

First live photographic records of Sumatran Mud Snake, *Sumatranus albomaculata* (Duméril et al., 1854) and Simeulue Pitviper, *Trimeresurus kirscheyi* (Vogel et al., 2022)

Marcus Lucassen¹, Rikke Bruhn Nielsen², Brecht Heusequin³, Julius Robert Zidorn⁴, and Ahmed Junaid^{5,*}

Photographic documentation is an established component of natural history recording (Morris, 2020). Images are critically important in the biological sciences (Uetz et al., 2024). Some species have even been described solely from photographs, and most of these taxa have ultimately been confirmed as valid (Kasalo et al., 2021). A photographic inventory of collections contributes to documenting biodiversity, increases accessibility for other researchers, enhances ecological knowledge and enables experts to examine specimens in a cost-effective way (Mertens et al., 2017).

With over 4000 known species, snakes are a rich reptile group (Mavoungou et al., 2024; Title et al., 2024; Uetz et al., 2025). Much of the world's snake diversity is under serious threat of extinction, and in some cases, species and populations have already disappeared (Slavenko et al., 2016; Meiri, 2024). A substantial body of evidence suggests that the actual number of threatened snake species is much higher, because data-deficient and non-assessed species are more likely to be at risk (Meiri, 2024). Strengthening conservation planning for snakes will depend on closing knowledge gaps and recognising species that are silently declining (Tingley et al., 2016; Meiri et al., 2023; Wotherspoon et al., 2024).

The Sumatran Mud Snake, *Sumatranus albomaculata* (Duméril et al., 1854), a member of family Homalopsidae, is currently reported from Nias, Simeulue and Sumatra islands in Indonesia (Uetz et

al., 2025). Owing to the scarcity of available data, its conservation status remains Data Deficient (Murphy, 2010), as it was described in 1854 based on museum specimen collected in 1847, and no museum specimen records are available from later than 1905 (Smithsonian, 2025; Uetz et al., 2025). The Simeulue Pitviper, *Trimeresurus kirscheyi* (Vogel et al., 2022), a member of family Viperidae, is currently reported only from Simeulue island of Indonesia (Uetz et al., 2025). *T. kirscheyi* is a Not Evaluated species due to insufficient information, as it was described in 2022 from museum specimens collected in 1913 (Vogel et al., 2022; Uetz et al., 2025). Not only *Sumatranus albomaculata* and *Trimeresurus kirscheyi* are currently classified as Data Deficient and Not Evaluated respectively, but they have also never been photographed alive (The Reptile Database, 2025a; The Reptile Database, 2025b), either in the wild or in captivity. Here, we present the first ever photographs of these snakes, taken in the wild.

On 18 November 2025 at 22:41 h, during a herpetofauna survey near Sinabang, Simeulue island, Indonesia, we observed three *Sumatranus albomaculata* individuals of unknown sex in freshwater mud pools within a flooded farmland. One of the individuals was carefully captured from mud (Fig. 1A), and placed on a nearby leaf for more photographs (Fig. 1B–D). The epithet *albomaculata* means “white spots”, which likely was incorrectly attributed due to the species being described from preserved specimen. All three individuals observed during this survey had red spots along the dorsum. Red pigmentation often fades to pale/whitish colouration when preserved long-term in formaldehyde or ethanol (Simmons, 1999; Shian et al., 2016).

On 20 November 2025 at 21:36 h, during a herpetofauna survey near Sinabang, Simeulue island, Indonesia, we observed an adult male *Trimeresurus kirscheyi*, crawling along a dirt slope next to a fast-flowing rainforest stream. This was followed by three

¹ Independent Researcher, Hjørring, Denmark.

² Independent Researcher, Sønderborg, Denmark.

³ Independent Researcher, Oudenburg, Belgium.

⁴ Independent Researcher, Rosengarten, Niedersachsen, Germany.

⁵ SAVE THE FROGS!, 1968 S. Coast Hwy Suite 622, Laguna Beach, California 92651, USA.

* Corresponding author. E-mail: ahmedjunaid.pk@gmail.com



Figure 1. A Sumatran Mud Snake (*Sumatranus albomaculata*) individual of unknown sex in the mud (A), with dorsal view placed on a plant leaf (B), with ventral view placed on a plant leaf (C), head of the individual placed on a plant leaf (D), observed near Sinabang, Simeulue island, Indonesia. Photos by Marcus Lucassen.

more individuals being observed along the same stream. Another adult male which was on the ground, and an adult male and a juvenile female both sitting 2–3 m up in trees. Two individuals were photographed, one adult male (Fig. 2A–C) and one juvenile female (Fig. 2D). Upon placing snakes on a branch, both individuals showed clear signs of defensive behaviour, including striking and violent tail wagging. As no other Green Pitviper species are known from Simeulue island, all four individuals were concluded to be *T. kirscheyi* based on locality. Although none of the six previously known specimens, including one male (RMNH 5174–75) (Uetz et al., 2025), showed a postocular streak, we observed a clear red postocular stripe in all adult male individuals observed, but absent in the female. The likely explanation for this is that these specimens were collected in 1913, and have since been preserved, which can result in fading of colours, especially red. The

presence of a postocular stripe in males is a common trait in several species within the *Trimeresurus hageni* complex (Vogel et al., 2022).

