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Marvelous, Mystical, Tropical Trogons

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Marvelous, Mystical, Tropical Trogons*

by Paul A. Johnsgard

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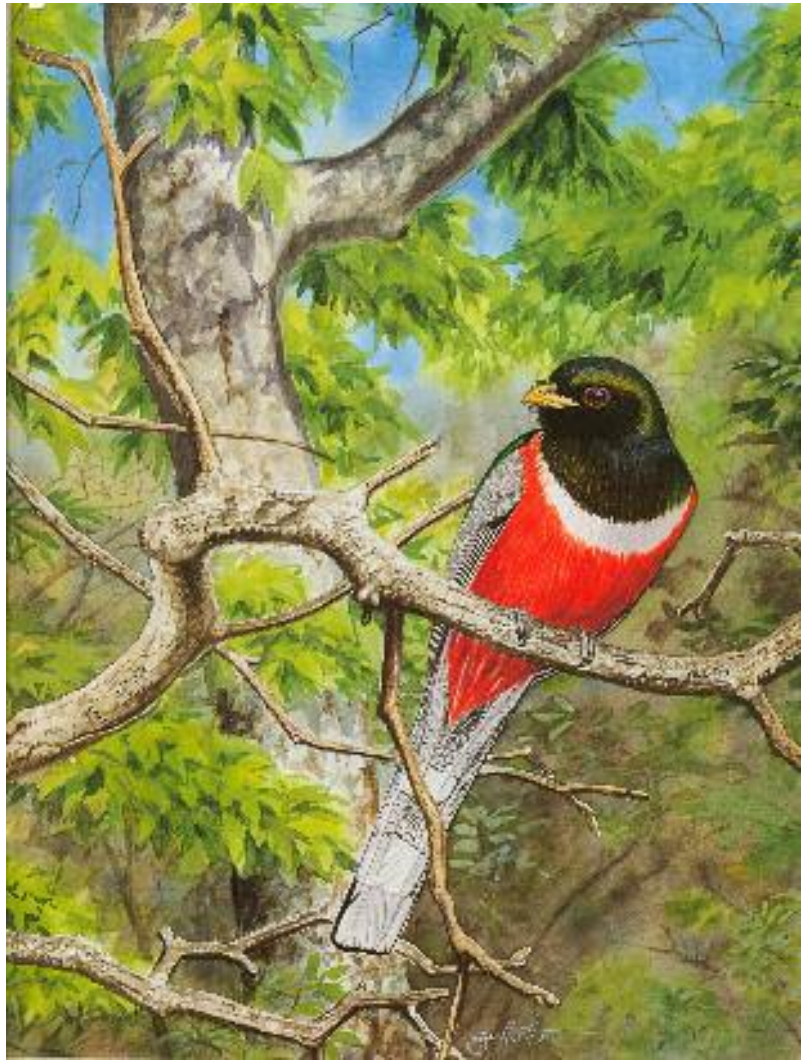
Without major conservation efforts on behalf of these colorful birds, many species of trogons and quetzals may soon vanish from the earth

Of all the groups of birds in the world, few fit our ideas of "tropical forest birds" as well as the trogons and quetzals. They are found almost entirely between the Tropics of Cancer and Capricorn, from northern Mexico to northern Argentina. Furthermore, nearly all of them depend on hollows in large trees for nest sites, except for a few species that excavate cavities in the paper-mache-like homes of tree-dwelling termites or arboreal wasp nests.



The beautiful Elegant Trogon (above) is the only species regularly found in the United States, where it is highly sought by birders.

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Although the Resplendent Quetzal (above) is the national symbol of Guatemala, the bird is seriously threatened there by poachers, live bird traders, and rampant deforestation.

Beyond that, trogons and quetzals conform to our ideas of how exotic tropical birds should appear. Nearly all of the approximately 40 species are colored iridescent forest green to bluish violet above and brilliant red, orange, or yellow below—colors as intense as those of the brightest orioles or tanagers. Yet these brilliant hues so effectively hide the birds from the human eye amid their surrounding forest vegetation that they are like one of those picture puzzles designed to test a person's visual abilities, in which you must discern a familiar shape in a confusing maze of intersecting lines and colors. The birds often remain maddeningly motionless, occasionally uttering monotonous repeated notes or, if you are very lucky, briefly spreading or defiantly flicking their tails up and down, as if certain that no mere human could possibly see them.

