDAE	*Chalinidae n.sp. (purple)*	x				
PORIFERA	CHALINIDAE	*Sigmadocia caerulea*	x				x
PORIFERA	CHALINIDAE	*Toxiclona sp.*	x				
PORIFERA	NIPHATIDAE	*Gelliodes fibrosa*	x	x			
PORIFERA	DARWINELLIDAE	*Pleraplysilla hyalina*	x				
		Total Porifera	7	2	0	0	1
HYDROZOA	CAMPANULARIIDAE	*Obelia bidentata*		x			
HYDROZOA	CAMPANULARIIDAE	*Obelia dichotoma*				x	
HYDROZOA	HALOCORDYLIDAE	*Pennaria disticha*		x	x		
HYDROZOA	PLUMULARIIDAE	*Halopteris sp.*				x	
HYDROZOA	PLUMULARIIDAE	*Plumularia strictocarpa*			x	x	
HYDROZOA	SERTULARIIDAE	*Tridentata humpferi*			x		
		Total Hydrozoa	0	2	3	3	0
ANTHOZOA	CLAVULARIIDAE	*Carijoa riisei*		x			
ANTHOZOA	ACROPORIDAE	*Montipora capitata*			x		
ANTHOZOA	ACROPORIDAE	*Montipora flabellata*			x		
ANTHOZOA	ACROPORIDAE	*Montipora patula*			x		
ANTHOZOA	AGARICIIDAE	*Pavona varians*				x	
ANTHOZOA	POCILLOPORIDAE	*Pocillopora damicornis*				x	
ANTHOZOA	POCILLOPORIDAE	*Pocillopora eydouxi*			x		
ANTHOZOA	POCILLOPORIDAE	*Pocillopora meandrina*			x		
ANTHOZOA	PORITIDAE	*Porites evermanni*			x		
ANTHOZOA	PORITIDAE	*Porites lobata*			x		
		Total Anthozoa	0	1	7	2	0
POLYCHAETA	POLYNOIDAE	*Paralepidonotus ampulliferus*	x				
POLYCHAETA	AMPHINOMIDAE	*Eurythoe complanata*					1
POLYCHAETA	PHYLLODOCIDAE	*Eulalia sanguinea*	x				
POLYCHAETA	PHYLLODOCIDAE	*Phyllodoce (Phyllodoce) sp.*			x		
POLYCHAETA	PHYLLODOCIDAE	*unid. Phyllodocidae*			x		1
POLYCHAETA	SYLLIDAE	*Branchiosyllis exilis*	x	x		x	1
POLYCHAETA	SYLLIDAE	*Haplosyllis spongicola*	x	x		x	
POLYCHAETA	SYLLIDAE	*Myrianida crassicirrata*	x		x		
POLYCHAETA	SYLLIDAE	*Syllidae sp.17*	x				
POLYCHAETA	SYLLIDAE	*Trypanosyllis zebra*	x	x	x		
POLYCHAETA	SYLLIDAE	*Typosyllis prolifera*		x			
POLYCHAETA	SYLLIDAE	*Typosyllis sp.1*	x	x	x		
POLYCHAETA	SYLLIDAE	*unid. Syllidae*	x	x	x	x	1
POLYCHAETA	NEREIDIDAE	*unid. Nereididae*			x	x	
POLYCHAETA	EUNICIDAE	*Eunice cariboea*		x	x	x	
POLYCHAETA	EUNICIDAE	*Eunice filamentosa*		x		x	
POLYCHAETA	EUNICIDAE	*Lysidice ninetta*		x	x		
POLYCHAETA	EUNICIDAE	*Nematonereis unicornis*			x	x	1
POLYCHAETA	EUNICIDAE	*Palola siciliensis*					1

