wasatch marine aquarium society

The Sea Star

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Adam Speaks out

Hello to all my aquatic friends!

Well hasn't the past few months been exciting for us? This season has been great for our club. We have had some wonderful presentations on kalkwasser reactors, electrical wiring, and coral propagation. We even celebrated the holiday season as a bunch of fish nerds. To conclude this winter season we had great meeting on Aquarium Photography and will have a very special presentation and visit from Anthony Calfo.

I'd like to thank the current presidency members for all their help and service during this year, and I know the next presidency will do a great job as well.

As always, the club is here to serve YOU so please let the presidency know what they can do for you! With that input I'd like to challenge everyone to help out with the club. This club wouldn't exist without wonderful volunteers pitching in. Finally I'd just like to say "thanks" to all of you for helping to educate the public, promote responsible reef keeping, and contributing to the advancements in the marine aquarium hobby.

Adam Blundell
WMAS President

Why I Love Seahorses

By The Seahorse Whisperer (Susy Applegarth)

What is there not to love? How could a person see these magnificent aquatic equines and not instantly fall in love with them?

What other marine fish could compare? With the royal coronet of a majestic king, the long snout of a regal race horse, the prehensile tail of a goofy monkey, the long intricate spine of a mystical dragon and the exoskeleton of a knight in shining

armor, these unique creatures have a distinctive appearance unlike any other creature. They are the only fish I know that swims upright, propelling itself with very tiny fins. A very whimsical pattern of locomotion!

My favorite part of owning these mystical creatures is their intriguing personalities. Some breeds do seem to mate for life, with the pair having a connection unlike no other pet I've owned. Every morning, whether the female is gravid or the male is carrying fry or not, they greet each other. They will cozy up next to their mate, flash their colors and entwine their tails around each other. Then, if both are ready to conceive, they will swim together, attached at the tail, and spin in the water column. He will open his pouch, she will drop her eggs in, and another generation of gorgeous aquatic equines is conceived!

Raising the fry is a different story! Not quite as lovely as the conception part! It is estimated that only 1% live in ocean. The fry are an incredibly tiny replica of it's parents, born live from it's fathers convulsions, needing live food that is active enough to entice a feeding response, but small enough to fit into their tiny snouts. The newborns are also very susceptible to bacterial and parasitic infections, very fragile and requiring incredibly pristine water conditions.

The business of raising seahorses has become very lucrative, though. The companies that have mastered the art of raising these specimens charge exorbitant amounts of moola for them, and keep their facilities under guard to keep their secrets intact! Very little information is released to the hobbyists, and very few hobbyists are able raise and sell them.

If there was ever a species that needed to be farmed in captivity, seahorses would be at the top of list. Not only are they prized for their aquarium antics, they are considered by some cultures to have magical powers, used for infertility, impotence and other healing snake oil remedies. Millions are removed from their paradise ocean homes to be dried, crushed and made into a pill, magical powder or liquid goop.
Seahorses can be found dried and on display in craft shops,

curio stores and tourist havens, to sit on shelves collecting dust as reminders of a forgotten vacation to the beach.

New CITIES regulations make it harder to find wild caught specimens for the marine hobbyist to add to their captive pet collection. Conscientious aquarists do recommend we only buy captive bred seahorses, not just because of the endangered species status of these gorgeous aquatic creatures, but also because of the ease of owning CB. Wild caught seahorses are very finicky about their diets, and most are unattainable to frozen food. CB, on the other hand, readily eat frozen mysis.

