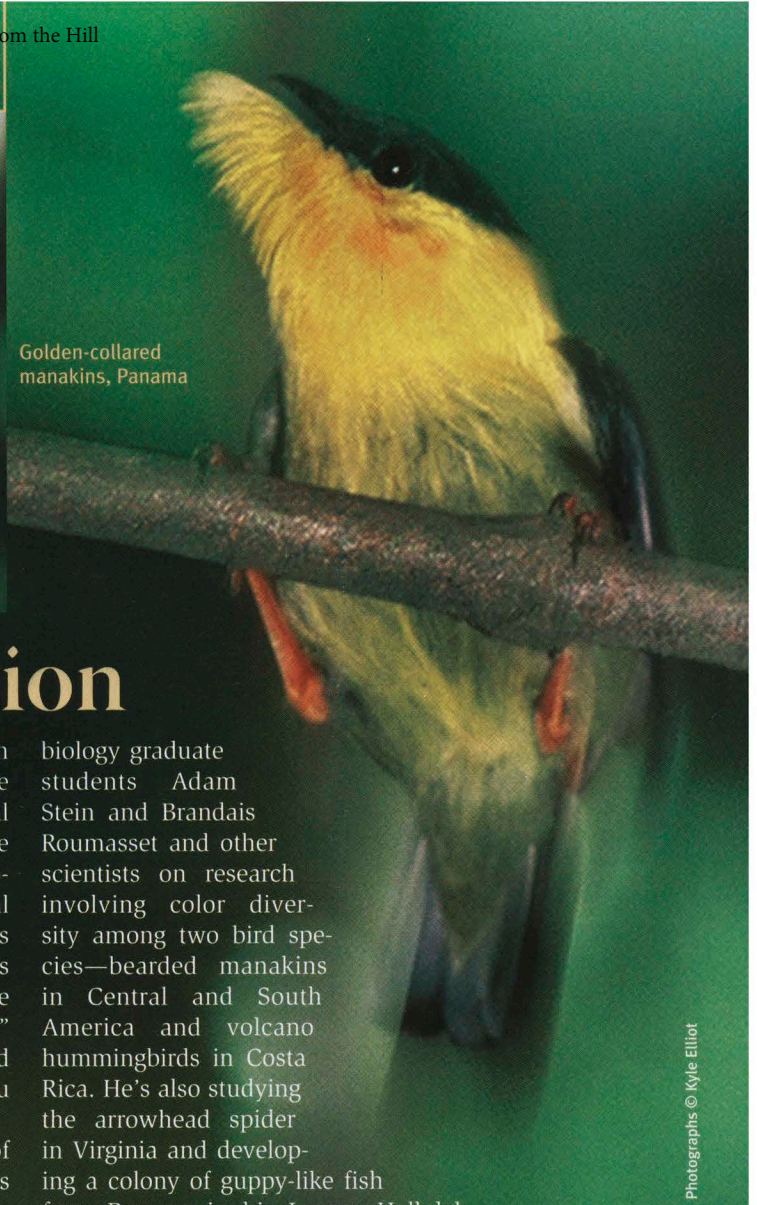


VIEW from the Hill



Golden-collared manakins, Panama



Photographs © Kyle Elliot

Evolution in Action

Biology professor J. Albert C. Uy performs field research in the tropical rainforests of the Americas and the South Pacific. In remote areas, he often relies on local villagers as guides, hiking for days through dense jungle to reach locations inhabited by birds on the brink of evolutionary change. He enjoys immersing himself in local culture, learning the language and customs. But he has also run out of food, been abandoned by unreliable guides in the middle of nowhere, and battled with inhospitable elements on many occasions. “It’s a lot of tedious work,” Uy says. “You sit for hours and hours watching birds, and back at camp there’s no electricity or hot water and you deal with things like mosquitoes, ticks, and malaria.”

Uy, a native of the Philippines, sacrifices the comforts of civilization to pursue his passion: exploring the mysteries of how birds and other animals develop visual signals—such as colors and intricate dances—to communicate and attract mates. “Selection within a species has driven the spectacular diversification of display traits and female preferences,” he says. “As a result, this has given rise to new species.” Some of Uy’s recent work links successful courting to such environmental influences as the contrast between bird color and background and lighting conditions. “We’re focusing on closely related populations that are still on the verge of changing,” he says. “We’re hoping to catch evolution in action.”

As an example, Uy cites the flycatchers of the Solomon Archipelago that he’s studying with a scientist from the American Museum of Natural History. “We see rapid changes in plumage and song among birds on islands that are mere kilometers apart,” he says. “One requirement for populations to change is they have to be reproductively isolated, so there’s no or little exchange of genes. In general, people have found that physical boundaries help speed up the formation of new species—it’s not necessarily a requirement, but the push geographic isolation provides certainly helps populations become reproductively isolated.”

Along with the flycatcher research, Uy has four other collaborative projects under way. He’s working with

biology graduate students Adam Stein and Brandais Roumasset and other scientists on research involving color diversity among two bird species—bearded manakins in Central and South America and volcano hummingbirds in Costa Rica. He’s also studying the arrowhead spider in Virginia and developing a colony of guppy-like fish

from Panama in his Lyman Hall lab with the assistance of several undergraduates. “We think that the females in this lineage of fish are evolving traits [such as a distinct anal fin] to mimic the males,” he says. “One hypothesis is they are doing this to avoid harassment from aggressive males.”

No matter where Uy’s research takes him, he maintains a great respect and fascination for the natural world. One place that truly captivates him is western New Guinea, where scientists recently discovered new species of birds and animals in a remote mountain range. Several years ago, Uy spent time on the island studying the male Vogelkop bowerbird, an avian architect known for creating elaborate bowers—hut-like structures that they adorn with colorful objects and other items to attract mates. “They collect blue things,” he says. “They would raid our camps and steal blue pens, blue toothbrushes, and pieces of blue tarp. What we found is the males with the most decorations were the ones getting matings.”

Piecing together such clues helps Uy in his exploration of biodiversity and the role that mating signals, habitat, and other factors play in species evolution. “To truly understand biodiversity,” he says, “we have to understand where it came from and how it evolved.” —Jay Cox