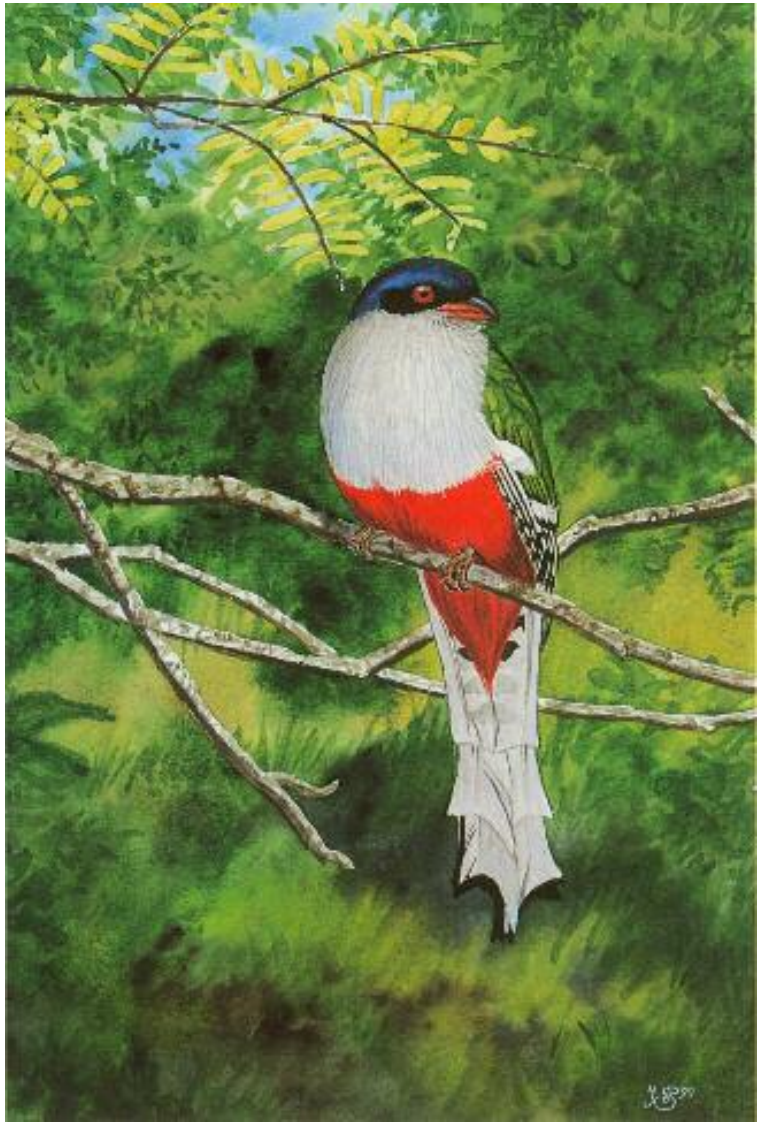
Trogons and quetzals reach their greatest abundance and species diversity in the lowland and middle montane forests of Central America and northern South America, where 23 species live. They also occur in the comparable tropical forests of Africa (three species) and southeastern Asia and the East Indies (11 species). Finally, two species are limited to Cuba and Hispaniola. The countries having the greatest numbers of resident species are Colombia with 13, Ecuador with 12, and Panama with 11. To the north and south these numbers gradually diminish, and only the Elegant Trogon (*Trogon elegans*) is regularly seen in the United States. This species penetrates southeastern Arizona and the extreme southwestern area of New Mexico. There it has become one of the "most-wanted" species for the hordes of birders who visit the Chiricahua, Huachuca, Santa Rita, and Atacosa mountains of southeastern Arizona.

These remote desert mountains served as a safe retreat for the trogons well into the 1900s, or more than 50 years after their first sightings north of Mexico. But it wasn't until 1939 that Cornell Lab of Ornithology founder Arthur A. Alien, armed with a tape recorder, documented the first known nesting of the species in the United States. Today, nearly 25,000 people visit these mountains

