Bio Palembanica 2(2): 123-127 (2025)
This journal is available online at: https://ejournal.uigm.ac.id/

First Record of Spiny Turtle *Heosemys spinosa* (Testudines: Geoemydidae) on Babi and Lasia Islands, West Sumatran Islands, Indonesia

SILVI DWI ANASARI[1*], MUHAMMAD IQBAL[2], TOM AMEY[1*]

[1]*Ecosystem Impact Foundation, Jalan Tgk. Banurullah, Desa Nancala, Teupah Barat, Simeulue, Aceh Province, Indonesia*
**Corresponding Author. E-mail: silvidwianasari@gmail.com; https://orcid.org/0009-0007-0340-6574*
**Corresponding Author. E-mail: tom@ecosystemimpact.com; https://orcid.org/0009-0009-9095-613X*
[2]*Department of Biology, Universitas Indo Global Mandiri, Jalan Jend. Sudirman No. 629, Palembang 30129, South Sumatra, Indonesia*
E-mail: miqbal@uigm.ac.id; https://orcid.org/0000-0002-6657-0183

Received 2 November 2025 | Accepted by *I. Aprillia*: 22 November 2025 | Published online 27 December 2025.

Abstract
The Spiny Turtle *Heosemys spinosa* is an Endangered freshwater species found throughout Southeast Asia, but its presence on smaller offshore islands is still poorly understood. This research reports the first verified occurrences of *H. spinosa* on Babi and Lasia Islands, part of the West Sumatran Islands in Aceh Province, Indonesia. From 15 October to 25 November 2023, nine individuals were observed on Lasia Island, and another was recorded on Babi Island on 2 August 2025. These new records expand the species' known distribution range and emphasize the ecological importance of these isolated, uninhabited islands in the West Sumatran region of Sumatra.

Keywords: Endangered species, *Heosemys spinosa,* Indonesia, Island biodiversity, Spiny Turtle.

Introduction

The Spiny Turtle *Heosemys spinosa* is an Endangered freshwater turtle found in lowland waters, flooded swamps and hilly streams (Cota *et al.,* 2021). The species ranges from Myanmar, Malaysia, Singapore and Indonesia (Das 2015). In Indonesia, *H. spinosa* has been recorded in Sumatra, Borneo, Natuna Islands, Bangka Islands, Belitung Island, Mentawai Islands, Batu Islands, and Riau Archipelagos (Manthey & Grossmann 1997; Stengel *et al.* 2011; Spinks *et al.* 2012).

Given its extensive distribution, herpetologists have queried whether *H. spinosa* truly represents a single evolutionary lineage or multiple unexplored taxa (Vetter & van Dijk 2006; Spinks *et al.* 2012). As a result of habitat loss, poaching for the wildlife pet trade, demand within food and traditional medicine markets of China, *H. spinosa* has become rare. *Heosemys spinosa* is classified as a threatened species, listed as Endangered with a decreasing population on the International Union for Conservation of Nature (IUCN) Red List (van Dijk *et al.* 2000; Spinks *et al.* 2011; Cota *et al.* 2021).

In this paper, we report the first record of *H. spinosa* on Babi and Lasia Islands, West Sumatran or Barusan Island chain, Aceh Province, Indonesia, and discuss the threats to the species. We also outline the conservation efforts being carried by local conservation organisation Ecosystem Impact Foundation on Babi and Lasia Islands.

Methods

On 15 October to 25 November 2023, nine individuals of *H. spinosa* (8 adults and 1 juvenile) were found on Lasia Island, and 2 August 2025 one individual was found on Babi Island Sumatra, Indonesia. The juvenile *H. spinosa* was easily identified due to it having marginal scute drawn out into a long sharp line (Manthey & Grossmann, 1997; Das 2010; Stengel *et al.*, 2011). This collection of recent sightings were the first record of *H. spinosa* on Babi and Lasia Islands, and adds an extension of range to its global distribution. Both Lasia Island (14.7 km^2) and Babi Island (46.5 km^2) are uninhabited and administratively located in the Teupah Selatan Subdistrict, Simeulue District (Simeulue Island), Aceh Province, Indonesia (Fig. 1).

