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SHORT COMMUNICATION

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# Molecular confirmation of the rhino rat snake *Rhynchophis boulengeri* in southern Vietnam

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In 2019, we made the first record of a rhino rat snake *Rhynchophis boulengeri* (Mocquard, 1897) in southern Vietnam (Nguyen et al., 2020), a single male specimen (ITBCZ 4506) found dead on a road in Song Hinh Protected Forest, Phu Yen Province. This amounted to a 600 km range extension. The morphology of the specimen was broadly congruent with *R. boulengeri*.

In 2021, *R. boulengeri* was split so that populations in Hainan Province, China are now assigned to *Rhynchophis hainanensis* (Peng et al., 2021). Given that there is a substantial distance between southern Vietnam and all other locations where *R. boulengeri* is found and that there are now two species within the genus, there is clearly interest in checking for potential cryptic species. Consequently, we sequenced the cytochrome b (cytb) gene for the specimen collected in Phu Yen Province and calculated uncorrected p-distances between this sequence and other available *Rhynchophis* sequences on GenBank (see Table 1 & Table 2) following methods described in Kane et al. (2023).

Uncorrected p-distances between the sequences obtained from the specimen we collected in Phu Yen Province and *R. boulengeri* from Lao Cai Province more than 1,000 km to the north was 0.79% and up to 1.36% from sequences from specimens with no associated locality data (Table 2). This is typical of within species variation for this gene (e.g. Laopichienpong et al., 2016). Uncorrected p-distances between *R. boulengeri* from Phu Yen Province and *R. hainanensis* ranged from 3.02–3.51%. Furthermore, the specimen from Phu Yen Province has a single loreal scale and black orbital stripe, clearly distinguishing it from *R. hainanensis* (Peng et al., 2021). We conclude that the specimen from Phu Yen Province is indeed *R. boulengeri*.

**Table 1.** List of taxa of *Rhynchophis* specimens and cytb sequences used in this study

| Species | Collection site | Voucher | GenBank | Reference |
|---|---|---|---|---|
| *Rhynchophis boulengeri* | Phu Yen, Vietnam | ITBCZ 4506 | PV588734 | This study |
| *Rhynchophis boulengeri* | Lao Cai, Vietnam | ANU2012083 | MW495262.1 | Peng et al., 2024 |
| *Rhynchophis boulengeri* | Not reported | MVZ Herp 218698 | LC640447.1 | Kambayashi et al., 2022 |
| *Rhynchophis boulengeri* | Not reported | NA | AF471053.1 | Lawson et al., 2005 |
| *Rhynchophis boulengeri* | Guangdong, China | ANU2018176 | MW495261.1 | Peng et al., 2024 |
| *Rhynchophis hainanensis* | Hainan, China | ANU20190002 | MW495258.1 | Peng et al., 2021 |
| *Rhynchophis hainanensis* | Hainan, China | HNU20190001 | MW495259.1 | Peng et al., 2022 |
| *Rhynchophis hainanensis* | Hainan, China | ANU20190003 | MW495260.1 | Peng et al., 2023 |

**Table 2.** Uncorrected p-distances between species of *Rhynchophis* sequences used in this study based on cytb sequences.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. PV588734 *R. boulengeri* | | | | | | | | |
| 2. MW495262.1 *R. boulengeri* | 0.79% | | | | | | | |
| 3. LC640447.1 *R. boulengeri* | 1.36% | 0.56% | | | | | | |
| 4. AF471053.1 *R. boulengeri* | 1.36% | 0.56% | 0.00% | | | | | |
| 5. MW495261.1 *R. boulengeri* | 0.91% | 0.11% | 0.68% | 0.68% | | | | |
| 6. MW495258.1 *R. hainanensis* | 3.51% | 2.66% | 2.78% | 2.78% | 2.78% | | | |
| 7. MW495259.1 *R. hainanensis* | 3.02% | 2.42% | 2.54% | 2.54% | 2.54% | 0.45% | | |
| 8. MW495260.1 *R. hainanensis* | 3.38% | 2.54% | 2.65% | 2.65% | 2.66% | 0.34% | 0.34% | |

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