

# THE STATUS OF THE NORTHERN SHRIKE IN NEW MEXICO

JOHN P. HUBBARD, 2016 Valle Rio, Santa Fe, New Mexico 87501

The Northern Shrike (*Lanius excubitor*) reaches the southern limits of its regular North American winter range in New Mexico, where it was first reported in November 1846 (Bailey 1928). Although such authors as Bailey (1928) and Ligon (1961) have discussed the species in a general way, no detailed study of its status in that state has ever been done. The present paper presents an analysis of the frequency and season of occurrence, numbers, distribution, habitat selection, age/sex ratios and subspecific allocation of the Northern Shrike in New Mexico.

## FREQUENCY OF OCCURRENCE

To date, records of the Northern Shrike in New Mexico span 131 winters, from that of 1846-47 through 1977-78. Over this period, this species has been recorded in only 30 (22.9%) of the winters in question (Table 1). This is an average of once every 4.5 winters, with the actual gap between records being 0 to 35 winters. On the basis of 10 year increments, starting in 1846-47, this averages about two winters of occurrence per decade, with the range from zero to nine (Table 2).

There have been no more than four reported winters of occurrence of Northern Shrike in New Mexico in any decade except the most recent one. In that exceptional period, i.e. 1966-67 through 1975-76, there were records in all but one of the 10 years, the exception being 1973-74. In fact, 1973-74 is the only winter over the last 12, i.e. 1966-67 through 1977-78, in which no Northern Shrikes were reported in the state. Contrasted to earlier decades, the most recent decade has seen the known status of the Northern Shrike change from an "occasional" to a "regular" winter visitant, to use the terminology of Hubbard (1978).

The apparent increase in the frequency of occurrence of the Northern Shrike in New Mexico could be an artifact to some degree. There are now more field-trained observers operating in the state than there were through the mid-20th century, and there are also more outlets for publishing sight records. However, the increase in frequency over the last decade contrasts sharply with the immediately preceding decade, 1956-57 through 1965-66, which had no paucity of observers and publication outlets, yet few shrikes were reported. In comparing these two decades, it would appear that the difference in the reported frequency of occurrence in this species is real and not an artifact. In

## NORTHERN SHRIKE

Table 1. Winters of reported occurrences of Northern Shrikes in New Mexico.

Winter	Number of records	Interval <sup>1</sup> (years)	Winter	Number of records	Interval (years)
1846-47	1	-	1933-40	1	0
1882-83	1	35	1950-51	1	10
1883-84	2	0	1951-52	1	0
1884-85	1	0	1956-57	1	4
1893-94	2	8	1966-67	1	11
1899-1900	1	5	1967-68	1	0
1901-02	1	1	1968-69	6	0
1902-03	1	0	1969-70	4	0
1903-04	1	0	1970-71	4	0
1913-14	1	9	1971-72	5	0
1915-16	3	1	1972-73	2	0
1917-18	1	1	1974-75	1	1
1918-19	3	0	1975-76	5	0
1922-23	1	3	1976-77	26	0
1938-39	1	15	1977-78	49	0

<sup>1</sup>Refers to number of years that elapsed between winters of reported occurrence.

previous decades, the numbers of observers and publication outlets were definitely smaller than since the mid-1950s, and the validity of the number of shrikes reported as an indicator of actual frequency of occurrence is accordingly less.

The status of the Northern Shrike as a regular winter visitant to New Mexico dates from the mid-1960s, whereas the period of occasional occurrence dates back through at least the mid-1940s. Occurrence may also have been more frequent around the turn of the century, as shrikes were recorded in four winters between 1896-97 and 1905-06. This spate of records was followed by a decrease in reports at least through the teens and 20s, years marked by significant ornithological activity in the state by members of the U. S. Biological Survey.

### SEASON OF OCCURRENCE

Reports of Northern Shrikes in New Mexico all fall within the 6 month period from October through March (Table 3). The peak month for records is December, which encompasses about a third of all reports. This is to be expected, as National Audubon Society Christmas Bird Counts take many observers into the field at this time of the year.