Taxa	Family	Species	Station 1	2	3	4	5
POLYCHAETA	LUMBRINERIDAE	*Lumbrineris sp.*	x	x		x	1
POLYCHAETA	DORVILLEIDAE	*Dorvillea sp.*			x		
POLYCHAETA	SPIONIDAE	*unid. Spionidae*		x			
POLYCHAETA	CIRRATULIDAE	*Cirriformia sp.*		x		x	
POLYCHAETA	OPHELIIDAE	*Armandia intermedia*				x	
POLYCHAETA	OPHELIIDAE	*Polyophthalmus pictus*			x	x	
POLYCHAETA	CAPITELLIDAE	*Capitella sp.*				x	
POLYCHAETA	MALDANIDAE	*unid. Maldanidae*	x				1
POLYCHAETA	STERNASPIDAE	*Sternaspis sp.*		x		x	
POLYCHAETA	TEREBELLIDAE	*Nicolea gracilibranchis*			x		
POLYCHAETA	TEREBELLIDAE	*Thelepus setosus*	x	x			
POLYCHAETA	SABELLIDAE	*Branchiomma nigromaculata*	x	x		x	
POLYCHAETA	SABELLIDAE	*Sabellastarte spectabilis*	x	x		x	1
POLYCHAETA	SABELLIDAE	*unid. Sabellidae*		x		x	1
POLYCHAETA	SERPULIDAE	*Hydroides dirampha*	x	x			
POLYCHAETA	SERPULIDAE	*Pomatoleios kraussii*	x				
POLYCHAETA	SERPULIDAE	*Serpula vermicularis*	x				
POLYCHAETA	SERPULIDAE	*Spirobranchus giganteus corniculatus*			x		
POLYCHAETA	SPIRORBIDAE	*unid. Spirorbidae*	x	x		x	
		Total Polychaeta	18	19	14	17	10
SIPUNCULA	ASPIDOSIPHONIDAE	*Aspidosiphon (Parspidosiphon) steenstrupii*			x	x	
SIPUNCULA	ASPIDOSIPHONIDAE	*Aspidosiphon elegans*			x		
SIPUNCULA	PHASCOLOSOMATIDA	*Phascolosoma nigrescens*			x		
SIPUNCULA	PHASCOLOSOMATIDA	*Phascolosoma scolops*			x		
SIPUNCULA	THEMISTIDAE	*Themiste (Langenopsis) langeniformis*	x			x	x
		Total Sipunculida	1	0	4	2	1
GASTROPODA	SCISSURELLIDAE	*Sinezona insignis*			x		
GASTROPODA	FISSURELLIDAE (DIODORINAE)	*Diodora cf. tongana*	x				
GASTROPODA	FISSURELLIDAE (DIODORINAE)	*Diodora granifera*			x	x	
GASTROPODA	PHASIANELLIDAE	*Tricolia (Hiloa) variabilis*			x		
GASTROPODA	TROCHIDAE (ENCYCLINAE)	*Euchelus gemmatus*			x		
GASTROPODA	TROCHIDAE (ENCYCLINAE)	*Gibbula marmorea*			x		
GASTROPODA	TROCHIDAE (TROCHINAE)	*Alcyna ocellata*			x		
GASTROPODA	TROCHIDAE (TROCHINAE)	*Trochus intextus*			x		
GASTROPODA	TURBINIDAE (COLLONINAE)	*Leptothyra rubricincta*			x		
GASTROPODA	TURBINIDAE (COLLONINAE)	*Leptothyra verruca*			x		
GASTROPODA	TURBINIDAE (TURBININAE)	*Turbo sandwicensis*			x		
GASTROPODA	CERITHIIDAE	*Cerithium boeticum*		x			
GASTROPODA	CERITHIIDAE	*Cerithium zebrum*		x	x		
GASTROPODA	CERITHIIDAE	*Ittibittium parcum*		x			
GASTROPODA	FOSSARIDAE	*Fossarus garrettii*			x		
GASTROPODA	EATONIELLIDAE	*Eatoniella (Dardaniopsis) pigmenta*			x		

Taxa	Family	Species	Station 1	2	3	4	5
GASTROPODA	CAECIDAE	*Caecum sepimentum*			x		
GASTROPODA	RISSOIDAE (RISSOINAE)	*Pusillina marmorata*			x		
GASTROPODA	RISSOIDAE (RISSOININAE)	*Rissoina cerithiiformis*			x		
GASTROPODA	HIPPONICIDAE	*Hipponix (Antisabia) foliaceus*			x		
GASTROPODA	HIPPONICIDAE	*Hipponix (Pilosabia) pilosus*				x	
GASTROPODA	CALYPTRAEIDAE	*Crepidula aculeata*		x	x	x	
GASTROPODA	VERMETIDAE	*Dendropoma rhyssoconcha*				x	
GASTROPODA	VERMETIDAE	*Dendropoma sp.*			x	x	
GASTROPODA	VERMETIDAE	*Eualetes tulipa*		x			
GASTROPODA	VERMETIDAE	*Serpulorbis variabilis*			x		
GASTROPODA	CYPRAEIDAE	*Cypraea isabella*			x		
GASTROPODA	ERATOIDAE	*Erato sandwicensis*			x		
GASTROPODA	TRIVIIDAE	*Trivia hordacea*		x	x		
GASTROPODA	RANELLIDAE (CYMATIINAE)	*Cymatium sp.*			x		
GASTROPODA	CERITHIOPSIDAE	*Joculator sp.*				x	
GASTROPODA	TRIPHORIDAE (INIFORINAE)	*Iniforis aemulans*			x		
GASTROPODA	TRIPHORIDAE (INIFORINAE)	*Iniforis hinuhinu*			x		
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Mastonia cingulifera*			x		
GASTROPODA	TRIPHORIDAE (MASTONIINAE)	*Viriola incisa*				x	
GASTROPODA	TRIPHORIDAE (TRIPHORINAE)	*Triphora pallida*			x		
GASTROPODA	TRIPHORIDAE (TRIPHORINAE)	*Triphora sp.*			x		
GASTROPODA	EPITONIIDAE	*Epitonium sp.*			x		
GASTROPODA	EULIMIDAE	*Balcis acanthyllis*				x	
GASTROPODA	BUCCINIDAE	*Caducifer decapitata*			x		
GASTROPODA	BUCCINIDAE	*Prodotia ignea*			x		
GASTROPODA	COLUMBELLIDAE	*Mitrella loyaltensis*		x		x	
GASTROPODA	COLUMBELLIDAE	*Mitrella margarita*			x		
GASTROPODA	COLUMBELLIDAE	*Mitrella rorida*			x		
GASTROPODA	COLUMBELLIDAE	*Seminella peasei*			x		
GASTROPODA	MURICIDAE	*Aspella producta*			x		
GASTROPODA	THAIDIDAE	*Drupa (Drupa) ricina*			x		
GASTROPODA	THAIDIDAE	*Morula sp.*			x		
GASTROPODA	COSTELLARIIDAE	*Vexillum (Pusia) lautum*			x		
GASTROPODA	MARGINELLIDAE	*Cystiscus huna*			x		
GASTROPODA	MARGINELLIDAE	*Granula sandwicensis*			x		
GASTROPODA	MARGINELLIDAE	*Volvarina fusiformis*			x		
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Dibaphus) sp.*			x		
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Nebularia) luctuosa*			x		
GASTROPODA	MITRIDAE (MITRINAE)	*Mitra (Strigatella) sp.*			x		
GASTROPODA	TURRIDAE (CLAVININAE)	*Carinapex minutissima*			x		
GASTROPODA	ORBITESTELLIDAE	*Orbitestella regina*			x		
GASTROPODA	RISSOELLIDAE	*Rissoella longispira*				x	
GASTROPODA	PYRAMIDELLIDAE	*Hinemoa indica*				x	
GASTROPODA	PYRAMIDELLIDAE	*Odostomia oxia*				x	
GASTROPODA	APLUSTRIDAE	*Hydatina amplustra*			x		
GASTROPODA	HAMINEIDAE	*Atys semistriata*			x		

