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Why straying from the nest is for the birds

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Humans do it. Birds do it. Cheat on their mates, that is.

But research by a team of biologists, including one from Kansas State University, suggests the birds may at least have a good reason.

Studies of socially monogamous birds show that broods often contain offspring resulting from extra-pair matings by one of the parents tending the nest. The researchers, among them KSU's Brett Sandercock, theorize that when they stray from monogamy, some breeds may simply be trying to avoid inbreeding and provide diversity to the genes they pass on to their offspring.

The team of biologists examined 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.

Sandercock, an assistant professor of avian ecology in the Division of Biology, said in recent years there has been a lot

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of interest in looking at the differences between social mating systems of birds and what scientists 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.

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," he said.

Sandercock said what appears to be going on is that the infidelity is a direct result of avoiding inbreeding. Humans might not be able to get away with that excuse, but among the birds it's backed by science. 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, Sandercock 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."