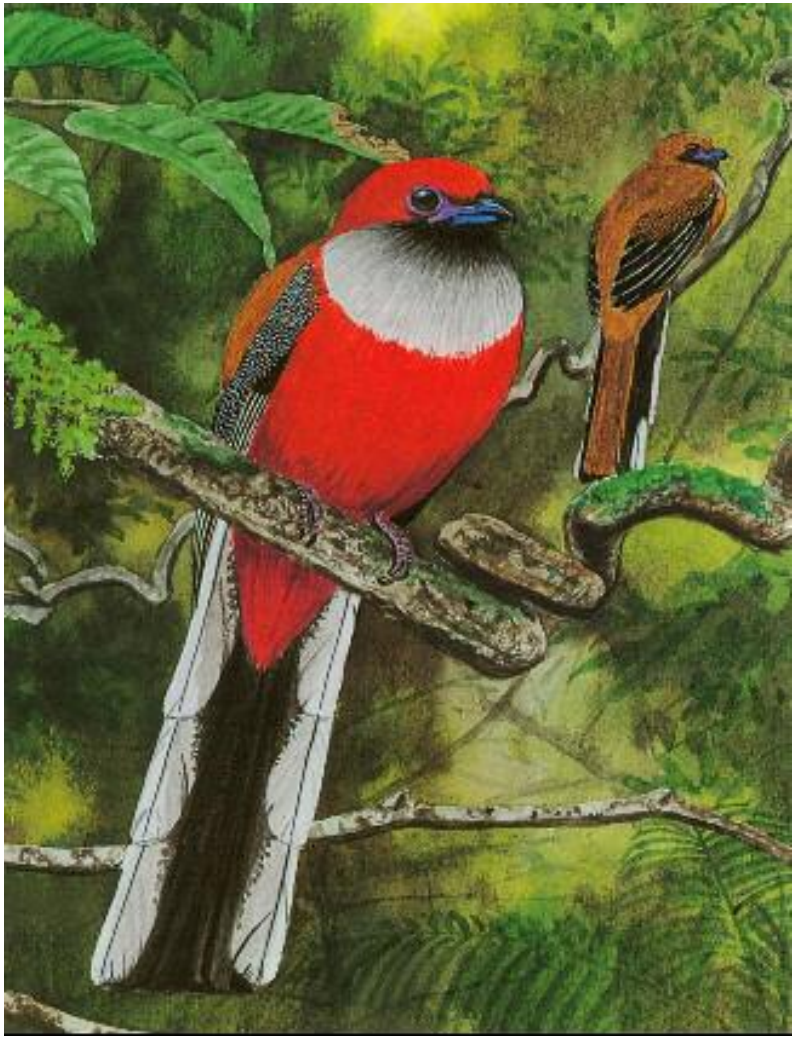
annually, many of them hoping to catch a glimpse of what ornithologist Richard Taylor called "the most elegant bird in North America."

Trogons and quetzals constitute an avian order that has no known close relationships with any other. Their strange toe arrangement—the first and second toe point backward, the third and fourth forward—superficially resembles that of woodpeckers, which also have two toes forward and two backward, but in the case of these and similarly clinging birds it is the first and fourth toes, rather than the first and second, that point behind. Actually, trogons don't often cling to vertical tree trunks or branches in the manner of woodpeckers, except when they are tearing away the rotted wood of dead trees to excavate nest cavities. Like many other cavity nesters, trogons may also simply claim and occupy existing tree cavities, especially those previously used and abandoned by woodpeckers. Because they can only gnaw extremely rotted wood, the cavities they occupy are usually unstable. It is not uncommon for the branch or trunk to collapse under its own weight during storms or over time, so few cavities can be used for multiple seasons.

"Trogon," the generic name of most of the New World species, translates from the Greek as "gnawer," and many of the species have serrated or toothlike edges on their bills that seem adapted for chewing or holding prey. Such serrations occur in many of the typical trogons, which are largely insect eaters. They are also present in the generally larger quetzals (*Pharomachrus* ssp.), which feed almost exclusively on the fruits of tropical trees, especially wild relatives of the oil-rich avocado. The term "quetzal" has its origin in Nahuatl, a Central American language, and perhaps refers to he beautiful iridescent train of elongated feathers that covers the adult male's true tail feathers. Or the word may have been derived from the loud two-syllable call that quetzals often utter when disturbed.



The Cuban Trogon (Priotelus temnurus) (above) is the only trogon found in Cuba. Like many other trogons worldwide, these birds are seriously threatened by the destruction of the forest habitat upon which they depend.



Deforestation in Borneo threatens the Whitehead's Trogon (above), the country's only endemic species, as well as five other species found there. The birds need the dead and rotting trees found in old growth forests to use as nest sites.

"Quetzal" has also found its way into the present-day languages of Mexico and Guatemala, for the now-mythic god Quetzalcoatl was derived from an actual historic Toltec hero, who eventually became transfigured into the Aztec's god of wind and air and a benevolent patron god of the arts and music. Feathers from the male quetzal's train were a symbol of power and status to the Aztecs; only high priests and similar important officials were allowed to own and wear them. In Guatemala, the quetzal myth has been perpetuated by the adoption of the Resplendent Quetzal (*Pharomachrus mocinno*) as the country's national bird symbol, as well as its basic unit of currency. Unfortunately this symbolic status has done nothing to benefit the species in Guatemala, where poaching of the Resplendent Quetzals for their skins and capturing them alive for the illegal aviculture trade—plus rampant deforestation of their cloud-forest habitat—have a disastrous effect on their population.

