

PARROTS, POACHERS & PAYLOADERS: Status and Natural History of the Yellow-shouldered Amazon

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Looking at a range map for the Yellow-shouldered Amazon (*Amazona barbadensis*) is equivalent to pinpointing some of the most arid regions in South America. No other large parrot is as clearly adapted to and limited by semi-desertic habitats. The species' ability to deal with drought conditions is most evident on the islands off the north coast of Venezuela: no free-standing water is available for the parrots on tiny La Blanquilla Island, and the dry season on Margarita Island can be equally harsh. Still, the birds appear to make up for this water shortage by feeding heavily on cactus stems and fruits, and on a large assortment of flowers. With their toes wrapped firmly about a bundle of cactus thorns, parrots will use their bill to pull off entire thorn rosettes from the tips of cactus stems, and then gouge out the moist flesh beneath. Many of the larger candlestick cacti bear the uneven scars of parrot bills, together with the smooth round holes left by woodpeckers seeking the same moisture. The cactus fruits themselves provide a lot of moisture, and during the fruiting season almost all the birds return to the roost with their bills and faces stained red by the sticky pulp. Cacti are common and their fruit crop abundant, so that it is undoubtedly the parrots' ability to exploit this resource that has allowed them to survive in their semi-desertic coastal habitats.

When I first started research on the Yellow-shouldered Amazon, the species' situation across much of its range in Venezuela was uncertain and in some areas potentially critical. Since then, new information from surveys by FUDENA/WCI investigator Philip Desenne suggests that there are fairly stable populations on mainland Venezuela, in the coastal states of Sucre and Falcón. Roosting flocks of up to 700 birds have been sighted in these areas, and there is no immediate threat of large scale habi-

tat destruction. On La Blanquilla Island, on the other hand, there are probably about 200 birds left, and nests are heavily poached by both transient fishermen and personnel from the permanent Navy outpost. With predation by feral cats becoming an additional problem, this population is increasingly in need of research and protection.

But the population I know best is the one on Margarita, the largest of the Venezuelan offshore islands. The island's open, arid habitat makes it an ideal study area: the birds are easy to locate, visibility is good for behavioral observations, and the local people are very supportive of our work. Culturally and geographically,

Margarita can almost be considered as two separate islands. The western Macanao peninsula, the only area where parrots are presently found, connects to the main body of the island by means of a narrow sand bar and an extensive mangrove lagoon. Massive hotel and commercial developments dominate the eastern side and make it the center of national and international tourism in Venezuela. Large scale tourism has not yet reached the drier, less hospitable peninsula, and part of our work is now aimed at ensuring a sound ecological basis for the area's inevitable future development.

Macanao is hot and dry, with unpredictable rains and temperatures in the high 80's. The landscape is dominated by seasonal stream beds that radiate down to the coastal plains from the central mountains and provide accessible trails over the entire peninsula. The rivers only run with water every three or four years, and then only for a few weeks at a time, but that is enough to carry down massive amounts of coarse white sand and gravel that sustain a thriving sand-mining industry. Sand is

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mixed into cement for construction sites on the eastern side of the island. Together with the traditional fishing industry, sand mining is a mainstay of the local economy, supporting both the few families that own most of the land, and a whole array of machinists, truck drivers and administrators.

Unfortunately for the parrots, the highest quality and most accessible sand is found in the same areas as the best nesting sites, the main roosting areas, and the most important feeding grounds. The preferred nesting and roosting tree is the Palo Sano, the largest of the lowland tree species. It reaches its highest densities along the lower stretches of the river beds, where the tractors do the most damage. The proximity of cactus fields whose fruits are the main food item for breeding birds probably increases the success of these lowland nests. Based on the location of current nesting areas, and on information from poachers, it is clear that the best nesting areas have already been destroyed or reduced by the sand mines. The tractors also provide access to the nests for the mine workers and truck drivers, who compete with each other for the chicks. I often find the

truck drivers wandering up the river beds into the study area, looking for parrots, iguanas, and wild fruits while they wait out the machinist's lunch break.

