

Common Freshwater Species

Keeping different species together can be a challenge. No two species, no matter how closely related, are exactly alike. Fish come in all shapes and sizes, exhibit all sorts of weird behaviors and can have vastly different requirements to survive.

Some fish are shy and require delicate care to thrive. Others can be feisty terrors that take over a tank. As such, it will often fall to you to determine what fish need to thrive and which species are compatible with various setups and tankmates. The following covers some broad categories of fish, their role in the hobby, some of their care requirements and how they fare with certain, notable tankmates.

Take note, however, that while these groupings are commonly used in the hobby, they are so broad in some cases that they are not always useful for figuring out care requirements and system compatibility. We discuss these groups to give you a wide introduction to the fish available in the hobby and to get you thinking about how to judge husbandry requirements and compatibility. When it comes time to actually stock an aquarium, you need to research each species for their care requirements and mutual compatibility as tankmates.

Livebearers

Species in this grouping include common guppies, mollies, platies and swordtails, among several others. The common trait all livebearers share is that females are viviparous. This means they retain eggs inside their bodies after fertilization and give birth to live, free-swimming young.



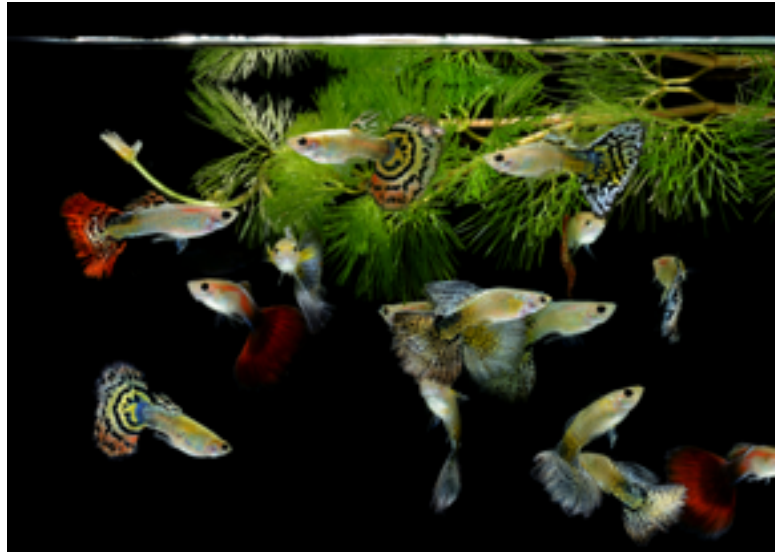
Livebearers such as guppies make great beginner fish.
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For aquarists, especially those new to the hobby, livebearers are significant. They make great introductory fish with easy care requirements. Livebearers are hardy, adaptable and reproduce quickly. In fact, in no time at all, you can have a population far too large for your aquarium.

Aquarium conditions: In general, livebearers prefer moderately hard, slightly basic water with a pH reading slightly above 7, but most species are very adaptable to different water conditions. Based on these parameters, most municipal tap water tends to be suitable for livebearer aquariums right out of the faucet; after it is been treated to remove chlorine and chloramines, of course. Livebearers tolerate a wide temperature range between 64 and 82 degrees Fahrenheit, though they are most comfortable in temperatures in the mid-70s.

Tankmate compatibility: Other livebearers are often a good choice, though be careful about mixing species if you do not want them to crossbreed. Not all species can crossbreed, but some, such as platies and swordtails, will.

Larger, aggressive fish will consume livebearers readily and some species of aggressive fish will nip at their fins. For fancy guppies (*image right*), a species of livebearer, be aware that males of another very common aquarium fish, namely bettas, will often mistake their flowing caudal (tail) fin as an indication they are competing males. If that happens, the betta is likely to kill the fancy guppy.



Livebearers are prodigious and will quickly reproduce to the point of causing an aquarium system to collapse, so be watchful for young fish and monitor their numbers.
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Schooling Fish

Though many livebearers also exhibit schooling behavior, this section covers non-livebearing species, including most tetras, danios and rasboras, because they make ideal community aquarium members and they fit well together in terms of aquarium condition requirements.

As schooling fish, they have similar temperaments, meaning they are relatively nonaggressive and generally stay within a similar small size range. Note: Some danio species are known to chase, but this can often be alleviated with larger school sizes. There is variation in this broad category, but in general with proper tank conditions and enough space, you can maintain multiple schools of these fish together. In some cases, they may even form combined schools, depending on which species are present.



