

Part 8

Friend or Foe

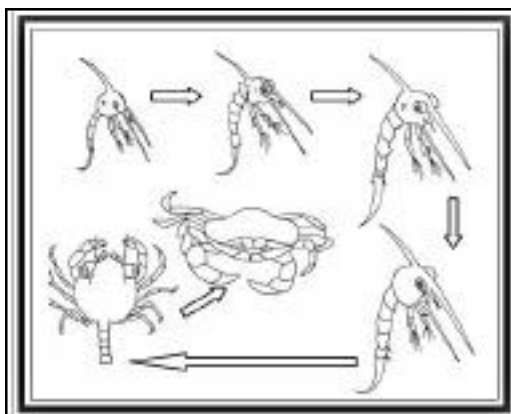
The Crustaceans Part 2 - True Crabs

DIGITAL IMAGES BY THE AUTHOR

In the last article of this series we looked at the Arthropods- segmented, "joint-footed" animals that include insects, crustaceans and their kin. We centred on the assemblage within the crustaceans that is known as the Order Decapoda and which includes some of the most familiar crustaceans – shrimps, crabs and lobsters and almost 25% of all known crustaceans. This article will focus on a further subdivision of the Decapoda called the Brachyura-a group containing the most familiar crustaceans of all – the true crabs which is represented by over 4500 described species.

True crabs can be distinguished from other decapod crustaceans, including porcelain crabs and squat lobsters, by the fact that their tails are not used in locomotion instead the tail is curved underneath the body. Sexes are separate in these animals and the tail can be used as a means to ascertain the sex of an individual: Female crabs incubate their eggs beneath the tail. You may have noticed this on some of the crabs in your aquarium as the egg mass is often brightly coloured- boxer crabs (*Lybia spp.*) often have bright orange egg masses present when imported. Sexes can be differentiated as the tail of the female is much broader and more rounded than the tail of a male in any given species.

Most crab species have a similar life cycle consisting of a planktonic larval development. Figure one shows how the body form of the crab changes from the first zooeal stage up to the adult form. Prior to the zooeal stages the life cycle resembles that of the shrimp depicted in the previous article in this series. We generally only ever experience the adult stage although this will undergo further moulting as it grows to maximum size.



Life cycle stages of a typical true crab. There are four zoëal stages in this situation (each separate larval stage is called a zoëa), a "big eyed" or Megalops stage which resembles a tailed adult and finally the adult stage has the tail tucked beneath the body characteristic of all brachyurans.



Underside of a teddybear crab. The broad tail shows that this is a female.

I have long since stopped being surprised by comments made by non-aquarists as they inspect the contents of the aquaria here at Cheshire WaterLife. Brittle stars have been mistaken for octopi, all corals are plants and so on. But almost everybody from the age of two, and sometimes much younger, can identify a crab as a crab. If all crabs were benign this would make their location and treatment in aquarium situations extremely easy but there are several species regularly encountered by marine aquarists that are definitely harmful,



TRISTAN LOUGHER B.Sc.
graduated from Manchester University in 1992 with a degree in Zoology. He has worked at Cheshire Waterlife for five years.

some which can be harmful depending on circumstance, and some which are arguably beneficial. If this article does not cover a particular species that you have encountered then it is up to you as the responsible aquarist to observe the specimen to determine whether it should be removed or not. I am perfectly happy to house unwanted crabs as most will do well in aquarium situations and sumps can be decent places to house any rogues that you may wish to keep away from the aquarium proper.

True crabs are widely encountered by marine aquarists because many species are extremely hardy. It is not uncommon to open a box of live rock and find several live species present. In the days of Florida live rock I can remember opening one box and twenty plus individuals of one species went scuttling across the floor! If this hardness is shared by most species of true crab (and I suspect it is) then it is no real surprise that we can encounter so many species in a reef situation. I will cover the removal of problem species later in the article unless a specimen requires individual attention.

