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# Study To Determine If Infidelity Among Birds An Attempt To Avoid Inbreeding, Diversify Genes

MANHATTAN, KAN. -- Humans do it. Birds do it. Cheat on their mates, that is. Molecular studies of socially monogamous birds have shown that broods often contain offspring resulting from extra-pair matings by one of the parents tending the nest. But while human infidelity may be more for self-centered gratification, a cheating heart among birds tells a different story and may be for less egotistical reasons.

Research has indicated that reproductive success among birds and mammals is negatively related to genetic similarity of parents. As such, some species of birds are simply trying to avoid inbreeding and provide diversity to the genes they pass on to their offspring.

A collaborative study by a team of international biologists examines how the mating tactics of females of three species of socially monogamous shore birds -- western sandpipers, Kentish plovers and common sandpipers -- that are paired to genetically similar partners. Their findings appear in the current issue of the journal *Nature*.

Brett Sandercock, a Kansas State University assistant professor of avian ecology in the Division of Biology, and a member of the research team that conducted the study, said in recent years there has been a lot of interest in looking at the differences between social mating systems of birds and what scientist can learn by looking at the genetics of those social systems. Sandercock's contribution to the

research included studying the social mating systems of sandpipers in western Alaska.

"There's been a revolution with new molecular methods of being able to ask some of these questions," Sandercock said. "A lot of this work has been done on songbirds and some really interesting observations made."

Partners in all three species, according to Sandercock, share responsibilities for incubation of the eggs. Males also tend to the brood after the eggs are hatched.

Sandercock said that while a high rate of extra-pair paternity is common in songbirds, the occurrence in shorebirds, which have "incredible variation" in their mating systems occurs significantly less. Less than 8 percent of the broods in western sandpiper nests were not the offspring of both parents in the nest; 5 percent of Kentish plover nests and 20 percent among common sandpipers. Sandercock said the study provides some of the "first baseline estimates" of the rate of extra-pair fertilizations in monogamous shorebirds.

"What's really exciting about this work is that we're looking more closely at those pairs that do have extra-pair fertilizations and try to figure out what's going on with them.

Sandercock said what appears to be going on is that the infidelity is a direct result of avoiding inbreeding. Genetic studies indicate that the rate of genetic similarity among the mated pairs of birds with extra-pair fertilizations is more closely related than pairs without extra-pair fertilizations. How the species are able to recognize a genetically similar partner is still a mystery, he said,

"We don't have a good sense of how females are doing this; how they assess how similar they are genetically to a mate," Sandercock said. "It implies that there is some sort of recognition mechanism that we don't fully understand.

Another mystery scientists have yet to uncover is what are the consequences of inbreeding?

"We don't have a good measure of what would have been the fertility of the eggs or the growth and survival of the chicks after hatching if she had not selected a mate other than her partner," Sandercock said. "But in a number of other birds those sorts of costs of inbreeding are fairly well-documented."

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