



SONORAN DESERT CONSERVATION PLAN STEERING COMMITTEE

EDUCATION SESSION #2

**June 26, 1999 (6:00 - 8:30 p.m.)
Arizona-Sonora Desert Museum (Gallery)
2021 N. Kinney Road
Tucson, Arizona, 85743**

1.

The Cactus Ferruginous Pygmy-Owl

The Pygmy-Owl Issue in Perspective

Dr. Lisa Harris

The Pygmy-Owl in Historical Context

Russell Duncan

THE PYGMY-OWL ISSUE IN PERSPECTIVE

Lisa K. Harris, Ph.D, President of Harris Environmental Group, Inc.

The Arizona population of the cactus ferruginous pygmy-owl was listed as an endangered species under the Endangered Species Act a mere two years ago. I thought that was interesting because my life has been obsessed with it over the last two years and it seems like a lot longer than that. At the time of its listing we knew virtually nothing about the bird or we knew very little.

There were very basic questions that needed to be answered such as the following:

- 1.How many birds are out there?
- 2.What is the life history of the bird?
- 3.What is the natural history of the bird?
- 4.What are the habitat needs?
- 5.What components of the landscape does this species need to go about its daily business?

These are basic questions; questions that science and studies answer. At the time the pygmy-owl was listed we knew the whereabouts of about 12 individuals. In the two years, there have been a lot of studies initiated that aid in answering the questions, however, we still have a long way to go.

Now we have studies that are funded at the local level by Pima County, at the state level by Arizona Game and Fish; at the federal level by the U.S. Fish and Wildlife Service and at the academic level by Texas A &M University, and these studies have provided more information about this individual species in Arizona.

We now know the whereabouts of approximately 70 individuals. So in the two years, we have gotten a lot better about finding them. Last year was a very good year because of the increased rainfall. About one-half of the individuals out there are juveniles and one-half are adults. It is hoped that next year those juveniles will survive to be breeding individuals.

Three experts will discuss what is known about the species and what has been learned within the last two years.

Russell Duncan will be the first presenter. Mr. Duncan is the President of R.B. Duncan and Associates, a natural resource consulting firm located in Tucson, Arizona.

Mr. Duncan is one of the better field biologists in the country and Russell is going to discuss the historic distribution of the owl as well as the current distribution which is one of the basic questions needing an answer in order to help this bird get off the Endangered Species list.

THE PYGMY-OWL IN HISTORICAL CONTEXT

Russell Duncan, R.B. Duncan & Associates Biological Consultants

I plan to speak about the ferruginous pygmy-owl in Arizona, its historical context beginning in 1872 when the bird was first identified in the Tucson Basin, all the way up to 1997. That is the historical context brought to light this afternoon.

First of all, I started this project about four years ago when the cactus ferruginous pygmy- owl was beginning to become the focal species in Tucson. The last species that was as notorious in Tucson was the Tumamoc Globeberry, a rare plant that had a lot of affects on private lands and federal lands for development.

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First I would like to acknowledge the Fish and Wildlife Service for partially funding this study and I would also like to thank my colleagues who assisted the most with this historical data gathering and discussion: Roy Johnson, Gale Monson, Steve Russell, Tim Tibbetts and a host of others. I would also like to thank the museum curators who really do not get their due and recognition. There is a wealth of information in museums throughout the United States and Canada. I am also thankful to all the technicians who helped us beat the bush for pygmy owls last year and those who are assisting this year. Pamela Swantek Ecological Database Designs now with Saguaro National Park assisted with the maps you will see tonight.

I contacted all the museums and fortunately with the Internet today, you can simply do that with one E-Mail message by sending it simultaneously to all the museum curators throughout North America and then you wait. Sometimes you wait and wait and wait until they get back from Borneo or some other hinterlands where they may be collecting birds. I also spoke with professional biologists and competent lay persons regarding the pygmy-owls in Arizona.

There is a wealth of information available from many people in Tucson who are both professionals and lay persons, and who are familiar with this species for all the time they have been here. I met one person who is 80 plus years who witnessed Alan Phillips blast a bird from their drinking fountain back in 1948 which was one of the last birds to be seen at Campbell and River Road. I produced a series of maps and I used those maps to delineate the known range of the species to base our survey of last year. Lisa Harris and I, with a host of our employees, went about surveying the species throughout its range from north of Phoenix, west along the Gila River and south all the way to the International border with Mexico.

THE RESULTS: I identified approximately 165 pygmy-owl records from various sources between the years 1872 to 1997. The species was first identified in Tucson at Fort Lowell Road near Craycroft Road where the Fort Lowell Museum is currently located, but probably a little more upstream where there is still some springs in evidence. The species was found as far north as New River, the dates and parentheses are when they were first collected at these sites. Cave Creek, and this is the northernmost extent of their range and then south to the Mexican border. In the border region they have been found at Organ Pipe and on the Tohono O'odham Nation. The first year they were sited in Organ Pipe was in 1954, but I actually think the records were in the late 1940's.

