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# A new species of *Gallirallus* from Calayan island, Philippines

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An unidentifiable species of rail was observed in May 2004 on Calayan island in the Babuyan islands, northern Philippines. One specimen of the bird was collected. Comparison with other rails of the region show it to be a previously undescribed species for which the name *Gallirallus calayanensis*, Calayan Rail, is proposed. It is apparently most closely related to Okinawa Rail *G. okinawae* of Okinawa in the Ryukyu islands, Japan. It is common in at least the north-central part of Calayan where forest overlies coralline limestone with sinkholes. It was neither seen nor heard on the other Babuyan islands visited. Although not apparently under immediate threat, given its small currently known range and population it may warrant classification as Vulnerable on the IUCN Red List.

## THE GENUS *GALLIRALLUS*

Sixteen species of *Gallirallus* rails have been recognised to date, ranging from the west Pacific islands and Australia to India and China (Taylor 1998). Almost all of these are island species, many are endemic to small islands, and some are already extinct. Three species are known from the Philippines: Slaty-breasted Rail *G. striatus* and Buff-banded Rail *G. philippensis*, which are the most wide-ranging of all the *Gallirallus* species, and Barred Rail *G. torquatus*. To the north, Okinawa Rail *G. okinawae* is restricted to Okinawa in the central Ryukyu Islands, Japan. *Gallirallus* rails are characterised by a robust bill and barring on the primaries (Olson 1973). The above species are also characterised by barring on the underparts. Another species, Sharpe's Rail *G. sharpei*, known from one specimen of unknown provenance, may possibly also originate in this region (BirdLife International 2004).

## DISCOVERY OF THE NEW *GALLIRALLUS*

Two groups of islands lie in deep water between Luzon in the Philippines and Taiwan: the more northerly Batanes islands, and the Babuyan islands which lie closer to Luzon. They are believed not to have been connected by land bridges to either Luzon or Taiwan during the Middle or Late Pleistocene (Heaney 1985). Of these islands, Calayan has been remarkably little explored by ornithologists: R. C. McGregor visited from October 1903 to January 1904 (Dickinson *et al.* 1991), but a century has elapsed since that time; we know of no further visits by ornithologists except our own.

At 11h30 on 11 May 2004, CE was birdwatching in central Calayan island as part of a faunal inventory being conducted by the Babuyan Islands Expedition organised by CO and GB. On a path in a coconut grove, a group of four rails were noticed making loud, harsh, rasping calls from a slope close by. Two silent birds were then seen crossing the trail and foraging by turning over dried leaves with a side-to-side motion of their bills. The birds were dark overall, lacked any barring, and had an orange-red bill and legs. Two

individuals appeared to be the same size as Barred Rail, while the other two appeared to be smaller. As they were unfamiliar, several photographs were taken, the calls were recorded, and notes were made. The observations were reported to the rest of the team members, and the next day DA searched the same area. Calls were heard in a nearby area of secondary growth, and playback resulted in a brief sighting of a silhouetted bird. On returning towards camp, DA heard the calls again in an area of primary forest. Following playback, a rail soon approached to within 2 m. The uniform dark plumage, red legs and medium-length red bill suggested that this was a hitherto undescribed species of rail.

Later that day DA made a short video-recording of one of the rails and showed it to the other team members. Over subsequent days many observations were made by all the authors. The number of sightings indicated that the rail was quite common in the area. As the group had a collecting permit issued by the University of the Philippines Los Baños (UPLB) through an Academic Research Agreement (ARA) with the Department of Environment and Natural Resources (DENR), it was decided that a specimen should be taken. The next day a bird was caught, and on the basis of this specimen we propose the name:

## *Gallirallus calayanensis*, sp. nov. Calayan Rail

### Holotype

Deposited in the National Museum of the Philippines, Manila, accession number NMB-019612 collected by Carl Oliveros on 14 May 2004 at 19°19.348'N 121°26.905'E, Longog, Barangay Magsidel, Calayan island, municipality of Calayan, Cagayan province, Philippines, at an altitude of 300 m. The bird appears to be a subadult female, as a poorly developed left oviduct was found on dissection, although no ovaries were visible.