## NORTHERN SHRIKE

Table 2. Number of winters of reported occurrence of Northern Shrikes in New Mexico, by decade.

Decade (winter through winter)	Number of winters occurrence reported
1846-47 through 1855-56	1
1856-57 through 1865-66	0
1866-67 through 1875-76	0
1876-77 through 1885-86	1
1886-87 through 1895-96	1
1896-97 through 1905-06	4
1906-07 through 1915-16	2
1916-17 through 1925-26	3
1926-27 through 1935-36	0
1936-37 through 1945-46	2
1946-47 through 1955-56	2
1956-57 through 1965-66	1
1966-67 through 1975-76	9
1976-77 and 1977-78	2

November and February yield only about half as many reports as December, but whether a scarcity of bird observers accounts for this is unknown. Only 3.1% of the reports are from October and 7.0% from March; these are the extreme months in the period of occurrence of Northern Shrikes in New Mexico. The latter figures almost certainly reflect a genuine scarcity of Northern Shrikes in the state during these months, although neither is a period of particularly high activity for observers. The earliest autumn record is 14 October 1977 (Chaves County) and the latest is 22 March 1978 (Mora County); records verified by specimens or photographs are from 23 October 1913 (Colfax County) to 2 March 1969 (Bernalillo County). (See Figure 1 for locations of counties.)

Table 3. Reported occurrences by month of Northern Shrikes in New Mexico.

Month	Number of records
October	4
November	21
December	44
January	31
February	20
March	9
Total	129

## NORTHERN SHRIKE

### NUMBERS

Numbers of Northern Shrikes recorded in New Mexico per winter are shown in Table 1; in most winters the species occurs in very low densities in the state with seldom more than 5 or 6 birds reported in any year. Notable exceptions to this trend are apparent for the winters of 1976-77 (26 records) and 1977-78 (49 records). During these two winters, Northern Shrikes were numerous enough to be termed locally common in some areas. For example, in 1976-77 there were 8 records from Rio Arriba County, and in 1977-78 there were 14 from San Juan, 7 from Valencia and 5 each from Sandoval and Socorro counties.

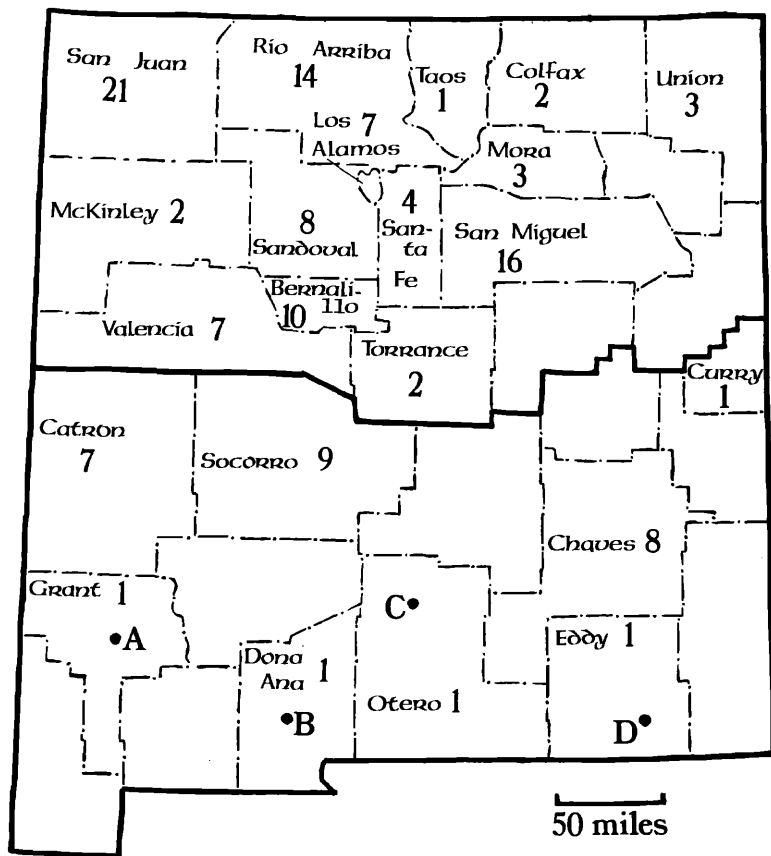


Figure 1. Counties of New Mexico, showing numbers of reported occurrences of Northern Shrikes (*Lanius excubitor*) in each (dark line separates northern from southern half of the state). A=Silver City, B=Las Cruces, C=Las Cruces and D=Loving.

