

Trogonids in Arizona, "How far do I have to walk?"

John C Murphy and René C. Clark

After an early morning hike into Madera Canyon, I (JCM) returned to the parking lot and waited for a couple of friends to come off the trail. A woman pulled in and parked near my Jeep. She exited her car and asked me, "How far do I have to walk?" My response was, "For what?" She replied, "To see the trogons." The tone in her voice suggested that I should have intuitively known her goal. On the return hike to the parking lot, I passed eight birders watching several trogons. I replied, "They are a mile, maybe two, up the trail." She responded with some vocalization, expressing her displeasure at walking that far, and proceeded up the trail.

The trogons and quetzals are in the order Trogoniformes which contains a single family, the Trogonidae (in common usage, the suffix **idae** is dropped and replaced with **id**, and the word is in lower case- trogonids). Many of these species are polytypic. Meaning they have one or more subspecies, and the possibility that cryptic species are present is significant (Dickens et al., 2021). The most trogonid species are in the Neotropics, where four genera contain 24 species. A single African genus includes three species, and two genera in Southeast Asia hold another twelve species.

Trogonids are pan-tropical in forests on almost all major land masses around the Equator, with an elevational distribution from sea level to 3,500 m (Johnsgard 2000, Del Hoyo *et al.* 2001). Trogons occur in habitats ranging from tropical rainforests to montane forests - often at mid-levels. Some use dry forests. Birders often locate trogonids by their loud vocalizations, which can be coos or whistles, and they often cock their tails while calling. However, trogons can be inconspicuous and can sit quietly for long periods. Like owls, they can rotate their head 180°.

The quetzals (the genera *Pharomachrus* and *Euptilotis*) are characterized by having a crest on the head, elongated upper wing coverts, and upper tail coverts exceeding the length of the tail, which, in the Resplendent Quetzal (*P. mocinno*) can be 70 cm. The long tail is broad at the base and truncated. The bill is short but broad at the base, usually brightly colored, and has a strongly arched culmen. Several species have a serrated maxillary tomium, which helps them manipulate food. The genus *Euptilotis* is monotypic and may be a recent addition to Arizona's bird fauna.

The most detailed study of Neotropical trogons' diets suggests they feed on a mix of fruits and arthropods, with the frugivory increasing with body mass. These birds are ecologically important in dispersing seeds larger than 15 mm in diameter (Remsen *et al.* 1993).

Trogon clade members share a colorful, soft plumage that is sexually dimorphic and a unique modification of the foot with toes three and four in front and toes one and two in the

back. This foot architecture is called the heterodactyl arrangement and is only found in trogons (Figure 1).

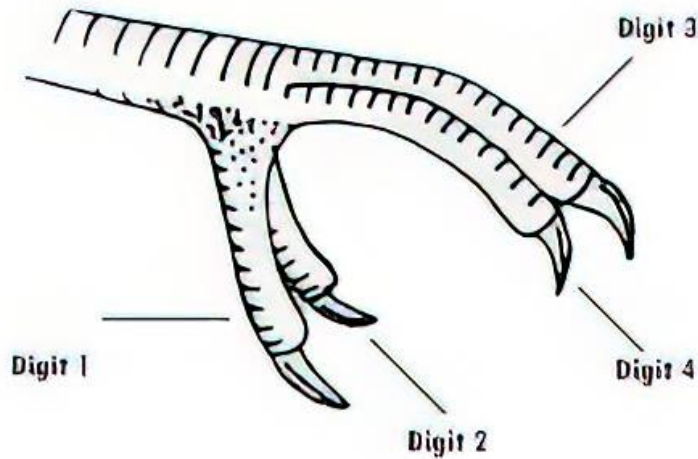


Figure 1. The arrangement of the toes in trogons is unique among birds. They have a heterodactyl foot with toes 3-4 in the front and 1-2 in the back.

