

Behaviorists discover a code within male loons' yodel

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An adult loon with an almost fully grown chick. The picture was taken in the fall just before migration. The adult is losing its breeding plumage to look more and more like the chick.

Imagine if an intruder entered your home, took the place of your spouse and you carried on with life as if nothing had changed. Such is the habit of loons that live on small lakes.

An undiscerning eye may look at two loons on a lake and think the same pair has returned for decades to breed. But according to a Cornell and Chapman University research study, published in the journal *Animal Behavior*, both male and female intruders regularly displace one of the partners, taking up with the resident of the opposite sex. And the reasons for some of this behavior are encoded in the loons' yodeling call.

While resident and intruding females settle their disputes with little bloodshed, male loons fight to the death over territories about 30 percent of the time -- at times diving underwater and spearing their opponents through the heart with their long beaks, according to the study.

A pair of loons will establish territories on freshwater lakes, occupying the entire lake. When an intruding male flies over a lake, he sends out a wavering, tremolo call, and the resident male replies with a yodel. This indicates the weight of the resident, which is coded into the yodel, based on the pitch. That enables an intruder to determine whether he can win a fight before he lands. For reasons unknown, older male loons may be at a disadvantage as they lose weight each year, while females gain weight.

"The question is, if you're a small [male] loon, why wouldn't you just keep quiet," said Charles Walcott, a Cornell professor of neurobiology and behavior and co-author of the study. "What we find is that in general, small loons yodel less than big loons, but they do still respond, so it must be useful enough to take that risk to respond, though we don't understand very well why."

And the risk can be grave. "When a male comes in, there is a horrendous battle which may go on the whole day," said Walcott. When fatalities occur, it is always the resident male that dies. The reasons for this trend are unclear, said Walcott.

Also, males determine where nests are placed, usually in swampy areas. If eggs and chicks survive free from such predators as raccoons, the male will return to nest in the same place the next year. But, if predators find the nest, the male finds a new site, Walcott said. Based on this trial-and-error strategy, males rear chicks to adulthood about half the time in their first year as fathers but up to 75 percent after four to five years on the same lake.

When a single female sees a suitable territory, however, she lands and squabbles with the resident female; eventually, one of them leaves and looks for a new territory. The remaining female loon mates with the male and returns with him the next year.

"The loon society, like any animal society, has these interesting adaptations, and this is a little different than the way most systems work," said Walcott. "You never would have seen these things if you didn't have marked loons so you knew who was who. Now when you go and visit a lake and you see a family of loons you can appreciate a little of what is happening."

While the findings are intriguing, more study is needed to better understand them, Walcott said.

Walter Piper, a professor of biological sciences at Chapman University, was the paper's lead author. Co-authors included biologist John Mager of Ohio Northern University and Frank Spilker, summer crew leader from Washington, N.C.

Source: Cornell University

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