Muscicapidae: split *Enicurus leschenaulti* (White-crowned Forktail) into three species

Background

Forktails *Enicurus* spp. are a well-defined group of largely sedentary, terrestrial muscicapid species with characteristic black-and-white plumage confined to forested streams and gullies in tropical and subtropical Asia. Six universally recognized species (Little Forktail *E. scouleri*, Spotted Forktail *E. maculatus*, Sunda Forktail *E. velatus*, Chestnut-naped Forktail *E. ruficapillus*, Black-backed Forktail *E. immaculatus*, and Slaty-backed Forktail *E. schistaceus*) are readily differentiated on morphological characters, with only the latter two posing field identification challenges under certain conditions due to the structural similarities, wing and head patterns. The sole incongruence across taxonomic authorities and literature lies in the White-crowned Forktail *E. leschenaulti* sensu lato of which Bornean Forktail *E. borneensis* had long been considered a subspecies.

The montane *E. borneensis* (Bornean Forktail) has been split from *E. leschenaulti* (White-crowned Forktail) primarily based on genome-wide DNA analyses (Moyle et al., 2017) as discussed in the proposal #176). However, the unresolved treatment of other White-crowned Forktail taxa, which differ strongly from one another in both appearances and vocalizations, has not been discussed in detail. These differences appear to be on the same level as between the structurally similar Black-backed and Slaty-backed Forktails. It is noted in AviList v2025 Checklist that further splits in this group may be warranted (AviList Core Team, 2025).

I propose that White-crowned Forktail *Enicurus leschenaulti* is further split into three species: *E. sinensis* (including subspecies *indicus*), *E. frontalis* (including subspecies *chaseni*), and *E. leschenaulti* (monotypic), following Eaton et al. (2016, 2021).

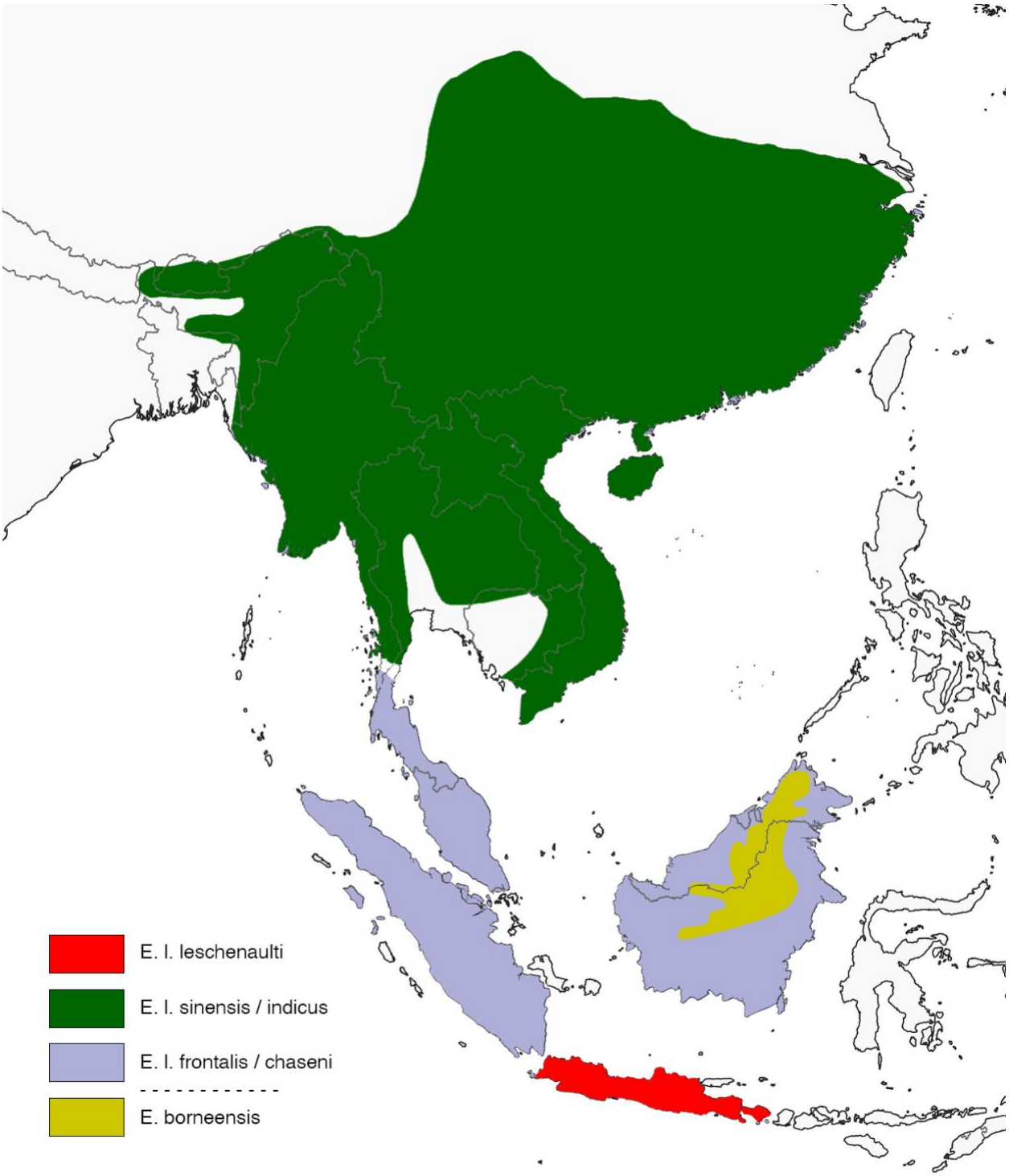

Figure 1. Range maps for proposed full species in *Enicurus leschenaulti* complex (James Eaton).

