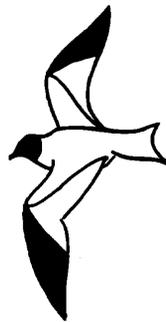


CALIFORNIA BIRDS



Volume 3, Number 4, 1972

BREEDING DISTRIBUTION AND HABITAT PREFERENCE OF THE GRAY VIREO IN NEVADA

Ned K. Johnson

In the northern portion of the breeding range of the Gray Vireo (*Vireo vicinior*) in Nevada, published records of occurrence are based on seven specimens from four localities and sight records from an additional five stations scattered over southern Nye, southern Lincoln, and Clark counties (Linsdale, 1936; Miller, 1946; Gullion et al., 1959; Hayward et al., 1963; and Johnson, 1965). The present note summarizes the aforementioned records and adds new information on occurrence at five localities, one of which extends the known breeding distribution of the species approximately 50 miles to the north (Fig. 1). These data document the occurrence of the Gray Vireo to the northern limits of the Mohave Desert in Nevada. All but two of the specimens (number shown within parentheses) in the following tabulation are stored in the Museum of Vertebrate Zoology where their identifications have been verified. Dates and initials of observer are indicated after sight records. Gullion et al. (1959) provided no dates or supplementary detail for their sight records; therefore these places of supposed occurrence may not be breeding localities and they are queried on the map.

NYE COUNTY: Grapevine Mountains-Wood Cañon (1, not examined); Phinney Canyon, 6000 ft, at 3 mi E Grapevine Peak (1): Phinney Canyon, 6700 - 6900 ft, at 2½ mi E and 1 mi S Grapevine Peak (singing on territory, 18 and 20 May, 1971; NKJ). Nevada Test Site, Pahute Mesa-Shoshone Mountain area (1, not examined). 1½ mi SW Oak Spring, 5850 ft (southeast of Belted Range; close to 37° 15'N, 116° 5'W) (1).

GRAY VIREO IN NEVADA

LINCOLN COUNTY: 1¾ mi N and 1½ mi W Caselton, 6100 ft (1); Wheeler Ranch, 6600 ft, E side Highland Range (singing on territory, 22 June 1972; NKJ); 1½ mi N Mount Irish Peak, 7400 ft (1); Clover Mountains, Tule Desert, and Mormon Mountains, (no dates; GWG).

CLARK COUNTY: Hidden Forest Canyon, 6100 - 6500 ft, Sheep Range; 2½ mi E Cold Cr. Field Station, 6200 ft, Spring Range (singing on territory, 24 May 1971; NKJ); N side Potosi Mountain, 5800 - 6000 ft (3); Potosi Pass,

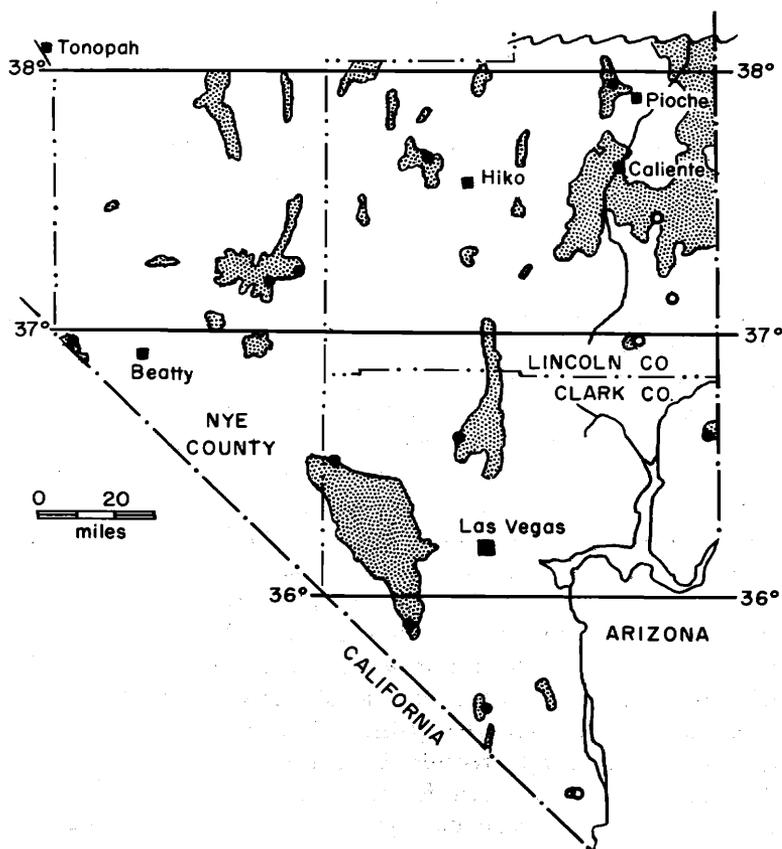


Figure 1. Map of southern Nevada showing known localities of occurrence of the Gray Vireo (*Vireo vicinior*). Records at presumed breeding stations are indicated by dots. Records for localities where breeding is uncertain are indicated by circles. Approximate extent of woodland and/or forest zones in the highlands is shown by stippling. Note the location of many of the localities for vireos near the margins of the woodland-forest zone.