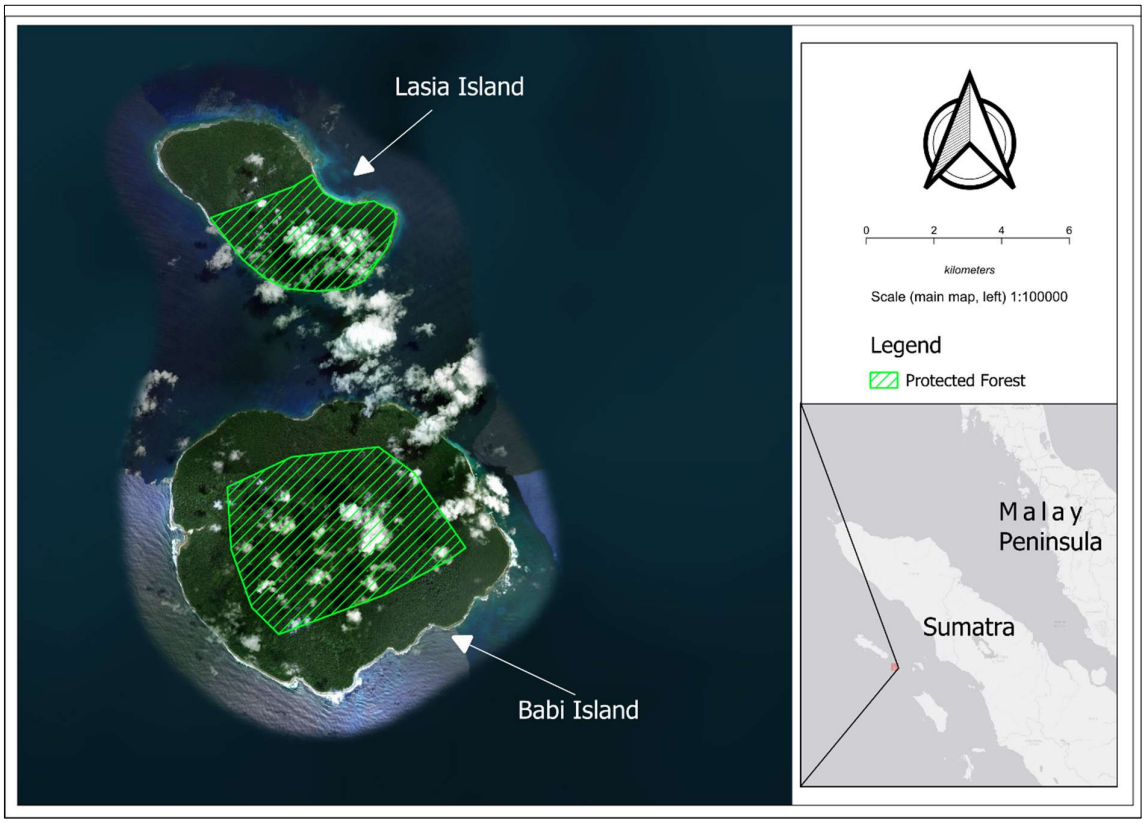


Figure 1. Map of Lasia and Babi islands, and their location off the western coast of Sumatra and the Malay Peninsula, showing protected forest areas.

Despite Babi and Lasia Island's small size and maximum altitude of around 40 m, the islands contain at least two small river systems, mangrove and close to 100% old growth forest cover, of which around 60% is Protected Forest. On Lasia Island, *H. spinosa* is found in habitats with wet soil, little moss, small trees (sapling groups), and leaf litter, whereas on Babi Island, *H. spinosa* is found in rattan with wet soil. Additionally, *H. spinosa* is also found in wetter mangrove habitats, which contain forest floors of coral reef substrate and crab burrows.

