

Notes on the Winter Avifauna of Two Riparian Sites in Northern Sonora, Mexico

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Explorations just south of the border yield some intriguing comparisons to the winter birdlife of the southwestern U.S.: some continuums, some contrasts



FOR MANY YEARS the region of the border between Mexico and the United States has been relatively well known in terms of bird species distribution. This is especially true in southeastern Arizona, southernmost Texas and southwestern California.

In the first two cases, the ecological communities of these areas are unique in the United States. This offers the birder an opportunity to observe what are essentially tropical and sub-tropical species within U.S. boundaries. The border area in southwestern California (i.e., San Diego — Imperial Beach area) is heavily birded due to a relatively high probability of encountering “vagrant” transients, a somewhat different situation.

Unfortunately, most of this border area coverage has been unilateral. The reasons for this are straightforward: bird listers are concerned with recording species within the standardized A.O.U. Check-list area; observers in general prefer to observe these birds and natural communities in the socially comfortable confines of their native country; birders headed south of the border are usually eager to reach more southerly latitudes where the species represent a greater difference from those of the U.S.; and finally, most interested persons would predict that the border areas of Mexico would support avifaunas quite similar to those just north of the border.

During the winter of 1979-1980, Ken Rosenberg, Gary Rosenberg and I undertook some field work in northern Sonora. Our primary objective was to continue a field study on several migratory insectivores. We were intentionally selecting areas which were as similar as possible (in a general sense) to several study sites in central Arizona.

Two Sonoran sites are under discussion here. One is along the Rio Sonora a few kilometers downstream from Ures, Sonora, at the small farming community of San Rafael. The area we covered is about 3km along the river by approximately .5km on either side. This area includes narrow strips of riparian habitat along the river itself (which was at the time about 6m - 10m wide and no more than .75m deep). This riparian zone supported primarily cottonwoods *Populus* and willows *Salix*, with a dense understory of vines, cane and perennial shrubs. Several irrigation canals branched off the river, and these were bordered by thick annuals providing a tremendous seed crop. Slower areas of the canals widened and harbored cattails,

rushes and dense perennial thickets. On one side of the river there was a dense bosque of mesquite *Prosopis*. An estimated 80% - 85% of the site was agriculture (corn, alfalfa, pasture). A row of mature cottonwoods and willows with a dense understory of tall, dormant annuals divided the fields for about .25km. The area is surrounded largely by arid, rocky hillsides with a sparse thorn-scrub community. This is one of two localized cottonwood-willow areas along the Rio Sonora today, although upstream there are magnificent stands of riparian vegetation in which mesquite is the dominant species. We spent about 70 hours of observation time at the Ures site on the dates of 30 November - 2 December 1979, and 14, 15 and 26 January 1980.

Our second locality is much closer to the United States. This area is along the Rio Magdalena near Imuris at San Ignacio, which is about 70km or 43 miles (as the Streak-backed Oriole flies) due south of Nogales, as compared with 225km (140 miles) for the Ures site. Agriculture occupied most of this area as well. The river flow was intermittent, mostly dry with the exception of a spring rising in the riverbed at the southern end of the site. The cottonwood-willow forests reminded us of Sonoita Creek near Patagonia, Arizona, but the trees here were fewer and the patches of mature trees more scattered. All the trees were leafed out (mesquite included), the tree-tobacco *Nicotiana* was in bloom, and there was a tremendous seed crop from tall, dense weeds surrounding the agriculture and in the understory of the cottonwood-willow forest and mesquite hedgerows.

At this site we made direct counts of the birds encountered in an area approximately 1km X 1km over a three-hour period (0800-1100 MST) on 16 January 1980. Returning on 27 January we again censused this area; we also kept a separate tally of birds seen in an additional strip of river habitat .5km X .25km in area.

We were overwhelmed by the representation of species and high numbers of individuals at the Imuris site. To give the reader some idea of the intensity of the birding here: on 27 January, Gary Rosenberg and I counted 85 species and more than 3000 individuals. These numbers include no waterfowl and only a single species of shorebird. The area supported remarkable numbers of passerines.

