

Released thick-bills in flight above their historic Chiricahua Mountain territory.

## THICK-BILLED PARROTS released & raised in the wilds of Arizona

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December 15, 1988

One of only two species of psittacines native to the continental United States, thick-billed parrots (*Rhynchopsitta pachyrhyncha*) effectively disappeared from here early in the 1900s. They still persist, though in dwindling numbers, in the Sierra Madre of western Mexico. The causes of their disappearance from the northerly parts of their range are not surely known. They were never intensively studied while occurring north of the border.

Recently we interviewed elderly Arizonans who were personally familiar with thick-billed parrots in those by-gone decades. Our conversations indicate a primary cause of their disappearance may have been shooting by subsistence-hunting miners and woodsmen. They may also have suffered from extensive cutting of the mountain forests to support the mining industry. Subsistence-hunting is not widely practiced in southeastern Arizona at the present time (and not at all for parrots), and timbering is no longer a major activity there.

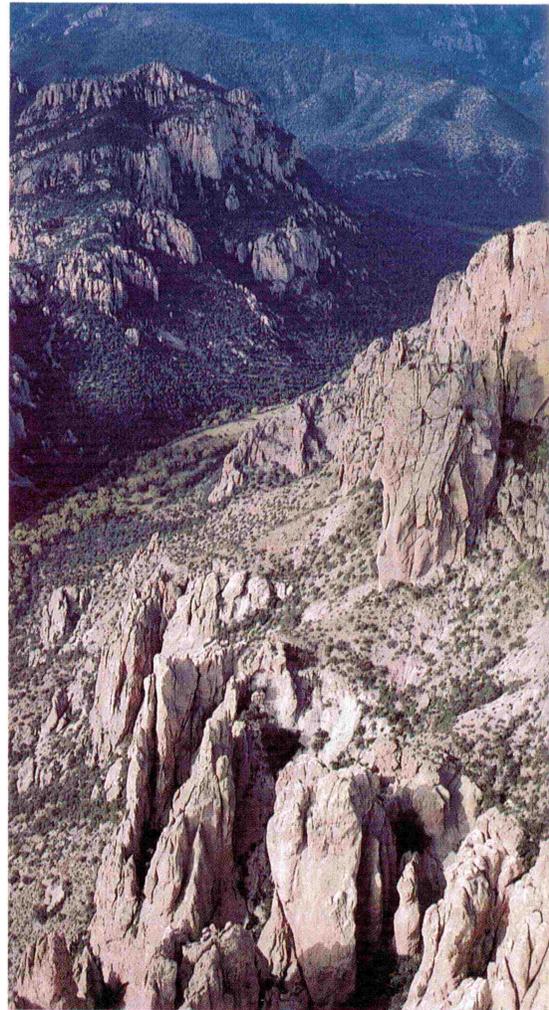
There are no historical breeding records for thick-billed parrots north of Mexico. However, such records are also virtually nonexistent for Mexico itself for the period when thick-bills occurred in the United States. Thus it seems quite likely the absence of breeding records is merely an observational artifact. None of the early naturalists visiting Arizona-New Mexico is known either to have seen thick-bills or to have made efforts to locate their nests. In fact, most information on thick-bills in the wild has come from incidental observations of ranchers, lumbermen and casual naturalists. This is hardly adequate to

prove what this species' breeding status may have been anywhere.

Historically, thick-bills occasionally made eruptive movements into Arizona from Mexico, most notably during the extreme drought of 1917-18. Our interview data indicate that, at least in the Chiricahua Mountains of southeastern Arizona, they were also once every-year residents, not just occasional visitors. They still breed within 150 km of the Arizona border (Lanning and Shiflett 1983). Thus there is a reasonable possibility they were once fully established in the United States as a breeding species.

Given that there has been some relaxation in the stress factors that may have once eliminated them from Arizona, it has long seemed desirable to us to attempt to reestablish thick-bills here. Doing so would again give the United States an indigenous representative of the parrot family and could also enhance overall conservation of the species. The populations of thick-bills in Mexico have recently