Trogons glean insects and fruit from the vegetation and catch insects while flying. Caterpillars seem to be a favorite. They have been described as "sallying substrate gleaners" (Collar 2001) because they take fruit and insects from trees while on the wing. Marshall (1957) described trogons as hovering while picking fruit from trees. Their wings are broad and rounded, with irregular notches, and their broad bills and weak legs reflect trogon's foraging habits and diet. Moermond and Denslow (1985) studied how birds pick fruit from trees while flying using video; they found that trogons don't hover; instead, they stall their flight as they reach the fruit. They tend to choose ripe fruit that probably comes off the tree more quickly than non-ripe fruit. Rarely do trogons pick fruit while they are perched or sitting. Although they can fly fast, trogons are reluctant fliers.

Seasonal altitudinal movements are common, but they migrate only short distances latitudinally. Thus some authors considered them nonmigratory, while others considered them local migrant forest birds with inferior long-distance dispersal abilities (Eisenmann 1985, Collar 2001). Local migrants are species that breed in one type of habitat and spend the Winter in a different habitat within the same geographic region. Most species are resident, but several become somewhat nomadic outside the breeding season, and the Elegant Trogon vacates more northern habitats in Winter. The Elegant Trogon, *Trogon elegans*, breeds as far north as the canyons in southern Arizona.

Trogons are territorial and monogamous. Both parents share duties attending reproduction. They nest in tree cavities (sometimes using old woodpecker holes or termite nests). They lay 2-4 white eggs and incubate them for 16-19 days (the male Resplendent Quetzal,

Pharomachus moccino, may incubate with his tail protruding out the nest hole). Young hatch synchronously. They are naked at hatching and fledge in 15-20 days. The chicks continue to be fed for several weeks after leaving the nest.

Virtually all trogonids are charismatic and attract the attention of birders. As such they have become one of the focuses of ecotourism wherever they occur. Quetzals are the object of a thriving ecotourism industry in Central America. Monte Verde, Costa Rica, became a popular tourist destination for experiencing rain and cloud forests. The iconic, Resplendent Quetzal, with a colorful plumage and a mythical reputation, is the centerpiece of Monte Verde's cultural tourism economy.

In Arizona, two species of trogons may be present, native Elegant Trogon, *Trogon elegans*, and the occasional visitor, the Eared Quetzal, *Euptilotis neoxenus*. Both are at the northern edge of their range, and most of their distributions are to the south in Mexico. The flashy plumage and exotic appearance of trogons have drawn thousands of visitors to the sky islands of Southern Arizona and specifically to Madera Canyon. The Eared Quetzal has a more complex history and status in Arizona than the Elegant Trogon. Here I discuss both species.

John Gould's Trogons

John Gould started his working life at age 14 as an apprentice gardener. At the same time, his interest in animals, particularly birds, grew. By age 20, he was an expert taxidermist and set himself up in business in London. His skill and reputation made him the first preserver [AKA the 'bird-stuffer'] and curator at the Zoological Society of London's Museum before age 30. All of this was done with little if any, education. Gould also became the author, artist, and publisher of a series of books that became the first monograph on birds of the world.

Gould's obsession with birds began in the late 1820s. A collection of birds from the Himalayas arrived at the Zoological Society's Museum. Gould dreamed of publishing a volume of imperial folio-sized (12 x 19 inches) with 100 hand-colored lithographs. This project became *A Century of Birds Hitherto Unfigured from the Himalaya Mountains, 1830-32*. The text was written by N. A. Vigor, Gould's friend, and mentor. Elizabeth Gould (John's wife) made the drawings and transferred them to the large lithographic stones. When he could not find a publisher, Gould self-published the work. It appeared in twenty monthly parts, four plates to a volume.

Gould's *A Monograph of the Trogonidae, or Family of Trogons*, was published by Taylor and Francis for the author in four parts published between 1858-1875. It is a large folio (543 x 366 mm) work with 47 hand-colored lithographic plates by Gould, William Hart, and Henry Constantine Richter. The first edition of this work (Gould's second monograph) was issued in 3 parts between 1835 and 1875 and illustrated with 36 plates; 34 species were described, including 12 new to science. The second edition was published in four parts over 17 years – an indication of how much fresh research went into this edition for which the text was re-written, the figures re-drawn, and new plates added.

