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THE GRAY-BREASTED CRAKE (*LATERALLUS EXILIS*) IN COSTA RICA: VOCALIZATIONS, DISTRIBUTION, AND INTERACTIONS WITH WHITE-THROATED CRAKES (*L. ALBIGULARIS*) [1]

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Abstract. We provide the first documentation of *Laterallus exilis* in Costa Rica. Because of its secretive nature, little is known about this species. We describe the coloration of its soft parts and contrast its vocalizations with those of *L. albigularis*, a common and sympatric congener. In Costa Rica, *L. exilis* apparently breeds during the rainy season. Contrary to previous beliefs, *L. exilis* appears locally common and widespread in Costa Rica. Although it appears most common in wet pastures, its habitat preferences shift seasonally, in response to fluctuating water levels. Because *L. albigularis* occupies the same types of habitat, we looked for evidence of interspecific interactions. We found that each species responded to playbacks of each other's vocalizations and that seasonal habitat shifts appeared reciprocal. Thus, we suggest that the coexistence of these rails is a dynamic process, mediated by interspecific territoriality and/or aggression.

Key words: Laterallus exilis; Laterallus albigularis; *vocalization; habitat; Costa Rica; interspecific interactions; rails.*

INTRODUCTION

The crakes of the genus *Laterallus*, collectively the least-studied group in the family Rallidae (Ripley 1977), are extremely secretive denizens of thick grassy or marshy vegetation, which they scarcely ever leave. The natural history of many species is very poorly known, even though the birds themselves may be widespread and even locally common. The Gray-breasted Crake, *L. exilis*, is just such a species, being known from less than 50 specimens over its entire range from Belize to Paraguay (AOU 1983). Indeed, many of the specimens were obtained without the birds ever being seen in the field by the collector. Two were caught by hand by men clearing tracts of marshy ground (Wetmore 1965); one was brought in by a house cat (Howell 1957); yet another was caught in a mammal trap set in a rodent runway (Storer 1981). That the bird is often overlooked over wide areas is attested to by Storer's (1981) specimen from Paraguay, which extended the species' known distribution 1,500 km to the south! Brief notes on the bird's habitat have been provided by Miller (1960), Wetmore (1965), Storer (1981), and Hilty and Brown (1986); the latter authors provide descriptions of some of the calls of *L. exilis*. Surprisingly, the nest and eggs of *L. exilis* were described long ago from Trinidad (Belcher and Smooker 1935) but no additional reports of nesting have been published.

In Central America, *L. exilis* was long known only from two specimens taken a century ago near the Nicaragua-Honduras boundary (Howell 1957). Since then, five additional specimens but few biological data have been obtained from Belize, Honduras, Nicaragua, and Panama (Howell 1957, Wetmore 1965, Russell 1966, Monroe 1968). The species is still widely regarded as rare and local (e.g., Blake 1977). In this paper we present the first reports of *L. exilis* from Costa Rica, where it is far more common and widespread than previously suspected. We also describe its vocalizations, soft-part colors, habitat, and interactions with its abundant and much better known congener, the White-throated Crake (*L. albigularis*). To facilitate detection and identification of *L. exilis*, we also describe in detail some vocalizations of *L. albigularis*.

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TABLE 1. Number of individuals of two *Laterallus* species located by vocalizations on two censuses of different habitats at La Selva.

Habitat	Wet season (August 1981)		Dry season (February 1983)	
	L. exilis (n)	*L. albigularis* (n)	*L. exilis* (n)	*L. albigularis* (n)
Tall grass–riverbank	0	3	0	4
Tall grass–high ground	4	2	0	5
Short-grass pasture	8+	0	15	0
Temporary marsh	0	6	4	1
Permanent marsh	0	8	0	10+
Totals	12+	19	19	20+

HABITAT AND NEST

The first evidence of *L. exilis* in Costa Rica was obtained at the La Selva Biological Station, 3 km south of Puerto Viejo de Sarapiqui, Provincia de Heredia, in the Caribbean lowlands, by S. Armbruster, M. Grayum, and P. Werner. At about 22:00 on 5 February 1980, a bird flew into the field station where, evidently blinded by the lights, it was captured, examined in detail with reference to a field guide, identified as *L. exilis,* and released (M. Grayum, in litt.).

