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BEHAVIOR, HABITAT, AND STATUS OF THE NOCTURNAL CURASSOW (*NOTHOCRAX URUMUTUM*) IN NORTHERN PERU[1]

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Resumen. – Comportamiento, habitat y situación del Paujil Nocturno (*Nothocrax urumutum*) en el norte del Perú. – El Paujil Nocturno *Nothocrax urumutum* es un residente bastante común de los bosques húmedos altos de la "*terra firmé*" en la planicie de la cuenca del Amazonas y en las estribaciones andinas (120–850 m) en el norte del Perú, principalmente al norte del Río Marañón. El Paujil Nocturno canta regularmente tarde en el noche, principalmente durante noches despejadas y sin luna, desde 19:00–23:00 h, y con menos frequencia desde 03:00–04:00 h. Canta de vez en cuando durante noches con de luna y aún en noches cubiertas y frescas. Individuos cantan desde perchas ocultas c. 15–25 m arriba del suelo. El Paujil Nocturno parece pasar la noche parado en estas perchas sin moverse, y baja al suelo al amanecer para forrajear de la misma manera de otras especies de paujiles. El Paujil Nocturno es excepcionalmente cauto y se escapa de los depredadores a pie en vez de volar hasta un árbol donde podría ser cazado fácilmente. En realidad, el Paujil Nocturno es cazado con poca frequencia y sobrevive aún en los margenes de la parte baja del Río Napo, donde hay una gran densidad de población humana. Densidades (estimadas) de hasta 6 individuos por km^2 son comparables a los de otros crácidos grandes en un lugar prístino en el sur del Perú. Actualmente, el Paujil Nocturno no está amenazado en el Perú ni por caza o por deforestación, pero su situación debería ser monitoreada al ir incrementado la densidad humana en la parte oeste de Amazonía.

Abstract. – The Nocturnal Curassow (*Nothocrax urumutum*) is a fairly common resident of tall rainforest on "*terra firme*" in the lowlands and Andean foothills (120–850 m) in northern Peru, primarily north of the Río Marañón. The Nocturnal Curassow regularly vocalizes late at night, primarily on clear, moonless nights from 19:00–23:00 h, and less frequently from 03:00–04:00 h. They are vocal occasionally on brightly moonlit nights and even on overcast, cool nights. Calling birds use concealed perches c. 15–25 m above ground. The Nocturnal Curassow apparently spends the night on such calling perches without moving, and descends to the ground at first light to forage in the manner of other curassows. Nocturnal Curassows are exceptionally wary and escape predators on foot rather than by flying up into a tree, where they would become easy prey for hunters. Nocturnal Curassows are rarely hunted, which explains their continued survival along the densely settled banks of the lower Río Napo. Density estimates of up to 6 individuals per

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[1]This manuscript was written by Parker in the late 1980s, and was submitted to the proceedings of the II International Symposium on the Family Cracidae, held in February-March 1988. The publication of this symposium was delayed, and Parker's manuscript was feared lost. A copy of this manuscript recently surfaced, however, in a collection of Parker's papers that had been maintained by Jaqueline M. Goerck. The information in the manuscript seems as relevant today as when it was written. The only changes that have been made to Parker's original draft are very minor grammatical editing, the preparation of an abstract, and the updating of a few references. I thank Tyana Wachter for her suggested improvements to the Resumen. – Thomas S. Schulenberg, Environmental and Conservation Programs, Field Museum of Natural History, Chicago, IL 60605 USA.

km^2 are comparable to those of other large cracids at a pristine site in southern Peru. At present, the Nocturnal Curassow is not threatened in Peru by either hunting or deforestation, but the situation should be monitored as more and more of western Amazonia becomes settled. *Accepted 17 August 2001.*

Key words: Nocturnal Curassow, *Nothocrax urumutum,* Cracidae, Peru.

