



# The Major Role of Coastal Lagoons in Aquatic Systems, Transitional Waters, and Coastal Marine Ecosystems

Daniel Nyarko\*

Department of Environment and Sanitation Studies, University of Ghana, Legon, Ghana

## DESCRIPTION

Coastal lagoons are land-sea transition zones: shallow inland water bodies isolated from the ocean by a barrier and connected to the ocean by one or more restricted inlets that remain open at least periodically. The majority of coastal lagoons were developed as a result of the Late Quaternary marine incursion, which began around 18,000 years ago and ended about 3,000 years ago; leaving a mean sea level near to what it is today. The interaction of river sediments with marine processes resulted in the formation of coastal barriers (winds, currents and waves).

Lagoons are altered by erosion and deposition after they have formed. The accumulation of in washed sediments and organic deposits has in filled several of the old coastal lagoons (e.g. in the Anzio district, and along the Adriatic coastline, in Italy). Elsewhere, the seaward barrier's coastal erosion has converted former lagoons to marine bays. Due to rapid geomorphologic change, coastal lagoons have a transient 'natural' character. The rates of sediment supply and relative sea-level increase are the key drivers of this process. The combined effects of eustatism (increasing mean sea level) and subsidence determine the actual sea level (lowering of the basin bottom).

Coastal lagoons come in a wide range of sizes, ranging from 10,000 square meters to 10,000 square kilometers. The Lagoon of Venice is the largest in the Mediterranean Sea, while the Curonian lagoon is the largest in the Baltic Sea. They also exhibit a vast spectrum of ecological diversity.

Coastal lagoons can be characterized in a variety of ways based on their:

- a) Mean salinity
- b) Tidal regime
- c) Geomorphic kind, which is concerned with water exchange with the sea

Under Directive 92/43/EEC on the conservation of natural habitats and wild flora and wildlife, coastal lagoon habitat is designated (Habitats Directive). In addition, a variety of bird species breed in coastal lagoons. As a result, numerous lagoons are now protected under the European Union's Birds

Directive 2009/147/EC. Since recorded times, Euro-Mediterranean lagoons have been managed to preserve their natural heritage while providing economic and societal benefits, until the balance was disrupted by increasing anthropogenic pressures, social and cultural changes.

Lagoons, in fact, are prized ecosystems, being among the most prolific and valuable settings in the Biosphere, and providing not only significant ecosystem services to modern society, but also frequently a high cultural heritage value.

Coastal lagoons are naturally stressed systems that endure frequent environmental disturbances and variations due to their transitory nature. Habitat loss and change, physical alteration, organic, chemical, and biological pollution, and overexploitation have all had a significant impact on lagoons. The qualitative pathways of lagoon ecosystem sensitivity to anthropogenic forces such as urbanization and industrialization are widely characterized, even if the underlying mechanisms and quantitative correlations are still unknown. Lagoons are also among the most vulnerable aquatic ecosystems to current and future climate change since they are ecotone habitats that are open and connected to both freshwater and marine environments. Coastal lagoons can also be thought of as climate change 'Sentinel Systems,' or systems that respond to specific stressors with changes across geographic gradients.

Changes in water temperature, freshwater supplies and their temporal patterns, and seawater imports will all be affected by climate change in lagoon ecosystems. Low water releases in Southern Europe and flash floods in Northern Europe are likely to exacerbate changes in species distribution and abundance, biodiversity, and ecosystem functioning. Adaptation to climate change, which affects important environmental factors such as temperature, dissolved oxygen, salinity, element concentrations, and hydrology, is likely to cause further changes in transitional and lagoon ecosystems. Lagoons are more susceptible to shifting pressures than other transitional waters because they are more limited, especially in the most reactive transitional zones, such as terrestrial-aquatic, freshwater-marine, sediment-water column, and lagoon waters-atmosphere.

**Correspondence to:** Daniel Nyarko, Department of Environment and Sanitation Studies, University of Ghana, Legon, Ghana, Email: danielnyarko@gmail.com

**Received:** 02-May-2022, Manuscript No. JCZM-22-16893; **Editor assigned:** 06-May-2022, Pre QC No. JCZM-22-16893 (PQ); **Reviewed:** 20-May-2022, QC No. JCZM-22-16893; **Revised:** 30-May-2022, Manuscript No. JCZM-22-16893 (R); **Published:** 07-Jun-2022, DOI: 10.35248/2473-3350.22.25.500.

**Citation:** Nyarko D (2022) The Major Role of Coastal Lagoons in Aquatic Systems, Transitional Waters, and Coastal Marine Ecosystems. J Coast Zone Manag. 25:500.

**Copyright:** © 2022 Nyarko D. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.