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Going After The Small Fry

Researcher does the impossible, finds larvae

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This fish with the long bill is ironically a shortbill spearfish, one of the billfish that researcher Andrew West is studying off the Kona Coast. - Andrew West | Special To West Hawaii Today

Adventure enthusiasts and fishermen transit the waters surrounding Hawaii Island throughout the year in pursuit of a memorably massive marlin or its billfish brethren.

For the past eight years, Andrew West has sought the smallest.

This researcher and avid fisherman moved from Australia to Hawaii Island in 1999 to study the distribution, abundance and taxonomy of billfish larvae. West also documented their behavior and noted developmental changes in their diet and feeding. He wanted to learn why billfish were found off the Kona Coast.

Naysayers told West to "forget about it" because finding larvae was an impossible task. Prior to his research, some assumed billfish came here to "have a bit of a feed and a bit of romance."

Billfish life cycle knowledge is limited, most of it derives from examining dead adults. No one even knows their maximum size, although there are estimates it is upwards of 3,000 pounds or more, West said.

Almost nothing is known about the developmental stages of billfish, from egg to 100 pounds. The only larvae most have seen are in vials. A situation- West called "intriguing" and "kind of ludicrous," especially when considering billfish belong to a multibillion dollar industry, which includes fishing tournaments.

West found evidence suggesting the waters off the Kona Coast are an active and important spawning hot spot. He must, however, find a high number of eggs and larvae as sufficient proof. He shared some findings at a recent Reef Talk, sponsored by the University of Hawaii Sea Grant College Program.

West made nets from "dumpster scraps," such as mosquito mesh netting, PVC parts and carpet fragments. He then drove an inflatable boat about 100 meters past a navigational buoy outside Honokohau Harbor. Using the nets, West captured three juvenile marlin within 20 minutes -- a feat that "blew everyone away."

Kona waters are a dynamic environment for billfish study, mainly because there is no continental shelf, low turbidity and many migratory fish stop here, West said.

Slicks, an oceanographic phenomena, also exists and form when swells collide with the topography, sending standing waves. These "gutters of the ocean" accumulate eggs, plankton and larvae. Lasting up to three days, slicks can be predicted. West wonders if there is a relationship between the larval abundance and slicks.

Aboard a research ship run by the National Oceanic and Atmospheric Administration, West collected larvae and eggs on the ocean surface by towing a fine-meshed sampling net.

Early on, West and NOAA scientists had to learn how to determine which billfish species were appearing in their larval collections. They solved the problem by identifying eggs and larvae based on the DNA differences. They took DNA samples from adult billfish tissue and then analyzed samples from the larvae and eggs, ranging from 1.6 to 1.8 millimeter in diameter. Within hours, the specimen was identified. They found about 50 eggs in seven days.

West established study sites at Kawaihae, Milolii, south of Kona-Kailua and north of Honokohau Harbor. No larvae was caught in Kawaihae waters, helping pinpoint the spawning area.

Once West followed a 2 centimeter Pacific blue marlin larvae when it suddenly stopped. "It looked at me like 'What? What are you following me for," he said. "Then it had the audacity to come up to me and starting nipping at me. There's nothing they're scared of."

Marlin are elusive fish that swim the Pacific with no boundaries. One "champion" fish traveled in 11/2 months from Kona to Midway to the equator to the Panama coast, West said.

During his quests, West got more spearfish larvae than that of marlin. He also learned when the adults were present so were the larvae. Though

reproducing year round, West concluded the Pacific blue marlin's peak spawning period happens late summer while the shortbill spearfish's peak spawning period takes place late winter and spring.

The fishery has changed dramatically since the days of Ernest Hemingway, whose legendary and romantic tales helped fuel the maritime hunt. West could not say what the total population is, but he insists billfish are slowly declining. A fact he based on the data from the catch per unit effort reported to Hawaii Division of Aquatic Resources. "Science is showing we cannot afford to nail the big ones, which tend to be the females," he said.

West dissected a 400-pound female and estimated 210 million eggs were inside. He supports catch and release, saying it won't hurt the charter industry. Still he knows 3 percent of billfish weighing more than 500 pounds are released. West acknowledged preconceived notions about longliners. He said these fishermen do catch more billfish, but are typically interested in those weighing 150 pounds.

West, along with recreational and charter boat fishermen, tagged Pacific blue marlin with pop-up satellite archival transmitters to chronicle their survival and movement following their release. Of the fish tagged, West said 97 percent survived if the fight time was 30 minutes or less. Longer fight times led to higher mortality rates.

West wants to see a community-based fishery management. He claimed the government has already asked him for ideas. The West Hawaii Fisheries Council recently established a subcommittee to explore this issue and West encouraged stakeholders to participate.

Get involved

- Those who wish to join the billfish subcommittee should contact Marni Herkes, West Hawaii Fisheries Council administrator, at 987-2171 or attend a fisheries council meeting held from 6:30 to 8:30 p.m. on the third Thursday of every month at the Hawaii Big Game Fishing Club.