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Habitattitude™ – Get It

What is Habitattitude™? It is a major national initiative to increase public awareness of the potential problems with aquatic invasive species. The initiative was developed by the national Aquatic Nuisance Species (ANS) Task Force and its partner organizations in collaboration with the U.S. Fish and Wildlife Service, the Pet Industry Joint Advisory Council (PIJAC), the National Sea Grant College Program, and many state fish and wildlife agencies. The goals of the campaign are to raise awareness of the issue amongst aquarium owners and water gardeners, get the support of these two groups for responsible behaviors and educate members of these groups on ways to prevent the introduction of potentially invasive species.

Why is Habitattitude™ Important? Invasive species have the potential to become major environmental and/or economic problems. In general invasive species are organisms that are released in an area in which they are not native to. Thus in almost all cases an invasive species is also a non-native species. However, the alternative is not true: not all non-native species are also invasive species. Many times the source of the initial introduction of the invasive species is not known but for aquatic species the aquarium and water garden hobbies are often, and many times unfairly, blamed. Habitattitude™ was developed to be a tool and campaign to teach consumers on how to adopt a conservation mindset and learn about the issue and alternative ways to releasing unwanted aquatic plants and animals.

What you can do. For individuals and consumers the campaign has detailed resources at a web site whose address is www.habitattitude.net. In general Habitattitude™ encourages you to prevent the introduction of non-native species by not disposing of unwanted aquatic species in the nearest body of water. Instead, steps one should take include contacting a retailer to see if they would take the specimen, contacting a local aquarium or water garden society to see if they would take the organism, or giving the species to another aquarist, pond owner or water gardener.

If you are a member of a local aquarium, koi or water gardening club you can bring Habitattitude™ to the attention of fellow members and set-up an organized way to accept donations of aquatic species no longer wanted by other community members. Perhaps consider contacting a local store and setting-up a program to take unwanted fish and plants that the store owner could not otherwise accept.

For stores owners, a goal of Habitattitude™ is to provide each store with a set of education materials including posters, shelf talkers and other materials branded with the Habitattitude™ logo (Fig. 1). Manufacturers of aquarium and pond supplies along with other groups in these industries will also be working with the member organizations of Habitattitude™ to help spread the campaign message.

Habitattitude™- Get it and become part of the solution

Habitattitude™
PROTECT OUR ENVIRONMENT
DO NOT RELEASE FISH AND AQUATIC PLANTS

Photo by Blane Perun

The Hot Pink mushroom ***Ricordia yuma.***

Propagation of the *Ricordia yuma*

By Blane Perun from WWW.Farms-of-TheSea.Com

Spending nearly four months of constant search and negotiation trying to obtain a Hot Pink *Ricordia yuma*; I knew if I was lucky enough at some point to find one I would have to do something other than just take the piece to market. In my spare time I had searched around and asked a few people in the industry if they had experience with the species in captivity and had they witnessed any natural reproduction. I'm sure there are people out there but my search had not turned up anyone. My only game plan at this point was to apply what I had learned in propagation of other mushrooms to the Yuma.

Luck turned in my favor one day and I was able to track down two pieces from a wholesaler in which I had recently opened an account. For any storeowners out there, sometimes the beginning of the relationship is when you get your best and most rare specimens, so don't be afraid to ask. I was a bit surprised at the wholesale price, but searching around on the web seeing what these specimens went for retail, I eventually saw the big picture.

I promised myself at whatever the final price; I would attempt propagation of the Yuma knowing full well I could lose the investment in twenty-four hours. If there was a loss at the very least I would have documented the methods I took so the next bereaved soul could benefit from the knowledge I acquired. With such a diminished natural resource the desire to keep a specimen like this really does not leave many options other than aquaculture. Presently the collection pool seems to be nearly drained so possibly anyone reading this article that may have been keeping one or multiple polyps in captivity may wish to emulate these propagation techniques in hopes of keeping the species available on the collectors market.

Necessity often is the drive behind invention and risk; it certainly was in this case. The easier option of releasing the item at retail had absolutely no appeal to me whatsoever. I have had tremendous success in propagating the *Ricordia florida* and to a lesser extent (demand-based) *Rhodactis*. I, like most of us out there tinkering with propagation, began with the *Discosoma*, which seems to be nearly indestructible.

Based on previous experience with *Discosoma*, watching natural multiplication though lateral fission, I noticed that a very small piece of mushroom, if attached, could mature into a nice-sized specimen in due time. However the same principle had not always been true for me when it came to *Rhodactis*.

