

Thick-billed Parrots

Field Observations and History

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Cover Picture

The ability to extract seeds from pine cones is crucial for the survival of Thick-billed Parrots and takes months to develop in fledglings, necessitating a long period of dependency on their parents.

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It is late afternoon and we are standing near the summit of a 9,000 foot peak in the northern Sierra Madre Occidental in Mexico. A raucous call emanates from the south and a single Thick-billed Parrot, *Rhynchopsitta pachyrhyncha*, flies below us, northward across the valley. The parrot moves powerfully in a straight line, like a missile, calling all the while, until it disappears from view past the mountain slope.

Our journey to this spot began well before dawn in Portal, Arizona. It has taken us across the deserts of northern Chihuahua, through mud and rivers, up precarious mountain roads, and into the high old growth pine forests so crucial for these birds and so endangered by relentless logging. We have come to observe the Thickbills in their most northerly nesting habitat presently known and to reflect on how they live, why they disappeared from the United States and on what the future may hold for them.

Appearance and history

Adult Thick-billed Parrots are bright green, lighter and more yellowish on cheeks and ear coverts, with bright red foreheads, forecrowns,



View from the crest of the Sierra Madre Occidental, showing the habitat of the Thick-billed Parrots
Photo: A Lurie

superciliary stripes, bends of wings, carpal edges and thighs. They have brownish markings in front of the eyes, yellow greater underwing-coverts and grayish undersurfaces of remiges and rectrices. Their legs and feet are gray, their bills are black, their iris is orange-yellow and they have yellowish-orange periophthalmic bare skin rings.

Juvenile birds differ in that they have largely white upper mandibles, a dark iris, gray periophthalmic rings, reduced red on the thighs and a lack of red superciliary stripes, wing bends and carpal edges. There is no obvious sexual dimorphism in adults, although males average

about 8% heavier than females. Thick-billed Parrots and the extinct Carolina Parakeets are the only parrots whose natural ranges included the continental United States. The stronghold of the Thick-billed Parrots, has always been the Sierra Madre Occidental of Mexico, but the species was also found in substantial numbers in southeastern Arizona and southwestern New Mexico in earlier times. While breeding colonies were never formally recorded north of the border, these birds were annually seen in good numbers during breeding season in the Chiricahua Mountains, making it likely that they did, in fact, raise families in the United States.

Thick-billed Parrots suffered massively from shooting in the U.S. and were essentially gone from U.S. territory by 1920. Their garrulousness, relatively large size and tame inquisitive behaviour, sadly made them easy targets for subsistence-hunting prospectors and other early settlers. Occasional sighting continued until 1938 in Arizona and until 1964 in New Mexico, but no parrots were recorded thereafter until a few captives were released to the wild in the late 1980's.

Thick-billed Parrots, which are CITES Appendix 1 listed, have become endangered in their remaining Mexican strongholds, principally because of extensive lumbering of old-growth pine



Toyota 4 Runner ascending the road in the northern Sierra Madre Occidental
Photo: A Lurie

forests. Where flocks of thousands once flew, now only about 500-2,000 pairs survive in the wild. Numbers in captivity have been hard to document, as almost all were captured illegally.

Habitat

During the breeding season from July through September, Thick-billed Parrots live high in the conifer forests of the northern Sierra Madre Occidental Mountains, mainly in Durango and Chihuahua. They prefer altitude nesting and this might relate mainly to the availability of their primary food trees - Mexican white pine, Arizona pine and Durango pine - and to an absence of nest predation threats from arboreal snakes. Nesting is timed to coincide with the monsoon season, when most conifers are fruiting.

Our trip has been timed to coincide with the height of the nesting season. We drove into the Mexican state of Chihuahua, the largest state in the country.

For several hours the route is across dry desert, interrupted by stretches of wheel-spinning mud created by recent cloudbursts. Jostling along, we ford rivers, drive up stream beds and finally begin to climb high into the mountains on a one-lane track that is barely passable in dry weather and a major challenge in the rainy season. Progress is slow and we reach our destination only near the end of the day.

Near the top, we encounter freshly cut old pine trees - an ominous finding that timbering has occurred on ejido lands supposedly reserved from cutting.

