

Syngnathus scovelli, the Elusive Freshwater Pipefish

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The Freshwater Pipefish has almost mythical status among livebearer enthusiasts. There are about a dozen species worldwide that are found in fresh water on a regular basis, but only one species in North America fits that bill—*Syngnathus scovelli*. This fish is rare in the hobby and is almost never available commercially except as by-catch from some of the Florida collectors of *Hippocampus zosterae*—but those are marine populations.

My good friend B.G. Granier sent me a group of wild caught freshwater adults and juveniles a couple of years ago. They came from a place on the north end of Lake Ponchartrain known as Bayou Lacombe, which is almost pure freshwater. Lake Ponchartrain is a huge estuarine lake to the north of New Orleans, and is fairly brackish, with some tidal influence via the Rigolets, a strait or canal on the eastern end of the lake that connects to the sea. The salinity drops considerably in the northern and western ends of the lake due to the influx of many streams and rivers.

B.G. challenged me to keep the pipefish going and get them to spawn. With some research and effort, in addition to B.G.'s excellent packing and shipping skills, I was not only able to keep all of the pipefish alive, but I was also able to get them to grow, spawn, and even raise second and third generations. There was a bit of experimentation and some trial and a lot of error, but these hardy fish not only withstood my mistakes, they rewarded my successes with fry—lots of them!

To save space, I'll skip the mistakes and just get right to what worked for me. Keep in mind that this was specifically a "freshwater" population from one particular area. These

techniques may or may not work with populations from other areas. From my research I discovered that *S. scovelli* occur from coastal southern Georgia all the way along the coastline of the Atlantic and Caribbean to Brazil. Most known populations do not reproduce in fresh water, though they are frequently found there. Only the Louisiana population appears to regularly occur in, and reproduce, in freshwater. There is even a rumored totally landlocked population in Louisiana, but there have been no documented collections from that site since the 1960s.¹ Anyway, I set up a 10-gallon tank with a layer of crushed coral on the bottom. I filled it with hard, alkaline water (pH 8.0, total hardness 450 ppm, with about 400 ppm of that coming from calcium carbonate). Later, I rotated water changes with 100 percent sea water, 100 percent fresh water, and a 50/50 mix to mimic the seasonal fluctuations in coastal Louisiana. Whether necessary or not, I don't know. But it did work for me. The pipefish really perked up after each water change, whether fresh, marine or somewhere in between. There was no rhyme or reason to the changes; I just made sure each change was different from the last.

The tank was set up outside of the fishroom in a room that received filtered natural daylight—no direct sun. But I noticed that without the slow increase in daylight that came from the natural light (such as when the fishroom lights come on with a timer), the pipefish did not perform their morning greeting ritual. Without this ritual, they do not reproduce.

I tried various live grassy plants to mimic the vallisneria and turtle grass beds where they are normally found in the

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¹ I've heard that in the headwaters of the St. Johns River, Florida, fully freshwater populations of *S. scovelli* exist, along with a landlocked stingray, *Dasyatis* sp. – Technical Editor, *Livebearers*.



Fig. 1.

Bayou Lacombe, Louisiana, less than a mile from Lake Ponchartrain, the collecting site for the pipefish described in this article. This picture was taken pre-Katrina, in December 2004.

wild. None of them, even the plants from Lake Ponchartrain, did well for me. So I added about two dozen plastic jungle val plants with an open area left in the front of the tank. This open area is where they performed their morning greeting. I added a group of Olive Nerite snails to help control the algae. They are also found in both full fresh water and full marine water, and they move between the two. When there were fry in the tank, I also added java moss from other tanks.

The tank was filtered with a sponge filter, and kept at room temperature which fluctuated between 68 and 78 °F over the course of the year. No heater was used. Fifty percent water changes were done weekly, as described above.

I fed the pipefish almost exclusively live foods. They only went after one frozen food, as described below, and that was only fed occasionally. They need to be fed every day, as their exoskeleton prevents them from storing too much fat, and they have a rudimentary stomach. I fed newly hatched brine shrimp daily, alternated with a second feed of daphnia, moina, grindal worms, and occasionally microworms.

The pipefish developed a routine for feeding that showed some intelligence, or at least an ability, to learn about the local conditions. Instead of hunting the food, they gathered in the val around the sponge filter and waited until it brought the food to them! After a few hours, they would again be scouring the tank looking for food. But at feeding time, they always moved to the area around the sponge filter. This gave me the idea to try frozen and freeze-dried cyclops. They went for it as long as it was moving in the current. As soon as it settled down to the bottom, they ignored it.

