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**RECENT SCIENTIFIC EVIDENCE SUPPORTING POPULATION DECLINES
IN THRESHER SHARKS**

(Prepared by the government of Panama)

Summary:

This document was submitted by the government of Panama on 20 March 2026 and includes additional information related to proposal UNEP/CMS/COP15/Doc.30.2.12 Proposal for the inclusion of the Pelagic thresher (*Alopias pelagicus*) and the Bigeye thresher (*Alopias superciliosus*) on Appendix I of the Convention.

RECENT SCIENTIFIC EVIDENCE SUPPORTING POPULATION DECLINES IN THRESHER SHARKS

1. Stochastic demographic analysis of the pelagic thresher shark (*Alopias pelagicus*) in the Ecuadorian Pacific. Mejia et al. (2025).

Evidence of population decline

- The demographic model indicates that current fishing pressure leads to a population decline of ~5% annually.
- Population growth rate (λ) values are below the threshold required for stability under current fishing mortality, indicating a declining population trajectory.

Fishing mortality exceeds sustainable levels

- The study estimates that current fishing mortality exceeds sustainable levels by 85.71%.

Demographic vulnerability

- Population growth rates are intrinsically low; λ values rarely exceed $\sim 1.08 \text{ yr}^{-1}$, demonstrating limited resilience to fishing pressure.
- Stable age distribution modelling shows exponential decline in population structure under current fishing mortality.

Stable age-distribution modelling under current fishing scenarios suggests an exponential decline in population structure, reinforcing the conclusion that **the species is highly susceptible to overfishing and that the stock is currently overexploited.**

2. Sustainable catches? A demographic assessment of exploitation levels of seven shark species caught in Ecuador Mejia et al. 2026 (Under Review)

This study evaluates demographic parameters for **multiple shark species in Ecuadorian fisheries**, including both thresher species (*A. pelagicus*, *A. superciliosus*).

Population growth rate indicates decline

- Both species have $\lambda < 1$, indicating declining populations under current fishing mortality.

Fishing mortality above sustainable thresholds

- Current fishing mortality exceeds critical levels for both species.
 - A. superciliosus*:
 - $F_{\text{critical}} \approx 0.03 \text{ yr}^{-1}$
 - Current fishing mortality exceeds this by $\sim 0.318 \text{ yr}^{-1}$
 - A. pelagicus*:
 - Fishing mortality also above ($\sim 0.05 \text{ yr}^{-1}$) sustainable thresholds
- Both species are experiencing substantial overfishing, exceeding 67% above their F_{critical} values

Required reduction in fishing mortality

To reach sustainable levels, fishing mortality would need major reductions:

- 91% reduction required for *A. superciliosus*
- substantial reductions above 44% also required for *A. pelagicus*
- Both thresher species are currently declining (5% annual to *A. pelagicus* and 28% to *A. superciliosus*) due to fishing mortality

The combined demographic analyses demonstrate that **both pelagic and bigeye thresher sharks are currently experiencing population declines driven by fishing mortality that exceeds sustainable limits**, while their life-history characteristics severely constrain recovery potential. This evidence supports the argument that these species meet the **CMS Appendix I criteria for species threatened with extinction due to ongoing anthropogenic exploitation**.

References

- Mejía, D., Galván-Magaña, F., Briones-Mendoza, J., Jakes-Cota, U., Villalobos, H., Moncayo-Estrada, R. and Hernández-Herrera, A., 2025. Stochastic demographic analysis of the pelagic thresher shark (*Alopias pelagicus*) in the Ecuadorian Pacific. *Regional Studies in Marine Science*, 88, p.104264. <https://doi.org/10.1016/j.rsma.2025.104264>
- Mejía D., Vianna, G., Salinas-de-León, P., Galván-Magaña, Briones-Mendoza, J. and Robalino-Mejía, C. Sustainable catches?. 2026. A demographic assessment of exploitation levels of seven shark species caught in Ecuador. *In Review*