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Ripple Marks

The Story Behind the Story

BY CHERYL LYN DYBAS

Here Be Oarfish—Sea Serpents Are Among Us

Davy Jones' Locker, it might be called, this final resting place of an oarfish. In a darkened back room at the Smithsonian Institution's Museum Support Center in Suitland, Maryland, ichthyologists Jeff Williams and Kris Murphy prepare to break the seal of a time capsule, a faded jar the color of yellow-green sea glass. A container that is a coffin.

Williams and Murphy lift the lead-weight jar from the uppermost shelf at the end of a row in the support center's fish collection, place it on a steel cart, and wheel it to a lab where fluorescent lights illuminate the contents. And where there are instruments to pry open the tightly shut, one-meter-high by 30-centimeter-wide jar.

Once through the lab's double-door entrance, Williams tries to free the jar's top. "That lid is wedged in almost like it was superglued shut," he says. Finally, after several twists of a wrench,

open sesame. Within, a three-meter-long fish with iridescent fins lies in repose, floating in preservative.

The oarfish (*Regalecus glesne*) washed up near St. Petersburg Beach, Florida, on April 6, 1967. According to a report in the next day's *St. Petersburg Times*, retired Rear Admiral Edward Ellsberg found the fish floating in the Gulf surf and dragged it ashore. Ellsberg hauled it to the Bureau of Commercial Fisheries Laboratory in St. Pete Beach. Scientists there donated the oarfish to the Smithsonian.

Little but a 2.5-centimeter-long silver tag reading USNM (US National Museum of Natural History) 201458, a long-lost catalog number buried with the fish, marks its existence. The oarfish's grave hadn't been disturbed in 47 years.



The fish's half-dollar-sized silver eyes seem to register our presence. I reach out to touch its scales. They're firm and far from cold. Shimmering flecks soon cover my hand.

Although I know it's too late for this oarfish, every instinct wants to return the beautiful fish to the sea.

SEA SERPENTS AMONG US

More than 50 years ago, Carole Richards of Malibu, California, might have had similar—if slightly more terrified—thoughts.

Sometime after nightfall on September 24, 1963, a 5.5-meter-long sea creature washed ashore on a Malibu beach. Around midnight, Richards took her poodle for a walk, happened upon the huge body, and screamed in fright. Phyllis Huggins, a neighbor, heard her cry, and within minutes, lights flashed on in houses throughout the city as word spread that a “sea serpent” lay dead just outside.

According to a police report of the incident, a passerby named North Young bravely dragged the monster off the beach and laid it across the top of his car, intending to take it to local authorities. Young had driven only about 1.5 kilometers from the beach when two police deputies spotted his vehicle, did a double-take, turned their squad car around, and directed its headlights at “a gigantic creature draped across a car roof.” They quickly decided to call in the experts.

“And that’s how I came to be at the scene,” remembered the late Boyd Walker, a zoologist at the University of California, Los Angeles. “Vlad Walters, another zoologist at the university, and I jumped into a truck, roared out to Malibu, and brought the dead ‘sea serpent’ back to the lab for analysis. No fearsome monster of the deeps, it turned out to be one of the rarest and most beautiful fish in the sea—an oarfish.”

The oarfish went on display at the Los Angeles County Museum of Natural History. It was a complete animal except for about a meter of its tail.

With its eerie, sinuous silhouette, it’s little

wonder the oarfish has long been mistaken for a sea serpent. The sea monster tales of Aristotle, Pliny, and other classical observers are likely accounts of oarfish. “Even the famous Sea Serpent, measuring fifty-six feet in length, cast up on the shore of Orkney in 1808 was almost certainly this fish,” maintains J.R. Norman in *A History of Fishes*.

Called “king of the palace under the sea” by Japanese fishermen, the oarfish is the longest teleost (bony, rather than cartilaginous, fish) in the ocean. A member of the family Regalecidae, it may reach lengths of more than six meters. The serpentine fish is found in temperate waters, usually at depths from 18 to 500 meters.

An oarfish sports a long, red dorsal fin that rises to a mane-like crest atop its head. This “sea monster with fiery red hair” was reported in Monterey Bay in a 1925 edition of the *Monterey Peninsula Herald*. The flaming hair of the “freak of Father Neptune” was thought to be seaweed the monster became entangled in while surfacing from the bay’s depths. The oarfish also has brilliant red pelvic rays that rotate like the oars of a rowboat when it swims, hence its common name.

The fish’s red fins come from the pigment of the krill it eats. Oarfish eggs are also red.

