

# Presentation Abstracts

## **The Arizona Bald Eagle Management Program**

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For more than 30 years, Arizona's nesting bald eagles have been monitored, studied, and conserved by numerous partners, represented as the Southwestern Bald Eagle Management Committee since 1984. The Arizona Game and Fish Department has been the lead agency in management efforts for the species since 1991, annually conducting nest searches and productivity assessments, demography studies (banding nestlings and identifying banded adults), seasonal closures, the Arizona Bald Eagle Nest Watch Program, mortality and threat tracking, and coordinating a winter count. The bald eagle breeding population in Arizona has increased 600% since 1978 and expanded into new areas of the state. Productivity (fledged young per occupied breeding area) averaged 0.92 from 2002 to 2011. In 2011, 55 of the 62 known breeding areas were occupied and fledged 56 young. Breeding density varies from as high as one breeding area per 5 km of river on the lower Verde River, to one per 22.4 km on the upper Verde and Salt Rivers. Of 152 breeders in 1987-2003, 81 were of undetermined origin (unbanded or unidentified), 70 were Arizona-born, and 1 was born outside of Arizona. Most adults (86%) breed within 150 km of their natal area, with females (average 109.7 km, n=21) dispersing farther than males (45.1 km, n=35). The average tenure in a breeding area for an adult is 9.8 years (n=83).

## **Shades of Gray: Changes in Abundance of Gray Hawk Nests on the San Pedro River over 13 Years**

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We conducted surveys for Gray Hawks in the San Pedro National Riparian Conservation Area (SPRNCA) in southeastern Arizona from 2010-2011. Gray Hawks have been historically studied in this area, which gives us a unique opportunity to study changes in their distribution and abundance over time. When compared to previously collected data, Gray Hawk territories have increased from an average of 25 territories per year from 1995-1997 to an average of 54 territories per year from 2010-2011. While we did not find a strong relationship between mesquite height and number of young produced per nest, our data express a pattern in which nest initiation date is correlated with number of young produced per nest and that nests at lower elevations also initiate earlier in the season. With these patterns, we argue that nest initiation date could be used as an indicator for habitat quality with Gray Hawks. In addition, previously unoccupied habitats within the SPRCA are currently successful breeding habitats, so we will use NDVI to assess whether this change is due to

Gray Hawks occupying marginal habitats, or if the riparian vegetation within the SPRNCA is expanding.

### **Detection Rates of Thrashers Vary Between Seasons and Survey Methods**

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Because detection probability affects counts and population estimates of wildlife populations, sources of variation in detectability should be explicitly addressed and quantified. In this study, we examined detection rates of Le Conte's Thrasher (*Toxostoma lecontei*, LCTH) and congeners between two seasons [winter (January-February) and spring (April-May)] and two survey methods (passive observation and call-broadcast). Surveys were conducted at stop locations of 15 Breeding Bird Survey (BBS) and 3 *ad hoc* routes within the Sonoran/Mojave BCR in Arizona. LCTH detection rates were lowest (0.01 bird/route) during spring passive surveys, moderate (0.04 bird/route) during winter passive surveys, and greatest (0.08 bird/route) during winter playback surveys. Other thrasher species responded vigorously to the broadcast LCTH song. Crissal Thrasher (*T. crissale*) detections doubled (winter) and quadrupled (spring) in response to the LCTH song and, in general, were greater in winter than spring. Curve-billed Thrasher (*T. curvirostre*) detections increased in response to the LCTH song, but during passive surveys this species was 50% more detectable in spring than winter. Our results suggest that data collected in April and May, when BBS routes are typically conducted, may provide biased counts and spatial distributions of Le Conte's and Crissal Thrashers. Development pressure on thrasher habitat has increased our need for unbiased population estimates and spatial occurrence data for these species. We recommend targeted surveys occur when detectability is highest (January-February). Though broadcast surveys significantly improve detection rates for thrashers, surveyors should apply this method judiciously to avoid disturbing these species during the breeding season.

### **Mexican Ducks (*Anas platyrhynchos diazi*) in Arizona: An Overview of Identification and Distribution**

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The Mexican Duck, *Anas platyrhynchos diazi*, though apparently declining within its historic range in Mexico, appears to be expanding its range within the United States. Within Arizona the taxon is known mainly from the southeast corner of the state, but individuals have been found throughout Arizona in recent years. Identification of Mexican Ducks in Arizona is complicated, with a large range of variation including intergrades with "Northern" Mallard. Though the Mexican Duck is currently considered a subspecies of Mallard, recent genetic data suggest it is more closely related to other monochromatic Mallard-like species. This evidence suggests that the Mexican Duck deserves specific rank, which has renewed interest among ornithologists and birders. We will discuss identification criteria as well as the recent range expansion and current distribution of this taxon in Arizona.