But these are instances of low intensity, non-professional poaching, that only affect a small proportion of the population. Keeping one or two birds as pets is a long-standing culturally important tradition on Margarita. Parrot chicks are given as highly treasured gifts to friends, lovers, teachers, and employers. Some of the most popular stories gradually being incorporated into the local folklore include those of long-lived pets that sang off-color songs, called out political slogans at inappropriate moments after escaping from captivity years earlier. The "evil eye" is blamed for most parrot deaths: apparently, the preferred method of taking revenge on your enemies is to cast a curse on your parrot, causing it to wither away and die. Many details of daily life revolved around the birds, and we have learned not to attack the local pet-keeping tradition in our conservation work.

The really serious damage is done to the parrot population by the few families that systematically monitor and poach nests in their home area. Regular clients come from the mainland or the eastern part of the island to buy whatever chicks are available, often placing orders for the coming year. The isolated mountain village of San Francisco is well known for supplying parrots. One particular family, locally known as the "vultures," depends completely on the illegal sale of wild game and parrot chicks for its livelihood. They accounted for most of the nest failures in my study area until last year, when I hired two former poachers to protect the nesting area. This made the "vultures" nervous enough to allow the fledging of 30 chicks from nests that had fledged few if any young in the recent past.

Mortality among poached chicks is high. Traditionally, chicks were only taken when they were "jacketed," that is, when most feathers have split their sheaths. Today there is such intense competition among poachers that chicks are often taken much earlier. Nests may be as much as two meters deep, and may curve at the bottom. To extract the chicks from such nests, poachers attach the tip of a bromeliad leaf to the end of a long flexible stem, with the curved spines

pointing toward the handler. The poacher then reaches into the nest with a stick, and probes around blindly until he or she hooks a chick on the fleshy part of the body under the wing.

Occasionally fishhooks are substituted for the bromeliad spines. Injuries are not as frequent as one might expect, but poachers will often kill chicks that they cannot get out in order to prevent a competing poacher from obtaining them later. Poachers also cut personal marks into the bark of nest trees, but I have no evidence that such "ownership" is respected anymore.

Chicks are fed a thick paste of pre-cooked cornflour and water, which often leads to impacted crops and malnutrition. A few wiser and wealthier poachers achieve better results with chicken feed instead of cornflour, and I've heard several of the small-time, old fashioned poachers complain about "those high-tech newcomers" to use syringes instead of spoons" to feed the chicks. Adult birds don't fare much better; they are seldom fed fresh fruit and have to rely on table scraps of cornmeal and fish. I am always amazed by the paradox between the love of an owner for his bird, and his ignorance of its basic needs.

I am even more amazed that the parrot population has held out as well as it has, considering the pressures exerted on it by the poachers and the sand mines. I am currently estimating the population of about 700 birds, with about 30 percent breeding or reaching the egg-laying stage in 1989 (as estimated from counts of lone males returning to the roosts). Because our first observations coincided with the first year of protection for the birds, it is hard to tell what the poaching rate was in previous years. During the first year, only two out of nine nests I was watching fledged young and I estimated that 75 percent of the nests on the island are poached each year. Somehow, the remaining 25 percent of the nests, primarily those in inaccessible mountain ravines, have maintained the population. Additionally, three nests located in the rocky crevices of Guarataro ("big stone") Mountain have never been poached, according to people who have repeatedly tried and failed to reach them.

Clutch size averages from two to four eggs, with a mean of 3.5, while

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brood size at hatching ranges from one to four chicks, with a mean of 3.1. Mean number of chicks fledged per nest in 1990 was 2.6, with four out of ten nests fledging the entire clutch of four. Reproductive potential is thus fairly high, and a few years without poaching would probably allow the population to recover; such intervals in the past may, in fact, have kept the population at its current levels despite the observed poaching intensity.