Alfred Newton authored the Trogon account for the Encyclopaedia Britannica's 11th ed and wrote, "The [trogons'] plumage is very remarkable and characteristic. There is not a species which has not beauty beyond most birds, and the glory of the group culminates in the quezal [sic]. But in others golden green and steely blue, rich crimson and tender pink, yellow varying from primrose to amber, vie with one another in vivid coloration, or contrasted ... with a warm tawny or a sombre slaty grey – to say nothing of the delicate freckling of black and white, as minute as the markings of a moth's wing – the whole set off by bands of white, producing an effect hardly equalled in any group"

The book reviewer for *Nature* (1875, December 23rd, page 166) reported on the second edition of the trogon monograph, wrote: "We must indeed congratulate the author on the energy and success with which, prompted by the pure love of science, he has brought out a second edition of one of the first of his many important ornithological works."

Gould's design and format of the bird accounts continued for the next fifty years. In the volumes that followed, Gould wrote the text. Eventually, fifty books were published on the world's birds, except for Africa. Gould also presented more than 300 scientific papers. The hand-colored lithographic plates numbered more than 3300. Even though Gould was not the artist, the accounts' design and arrangement were products of Gould's genius. His wife was his first artist, and several others followed her. Gould (1834) described the Elegant Trogon from specimens obtained in Mexico and later (1835) reported some coloration differences in the *Trogon elegans* populations. He described *Trogon neoxenus* (Gould 1838) with a type locality of México. And twenty years later, he proposed the genus *Euptilotis* (Gould 1858), with the type species *Trogon neoxenus*.

Gould (1838) explained why he named this species *neoxenus*.

"I have seldom been more gratified by the sight of any species of this beautiful family than I was on the receipt of the bird figured in the accompanying Plate, which exhibits characters of the highest interest, although the specimen (the only one I have seen) is evidently in a state of immaturity. Judging from analogy, I should conceive that it is the young male of an aberrant species of that splendid minor group, to which the sub-generic name of *Calurus* has been applied; and that the adult, which is at present unknown, will, whenever it is discovered, prove to be a bird of very great beauty. The individual represented was received from Mexico by John Taylor, Esq., by whom it was presented to the Zoological Society of London. The difficulty of assigning a specific name to any species of which the young only has been seen, has induced me to propose that of *neoxenus* (welcome stranger) for the present bird, adult examples of which will be sought for with the highest interest by every ornithologist."

Today *Trogon elegans* has five subspecies considered valid (Peters 1945). They are in two groups, the northern group with *T. e. ambiguus*, *T. e. goldmani*, and *T. e. canescens*, and the southern group with *T. e. elegans* and *T. e. lubricus*. The pattern on the ventral side of the tail's flight feathers and the coloration on the dorsal side differentiated each group. The southern group

is Central American and has distinct, narrow, black-and-white barring and a greenish sheen on the upper surface of the tail feathers. The northern group (from Mexico and the USA) (the *ambiguus* group) has fine gray-and-white marbling and a coppery sheen on the upper tail feathers. Although recognition of the two groups as a single species is based on intermediate patterns described for female and immature birds, they can be distinguished. The *ambiguus* group has a coppery rather than greenish sheen on the upper side of central rectrices (except on *goldmani*), and the middle of the wing is more finely and minutely barred than in the *elegans* group. The Elegant Trogon needs a more detailed study comparing various populations with molecular data. Dacosta and Klica (2008) recovered genetic diversity in *Trogon* that exceeds the perceived biodiversity. They also found that the genus likely originated in Central America.

Gould described the Elegant Trogon in 1834 and had an account of the species in his monograph. The following is from the 1858-75 monograph.

The beautiful bird here figured under the specific title of *elegans* is a native of Guatemala, a country rich beyond measure in zoological stores, and of the numberless productions of which a large proportion are yet to be characterized by the scientific.

The Graceful Trogon was received from Paris, to which city it was sent from Guatemala in company with several other species, as the *Trog. resplendens*, See.

In point of affinity it is most nearly allied to the bird we have called *ambiguus*, the chief point of difference being in the decided barring of the outer tail-feathers, and in the stronger marking on the wings.

