

# Marine protected area network

## Hawaii's western shore, USA

May 2009



Photo: Andrew Harwood, Washington State University, Vancouver, WA.

**Name of site/location:** Marine protected area network along the Island of Hawaii's western shore, USA

**Site:** The Hawaiian archipelago is largest and most isolated in the world, giving rise to species that occur nowhere else on earth, such as the Potter's angelfish (*Centropyge potteri*), Bandit angelfish (*Holacanthus arcuatus*) and Tinker's Butterflyfish (*Chaetodon tinkeri*). The western shore of the Island of Hawaii (hereinafter West Hawai'i) hosts some of the most spectacular coral reefs within the main Hawaiian Island archipelago and has the most productive aquarium fishery in the State, with yellow tang (*Zebrasoma flavescens*) and goldring surgeonfish (*Ctenochaetus strigosus*) as the two commonly harvested species.

**Project:** In 1999, a network of Marine Protected Areas (MPAs) was established in West Hawaii. In addition to the

existing 13 MPAs, the State of Hawaii set aside 9 new MPAs that prohibited aquarium fish harvesting. These MPAs were established in response to public concern regarding perceived overharvesting of reef fishes from the aquarium trade and conflict between aquarium fishers and other community stakeholders, such as environmental organizations, recreational dive shops, Hawaiian communities, and the general public. Collectively, these MPAs closed 35.2% of West Hawaii's 110 mile long coastline to aquarium fish harvesting.

**Benefits:** In 2007, the perceptions of thirteen fishers with 10+ years experience in West Hawaii's aquarium fishery were evaluated to determine if their socioeconomic status changed subsequent to the implementation of an MPA network and if they were satisfied with their level of income from the fishery. Most fishers indicated the fishery was

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their sole source of income and they comprised 35% of the total active aquarium fishing fleet in West Hawai'i. Additionally, catch reports were analyzed to examine the impact of the MPA network on fishery yields.

The socioeconomic attributes evaluated included: 1) overall economic status, 2) bank savings, 3) health, 4) family, 5) work, and 6) overall well-being. The fishers responded stating that nearly all socioeconomic attributes were either unchanged, better, or much better subsequent to establishing the MPA network, with the exception of two fishers who said their health and bank saving worsened. Additionally, 83% of the fishers surveyed indicated they were satisfied or extremely satisfied with their level of income from the aquarium fishery. Overall, it appears the socioeconomic status has improved for fishers who have remained active in the aquarium fishery since before the MPA network was implemented in West Hawai'i.

Based on aquarium collector catch reports, the total catch and the catch for the two most commercially viable species (i.e., yellow tang and goldring surgeonfish) was higher in 2006 than in its previous 40 year history. The price per yellow tang received by aquarium fishers also increased by an average of 33% subsequent to establishing the MPA network. Comparisons of reef fish abundance following 7 years of protection demonstrated that this network had successfully increased yellow tang abundance by 72% within MPA boundaries

Moreover, the number of fish caught per one day of aquarium fish harvesting was higher in West Hawai'i than elsewhere in the state and maintains an upward trend relative to initial catch numbers prior to the MPA network establishment. Some of the increase could be due to spillover from the MPAs; however, there are other factors that may be contributing to this pattern i.e., better understanding the reef and behavior of fish, operating equipment more effectively, adopting new technologies and fishing techniques, etc.

**Contact:** (both present at IMCC)

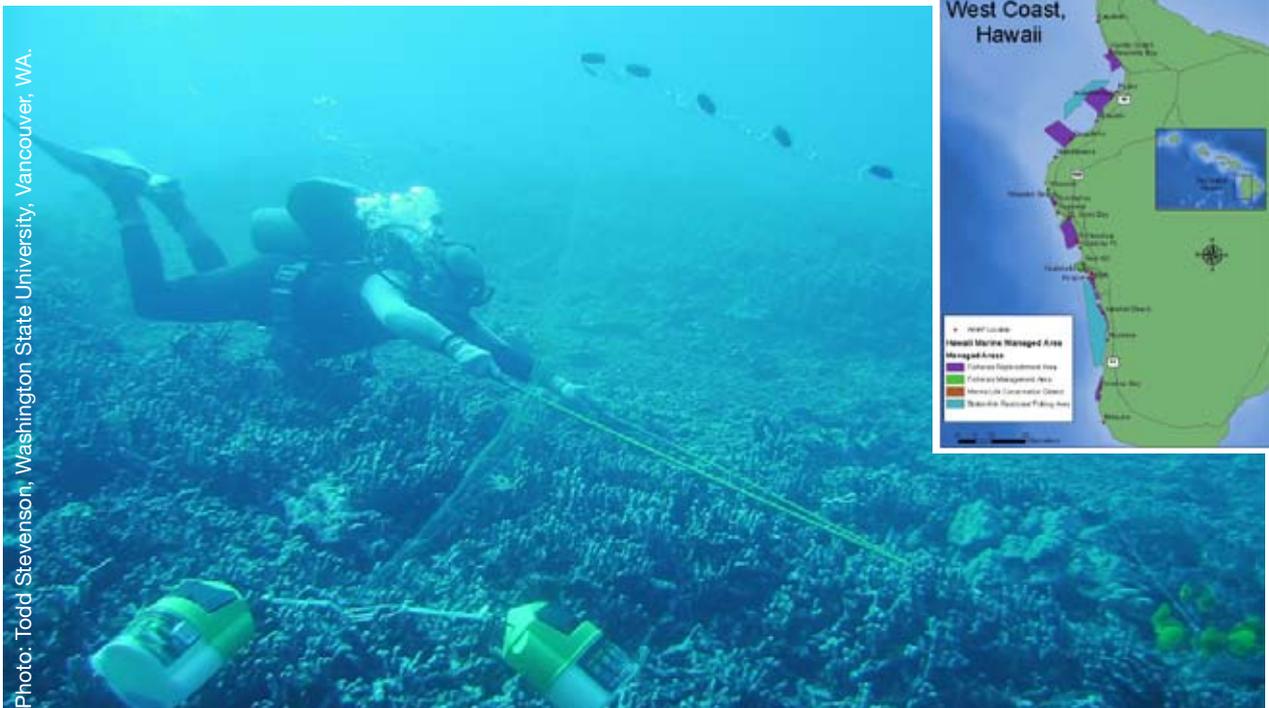
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Please direct questions related to the fisher socio-economic to Stevenson, and questions related to the overall history of the MPAs and the catch reports to Tissot.

**Credits:** This case study was derived from: A Marine Protected Area Network Delivers Economic and Social Benefits to Aquarium Fishers in Hawaii.

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