

Brackish Fish

How to care for freshwater pufferfish

Freshwater pufferfish are popular aquarium inhabitants due to their personalities and intelligence. They are from the family *Tetraodontidae*, which also includes marine pufferfish, and they originate from Asia and Africa. Despite their name, some freshwater pufferfish will require brackish conditions as they mature. **As such, some freshwater pufferfish are specialist species and are not suitable for the general community aquarium.**



Water requirements

Freshwater pufferfish require very clean water and potentially brackish conditions, their suggested parameters are shown below. The parameters are a general guide for this group of fish, so it is important to check with your OATA retailer for any species-specific requirements before purchasing.

Temperature:	between 22-27°C
pH:	6.5-8.0
Ammonia:	Zero mg per litre
Nitrite:	Zero mg per litre
Nitrate:	Not to exceed 20 mg per litre above normal tap water levels
General hardness:	Soft-hard (4-18°dH)
Carbonate hardness:	Soft-hard (3-15°dkH)
Salinity:	Some species will need to be kept in brackish water, ask your OATA retailer for details

Biology

There are various species of freshwater pufferfish available in the trade and most are from the genus *Tetraodon*. As the name suggests, pufferfish can “puff” or swell their bodies by swallowing large amounts of water or air very quickly. They do this to avoid predation and is a stress response so these fish should not be artificially encouraged to do so by provocation. Pufferfish also have teeth which continually grow throughout life and therefore need to be ground down by feeding them the correct diet with shellfish in their shells. Freshwater pufferfish vary greatly in size from the pygmy puffer (2cm) to much larger species such as the mbu puffer (60cm). Regardless of their size, these fish can live several years in a well matured set up with good water quality. Care should be taken when handling pufferfish as most have sharp teeth and some may be poisonous. Please see our [Hazardous Aquatic Animals](#) guidance for more information.



Sept 2022

www.ornamentalfish.org info@ornamentalfish.org

Copyright: OATA, Wessex House, Station Road, Westbury, Wiltshire, BA13 3JN

Some freshwater pufferfish, such as the pygmy puffer should be kept in groups of at least five in the home aquarium, but more is better. These species are social and those which are kept singly or in too small groups will often become stressed. However, some other species are more aggressive and should be kept alone.

Aquarium requirements

As a general rule, you should within reason, buy an aquarium as large as possible. This will vary based on the species you have chosen. A small group of pygmy puffers could be kept in an aquarium as small as 80 litres. However, much larger species such as the mbu puffer will require a much larger aquarium at least 240cm long. Ask your OATA retailer for the recommended aquarium size for your species. The larger the aquarium, the more stable the environmental conditions such as temperature and water quality will be. Whatever the size, **a filter is always essential.**

The tank should also have aquarium gravel or sand, and ideally live plants present to provide cover. If live plants are not used, then the addition of plastic plants and suitable ornaments is recommended. These could include plant pots or model caves, which supplies the fish with shelter. Although some cover will be required, the larger species will appreciate a much less cluttered aquarium. It is important to remember that some freshwater pufferfish species are not strong swimmers and will not appreciate fast water currents.

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.

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 above.

Introducing your fish

Before adding any fish, seek advice from your OATA retailer to make sure that your aquarium is an appropriate size for the species of freshwater pufferfish 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 fish you have in your aquarium slowly as the population of beneficial bacteria established when maturing your aquarium filter need to increase every time more fish 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 fish, leading to unhealthy levels of ammonia and nitrite, which may cause fish to become ill or die.



Sept 2022

www.ornamentalfish.org info@ornamentalfish.org

Copyright: OATA, Wessex House, Station Road, Westbury, Wiltshire, BA13 3JN

Healthy fish have clear bright eyes, undamaged fins, intact scales, no ulcerations or bumps, appropriate swimming behaviour and steady breathing. Do not purchase a seemingly healthy fish if sickly fish are present in the tank with it. Signs of disease can include clamped fins, flicking against gravel or décor and shimmying (shaking). Diseases can be easily carried by fish that do not show any clinical signs. If in doubt, ask your OATA retailer for advice as they will have in-depth knowledge and experience.

