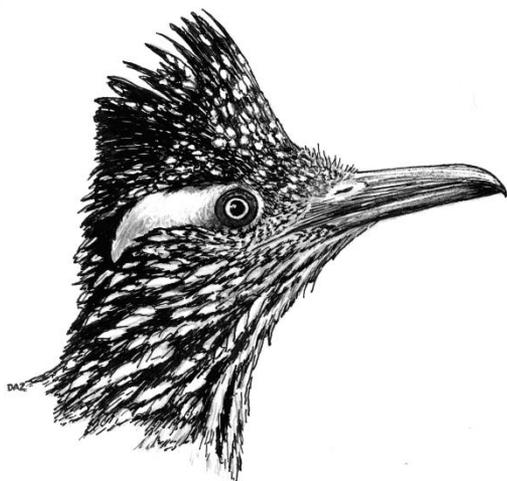


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THE HIGH COST OF HEIGHTENED SECURITY: ALLTHORN AND SWAINSON'S HAWK

STEVE WEST

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Abstract—Birds select nest sites for a variety of reasons not the least of which is protection against the risk of predation. Everything else being equal, pairs nesting at the tips of branches or in plants covered with spines or thorns should be more successful than those that select lower, unprotected sites in plants or on the ground. Reported here are the results of a Swainson's Hawk (*Buteo swainsoni*) nest in an Allthorn or Crucifixion Thorn (*Koeberlinia spinosa*), a plant that would seem ideal as a nesting substrate.

Commonly referred to as Allthorn, Crucifixion Thorn, or Crown of Thorns, *Koeberlinia spinosa* is a low bush or tree, occurring from southeastern California, southern Arizona, southern New Mexico and southwestern Texas, and south in Mexico to Oaxaca (Petrides and Petrides, 1992). It occurs in low areas with most plants below approximately 1,700 m (5,500 ft) in elevation (Carter, 2012). This species is many branched with numerous sharp thorns throughout the structure of the plant. Most of the plants are short but occasional plants in excess of 5 m are found with the tallest one from Boyce Thompson Southwestern Arboretum, Pinal County Arizona in excess of 7 meters (www.americanforests.org/our-programs/bigtree). The abundance of thorns would seem to make this an ideal site for nest placement but over many years I have been surprised by the low use of this plant for nesting birds. Reported here is the first report of Swainson's Hawk using Crucifixion-thorn as a nest site (England, A. S., et al., 1997) and results of that attempt.

While conducting studies of bird use of *Koeberlinia* a large stick nest was found north of Lake Avalon (UTM NAD83 550532 northing, 3552903 easting, elevation 1106 m.) Eddy County, New Mexico on 4 June 2012 with an adult Swainson's Hawk sitting nearby (Figure 1). As a nest had not been observed at that location before it was felt that it is probably an active Swainson's Hawk nest. Returning on 30 June a young bird was seen standing on the east side of the nest bowl. This observation was made from about 35 m and we did not approach any closer to avoid disturbing the young bird(s) at the nest.

The author and Tom Hines returned on 4 July to photograph the nest from a distance that would not disturb the nestling(s). As we approached the nest we saw what looked like a young bird resting on spines outside of the nest bowl and as we got closer it was obvious the bird was not moving. Approaching the nest we saw no movement and discovered the young bird was dead. We returned later in the morning with a ladder to extract the dead bird and check on nest contents.

With some difficulty the dead bird was removed from the tangle of thorns (Figure 2). It was punctured in several places including the top of the cranium. It wasn't possible to tell how long it had been dead but it appeared healthy on the 4th. Based on weight measurements taken of the dead bird, it appeared to be about 17 days old from hatching (Parker, 1976). The bird was punctured deeply on the scalp, several places in the chest and on both wings. While removing the bird, another young Swainson's Hawk was in the nest and it was approximately 50% larger than the one removed (Figure 3).

The nest was again examined on the 12th of July. From about 35 m, a large juvenile Swainson's Hawk was seen sitting in the nest while an adult soared overhead. The next visit on 27 July did not find any Swainson's Hawks in the nest area. An examination on the nest showed that the bowl was empty.