*Schooling species, such as neon tetras (*Paracheirodon innesi*), do best when kept in groups of six or more.*
inubi/Adobe Stock

Aquarium conditions: While their care requirements are not necessarily identical, in the case of most tetras, danios and rasboras, they do well in soft water with a neutral to slightly acidic pH between 6.5 and 7. In some cases, it is possible to maintain fish slightly outside of their preferred parameters, as long as conditions are otherwise stable. Maintain aquarium temperatures in the tropical range, between 75 and 82 degrees Fahrenheit.

Some sources recommend slightly different temperature ranges, but generally, maintaining a relatively stable temperature is more important than hitting specific numbers, as long as you are not too far outside of the specified range. Slight variations in temperature are to be expected—and in certain circumstances, even desirable—but the goal is to keep conditions from shifting too rapidly.

Tankmate compatibility: As noted already, most of these species do well together in large community aquarium setups. Additionally, any peaceful species with similar water-care requirements that will not mind a lot of activity in the tank will also thrive with tetras, danios and rasboras. They are especially great with planted aquariums, because they generally will not damage plants and they benefit from foliage removing waste from the aquarium. These schooling fish are all-around great choices for a non-specific, low-predation, peaceful community aquarium.

Anabantoids

Also known as labyrinth fish, this suborder of fish—known scientifically as Anabantoidei—includes gouramis and bettas. Actually, bettas are just a type of gourami, but many hobbyists refer to them separately. The distinguishing feature of the anabantoids is their unique, lung-like labyrinth organ.

While some fish can actually survive by absorbing oxygen from the atmosphere through other means, the labyrinth organ allows the anabantoids to breathe air in a manner similar to most terrestrial animals. It is a unique adaption that likely resulted from living in small puddles with low dissolved oxygen content.

In fact, gouramis have undersized gills and while they can absorb oxygen from the water column through their gills, they will not actually be able to get enough oxygen to survive without being able to occasionally go to the surface and take some air into their labyrinth organ.

As such, they are referred to as obligate air breathers. It is important to provide all gouramis and bettas with access to the aquarium surface, because otherwise these fish will literally drown.



Dwarf gouramis, of the suborder Anabantoidei, prefer slightly acidic water conditions.
pirotehnik/Adobe Stock

Aquarium Conditions: Several species of gourami are popular in the aquarium trade. While wild-caught specimens usually come from water that is soft and slightly acidic, most of those available to hobbyists were bred in captive environments with higher pH levels and varying degrees of hardness. As such, most gouramis are highly adaptable to various water conditions and temperatures.



Anabantoids will often hang out near the surface, breathing air, which will pass to their labyrinth organ.
Vladimir Wrangel/Adobe Stock

Acceptable pH ranges vary by species, however. Bettas prefer a neutral pH, for instance, while dwarf gouramis (*Colisa lalia*) reportedly tend to

prefer soft, slightly acidic water, with temperatures around 75 to 80 degrees Fahrenheit.

Incidentally, though dwarf gouramis are popular in the aquarium hobby, some sources report that they are difficult to keep and are very susceptible to infection. In the case of the anabantoids, you need to do your research first, as some are famously hardy, while others have more demanding care requirements.

Interestingly, here is a wide range in difficult levels between gourami species. Some are very easy to maintain in aquaria, while others give even experts difficulties. Do your homework before selecting a specific fish to take home.

Tankmate compatibility: As stated above, research is essential with any anabantoid. Some anabantoid species are entirely incompatible with other fish. Bettas can actually get along with some other fish species in a community aquarium, but males will not tolerate members of their own species.

In fact, some fish with showy tales, such as fancy guppies, can actually provoke aggressive behavior in male bettas. Some of the gouramis do make quite good community aquarium fish, depending on the tank's other inhabitants, but it is best to use caution and monitor tankmates accordingly.

Bottom Dwellers

This is a very large and diverse group of fish. It includes many species of catfish and loaches, among other species not covered here. Catfish are members of the order Siluriformes and there are more than 3,000 identified species in this order. True loaches—including dojo and kuhli loaches—are members of the family Cobitidae.

However, many other fish referred to as loaches—such as the clown loach—are members of the family Botiidae. Morphology of bottom dwellers varies widely. For example, some catfish species only grow to a few inches in length, while others can reach several feet in length. These popular fish can help remove detritus from the bottom of the aquarium, as they rummage through aquarium gravel for food.

