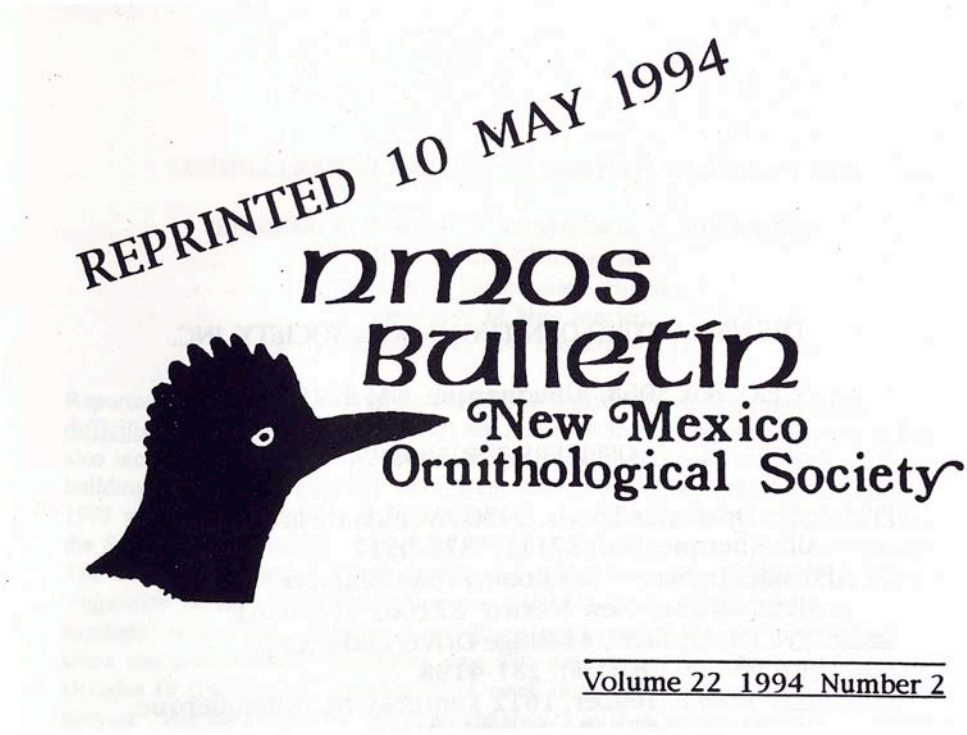

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P.O. Box 3068, Albuquerque, NM 87190-3068

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CORDILLERAN FLYCATCHERS NESTING WITHIN A CAVE

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Reported nest sites of the Western Flycatcher complex [formerly *Empidonax difficilis* (AOU 1989, Johnson 1980)] are primarily in trees or other vegetation but also include stream banks, cracks and ledges of rock cliffs, and structures such as buildings and bridges (Bendire 1895, Bent 1942, Davis et al. 1963). On 26 July 1993 we observed Cordilleran Flycatchers (*E. occidentalis*) nesting within a cave in the San Mateo Mountains (T5S, R7W, NW 1/4 Sec. 27), Socorro Co., New Mexico. The cave was situated in a rock face on the south facing slope of Bear Trap Canyon. Vegetation on the south-facing slope was primarily Gambel's oak (*Quercus gambelii*) with a few ponderosa pines (*Pinus ponderosa*), while the north-facing slope was predominantly ponderosa pine with some aspen (*Populus tremuloides*) and Douglas fir (*Pseudotsuga menziesii*). A small intermittent stream flowed through the canyon. The cave entrance was approximately 3 m high and narrowed for a distance of approximately 8 m before constricting to approximately 1.5 m high and 0.5 m wide for another 3 m. Although we investigated the cave during a sunny afternoon, light within the cave progressively dimmed requiring the use of a flashlight for observations away from the cave entrance.

Upon our entering the cave, a bird flew past us, struck the floor of the cave, recovered flight, and exited. We found three approximately 5-day old nestlings in a nest located on a narrow ledge. The ledge was approximately 1.4 m high near the roof of the cave just in front of the cavern's constriction (approximately 8 m within the cave). A Cordilleran Flycatcher was observed calling from an oak at the entrance of the cave. We observed the cave for approximately 1.5 hours during which time this individual remained near the cave entrance calling. It occasionally flew off, returned to an oak near the entrance with an insect, and flew into the cave at least 20 times. At times, another Cordilleran Flycatcher joined the first in the oaks at the cave entrance. The second bird was not observed to carry food or enter the cave.

G. Farley, J. Stuart, B. Thompson, and J. Travis commented on an earlier version of this paper.

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BIRDS OF RESTORED AND MATURE RIPARIAN WOODLANDS IN THE MIDDLE RIO GRANDE VALLEY

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As part of an ongoing project documenting vertebrate use of riparian vegetation in the Middle Rio Grande Valley of New Mexico, we summarize data collected during 1992 on avian use of different-aged woodlands. Our study documents avian use of sites revegetated with a variety of woody plant species and compares the results with an avian assemblage in mature cottonwood bosque. This note provides data for 83 species of birds (Table 1) and supplements a more in-depth discussion of the vegetation structure and associated bird populations published elsewhere (Farley et al. in press).

Four different sites were surveyed during each season using both variable-circular plot and transect censusing techniques. Seasons were defined as follows: winter - December through February; spring - March through May; summer - June through July; fall - August through November. The study sites have different management histories and vary in both size and location in the valley. Three of these sites are within management units on Bosque del Apache National Wildlife Refuge, Socorro County. Two of these refuge sites were revegetated by clearing salt cedar *(Tamarix chinensis)* prior to planting saplings of Rio Grande cottonwood *(Populus fremontii)* and Goodding willow *(Salix gooddingii).* A variety of volunteer shrubs and annual plants also have become established on the sites. Unit 28 is 50 hectares (ha) in area and was planted in 1989; Unit 29 is also 50 ha and was revegetated using similar methods in 1990. The latter unit contains an island of mature cottonwood forest near the survey line, therefore some of the bird species detected on the site were not specifically using the revegetated area.