Sub-Phylum : Crustacea

Class: Malacostraca
Superorder: Eucarida
Order: Decapoda
Infraorder: Brachyura
Family: Majidae
Genus: *Mithrax/Mithraculus?*

I am basing the name of this crab species on comparisons with the emerald or gorilla crab *Mithrax sculptus*. Emerald crabs are found throughout the Caribbean region in



Mithrax sp. Note the rounded nodules on the carapace but particularly those spoon shaped pincer tips.

shallow water where they feed on algae which is scraped from rocks using the blunt ended, almost ladle-shaped, claws. It is this last feature, shared by the unidentified, yet extremely common, crab in the photo. Whether all individuals bearing these pincers are one species or represent a group of closely related species requires further investigation but the characteristics of all individuals I have encountered are the same. They have bristly or hairy legs to some extent – colour of the body varies from cream coloured through light brown to dark brown to black. Some appear uniformly coloured whereas others are mottled. They all without exception have these blunt ended pincers which look as if they have been scooped out. This shape appears to be ideal for the removal of algal films from the surface of rocks but I also seen them employed in breaking off small chunks of coralline algae or even some of the tough wiry forms of macroalgae typically found on Caribbean live rock.

Emerald crabs are cited in the literature as being capable of removing *Valonia spp* algae but this seems to depend very much on the individual concerned and how much other food is available to the crab. This species grows to around 3-4 inches across the carapace which in the context of most reef aquaria is a large beast. I have not had experience of such beasts but reports state that they are unproblematic at this size. Certainly small *Mithrax* species seem to behave impeccably.

It must be stated here that there are very few species of crab which will turn down a free protein meal. Even if a crab spends much of its life eating algae, the arrival of a large lump or protein in the form of e.g. a fish – dead or dying is likely to be a windfall rarely rejected. The fish is unlikely to have fallen prey to a *Mithrax* crab because they do not seem to be aggressive, but several specimens have been blamed for reaping the harvest that a dead fish represents. I always leave these

crabs where I find them as I have never observed them doing any damage to the aquarium inhabitants. If you have different experiences with them then remove them but until this happens I would recommend giving them the benefit of the doubt.

Many other representatives from the family Majidae are imported either by design or accident. They include the well known and popular pruner of corals the Decorator crab plus a wide variety of other species including sponge crabs. Many species can arrive by accident on specimen pieces of coral. Their adaptations for camouflaging themselves may make some members of the Majidae difficult to spot but their removal is preferred as they can be quite destructive as they prune corals and other invertebrates to enhance their disguise.



Camposcia retusa -Decorator crab with decoration. A fascinating species that causes damage to corals by pruning them. A good natural propagator?



A closely related species – this one covers itself with algae to remain concealed. Possibly *Huenia sp.*



Sponge crab. The living sponge conceals the crab well by breaking up its outline.

Xanthid crabs

Xenia crab



The white colouration of the *Xenia* crab can make it difficult to spot but the observant aquarist should be able to locate one if present.

Xanthid crabs superficially resemble swimming crabs (see later) but note that the hind legs are of the clinging type in Xanthids not paddle shaped. Over recent years there is one species of crab which has become much more commonly encountered than in the past. This is due to the increased amount of pulsing *Xenia spp.* imported for the aquarium trade. The white pearlescent *Xenia* crab is often found ensconced in even surprisingly small colonies of *Xenia* soft coral. The nature of the beast is difficult to ascertain. Early encounters suggested that the crab was a harmless commensal species perhaps living off the mucus of the coral. Due to the increased volume of encounters with this animal a different story seems to be emerging. That the pulse coral is bothered by the presence of the crab is certain. I have witnessed small colonies shrink in size due to its presence. It could be that larger colonies are not bothered unduly by its behaviour as the disturbance will

be shared by most of the colony rather than a small area as in the case of smaller pieces. However, there are reliable reports of the crab consuming the *Xenia* itself often after the colony has become damaged in some way. For this reason I must recommend removal of this undoubtedly beautiful creature.



Xenia shrimp. Apparently harmless.

Since writing the previous article in the series I have found a new species of shrimp that appears to live commensally with *Xenia sp.* soft coral. This shrimp measures just under 11mm and appeared to be completely harmless. It did not effect the *Xenia* in the short to medium term and seemed to forage amongst the polyps for food.

