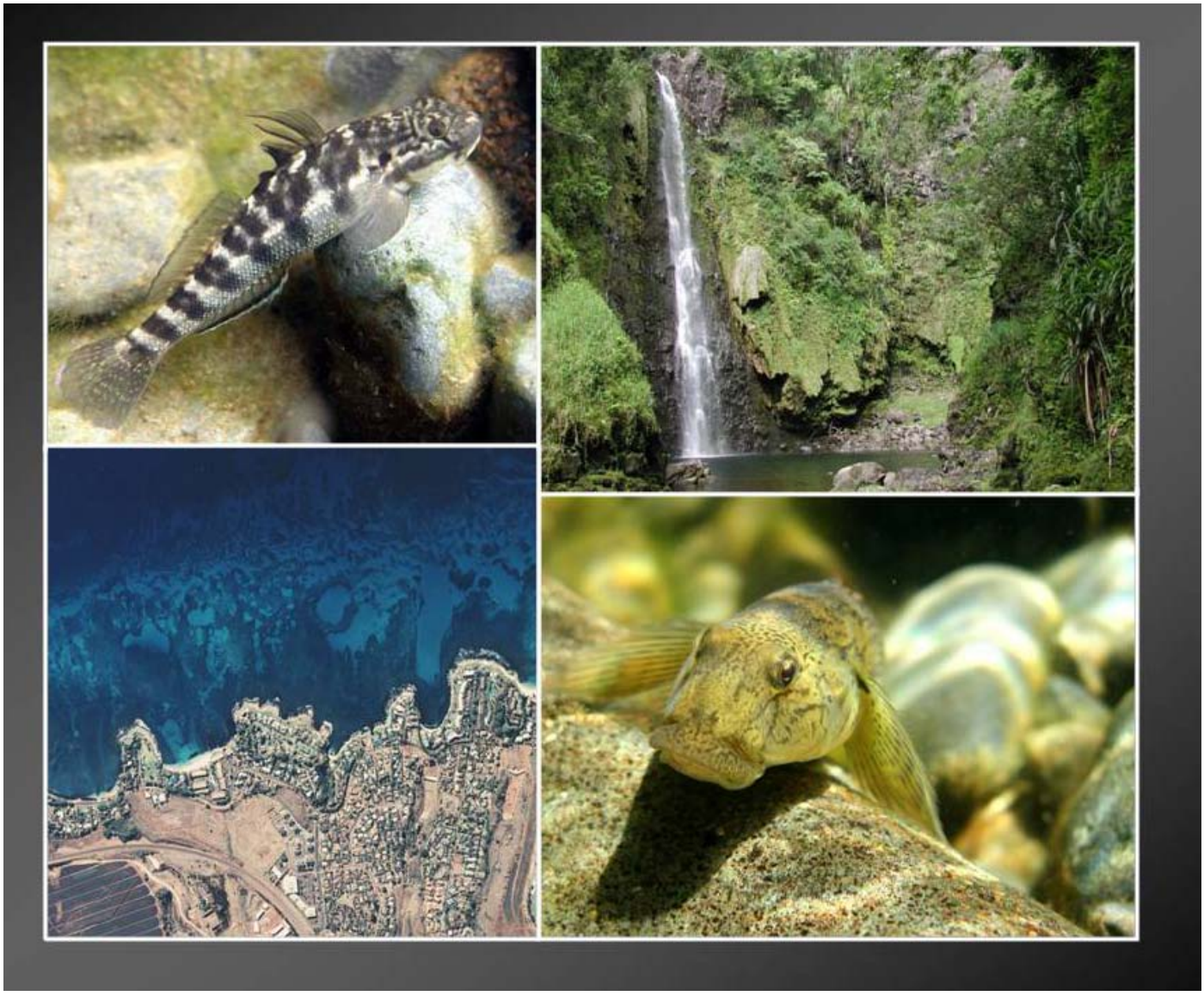
Hawaii Fish Habitat Partnership

Strategic Plan



HAWAII
FISH HABITAT
PARTNERSHIP

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EXECUTIVE SUMMARY

The Hawaii Fish Habitat Partnership is composed of a diverse group of stakeholders who seek to develop and implement a technically sound aquatic habitat restoration program. The focus of the partnership is to protect, restore and maintain stream, estuary and coastal marine habitats to benefit native aquatic life and fishery resources in the State of Hawaii.

The main Hawaiian Islands have 1,207 kilometers (km) of shoreline and approximately 2,526 km^2 of coral reef. Approximately 612 species of fish have been observed in nearshore coastal marine habitats of the islands. The geographic isolation of Hawaii has resulted in some of the highest endemism of any tropical marine ecosystem on earth. Approximately 370 perennial streams are located on the five largest Hawaiian Islands, of these about 40 form stream-mouth estuaries at their confluence with the sea. These streams and estuaries support communities of fish and invertebrates that are diadromous and must complete migration to and from freshwater to the sea and back during the course of their life cycle.

By several measures, nearshore marine and coral reef habitats of Hawaii have degraded in recent decades. This is illustrated by decreasing estimates of live coral cover and by a marked loss of standing stock fish biomass, particularly in areas adjacent to large human populations. Similarly, inland waters including streams, estuaries and anchialine pools exhibit diminished habitat availability and reduced biological function throughout the Hawaiian Islands. Widespread impacts include physical alteration of stream channels, degradation of water quality, extensive water withdrawals, and the introduction of detrimental non-native species. An important management goal for stream systems in Hawaii is removal of migration barriers to allow passage of native fish and invertebrates between the sea and interior watersheds.

This Strategic Plan is the result of a collaborative, consensus-based and scientifically-driven process whereby stream, estuarine and coastal marine conservation actions undertaken by the partnership were identified and prioritized. The partnership has four broad goals:

> I. Maintain, protect, manage, and restore aquatic habitat in sufficient quantity and quality to allow native species to thrive;
>
> II. Address priority invasive species with prevention, early detection, rapid response, and ongoing control or eradication;
>
> III. Manage, and disseminate scientific and technical information needed to improve the effectiveness of conservation and recovery programs; and
>
> IV. Improve partnerships and cooperative efforts and strengthen outreach and education leading to improved understanding of native aquatic wildlife resources in Hawaii.

The partnership is composed of representatives from State and Federal resource agencies, regional watershed coalitions, the Hanalei Watershed Hui, the Nature Conservancy, private

landowners and industry representatives such as Maui Land and Pineapple Inc., Kamehameha Schools and the Hawaii Farm Bureau.