The third site (140 ha) is situated at the north end of Caballo Reservoir near Las Palomas, Sierra County, and was naturally revegetated following inundation in the late 1980's. Cattle were excluded by fencing in 1988 after three years of high water, and the majority of woody vegetation was 5-years old when we conducted our survey. The fourth site (ca. 30-years old) is also located on Bosque del Apache N.W.R (Units 7 and 26; total 42 ha), and was selected as a benchmark for comparison with the avian assemblages on the revegetated sites. Therefore, we surveyed sites of 2, 3, 5 and approximately 30 years in age.

The youngest two sites contained even distributions of young cottonwoods and willows, from 1 - 4 meters (m) in height, in addition to poorly developed perennial understories. The 5-year site had the most heterogeneous mix of woody vegetation, including 1 - 10 m tall cottonwood, Goodding willow, and screwbean mesquite *(Prosopis pubescens)* trees. This site also was characterized by a well-developed shrub

community. The mature site contained a canopy (8 -13 m height) of cottonwood, with a subcanopy (2 - 7 m height) of salt cedar and Goodding willow and an understory of seepwillow *(Baccharis glutinosa)* and New Mexico olive *(Forestiera neomexicana).*

The results indicate that riparian woodlands of different age support different assemblages of bird species (Table 1). Observations from the 5-year site are most similar to the 30-year site for most seasons; for example, overlap in species composition between these two sites ranged from 11 to 27 % (Farley et al. In press). In contrast, the 2-year and 30-year sites shared only 3 to 9 % of bird species. Many of the differences in bird assemblages among sites could be attributed to variation in woody vegetation density and structure. For example, extensive open areas vegetated with annuals on the 2- and 3-year sites were primarily responsible for the presence of many sparrow species. Cavity-nesting and timber-foraging species were restricted to the 30-year site where mature trees and snags were present. We were surprised at the rapidity with which the revegetated sites became suitable for use by a variety of bird species found in mature bosque, such as many neotropical migrants. Our information suggests that the revegetation methods may be a useful means of reclaiming riparian habitat that has been overtaken by exotic plants such as salt cedar.

ACKNOWLEDGMENTS

We thank John Taylor, Phil Norton and the staff of Bosque Del Apache N.W.R., and Drs. Cliff Crawford and Manuel Molles for their support. Dr. Robert Dickerman made helpful comments on an earlier version of the manuscript. This research was funded by the U.S. Fish and Wildlife Service and the U.S. Bureau of Reclamation.

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Table 1. Bird species[1] detected by season on 2, 3 and 5-year revegetated sites and a 30-year mature woodland site in the Middle Rio Grande Valley of New Mexico.

Species	Guild[2]	Status[3]	Fall				Winter				Spring				Summer			
			2-yr	3-yr	5-yr	30-yr	2-yr	3-yr	5-yr	30-yr	2-yr	3-yr	5-yr	30-yr	2-yr	3-yr	5-yr	30-yr
Turkey Vulture, *Cathartes aura*	p	SD						X						X				
Northern Harrier, *Circus cyaneus*	p	SD		X			X											
Red-tailed Hawk, *Buteo jamaicensis*	p	SD					X											
American Kestrel, *Falco sparverius*	p	SD	X					X	X									
Prairie Falcon, *F. mexicanus*	p	SD					X											
Ring-necked Pheasant, *Phasianus colchicus*	gs	PR	X	X				X			X	X			X	X		
Wild Turkey, *Meleagris gallopavo*	gs	PR				X								X				X
Gambel's Quail, *Callipepla gambelii*	gs	PR	X									X	X		X	X	X	
Sandhill Crane, *Grus canadensis*	gs	SD					X	X										
Killdeer, *Charadrius vociferus*	gs	SD										X						
Mourning Dove, *Zenaida macroura*	gs	SD		X	X	X	X	X	X		X	X	X	X	X	X	X	X
Greater Roadrunner, *Geococcyx californianus*	p	PR										X						
Barn Owl, *Tyto alba*	p	SD															X	
Great-horned Owl, *Bubo virginianus*	p	PR										X		X		X		
Black-chinned Hummingbird, *Archilochus alexandri*	n	NM			X	X							X	X			X	X
Broad-tailed Hummingbird, *Selasphorus platycercus*	n	NM																X
Ladder-backed Woodpecker, *Picoides scalaris*	td	PR				X								X				X
Downy Woodpecker, *P. pubescens*	td	PR				X								X				
Hairy Woodpecker, *P. villosus*	td	PR												X				
Northern Flicker, *Colaptes auratus*	gs	PR	X	X	X	X	X	X	X	X				X	X			X
Olive-sided Flycatcher, *Contopus borealis*	f	NM															X	
Western Wood-pewee, *C. sordidulus*	f	NM			X								X	X			X	X
flycatcher, *Empidonax* sp.	f	NM											X				X	
Say's Phoebe, *Sayornis saya*	f	SD					X	X										
Ash-throated Flycatcher, *Myiarchus cinerascens*	f	NM										X		X	X			X
Western Kingbird, *Tyrannus verticalis*	f	NM			X						X		X		X	X	X	
Horned Lark, *Eremophila alpestris*	gs	SD					X											
American Crow, *Corvus brachyrhynchos*	gs	SD					X											
Common Raven, *C. corax*	gs	PR		X	X					X				X				
White-breasted Nuthatch, *Sitta carolinensis*	tg	PR			X	X		X		X								X

Table 1, continued.

