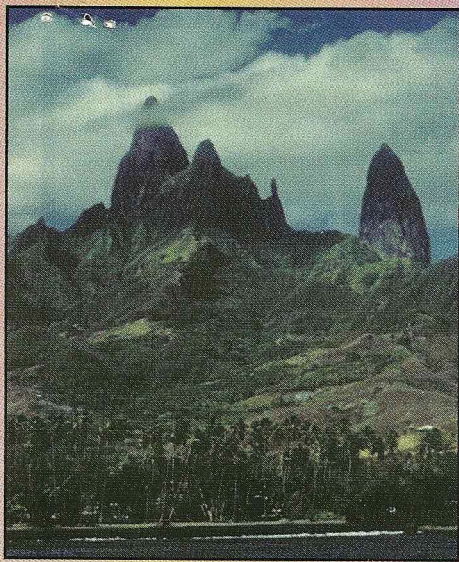


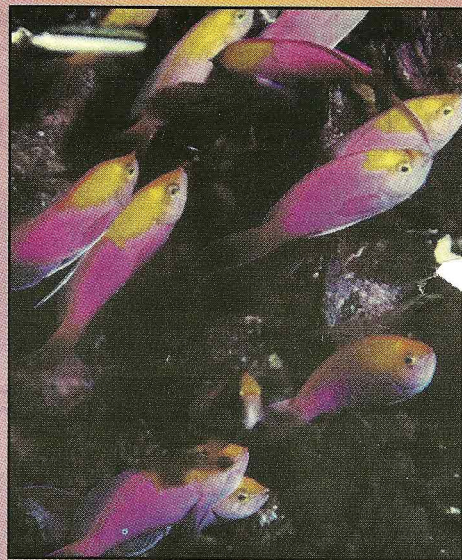
By John Hoover



The island of Ua Pou, Marquesas.

occupying 58 square miles and rising to 4,134 ft. (Its main claim to fame seems to be that French painter Paul Gauguin is buried there.) Next in size is the "capital" island, Nuku Hiva, situated in the north and rising to 3,978 feet. The young Herman Melville once jumped ship in this paradise island, later recounting his unusual experiences in his highly successful novel, *Typee*.

Although part of French Polynesia, the Marquesas are geographically and culturally distinct. After European contact (beginning with the Spanish in 1595, who named them after the Viceroy of Peru) most of the native Polynesians succumbed to foreign diseases. Today only about 7,500



Regal Anthias, Pseudanthias regalis.

EXPEDITION TO THE MARQUESAS

A Look At Some New And Remarkable Reef Fish

The Marquesas are a group of high islands lying 750 miles northeast of Tahiti. Dramatic and off the beaten track, they fall in two loose clusters of six islands in the north and four in the south, plus some tiny islets. Hiva Oa in the southern group is largest,

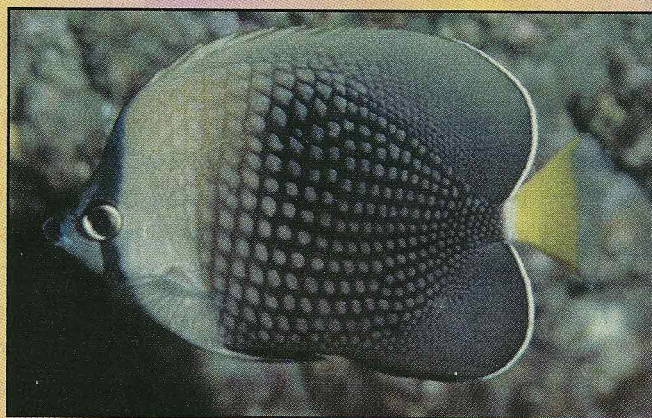
remain. They, plus a smattering of Europeans are the sole inhabitants. With such a small population, everyone knows everyone and there is little or no crime. The islands have good infrastructure -- communications, roads, medical care -- but are otherwise relatively undeveloped. Agricultural products, mostly copra and vanilla (the

former heavily subsidized by France), are the economic mainstays. Tourism is in its infancy.

Geologically, the Marquesas (Marquises in French) are all of volcanic origin and rise abruptly from the sea, unprotected by barrier reefs. The scenery is spectacular. Vaipo waterfall on Nuku Hiva, plunging



Hiva Anthias, Pseudanthias hiva.



Tahiti Butterflyfish, Chaetodon trichrous.