Through ongoing commitment to effectively organize and communicate across organizational boundaries, the partnership will focus existing and future resources on aquatic habitat restoration, partnership and outreach to achieve the priorities identified in this strategic plan

I. INTRODUCTION

The Hawaiian Island chain is one of the most geographically isolated island groups in the world. The islands consists of two regions: the Main Hawaiian islands (MHI) which are composed of high volcanic islands and which have localized barrier or fringing coral reefs abutting their shores; and the Northwestern Hawaiian Islands (NWHI) which consist of widely scattered uninhabited coral atolls, islands and banks that extend over 2,000 kilometers (km) northwest of the MHI. The main islands (Kauai, Niihau, Oahu, Maui, Molokai, Lanai, Kahoolawe, and Hawaii Island) together have 1,207 km of shoreline and approximately 2,526 km^2 of coral reef.

The archipelago is located in the middle of the Pacific Ocean and as a result Hawaii's coral reefs are exposed to large open ocean swells and strong tradewinds. These dynamic natural processes largely define the topographic structure of Hawaiian coastal marine environment. The geographic isolation of Hawaii has resulted in some of the highest rates of endemism of any tropical marine ecosystem on earth. Some of these endemic species are dominant components of the coral reef community, resulting in unique marine ecosystems that have high conservation value on a global scale.

Freshwater ecosysystems in the islands were similarly influenced by geographic isolation and and were shaped by rainfall patterns associated with tradewinds. Approximately 370 streams are located across the main Hawaiian Islands, of these, about 40 of the larger stream systems form stream-mouth estuaries at their confluence with the sea. Perennial streams are primarily located on island coastlines that are exposed to the northeast tradewinds. Leeward areas are much more arid and perennial streams are less common in leeward areas, particularly on the southwestern flanks of the larger islands of Maui and the Big Island. Like the marine environment, the inland waters of Hawaii similarly exhibit numerous endemic species. The entire native freshwater vertebrate fauna, as well as the larger invertebrates of Hawaiian streams, includes only five species of fish, two species of mollusk, and two species of crustacean (prawn and shrimp). The ancestors of the Hawaiian stream fish were evolutionarily derived from stream species with marine larvae capable of transport and dispersal over long distance from the Indo-Pacific north and east to Hawaii. The biogeographic origins of the Hawaiian stream mollusks and crustaceans are poorly studied and not as well known.

Island environments by their very nature are subject to resource limitations. Geographic distance, coupled with ever-growing human resource needs that alter coastal marine landscapes and increasing human uses of water resources have severely altered marine and freshwater ecosystems in Hawaii. The missions of several State and Federal agencies as well as non-governmental organizations (NGOs) and community groups specifically identify conservation and restoration of marine and freshwater resources in Hawaii. A number of conservation and fishery management programs have been implemented to increase conservation in coral reef habitats, for example the *Hawaii Coral Reef Strategy* developed by the State of Hawaii in cooperation with the US Coral Reef Task Force. However, it is widely recognized that to date, few on-the-ground programs have been implemented to conserve and restore inland aquatic systems. Hawaii lags behind the rest of the nation in implementation of actions to address the decline of inland water habitats that support fishery resources and unique aquatic communities.

This record of accomplishment can be improved with better coordination, more resources, and better communication among parties in the state that are tasked with aquatic resource conservation mandates. A major challenge is that that Hawaii is fragmented geographically and resource managers face logistical challenges and high expenses due to the need to work on multiple islands. An important need to improve aquatic resource management is to foster communication, develop expertise, and to direct resources for application at locations where on-the-ground action is most needed.

The Hawaii Fish Habitat Partnership (HFHP) was formed to fill these un-met needs in aquatic resource conservation. The partnership was conceived to form a cooperating workgroup for coordinated planning, development, funding and implementation of on-the-ground habitat restoration projects that address degradation of streams and stream-mouth estuaries in the islands and to provide leadership for integrating restoration planning on a watershed or "ridge-to-reef" basis. The partnership functions and provides guidance across traditional boundaries of agency, NGO, communities and the private sector to accelerate development of on-the-ground projects that will result in demonstrable success in aquatic resource recovery. The HFHP continues to grow with input and support from public and private stakeholders (Appendix II).

Participating HFHP organizations include several State agencies that have authority to manage water resources and the habitats and species that are found in State waters. These include the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR), the Commission on Water Resource Management (CWRM), and the Hawaii Department of Health (DOH) Environmental Planning Office and Environmental Management Division Clean Water Branch. Other State-level participants include the DLNR Division of Forestry and Wildlife (DOFAW) and Division of State Parks, both of which own and manage thousands of acres of conservation lands where significant aquatic resources are found. Federal agency participation includes the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Pacific Islands Area Office; the USDA Forest Service Southwest Experiment Station Institute of Pacific Islands Forestry; the National Oceanic and Atmospheric Administration (NOAA) Fisheries Pacific Islands Regional Office, Office of Habitat Conservation; the NOAA National Ocean Service Pacific Services Center; the U.S. Geological Survey Hawaii Water Science Center; the US Fish and Wildlife Service Pacific Islands Fish and Wildlife Office (PIFWO); and others.

In addition to government agencies, several non-governmental and private organizations are participating in the HFHP, these include several watershed coalitions that have formed to provide stewardship support on public and private lands such as the Hanalei Watershed Hui, the Hui o Koolaupoko, the Kohala Watershed Partnership, East Maui Watershed Partnership and others. Private landowner support has come from Kamehameha Schools, and Maui Land and Pineapple, Inc. Industry involvement has come from the Hawaii Farm Bureau, a non-profit organization of farmers, landowners and agriculture-affiliated businesses united for the purpose of formulating action to support agriculture in Hawaii.

Partnership History

The HFHP was formed under the umbrella of the National Fish Habitat Action Plan (NFHAP), which is a nationwide strategy that seeks to minimize and reverse the causes of aquatic resource decline. The plan calls for the formation of placed-based or resource based fish habitat partnerships to function as the "primary work units" of NFHAP. The HFHP fits well within this organizational structure and can contribute to the national goals of NFHAP. The action plan is structured across agency, NGO and private-sector boundaries and calls upon local expertise to identify and coordinate local and regional efforts to build partnerships that independently develop and implement habitat restoration projects. A primary goal of NFHAP is to create synergy that builds upon multi-partner cooperative conservation that will achieve results not possible by these organizations working alone.

Interest in formation of a partnership prompted PIFWO and DAR to co-host an exploratory "kick-off" meeting in September 2007 to gauge support by stakeholders. A diverse group of partners including DAR, DOH, CWRM, DOFAW, EPA and the U.S. Army Garrison Hawaii Environmental Command attended the meeting and committed to forming a partnership at that time.

A major step in the formation of the HFHP was the February 2008 Strategic Planning workshop convened in Honolulu and co-hosted by DAR and PIFWO. This meeting was attended by over 30 individuals representing a cross-section of State and Federal agency, NGO, Native Hawaiian groups, private landowners and regional- and headquarters-level participation by U.S. Fish and Wildlife Service (Service). The purpose of the facilitated meeting was to develop an outline of realistic goals, objectives, work products and timelines to form a HFHP Draft Strategic Plan. The workshop expanded upon on existing State-identified conservation goals set forth in the Hawaii's Statewide Aquatic Wildlife Conservation Strategy (SAWCS 2005). The conservation goals of the SAWCS served as the starting point in the process of developing and prioritizing objectives to achieve restoration of inland waters in Hawaii. At the workshop, the conservation goals outlined in the SAWCS were made more specific with input from stakeholders. Participants reviewed aquatic habitat conservation needs to specifically address stream and stream-mouth estuary aquatic resource issues.

