

The Vermilion Flycatcher (*Pyrocephalus rubinus*) in southern Nevada

POLLY SULLIVAN¹ AND CAROLYN TITUS²

¹5493 Painted Mirage Road, Las Vegas NV 89149

²5909 Gipsy Avenue, Las Vegas NV 89107

In a family of birds noted for its identification challenges (the genus *Empidonax* comes to mind), the male Vermilion Flycatcher (*Pyrocephalus rubinus*) is a notable exception. There is no chance of mistaking this brilliantly plumaged bird for anything else. Even the female, although not as brightly colored, is unlikely to be confused with other flycatchers.

I. Distribution in southern Nevada.

Vermilion Flycatchers have an extensive range that extends from the southwestern United States through Mexico and Central and South America as far south as central Argentina. They are even found on the Galapagos Islands. In Nevada, this species is found regularly only in the southern tip of the state. Historically, numbers of the bird were probably small in our region. The early ornithological literature of southern Nevada has few references to the species. For example, the Death Valley Expedition visited several southern Nevada sites, including Ash Meadows, the Pahrump and Las Vegas valleys, and the Virgin Valley near Bunkerville, in the spring of 1891, but they did not note any Vermilion Flycatchers (Fisher 1893). The only Vermilion Flycatcher mentioned in the expedition's report was found at St. George (Utah) in May. Fisher stated that the previously known northern limit of the species was Fort Mojave, Arizona. Seventy-two years later, Bent, in his monumental work on the life histories of North American birds (Bent 1963), gave the bird's range as "north to southern Nevada (probably Alamo and Pahrump)".

Henderson Christmas Bird Counts (NAS 1967-1997), begun in 1967, first recorded the Vermilion Flycatcher, a female, in 1972. Three individuals were reported the following year, and a lone bird was listed on the 1981 count summary. Beginning in 1986, the flycatcher became a regular count species, with single birds in 1986, 1987, 1989, 1990, and

1993. Two birds were observed in 1988 and 1992. Single birds also were reported on the Desert National Wildlife Range (NWR) counts in 1978, 1984, and 1992-1994.

The species appears on a 1974 checklist for the Overton Wildlife Management Area as occurring in riparian areas. Blake (1978) described the bird as a transient in desert scrub and a summer resident in riparian habitat. Recent checklists for various sites in southern Nevada all include Vermilion Flycatcher as occurring regularly, so the species seems to have become established in that area. Birders now expect to find one or more individuals at Ash Meadows NWR, Blue Diamond, Gilcrease Ranch in Las Vegas, Corn Creek (Desert NWR), and the farming areas in the upper end of the Pahrangat Valley. In each of the last three summers, one or two pairs have nested successfully in Bunkerville Park (Clark County), and observations in the summer of 2000 of two males and one juvenile male in Logandale (Clark County) suggest a breeding population there as well (USGS/BRD 2000).

The historical occurrence of this species in southern Nevada gives little indication of the thriving Vermilion population found today near Moapa NWR. During the 2000 breeding season, 18 breeding pairs were identified along the Muddy River on the Warm Springs Ranch (USGS/BRD 2000). Incidental observations suggest the possibility of 5 to 10 more pairs in the surrounding area. It is uncertain how many years the birds have inhabited the semi-agricultural riparian habitat of Warm Springs Ranch. However, their well-established presence, coupled with observations of male Vermilions Flycatchers wintering at the ranch in 1999 (B. Lund pers. comm.), suggest habitation for more than a few years.

The Warm Springs Ranch is a mixture of desert, riparian, and agricultural landscapes. Large seasonally flooded cattle and horse pastures lined with mature Fremont cottonwoods (*Populus fremontii*), Gooding willow (*Salix goodingii*), and ash are found throughout the property. Skirting the fields are numerous groves of established mesquite (*Prosopis* spp.), which is the type of tree in which most Moapa Valley Vermilion Flycatcher nests were found. The adjoining pastures have abundant insects such as large fleshy grasshoppers, which seems to be a staple of the Vermilion Flycatcher's diet.

II. Plumage.

The Vermilion Flycatcher has distinct coloration patterns that may make the species suitable for non-invasive behavioral observation research. Just as one can identify individual toads by their variation in

their spots, or individual dolphins by unique variations in their dorsal fin edges, one may be able to identify Vermilion Flycatchers by their color variations. Identification of mating pairs is made possible by distinct coloration differences (in the form of white abdominal patches) between second-year males, and by differences in coloration between adult females (pink lower abdomen) and second-year females (yellow lower abdomen). Observation of distinctly marked pairs seen together consistently throughout the breeding season suggests seasonal monogamy and seasonal loyalty to a given territory. Some of the behavioral interpretations in this paper are made with these distinctions in mind.

III. Breeding behavior and nesting.

Vermilion Flycatcher behavior is very interesting to observe. The male gives a brief but spectacular upward courtship flight that is combined with furious wing-flapping and a shrill *breet!* sound. At Warm Springs Ranch, the display also appears to serve as a territorial display or defense mechanism to distract or frighten a perceived intruder. The male frequently and repeatedly displays this behavior towards humans that approach the nesting territory when eggs are in the nest. This territorial or defense display is less common and occurs several hundred meters from the nest when nestlings or fledglings are being protected. This more-distant strategy may be used to prevent the nest from being detected.