Species	Guild[2]	Status[3]	Fall				Winter				Spring				Summer			
			2-yr	3-yr	5-yr	30-yr	2-yr	3-yr	5-yr	30-yr	2-yr	3-yr	5-yr	30-yr	2-yr	3-yr	5-yr	30-yr
Bewick's Wren, *Thryomanes bewickii*	tfs	SD							X					X				X
House Wren, *Troglodytes aedon*	tfs	NM			X													
Marsh Wren, *Cistothorus palustris*	tfs	SD		X				X										
Ruby-crowned Kinglet, *Regulus calendula*	tfs	SD							X	X								
Western Bluebird, *Sialia mexicana*	tfs	SD					X											
Hermit Thrush, *Catharus guttatus*	gs	SD								X								
American Robin, *Turdus migratorius*	gs	SD		X		X				X								X
Northern Mockingbird, *Mimus polyglottos*	tfs	PR											X			X		X
Crissal Thrasher, *Toxostoma crissale*	tfs	PR			X													
American Pipit, *Anthus spinoletta*	gs	SD							X									
Phainopepla, *Phainopepla nitens*	tfs	NM															X	
Loggerhead Shrike, *Lanius ludovicianus*	p	SD		X	X		X	X										
Solitary Vireo, *Vireo solitarius*	tfs	NM				X								X			X	X
Warbling Vireo, *V. gilvus*	tfs	NM			X									X				
Orange-crowned Warbler, *Vermivora celata*	tfs	NM			X									X				X
Nashville Warbler, *V. ruficapilla*	tfs	NM			X													
Virginia's Warbler, *V. virginiae*	tfs	NM	X	X														X
Lucy's Warbler, *V. luciae*	tfs	SD			X	X								X				
Yellow Warbler, *Dendroica petechia*	tfs	NM														X	X	
Yellow-rumped Warbler, *D. coronata*	tfs	SD		X	X			X				X	X					
Townsend's Warbler, *D. townsendi*	tfs	NM				X												
MacGillivray's Warbler, *Oporornis tolmiei*	tfs	NM	X	X	X	X											X	
Common Yellowthroat, *Geothlypis trichas*	tfs	NM		X										X	X	X		
Wilson's Warbler, *Wilsonia pusilla*	tfs	NM	X	X	X	X											X	
Yellow-breasted Chat, *Icteria virens*	tfs	NM												X				X
Summer Tanager, *Piranga rubra*	tfs	NM				X								X				X
Western Tanager, *P. ludoviciana*	tfs	NM												X				
Blk-headed Grosbeak, *Pheucticus melanocephalus*	tfs	NM													X	X	X	X
Blue Grosbeak, *Guiraca caerulea*	tfs	NM	X	X	X	X												
Lazuli Bunting, *Passerina amoena*	tfs	NM		X														

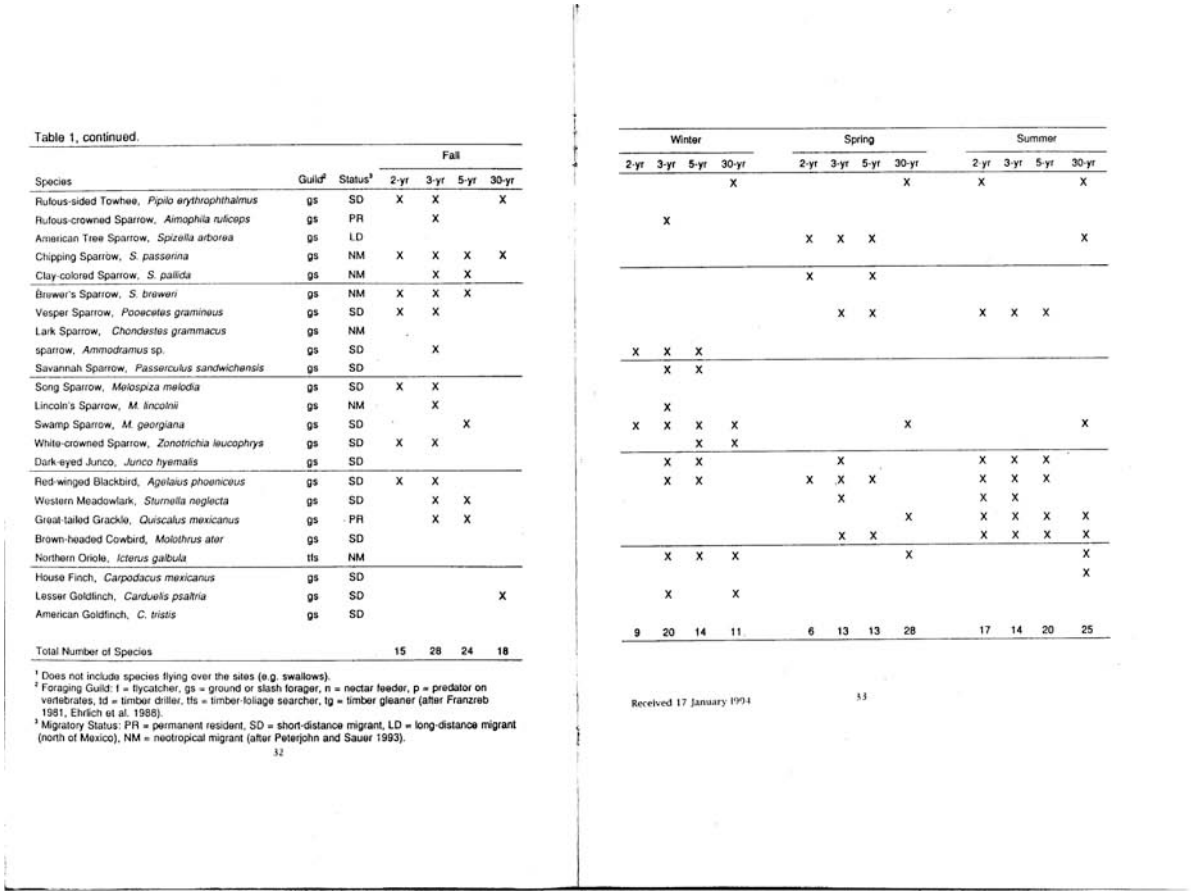

Table 1, continued.