### Description of holotype

Crown, nape, breast, belly, back and upperwing-coverts all dark olive; cheeks, ear-coverts, throat and lores blackish; chin white; rump olive-brown, and tail



**Plate 1.** Front view of Calayan Rail, Longog, Calayan island, Philippines, 14 May 2004.



**Plate 2.** Upperparts of Calayan Rail, Longog, Calayan island, Philippines, 14 May 2004.



**Plate 3.** Underwing of Calayan Rail, Longog, Calayan island, Philippines, 14 May 2004.



**Plate 4.** Close-up of underwing of Calayan Rail, Longog, Calayan island, Philippines, 14 May 2004.



**Plate 5.** Presumed juvenile or immature Calayan Rail showing pale ear-coverts, Longog, Calayan island, Philippines, 16 May 2004.



**Plate 6.** Calayan Rail showing rufous coloration in sunlight, Longog, Calayan island, Philippines, 16 May 2004.

blackish-brown (Plates 1–2). Remiges: upper surface black, edged brown on outer web, more broadly edged brown on inner primaries; lower surface blackish-brown narrowly edged pale brown; base of primaries white. Some primaries appeared very worn with a bristle projecting from the remaining rachis. Underwing-coverts blackish-brown irregularly marked with cream, forming four more-or-less regular narrow bars along the marginal, lesser and median underwing-coverts, with one bar extending onto the median underprimary coverts; greater underwing-coverts also irregularly spotted with cream (Plates 3–4). The tail feathers are decomposed, giving the tail a tufted, hairy appearance (Plate 2). Feet and legs orange-red in the living bird but darker red in the dried specimen, claws pale horn, but orange-red on ridge. Lower mandible scarlet at base, grading to orange at gonys; upper mandible scarlet basally grading to orange at distal end of nares. Bill yellowish distally from gonys, with tip and cutting edge buffy-horn, and ridge of culmen darker horn. Iris orange with narrow orange orbital ring. These colours were recorded in indirect sunlight; in direct sunlight the plumage appears browner.

### Measurements of holotype

Measurements (in millimetres) were taken from the preserved skin at least 25 days after collection. Minimum wing chord: 142.6 (left), 147.1 (right). Maximum chord of flattened, straightened wing: 150.9 (left), 153.6 (right). Tail length: 59.7. Bill length to skull: 33.7; bill length from gape: 40.6; width at base of nares: 7.7; depth at gonys: 7.7. Tarsus: 48.6 (left), 46.9 (right). Middle toe: 52.1 (left), 52.9 (right). Length of keel of sternum: 46.0; length of clavicle: 38.5. Weight (of live bird): 244.5 g.

### Diagnosis

The size and shape of the bill, pattern of scutes on the tarsus, overall body size, and geographical location indicate that the specimen belongs in the genus *Gallirallus*. However, it is somewhat aberrant as the other members of the genus have barred primaries (Olson 1973), whereas it retains barring only on the underwing-coverts. Table 1 compares the key characters of Calayan Rail with a number of other rails of the region. The other *Gallirallus* species occurring in the Philippines, Slaty-breasted, Buff-banded and Barred Rails, all have barred underparts and have a horn-coloured, brown or grey bill and legs. Calayan Rail is most similar to Okinawa Rail in its red bill and legs, olive back, and decomposed tail (the latter confirmed by K. Ozaki *in litt.* 2004), but lacks the striking black face and throat, white cheek-line and barred underparts. Sharpe's Rail also has a red bill and legs, but it has white spotted upperparts and primaries barred with white (Taylor 1998). The only rail in the region that has a uniform plumage with red bill and legs is Drummer Rail *Habroptila wallacii*. This is superficially similar to Calayan Rail but is much larger and geographically rather distant, being confined to Halmahera in the North Moluccas, Indonesia (Taylor 1998 BirdLife International 2001). Moreover, *Habroptila* differs from *Gallirallus* in having a frontal shield and feathered tibiotarsus, and lacking barring on the primaries and underwing-coverts. del Hoyo *et al.* (1996) considered Barred Rail and Okinawa Rail (together with New Britain Rail *G. insignis*) to form a distinct subgroup within *Gallirallus*. Calayan Rail would seem to belong to this subgroup.

We noted a number of smaller Calayan Rail individuals, presumed to be juveniles. These birds were nearly uniform in colour, and had orange-red bills and

**Table 1.** Comparison of characters of Calayan Rail with other rail species (Philippine race where indicated by trinomials; data for other species from Taylor 1998 and Kennedy *et al.* 2000).

