An aquaticecosystem is an [ecosystem](https://en.wikipedia.org/wiki/Ecosystem) in a [body of water](https://en.wikipedia.org/wiki/Body_of_water). [Communities](https://en.wikipedia.org/wiki/Biocoenosis) of [organisms](https://en.wikipedia.org/wiki/Biota_%28ecology%29%22%20%5Co%20%22Biota%20%28ecology%29) that are dependent on eachother and on theirenvironment live in aquaticecosystems. The two main types of aquaticecosystems are [marine ecosystems](https://en.wikipedia.org/wiki/Marine_ecosystem%22%20%5Co%20%22Marine%20ecosystem) and [freshwaterecosystems](https://en.wikipedia.org/wiki/Freshwater_ecosystem%22%20%5Co%20%22Freshwater%20ecosystem).

Marine ecosystems, the largest of all ecosystems, cover approximately 71% of the [Earth's surface](https://en.wikipedia.org/wiki/Earth%27s_surface%22%20%5Co%20%22Earth%27s%20surface) and containapproximately 97% of the planet's water. Theygenerate 32% of the world's net [primary production](https://en.wikipedia.org/wiki/Primary_production%22%20%5Co%20%22Primary%20production). They are distinguishedfromfreshwaterecosystems by the presence of dissolved [compounds](https://en.wikipedia.org/wiki/Chemical_compound%22%20%5Co%20%22Chemical%20compound), especially [salts](https://en.wikipedia.org/wiki/Salt_%28chemistry%29%22%20%5Co%20%22Salt%20%28chemistry%29), in the water. Approximately 85% of the dissolvedmaterials in [seawater](https://en.wikipedia.org/wiki/Seawater%22%20%5Co%20%22Seawater) are [sodium](https://en.wikipedia.org/wiki/Sodium%22%20%5Co%20%22Sodium) and [chlorine](https://en.wikipedia.org/wiki/Chlorine%22%20%5Co%20%22Chlorine). Seawater has an averagesalinity of 35 [parts per thousand](https://en.wikipedia.org/wiki/Parts-per_notation%22%20%5Co%20%22Parts-per%20notation) of water. Actualsalinity varies amongdifferent marine ecosystems.



A classification of marine habitats.

Marine ecosystems can bedividedintomany zones dependingupon water depth and shorelinefeatures. The [oceanic](https://en.wikipedia.org/wiki/Ocean%22%20%5Co%20%22Ocean) zone is the vast open part of the oceanwhereanimalssuch as whales, sharks, and tuna live. The [benthic](https://en.wikipedia.org/wiki/Benthic%22%20%5Co%20%22Benthic) zone consists of substratesbelow water wheremanyinvertebrates live. The [intertidal](https://en.wikipedia.org/wiki/Intertidal_zone%22%20%5Co%20%22Intertidal%20zone) zone is the area between high and lowtides; in this figure itistermed the littoral zone. Othernear-shore (neritic) zones caninclude [estuaries](https://en.wikipedia.org/wiki/Estuary%22%20%5Co%20%22Estuary), [saltmarshes](https://en.wikipedia.org/wiki/Salt_marsh%22%20%5Co%20%22Salt%20marsh), [coralreefs](https://en.wikipedia.org/wiki/Coral_reef%22%20%5Co%20%22Coral%20reef), [lagoons](https://en.wikipedia.org/wiki/Lagoon%22%20%5Co%20%22Lagoon) and [mangrove](https://en.wikipedia.org/wiki/Mangrove%22%20%5Co%20%22Mangrove) swamps. In the deepwater, [hydrothermalvents](https://en.wikipedia.org/wiki/Hydrothermal_vent%22%20%5Co%20%22Hydrothermal%20vent) mayoccurwhere [chemosynthetic](https://en.wikipedia.org/wiki/Chemosynthesis%22%20%5Co%20%22Chemosynthesis) [sulfur](https://en.wikipedia.org/wiki/Sulfur%22%20%5Co%20%22Sulfur) [bacteria](https://en.wikipedia.org/wiki/Bacteria%22%20%5Co%20%22Bacteria) form the base of the food web.

[Classes](https://en.wikipedia.org/wiki/Class_%28biology%29%22%20%5Co%20%22Class%20%28biology%29) of organismsfound in marine ecosystemsinclude [brownalgae](https://en.wikipedia.org/wiki/Brown_algae%22%20%5Co%20%22Brown%20algae), [dinoflagellates](https://en.wikipedia.org/wiki/Dinoflagellate%22%20%5Co%20%22Dinoflagellate), [corals](https://en.wikipedia.org/wiki/Coral%22%20%5Co%20%22Coral), [cephalopods](https://en.wikipedia.org/wiki/Cephalopod%22%20%5Co%20%22Cephalopod), [echinoderms](https://en.wikipedia.org/wiki/Echinoderm%22%20%5Co%20%22Echinoderm), and [sharks](https://en.wikipedia.org/wiki/Shark%22%20%5Co%20%22Shark). Fishescaught in marine ecosystems are the biggest source of commercial foodsobtainedfromwild populations

Environmentalproblemsconcerning marine ecosystemsincludeunsustainable exploitation of marine resources (for example [overfishing](https://en.wikipedia.org/wiki/Overfishing%22%20%5Co%20%22Overfishing) of certain species), [marine pollution](https://en.wikipedia.org/wiki/Marine_pollution%22%20%5Co%20%22Marine%20pollution), [climate change](https://en.wikipedia.org/wiki/Fisheries_and_climate_change%22%20%5Co%20%22Fisheries%20and%20climate%20change), and building on coastal areas

## Function

Aquaticecosystemsperformmany important environmentalfunctions. For example, they [recycle nutrients](https://en.wikipedia.org/wiki/Biogeochemical_cycle%22%20%5Co%20%22Biogeochemical%20cycle), purify water, attenuatefloods, recharge ground water and provide habitats for wildlife.Aquaticecosystems are alsoused for humanrecreation, and are very important to the [tourism](https://en.wikipedia.org/wiki/Tourism%22%20%5Co%20%22Tourism) industry, especially in coastalregions.

The health of an aquaticecosystemisdegradedwhen the ecosystem'sability to absorb a stress has been exceeded. A stress on an aquaticecosystem can be a result of physical, chemical or biologicalalterations of the environment. Physical alterationsinclude changes in water temperature, water flow and light availability. Chemical alterationsinclude changes in the loading rates of biostimulatorynutrients, oxygenconsumingmaterials, and toxins. Biologicalalterationsinclude over-harvesting of commercial species and the introduction of exoticspecies. Human populations can impose excessive stresses on aquaticecosystems. There are manyexamples of excessive stresses withnegativeconsequences. Considerthree. The environmentalhistory of the Great Lakes of North America illustratesthisproblem, particularly how multiple stresses, such as water pollution, over-harvesting and invasive species can combine.The Norfolk Broadlands in Englandillustratesimilardeclinewith pollution and invasive species.Lake Pontchartrain along the Gulf of Mexico illustrates the negativeeffects of different stresses includinglevee construction, logging of swamps, invasive species and salt water intrusion.