The lengthened tails of many of the Mexican Trogons seems a feature which distinguishes them from all the other Trogons of the new continent; but in this particular the *Trog. elegans* is especially conspicuous, possessing as it does a more lengthened tail than any other of the smaller species of this genus.

The female is readily distinguished from the male by her more obscure and less gaudy colouring, a description of which is given above. The plate represents a male and female.

In Gould's monograph, immediately following the *Trogon elegans* account is Gould's description of *Trogon ambiguus*. Today this is considered a subspecies of the Elegant Trogon. He comments.

Those who have had opportunities to study nature are well aware of how slight occasionally are the shades of difference between closely-allied species: it might be objected that these differences may be merely casual or those of variety only; but when we find that they constantly obtain in two birds brought from two very distinct countries, and that by attending to their markings we should be able to assign to each its peculiar locality, the objection falls to the ground: it is true that the same species may differ in the intensity of its colouring, from the influence of temperature, air, and food, but it will seldom be found to vary in the character of its permanent markings.

It is upon these views that I have ventured to separate this bird from the Trogon *elegans*, to which it so closely assimilates that it requires an experienced eye to note

the points of difference; these points consist in the obscure and pale, but finely-dotted appearance of the outer tail-feathers of *Trog. ambiguus*, in opposition to the strong and well-defined black bars on the same part in *Trog. elegans*; while at the same time the centre of the wing is much more finely and minutely barred in the former than in the latter. Had I seen only a single individual of each of these birds, I might have been in doubt on the subject; but my comparisons having been made upon individuals of all ages, I feel but little hesitation in assigning to the present bird, at least provisionally, the rank of a distinct species.

The localities in which these two birds appear to be indigenous are distinctly separated from each other; all the examples I have seen of *Trogon ambiguus* having been exclusively received from the northern states of Mexico, while the *Trogon elegans* is strictly limited to the southern.



Figure 2. An adult male *Trogon ambiguus* (= *Trogon elegans ambiguus*) from Gould's 1858-1875 monograph on trogons. Gould gave this species the common name, the Doubtful Trogon.



Figure 3. A pair of Elegant Trogons from Gould's 1858 monograph.

The Eared Quetzal was recorded from the northern edge of its range about 160 km south of the Arizona-Mexico border by Marshall (1957) but was unknown in the USA at that time. The distribution of the Eared Quetzal is almost completely restricted to the forests of the Sierra Madre. Marshall observed the species using large territories in pine-oak woods, including adjacent white pine and ponderosa pine forests. He reported a pair of quetzals crossing a mile of foraging area daily and returning over the same route at dusk. A lone male traversed a two-mile ridge three times in one day. The male's conspicuous song and large territory contrasted with a pair inspecting tree holes near Marshall's camp. The pair of birds sang only when the lone male came near. Another bird sang two miles farther down the same ridge of forest-like Apache pines. Thus there were three singing males in as many miles, but the roving bird sang all around and within the small area of the mated pair.

Marshall also described the feeding behavior of the species as follows.

The magnificent Eared Trogon gleans arthropods from pine foliage while hovering an instant with body vertical; then it falls, levels off, and flies to a bare horizontal branch. The hovering position is reached at the end of a short flight inclined upward. Nearly all the activity I saw took place at middle height in tall pines; flights are above the intervening oaks.

The Eared Quetzal was added to the Arizona fauna in 1977 when a family group of four was discovered at the South Fork of Cave Creek in the Chiricahua Mountains, Cochise County. Zimmerman (1978) described the discovery as follows (minor editing by JCM.)

On the morning of October 18th, 1977, Kim Innes, on the South Fork of Cave Creek Canyon in the Chiricahuas, saw and heard an unfamiliar large bird resembling a trogon. She did not see it well. Nevertheless, her report to the American Museum's Southwest Research Station prompted Ruth Morse to mention that three days earlier, in the South Fork, she too had observed a trogon "that squealed." To Richard Taylor, a local Forest Service employee studying the canyon's Elegant or Copperytailed Trogons for some time, this called for an investigation. He had never heard *Trogon elegans* utter notes answering this description. On October 23rd, he and Vincent Roth identified the moot bird as a male Eared Trogon. The following day, Barbara Roth, Sally and Walter Spofford, and Bert and Millie Schaugency made a concerted effort to document its presence. All saw the bird well and secured tape recordings and photographs.

