Two overlooked elusive crakes (Aves, Rallidae): first country record of Ocellated Crake *Micropygia schomburgkii* in Ecuador and Rufous-faced Crake *Laterallus xenopterus* in Peru

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**ABSTRACT**

We present two new distributional country records based on previously misidentified sound recordings: Ocellated Crake, *Micropygia schomburgkii* (Schomburgh, 1848), in Zamora Chinchipe (Ecuador) and Rufous-faced Crake, *Laterallus xenopterus* Conover, 1934, in Madre de Dios (Peru). We show supporting spectrograms of sound recordings and provide tools to justify the correct identification of the trills of both species. This range extension is especially relevant for the Vulnerable *L. xenopterus*, representing a new important breeding site in the Bahuaja Sonene National Park, Peru.

Many crake species (Aves, Rallidae) figure among the least known birds in the World, in part, because of their secretive habits in densely vegetated and flooded habitats [1]. One of the easiest ways to detect these species is through their trill, which is their most frequent, loudest, and longest vocalization. However, trills of many crake species of the genera *Anurolimnas*, *Laterallus*, and *Micropygia* are so similar that they are not easily identified. The Ocellated Crake, *Micropygia schomburgkii* (Schomburgh, 1848), is a poorly known bird species [1,2]. It has a vast range and is categorized as Least Concern for conservation [3], but it is only found at scattered localities in diverse habitats from dry to wet grasslands in Argentina, Costa Rica, Colombia, Venezuela, Guianas, Peru, Bolivia, and Paraguay [1,4,5]. Its main vocalization is a relatively pure and penetrating slow trill that sometimes finishes in a series of raspy drawn-out notes [1,6] (Figure 1). The Rufous-faced Crake, *Laterallus xenopterus* Conover, 1934, is considered Vulnerable and it is probably among the five most secretive Neotropical crake species [1,3]. It was discovered in 1933 in Paraguay [7] and nothing was known of it until 45 years later when Sick reported a specimen captured in Brazil [8]. During the last 35 years, a few studies have added scant new information about this crake [e.g. 9–14]. Its range remains poorly understood and it is certainly known from a few localities in Bolivia, Brazil, and Paraguay [11,12,14]. It inhabits moist *campo limpo* dense grasslands in the Cerrado region and shallowly flooded savannas dominated by tussock grasses in the Beni Savanna region [11,14]. Its main territorial vocalization is a duet trill that is relatively short, more gargled, and with clearly distinguishable notes in comparison to other *Laterallus* [6] (Figure 2).

Here we provide evidence of two new distributional country records based on previously misidentified crake sound-recordings: *M. schomburgkii* for Ecuador and *L. xenopterus* for Peru. We present supporting spectrograms of sound recordings and provide tools to justify the correct identification of the song of both species.

EAD reviewed all available Neotropical crake records with associated supporting evidence at eBird (Cornell Lab of Ornithology, www.ebird.org), iNaturalist (www.inaturalist.org), Macaulay Library (Cornell Lab of Ornithology, www.macaulaylibrary.org), and Xeno-canto (www.xenocanto.org) up to September 2019 [6]. Thus, the identification of all the media of interest archived at those repositories (audio, photos, and videos) was checked. Particularly, the identification of sound recordings was corroborated aurally and visually (with the help of spectrograms) using Raven Pro version 1.5 (Cornell Lab of Ornithology, www.birds.cornell.edu/raven). Spectrogram parameters were set at window type = Hann, size = 312 samples (6.5 ms), 3 dB filter bandwidth = 221 Hz; time-grid overlap = 50%; hop size = 156 samples (3.25 ms); frequency grid-DFT size = 512 samples, grid spacing = 93.8 Hz. Specifically, two misidentified sound-recordings representing first country records were found: *M. schomburgkii* for Ecuador (Figure 1; XC251040/ML246349), and *L. xenopterus* for Peru (Figure 2; ML44076). Spectrograms of these sound recordings were compared to other correctly identified recordings (Figures 1 and 2, Appendix A). Using Esri ArcMap 10.4 (www.esri.com), the new country records were plotted in...
Figure 1. Spectrograms comparing vocalizations of Russet-crowned Crake, *Anurolimnas viridis*, and Ocellated Crake, *Micropygia schomburgkii*. The top three spectrograms show trills of *Anurolimnas viridis* and *Micropygia schomburgkii*. The three bottom spectrograms in solid-line boxes belong to zoomed-in insets of the corresponding top spectrograms. The pink circle with a white dot corresponds to the first country record of *Micropygia schomburgkii* for Ecuador (originally identified by the recordist as Russet-crowned Crake, *Anurolimnas viridis*). Note duet trill of *Anurolimnas viridis*, in contrast to solo trills of *Micropygia schomburgkii* followed by diagnostic *prrrzzzz* “crying” notes. See Appendix 1 for recordings supporting information.

a map together with previous records of each species that count with supporting documented media [data from 6] (Figure 3). We follow the taxonomy of Remsen et al. [15]. Associated information and comments of the first country records of *M. schomburgkii* for Ecuador and *L. xenopterus* for Peru are provided below.