Taxa	Family	Species	Station 1	2	3	4	5
GASTROPODA	HAMINEIDAE	*Diniatys dentifer*				x	
GASTROPODA	HAMINEIDAE	*Haminoea sp.*				x	
GASTROPODA	SCAPHANDRIDAE	*Cylichna pusilla*				x	
GASTROPODA	APLYSIIDAE (NOTARCHIINAE)	*Stylocheilus longicaudatus*			x		
GASTROPODA	JULIIDAE	*Julia exquisita*			x	x	
GASTROPODA	CUTHONIDAE	*Cuthona pinnifera*	x				
GASTROPODA	CUTHONIDAE	*Cuthona sp.*	x				
GASTROPODA	SIPHONARIIDAE	*Siphonaria normalis*	x	x	x		
GASTROPODA	SIPHONARIIDAE	*Williamia radiata*			x		
		Total Gastropoda	4	8	53	16	0
BIVALVIA	MYTILIDAE	*Brachidontes crebristriatus*			x		
BIVALVIA	MYTILIDAE	*Crenella sp.*				x	
BIVALVIA	MYTILIDAE	*Lithophaga sp.*				x	
BIVALVIA	MYTILIDAE	*Septifer bryanae*			x		
BIVALVIA	ARCIDAE (ARCINAE)	*Barbatia nuttingi*			x		
BIVALVIA	ISOGNOMONIDAE	*Isognomon perna*			x		x
BIVALVIA	MALLEIDAE	*Malleus regula*			x		
BIVALVIA	PTERIIDAE	*Pinctada sp.*	x	x	x		x
BIVALVIA	OSTREIDAE	*Dendostrea sandvicensis*	x		x	x	
BIVALVIA	OSTREIDAE	*Dendostrea sandvicensis*		x			
BIVALVIA	PROPEAMUSIIDAE	*Chlamydella sp.*			x		
BIVALVIA	ANOMIIDAE	*Anomia nobilis*	x	x			
BIVALVIA	HIATELLIDAE	*Hiatella arctica*	x	x	x	x	
BIVALVIA	LASAEIDAE	*Lasaea hawaiensis*		x			
BIVALVIA	SEMELIDAE	*Semelangulus sp.*				x	
		Total Bivalvia	4	5	9	5	2
POLYPLACOPHORA	CHITONIDAE	*Rhyssoplax sp.*				x	
POLYPLACOPHORA	ISCHNOCHITONIDAE	*Ischnochiton sp.*			x		
		Total Polyplacophora	0	0	1	1	0
CIRREPEDIA	BALANIDAE	*Balanus amphitrite*	x	x			x
CIRREPEDIA	BALANIDAE	*Balanus eburneus*	x				
CIRREPEDIA	BALANIDAE	*Balanus reticulatus*	x	x			
CIRREPEDIA	CHTHAMALIDAE	*Chthamalus proteus*	x				
		Total Cirrepedia	4	3	0	1	2
PERACARIDA	AMPHILOCHIDAE	*Amphilochus likelike*				x	x
PERACARIDA	AMPHILOCHIDAE	*Amphilochus menehune*			x	x	
PERACARIDA	AMPHILOCHIDAE	*Amphilochus sp.*					x
PERACARIDA	AMPITHOIDAE	*Ampithoe ramondi*		x			
PERACARIDA	AMPITHOIDAE	*Ampithoe waialua*			x	x	x
PERACARIDA	ANAMIXIDAE	*Anamixis moana*			x	x	
PERACARIDA	AORIDAE	*Bemlos intermedius*				x	x
PERACARIDA	AORIDAE	*Bemlos macromanus*	x	x		x	x
PERACARIDA	AORIDAE	*Bemlos pualani*				x	
PERACARIDA	AORIDAE	*Bemlos sp.1*				x	x
PERACARIDA	AORIDAE	*Lembos leapakahi*			x		
PERACARIDA	COLOMASTIGIDAE	*Colomastix kapiolani*	x	x		x	
PERACARIDA	COLOMASTIGIDAE	*Colomastix lunalilo*	x				
PERACARIDA	COROPHIIDAE	*Corophium ascherusicum*	x				
PERACARIDA	COROPHIIDAE	*Corophium baconi*	x				
PERACARIDA	COROPHIIDAE	*Corophium insidiosum*	x	x			
PERACARIDA	COROPHIIDAE	*Ericthonius brasiliensis*	x	x	x	x	