The National Fish Habitat Board invited candidate partnerships to apply for recognition under NFHAP during an application period that closed December 19, 2008. The application requirements included a description of the organizational structure and capacity of the HFHP, and submittal of a draft strategic plan. After consideration by the Board, the HFHP was granted full recognition as a fish habitat partnership under NFHAP on March 5, 2009. This recognition carried with it: 1) the recommendation by the board that the HFHP expand its habitats of interest to include coastal marine areas, including coral reef habitats; and 2) that the HFHP finalize its strategic plan.

Technical Support for Strategic Planning

An important source of technical support for prioritizing aquatic habitat restoration efforts in Hawaii is the "*Atlas of Hawaiian Watersheds and their Aquatic Resources*". The Atlas was

developed by the DAR and is available to the public on CD and on the internet (**http://www.hawaiiwatershedatlas.com**). The Atlas compiles biological information, habitat data and land use information from virtually every watershed in the state. Geographic information in the database links the biological data to topographic features, land ownership and land use on a watershed-by-watershed basis. Another important source of information that was used to understand conservation needs and opportunities for coastal marine areas was the *Marine Ecoregional Assessment for the Main Hawaiian Islands* (The Nature Conservancy Hawaii Marine Program, 2009). This assessment identified 65 discreet coastal areas of biological importance for long-term resiliency of coral reefs based on a range of technical data, geospatial analyses and expert review. Subsets of these coastal marine sites were chosen as priority coral reef conservation areas by the Hawaii Coral Program. Preliminary results of the Hawaii portion of the *National Assessment of Fish Habitat* were also used. This geospatial analysis was undertaken to integrate inland and coastal marine conservation focus areas for planning purposes.

II. VISION AND MISSION OF THE HAWAII FISH HABITAT PARTNERSHIP

The *vision* of the HFHP is a long-term goal that defines our contribution to a desired future condition of aquatic resources in Hawaiian streams, estuaries and coastal marine environments. This vision states an endpoint that the partnership intends to reach as a result of strategic plan implementation. The vision statement serves as a springboard for action and challenge for partners:

The vision of the Hawaii Fish Habitat Partnership is;

- **The environmental resource value, cultural resource value, and sustainable use of Hawaiian stream, estuary, and nearshore marine resources are improved and/or maintained;**
- **Populations of native freshwater, estuarine and nearshore marine species are protected and restored;**
- **To maintain and/or expand freshwater, estuarine, and nearshore marine habitats that fully support native aquatic life, and;**
- **The natural value and environmental function of freshwater, estuarine and nearshore marine habitats increasingly benefit the people of Hawaii and the nation.**

The *mission statement* of the HFHP is a short, formal statement of the purpose of the partnership as an active, functional organization. The mission statement guides the actions of the HFHP and spells out the overall goal of the partnership. The mission statement provides a sense of direction for decision-making and provides the framework and context within which the HFHP strategic actions are formulated.

The mission of the Hawaii Fish Habitat Partnership is:

The Hawaii Fish Habitat Partnership seeks to cooperatively develop and implement conservation projects to benefit native aquatic life and sustainable uses of streams, estuaries, and nearshore marine habitats through the support and participation of government agencies, non-governmental organizations, and communities.

III. COASTAL MARINE, STREAM, AND ESTUARY RESOURCES OF HAWAII

Physical Features of the Islands

The Hawaiian archipelago consists of eight main islands and the numerous shoals and atolls of the northwestern Hawaiian Islands. Erosion of the original volcanic massifs that formed the main islands resulted in steep-walled valleys with well-developed soils and numerous stream systems across the state. In the southwest of the island chain, Hawaii Island is geologically the youngest of the main islands and is characterized by gently sloping shield volcanoes and frequent, long lasting eruptions. Volcanoes on the other islands are dormant or extinct. Kaua`i is geologically the oldest of the main islands. Islands with extensive windward exposure include Hawaii, Maui, Molokai, Oahu and Kaua`i. The windward-exposed areas are characterized by deep valleys, high rainfall, abundant vegetation, and numerous streams and springs.

Coastal Marine Ecosystems

Shallow water benthic habitats in the Hawaiian Islands are dominated by a variety of substrate types including mud, sand, basaltic boulder, coral rubble, and broad expanses of limestone pavement (Battista et al 2007). Biological benthic cover is highly variable and can consist of seagrass, macroalgae, algal turf, coralline algae and coral. Although not all nearshore marine bottom areas are structurally formed from coral material, the majority of open coastline and protected shoreline benthic habitats are coral-dominated. These coral-dominated habitats (referred to generally as coral "reefs") are of particular interest for conservation planning due to high rates of endemism, overall biodiversity, and importance for fishery resources. Coral reef habitats are sensitive to human-caused degradation and are increasingly recognized to be at risk as a result of global climate change.

Coral reefs of the Hawaiian Islands are geologically young and not as well developed as reefs in areas with a longer geologic history. Most coral reefs in the MHI consist of small fringing reefs that occur close to shore. There is a westward trend towards greater reef development which coincides with the geologic ages of the islands. Superimposed upon this pattern, however, are the effects of wave exposure: in general, the more sheltered leeward coasts, and leeward embayments in particular, have reefs with greater coral cover than wave-exposed windward shorlines.

Due to the geographic isolation of the Hawaiian Islands, Hawaiian reef communities are less diverse than many other coral reefs areas, especially those in the broader Indo-Pacific province extending to the west and south of the islands. One consequence of lower overall diversity is

that reef-building corals in Hawaii are more generalized in their microhabitat requirements and distribution than other coral species. As a result, relatively few coral species dominate Hawaiian reefs, despite the unusually high level of endemism among marine organisms (Table 1). In response to variation in environmental conditions near the shoreline, coral reefs exhibit zonation where the abundance and composition of the coral community varies according to depth and distance from shore. Wave exposure is the primary factor causing coral community zonation in Hawaii but gradients in sedimentation, salinity, and temperature are also important. Hawaiian reefs do not exhibit a high abundance of filter feeding animals such as soft corals, sponges, tunicates, and bivalves. As a result, Hawaiian reefs are more clearly dominated by corals.

