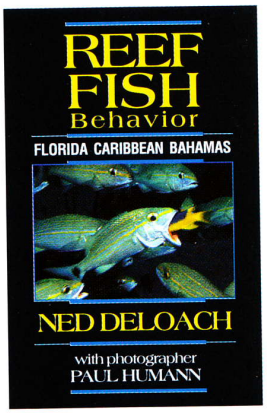
A Journal of Marine Life Observations

For the past five years my wife Anna and I have had the good fortune of studying the nature of reef fishes for *Reef Fish Behavior–Florida, Caribbean, Bahamas*. The result, a six-by-nine-inch, 360-page book with 475 photographs, is intended as an overview of what is presently known about the behavior and ecology of reef fishes and to serve as a companion to Paul Humann's *Reef Fish Identification*, a comprehensive identification guide to the fishes of the same region. Both volumes are the result of an expanding partnership between the scientific and the recreational diving communities.

The book's material came from two primary sources: four summers of underwater observation and photography in Bimini, Bahamas, and many hours of research in the library at the Rosenstiel School of Marine and Atmospheric Science, University of Miami. Anna and I thoroughly enjoyed every facet of the project, but our four extended stays in South Bimini were magical times. While on the island, we had the luck of living at Wen-Mar, a rustic, thick-walled, white concrete cottage built in the 1940s at the very edge of the sea. Our times there revolved around a small, brightly lit sitting room that faced west toward the Gulf Stream. On clear nights we could see the glow of Miami from the room's glass doors, and while enjoying coffee in the cool of morning, we watched pelicans dive and eagle rays jump in our front yard. Afterwards, I would settle into an ocean-facing futon surrounded by stacks of research papers and dog-eared references and read about fishes or hammer away at my laptop until noon.



We dived seven days a week, four to five hours a day, except during prolonged westerly blows. Our borrowed boat (the *Pocahontas*, the *Blenny* or the *Big Hellie*, depending on the year) invariably pulled away

It's the book that we've all been waiting for. Reef Fish Behavior, *a ground-breaking new book by Ned DeLoach and Paul Humann, is by far the most informative and engaging collection of marine life observations ever assembled for divers and underwater naturalists. This latest addition to the popular DeLoach and Humann marine ID book collection is sure to be eagerly received by a broad audience of marine enthusiasts.*

Editors Note

By Paul Humann - Anna & Ned DeLoach

from the dock at one with Capt. Anna at the helm. Thirty minutes later, we were happily underwater. From among the dozens of excellent dive sites that edge the islands, we consistently returned to the same six. The locations, ranging in depth from fourteen to fifty-five feet, allowed us to observe several different fish communities on a semiregular basis over extended periods. When we were studying a new behavior or trying to capture a difficult image, we often returned to the same location daily for weeks. During periods when we were "on to something," we worked the hardest, stayed underwater the longest, and were the happiest.

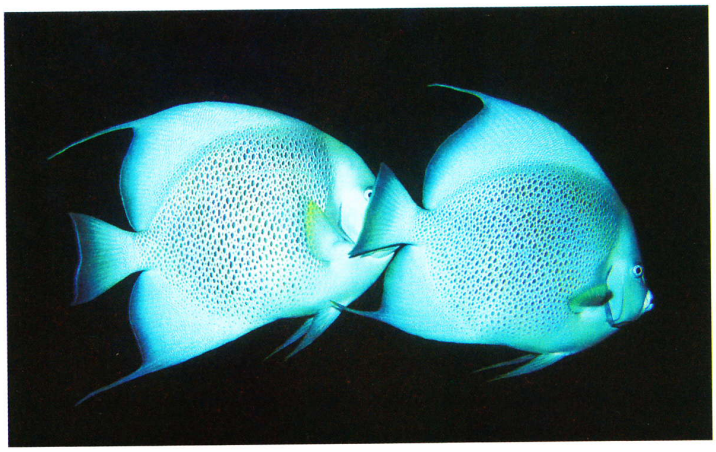
Anna carried a video camera, and I lugged along a housed camera with a sixty-millimeter macro lens and a Nikonos III with a twenty-millimeter lens, both connected to a single strobe. We typically made three dives each afternoon, the last ending with just enough light left on the horizon to help Anna navigate home. Even before showering, we had the day's videotape turning in the VCR and reviewed our afternoon's exploits while sipping rum and taking notes.