INTRODUCTION

The Nocturnal Curassow (*Nothocrax urumutum*) is probably the most difficult to observe of all South American birds. Delacour & Amadon (1973), summarizing what then was known of the species, stated that "so far as we know, no naturalist has ever seen *Nothocrax* in the wild by day." They described efforts by Wetmore (and later Amadon & Schwartz) and native collectors to obtain specimens in rainforest along the upper Río Orinoco of extreme southern Venezuela, and discussed what was learned of the nocturnal habits of this elusive species. Ruschi (1979) mentioned "flushing three or four from under a fruiting tree" and described a nest in Brazil. Otherwise, published field observations are nonexistent. In this paper I describe my own experiences with the Nocturnal Curassow in the field, including the first observations made by an ornithologist during daylight hours, and I present additional information on the nocturnal behavior of the species.

The Nocturnal Curassow presently is known from a vast area of lowland rainforest in the Amazon basin, from eastern Colombia along the Río Guaviare (Hilty & Brown 1986) and Venezuela along the upper Río Negro near its confluence with the Río Casiquiare (Meyer de Schauensee & Phelps 1978), south through eastern Ecuador to northeastern Peru, and in western Brazil west of the Rio Negro south to the Rio Jiparaná in Rondonia [see Stotz *et al.* 1997; tape recordings in the Library of Natural Sounds (LNS), Cornell Laboratory of Ornithology], and the headwaters of the Rio Tapajos (Sick 1985). In Peru, it occurs from the foothills of the Andes in extreme northern Amazonas (upper Río Cenepa; Louisiana State University Museum of Natural Science specimens) eastward along the north bank of the Río Marañon and along both banks of the Río Napo to the Amazon. It also inhabits hill forest south of the Amazon in the forested region between the ríos Ucayali and Javarí.

STUDY AREAS

My observations of Nocturnal Curassows were made in the following localities: Cerro Guadalupe, upper Río Cenepa, depto. Amazonas, 13–14 August 1978; 2 km south of La Libertad, south bank of the Río Napo, depto. Loreto, from 24 May–6 June 1982; 1–3 km north of the mouth of Quebrada Sucusari, north bank of the Río Napo, depto. Loreto, from 3–28 June 1983, 10–20 January 1984, 11–25 June and 22–25 August 1984, 16–30 January 1985, 8–23 June 1985, and 23–27 January 1986.

RESULTS

Habitat. On Cerro Guadalupe, as well as along a ridge at the headwaters of the Río Kagka (J. P. O'Neill pers. com.), depto. Amazonas, Nocturnal Curassows inhabited tall, humid rainforest on slopes and narrow ridge crests to an elevation of at least 850 m. The canopy, which averaged about 30 m in height, was broken in places by large treefalls, most of which were overgrown by impenetrable tangles of vine-covered shrubs and small trees. Arboreal epiphytic mosses and bromeliads were common, especially along the ridge tops, whereas the shaded undergrowth, especially

on slopes, was fairly open and dominated by small *Geonoma* palms. Arboreal, woody vines were conspicuous along the edges of treefalls. At the lower Río Napo sites, the Nocturnal Curassow was noted only in mature "*terra firme*" forest, on gently sloping hills (to an elevation of c. 130 m) dissected by numerous small streams, 1–5 km from the nearest black water streams and seasonally flooded forests (or "varzea"). This high-ground forest structurally was similar to that described above, but had a few taller emergents, less arboreal epiphytic vegetation, and a somewhat denser, shrubby understory. *Geonoma* palms were equally numerous and conspicuous.

Behavior. My first opportunity to study the Nocturnal Curassow in the wild came in August 1978, when I joined a hunting party of four Aguaruna Indians for six days of travel by dugout canoe and a long hike to the summit of Cerro Guadalupe. Although we did not see the curassows, we heard several calling at a great distance late on the moonlight night of 18 August. With the help of translators Brent Berlin and James Boster, John O'Neill and I began to compile natural history observations based largely on the accounts of the Aguaruna hunters. Most of this anecdotal information later was corroborated by "mestizo" hunters living near my Río Napo study areas. Aguaruna and Huambisa men referred to the curassow as "ayachui", whereas "mestizos" called it "montete".