Table 1. Endemism in coastal marine fauna of Hawaii

Taxon	Percent endemic
Algae	18%
Sponges	48%
Hard corals	18%
Soft corals	49%
Gastropods	26%
Bivalves	51%
Crustaceans	38%
Fishes	23%

*From Kay and Palumbi 1987, Abbott 1999 & 2002 and Randall 2007

Threats to coastal marine habitats

Coral reefs played an important role in ancient Hawaiian culture and subsistence. Like many Polynesians societies, pre-contact Hawaiians had intimate knowledge of ocean resources and employed a complex system to manage resources in ways that ensured long-term use. Some of these methods included the "kapu" system in which certain reef tracts or species would be declared off limits to regulate fishing at times that were thought to correspond to spawning and recruitment periods. Over time, these practices have disappeared due to cultural, political and demographic changes that have affected land ownership, land use, and water rights. Increasing consumptive resource use and non-point source pollution due to large human populations in coastal areas have greatly disrupted coastal marine ecosystem functions. Hawaii's reefs are still in fair to good condition relative to other parts of the world, however, many near-shore reef tracts, especially those adjacent to urban areas and popular destinations, are in poor condition due to land-based sources of pollution, fishing pressure, recreational overuse and invasive species. Coral reefs have high resource value and provide valuable ecosystem services such as storm surge abatement, protection from ocean swell energy, and providing food for sustenance and commerce. In addition, Hawaii's coral reefs generate approximately $800 million annually to the state's economy from marine tourism.

The onset of global climate change may bring about marked change in subtropical and tropical coastal marine ecosystems. Coral reefs provide both a biological and geological foundation to these coastal systems, and effects of sea-level rise, ocean acidification, and increased sea surface temperature may result in changes to biological communities as well as the structure and

function of the shoreline substrates that they inhabit. In response to ongoing degradation of coral reefs around the world, and in anticipation of increasing coral reef impacts due to global climate change, a petition was recently filed to list 82 species of coral as threatened or endangered under the Endangered Species Act (ESA). This administrative action is currently in the status review phase of the petition process. Nine of the coral species petitioned for listing are found in Hawaiian waters (Table 2).

Table 2. Coral species endemic to Hawaii included in petition for listing as threatened or endangered under the Endangered Species Act.*

Species	Occurrence	Habitat preference	Growth form
Acropora paniculata	Uncommon	Shallow lagoon, upper reef slope	Tabular
Cyphastrea agassizi	Uncommon	Shallow reef,	Encrusting to submassive
Cyphastrea ocellina	Uncommon	Upper reef slope	Massive to encrusting
Leptoseris incrustans	Uncommon	Shallow reef	Encrusting - plates
Leptoseris yabei	Uncommon	Flat substrate	Encrusting - plates
Montipora dilatata	Common	Subtidal	Encrusting - submassive
Montipora flabellata	Common	Shallow reef	Encrusting - nodular
Montipora patula	Abundant	Shallow reef	Encrusting - plates
Porites pukoensis	Rare	Shallow protected reef, lagoon	Massive, columnar
Psammocora stellata	Uncommon	Shallow wave washed rock	Submassive - branching

*Federal Register Notice 75 FR 6616, February 10, 2010.

Streams and Stream-Mouth Estuaries

The volcanic basalt that forms the bulk of the main Hawaiian Islands is porous and permeable, which facilitates infiltration and storage of groundwater. A large body of groundwater exists within these porous basalts throughout each of the larger islands. In addition to this basal groundwater layer, smaller, perched groundwater systems form at higher elevations, contained by dense geologic features of low permeability. The geomorphic characteristics of Hawaii's streams such as channel form and function, as well as numerous physical and biological characteristics, are formed and maintained through the action of relatively frequent high flow events. However, low-flow and base-flow characteristics are equally important, especially in the maintenance and distribution of aquatic life during periods of drought. Because ground water reserves are extensive in some locations in the islands, streams, springs and rock seeps fed by basal ground water exhibit highly permanent, stable low flows. As a result, the aquatic communities may persist in streams despite occasional severe drought.

The aquatic macrofauna native to Hawaiian streams includes five species of diadromous fish and three diadromous aquatic invertebrates (Table 2). These organisms require cold, clean, high-quality stream water that is free of excessive land-derived nutrients and suspended particulates. All of these species require passage between the stream environment and the sea at two significant and vulnerable time periods in the course of their life histories. These migratory species are dependent upon a free-flowing connection to the sea, via the stream channel, to complete their development and reproduction. This diadromous life cycle is known as *amphidromy*; a two part life cycle whereby a migration from freshwater to the sea and back is completed during growth and development, but not for specifically for reproduction.

The two-part life cycle of amphidromous species begins as adults live and reproduce in stream habitats, newly hatched larvae are dispersed downstream to the ocean where the larvae live until they metamorphose from the larval stage to a postlarval body form and begin upstream migration. Three of the Hawaiian stream gobies have pelvic fins that are fused into a ventral suction disk which becomes functional upon metamorphosis. This unusual morphological adaptation is used to cling to rock surfaces. Two fish species, *Lentipes concolor* and *Sicyopterus stimpsoni*, are strong climbers and are capable of ascending vertical or overhanging waterfalls. The decapod shrimp *Atya bisulcata* and the neritid snail *Neritina granosa* are very good climbers and easily ascend steep stream channels. In some stream systems, large populations of these invertebrate species can be found above vertical or overhanging waterfalls as high as 900 feet.

Table 2. Native migratory freshwater organisms of Hawaiian streams.

Organism	Scientific name	Hawaiian name	Biogeographic status
Freshwater fish (family Gobiidae)	*Awaous guamensis*	O'opu nakea	indigenous
	Lentipes concolor	O'opu alamo'o	endemic
	Stenogobius hawaiiensis	O'opu naniha	endemic
	Sicyopterus stimpsoni	O'opu nopili	endemic
Freshwater fish (family Eleotridae)	*Eleotris sandwicensis*	O'opu akupa	endemic
Freshwater shrimp Crustacean	*Atyoida bisulcata*	Opae kala'ole	endemic
Freshwater prawn Crustacean	*Macrobrachium grandimanus*	Opae 'oeha'a	endemic
Freshwater snail (Mollusk)	*Neritina granosa*	Hihiwai	endemic

The climbing fish and invertebrates occasionally are found in high-elevation perennial sections of intermittent or interrupted (diverted) streams, above reaches that do not contain perennial flow. Upstream migration to these intermittently isolated upper reaches is opportunistic and is accomplished by a few successful upstream migrants as flowing water conditions allow. All of these stream-dwelling species are rarely found as adults in man-made waterbodies such as ditches, flumes, reservoirs or other impoundments. If juveniles are entrained into these types of structures and survive to adulthood, they are effectively removed from the population because their reproductive output is lost without a connection to the sea for downstream dispersal of larvae.

In addition to the migratory stream-dwelling fish and invertebrates whose larval life stage takes place in the ocean, a number of less-conspicuous native macroinvertebrates are found in inland water systems in Hawaii. Many of these are endemic to the Hawaiian Islands and some are

limited in distribution to single islands or single subregions within an island. These include the widespread but rare freshwater sponge (*Heteromyenia baileyi*), a diverse genus of endemic moths that have an aquatic larval stage (*Hyposmocoma sp.*), and the torrent midges (*Telmatogeton sp.*). An aquatic snail with a distribution limited to a few locations on Kauai (Newcomb's snail, *Erinna newcombi*) is listed as "threatened" under the ESA. Two species of stream-associated damselflies in the genus *Megalagrion* were recently listed as endangered, three additional species are proposed for listing as endangered, and one species remains a candidate for listing. Six anchialine pool shrimp have candidate status (Table 3).