Allthorn is one of the more classic plants found in the Chihuahuan and other deserts. It would appear to be an ideal nesting site for a variety of birds but I have been surprised over the years how few active nests I have actually found there. Cactus Wren (*Campylorhynchus brunneicapillus*) and Verdin (*Auriparus flaviceps*) nests are occasionally found with Western Kingbird (*Tyrannus verticalis*) and Scissor-tailed Flycatcher (*Tyrannus forficatus*) being found less frequently. Perhaps birds which build open cup nests run the added risk of having to deal with an abundance of thorns. Future studies should look at the fledging rates of birds using Allthorn as the nesting substrate as compared to other spinescent plants.



Figure 1: Nest site of Swanson's Hawk (*Buteo swainsoni*) north of Carlsbad in *Koeberlinia spinose*.



Figure 2: Dead Swanson's Hawk impaled on *Koeberlinia spinosa* thorns.



Figure 3: Young Swanson's Hawk taken the same day as when dead one was found.

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ABSTRACTS FROM THE NMOS 54TH ANNUAL MEETING

The following abstracts are from the papers presented April 9th, 2016 at the 54th annual meeting of the New Mexico Ornithological Society held at the Crown Plaza Hotel in Albuquerque, New Mexico.

ORAL PRESENTATIONS

(In Order of Presentation; Presenters Underlined)

A Tale of Two Species: The Positive Feedbacks of Avian Seed Dispersal Between Pinon Pine (*Pinus* Sp.) And Juniper (*Juniperus* Sp.) - W. Jaremko-Wright, New Mexico Highlands University, 1005 Diamond St, Las Vegas, NM 87701

Piñon-juniper woodlands and savannas make up a significant proportion of New Mexico's forested landscapes. Two of the primary species of this vegetation type; Two-needle Piñon (*Pinus edulis*) and One-seed Juniper (*Juniperus monosperma*), rely heavily on seed dispersal by avian vectors. Since European settlement of the southwest (1860), these species have experienced dramatic range and population increases. Beginning in 2001 however, populations of *P. edulis* have experienced dramatic die-off events across the southwest due to drought and associated bark beetle (*Ips* sp.) outbreaks. *J. monosperma*, in contrast, has experienced little to no die-off events during this time

period. Frugivorous birds like thrushes (which disperse Junipers) and scatter-hording corvids (which disperse Piñons) select habitats based on availability of fruit, or nut-producing trees. As tree populations decline, so too may the populations of their respective avian seed dispersers. The positive feedbacks that govern these population fluctuations may occur quickly, or may be non-linear, with distinct tipping points as a population of trees declines. Declines in *P. edulis* populations may set in motion feedbacks of decline between both the tree and Pinyon Jay (*Gymnorhinus cyanocephalus*) populations, while the opposite may be true for *J. monosperma* and associated seed dispersers. This presentation reviews some relevant literature about the state of Piñon-juniper vegetation dynamics in New Mexico, population trends of Pinyon Jays, Mountain Bluebirds, and other thrushes and the implications for both tree and bird populations under climate change scenarios and land management practices.

Experimental Hypobaric Alters Inter-Specific Competitive Dominance in Elevational Replacement Hummingbird Species - A.M. Gaffney, J.J. McCormick, C.M. Mermier and C.C. Witt Department of Biology, Castetter Hall 1489, University of New Mexico, Albuquerque, NM 87131