Taxa	Family	Species	Station 1	2	3	4	5
PERACARIDA	COROPHIIDAE	*Ericthonius sp.*	x				
PERACARIDA	EUSIRIDAE	*Pontogeneia pacifica*				x	x
PERACARIDA	ISAEIDAE	*Gammaropsis alamoana*				x	
PERACARIDA	ISAEIDA E	*Photis aina*			x		
PERACARIDA	ISAEIDAE	*Photis hawaiensis*				x	
PERACARIDA	ISCHYROCERIDAE	*Jassa lilipuna*					x
PERACARIDA	ISCHYROCERIDAE	*Jassa sp.*			x		
PERACARIDA	ISCHYROCERIDAE	*Leucothoe hyhelia*	x		x	x	x
PERACARIDA	ISCHYROCERIDAE	*Leucothoe lihue*	x				
PERACARIDA	ISCHYROCERIDAE	*Leucothoe sp.2*	x	x		x	
PERACARIDA	ISCHYROCERIDAE	*Leucothoe tridens*		x	x	x	
PERACARIDA	ISCHYROCERIDAE	*Leucothoides pottsi*			x		
PERACARIDA	ISCHYROCERIDAE	*Notopoma n.sp.*			x		
PERACARIDA	ISCHYROCERIDAE	*Ventojassa ventosa*		x	x		
PERACARIDA	LEUCOTHOIDAE	*Paraleucothoe cf. flindersi*	x				
PERACARIDA	MELITIDAE	*Ceradocus hawaiiensis*	x	x			
PERACARIDA	MELITIDAE	*Elasmopus cf. pseudoaffinis*			x		
PERACARIDA	MELITIDAE	*Elasmopus hooheno*	x		x		
PERACARIDA	MELITIDAE	*Elasmopus molokai*			x		
PERACARIDA	MELITIDAE	*Elasmopus pectenicrus*	x				
PERACARIDA	MELITIDAE	*Elasmopus pocillimanus*			x		
PERACARIDA	MELITIDAE	*Elasmopus rapax*	x	x			
PERACARIDA	MELITIDAE	*Elasmopus sp.*	x				
PERACARIDA	MELITIDAE	*Maera pacifica*	x	x	x	x	x
PERACARIDA	MELITIDAE	*Maera quadrimana*	x		x	x	
PERACARIDA	MELITIDAE	*Mallacoota insignis*			x	x	x
PERACARIDA	MELITIDAE	*Melita appendiculata*	x	x			
PERACARIDA	OCHELESIDAE	*Ochlesis alii*			x		
PERACARIDA	OEDICEROTODAE	*Perioculodes sp.*				x	x
PERACARIDA	PLEUSTIDAE	*Tepidopleustes honomu*			x		
PERACARIDA	PODOCERIDAE	*Podocerus brasiliensis*	x	x	x	x	
PERACARIDA	PODOCERIDAE	*Podocerus talegus lawai*			x	x	
PERACARIDA	STENOTHOIDAE	*Stenothoe valida-gallensis*	x	x	x	x	
PERACARIDA	TALITROIDAE	*Hyale honoluluensis*	x				
PERACARIDA	TALITROIDAE	*Hyale laie*			x		
PERACARIDA	APSEUDIDAE	*Apseudes tropicalis*				x	
PERACARIDA	APSEUDIDAE	*Parapseudes neglectus*			x	x	
PERACARIDA	APSEUDIDAE	*Synapseudes minutus*					x
PERACARIDA	TANAIDAE	*Zeuxo seurati*	x			x	x
PERACARIDA	PSEUDOZUXIDAE	*Leptochelia dubia*	x	x			
PERACARIDA	BRESILIIDAE	*Discias cf. exul*				x	
		Total Paracarida	25	14	26	26	13
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Onycocaris n.sp.*				x	
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Onycocaris quadratophthalma*			x	x	
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Palaemonella rotumana*	x		x		
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenes grandis*	x				
DECAPODA	PALAEMONIDAE (PONTONIINAE)	*Periclimenes sp.*		x		x	x
DECAPODA	ALPHEIDAE	*Alpheus brevipes*			x		
DECAPODA	ALPHEIDAE	*Alpheus clypeatus*			x		