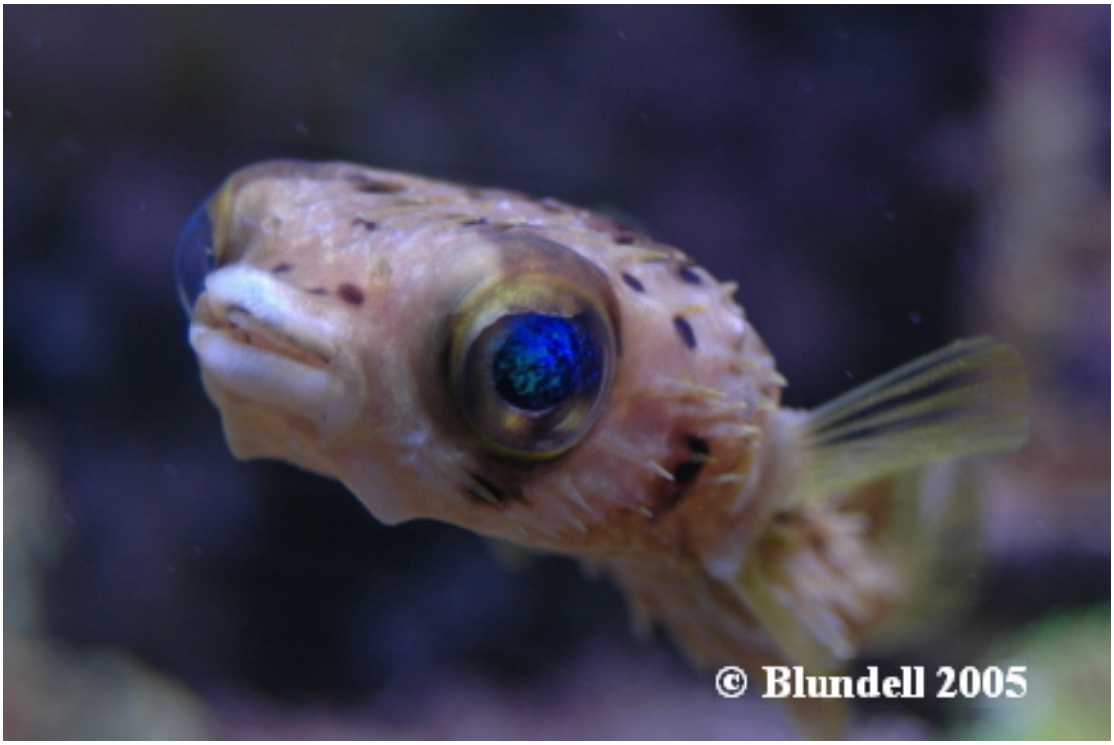
So, in closing, I must recommend to anyone considering seahorses, just do it (with CB!)! Trade in your tangs, wrasses and angelfish! Start enjoying a forest of macro-algae, and the wonders of amphipod hunters! Or, just come enjoy mine!

Puffers

By Adam Blundell

Those Cute Little Puffers -

This SeaStar fish spotlight is on the adorable puffer fish *Diodon holocanthus,* Linnaeus 1758. These fish are commonly called porcupine puffers, spiny puffers, or simply puffer fish.

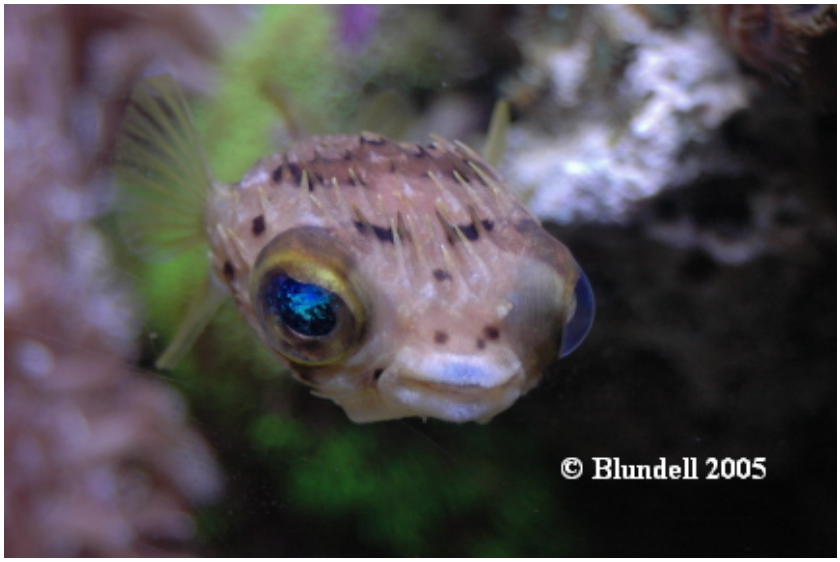


Identification -
Many people view puffer fish as unattractive to the average hobbyist aquarium. Although I do agree with that statement, these fish in particular are attractive and are certainly at the top of the personality list. These fish have an attractive tan colored body with dark brown patches. Their bodies are covered by dozens of spines that can be erected by inflating the body. Spines and body color allow for easy identification of this fish.