Species	Guild[2]	Status[3]	Fall 2-yr	Fall 3-yr	Fall 5-yr	Fall 30-yr	Winter 2-yr	Winter 3-yr	Winter 5-yr	Winter 30-yr	Spring 2-yr	Spring 3-yr	Spring 5-yr	Spring 30-yr	Summer 2-yr	Summer 3-yr	Summer 5-yr	Summer 30-yr
Rufous-sided Towhee, *Pipilo erythrophthalmus*	gs	SD	X	X		X				X				X	X			X
Rufous-crowned Sparrow, *Aimophila ruficeps*	gs	PR		X				X										
American Tree Sparrow, *Spizella arborea*	gs	LD									X	X	X					X
Chipping Sparrow, *S. passerina*	gs	NM	X	X	X	X												
Clay-colored Sparrow, *S. pallida*	gs	NM		X	X						X		X					
Brewer's Sparrow, *S. breweri*	gs	NM	X	X	X													
Vesper Sparrow, *Pooecetes gramineus*	gs	SD	X	X								X	X		X	X	X	
Lark Sparrow, *Chondestes grammacus*	gs	NM																
sparrow, *Ammodramus* sp.	gs	SD		X			X	X	X									
Savannah Sparrow, *Passerculus sandwichensis*	gs	SD						X	X									
Song Sparrow, *Melospiza melodia*	gs	SD	X	X														
Lincoln's Sparrow, *M. lincolnii*	gs	NM		X				X										
Swamp Sparrow, *M. georgiana*	gs	SD			X		X	X	X	X				X				X
White-crowned Sparrow, *Zonotrichia leucophrys*	gs	SD	X	X					X	X								
Dark-eyed Junco, *Junco hyemalis*	gs	SD						X	X			X			X	X	X	
Red-winged Blackbird, *Agelaius phoeniceus*	gs	SD	X	X				X	X		X	X	X		X	X	X	
Western Meadowlark, *Sturnella neglecta*	gs	SD		X	X							X			X	X		
Great-tailed Grackle, *Quiscalus mexicanus*	gs	PR		X	X									X	X	X	X	X
Brown-headed Cowbird, *Molothrus ater*	gs	SD										X	X		X	X	X	X
Northern Oriole, *Icterus galbula*	tfs	NM						X	X	X				X				X
House Finch, *Carpodacus mexicanus*	gs	SD																X
Lesser Goldfinch, *Carduelis psaltria*	gs	SD				X		X		X								
American Goldfinch, *C. tristis*	gs	SD																
Total Number of Species			15	28	24	18	9	20	14	11	6	13	13	28	17	14	20	25

[1] Does not include species flying over the sites (e.g. swallows).
[2] Foraging Guild: f = flycatcher, gs = ground or slash forager, n = nectar feeder, p = predator on vertebrates, td = timber driller, tfs = timber-foliage searcher, tg = timber gleaner (after Franzreb 1981, Ehrlich et al. 1988).
[3] Migratory Status: PR = permanent resident, SD = short-distance migrant, LD = long-distance migrant (north of Mexico), NM = neotropical migrant (after Peterjohn and Sauer 1993).

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1994 ANNUAL MEETING REPORT

The 32nd annual meeting of the New Mexico Ornithological Society was held Saturday 5 March at the New Mexico Museum of Natural History in Albuquerque, New Mexico with 85 people attending. Sandy Williams presided at the business meeting. He thanked Jackie McConachie and Mary Alice Root for the meeting arrangements and Gloria Travis and Rose Brasel for the outstanding coffee break food. Reports were made by the treasurer Ross Teuber, by Jim Travis on Partners in Flight, by Pat Snider on the Rare Bird Alert, by Sandy on the Breeding Bird Survey, by Jackie McConachie on the Data Base, and by Jim Place on the new Hawks Aloft group. Pat Stein and Janet Lamkin offered to host the 1995 annual meeting in the Los Alamos/Santa Fe area. Sandy reported on the change in American Birds being made as to discontinuing the magazine part and keeping the field reports. Rollie Goodman retired as Field Notes editor after 10 years of outstanding service. In appreciation he was awarded a Life Membership and the Florence Merriam Bailey Award, a unique New Mexico Ornithological Society service award. The nominating committee presented the 1994-6 slate of officers and it was approved by acclamation. (See inside front cover of the Bulletin for the names.) The paper session was chaired by Dr. James Findley and 18 outstanding talks were given; the opening/welcoming address was given by Dr. Rick Smartt of the Museum. The abstracts of the papers appear in this issue of the Bulletin. The banquet was held at the Old Town Sheraton Hotel and the presentation afterward was made by Ro Wauer who talked about Big Bend National Park. T-shirts and mugs with Dale Zimmerman's Montezuma Quail drawing were a popular feature of the meeting. A Sunday morning field trip to Petroglyph National Monument was led by Walter Kleweno and Hart Schwarz.

THE ABSTRACTS OF THE ORAL PRESENTATIONS GIVEN AT THE 1994 ANNUAL MEETING FOLLOW IN ORDER OF PRESENTATION:

MOVEMENTS AND HABITAT SELECTION OF RELEASED APLOMADO FALCONS IN SOUTH TEXAS

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Aplomado Falcons were last recorded in the United States in the 1950s. A priority of the Recovery Plan is to reintroduce this endangered species in suitable habitats in the United States. As a result of a joint venture between The Peregrine Fund and US Fish and Wildlife Service, 26 young-of-the-year aplomado falcons were released into the wild on Laguna Atascosa National Wildlife Refuge during spring, 1993. Fledgings were recaptured after about three weeks and tail-mounted radio transmitters were attached. By the end of October, we were still recording data on 10 aplomado falcons with operational transmitters. Four mortalities had been confirmed. Monitoring of this release will continue until February, 1994. We will report on survival, dispersal distances and directions, and structural characteristics of habitats used by released aplomado falcons.