One individual of Ocellated Crake, *M. schomburgkii* was recorded for the first time in Ecuador; Zamora Chinchipe, turnoff to Chito on La Chonta to El Chorro road; 4.936 S, 79.105 W; 1,100 m a.s.l.; 23 October 2004, 12:30 am; sound-recorded by Niels K. Krabbe; first deposited at Xeno-canto XC251040, also available at Macaulay Library (Cornell Lab of Ornithology), catalog number ML246349. Originally identified by the recordist as Russet-crowned Crake, *Anurolimnas viridis* (Statius Muller, 1776). There was no previous record of *M. schomburgkii* from Ecuador [16,17]. *M. schomburgkii* is already included as *h* (hypothetical/undocumented) in the Comité Ecuatoriano de Registros Ornitológicos (CERO) checklist 2020 because the CERO was informed by us of the record here presented [18].

Two individuals (probably a pair) of *L. xenopterus* were recorded for the first time in Peru; Madre de Dios, Pampas del Heath; 13.0 S, 69.0 W; ca. 210 m a.s.l. 1.; 15 August 1988; sound-recorded by Theodore A. Parker III; Macaulay Library (Cornell Lab of Ornithology), catalog number ML44076. Originally identified by the recordist as Grey-breasted Crake, *L. exilis* (Temminck, 1831). There is no previous record of *L. xenopterus* from Peru [19,20]. Because trills of these species were misidentified by T. Parker at Pampas del Heath, and Parker et al. [21] reported sound recordings of *L. exilis* from other localities with the possible presence of *L. xenopterus*, we also reviewed Parker sound recordings from localities reported by Parker et al. [21] contained in unarchived
cassettes at the Macaulay Library (Cornell Lab of Ornithology), as well as all his crake sound-recordings listed in those cassettes (Santa Cruz and Beni departments, Bolivia; Madre de Dios and Loreto departments, Peru; Brasilia, Espirito Santo, Parana, and Rio Grande do Sul states, Brazil; mostly between years 1988 and 1990). However, these tapes contained no L. xenopterus recordings.

*Micropygia schomburgkii* utters a trill that rises in pitch and then maintains a fairly constant frequency, composed of a long series of relatively pure and loud *pr pr pr* notes [1,6]. Because these trills are delivered in solo (i.e., by one individual), the note rate heard is lower than in duet trills of other crakes (EAD pers. observation) (Figure 1). Nevertheless, the trills of this species are frequently confused with those of *Anurolimnas viridis*, and *L. xenopterus* (EAD pers. observation). However, the trills of *A. viridis* are (1) more strident, (2) much longer in duration, (3) descending in frequency from start to end, and (4) composed of glassy tinkling notes; whilst the trills of *L. xenopterus* are (1) slightly lower pitched, (2) shorter, and (3) with almost twice the number of notes per second [6,22]. Additionally, *M. schomburgkii* also gives a series of harsh progressively more drawn-out *pjrr* or *prrxzz* “crying” notes that can be given sometimes immediately after solo trills (Figure 1) or sometimes as isolated calls [1,6]. The identification of XC251040/ML246349 as

Figure 2. Spectrograms comparing vocalizations of Grey-breasted Crake, *Laterallus exilis*, and Rufous-faced Crake, *Laterallus xenopterus*. The top three spectrograms show duet trills of *Laterallus exilis* and *Laterallus xenopterus*. The bottom three spectrograms with solid lines belong to zoomed-in insets of the corresponding top spectrograms. The blue square with white dot corresponds to the first country record of *Laterallus xenopterus* for Peru (originally identified by the recordist as Grey-breasted Crake, *Laterallus exilis*). Note longer note duration, more tonal notes, and diagnostic isolated final note (diagonal arrows) of *Laterallus xenopterus* in comparison to harsh notes that rapidly descend in pitch in *Laterallus exilis*. See Appendix A for recordings supporting information.
M. schomburgkii is justified because no other neotropical crake is known to give a solo trill followed by “crying” notes [1,6] (Figure 1).