The first indication of the habitat of *L. exilis* in the area was a bird observed by Levey at close range on the dark, rainy afternoon of 24 July 1981, as it foraged by a mud puddle on a dirt road through tall grass. Between 28 July and 18 August 1981, we traversed the surrounding area repeatedly in search of *L. exilis.* We twice flushed Gray-breasted Crakes in a nearby pasture. Eventually we learned their call and how to distinguish it from those of the abundant *L. albigularis.* This permitted us to conduct a rough census of the two species in the area, a mosaic of tall grass on high ground and along the river, shorter grass in pastures, and both temporary and permanent marshes (Table 1, Fig. 1).

We regularly heard at least two *L. exilis* in one small (ca. 2 m^2) area of tall grass during late July, but all attempts to trap, glimpse, or flush them failed. The birds were no longer present on 18 August and Stiles searched this dense patch of grass. He found a globular nest of (now) dry grass stems and blades, about 14 cm outside diameter. It had a wide side entrance and was located about

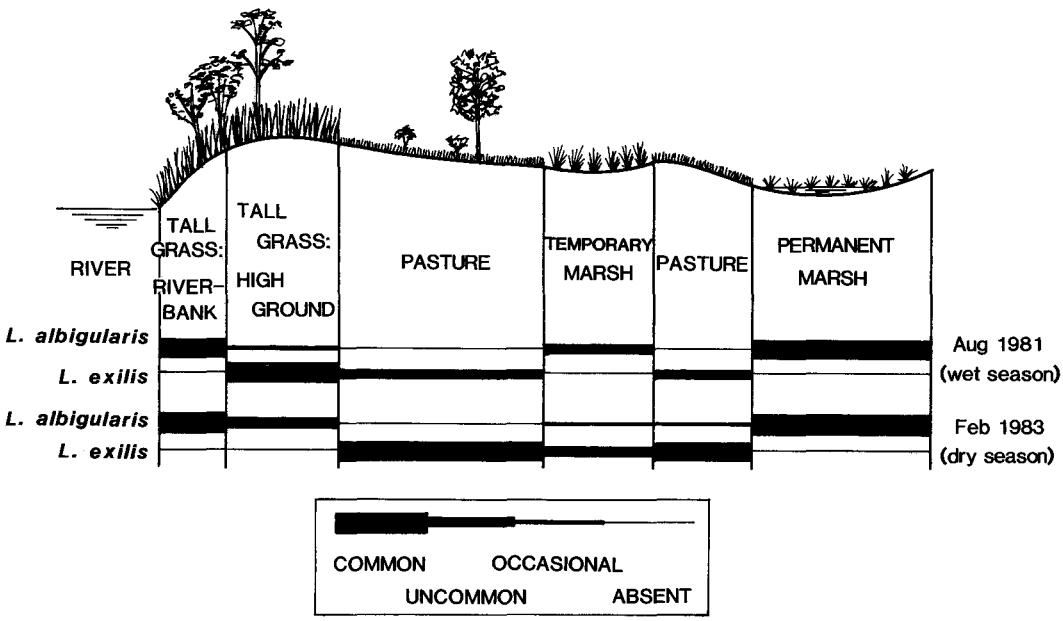

FIGURE 1. Schematic diagram. Rail habitats in La Selva area: North bank of Rio Puerto Viejo with relative abundances of two species of *Laterallus* in wet and dry seasons.

TABLE 2. Measurements of *Laterallus exilis*.

	Exposed culmen[1] (mm)	Wing chord (mm)	Tarsus length (mm)	Weight (g)
Males	16.2 (15–18)	72.6 (68–78)	22.7 (21–25)	29[2]
Females	14.8 (14–16)	72.8 (71–75)	22.6 (22–23)	34[2,3]
Specimen: adult female (UCR 2684)	16.1	70.2	22.0	34.9
Released: adult, male?	15.6	69.0	23.0	31.0

[1] Measurements from Blake 1977 (n = 19 males, 6 females).
[2] Weights from Ripley 1977 (n = 7 males, 3 females).
[3] R. W. Storer (pers. comm.) reports a weight of 27 g for a female *L. exilis* collected in Paraguay.

10 cm above ground. Apparently abandoned due to our disturbance of the birds 2 weeks earlier, the empty nest disintegrated upon being removed from the grass. The structure of the nest agrees fairly well with the description by Belcher and Smooker (1935), although *L. albigularis* builds a similar nest (Wetmore 1965).

