



ScienceWatch – When Fish Lie

“I find it particularly interesting that fish are capable of such sophisticated behavior.” - M. Plath

Deception, a common human trait, is hard to find elsewhere in the animal kingdom. Ravens and jays try to trick others when they are hiding food, but corvids are the geniuses of the bird world. So who would expect to find trickery in a small grey fish known as the Atlantic molly? Nevertheless, according to a study by animal ecologist Martin Plath and colleagues, University of Potsdam, Germany, and University of Oklahoma, US, in the August 5, 2008 issue of *Current Biology*, male mollies will feign sexual interest in less desirable females when other males are around.

The team studied the mating preferences of the Atlantic molly (*Poecilia mexicana*). Atlantic molly males are known to copy other males' mating preferences, which makes them prone to being duped. The researchers set up a series of simple observational experiments. First they placed two “stimulus” females, one large, one small, in a test tank. Next they introduced a “focal” male into a clear cylinder in the center of the tank and released him after five minutes of acclimation. During the next five minutes the scientists observed his attempts at copulation with both females. In these trials the focal male attempted to copulate first with the larger female 90% of the time.



In a second set of trials the focal male was once again placed in his cylinder, and then released so he could interact with the two females. However, now an “audience” male who could only watch but not interfere was also present in another cylinder in the back of the tank. When the audience male was absent the focal male greatly preferred the larger, more fecund female, but now in the presence of the audience male, he completely switched his preference to the smaller, less desirable female, approaching the scrawny female first 90% of the time. To show that the focal male had not simply lost interest in the larger female, the team repeated the first set of trials in which the audience male was absent. Once again the focal male greatly preferred the larger female.

In the next set of experiments the team let the male choose between an Atlantic molly female and one from another species. The Atlantic molly has a strange relationship with its close cousin, the Amazon molly (*P. formosa*). The latter are all females that produce young by a form of parthenogenesis, an asexual form of reproduction in which females produce developing eggs without fertilization by males. However, Amazon mollies need sperm from Atlantic mollies to trigger embryo development, even though the sperm do not fertilize the eggs.

The Atlantic molly male makes no genetic contribution to the developing embryo, so clearly he would prefer mating with a female of his own species, and that's exactly what

the researchers found. With no audience male present, the focal Atlantic male mostly ignored the Amazon female, approaching her only 12% of the time. However with the audience male in the tank, he once again switched his preference to the less desirable Amazon female.

These experiments show that male Atlantic mollies will conceal their mate choice when rival males are present by directing their sexual advances towards less desirable females, even performing non-productive mating with females of another species.

At first these findings surprised the scientists, but in retrospect they concluded that, “Indeed, it is puzzling that deceptive signals are not more common.” The team suggests that by sending out misleading signals and leading rival males away from preferred females, males can reduce mating competition.

This strategy can only work for a species like the Atlantic molly, where males copy the mate choice of others. However, in nature one strategy usually spawns a counter-strategy, and a rival male that doesn't take the bait will most likely mate with the choicest female. Since that is a behavior favored by natural selection, the team predicts they will find males that won't be bamboozled.

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