The general consensus among Peruvian hunters was that the Nocturnal Curassow is an extremely elusive but at least partially diurnal species that spends most of its time on the ground searching for fallen fruits. At least three reliable sources claimed that the species is most active during the first few hours of light, and again late in the afternoon, a daily rhythm similar to that of most cracids. Many believed that curassows take cover in holes in fallen logs or impenetrable treefalls during mid-day when rarely seen. All hunters agreed that the birds are extremely difficult to find during the day, and that they differ from other cracids by running away rapidly and quietly when alarmed. In contrast, other large cracids, especially *Crax* spp. and all *Penelope* spp., are quick to fly up noisily from the ground when disturbed, and usually perch conspicuously, if only for a few seconds, on open branches at mid-heights or in the lower canopy. Additionally, the latter species usually utter disturbance calls of some kind, these being particularly loud in the case of *Penelope* species. Due to the wary nature and relatively small size of these curassows, hunters generally do not go out of their way to hunt Nocturnal Curassows, preferring easier and larger prey such as deer, peccaries, monkeys, or large rodents (especially *Paca agouti*). When they do locate Nocturnal Curassows calling from high in trees at night, or during the hours just before dawn, hunters usually wait for the birds to flutter down to the ground at first light, rather than waste shells on birds wholly or partially obscured by dense vegetation. Armed with bright flashlights, Aguaruna hunters rather easily spotlighted and collected two calling males, but good lights are rarely available to native hunters, and probably are used mainly for much larger game. Our attempts to spotlight curassows were successful only once in six attempts, when G. Rosenberg and T. Schulenberg tape-recorded (LNS) and collected a seemingly solitary female calling from a fairly open limb about 15 m above ground south of the Libertad camp. These observers were unable to detect any eye shine but were fortunate to see the entire bird in silhouette (Rosenberg, pers. com.). At least one mestizo hunter along the Río Napo claimed to use dogs to hunt Nocturnal Curassows during the day, when the birds were said to "freeze" occasionally in dense undergrowth rather than attempt escape by running.

I first saw a Nocturnal Curassow late in the morning on 31 May 1982 while watching antbirds drawn to a swarm of army ants (*Eciton burchellii*) moving through dense undergrowth along a small stream in tall forest about 2 km south of Libertad. The bird emerged from a dark thicket of *Heliconia* sp. plants at the edge of a large treefall in the bottom of a narrow ravine. Seemingly unaware of my presence, it walked upslope away from an oncoming phalanx of ants, and disappeared within 15 seconds. I tried to follow it through the undergrowth, but it vanished without so much as rustling the damp leaf-litter. The bird seemed to be avoiding and perhaps fleeing from the ants, but I cannot rule out the possibility that it had been foraging near the swarm before becoming aware of my presence.

My second encounter with the species was much more dramatic. On 18 June 1986, while censusing birds along a heavily used trail at the Sucusari site, I stopped (at c. 10:30 h) about 2 m from the massive, earth-covered root system of a recently fallen tree, when an adult curassow darted swiftly across the path in front of me and continued off, zigzagging down a gentle slope through the open undergrowth of tall forest. Thinking that a nest or young might be nearby, I cautiously edged up to the uprooted trunk and peered over it. In the 2-m across depression created by the unearthed roots, my eyes briefly focused on another curassow not more than two meters away. The bird was lying in the middle of the hole, with its body pressed against the ground; the head was turned to one side, and the wings were partially open and flattened on the ground. Upon seeing me it bolted off in the direction of the first bird and vanished within seconds. I searched unsuccessfully for them for 30 min. I assume that the birds had been foraging in the vicinity of the fallen trunk when they heard my approach, because I had walked the same trail 45 min earlier, from the opposite direction, passing within a meter of, and in clear view of, their hiding place. My only other observation was a several second glimpse (at c. 08:00 h) of another adult running away through *Geonoma* palm undergrowth of hilly forest about 2 km north of the previous sighting.