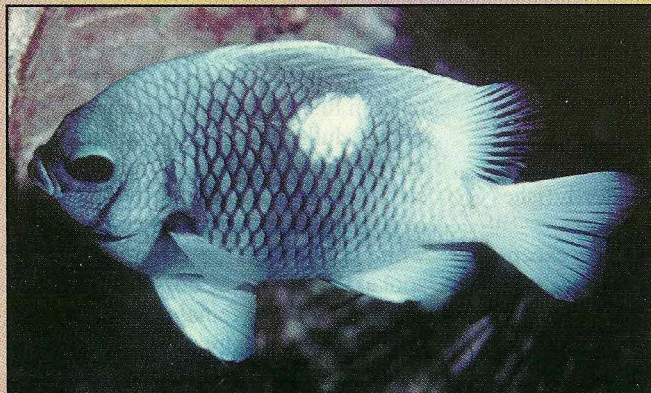
Flame Angelfish, Centropyge interrupta, Marquesan color forms.



Marquesan Coris (initial phase), *Coris marquesensis*.



Hewett's Coris (terminal male), *Coris hewetti*.



Marquesan Dascyllus, *Dascyllus strasburgi*.



Mixed school of Blue-Lined Snappers and Mimic Goatfish, *Lutjanus kasmira*, *Mulloidichthys mimicus*.

1,200 ft., is one of the world's highest. Pinnacles and needles of weathered rock separate lush green valleys, some uninhabited. (Mossy, overgrown remains of stone house and temple platforms show that this was not always the case.) Beautiful deep bays alternate with rocky cliff shorelines.

Underwater, the islands are equally interesting although coral is scarce and visibility often poor. Marquesan waters are rich with plankton and support abundant marine life. Manta rays and schooling hammerhead sharks are common. Melon-headed whales (actually a kind of dolphin, and rare most everywhere else) congregate in some areas by the hundreds. Reef fishes abound too, and many Marquesan species occur nowhere else. According to a recent paper by Dr. John

E. Randall and John L. Earle, this isolated archipelago boasts an endemism rate of 12 percent for fishes -- fourth highest in the world. Only Hawaii, Easter Island, and the Red Sea have a higher proportion of endemic fishes. (Hawaii tops the list at about 23 percent.)

Endemism aside, the Marquesas are faunistically impoverished compared to the rest of French Polynesia, including the Tuamoto Atolls 300 or so miles to the southwest. Currents run the wrong way to transport larvae from there, and the coral reef habitat that many South Pacific fishes might prefer is absent. Why corals fare so poorly in the Marquesas is not clear, but there are almost no reefs and we saw less than half a dozen obvious species of coral. One, a branching pocilloporid, appears

not to have survived a recent El Niño episode. Periodic cold equatorial upwellings alternating with warm El Niños might be responsible for the lack of corals, but this is just a wild guess. None of the scientists I have asked had a sure answer.

In October 1999 I traveled to the Marquesas with a mixed group of shell collectors, entomologists and ichthyologists, all looking for the rare and unusual. We visited only two islands, Nuku Hiva and Ua Pou, staying in bungalows at Taiohae, the main village on Nuku Hiva, and at a guest house at Hakahau, the main settlement on Ua Pou. The insect people spent their days inland following streams up the valleys or exploring the high ridges looking for new species. The half dozen or so shell collectors dived day and



Whitley's Boxfish, *Ostracion whitleyi* (male).



Pompom Crab, *Lybia tessellata*, Marquesan color form.

night feverishly turning over rocks in search of rare cowries, cones, and other shells. The two ichthyologists, John Earle and Ross Robertson, collected tissue samples of Marquesan fishes for DNA analysis. Being on vacation, I simply dived and took pictures. I hoped particularly to get photos of the endemic Marquesan fishes, some of which had not yet been described. We dived with the Centre Plongée Marquises, the only dive operation in the Islands. Xavier Curvat, a Frenchman with 8 years experience in the area, is the highly competent owner.

Xavier's tee-shirts depict a diver startled by a giant hammerhead. He promises his clients a 90 percent chance of seeing these animals, and we weren't disappointed. "Hammerhead Sentinel" a headland ten minutes from the dock was our checkout dive site, and typical of the sites we visited. Cliffs of dark volcanic rock 20 to 30 ft. high plunged into the sea, bottoming out into boulders, rubble, or sand at about 70 ft. Ledges, funnels, and undercuts on the walls provided plenty of habitat for small fishes. In deeper water off the point itself half a dozen or so hammerhead sharks milled about, sometimes approaching within 15 ft. of us. Every so often the dark form of an enormous manta ray passed overhead. (There were to be more mantas in the Marquesas than anywhere else I have dived.) The nooks and crannies of the wall itself were alive with small reef fish. Aggregations of snappers and goatfish hovered over the rocky or rubbly bottom and schools of fusiliers swept past in midwater. Most of our dive sites were similar. Occasionally Xavier took us to coves or protected bays, and twice we explored large caves with underwater entrances. Unfortunately, plankton and particulate matter lowered visibility to 20-30 ft. for most of our dives.

