The structural work may have practical implications as well. If researchers can find differences between the way human pol II and its bacterial and fungal counterparts interact with either DNA or associated proteins, they may be able to find antibiotics that work by specifically inhibiting pathogen polymerases. Another possibility is to look for drugs that prevent transcription factors involved in stimulating cell growth from binding to pol II, as these may be potential targets for cancer therapy.

Meanwhile, the members of Kornberg's team can pride themselves on a feat that was judged impossible just a few years ago. "Until a relatively short time ago," Geiduschek says, "pol II was regarded as beyond contemporary reach." **–JEAN MARX**

ECOLOGY

Birds Weigh Risk Before Protecting Their Young

As every parent knows, what's best for the children may not always be best for the parents, be it a movie choice or where to spend hard-earned money. Feathered parents can face an even starker decision: whether to trade their progeny's survival for their own.

And cold-hearted though it may seem, birds are sometimes willing to sacrifice their young to save themselves so they can breed again. New work, reported on page 494, clearly shows that breeding birds factor in both the number of their young and their own likelihood of surviving when deciding whether to risk delivering food to the nest in the presence of a predator. This behavior even varies according to what type of threat a specific predator poses. "Birds have the cognitive ability to react [differently] to certain kinds of predators," says Jeffrey Brawn, a population ecologist with the Illinois Natural History Survey in Champaign.

The work, by Cameron Ghalambor, now at the University of California, Riverside, and his colleague Thomas Martin at the U.S. Geological Survey in Missoula, Montana, probed a long-suspected difference between birds in the Northern Hemisphere and their counterparts in the tropics and the Southern Hemisphere: Northern birds tend to lay more eggs than do similar species in the South.

For these studies, Ghalambor and Martin first analyzed preexisting data on number of young and adult survival of some 182 species, comparing birds from Europe and North America with those from New Zealand, Australia, and South Africa. They also probed these characteristics in more detail in two bird populations on opposite sides of the Equator, in Arizona and in Argentina. "I've never seen comparisons over such a broad geographic area," comments Amy Krist, an evolutionary biologist at the University of Hawaii, Hilo.

Both the preexisting data and those from the Argentina and Arizona sites confirmed the disparity in the number of eggs laid per season between northern and southern populations. Ghalambor argues that the difference may be explained by the fact that northern birds sometimes live just one season, so they "invest more in reproduction" by laying more eggs the one chance they have.

Ghalambor and Martin then tested whether that investment also results in differences in the risks northern and southern populations run to protect either themselves or their young. They looked at the parents' willingness to return to the nest to feed their chicks when confronted with a predator. The researchers compared five Argentinian species—a flycatcher, a thrush, a wren, a sparrow, and a warbler—to their closest relatives in Arizona.

Parenting strategies. Although similar in many ways, these two robin species from Arizona (*left*) and Argentina (*above*) differ in the amount of risk they will take for their young.

For each species, they tested the parents' reactions to recordings of calls from a hawk, which attacks adults; a jay, which attacks chicks; or a nonthreatening stuffed tanager. They attempted to test each bird call on each set of parents and observed them for 90 minutes both before and after. All told, they made 175 presentations to 61 nests.

As expected, birds from both hemispheres reduced their food deliveries when they heard and saw either the hawk or the jay. "It's been known for a while that birds avoid going to nests when they know they are being watched," says Robert Ricklefs, an ecologist at the University of Missouri, St. Louis. But there were some intriguing differences.

Take the house wren. The wrens in Arizona averaged 5.8 chicks per nest, while their southern counterparts averaged just 3.7. The jay, which attacks chicks, spooked the Arizona wrens more than those in Argentina, inciting a greater reduction in feeding. In contrast, the Argentinian birds were less concerned about leading the jay to their nests but were more leery of the hawk, very quickly abandoning feeding their chicks to protect themselves.

"There is a trade-off between survival and reproduction," explains Ghalambor, in which the northern birds that are unlikely to survive the winter have put all their eggs in one nest, so to speak, and do everything they can to care for those eggs. Southern birds hedge their reproductive potential, producing fewer eggs at one time but breeding more than once. Hence, they value their own survival more than that of their chicks.

Biologists have long thought that some traits evolve to compensate for other traits that might compromise an organism's reproductive potential, says Brawn. Yet demonstrating how characteristics such as nest size and risk-taking behavior vary in different environments to contribute to the species' survival has been tough. Ghalambor and Martin, says Brawn, have corroborated "one of the central principles of life history theory."

–ELIZABETH PENNISI

MICROARRAYS

Data Standards On the Horizon

Microarrays offer researchers a tantalizing way to reap the bounty of genome sequencing—if the torrent of data they generate can be managed properly. In an effort to tame the flood, a group of scientists is almost ready to propose standards for describing and sharing microarray data. Even so, researchers and journal editors are not very far along in figuring out how to enforce them.

Microarray data won't reach their potential until researchers can compare their own results with those of experiments in other

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