

Tropical Marine Invertebrates

How to care for marine crustaceans

Marine crustaceans are very diverse and most make excellent inhabitants. Some perform an excellent 'cleaner' role in the aquarium and others will exhibit interesting behaviours. Although there are thousands of species of marine crustaceans, this care sheet aims to focus on crabs, shrimps and lobsters. As marine crustaceans are so diverse, they have many different needs. Always consult your OATA retailer before purchasing any marine crustacean to ensure they will mix with current tank mates.

Thanks to TMC for use of this picture



Water requirements

Marine crustaceans are usually undemanding of water chemistry and their suggested parameters are shown below. These parameters are a general guide for this group of invertebrates, so it is important to check with your OATA retailer for any species-specific requirements before purchasing. Please also note that if keeping these invertebrates in a reef aquarium, some parameters will need to be altered to accommodate more sensitive species.

Salinity:	Between 1.023-1.026
Temperature:	Between 24-26°C
pH:	7.9-8.3
Ammonia:	Zero mg per litre
Nitrite:	Zero mg per litre
Nitrate:	Not to exceed 50 mg per litre
Carbonate hardness:	Hard (8-12°dkH)
Calcium:	Between 380-450 ppm
Magnesium:	Between 1250-1350 ppm

Biology

Crustaceans are invertebrates that have a hard exterior called an exoskeleton and a body that is divided into segments. A crustacean will shed the hard exoskeleton as it grows and it is common to see empty 'shells' in the aquarium. After they have shed, it will take them a couple of days for the new exoskeleton to harden and will often hide during this time. Marine crustaceans vary in size: sexy shrimp (*Thor amboinensis*) will only grow to 2cm whereas blue spiny lobsters (*Panulirus versicolor*) will grow to over 30cm.

Some marine crustaceans such as mithrax (*Mithrax sculptus*) or hermit crabs perform a grazing function in the aquarium and will readily consume specific types



of algae. Other species such as peppermint shrimp (*Lysmata wurdemanni*) will consume unwanted *Aiptasia* anemones, whilst cleaner shrimp (*Lysmata amboinensis*) may eat parasites on larger fish. Some species, particularly smaller shrimp, are unlikely to live longer than two years, but other species can live for many years in a well-matured set-up with good water quality. Some species of marine crustacean, such as peppermint shrimp, are bred on a commercial scale and tank-bred individuals are readily available.

Generally, marine crustaceans can be kept in groups or alone. Some species, such as sexy shrimp, will need to live in small groups of at least four and therefore, should not be kept alone as they may become stressed. Other species, such as mantis shrimp are quite the opposite and will grow large, become aggressive and have specific husbandry needs, so should be kept alone.

It is also important not to overstock the aquarium with crustaceans as they may fight for food or territory. As marine crustaceans are invertebrates, copper is toxic to them and care should be taken when using treatments in the aquarium or introducing fish from retailers that use copper in their systems.

Aquarium requirements

As a general rule, you should within reason, buy an aquarium as large as possible. It is recommended that an aquarium of at least 40 litres is used for smaller species of crabs and shrimp. Larger crustaceans will need a larger aquarium, the size of which will vary by species, ask your OATA retailer for advice. Whatever the size, **a filter is essential**. For marine set-ups this can be in the form of live rock with sufficient water flow, an internal or external filter, or a sump-based filter. A protein skimmer can also be beneficial for maintaining water quality as it will help to remove dissolved organic waste before it can break down into more harmful substances.

Marine crustaceans are undemanding of décor and need very little. Live or artificial rock is essential as it will provide opportunities for grazing and areas for freshly moulted individuals to hide. Some crustaceans may require a sand bed for them to excavate a tunnel, so the aquarium should have at least 4cm of coral sand on its base. There should be a moderate water flow to provide good surface movement and to ensure detritus doesn't accumulate.

A heater is required to maintain a suitable temperature all year round. To minimise fluctuations in water temperature, the aquarium should not be situated near any draughts or heat sources. It should also be out of direct sunlight and away from loud noises, vibrations and sudden movements. Overhead tank lighting is recommended to maintain a correct day-night cycle. This will not need to be particularly bright for crustacean species but may need to be brighter if keeping with coral species - see our coral care sheets for more information.



Water testing kits are essential so that water quality can be checked on a regular basis (once a week) to ensure it does not slip below the water requirements stated earlier.