Aquarium conditions: Acceptable parameters vary widely. For example, *Corydoras* catfish (aka cory), a popular genus of catfish in the aquarium trade, are relatively easy to care for. They prefer soft, neutral to slightly acidic pH in a range from 7 to 7.8. They generally do well at temperatures between 72 and 80 degrees Fahrenheit, but can be quite finicky about water quality.



Another popular species, the clown loach, can do well in soft water with a more acidic pH range between 6 and 6.5, and a temperature range from 75 to 82 degrees Fahrenheit. However, while most clown loaches are around only 1 to 3 inches long when sold in the hobby as juveniles, they can grow up to over a foot in length as adults.

Some popular catfish, such as *plecostomus* catfish, can also grow to prohibitively large sizes. Keep that in mind when considering any bottom dwellers.

Catfish are some of the most recognizable fish species available in the hobby, though be aware that many can grow quite large, well beyond the capacity of their tank.
Susan Marley/Adobe Stock

Tankmate compatibility: Because there is so much variability in this wide grouping of fish, it can be hard to make generalization about compatible species. The cory catfish mentioned previously do well in small schools and are shy, peaceful fish who will not bother most other species. On the other hand, clown loaches can be notoriously aggressive, especially if kept in a community aquarium without any other members of their species.



Glass or ghost catfish (*Kryptopterus vitreolus*) are unique in that they are translucent and will school together in the aquarium.
mikhailg/Adobe Stock

Plecostomus catfish are also known to become more aggressive as they grow. Some catfish

commonly sold in the hobby, such as the red tail catfish, really should not ever be kept in aquaria. Do your research and know what you are getting into with this widely variable group of fish.

Goldfish

While extremely popular and widely recognized in the aquarium hobby, goldfish do not actually make good beginner fish. For one, they are indeterminate growers and can easily reach adult sizes of a foot or more, meaning they require a large aquarium or even a pond environment to thrive. They also require very high water quality with low levels of nitrites and nitrates and are generally more finicky than some other species. There are multiple varieties of fancy goldfish, such as shubunkins, fantails and lionheads, all with varying and particular care requirements.

Aquarium conditions: Goldfish are commonly referred to as a cold-water species, as opposed to tropical species. While there is a grain of truth to this, it has more to do with their requirement for high dissolved oxygen levels than actual low water temperatures.

The warmer the aquarium water, the less dissolved oxygen it will hold. In general, goldfish prefer a slightly lower temperature range, say around 65 to 75 degrees Fahrenheit, but it is not as big a deal as some sources make it appear to be. They tolerate relatively both hard and soft water conditions and a wide, slightly basic pH range from 7 to 8.4. Frequent water changes and strong filtration are a must.

Tankmate compatibility: Though not particularly aggressive overall, goldfish may become aggressive or exhibit predatory behavior in some circumstances.

Also, because they require relatively stringent water quality standards to thrive, goldfish do not make the best community fish. It is possible to keep them with tropical species, but in many cases, it may prove to be more trouble than it is worth.

Other goldfish are the best tankmates; however, some species, such as white cloud mountain minnows and some bottom-dwelling fish, can make good tankmates. Overall, you will need a large, dedicated setup or even a pond to be successful in the long-term.



Lionhead goldfish tend to be more delicate and are somewhat harder to keep than other varieties.
Lim Tiaw Leong/Adobe Stock



Fun Facts

- ◆ **Goldfish can live for years, even into their 40s, if maintained properly.**
- ◆ **They don't actually have poor memories. In fact, they can be trained to do tricks.**
- ◆ **Goldfish don't stop growing as they age, so plan to have lots of space for them.**
- ◆ **A group of goldfish is known as a troubling. Go figure.**

Cichlids

These are very popular aquarium fish with a unique background and history. Cichlids are classified as members of the family Cichlidae, which is one of the largest vertebrate families in the world. Interestingly, cichlids are known as secondary freshwater fish.

This means they evolved from ancestors that were primarily saltwater-dwelling species. This fascinating group of fish is part of the order Perciformes, or perch-like fish, which is comprised of mostly marine species.



Cichlids are incredibly diverse and popular, though many species are difficult to keep and require specific setups.
Gyorgy/Adobe Stock

Cichlids are relatively closely related to fish in the suborder Labroidei, which includes saltwater wrasses, damselfish and parrotfish. In fact, cichlids used to be classified within the suborder, but have since been moved to their own order Cichliformes. Taxonomy gets complicated, but this is why it is such a useful tool for aquarists trying to understand the history and morphology of fish.

