
Overview of plastic ingestion in seabirds: a call for harmonized methods

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Abstract

Plastic pollution is a ubiquitous and increasing issue concerning the marine environment. It has been estimated that at least 267 marine species in the world are affected by plastic ingestion including sea turtle species, seabird species, and all marine mammal species. Seabirds are particularly susceptible to plastic pollution because of high rates of ingestion. Plastic pollution causes the death of more than one million of individuals each year and more than 99% of seabirds will be impacted by this type of pollution by 2050. In addition, seabirds are excellent bioindicators of the ecological status of ecosystems because they are abundant, with a long-lived span, are often located at the top of the food chain, and are directly impacted by anthropogenic pressures. However, much of the research on the effects of plastic ingestion in seabirds is scarce and information is scattered and disconnected due to the use of different methodologies. Here, we review the diversity of approaches and protocols followed to assess macro- and microplastic ingestion in seabirds to offer a global overview of their status. We screened over 2500 papers to finally obtain a database of targeted papers on plastic ingestion including methods for sampling, detection, and analysis of macro- and microplastics in seabirds. Overall, we found as major gaps that many studies are limited to a visual classification of macro and microplastics, but chemical analytical techniques to identify the composition of macro and microplastics are underrepresented. For a better understanding and assessment of the impact of plastic pollution on seabirds, standardized methods for the separation and identification of macro- and microplastics in seabirds are needed to provide datasets that allow a higher level of analysis of ecosystem health status using seabirds as ecosystem sentinels.

Keywords: global change, macroplastic, marine conservation, microplastic, seabirds, plastic ingestion

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