Mating occurred frequently during the morning greeting ritual. At most times, there was at least one gravid male in the colony. As far as I could tell, only one female spawned with all of the males. She would turn coal-black each morning, balancing upright on her tail in the open area, just as it started to grow light. The bright silver “Ys” on her flanks seemed to glow. At other times they are only barely visible. The males turned lemon-yellow and moved one at a time into the open area, also balancing on their tails parallel to the female, almost



Fig. 2.
Collecting in Bayou Lacomb.

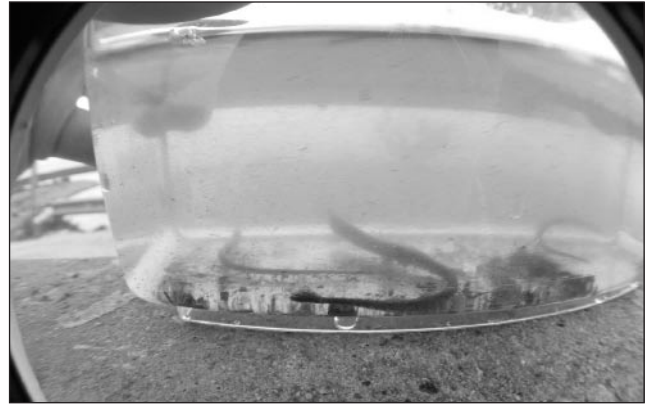


Fig. 3.
Freshly collected pipefish.

looking like the number 11. They spent a minute or two looking each other up and down, and then rose up into the water. Sometimes they mated, other times the male just swim away.

Mating is a quick affair, with just a brief touch of the bellies. The female inserts several eggs into the male's pouch, where they are fertilized. The male moves off and another male takes his place. Sometimes several males participate, sometimes only a few. But it appears that the greeting takes place each morning. Only the largest female participates. The others just watch from the plants. Every time I was up that early and watched, they did it. Interestingly, the gravid males often participated in the ritual as well. Sometimes they even mated with the female. There have been many males collected in the wild with more than one batch of eggs in their pouch in different stages of development, so it appears that this behavior is not uncommon.

Contrary to popular belief, the male does provide some nutrition to the developing embryos, along with allowing for some gas exchange and some waste removal from the eggs. The mechanisms for this are only now beginning to be studied, so I'm sure more information will come along as the years go by.

Fry are born about two weeks after mating, early in the morning. I always found fry; I never witnessed the actual delivery. Fry are miniature copies of the adults, about 3/8 to 7/16 of an inch or so in size. They are ready to feed fairly quickly after birth and are ravenous eaters. The adults appear to ignore them, and I never had a problem with predation.

Fry feed on newly hatched San Francisco Bay brine shrimp, which are smaller than the Utah brine shrimp. I don't know if they will feed on the Utah brine shrimp right away; I have not tried. They will also take vinegar eels, microworms, young daphnia, young moina, and one other little tidbit.

The olive nerites lay eggs in the tank. Unlike most other

snails, nerites have free swimming larvae. They swim up to the surface and gather under the lights. With a good-sized population of nerites, you will have their larvae on most days. The young pipes will find them and spend hours munching them near the surface. This became so common that I left a couple of the vals floating so they had some anchors near the surface and didn't have to waste a lot of energy swimming.

Fry grow quickly, reaching about one inch after a month, and their adult size in six months to a year, depending on how frequently you change the water. They start reproducing at about eight months. Batches for young males are usually about a dozen or so fry. Larger males have given me nearly 100 fry, and some wild-collected males have been reported with as many as 190 embryos. A normal batch, though, is about 30.

I've passed out hundreds of these guys to more than two dozen other hobbyists, including some very advanced breeders, and so far *not one* has succeeded in getting them to spawn. I've explained everything that I did, even given them copies of articles I've written about them, and still not one of these hobbyists has succeeded. Follow-up conversations indicate that *none* of them followed all of the steps above—most of them have tried to cut corners, kept them in the regular fish-room with lights on a timer and no exposure to daylight (hence no greeting ritual and no spawning!), not fed them live foods every day, not done regular water changes, not kept them with enough (or any) plants for anchors, etc.

These amazing and unique animals require dedicated care. They cannot be maintained long-term unless you are willing to go the extra steps to provide for their needs. They are not for the casual aquarist. Success requires planning and effort on your part. If you want to give them a try, by all means do so. But know what you're getting into and plan ahead. 