The original sighting was of an adult male followed within a few weeks by an adult female and shortly after by two other quetzals, at least one a juvenile, the other not seen as well or with the others, not yet a full adult. The two nonadult birds were seen by different observers at different times, with the juvenile male described as mottled in both the green breast and red belly (Taylor 1994) and the fourth described as an immature bird.

Despite annual fall sightings in the Chiricahuas since 1977 and predictions that the species would eventually be found nesting in the United States (Zimmerman 1978), there was no evidence of nesting until October 1991, when a pair of Eared Quetzals was discovered feeding young in a tree cavity in upper Ramsey Canyon (Williamson 1992).

Some tentative conclusions about this species' behavior and reproductive cycle were listed by Williamson (1992). (1) Its normal nesting season coincides with the North American Monsoon. Nesting commences in late July and early August. (2) The chicks develop at the same rate as quetzal chicks, have a nestling period of about four weeks, and normally leave the nest by the end of September. (3) It is nonmigratory and may remain in or near its nesting territory during the Winter. (4) It is strikingly less tolerant of human activity than the typical Elegant Trogon. Sightings of this species attracted hundreds of birders throughout the U.S. The intense activity caused concern for the Eared Trogon's future as an Arizona breeding species (Zimmerman 1978).



Figure 4. A pair of Eared Quetzals, *Euptilotis neoxenus*, from Gould's monograph.

Given their observed sensitivity to human activity and long nestling period, the Eared Quetzal may suffer more human-caused nesting failure than the Elegant Trogon. Interference from birders attempting to photograph nests was a significant cause of nest abandonment by Elegant Trogons in Cave Creek Canyon. Birding has a major economic impact on southeastern Arizona and has been a significant factor in land conservation success in this state. The positive economic impact is largely created by dependable "rarities" such as Elegant Trogons and Red-faced Warblers. The irregular appearance of species such as Eared Quetzal enhanced it. The establishment of the Eared Quetzal in areas of southeastern Arizona with reasonable access to birders adds to the impact of birding on the local economy.

Under Mexican law, the Eared Quetzal is considered a threatened species. The bird is endemic to Mexico, inhabiting northwest and west-central Mexico. The name "Eared Trogon" was changed to the "Eared Quetzal" by Banks et al. (2002). The lack of knowledge about its

ecology and distribution during the nonbreeding season motivated Contreras-Martínez et al. (2020) to investigate it. They found it in the Sierra del Aguila and Sierra de Manantlan in west-central Mexico. Contreras-Martínez et al. recorded the Eared Quetzal from late October to early March. Thus the species can be observed year-round; on occasion, it can be seen in Arizona and it can regularly be observed in Chihuahua, Durango, Sinaloa, and Nayarit in Mexico. However, Eared Quetzals can only be recorded from November to May in Jalisco and Michoacán. This suggests that at least some individuals undertake migrations. Its potential distribution in central and southern Jalisco includes nine forested mountain ranges.

The following is based on Zimmerman (1978) and Williamson (1992).

In 1991, eight to twelve sightings (more than any other year) occurred over a broad area in Arizona. Articles published that year declared an "Eared Trogon invasion." Eared Quetzals were seen each year, from 1989 to 1997, with most years having multiple documented sightings, and pairs were present in five of those years. In June 1991, a male and female were reported together in the South Fork of Cave Creek, Chiricahua Mountains, Cochise County, for two weeks without subsequent observations. There until a one-day sighting on August 8th. A pair was noted in Ramsey Canyon (Huachuca Mountains) on August 5th; the bird stayed into late fall. Another pair was discovered on August 7th in Madera Canyon (Santa Rita Mountains) and remained into September. An additional female was reported on August 19th in Gardner Canyon (Santa Rita Mountains). Another female was seen in the Chiricahua Mountains on November 22nd. Video documentation revealed the first-known nest attempt for this species in the United States on October 10th 1991. The nest was found in a Big-toothed Maple (*Acer grandidentatum*) snag easily visible from the Hamburg Trail in Ramsey Canyon (Huachuca Mountains.) The nest was monitored carefully, and both adults were observed actively feeding young. A last morning visit by one adult on October 27th revealed that the nest failed after a storm on October 26th brought snow and temperatures of -3C. The chicks succumbed to hyperthermia and were assumed to be between 18-21 days old at the time of death (Williamson 1992). The pair were seen at several locations in the Huachuca Mountains for the next few years, the male lingering into 1997.

