

Loving the Chambered Nautilus to Death



Stuart Westmorland

A chambered nautilus swam near Gnemelis Drop-Off, Palau, in the southwestern Pacific. Marine biologists have begun to consider whether it should be listed as an endangered species.

By WILLIAM J. BROAD
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It is a living fossil whose ancestors go back a half billion years — to the early days of complex life on the planet, when the land was barren and the seas were warm.

Naturalists have long marveled at its shell. The logarithmic spiral echoes the curved arms of hurricanes and distant galaxies. In Florence, the Medicis turned the pearly shells into ornate cups and pitchers adorned with gold and rubies.

Now, scientists say, humans are loving the chambered nautilus to death, throwing its very existence into danger.

“A horrendous slaughter is going on out here,” said Peter D. Ward, a biologist from the University of Washington, during a recent census of the marine creature in the Philippines. “They’re nearly wiped out.”

The culprit? Growing sales of jewelry and ornaments derived from the lustrous shell. To satisfy the worldwide demand, fishermen have been killing the nautilus by the millions, scientists fear. Now marine biologists have begun to assess the status of its populations and to consider whether it should be listed as an endangered species to curb the shell trade.

On eBay and elsewhere, small nautilus shells sell as earrings for \$19.95, and as pendants for \$24.95. Big ones — up to the size of plates — can be found for \$56, often bisected to display the elegant chambers.


As jewelry, the opalescent material from the shell’s inner surface — marketed as a cheaper alternative to real pearl — can fetch \$80 for earrings, \$225 for bracelets and \$489 for necklaces.

Catching the nautilus is a largely unregulated free-for-all in which fishermen from poor South Pacific countries gladly accept \$1 per shell.

Scientists worry that rising demand may end up eradicating an animal that grows slowly and needs 15 years or more to reach sexual maturity — an unusually long time for a cephalopod. (Its cousins include the squid and the octopus.)

“In certain areas, it’s threatened with extermination,” said Neil H. Landman, a biologist and paleontologist at the American Museum of Natural History and the co-editor of “Nautilus: The Biology and Paleobiology of a Living

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Known Populations of Nautilus

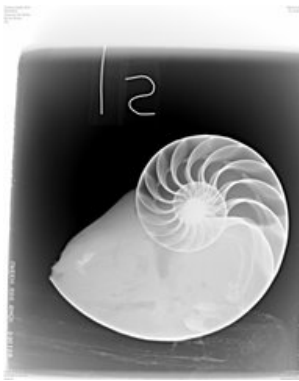
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Eric Catlin

GLOBAL CENSUS Biologists used traps to start their count off the Philippine island of Bohol. The captive nautilus were X-rayed and returned to the sea.

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Fossil,” a compendium of scientific reports.

The nautilus lives on the slopes of deep coral reefs in the warm southwestern Pacific. While it is easy to catch with baited traps on long lines, the depths — as much as 2,000 feet, below the range of sunlight and scuba divers — make it hard to study.

So to find out just how endangered the nautilus is, biologists began a formal census last summer in at least six regions known to harbor the shy creatures.

Dr. Landman said the relatively few scientists who study the nautilus must overcome “a tremendous lack of knowledge” about its overall numbers and geographic range.

By contrast, modern consumers know far too much, he said: “You can see the shells polished and sold all over the place.”

The fossil record dates the ancestors of the nautilus to the late Cambrian period, 500 million years ago. Some grew to be true sea monsters, with gargantuan shells and big tentacles. Over eons, the thousands of species have dwindled to a handful.

The word “nautilus” comes from the Greek for boat. When the first shells arrived in Renaissance Europe, collectors were stunned: They saw the perfect spirals as reflecting the larger order of the universe.

Later on, Victorian homes displayed them as curios. In his famous 1858 poem “The Chambered Nautilus,” Oliver Wendell Holmes admired “the silent toil” that produced the “lustrous coil.” And in “Twenty Thousand Leagues

Under the Sea,” Jules Verne created a watertight submarine of many compartments and christened it the Nautilus.

About those chambers: The creature periodically erects barriers inside its shell as it grows, leaving a series of unoccupied spaces behind. Like a submarine, the nautilus changes the amount of gas in the empty chambers to adjust its buoyancy. And it uses jet propulsion to swim.

To feed on fish and shrimp, it has as many as 90 small tentacles — and, like all cephalopods, a relatively large brain and eyes. The coiled shell can exhibit a nacreous luster or bands of bright color. The creature cannot go too deep lest its shell implode — like the hull of a submarine.

While the dwindling stocks of a beloved species can sometimes serve as a call to action — think of whales, pandas and polar bears — the threat to the chambered nautilus has gone largely unnoticed by the public. Specimens are for sale at relatively low prices and in seeming abundance. The situation is quite unlike that of rhinoceros horns or elephant tusks, which are considered contraband.

Deceptive marketing may help. The iridescent material inside nautilus shells is sometimes machined into pleasing shapes and sold as “Osmeña pearl.” (In the Philippines — home to much nautilus fishing — the Osmeña family is a political dynasty, and its name lends cachet.)

A recent Internet ad offers to sell an “Osmeña Pearl Sterling Silver Necklace” for \$495, calling the dozen pearls “gorgeous, large, silver-hued, pale slate-blue.” The colorful ad says nothing about their origin.

Worse, collectors talk of obtaining rare “Nautilus pearls” that sell for thousands of dollars each. Scientists dismiss the pearls as fraudulent.

Over the decades, scientific alarms have rung periodically. Biologists have slowly compiled anecdotal reports of population declines near the Philippines, Indonesia and New Caledonia (whose official emblem features a nautilus shell).

But the alarms sounded with new intensity last year at a conference in Dijon, France. Patricia S. De Angelis of the United States Fish and Wildlife Service reported that the United States had imported 579,000 specimens from 2005 to 2008.

When Dr. Ward, of the University of Washington, heard that, “the figure shocked the hell out of me,” he recalled.

Suddenly, a species thought to be fairly plentiful became the object of serious concern.

This summer, the Fish and Wildlife Service paid for Dr. Ward and his colleagues to begin a global census off the Philippine island of Bohol, which has long figured prominently in the shell trade.

In an e-mail in August, he said the team was working with local fishermen to set 40 traps a day but was catching two creatures at most — a tenth to a hundredth the rate of a decade ago. “A horror show,” he called it, adding that he suspected that one particular kind of nautilus “is already extinct in the Philippines” or nearly so.

“A very old species is being killed off quickly out here,” he wrote.

The captive nautilus were X-rayed and returned to the sea.

The team plans to go to Australia in December to expand the census to its Great Barrier Reef. The hope is that data from six sites will allow the scientists to estimate the world's remaining nautilus population, and what might constitute a sustainable catch.

Scientific worry over the fate of the nautilus parallels the growing apprehension over the effects of deep-sea fishing on a variety of creatures. Last month, the United Nations General Assembly held an open debate on the subject, with the aim of developing safeguards.

Marine biologists are lobbying for protection of the nautilus under the same United Nations rules that protect the American black bear, the African gray parrot, the green iguana and thousands of other creatures. The rules, the Convention on International Trade in Endangered Species (or Cites, pronounced SIGH-tees), allow commercial trade if it is legal and sustainable.

In an interview, Dr. De Angelis of the Fish and Wildlife Service called the nautilus census team “the best of the best” and described its goals as getting to the bottom of the population question and coming up with a credible estimate for the dimensions of the global trade.

“Ultimately,” she said, “we’re looking at whether this is sustainable.”

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