Taxa	Family	Species	Station 1	2	3	4	5
DECAPODA	ALPHEIDAE	*Alpheus gracilipes*		x			
DECAPODA	ALPHEIDAE	*Alpheus lobidens*	x	x			x
DECAPODA	ALPHEIDAE	*Alpheus paralcyone*				x	
DECAPODA	ALPHEIDAE	*Alpheus pugnax*			x		
DECAPODA	ALPHEIDAE	*Metalpheus paragrac ilis*			x		
DECAPODA	ALPHEIDAE	*Metalpheus rostratipes*			x		
DECAPODA	ALPHEIDAE	*Synalpheus bituberculatus*		x			
DECAPODA	ALPHEIDAE	*Synalpheus paraneomeris*		x	x		
DECAPODA	ALPHEIDAE	*Synalpheus streptodactylus*		x		x	
DECAPODA	ALPHEIDAE	*Synalpheus thai*		x			
DECAPODA	HIPPOLYTIDAE	*Saron marmoratus*		x		x	
DECAPODA	HIPPOLYTIDAE	*Thor paschalis*					x
DECAPODA	HIPPOLYTIDAE	*Thorina maldivensis*			x	x	
DECAPODA	GRAPSIDAE	*Metopograpsus messor*	x				
DECAPODA	PORTUNIDAE	*Thalamita edwardsi*		x		x	
DECAPODA	PORTUNIDAE	*Thalamita integra*	x	x			x
DECAPODA	PILUMNIDAE	*Pilumnus longicornis*				x	x
DECAPODA	PILUMNIDAE	*Pilumnus sp.*			x		
DECAPODA	TRAPEZIIDAE	*Domecia hispida*			x		
DECAPODA	TRAPEZIIDAE	*Trapezia ferruginea*			x		
DECAPODA	XANTHIDAE	*Chlorodiella sp.*		x			
DECAPODA	XANTHIDAE	*Liocarpilodes integerrimus*			x		
DECAPODA	XANTHIDAE	*Liomera bella*		x		x	
DECAPODA	XANTHIDAE	*Paraxanthias notatus*			x		
DECAPODA	XANTHIDAE	*Phymodius monticulosus*		x			
DECAPODA	XANTHIDAE	*Phymodius nitidus*			x		
DECAPODA	XANTHIDAE	*Phymodius ungulatus*		x			
DECAPODA	XANTHIDAE	*Platypodia eydouxii*		x			
DECAPODA	XANTHIDAE	*Pseudoliomera remota*			x		
DECAPODA	XANTHIDAE	*Pseudoliomera variolosa*			x		
DECAPODA	XANTHIDAE	*Xanthias sp.*	x				
DECAPODA	DYNOMENIIDAE	*Dynomene hispida*			x		
DECAPO DA	MAJIDAE	*Perinea tumida*			x		
DECAPODA	MAJIDAE	*Schizophorida hilensis*			x		
DECAPODA	DIOGENIDAE	*Calcinus guamensis*			x		
DECAPODA	PAGURIDAE	*Pagurixus festinus*			x		
DECAPODA	GALATHEIDAE	*Galathea spinosorostris*			x		
DECAPODA	PORCELLANIDAE	*Petrolisth es sp.*			x		
DECAPODA	GONODACTYLIDAE	*Gonodactylaceus falcatus*		x		x	x
		Total Decapoda	6	16	24	11	6
ECTOPROCTA	BEANIIDAE	*Beania discodermiae*			x		
ECTOPROCTA	BUGULIDAE	*Bugula dentata*	x				
ECTOPROCTA	BUGULIDAE	*Bugula neritina*	x				
ECTOPROCTA	CELLEPO RIDAE	*Costazia costazii*				x	
ECTOPROCTA	CELLEPORIDAE	*Holoporella aperta*	x			x	
ECTOPROCTA	CELLEPORIDAE	*Holoporella sp.*		x	x	x	
ECTOPROCTA	SCRUPOCELLARIIDAE	*Scrupocellaria sinuosa*	x				
ECTOPROCTA	HIPPOPODINIDAE	*Cosciniopsis fusca*			x		
ECTOPROCTA	HIPPOPODINIDAE	*Hippopodina feegeensis*			x		
ECTOPROCTA	MARGARETTIDAE	*Margaretta gracilior*			x	x	
ECTOPROCTA	MICROPORELLIDAE	*Microporella orientalis*				x	

			Station				
Taxa	Family	Species	1	2	3	4	5
ECTOPROCTA	SCHIZOPORELLIDAE	*Schizoporella cf. errata*	x		x		
ECTOPROCTA	SCHIZOPORELLIDAE	*Schizoporella decorata*				x	
ECTOPROCTA	SMITTINIDAE	*Parasmittina sp.*				x	
ECTOPROCTA	TETRAPLARIIDAE	*Pollaploecium brevis*			x		
ECTOPROCTA	WATERSIPORIDAE	*Watersipora edmondsoni*				x	
ECTOPROCTA	VESICULARIIDAE	*Amathia distans*	x			x	
ECTOPROCTA	SCRUPARIIDAE	*Scruparia sp.?*	x	x			
ECTOPROCTA	CRISIIDAE	*Crisia circinata*				x	
ECTOPROCTA	CRISIIDAE	*Crisia sp.*			x		
ECTOPROCTA	LICHENOPORIDAE	*Disporella sp.*			x		
ECTOPROCTA	TUBULIPORIDAE	*Tubulipora sp.*	x		x	x	
		Total Ectoprocta	8	2	10	11	0
ECHINODERMATA	OPHIOCOMIDAE	*Ophiocoma pica*			x		
ECHINODERMATA	AMPHIURIDAE	*Amphipholis squamata*				x	
ECHINODERMATA	AMPHIURIDAE	*Amphiura immira*		x		x	x
ECHINODERMATA	OPHIACTIDAE	*Ophiactis savignyi*	x	x			
ECHINODERMATA	OPHIACTIDAE	*Ophiactis sp. (red-spotted)*		x			
ECHINODERMATA	DIADEMATIDAE	*Echinothrix calamaris*			x		
ECHINODERMATA	TOXOPNEUSTIDAE	*Tripneustes gratilla*			x		
ECHINODERMATA	ECHINOMETRIDAE	*Echinometra mathaei*			x		
		Total Echinodermata	1	3	4	2	1
ASCIDIACEA	DIDEMNIDAE	*Didemnum perlucidum*		x			
ASCIDIACEA	DIDEMNIDAE	*Didemnum psammatodes*		x		x	x
ASCIDIACEA	DIDEMNIDAE	*Tridemnum savignii*		x			
ASCIDIACEA	ASCIDIIDAE	*Ascidia sydneiensis*	x				
ASCIDIACEA	ASCIDIIDAE	*Phallusia nigra*	x				
ASCIDIACEA	PEROPHORIDAE	*Perophora annectens*				x	
ASCIDIACEA	STYELIDAE	*Cnemidocarpa areolata*	x	x			
ASCIDIACEA	STYELIDAE	*Eusynstyela hartmeyeri*	x				
ASCIDIACEA	STYELIDAE	*Polyandrocarpa sagamiensis*	x				
ASCIDIACEA	STYELIDAE	*Polycarpa aurita*				x	
ASCIDIACEA	STYELIDAE	*Styela canopus*					x
ASCIDIACEA	PYURIDAE	*Herdmania pallida*	x	x			
ASCIDIACEA	PYURIDAE	*Microcosmus exasperatus*	x	x			
		Total Ascidiacea	7	6	0	3	2
OSTEICHTHYES	MURAENIDAE	*Gymnothorax sp.*		x		x	
OSTEICHTHYES	KUHLIIDAE	*Kuhlia sandvicensis*		x			
OSTEICHTHYES	LUTJANIDAE	*Lutjanus fulvus*		x			
OSTEICHTHYES	MULLIDAE	*Mulloidichthys flavolineatus*			x		
OSTEICHTHYES	MULLIDAE	*Parupeneus bifasciatus*			x		
OSTEICHTHYES	MULLIDAE	*Parupeneus multifasciatus*			x		
OSTEICHTHYES	MULLIDAE	*Parupeneus pleurostigma*			x		
OSTEICHTHYES	MULLIDAE	*Parupeneus porphyreus*			x		
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon auriga*			x		
OSTEICHTHYES	CHAETODONTIDAE	*Chaetodon ornatissimus*			x		
OSTEICHTHYES	POMACENTRIDAE	*Abudefduf abdominalis*		x	x		
OSTEICHTHYES	POMACENTRIDAE	*Dascyllus albisella*		x			
OSTEICHTHYES	POMACENTRIDAE	*Stegastes fasciolatus*			x		
OSTEICHTHYES	LABRIDAE	*Thalassoma ballieui*			x		
OSTEICHTHYES	LABRIDAE	*Thalassoma duperrey*			x		
OSTEICHTHYES	SCARIDAE	*Scarus sp.*			x		