Results and Discussion

Babi and Lasia Islands are remote islands situated over 100 km off the northwest coast of Sumatra. Exploration of the herpetofauna on these islands has been limited. The most recent information available is from a study by Iqbal *et al.* (2023), which documented the presence of the Sumatran Forest Gecko *Gekko albomaculatus* on the islands. Earlier reports by de Rooij (1915, 1917, 1922) mentioned herpetofauna on Babi Island, but no data was recorded for Lasia Island. Lasia and Babi Islands were once a single paleo-island, connected by land bridges during the quaternary period's ice ages over the past 2.5 million years. However, they remained isolated from Simeulue Island and mainland Sumatra, making them one of western Indonesia's smallest deep-sea paleo-islands (Rebecca 2006; Rheindt *et al.* 2019; Salles *et al*. 2021). This prolonged isolation has resulted in high endemism, with five endemic bird species (Eaton *et al.* 2021), and two endemic mammal species found exclusively on these islands: the critically endangered Lasia Long-tailed Macaque *Macaca fascicularis lasiae* and the Lasia Lesser False Vampire Bat *Megadema spasma lasiae* (Amey *et al.* 2022; IBIS 2023). This unique biodiversity highlights the islands' distinct evolutionary history. Given the relatively unexplored nature of Babi and Lasia's flora and fauna, along with the island's high levels of endemism, Vetter & Dijk (2006) and Spinks *et al.* (2012) have questioned whether *H. spinosa* truly represents a single evolutionary lineage or multiple unexplored taxa. Therefore, we suggest that further research into the taxonomic lineage of Babi and Lasia Island's spiny turtle is warranted.



Figure 2. The individuals of *Heosemys spinosa* that were found on Lasia Island (15 October to 25 December 2023).

The remote location of Babi and Lasia Islands means they are rarely accessed by herpetologists. Indeed, historically Simeulue and surrounding islands including Babi and Lasia Islands have received less scientific attention than Nias Island, the largest of the West Sumatran Islands (Rheindt *et al.,* 2020). Our first record of *H. spinosa* described here supports this and highlights the lack of scientific research on Babi and Lasia Islands. A local conservation organization, the Ecosystem Impact Foundation, with which some of us are affiliated, has carried out extensive research into the fauna of Simeulue Island (Ecosystem Impact, 2024), located 30 km from Babi and Lasia Islands, but has never encountered *H. spinosa* on Simeulue Island itself. In a write-up of Mr. Edw. Jacobson's reptiles collected on Simeulue Island (Simalur) in 1913, de Rooij (1922) lists *Cuora amboinensis* (listed as *Cyclemys amboinensis*) as the only species of freshwater turtle on Simeulue Island. *Cuora amboinensis* is absent from a herpetofauna list recorded during a biodiversity survey conducted between 12-24 September 2018 on Simeulue Island (Dinas Lingkungan Hidup Kabupaten Simeulue, 2018), but was recorded in Teluk Dalam lake on 6 July 2021 (Muhammad Iqbal *pers. obs*.).

Habitat loss and human exploitation have negatively impacted many turtle species, with the clade being one of the most threatened vertebrate groups (Spinks *et al*. 2011; AFWA 2020; CITES 2022); with spiny turtle being one such species (Ives *et al*. 2007; Spinks *et al.* 2011; Stengel *et al.* 2011; Cota *et al.* 2021). With Babi and Lasia Islands maintaining close to full old growth forest cover, and being protected through conservation action in the form of a community ranger project, the island may act as an example of a safe location for the species' protection at the edge of the species known distribution.

We recommend that further research into the distribution and status of *H. spinosa* throughout the West Sumatran Islands should be carried out. *H. spinosa* has been reported to occur on the Banyak Islands, 50 km southeast of Babi and Lasia Islands (Tapley & Muurmans 2011; Cota *et al*. 2021). However, we are unable to find the original data sources which were used to confirm the occurence of the species on the Banyak Islands. With the considerable threat to *H. spinosa* due to habitat loss and uncontrolled capture for the pet trade, further studies on *H. spinosa* and other herpetofauna on satellite islands such as Babi and Lasia Islands are urgently required to resolve the many gaps in herpetofauna species distribution knowledge.

