The Impact of Plastic Pollution on Marine Life – The Case of Sea Turtles

SDG214 – 2021

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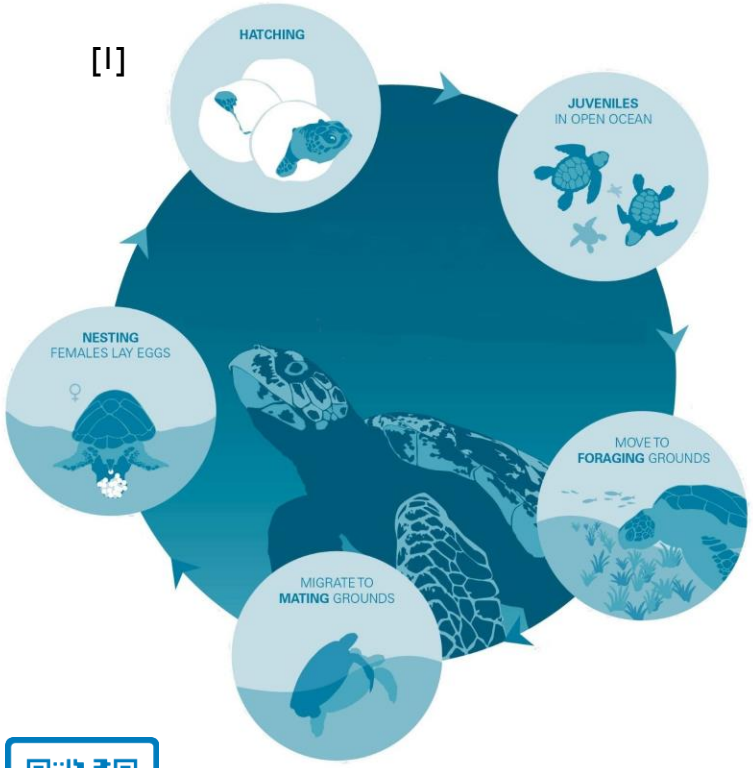
1. Introduction

Plastic is the predominant component of marine and costal debris (7)

[1]



SCAN ME

6 of 7 species of sea turtles are threatened with extinction (5)

2. Effects of Plastic Pollution

2.1 Nesting habitats

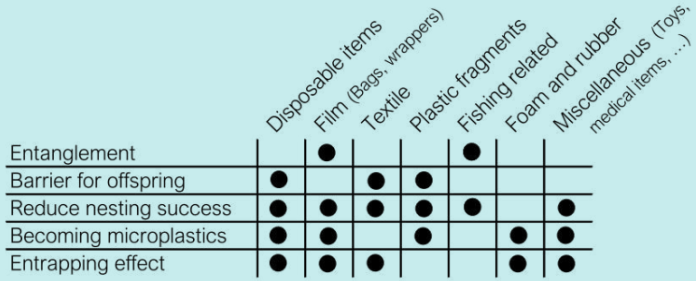
Macroplastics may cause entanglement, entrapping and barrier effect

- Death, increased predation risk or abortion of nesting attempt

Microplastics may change physical properties of beach

- Hatchling sex-ratios affected by lower sand temperatures
- Desiccation of eggs due to reduced humidity and increased permeability (4, 6)

[2] Potential effect of different groups of plastic litter at polluted beaches on nesting



2.2 Plastic ingestion

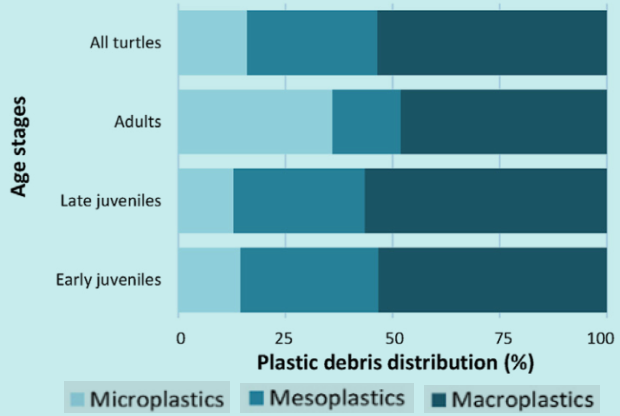
Ingestion of macroplastics causes:

- Intestinal blockage
- Internal injury
- Dietary dilution
- Malnutrition
- Increased buoyancy

Could result in poor health, reduced growth rates and reproductive output, or death (6)

Microplastics may be harmful at cellular and subcellular level. They can also act as a carrier for toxic substances such as heavy metals (3)

[3] Ingestion of plastic debris by sea turtles in Greece



2.3 Entanglement

Every year 5.5% of turtles get entangled of which 90% is found dead (2)
Entanglement may cause long-term suffering and a slow deterioration (1)

[4]

References

(1) Barreiros, J. P. & V.S. Raykov (2014): Lethal lesions and amputation caused by plastic debris and fishing gear on the loggerhead turtle *Caretta caretta* (Linnaeus, 1758). Three case reports from Terceira Island, Azores (NE Atlantic). In: Marine Pollution Bulletin 86. 518 – 522.

(2) Duncan et al. (2017): A global review of marine turtle entanglement in anthropogenic debris: A baseline for further action. In: Endangered Species Research 34. 431-448.

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(4) Gündoğdu et al. (2019): Potential interaction between plastic litter and green turtle *Chelonia mydas* during nesting in an extremely polluted beach. In: Marine Pollution Bulletin 140. 138-145.

(5) IUCN (International Union for Conservation of Nature) (2012): IUCN red list of threatened species. Version 2012.2. IUCN, Gland, Switzerland. Available from http://www.iucnredlist.org (accessed December 2012).

(6) Nelms et al. (2016): Plastic and marine turtles: a review and call for research. In: ICES Journal of Marine Science 73. 165–181.

(7) Pham et al. (2017): Plastic ingestion in oceanic-stage loggerhead sea turtles (Caretta caretta) off the North Atlantic subtropical gyre. In: Marine Pollution Bulletin 222-229.

Images

[1] Olive Ridley Project (2017): Life Cycle Of Turtles. https://oliveridleyproject.org/life-cycle-of-turtles (03.05.2021)

[2] Based on: Gündoğdu et al. 2019

[3] Digka et al. (2020): Evidence of ingested plastics in stranded loggerhead sea turtles along the Greek coastline, East Mediterranean Sea. Environ. Pollut. 263, 114596.

[4] OfficialPSDs. n. d. Sea turtle (PSD). Accessed May 3, 2021. https://officialpsds.com/sea-turtle-psd-7qzzn6

3. Conclusion

Macroplastics affect sea turtles in all life stages. The effects of micro-plastics ingestion remain unclear as toxicity data regarding microplastics are limited. SDG14.1 can contribute to protecting sea turtles and further monitoring is crucial.