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Climate Change Gives Sex Selection a Boost

By John Bohannon
ScienceNOW Daily News
4 October 2006

When it comes to climate change, what's love got to do with it? A lot, according to a study of shifts in bird migrations in response to global warming. Competition for females may be helping some species adapt to climate change more quickly.

The timing of bird migrations appears extremely sensitive to climate change. Many migrating species have been arriving earlier by the year as warmer springs thaw the snows ever sooner. What remains to be explained is why some species of birds are far more affected than others in the same geographic

Early-bird reward.

Sexually selective birds, such as these European blackbirds (the male is the colorful one), appear to have taken full advantage of climate change, shifting migration patterns to boost their chance of finding mates.

Credit: Thomas Sacher

range. Answering this question could help scientists better anticipate global warming's impact on biodiversity, and allow them to prioritize conservation efforts.

What differs between birds that might explain their varying reactions to climate change? One possibility, scientists believe, is sexual selection. In species where males compete fiercely for the attention of choosy females, migrating early actually works in the male's favor, giving him easy access to females that arrive at their destination ahead of schedule.

To test this theory, a team led by Claire Spottiswoode, an evolutionary ecologist at the University of Cambridge, U.K., analyzed the history of birds on two islands off the coasts of Germany and Denmark. There, the migration patterns of nine species had been recorded for 2 decades. To quantify the choosiness of the females, the researchers created a score for each species based on previously published data of standard indicators of sexual selection, including the frequency of cuckolding, the relative size of testes, and the color intensity of males relative to females. Then they compared this with the timing of migration between the island and the mainland, to see whether choosier species were also those whose migration patterns had shifted the most.

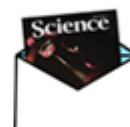
That turned out to be the case. The migration timing of nearly all nine species shifted forward over the period examined, but species with strong sexual selection shifted more quickly, the group reports 4 October in the *Proceedings of the Royal Society B*. If the effect proves to be universal among migrating animals, says Spottiswoode, then the intensity of sexual selection could be used to predict which species will adapt quickly to climate change and which will lag behind.

Beyond the implications for conservation, the study could be a boon for basic

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biology, says Stuart Bearhop, an ecologist at Queen's University in Belfast, Northern Ireland. "If correct, it would shed light on the forces driving migratory behavior and the evolution of migration itself."

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