

Seabirds as bioindicators of marine ecosystems

ABSTRACT

Seabirds are those waterbirds that directly or indirectly depend on the marine environment over the waters, i.e., they foraged at sea either near shore or offshore and inhabit in coastal areas, islands, estuaries, wetlands, and ocean islands. They are mostly aerial waterbirds sailing above sea spending much of their time (weeks, months, and even years) in marine environments or floating on the water surface or diving in deep sea in search of food. Seabirds encompass of 65 genera, 222 marine, and 72 partially marine bird species. Seabirds have been used as good indicators (i.e., bioindicators) of marine ecosystems due to cause-effect association with different microclimate and habitats. They exploit broad scale of habitat, quickly respond to environmental changes, they can be detected easily (i.e., they showed their presence through vocalization), easy to identify, can be surveyed efficiently over large spatial scale, e.g., presence, abundance, and influenced by surrounding habitats as compared to other animals. Employing seabird as bioindicators is a cost-effective and informative tool (well defined matrix) to determine the effects of disturbances, contamination, i.e., effects of pollutants, organic substances, and oil-spills of the marine environment. Seabirds are top predators in the marine food chain and key component of the food web. Seabirds may indicate the status of habitat, reduction in food occurrence and abundance, rate of the predation, an effect of weather (climate change), and threats. The other reason could be that, seabirds often closely associate with inter-site more distinctly than other animals and may breed in the same site each year, easy to catch while incubating and during rearing chicks. Hence, it is crucially important to use seabirds as bioindicators within the context of ecological and spatial parameters to determine the effects of disturbances in the marine environment and for effective conservation and better management of seabirds in the future.

Keyword: Seabirds; Bioindicators; Marine; Habitat; Threats; Ecology