GRAY VIREO IN NEVADA

6300 ft (pair on territory, 24 May 1971; NKJ); $\frac{3}{4}$ mi E and $\frac{3}{4}$ mi S Virgin Peak, 5400 - 6100 ft, Virgin Mountains (8); $\frac{1}{2}$ mi E Big Pine Spring, 5400 ft, McCullough Range (two pairs on territories, 23 May 1972; NKJ); Dead Mountains (no date; GWG). Gullion et al. (1959) mention the occurrence of the Gray Vireo at Boulder City and in Las Vegas Valley; these records presumably pertain to transients.

From these locality data, and from notes on ecologic occurrence, I can summarize the status of this species in Nevada. Here, as elsewhere on the Mohave Desert, the Gray Vireo usually occurs at low density, occupying remote slopes and canyon bottoms over a relatively narrow elevational range between 5400 and 6600 feet (rarely to 7400 feet) at the lower edge of piñon (*Pinus monophylla*)-juniper (*Juniperus osteosperma*) woodland (Fig. 1). As Grinnell and Miller (1944: 386) noted, "Dry chaparral, which forms a continuous zone of twig growth from one to five feet above the ground" is the preferred habitat. In the Virgin Mountains of Clark County this vireo occurred at unexpectedly high density, with numbers perhaps comparable to those reached in coastal southern California chaparral where Grinnell and Swarth (1913: 293) estimated 16 pairs per square mile in chamise (*Adenostoma fasciculatum*) in the San Jacinto Mountains. The vireos in the Virgin Mountains occupied mountain-mahogany (*Cercocarpus ledifolius*), Gambel oak (*Quercus gambelii*), and Mexican manzanita (*Arctostaphylos pungens*). Gullion et al. (1959: 296) and Kay and Bradley (1968: 72-73) comment on the unusual development of the mixed chaparral formation in this range. Clearly, the designation of the Gray Vireo as an inhabitant of the "most arid scrub" (Barlow et al., 1970: 395) or of the arid "lowlands" (Hamilton, 1958: 311) does not apply in the region under discussion.

The northernmost records for the species, from the foothills on the east side of the Highland Range near Caselton in Lincoln County, were obtained in an area of diverse shrubland and low woodland of spaced juniper and sagebrush (*Artemisia tridentata*), where squaw apple (*Peraphyllum ramosissimum*) and cliff rose (*Cowania stansburyana*) grew in profusion with several other unidentified species of small shrubs. The Gray Vireo was numerous here; several males sang along one-half mile of road. A male in active breeding condition (singing; left testis, 5 x 3 mm) was collected; it interacted with a presumed mate. Nearby areas grown to juniper and sagebrush, but without the other species of shrubs, lacked the vireo.

In view of continuing interest in habitat distribution and sympatry of vireos (Hamilton, 1959 and 1962; Barlow et al., 1970; Williamson, 1971) I offer the following remarks on the ecologic relationships of

GRAY VIREO IN NEVADA

the Gray Vireo and the Solitary Vireo (*Vireo solitarius plumbeus*) during the nesting season in southern Nevada. These species are both members of the subgenus *Vireo*; *V. vicini* is a "thicket forager" and *V. solitarius* is an "arboreal forager" (Hamilton, 1958: 310-311), and thus one might assume that they could stratify if sympatric. I have observed both *V. vicini* and *V. solitarius* on breeding territories in six different mountain ranges in southern Nevada. The Gray Vireo has been studied in two other ranges where Solitary Vireos apparently do not nest. Only in the Grapevine Mountains, Nye County, and on Mount Irish, Lincoln County, have the two species been found as closely as approximately one-half mile. In the former range the Gray Vireo has been recorded along Phinney Canyon from 6000 to 6900 feet elevation and I have found the Solitary Vireo on the slope above the same canyon between 6900 and 7500 feet elevation. On Mount Irish I recorded the Gray Vireo once at 7400 feet elevation and found the Solitary Vireo one-half mile distant at 6900 feet elevation, at 7800 feet, and again at 8100 feet. In the other four mountain ranges the Solitary Vireo always has been located at mid-elevations one mile or more upslope from the sites of occurrence of the Gray Vireo in the foothills. In such places the Solitary Vireo prefers either forest of ponderosa pines (*Pinus ponderosa*) or heavy woodland of mature piñon. Mountain-mahogany and/or Gambel oak occasionally is present as a subdominant. I have never observed overlap between the Gray Vireo and the Solitary Vireo in Nevada, but contact may occur infrequently where the chaparral and scattered woodland preferred by *V. vicini* intermixes at its upper elevational edge with the lower border of the ponderosa pine forest or heavy piñon woodland inhabited by *V. solitarius*. Depending upon slope, exposure, and latitude (Wells and Berger, 1967), such contact could occur between approximately 6500 and 7500 feet elevation.

