

The Pederson's Cleaning Shrimp

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Photos by Chris Pederson

When biology instructors teach taxonomy they delve into the how and why of classifying, or naming living things. At first glance this may be perceived as a simple task. It should be a straightforward task to tell one organism from another. In some cases, yes... in some cases, no. Identifying trees is easy enough if you use just the leaves, but using the flower or fruit is considered a more robust approach. Even then you have to be flexible enough to be willing to use other things, called characters, to sort out who's who. Sometimes characters change and the next generation of taxonomists discover new ways to better name things.

Back in 1991 I met Chris Pederson, a man with whom I would teach marine science for a number of years until his retirement in 2000. It was not at all surprising that Chris and I would become good friends, especially with our common background in marine science.

The Pederson's established a foothold in the Bahamas. This is prime territory for coral reefs and Chris and his father, Harry, explored the reefs off the west end of New Providence Island at Lyford Cay through many years. This is when things get exciting. Diving at New Providence Island, Bahamas in 1954, Harry photographed some remarkable fish-cleaning habits by some shrimp. While working on the reefs, the Pedersons noted the shrimp lived in association with a sea anemone, either *Bartholomea annulata* or *Condylactis gigantea*, living among the tentacles without harm. Fish, or any other unsuspecting animal, are rendered paralyzed and then consumed by the anemone. The shrimp "inoculate" themselves against the toxicity of the stinging nematocysts by pressing their bodies against the tentacles.



Pederson's cleaning shrimp *Ancylomenes pedersoni* (*Periclimenes pedersoni*)
Body length 3.8 - 5.0 cm (1.5 - 2.0 inches) Antennae are two to three times the body length.

Harry and Chris conducted some behavior studies while diving at New Providence Island, Bahamas. The text below is from Chris Pederson on the behavior of the shrimp.

I found this shot (the image below) and thought I'd send it to you because it is a much more typical example of how these shrimp are normally found. It could be different in other parts of the Caribbean, but in the Bahamas, we never observed the Pederson's shrimp in association with any anemone other than the one you see here and in parts of the other shots you already have.

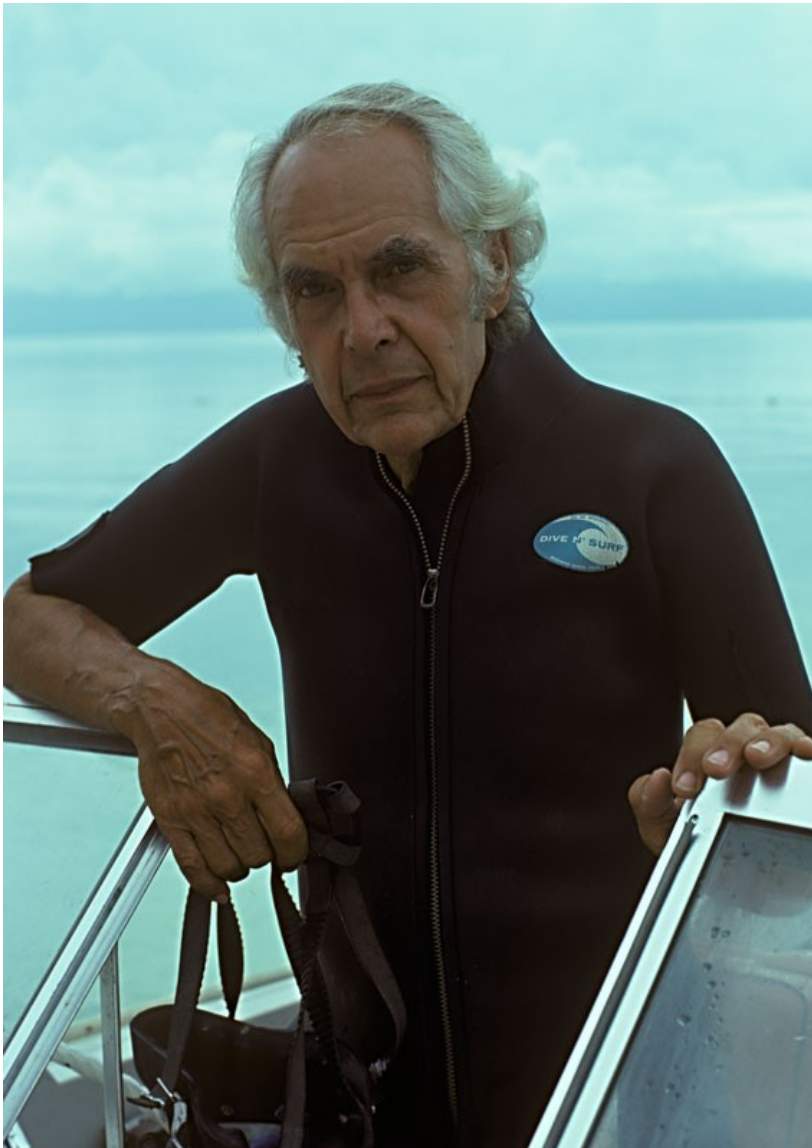
*The anemone is *Bartholomea annulata* and the shrimp are most often observed in pairs... one female and one male. In this shot, I believe the female is the one slightly above center (she is gravid, or pregnant) and the male is just above her on a ledge. They wave their long, white antennae as a signal to fish that they are available for "cleaning services." I have seen them service small groupers of various kinds as well as other kinds of fish.*