ECOLOGY OF BALD EAGLES WINTERING AND BREEDING NEAR CABALLO RESERVOIR, NEW MEXICO

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The bald eagle *(Haliaeetus leucocephalus)* was listed as an endangered species in the United States in 1978. A recovery plan outlining recovery goals was prepared by the U.S. Fish and Wildlife Service for the southwestern population in 1982. Intensive state and federal efforts to protect habitat and nest sites, combined with the ban of pesticides believed to induce eggshell thinning in raptors have been vital to the recovery of the bald eagle. There were fewer than 2,400 bald eagles in the contiguous United States in 1980; the 1992 census documented over 6,000. Bald eagles wintering in New Mexico also seem to be increasing in number. This project was initiated to determine if pool size management affects bald eagles wintering at Caballo Reservoir, NM. Two years of data collection will be completed at Caballo Reservoir, located in south central New Mexico. Bald eagles wintering on Caballo Reservoir were censused by boat or truck from December 1992 through March 1993, and December 1993 through March 1994. Aerial census surveys also were completed for wintering populations. Behavioral observations were recorded during both winter periods. Foraging behavior and food habits documentation were the major areas of emphasis during the focal animal observations. Caballo Reservoir was sampled to determine fish availability. Floating gill nets set for 24 hour periods were utilized. Dead cottonwood snags located along the reservoir's perimeter were scrutinized to discern characteristics favorable for bald eagle perching. Optimal foraging experiments were conducted on wintering eagles during 1993 and 1994. A pair of breeding bald eagles nesting near Caballo Reservoir were observed in 1993. Two eggs were laid, hatched, and both eaglets successfully fledged. Nest observations indicated both adult eagles fed the eaglets. Fish were the most common item delivered to the nest. The parameters emphasized during this project were selected and data were collected and analyzed to provide insight into the ecological necessities of bald eagles wintering and breeding near Caballo Reservoir, NM.

FIDELITY OF MIGRANT BALD EAGLES TO WINTERING GROUNDS IN SOUTHERN COLORADO AND NORTHERN NEW MEXICO

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DALE W. STAHLECKER, Eagle Ecological Services, 30 Fonda Road, Santa Fe, NM87505

Abstract: Ten of 36 Bald Eagles *(Haliaeetus leucocephalus)* color-marked in the San Luis Valley of southern Colorado in 1977 and 1978 were found there in subsequent winters, while only one was known to have wintered elsewhere. Four adult eagles (3 in Colorado and 1 in New Mexico) returned to the same winter ranges on which they had been radio-tracked during the winter of their capture, 1 color-marked adult was seen near its capture site for 6 succeeding years, and a banded adult was found dead 3 km from its winter capture site 10 years later. Percent of marked adults (28%) observed in subsequent years in the same wintering area was equivalent to that of immatures (28%), but mean number of years adults were seen post-marking (x=3.8) was greater than for immatures (x=1.4), indicating traditional use of wintering grounds by adults. Breeding grounds of 6 adults from the San Luis Valley were at least 1900 km north in east-central Saskatchewan and western Manitoba, Canada (This paper is published in J. Field Ornith. 64:129-134).

A COMPARISON OF HOME RANGE ESTIMATES FOR A BALD EAGLE WINTERING IN NEW MEXICO

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A wintering adult male bald eagle *(Haliaeetus leucocephalus)* captured on 13 February 1988 at Abiquiu Reservoir, New Mexico, was radio-tracked for 191 hr during 29 of 38 days he remained in the study area. He used 45 different perches; 126 perch locations were used for more than the "biological independence" minimum of 30 min. Computer-generated estimates of the eagle's home range (km^2) were: harmonic mean - 170.0, Jennrich-Turner non-circular ellipse - 105.0, weighted non-circular ellipse - 58.3, and minimum convex polygon - 57.6. A minimum convex polygon drawn to exclude non-use areas provided the best estimate (16.1 km^2) of the eagle's winter home range. Mean home ranges in other studies have ranged from 18 km^2 in Missouri at a waterfowl concentration (J. Wildl. Manage. 49:592-594) to 411 km^2 for eagles that ranged widely in Arizona (Southwest Nat. 34:453-459). By feeding primarily on fish because waters did not freeze, this eagle was able to meet his nutritional needs in a small home range that did not attract nor could have supported a large number of eagles (This paper appears in J. Raptor Res. 27:42-45).

PATTERNS IN THE FALL MIGRATION OF SHARP-SHINNED HAWKS, *ACCIPITER STRIATUS*

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Migrating hawks require huge amounts of energy in order to reach wintering grounds. Patterns and trends of migrations provide insight into how hawks accumulate and deplete their fat stores. Sharp-shinned Hawks *(Accipiter striatus)* are very sexually dimorphic, which may play a role in determining migration patterns. Data collected by Hawk Watch International at two sites in the western U.S. provided information on migrating *A. striatus* for the falls of 1991, 1992, and 1993. Regression analyses of bird weight relative to size and migration dates suggests that, for nearly all age and sex classes, individuals that are heavier for their weight migrate later in the season ($p < .001$). Juvenile birds (hatch year only) migrate significantly sooner in the season than mature birds (after-hatch year) ($p < .001$). Females for both age classes migrated significantly earlier than males ($p < .01$). Possible explanations are: Females have to leave the breeding grounds earlier than males

because they are more restricted by their prey base, healthier birds remain on the breeding grounds as long as possible to build up energy stores for migration, and/or that hatch year birds migrate to wintering grounds earlier so they can familiarize themselves with the territory before adults arrive.

DARK MORPH BUTEOS IN NEW MEXICO

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ABSTRACT: Dark morph Buteos are fairly common in New Mexico in winter. Harlan's Hawk *(Buteo jamaicensis harlani),* a principally dark morph (90%) subspecies of the Red-tailed Hawk, has been observed during recent winters in greater numbers than expected in the state. The Rio Grande bosque may be an important wintering area for this subspecies, which breeds primarily in Alaska and the Yukon. Dark morph plumages present a formidable challenge in field identification. Partly for this reason, reliable data on dark morph occurrances in the state are few. A slide presentation will review indentification criteria for dark morph Buteos expected in New Mexico. Some hypotheses for the existence of dark morph plumages will be discussed briefly.

BIRD ASSEMBLAGES IN REVEGETATED COTTONWOOD FORESTS OF THE MIDDLE RIO GRANDE

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ABSTRACT: Riparian ecosystems provide critical habitat for migratory and resident birds in the arid southwest, but the distribution of this vegetation is limited due to both historical and current management practices. To counteract the loss of this ecosystem, several mitigation projects have been initiated along the Rio Grande in New Mexico. We compared year-round avian use of three revegetated cottonwood sites of different ages at Bosque del Apache National Wildlife Refuge and Caballo Reservoir, New Mexico with use of mature cottonwood forest at Bosque del Apache. As vegetation structure changes, the number of bird species and species composition vary. The avian communities at revegetated sites become increasingly more similar to that of the mature forest with increasing site age, suggesting that reconstruction methods may be successful at replicating original cottonwood bosque habitat for birds. These sites seem to be particularly important to some species of neotropical migrants. The presence of a mosaic of riparian vegetation types of different age and structure may be essential for the conservation of avian species richness in the middle Rio Grande Valley.