In addition to poaching, natural mortality of parrot chicks is high, as a Venezuelan undergraduate student working under my supervision found out last year. The first nest he located had a boa constrictor in it, and inside the snake was a female parrot killed in the process of egg-laying. At a four-chick nest along the road, an Epicrates boa killed one three-week old chick and ingested another, leaving the oldest and youngest siblings intact. Three chicks just days short of fledging disappeared without a trace from another nest, probably to snake predation. We frequently found snakes curled up in tree cavities that poachers identified as former nests. Brown-cheeked Conure (*Aratinga pertinax*) nests in the study area were particularly hard hit, since the termite mounds they use are close to the ground and easily accessible to terrestrial as well as arboreal snakes. Snake density is extraordinarily high on the island, and my local assistants have unilaterally decided that parrot conservation is synonymous with snake eradication. They are very skeptical of my "ecological-importance-of-snakes" explanation, and I have to keep a close eye on them to prevent an all out snake massacre.

Poaching has indirectly contributed to the project, in the form of five confiscated chicks we obtained last year. The chicks ranged from two to four weeks in age, and all had some feather development. I hand-raised them on Kaytee Products' baby-bird formula, then weaned them onto a combination of Marion Zoological's Scenic bird food pellets and natural diet items (I am very grateful to both companies for donating the feeds, which made hand-raising the chicks much easier and more successful). At about fledging age, I transferred the birds to a 4 x 4 meter cage standing in parrot habitat, which has allowed them to fly about and to learn natural vocalization from

wild parrots. This year I will use them in nutritional and feeding behavior studies, the current focus of my research.

The hand raised chicks provided a rare opportunity for a reintroduction experiment, which was informative both in its success and its failure. After hand-feeding the chicks for about two weeks, I placed three siblings in a nest with chicks of the appropriate age distributions. Only the youngest of the introduced chicks was accepted by the foster parents, probably because it was the only one of the three siblings that still showed a normal begging response, raising its head and calling vigorously at the approach of either the food syringe or an adult bird. Poachers corroborate this conclusion, since they often remove all chicks from a nest near their house, sell them, and replace them with one or more chicks from a faraway nest which they cannot protect but for which they do not yet have a buyer. Poachers have successfully fostered chicks of over a month of age, although they do usually foster chicks younger than the original ones. At any rate, we now know that if any more chicks are confiscated, we will be able to reintroduce them to protected nests in the study area if we act quickly.

We probably will get some more confiscated chicks, given the increasing involvement of the National Guard and the Ministry of the Environment with parrot conservation on Margarita. In March 1989, WCI-supported researcher Patricia Marquez initiated a conservation education project which has successfully raised public interest in conservation, led to a reduction in parrot poaching, and achieved the declaration of the parrot as the regional bird. Last year the local cultural development group sponsored a film for local television about our work with the parrots, and posters, T-shirts, coloring books, pamphlets and stickers carry the conservation message everywhere on the island. Work will continue in 1990 with the participation of the Venezuelan Ministry of Environment, the Venezuelan conservation group Pro Vita Animalium, and Wildlife Conservation International.

Given the success of the educational program so far, I am convinced that poaching is a solvable problem, although its eradication may take

some time. The other major threat to the parrots, habitat destruction by sand mining, is irreversible and therefore far more serious. We are lucky to have met with unexpected success in that area. One of the local sand mine owners has supported our research from the very beginning, to the extent of chasing after poachers when necessary, and moving the tractors when these threatened the nesting areas. He has now decided to gradually phase out sand mining as a source of income, and replace it with an ecotourism industry. Ecotourism is essential to ensure the rational development of Macanao, and to preserve its unique fauna and flora. The parrot itself has become a symbol, and a very eloquent one, for conservation on the island, but there are endemic subspecies of deer, ocelot, rabbit, and Blue-crowned Conure on Macanao that also require protection and research. It is my hope that parrot conservation on Margarita will encourage rational resource use, and that projects elsewhere will in the future emphasize the important interactions between parrots, their habitat, and the local traditions that will ultimately protect them. ●



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