



RAISING FISH “LOKO” STYLE

BY ROB PARSONS

To an airline passenger peering down at Moloka`i's south shore, the rock walls delineating a number of coastal ponds may be reminiscent of the Waikiki Natatorium, the venerable salt water swimming pool and war memorial where Olympians Duke Kahanomuku and Johnny Weissmuller once trained.

However, the coastal ponds dotting the shorelines of Moloka`i and other Hawaiian islands weren't constructed for recreation, but for raising and fattening fish to feed chiefs and commoners alike. Unique to Hawaii among all Pacific island cultures, archaeological data shows that more than 300 *loko i`a* (fishponds) were constructed throughout the isles, dating back many centuries.

Walls stacked with basaltic boulders and coral ingeniously allowed for tidal circulation, yet withstood seasonal storms. *Makaha* (sluice gates) made of `ohia wood and bound with cords allowed small fish to pass through, while keeping plumper fish inside from escaping. Fishpond sites were carefully selected, situated where freshwater streams or springs met the ocean. Here is where certain *limu* would grow, food for the herbivorous *moi* (Pacific threadfin), *awa* (milkfish) and `ama`ama (mullet). Design of the historic coastal fishponds clearly incorporated the intricate knowledge early Hawaiians acquired through meticulous observation of natural processes.

“Hawaiian agriculture and aquaculture enhanced what nature was already doing,” said cultural practitioner Michael Kumuhauoha Lee of the `Ewa Beach Limu Restoration Project. Lee's great, great grandfather held a Bishop Estate lease dating back to the 1860s for a coastal fishpond off of Kaneohe, at He`eia. “Hawaiians increased the abundance of what is already there in nature, and did so without upsetting its balance.

“Modern ocean fish farming has not integrated cultural knowledge in with their ‘science fair’ projects,” says Lee. “Hawaiians brought cleaner fish like wrasses into the *loko i`a* to control parasites, and *kaku* [barracuda], an apex predator, to cull out weak or diseased fish.” They sometimes fed the fish with fruit gathered in the mountains that contained a moth larvae, said Lee—one of many “family secrets” he claims will “not be found in studies at UH, Bishop Museum or anywhere else.”





Wayne Chun

Lee's traditional knowledge—and that passed down through chants, legends and historical documents—is helping revitalize efforts to restore fishponds across the islands. Moloka'i alone has 78 *loko i'a*—the majority scalloping a 20-mile stretch of its southern coastline—though many have thickets of invasive mangrove penetrating their lava rock walls. Restoration efforts are ongoing at some of the sites, under the guidance of Noelani Lee Yamashida, Walter Ritte Jr. and others.

Within Kaneohe Bay on O'ahu, two restoration efforts are thriving. Waikalua Loko is situated between two streams that bring water falling in the Ko'olau mountains into the bay. The 11-acre area of the pond provides ample educational resources for both ancient and modern fishpond practices.

He'eia Fishpond was one of six O'ahu fishponds reported in use back in the 1960s, though it fell into disrepair after a flood in 1965. (Taro fields, now given way to urban development, once buffered the coastal pond, as Hawaiians used stream water for food production both inland and at the seashore.) Production was restored in the 1990s, using both Hawaiian and Western aquaculture techniques to produce 70,000 pounds of *moi* yearly, and 1,000 pounds of a Florida variety of *ogo* (edible seaweed) weekly.

Construction of Hawaiian fishponds was no small endeavor, though it is also said that some were built in a single night by Menehunes, the legendary mystical, diminutive race of early Hawaii. It is believed that under direction of their *konobiki*, or chiefs, hundreds of

commoners formed human chains to bring lava rock from upslope to the ocean, crafting walls as much as nine feet thick.

It is believed that as many as 10,000 workers were needed to reconstruct the Ko'ie'ie fishpond on Maui several hundred years ago. The *loko i'a* were masterpieces of Hawaiian engineering, according to the website of the group dedicated to its revitalization along the North Kihei coastline. "They were a means of bringing the community together, and a display of remarkable leadership by the *ali'i* [chiefs]" the group states.

"In the uplands, the *maka'ainana* [commoners] would benefit from the pond's bounty. Here, the *loko i'a kalo* [taro ponds] and *loko wai* [freshwater ponds], were refrigerators for fish such as *'o'opu* [gobies] and *aholehole* [big-eyed scad]. Towards the ocean, many fishponds were reserved for the *ali'i*. People were forbidden to retrieve fish from *loko kuapa*, such Ko'ie'ie. The fish were used for subsistence, ceremonial purposes, and managed carefully to ensure that the resources were not abused."

Once the ponds were completed, one or more thatched *hale kia'i* [guardhouses] were constructed, where a keeper watched over the ponds and prevented theft. Small fish (*pua*) were sometimes lured into the ponds with treats of taro, sweet potato or breadfruit. Soon they grew too large to swim back out through the *makaha* gate.

Harvesting was done with nets, while other men splashed the water to drive fish into them. Fresh fish were sometimes wrapped in layers of *limu* and wet leaves, and the chief's swiftest runner delivered the meal-to-be, still wriggling and alive.

Such is among the deeds attributed to Makoa, a famous foot racer of 200 years ago, around the time of King Kamehameha. It is said the king craved fresh *'ama'ama*, or mullet, with his meals, to counter the bitter taste of his royal beverage, made from *'awa* (kava) root. Legend states that Makoa made a run from Kawaihae to the king's fishpond at Waiakea in Hilo—a distance of 80 miles that would take an ordinary man four days—in a single day, bringing the king a live mullet.

Lee believes that modern Western aquaculture systems run into difficulties by trying to maximize dollar output, and by not looking at how true natural resource systems of abundance are created. "It is the Hawaiian belief," says Lee, "that everything is a living being. The outer fishpond rock walls are like the skin—they are porous and allow zooplankton to pass through. Plankton and algae are among the most basic life forms.

"The fresh-water springs are like the circulatory system," said Lee. "It is essential to set up a diverse biosphere, and to plant and seed the *limu* to attract the fish into the pond. Don't disregard the vitality of the elemental systems, the safeguards and the knowledge that is already here."

In Hawaii's quest to offset imports and produce more of the healthy local food it consumes, there is clearly much to be gleaned from past practices that were deeply in harmony with the land and sea. In time, it is conceivable that we may replace eating "local style," now indicative of plate lunches and fast foods, with "*loko* style"—a return to values and practices that nurtured inhabitants of Hawaii since they first arrived here. □