Acknowledgments

We extend our gratitude to the Aceh Provincial Department of Environment and Forestry, Simeulue Environment and Forestry Service, and the Simeulue Forest Management Unit for their support. Special thanks are due to the dedicated community rangers who protect Babi and Lasia Islands, including Wawan Nalis and team. We also acknowledge Mandai Nature for providing financial support that enabled the research leading to the documented sightings in this article.

References

Amey, T., Hansen, M.F., Gumert, M.D., Ang, A. 2022. *Macaca fascicularis* ssp. *lasiae*. Available from: The IUCN Red List of Threatened Species 2022: e.T39788A199564482. https://www.iucnredlist.org/species/39788/199564482. Accessed on 1 August 2025.

AFWA 2020. *Case Study: U.S. Freshwater Turtles snd Tortoises in the Context of the Convention on International Trade in Endangered Species of Wild Fauna and Flora*. Available from: https://www.fishwildlife.org/application/files/7815/9352/0162/Case_Study_U.S._Freshwater_Turtles_and_Tortoises_CITES_2020_FINAL.pdf. Accessed on 1 August 2025.

Chan-ard, T., John, W.K. Parr, J.W.K. & Nabhitabhata, J. 2015. *A Field Guide to the Reptiles of Thailand.* Oxford University Press. Oxford, 352 pp,

CITES. 2022. *Transfer of Genus Apalone spp. (Except the subspecies included in Appendix I) to Appendix II, in accordance with Article II, paragraph 2 (a) of the Convention and Resolution Conf. 9.24 (Rev. CoP17).* Panama City, Panama, CITES.

Cota, M., Guntoro, J., Horne, B.D., Kusrini, M.D., Krishnasamy, K. & Shepherd, C. 2021. *Heosemys spinosa*. https://www.iucnredlist.org/species/9942/3152508. Available from: The IUCN Red List of Threatened Species 2021: e.T9942A3152508. Accessed on 1 August 2025.

Das, I. 2015. *A Field Guide to the Reptiles of South-East Asia*. Bloomsbury Publishing, London, 376 pp.

de Rooij, N. 1915. *The Reptiles of of the Indo-Australian Archipelago. Volume I. Lacertilia, Chelonia, Emydosauria.* E.J. Brill., Leiden, Netherland, 405 pp.

de Rooij, N. 1917. *The Reptiles of the Indo-Australian Archipelago. Volume II. Ophidia. Leiden,* E.J. Brill., Leiden, Netherland, 356 pp.

de Rooij, N. 1922. Fauna Simalurensis: Reptilia. *Zoologische Mededelingen* 6: 217–238.

Dinas Lingkungan Hidup Kabupaten Simeulue. 2018. *Laporan survei (burung, herpetofauna dan flora) di Taman Hutan Raya Simeulue, Kabupaten Simeulue, Provinsi Aceh.* Sinabang, Indonesia, Dinas Lingkungan Hidup Kabupaten Simeulue. [in Indonesian]

Eaton, J., van Balen, B., Brickle N.W. & Rheindt, F.E. 2021. *Birds of the Indonesian Archipelago: Greater Sundas and Wallacea.* Lynx Edicions, Barcelona, 536 pp.

Ecosystem Impact. 2024. *What we do - ecosystemimpact: Together we heal our planet, EcosystemImpact What We Do.* Available from: https://www.ecosystemimpact.com/what-we-do-2. Accessed on 07 May 2024.

IBIS. 2023. *Megaderma lasiae* Lyon, 1916. Available from: https://mammals.indianbiodiversity.org/mammals/mammalia/chiroptera/megadermatidae/megaderma/megaderma-lasiae. Accessed on 08 May 2024.