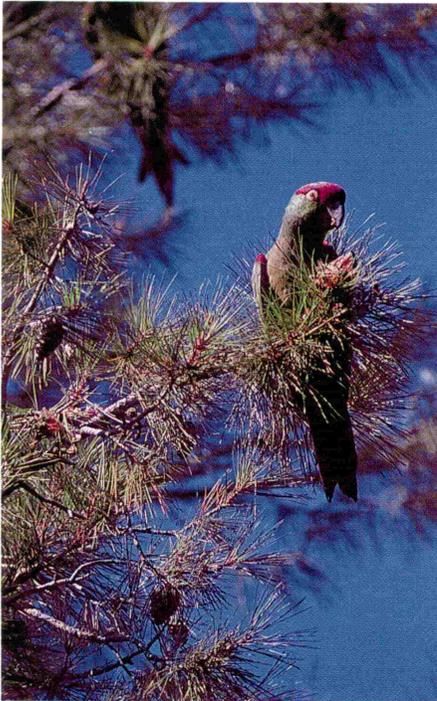
Photo by Helen Snyder



Aerial view of the rugged Chiricahua Mountains in southeastern Arizona.



First thick-bill youngster fledged in the wild in Arizona.



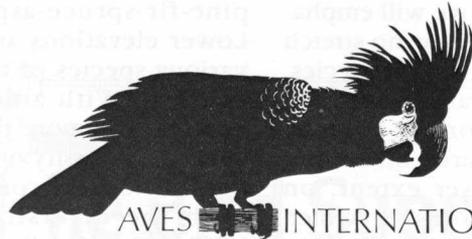
Released adult thick-bill feeding on Chiricahua pine.

become severely stressed by harvesting for the illicit pet trade. This, coupled with continuing habitat destruction there, makes long-term persistence of the species in Mexico highly questionable.

In 1985 and 1986, an enormous increase in the flow of smuggled thick-bills into the United States was observed by Fish and Wildlife Service agents. Large numbers began turning up in confiscations. Nearly all appeared to have been captured as adults, judging from their dark bill color and their familiarity with pine cones. Agent Sam Jojola soon suggested the confiscated birds might be used in an experimental release effort. Being wild-caught adults, they had a relatively high probability for survival in the wild, though their previous experience might also take them home to Mexico if they were released in the United States.

The idea of a release effort was very favorably received. In little more than 30 days after an initial planning meeting, two public hearings were held and an environmental assessment and a three-agency cooperative agreement were developed. The Arizona Game and Fish Department became the lead agency for the project, with the Fish and Wildlife Service and Forest Service as crucial cooperators. One month later the first birds arrived and before another month had passed, the first release took place.

Since then, many organizations have taken a strong interest in the release program, supplying both financial support and birds for release. Most notable among these are the Jersey Wildlife Preservation Trust and (its granting arm) Wildlife Preservation Trust International, the Aviculture Institute, and the San Diego Zoo, Los Angeles Zoo, Sacramento Zoo, Gladys Porter Zoo, Arizona-Sonora Desert Museum, Bronx Zoo and Salt Lake City Zoo. More than 300 individuals have also contributed time, money and birds. We would particularly like to acknowledge Bud Brunner, Steve Hoffman, Bill Konstant, Jim Koschmann, Dirk Lanning, Allison Leete, Chuck Rau, Mike Wallace, Jim Wiley and Jerry and Teddy Wolcott, who have given especially generously of their time and expertise in launching the effort. The considerable support of Michael J. Spear, USFWS Regional Director (Region 2) and Sotero Muniz, USFS Regional Forester (Region 6), has also



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been crucial to this project.

Before proceeding, we will emphasize that the thick-bill is by no stretch of the imagination a tropical species. It is a bird of temperate conifer and mixed deciduous-conifer forests. Thick-bills feed primarily on conifer cones and, to a lesser extent, on juniper berries and acorns. In winter, they inhabit areas with overnight temperatures usually dropping far below freezing. It is an odd but an accurate image to characterize this parrot as a bird of the snow zone.

The Chiricahua Mountains of southeastern Arizona were chosen as the site for our initial releases. Most of the early records of thick-bills in the United States came from that area (Lusk 1900, Phillips et al. 1964, Smith 1906, Wetmore 1935). The Chiricahuas have a substantial acreage of suitable habitat at elevations of 2000 to 3000 meters, the principal range of thick-bills in Mexico (Lanning and Shiflett 1983).

The Chiricahuas are largely under Coronado National Forest jurisdiction. They are managed for recreation, wildlife and watershed values. Extremely little timbering has occurred there in recent decades. The high-elevation slopes are cloaked

with almost continuous and mature pine-fir-spruce-aspen vegetation. Lower elevations are dominated by various species of oaks mixed with conifers. With a dozen species of conifers and more than half a dozen oaks, the diversity of food available in the Chiricahuas compares favorably with the diversity south of the border. Conifer diversity diminishes noticeably to the north in Arizona.