Pederson's cleaning shrimp wave their long, white antennae to signal fish.

The interesting thing is that groupers normally will take shrimp as a meal, but not these. We even tried releasing a shrimp up in mid water, just to see what would happen, and the result was that all the predator fish, groupers, snappers, etc. made a rush toward the shrimp, but stopped short and simply followed it down to the seafloor. No harm done and the shrimp made its way back to its station. When they are working on a fish, they will go inside the mouth which the fish kindly holds wide open, and they will also go under the gill covers while the fish holds them open.

So matters stood until 1958 when samples were sent to the taxonomist, Dr. Fenner A. Chace Jr. of the Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution. Dr. Chace knew he was looking at a previously undescribed shrimp. He called it *Periclimenes pedersoni*, or Pederson's shrimp. So it's been known ever since... Not exactly. Recall the beginning of this essay and how, with the recognition of new characters the naming must be re-shuffled a bit. And so it goes. Taxonomists now use characteristics of DNA and "family trees," combined with behavior. This cleaner shrimp is now known as *Ancylomenes pedersoni*. It remains a great collaboration between two great men, Fenner Chace and Harry Pederson.



Harry Pederson (Chris Pederson's father)

This is my dad (image left). The shot was taken in the Summer of '74 and he was 66. He was not as stern as the photo might suggest but rather had a terrific sense of humor and a very creative wit.

He graduated from the University of Minnesota with a degree in 18th century English Literature with plans to become a writer. However, WWII got in the way and he wound up in California working as a staff photographer for Consolidated Aircraft Company where they built B-17s. His brother also worked there and it was in the waters off the coast of California that they became interested in underwater photography.

They were both refused entry into the armed services because Dad had rheumatic fever when he was at the University and his brother had been involved in a motorcycle accident when he was in high school which left him with a number of metal plates in both of his lower legs.

Dad passed away in 1996 at the age of 87 and not a day goes by that I do not miss him. He had an insatiable curiosity for undersea creatures and lectured on his undersea films for many years for the Audubon Society, and, by his third year, he had replaced Roger Tory Peterson as the most requested lecturer on the Audubon circuit.

It has been a blessing to me to spend time with Chris studying the Laguna Madre and Rio Grande. I am grateful for his help in the field and fellowship.



Chris Pederson and Joe Kowalski share a common background in marine science.

Extra Credit: What do you see in the image below?

