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Fish go to business school

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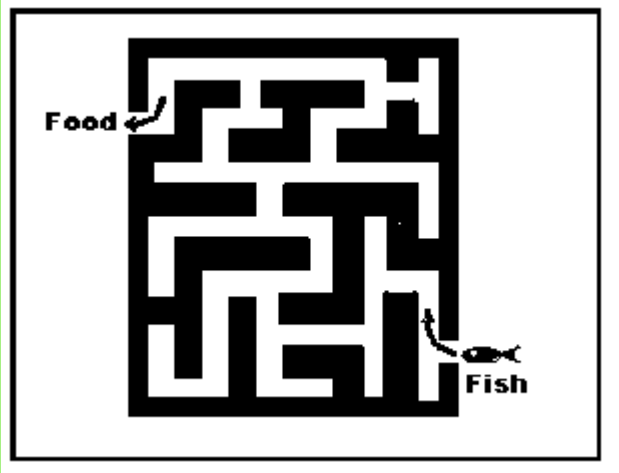
Being a fish in the open sea is not all instinct, current studies have revealed. Scientists at the department of Animal Behaviour, Cambridge University, have discovered that fish learn many survival skills from their companions, by identification and imitation. The findings may be useful in helping farm-bred fish fare better in the high seas than they are doing now.

Do fish learn?

The traditional learning animal of laboratories is the mouse, which learns to solve mazes. But it is found that fish are also pretty good at this skill!



Scientists constructed simple mazes with partitions in fish tanks and measured the time it took fish to learn the way through. The fish ultimately learnt to navigate the holes and tunnels in the partitions, to reach the food. Which showed that they could eliminate wrong turns by trial and error, and also retain the learning for future trials.

But what was more remarkable was what happened when larger numbers of fish were set the maze together. Given a chance to interact with other fish that had already solved the maze, newcomers profited from the experience of others and solved the maze much faster.

Choosing leaders

As if this were not bright enough, the fish also made choices in the leader fish they followed. For one they chose leaders from fish they had been with, over new ones that came in, even if these new fish seemed to know their way. And for another, they preferred ‘newly qualified’ teachers, which were easy to follow, rather than the ‘pros’ who went through the maze too fast! But the best of all was that they could make out the knowledgeable ones from the newbies. The implication is that learning that comes to one fish is likely to be passed on to the others double quick! Here we are talking about doing a maze, but this would work as well for skills like recognizing food or escaping predators.

Where this helps

An area where these discoveries find ready application is the conservation and breeding of fish varieties. Hatcheries in many countries breed fish in captivity and release them into the sea, to 'go forth, feed and multiply'. The newly hatched fish are fed balanced feed till they learn to swim and navigate freely, and then they are set free. An important fish hatchery industry is of salmon breeding.

The trouble is that of the 5 billion hatchery-bred salmon released into the sea, worldwide, each year, only 5% survive to adulthood. Why should this be? Several reasons are suggested. One is that in the hatchery the fish have not experienced live food. The 'feed' was of the pellet form, similar to the fish feed used in home aquariums. When left to themselves in the open sea, without a regular supply of prepared feed, most of the fish do not survive long enough to learn to hunt for real food. Most would not recognize a living worm as wholesome food. In fact many hatchery-bred salmon are known to react with fear! The other reason is that in the protected hatching farm, these fish did not learn to recognize predators. The result is that most of those that do not starve to death get eaten as food.

Coaching classes

An answer being developed is that each batch of fish being released be provided with a few experienced fish to show the others the way. Another idea is that before being let out into the sea, the newly hatched fish be weaned to live prey with a few ocean-bred fish as hunting trainers. The finding that fish readily observe and imitate suggests that both ways may be quite workable.

Yfke van Bergen, a student of Cambridge University says in a prize-winning essay on the subject that young salmon even learn by simply watching other fish on TV! Hatcheries could then have submerged TV screens where fish would watch and learn useful survival skills. The sight of enemy species devouring salmon, in early youth, could lead to a flight response when the predator species is seen later in life!