

# The Hawai'i Cooperative Fishery Research Unit— Celebrating **50 Years** of Service to the People and Marine Resources of Hawai'i

**T**he Hawai'i Cooperative Fishery Research Unit would like to thank all of its partners for an incredibly successful and productive 50 years. Some of the major accomplishments are highlighted below:

- ◆ The Hawai'i Cooperative Fishery Research Unit is a partnership between the U.S. Geological Survey, the University of Hawai'i system, the Hawai'i Department of Land and Natural Resources, and the U.S. Fish and Wildlife Service.
- ◆ The Unit was formed in 1966 at the University of Hawai'i at Mānoa and was housed there through 2012, when it was relocated to the University of Hawai'i at Hilo.
- ◆ The Unit was established with a shared vision of developing the scientific knowledge and natural resource professionals necessary to ensure the sustainability of Hawaiian natural resources for future generations.
- ◆ Since its inception, 53 graduate students (40 M.S. and 13 Ph.D.) have completed their degrees under the direct supervision and guidance of Unit scientists.
- ◆ Since 1996, 40 percent of Unit alumni have gone on to careers in academia, 30 percent in State and Federal natural resource agencies, and 20 percent in the private sector (environmental consulting or advocacy).
- ◆ Unit scientists have published a total of 93 peer-reviewed journal articles and 36 technical reports, as well as countless abstracts for oral and poster presentations.
- ◆ The research of Unit scientists spans the globe with projects completed in Hawai'i, throughout the Pacific Islands, and around the world.



◆ The impact of the science conducted at the Hawai‘i Cooperative Fishery Research Unit has been felt worldwide, and has provided critical information and insights on the status of Hawaiian freshwater and marine resources. Here are but a few highlights that have had direct effect on how freshwater and marine resources are managed in Hawai‘i:

- Unit scientists and students documented that marine protected areas contributed a significant amount of biomass of fish species targeted by Hawaiian fishermen to the waters surrounding the protected area.<sup>1</sup>
- Hawaiian estuaries were documented to be important nursery habitats for Giant Trevally (*ulua aukea*) and Bluefin Trevally (*‘ōmilu*) by Unit scientists and students.<sup>2</sup>
- The ecological importance of Giant Trevally and Bluefin Trevally was emphasized in work conducted by Unit scientists and students in the Northwestern Hawaiian Islands. Researchers found that each individual fish consumed roughly 110 to 330 pounds (50 to 150 kilograms) of fish per year, suggesting that their depletion from the waters around the main islands could have implications for other species in the nearshore fish assemblages.<sup>3</sup>
- Unit scientists were the first to recognize that the differently colored males and females of the Hawaiian freshwater goby, *Lentipes concolor* (‘o‘opu ‘alamo‘o), were the same species and recognized that the species was being threatened by

degradation and alteration of Hawaiian streams.<sup>4</sup>

- Unit scientists and students conducted pioneering research on the diets of the six snapper species (‘ehu, gindai, kalekale, lehi, onaga, and ‘ōpakapaka) that are part of the regulated “Deep Seven” deepwater bottomfish fishery of Hawai‘i, describing how the six species partitioned food resources.<sup>5</sup>
- The amount of damage sustained by corals through the feeding activities of reef fishes was assessed by Unit scientists and students and found to be influenced by the total area covered by living coral, suggesting that recovery after major disturbance events may be limited by fish feeding activities.<sup>6</sup>
- Unit scientists and students have developed relationships between the structural complexity of Hawai‘i coral reefs and the composition of the fish assemblages living there, leading to a better classification of Hawaiian reefs and more focused conservation and management efforts.<sup>7,8</sup>
- Unit scientists and students have assessed the impacts of introduced snappers and Peacock Grouper (*roi*) on Hawaiian reef fish assemblages and found that these invasive species have not yet had a detectable impact.<sup>9,10,11</sup>

We are looking forward to another 50 years of serving the research and educational needs of our cooperators.

