



FISH SCHOOLING

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Schooling

- Fish schooling and aggregation behaviors are some of the most prominent social and group activities exhibited by fishes.
- Fish may school or form aggregations for many reasons, including foraging, reproduction, and defense from predators.
- One of the most enduring hypotheses regarding fish schooling is that fish in schools can obtain a hydrodynamic advantage, thus reducing the cost of locomotion, by taking advantage of the wakes shed by neighbors within the school.

Why do fish swim in schools?

- First and foremost, schools protect fish from their enemies. It's the same rule our mothers taught us as youngsters, always stay in a group because there is safety in numbers.
- Predators find it far easier to chase down and gobble up a fish swimming all alone, than trying to cut out a single fish from a huge group.
- The same holds true in reverse. Fish can better defend their territory in a group. Bullies will think twice about facing an angry school of dozens or hundreds of fish.
- It is also believed that swimming close together reduces friction and allows fish to conserve energy while swimming.
- When dinner time comes along, food is easier to find as a group.
- Having fifty sets of eyes and noses gives the school a better chance of locating food.
- Last but not least, when fish spawn a school ensures that at least some of their eggs will elude predators due to the sheer numbers produced by a large group of fish.

How do they swim so close without colliding?

- A complex combination of senses allows fish to achieve those smooth schooling movements we marvel at.
- At one time it was believed a leader in the school directed the movements of the entire school. However, it is now known that each fish responds to the movements of the other fish, as well as stimuli such as pheromones.
- If one fish moves in a different direction all the others sense it and move accordingly.
- The anatomy of fish also factors into the schooling equation. Eye placement on the sides of the head allows the fish to readily see what is next to them and move accordingly. However, sight is not the only factor used in schooling.
- Fishes are able to establish their placement and direction in a school by using hearing, lateral line, sight, and even the sense of smell.

Do all fish school?

- Even though eighty percent of all fish live in school at some point in their lives, some fish live solitary lives.
- As a rule smaller fish are more likely to live out their lives in schools, although some large fish will school together.
- Furthermore, not all fish that school do so for protection in numbers.
- In fact some of the fiercest fish in the world live in schools. Piranha fish live in large schools that they are born into. Although they tolerate their brothers and sisters, a new piranha attempting to join the school later is usually attacked and killed.

Piranha fish



How many fish make a school?

- There isn't a magic number that defines a school. However, in the wild schools of fish are generally quite large, often numbering in the hundreds or even thousands.
- In captivity, schooling fish need to have at least four to six to create a comfortable school.
- The old proverb, the more the merrier, definitely applies to schools of fish. In other words, you can't have too many fish in a school.

Which fish prefer schools?

- Quite a few popular freshwater fish prefer to live in schools. Barbs, Danios, and most Tetras should always be kept in schools. Loaches such as the Clown and Kuhli loach often will pine away if they are not kept in a school of their own kind. Even larger fish such as the Silver Dollar prefer to live in a school.
- It's a good idea to do your homework before choosing and purchasing a new fish, so know you up front if they are best kept in a school. If the fish you are considering prefers to live in a school you should plan on purchasing at least four of the same species.
- Generally it's best if you can purchase them all at the same time. If not, purchase groups of 3 or more at a time, rather than adding one fish to the school at a time.
- Also consider the size of the tank required to keep a school, as schools require more space. A good LFS (local fish shop) will advise you on what is needed.

Difference Between Shoaling & Schooling

- Any group of fish that are swimming closely together and follows a general direction are said to be shoaling.
- Individual fish in a shoal may do as it satisfies.
- Each fish may just be scouring around for food or resting nearby.
- Shoaling fish are very common in both freshwater & marine habitat.
- Although shoaling fish are common in wild, but in an aquarium environment, shoaling fish may just stop shoaling.
- This is usually due to the lack of predatory and abundance of food. In such safe environment, a corydoras for example, will swim off by itself doing its own thing since it know there are no natural predators around.