Morphology

- *E. l. frontalis* is smaller and noticeably shorter-tailed than all taxa. The difference between *E. l. frontalis* and its closest mainland taxon (*E. l. indicus*) is stated by Robson (2008) to be 20.5 cm (*E. l. frontalis*) vs 28–28.5 cm (*E. l. indicus*) in total length. Note that *E. borneensis* is on average even smaller than *E. l. leschenaulti*, but larger and longer-tailed than *E. l. frontalis*. See Figures 2–4 for side-by-side comparisons of specimens.

- Excluding the white terminal band, all taxa except *E. l. frontalis* and *E. l. chaseni* have three well-spaced, white bands on black uppertail. The third band in *E. l. frontalis* and *E. l. chaseni* is either part of the terminal band or separated by very narrow gaps (Figures 5 –6).

- Consistent differences in the extent of white on crown (best examined when crown feathers not raised; see Figure 5) and the crest length (Figure 6): well beyond mid-crown in *E. l. leschenaulti*, slightly beyond mid-crown in *E. l. frontalis*, and not beyond mid-crown in *E. l. indicus* and *E. l. sinensis*. Despite morphometric differences, *E. l. chaseni* is grouped with *E. l. frontalis* on the basis of biogeography and its original description being stated by Meyer de Schauensee (1940) as "similar to *E. l. frontalis* but very much larger", implying the resemblance in the extent of white forehead patches between the two. This grouping aligns with Eaton et al. (2016, 2021). Note that female has a slightly shorter white crest than male (Wells, 2007).

- Wells (2007) stated that "Juvenile plumages suggest an alignment of *frontalis* with *leschenaulti* of Java and Bali, and *borneensis* with northern continental *sinensis*". *E. borneensis* and *E. l. indicus/sinensis* share the warm brown colouration in juvenile plumages, as well as being larger and longer-tailed than *E. l. frontalis* (Figure 7).

- The two geographically close mainland taxa *E. l. frontalis* and *E. l. indicus* appear to be allopatric in distribution (Figure 1). The northernmost record of *E. l. frontalis* is a specimen collected at the latitude 10°09'N, well within the Sundaic biogeographic subregion, in the extreme southern Myanmar (Wells, 2007), while the southernmost record of *E. l. indicus* lies in Kaeng Krachan Forest Complex, which is part of the Indochinese subregion. Importantly, there is **no documentation suggesting clinal variation in the potential contact zone around the Kra Isthmus**. Available photographs where ranges of the two taxa approach show consistent, non-overlapping features (i.e. tail length, juvenile plumage colouration) of *E. l. indicus* and *E. l. frontalis*, corresponding with Indochinese and Sundaic biogeographical subregions respectively.

Figure 2. From left to right: *E. borneensis*, *E. leschenaulti frontalis*, *E. l. leschenaulti*, *E. l. indicus*, and *E. l. sinensis* specimens in British Natural History Museum (James Eaton).

Figure 3. From left to right: *E. borneensis*, *E. leschenaulti frontalis*, *E. l. leschenaulti*, *E. l. indicus*, and *E. l. sinensis* specimens in British Natural History Museum (James Eaton).

Figure 4. From top to bottom: *Enicurus l. leschenaulti* (male; West Java), *E. l. leschenaulti* (female; East Java), *E. l. frontalis* (female; East Kalimantan), and *E. l. frontalis* (male; Central Kalimantan) collected in Indonesia (Mohammad Irham). Note that *E. l. leschenaulti* have distinctly longer tails than its geographically closest counterpart *E. l. frontalis*.

Figure 5. Adult plumages with crown feathers flattened. Left to right, top to bottom: *E. leschenaulti sinensis*, *E. l. frontalis*, *E. l. leschenaulti*, *E. borneensis*