DESCRIPTION OF SPECIMENS

On 22 February 1983 we set a line of mist nets (anchored at the bottom) just in front of a drainage ditch and adjacent to an area where we had heard *L. exilis* calling. With three assistants, we moved in a semicircular path in front of the net, trampling the grass as thoroughly as possible to eliminate the runways and making much noise. By gradually decreasing the radius of the semicircle, we drove the birds toward the net and captured two of them. One was photographed, measured, and released, the other, an adult female, was collected (no. 2684 in the bird collection of the Museo de Zoologia, Universidad de Costa Rica). This bird had very light fat, and its stomach contained insect remains, including a 2-cm tettigoniid grasshopper. Ripley (1977) reports its diet as "mainly seeds and, to some extent, insects." Measurements of our two specimens agree well with those given in Blake (1977) (Table 2). Because the two birds were netted together, it is likely they were a pair. Weight and wing length of the bird we released relative to the bird we collected, suggest that the released bird was a male. The two were similar in plumage and soft parts, save that the bird released showed some narrow white tipping on the wing coverts, while the specimen shows none.

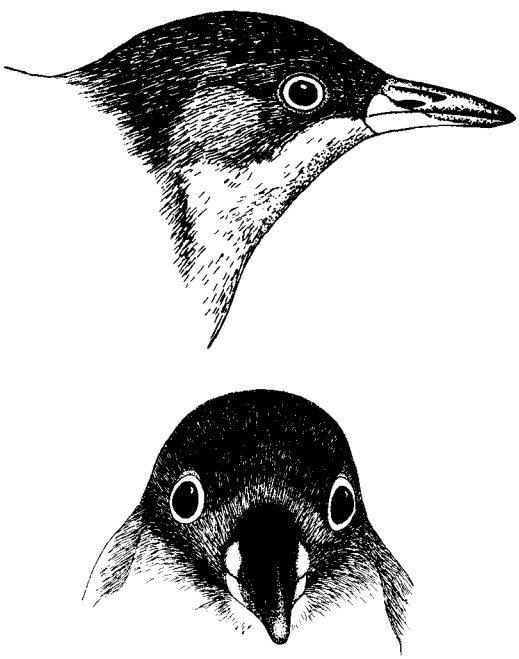

FIGURE 2. *Laterallus exilis* bill pattern.

No previous description or illustration (e.g., Ripley 1977, Storer 1981) does justice to the colors of the bill of *L. exilis*. The distal third of the lower mandible was black, the rest was a pale, almost luminous green. The green extended onto the proximal quarter of the upper mandible, creating a large, bright, sharply defined patch of color (Fig. 2). The conspicuous contrast of the green and black surely produces a striking effect in the dim light of the bird's runways under dense grass. Further contrast is provided by the red irides and narrow bare yellow eyelids. The legs were yellowish-buff.

VOCALIZATIONS

The commonest vocalization of *L. exilis* is an explosive series of two to 10 sharp, penetrating whistled notes (Fig. 3a). The first note is usually slightly higher in pitch than the following notes