If species differ in their tolerance of hypoxia, species interactions could change with elevation. Species distributions are predicted to shift upslope as climate warms, increasing exposure to hypobaric hypoxia, with unpredictable consequences for species interactions. Hummingbirds exhibit exceptional O₂ consumption rates which make them particularly susceptible to changes in the partial pressure of oxygen (PO₂). The lowland Black-chinned Hummingbird and montane Broad-tailed Hummingbird overlap at mid-elevations, ~2000-2500 m, in the southwestern United States. Black-chinned Hummingbirds tend to be competitively dominant over Broad-tailed Hummingbirds in contests for nectar resources. We captured adult males of both species from the zone of overlap to test whether interspecific competitive dominance would be affected by air pressure. We used a hypobaric chamber to simulate elevations ranging from 1600 m to 4600 m. To measure competitive dominance, naïve adult males of each species were allowed to compete for perches of differing heights. To evaluate whether species differed in their physical responses to hypobaric hypoxia, we quantified activity levels as simulated elevation increased within the hypobaric chamber. Our tests confirmed the interspecific competitive dominance of Black-chinned Hummingbirds at simulated low elevations; but the direction of dominance flipped at simulated high elevations. The low-elevation species experienced a more severe reduction in activity under hypobaric, suggesting hypoxia-induced respiratory stress. These results indicate that differential genetic adaptation to atmospheric pressure and its consequences for interspecific interference competition contribute to the maintenance of the elevational distribution limits. This suggests that warming will not shift distribution limits upslope.

Elevational Migration and Genetic Divergence in Elevational Generalist Songbird Species on the West Slope of the Peruvian Andes - C.R. Gadek, E.J. Beckman, A.C. Chavez, S.D. Newsome, and C.C. Witt, Department of Biology, Castetter Hall 1489, University of New Mexico, Albuquerque, NM 87131 and C.G. Galen, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024.

Tropical bird species tend to have narrow elevational distributions, reflecting climatic specialization, but a few are distributed continuously across broad elevational gradients. Exposure to different altitudes exerts diversifying selection due to PO₂ and temperature differences; therefore, elevationally widespread species should be in the process of diversifying. Conversely, gene flow counteracts local adaptation, so species that migrate elevationally should be more resistant to diversifying selection. Here we tested for elevational movements by measuring stable hydrogen isotopes ($\delta^2\text{H}$) in four elevational generalist species from the west slope of the Peruvian Andes. We used morphometric and mtDNA analyses to test for genetic differentiation between populations at high and low elevations. We found two different elevational patterns in stable isotope ratios ($\delta^2\text{H}$): (1) decline in $\delta^2\text{H}$ with elevation in two species that we hypothesized to be sedentary (House Wren and Rufous-collared Sparrow); and (2) no relationship with $\delta^2\text{H}$ in two species that we hypothesized to be migratory (Cinereous Conebill and Hooded Siskin). Morphometric analyses showed no differences between high and low populations for conebills, subtle differences for sparrows and wrens, and dramatic differences for siskins. mtDNA was undifferentiated between high and low populations in conebills and siskins, subtly differentiated in wrens, and dramatically differentiated in sparrows. Neither conebills nor siskins showed mitochondrial differentiation, consistent with the hypothesis that elevational movements hinder local adaptation. However, siskin populations demonstrated strong morphometric divergence despite elevational movements. In sum, elevational generalist species exhibit idiosyncratic ecological and genetic responses to elevation extremes.

Impacts of Solar Energy Development on Breeding Birds of the Nutt Grasslands, NM - D. Meliopoulos, and M.J. Desmond, Department of Fish, Wildlife, and Conservation Ecology, New Mexico State University, Las Cruces, NM 88001 and D. Daniels, Department of Applied Statistics, New Mexico State University, Las Cruces, NM 88003

The Nutt grasslands of southcentral New Mexico are one of the important remaining tracts of desert grasslands. This research examines the effects of a recent solar development in this valuable and threatened ecosystem on grassland bird populations. Our objectives were to quantify avian abundance, community composition, and abundance of individual species at varying distances from the solar facility. The study design entailed 100, 50 m radius plots within the solar facility and at 4 distance categories from the facility. Each distance category had 20 randomly selected plots spaced >200 m apart and from major roads, and >400 m from turbines on an adjacent

wind farm. We used negative binomial regression analysis to examine avian abundance in relation to environmental noise levels, soil temperatures, insect abundance, vegetation cover and various edges. Daily nest survival of Mourning Dove (*Zenaidura macroura*) nests and depredation rates were also evaluated using logistic-exposure models in Program MARK. Horned Larks (*Eremophila alpestris*) comprised 72% of all birds on the study site and 85% of the grassland bird guild. Overall, distance to solar facility did not impact grassland birds, but there was a significant interaction between distance to solar facility and year, indicating potential effects that were not detected in the first year, possibly due to the extreme dry conditions. Year and nest age influenced daily mourning dove nest survival more than distance to solar facility. We will discuss these results as well as recommendations for future research.