Species	Distribution	Characters	Wing (mm)	Tarsus (mm)	Tail (mm)	Bill (mm)
CALAYAN RAIL <i>Gallirallus calayanensis</i>	Calayan island, Philippines	Bill and legs red; plumage rather uniformly olive or rufous with barring only on underwing-coverts	151–154	47–49	60	33.7
OKINAWA RAIL <i>Gallirallus okinawae</i>	Okinawa island, Japan	Bill and legs red; upperparts olive/olive-brown; face and throat black with prominent white cheek-stripe; underparts black barred white	139,148	59, 65	53	45, 52.5
BARRED RAIL <i>Gallirallus torquatus torquatus</i>	Philippines, [Indonesia to New Guinea]	Bill and legs dark horn; upperparts dark brown; face, chin and throat black with prominent white cheek-stripe; underparts black barred white	135–156	46–53	45–62	41–48
SHARPE'S RAIL <i>Gallirallus sharpei</i>	Unknown	Bill and legs red; upperparts brownish-black spotted white, remiges barred white	140	41.5	65	26
BUFF-BANDED RAIL <i>Gallirallus philippensis philippensis</i>	Philippines [Australasia, Indonesia]	Bill greyish-horn with purplish-red base; legs and feet greyish-brown; white eyebrow and rufous facial stripe and hindneck; underparts mostly barred black and white	129–144	39–46	65–68	27–33
SLATY-BREASTED RAIL <i>Gallirallus striatus striatus</i>	Philippines [India, China to Greater Sundas]	Bill horn with purplish-red base; legs greyish-horn; sides of face and breast light grey; upperparts brown, barred white; belly barred black and white	111–122	32–36	32–40	34–40
DRUMMER RAIL <i>Habroptila wallacii</i>	Halmahera, Indonesia	Bill red with frontal shield; legs red; upperparts brownish-black and slaty-grey	179–185	79–99	55–71	70–84

legs. Some individuals had whitish ear-spots, and one such bird also had a shorter bill (Plate 5). Juveniles of Okinawa Rail and Barred Rail are not uniform in colour but show the blackish face with white cheek-line of adults.

Most birds observed appeared very dark olive-brown or even sooty in the gloom of the forest floor, but more olive on better-lit open paths. Occasionally, notably in bright sunlight, individuals appeared rufous with browner wings (Plate 6). This may be an effect of lighting, as in Plates 1 and 3 the primaries show a strong rufous tinge with light shining through them. Nevertheless, we have been unable to reproduce this effect with the holotype specimen and the matter remains unresolved.

### Etymology

The species is named after the island to which it is thought to be endemic, and it is hoped that the scientific and common names will draw attention to the ornithological importance of the island. There are two subspecies of bird occurring on Calayan with the trinomial *calayensis* (*sic*) but this is the first full species to be named after the island.

### Behaviour

When undisturbed, Calayan Rails foraged by pecking at the ground, occasionally overturning leaves with a sideways sweep of the head and bill. In some areas, the rails appeared to be very shy and ran off quickly giving an alarm call; in other areas birds were tamer and tolerated closer approach to within 1 m. Although singles were often seen, small (presumably family) groups were also observed. When birds were relaxed, the tail was held horizontal; it was cocked when they became nervous. Occasionally, birds resembled Barred Rails with their characteristic stance of cocked tail and head drawn back with the bill parallel to the ground. No birds were seen to fly. A preliminary examination of the holotype revealed a small sternum and pectoral muscles; this, and the weak tail, suggests that the species is flightless or nearly so, as are some congeners (e.g. Okinawa Rail).

### Diet

The stomach of the holotype contained the opercula of snails, beetle fragments and millipede rings. A limestone gastrolith and strands of grass-like plant material were also present.

### Distribution and habitat

Calayan Rail is presently known only from Calayan island in the Babuyan group of islands, northern Philippines. The Babuyan islands comprise five main islands: Camiguin Norte, Babuyan Claro, Calayan, Dalupiri and Fuga, together with some small islets including Pamoctan, Guinapao Rocks and Didicas. We visited all of these islands except Fuga. While time did not permit all areas on all islands to be surveyed directly, local residents were questioned closely about which birds they knew, and often acted as our guides. Close attention was paid to bird calls, and recordings were made and discussed. No-one reported birds fitting the description of Calayan Rail on any other

island. Thus we believe that the species may be restricted to Calayan.