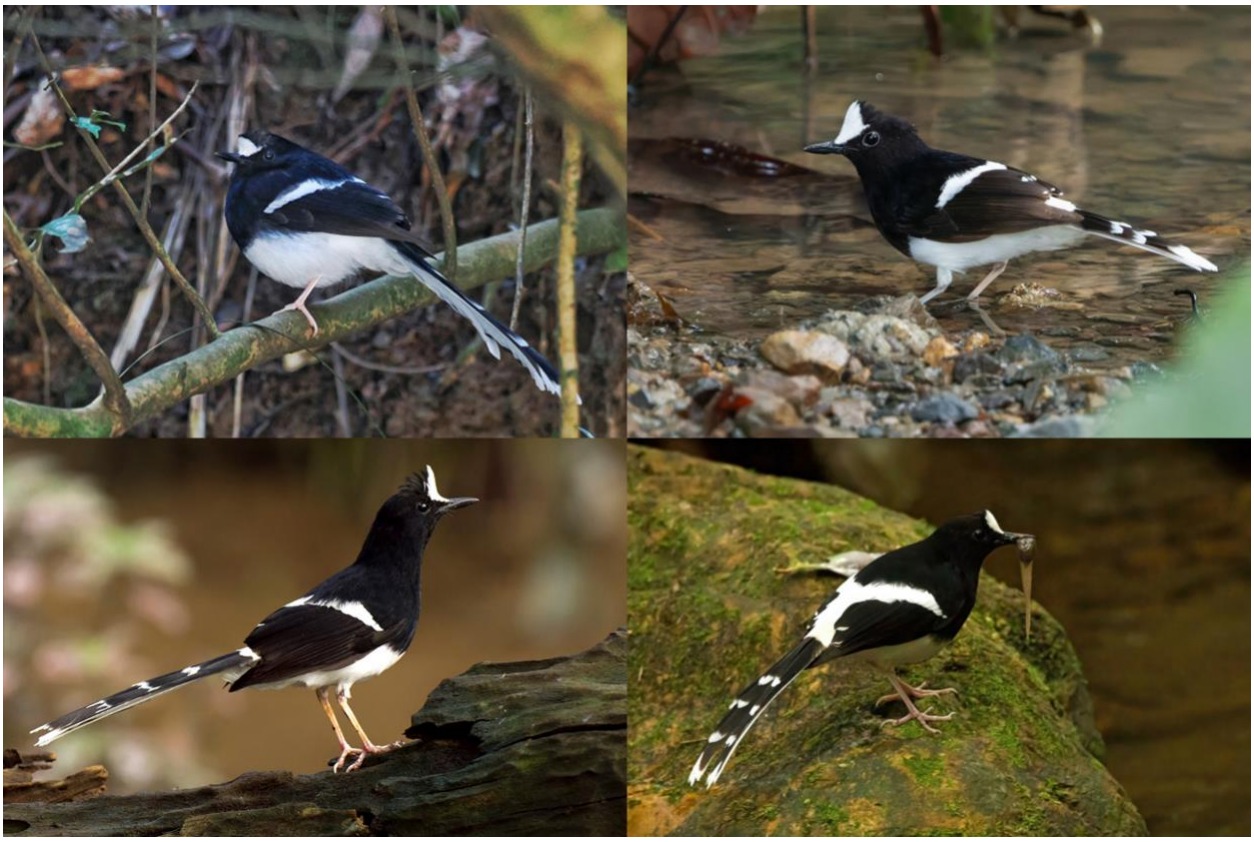

Figure 6. Adult plumages with crown feathers raised. Left to right, top to bottom: *E. leschenaulti sinensis*, *E. l. frontalis*, *E. l. leschenaulti*, *E. borneensis*

Figure 7. Juvenile plumages. Left to right, top to bottom: *E. leschenaulti sinensis*, *E. l. frontalis*, *E. l. leschenaulti*, *E. borneensis*

Bioacoustics

Differences in vocalizations noticeable in the field and available recordings align with the proposed species limits.

Round (2012) stated that "*E. l. frontalis* has strikingly different alarm and contact calls from continental Thai birds. The songs may be expected to differ also, but are strikingly complex and detailed analysis is required".

- The harsh calls, presumably emitted when agitated, are common in *E. l. sinensis* and *E. l. indicus* (Figure 8). However, I cannot find any similar call-type in *E. l. frontalis* and *E. l. leschenaulti* on neither Macaulay Library nor xeno-canto despite ample sample sizes.
- Calls of *E. l. indicus* and *E. l. sinensis* are well-spaced single notes with a higher frequency range at the beginning before falling more abruptly than other taxa and leveling off (Figures 9 and 10)
- *E. l. frontalis* and *E. l. leschenaulti* commonly emit flatter call-notes than *E. l. indicus/sinensis*. The call-types similar in spectrogram to typical calls of *E. l.*

indicus/sinensis tend to be lower-pitched at the start and slightly rising while trailing off (Figures 11 and 12)

- *E. l. frontalis* usually emits bouts containing two consecutive notes interspersed with, well-spaced single notes (Figure 11)
- The two-consecutive call-notes in *E. l. leschenaulti* tend to be delivered in a constant manner without any single notes interspersed (Figure 12)

Although songs of all taxa frequently incorporate mimicry to a great extent, there appear to be discernible patterns from field experiences. These differences are depicted in available online recordings as follows (J. A. Eaton, personal communication, 11 October 2025):

- Songs of *E. l. indicus* and *E. l. sinensis* are a series of consecutive mellow, high-pitched notes (Figures 14 and 15). These series are most noticeably different from other proposed species in frequently being descending at the beginning before leveling off (Figures 16 and 17).
- Songs of *E. l. frontalis* are composed of distinctly shorter notes than *E. l. sinensis*, with varied melodic notes interspersed (Figure 18).
- *E. l. leschenaulti* sings series of repetitive notes that are uniform in pitch, with the very first notes often distinctly raspy. These series are sometimes interspersed with various melodic notes and mimicry (Figure 19).