Relative to our knowledge of bird distribution north of the border, we did note a "gradient" phenomenon in the distribution of some species. That is, the numbers or absence of certain species matched more or less closely the pattern we would have predicted, based upon an extrapolation from distribution patterns in southern Arizona. On the other hand, with other species we encountered an unexpected dramatic departure from predictions based on winter birding in the southwestern United States. As an isolated example, one small flock at the Imuris site included three tanagers of two species (Hepatic *Piranga flava* and Summer *P. rubra*), three species of orioles (Hooded *Icterus cucullatus*, Streak-backed *I. sclateri*, and Baltimore *I. g. galbula* — all adult males), and two adult male Black-headed Grosbeaks *Pheucticus melanocephalus*. Such a winter flock is unheard of forty miles to the north in Arizona. The species list below will speak for itself.

Thus, observations of certain birds represented a deviation from what we would have predicted based on past observations outside of the areas. However, this may reflect only a relative lack of coverage of northern Sonora. Whether or not these individuals do indeed fit a more predictable gradient pattern, rather than isolated occurrences, will be established as there is greater coverage of these areas in the future. Our understanding of bird distribution in Arizona will be augmented and clarified by increased ornithological exploration in northern Sonora.

How well our observations fit into any pattern cannot even be guessed at this

point. Many variables are involved, and the variables and their interactions can change rapidly from year to year. For example, the Imuris area of the Rio Magdalena was the first area south of the border which had full green foliage on the cottonwoods, willows, and mesquites. There was a sharp transition from the brown, barren woodland just a few miles north on the same river. There is a downward elevational slope from Nogales to Hermosillo, and for some reason in 1979-1980 the Imuris area was the first green point on this elevational and latitudinal gradient. This type of "oasis" condition could vary greatly from winter to winter. In more severe winters, the green oasis effect might be lacking in the Imuris area.

For the birder we can state that these sites offered just about the most exciting temperate-zone winter birding we've ever had, at a remarkably short distance from Arizona. Exploring new areas such as this can prove exciting and rewarding.

For the ecologist, such areas in Sonora offer a nice comparative situation. The riparian habitat in the Southwest is almost completely gone, and the majority of what is left is in a condition greatly altered by man. We found magnificent untouched stands of mesquite trees (many exceeding forty feet in height) north of Ures on the Rio Sonora, a condition which used to exist in Arizona but has now completely vanished. We found cottonwood-willow-sycamore associations on the Rio Magdalena with complete regeneration, represented by trees of all ages: again, a very rare situation in the United States' arid southwest. Studying these areas could increase our knowledge of these systems in a more natural state. Finally, these areas are void of Salt Cedar! This introduced species is rampant in similar riparian systems in the southwestern U.S.

The following annotated list presents the high count (per visit) for each species at each site. Included are a number of species for which there are very few Sonoran records. One need only examine the species and the numbers of individuals recorded within these small areas to understand why we could only call the birding spectacular. Many of these species and/or numbers would have been boldfaced on any southwestern U.S. "Christmas bird count."

This species list follows the taxonomical order and English names of "A Field Guide to Mexican Birds" by Peterson and Chalif, 1973. In Column I are the high counts for species in the Ures area, in Column II are the highs for the Imuris area. Following the lists are selected species accounts. The reader should keep in mind the small size and the limited habitat of these areas while reviewing the lists.

Great Egret	1	0	American Kestrel	13	0
Green Heron	1	0	Prairie Falcon	1	0
Mallard	22	0	Gambel's Quail	0	54
Green-winged Teal	4	0	Elegant Quail	32	0
Cinnamon Teal	3	0	Killdeer	14	8
Turkey Vulture	47	36	Greater Yellowlegs	4	0
Black Vulture	41	154	Spotted Sandpiper	4	0
Marsh Hawk	2	1	Common Snipe	1	0
Sharp-shinned Hawk	1	1	Mourning Dove	446	135
Cooper's Hawk	1	1	White-winged Dove	120	38
Zone-tailed Hawk	0	1	Inca Dove	0	1
Red-tailed Hawk	3	2	Common Ground-Dove	3	1
Ferruginous Hawk	1	0	Greater Roadrunner	2	2

