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CITES NON-DETRIMENT FINDING

A Primary Evaluation of *Malayemys subtrijuga*

From INDONESIA



Ministry of Environment and Forestry (KLHK)
&
National Research and Innovation Agency (BRIN)
2023

CITES Non-detriment finding

A Primary Evaluation of *Malayemys subtrijuga* from Indonesia

Text in italics is explanatory and should be deleted in completed documents. Please refer to the NDF Guidelines document for further explanation on how to complete this evaluation.

Species name	Mekong snail-eating turtle (<i>Malayemys subtrijuga</i>)
Range state name	ID
Report compiled by	SA & MA
Date compiled	07/22/2023

Section One: Summary

Please provide a short overview (1-2 paragraphs) of the trade in this species in the country of interest.

Mekong Snail-Eating Turtle (MSET), *Malayemys subtrijuga*, listed in Appendix II. The harvest of MSET in Indonesia extremely low volume, in total was 569 individuals from 2017 to 2021 or average 114 individuals per year. Based on molecular data and pattern distribution, MSET is **nonnative species** in Indonesia.

This NDF will examine the 114 wilds caught MSET each year.



Figure 1. A male *Malayemys subtrijuga* from Demak, Northern coast of Central Java (Photograph by A. Hamidy)

Section Two: Primary Evaluation score

Please score each attribute listed within the table below and sum these to provide a total.

Criteria	Number of points			Score
	1	2	3	
Annual Harvest level	Low (<2,000)	Medium (2,000 - 20,000)	High (>20,000)	1
Area of occupancy for non native/allien/invasive species	Large (>20,000km ²)	Medium (2,500 – 20,000km ²)	Small (<2,500km ²)	1
Life-history	Fast	Medium	Slow	2
Illegal trade and IUCN Threat status	If levels of illegal trade are known, they should be included under “Annual harvest level”. If unknown, and suspected to be detrimental, give a maximum score of 1 point . Similarly, if the status of the species is listed as VU, EN or CR in the IUCN Red List of Threatened Species, give a maximum score of 1 point			0

Section Three: Justification – Harvest level

Please provide an explanation with appropriate references to justify the score given.

The harvest of MSET in Indonesia actually extremely low volume, based on exporter report the total number export between 2017 to 2021 was 569 individuals or about 114 individuals each year. Based on molecular and distribution data, MSET is nonnative species in Indonesia.

Based on those would give us an annual harvest rate value of 1.

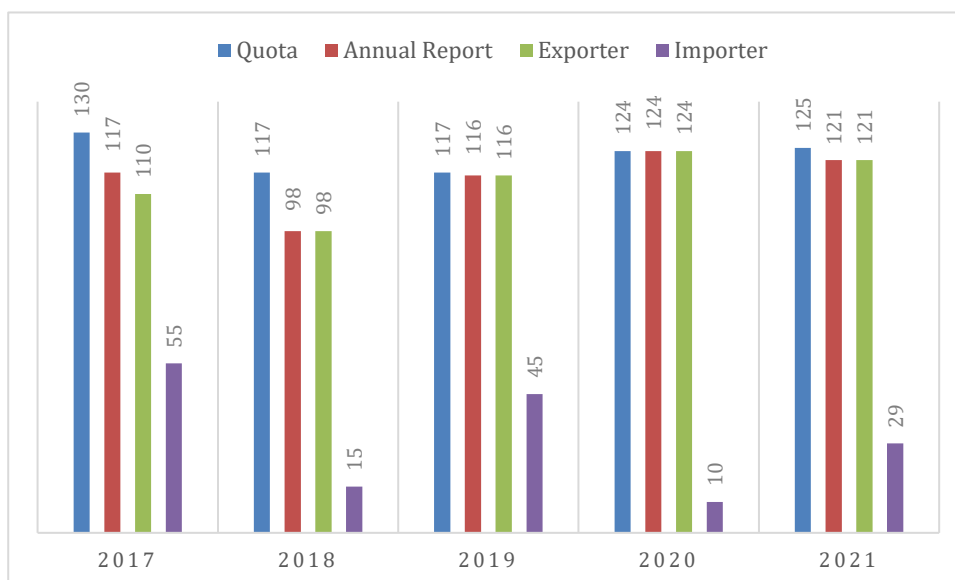


Figure 2. Comparison of export quota, annual report, exporter, and importer report of Malayemys subtrijuga from Indonesia.

Section Four: Justification – Area of occupancy

Please provide an explanation with appropriate references to justify the score given.

Based on a record of the Museum Zoologicum Bogoriense (MZB), MSET is distributed in western Java (Jakarta, Serang/Banten, and Tasikmalaya) and Sumatra (Riau), Figure 2. On Java, the species inhabiting wetland on northern coast. The distribution in Indonesia is thought a result of human intervention primarily from the Mekong River on mainland Southeast Asia.