AN UNLIKELY FISH

Oarfish and their relatives—which have common names as fanciful as unicornfish, inkfish, and tube-eyes—make up the order Lampridiformes. The oarfish’s closest relative, known as the streamerfish, or *Agrostichthys*, is not as large and spectacular, but is also very secretive: few streamerfish have ever been found.

All lampridiforms have evolved a novel mechanism for capturing their prey (usually small invertebrates): the fish move their upper jaws forward when feeding, making their open mouths some 40 times larger.

Despite such facts, ichthyologists know little more about the oarfish today than they did in 1771, when the first specimen



Regalecus glesne (oarfish), US National Museum of Natural History record number 201458, collected April 6, 1967, on St. Petersburg Beach, Florida. The tag says that the specimen measures 11 feet, 2 inches (see next page). Photo credit: Sandra Raredon

was described in the scientific literature by Morton Brunnich, a Danish naturalist. He found the fish washed up on a beach near a coastal farm in Norway.

A few encounters with this seldom-seen creature have occurred at sea, but despite attempts to lure it close enough to a ship to be caught, none has succeeded. A 1906 encounter may be the nearest scientists have come to capturing a live adult *Regalecus*.

Marine biologist F. Wood Jones published an account of the sighting in *The Fishes of the*

Indo-Australian Archipelago. On October 28, 1906, some 50 kilometers south of the Island of Sumbawa, a “long and very beautiful fish came to the surface at the ship’s bow. Baited rigs were thrown to it, but it took no notice of them.”

Although the vessel’s crew wasn’t able to entice the oarfish onto a hook, Jones writes that the fish was a wondrous sight. “With its vivid red crest and dorsal fin, scarlet streamers on its sides, and blue of its head and intense shine of silver on its body, it was probably the most beautiful creature I’ve ever seen.”

Naturalist C.F. Holder was one of the few other scientists of the early 1900s to see an adult oarfish alive. In 1925, Holder chanced upon an oarfish swimming in shallow waters along the beach of Avalon Bay on Santa Catalina Island, off southern California.

“The opportunity to observe this radiant creature was one I’ll never forget,” he wrote in *Fishes*. “The fish was a fragile and delicate creature, a very ghost of a fish, which swam along just beyond where the water gently lapped the sands. It was a striking creature, showing naught but a vivid red mass of seeming plumes and a silver sheen where it undulated through the water.”

Sporadic sightings of the fish have been recorded since, most of them similar to the dead 1963 Malibu oarfish. What little we know about oarfish is mostly from research on their washed-ashore bodies.

SOUTHERN CALIFORNIA’S COAST: A MAGNET FOR OARFISH?

To wit, last September, Jasmine Santana, a marine science instructor at California’s Catalina Island Marine Institute, decided to go snorkeling on her day off. While splashing in the shallows, she spotted an unidentified floating object.

Santana’s colleagues had shown her photos

of unusual ocean fish, so she soon recognized her find as an oarfish. She and co-workers dragged the 5.5-meter-long fish ashore and placed it in a low-lying swale. There it stayed until Jeff Chace, an institute biologist, brought the fish to a freezer. He kept it in cold storage until it could be examined.

The oarfish, however, wasn’t alone.

Five days later, another oarfish washed up 80 kilometers away in Oceanside, California. This one, which measured 4.3 meters from head to tail, carried something extra: hundreds of thousands of eggs in 1.8-meter-long ovaries. Its stomach was almost empty. A strong current, perhaps the northeastward-flowing Kuroshio Current, may have carried it and the first fish, a male, far from “home.”

FOR AN OARFISH, WHERE IS HOME?

Long considered denizens of the deep sea, oarfish are in fact fish of the mid-water depths.

“Earlier ichthyologists tended to consider *Regalecus* a deep-sea fish,” writes Tyson Roberts in *Systematics, Biology, and Distribution of the Species of the Oceanic Oarfish Genus Regalecus* (University of Chicago Press, 2012). “The notion perhaps was due to the unusual appearance of *Regalecus*, including its large eyes [typical of deep-sea fish], its rarity, and the observation that it was occasionally taken in fishing gear at considerable depths.

“Such gear, however, was not of the closing variety, and so it could have caught *Regalecus* at any depth on up to the surface.”

Regalecus, Roberts maintains, is a genus made up of at least two species, *Regalecus glesne* and *Regalecus russellii*. Both species have two crests in front of their dorsal fins. In *Regalecus glesne*, five or ten rays adorn the second crest, while in *Regalecus russellii* the second crest has just one long ray.

The two species’ geographic distributions

are almost totally separate. The only place they are known to occur together is off the coast of South Africa.

One population of *Regalecus glesne* lives primarily in the North Atlantic, while another exists in the Mediterranean. A third population of *Regalecus glesne* is found in the South Pacific; its range may extend far afield—uninterrupted across the South Atlantic.