Distribution and Breeding Habitat Requirements of Bendire's Thrasher (*Toxostoma bendirei*) Throughout its New Mexico Range - C.T. Bear Sutton and M.J. Desmond, Department of Fish, Wildlife, and Conservation Ecology, New Mexico State University, Las Cruces, NM 88003 and M. Darr, Bird Program, Wildlife Management Division, N.M. Department of Game and Fish, Santa Fe, NM 87507

Bendire's Thrasher is an understudied and cryptic arid land obligate. Data from breeding bird surveys indicates that this species is experiencing among the greatest declines of any species in North America. It is estimated that 28.7% of the global population of Bendire's Thrasher occurs in New Mexico, where breeding bird surveys indicate a 4.4% annual decline in populations over the last 10 years, and a more recent analysis estimates the population will decline by 30% in the next 15 years and 50% within 20 years. The lack of knowledge about the Bendire's Thrasher, and the apparent population declines have led to an interest in increasing conservation efforts and basic ecological knowledge for this species. This research aims to answer some basic questions about Bendire's Thrasher in New Mexico while setting ground work for future conservation efforts. Our objectives were to determine the most effective way to survey for Bendire's Thrasher, improve the current understanding of Bendire's Thrasher distribution in the state of New Mexico, and describe the breeding territories of Bendire's Thrasher. We found 22 Bendire's Thrashers in 2015, mainly through the use of recorded song playback. Of the 22 Bendire's Thrashers we found, we mapped and completed vegetation surveys on 20 of their territories. We also completed 21 vegetation surveys on random points to compare with the vegetation on Bendire's Thrasher territories. Preliminary analysis of this data suggests Bendire's Thrashers select for breeding habitat with more tall shrubs and bare ground than random locations. We will present a preliminary data analyses from our first season of data collection.

Migratory Bird Treaty Centennial - K. Madden, Division of Migratory Birds, Southwest Region, U.S. Fish and Wildlife Service, Albuquerque, NM 87102

The first Migratory Bird Treaty was signed between the U.S. and Great Britain (for Canada) on August 16, 1916. This treaty and the three others that followed form the

cornerstones of our efforts to conserve birds that migrate across international borders. These treaties connect the Service with our federal, state, tribal and non-government partners, both domestic and international, who share our long, successful history of conserving, protecting and managing migratory bird populations and their habitats. Kristin will review the history of migratory bird conservation in North America, provide an overview of a few current landscape level programs, and update attendees on Centennial celebrations in New Mexico.

Similar Unusual Plumaged Gulls Found in Widely Separated Locations in North America Including San Juan County, New Mexico - T. Reeves, 5101 Piñon Hills Blvd., Farmington, NM 87402

Possible Ring-billed Gulls with atypical plumage and resembling one another have been found, photographed, and reported as follows: December 17, 2011, San Juan County Landfill, NM, one individual observed one day by Tim Reeves, posted on eBird; October 28, 2012, central Saskatchewan, one individual observed one day by unnamed photographer, posted on BirdForum by Alaina Lee; November 27 or 28, 2012, Pueblo Reservoir, Pueblo, CO, observed one day by Brandon Percival, posted on BirdForum by Tony Leukering; January 28, 2015, San Juan Landfill, NM, one bird observed on eight dates ending February 28, San Juan County Landfill by Tim Reeves, posted on eBird; April 2, 2015, Susquehanna River near Harrisburg, PA, observed one day by Frank Haas, posted on BIRDWGO1; February 27 and March 7, 2016, San Juan County Landfill, NM, one bird observed on two dates by Tim Reeves. General appearance variable from feather to feather, wing to wing, and among individuals: size of Ring-billed Gull, black bill with yellow tip, gape black, dark to pale eye, gray to black spotting on head, throat gray with markings, gray ring around neck, upper parts with scattered and solid colored white, black, brown, and gray overlapping feathers, tail gray above with dark median line and white below, breast gray, legs dark to medium brown, wings above and below gray with black or white areas, secondaries gray, black, or white, solid or multicolored, primaries alternating black or white or black with variable areas of white, under wing gray, black, and white.

