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# VERMILION FLYCATCHER

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## Navigating toward a Sustainable Future



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# Research and Recovery of Ferr Pygmy-Owls in the Sonoran De

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For nearly ten years, efforts to protect a small population of Ferruginous Pygmy-Owls near Tucson pitted environmentalists against developers in a heated clash reminiscent of the controversy that surrounded the Spotted Owl in the Pacific Northwest.

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In 1997, when the US Fish and Wildlife Service listed the Pygmy-Owl as endangered under the Endangered Species Act, we had little biological information available to guide the debate. Efforts to survey large portions of southern Arizona began soon after in 1998 and 1999. We soon discovered that Pygmy-Owls were rare and that most occupied sites were in xeroriparian woodlands and adjacent desert scrub and grassland with saguaros, as well as in native and exotic vegetation on the outskirts of northwest Tucson. However, we found very few Pygmy-Owls along major river valleys where they were described as common in the early 1900s, probably due to the loss of large riparian forests. By 2000, there was still little information on the status of Pygmy-Owls in adjacent Mexico and on important habitat attributes.

Much has changed over the last ten years. In 2006, the US Fish and Wildlife Service (USFWS) removed Pygmy-Owls from the endangered species list for reasons unrelated to recovery. Soon after, a coalition of conservation organizations petitioned the USFWS to relist the owl. A decision is expected sometime during 2010.

We now know a lot more about the ecology and genetics of Pygmy-Owls, which should help guide conservation, recovery, and urban planning in Arizona. Most importantly, in spite of changes in its legal status, efforts to augment and recover populations of Pygmy-Owls began immediately after it was delisted.

Recent recovery efforts have taken two forms: a passive approach to improve local habitat conditions by erecting nest boxes on the Buenos Aires National Wildlife Refuge in areas that are otherwise suitable but that lack nest cavities, and a more active approach by the Arizona Game and Fish Department (AZGFD) to breed Pygmy-Owls in captivity. Since 2006, AZGFD has removed 11 Pygmy-Owls (mainly juveniles) from the wild in Arizona and they have produced six fledglings over three breeding seasons, none of

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which has been released into the wild. Additional attempts at captive breeding will be needed before these efforts can contribute to recovery in Arizona.

So what have we learned from recent research and what are the implications of these results? In 2006, Glenn Proudfoot provided compelling evidence that populations in Arizona are genetically similar to those in adjacent Sonora and Sinaloa, and different from those in southern Texas and elsewhere in Mexico (see distribution map, right; map provided by http://bna.birds.cornell.edu and the Cornell Lab of Ornithology). These findings will form the basis for revising the current taxonomy and may affect the USFWS decision on listing the species as endangered.

Although efforts to systematically monitor populations of Pygmy-Owls in Arizona are lacking, only 37 adults have been found since 1999 and only approximately 20 adults have been found during any year since 2003, suggesting that populations have recently declined. Pygmy-Owls are now extirpated from the Tucson area; AZGFD removed the last-known Pygmy-Owl in 2006 and the last verified record of a wild bird was near Red Rock in 2007. In the past two years, Pygmy-Owls have occurred in Arizona, in Organ Pipe Cactus National Monument, in and around the Altar Valley, and on the Tohono O'odham Nation.

In 2000 and 2001, I documented a population of Pygmy-Owls in northern Sonora that can provide an important source population for augmenting numbers in Arizona. At the same time, I also began to monitor populations and have since estimated declines in abundance totaling approximately 27 percent over 10 years. The structure of the vegetation at sites I have monitored has been largely stable, and drought seems to be driving the decline. Declines have been greater at sites with smaller areas of riparian vegetation and less structural complexity of riparian vegetation, fewer potential nest cavities, and greater land use by humans. I have also found that reproductive performance is higher in nest cavities with smaller entrances, greater height, and larger internal volume, and that these resources at small spatial scales are extremely important even relative to resources at larger spatial scales in areas up to 6 acres around nests. My studies of Pygmy-Owl movement and dispersal indicate that individuals tend to avoid large vegetation gaps when dispersing from their natal sites. The probability a dispersing Pygmy-Owl will pair, settle, and establish a territory declines as vegetation disturbance in the landscape surrounding habitat patches increases.

Findings from recent research have important implications for recovery of Pygmy-Owls in Arizona. While managers tend to consider declines due to drought as being beyond our control, high-quality habitat may buffer the effects of drought. Therefore, maintaining and enhancing riparian woodlands and the abundance of potential nest cavities should help because populations in areas with these characteristics have declined less even despite drought. While conservation planners often work with general models or descriptions of habitat as targets for conservation and mitigation, resources at small spatial scales are of enormous importance to reproduction by Pygmy-Owls. Therefore, we may need to re-evaluate these general habitat targets to ensure they are consistent with the actual resources and conditions that promote the persistence and growth of populations of Pygmy-Owls. At larger regional scales, landscape structure such as vegetation disturbance affects movements by Pygmy-Owls. Therefore, linkages that foster dispersal among existing or soon to be restored patches of habitat may be essential for recovery.

Finally, we should consider restoring mesquite woodlands at large scales along major drainages in southern Arizona, and translocating owls from areas in Sonora where we know abundance has been stable or increasing in recent times. Priority sites for translocation will be those that owls have recently occupied or that are now occupied by unpaired owls, and those that have habitat features known to foster high levels of demographic performance by Pygmy-Owls. Experienced adult owls from adjacent Mexico are a better source for bolstering captive populations than juveniles from Arizona, which may be essential for local persistence. Good future prospects for populations of Pygmy-Owls in Arizona will require focus, effort, resources, and public support.

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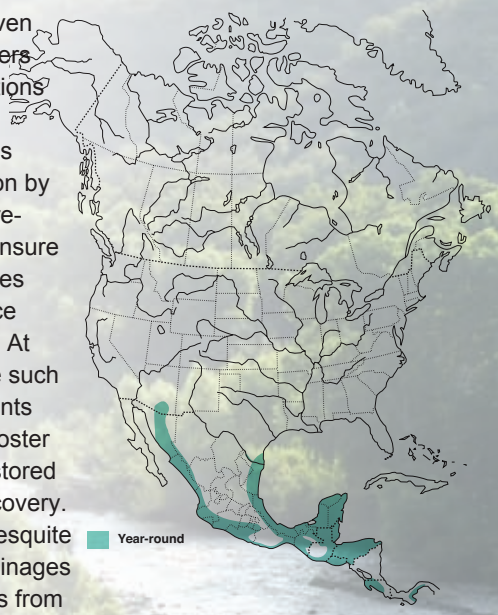


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