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Propagation of the *Ricordia yuma*

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From my experience they seemed more sensitive after propagation, requiring more care and less light intensity until they heal. Oddly enough I have cut a quarter sized *Ricordia florida* into about 16 pieces and saw them mature to small eraser sized polyps in just a short time.

Certainly one rule that had applied to any mushroom I had worked with was that a single slice down the middle seemed to be the least intrusive and had the quickest rebound time. After much contemplation my objective was to cut the specimen in half, and let it heal then cut each piece in half once more. The variables here for me were the healing time and whether the polyp would heal at all.

At the beginning I figured I could try propagating some other Yumas I had here to see if I noticed anything unusual about them or how they reacted to the incision and most importantly how they healed. The first step for me then and now was to provide the propagated specimen with some fresh clean substrate; in this case I use Florida Crushed Coral. I pour a bit into a Solo container, just enough to weight it down in the water. I used the high container because from past experience the frags would come out of the shorter ones due to water movement.

In the case of this first Yuma, which I had grown for months now, I would have to separate the base from the plug that it had been growing on. Don't be intimidated convincing the foot to loosen. It ís not that difficult, even if its been attached for years. The trick is don't tear at the disk or foot itself, but slightly pry it off. Actually if you look around the perimeter of the foot you should notice a section that has just enough room to slip in a blunt-edged tool. Take note I said blunt edge, you don't want to lacerate the foot, the coral will need to expend all its energy on healing the cut to be made.

Next put the specimen on a plastic cutting board. Avoid using wood it can harbor bacteria. Make sure you wet the board with saltwater from your tank, I find that this aids in some extent in avoiding a lot of sliming. You then want to secure the specimen between two fingers, each on the left and right side of the mouth. Then slowly compress the disk and you should see water expel from the mouth if there is any left. This step could also be done in the tank, but I have a tendency to let them slip through my fingers.

Now the cut: don't hesitate and make sure your tool is clean and sharp! Before I cut I typically check the condition of the foot, and try to ensure the cut provides an equal amount of foot for each half. In my case I am using a pair of new, very sharp scissors and am propagating this specimen into four equal-sized pieces.

After waiting about a week I noticed the Yumas healing nicely and had not run into any complications during the process. All in all it felt like working with a large bumpy *Discosoma*. I figured now would be as good as a time as any to emulate this process one more time with the intended.

Starting out in much the same manor, identifying where I want to make the cut by a close inspection of the base. All of the sudden "bam", cutting through this was entirely different than any *Ricordia* I have ever propagated. The disk had the consistency of a vinyl-based plastic and was very thick. As where other Mushrooms seems to have a very thin elastic layer on the disk, this one was very thick in comparison. In fact, it was a little difficult to cut through fast and clean without a tearing motion.

Photo by Blane Perun

*The underside of the **R. yuma** after the cut.*

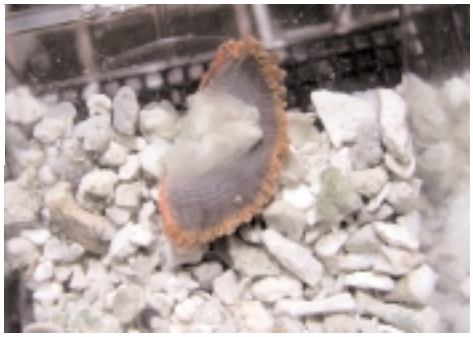

Photo by Blane Perun

*Another photo of **R .yuma** after the cut.*

Another surprise, mega guts. We have all seen Mushrooms expel them from time to time, but I did not expect so much. Looking at the photo you can see the strength of the walls and the rigidity of the intestine cavity. Most mushrooms after being cut have the appearance of jelly. With half of the foot gone, this guy still stands perfectly and the wall strength was not expected. On the same token I was beginning to realize that I had no experience with anything like this and had hoped the principles I applied to other Mushrooms would work here.