Barn Owl	1	0	Blue-gray Gnatcatcher	2	3
Common Screech-Owl	1	1	Black-tailed Gnatcatcher	4	3
Great Horned Owl	1	1	Ruby-crowned Kinglet	9	88
Northern Pygmy-Owl	0	1	Water Pipit	37	10
Long-eared Owl	0	1	Loggerhead Shrike	7	4
<i>Asio (flammeus?)</i>	1	0	Starling	80	48
White-throated Swift	0	45	Hutton's Vireo	0	1
Broad-billed Hummingbird	0	1	Bell's Vireo	1	0
Anna's Hummingbird	0	7	Solitary Vireo:		
Costa's Hummingbird	0	6	<i>cassinii</i> form	1	1
Belted Kingfisher	1	1	<i>plumbeus</i> form	3	2
Green Kingfisher	1	0	Orange-crowned Warbler	5	30
"Red-shafted" Flicker	4	0	Yellow-rumped Warbler:		
"Gilded" Flicker	2	2	<i>auduboni</i> form	38	125
Gila Woodpecker	23	98	<i>coronata</i> form	1	0
<i>Sphyrapicus "nuchalis"</i>	1	0	Black-throated Gray Warbler	1	10
Ladder-backed Woodpecker	5	16	Townsend's Warbler	0	1
Eastern Phoebe	1	0	Common Yellowthroat	12	4
Black Phoebe	8	9	Wilson's Warbler	6	1
Say's Phoebe	4	5	House Sparrow	0	37
Vermilion Flycatcher	10	0	Brown-headed Cowbird	80	0
Cassin's Kingbird	5	0	Great-tailed Grackle	60	41
Ash-throated Flycatcher	0	2	Brewer's Blackbird	250	8
<i>Myiarchus (nuttingi?)</i>	2	0	Hooded Oriole	0	1
Olivaceous Flycatcher	1	0	Northern Oriole:		
Coues' Flycatcher	0	1	Baltimore form	0	1
Least Flycatcher	1	0	Bullock's form	1	0
Hammond's Flycatcher	1	1	Streak-backed Oriole	16	2
Dusky Flycatcher	1	1	Red-winged Blackbird	500	95
Gray Flycatcher	6	4	Yellow-headed Blackbird	1	1
Western Flycatcher	1	3	Eastern Meadowlark	10	5
Horned Lark	18	0	Western Meadowlark	50	12
Common Raven	60	15	Summer Tanager	1	1
White-necked Raven	12	16	Hepatic Tanager	0	2
Scrub Jay	1	0	Western Tanager	0	1
Bridled Titmouse	0	4	Cardinal	16	31
Verdin	10	43	Pyrrhuloxia	28	36
White-breasted Nuthatch	0	5	Black-headed Grosbeak	2	2
Brown Creeper	0	1	Blue Grosbeak	3	1
Long-billed Marsh Wren	14	1	Indigo Bunting	2	0
Cactus Wren	12	36	Lazuli Bunting	42	0
Bewick's Wren	8	20	Varied Bunting	1	0
Northern House-Wren	47	15	Green-tailed Towhee	13	42
Brown Thrasher	0	1	Rufous-sided Towhee	2	1
Bendire's Thrasher	0	6	Brown Towhee	16	37
Curve-billed Thrasher	6	51	Lark Bunting	8	1
Crissal Thrasher	2	3	Savannah Sparrow	14	15
Northern Mockingbird	5	49	Grasshopper Sparrow	2	0
Hermit Thrush	2	2	Vesper Sparrow	35	27

Lark Sparrow	58	19	Song Sparrow	21	12
Rufous-winged Sparrow	6	1	White-crowned Sparrow:	280	1315
Cassin's Sparrow	12	0	light-lored type	(30)	(483)
Chipping Sparrow	5	45	dark-lored type	(250)	(56)
Clay-colored Sparrow	4	0	White-throated Sparrow	0	2
Brewer's Sparrow	180	65	Dark-eyed Junco	1	1
Field-Worthen's type	1	0	House Finch	50	170
Black-chinned Sparrow	1	0	Pine Siskin	0	2
Fox Sparrow	1	0	American Goldfinch	6	5
Lincoln's Sparrow	43	18	Lesser Goldfinch	12	160
Swamp Sparrow	13	0	Lawrence's Goldfinch	2	2

SPECIES ACCOUNTS

ZONE-TAILED HAWK

Buteo albonotatus

One was at the Imuris site 27 January 1980. Mid-winter records in Arizona are very rare; this record is of interest because of the site's proximity to Arizona.