The Tohono O'odham Nation, had a collection from 1933, the Altar Valley in 1982, Patagonia in 1975, Ruby along Sycamore Canyon in 1979. The westernmost record of pygmy-owl presence was in Agua Caliente in 1896, this is in the extreme western Maricopa County along the Gila River near Yuma County. If you have ever been there, it is incredibly arid at this time and it was a former stagecoach stop and hot springs. It was a welcome respite for people on their way to Yuma and to the west coast from Tucson. The easternmost credible record was from Old Camp Goodwin near present day Geronimo along the Gila River in western Graham County. There are no verifiable records from either Cochise or Greenlee Counties. The two published records for Cochise were later recanted by the authors who submitted them for publication. The one record, unpublished for Greenlee County, has yet to be verified and it was probably misidentified.

Another record, unpublished again, was from eastern Graham County that has not been substantiated and was probably also misidentified. These were along the Gila River, or a confluence of them, near the San Francisco River area in eastern Arizona. To date, no one has ever identified the one-time records by one individual observing the birds. This is not to say that person was not a credible observer, but it has never been resubstantiated.

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This is what the map looks like from all of the records from 1872 to 1997 and these two are the northernmost including New River and Cave Creek in the Phoenix Area on the Salt River. This is the blue point area at the confluence of the Verde River, the Salt River and the Agua Caliente. It is an incredibly dry area. An individual (?) in southeastern Yuma County was probably a transient bird and has never been seen since 1955. The records for the Organ Pipe area I have are more toward the middle of the Tohono O'odham Nation.

When I had this map made, I received one record from Occidental College in Los Angeles and there is also a record now for Fresno Canyon on the Tohono O'odham Nation on the west side of the Baboquivari Mountains. These are all the Altar Valley records, the Patagonia area has two records that are credible. One record at Sycamore Canyon and all of these records have now been refuted or are questionable that include two in Cochise County, one in Greenlee and one in eastern Graham counties. This is Fort Goodwin; it is very difficult to locate the old fort and there are all of these records in the Tucson Basin. Some of the records represent present day while others are historical. The 1872 record along the Rillito Creek indicate it was once intimately flowing in that area. Pinal County is mostly associated with the Gila River watershed; at Superior, it was actually at the Boyce-Thompson Arboretum which is a combined map.

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This is the first 50-year period where all the historical explorers were spending their time and found pygmy-owls. The Tucson area associated with Fort Lowell, the Sacaton area and Blackwater area had a BIA agent working on the Pima Reservation. The New River and Cave Creek area represent museum collections. These are birds that were actually collected by collectors who were "hired guns" by universities. Many of them were biologists, others were amateurs and egg collectors and they were actually paid by the egg set or by the bird. The more important the bird, the more they would get paid for it. Again, the Agua Caliente was a stage stop and we can thank those collectors for knowing where the pygmy-owl was because it has lost ground as you will understand today

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This is the second 50-year period where some of their research was just beginning on birds in general in Arizona. There was a researcher in the late 1940's who later published his studies on birds in Organ Pipe. Gale Monson, one of the co-authors of "The Birds of Arizona," with the Fish and Wildlife Service out on the refuge identified an individual bird at the Cabeza Prieta Tanks. If anybody has been out there, you would just never think it would be pygmy-owl habitat since Bighorn Sheep do fairly well out there. As a point of information, many records are in a museum in Northern Arizona at Flagstaff in a little used bird collection.

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This map represents a 20-year period in the 60's and 70's. This is where a lot of the records came from in that time period and most of these records are from non researchers. They continue to be found here, and you can see how the range has contracted since they are no longer being found in this area around the Phoenix Salt River and Gila River. This is where they are all known to be from, from the Organ Pipe area on the Tohono O'odham Nation and are also known in a fairly good sized population of six or more territories in the Altar Valley and in the Tucson Basin. Many of these are found in the Tortolita fan as you well know that spreads out in the south flank and west flank to the mountain ridge.

We identified four sites last year. Out of all that acreage that we surveyed, we only identified four sites. We concentrated on areas outside of the Tucson Basin Proper. Game and Fish was covering much of that area since we already knew where they were in the Tucson Basin area. We covered areas in the Altar Valley all the way up to New River and even went as far as Wickenburg along the Hassayampa Creek, which I thought was possibly potential (pygmy-owl habitat) even though no historical records came from there. We went all the way over to the Superior area, Florence, down to Santa Cruz County and all we found were four territories. Two are in southern Pima County in the Altar Valley and two in southern Pinal County.