Your OATA retailer will usually sell your fish to you in a plastic bag. Pufferfish should be double bagged to prevent their sharp spines or beaks causing a leak if they bite the bag. Try not to keep them in this for too long. Once purchased, take your new fish home as quickly as possible as fish are easily stressed by bright lights, extreme temperatures, noise and movement.

Once home, your fish 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 fish 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 fish for up to 20 minutes. Once complete, carefully release the fish 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. Monitor your new fish carefully for the first week, paying particular attention to water quality. If in doubt, contact your OATA retailer for advice.

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). The water should be tested regularly (at least once per week) to ensure that ammonia and nitrites don't build up. Ensure that the replacement water is treated with tap water conditioner to remove any harmful chlorine or chloramine present before adding to the aquarium.

Filters should be checked for 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.

Good husbandry is essential as freshwater pufferfish 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 water hardness every week, especially during initial set-up and after adding extra fish.



Sept 2022

www.ornamentalfish.org info@ornamentalfish.org

Copyright: OATA, Wessex House, Station Road, Westbury, Wiltshire, BA13 3JN

What to watch out for

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

- ▶ swimming behaviour – hanging at the surface, sitting on the bottom or erratic swimming
- ▶ colour – turning a darker or paler colour than normal
- ▶ temperament – changes in level of aggression or hiding more than normal
- ▶ breathing – gill covers moving at a slower or faster rate than normal
- ▶ appearance – development of white spots or fluffy growths, loss of fins or scales
- ▶ condition – increase or decrease in body weight and condition
- ▶ 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

Freshwater pufferfish are carnivorous and are unlikely to feed on any prepared feeds. Instead, they should be fed a meaty diet of frozen live foods. For the smaller species this may include daphnia, bloodworm and brine shrimp but the larger species will require cockle, mussels and shrimp. Cockle in the shell is a good food for freshwater pufferfish as it will help wear down their teeth as they break open the shell. Any species struggling to feed on frozen food can be tempted by live feeds such as artemia, daphnia and for larger species, river shrimp.

Freshwater pufferfish should only be fed what they can eat within a few minutes, once a day. As they are carnivorous, 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

Freshwater pufferfish are notorious for nipping fins, may predate on smaller species and can be highly aggressive. Therefore, most pufferfish should be kept in single species-only aquariums. However, some species such as green spotted puffers may fit into a brackish community aquarium with archerfish, mono's and scats.

Breeding

Most puffers are unlikely to breed in the home aquarium due to their fluctuating salinity needs. However, pygmy puffers may spawn in the home aquarium. The female will deposit her eggs into a clump of vegetation where the male then fertilises them. Once the eggs hatch,



Sept 2022

www.ornamentalfish.org info@ornamentalfish.org

Copyright: OATA, Wessex House, Station Road, Westbury, Wiltshire, BA13 3JN

the parents should be removed, and the fry will need very small live food like infusoria and microworms.

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 (required for live plants)*
- ▶ Gravel or sand
- ▶ Tap water conditioner/dechlorinator
- ▶ Water testing kits (ideally ammonia, nitrite, nitrate, pH and water hardness)
- ▶ Gravel cleaner/siphon cleaning device (recommended)
- ▶ Aquarium decorations and/or live plants
- ▶ Bucket for water changes

*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.
- ▶ Aquarium is cycled and ready to receive fish.

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 freshwater pufferfish.

Establish a routine...

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



Sept 2022

www.ornamentalfish.org info@ornamentalfish.org

Copyright: OATA, Wessex House, Station Road, Westbury, Wiltshire, BA13 3JN

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

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 fish properly for the duration of their life and provide an aquarium which can accommodate your 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) or decorations so that non-native organisms do not enter natural watercourses.

Visit ornamentalfish.org to find a full range of how to guides and species-specific care sheets to help you look after your fish successfully.



Sept 2022

www.ornamentalfish.org info@ornamentalfish.org

Copyright: OATA, Wessex House, Station Road, Westbury, Wiltshire, BA13 3JN