The first birds available for release, like most birds received subsequently, were in relatively poor physical condition when they arrived in Arizona. The people capturing thick-bills in Mexico invariably cut or pulled out their primaries and secondaries, presumably to reduce the chance of escape. Birds whose primaries have been forcibly pulled out often do not replace the feathers and are invariably unsuitable for release.

Birds with cut flight feathers can usually be rehabilitated for release by imping. For many that have come to us, it has been necessary to imp a half dozen or more feathers on a single wing to get them into flying condition. However, our first releases showed us it is better not to release birds with more than three or four impeded feathers on a wing. Thus,

given the prolonged nature of wing molt in thick-bills, it is often necessary to hold birds for months, until they have molted-in substantially natural wings.

While being held for release, the parrots are housed in 8' x 8' x 8' cages that allow enough space for regular flight. They are conditioned to natural foods present in the area. To encourage strengthening of flight muscles, feeding trays are centrally located and kept several feet below peripheral perches. This forces the birds to helicopter up and down to obtain food.

Nevertheless, the cage environment is no match for the wild in potentials for exercising the birds. Wild thick-bills are very strong flyers, attaining speeds approaching 80 kph and engaging in routine foraging flights of 10 to 20 kilometers. Though our released birds have generally flown well, they sometimes have not been able to keep up with wild birds immediately and thus are unsuitable for release.

It generally takes them a week or so in the wild to develop the flight abilities necessary to keep from lagging behind the flock. During that period, they suffer elevated risks of predation from hawks, especially the locally common goshawk (*Accipiter gentilis*).

Altogether, 29 birds, some wearing radio collars, were included in the first releases we conducted, in the early fall of 1986. Seven of the birds were quickly lost, probably to hawks. Eight were last observed heading south, toward the Mexican border. The other 14 remained in Arizona, but showed considerable exploratory behavior during the first few months after release. In December, they left the Chiricahuas for a month-long stay in the Graham Mountains, 110 kilometers to the northwest. They returned to the original release site around New Year's Day, and then settled in for a period of relatively sedentary existence.

In mid-June 1987, the group, by then numbering 17 birds because of releases during the spring, again took off to the northwest. But this flight took them at least 400 kilometers. They spent the summer in various locations along the Mogollon Rim of central Arizona. Our information on their movements came almost entirely from local residents, as we were unable to locate them by radio-tracking. The flock apparently spent

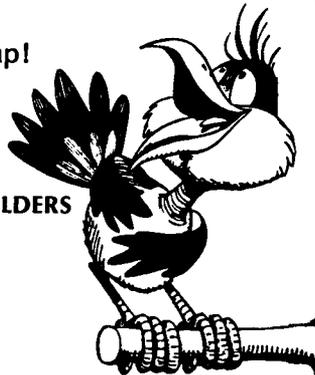
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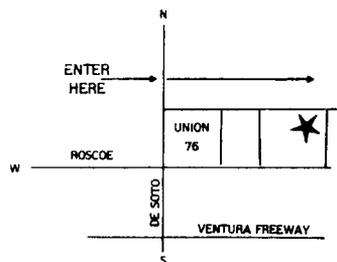
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most of the time in the Tonto Basin, although we found one dead radioed bird (a raptor kill), on the rim of Oak Creek Canyon, about 100 km northwest of the Tonto Basin area. Also, one impeded feather was found by a schoolgirl in the White Mountains of east-central Arizona, close to the New Mexico border.

The flock covered considerable ground during their first summer. Food supplies along the Mogollon Rim were very limited then. There were few cones of pinon or ponderosa available in the regions we checked. The birds apparently fed almost exclusively on Douglas fir cones. Whether any breeding attempts took place is unknown; if they did they were probably unsuccessful.

In late September 1987, almost exactly a year from the date of the first release, nine thick-bills returned to the original release area. A few others may have stayed in central and northern Arizona, as we received reports from the Flagstaff region through the fall. We immediately released a freshly-radioed bird into the returned flock in the Chiricahuas. The group stayed together there until mid-June 1988, suffering the loss of only a single bird. During that second winter, the flock did not repeat its movement to the Graham Mountains, instead remaining extremely sedentary near the release area.

With the release of three parrots in the spring of 1988, we built the flock in the Chiricahuas back up to 11 birds. Again in mid-June, the flock headed northwest to the Mogollon Rim. In fact, their date of departure was only four days different from that of 1987. Three birds did not leave with the group. Along with two birds released in June, they remained in the Chiricahuas throughout most of the summer.