The North Atlantic *Regalecus glesne* population reproduces in the western Atlantic; oarfish in the Mediterranean spawn in the Straits of Messina. “Oarfish in the eastern North Atlantic are likely non-reproductive waifs or ‘ex-pats,’” Roberts believes.

Regalecus russellii occurs mostly in North Pacific waters off Japan, Korea, and China. “Oarfish found along the coast of California and Mexico—the eastern Pacific—are probably *Regalecus russellii* that drifted across the ocean,” Roberts says. “They are always large, six feet or longer, with the females usually full of eggs, but as far as we know they don’t reproduce in the eastern Pacific, only in the western.”

The reason oarfish spawn where they do, he says, is unknown.

Four years ago, in 2010, “there was an unprecedented sighting of 20 large oarfish in Japanese waters,” Roberts relates. “I’m guessing that this was the result of an unusually successful oarfish spawning somewhere in the western Pacific.”

If history repeats itself, he believes, we can expect more oarfish in California waters in the next few years. “The two oarfish there last fall were almost certainly from an earlier major spawning event.”

In the distant Indian Ocean, so little is known about oarfish “that not even the species has been identified,” Roberts says, “although it’s probably *Regalecus russellii*.”



FINALLY, A LIVE OARFISH

Would marine scientists ever observe an oarfish alive—for more than a fleeting glimpse?

It finally happened in 2008, and is documented in a video recorded in the depths of the Gulf of Mexico. The fish was one of five seen between 2008 and 2011; the oarfish were spotted at depths of up to 500 meters. According to biologist Mark Benfield of Louisiana State University, the observations, through the eye of a remotely operated vehicle (ROV), are the first time an oarfish has been filmed in its natural habitat. Benfield and colleagues published the results last year in the *Journal of Fish Biology*.

The research was conducted through a partnership between academia and the oil and gas industry called the Gulf SERPENT Project.

"Access to the deep sea is a challenge for oceanographers," writes Benfield in his journal paper, "but increasing demands for hydrocarbons have resulted in a sustained deep-sea presence by the oil and gas industry. Hundreds of rigs, drillships, and other platforms equipped with ROVs now routinely operate in deep waters."

With this large fleet of eyes, he says, comes an opportunity to learn more about the species that inhabit the largest ecosystem on Earth: the depths of the open seas.

On the morning of July 10, 2008, an ROV operated by Saipem-America conducted a survey on behalf of the Gulf SERPENT Project. The ROV floated just below a semisubmersible drilling rig, the Thunder Horse. As scientists watched from a control room aboard Thunder Horse, the ROV met up with something "oriented vertically in the water, with its head pointing upward," says Benfield.

The submersible approached, and the wraithlike image slowly resolved into an

oarfish with its body inclined toward the vehicle. As the ROV inched closer, "the oarfish gradually retreated down and away, propelling itself with undulations of its dorsal fin," Benfield says.

"The fish's swimming behavior is fascinating. It moved backward and downward not head first but tail first, and at quite a good speed. It was a big fish, somewhere between 16 and 32 feet long."

That was the third of five such Gulf SERPENT Project sightings of oarfish in the Gulf of Mexico.

"These Gulf oarfish—alive in their mid-water realm—are changing what we know about such 'sea serpents,'" says Benfield.

MESSAGE FROM THE OARFISH

Oarfish from sea serpent encounters along the coast of California rest in peace in the fish collection of the Scripps Institution of Oceanography. Oarfish are also at the LA County Museum of Natural History; California Academy of Sciences in San Francisco; and Florida Museum of Natural History in Gainesville, among others.

One of the specimens at Scripps was trapped in a fisherman's driftnet near the San Juan Seamount in the Eastern Pacific; a warning, perhaps, of more such catches to come.

Oarfish photographed in the Gulf of Mexico in August 2011 in the waters over Mississippi Canyon. Photo credit: BP/Trustees of the Deepwater Horizon/Louisiana State University



"The oarfish has blundered into the hands of man in the past," said the late Romeo Mansuetti, a fisheries scientist at the University of Maryland Chesapeake Biological Laboratory. "As he plies the ocean in ever greater numbers, man's encounters with the oarfish may—or may not—increase. May it be remembered that the fish has no commercial value, nor any potential as a game fish."

In spite of increasing exploration and exploitation of the ocean, many researchers believe that because of the oarfish's seeming rarity, the secrets of its life may never be fully revealed.

If such a fish can even exist, however, the ocean's depths may be teeming with creatures we know nothing about.

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Jar specimen from page 11 laid out on a table at the Smithsonian Institution. Photo credit: Sandra Raredon