A 45-year summary of the Eared Quetzal in Arizona (Abbott 2022) found 66 occurrences spread over 27 (60%) of the past 45 years, showing that long-distance flights across the border have happened multiple times, and patterns of frequency suggest they will continue. The Sky Islands in both countries contain similar Madrean habitats and radiate from the Sierra Madre core in a stepping-stone distribution with distances between them ranging from 90-215 km. In the United States, Eared Quetzals frequent the same habitat as they do in Mexico, preferring mature riparian vegetation in rugged canyons with flowing streams, often adjacent to oak-pine woodland (Taylor 1994). Quetzals have used different ranges in the same season and year. However questions remain: How long do they remain in an area if they move between ranges? do they return to Mexico, and if so, do the same individuals return to the US? Patterns of movement within the Chiricahua, Huachuca, and Santa Rita mountains over the 45 years show that Eared Quetzals move extensively and use multiple drainages within single seasons and between seasons.

The discussion in Abbott (2022) does not produce satisfactory hypotheses as to why the bird's appearance in the USA may occur. The idea that the birds may be displaced from their habitats in Mexico is not addressed. Wildfires, droughts, and logging activity may force the birds to move out of their home ranges in the Sierra Madre Occidental into the USA.

Abbott (2022) cites Howell and colleagues' (2014) suggestion that a portion of the Mexican population of Eared Quetzal may be migratory and that U.S. sightings may result from an "overshoot" as birds migrate north and northwest from southern areas of their range to breed in northern sections of Mexico. The sightings map shows that U.S. occurrences align with these trends north and northwest from known breeding areas in Mexico. However, this does explain why the birds only appear in 60% of the years between 1977 and 2022.

The Discovery of the Elegant Trogon in Arizona

Spencer F. Baird's 1858 book *Birds* noted that the National Museum (USNM) had four specimens of *Trogon elegans* from Nuevo Leon, Mexico. In Robert Ridgeway's (1880) catalog of birds, he considered trogons extralimital to the US and reported they are found only south of the Rio Grande. Ridgeway listed the identical USNM specimens reported by Baird.

In his *Illustrations*, Cassin (1862) speculated that the trogon would eventually be found within the USA. Scott (1886) recognized the presence of a trogon in the Catalina Mountains. A laborer described a bird he had seen only a few hours before, which he believed "was a kind of bird of paradise." He said it was tame, letting him approach closely, and further stated it "Had a very long brilliant tail and was bright pink on the breast." The comment was made on September 20th, 1884, and the observation was made about a mile from Cassin's house. Then two other men reportedly saw the same or a similar bird.

On August 24th, 1885, Lt. H. C. Benson of the 4th Calvary was stationed at Fort Huachuca, Arizona. He shot a young male trogon in the Huachuca Mountains. Benson sent the bird to the National Museum, and Robert Ridgeway (1887), the curator of the National Museum's bird collection, recognized that the Trogon was in its first plumage. The nestling plumage of this Trogon had not been previously described in print. Now, there was evidence of a breeding population in the USA. In 1891, Mr. Lusk, a resident of Ramsey Canyon, observed the species on June 9th.

Fowler (1903) recounted observing trogons in the Santa Rita's. He described a trip into Gardner Canyon on June 9th, 1892. He and his father accompanied Dr. A. K. Fisher. While riding horses through the pine-oak forest, a male trogon flew across the path and perched on an oak on the other side of a stream. They saw and heard several other trogons on the same day at higher elevations. Also, in 1892, Dr. E. A. Mearns shot several trogons in the San Luis Mountains in southwestern New Mexico. However, Swarth (1914) still considered the Elegant Trogon a rare and irregular visitor to southern Arizona.