Evidently the habitat intermixture in certain portions of Arizona permits greater contact of the two species than is seen in Nevada toward the northern edge of the range of the Gray Vireo. For example, Barlow et al. (1970) reported several instances of "habitat co-occupancy" of *V. vicini* and *V. solitarius* in Grand Canyon National Park, Coconino County, and presented results of limited experiments with playback of tape-recorded songs which suggest the possibility of interspecific territoriality. In Nevada, not only do the distinctive habitat preferences of each species seem to preclude such interactions, but it is also significant that neither form in allopatry has ever been found on a breeding territory in habitat that appeared

GRAY VIREO IN NEVADA

even marginally suitable for occupancy by the other form.

Thus, Hamilton's (1962) thesis, that local sympatry is rarely found in members of the same subgenus within *Vireo*, seems supported by the present evidence. Furthermore, P. Williamson (1971) in an elegant analysis clearly has demonstrated the existence of species-specific foraging movements in the Red-eyed Vireo (*V. olivaceus*), Yellow-throated Vireo (*V. flavifrons*), and White-eyed Vireo (*V. griseus*), and of important differences in foraging sites of the sexes of *V. olivaceus*. Therefore, although differences in gross habitat preferences and stratification among vireos may prevent substantial contact between species, when contact does take place subtle additional differences in behavior and ecology can come into play. Presumably such differences serve to reduce even further interaction and competition.



Figure 2. Habitat of Gray Vireo in mixed chaparral and open woodland of piñon, juniper, serviceberry, and scrub oak on the north slope of Potosi Mountain, 6300 feet, Clark County Nevada. Photograph taken on 25 May 1971.

Photo by Ned K. Johnson

GRAY VIREO IN NEVADA

Gene M. Christman drafted the final version of the map and Robert Ornduff identified several shrubs. Lynn Carpenter, Robert E. Jones, and Alexander K. Johnson provided assistance and companionship in the field. These data were obtained incidental to research dealing with speciation in the Solitary Vireo, which is supported in part by the Committee on Research, University of California, Berkeley.

LITERATURE CITED

- Barlow, J. C., R. D. James, and N. Williams. 1970. Habitat co-occupancy among some vireos of the subgenus *Vireo* (Aves: Vireonidae). *Canadian J. Zool.* 48: 395-398.
- Grinnell, J., and A. H. Miller. 1944. The distribution of the birds of California. *Pac. Coast Avif.* 27: 1-608.
- Grinnell, J., and H. S. Swarth. 1913. An account of the birds and mammals of the San Jacinto area of southern California. *Univ. Calif. Publ. Zool.* 10: 197-406.
- Guillion, G. W., W. M. Pulich, and F. G. Evenden, 1959. Notes on the occurrence of birds in southern Nevada. *Condor* 61: 278-297.
- Hamilton, T. H. 1959. Adaptive variation in the genus *Vireo*. *Wilson Bull.* 70: 307-346.
- Hamilton, T. H. 1962. Species relationships and adaptations for sympatry in the avian genus *Vireo*. *Condor* 64: 40-68.
- Hayward, C. L., M. L. Killpack, and G. L. Richards. 1963. Birds of the Nevada Test Site. *Brigham Young Univ. Sci. Bull., Biol. Ser.* 3: 1-27.
- Johnson, N. K. 1965. The breeding avifaunas of the Sheep and Spring ranges in southern Nevada. *Condor* 67: 93-124.
- Kay, F. R., and W. G. Bradley. 1968. The occurrence and distribution of the eastern fence lizard (*Sceloporus undulatus*) in southern Nevada. *Herpetologica* 24: 72-76.
- Linsdale, J. M. 1936. The birds of Nevada. *Pac. Coast Avif.* 23: 1-145.
- Miller, A. H. 1946. Vertebrate inhabitants of the pinon association in the Death Valley region. *Ecology* 27: 54-60.
- Wells, P. V., and R. Berger. 1967. Late Pleistocene history of coniferous woodland in the Mohave Desert. *Science* 155: 1640-1647.
- Williamson, P. 1971. Feeding ecology of the Red-eyed Vireo (*Vireo olivaceus*) and associated foliage-gleaning birds. *Ecol. Monogr.* 41: 129-152.

Museum of Vertebrate Zoology and Department of Zoology, University of California, Berkeley, California 94720.