I had contemplated, with the amount of internals and the strength of that wall, the specimen could not close in on itself with the ease *Ricordia florida* does, or other Yumas for that matter. I was very glad I moved to these hang-on breeders so I would be able to keep close tabs on the healing process. That day I had checked on the piece at least five or six times, and was pretty surprised everything looked good. I had noticed, however, in contrast to the other *Ricordias*, Yumas certainly slimed up around the rear on the incision, particularly near the intestines. I took care to gently squirt off the group two to three times a day with a small pipette. This was a tedious but necessary process I believe. A lack of care in this area may have led to infection. I had

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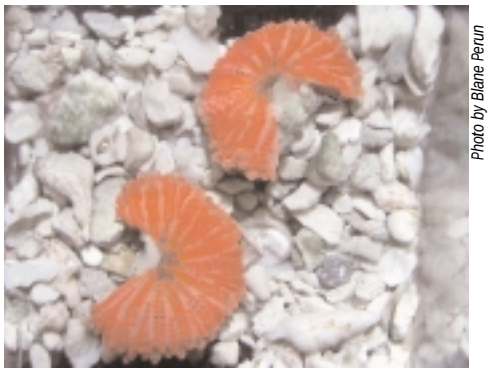


Photo by Blane Perun

The two cut pieces healing

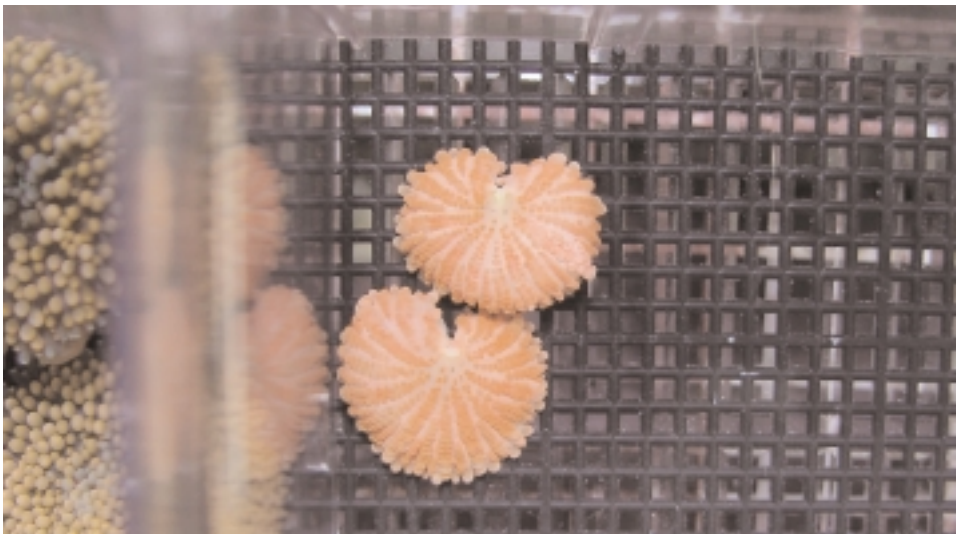
Photo by Blane Perun

Front and back views as the healing process continues.

Photo by Blane Perun

*Close up of the underside of the healing **R. yuma**.*

Photo by Blaine Perun



*Now there are two almost 100% healed Hot Pink **R. yuma** mushrooms.*

Propagation of the *Ricordia yuma*

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taken several photos a day and have included the most dramatic ones in this article so you can witness the healing process.

Most impressive was the speed of the foot contorting itself to close in and form a complete cylinder once again. This is where the mushroom first directed its energy. Once the foot closed its wound, the disk began tightening horizontally and constricting vertically to begin taking on the appearance on a arc instead of a flat disk. Almost immediately the half circle looked more like a small pie with a piece or two removed. I was surprised that the energy had not been directed towards closing off the intestines with the foot, it seems they would make good food for a small fish on the reef.

It appeared that much of the activity happened early on, then things really began to slow down. This is where the process seemed to differ from other specimens I worked with (*Rhodacits* and *Ricordia* alike). I believe it is due to the fact that the disk is so rigid that the healing process is a combination of growth and closing of a wound. Where in the case of *Discosoma*, the mushroom seems to make noticeable forward progress each day and in contrast the animal is uniformly soft and flexible. Once the polyp was about 75% closed I noticed the foot expanding from the bottom to meet the top of the disk and seal off the vulnerable intestine area. As I mentioned I was surprised that I had not seen the foot closing in from all sides to engulf this area. This could have something to do with the wall rigidity or not, but it may point to the reason all of the initial energy seemed to be directed toward the foot.

At this point the specimen was 90% closed; the outer walls had fused with the disk closing off the internals, the foot had engulfed the intestinal region for protection, with the exception a portion of it was left exposed at the top of the disk. My guess is since there was not a functioning mouth apparatus; this mushroom is forced to expose a section of the intestines for absorption feeding until a mouth could be formed. This is not something I had witnessed or at least paid much attention to with *Ricordia florida*, *Discosoma* or *Rhodactis* mainly because the process takes place quicker and there is less time for observations.