Nocturnal behavior. Although the above three sightings of the Nocturnal Curassow are my only daytime records during 60 days of intensive fieldwork at the study sites, I regularly heard the species calling at night at both Napo localities. At least three "pairs" regularly vocalized within earshot (1–2 km) of the Sucusari camp, and one "pair" and 3 single birds were heard several times 2–3 km south of Libertad. They sang most often on clear, dark nights during short periods of dry weather, but occasionally were heard on brightly moonlit nights, and also on unusually cool, overcast nights. Singing usually commenced 2–4 h after dusk (mean = 21:00 h for first song; range 19:00–23:00 h), and often continued until 23:00 h. A briefer period of vocal activity extended from c. 03:00–04:30 h. Song bouts broken by occasional brief periods of silence were typically 15–45 min in duration. The song consists of seven low-pitched, resonant notes delivered at a rate of 4–5 per min: *hmm-hmm-hmmmm, hmm hmm-hmmm, hmmph!* The second and third notes of the second phrase are distinctly higher-pitched and more slurred than the preceding ones, and the terminal note is the loudest and most emphatic. At a distance of more than 1 km, songs sound very low and muffled, and are similar in quality to those of other curassows. At 30–100 m, the same vocalizations are distinctly clearer and higher-pitched than those of related species.

Although single birds, probably males, often were heard, I also regularly heard two individuals, presumably a male and a female, calling in chorus from the same tree or from adjacent trees. The second individual of the

two usually sang immediately after the first, but occasionally songs were partially or wholly overlapping. Calling pairs often were answered by one or two distant pairs, after pauses of c. 5 to 10 sec. Calling birds perched near trunks within dense tangles of vines and foliage from c. 15–25 m above ground (mean = 5 individuals). Three of five trees containing calling birds were on sloping land higher than most of the surrounding forest and near or at the edges of treefalls. Such sites appear to be ideally situated for maximum broadcast potential. All individuals remained motionless while in the trees, and attempts to get them to move by pounding on trunks or throwing sticks in their direction were unsuccessful. Although such disturbances would cause them to fall silent, at least three curassows resumed calling within 20–30 min.

Population. Regular nighttime counts of calling Nocturnal Curassows yielded density estimates of approximately 4 individuals per km^2 at Libertad, and 6 per km^2 at Sucusari. Such densities are comparable to those reported for other large cracids at a rainforest site of about the same size (82 ha) in Manu National Park, southeastern Peru (see Terborgh *et al.* 1990). In contrast to my Napo study areas, the Manu site is remote and unhunted. Constant hunting pressure along the lower Río Napo has resulted in the extirpation of the Blue-throated Piping Guan (*Aburria pipile*) and the Salvin's Curassow (*Crax salvini*) from my study sites, and in the rarity of the Spix's Guan (*Penelope jacquacu*). Fortunately all these survive within 10–20 km of the sites, and with the probable exception of the Wattled Curassow (*Crax globulosa*), a bird of riverine forest and river islands in the Napo (see Remsen & Parker 1983), no cracid is threatened with extinction in Peruvian Amazonia, except locally in narrow, heavily hunted zones along major watercourses. That the Nocturnal Curassow still is fairly common within 2 km of the settled banks of the Río Napo only 70 air km from Iquitos, the largest city of the Peruvian Amazon, suggests that this species is not threatened by hunting at the present time. The known range of the Nocturnal Curassow encompasses roughly 300,000 km^2 of rainforest in Ecuador and Peru alone, most of which is much less densely settled than the lower Río Napo region. Extrapolation from densities of 6 individuals per km^2 in northern Peru yields a conservative estimate of 1 million individuals if only 10% of the available habitat is occupied. Particularly heartening is that the species almost surely occurs throughout the vast area between the Putumayo and Marañón rivers in Ecuador and Peru, and it may also occur south of the Marañón in the Pacaya-Samiri National Park. It also is reportedly common along the Guaviare and Casiquiare rivers in Colombia (Hilty & Brown 1986), and probably is equally numerous throughout much of its range in Brazil.

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