Part of the appeal of cichlids is that they are such colorful, flashy freshwater fish and are often mistaken for marine species by those unfamiliar with their care requirements. There are two broad categories of cichlids available in the hobby: South American cichlids, which include angelfish, discus, oscars and apistogramma; and the Rift Lake cichlids, which are one of the most evolutionarily diverse groups in the world.

Aquarium conditions: As cichlids inhabit such a wide swath of habitats, it is impossible to pin down consistent care requirements between species. You will have to research carefully and plan a setup around these fish based on their care requirements. In general, though, many aquarists will establish species-specific setups dedicated to one cichlid or a small group of compatible species. This ensures compatible care requirements and also helps resolve the issues of cichlid aggressiveness.

Tankmate compatibility: In most cases, you should establish an aquarium specifically for the cichlids being kept. Many cichlids do not do well with other species. Most are notoriously aggressive and need to be housed in species tanks—that is, setups with only that chosen species—to be successful.

There are many exceptions to this general statement though. For example, some Rift Lake cichlids have similar care requirements and if systems are set up correctly, multiple species from the region can cohabit together in relative piece. Some other cichlids, such as discus, which originate from South America, are actually relatively calm and shy. They often do best on their own, as they prefer mellow conditions. Because of this, many dedicated discus keepers maintain them separately.¹²

Common Saltwater Species

Saltwater species range from easy-to-keep, captive-bred species, to impossible-to-keep wild-caught nightmares. Advances in the hobby mean aquarists can keep a wider variety of species safely now, more than ever before.

Community-safe Marine Fish

Many marine fish species are suitable for either a community fish-only marine setup or as companions for coral in reef aquariums. Note that some species may only be suitable for one type of aquarium or the other, even if they do well together.

The ubiquitous and popular *Ocellaris* clownfish—made famous by Disney’s “Finding Nemo” and “Finding Dory” movies—are hardy, eat readily and are even easy to breed in home aquariums. In fact, they are so easy to breed that many of the specimens available in the aquarium trade are now captive-bred.



Clownfish (Amphiprion sp.) are likely the most popular and easily recognized fish in the marine aquarium hobby, with multiple species and morphs available.
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Pajama cardinalfish are another popular, peaceful fish that are relatively easy to keep. Blue/green chromis, royal grammas, blennies, some wrasses and a variety of other species also make good community marine fish.

Many of these same species are also compatible with reef aquariums. In larger tanks around 100 gallons or more, smaller angelfish species can be compatible with reef systems, but it is necessary to supervise these species to make sure they are not harming coral. Some fish will feed on coral, however, and you have to be careful about what you add to reef aquarium systems.



*Banggai cardinalfish (*Pterapogon kauderni*) are peaceful and make for excellent beginner marine fish, and they are also relatively easy to breed in aquariums.*
Andrea Izzotti/Adobe Stock

Aquarium conditions: If reef aquariums are large enough, most of these community-safe species can be housed successfully. In most reef systems, corals are the main focus, so water parameters are generally set to match their needs, which is more than adequate for most compatible fish species.

The Need for Captive Breeding

Most marine fish species available in the hobby are wild-caught. In many cases, these fish are more difficult to keep and suffer from higher mortality rates in aquariums.

There is a sense of urgency among hobbyists regarding the need to expand captive breeding efforts, especially of popular marine species.

Recent regulatory hurdles have highlighted the hobby's vulnerability. Luckily, several tank-bred and tank-raised species are now widely available. Both clownfish and cardinals are readily obtainable from captive-bred sources.

Tankmate compatibility: Because we are discussing community-safe marine fish, the main compatibility issues will be with certain species and corals. Larger angelfish species are a direct threat to corals and triggerfish, parrotfish and some butterflyfish species are all known corallivores, meaning they eat coral polyps. Triggerfish and parrotfish actually do not often make good tankmates for many peaceful fish species as well, so they are better suited to fish-only setups with compatible species to begin with.

Predatory Species

Many dedicated marine hobbyists enjoy keeping predatory fish and invertebrates. Instead of community aquariums, these fishkeepers are looking for striking specimens with interesting behaviors. Popular options for saltwater fish-only setups include groupers, lionfish, triggerfish, pufferfish and eels, among others.