The two sites identified in Pinal County were in Arizona Uplands Desertscrub and the two sites were found in backwoods. The two sites in Pinal County are interesting in that they are in the same general habitat that was described historically. That is, they are in mesquite/ cottonwood/ hackberry habitat along free flowing reaches of streams and their tributaries.

In addition, there are other territories found recently that is different than what is now being found in Pima County. Most of it is Sonoran Desertscrub with the Arizona Upland being palo verde and the characteristic saguaro being ever present. In that habitat it has been saguaros and down in the Altar Valley where we found them, they likely nest in woodpecker cavities that have been excavated in Arizona walnut and ash.

Although they do make nests in the mesquite, the softer broadleaf trees are a preferred site since there are no saguaros there whatsoever. The results of our historical records search and all our surveys definitely validate the map that was produced by Phillips et al. in 1964. It differs with Monson's in that all of the records included by Monson in eastern Graham and western Greenlee counties are highly suspect because they have never been verified before. The maps are also likely extralimital and do not really reflect the normal range of the species. I am not saying they were not ferruginous pygmy-owls it is just that such records would not be accepted by the Arizona Bird Committee which is why I left them out of the credible record.

The published Yuma County record that Gale Monson identified should still be considered hypothetical and extralimital because it is a single observer record, even though Gale Monson is one of the most competent, he is certainly probably the top, living ornithologist in Arizona but still, it should be considered suspect even though it was a credible record because there was no photographic voucher and no subsequent records.

There have been no records west of Organ Pipe Cactus National Monument despite hundreds of hours of effort being funded by the military on Cabeza Prieta and on the Barry M. Goldwater Gunnery Range with no pygmy-owls being identified.

Again, habitat at the Pima County sites and on the Buenos Aires are like the historical records of the 1800's and early 1900's. The Sonoran Riparian Deciduous Forest with surface or near surface water present differs from most of our Pima County observations. At these sites which are east of Red Rock and on the north side of the Tortolita's, we found just Sonoran Desertscrub. If you are familiar with the Park Links Roadway between Red Rock and the Tom Mix Highway, that too is pygmy-owl habitat.

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This is the habitat on the Buenos Aires and if you look at it, it is much different from pygmy-owl habitat in the Tucson area. As you can see there is water on the Buenos Aires. The tallest trees are walnuts and hackberry's, mesquite, gray thorn and several other thorn scrub-like species.

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This is a view of the interior where the pygmy-owls were in incredibly, very lush habitat. This is probably what Bendire found them in along the Rillito at Fort Lowell. I have a picture of that general area back in 1988 that I will show you. If you are familiar with that stand that is now waning at the Craycroft Road crossing at River Road and that is directly due to down pumping.

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This is another site in Buenos Aires where there are seeps along the drainageway. This is an ash tree, there is more ash and a lot of mesquite. The upland habitat is scrub grassland, it is more of what is described as mesquite savannah and unlike where they are mainly found in the Tucson area. I'm not saying the pygmy-owl spent a whole lot of time out there, certainly they probably forage but they likely nest in the ash and hardwood trees. They spend a lot of time along the corridor.

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Here's a site in Pima County east of Red Rock which is typical Sonoran Desert Scrub. There is no ironwood present there, but there is a lot of mesquite. It is very diverse structurally.

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Here is a picture of that area near Fort Lowell. Most of the trees are dying and there is very little recruitment going on and we will probably lose that entire stand in the next 10 years...if that.

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To wrap things up, the historical record search and our recent surveys definitely show a decline of species that is notably evident in the northern part of the former range along the Gila and Salt River Basins near Phoenix.

Declines have also occurred elsewhere in these watersheds. There has been a local decline in the Tucson Basin but we are finding more and more birds everyday, much more than (we knew were present) when the bird was listed.

According to Roy Johnson as a collaborator, we have a manuscript in preparation that has incorporated the historical data. The range contraction is likely the result of direct/indirect human related impacts, primarily dam construction for diversion and flood control beginning in the early 1900's in the Phoenix area, conversion of both riparian and upland, non-riparian desertscrub habitats to croplands in the Phoenix area, urban development, lowering of groundwater tables for urban and agricultural uses and other causes.

There is a wealth of historical information out there and it still trickles in every day. I just uncovered some personal records by Florence Thornburg at the University of Arizona. She kept what is known as wetmore style cards; individual cards for individual species observations, detailed notes in a card file collecting dust at the U of A.

If it were not for the curators such as Tom Huels, we biologists or the public would not have that information today. It is important that universities carry on that curatorial responsibility. There was (also a historical) record for the Immaculate Heart Catholic Nunnery on Sabino Canyon Road just before the Kolb Road bypass in 1949.