Although the flock that headed north included only one bird with an effective radio, we were able to find it almost immediately. The birds had again moved to the Tonto Basin, to the very area in which they had summered in 1987. Through mid-July, they were finding more food than in 1987. Ponderosa and pinon cones were abundant and the flock thrived. We frequently saw the birds mating, but soon lost track of them.

We were unable to pick up the one transmitter's signal despite extensive airplane and ground searches in late July and August. Perhaps the flock



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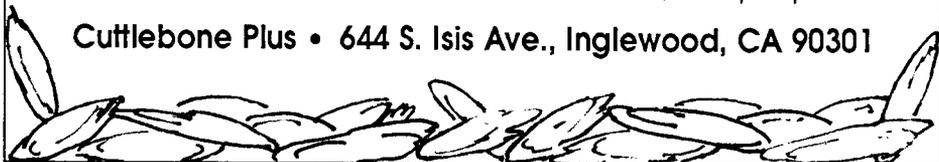
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made a major flight elsewhere (a few thick-bills were reported more than 100 kilometers to the east for a few days). Perhaps the one transmitter simply malfunctioned. Or perhaps the radioed bird (a big female) had laid eggs and was undetectable because she was in a nest cavity somewhere. When last seen, she was copulating a number of times with her mate.

We received no confirmed reports of thick-bills anywhere other than the Chiricahuas until September. Then a group turned up in the same Tonto Basin area where the flock was seen in July. The group varied from eight to ten birds for a few weeks, then up to 12 were seen. The increase was, in part, accounted for by two radioed birds that had summered in the Chiricahuas. They probably joined the Tonto flock in early September, soon after they were last seen in the Chiricahuas. To do so, they had to relocate the flock more than 300 kilometers to the north. But the other two birds proved to be quite a different, even more exciting story.

Local residents began reporting that one, perhaps two, of the birds had pale bills. Could they be young birds? For frustrating weeks through October, we chased the flock over hill and dale to get a definitive look. Central Arizona is a vast, rugged region of pine forests and steep canyons, and very difficult to search. We kept postponing writing an update on the project, in hopes of including "great news." But the flock proved more than equal to the effort and successfully avoided the search.

Then, in November, nine birds were back in the Chiricahuas. Soon they were roosting and foraging at the now familiar sites. And two have unmistakable, distinctly pale bills that show very well as they beg food from their parents! Clearly at least one pair of thick-billed parrots bred successfully in the wild in Arizona in 1988. It may not be a first, but we hope it is not a last.

As we write this, the young birds and the rest of the flock are again wintering on the snow-covered crest of the Chiricahuas, where the conifer cone crop is very good this year. We still have two radioed birds somewhere in central Arizona. And some captive-bred birds are getting in shape for a release, perhaps in June. The new radios they will carry will be a tremendous help. All things considered, the wild-caught release program

is going well.

A separate release effort, with captive-bred birds from the Jersey Wildlife Preservation Trust and the Gladys Porter Zoo, was not as successful. In late 1987, we released five of these hand-reared birds in the Chiricahuas. For six months, the birds had been conditioned to feed on pine cones. They had ample opportunity to socialize with one another and with captive wild-caught birds throughout that period. On release, however, they showed no tendency to flock and scattered as single individuals in all directions. They made no attempts to feed on the very pines they had learned to feed upon while still in captivity. After little more than a day, it was obvious they would not form a flock or even begin feeding. We recaptured them all, and distributed them to various captive-breeding projects.

We also released a parent-reared bird from the Sacramento Zoo with the Jersey birds. Even when first obtained, this bird socialized with wild-caught parrots rather than with hand-reared birds in the same cages. It soon became indistinguishable from wild-caught birds in feeding abilities and other behavior. On release, it immediately joined the flock and its behavior was entirely typical of wild-caught birds. Unfortunately, it was taken by a raptor before it could achieve full flight strength and full integration with the wild flock. This suggests, though, that releases of captive-bred birds may be successful with parent-reared individuals.

Overall, several encouraging points should be noted for the first two years of this project. First, once birds have passed through a high-vulnerability phase immediately after release, they have reasonably high survival rates. Second, at least some have found Arizona to be a congenial place and have established what appears to be a migratory pattern between the southeastern and central parts of the state. Third, there have been no signs the birds have had difficulty finding food, despite 1987 having been a relatively poor cone year for a number of dominant conifers in the region. Fourth, while breeding has not yet been documented by observations at the nest, the frequency of copulations observed in 1988 and the subsequent appearance of two young birds in the flock suggest strongly to us that reproduction has occurred in the

wild. These points all reinforce our intent to continue the release effort.