## **First Statewide Surveys of Wintering Mountain Plovers in Arizona**

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Like many grassland species, Mountain Plover populations have declined across their range and are a species of concern in most states and provinces in which they occur. The winter distribution and abundance of these plovers in Arizona is quite incomplete. With support from the U.S. Fish and Wildlife Service and similar efforts in southern California, AZFO coordinated the first ever statewide surveys for Mountain Plovers during the winter of 2010-2011. The number of plovers detected was fewer than expected, but similar poor results were also obtained in California, suggesting wintering populations in the Southwest were well below normal levels this past winter. There is potential for conducting additional surveys during the winter of 2011-2012 in an effort to assess current populations levels.

## **POSTER ABSTRACTS**

### **The Probable Breeding of Cassin's Sparrow (*Peucaea cassinii*) in Pinal County**

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Before the summer of 2006 there was no documented evidence of Cassin's Sparrow breeding in Pinal Co. Following an especially wet monsoon season that summer, Cassin's Sparrow was discovered singing and skylarking in an extensive semidesert grassland area from northern Pima Co. to east of Oracle in Pinal Co. The skylarking behavior of males suggested the presence of females and probable nesting. In the following five years surveys were conducted to determine whether the 2006 expansion was simply the result of unusually high rainfall one summer or was the discovery of a population that may have been previously undetected. In those five years Cassin's Sparrow was detected in some of the areas where it had been observed in 2006, but in no years was it found in as wide an area. The number of skylarking males varied each year, but generally was most concentrated along Willow Springs Road northeast of Oracle Junction, with the greatest concentration in this area in 2008. Of the five years the greatest dispersion was in the summer of 2011. It is difficult to determine if some of the Cassin's Sparrows in this area are resident year-round as they are usually silent and elusive when not breeding. However, in the spring of 2009 a male Cassin's Sparrow was heard singing along Willow Springs Road as early as March. No nests have yet been discovered, but extensive breeding behavior in this appropriate habitat suggests that nesting is taking place and may well have been the case for many years.

## Arizona Golden Eagle Management

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The Golden Eagle population in the western United States has been recently estimated at around 30,000 individuals, however, some evidence suggest numbers are declining. With the U.S. Fish and Wildlife Service's newly established Bald and Golden Eagle Protection Act permitting process coupled with concerns for possible population declines, the states need current information on golden eagle breeding distribution, occupancy, and productivity. In Arizona, very little current information exists. In order to start filling this data gap, the Arizona Game and Fish Department, in cooperation with the Bureau of Land Management, initiated a 2-year helicopter flight survey to document potential golden eagle nesting sites throughout the state. The 2011 surveys concentrated on surveying the western third of Arizona's cliff nesting habitat. These cliff nesting surveys will continue during spring 2012 to cover high priority areas in central and eastern Arizona. Pending future funding, occupancy and reproductive assessments will be conducted beginning in the spring of 2013. Any information from birders regarding Golden Eagle nest locations and sightings can help refine the state population estimates. Golden eagle sighting information during the breeding season (March to July) and potentially active nests can be reported at [goldeneagle@azgfd.gov](mailto:goldeneagle@azgfd.gov).

## **Rapid effects of capture and handling on circulating hormone concentrations in the male Rufous-winged Sparrow, *Peucaea carpalis***

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Many studies on wild birds involve the capture of these birds for the purpose of marking and measuring morphological and physiological parameters. These studies rarely examine the physiological effects of capture and subsequent restraint or the duration of these effects. We measured circulating concentrations of the glucocorticoid corticosterone (**CORT**, which in birds is rapidly released in response to stress) and of testosterone (**T**, the testicular hormone that controls male reproductive behaviors and morphology) of adult male Rufous-winged Sparrows, *Peucaea carpalis*, sampled during their summer reproductive season at the Santa Rita Experimental Range, Pima Co., AZ. Based on previous work, we predicted plasma CORT and T to increase and decrease, respectively, in response to capture and handling. Sparrows were caught using playback songs and Japanese mist nets, bled within 2 minutes to measure initial (baseline) hormone levels, held in individual breathable cloth bags, bled again 5, 10, 20, or 30 min later to measure stress-related hormone levels, and then marked and released. As predicted, capture and handling markedly increased plasma CORT. The experimental procedure was also associated with a 30-50 % decrease in plasma T that was detected as early as 10 min after capture and persisted until birds were released up to 30 min later. The relative magnitude of the decrease was positively, although not linearly, related to baseline plasma T. Sparrows were then recaptured 1-7 hours after release to determine the duration of the stress-associated decrease in plasma T. When re-captured using the same method as for the initial capture, birds still had depleted plasma T and, from this standpoint, did not show signs of recovery relative to when they were released after the first capture. Thus, capture and handling

markedly affected plasma hormones. In the case of plasma T, the effect was persistent and individually but predictably variable. The implications of these findings require further study because it is unknown whether the observed stress-related hormonal changes are associated with behavioral and/or physiological effects that might compromise short-term survival and/or reproductive success. Support: National Science Foundation Award 1026620 to P.D.