Nearby, we pull off into a lupin meadow and head to a rise giving a view of several known nest trees from past years. These are all huge dead pine and fir snags with their tops broken off. The vista across the mountains and valleys is breathtaking. The relatively strong growth of trees on the moister north sides of the mountains is obvious from our vantage point. We do not see any parrot activity in the nest trees, but we do get an initial greeting from the solitary Thick-billed Parrot flying across the valley, followed by a group of 3 more overhead.

We move on to the campsite near the mountaintop. At this point, the monsoon weather moves in and we are enveloped first by dense fog, then by chilling rain.



Thick-billed Parrot feeding on Chihuahua Pine cone

Photo: N Snyder

Day two - Morning

From various directions male parrots can be heard noisily leaving their nest trees to head off for their first foraging of the day. They will return at intervals through the day to feed their mates at their nests, then head off again to join other parrots in resumed foraging.

Food, language and natural predators

Thick-billed Parrots mainly feed on the seeds of pine trees.

Working in small flocks, they normally clip cones from the branches and then thoroughly shred the cones with their bills in a systematic spiral fashion. They start from the base and end at the apex, removing each seed as they progress. They eat seeds from a variety of conifers, including various pinons, Douglas fir, Apache pine, Chihuahua pine and Mexican white pine. It takes a parrot from one to 20 minutes to consume the seeds from a single

cone, depending on the cone species. Mexican white pines, with their large seeds, appear to be favoured, even though the cones are so heavy that they are difficult for the parrot to hold and are frequently dropped inadvertently. With this pine species, the parrots sometimes refrain from clipping the cones free from the branches and work on them in place, hanging upside down, although their ability to extract seeds is hampered when the cones remain attached to the branches.

Other foods in the Thick-bill diet include acorns, juniper berries, agave flower nectar, cherry fruits and insects. An interesting component of the diet is tree bark - an item found in the diet of some Amazona parrots as well. Reasons for eating tree bark are unknown, but the material is a frequent component found in sampling the crops of nestling parrots and must have some important function in the diet.

Thick-bills, unlike some other



Nestling Thick-billed Parrot in nest hole

Photo: N Snyder

birds that feed on pine seeds, do not appear to store food, although they have been seen raiding the granaries of acorn woodpeckers, much to the displeasure of the latter. Water is generally taken from potholes in cliffs or from the tops of waterfalls, where the parrots can have a clear view of the approach of predators and have a clear downward flight path for escape. They rarely drink from streams in the bottoms of canyons.

Thick-billed Parrots have a variety of vocalizations, which they use for alerting flock members to the approach of predators, flock integration, territorial interactions and soliciting food from mates and parents. Under the tutelage of their parents, the chicks begin vocalizations early and appear to have the full complement of vocalizations when they fledge. During flight, a flock will be garulously calling, sounding like laughing children. Feeding flocks often post sentinels, who scan intently for predators. An alarm call from a sentinel will put the entire flock into instantaneous flight and the birds are normally easily capable of outflying their avian enemies.

Threats from Raptors

The primary predation threats faced by Thick-billed Parrots come from various raptors. Chief amongst such raptors are Red-tailed Hawks, Apache Goshawks and Peregrine Falcons. The parrots are powerful flyers and are rarely taken except when raptors are able to gain close approach undetected by the parrots. Surprised in midair by a Peregrine Falcon, they dive straight for the ground and



Adult and young about to fledge from nest in snag of Mexican white pine in the Sierra Madre Occidental

Photo: N Snyder



Sampling the crop (with a syringe) of a juvenile parrot

Photo: N Snyder

evade the falcon with agile manoeuvres as they dive into trees that the falcon is reluctant to enter. Nocturnal predation comes mainly from ring-tailed cats. Thick-bills appear to be free of severe threats from snake predation faced by *Amazona* parrots inhabiting lower altitudes. Back at camp two parrot pairs and a solitary individual fly overhead, heading toward the nest trees which are now out of sight. Meanwhile, Noel and Rurik return from their search and report locating several new active nests.

Nesting Biology

Nesting females will usually lay clutches of 3 eggs, with intervals of 2-3 days between eggs. The male spends the night in the nest hole with the female. Incubation takes approximately 26 days from the first egg, after which the chicks hatch at 2-3 day intervals, comparable with the laying intervals. The chicks first open their eyes at 6 days, and their eyes are fully open at 16 days. Pinfeathers begin erupting at 16 days and the chicks are well feathered at 36 days and they have their full juvenile plumage by 56 days.