			Station				
Taxa	Family	Species	1	2	3	4	5
OSTEICHTHYES	ZANCLIDAE	*Zanclus cornutus*		x	x	x	
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus blochii*			x		
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus nigrofuscus*			x		
OSTEICHTHYES	ACANTHURIDAE	*Acanthurus nigroris*			x		
OSTEICHTHYES	BALISTIDAE	*Rhinecanthus rectangulus*			x		
OSTEICHTHYES	OSTRACIIDAE	*Ostracion meleagris*			x		
OSTEICHTHYES	TETRAODONTIDAE	*Arothron hispidus*			x		
		Total Osteichthyes	0	6	19	2	0
		Total Taxa	89	101	202	117	54

APPENDIX G

Supplementary Information for Nonindigenous and Cryptogenic Species Observed or Collected at Kuapâ Pond-Maunalua Bay during 2002 Surveys

Status:

PR, I: Previously reported, Nonindigenous
NR, R: New report, Nonindigenous
PR, C: Previously reported, Cryptogenic
NR, C: New report, Cryptogenic

ID:

EA: Eastern Atlantic
CA: Caribbean
WA: Western Atlantic,
EP: Eastern Pacific
IP: Indo-Pacific
WIP: Western Indo-Pacific,
RS: Red Sea,
WW: Tropical or Temperate World Wide.

Family	Genus and Species	Status	Status Authority	1st Rept.	Source &/or Comment	Origin and/or Previous Range	ID
Macroalgae							
Udoteaceae	*Avrainvillea amadelpha*	PR, I	Mont.	1981	Kahe Point(1981) Maunalua Bay (1985) (Brostoff 1989)	Tropical Worldwide (Brostoff 1989)	WW
Rhodomelaceae	*Acanthophora spicifera*	PR, I	Doty, 1962	1952	Pearl Harbor, introduced on barge fouling	Guam-Australia (Doty, 1961)	WIP
Solieriaceae	*Eucheuma denticualtum*	PR, I	Russell, 1993	1970	Kane`ohe Bay and Honolulu Harbor	Philippines	WIP
Hypneaceae	*Hypnea musciformis*	PR, I	Russell, 1993	1974	Kane`ohe Bay, introduced into for aquaculture experiments	Florida	CA
Gracilariaceae	*Gracilaria salicornia*	PR, I	Smith et al. in press	pre-1950	Kane`ohe Bay & Waikîkî in 1971, previously in Hilo Bay pre-1950	Philippines?	WIP
Rhizophoraceae	*Rhizophora mangle*	PR, I	Wester 1981	1902	Molokai and Oahu, introduced for erosion control	Florida	CA
Porifera							
Chalinidae	Chalinidae n.sp. (purple)	PR, I	Kelly-Borges & Defelice, ms	1997	Keehi Lagoon (Coles et al. 1999b)	Uncertain	
Chalinidae	*Sigmadocia caerulea*	PR, I	Kelly-Borges & Defelice, ms	1996	Pearl Harbor (Coles et al. 1997, 1999a)	Caribbean (Kelly-Borges and DeFelice, Unpublished)	CA
Niphatidae	*Gelliodes fibrosa*	PR, I	Kelly-Borges & Defelice, ms	1996	Pearl Harbor (Coles et al. 1997, 1999a)	Philippines (Kelly-Borges and DeFelice, Unpublished)	WIP
Suberitidae	*Suberites zeteki*	PR, I	Kelly-Borges & Defelice, ms	1947	Kane`ohe Bay (de Laubenfels, 1950)	Panama-Caribbean (Kelly-Borges and DeFelice, Unpublished)	CA
Mycalidae	*Zygomycale parishii*	PR, I	Kelly-Borges & Defelice, ms	1947	Kane`ohe Bay (de Laubenfels, 1950)	Indo-Pacific (Kelly-Borges et al., ms.)	IP
Mycalidae	*Zygomycale parishii*	PR, I	Kelly-Borges & Defelice, ms	1947	Kane`ohe Bay (de Laubenfels, 1950)	Indo-Pacific (Kelly-Borges et al., ms.)	IP
Hydrozoa							
Campanulariidae	*Obelia bidentata*	PR, I	Carlton & Eldredge, ms	1946	Hawaiian Islands, as *Laomedea bicuspidata* by Vervoort 1946	Atlantic or Worldwide	WW
Campanulariidae	*Obelia dichotoma*	PR, I	Carlton & Eldredge, ms	1972	Kane`ohe Bay, BPBM Spec D 458	Atlantic or Worldwide	WW
Halocordylidae	*Pennaria disticha*	PR, I	Carlton & Eldredge, ms	1929	Pearl Harbor, BPBM Spec D 183	European Atlantic, Worldwide (Cooke 1977)	EA
Plumulariidae	*Plumularia strictocarpa*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay (Coles et al. 2002)	Tropical Worldwide	WW
Sertulariidae	*Tridentata humpferi*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay (Coles et al. 2002)	Tropical Worldwide	WW
Clavidae	*Turritopsis nutricula*	PR, I	Carlton & Eldredge, ms	1946	Waikîkî Reef and Pearl Harbor (Cooke 1977)	Western Atlantic, Worldwide (Cooke 1977)	WA
Kirchenpaueriidae	*Ventromma halecioides*	NR, C	Calder, pers. comm.	2000	Kane`ohe Bay (Coles et al. 2002)	Tropical Worldwide	WW
Anthozoa							
Clavulariidae	*Carijoa (Telesto) riisei*	PR, I	Carlton & Eldredge, ms	1972	Pearl Harbor, BPBM Spec D-454	Florida-Brazil (Bayer, 1961)	CA
Polychaeta							
Sabellidae	*Branchiomma nigromaculata*	PR, C	Carlton & Eldredge, ms	1852	Hawaiian Islands, as *Sabella havaica* (Kinberg)	Tropical Worldwide	WW