The Ferruginous Pygmy-owl in Arizona: Historical Context, 1872 - 1998

Russell B. Duncan

R. B. Duncan & Associates, Tucson

and

Lisa K. Harris

Harris Environmental Group, Tucson

Acknowledgements

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Methods

Historical Distribution, 1872 - 1997:

- The senior author conducted a thorough review of the literature, museum collections and associated archived records, and communicated with professional biologists and competent laypersons regarding their knowledge of pygmy-owls in Arizona. The goal was to produce maps of the species' historical and contemporary distribution in the state.

1998 Pygmy-owl Surveys:

- The resulting maps were then used by our team to conduct surveys within the species' historical range in Arizona for the U.S. Fish and Wildlife Service in 1998.

Results

Historical Distribution, 1872 - 1997

- About 165 Ferruginous Pygmy-owl records were identified from various sources from 1872 - 1997 in Arizona.
- The species was first identified in the USA at Fort Lowell near Tucson, Arizona in January 1872 by Lt. C. E. Bendire.
- Museum and published records exist from as far north as New River (1892) and Cave Creek (1895) in northern Maricopa County.
- To the south they were and continue to be known from the Tucson Basin area and along the international border with Sonora, Mexico.

Results (Continued)

Historical Distribution (continued)

- In the border region they have been identified at Organ Pipe Cactus NM (1954), Tohono O'odham Nation (1933), and in the Altar Valley (1982) in Pima County, and near Patagonia (1975) and Ruby (1979) in Santa Cruz County.
- The western most record was at Agua Caliente (1896) along the Gila River, Maricopa County near the Yuma County line and at Cabeza Prieta Tanks (1955) in southeastern Yuma County.
- The eastern most credible record was from old Camp Goodwin (1876) along the Gila River in Graham County.

Results (Continued)

Historical Distribution (concluded)

- No verifiable Ferruginous Pygmy-owl records were identified from Cochise or Greenlee counties. The two published records for Cochise County were later recanted.
- The one record (unpublished) for Greenlee County has yet to be verified and was probably misidentified. Another record (unpublished) from eastern Graham County has not been substantiated and was probably also misidentified.

Results (Continued)

1998 Survey Results

- Ninety-three transects were conducted from 18 March - 30 June 1998 representing about 83,565 acres of potentially suitable Ferruginous Pygmy-owl habitat surveyed.
- Four new territories were identified in 1998, two in southern Pinal County east of Red Rock and two in the Altar Valley of southern Pima County north of Sasabe.
- None were detected in suitable habitat in the northern-most parts of the species' former range in Maricopa County and in central and northern Pinal County, and none were identified in Santa Cruz County.

Results (Concluded)

- The two sites that we identified in Pinal County were in Arizona Upland Sonoran Desertscrub habitat with a diverse desert riparian scrub (xeroriparian) component along normally dry washes with an abundance of saguaros in the area.
- The two sites in Pima County were in Sonoran riparian deciduous woodland habitat dominated by mesquite, net leaf hackberry, and other trees and shrubs. Surrounding upland habitat was a scrub grassland with scattered mesquite. No saguaros were present.

Discussion

- The results of our historical records search and resulting maps generally validate the one in print since 1964 by Phillips et al. than Monson's published in 1998.
- The records included by Monson for eastern Graham and western Greenlee counties are questionable and extralimital, and would not be accepted if reviewed by the Arizona Bird Committee.
- The published Yuma County record is a well-documented sight record by an experienced observer. Even so it should be considered hypothetical and extralimital because it is a single-observer record. No other substantiated records exist in Yuma County nor to our knowledge anywhere west of Organ Pipe Cactus NM.

Discussion (continued)

- Habitat at the two Pima County sites that we identified in 1998 on the Buenos Aires NWR were like many of the historical sites described by pioneering naturalists in the late 1800s and early 1900s, i.e., Sonoran riparian deciduous forest and woodland. Such habitat is associated with surface or near surface water.
- This differs from most present-day locations, including our Pinal County observations. At these sites they were found in Sonoran Desertscrub representative of the Arizona Upland series dominated by palo verde, saguaro, and other trees, shrubs and cacti.

Discussion (continued)

- The historical records search and recent surveys by us and others show that the range of the Ferruginous Pygmy-owl has indeed contracted. Declines are notably evident in the northern part of its former range in the Gila and Salt river basins near Phoenix. Declines have also occurred elsewhere in these watersheds.
- According to R. Roy Johnson and his collaborators (MS in prep.; pers. comm.) the range contraction is the result of numerous direct and indirect human-related impacts, including dam construction for diversion and flood control purposes beginning in the early 1900s; conversion of both riparian and upland (non-riparian) desertscrub habitats to croplands; urban development; lowering of groundwater tables for urban and agricultural uses; and other causes.