Introducing your crustacean

Before adding any invertebrate, seek advice from your OATA retailer to make sure that your aquarium is appropriate for the crustacean you would like to keep. Check that the water quality in your aquarium is suitable i.e. levels of ammonia and nitrite are zero. Only increase the number of livestock you have in your aquarium slowly as the population of beneficial bacteria established when maturing your aquarium filter need to increase every time more livestock are added and feeding increases. Overstocking or stocking your aquarium too quickly can result in 'new tank syndrome'. This occurs when there are not enough nitrifying bacteria to cope with the increased waste from the livestock, leading to unhealthy levels of ammonia and nitrite, which may cause invertebrates to become ill or die.

Your OATA retailer will usually sell your crustacean to you in a plastic bag, try not to keep them in this for too long. Once purchased, take your new invertebrate home as quickly as possible because they are easily stressed by bright lights, extreme temperatures, noise and movement.

Once home, your invertebrate will need to acclimatise to their new environment and a common method of doing this is known as the 'floating bag' method. Switch off the aquarium lights and take the bag containing your new invertebrate out of its outer wrappings carefully, avoiding exposure to bright light. Float the bag in the water of your tank to ensure the temperature in the bag is the same as the aquarium water. After 10 minutes, slowly introduce small amounts of aquarium water into the bag containing the invertebrate for up to an hour. Invertebrates will struggle with changes in water chemistry more than fish and so good care should be taken during the acclimation process. Once complete, carefully place the marine crustacean into the aquarium whilst introducing as little bag water into the aquarium as possible. After this, dispose of the bag and any excess water appropriately.

For very sensitive species, a better method might be the use of drip acclimation. This could be achieved by keeping the crustacean in the container in which it is sold and a small airline siphon started to drip water into the container, slowly changing the water parameters to that of the aquarium. Ensure that the temperature does not fall too low during this procedure. Once conditions match, carefully remove the invertebrate from the container and place it in the aquarium. Dispose of the water in the transport container appropriately.

Monitor your new invertebrate carefully for the first week, paying particular attention to water quality. If in doubt, contact your OATA retailer for advice.



If possible, quarantining new livestock in a separate aquarium for at least a week before they enter the main tank can help reduce any risk of disease spread from new inhabitants. Ask your OATA retailer for advice on this topic.

Maintenance

At least once every week, a partial water change of 25% is strongly recommended (a siphon device is useful to remove solid waste from the gravel). Filters should be well maintained, with regular checking and cleaning to prevent blockages. If the filter needs cleaning, do not run it under the tap because any chlorine or chloramine present may kill the beneficial bacterial population that has established in the media. Instead, it should be rinsed lightly in the tank water which is removed during a partial water change as this reduces the amount of bacteria which are lost. Protein skimmers should be regularly cleaned to maintain their performance.

Good husbandry is essential as crustaceans can be stressed by even the smallest amounts of ammonia and nitrite which may then cause them to develop various diseases. Test the water to monitor the ammonia, nitrite and nitrate levels, together with pH and carbonate hardness every week, especially during initial set-up and after adding extra livestock. It is also important to regularly monitor salinity and use reverse osmosis water to replace any water lost through evaporation.

What to watch out for

All animals will have slight variations in their behaviour or appearance, but keeping an eye on any changes in the following factors will help to identify any potential problems before they become a real health issue:

- ▶ behaviour – lethargic, hanging out in the open, sitting on the bottom or erratic movements
- ▶ colour – turning a darker or paler colour than normal
- ▶ temperament – changes in level of aggression or hiding more than normal
- ▶ appearance – development of white spots or fluffy growths, loss of body parts
- ▶ feeding – reduced intake or lack of interest in food

If you are concerned about the health of any of your livestock, then test your water quality and contact your OATA retailer for further guidance.

Feeding

Marine crustaceans vary in their dietary requirements. Most species are omnivorous and will consume algae, detritus and small meaty items so a varied diet such as nori algae sheets, small frozen items (e.g. brine shrimp), or pellets should be provided. Other



larger species, (e.g. lobsters) will require larger meaty items such as pieces of lancefish, cockles or mussels. Herbivorous species are often sold to eat undesirable algae, but it is important that extra algae is provided in the form of nori sheets, if they consume it all.