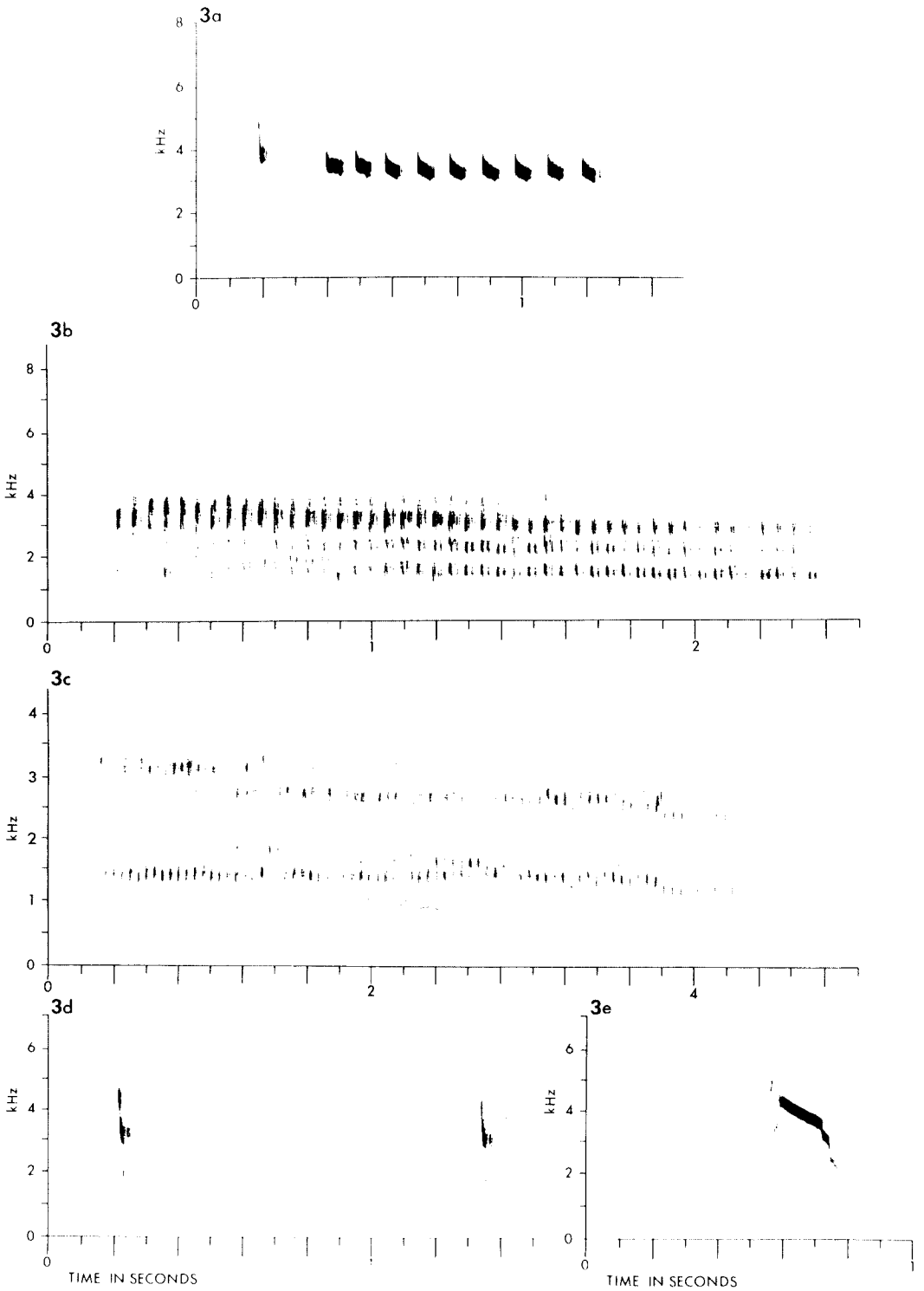

FIGURE 3. Sonograms of *Laterallus exilis* (a, b) and *L. albigularis* (c, d, e) vocalizations. (From Stiles, reel #13 in Florida State Museum Bioacoustical Laboratory and Archives.)

and is very abrupt. In longer series, the final notes may drop slightly in pitch. This vocalization, *dudedededededede,* is given in a variety of situations: in alarm or excitement, in response to playbacks, or in response to disturbances such as a loud noise. Often if one bird calls, others in the vicinity take up the chorus.

There seems to be some confusion over this vocalization of *L. exilis* and one of the Black Rail, *L. jamaicensis.* According to Ridgely (1981), a recording from central Panama ascribed to *L. jamaicensis* by the recordist, S. T. Harty, may be from *L. exilis.* Stiles has heard the recording in question and is sure that it is of *L. jamaicensis*—we have never heard such a vocalization from *L. exilis.* The vocalization of *L. exilis* is similar but contains many more notes and lacks a final rolling note (Reynard 1974).

The second vocalization of *L. exilis* is a dry rattle with a sharp, "ticking" quality (Fig. 3b). It may be brief or fairly prolonged. We have heard it mainly from birds at close range responding vigorously to playbacks, and occasionally at dawn and dusk. We suspect it is a territorial song. In general, it is heard much less often than is the more prolonged, bubbly, churring trill of *L. albigularis* (Fig. 3c), which is given in a wider variety of situations (more frequently in response to playback, disturbances like loud noises, etc.). The trills of both species contain approximately 20 syllables/sec but they differ dramatically in harmonics. In *L. albigularis* the dominant frequency is approximately 1.5 kHz, with a strong harmonic at 3 kHz. In *L. exilis* each syllable contains three frequencies (ca. 1.8, 2.5, and 3.2 kHz) at which the sound is almost equally intense, suggesting a complex vibration of syringeal structures, but without harmonics (Fig. 3b). *Laterallus albigularis* also has a slurred *chip* note, which it gives mainly when distressed, alarmed, or excited (Fig. 3d); in intense alarm, a shrill squeal is given (Fig. 3e). All of these vocalizations can be readily distinguished from vocalizations of *L. exilis,* which permits the use of vocalizations to census abundance and local distribution of the two species—a practical necessity as the birds are usually impossible to see.