There are relatively few inland reaches where freshwater is regularly influenced by seawater to form discreet estuaries. Of the approximately 370 perennial streams in Hawaii, about 40 form stream-mouth estuaries. Estuaries in Hawaii are locally important because they provide juvenile nursery habitat for fish that inhabit marine environments as adults. As many as 30 marine fish species occupy these stream-mouth estuaries opportunistically as juveniles before moving to nearshore marine and coral reef habitat. Many of the fish species that use estuarine habitat when young are recreationally or commercially important at larger sizes. Examples include jacks (Carangidae), mullet (Mugilidae), flagtails (Kuhliidae) and others.

Threats to stream and estuary habitats

Human-caused modifications to surface and ground water systems throughout Hawaii have profoundly altered natural hydrologic regimes. The original human inhabitants of the islands converted many acres of coastal and valley lowlands to production of taro, a Polynesian staple food crop that is farmed in flooded fields created by stream water diverted from natural channels. In the modern era, complex irrigation conveyance systems were built to support the cultivation of sugar cane. These diversions transfer very large volumes of water out of natural watercourses and into extensive networks of ditches, tunnels, flumes, reservoirs, and ultimately, to fields. Historically, stream water diversion structures were built to be highly efficient in their ability to entrain water. Many of these structures divert all flowing stream water at moderate to low flows, leaving the stream channel below the dam completely dry. In some areas, ground water was exploited on an equally large scale to support agriculture and localized ground water draw-downs have reduced groundwater-supported base flows in many streams. A shift from large plantation agricultural uses of water to small-scale "diversified agriculture" and urban uses has occurred within the last several decades, with the decline of large-scale production of sugarcane.

Other human-caused alternations to streams and estuaries are equally widespread across Hawaii and have further limited habitat available to support native aquatic life. These impacts include flood control infrastructure such as cement channels, and levees that confine stream flows and disconnect streams from adjacent flood plains, sediment and debris basins, and erosion control modifications to coastal and estuarine shorelines. Although these features alone do not reduce water volume, many result in a departure from normal hydrographic characteristics by causing increased peak flows, prolonged dry periods, and altered physical and chemical characteristics, such as increased water temperatures.

Base-flow volumes of streams in the Hawaiian Islands have declined over recent decades (Oki 2009). The effects of global climate change are likely to continue, if not accelerate, this long-term trend. The continuous contribution of moisture carried to the islands by the tradewinds is

expected to decline, while intermittent storm-driven inputs of rain are expected to increase. A change to the overall water budget of the Hawaiian Islands is very likely, and the resulting change to aquatic habitats will likely include lower base flows, accelerated erosion, increased transport of sediment to receiving waters, and changes to wetland and riparian areas. Model predictions for the severity of these changes at the regional and subregional levels are not fully developed.

Anchialine Pools

Anchialine pools represent an inland waterbody type that is widespread but threatened throughout the Hawaiian Islands. The term “anchialine” is derived from Greek meaning "near the sea.” Anchialine pools are defined as land-locked bodies of water that occur near the coast in permeable substrates and which, by the presence of salt water and tidal fluctuations, show subsurface hydrologic connections both to the sea as well as the underlying fresh water table. They are characteristically brackish or saline but do not have surface connections to the open ocean. Anchialine pools are often formed in depressional areas found in geologically recent lava flows along coastlines, but occasionally they are situated in flooded solution cavities in coastal karsts (geologic formations composed of uplifted reef and limestone). In Hawaii, the majority of remaining anchialine pools are located on the Kona coast and southern coastlines of the Big Island, the southeast coast of Maui, and on several small and widely separated coastal sites on Oahu.

Anchialine pool salinities can range from near-fresh to concentrations just below that of sea water, although there are a few pools with high evaporation rates that exhibit salinities considerably higher than seawater (up to 41 ppt). Anchialine pools contain a fauna that is estuarine-like because they are tolerant of brackish water conditions. Currently there are six endemic anchialine pool shrimp that are candidates for listing under the ESA (Table 3). Several of these shrimp species are extremely rare and their basic biological characteristics, including life history patterns, current and historical ranges, and conservation needs are not known. The introduction of non-native predators (Poeciliids, “tilapia” and other fish) into anchialine pools is a severe problem that has eliminated the native fauna from many anchialine pools.

Threats to anchialine pool habitats

In the islands, disturbances due to agricultural and urban land use is most concentrated along shorelines , because of this anchialine pools have been severely impacted by coastal development. Many anchialine pools were filled in the past, and remaining pools continue to be affected by ongoing land use development, particularly resort and golf course construction along the Kona coast of the Big Island. Withdrawal of groundwater for domestic or irrigation use, and contamination of groundwater by polluted runoff originating from expanding urban areas present an ongoing threat. Because anchialine pools are located in shoreline areas, climate change effects such as sea level rise, decreased rainfall, and saltwater intrusion into coastal water tables may further decrease the extent of these aquatic habitats.

Table 3. Listed, proposed and candidate freshwater and anchialine pool organisms of Hawaii.

Organism	Scientific Name	Common name	Distribution	Status
Freshwater snail (Mollusk)	*Errina newcombi*	Newcombs snail	Kauai (~12 sites)	Threatened
Damselflies (Odonata: Libellulidae)	*Megalagrion pacificum*	Pacific damselfly	Molokai, Maui, Big Island (7 sites total)	Endangered
	Megalagrion nesiotes	Flying earwig Hawaiian damsel	Maui (1 site)	
	Megalagrion nigrohamatum nigrolineatum	Black-line damselfly	Oahu (~11 sites)	Proposed for ESA listing
	Megalagrion oceanum	Oceanic damselfly	Oahu (7 sites)	
	Megalagrion leptodemus	Crimson Hawaiian damselfly	Oahu (4 sites)	
	Megalagrion xanthomelas	Orangeback damselfly	Oahu, Lanai, Molokai, Maui, Big Island (18 sites total)	Candidates for ESA listing
Anchialine pool shrimp	*Metabetaeus lohena*	No common name (NCN)	Maui, Big Island, Oahu (several sites)	
	Antecaridina lauensis	NCN	Maui (two sites), Big Island (two sites)	
	Calliasmata pholidota	NCN	Maui (two sites), Big Island (two sites)	
	Palaemonella burnsi	NCN	Maui (three sites), Big Island (one site)	
	Procaris hawaiana	NCN	Maui (two sites), Big Island (one site)	
	Vetericaris chaceorum	NCN	Big Island (single pool)	

IV. INTEGRATING CONSERVATION PLANNING FOR AQUATIC HABITATS *MAUKA* TO *MAKAI*

An emerging theme in aquatic resource conservation in Hawaii is the need to integrate habitat restoration planning and project implementation from *mauka* (inland) to *makai* (seaward) areas. Because island land masses are small, there are often very short distances between land-based sources of disturbance and coastal marine environments. Degradation of aquatic habitat caused by historical and current human land use practices extend into coastal waters, either via direct impacts (dredging, fill, or construction of seawalls) or indirectly through surface runoff and groundwater flow. Land-based sources of pollution, such as suspended sediment, nutrients and other pollutants represent one of several factors threatening the quality of nearshore marine ecosystems in Hawaii. Reef building corals are particularly sensitive to these impacts. The

complex interrelationship of direct and indirect land-based impacts to coral reefs, water quality degradation, aquatic invasive species, and overfishing on the health and integrity of coastal marine and coral reef ecosystems is not always well understood, however, enough is known to plan and implement conservation actions that minimize land-based impacts to marine systems.