Perhaps the most conspicuous endemics were Regal Anthias (*Pseudanthias regalis*), which were abundant along the walls. Males are intense purple with an orange-yellow cap that usually extends about halfway down the back. Females are mostly orange-yellow. We often saw Regal Anthias in the close vicinity of large morays, usually the feisty Tinsnip or Masked Moray (*Gymnothorax breedeni*). *Pseudanthias hiva*, a recently named endemic anthias which resembles *P. cooperi* from the Central Pacific, was far less common. Females were salmon with a narrow reddish bar down the center of the body. Only once,

off the Island of Ua Pou at 120 ft., did I see the gorgeous mature males. Salmon, with or without the narrow reddish bar, they sport a bright red tail. Its light blue upper and lower margins each culminate in a prolonged filament. Having been too deep for too long, I had insufficient time to get the great picture they deserve.

The most common chaetodontid was the Tahiti Butterflyfish (*Chaetodon trichrous*). Basically brown with a light face and dark bar through the eye, it is similar in appearance and habits to Klein's Butterflyfish (*C. kleinii*) which in other parts of the Pacific is often the most abundant species of its family. The Tahiti Butterflyfish is endemic to the Society, Tuamotu and Marquesas Islands, where Klein's does not occur. At least fourteen other butterflyfishes occur in the Marquesas. All are common Indo-Pacific species except for the Marquesan Butterflyfish (*Chaetodon declivis*), a member of the deep-dwelling species complex that includes Tinker's Butterfly (*C. tinkeri*) from Hawaii and the Marshall Islands. I would have dearly loved to have seen *C. declivis* but it was not to be. We showed our dive guides a picture but even they had never encountered it. It might not even occur in the northern Marquesas as the few records have all been from the southern islands and the Line Islands to the northwest. Unlike its better-known relative, Tinker's Butterflyfish, the diagonal patch on its back is orange-yellow instead of black.

No endemic angelfishes have yet been discovered in the Marquesas. The predominant pomacanthid along the walls was the Lemonpeel Angel (*Centropyge flavissima*), a widespread Pacific species that occurs as far east as Easter Island. Bright yellow outlined delicately with iridescent blue, with discrete touches of blue around the mouth, eyes, and gills; it is neither shy nor hard to see. More exciting was a species occurring in the zone of large rubble at the base of the walls. Here, if one looked carefully, Flame Angelfish *Centropyge loricula* could be seen. Throughout most of their range (from the Great Barrier Reef to Hawaii) these beauties are typically bright red marked with five or six vertical black bars. In the Marquesas, however, they are uniform red except for the first short bar on the gill cover. Some individuals have one or two more black bars but these are much reduced. Could these unusual Flames represent a new species? Dr. Randall can find no other physical differences between

Marquesan and other *Centropyge loricula*, so for now they remain under the same name. The only other angelfish recorded from the Marquesas is the small, secretive White-Tail Angelfish (*Centropyge flavicauda*) which I did not observe.

Two endemic species of *Coris*, described by Dr. Randall in 1999, inhabit the Marquesas. Both are spectacular. *Coris marquesensis*, the Marquesan version of the well-known Indo-Pacific Yellowtail *Coris* (*C. gaimard*), is even more striking than that species. Young adult females are orange with four rows of iridescent blue spots down the body, partly joined to form lines. As they mature the orange dulls and the spots separate, increase in number and diminish in size. Juveniles look much like juveniles of *C. gaimard*, orange-red with five white saddles, but have a large black spot at the rear of the dorsal fin. Males, less colorful than females, were large, uncommon and extremely skittish. As far as I could see they resembled male *Coris gaimard*, but I was unable to photograph them or even get a good look at them. Neither, apparently, was Dr. Randall for no color description for the male appears in his paper.

The other Marquesan *Coris* is even more interesting. When I first saw one I thought I had discovered a new wrasse of the genus *Cirrhilabrus*. About 5 in. long at most, these wrasses lived in harem groups over rubble bottoms. Males, ordinarily greenish and with dull brownish red stripes on head and body, displayed conspicuously to females by swimming well off the bottom, raising their large red dorsal fin, and quickly changing their reddish stripes to a light, bright, iridescent blue. The color change was quite amazing. The females -- small, drab and inconspicuous -- seemed hardly worthy of the fuss. Dr. Randall states that no other wrasses of the genus *Coris* display this type of courtship behavior. He recently named the species *Coris hewetti*.

There are at least six endemic damselfishes in the Marquesas. The one that caught my eye most often was the Marquesan Dascyllus (*Dascyllus strasburgi*) which as an adult resembles an unusually pale Threespot Dascyllus (*Dascyllus trimaculatus*). Groups of juveniles and subadults inhabited large carpet anemones, probably *Stichodactyla mertensii*. If given the chance, they would doubtless also shelter in heads of branching corals like other *Dascyllus* species, but the one

species of branching coral we saw had been killed by warm El Niño waters several years before. Almost no intact skeletons remained, only bits and pieces in the rubble.