**Mahalo.**

Tim Grabowski, Unit Leader

<sup>1</sup>Stamoulis, K.A., and Friedlander, A.M., 2013, A seascape approach to investigating fish spillover across a marine protected area boundary in Hawai‘i: *Fisheries Research*, v. 144, p. 2–13, <http://dx.doi.org/10.1016/j.fishres.2012.09.016>.

<sup>2</sup>Smith, G.C., and Parrish, J.D., 2002, Estuaries as nurseries for the jacks *Caranx ignobilis* and *Caranx melampygus* (Carangidae) in Hawaii: *Estuarine, Coastal and Shelf Science*, v. 55, no. 3, p. 347–359, <http://dx.doi.org/10.1006/ecss.2001.0909>.

<sup>3</sup>Sudekum, A.E., Parrish, J.D., Radtke, R.L., and Ralston, Stephen, 1991, Life history and ecology of large jacks in undisturbed, shallow, oceanic communities: *Fishery Bulletin*, v. 89, no. 3, p. 493–513, <https://swfsc.noaa.gov/publications/CR/1991/9173.PDF>.

<sup>4</sup>Maciolek, J.A., 1977, Taxonomic status, biology, and distribution of Hawaiian *Lentipes*, a diadromous goby: *Pacific Science*, v. 31, no. 4, p. 355–362, <http://hdl.handle.net/10125/1337>.

<sup>5</sup>Haight, W.R., Parrish, J.D., and Hayes, T.A., 1993, Feeding ecology of deepwater lutjanid snappers at Penguin Bank, Hawaii: *Transactions of the American Fisheries Society*, v. 122, no. 3, p. 328–347, [http://dx.doi.org/10.1577/1548-8659\(1993\)122<0328:FEODLS>2.3.CO;2](http://dx.doi.org/10.1577/1548-8659(1993)122<0328:FEODLS>2.3.CO;2).

<sup>6</sup>Jayewardene, D., Donahue, M.J., and Birkeland, C., 2009, Effects of frequent fish predation on corals in Hawaii: *Coral Reefs*, v. 28, no. 2, p. 499–506, <http://dx.doi.org/10.1007/s00338-009-0475-y>.

<sup>7</sup>Friedlander, A.M., and Parrish, J.D., 1998, Habitat characteristics affecting fish assemblages on a Hawaiian coral reef: *Journal of Experimental Marine Biology and Ecology*, v. 224, no. 1, p. 1–30, [http://dx.doi.org/10.1016/S0022-0981\(97\)00164-0](http://dx.doi.org/10.1016/S0022-0981(97)00164-0).

<sup>8</sup>Friedlander, A.M., and Parrish, J.D., 1998, Temporal dynamics of fish communities on an exposed shoreline in Hawaii: *Environmental Biology of Fishes*, v. 53, no. 1, p. 1–18, <http://dx.doi.org/10.1023/A:1007497210998>.

<sup>9</sup>Dierking, Jan, 2007, Effects of the introduced predatory fish *Cephalopholis argus* on native reef fish populations in Hawaii: Honolulu, University of Hawai‘i, Ph.D. dissertation, 115 p., <http://www.fpir.noaa.gov/Library/HCD/Dissertation%20Jan%20Dierking.pdf>.

<sup>10</sup>Oda, D.K., and Parrish, J.D., 1982, Ecology of commercial snappers and groupers introduced to Hawaiian reefs: *Proceedings 4th International Coral Reef Symposium*, v. 1, p. 59–67.

<sup>11</sup>Friedlander, A.M., Parrish, J.D., and DeFelice, R.C., 2002, Ecology of the introduced snapper *Lutjanus kasmira* (Forsskal) in the reef fish assemblage of a Hawaiian bay: *Journal of Fish Biology*, v. 60, no. 1, p. 28–48, <http://dx.doi.org/10.1111/j.1095-8649.2002.tb02386.x>.