Other Xanthid crabs are imported infrequently and most are potentially harmful. Remove them whenever possible.

Family Dromiidae



Dromiid crab – unidentified species without sponges present.

Dromiids are another brachyuran species often referred to as sponge crabs. Typically they have rather short yet powerful looking pincers and a rounded carapace. Dromiids

will shape a piece of sponge or other encrusting animals such as tunicates or soft corals and then hold it over the body with the small hind legs – an identification feature of this family. They are unlikely to be harmful in a reef aquarium other than pruning prize specimens of coral although they follow the same rules as for all crabs – protein meals are the best!

An interesting characteristic of many dromiid species is the fact they eggs hatch into young crabs rather than having the planktonic stages typical of most brachyurans. I am yet to experience a gravid female being imported but I could get overrun with them!

Pilumnidae Teddy Bear Crab *Pilumnus spp.*



The teddy bear crab – hated by some and never even noticed by others.

The teddy bear crab is almost unmistakable as the entire body is covered in hair-like projections. Some aquarists will never spot the entire animal perhaps only getting fleeting glimpses of a black pincer claw poking out from behind a rock when the lights are out. This species can conceal itself in some apparently tiny holes that you would think it impossible for them to squeeze into. Offering advice on teddy bear crabs is not straightforward- it really depends on the personality of the individual in question. Certain specimens have been known to cause great damage in reef aquaria – consuming corals and attacking most animals present. Some have never been a problem despite attaining a large size. The reason for this seems to be related to their diet prior to import. Removal must be recommended however, the only problem is how? Trapping (see later) can work well for certain individuals but the only sure way to get them is to remove the rock in which they hide and wait until they vacate it.

Do not mistake the relatively harmless *Cymo spp.* hairy coral crabs for the teddy-bear crab. These have much shorter hairs

and a more rounded carapace than *Pilumnus spp.* crabs. These depend on their coral hosts for their survival. As they move about corals such as *Acropora* the hairs collect mucus which is harvested by the crab for food. This can result in some minor damage to the coral but as there will not be more than perhaps one or two individuals present in an aquarium their effects will be well spread out. Being such a specialised feeder its removal from its host will result in its starvation and death.

Menippidae -Red Eyed Crabs and their relatives

Eriphia spp. and relatives



A villain of the peace – the red eyed crab



***Eriphia sp.* A different species from the one above – but equally destructive.**

There are a number of different species that are collectively called "red eye crabs" obviously sharing the same characteristic of vivid red coloured eyes. Some are members of the family Menippidae but others are more likely to be Xanthids. Individuals from either family are powerful looking crabs often imported with live rock and coral specimens. To the untrained eye they may be mistaken for the previously discussed *Mithrax* crabs but can be distinguished from the latter by having pointed ends to the pincers, red eyes and often a lumpy looking- with the raised areas forming a symmetrical pattern resembling a "six pack" rather than rounded nodules. The eyes (which may be reddish in *Mithrax spp.* are more prominent in *Eriphia spp.* and have a more stalked appearance. They are predators and will attack any animal fish or invertebrate that they have a chance of subduing. They should be removed without exception

although placed in a small aquarium or sump they make interesting specimens.

Family Portunidae Swimming Crabs



Unidentified swimming crab – note the paddle-like hind legs and well developed eyes.

Anyone who has been rock-pooling along the Western coast of the U.K. is likely to encounter the native member of the Portunidae. Most British crab species will either stay stock still when disturbed or try to make a dash for freedom. The swimming crab rears up on its back legs with its menacing pincers outstretched and dares you to get closer! Such feisty beasts are not creatures for the reef aquarium although they would make excellent specimens for the specialist aquarium. Portunids can be easily identified by their paddle shaped hind legs used for locomotion in water. The eyes are well developed and, like Trapeze crabs (see later) they are located at the front corners of the carapace thus affording excellent binocular vision. The specimen in the photograph was only small – about the size of a fifty pence piece but could still have presented a problem to small gobies and shrimp. The larger the specimen, the greater the range of potential prey items within an aquarium.