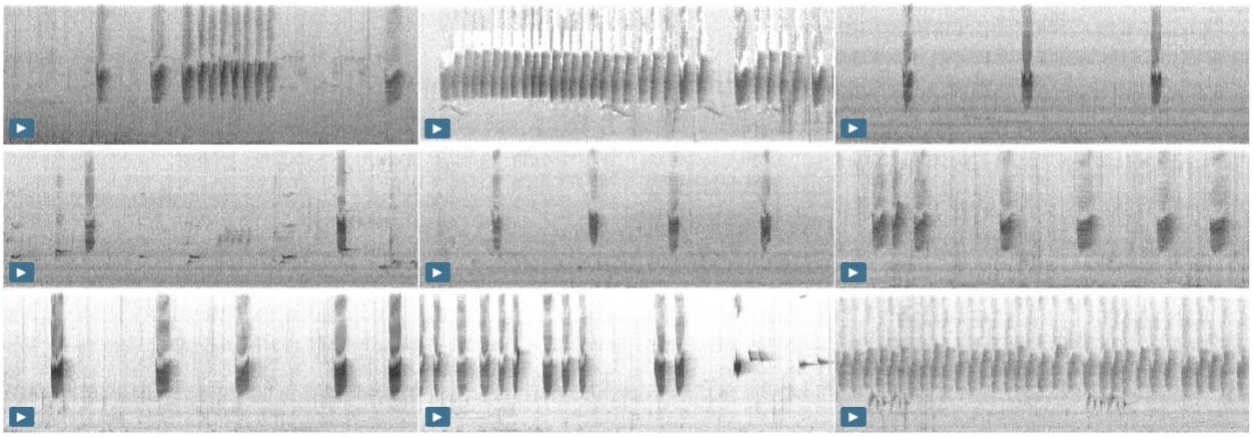

Figure 8. Presumed alarm calls of *E. leschenaulti sinensis* (screenshot taken from eBird). This call-type is also common in *E. l. indicus*

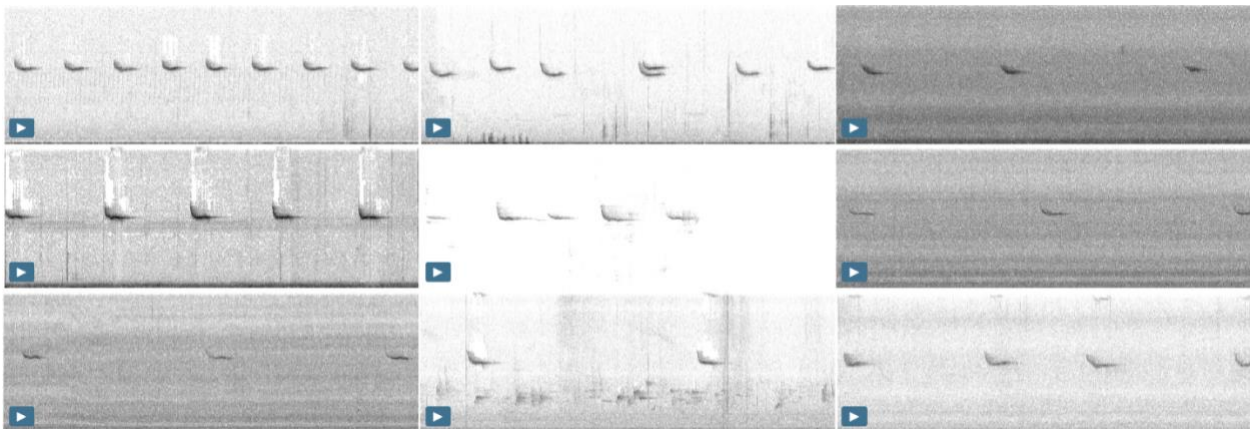

Figure 9. Calls of *E. leschenaulti sinensis* (screenshot taken from eBird)

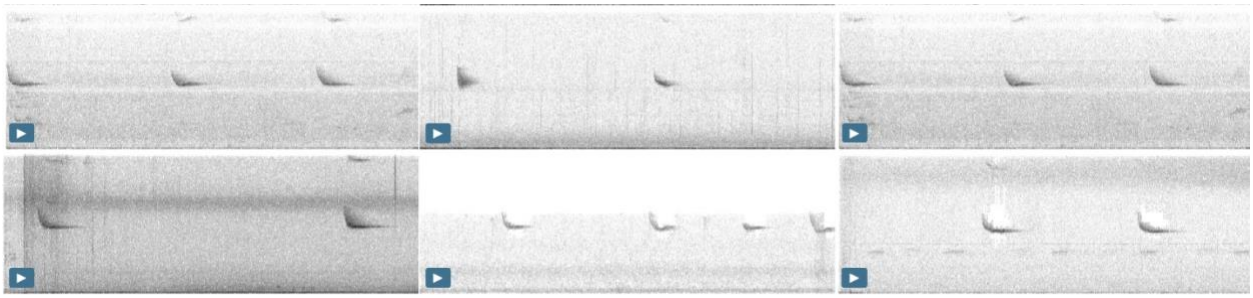

Figure 10. Calls of *E. leschenaulti indicus* (screenshot taken from eBird)

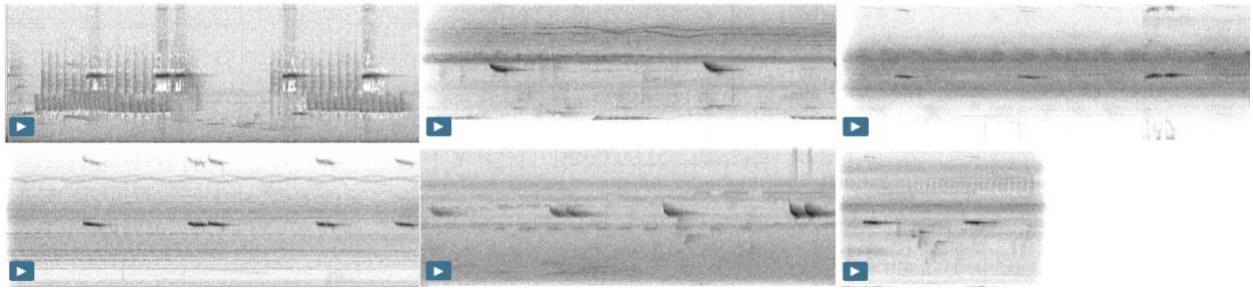

Figure 11. Calls of *E. leschenaulti frontalis* (screenshot taken from eBird)