As many crustaceans graze throughout the day, it is not possible to say how many times they should be fed. This will also depend on what natural food items are in your aquarium. When extra feeds are given, take care not to overfeed as this can lead to a build-up of uneaten food which breaks down releasing toxic waste into the water. If in doubt, ask your OATA retailer for advice on appropriate feeding levels.

Compatibility

Marine crustaceans vary in their compatibility. They will generally mix with all fish considered 'reef-safe', but those that are not 'reef-safe' are likely to predate on them and they should not be kept together. In addition, some scavenger species such as lobsters and crabs are opportunistic and may predate on slow-moving aquarium inhabitants, and so should be mixed carefully. Hermit crabs should always be provided with ample food and plenty of spare shells to prevent them attacking snails for their shells. Always check compatibility with your OATA retailer before introducing a crustacean into your aquarium.

Breeding

Some marine crustaceans may spawn in the home aquarium, and it is not uncommon to see a shrimp holding eggs on the underside of its body. However, they produce small planktonic larvae that naturally drift in ocean currents until they reach an adequate size to settle. In an aquarium setting, they are likely to get sucked into filters and pumps or eaten by other aquarium inhabitants. They also require specific live feeds and so a specialist set-up is required to raise them to adulthood.

Checklist

Before purchase make sure:

1. You have the appropriate equipment and position for the aquarium.
2. You have researched all the species in which you are interested and your final choices are all compatible.
3. You are familiar with how to transport and release your fish.
4. You are aware of the daily, weekly and monthly maintenance your aquarium will require.
5. You are prepared to look after your fish properly for the duration of their life.



Shopping List

- Glass or acrylic aquarium
- Filter*
- Heater*
- Lighting*
- Gravel or sand
- Aquarium salt and a hydrometer or refractometer
- Access to reverse osmosis water or a reverse osmosis unit
- Water testing kits (ideally ammonia, nitrite, nitrate, pH and water hardness)
- Gravel cleaner/siphon cleaning device (recommended)
- Aquarium decorations
- Bucket for water changes
- Live or artificial rock
- Protein skimmer* (optional but recommended)
- Ultraviolet steriliser (optional but recommended)

*may be included in branded aquarium sets but can be purchased separately.

Before purchase make sure:

- The aquarium is of a suitable size that ideally can accommodate the fish once they are fully grown
- Water parameters are as advised in this leaflet.

Always buy...

test kits and regularly check the water for ammonia, nitrite, nitrate and pH. This will allow you to make sure the water in your aquarium is not causing welfare problems for your marine crustaceans.

Maintain...

the water in the aquarium within the accepted parameters highlighted above. You may need to do regular water changes to achieve this.

Never siphon by mouth...

A fish tank can harbour bacteria which can be harmful if swallowed. Buy a specially designed aquarium gravel cleaner which can be started or primed without the need to place the siphon in your mouth

Establish a routine...

for testing the water in your aquarium. Record your results to enable you to highlight fluctuations quickly. Also check the temperature of the water.

Always wash your hands...

making sure to rinse off all soap residues, before putting them into your aquarium, or use long sleeved rubber gloves. Wash your hands again afterwards and certainly before eating, drinking or smoking.



Five Welfare Needs Checklist:

The Animal Welfare Act 2006 states that all pet owners have a legal duty of care to their pets. Anyone who is cruel to an animal or is found not to be providing the five animal welfare needs, as listed below, can be prosecuted.

- A **suitable environment** e.g. appropriately sized tank (with water heater if tropical set up) within a suitable location in your home.
- A **suitable diet** which meets the needs of your chosen fish.
- **Behaviour** - Fish are able to exhibit their normal behaviour e.g. hiding places for timid fish, enough room for fish to swim freely.
- **Companionship** - Ensure you know whether your chosen fish need to be kept with, or apart from, other fish.
- **Health** - Protected from pain, injury, suffering & disease e.g. you are aware of the daily, weekly and monthly maintenance that your aquarium will need.

- **Water quality test kits are a necessity not an optional extra**
- **You must be prepared to look after your invertebrates properly for the duration of their life and provide an aquarium which can accommodate all fish when fully grown**



*Never release your aquarium animals or plants into the wild. It is illegal and for most fish species this will lead to an untimely and possibly lingering death. Any animals or plants that do survive might be harmful to our native countryside. Take care to properly dispose of any soiled substrate (e.g. sand or gravel) water or decorations so that non-native organisms do not enter natural watercourses.