To the best of our knowledge, these photographs of *Sumatranus albomaculata* and *Trimeresurus kirscheyi* represent first ever documented photographs of living individuals of both species. Owing to the high risk of poaching of both species, we have intentionally not shared the precise locality data. Exact coordinates will be provided by corresponding author (Ahmed Junaid) only upon reasonable request, solely for legitimate academic and research purposes.

References

- Kasalo, N., Deranja, M., Adžić, K., Sindaco, R., Skejo, J. (2021): Discovering insect species based on photographs only: The case of a nameless species of the genus *Scaria* (Orthoptera: Tetrigidae). *Journal of Orthoptera Research* **30**(2): 173–184.



Figure 2. An adult male *Simeulue Pitviper* (*Trimeresurus kirscheyi*) with lateral view placed on a branch (A), with ventral view placed on a branch (B), head of adult male placed on a branch (C), and a juvenile female *Simeulue Pitviper* (*Trimeresurus kirscheyi*) with lateral view placed on a branch (D), observed near Sinabang, Simeulue island, Indonesia. Photos by Marcus Lucassen.

- Mavoungou, L.B., Jackson, K., Goma-Tchimbakala, J. (2024): Snake species assemblages across habitat types in four departments of the Republic of Congo, with emphasis on medically-relevant venomous species. *Heliyon* **10**: e33583.
- Meiri, S., Chapple, D.G., Tolley, K.A., Mitchell, N., Laniado, T., Cox, N., et al. (2023): Done but not dusted: Reflections on the first global reptile assessment and priorities for the second. *Biological Conservation* **278**: 109879.
- Meiri, S. (2024): SquamBase—A database of squamate (Reptilia: Squamata) traits. *Global Ecology and Biogeography* **33**(4): e13812.
- Mertens, J.E.J., Roie, M.V., Merckx, J., Dekoninck, W. (2017): The use of low cost compact cameras with focus stacking functionality in entomological digitization projects. *ZooKeys* **712**: 141–154.
- Morris, R.K.A. (2020): Imperfect detection: photographic recording and its implications. *British Journal of Entomology and Natural History* **33**: 41–56.
- Murphy, J. (2010): *Sumatranus albomaculatus*. The IUCN Red List of Threatened Species **2010**: e.T176695A7285351.
- Shian, S.W., Soenggono, A., Pramod, S.V. (2016): Comparison of Tissue Preservation using Formalin and Ethanol as Preservative Formula. *Althea Medical Journal* **3**(3): 359–363.
- Simmons, J.E. (1999): Storage Concerns For Fluid-Preserved Collections. *National Park Service* **11**(3): 1–4.
- Slavenko, A., Tallowin, O.J.S., Itescu, Y., Raia, P., Meiri, S. (2016): Late Quaternary reptile extinctions: size matters, insularity dominates. *Global Ecology and Biogeography* **25**(11): 1308–1320.
- Smithsonian (2025): *Enhydryis albomaculata*. https://www.si.edu/search/all?edan_q=Enhydryis%20Albomaculata.
- The Reptile Database (2025a): *Sumatranus albomaculata* DUMÉRIL, BIBRON & DUMÉRIL, 1854. <https://reptile-database.reptarium.cz/Sumatranus/albomaculata>.
- The Reptile Database (2025b): *Trimeresurus kirscheyi* VOGEL, DAVID & SIDIK, 2022. <https://reptile-database.reptarium.cz/Trimeresurus/kirscheyi>.
- Tingley, R., Meiri, S., Chapple, D.G. (2016): Addressing knowledge gaps in reptile conservation. *Biological Conservation* **204**: 1–5.
- Title, P.O., Singhal, S., Grundler, M.C., Costa, G.C., Pyron, R.A.,

- Colston, T.J., et al. (2024): The macroevolutionary singularity of snakes. *Science* **383**: 918–923.
- Uetz, P.H., Patel, M., Gbadamosi, Z., Nguyen, A., Shoope, S. (2024): A reference database of reptile images. *Taxonomy* **4**(4): 723–732.
- Uetz, P., Freed, P., Aguilar, R., Reyes, F., Kudera, J., Hošek, J. (2025): The Reptile Database. <http://www.reptiledatabase.org>.
- Vogel, G., David, P., Sidik, I. (2022): A review of the complex of *Trimeresurus hageni* (Lidth de Jeude, 1886) (Squamata: Viperidae) with descriptions of three new insular species from Indonesia. *Taprobanica* **11**(02): 54–83.
- Wotherspoon, L., Caetano, G.H.D.O., Roll, U., Meiri, S., Pili, A., Tingley, R., Chapple, D.G. (2024): Inferring the extinction risk of Data Deficient and Not Evaluated Australian squamates. *Austral Ecology* **49**(2): e13485.