On May 31st, 1939, Arthur A. Allen, a Cornell University ornithologist, discovered an Elegant Trogon's nest in Madera Canyon. Allen and his two companions (Charles Brand and David Allen) were on a bird-sound recording expedition in Texas when they learned of the bird's presence from Mr. and Mrs. Roger T. Peterson. Allen and company were guided to the bird by Charles Vorhies and one of his students, William Proctor. They found the male trogon without great difficulty. The bird flitted up and down a small ravine that paralleled the road. Allen camped on the spot, hoping to record the trogon's voice. The following day the trogon did not start calling until 0700. Allen made his way toward the bird with the microphone. The trogon flew farther away than it had done the previous day. Since Allen could go no farther with the cable, he set up the microphone to record a Black-headed Grosbeak singing from its nest about ten feet up in a sapling.

Allen had breakfast and returned to the location to investigate tree holes. The trogon was nowhere in sight. After he had climbed two trees, he placed the ladder against a third tree, which had an old woodpecker hole about nineteen feet from the ground. As he climbed, the male trogon alighted about ten feet from his face and stared at him for over a minute. Then, realizing he had found the bird's nest, he set up a blind on the ground about 25 feet away. Within 30 minutes, the female trogon appeared and flew directly to the nest hole while the male alighted on a branch some ten feet away and uttered some notes quite different from his song. The female clung to the entrance hole for several minutes, looking in, but did not enter, and when she flew away, the male left with her. It was a half-century between when the Elegant Trogon was found in the USA and its nest was discovered (Allen 1944, 1961).

Rene's Trogon Story

It was January of 2017, and I was bound and determined that this would be the year that I FINALLY find and photograph one of the most beautiful birds to over-winter in Southern Arizona, the Elegant Trogon. This species can be found almost year-round in some parts of Southern Arizona. Still, in 2017 all I knew was that if one wanted to see this bird, the window of opportunity was January through early April, then POOF – gone back to their homes somewhere to the south for another year.

I was aware that every Winter for the past seventeen years before 2017, one spectacular male, "Elvis" frequented certain areas of Patagonia Lake State Park. I had even heard rumors that he was comfortable around people and would practically pose for the camera. Of course, all this sounded way too good to be true, but I had to find out for myself.

On January 22nd, 2017, a hiking/photography friend and I drove in the early morning from Tucson to Patagonia Lake State Park, in Patagonia, Arizona. Once parked, we "geared up" and hit the trail. We had no flipping idea where to start looking, so we decided to stick to trails near the creek. It was muddy and slippery in some places, and we often lost the trail, but we never lost hope. About four hours into searching, hope was dwindling fast. We stopped and questioned every birder we saw about general areas where this bird has been known to frequent. We got directions ranging from one end of the creek to the other. At one point, a birder said, "it's just down the creek." We took off like a rocket! When I am out photographing, I pack about ten pounds of gear. Carrying all this stuff can throw my

balance off significantly. So "taking off like a rocket" in muddy, slippery conditions combined with my excitement and a plethora of ankle-grabbing tree roots was bound to result in my going down in a rather ungraceful belly flop in the mud. Thank goodness it wasn't a cow pie, as they dot the terrain in massive goeey numbers. As the wind is being knocked from my lungs, I held the camera straight out so as I went down, my gear never so much as touched dirt. A girl has got to have her priorities.

No bird.

It's now been six hours of diligent searching and nothing to show for it but muddy clothes and a broken spirit. Finally, my friend and I decided that Elegant Trogon:1 Intrepid Photographers:0. We were done and decided to head back, go home, and lick our wounded pride. As we were walking, the trail split. We half-haphazardly chose to take the fork, thinking it might get us to the car faster. Walking, I hear my friend say, "Oh Sh*t!". There in front of us on a tree stump is the Elegant Trogon! It saw us and flew into a tree where lots of twigs obscured it. All around us on the ground were cow pies, but we couldn't care less. We hit the ground on our knees, trying desperately to "thread the needle" and find a space between twigs where we might get a shot of this beautiful bird. And then magic happened. It was as if "Elvis" knew how hard we had searched and all the ankle-grabbing roots, mud, and cow poo we trekked through to find him, and he decided to reward us for all our efforts.