NORTHERN PYGMY-OWL

Glaucidium gnoma

One seen and heard 27 January 1980 at the Imuris site represents a lowland riparian record for this essentially montane species. Forests seemingly more suitable for the species are visible on a nearby range of mountains northeast of this location.

BROAD-BILLED HUMMINGBIRD

Cynanthus latirostris

One was at the Imuris site on 16 and 27 January 1980. This species is occasionally recorded in central and southeastern Arizona in winter, primarily at feeders. The presence of one at this site was probably related to the fact that this was the northernmost area in the Magdalena Valley where we found Indian Tree Tobacco *Nicotiana glauca* in bloom during the winter.

EASTERN PHOEBE

Sayornis phoebe

One at the Ures site 30 November - 2 December 1979 represents one of the few sight records for Sonora. The species is a rare but regular winter resident in Arizona, and there are winter sight records for Sinaloa as well.

NUTTING'S FLYCATCHER

Myiarchus nuttingi

This *Myiarchus* breeds in the area, but we know of no specific winter records. Two individuals were observed in the mesquites at the Ures site 30 November - 2 December 1979, and another was seen in thorn scrub near Moctezuma, Sonora, 15 January 1980. None of these birds was calling, but plumage characters suggested these

birds were *nuttingi*. The dark stripe along the outer edge of each unworn tail feather had a straight inner edge, not curving inward to cover the entire tip of the rectrix as in Ash-throated Flycatcher *M. cinerascens*. The uniform brown of the cap, auriculars and nape extended down to the bill and the sides of the neck, without the brown and gray contrast that is present on the forehead and hind-neck of the Ash-throated. These tentative winter sightings at the northern edge of Nutting's breeding distribution suggest the species may be a permanent resident throughout its range.

OLIVACEOUS FLYCATCHER

Myiarchus tuberculifer

A winter record at this northerly location is noteworthy. This species withdraws in winter from the northern fringe of its breeding distribution, and winter records for the U.S. are virtually nonexistent. This individual was calling when discovered at the Ures site on our first visit (30 Nov. - 2 Dec. 1979). It was not seen on subsequent trips, suggesting this bird was a late transient.

COUES' FLYCATCHER

Contopus pertinax

One was at the Imuris site on 16 and 27 January 1980. Wintering regularly from southernmost Sonora southward, this species is probably a sparse winter resident in northern Sonora. In Arizona there are a few individuals at scattered locations during most winters.

LEAST FLYCATCHER

Empidonax minimus

One studied at the Ures site on 14 January 1980 was identified by the following combination of characters, proven in recent years to be reliable for field identification: A small *Empidonax*, appearing quite grayish with a white throat. Pure white wingbars and tertial edgings, contrasting sharply with black wings. Bill short, but wider at the base than that of nearby Hammond's Flycatcher *E. hammondi*; lower mandible yellowish-pink. Eying relatively wide and pure white, with a touch of white in the lores. Breast lightly washed with grayish and rest of underparts whitish. Tail narrow, proportionately long for a Hammond's but shorter than that of Dusky Flycatcher *E. oberholseri*, with a whitish outer web to outermost rectrices. Call note a sharp "hwhit."

The Least Flycatcher was not wholly unexpected here. It winters regularly in western Mexico at least from Sinaloa southward, and there is a March specimen from southernmost Sonora (Miller *et al.* 1957). The breeding range of the species extends as far west as the Pacific Coast in northern British Columbia (Godfrey 1966). J. P. Hubbard has established that Least Flycatchers migrate regularly through eastern New Mexico, and recent work in California has shown that it occurs there annually in small numbers, primarily in fall.