Another common damsel is the recently described Marquesan Sergeant (*Abudefduf conformis*) which

resembles the common Indo-Pacific Sergeant (*A. vaigiensis*). There are also at least three undescribed species of *Chromis* (none particularly colorful) and the recently described *Stegastes robertsoni*, an inhabitant of sheltered bays. Every morning at dawn, males of this normally drab, all-black "farmer"

damselfish take on conspicuous, highly contrasting black-and-white spawning coloration, a phenomenon that I observed in some deep tide pools a short walk from our cottages. The species name honors ichthyologist D. Ross Robertson, a member of our expedition! The species itself, down to the courtship display, closely resembles *S. nigricans* of the Indo-Pacific.

Five species of boxfish inhabit the Marquesas. The most interesting to me was Whitley's Boxfish (*Ostracion whitleyi*). Coming from Hawaii, I am familiar with the brown and white females of the species but the bright blue males are almost never found. In the Marquesas, however, big blue males were as common as females. It was a treat to see them after so many years of deprivation. Females from the Marquesas and Society Islands have numerous small brown spots both on the underside and in the white band; these spots are sparse or lacking in Hawaiian specimens. The Marquesas

seem to be the center of population for Whitley's Boxfish, which occurs from French Polynesia to Hawaii and as far north as Midway Atoll.

Big schools of Blueline Snappers (*Lutjanus kasmira*) were common and if one looked closely, one saw that they often contained impostors -- Mimic Goatfish (*Mulloidichthys mimicus*). The goatfish is apparently more desirable to predators than the snapper, so the goatfish mimics the snapper and schools with it. It takes a keen eye at first to tell the difference between the two species. The goatfish have a distinctly forked tail and two dorsal fins while the snappers have a squared-off

tail and one continuous dorsal fin. Of course the goatfish are usually careful to keep their barbels tucked up, for these would immediately betray them. Mimic Goatfish are endemic to the Marquesas and Line Islands.

Coming to the surgeonfish, there are two, actually three, of interest. When young, *Acanthurus pyroferus*, among the most common acanthurids in the Marquesas, mimics the Lemonpeel Angelfish, the most common angelfish. I was never sure I could tell which was which unless I could see the backward-pointing spine on the gill cover that proved I was watching an angelfish.

Unfortunately, I was never successful in photographing a mimic. But this particular example of mimicry is not unique to the Marquesas. What is unique is an endemic relative of the common Indo-Pacific Orangeband Surgeonfish (*Acanthurus olivaceus*). It has a shorter orange band and the pattern on its caudal fin is reversed, thus the name *A. reversus*. Also, a subspecies of the widespread Convict Tang (*Acanthurus triostegus*) occurs only in the Marquesas. Instead of a black bar at the base of the tail it has two black spots.

Two endemics I did not find were the Marquesan Toby (*Canthigaster marquesensis*) and the dartfish *Ptereleotris melanopogon*. The toby apparently resembles the Lantern Toby (*C. epilampra*), an attractive species that I see occasionally in Hawaii, usually in deeper water. The dartfish occurs most often below 60 ft.

Another animal of interest was a tiny pompom or boxer crab which sported a color pattern quite different from the Indo-Pacific *Lybia tessellata*. These were not uncommon under stones in the rubble. I collected three, thinking they might be a new Marquesan species. Unfortunately, crab specialist Peter Davie of the Queensland Museum could find no distinct characters other than color so they remain a geographic color variant.

I'm not sure if our trip ended with a bang or a whimper. On the last dive of the last day a 3-4 ft. Giant Moray (*Gymnothorax javanicus*) attacked John Earle without provocation as he swam past its lair. Seizing his hand, the eel pierced both the back and the palm with its needle-sharp teeth, then pulled back causing laceration and damage to tendons and nerves. John took it well but was in obvious distress during the 30-minute boat ride back to Taiohae, his hand wrapped in a bloody towel. At the town clinic he received excellent treatment. As chance would have it, a French heart surgeon, evidently tired of the rat race in Paris, had recently relocated to quiet Nuku Hiva. She worked on John for hours, carefully sewing together and reconstructing his tendons. Had John been home in Honolulu, he would not have had speedier or more expert medical care. In weeks he was almost completely healed.

There is much more to see in the Marquesas, above water and below, than we could sample in two short weeks. The islands would definitely be worth visiting again. As far as I know, no one has ever kept any of these fabulous Marquesan fishes in an aquarium. Someday, I will be back.