The juveniles have mostly white upper bills, in contrast to the black bills of adults and they usually fledge at 59-65 days from hatching. Much pre-fledge time is spent exploring the entrance of the nest and looking outside. The young are quite vocal at this time and are accompanied by the parents upon their first flight. They remain fully dependent on their parents for several months. Learning to cut pine cones off branches and how to extract pine seeds is a slow and complex process and the parents continue

to feed their youngsters fully capable of feeding themselves. Toward the end of the breeding season in the fall, family groups begin flocking together in preparation for migration to more southerly regions.

Day two - Afternoon

We decide to visit one of the active nests found by Noel and Rurik once the storm subsides in late afternoon.

We set out on foot for the nest site, even though it is still raining lightly. There is a steady downhill hike of 30 minutes and then we climb down and across a steep slope with jumbled rocks, agaves and tangles of brush and fallen and living trees with no trace of a trail and few recognizable landmarks. We finally reach the site. There, on a snag 50 feet in front of us, are 5 Thick-billed Parrots. They are grooming each other, sitting not far from a nest hole. We videotape them, and Rurik photographs them for about 10 minutes and they pay us almost no attention, even though we are in full view of them on the slope. Then they finally fly off in a flurry of raucous calls that echo across the canyon and gradually fade in intensity. It is a spectacle of powerful natural beauty, never to be forgotten.

Day three

We are up at 4am, eat, pack and are on our way down the mountain by 5:30.

Essentials of conservation

With sound conservation efforts in Mexico and a thoughtful reintroduction program based on healthy wild populations, we could see again this wonderful parrot in the skies of Arizona and

New Mexico. While the species is not presently critically endangered, it is endangered, especially due to continued, massive lumbering and destruction of its primary habitat.

Trapping for the pet trade continues to be a problem. Though most birds are netted as adults, nest-robbing continues, sometimes with the felling of nest trees. With nesting snags becoming increasingly rare, such harvest penalizes not only present but also future parrot generations. In addition, the disturbance associated with lumbering operations sometimes causes nest abandonment. Clearly habitat destruction and the pet trade are the major problems faced by the species. While regeneration of pine forest is generally good in the Sierra Madre Occidental and young pine forests do offer some food resources for the birds, they do not provide the nest sites that are equally important for their survival.

Sadly, almost none of the old-growth or near old-growth forests of the Sierra Madre Occidental have been set aside as preserves. Yet these mountains represent one of the major centers of biodiversity in the world.

Conservation interest in the biological resources of the Sierra is very recent. In very recent years, several habitat conservation programs have been proposed including a series of reserves which would protect the best remaining forested regions. Perhaps the most substantial of these is the El Carricito region of northern Jalisco. Unfortunately, this region is south of the nesting range of the Thick-billed Parrot.

Recently, following intensive negotiations, an agreement was signed between the Ejido Tutuaca,


a rural forest cooperative and a number of organizations, principally The Wildlands Project, Pronatura and Naturalia, creating a 15 year moratorium on any cutting of timber in a region of southern Chihuahua that hosts the most important remaining nesting habitat of the Thick-billed Parrot. This agreement was reached after collaborative studies of the region conducted over a period of 5 years by the Wildlife Preservation Trust International (WPTI) and Monterrey Tech (ITESM). More than 100 active nests have been found in the region in some recent years and it may represent more than 10% of the total breeding population of the species.

Other conservation measures of potential importance that have been implemented include a ban on cutting of spruce, *Pseudotsuga* (Douglas fir) and *Abies* firs throughout the Sierra, trees that often serve as nest sites for the Thick-bills. To the extent that this ban is honored by timber harvesters, it may ensure at least a minimal number of nest sites for the species into the future.

Finally, there have been experimental efforts to assess the feasibility of reintroducing the species into Arizona.

Donations towards habitat preservation for the Thick-billed Parrots can be sent to:

Leanne Klyza Linck, Executive Director, The Wildlands Project
1955 West Grant Road, Suite 145
Tucson, AZ 85745-1147, USA

Such donations should specify that they are to be used for Thick-billed Parrot Conservation efforts in Mexico, and will be used to preserve additional important nesting habitats in the Sierra Madre Occidental. 



Flock of released, wild-caught Thick-bills overhead in the Chiricahuas of Arizona in 1986
Photo: N Snyder