

**THE EARED TROGON IN ARIZONA:
BEHAVIOR, ECOLOGY, AND MANAGEMENT OF THE "NORTHERN QUETZAL"**

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Introduction

The Eared Trogon, *Euptilotis neoxenus*, is endemic to the pine-oak forests of the Sierra Madre Occidental of Mexico and is recorded from the northern edge of the range within 160 km of the Arizona-Mexico border (Marshall 1957). This close relative of the Resplendent Quetzal (*Pharomachrus mocinno*) was added to the avifauna of Arizona in late 1977, when individuals were sighted in Cave Creek Canyon in the Chiricahua Mountains and Ramsey Canyon in the Huachuca Mountains. Despite sightings in the Chiricahuas virtually every fall since 1977 (Davis and Russell 1990) and predictions that the species would eventually be found nesting in the United States (Zimmerman 1978), there was no conclusive evidence of nesting until October 1991, when a pair of Eared Trogons was discovered feeding young in a tree cavity in upper Ramsey Canyon in the Huachuca Mountains.

My involvement with Eared Trogons began on 5 August 1991, when a male and female were discovered in the Coronado National Forest Miller Peak Wilderness within 1 km of the boundary of The Nature Conservancy's Ramsey Canyon Preserve. The sighting in Ramsey Canyon was not altogether surprising as it followed weeks of sporadic sightings of this species along the South Fork Trail in Cave Creek Canyon beginning on 9 June. News of the Ramsey Canyon sighting reached the birding community within days of the discovery, and the presence of Eared Trogons in upper Ramsey Canyon was soon announced on the North American Rare Bird Alert. By early November Eared Trogons had been reported from five locations in southeastern Arizona, but only the South Fork and Ramsey Canyon birds were seen by large numbers of birders.

The results of the announcement were immediately apparent to preserve personnel. Between 13 and 18 August, at least 138 people who came to Ramsey Canyon Preserve were turned away after the preserve reached capacity, and many who telephoned the preserve for information were encouraged to avoid the preserve in favor of National Forest trailheads at Brown and Carr canyons. Visitation at the preserve from 13 to 31 August was 45% higher than the same period in 1990, and use of the Hamburg Trail, which provides access through the preserve to the Miller Peak Wilderness, more than doubled over the same period, from 229 users in 1990 to 489 in 1991. Use statistics for the two nearby National Forest trailheads are not available, but these areas normally attract only a fraction of the visitation of Ramsey Canyon Preserve and so may have experienced even more dramatic increases in use.

Informal records of staff, visitor, and volunteer reports of the birds were kept in the wildlife sightings log at Ramsey Canyon Preserve beginning on 5 August. Many but not all of the entries note the number, sex, location, and behavior of the bird or birds observed. Preserve staff also received reports of birder behavior, including shouting, running, loud and continuous playing of taped trogon calls, and off-trail pursuit of the birds (including at least one intrusion on a documented den site for the rare ridge-nosed rattlesnake, *Crotalus willardi*).

Birder success was far from 100%, and the proportion of successful parties appeared to decline as larger numbers of people entered the area. As activity increased in the upper canyon, sightings of the trogons began coming in from further upstream, until the pair seemed to settle into an area in lower Pat Scott Canyon more than 2 km from the site where they were first seen. Sightings from areas downstream continued, but the proportion of reports from the original sighting area declined. Visitor activity declined somewhat after the first week, and dropped off sharply following Labor Day.

On 9 September Tom Wood and I visited the area in response to reports of possible nesting behavior and observed a trogon of unknown sex entering a woodpecker nest cavity in a dead conifer at 2100 m in lower Pat Scott Canyon. We observed that the bird entered the cavity whenever it began to rain and emerged when the rain stopped; this fact plus the time of year convinced us that we had observed shelter-seeking behavior, not nesting. On 10 October a group of birders videotaped a female entering a cavity in a dead big-toothed maple (*Acer grandidentatum*)

approximately 1.3 km downstream from the site of the first cavity and easily visible from the Hamburg Trail; a member of the same group returned on 12 October and observed a male carrying a caterpillar into the same cavity, indicating the presence of young. On 14 October I watched the tree from 1130 to 1530, observed 6 feeding visits by the adults, and was able to confirm the presence of two chicks by tapping the tree and listening to the nestlings' hissing begging calls.

With nesting confirmed, I initiated a volunteer monitoring program with the assistance of the Tucson and Huachuca Audubon Societies. Volunteers were present at the site every day to record observations of both trogon and birder behavior, and were also provided with viewing guidelines intended to prevent or minimize disruption of the birds' behavior by both observers and monitors. More than 60 hours of observations at the nest site provided a wealth of data on the birds' behavior at the nest, including their response to human presence and behavior.

The male was the more vocal member of the pair, giving the "squeal-chuck" call and cackling flight call more often and for longer periods than the female. He was also more cautious when approaching the nest, particularly when there was conspicuous human activity along the trail. On one occasion the male arrived at the nest with food, aborted three attempts to enter the nest, and flew around the nest area in an agitated manner over a period of 14 minutes but did not enter the nest to feed the young until an observer removed and concealed his white shirt and cap. In contrast, the female usually flew quickly to the hole and entered immediately, but would typically pause at the nest entrance for a few moments before departing.

