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School's out

by Mark Webster

One of the most exciting experiences for any diver is to get close to large numbers of schooling fish, swim with them and perhaps even enter the shoal and become a part of it for a few moments. This experience is perhaps even more exciting for a photographer as it enables you to get very close to your subject and perhaps fill the frame entirely with fish. Many schooling fish are normally wary of letting a diver get too close, so we should make the most of the opportunity when it arises and adopt the best techniques to ensure that the images we capture are a success. It also helps to understand a little about schooling fish behaviour which can help you make the best approach when you encounter a shoal.

So, exactly why do fish school together and how do they achieve the incredible discipline and communication required to behave as a single entity? Research has shown that approximately one quarter of all fish school throughout their lives and that at least half of all species shoal together for part of their existence. The reasons for this are numerous - to grow, travel, feed, rest, spawn and mostly of course to avoid predators. Although it is mostly fish of the same species and same size that you will find schooling together, you will occasionally find a rogue species within a shoal using them as protection.

The most amazing skill that schooling fish possess is the ability to move in a totally coordinated fashion always seeming to maintain



Shooting head on to the shoal is another way of avoiding reflection and glare. The fish swimming towards the camera here look quite 'flat' with little reflected light. Nikon D300, Subal ND20, 10 to 17mm FE zoom, Subtronic Mini flash guns, ISO 100 f11 1/60.

the same distance from the other fish in the shoal. They apparently accomplish this using a technique defined as the 'optomotor response' which is the simultaneous use of eyes, nerves and muscles to communicate and sense movement between the individual fish. Often fish will feature a dark stripe or spot in their livery which enables each fish in the shoal to zero in on the movements of its neighbour

and thus achieve the astonishing chain reaction of movement shoals produce. So there is no 'leader of the pack' as such, each fish is reacting to those around it.

Confusing potential predators is the single most important activity for the school. Most predators will intend to home in on an individual fish, which display the shape and behaviour of prey



Many reef fish that are normally seen singly or in pairs congregate in schools to breed in the summer. These masked butterfly fish in the Red Sea are a good example. Nikon D300, Subal ND20, 10 to 17mm FE zoom, Subtronic Mini flash guns, ISO 100 f11 1/125.

from previous encounters. So the objective of the school is to confuse this identification process and prevent the predator from singling out an individual. As a predator approaches a school the typical behaviour pattern is for the shape of the shoal to contract and present a tighter smaller volume and perhaps a different shape. This will be followed by quick changes in direction and speed to confuse the enemy. These movements will also alter the colouration of the school - one moment dark and then the

next bright and silvery as the light is reflected from their scales. This whole activity masks the shape of the individual fish presenting only a mass of glimmering silver making it extremely difficult for the predator to decide where to attack. Not every fish in the shoal can keep up with this and often single fish or small groups will get left behind, which may have fatal consequences. However, there seems to be a game plan for this as well and you will often observe schools splitting into two to further confuse



Anthias are perhaps the most common schooling fish in the Red Sea and are a good subject to practice with. They are very sensitive to noise and you can make the shoal converge at the right moment by blowing air out of your regulator. Nikon D100, Light & Motion Titan housing, 10.5mm FE, Subtronic Mini flash guns, ISO200 f11 1/60.

the predator whilst one part sweeps back to pick up the stragglers.

Fish which do not normally school together will often shoal when the breeding season starts in order to increase the chances of successful fertilisation. The sheer number and proximity of males and females is a boost, although some species do break away temporarily from the school in mating pairs when the moment to spawn arrives. Encountering normally solitary reef fish in big concentrations can be quite spectacular and for me

the most striking include the bright yellow masked butterfly fish and those cute looking masked puffer fish which swim up and down the reef which such purpose when they shoal.

Choosing the right lens for schooling fish is always going to be a compromise, unless you are confident that your fish are waiting for you and you know the size of the school. Short range zooms are perhaps the best choice – the 10-17mm or 12-24mm on a DX format and perhaps the 17/18-35mm range on an FX format

although a true fish eye on either format works well if you can get close enough. These lenses should be able to let you capture a reasonably large school from medium distances, whilst the longer end of the lens is great for smaller groups of fish. For tighter group shots a 60mm or equivalent is a good choice on either format to enable you to concentrate on perhaps two or three fish in a shoal with more fish in the background to fill the negative space.

Flash exposure and silvery reflective fish scales is a real challenge. Unless you are shooting a school head on there is always going to be the chance of light being reflected from the scales of the fish causing hotspots and over exposure. You may find that you want to deliberately underexpose to avoid this and try and correct the exposure in post processing, or alternatively experiment with practical techniques. Shooting straight towards the flanks of the fish poses the biggest chance of reflection and may be improved by getting a more oblique angle on the subject, perhaps by shooting a little below them or slightly from the side with the intention that reflected light will not come straight back at the lens. Scales are fickle though and fish are always on the move in a shoal.

If you are close enough perhaps try divergent lighting with twin flash



Schooling cat fish are another very approachable subject, but they are always on the move feeding on a sandy bottom. Keeping ahead of the fish and not stirring up the visibility is a challenge. Nikon D200, Subal ND20, 10 to 17mm FE zoom, Subtronic Mini flash guns, ISO 100 f11 1/60.

guns, again with the intention of directing reflected light away from the lens. In many instances we just have to accept that some of our subjects within the shoal are going to be 'hot' or slightly over exposed which might even convey a sense of movement. The great advantage we now have with digital is immediate feed back and the ability to highlight hotspots – although I find the histogram can be misleading with these subjects.

There are of course species that are not quite so reflective, for example

anthias, goat fish, big eye squirrel fish etc. which are easier to practice with.

Don't forget natural light as well, with or without filters, particularly for large schools in shallow water. Taking a white balance reading off an ungloved hand works well and you may want to try shutter priority or manual mode if the shoal is fast moving.

There is no magic formula for approaching schooling fish, although in some circumstances they seem to be less concerned by your approach. Shoals that have gathered to spawn



Not all schooling fish are silver of course. These big eye squirrel fish present far fewer problems for obtaining a correct exposure. Nikon D300, Subal ND20, 10 to 17mm FE zoom, Subtronic Mini flash guns, ISO 100 f11 1/125.

only have one thing on their minds and are normally very tolerant of a close approach and may even ignore you entering the shoal. Knowing where and when to go will increase your chances of experiencing this – for example April/May at Gladden Spit in Belize for Cobora snapper (and Mantas and whale sharks) and June/July at Ras Mohammed for red