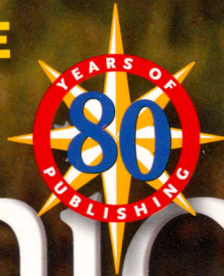


ANNUAL ENVIRONMENT ISSUE

CANADIAN Geographic



JUNE 2010 \$7.95
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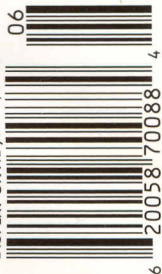
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Alien species to the rescue?

BY CHRIS WOOD

NATURALISTS HAVE RAISED ALARMS about the growing number of “invasive” species hitching rides to new habitats and devastating local ecosystems. But as wildlife genetics illuminate the genome — the ultimate “barcode” for biodiversity — that assumption is proving shaky. The surprising finding: most transplanted species do not dilute genetic diversity in their new locales and may even enhance it.

“The vast majority of species that establish in a new place do nothing,” says Mark Vellend, Canada Research Chair in Conservation Biology at the University of British Columbia. “Most don’t outcompete the natives or cause diseases or screw up water pipes.”

Most transplants, in fact, integrate uneventfully into their new homes, often displacing but seldom eradicating previous residents and directly enriching local biodiversity in the process. Lizards introduced to Florida from Cuba, for example, possess more diverse genomes than their native cousins.

Squirrels provide a closer-to-home example: the frontier between the ranges of North America’s two species of flying squirrel used to be distinct. Northern flying squirrels occupied conifer and mixed-wood forests from Alaska to Nova Scotia and south-central Ontario. Southern flying squirrels flitted from Florida to the northern fringes of Lakes Erie and Ontario. Encouraged by milder winters in recent years, however, southern flying squirrels have been gliding farther north in recent decades, reaching Algonquin



Provincial Park in central Ontario.

Not surprisingly, the two are now interbreeding, says Paul Wilson, Canada Research Chair in DNA Profiling, Forensics and Functional Genomics at Trent University. Far from posing a threat to biodiversity, he proposes, interbreeding may convey advantages to both original squirrel populations. Southern flyers may acquire some of their northern counterparts’ tolerance for cold, he says, in exchange for “genetic material

that might give the resident species some advantage to fighting off pathogens that they were not typically exposed to in a previous climate regime.”

A similar dynamic was seen when coyotes pushed beyond their historic range in southwestern United States.

“Where wolves were being extirpated and didn’t readily hybridize with coyotes elsewhere in North America,” says Wilson, “you saw them eliminated from the landscape. But once the coyote hit this eastern wolf range, you started to see hybrids forming, with the genetic potential to become more wolfy or more coyote-like, depending on the environment.”

“In the absence of those coyotes invading,” adds Wilson, “it’s not entirely clear whether there would be much of a remnant left of those eastern wolves.”

While alarm over a minority of alien species is justified, anything that strengthens genetic diversity is welcome. A varied gene pool means hardier species and more resilient ecosystems. Biodiversity starts here.

While some invasive species outcompete and destroy homegrown species, most play a benign or even helpful role. The northern flying squirrel (RIGHT) is more genetically hardy as a result of mixing with its southern cousin. When coyotes (BOTTOM) pushed into the range of eastern wolves (BELOW RIGHT), the subsequent hybrids, called coywolves, may have saved the wolves from elimination.

