

Summary of 2007-2008 San Pedro Riparian National Conservation Area Research

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Glenn Johnson and Charles van Riper III

Summary of Research Objectives: To quantify bird abundance and diversity occurring in riparian areas along the upper San Pedro river in relation to vegetation characteristics, stream morphology and hydrology, and especially the effects of the thriving beaver (*Castor canadensis*) population that was re-introduced to the San Pedro from 1999-2001. We are currently analyzing and writing up results from our efforts from 2005-2007, where we collected data at over 300 bird and vegetation sampling sites throughout the S.P.R.N.C.A. and northern Sonora, including many sites that were surveyed by other researchers prior to beaver re-introduction. Preliminary results indicate that the beavers are currently found in areas with relatively higher bird diversity and high abundance of riparian obligate species, and on-going analyses will determine what other vegetative and hydrological factors can explain differences in the riparian bird community along the river, and if the bird community where beaver have established have undergone changes in any way different than sites without beavers.

Joseph Fontaine

Populations of Neotropical migratory birds continue to decline throughout much of North America. In an effort to help identify why, the University of Arizona and the USGS Sonoran Desert Research Station, in conjunction with the Bureau of Land Management, have developed a research project along the San Pedro River exploring migration patterns of Neotropical migrant birds. While extensive effort has traditionally focused on summer productivity and over winter survival of migrant birds, only recently have conservation biologists begun to understand the importance of migration pathways, stopover behaviors, and stopover habitat quality in the long-term viability of migrant populations. As a first step to increasing our understanding of the factors limiting populations of Neotropical Migration, we are attempting to identify critical migratory habitats and corridors along the Arizona-Mexico border. Within these habitats, we are furthering our understanding of migration patterns by investigating how invasive plants, hydrology, food availability, plant phenology, competition, and predation risk influence migratory behaviors as well as migrant populations. For more information on what we do, and how you can help visit our web sites:

(<http://fontaine.joseph.googlepages.com/neotropicalmigrantbirds> and <http://sbsc.wr.usgs.gov/sdrs/>).

Research sponsored by The Institute for Bird Populations

Peter Pyle and David F. DeSante

Summary of research objectives: Many species of western North American birds, including a number of bird species of conservation concern that breed in USFWS Region 6, leave their breeding grounds and migrate to discrete locations in the “Mexican monsoon region” of the southwestern deserts, where they stop and undergo molt before continuing migration to their wintering grounds. Because molting is one of the most energy-demanding events within the annual cycle of birds, the maintenance of high quality “molt-migration-stopover” habitat for these species is crucial for managing their populations. Virtually nothing, however, is known of these birds during this important moltmigration period. In order to investigate the ecology of these molt-migrants and to begin to identify critical habitat requirements of their molt-migration-stopover sites, we propose to conduct a one-year pilot study that will include extensive surveys and the operation of three mistnetting and banding stations in the Mexican monsoon region of southern Arizona during June-September 2006. Our ultimate goal is to utilize this information to formulate conservation and management strategies to preserve and enhance critical molt-migration habitat, in order to help reverse population declines and maintain stable or increasing populations of those species that undergo molt migrations and breed in USFWS Region 6.

Research sponsored by Arizona State University

Kathleen Lohse

Summary of research objectives: By virtue of their key position at the interface of aquatic and terrestrial ecosystems, riparian zones are “hot spots” of diversity and ecosystem processes. One process that can benefit waterquality is denitrification, which results in nitrogen (N) removal from riparian soil and groundwater. Throughout the western United States, human extraction of groundwater and regulation of riverflows have dramatically altered hydrologic regimes, with potentially significant consequences for coupled river-riparian biogeochemistry. Damming, groundwater pumping and surface water diversions reduce hydrologic connectivity, making stream flow intermittent, lowering groundwater tables, and inadvertently increasing the likelihood of undesired riparian regime shifts from native *Populus fremontii*-*Salix gooddingii* (cottonwood-willow) galleries to non-native *Tamarix* (*Spp*) (saltcedar)shrub. Although the hydrological conditions leading to this regime shift are well known, information is lacking about how riparian ecosystems function under these altered hydrologic states. The role of riparian species in modulating function is also unknown. Thus, the research objective is to understand and predict how

changes in hydrological/ecological regimes alter critical river-riparian ecosystem function and services.

Research sponsored by Northern Arizona University

Kenneth Etzel and Jennifer A. Holmes

Summary of research objectives: Raptors are considered the apex of food chains and are therefore exceptional indicators of ecosystem health. The Common Black-Hawk (*Buteogallus anthracinus*), Gray Hawk (*Asturina nitida*), Mississippi Kite (*Ictinia mississippiensis*) and Zone-Tailed Hawk (*Buteo albonotatus*) are four species of diurnal raptor that depend on riparian habitats for breeding in Arizona and can serve as sensitive indicators of riparian ecosystem health. The overall goal of this project is to meet the need for a better understanding of the current status, population size, and demographics of riparian raptors in Arizona, including the Common Black-Hawk, Gray Hawk, Mississippi Kite, and Zone-Tailed Hawks, and the habitats upon which they depend. We will examine the habitat needs of these species in order to assess their value as indicators of riparian health, with the goal of identifying parameters that can serve as target, “desired conditions” for riparian habitat restoration.