About two months after this last photo I repeated the process cutting each of these polyps into two. The healing time and pattern was similar, but I think in retrospect it was very taxing on the coral too and very unnatural. The process was very interesting and I had learned a lot from my observations. In the end there were four Hot Pink *Ricordia yuma* where there had only been one! You can find my propagated specimens at www.farms-of-thesea.com and you can read about my trials and tribulations at www.thesea.org

PUBLICATION INFORMATION

SeaScope® was created to present short, informative articles of interest to marine aquarists. Topics may include water chemistry, nutrition, mariculture, system design, ecology, behavior, and fish health. Article contributions are welcomed. They should deal with pertinent topics and are subject to editorial reviews that in our opinion are necessary. Payments will be made at existing rates and will cover all author's rights to the material submitted.
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Fire!

By Dr. Peter Wirtz

The Fire worm *Hermodice carunculata* reaches a length of 30 cm and can grow to the thickness of a finger. It lives on many different types of ocean sediments, on both sides of the subtropical and tropical Atlantic, and in the warmer parts of the Mediterranean Sea.

Photo by Dr. Peter Wirtz

*Fire worm feeding on **Tubastrea** coral at the Cape Verde Islands*

This is an impressive species for several reasons. Each of the up to 125 segments bears two tufts of white bristles. When the fire worm feels threatened it can spread these bristles. Do not touch a fire worm ! The bristles easily penetrate the skin, where they break off and cause an intense burning sensation that can last for weeks. Therefore the name "fire worm"! You can try to remove some of the bristles with scotch tape but beware you will never be able to remove all of them.

Photo by Dr. Peter Wirtz

When feeling threatened the fire worm spreads its bristles.

As can be seen in the photos accompanying this article, the color of the fire worm can vary from red to greenish, with golden rings between the segments. In addition to the two tufts of bristles, each segment bears a pair of red, branched gills. The large pleated and branched red appendage on the head of the worm is called a caruncle. The function of this structure is still not known with certainty but it is most likely a chemosensory organ; that is it probably serves for smelling.

Fire worms prey on many different invertebrates and are among the few animals that even eat sea anemones! The Caribbean shrimp *Periclimenes yucatanicus* is said to defend its host sea anemone *Condylactis gigantea* against approaching fire worms, thus re-paying the protection it receives from the anemone. Fire worms also prey on coral, such as *Tubastrea* and many other species, and on hydrocoral such as *Millepora*. They can even overwhelm animals larger than themselves, such as for instance brittle stars. Sometimes, several fire worms appear to "co-operate" in subduing prey. But most likely the smell of the wounded prey attracts additional fire worms that then also attempt to feed on victim.

Photo by Dr. Peter Wirtz

The red organ on the top of the head, called a caruncle, probably serves for smelling.

In contrast to most bristle worms, fire worms are day-active animals. As they are anything else than defenseless, they do not have to hide from fishes or other predators. The mouth of fire worms does not contain jaws but sharp ridges for scraping. For feeding, the mouth is everted and placed over the food. In addition to preying on invertebrates, fire worms are scavengers. Any dead animal on the bottom of the sea, from jelly fish to true fish, will attract them from far away. Soon, the corpse is entirely covered in a mass of fire worms.

Fire worms are robust animals easy to transport and easy to keep in an aquarium. Of course, they are completely unsuited for an aquarium containing coral because they would eat the coral. Most other invertebrates in the same aquarium, from sea anemone to brittle star, would sooner or later also fall prey to them. They do, however, not pose a great threat to the aquarist: they do not reproduce rapidly and any fire worm accidentally introduced into the aquarium can easily be removed with a forceps (remember: don't touch it with your fingers!).

On the other hand, fire worms are attractively colored, day-active animals. Their behavior would surely merit a closer look in an aquarium specially set up for them.

Literature:

Sussman, M., Y. Loya, M. Fine, E. Rosenberg. 2003. The marine fireworm *Hermodice carunculata* is a winter reservoir and spring-summer vector for the coral bleaching pathogen *Vibrio shiloi.* Environmental Microbiology **5**: 250-255.

Photo by Dr. Peter Wirtz

Any carrion on the bottom of the sea will soon be covered in fire worms