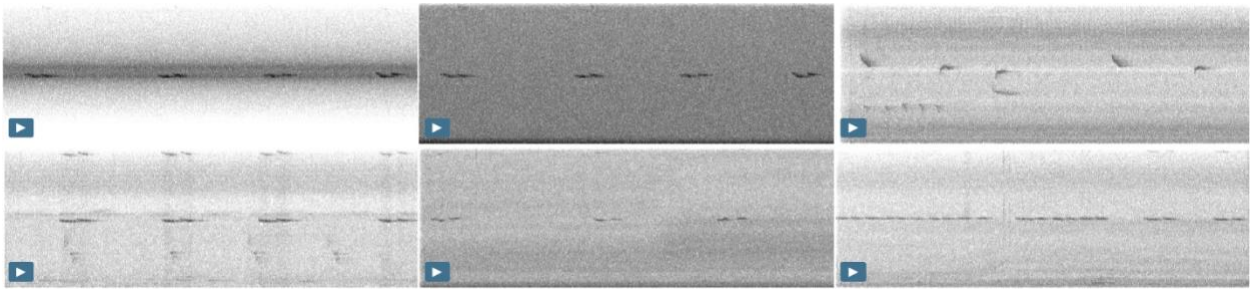

Figure 12. Calls of *E. l. leschenaulti* (screenshot taken from eBird)

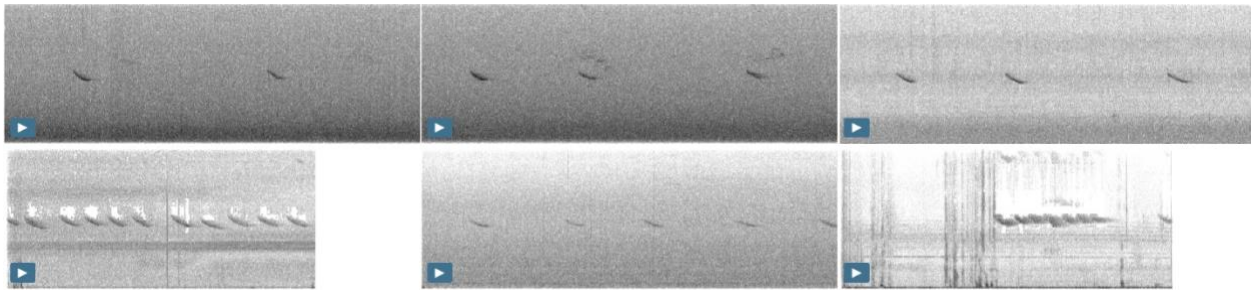

Figure 13. Vocalizations of *E. borneensis* (screenshot taken from eBird) differ from all *E. leschenaulti* taxa in being distinctly downslurred. The only available recordings of its song are series of consecutive, homologous notes more or less identical to the contact calls

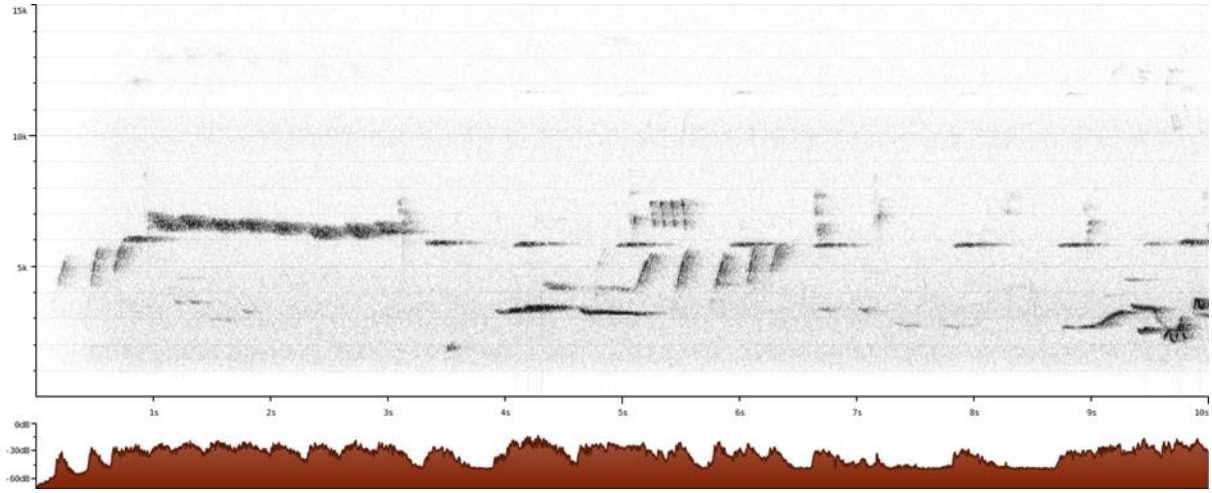

Figure 14. Song of *E. l. indicus* (https://xeno-canto.org/804422)