Miniatus groupers are popular and striking examples of predatory fish with big personalities that exhibit interesting behaviors in fish-only aquariums. Some triggerfish grow quite large and can be very aggressive. Porcupine puffers have a sharp beak that they need to keep worn down. As a result, they will nip tankmates and invertebrates. There are several species that exhibit aggressive tendencies in aquariums, so be sure to check compatibility.



*Clown triggerfish (*Balistoides conspicillum*), like most other triggerfish, are very aggressive and best not kept with corals, invertebrates or less aggressive tankmates.*
mirecca/Adobe Stock

Aquarium conditions: The main considerations with marine tanks focused on predatory fish are maintaining high water quality and ample volume. These fish tend to grow quite large. General suggested parameters for a fish-only or fish-only-with-liverock setup include a specific gravity of 1.023 to 1.025, a temperature range between 72 and 78 degrees Fahrenheit, a pH range from 8.1 to 8.4 and around 8 to 12 degrees of carbonate hardness.

Tankmates: Surprisingly, some predatory fish will actually get along well with one another. You might have very mixed results, however. Some groupers can be housed with certain species of tangs, for example. Pufferfish may get along with larger tankmates. You need to do your research and be prepared to isolate fish and deal with incompatibilities if they crop up.



*Often unintentionally introduced, the peacock mantis shrimp (*Odontodactylus scyllarus*) is strikingly beautiful, but also very deadly to most fish living in the aquarium.*
whitcomberd/Adobe Stock

As an aside, there is a very aggressive, predatory invertebrate liverrock hitchhiker that can be absolutely stunning in its own setup: the mantis shrimp. This murderous crustacean looks like a

cross between a lobster and a sci-fi alien, and it will absolutely kill everything else in the aquarium. Some hobbyists like to keep mantis shrimp in specialized setups because they are absolutely fascinating to watch, but this takes some advanced husbandry skills. For one, mantis shrimp can strike so forcefully with their appendages that they can generate the equivalent energy of a .22 bullet fired from a gun, which is more than enough to shatter aquarium glass. Take that as a warning. Despite this, however, they are very interesting to observe.¹³

A Note on Difficult Specimens

There are many species of saltwater fish that are otherwise safe for reef systems and peaceful toward tankmates, but because their care requirements are so exacting, very few, if any, aquarists should attempt to keep them. These are species left to true experts in the hobby.

The first species that comes to mind is the Mandarin goby. This is a beautiful fish that is not likely to harm tankmates. The problem is, it is very difficult to get wild-caught specimens to feed in captivity, though captive-bred specimens are increasingly available that will eat readily. There are some solutions for this problem, but only aquarists who truly know what they are doing should even try.

Another difficult species is the Moorish idol. While it is among the most beautiful fish in the ocean, it requires very large systems and is notoriously difficult to keep alive.

The blue ribbon eel is another very difficult species to maintain in captivity. While we do not recommend these species, even for fairly advanced aquarists, aquarium maintenance professionals are likely to run into customers who ask about these from time to time.

Unless you are extremely confident in your abilities and have ample experience with a wide variety of marine and reef systems, you would do best to avoid these species entirely and explain to customers that you cannot ethically agree to attempt introducing these to their setups. As such, we do not go into care requirements for these species. Even very experienced marine hobbyists have a difficult time keeping these species alive in captivity, which begs the question of whether it is even ethical to try with them.

The Piscine Lifecycle

We have barely scratched the surface of what is possible in the aquarium hobby. There are so many combinations of species and setups, it is literally impossible to master every aspect of the hobby. That is one of the best parts about this pastime, though. There is always something new to learn.

As you progress in the hobby, gaining confidence and experience along the way, you will notice that the fish you care for are doing well. They will exhibit interesting behaviors and once you develop your fish sense, you will see that they are thriving. This brings us to an interesting point. If fish are well cared-for and healthy, eventually they will do the next logical thing in their lifecycle: reproduce.

This is often the mark of a successful fishkeeper. It is a badge of honor in certain circles of the hobby to be able to induce a difficult species to spawn in captivity. We will not discuss all of the ins and outs of fish breeding in this program; it is an extremely complicated endeavor to breed many aquatic species and entire books have been written on the topic. However, as a budding aquarium industry professional, you should be aware that some species are actually quite easy to breed and can provide you with an extra source of income in the form of trade opportunities and a dedicated client base in your aquarium maintenance clientele. Don't take this on until you are absolutely sure that you are ready, for the sake of your fish.