## NORTHERN SHRIKE

Table 4. Numbers of shrikes recorded from October through March in the northern half of New Mexico in roadside counts.

	1974-75	1975-76	1976-77	1977-78	Total
<b>NORTHERN SHRIKE</b>					
Number seen	1	0	14	25	40
Number/100 miles	.01	0	0.2	0.3	0.1
Miles per shrike	6895	4971+	558	309	685
<b>LOGGERHEAD SHRIKE</b>					
Number seen	55	14	25	33	127
Number/100 miles	0.8	0.3	0.3	0.4	0.5
Miles per shrike	125	355	312	234	216
<b>SHRIKE spp.<sup>1</sup></b>					
Number seen	52	37	22	28	139
Number/100 miles	0.7	0.7	0.3	0.4	0.5
Miles per shrike	133	134	355	276	183
Total miles, roadside counts	6895	4971	7807	7731	27,404

<sup>1</sup>The vast majority of these were certainly Loggerheads.

Another way of looking at numbers of Northern Shrikes recorded in New Mexico is from roadside counts compiled by the New Mexico Department of Game and Fish (Table 4). In the northern half of the state (see Figure 1) between October and March, a total of 40 Northern Shrikes was counted in 27,404 miles from 1974-75 through 1977-78. This is about 0.1 shrike per 100 miles, or one shrike per 685 miles. Loggerhead Shrikes averaged about 0.5 per 100 miles, or one per 216 miles. Unidentified shrikes (almost certainly dominantly Loggerheads which were too poorly seen to identify to species) averaged about 0.5 per 100 miles, or one per 183 miles. These figures show that Northern Shrikes were identified only about 20% as often as Loggerheads, and if most unidentified shrikes were of the latter species, then Northerns were even rarer, i.e. less than 10% as frequent. In two winters (1974-75 and 1975-76), Loggerheads out-numbered Northerns 69:1 among identified shrikes, whereas in the two most recent winters the disparity decreased to 1.5:1.

### DISTRIBUTION

It is obvious, and not unexpected, that the bulk of the records of Northern Shrikes in New Mexico are from the northern half of the state (Figure 1). Of the 129 records, 100 (76.9%) are from the north; an additional 25 records are from the next more southerly quarter of the

state, whereas only 4 are from the southernmost quarter. In general the records are concentrated in the northwestern quadrant, but coverage in the northeast has not been extensive, especially in the foothills of the Rocky Mountains where the birds are more likely to occur. Southward, Northern Shrikes occur most regularly to the Mogollon Plateau (e.g. Catron County) and along the Rio Grande and Pecos valleys, southward to the respective vicinities of Socorro and Roswell. Single records farther south are from the areas of Silver City, Grant County; Las Cruces, Dona Ana County; Tularosa, Otero County; and Carlsbad, Eddy County. All but the last of these records are verified by photographs or specimens.

#### HABITAT SELECTION

Where habitat data are available for occurrences of Northern Shrikes, there is a frequent association of this species with rather open wooded habitats. Most frequent are pinyon-juniper and lowland riparian woodlands, with occasional occurrences in open Ponderosa Pine (*Pinus ponderosa*) stands. Occasional birds have been noted in grasslands and low shrublands, but such occurrences appear to be infrequent. These shrikes tend to perch relatively high, including in the tops of trees and on utility lines. Very little study of habits, prey and other aspects of the biology has been done in New Mexico, but the data to date agree generally with observations from farther north.