Besides the Resplendent Quetzal, four other similar species of quetzals occur in Latin America, with three of them geographically replacing the Resplendent Quetzal in mountain forests, and the other—the Pavonine Quetzal (*P. pavoninus*)—existing in the lowland forests of the upper Amazon Basin. Although none of these birds has ornamental feathers as long as the Resplendent Quetzal's, all of them are similar in size and have an intensely golden-green iridescence on their upperparts. Indeed, the intensity of their iridescence is second only to that of hummingbirds. Furthermore, hummingbirds lack the brilliant carotinoid pigments that splash over the underparts of trogons, producing colors that need not rely on direct sunlight to produce their wonderful riot of color.

Why, you might ask, have these glorious plumages evolved? Trogons are thought to be highly monogamous; the male not only participates equally in incubation but does his share in rearing the young. Thus, in contrast to such elaborately plumaged tropical forest bird groups as the hummingbirds and birds of paradise, sexual selection seems an unlikely candidate for the evolution of

such riotous colors and patterns. Perhaps the green upper-parts and yellow to red underparts are, like those of many of the similarly monogamous parrots, actually a form of camouflage, helping the birds to blend in with their dense forest surroundings—just as artist Abbot Thayer proposed early in this century, and for which he was roundly criticized.

It is interesting that the larger species, the quetzals, whose fruit-eating habits mean that they don't have to chase prey, have the most beautiful and elaborate plumages in the family. Is it possible that the "handicap principle" of natural selection might apply? This is a hypothesis that attempts to account for the evolution of extravagant and seemingly costly male plumages or soft-part elaborations in mostly non-monogamous bird species—such as the peacock's long, heavy, and conspicuous train, which must adversely affect its ability to fly and run. The idea is that males with enough vigor and genetic quality to be able to carry the "handicap" of having particularly colorful or long feathers or other seemingly costly secondary sexual traits identify themselves as being the most desirable mating partners of discriminating females.

In any case, the beauty of quetzals and trogons has probably been a distinct handicap for them, at least in terms of surviving in the face of human exploitation. It is also their sad fate to be adapted to the tropical forests that are being destroyed most rapidly by the timber industry, especially in Asia and the lowlands of South America. None of these species has yet become extinct, but some—such as the Resplendent Quetzal—are now confined to a few protected forest reserves, most of which are not large enough to sustain viable breeding populations or to encompass their seasonal migrations to lower altitudes during the non-breeding season.

Ecotourists visiting Central and South America often have trogons and quetzals near the top of their lists of birds they would most like to see, and the money brought into countries that are willing to set aside large tracts of land as preserves or sanctuaries,

such as Costa Rica, has paid high economic dividends. But trogons tend to have large home ranges—the Elegant Trogons of Arizona, for example, usually have territories at least a half-mile in size. Furthermore, the impermanent nature of their usual cavity nesting sites causes them to shift nesting territories on a regular basis. Added to these problems is the fact that trogons are sensitive to human disturbance during breeding season. The repeated intrusion of birders, especially those using tape-recordings to locate breeding pairs, has created stress for nesting birds in some locations and may have even caused some nest failures.

But disturbance to trogons and quetzals caused by tourists and birders is a minor threat compared with the chainsaw. Cutting down old-growth forests containing dead and rotting trees that offer ideal nest sites is the greatest danger to trogons and indeed most tropical birds. Deforestation in Borneo, where six trogons occur and where one, the Whitehead's Trogon (*Harpactes whiteheadi*), is endemic, and the Philippines, which also supports an endemic trogon, poses especially serious problems for the group. Generally, the Asian trogons have been studied far less than their New World counterparts. The nest sites of some Asian species remain undiscovered, to say nothing of the details of their breeding biology.

The Eared Trogon (*Euptilotis neoxenus*) of western Mexico is now classified by the International Union for the Conservation of Nature and Natural Resources as endangered, and the Ward's Trogon (*Harpactes wardi*) of the eastern Himalayan forests is considered "vulnerable." The Resplendent Quetzal of Central America is believed to be endangered in several individual countries and as "near-threatened" collectively. The small ranges and habitat losses of the Hispaniolan Trogon (*Priotelus roseigaster*) and the Baird's Trogon (*Trogon bairdii*) of Costa Rica and Panama have also placed them in a near-threatened situation.

It is depressing advice to suggest that the best way to see as many species of trogons and quetzals as possible is to begin quickly, before they are snuffed out like so many flickering can-

dles. But unless major conservation efforts for these birds start soon, such would seem to be the case.

Paul A. Johnsgard is a Foundation Professor in the School of Biological Sciences at the University of Nebraska, Lincoln. Smithsonian Institution Press will publish his monograph on the trogons and quetzals of the world next year.