

While channel-surfing the other night, I came across a show about how “swarm intelligence” works in various types of animal groups. Mostly, the show focused on bees. On an isolated island, a study shed light on how a group of these insects selected a site for a new home.

The 12,000 member swarm had outgrown the home originally built for them by the scientists conducting the study. Predictably, once the dwelling became over-crowded, the swarm began looking for a new home. The way in which the bees conducted the search was fascinating.

The scientists created two new potential nest sites and placed them the same distance away from the original home, in opposite directions. One of the new homes (marked yellow) had an opening large enough for the bees to comfortably enter, but small enough to prevent predators from invading. The other home (marked blue) was identical, except it had a larger entry way, which would allow predators to easily invade.

Would the bees select the better site, and if so, how would they do it?

Predictably, the scientists observed scout bees making forays to all parts of the island. Eventually, some of the bees found each of the two potential new home sites. Observers captured and marked the scouts with the two different colors, so their behaviors back at the original site could be identified. Remarkably, the scouts returned to the main group and began doing “dances” which apparently indicated the direction in which they'd found something “interesting” or “stimulating” enough to make them want to dance. These dances have been for some time recognized as a kind of language among bees.

Furthermore, the bees which had found the ideal new home site danced for longer than those which had found the “fixer up” with the too-large front door. Additionally, bees which had discovered the optimal site began to block, or disrupt, the dances of those which had found the inferior one.

Eventually, other bees began to make forays to the sites, more heading to the ideal one than to the lesser one. Over time, the colony relocated to the prime site.

While no individual bee within the group possessed the intelligence or capability to deduce which home site would be the best one, the colony as a whole was successful in doing so. Scientists recognize this “swarm intelligence” in many species--insects, animals and fish.

Ants possess similar abilities, using scent signals passed from workers to others to communicate the whereabouts and abundance of food sources located within their range. These scent signals, like the dances of the bees, act as a kind of language. The communication is simple, direct and unsophisticated on a one-to-one level, but it's also capable of allowing the group to accomplish goals without understanding how they are doing so.

Fish have similar abilities, or so it seems. They react to the threat of predators by bunching together tightly, for instance. In some cases, the schools then possess the ability to move about in unison, their movements orchestrated majestically by some internal “group” intelligence or ability.

What I find most interesting about this topic is what it implies about how fish might “communicate” messages, though they possess no language which we humans can readily identify. Is it possible stressed fish might move about in ways which would signal danger to

their school mates after they are caught and released? Or, could they emit some other kind of scent or signal to send the same message? Some anglers already believe fish are capable of doing just that, so they retain the fish they catch in a live well rather than releasing them back into the water, until they are ready to stop fishing.

Personally, I doubt fish are capable of communicating in this way, but the fact that ants and bees can and do use "languages" which are beyond human comprehension makes it easier to believe fish could do something similar.

Either way, I stick to my claim that "there is no such thing as a smart fish". Many times, I've heard the old adage, "That fish didn't get big by being stupid." My response is usually the same--"It didn't get big by being smart either."

Consistently, all the evidence I saw in the television special, and in the articles I've subsequently read on swarm intelligence supports the same claim with respect to the intelligence levels of individual members of these animal groups. Individually, they possess almost no recognizable level of intelligence. It's the group dynamic, created over time, through thousands of simple messages being sent and received, which generates a higher level of intelligence in the group.

In other words, there are no smart members in the group, no "smart fish". A specific fish doesn't survive longer because it is smarter than the others. But, swarm intelligence ensures that some members of the group WILL thrive and survive to a ripe old age.

A single speckled trout is stupid, but the school of trout is smart!