Conservation projects intended to address land-based degradation of coastal marine and coral reef areas have direct impacts on inland aquatic habitats such as streams and estuaries which have conservation needs of their own. For example, diadromous fish passage in a stream may be impeded by a poorly-placed structure that is causing bank failure and the resulting eroded sediment is transported downstream to coastal marine habitats where it smothers live coral. Using an integrated approach, a project designed to improve coral reef habitat by reducing sediment transport could simultaneously enhance fish passage.

V. GOALS AND OBJECTIVES OF THE HAWAII FISH HABITAT PARTNERSHIP

The HFHP Steering Committee and various participants from the larger partners group met on three occasions to establish strategic goals and objectives appropriate for the partnership to pursue. Specific actions to achieve these strategic goals were also identified (Table 4). In recognition of anticipated constraints on time, technical capacity and limited funding, the Steering Committee was tasked with identifying the highest priority objectives among all objectives identified to achieve the goals of the partnership. A total of six objectives were selected as the high priority medium-term (5-10 year) objectives to guide and focus HFHP activities (Table 4, shaded text). These goals and objectives are especially important for guidance in selecting on-the-ground projects that the HFHP will directly support, and for identifying operational needs required to ensure that the partnership continues to function as a effective organization.

VI. STRATEGY IMPLEMENTATION

Climate Change and Adaptive Management

Climate change will profoundly affect Hawaii's terrestrial and aquatic environments and the human communities that depend on these natural systems. Key vulnerabilities facing the Hawaiian Islands due to climate change include changes in the availability of freshwater, changes to coastal topography including sea level inundation, and impacts to coastal and marine ecosystems. The magnitude and temporal progress of climate change will always have an element of uncertainty. The most important planning elements required to prepare for climate change are resilience and adaptation. Through the implementation of this strategic plan, the HFHP will seek to enhance the ability for aquatic ecosystems to respond to the effects of climate change with increased resiliency. Development of HFHP habitat restoration projects and environmental management actions will consider appropriate spatial and temporal scales and adopt a decision-making framework that accounts for uncertainty in forecasting global climate change.

Table 4. Hawaii Fish Habitat Partnership strategic goals, objectives and actions. Priority objectives are shaded.

Goal	Objective	Action
Goal I. Native species and habitats *Maintain, protect, manage, and restore native species and habitats in sufficient quantity and quality to allow native species to thrive.*	Objective 1: Preserve and improve habitat and connectivity by reducing impacts of instream structures that are barriers to native species passage.	Work with partners to remove or modify instream structures that impede native species migratory passage. Fund or provide technical assistance to partners for removing/modify at least one barrier per year annually through 2015.
		Fund or provide technical assistance to develop and distribute engineering guidelines for fish passage in Hawaii.
	Objective 2: Provide expertise to establish defined instream flow volumes in natural stream channels adequate to restore and maintain viable populations of native fish and invertebrates.	Provide technical assistance to partners to increase the number of streams with natural flow regimes.
		Document changes in populations of native fish and invertebrates above and below modified or discontinued diversions in flow-restored streams.
	Objective 3: Address chemical and physical water quality characteristics to reduce or eliminate impacts to native species:	Support projects that lead to an increase in the number of streams, estuaries and coastal water bodies meeting water quality standards, as indicated by a reduction in the number of waterbodies listed as impaired.
		Contribute to restoration actions that ensure fish are safe to eat, as indicated by a reduction in the number of DOH fish consumption advisories.
	Objective 4: Support effective management for rare native species and their habitats.	By 2011 complete surveys of known, historic and suspected Newcomb's snail populations, and evaluate snail predation risk posed by introduced species.
		Support completion of statewide anchialine pond management plan by DLNR,
		Contribute to development of damselfly recovery planning and implementation.
		Compile *Lentipes* data from Oahu from published and unpublished data for Stream Atlas.

Goal	Objective	Action
		Initiate invasive riparian vegetation control at priority estuary sites.
		Identify and map species distributions, make Atlas of Hawaiian Watersheds available in searchable database format for access on internet by end of CY 2012.
	Objective 5: Preserve and improve riparian and wetland habitats that are linked to streams, estuaries, nearshore marine habitat.	Increase number of riparian, estuarine and wetland acres protected and managed.
		Increase extent of riparian, estuarine and wetland habitat that support native species.
		Initiate hau control at priority locations with partners by 2013.
		Initiate mangrove control along priority estuary shorelines with partners by 2014.
	Objective 6: Develop and implement conservation projects that link inland and nearshore marine ecosystems to protect, restore and maintain self-sustaining aquatic communities.	Coordinate with Hawaii Coral Program to implement aquatic habitat restoration project adjacent to priority coral reef conservation areas.
		Collaborate with local groups implementing community-based management of inland and nearshore marine and coral reef systems.
<u>Goal II. Aquatic invasive species</u> *Address priority invasive species through a three-tiered approach combining: 1) prevention and interdiction, 2) early detection and rapid response, 3) and ongoing control or eradication.*	Objective 1: Support effective methods, tools and policies to detect, prevent and interdict the introduction and establishment of aquatic invasive species.	Revise screening procedures at ports of entry to better include AIS, hold workshops on aquatic species Hazard Analysis and Critical Control Points (HACCP) for port and airline staff.
	Objective 2: Support effective management methods and tools for control of priority invasive species in freshwater, estuarine, nearshore marine, and anchialine systems.	Implement one new control method in two priority watersheds: one urban site and one conservation site.
	Objective 3: Support effective education and outreach for preventing	Within three years write outreach plan for aquatic invasive interdiction and control for inland waters of Hawaii.