### **The influence of urbanization on the reproductive phenology and morphometrics of the Abert's Towhee**

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To successfully breed, birds must time their seasonal reproductive activity to coincide with peak food abundance. A mistiming between reproduction and peak food availability can have severe fitness costs. Consequently, the timing of reproduction (reproductive phenology) is considered one of the major life history traits reflecting the adaptation of birds to local environmental characteristics. The strongest, most consistent pattern emerging from studies of the effects of urbanization on birds is that urbanization is associated with advancement of reproductive phenology. We tested the hypothesis that urbanization of Phoenix, AZ advances the onset of seasonal breeding in urban Abert's Towhees, *Melospiza aberti*. We measured testis volume and cloacal protuberance width of adult male towhees caught in urban localities of the Phoenix metropolitan area and outlying desert localities. We also measured body mass, tarsus length, and fat stores to investigate whether urbanization is associated with morphological differences in towhee populations. The data suggest that Urbanization of Phoenix is not associated with differences in body mass, tarsus length, or fat stores. However, testis volume and cloacal protuberance suggest that urbanization of Phoenix is associated with an advancement of reproductive phenology of urban towhees. The mechanism responsible for this difference is unknown and requires further study. We are currently testing the hypothesis that this difference in reproductive phenology is a result of greater food abundance in urban areas, and will present data from a captive study supporting this hypothesis. Support: Central Arizona Phoenix – Long-Term Ecological Research (CAP LTER) grant to S.D.

### **Corticosterone's relationship with parental investment in a Sonoran Desert passerine, the Rufous-winged Sparrow, *Puecaea carpalis***

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The hormonal control of parental investment in birds, and particularly the factors that control variation in parental care, are poorly known. This control is hypothesized to involve several hormones including corticosterone (CORT). Corticosterone is secreted into the blood in response to stress, inhibits the activity of the reproductive system, and promotes behaviors that increase survival, such as escape and foraging that draw parents away from maintenance of the clutch. We used Rufous-winged Sparrows (RWSP) to investigate whether plasma initial (i.e., in non-stressed birds) CORT or stress-induced (SI) CORT predicts parental investment. We hypothesized that (1) RWSP modulate the stress response to control parental decisions and (2) plasma initial and/or SI CORT affect(s) parental investment, with higher CORT being associated with less investment. We predicted

that parents with higher plasma initial CORT would invest less in their offspring – as estimated by fewer eggs per nest and less care towards the eggs - than parents with low plasma initial CORT. We also predicted that the SI increase in plasma CORT would be smaller in males with a higher investment in offspring than in males with few offspring and lower investment. We located RWSP nests at the Santa Rita Experimental Range, recorded the number of eggs contained in each nest to estimate parental investment, and measured hatching success. Parental investment is assumed to affect reproductive success, and higher investment in incubation would, therefore, result in more successfully hatched chicks. Males, which like females provide parental care, were caught using Japanese mist nets and bled within minutes of capture to determine plasma initial CORT. Birds were then exposed to a standard non invasive stress (holding in a breathable cloth bag for 30 minutes) to induce a stress response, and bled again to determine plasma SI CORT. The procedure was repeated on the same birds after eggs hatched. Our hypotheses were not supported. Plasma initial CORT was not correlated with the investment of the parents as estimated by clutch size or number of chicks hatched. The SI increase in plasma CORT did differ between parents with different sizes of clutch and thus investment, but in the opposite direction than predicted: the more eggs laid, the higher the SI increase in plasma CORT. The SI increase in plasma CORT increased as a function of the number of chicks but the significance of this observation is unclear as relatively few nests were found to contain chicks.

### **Bird Monitoring Expeditions to Mexico, 2008 and 2010**

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The Sonoran Joint Venture in collaboration with Western Field Ornithologists conducted Bird Monitoring Expeditions, to the Reserva Biosfera Sierra La Laguna in Baja California Sur in 2008 and to the Area Protegida Flora y Fauna Sierra Alamos y Rio Cuchujaqui near Alamos, Sonora in 2010. These are five days in the field using intensive bird monitoring protocols. Similar to the Arizona Coordinated Bird Monitoring Program, we used area search with double sampling and the national nightjar protocol along with other techniques. Professional biologists and citizen scientists from both the U.S. and Mexico volunteer a week of their time to add to the bird monitoring data for Mexico.