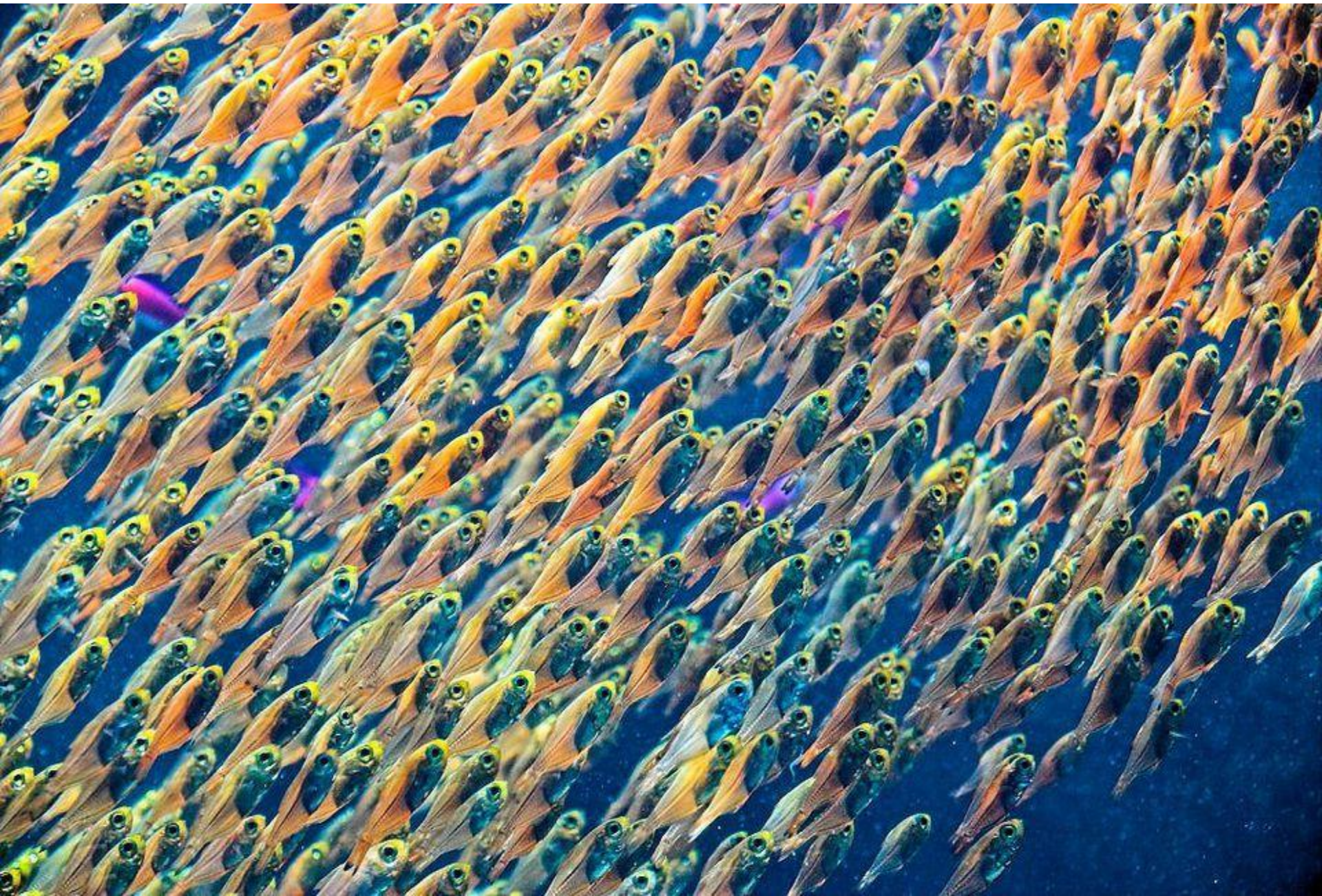
Examples shoaling fish are Corydoras Pygmaeus, Cardinal Tetras, Rummy Nose Tetras and Ruby Tetras



Difference Between Shoaling & Schooling

- On the other hand, schooling fish will not only swim closely together, they will form a very tight formation and will swim in a very synchronized manner.
- The schools can perform very complicated manoeuvres such as changing of directions and turning as a whole.
- Schooling fish are commonly found in the marine habitat.
- The primary advantage of forming such tight schools and swimming in coordinated manner is to minimize the chances of being eaten by larger fish.
- The synchronized swimming performance also helps to confused the predators.

Examples for schooling fish are Yellowtail Fusiliers, Tuna and Herring.



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