BROWN THRASHER

Toxostoma rufum

One was seen at the Imuris site on 16 and 27 January 1980, a satisfactory span of dates to indicate this was a wintering bird. In Arizona the species is a rare but regular transient (somewhat more irregular as a winter resident). According to Russell and Lamm (1978), there is but one previous record for Sonora: one at Guaymas in

December 1968.

BELL'S VIREO

Vireo bellii

One was seen at the Ures site 1-2 December 1979. We have heard of other recent winter records in mesquite thickets of north-central Sonora; this probably represents the northern fringe of the species' winter range.

HOODED ORIOLE

Icterus cucullatus

On 27 January 1980 at Imuris an adult male was seen in company with two adult male Black-headed Grosbeaks, a Summer Tanager, and two Hepatic Tanagers. This species is rare in Arizona in winter.

"BALTIMORE" ORIOLE

Icterus g. galbula

An adult male was studied at the Imuris site on 27 January 1980. To our knowledge there is only one previous record in Sonora: one taken south of Nogales 12 October 1954 (Phillips *et al.* 1964). This form winters regularly in small numbers farther south in western Mexico (Nayarit) and in very small numbers in coastal California.

STREAK-BACKED ORIOLE

Icterus sclateri

This oriole was a common riparian species at Ures all winter, and at Imuris an adult male was seen 16 January and a subadult male 27 January 1980. Therefore, despite the rarity of the species in Arizona, it is apparently a fairly common winter resident not far to the south. Most individuals observed were males, so perhaps the dispersal patterns of the sexes differ.

TANAGERS

Piranga

All three of the species recorded were noteworthy for this latitude in winter. Two Hepatic Tanagers *P. flava*, a male and female together at Imuris 16 and 27 January 1980, were especially interesting.

INDIGO BUNTING

Passerina cyanea

Two at Ures 30 November - 2 December 1979 would represent first winter records for this area of Mexico. This species has been expanding its summer range in the southwestern U.S. recently, with some Arizona river systems supporting large populations. There are recent sight records of singing birds in western Sonora as well (Russell and Lamm 1978).

VARIED BUNTING

Passerina versicolor

A female-plumaged bird at the Ures site 1 December 1979 was rather far north.

SPIZELLA, SPECIES

On 30 November 1979 at the Ures site, Ken Rosenberg observed what was either a Field Sparrow *S. pusilla* or Worthen's Sparrow *S. wortheni*. Because of the extreme similarity of these two species Rosenberg did not make a positive identification, but he felt it was probably a Field Sparrow. Neither species has been recorded in Sonora.

FOX SPARROW

Passerella iliaca

An individual seen by Gary Rosenberg and the author on 14 January 1980 in dense vegetation at the Ures site was identified as a member of the southwestern group of subspecies (*P. i. schistacea* or *P. i. olivacea* in the sense of Phillips, in Phillips *et al.* 1964). Russell and Lamm (1978) list only one record for the Fox Sparrow in Sonora (Sonoyta, December 1968), although an earlier record had been published (22 December 1954 at Santa Cruz — Phillips *et al.* 1964).

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Short Notes

Tool Use by a Mountain Chickadee

A Mountain Chickadee *Parus gambeli* in a flock of eight was observed using a very unusual foraging method that I have interpreted as tool use. The incident occurred on 17 July 1980 at 0920 MST in Ponderosa woods of the Dry Lake Hills, just north of Flagstaff, Coconino County, Arizona.

The chickadee was foraging about seven meters up on a dead, barkless tree. It began very excitedly probing with its bill a vertical crack about one cm wide and about one half meter long. It pecked at the side of the crack and pulled off a splinter about five cm long, having a grip on the splinter about two cm from one end. It then pushed the long end of the splinter back into the crack and probed several times. It moved down the crack again and probed with the splinter once more before flying to an adjacent tree, still carrying the splinter in its bill. It held the short end of the splinter with its foot and pulled it through its bill until it had the other end in its bill. It then made several chewing movements on the splinter before discarding it and flying off. I had seen nothing impaled on the end of the splinter before the chickadee pulled it into its bill.