#### AGE/SEX RATIOS

Among the 129 records of Northern Shrike from New Mexico, 80 are of birds that were aged by the observer or are ageable. Of these, 49 (61.2%) are classed as adult, versus 31 (38.8%) that are classed as immatures. Twenty-four of these records are based on specimens, which show a 50:50 ratio. Possibly this is somewhat biased, in that the more distinctive immature may be somewhat more often identified and taken by collectors. The age ratio for all records from 1946-47 through 1976-77 shows an adult dominance of 54.8%, whereas in 1977-78 it was 68.4%. The latter figure suggests that in the exceptional winter of 1977-78, a greater than normal incursion of adults occurred into New Mexico.

The sex ratio in a sample of 21 specimens examined by me is 66.7% female. If adults and immatures are segregated, the ratio is 70.0% in the former (n=10) and 63.6% in the latter (n=11). This is an interesting preponderance of females, and it parallels a random sample of Northern Shrikes taken in Michigan. In the latter, 6 of 9 (66.7%) are females; conversely, in a random sample from Idaho, 7 of 10 (70.0%) are males. These data may indicate that females tend to winter more frequently at the periphery of the regular winter range (e.g. New Mexico and Michigan), whereas males may predominate farther north (e.g. Idaho).

## SUBSPECIFIC ALLOCATION

Two races of Northern Shrike have been recognized in North America: *L. e. invictus* breeds in the western part of the continent, from Alaska east to Manitoba; and *L. e. borealis* breeds in the eastern part, from Ontario to Labrador (AOU 1957). Winter ranges of these two forms retain this orientation, with overlap occurring in the area between the Great Lakes and the Upper Great Plains. Intergradation between breeding *invictus* and *borealis* is thought (Miller 1931) to occur along the western side of Hudson Bay, with this population moving southward to winter in the overlap zone indicated above.

Based on the above information, one might expect both races and their intergrades to occur in the general vicinity of the Great Plains, including in New Mexico. Recent literature, in fact, suggests that such is the case, as *borealis* is listed from Oklahoma (Sutton 1967), *invictus* from Colorado (Bailey and Niedrach 1967) and Texas (Oberholser 1974), and both races in Kansas (Johnston 1965). In order to examine the question of populational occurrence in New Mexico, I carried out an analysis of the available material of *Lanius excubitor* from there.

Geographic variation in the Northern Shrike in North America seems to have been treated in detail only by Miller (1931), who characterized birds from western populations (*invictus*) as being paler and larger than eastern ones (*borealis*) and in having more white in the tail and superciliary. Miller was hampered in his assessment by small sample sizes, with only 25 adults and 104 immatures available to assess a species that breeds from Alaska to Labrador! In view of this paucity of material, any attempt to use Miller's findings to assess subspecies occurrence in New Mexico will obviously be tentative and subject to future clarification. Furthermore, as indicated below, certain characters by which these races are said to differ are too poorly understood or are too inconsistent to be used for this purpose; therefore, I have not used them in deciding which names to place on New Mexican material.

To assess supposed differences between the two races, I assembled a series of probable *invictus* (7 adults, 3 immatures) from Idaho and one of probable *borealis* (5 adults, 4 immatures) from Michigan. These two series differed consistently in that adults and immatures of *invictus* are dorsally paler than *borealis*, with the latter group often buffier (less grayish brown) above than their counterparts. Given this assessment, I then compared the available 12 adult and 10 immature specimens from New Mexico with the appropriate age groups in the two series. The New Mexico specimens agreed consistently with *invictus* from Idaho, being dorsally pale in adults and pale and/or buffy in immatures. There were several specimens that were slightly darker than the Idaho birds, these being an adult from Mora County and single immatures from McKinley and Valencia counties. Such specimens could be intergrades of *invictus* with

*borealis*, but more likely they represent individual variants within the former; none shows any other sign of *borealis* influence. Several birds in a series from San Miguel County are also somewhat dark, but these specimens are soiled, and as a result they cannot be accurately assessed.