Family	Genus and Species	Status	Status Authority	1st Rept.	Source &/or Comment	Origin and/or Previous Range	ID
Phyllodocidae	*Eulalia sanguinea*	PR, C	Carlton & Eldredge, ms	1966	Pearl Harbor, living in *C. virginica* oysters (Hartmann 1966)	Worldwide	WW
Opheliidae	*Armandia intermedia*	PR, C	Carlton & Eldredge, ms	1987	Honolulu Harbor and Kane`ohe Bay	Worldwide	WW
Capitellidae	*Capitella* sp. cf *capitata*	PR, C	Carlton & Eldredge, ms	1978	Ala Wai Canal and Kane`ohe Bay (Ward, 1987)	Worldwide	WW
Serpulidae	*Hydroides dirampha*	PR, I	Carlton & Eldredge, ms	1929	BPBM Spec 1083 as H. lunulifera, Pearl Harbor	Tropical and Temperate Worldwide (Baily-Brock and Hartman 1987)	WW
Serpulidae	*Pomatoleios kraussii*	PR, I	Carlton & Eldredge, ms	1976	Pearl Harbor, (Grovhoug and Rastetter 1980)	Tropical Indo-West Pacific (Bailey-Brock and Hartman, 1987)	WIP
Serpulidae	*Sabellastarte spectabilis*	PR, C	Carlton & Eldredge, ms	1976	Pearl Harbor as *S. sabellastarte*, (Grovhoug and Rastetter 1980)	Tropical Worldwide	WW
Serpulidae	*Serpula* sp. cf. *vermicularis*	PR, C	Carlton & Eldredge, ms	1938	Kane`ohe Bay, BPBM Spec R 1218 as *Serpula vermicularis*	Worldwide	WW
Gastropoda							
Pyramidellidae	*Crepidula aculeata*	PR, I	Carlton & Eldredge, ms	1913	Pearl Harbor, BPBM Spec MO-231366	Worldwide (Kay, 1979)	WW
Vermetidae	*Eualetes tulipa*	PR, I	Carlton & Eldredge, ms	1972	Kane`ohe Bay and Pearl Harbor as *Vermetus alii* (Hadfield et al. 1972)	Florida (Hadfield, pers. comm. in Carlton & Eldredge, ms)	WA
Pyramidellidae	*Hinemoa indica*	PR, C	Carlton & Eldredge, ms	1918	Waikîkî, as *Odostomia indica* (Pisbry 1918)	Indian Ocan	WIP
Bivalvia							
Anomiidae	*Anomia nobilis*	PR, C	Carlton & Eldredge, ms	1912	Pearl Harbor, BPBM Spec MO-68170	Japan, Indo-West Pacific	WIP
Hiatellidae	*Hiatella arctica*	PR, I	Carlton & Eldredge, ms	1938	Honolulu Harbor as *Saxicava hawaiiensis*	Worldwide	WW
Cirrepedia							
Balanidae	*Balanus amphitrite*	PR, I	Carlton & Eldredge, ms	1913	Pearl Harbor, BPBM Spec B 233, Pilsbry (1928)	Worldwide (Carlton & Eldredge, ms)	WW
Balanidae	*Balanus eburneus*	PR, I	Carlton & Eldredge, ms	1929	Pearl Harbor, BPBM Spec. B 271,	Western N. Atlantic, Worldwide (Carlton & Eldredge, ms)	WA
Balanidae	*Balanus reticulatus*	PR, I	Carlton & Eldredge, ms	1916	Henry and McLaughlin (1975)	Worldwide (Carlton & Eldredge, ms)	
Chthamalidae	*Chthamalus proteus*	PR, I	Southward et al. 1998	1995	Kane`ohe Bay (Hoover 1998)	Caribbean (Newman. pers. comm.)	CA
Isopoda							
Anthuridae	*Mesanthura sp.*	PR, C	Carlton & Eldredge, ms	1996	Pearl Harbor (Coles et al. 1997, 1999a)		
Sphaeromatidae	*Paracerceis sculpta*	PR, I	Carlton & Eldredge, ms	1943	Pearl and Hilo Harbors (Miller 1968)	Eastern Pacific	EP
Amphipoda							
Corophiidae	*Corophium acheruscium*.	PR, I	Carlton & Eldredge, ms	1943	Waikîkî (Barnard 1955)	Tropical and Temperate Worldwid (Barnard 1971)	WW
Corophiidae	*Corophium baconi*.	PR, I	Carlton & Eldredge, ms	1967	Kaneoho Bay (Barnard 1955)	Bering Sea – Peru (Barnard 1970)	WW
Corophiidae	*Corophium insidiosum*.	PR, I	Carlton & Eldredge, ms	1959	Hilo Harbor (Barnard 1970)	North Atlantic	WA