Family Trapezidae Common Name: Trapeze crabs

Most reef-keepers with small polyp stony corals (SPS corals) such as *Acropora spp.* will be aware of these little crabs. Often found in pairs they reside within the branching arms of the coral and were once thought to be consuming the coral itself. Observations of aquarium specimens leads experts to believe that the trapeze crabs are actually beneficial to their hosts by removing unshed mucus, protecting the coral from predators and the removal of detritus from its surface. An indication of how much beliefs in this hobby of ours can change is the fact that nowadays many aquarists will not purchase pieces of *Acropora* if the crabs are not present!

As previously mentioned trapeze crabs have well developed eyes located at the front corner of the carapace. They can be easily distinguished from swimming crabs which share the same trait by the hind legs. As we have seen the hind legs of swimming crabs are paddle shaped whereas they are pointed in trapeze crabs – an adaptation shared by the vast majority of brachyuran crabs-for grasping. Of course, it is unlikely that you will find a trapeze crab out of the context of a small polyp stony coral but this does happen, particularly when a new coral specimen is introduced and the trapeze crab abandons ship. You should be able to reunite the crab with its home if this occurs.

Catching Crabs(!)

Ahem, not as easy as it sounds this. It will never cease to amaze me just how small a hole your average crab can run into when alarmed. This is doubly true of teddy bear crabs – they must need some grease and a shoehorn to get into some of the nooks and crannies we find them in. The would-be crab hunter needs to use persuasion and guile to obtain his or her quarry. I find the best technique is to use a tall glass tumbler baited with a fish- based food such as lancefish or silversides. Place the glass in an upright position preferably between two of rocks. It is very important that any ornamental shrimp that you have are kept occupied with meals of their own – something that will last them a while and hopefully cause them to have little or no interest in the baited trap. The problem here is that we are working on the principle that crabs either cannot swim (true for the vast majority) or that they cannot swim vertically (usually true of Portunid crabs). This does not count for shrimp. Their tails are not curled under the body – they are lined with rows of specialised limbs which propel the shrimp forward. This means that your bait can be nabbed and scoffed by the opportunistic shrimp before the target crab has even left its lair. Choosing a smooth sided glass will mean that in the majority of cases the crab will not be able to gain enough purchase to climb out. This technique works very well for most crabs. I should say that the best results with this technique are achieved when your aquarium is in total darkness.

Unfortunately, this removal method is not 100% effective. There is always a hardcore of resistance to even the most subtle removal technique. It may be a coincidence but one of the trickiest specimens to try and trap is the benign teddy bear crab. This is the individual of the species which doesn't seem to be a pest in the aquarium but the aquarist would like to remove just in case it becomes one. In these situations a search of the aquarium is

necessary to locate where it is hiding but as in all wars an hour's reconnaissance is worth a day in battle so try and establish where the crab is hiding before you get wet. I know of several instances where every rock in an aquarium has been removed and inspected and the target crab has not been located! Remove the rock to another aquarium or take it to a sympathetic dealer who may have the means to remove it and return the rock to you. Otherwise, get your chisel out and chip around the rock until the crab falls out. Please note that I do not condone the killing of any of the unwanted animals found in reef aquaria. I appreciate that in some case deaths are inevitable as specific dietary requirements of certain coral-eating animals will mean that they will die if removed. In this case it's the coral or the predator so I have no problem with it. However, if an animal can be sustained elsewhere then it should be given the chance. After all, it didn't ask to be put in your aquarium – it was minding its own business on a reef before you got hold of it! Seriously though, put unwanted crabs etc in sumps or set up an aquarium for them. A simple one will usually be more than adequate. Otherwise, see if your dealer will take it off your hands, you won't get anything for it but it will serve as an educational tool for other aquarists.

This ends our look at the Brachyuran decapods or crabs as we like to call them. In the next article I hope to tie up some loose ends from the Crustacean assemblage- Isopods, Amphipods and their relatives.

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