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IMPORTANT THINGS TO REMEMBER:

ALWAYS PURCHASE test kits and regularly check the water for ammonia, nitrite, nitrate and pH. This will allow you to ensure that the water in your aquarium is not causing welfare problems for your fish.

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.

MAINTAIN the water in the aquarium within the accepted parameters highlighted in this leaflet. You may need to undertake regular water changes to achieve this.

ALWAYS wash your hands, making sure to rinse off all soap residues, before putting them into your aquarium. Wash them again afterwards and certainly before eating, drinking or smoking.

NEVER siphon by mouth. A fish tank can harbour bacteria which can be harmful if swallowed. Purchase a specially designed aquarium gravel cleaner which can be started without the need to place the siphon in your mouth.

NEVER RELEASE YOUR AQUARIUM ANIMALS OR PLANTS INTO THE WILD.

Never release an animal or plant bought for a home aquarium into the wild. It is illegal and for most fish species this will lead to an untimely and possibly lingering death as they are not native to this country. Any animals or plants that do survive might be harmful to the environment.

Checklist...

Equipment:

- Aquarium
- Gravel cleaner
- Water testing kit
- Marine salt
- Marine substrate and live rock
- Reverse osmosis, deionised water or tap water conditioner
- Heater, thermometer and hydrometer
- Filter and protein skimmer

Before purchase ensure that:

- The aquarium is well established and large enough.
- Water parameters are as advised.
- You are fully aware of the adult size and risks in keeping these fish.



ORNAMENTAL AQUATIC TRADE ASSOCIATION LTD

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**How to
care for...**



**Large Marine Fish:
Groupers,
Morays & Triggerfish**

Introduction...

This is a group of fish for the more adventurous and experienced marine enthusiast. This includes the Moray eels, Groupers and Triggerfish. These fish all get large in comparison to most other marine species available.

These fish belong to the families Muraenidae (Moray eels), Serranidae (Groupers) and Balistidae (Triggerfish).

Water requirements...

These fish are large and notoriously dirty, so extra effort is required to maintain good water quality. The water is recommended to be kept within the following parameters, although these fish may acclimatise to different water in time:

Temperature: 23-26°C

pH: 8.1-8.4

Ammonia: 0mg/l (0.01mg/l may be tolerated for short periods)

Nitrite: 0mg/l (0.125mg/l may be tolerated for short periods)

S.G.: 1.020-1.025 at 22-26°C

Biology...

These fish are some of the largest available for a home aquarium. The commonly available Moray eels can reach a length of between 50-100cm. The Groupers which are found in the trade can reach sizes up to 100cm. The Triggerfish reach a size of between 30-70cm.

Moray eels are scavengers which have a second set of jaws known as pharyngeal jaws in their throat which are used to ensure that food can be crushed and swallowed.

Triggerfish use their strong jaws to dig caves into which they will retreat if threatened. In order to protect themselves once in their cave they will lock out the first ray on their dorsal fin. This mechanism is also used to prevent predators swallowing the fish.

These fish can survive for many years if the water quality is maintained to a good standard.

Groupers are protogynous hermaphrodites, meaning all fish are female when juvenile turning into males when they reach a certain size or life stage.

Aquarium requirements...

This group of large fish need equally large accommodation. The size of tank required is dependent on the adult size of the species concerned, but 300 litres should be adequate for the smallest species. Check in books or with your retailer as to the fully grown size of the species you are interested in.

A heater, thermometer, hydrometer and test kits are essential to maintain and monitor the water quality. A protein skimmer would also be beneficial owing to the messy nature of these fish. Some of these fish, such as the moray eels, are notorious escape artists so a tight fitting lid is essential.

Heaters should be carefully positioned to ensure that they cannot cause harm to the fish. Some fish have been known to be burnt by the heating element, so a heater guard should be considered.

Live rock not only helps to aid the filtration, but also can provide crevices for fish to retreat to. Ensure that any rockwork is securely positioned to prevent any rocks from becoming dislodged.

Maintenance...

At least every two weeks, a partial water change of 25-30% is strongly recommended (a siphon device is also useful to remove waste from the gravel). This helps to reduce the build-up of potentially harmful nitrates and other pollutants. Replacement water should be dechlorinated using strong aeration or a tap water conditioner (if not using reverse osmosis water). Ideally, replacement water should be heated and enough salt should be added to achieve the correct salinity.

Filters should be checked for clogging and blockages. If the filter needs cleaning, then do not wash it using tap water; any chlorine present may kill the beneficial bacteria that has established within the media. Instead, it can be rinsed in tank water which is removed during a partial water change. This should reduce the number of bacteria lost.

Good husbandry is essential. Test the water weekly to monitor ammonia, nitrite and nitrate, especially after initial set-up and after adding new fish. Don't forget to check the salinity as this may increase due to evaporation of water.

If live rock and invertebrates are present in the aquarium, never use copper based medications. Copper is highly toxic to invertebrate species, including those found within live rock.

Feeding...

These fish species are carnivores and feed upon many things in the wild including shrimps, crustaceans and fish. This diet will need to be replicated in the home aquarium. Feeding with prepared frozen foods such as shrimp, squid, and crustaceans will be suitable, always ask your retailer to feed the fish in front of you before purchase to ensure feeding.

Take care when feeding these fish, especially the triggerfish and the Moray Eels, they have sharp teeth and strong jaws and may inflict a nasty bite if you are not careful. Feed your fish 2-3 times a day and remove any uneaten food to reduce waste build up.

Common problems...

A water quality problem will affect fish behaviour and can be shown by clamped fins, reduced feeding, erratic swimming and gasping at the surface. Immediately test the water if any of these symptoms are shown. Poor water quality is the main cause of disease outbreak in aquarium fish.

If in doubt, consult your retailer.

Compatibility...

These fish should not be kept with small fish as they will eat them. They are generally not reef safe either and many will eat small crustaceans, Triggerfish can use their strong beaks to damage corals.

It is best to keep just one individual per tank, as these fish become aggressive and territorial with age towards same species. Moray Eels may be kept with larger fish, such as Triggers, puffers, lionfish and groupers. The majority of triggers can be kept in community tanks, however research your chosen species before purchase as some become exceedingly aggressive with age. Groupers can be kept in community tanks with other large fish.

Breeding...

There is little evidence of successful breeding in the home aquarium of any of these species. It may be too difficult to replicate the environmental signals required to initiate spawning of the fish.