An Overview of the Birds of the Middle Gila Valley of New Mexico - R.S. Shook, Department of Natural Sciences, Western New Mexico University, Silver City, NM 88061

The Middle Gila Valley of New Mexico (also known as the Cliff/Gila Valley) is defined from the confluence of Mogollon Creek and the Gila River, above the towns of Cliff and Gila, south approximately 35 km to the southernmost point of the Gila Bird Area. Over 325 species of birds have been documented in the Middle Gila Valley of which several species are either Federally or State Threatened or Endangered. Of these, the Middle Gila Valley supports one of the largest Willow Flycatcher (*Empidonax trailii extimus*) populations in New Mexico (a twenty-two year average of 149 territories), the densest Common Black Hawk (*Buteogallus anthracinus*) population in North America (an

average of 0.60 pairs/km along the 35 km valley), and perhaps the largest Yellow-billed Cuckoo (*Coccyzus americanus*) population in the western United States. These and other species of the Middle Gila Valley, such as the Gila Woodpecker (*Melanerpes uropygialis*), Bell's Vireo (*Vireo bellii*) and Abert's Towhee (*Melospiza aberti*) will be discussed.

First Through Fourth-Year Dispersal of Golden Eagles from Natal Areas Across the Colorado Plateau Region - J.R. Dunk, Department of Environmental Science and Management, Humboldt State University, Arcata, California 95521, K. Jacobson, Arizona Game and Fish Department – Raptor Wing Phoenix, AZ 85806, D.W. LaPlante, Natural Resource Geospatial, Yreka, California 96097, B.A. Millsap, U.S. Fish and Wildlife Service – National Raptor Coordinator Albuquerque, New Mexico 87103, R.K. Murphy, U.S. Fish and Wildlife Service – Division of Migratory Birds, Albuquerque, New Mexico 87103, D.W. Stahlecker, Eagle Environmental, Inc., Santa Fe, New Mexico 87508, and B. Woodbridge, U.S. Fish and Wildlife Service – Western Golden Eagle Team Yreka, California 96097.

Knowledge of age-specific dispersal by Golden Eagles (*Aquila chrysaetos*) from natal areas is needed to help manage the species in North America. During 2010-2015, we used satellite telemetry to document pre-adult dispersal by Golden Eagles from natal areas across the Colorado Plateau Region of the southwestern United States. Here we report on (1) first-year dispersal timing, distance, and age, sex, and area influences; and (2) relationships between first-year patterns and those of second through fourth years. Fifty-six Golden Eagles tagged at age ~55 days during 2010-2014 and that subsequently dispersed yielded hourly ± 20 -m locations for ≥ 6 months. Most (>75%) eagles dispersed from natal areas during October-early December. By the subsequent early spring, 70% were within 120 km of natal areas and 25% had moved farther; most that dispersed >500 km died within their first year. We found no relationship between dispersal date and sex or age, though long-distance dispersers left natal areas earlier. Eagles from the more arid part of the study area dispersed greater distances in their first year of life. Overlap of second- and third-year, early spring home ranges (HRs; 95% minimum convex polygon) with first-year HRs was 27% and 71%, respectively. Distances between centroids of natal areas and of early spring HRs differed little between first and second or third years. Our findings suggest first-year dispersal patterns strongly determine spatial patterns in subsequent pre-adult years. Most eagles stayed within natal landscapes, indicating such areas are critical habitat for more than just breeding pairs.