Although the male performs the aerial display exclusively, we observed at Warm Springs that both mates engage in other nest-protection behaviors. The adult that is not at the nest will call or repeat a short flight pattern to attract the intruder's attention. Once the attention is gained, the bird will fly a few meters farther from the nest to draw the intruder away, sometimes in a circuitous path around the nest. The distraction behavior often is effective in preventing the location of the somewhat exposed nest from being detected.

The cup-shaped nest of the Vermilion Flycatcher usually is built in the fork of a horizontal branch that is surrounded by dead, leafless branches. The nest typically is the same color as the dead branches; thus, even though the nest may be placed out in the open, it is cryptic against its background. At the Warm Springs site, nest spacing was fairly uniform, and nest location was habitat dependent. Most of the nests were located between one and four meters above the ground in mesquite groves situated near both large cottonwood trees and open fields. Several nests also were found in cottonwoods and ash trees

flanking open fields, and always at a height greater than 10 meters (USGS/BRD 2000). Although the territorial range has not been determined, the spacing between nests and the localization of protective behavioral displays suggests a separation between individual nesting territories.

One breeding pair re-used a successful nest several times within a given territory. Within a week of fledging, the female was seen incubating 3 to 4 newly laid eggs, and the male appeared to take over much of the care and feeding of the fledglings. Re-use of the same nest reduces energy expenditure that may allow the third or possibly fourth (although this was not documented) clutch of eggs in one season.

Vermilion Flycatcher eggs are small and colored a creamy white with dark-brown splotches and speckles. The clutch size ranges from two to four eggs. Four eggs commonly were found in the last brood of the season and, if successful, generally resulted in three fledglings. Spring broods were observed to consistently produce two fledglings. Egg number for early-spring nesting is unknown. The well-cared-for fledglings quickly acquired juvenile coloration, and most of them appeared to leave the vicinity of the nest, although some were observed in their nesting territory even after the next brood had fledged.

We observed predation of Vermilion Flycatcher eggs and nestlings by snakes and ravens at the Warm Springs Ranch on several occasions during 2000. Three cases of nest predation were documented at 19 of the Vermilion Flycatcher nests that we studied in 2000, and all three pairs re-nested after the predation incident (USGS/BRD 2000).

IV. Parasitism.

The major threat observed to Vermilion Flycatcher nesting success was parasitism by the Brown-headed Cowbird (*Molothrus ater*). Brown-headed Cowbird parasitism is common in agricultural habitats, but it is a fairly new phenomenon within the last century in the recently populated southwestern States. The female cowbird adopts a seasonal host nest territory and mates with multiple males. The female can lay an egg every day or two and deposit it into the host nest in less than a minute. The female generally lays one egg per host nest while removing one or more eggs of the host species (Ortega 1997). Further brood depletions may occur if the larger Brown-headed Cowbird chick pushes other hatchlings out of the nest or forces them to starve by dominating the attention of the feeding parents.

As with other neotropical migrant species (USGS/BRD 1998), some Vermilion Flycatcher pairs abandon parasitized nests, and other

pairs successfully fledge the Brown-headed Cowbird chick. At Warm Springs, five out of 11 parasitized Vermillion Flycatcher nests produced Brown-headed Cowbird fledglings (USGS/BRD 2000). In several cases of Brown-headed Cowbird parasitism, the female flycatcher continued to sit on the nest while the new nest was built. The abandonment sometimes occurred while there were Brown-headed Cowbird hatchlings or fledglings, and in one case when a Vermillion Flycatcher hatchling actually was present. Direct observation of several nesting pairs at Warm Springs showed these pairs lost 2–4 potential offspring. On some occasions, the pairs were observed expending considerable energy feeding the voracious Brown-headed Cowbird chick if parasitism went unrecognized. There does not appear to be any correlation between age of birds (second-year or adult) and recognition of parasitism. Whether recognition of parasitism is hereditary or a learned behavior is unknown.

Most documented incidents of parasitism occurred later in the breeding season. Parasitism was documented in approximately 30 percent of the broods at the Warm Springs site. Despite the parasitism, the Vermillion Flycatcher pairs were able to produce 41 fledglings from 18 breeding pairs (USGS/BRD 2000). The strategies of early nesting (documented as early as mid-April) and multiple broods may help to counter the predation by the Brown-headed Cowbird.

The definable separation of individual Vermillion Flycatcher nesting territories at Warm Springs may provide an opportunity for further study of cowbird parasitism and its impact on other neotropical migrant species in the local area. A more thorough study of early nesting attributes also will help to verify nesting success and brood numbers within one season. Establishment of the stability and full number of nesting pairs in the Warm Springs, Bunkerville, and Logandale areas, as well as identification of other possible nesting sites in Clark County, are important population parameters that could be defined better. It seems reasonable to conclude that Vermillion Flycatchers are undergoing a real and substantial population increase in southern Nevada, and it therefore would be prudent to continue documenting this species' behavior and movement in Clark County.

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