As if on cue, he flew from his cover and landed a few feet away on an entirely unobstructed branch, at eye level, in perfect light, and posed for a good five minutes or so, giving us the dream shots that we had spent so much time visualizing in our hearts, but never really expected to obtain. Then, in a flash, he was gone. I was nearly in tears from the experience, and my friend and I were on a "birding high" for several weeks following that incredible encounter. Little did we know just how special that meeting would be. After seventeen years of this one beautiful bird over-wintering at Patagonia Lake State Park, he has never been seen again. I have since visited and photographed Elegant Trogons on several occasions at Madera Canyon, but no birding encounter before or since can match the joy I felt while shooting the king himself...Elvis, the king of the Trogons.



Figure 5. The Elegant Trogon, known as "Elvis." Photography by René C. Clark

Fossils, DNA, and the Birds' Tree of Life

Various authors have speculated on the placement of the trogons in the birds' Tree of Life. (The Tree of Life refers to the phylogeny of a group of organisms.) They have been suggested as part of the basal radiation of the order Coraciiformes (the kingfishers, the bee-eaters, the rollers, the motmots, and the todies), part of the order Passeriformes (songbirds), closely related to the sub-Saharan mousebirds (Coliiformes), and considered relatives of the cosmopolitan owls. The confusion leaves no satisfactory answers. However, the most recent molecular study (Prum et al. 2015) considers trogons and quetzals the sister to the Madagascar Coucko Roller, *Leptosomus discolor*, the only extant species in its family, the Leptosomidae.

The fossil record of trogons extends back 54 million years (Ma) to the Early Eocene of Europe. The molecular clock data suggest the modern Trogoniformes diverged between the African genera and the rest of the clade between 19.7 and 35.6 Ma. New World and Old World trogons split between 18 and 32.6 Ma (Espinosa de los Monteros 1998, Johansson 1998). The successive sister taxa of extant Trogonidae in the Paleogene and early Neogene of Europe suggest an Old World origin of the crown group. The fossil genera *Masillatrogon* and *Primotrogon* lack the derived features of the wing skeleton of extant Trogonidae. These early trogons had different flight and foraging techniques than extant species.

Most trogon fossils date from the Oligocene and Eocene of France and Germany, which are geographically distant from their current range (Mayr 1999). The earliest known trogon with a heterodactyl foot is *Primotrogon wintersteini*, from the French Oligocene — about 33 million years ago. It is considered the sister to all extant trogons, structurally similar but with a smaller eye and narrower bill (Mayr 2009). The oldest known New World fossils, from the Pleistocene (around 2.6 million years ago), are very recent. Despite the current concentrations of trogon diversity in the Neotropics, more fossil evidence has been found in the Old World, supporting an Old World origin (Espinosa de los Monteros 1998).

Cornell University's online Birds of the World (Winkler et al. 2020) and Wikipedia suggest the etymology for the trogon name is the Greek word for "nibbling" and refers to how these birds gnaw holes in trees to make their nests. Trogons are all cavity nesters, but few species make their nesting cavities. Of those that do, one species carves cavities in decomposing trees, and another excavates cavities in arboreal termite nests. Yet, another eats wasps that have formed a large nest and hollow out a nesting hole in the wasp nest. But most seem to co-opt tree holes and cavities made by other species. I suspect Brown (1985) was correct, noting the word *Trogon* is derived from the Greek *trogale*, which means hole.

For the most part, trogons are residents of tropical forests, so why are they in southern Arizona? The simple answer is that they have small amounts of habitat in Arizona's sky islands. Like the Barking Frog, the Tarahumara Frog, Yarrow's Spiny Lizard, Green Rat Snake, the Thornscrub Vine Snake, Thick-billed Parrots, Broad-tailed Hummingbirds, White-eared Hummingbird, the Sonoran Ocelot, and Jaguar the trogons are Neotropical species that expand their range northward into southeast Arizona because of the sky island habitats.

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