Miller's (1931) conclusions that *invictus* averages longer in wing and tail and has more white in the tail than *borealis* are borne out by his data, but the differences are generally small. Thus, in average wing length *invictus* ranges from 0.5 to 4.3 mm greater and in tail length from 1.7 to 4.4 mm greater than *borealis*. Given that the standard deviations range up to 2.1 mm in wing length and 2.8 mm in tail length, it is doubtful that the differences between the two races are significant. In regard to the amount of white in the tail, which Miller calculated as the ratio between tail length and linear extent of white on the inner web of the outer rectrices, the differences range from 4.4 to 9.7 greater in *invictus*. Again, these differences are probably not significant, as standard deviations range up to 5.5. In addition, I have already mentioned that sample sizes – especially of adults – used in compiling these data were very small, and both an increase in the number and the areal distribution of specimens would be apt to undermine differences even further.

The Idaho and Michigan specimens that I assembled show mixed results when compared to Miller's (1931) measurements, at least in regards to wing length. Six of the 10 Idaho specimens are larger than any of his measurements of *borealis*, while the remaining four fall in the range of overlap; thus, this sample is 60.0% assignable to *invictus* in this character. Three of the nine Michigan specimens are smaller than Miller's *invictus*, but the remaining six are in the range of overlap; thus, this sample is 33.3% assignable to *borealis*. Of the 21 sexed specimens from New Mexico, fully 14 fall in the range of overlap; of the remainder, 5 are in the exclusive class of large *invictus* and two in that of small *borealis*. The latter two are both adult males (one each from San Juan and Bernalillo counties) that otherwise agree in their pallor with *invictus*, and this is the name that I would apply to them. From this discussion, I conclude that wing length is not a conclusive means of distinguishing *invictus* and *borealis*.

I am unable to duplicate Miller's (1931) measurements for tail length, inasmuch as I obtain consistently smaller values for any age, sex or subspecies group than he did. For example, Miller's mean for adult male ( $n=11$ ) *invictus* is 117.6 mm, versus mine of 110.7 ( $n=6$ ) for that race from Idaho; also, his value for adult female *borealis* is 111.3 ( $n=6$ ), while mine is 106.4 ( $n=4$ ). Under the circumstances, I do not believe that our data are comparable and thus should not be compared. In addition, our measurements of the amount of white in the tails of specimens cannot be compared directly, as Miller's values are computed as a ratio with tail length. Thus, because of this disparity in data and because my samples of



probable *invictus* and *borealis* specimens are small, I cannot carry through on any comparisons of tail length and "tail white" in assigning the New Mexico material to race. However, I suspect that were the data available assignment on these characters would be as unsatisfactory as that based on wing length.

To summarize, specimens of Northern Shrike from New Mexico agree closely with presumed *invictus* from Idaho in the pallor of the upperparts of all age classes, as well as in the buffy dorsum of immatures. Therefore, I assign New Mexico birds to this race, which breeds from Alaska eastward to Manitoba and winters in western North America.

### SUMMARY

The Northern Shrike was first recorded in New Mexico in the winter of 1846-47 and has been recorded in 30 different winters beginning at that time. Until recently, the species appears to have been mainly an occasional winter visitant to the state, but since 1966-67 it has become essentially regular there. The period of occurrence is from 14 October through 22 March, with most records from December – associated with Christmas Bird Counts. Except for the winters of 1976-77 and 1977-78, when the species was locally numerous, it has been a low density visitor to New Mexico, as indicated by the total of 129 individuals recorded in 131 winters. Most records for the state are in the northern half, with only four from the southernmost quarter. Adults equal or slightly outnumber immatures, except that in 1977-78 they comprised about two-thirds of the birds observed. Females outnumber males by that same ratio. The race occurring in New Mexico is *Lanius excubitor invictus*, distinguished by being paler than *L. e. borealis*; mensural characters supposedly separating these races overlap and may not be definitive.

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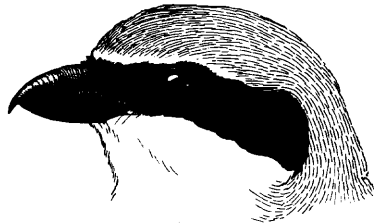
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*Northern  
Shrike*



*Loggerhead  
Shrike*

*Sketch by Narca Moore*