Laterallus xenopterus gives a duet trill typical of other members of the genus [1,6]. Its trills resemble those of the Red-and-white Crake, L. leucopyrrhus (Vieillot, 1819), in being somewhat gargled, and with clearly distinguishable notes, but similar in pitch to those of the Rufous-sided Crake, L. melanophaius (Vieillot, 1819) [1,6]. Diagnostic features of the trill of L. xenopterus are (1) its relatively short duration, typically the shortest trills of the genus, and (2) the ending

Figure 3. Map showing localities of Rufous-faced Crake, Laterallus xenopterus, and Ocellated Crake, Micropygia schomburgkii, in central west South America (data from [6]). New country records of Micropygia schomburgkii for Ecuador, and Laterallus xenopterus for Peru, are shown in symbols with a white dot.
in one or more isolated final notes that follow the main body of the trill [6] (see Figure 2). In contrast, the trills of *L. exilis* are faster and harsher rattles that descend in pitch (Figure 2) [1,6,23]. Duet trills of these species are two-parted, beginning with soft initial notes audible at close range that are then followed by the loud-trilled portion which is audible at longer distances [22].

The soft initial notes of *Laterallus* crakes are often diagnostic; *L. exilis* presents *pri pri pri* initial notes, while *L. xenopterus* typically utters two well-spaced wavy and pure whistled notes that ascend and descend in frequency (“preew … … preew”) [see 22]. However, soft initial notes are not always given before the trills and can be difficult to record because they are only audible at close range [6,22]. The soft introductory notes are missing or not audible in ML44076, possibly because the duet trill is not in focus at the beginning, the high-background noise of the recording may mask the soft initial notes, and/or the initial parts of the trills overlap with the loud song of an Ash-throated Crane, *Mustelilarius albicolis* (Vieillot, 1819) that figures prominently in the recording. Because all of the arguments brought above, and especially because no other neotropical crane utters final isolated notes at the ending of the duet trill, the identification of ML44076 is justified as *L. xenopterus* [6] (Figure 2).

These new records extend the known ranges of these species by 265 km NW for *M. schomburgkii* and by 335 km NW for *L. xenopterus* (measured from the nearest previous species record showed in Figure 3, records from [6]). This range extension is especially relevant for the Vulnerable *L. xenopterus*. Both records occurred in habitats known to be used by these species. Also, these new range extension records do not constitute extensions in the known elevational range of the species, neitherfor *M. schomburgkii* (new record at 1,100 m. a.s.l.; known range from 4 to 1,707 m. a.s.l.) nor for *L. xenopterus* (new record at 210 m. a.s.l.; known range from 128 to 1,236 m. a.s.l.) – elevational data was gathered only from species records with associated supporting data such as photos, sound-recordings or museum specimens, and reliable bibliography [4,6].

The *M. schomburgkii* new record was made by NK in a semi-natural savanna with introduced cattle grass, adjacent to a patch of recently burned grassland at the road that connects La Chonta and El Chorro villages, Zamora Chinchipe, Ecuador. *A. viridis* and *L. exilis* also occur in the area (EAD pers. observation). Indeed, the trills of *A. viridis* shown in this study and the new *M. schomburgkii* record were obtained at less than 700 m from each other (see Appendix A). However, as shown for other crakes, ecological segregation between these species is apparent to some extent [e.g. 23,24]. Even though *M. schomburgkii* and *A. viridis* share fern scrub with some Melastome shrubs and *Curatella americana* trees, *M. schomburgkii* apparently prefers more open and drier areas, while *A. viridis* prefers more humid areas with taller vegetation, and *L. exilis* uses 0.5–1.5 m tall open grasslands in the area (pers. observation). These three crane species utter trills and sometimes respond to interspecific playback trials among them [EAD pers. observation; also see 22–24]. As these species share general habitats to some extent, occur in close proximity, have similar vocalizations, and are difficult to see, *M. schomburgkii* could have remained overlooked in the area. Nevertheless, *M. schomburgkii* is considered to present some vagrant or occasional movements, especially associated with fires [1]. However, after being informed about the record here reported, Jonas Nilsson (in litt.) detected at least six *M. schomburgkii* territories at the same site during 12-14 November 2019 and 19–22 January 2020. These new records of the species 15 years after the first sound recording, might be the result of fortuitous vagrant events, but we believe they indicate the continued presence of the species in the area.