AVIAN COMMUNITY RESPONSE TO THE TRANSFORMED ENVIRONMENT IN THE RIO GRANDE VALLEY OF SOUTHERN NEW MEXICO

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ABSTRACT: The Rio Grande valley of southern New Mexico represents a landscape where native riparian vegetation communities have been mostly replaced by an intensively manipulated agricultural

environment. To the south of Elephant Butte Dam, woody vegetation is prevented from growing within the levee system along the river. As a result, only limited, scattered tracts of riparian vegetation remain in this region. The exotic saltcedar (*Tamarix spp*.) is well established and dominates many of the remnant seminatural areas along the river. We investigated the avian community using this transformed environment during the breeding season. Bird surveys were conducted in agricultural and remnant seminatural areas for birds during the summer of 1993. Potential habitat types in the agricultural landscape that were sampled included crop field mosaics, water conveyance channels, and pecan orchards. Thirty transects were established in fields and orchards in three distance categories measured from remnant "islands" of woody riparian vegetation. At every site, one survey was conducted in each of three time blocks during the breeding season. Data analyses will be presented regarding avian community composition, species occurrence compared to distance from remnant tracts, and relative importance of the different habitat types. Perspectives will be discussed regarding historical versus present avian assemblages in this portion of the Rio Grande corridor.

NEOTROPICAL MIGRANT BIRD COMMUNITY COMPOSITION AND HABITAT IMPORTANCE IN THE MIDDLE RIO GRANDE VALLEY OF NEW MEXICO

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Abstract: Concerns about population declines in many neotropical migrant (NTM) bird species have heightened the interest in conservation, monitoring, and research concerning these species and their habitat needs. This project investigated NTM bird use within vegetative habitats of the middle Rio Grande of New Mexico from Las Cruces to Velarde. Approximately 71 variable distance transects representing 47 different vegetation community/structure types were surveyed during breeding and spring and fall migration periods of 1992 and 1993. Field work from both seasons detected 259 bird species of which 156 species were on transects in study tracts. For all species detected in the corridor, 144 were NTM species as defined by the National Fish and Wildlife Foundation Partners in Flight program. A multivariate ordination of bird detections and habitat structure variables is used to identify relative importance among the 47 vegetation categories. Woody communities with well developed vegetative structure in all levels and geographically isolated habitat tracts appear to support highest species numbers. Project results are expected to help the Rio Grande Bosque Conservation Committee identify and prioritize management concerns.

RELATIONSHIP OF SPECIES DETECTION TO NUMBER AND LENGTH OF TRANSECTS IN LINEAR RIPARIAN HABITATS

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Abstract: Transect length requires consideration in designing efficient sampling schemes for studies of species composition in avian communities. We sampled five 1500-m transects in linear riparian habitats in southern New Mexico and recorded accumulation of detections for 52 species in 100-m distance intervals during breeding season and fall migration. Species detection was rapid initially but rates generally declined in latter intervals. Surveying beyond 1000-m on transects yielded few new species. Results indicated that sampling at more sites with more repetitions would be more efficient

for general species detection in this habitat type than longer transects. Longer transects appeared necessary if study objectives require detection of rarer species

NMOS BIRD DATABASE

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Thirty-two years ago, a group of ornithologists and amateur birders living in New Mexico founded the New Mexico Ornithological Society (NMOS). Since that time, NMOS Field Notes have been published on a quarterly basis, reporting observed bird activity throughout the state. In 1990, NMOS decided to computerize these observations to allow scientists and enthusiasts alike to take a closer look at bird trends in New Mexico. To date, approximately 3,000 records have been transcribed from NMOS field notes and put into the computer using FoxPro Database software. This is roughly five percent of the total number of field note records.

THE FOODS AND BEHAVIOR OF THE COMMON MERGANSER WINTERING ON CABALLO RESERVOIR, NEW MEXICO

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The common merganser *(Mergus merganser)* winters on many New Mexico reservoirs and waterways, including Caballo Reservoir, which is located in the middle Rio Grande Valley. Numbers of common mergansers wintering on the reservoir are highly variable from year to year. Studies have shown that negative impacts on fish populations can occur when large numbers of mergansers are present over an extended period of time. A population of endangered bald eagles *(Haliaeetus leucocephalus)* also utilize Caballo Reservoir for food resources during the time that mergansers are present. A study was initiated in January 1992 to determine the foods utilized by the common merganser on Caballo Reservoir. Data collection began in the winter of 1993, and is being collected during the 1993-94 winter, as well. Data collected includes: numbers of common mergansers present, duration of wintering period, sex ratios, and prey species utilized. In addition, the diurnal time budget of the common merganser is being determined from quantified behavioral observations made at the reservoir. Preliminary analysis of digestive tracts show that gizzard shad *(Dorsoma cepedlanum)* is the predominant item in the merganser's diet. The size range of gizzard shad in the sample also suggests that there is dietary overlap between the bald eagles and mergansers. Presentation will include data on numbers of mergansers wintering at Caballo Reservoir, duration of stay, diet, and sex ratios.

NEW MEXICO'S FIRST ACADIAN FLYCATCHER *(EMPlDONAX VIRESCENS):* ACOUSTIC ANALYSIS FOR THE TIN-EARED FIELD ORNITHOLOGIST

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On October 14, 1993, Charles Black noticed an *Empidonax* flycatcher on the UNM campus in Albuquerque, giving what he thought was an unusually loud and emphatic call. Several others, including myself, were notified, and over the next day and a half, the bird was observed, photographed, and tape recorded. Vagrant *Empidonaces* generally are difficult to identify and more difficult to document. However, in the past few years computer software and usable hardware for instrumental acoustic analysis have become much more widely available and relatively easy to use.