INTERACTIONS WITH *LATERALLUS ALBIGULARIS*

Censuses of August 1981 and February 1983 (Table 1), made within 1 hr of sunrise and/or sunset, when these rails are most active and vocal, reveal a notable change in habitat use between wet and dry periods (Fig. 1). *Laterallus albigularis* always occupied the permanent marsh and riverbank, while *L. exilis* always occupied shorter grass in the pasture. However, in the wet season tall grass on high ground was used mainly by *L. exilis* and the temporary marsh by *L. albigularis.* In February this marsh had completely dried out and we found mostly *L. exilis* there, while all tall grass was occupied by *L. albigularis.* At this time, we found two pairs of *L. exilis* in an area 50 × 75 m in the pasture, and ca. seven to eight pairs in an area of ca. 2 ha. After 1984 the pasture was mostly abandoned and the grass grew higher. In June 1986, the grass was mostly over 1 m in height and occupied mainly by *L. albigularis.* In February 1987 there were no *L. exilis* in this area, but there were some in a more intensively-cropped pasture 0.5 km to the northeast.

TABLE 3. Responses of two *Laterallus* species to playbacks of their own vocalizations, and those of the other species, May 1984.

	Stimuli			
	Whistled call of *L. exilis* (Fig. 3a)		Churring trill of *L. albigularis* (Fig. 3c)	
Species tested	Response[1]	No response[2]	Response[1]	No response[2]
L. exilis	4	2	1	2
L. albigularis	3	2	8	0

[1] Response = approach and/or vocalization (within 10 sec of playing of call).
[2] No response = no vocalization within 10 sec or approach.

These results indicate that local habitat distribution of the two *Laterallus* species is highly fluid, with *L. albigularis* generally occupying wetter sites. Moreover, individuals or pairs seem spaced out and each species responds to the other's vocalizations (Table 3). This strongly suggests that the two species are interspecifically territorial, and that the habitat shifts might reflect competitive interactions. The fact that *L. albigularis* seemed to respond more vigorously to calls of *L. exilis* than vice versa suggests that the former is the aggressively dominant species, as might be expected from its larger size (mean weight = 42.8 g, $n = 8$, Stiles, unpubl. data). In this respect, it is noteworthy that *L. albigularis* used its churring trill freely in responding to playback of calls of both species but *L. exilis* trilled only once when responding to calls of its own species. It would be interesting to determine if

L. exilis used its trill more freely where *L. albigularis* are absent (e.g., Trinidad; ffrench 1973).

DISTRIBUTION

Laterallus exilis appears to be quite widespread, and even locally common, in the wet lowlands of Costa Rica. In July 1984 Stiles found it numerous in wet pastures and a small brushy marsh near Laurel and Comte, in the southern Pacific lowlands of Provincia Puntarenas near the Panama border. In July 1985 he heard it calling frequently in wet, marshy pastures around San Jose de Upala, Provincia Alajuela, near the Nicaraguan border. In October 1985 he found it in similar habitats near Puerto Viejo and Manzanillo, Provincia Limon, in the extreme southeastern Caribbean lowlands. With the deforestation of most of Costa Rica's humid lowlands in the last 30 years, we believe that the habitat of *L. exilis,* and its total numbers, have increased greatly. However, there seems no reason for supposing that this species is a recent invader of Costa Rica. It has probably been present, but overlooked, all along—scarcely surprising in view of its extremely secretive, skulking behavior. We believe that *L. exilis* will be found common elsewhere in Central America and that Olson's statement that "*exilis* is far less common [in Central America] than in South America" (Olson 1974:172) needs reevaluation (see also Meyer de Schauensee 1966).

Several authors have reported finding two or more species of *Laterallus* (and other small rails) to be locally sympatric, apparently with or without segregation by habitat (Storer 1981, Negret and Teixeira 1984, Teixeira and Mendez Pirga 1984, Hilty and Brown 1986). Our observations strongly suggest that the coexistence of small neotropical rails may be a highly dynamic process, perhaps largely mediated by interspecific territoriality and/or aggression, and strongly affected by seasonal and successional changes in water levels and vegetation.

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