MSET inhabits lowland freshwater habitats including ponds, canals, streams, swamps, marshes, and wet rice fields. The total area of wetland on the northern coast of Java is 12,206.14 km².

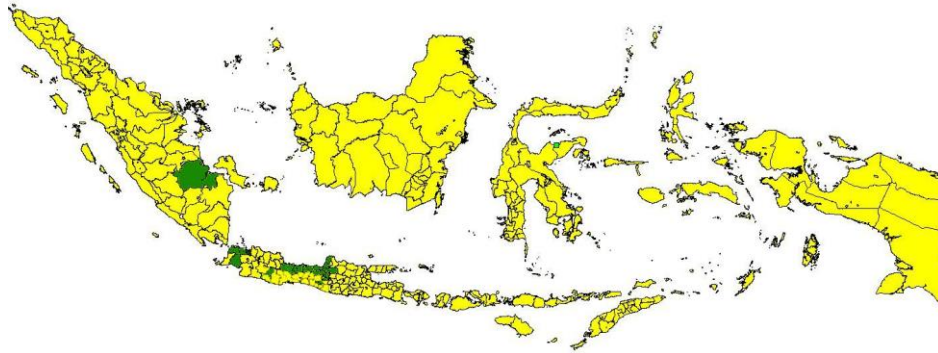


Figure 3. Distribution of *Malayemys subtrijuga*, a non native turtle in Indonesia (Map prepared by Munir).

Hamidy et al. (2019) sequenced two mitochondrial genes of 11 *M. subtrijuga* specimens, consisting of field-collected turtles from Java and captive individuals from a breeder on Sumatra. These sequences were compared with data for Indochinese populations submitted to GenBank by Ihlow et al. (2016). A low genetic variation was found, leading Hamidy et al. (2019) to regard *M. subtrijuga* as having been introduced to Indonesia. Genetic divergence between Indonesian and Indochina population is 0.0-0.5% in NADH4 and 0.0-1.0% in CytB.

But Dawson et al (2020) believed solely on mitochondrial genes may be unsuitable for resolving the history of recent divergences and declare those are inadequate to fully settle the status of *M. subtrijuga* on Java. Based on the limited and jumping distribution (Indochina and Java) especially at the locations of anchored Indonesia-Indochinese interaction of trade history in the past (northern cost of Java) and as well as conclusion from Hamidy et al. (2019), we conclude that MSET is nonnative turtle in Indonesia.