Goal	Objective	Action
	detecting and managing aquatic invasive species.	Within five years produce and air TV commercial addressing aquatic invasive, distribute written AIS material at Hawaii Fishing Fair.
		Convene Hazard Analysis and Critical Control Point (HAACP) workshops with partners actively doing aquatic restoration actions.
Goal III. Science and data *Develop and implement activities to collect, manage, and disseminate information needed to guide effectiveness of conservation, management, and recovery programs.*	Objective 1: Support research and monitoring to obtain data needed to guide conservation, management and recovery programs in stream, estuarine and nearshore marine waters.	Provide engineering and design information for support of fish passage.
		Support operation of stream gauges and hydrological analysis for support of native species.
		Contribute to statewide inventory of reservoir introductions and aquatic invasions.
		Assist review of impaired waters determination and contribute to TMDL biological data collection and analysis, support implementation of stream bioassessment protocols using macroinvertebrates.
		Conduct habitat surveys and inventories for aquatic organisms and improve efforts to make surveys more systematic and comprehensive.
		Support aquatic habitat data collection and analysis in Watershed Partnership monitoring programs.
	Objective 2: Support development and implementation of a framework to link watershed and nearshore marine physical and biological data across multiple geospatial and temporal scales.	Fund Watershed Atlas distribution and continued development of Species Atlas.
		Fund Statewide Inventory of Barriers to Fish Passage with State partners.
		Work with NFHAP Science and Data Committee representatives to ensure National Assessment of Fish Habitat adequately represents aquatic habitats of Hawai
	Objective 3: Improve cooperation among stakeholders through	Assist with a quality assessment/quality control report for Hawaii Stream Atlas and related products.

Goal	Objective	Action
	dissemination of research and data regarding aquatic populations and habitat condition.	Provide technical assistance for Hawaii Dept. of Health water quality reports.
	Objective 4: Support research and monitoring to obtain data needed to assess effects of global climate change on stream, estuarine and nearshore marine waters.	Work with the Pacific Islands Climate Change Cooperative to ensure that evaluation of regional effects of climate change consider aquatic habitats.
Goal IV. Partnership and education *To improve partnerships and cooperative efforts and to strengthen outreach and education leading to improved understanding of native aquatic wildlife resources in Hawaii.*	Objective 1: Establish partnerships with private landowners, government agencies, and community groups to facilitate sustainable resource use and implement identified conservation actions.	Develop web site highlighting HFHP and its vision/mission, highlight stream and estuary restoration-related projects. Incorporate HFHP web presence with to NFHAP and related web sites.
		Identify existing networks and locally-based watershed alliances and coastal conservation groups with existing projects.
		Develop and distribute a synopsis of federal, state and NGO grants and other funding support appropriate for aquatic habitat restoration activities by cooperators.
	Objective 2: Increase public understanding of aquatic wildlife and habitat by developing and implementing a strategic conservation education program that would include public awareness campaigns.	Identify existing networks and contacts for locally-based watershed alliances and and coastal conservation groups on-going projects.
		Convene a stream restoration symposium or workshop, Steering Committee will investigate sponsoring symposium during Hawaii Conservation Conference.
		Increase partnership involvement in innovative approaches to protection and restoration of aquatic habitat.
	Objective 3: Improve conservation education of visitors and the tourism industry regarding natural history, environmental value, and appropriate	Support education of visitors regarding the natural history, environmental value, and appropriate cultural considerations of inland and coastal marine waters, especially waters of high conservation value.

Goal	Objective	Action
	cultural considerations of inland and nearshore marine waters.	Develop educational module on the topic of aquatic resource conservation for the Kapiolani Community College *Ho'okipa Me Ke Aloha / Ka'ana I Na Loina Hawai'i* - Sharing Hawai'i's Heritage Visitor Industry Training Certificate.

To effectively plan and implement an aquatic conservation program in recognition of the unpredictable onset of climate change the HFHP will focus on landscape-scale approaches to conservation that integrate science and management. This will include placing particular emphasis on: 1) understanding ecological systems and function, 2) applying model-based projections, 3) species-habitat linkages, 4) risk assessment, and 5) adaptive management.

Organizational Responsibilities

The organizational structure of the HFHP will include a standing Steering Committee composed representative partners with participation based upon interest and availability (Appendix II). The primary role of the Steering Committee is to implement this plan (and associated prioritization of stream and estuary protection, restoration, and enhancement projects) and a secondary role will be to foster communication between partners and work with cooperators to support implementation of successful aquatic habitat restoration projects. The Steering Committee will meet no less that twice per year and take the lead role in soliciting projects, communicating timelines for proposal requests, coordinating multiple funding sources and ranking projects for funding consideration. Subcommittees will be formed to address specific issues that require ongoing attention; these include the Science and Data Subcommittee, which will assist interaction between partners with technical capacity and will assist with national reporting initiatives. The Communications Subcommittee will ensure that meaningful and scientifically accurate outreach material reaches appropriate audiences through media and other outlets. When input is required on native Hawaiian resource uses, a Subsistence and Cultural Advisors subcommittee will be formed ensure that resource users provide advice and consultation regarding HFHP actions that may affect these constituencies.

The goals and objectives outlined in this plan will serve as the basis for the conservation actions undertaken by the HFHP through 2020. The Strategic Plan will be updated, if needed, in coordination with the National Fish Habitat Board review of the HFHP in 2012.

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Appendix I – Focus Watersheds

Several sources of information were used by the partnership Watershed Subcommittee to identify priority areas for on-the-ground restoration. The *Atlas of Hawaiian Watersheds and their Aquatic Species*, which is an analytical product developed with partial support from the partnership, was an important data source. The Atlas includes a statewide stream quality rating system that incorporates stream survey data and other biological information, watershed size, hydrologic features and land use characteristics. Preliminary results from the Hawaii Islands portion of the *National Assessment of Fish Habitat* were used to understand potential relative disturbance values of watersheds/subwatersheds on a standardized statewide basis. A draft version of the *Hawaii Statewide Fish Passage Barriers Inventory*, another database product developed with support from the partnership, was also used to understand the potential impacts of man-made barriers to upstream migration and downstream dispersal of native freshwater organisms. A growing component of partnership activity is addressing watershed-related impacts to coastal marine and coral reef areas across the freshwater/marine interface. Watersheds located adjacent to priority coral reef conservation areas identified by the Hawaii Coral Reef Working Group in *The Hawaii Coral Reef Strategy: Priorities for Management in the Main Hawaiian Islands* were given priority in selection of focus watersheds. These data sources will continue to be developed and new information will be incorporated to guide selection of geographically focused partnership-supported restoration projects.

Table A-1. Focus watersheds and coastal segments selected for HFHP fish passage and fish habitat restoration project planning and design.