The Beni savannas, also known as the Moxos plains or Llanos de Mojos, lie mostly within Bolivia. However, small areas extend along the Iténez (Guaporé) River into the State of Rondônia in Brazil and in the Pampas del Heath of the Madre de Dios Department in Peru [25]. The presence of *L. xenopterus* was documented for El Beni Department of Bolivia in 1996 [11]. Our new record of *L. xenopterus* for Peru fits nicely in this biogeographic scenario because the Beni Savannas and the Pampas del Heath belong to the same biome complex. This also represents the first known sound recording of *L. xenopterus*, followed by those from Paraguay in 1997 by Juan Mazar Barnett (XC15482 to XC15485). Also, this new record would be the fourth known locality for *L. xenopterus* [7,8,26,27]. *L. xenopterus* is a very secretive species that has recently become better known [e.g. 13,14]. Lack of surveys at Pampas del Heath and the trill similarity between *L. xenopterus* and *L. melanophaeus* [1,6], also present in the Beni savannas [11,28], may explain the lack of records from this area. No seasonal movements are known in *L. xenopterus* [1], suggesting that the Pampas del Heath is a new important breeding site for this species. Fortunately, all of the Pampas del Heath are protected in Peru by the Bahuaja Sonene National Park [25].

Finally, these new records based on sound-recorded vocalizations demonstrate the importance of natural history audio archives and highlight the need for more sound recordings of bird vocalizations. Crakes are more often heard than seen, and this seems especially true for the elusive *M. schomburgkii* and *L. xenopterus*. Visual detection of these species would have provided unmistakable clues to species identification; however, the two recordings discussed here were made without seeing the birds. Without these sound recordings, these new country records would have been lost. Continued economic and logistic support for sound-recording field trips at
poorly surveyed remote areas is key to a complete understanding of the diverse Neotropical avifauna.

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**Disclosure statement**

No potential conflict of interest was reported by the authors.

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**Authors contributions**

EAD identified the species for the new country records, analyzed the recordings, conducted research, and wrote the paper; NK sound-recorded Ocellated Crake for the first time in Ecuador, conducted research, and wrote the paper; JIA conducted research and wrote the paper.

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### Appendix A. List of sound recordings compared in this study. Catalog numbers beginning with ML correspond to the Macaulay Library (Cornell Lab of Ornithology, [www.macaulaylibrary.org](http://www.macaulaylibrary.org)); beginning with XC correspond to Xeno-canto ([www.xeno-canto.org](http://www.xeno-canto.org))

| Species                  | Catalog number | Date       | Country | State, province, or department | Locality                        | Latitude (degrees) | Longitude (degrees) | Recorder | Channels | Sample rate (KHz) | Bit depth | Microphone                  | Recordist          |
|--------------------------|----------------|------------|---------|--------------------------------|---------------------------------|--------------------|--------------------|----------|----------|---------------------|-----------|--------------------------|--------------------|
| *Anurolimnas viridis*    | ML247884591    | 21 April 2017 | Ecuador | Zamora Chinchipe                | El Chorro – La Chonta road      | −4.93775           | −79.10046          | MARANTZ PMD 661 Dual Mono | 48        | 24                    | bits                | Sennheiser ME 67 |
| *Laterallus exilis*      | ML247888971    | 17 April 2017 | Ecuador | Napo                            | Tena                            | −1.05962           | −77.60128          | MARANTZ PMD 661 Dual Mono | 48        | 24                    | bits                | Sennheiser ME 67 |
| *Laterallus xenopterus*  | ML247887531    | 4 October 2016 | Paraguay | Canindeyú                        | RNBM, Aguará Ñú                  | −24.17680           | −55.29483          | MARANTZ PMD 661 Mono | 48        | 24                    | bits                | Sennheiser ME 62 on Telinga Universal Parabola |
| *Laterallus xenopterus*  | ML44076        | 15 August 1988 | Peru     | Madre de Dios                   | Pampas del Heath                | −13.0              | −69.0              | Nagra 4.2 Mono             | 44.1       | 16                    | bits                | Electro-Voice DL42 |
| *Micropygia schomburgii* | XC476512       | 23 May 2019   | Brazil   | São Paulo                       | Franco da Rocha, Parque Estadual do Joquery | −23.3449           | −46.6903           | - Mono              | 48        | 32                    | bits                | -                      |
| *Micropygia schomburgii* | XC251040/ML246349 | 23 October 2004 | Ecuador | Zamora Chinchipe                | El Chorro – La Chonta road      | −4.936             | −79.105            | Sony TCM 5000 Mono        | 44.1       | 16                    | bits                | Sennheiser ME 67 |

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