Behavior -
Porcupine puffers belong to the family Diodontidae unlike most common puffers of the Tetraodontiformes order. They are named of course for their two fused plates for teeth, which generate a large solid crushing force. These fish possess and use the typical 7 fins system, and swim with a diodontiform locomotion. These fish have a strong bone structure, the ability to inflate (increasing body size), and spiny projections. All of these items greatly increase their defense mechanisms, but ironically decrease their escape and chase swimming abilities.

Husbandry -
In this author's opinion these fish are the most misunderstood fish in the marine aquarium hobby. These fish are nearly always viewed as completely reef unsafe, which may be completely inaccurate. These fish may be kept in harmony with other fish, corals, and even common invertebrates. The fish shown here is kept in the author's aquarium with fireshrimp, peppermint shrimp, mythrax crabs, and even anemone shrimp. Small shrimp would be at risk, as krill and mysis commonly used as the primary food source for these fish.

Collection -
Diodon are found circumtropical. They serve little if not no use in the fisheries industry. They are nocturnal fish and are seen far less frequently during the day. Being seen less often and lacking bright coloration also contribute to low collection rates. These fish are sometimes caught with nets but being such terrible swimmers they are also commonly caught by hand. With proper collection common for these fish, healthy specimens can be found. The best chance for getting a healthy fish is to purchase an Atlantic fish or a fish from Fiji/Hawaii. Proper care after purchase is to ensure healthy and proper water chemistry, and more importantly a balanced and proper diet. Diet is of great concern for these fish and should include a mix of chopped up marine sea foods including various types of shrimp, squid, mussels, and crab meat.



Coral Highlight by Jake Pehrson

Above: Frogspawn *(Euphyllia sp.)*
Left: Actual frog spawn (frog eggs). Notice how closely the coral resembles actual frog spawn.

Quick Facts

Common Names: Frogspawn, Branching Frogspawn, Octopus Coral
Pronunciation: yoo-FILL-ee-A
Coral Type: Large Polyp Stony
Origin: Indo-Pacific
Care Level: Easy-Medium
Temperament: Aggressive
Light Requirements: Medium to High
Water Flow: Low to Medium
Temperature: 77° to 80° F
Feeding: Photosynthesis, Phytoplankton, Zooplankton, Organic Matter
Supplements: Calcium and alkalinity
Growth Rate: Slow to Medium
Propagation: Easy to Hard

Frogspawn

Euphyllia divisa & E. paradivisa

The coral Frogspawn consists of two species in the genus *Euphyllia*. *E. divisa* (Frogspawn) and *E. paradivisa* (Branching Frogspawn). Frogspawn can be distinguished from other Euphyllia species because it's polyps branch out and have round contrasting nodules or bumps that cover the polyp giving the appearance of a mass of frog eggs or "frog spawn" (see pictures).

Frogspawn are usually found in brown and green colors. E. divisa can often be found in a almost fluorescent green color. These corals are beautiful and almost always demand a high price.

Frogspawn is a hardy coral that can adapt to a wide range of tank conditions. They can also act as a water quality meter. If their polyps are not extending this can often be an early sign of poor water quality. Shortly after the water quality improves the coral should extend it's polyps again.

Feeding Frogspawn is accomplished relatively easy as they will catch food floating by. You can also direct feed Frog Spawn by placing fairly large pieces of shrimp, fish, krill, etc. near the mouth of the polyp. Directly feed frogspawn can increase growth and health of the coral.

Frogspawn are territorial and on a regular basis will send out long vicious sweeper tentacles to sting any adjacent corals. Most corals will not survive repeated attacks, so careful observation of the corals close to a Frogspawn colony is a must.

Some people with large populations of soft corals have reported difficulties in keeping Frogspawn (and other members of the genus *Euphyllia)* alive and health. Many have said that his is because they are very sensitive to toxins released by some soft corals. If you are having a hard time keep any type of *Euphyllia* and have a large population of soft corals in your tank this may be something to look into.

Propagation is easily accomplished with *E. paradivisa* as each branch will usually have a single polyp at the end and can be separated from the colony with no damage to cutting or original colony. *E. divisa* is much more difficult to propagated and propagation attempts can often result in the death of the entire colony and is not recommended. Frogspawn can also self propagate. It is not uncommon to see small "buds" growing from the Frogspawn skeleton. These can be broke off and attached to a rock and will eventually grow into an entire colony.