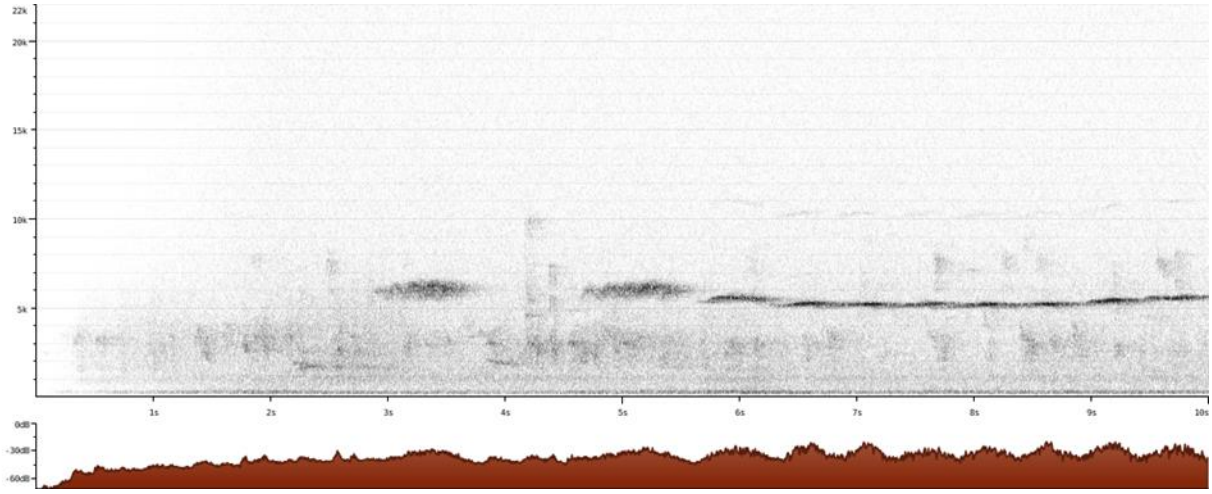

Figure 15. Song of *E. l. sinensis* (https://xeno-canto.org/978499) from Zhejiang, China

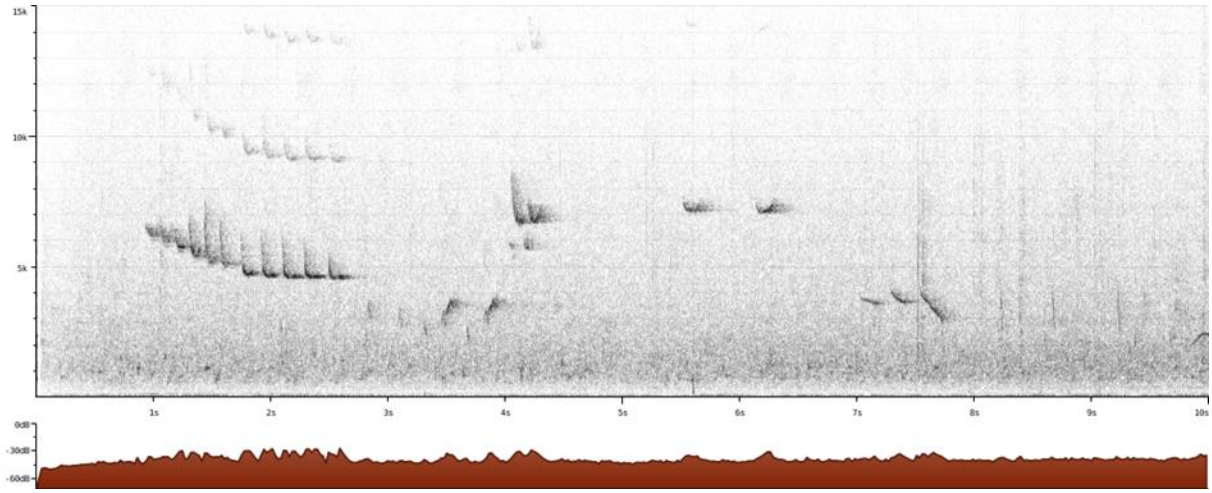

Figure 16. Song of *E. l. sinensis* (https://xeno-canto.org/78318) from Jiangxi, China

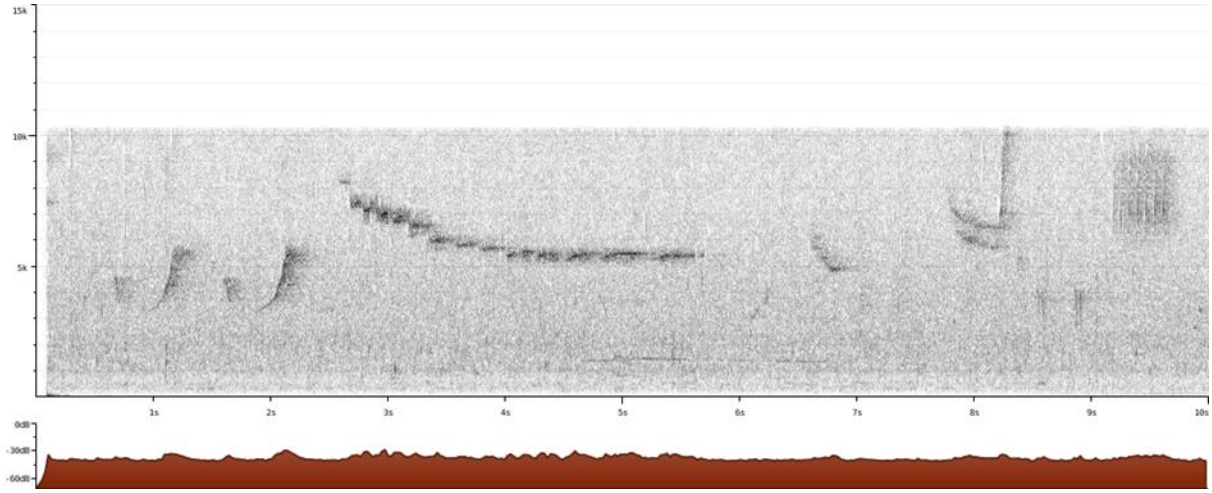

Figure 17. Song of *E. l. sinensis* (https://xeno-canto.org/299797) from Sichuan, China