Family	Genus and Species	Status	Status Authority	1st Rept.	Source &/or Comment	Origin and/or Previous Range	ID
Corophiidae	*Ericthonius brasiliensis*	PR, I	Carlton & Eldredge, ms	1935	Kane`ohe Bay (Barnard 1955)	Tropical and Temperate Worldwide (Muir, pers. comm.)	WW
Melitidae	*Elasmopus rapax*	PR, I	Carlton & Eldredge, ms	1937	Kane`ohe Bay (Barnard, 1955)	Tropical Worldwide (Bernard, 1970)	WW
Leucothoidae	*Paraleucothoe flindersi*	PR, C	Muir, 1997	1996	Pearl Harbor (Coles et al. 1997, 1999a)	Australia	WIP
Podoceridae	*Podocerus brasiliensis*	PR, I	Carlton & Eldredge, ms	1938	1935 in Kane`ohe Bay (Barnard 1935)	Tropical and temperate wordwide	WW
Isaeidae	*Photis hawaiensis*	PR, C	Carlton & Eldredge, ms	1937	Kane`ohe Bay, BPBM Spec S 6011		
Tanaidacaea							
Pseudozuxidae	*Leptochelia dubia*	PR, C	Carlton & Eldredge, ms	1939	BPBM Spec S 5048, Black Point		
Decapoda							
Gonodactylidae	*Gonodactylaceus falcatus*	PR, I	Carlton & Eldredge, ms	1954	Kane`ohe Bay and Waikîkî as *Gonodactylus falcatus* (Kinzie, 1968)	Eastern Pacific - Phillipines (Kinzie, 1968)	WIP
Ectoprocta							
Vesiculariidae	*Amathia distans*	PR, I	Carlton & Eldredge, ms	1935	Kane`ohe Bay (Edmondson and Ingram 1939)	Tropical Worldwide (Carlton & Eldredge, ms)	WW
Bugulidae	*Bugula dentata*	PR, I	C. Zabin, pers. comm.	1997	Ala Wai,Honolulu and Barber's Point Harbors	IndoPacific (C. Zabin, pers. comm.)	IP
Bugulidae	*Bugula neritina*	PR, I	Carlton & Eldredge, ms.	1921	BPBM Spec K 235, Pearl Harbor	Tropical Worldwide (Gordon and Maatavari 1997).)	WW
Schizoporellidae	*Schizoporella cf. errata*	PR, I	Carlton & Eldredge, ms	1935	Kane`ohe Bay as *S. errata*. Poss. pre 1933 (Edmondson, 1933)	Worldwide	WW
Watersiporidae	*Watersipora edmondsoni*	PR, I	Carlton & Eldredge, ms	1966	Ala Wai (Soule and Soule, 1967)	Tropical-Subtropical Pacific (Carlton & Eldredge, ms)	IP
Acidiacea							
Ascidiidae	*Ascidia sydneiensis*	PR, I	Carlton & Eldredge, ms	1976	Pearl Harbor, BPBM Spec Y 244,	Tropical Worldwide (Abbott et al. 1997)	WW
Didemnidae	*Didemnum perlucidum*	PR, I	Godwin & Lambert 2000	1998	Keehi Lagoon (Godwin & Lambert 2000)	Tropical Worldwide	WW
Styelidae	*Eusynstyela hartmeyeri*	PR, I	Godwin & Lambert Pers. Com.	1996	Pearl Harbor, as *Eusynstyela aliena* Monniot (Godwin and Lambert 2000)		
Pyuridae	*Herdmania pallida*	PR, I	Carlton & Eldredge, ms	1972	Pearl Harbor, as *Herdmania momus* Long (1974)	Tropical Worldwide (Abbott et al. 1997)	WW
Pyuridae	*Microcosmus exasperatus*	PR, I	Carlton & Eldredge, ms	1996	Kane`ohe Bay (Abbott et al. 1997), 1st rept. date unspecified	Tropical Worldwide (Abbott et al. 1997)	WW
Ascidiidae	*Phallusia nigra*	PR, I	Carlton & Eldredge, ms	1975	Kane`ohe Bay, BPBM Spec Y 241 as *Ascidia nigra*	Worldwide (Abbott et al. 1997)	WW
Styelidae	*Polyandrocarpa sagamiensis*	PR, I	Carlton & Eldredge, ms		Kane`ohe Bay and Pearl Harbor (Abbott et al. 1997), date unspec.		
Styelidae	*Styela canopus*	PR, I	Carlton & Eldredge, ms		Kane`ohe Bay and Pearl Harbor (Abbott et al. 1997), date unspec.	Eastern North America (Lambert and Lambert 1998)	WA
Lutjanidae	*Lutjanus fulvus*	PR, I	Maciolek, 1984; Randall, 1987	1956	Kane`ohe Bay, in 1956 and 1959 for fisheries "enhancement"	Tropical Indo-Pacific (Randall, 1987)	IP