Salinity

By Jon Finch

What is salinity:

All natural waters contain some dissolved salts. In fresh water it's typicly such a small amount that it's measured in parts per million (ppm) and reported as total dissolved solids (TDS). As more and more salt is dissolved it becomes easier to describe the water in terms of salinity. Salinity, as far as the average hobbyist is concerned, can be thought of as the amount of solids dissolved in water reported in parts per thousand (ppt).

How saline is the ocean:

32 ppt near poles
35 ppt near equator

Specific Gravity vs. Density:

Specific gravity is not synonymous with density, although they are often confused. Even popular hobbyist authors confuse the two. Specific gravity is defined as the ratio of the density of a liquid compared to the density of pure water; as such it is a unit-less number. The nuances of using different reference standards for calculating specific gravity are beyond the scope of this article. But as an example, if one were to measure the weight of one milliliter of 35 ppt seawater (at 80°F) it would weight 1.023 grams giving a density of 1.023 g/cc. But the specific gravity of this same water sample is 1.0269 (60°F reference hydrometer).

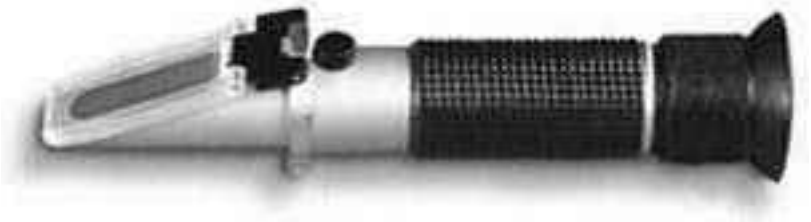
How is it measured?

Hydrometer

Hydrometers work by floating in a liquid medium. The denser the liquid the higher the hydrometer will float. This height can be observed and a specific gravity calculated. There are typically two different types of hydrometers. One is a long glass cylinder with lead shot in the base that floats in the water sample. The other is the "swing arm" type such as the ones sold by SeaTest. The swing arm points to the specific gravity of the liquid. The glass cylinder type is not temperature compensated and requires an additional calculation if the sample water is at a different temperature then the hydrometer reference temperature. The swing arm types are temperature compensated and can be read directly.

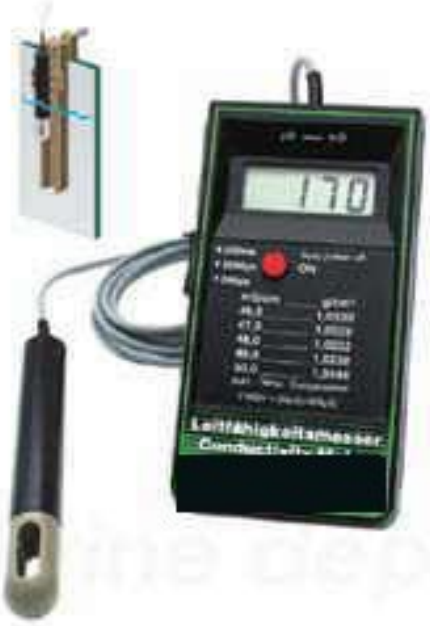
Refractometer

Refractometers measure the angle that light passing through a liquid is bent. From this angle the specific gravity can be calculated. These are very easy to use and as such are gaining popularity among reef keepers. Most, if not all, refractometers sold to hobbyists are calibrated for a NaCl solution. Since seawater also contains other salts, these meters are slightly off right out of the box.



Conductivity

Although conductivity is probably the most popular way to measure salinity among oceanographers, its cost has kept most hobbyists from using it. The meter works by passing a current through the liquid sample and measuring the conductivity (or conversely the resistance). From this the salinity can be calculated.



Does it really matter?

A poll of reef hobbyists will undoubtedly find tanks with salinities ranging from 30 - 38 ppt (approx. 1.022 – 1.028 SG). I believe that nature had it right and try to maintain my tank at 35 ppt (1.0269 SG), but many beautiful tanks are maintained at other salinities. I would suggest that whatever salinity you decide to use that you try to keep it as stable as possible. And if you keep your salinity below natural levels, don't expect your salt mix to have natural levels of calcium, alkalinity or magnesium. And finally, if you would like to check the accuracy of your hydrometer, refractometer or conductivity meter an easy standard can be made using table salt and is found here:

http://reefkeeping.com/issues/2004-06/rhf/index.htm