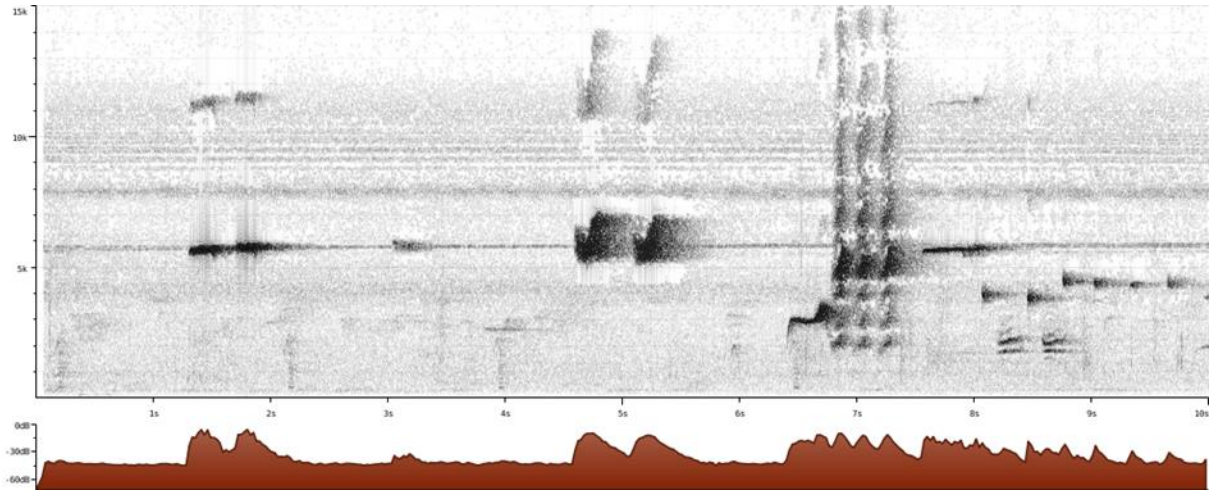

Figure 18. Song of *E. l. frontalis* (https://xeno-canto.org/150810)

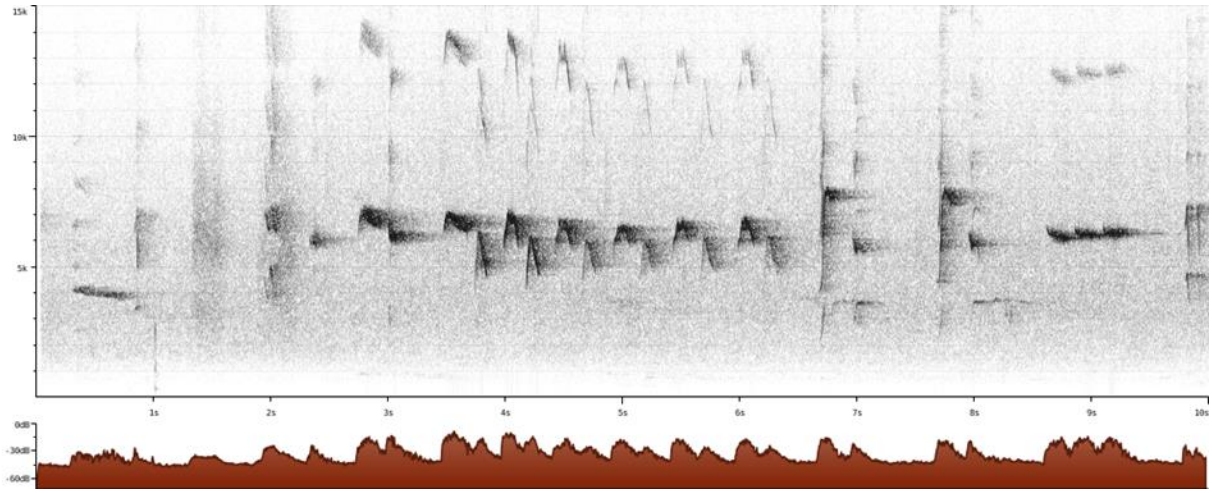

Figure 19. Song of *E. l. leschenaulti* (https://xeno-canto.org/413650)

Genetics

Moyle et al. (2005) found *E. borneensis* to be paraphyletic with *E. leschenaulti* on mtDNA analyses. Albeit with low bootstrap support, their cladogram shows *E. borneensis* to be sister to *E. l. leschenaulti*, with *E. l. frontalis* being the next closest relative, while the dichotomy of *E. l. indicus* and *E. l. sinensis* is basal to the group. In addition, *E. l. frontalis* in northeastern Borneo appears to warrant a subspecific recognition separate from other populations (Figure 18). Further genome-wide genetic analyses would help with clarifying these relationships.