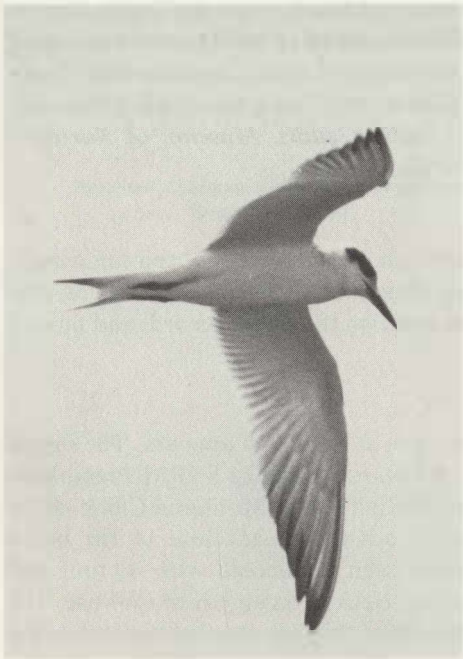
Mountain Chickadees frequently excavate in decayed wood, usually flipping removed chips over their shoulder. In over 100 hours observation of this species, this was the first time it was seen to use one of the removed pieces as a tool. This incident is reminiscent of tool use by the Galapagos finches described by Millikan and Bowman (*Living Bird* 6:23-41), which use cactus spines and sticks to extract insect larvae. To my knowledge, no other example of tool use has been reported for a Mountain Chickadee or for any other North American parid. — Philip Gaddis, *Museum of Northern Arizona, Route 4, Box 720, Flagstaff, AZ 86001.*

Editor's note: Tool-using by birds is uncommon. The subject has been extensively reviewed by Jeffery Boswall (1977, *Avicultural Magazine* 83: 88-97, 146-159, 220-228; 1978, *op. cit.* 84: 162-166). I asked him to comment on the above record, and he sent the following reply. — K.K.

To define tool-use is much more difficult than at first sight appears. The recent volume by Benjamin B. Beck (*Animal Tool Behaviour*, Garland STPM Press, New York, 1980) makes this very clear. In the case of Philip Gaddis' Mountain Chickadee it would be difficult to credit any interpretation other than tool-use to the bird's observed behaviour. However the bird was not seen to succeed with its tool and therefore, *pro tem*, the instance can really only be regarded as apparent tool-use. The fact that in over 100 h of observations on this species this was the first time that tool

behaviour has been observed might mean that tool behaviour is not a regular behavioural trait among these chickadees. Further, the fact that the species in any case works with wood to excavate its nest hole means that opportunities to employ a splinter as an implement must have occurred many, many times. And yet the species (like, apparently, the vast majority of the world's birds) has not become a tool user. This in turn suggests that only in exceptional circumstances is the use of an external object a more parsimonious path for natural selection than the evolution of body structures or other behavioural traits to solve the same problem. Thus when we come across a lone observation of a species apparently using a tool, we are tempted to ask is the explanation that — to word it teleologically — it is an experiment that doesn't pay off?

I used to think that the fragmentary nature of much of the data on tool using by wild birds was due to inadequately-systematic observation, and no doubt this *may* to some extent be the explanation. I now think that the observers may have been witnessing some "errors" in a process of trial and error learning. Two other individual instances of parids (two Blue Tits *Parus caeruleus*) using a piece of vegetation as a poker or prod are given in my 1977 paper (p. 150), as are *single* instances of individual birds of six other passerine species using an elongate object as a probe. Of these three were seen to succeed. But even success with a "new" method of food extraction need not mean that the behaviour pattern will be "taken up" as part of a species' behavioural repertoire. It may still be a less economic method of foraging. It must be added that there is of course one bird species well known regularly to employ a probe, and at least two others that are almost certainly regular in their use of such an instrument. — Jeffery Boswall, Birdswell, Wraxall, Bristol BS19 1JZ, England.



The challenge in the preceding issue featured this tern, photographed at a southern beach in autumn. Can you identify it to species?

Answer to Snap Judgment 6

KENN KAUFMAN