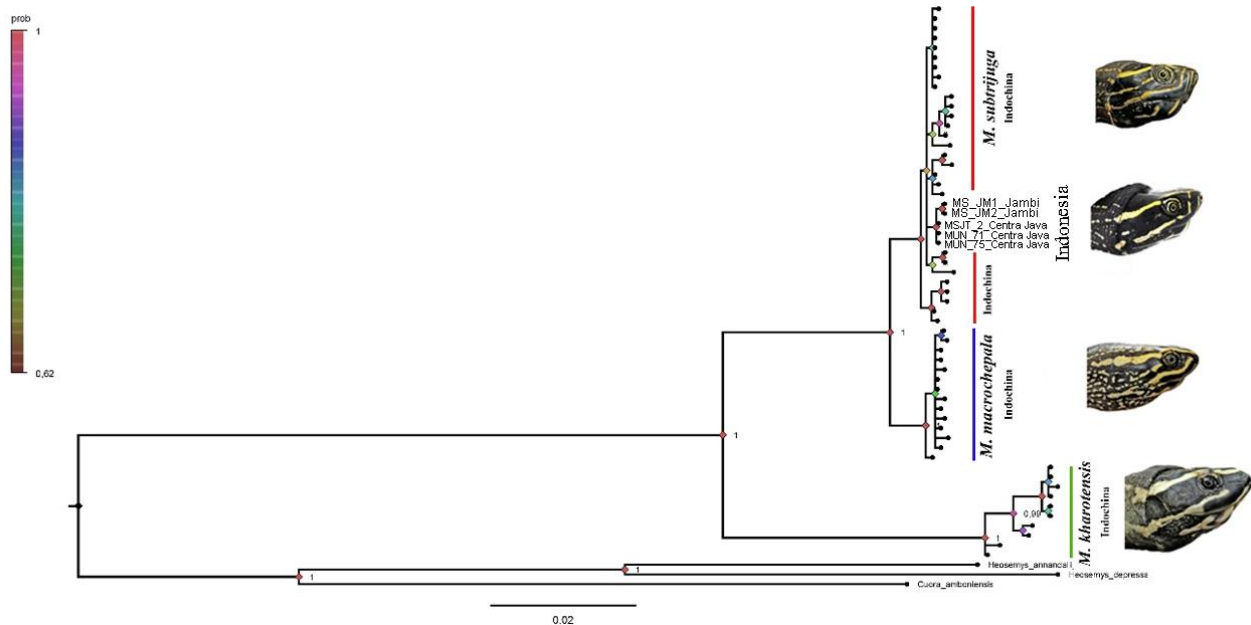


Figure 3. Phylogenetic of *Malayemys* based on 1884 bp of mitochondrial gene (*NADH dehydrogenase subunit 4, Cytochrome b, tRNA-His, tRNA-Ser, tRNA-Leu dan tRNA-Thr*)

Taking into account non-native species, the order of our scoring of the Section Four: Justification – Area of occupancy is reversed, on the grounds that the wider the distribution area of non-native species, the greater the potential for harm to local biodiversity.

Therefore, we assign an area of occupancy of 1.



Figure 4. The Habitat of *Malayemys subtrijuga* in northern coast of Java encompass wet land area about 12,206.14 km²

Section Five: Justification – Life history

Please provide an explanation with appropriate references to justify the score given.

In captivity the maximum longevity of MSET reaches 14.2 years, males reach maturity at age around 3 years and 5 years in females, and clutch is size 3–10 eggs with 4–6 clutches per year.



Figure 5. Captive breeding of *Malayemys subtrijuga*

We therefore assign this species clearly to the ‘Medium’ category: 2 points.

Section Six: Illegal trade

Please provide an explanation with appropriate references to justify the score given.

Illegal trade is unknown, and in the Red List IUCN listed as NT.

We therefore assign this species clearly to score 0 points.

Section Seven: Conclusion, course of action and determination on exports

Please provide an overall conclusion on the perceived threat of trade to the species and details on whether further course of action will be taken to complete an NDF for the species.

Our evaluation yields a final score of **4**, therefore **the wild population is non-detrimental**.

Evaluating Non-Detriment

Primary Evaluation score lower than five (5) = trade is non-detrimental (**record the score and justification in the *Primary Evaluation* worksheet provided (in [Annex B](#)). This can be used for Step 4 of the Non-Detriment Finding**).

If the *Primary Evaluation* score is equal to or greater than five (5) then the non-detriment requirement cannot be satisfied, warranting additional information based on other indices to evaluate detriment. **A *Secondary Evaluation* should be undertaken**.

Since MEST included in the review proces in AC-26 CITES, Indonesia has followed the Secretariat recommendation to reduce the export quota up to 35 % become 125 individuals every year with limitation of maximal harvest size 10 cm (SCL). Considering the low level of harvest and inclusion of this species as non-native to Indonesia, we believe that current harvest quota is not detriment to wild population.

Section Eight: Literature Cited

Please provide references to all the reports and literature cited in this evaluation.

AnAge entry for *Malayemys subtrijuga*

https://genomics.senescence.info/species/entry.php?species=Malayemys_subtrijuga

Dawson, J.E., Ihlow, F., and Platt, S.G. 2020. *Malayemys subtrijuga* (Schlegel and Müller 1845) – Mekong Snail-Eating Turtle. In: Rhodin, A.G.J., Iverson, J.B., van Dijk, P.P., Stanford, C.B., Goode, E.V., Buhlmann, K.A., and Mittermeier, R.A. (Eds.). Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Chelonian Research Monographs 5(14):111.1–24. doi: 10.3854/crm.5.111.subtrijuga.v1.2020; www.iucn-ftsg.org/cbftt/.

Hamidy, A., Munir, M., and Herlambang, A.E.N. 2019. [Native or introduction? Preliminary evaluation of the *Malayemys subtrijuga* population in Indonesia and its conservation challenges.] (in Indonesian). In: Dwibadra, D., Murniati, D.C., Rachmatika, R., Damayanto, I.P.G.P., Inayah, N., Sukmawati, J.G., Herlambang, A.E.N., Dalimunthe, S.H., Fefirenta, A.D., Rahayu, R.S., and Prawestri, A.D.P. (Eds.). [Proceedings of the National Seminar on Conservation and Utilization of Wild Plants and Animals: Research as a Foundation for the Conservation and Utilization of Wild Plants and Animals], pp. 347–353.

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Platt, S.G., Sovannara, H., Kheng, L., Holloway, R., Stuart, B.L., & Rainwater, T.S. 2008. Biodiversity, Exploitation, and Conservation of Turtles in the Tonle Sap Biosphere Reserve, Cambodia, with Notes on Reproductive Ecology of *Malayemys subtrijuga*. *Chelonian Conservation and Biology*, 2008, 7(2): 195–204

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