Despite mediocre recording equipment and technique and the considerable noise of a nearby artificial waterfall, sonograms and spectra of the bird's call note, prepared on modest home computers with fairly inexpensive software, were sufficient to make a positive identification of this bird as an Acadian Flycatcher *(Empidonax virescens),* New Mexico's first-and only the second documented record west of the Great Plains in the past century. Maximum pitch and duration proved reliably measurable and significant for species identification. Indeed, *each* is almost sufficient to distinguish Acadian flycatcher from any other Empidonax of the U.S. or the visually most similar species of Mexico. Photographs of the bird and a short portion of one recording will be presented, along with a brief description of its quite characteristic behavior and some of the sonograms in comparison to reference ones. Finally, possibly profitable directions that sound recording and acoustic analysis for field birding and research will be discussed.

DOES REDUCED MALE ASSISTANCE IN DEFENDING OFFSPRING CONTRIBUTE TO THE COST OF POLYGYNY IN HOUSE WRENS?

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We investigated whether reduced male aid in defending offspring detracts from fitness of females choosing already-mated males in house wrens. Frozen snakes were placed at 23 nests of monogamously mated males and 12 "secondary" nests of bigamously mated males. Presentations were made during incubation stages of females attending focal nests. Snakes were placed at secondary females' nests when nests of their primary counterparts contained 5-9 day old young. Males are most attentive to primary nests during this period and should therefore be relatively inattentive to secondary mates and nests. Nevertheless, an equal proportion of monogamous and bigamous males discovered snakes within 15 min, and mean time to discovery did not differ with nest status. Monogamous and bigamous males also were equally likely to attack snakes physically once discovered. Monogamous males appeared no more likely to discover snakes than bigamous males for two main reasons. First, although monogamous males were near focal nests (i.e., < 10 m) more often than were bigamous males, monogamous males tended to stay out of view of nests for long periods of time. In contrast, bigamous males always went immediately to secondary nests upon arriving in their vicinity. Second, about one-third of monogamous males in this study spent much of their time during trials at the far edges of their territories advertising for second mates. Our experiment suggests that reduced male aid in defending nests against small, diurnal predators probably does not contribute to a cost of polygyny in house wrens.

NESTING SUCCESS OF WESTERN BURROWING OWLS *(ATHENE CUNICULARIA HYPUAEA)* IN NATURAL AND HUMAN-ALTERED SITES

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ABSTRACT: The reproductive success of 27 pairs of western Burrowing Owls *(Athene cunicularia hypugaea)* was studied in human-altered and natural areas on the campus of New Mexico State University. Pairs nesting in human altered areas had significantly more nestlings and fledged significantly more young than pairs in natural areas. The pairs nesting in natural areas had closer neighbors than did pairs in altered areas. The poorer reproductive success of natural-area pairs could, thus, have been due to increased inter-owl disturbance and/or to greater competition for food, which might have led to brood reduction or increased risks to young whose parents were away foraging. Despite the heightened possibility of disturbance and increased risk of mortality by automobiles, pairs nesting in burrows near frequent human activity may have had access to greater food resources (insects and bats attracted to street and other lights; access to the carcasses of grackles, blackbirds and doves in local campus roosts) than pairs nesting in natural areas.

OBSERVATIONS ON THE BREEDING AND NESTING BEHAVIOR OF THE ROCK WREN, *SALPINCTES OBSOLETUS*

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I studied a color-banded population of rock wrens *Salpinctes obsoletus* in Rinconada Canyon of Albuquerque's West Mesa area from March through August, 1992. My goal was to confirm that rock wrens are monogamous and to document some of their basic courtship and nest-building behaviors. I was particularly interested in investigating reports of a rock "trail" leading to the nests of rock wrens. My observations indicate that rock wrens are basically monogamous, although males had to be vigilant guarding their mates from intruding males from neighboring territories. Population turnover was high; by the end of my study period, nine of the twelve birds I had banded had disappeared and been replaced. Nest success was low (36%). The most successful breeding pair I observed attempted to raise three broods in the period from March through July; two of the three were successful. The wrens built new nests each time, and the male would take care of the fledglings from the first nest while the female began incubating the new clutch of eggs. Both sexes participated in building the nest, and ten out of the eleven nests I found had a pile of small, flat stones adjacent to the nest. I only observed the construction of one of these rock "trails," which was built entirely by the female. The vulnerable nature of rock wren nests, particularly those built in crevices close to the ground, and the frequency of predation on the nests has led me to support the hypothesis that these small piles of rocks in front of the nest may function as a deterrent to predators by reducing the size of the nest entrance.

PATTERNS OF COLORATION IN BIRDS AS A FUNCTION OF THE HABITAT

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Number of colors and type of dominant color in the Subfamily Thraupinae were used to evaluate the existence of a relationship between coloration patterns in birds and their environment. A significant difference in coloration patterns among three light habitats, defined by their structural geometry, was found in the tanager family. There is a larger number of colors in the body of the species found in a closed forest as compared with the ones in semiopen areas. Species with a higher proportion of greens in their bodies predominate in the closed forests, while those with blue in the open forests, species with a large proportion of blacks are more frequently found in the semiopen areas. The patterns obtained seem to be related with predation avoidance and communication among species. The importance of the habitat in the coloration of birds might set limitations on the distribution of birds across the geographical landscape.

AVIFAUNA AND CONSERVATION OF LOWLAND RAINFOREST, PAPUA NEW GUINEA

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New Guinea supports an avifauna of over 600 breeding species. Many of these birds inhabit its most diverse and threatened environment, lowland jungle. Lowland forest is the most poorly understood habitat and contains some of the least studied birds in all of New Guinea. To date, the natural history and ecology of unusual species, such as the southern crowned pigeon *(Gourea scheepmakeri),* or the double wattled cassowary *(Casuarius casuarius)* are only sparsely, if at all, documented by western science. I will present initial observations of an ongoing 5-year study to document the avifaunal and floral diversity in an undisturbed tract of lowland forest of Papua New Guinea. Research focuses on relatively unknown bird species, avifaunal composition, and frugivore/seed predator interactions. By involving members of local tribes and funding postgraduate students from both Papua New Guinea and abroad, the project is an encouraging

step toward the establishment of the country's first lowland forest reserve.