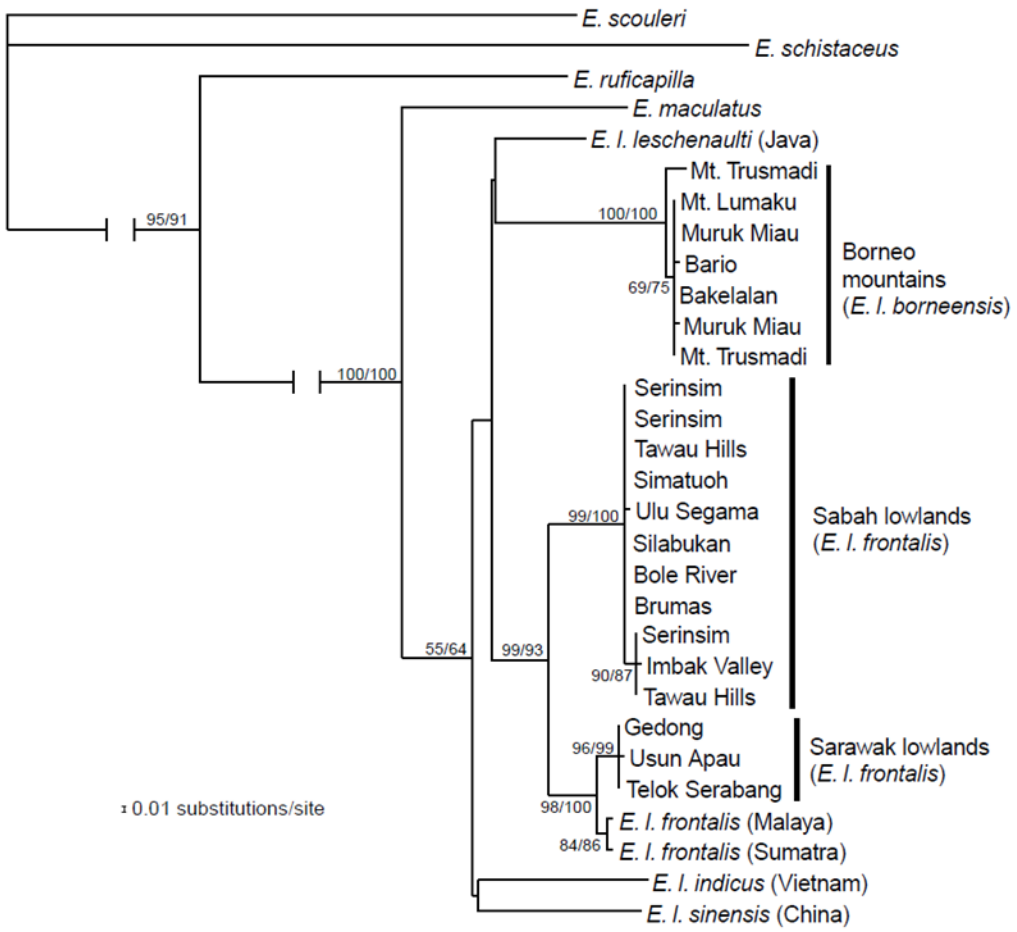

Fig. 2. Maximum likelihood tree based on the complete data set. Numbers above nodes indicate ML bootstrap proportions/MP bootstrap proportions. Unlabelled nodes received < 50% support in both ML and MP bootstrap replicates.

Figure 20. Phylogenetic tree of White-crowned and Bornean Forktail taxa based on mtDNA analyses (Fig. 2 in Moyle et al. 2005)

Ecology

E. l. frontalis exhibits different habitat preferences from other taxa in being essentially a lowland species. It is described as commonest in plains-level forest in the Thai-Malay Peninsula (Wells, 2007). In contrast, other taxa are birds of mountainous areas occurring up to above submontane ecotone, with regular records up to the highest summits in Thailand (2565 masl). The specimen of *E. l. leschenaulti* with elevation labelled was stated to be collected at 1377 masl on Mount Salak, West Java (Figure 4).

Conclusion

The Tropical Asian RAG supports the recognition of *Enicurus sinensis* (including subspecies *indicus*) and *E. frontalis* (including subspecies *chaseni*) as species distinct from the monotypic *E. leschenaulti* based primarily on the marked differences in morphology and bioacoustics. Using the yardstick approach, we argue that their differences are on par with those between species such as the Black-backed and Slaty-backed Forktails, which are distinguished by only a few key plumage differences including the extent of white on forehead (similar to the *leschenaulti* taxa). Note that the taxa *E. sinensis* and *E. frontalis* appear allopatric, and no morphologically intermediate populations between the two have been documented in their potential contact zone.

The three species proposed are allopatric. *leschenaulti* sensu stricto is restricted to Bali and Java where the only other forktail taxon is Sunda Forktail. The ranges of the slope-specialist *indicus* and the lowland *frontalis* nearly approach around the Kra Isthmus without any evidence suggesting clinal variation or hybridization. This parallels the situation on Borneo where altitudinal ranges appear to marginally segregate *frontalis* from the upland *E. borneensis*, which is more similar to *sinensis* (and *indicus*) in structure and juvenile plumage colouration.

The accepted split of *E. borneensis* is based on a genomic study using 1910 loci from RAD-Seq data (Moyle et al. 2017) sampling only Bornean birds (i.e. comparing *frontalis* and *E. borneensis*). It would not be surprising if thorough genomic analyses across other taxa would dictate further splits aligning with bioacoustics and morphological characters as already indicated by the results from mtDNA analyses (Moyle et al. 2005), which found that the *sinensis* and *indicus* dichotomy being basal to the whole group, while *E. borneensis* and *leschenaulti* sensu stricto form a clade sister to *frontalis*.

References

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