Focus Watershed	Primary habitat restoration needs	Priority	Notes
East Maui Watersheds and Coastal Areas – Huelo to Nahiku	Fish passage (irrigation diversions, road crossings)	High	Partial instream flow restoration for some streams in this region
West Maui Watersheds and Coastal Areas – Wailuku to Honolua	Fish passage (irrigation diversions, flood control)	High	Partial instream flow restoration for some streams in this region
North Shore Kauai Watersheds and Coastal Areas – Hanalei to Limahuli	Fish passage (irrigation diversions, road crossings), riparian vegetation control	Mid	Impacts of area stream diversions on migratory animals not well known
Kahana Watershed and Bay, Oahu	Invasive riparian vegetation control	Mid	Invasive trees in lower watershed
KoolaupokoWatersheds – Kahaluu to Hakipuu, Oahu	Invasive riparian vegetation control, wetland, stream channel alteration	Low	Support integration of inland and coastal restoration efforts
Waikele/Kipapa Watershed, Oahu	Fish passage (road crossings), stream channel alteration, nonpoint source pollution, invasive species)	Low	Large stream system with multiple impacts

Appendix II – Partners List

Note: * indicates Steering Committee member

Private / Large landowner
- Kamehameha Schools, Land Assets Division, Water Resources Management *
- Maui Land and Pineapple, Inc., West Maui Conservation Team, Makai Stewardship Program *

Industry Group
- Hawaii Farm Bureau*

Watershed Groups
- Hanalei Watershed Hui / Hanalei American Heritage River Program*
- Hawaii Association of Watershed Partnerships*
- East Maui Watershed Partnership
- West Maui Watershed Partnership
- East Molokai Watershed Partnership
- Kohala Watershed Partnership
- Koolau Mountains Watershed Partnership
- Kauai Watershed Alliance
- Hui o Koolaupoko

NGO
- The Nature Conservancy, Hawaii
- The Oceanic Institute
- Hawaii Wetland Joint Venture
- Hawaii Conservation Alliance
- KEY Project

State of Hawaii
- Hawaii Department of Land and Natural Resources
    - Division of Aquatic Resources*
    - Division Forestry and Wildlife*
    - Commission of Water Resource Management*
    - Natural Area Reserve System
    - Division of State Parks
- Hawaii Department of Health
    - Environmental Planning Office, Stream Bioassessment Program*
    - Clean Water Branch
- Office of State Planning
    - Coastal Zone Management Program
- Office of Hawaiian Affairs

Local / County
- Honolulu Board of Water Supply

University Researchers
- Michigan State University, Department of Biology
- Hawaii Pacific University
- University of Hawaii, Manoa, Department of Zoology, Institute of Marine Biology
- University of Hawaii, Hilo, Cooperative Studies Unit
- North Carolina State University, Department of Biology
- Tulane University, Department of Ecology and Evolutionary Biology

Federal

- U.S. Fish and Wildlife Service
  - Pacific Islands Fish and Wildlife Office*
  - Pacific Islands National Wildlife Refuge Complex
- U.S. Geological Survey
  - Water Resources Division, Hawaii Water Science Center
  - Biological Resources Discipline, Pacific Islands Ecosystems Research Center*
- U.S. Forest Service
  - Southwest Experiment Station, Institute of Pacific Islands Forestry*
- NOAA Fisheries Pacific Islands Regional Office
  - Habitat Conservation Division*
  - NOAA Restoration Center
- NOAA National Ocean Service
  - Pacific Island Service Center
- U.S. Environmental Protection Agency
  - Pacific Islands Contact Office*
- U.S. Department of Agriculture
  - Natural Resources Conservation Service *
- U.S. Army Garrison Hawaii

National Park Service, Inventory and Monitoring Program

Appendix III – Organizational Structure

HAWAII FISH HABITAT PARTNERSHIP
ORGANIZATIONAL STRUCTURE

Introduction:
The intent of this document is to establish a self-identified, self-organized, self-directed group of participating government agencies, non-governmental organizations, and private entities that carry out aquatic habitat restoration in the Hawaiian Islands. This partnership uses shared expertise and technical knowledge to plan, fund and implement environmental restoration projects to benefit native aquatic species.

Section 1.
Partners agree in principle that aquatic habitats and the aquatic species that these habitats support have intrinsic value and represent important environmental resources for residents of Hawaii, the nation, and the world.

Section 2.
Partners recognize that a variety of natural and human-caused changes have altered aquatic habitats in the Hawaiian Islands and the result of these changes may diminish environmental functions and intrinsic values.

Section 3.
Partners who participate in this working group will apply sound scientific and technical knowledge, environmental management, cultural sensitivity, and socio-economic principles to restore, enhance and maintain aquatic habitats and the biodiversity supported by these habitats.

Section 4.
By working together, members of this organization enhance the effectiveness of efforts to protect and maintain healthy aquatic ecosystems.

Article I: Name
This organization is called the Hawaii Fish Habitat Partnership.

Article II: Membership
Membership in the HFHP is open to organizations with public trust responsibilities and stewardship missions that include the goal of restoring, enhancing and maintaining aquatic habitats and the biodiversity that these habitat support.

Article III: Structure
The Hawaii Fish Habitat Partnership is structured as follows:

The Hawaii Fish Habitat Partnership seeks to cooperatively develop and implement aquatic conservation projects in Hawaiian streams and estuaries through the support and participation of government agencies, non-governmental organizations, and the private sector.

- *Partners Group* – organizations are considered partners based on interest expressed in communication via electronic and regular mail, professional meetings, other outreach, and informal contact.
- *Steering Committee* – A subgroup of key partners representing a range of agency, non-governmental organization and private interest perspectives will be solicited from the larger partners group based on interest, availability and agency mission and capacity.
- *Science and Data Subcommittee* – This subgroup facilitates participating agencies that posses assessment, monitoring and analytical capacity will cooperatively contribute technical assistance to HFHP projects.
- *Communications Subcommittee* – This subgroup reviews written outreach material including fact sheets and newsletters, may respond on the part of the Partnership to media inquiries and seek out opportunities for outreach and collaboration with new and non-traditional partners.
- *Subsistence and Cultural Advisors Subcommittee* – A group of private individuals, non-governmental organizations, and agency partners will provide consultation and advice on subsistence and cultural use of aquatic resources.

Article IV: Activities
The primary role of the HFHP is to implement the partnership strategic plan, a secondary role is to provide technical assistance and foster communication among partners. The HFHP has no authority beyond those of its individual members' organizations.

Article V: Governance
The Steering Committee forms the decision-making body of the HFHP. The Steering Committee strives to achieve consensus-based decision-making. If required, an appropriately-trained facilitator may be selected to guide committee decision process.

Article VI: Coordination
Logistical and staff support is provided by participating members on an irregular and infrequently rotating basis, according to interest and organization capacity. There is no implied requirement to provide staff support to be considered a partner in good standing.

Article VII: Meetings
The Steering Committee will meet no less than twice per year. Subcommittees will meet on an as-needed basis.

Article VIII: Amendment
The Steering Committee may amend this Charter in order to better achieve the goals of the partnership through facilitated consensus-based agreement.

The Hawaii Fish Habitat Partnership seeks to cooperatively develop and implement aquatic conservation projects in Hawaiian streams and estuaries through the support and participation of government agencies, non-governmental organizations, and the private sector.