Calayan is not densely populated. The main town and population centre of the island (Poblacion) is located on the south side of the island, behind which are extensive areas of rice fields. We thoroughly investigated these fields and adjacent areas of forest and scrub. While Barred Rail was common in this area, Calayan Rail was not observed. To the north of the rice fields lies a large block of primary forest on apparently clay soils. We established a camp on the north side of this block in a large rice-field clearing in the geographical centre of the island; this was connected by a network of paths through secondary forest to other such clearings. This area lies on coralline limestone that is permeated with sink-holes and caves, although streams flow at the surface in some places and are diverted for rice irrigation.

Calayan Rail was found to be common in primary and secondary forest on this limestone, and even in degraded areas with young secondary growth of low trees. For example, up to eight individuals were seen or heard along a 2 km trail in one morning. The species appeared to prefer areas near streams, but it was not clear if it was tied to them. Discussion with local people established that it was well known in the area and called *piding*, although this name is also used for the Plain Bush-hen *Amaurornis olivaceus*. However, Calayan Rail was not found in rice-fields or in open clearings, where White-breasted Waterhen *Amaurornis phoenicurus* and Plain Bush-hen occurred; nor was it found along trails that traversed the primary forest block in the southern half of the island, and there was no response when tapes of its calls were played there. The rail may be restricted to, or prefer, areas of coralline limestone, but further surveys are required to confirm this.

Unfortunately, we did not have time to explore further than 2 km from camp along two trails. These formed a triangle encompassing an area of c.2 km<sup>2</sup>. By extrapolating from the frequency of observations, we estimate there could be one pair per 1–2 hectares in suitable habitat, giving an approximate total of 100–200 pairs in the area we surveyed. We have no information on the total extent of the area of forested coralline limestone, but areas near the north and west coasts have a dispersed human population with associated agricultural clearings. The extent of occurrence of the Calayan Rail is likely to be much less than 100 km<sup>2</sup>, and possibly lower than 10 km<sup>2</sup>.

### Vocalisations

Birds were observed making a series of hoarse, staccato, *ngeck ngeck ngeck*... calls repeated at a rate of about seven per second and given in a series lasting 30 seconds or more (Fig. 1). Both individuals and small (possibly family) groups gave this call, sometimes in response to playback of the call. The call resembles one of the calls of Okinawa Rail (Kabaya and Matsuda 2001), although the energy distribution within the harmonics appears different. Barred Rails give calls at a slower rate (c.4 notes per second). A hand-held bird gave an alarm call *ngreeek* (Fig. 2), and a similar call *krreeert* was also heard in the field (Fig. 3), sometimes extended into a trumpeting scream. It is apparently

quite different from any call of the Okinawa Rail (K. Ozaki *in litt.* 2004). A shorter form of this call, *skeet!* was occasionally heard when individuals dashed for cover.

### Affinities of the Babuyan avifauna

The principal biogeographical influence on the Babuyan islands is that of Luzon. However, both the Babuyan islands and the more northerly Batanes have some affinities with Lanyu (Taiwan) and the Ryukyu islands of Japan to the north. This is the only part of the Philippines where northern species such as Whistling Green Pigeon *Treron formosae*, Ryukyu Scops Owl *Otus elegans* and Brown-eared Bulbul *Ixos amaurotis* occur, as well as, among mammals, Ryukyu Flying Fox *Pteropus dasymallus*. If Calayan Rail is most closely related to Okinawa Rail, this is further evidence for a northerly influence.

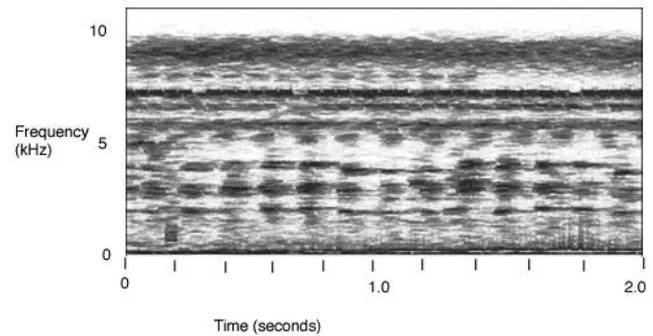
### Conservation

Calayan is a small island of 196 km<sup>2</sup>, and Calayan Rail may be restricted to only those parts of the island with forested coralline limestone outcrops. Here the soil is often very thin or absent, and hence unsuitable for agriculture. The rail was seen in both primary and degraded forest. The human population of the area is very low. Although the rails are apparently occasionally caught in traps set for Red Junglefowl *Gallus gallus*, they are not directly targeted. Introduced predators such as dogs and cats were largely absent. Potential natural predators include monitor lizards *Varanus salvator*, one of which was seen pursuing a pair of rails on one occasion. Snakes are also likely predators, although the recently introduced poisonous toad *Bufo marinus* may have reduced snake numbers on the island. Some of the larger raptors that migrate through Calayan may also prey on rails. However, we found no evidence to infer that the population is declining.