On the afternoon of 26 October the first storm of the winter reached the Huachucas. Overnight temperatures at the preserve weather station (elevation 1720 m) dropped to -3°C ., and temperatures at the nest site were likely 3° colder. The last recorded nest visit by an adult trogon was reported the next morning. On 28 October the pair were found together at midmorning and early afternoon in a grove of fruiting Arizona madrone trees (*Arbutus arizonica*) just inside the upstream boundary of Ramsey Canyon Preserve. On 30 October volunteers from the Bisbee Fire Department climbed the nest tree and recovered the bodies of the two young trogons.

One of the chicks died of unknown causes several days before the other; due to the poor condition of the carcass its age and cause of death could not be determined. Its nestmate appeared to have survived until the storm, then succumbed to hypothermia. Its well-preserved body was well-fleshed, full-bellied, and partly covered in a coat of black and yellow down. Based on documented developmental stages in Resplendent and Golden-headed quetzals, this chick was between 18 and 21 days old and 7 to 12 days from fledging at the time of death.

The adult trogons apparently stayed in the area throughout the winter, remaining mostly in the restricted area of Ramsey Canyon Preserve, though there were several sightings in nearby Scheelite Canyon. Sightings became more regular in early February, and word once again spread in the birding community. February visitation at the preserve increased by 5% and use of the Hamburg Trail increased by 20% over February 1991. Both male and female trogons were present on the preserve the first week of March and made sporadic appearances along the Hamburg Trail. On 15 March 1992, 30 people went up the Hamburg Trail between 0800 and 0915, all looking for the elusive trogons.

Conclusions and Future Research

Based on information gained from my own and others' observations of Eared Trogons in Ramsey and Cave Creek canyons, reports of field observations of Eared Trogons in Mexico (R. Taylor, pers. comm.), and personal field observations of seven species of typical trogons (genus *Trogon*) and the Resplendent Quetzal, I have drawn some tentative conclusions about the behavior and reproductive cycle of this species:

1. Its normal nesting season coincides with the summer rains, commencing in late July and early August.
2. The young develop at approximately the same rate as quetzal chicks, have a nestling period of approximately four weeks, and normally leave the nest by the end of September.
3. It is essentially non-migratory and may remain in or near its nesting territory during the winter.
4. It is strikingly less tolerant of human activity than typical trogons such as the Elegant Trogon (*Trogon elegans*).

The 1977 sightings of this species attracted hundreds of birders from throughout the U.S., and this intense activity caused concern for the future of the Eared Trogon as a breeding species in Arizona (Zimmerman 1978). Given their observed sensitivity to human activity and long nestling period, Eared Trogons may be much more susceptible to human-caused nesting failure than Elegant Trogons. Taylor (1979) has observed that interference from birders attempting to photograph nests is a significant cause of nest abandonment by Elegant Trogons in Cave Creek

Canyon. While the late initiation of nesting is the superficial cause of this nest failure, the birds' movements in the canyon during periods of greater and lesser human activity suggest that birding pressure was a factor in delaying nesting.

Informal observations of birder behavior in Ramsey Canyon suggest that, despite their generally high level of environmental awareness and concern, birders in the field often act in ways which may be detrimental to birds and/or their habitat. This agrees with a study of birder behavior conducted at Point Pelee National Park, a birding "hotspot" in southern Canada (Butler and Fenton 1986). Given the increasing numbers of birders coming to southeastern Arizona each year, the growth of competitive birding, and the efficiency of the birding information network, the scenes in Ramsey Canyon and South Fork in 1991 are likely to be repeated with even greater intensity following each appearance of a "rarity."

Birding has a major economic impact on southeastern Arizona, and has been a significant factor in the success of land conservation in this part of the state. This positive economic impact is created largely by the presence of dependable "rarities" such as Elegant Trogons and Red-faced Warblers, and is enhanced by the serendipitous appearance of species such as Eared Trogons. If Eared Trogons are to become established in areas of southeastern Arizona with reasonable access to birders, and if human impact on the birds and the sensitive natural areas they frequent is to be maintained at reasonable levels for the health of the entire ecosystem, we must learn a great deal more about the behavior of both the trogons and their human admirers, and we must apply what we learn to the management of highly popular birding areas such as South Fork and Ramsey Canyon.

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[Addendum: March was a virtual repeat of August. In late February, the birds began leaving their refuge in the preserve's restricted area to make appearances every one to three days along the Hamburg Trail. Since the birds were in little danger of being pursued under these conditions, we allowed a report to go out on the Tucson Rare Bird Alert. The birds were seen daily from 3/7 to 3/17, except for Sat. 3/14 and Sun. 3/15. Over the same ten-day period, both visitation and use of the Hamburg Trail increased dramatically, up 37% and 168% respectively over 1991 statistics. As the number of birders on the trail increased, the number and duration of trogon sightings decreased. No major breaches of etiquette were reported. Regular sightings on the preserve ceased after 3/17.]