Iqbal, M., Amey, T., Kusuma, I., Alim, S.S., Setiawan, A., Amin, A. & Yustian, I. 2023. First record of the Sumatran Forest Gecko *Gekko albomaculatus* (Giebel, 1861) on Babi and Lasia islands, Sumatra, Indonesia. *Herpetology* Notes 16: 301–304.

Ives, I., Spinks, P.Q. & Shaffer, H.B. 2007. Morphological and genetic variation in the endangered Sulawesi tortoise *Indotestudo forstenii*: evidence of distinct lineages?. *Conservation Genetics* 9: 709–713. DOI: https://doi.org/10.1007/s10592-007-9395-y

Mandai. 2024. *Mandai Nature, Mandai Nature: Creating a future where Nature, Wildlife and People Thrive.* Available from: https://www.mandainature.org/en/home.html. Accessed on 07 May 2024.

Manthey, U. & Grossmann, W. 1997. *Amphibien und reptilien Sudostasiens*. Natur & Tier, Berlin, 512 pp.

Rebecca, L. 2006. *Rise and Fall: Satellites Reveal Full Length of Tsunami-generating Earthquake.* Available from: https://earthobservatory.nasa.gov/features/Aceh/aceh3.php. Accessed on 07 May 2024.

Salles, T., Mallard, C., Husson, L., Zahirovic, S., Sarr, P. 2021. Sepulchre Quaternary landscape dynamics, boosted species dispersal across Southeast Asia. *Communications Earth & Environment*, 2: 240. DOI: 10.1038/s43247-021.

Spinks, P.Q., Thomson, R.C., Hughes, B., Moxley, B., Brown, R., Diesmos, A. & Shaffer, H.B. 2012. Cryptic variation and the tragedy of unrecognized taxa: the case of international trade in the spiny turtle *Heosemys spinosa* (Testudines: Geoemydidae). *Zoological Journal of the Linnean Society* 164: 811–824. DOI: https://doi.org/10.1111/j.1096-3642.2011.00788.x

Tapley, B. & Muurmans, M. 2011. Herpetofaunal records from Pulau Bangkaru, Sumatra. *Herpetology*

Notes 4: 413-417.
Rheindt, F.E., Baveja, P., Ferasyi, T.R., Nurza, A., Rosa, T.S., Haminuddin., Ramadhan, R. & Gwee, C.Y. 2019. The extinction in progress in the wild of the Barusan Shama *Copsychus* (*malabaricus*) *melanurus*. *Forktail* 35: 28–35.
Rheindt, F.E., Gwee, C.Y., Baveja, P., Ferasyi, T.R., Nurza, A. & Rosa, T.S., Haminuddin. 2020. A taxonomic and conservation re-appraisal of all the birds on the island of Nias. *Raffles Bulletin of Zoology* 68: 496–528. DOI: https://doi.org/10.26107/RBZ-2020-0068
Stengel, C.J., Shepherd, CR. & Caillabet, O.S. 2011. *The Trade in Tortoises and Freshwater Turtles in Jakarta Revisited.* TRAFFIC Southeast Asia, Selangor, 24 pp.
van Dijk, P.P., Stuart, B.L. & Rhodin, A.G.J. 2000. *Chelonian Research Monographs No. 2.* Chelonian Research Foundation, Lunenburg, 164 pp.
Vetter, H. & van Dijk, P.P. 2006. *Terralog, Turtles of the World, Vol. 4. East and South Asia*. Chimaira and Aqualog, Frankfurt, 160 pp.
Uetz, P., Freed, P., Aguilar, R. & Hošek, J. 2021. *The Reptile Database*. Available from: http://www.reptile-database.org. Accessed on 07 May 2024.
Widyananto, R. 2009. *Keanekaragaman Herpetofauna di Areal Siberut Conservation Program (SCP), Pulau Siberut, Kepulauan Mentawai, Sumatera Barat.* Bogor, Indonesia, Institut Pertanian Bogor