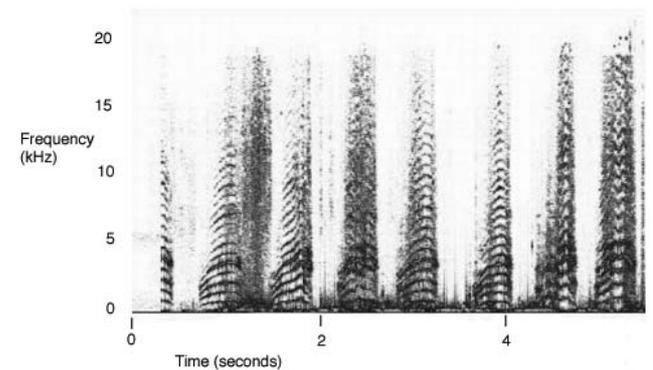
The human population on Calayan is low (8,451 individuals) and is concentrated in the south of the island. However, the construction of a road around the periphery of the island, and a link to its centre, have already been started. These roads may well encourage the spread of settlements and hence cats, dogs and rats, and could threaten the Calayan Rail population. In the longer term, the witting or unwitting introduction of predators or niche competitors is an ever-present danger.

Conservation is already being promoted in the Babuyan islands. The Worldwide Fund for Nature (WWF)-Philippines has been working to preserve humpback whales *Megaptera novaeangliae* in the area, and has been promoting environmental awareness in local schools since 2001. More recently, in June 2003, a bill was filed in the Lower House of the Philippine Congress that seeks to declare the islands of Calayan municipality and the surrounding waters a protected area.

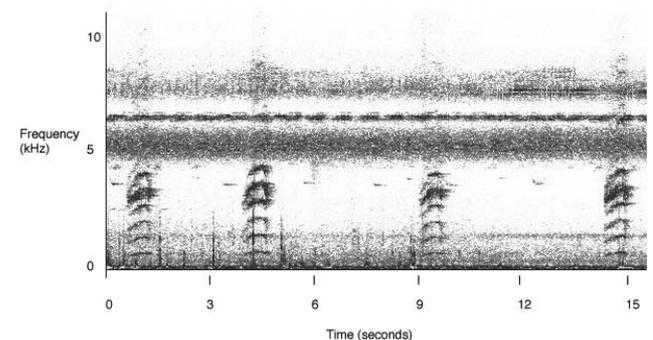
These measures may encourage the protection of the rail's habitat. However, it should be borne in mind that flightless rails are particularly vulnerable to extinction. Of 20 extant flightless rail species, only two are not considered threatened, and neither is restricted to a small island (Taylor 1998). Of the 20 species or subspecies of rail that have almost certainly become



**Figure 1.** Sonagram of calls of Calayan Rail, Longog, Calayan island, Philippines, May 2004.



**Figure 2.** Sonagram of alarm calls of Calayan Rail, given by hand-held bird, Longog, Calayan island, Philippines, May 2004.



**Figure 3.** Sonagram of alarm calls of presumed Calayan Rail (bird not seen whilst recording made), Longog, Calayan island, Philippines, May 2004.

extinct since 1600, 90% were flightless (Taylor 1998). Some of these were hunted to extinction, but the main cause was the introduction of predators such as dogs, cats, mongooses, pigs and, on Guam, the brown tree snake *Boiga irregularis*; a secondary cause has been habitat destruction (Taylor 1998). The Okinawa Rail has continued to decline in numbers since its discovery, owing to predation by cats and mongooses, despite official protection and public awareness (Ozaki *et al.* 2002).

On the basis of its small currently known population and range size, the Calayan Rail appears to qualify as Vulnerable on the IUCN Red List under criteria D1 (population <1,000 mature individuals) and D2 (area of occupancy <20 km<sup>2</sup> or restricted to ≤5 locations: IUCN 2001). This is a precautionary preliminary

assessment and further research is needed to clarify the habitat requirements, range size and population size of the species. It is likely to become more threatened in the future, and action is needed to pre-empt potential threats to the Calayan Rail and its habitat.

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