The primary difficulty we have encountered since beginning this project has been obtaining adequate numbers of birds for release. Very few birds came to us through Fish and Wildlife Service confiscations during 1987 and 1988. To a very limited extent, this lack of birds was alleviated by some much appreciated donations from zoos and private breeders. Then, in the summer of 1988, U.S. Customs confiscated 37 thick-bills in Texas. It seemed as if we could anticipate a large release late in 1988.

Unfortunately, the Texas birds suffered eight mortalities during quarantine. Then several more died shortly after they were transferred for a second quarantine with our consulting veterinarian, Jim Koschmann, in El Paso, Texas. Even worse, Jim's investigations, in consultation with renowned avian pathologist David Graham of Texas A&M University, revealed "avian wasting disease" in the group. Thus very likely none will be releasable, if indeed any survive this currently incurable, little known disease. To add insult to injury, Jim contracted a bad case of parrot fever from the thick-bills that cleared quarantine. Both Jim and the birds are recovering from that, though.

Thanks to America's wildlife smugglers, though, not all the news is "bad" (?). Recent busts in California and Ohio are sending some other thick-bills our way, and those birds appear to be healthy. And locally, over the Thanksgiving holidays, late one night someone dropped off four thick-bills in a brown paper bag at the Phoenix Zoo. Although the dew that night obliterated the note the anonymous donor left, it appears the birds were captive bred but of questionable legality. Regardless, they are also now destined for the release program.

While the overall smuggling of thick-bills into this country is still substantial, it is now clear that confiscations are an erratic source of birds at best, and many of the birds are in very poor condition. To the extent that captive-breeding efforts can supply high quality, parent-reared birds, we hope to move toward steadier and larger release efforts in the years ahead.

A number of facilities have been setting up or stepping up their breeding efforts in the past two years to supply releasable birds for the program. Foremost among them are

the Jersey Wildlife Trust, Tracy Aviary, Gladys Porter Zoo (at Brownsville) and the zoos at San Diego, Los Angeles and Sacramento. The Arizona-Sonoran Desert Museum and the Phoenix Zoo are also assisting in this area, as well as by providing educational displays with non-releasable birds. We hope to encourage captive breeding even further very soon by working with the Tyson Research Center of Missouri. Walter Crawford, who is especially well known and respected in raptor propagation and rehabilitation circles, has offered to develop and underwrite funding of a breeding program with 30 or more pairs of thick-bills at that facility.

We even contributed to the captive breeding effort ourselves this summer. Just days before they were scheduled for release into the wild flock, a pair of thick-bills in our holding pens responded to an artificial nest cavity by producing two eggs, on August 14th and 19th. On September 10th and 12th the eggs hatched, belying the old adage about a watched pot never boiling (believe us, these eggs were watched!). The youngsters fledged this fall; one is extremely vigorous, the other less so. One or both should be ready for release this spring, and well accustomed already to life in the Chiricahuas.

With future releases, we will, of course, be most anxious to bolster the wild flock that is now in the Chiricahuas. But we also hope to determine if releases of parent-reared birds might lead to a less migratory flock. There is a greater diversity of conifers and oaks in southeastern Arizona than in the central part of the state. This suggests parrots there might be better buffered against cone crop failures during drought cycles. If migratory patterns are largely learned behavior in thick-bills, perhaps releases of captive-reared birds in isolation from wild-caught birds could produce more sedentary populations. Who knows? But it will surely be fun finding out.

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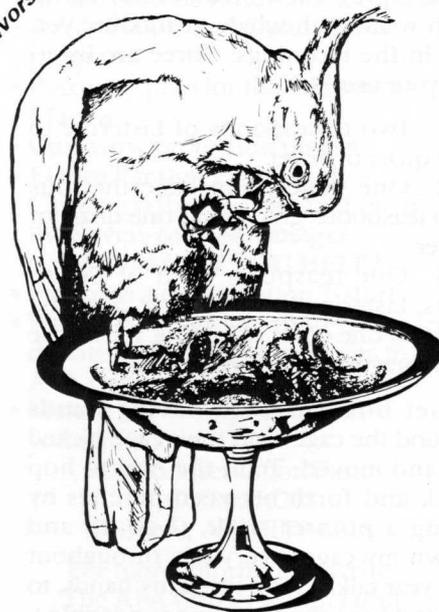
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