Spotted eagle rays, Aetobatis narinari, *forage over sand flats for hard-shelled clams, oysters, and large gastropods which are crushed by specialized dental plates. The spectacular fish suffered a marked decline in the Cayman Islands after commercial interests overharvested its primary food, queen conch,* Strombus gigas. *But after the government mandated no-take reserves for queen conch, the tasty mollusks made a dramatic rebound. With its primary food supply reestablished, the island's population of eagle rays also made a strong recovery.*

A few parrotfishes in the genus Scarus, *including this queen parrotfish,* S. vetula, *occasionally cloak themselves in mucus nightgowns secreted from their mouths. A laboratory experiment demonstrated that the bubbles mask the sleeping fishes' odor from night-prowling morays.*

At first glance, the social organization of reef fishes appears chaotic, but closer examination reveals a well-ordered structure based on size, with larger individuals dominating underlings and reproductive activities. Instead of resorting to life-threatening combat to establish their position in the pecking order, yellowhead wrasse, Halichoeres garnoti, *harmlessly compare the size of their opened mouths, a behavior known as gaping.*

Across the Gulf Stream, we dived into the journal-packed stacks at the Rosenstiel Library with the same enthusiasm that kept us underwater for hours at a time. We quickly discovered that, unlike terrestrial animals that have been observed and documented for centuries, the study of coral reef animals is in its infancy. With little choice before the birth of scuba just a half-century ago, marine biologists based much of their early research on preserved specimens fished from the reef. Their inability to observe the fishes and invertebrates in their natural habitat left large gaps in our understanding of the behavior and ecology of reef animals. Today's diving naturalists, whether academically trained or inquisitive amateurs, are pioneers chronicling the last great undocumented natural history on earth. It is an exciting time to be a diver. □



Monogamy appears to be more common on the reef than once thought. Mated pairs of gray angelfish, Pomacanthus arcuatus, *feed together much of the day on sponges, gorgonian polyps, and zoanthids inside their large, poorly defended territories. After extended separations, partners circle enthusiastically, as if happy to be back together. We observed a pair court and spawn at dusk on two consecutive days. The angelfish playfully circled and cavorted near the bottom before the female began to rise with the male close behind. After ascending a few feet, the female broke for the bottom where courtship continued. Several more false spawning attempts ensued before finally, just after sunset, the pair continued their rise fifteen feet into the water column where they shed gametes. Throughout their slow ascent, the female caressed her trailing mate's face with a fluttering tail.*

Like many smaller site-attached reef fishes, purple reef fish, Chromis scotti, *are benthic egg-layers. After hastily fin-fanning a patch of algae, a breeding male leaves to find a mate. He advertises his intent by approaching a prospective partner in a series of dips before attempting to herd her back to his territory. Once near, the male dips excitedly above his nest and brushes his belly across the site. A few well-placed nips usually coax a hesitant female aboard where, side-by-side, the pair skim back and forth, scattering eggs and sperm as they go. Ten to twenty minutes later, the female swims away, leaving her eggs in the care of the male. He defends the site and tends to the eggs until the clutch hatches three days later.*

Because of their cryptic nature, peppermint bass, Liopropoma rubre, *are seldom seen. Ten minutes after sunset, eight days after the full moon of September, we had the luck to sight a pair of the three-inch torpedo-shaped sea bass slipping out from a tangle of finger coral. They immediately vanished when illuminated by a light. Minutes later they reappeared, hovering inches apart. One had its head elevated, and both twitched. Slowly, they moved together until their faces touched. In this position, the pair drifted up two body lengths above the coral before popping apart in an apparent spawn.*