A PERSONAL NOTE ON THE HARD LIVES OF BIRDS AND ORNITHOLOGISTS

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The flap over the 1992 collecting of a Yellow-green Vireo near Rattlesnake Springs under dubious circumstances moved me to take a look at the shifting attitudes and techniques of professional and amateur bird students since the days of Audubon and his rivals. What is clear is that there was no conservation ethic in the 19th century, and that the concept of protecting bird populations grew very slowly in the present century. The rules under which birders operate today -- whether by law or common consent -- are a relatively recent development.

Looking back to the pioneers, John James Audubon is an excellent example. For his bird paintings he shot his models (and often ate them because he lived on the edge of poverty). Yet he was shocked by the wholesale slaughter of some birds -- plovers, which migrate north across the Gulf of Mexico, were greeted on the shore near New Orleans by shoulder-to-shoulder gunners. And he witnessed the arrival of a tremendous flight of Passenger Pigeons at a nesting site in Kentucky, only to be shot by the tens of thousands by market gunners who retrieved only a fraction of those they slew (pigs ate the rest). Protest was impossible, and he recorded his horror privately.

Birding as we know it didn't exist yet, but there were always a few well to-do collectors of skins, nests and eggs in those days. And serious collecting was done by the physicians who accompanied the troops sent to explore the huge territories we acquired from Mexico after the 1846-48 war. They collected specimens of flora and fauna, principally for the Smithsonian Institution, which later sent out its own collectors. The birds, of course, were shot.

Toward the end of the century birding as a serious avocation began to make strides, with enough followers to justify the Handbook of Birds of Eastern North America by Frank M. Chapman of the American Museum of Natural History, in 1895, and Florence Merriam Bailey's Handbook of Birds of Western North America, in 1902. Both were compact enough to carry into the field, and Chapman's was so popular that my copy, from 1907, is the seventh edition. Many of Chapman's descriptions depend on details evident only if the bird is in your hand, reflecting the idea that the only reliable identification had to be made over the barrel of a shotgun. He grudgingly accepted binoculars as a substitute, but only if the observer first studied specimens in a museum. He was much more comfortable with the gun. He advised the student to be content with only two to five examples of each species, and devoted four pages to the 45 steps in preparing a specimen. Nevertheless, the conscience was at work; he quoted the Smithsonian's eminent Charles Bendire, who admonished students not to collect nests and eggs. Today's birding ethic -learn to identify, look, don't shoot - was to await Roger Tory Peterson's first field guide in 1934.

The concept of protection was also slow to grow. The first official refuge was a small Florida island set aside by Teddy Roosevelt for breeding water birds. The National Audubon Society, founded in 1905, devoted itself to halting the slaughter of egrets to provide feathers for women's hats; our first environmental martyrs were two Audubon wardens slain by plume hunters.

Modern field identification was pioneered by Peterson's mentor, Ludlow Griscom, who announced in 1910, at the age of 20, that he could identify birds through binoculars -- and proved it to skeptics by naming numerous birds correctly before he brought them down with his shotgun. But as late as 1922 he admitted finding some species impossible to distinguish, a problem Peterson solved with his use of field marks. Through his long career Griscom remained a collector, shooting thousands of birds. Meantime Chapman had launched the Christmas bird count in 1900 as an offset to the bloody custom of going afield on December 25 to shoot as many

birds as possible.

I must draw on memory to describe what I believe was one of the first broad official moves to control bird-hunting. Market hunters on Long Island had long been shooting shorebirds to sell in New York's Fulton fish market, where restaurateurs shopped. Demand began to outstrip supply, and by about 1910 the gunners could supply only peeps -- which have about two bites of meat. Citizens evidently raised an outcry, and the state banned all shorebird hunting. Almost 50 years later, when my wife and I built a summer cottage on the south shore, shorebirds were still scarce, and some species never recovered. Hardest hit were Eskimo Curlews, which migrated in close-knit flocks. When some were shot, the others returned to check on the fallen. The gunners needed only patience to destroy the entire flock. This was the first step toward virtual extinction of the species, though recent sightings suggest that a few may still survive.

With the later Peterson guides, birding began to be transformed into everyman's avocation. Over the last half-century, we have learned to use binoculars, scopes and cameras. And, as wildlife enthusiasts, most of us have a knee-jerk reaction when any bird -- except perhaps those designated as game for hunters -- is deliberately killed. Professional ornithologists have mostly chosen to keep a low profile on the subject, rather than expend energy on endless explanations. Lately, however, some have tried to communicate. The best such effort I have seen, that of Louisiana ornithologist J. V. Rensen, Jr., appeared in Birding (April, 1993, pages 129-132). He estimates that scientists in the U.S. collect about 3,000 to 4.000 birds a year in all for specific research projects. From a variety of sources he cites North America's bird population estimates at 5 billion to 20 billion, and lists various estimates of human-caused mortality each year -- a minimum of 98 million hitting plate-glass windows, 50 million colliding with vehicles. The most shocking is from an article by Rich Stallcup in the Point Reyes Bird Observatory journal for spring-summer 1991 he estimates that domestic cats kill 4.4 million birds a day, with another huge total by those that have gone wild.

The above is only a sampling of professionals' data cited to stress the minute impact of the collection of specimens for research projects on a variety of subjects that can only be studied from preserved specimens. Remsen says that Louisiana ornithologists make a point of collecting only in areas where there are no birders. If you have access to Birding magazine, his wide-ranging article is well worth reading.

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A final note relating to Pete Dunne, a well-known writer and field birder on the staff of the New Jersey Audubon Society. I enjoyed a guided birding tour with him some years ago when a European shorebird had shown up in the state. Had he collected it, I asked. He said he had never shot a bird:

"I know that bird is biologically dead -- he can't get back home, and can't find a mate here, but my answer is still 'no' though I don't quarrel with those who disagree."

My feelings are the same. I couldn't kill a bird. But I don't quarrel with a scientist who collects as part of serious research.

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