Potential Heavy Metal Exposure to Snowy Plovers Breeding in the Southern Great Plains - H.M. Ashbaugh and W.C. Conway, Department of Natural Resources Management, Texas Tech University, Box 42125, Lubbock, TX 79409, D.P. Collins, Migratory Bird Office – Region II, U.S. Fish and Wildlife Service, Albuquerque, NM 87103, D.A. Haukos, U.S. Geological Survey, Kansas Cooperative Fish and Wildlife Research Unit, Kansas State University, Manhattan, KS 66506, C. E. Comer, Arthur

Temple College of Forestry and Agriculture, Stephen F. Austin State University, Nacogdoches, TX 75962

Interior Snowy Plover (*Charadrius nivosus*) populations are declining due to deteriorating habitat quality, poor juvenile survival, and declining nest success. Currently, Snowy Plover exposure to potential environmental contaminants remains unknown, but may contribute to declining breeding populations in saline lake and alkali flat habitats of the Southern Great Plains. Using inductively coupled mass spectrophotometry, we estimated heavy metal (V, As, Cd, Pb, and Se) concentrations in Snowy Plover blood (to reflect recent potential exposure) and tiger beetles (Cicindelinae; to reflect potential prey-related exposure pathways) from breeding habitats in Texas, Oklahoma, and New Mexico. Tiger beetles are predaceous as both adults and larvae, and should reflect potential cumulative heavy metal availability to breeding Snowy Plovers. For all metals, blood and tiger beetle concentrations were below reported background levels, except for Se, where 85 % of snowy plover blood samples were quantifiable and greater than reported toxicity thresholds. Although Se concentrations in tiger beetles were below reported toxicity thresholds for invertebrates, censored regression modeling indicated that tiger beetle concentrations were positively related to snowy plover Se concentrations. Although potential biomagnification pathways are not explicitly known, snowy plovers appear to be bioaccumulating and biomagnifying Se through prey consumption. Chronic exposure to Se can result in reproductive failure, developmental malformations, and mortality and may be a factor in long term population declines. Currently, few data on regional contaminants exist, and this research reveals the significance of continuing monitoring and investigations into the effects of these contaminants on regional Snowy Plover persistence.

Evidence of Mixing of Two Greater Sandhill Crane Populations - D.P. Collins, U.S. Fish and Wildlife Service, Migratory Bird Office – Region 2 P.O. Box 1306, Albuquerque, New Mexico 87103, J.M. Knetter, Idaho Department of Fish & Game, 600 S. Walnut, PO Box 25, Boise, ID 83707, C.M. Conring,, B.A. Grisham, and W.C. Conway, Department of Natural Resources Management, Texas Tech University, Goddard Building , P.O. Box 42125, Lubbock, TX 79409, S.A. Carleton, U.S. Geological Survey, New Mexico Cooperative Fish and Wildlife Research Unit, New Mexico State University, Las Cruces, NM 88003, and M.A. Boggie, Department of Biology New Mexico State University, Las Cruces, NM 88003

Population delineation throughout the annual life cycle is needed to formulate regional and national management and conservation strategies for migratory birds. Despite being well studied continentally, connectivity of Sandhill Crane (*Grus canadensis*) populations throughout the western portion of their North American range remains poorly described. Our objective was to determine if intermingling occurs among any of the western greater Sandhill Crane populations (Rocky Mountain Population, Lower Colorado River Valley Population, and Central Valley Population) in the intermountain west. Capture and marking occurred during winter and summer months on private

lands in California and Idaho as well as on three National Wildlife Refuges (Bosque del Apache, Cibola, Sonny Bono Salton Sea National Wildlife Refuges). A majority of marked cranes summered in traditional intermountain west breeding areas. A handful of cranes summered outside of traditional breeding areas in west central Idaho around Cascade Reservoir near Donnelly and Cascade, Idaho. A crane colt captured during the summer survived to winter migration and moved south to areas associated with the Rocky Mountain Population. The integration of the crane colt captured near Donnelly, Idaho, provides the first evidence of potential intermingling between the Lower Colorado River Population and Rocky Mountain Population. Further evidence of intermingling was observed when a crane marked in Arizona presumed to be an LCRV crane stopped over in a traditional RMP fall staging area. We suggest continued marking and banding efforts of all three western populations of cranes will accurately delineate population boundaries and connectivity and inform management decisions.

* * *

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The New Mexico Ornithological Society was organized to gather and disseminate accurate information concerning the bird life of New Mexico; to promote interest in and appreciation of the value of birds, both aesthetic and economic, to further effective conservation of the state's avifauna; to facilitate opportunity for acquaintance and fellowship among those interested in birds and nature; and to issue publications as a means of furthering these ends.

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