Wetlands

From Wikipedia: Wetlands

A wetland is a distinct ecosystem that is flooded by water, either permanently (for years or decades) or seasonally (for weeks or months). Flooding results in oxygen-free (anoxic) processes prevailing, especially in the soils. The primary factor that distinguishes wetlands from terrestrial land forms or water bodies is the characteristic vegetation of aquatic plants, adapted to the unique anoxic hydric soils. Wetlands are considered among the most biologically diverse of all ecosystems, serving as home to a wide range of unique plant and animal species. Methods for assessing wetland functions, wetland ecological health, and general wetland condition have been developed for many regions of the world. These methods have contributed to wetland conservation partly by raising public awareness of the functions some wetlands provide.

Wetlands occur naturally on every continent, except for Antarctica. The water in wetlands is either freshwater, brackish or saltwater. The main wetland types are classified based on the dominant plants and/or the source of the water. For example, marshes are wetlands dominated by emergent vegetation such as reeds, cattails and sedges; swamps are ones dominated by woody vegetation such as trees and shrubs (although reed swamps in Europe are dominated by reeds, not trees). Examples of wetlands classified by their sources of water include tidal wetlands (oceanic tides), estuaries (mixed tidal and river waters), floodplains (excess water from overflowed rivers or lakes), springs, seeps and fens (groundwater discharge out onto the surface), bogs and vernal ponds (rainfall or meltwater). Of course, some wetlands will have multiple types of plants and be fed by multiple sources of water, making them difficult to classify.

Wetlands contribute a number of functions that benefit people. These are called ecosystem services and include water purification, groundwater replenishment, stabilization of shorelines and storm protection, water storage and flood control, processing of carbon (carbon fixation, decomposition and sequestration), other nutrients and pollutants, and support of plants and animals. Wetlands are reservoirs of biodiversity and provide wetland products. They also place a role in climate change mitigation and adaptation. However, some wetlands are a significant source of methane emissions and some are also emitters of nitrous oxide. Constructed wetlands are designed and built to treat municipal and industrial wastewater as well as to divert stormwater runoff. Constructed wetlands may also play a role in water-sensitive urban design.

The world's largest wetlands include the Amazon River basin, the West Siberian Plain, the Pantanal in South America, and the Sundarbans in the Ganges-Brahmaputra delta. According to the UN Millennium Ecosystem Assessment, wetlands are more affected by environmental degradation that than any other ecosystem on Earth.
Community action projects

- Ecosystem restoration

Resources

Video

Events

*From Wikipedia: World Wetlands Day*

**World Wetlands Day** is an environmentally related celebration which dates back to the year of 1971 when several environmentalists gathered to reaffirm the protection and love for wetlands, which are the small environments of plant life and organisms found within water bodies that bring about ecological health in abundance to not only water bodies but environments as a whole. The World Wetlands Secretary Department is originally from Gland, Switzerland and in accordance to the beginning of World Wetlands Day, the Ramsar convention first attributed this recognition in "the Iranian city of Ramsar on the shores of the Caspian Sea".

World Wetlands Day is celebrated on the second day of February every year, though it was not originally celebrated until 1997. This day serves to recognize the influence and positive production that Wetlands have had on the world and in terms brings communities together for the benefit of Mother Nature. This day, also raises global awareness because wetlands play a
significant role not only in people but in the planet. Community protectors and environmental enthusiast all come together on
this day to celebrate their love for nature through celebration, which recognizes what wetlands have done for not only us
humans, but all sorts of organisms in this world.

Over time, human construction has led to various ecological problems affecting wetlands. Overpopulation and construction has
led to a decrease in environmental conservation and in total has brought upon issues to these lands. Many wetlands are being
lost and ecologists claim that human should recognize this dilemma before the loss of a natural filter and conserver of the
world.

**Wetland restoration**

*From Wikipedia:Wetland § Restoration*

Restoration and restoration ecologists intend to return wetlands to their natural trajectory by aiding directly with the natural
processes of the ecosystem. These direct methods vary with respect to the degree of physical manipulation of the natural
environment and each are associated with different levels of restoration. Restoration is needed after disturbance or perturbation
of a wetland. Disturbances include exogenous factors such as flooding or drought. Other external damage may be anthropogenic
disturbance caused by clear-cut harvesting of trees, oil and gas extraction, poorly defined infrastructure installation, over
grazing of livestock, ill-considered recreational activities, alteration of wetlands including dredging, draining, and filling, and
other negative human impacts. Disturbance puts different levels of stress on an environment depending on the type and duration
of disturbance. There is no one way to restore a wetland and the level of restoration required will be based on the level of
disturbance although, each method of restoration does require preparation and administration.

**Wetlands and local communities**

*From Wikipedia:Wetland § Valuation*

The value of a wetland to local communities, as well as the value of wetland systems generally to the earth and to humankind,
is one of the most important valuations that can be conducted for sustainable development. This typically involves first
mapping a region's wetlands, then assessing the functions and ecosystem services the wetlands provide individually and
cumulatively, and evaluating that information to prioritize or rank individual wetlands or wetland types for conservation,
management, restoration, or development. Over a longer period, it requires keeping inventories of known wetlands and
monitoring a representative sample of the wetlands to determine changes due to both natural and human factors. Such a
valuation process is used to educate decision-makers such as governments of the importance of particular wetlands within their
jurisdiction.

*see also* Wetlands and sustainable livelihood

**Wetlands and Climate emergency**

*From Wikipedia:Wetland § Climate change mitigation and adaptation*
Wetlands perform two important functions in relation to climate change. They have mitigation effects through their ability to sink carbon, converting a greenhouse gas (carbon dioxide) to solid plant material through the process of photosynthesis, and also through their ability to store and regulate water. Wetlands store approximately 44.6 million tonnes of carbon per year globally. In salt marshes and mangrove swamps in particular, the average carbon sequestration rate is 210 g CO$_2$ m$^{-2}$ y$^{-1}$ while peatlands sequester approximately 20–30 g CO$_2$ m$^{-2}$ y$^{-1}$. Coastal wetlands, such as tropical mangroves and some temperate salt marshes, are known to be sinks for carbon that otherwise contributes to climate change in its gaseous forms (carbon dioxide and methane). The ability of many tidal wetlands to store carbon and minimize methane flux from tidal sediments has led to sponsorship of blue carbon initiatives that are intended to enhance those processes.

**Wetlands and Ecological emergency**

*From Wikipedia: Wetland § Reservoirs of biodiversity*

Wetland systems' rich biodiversity is becoming a focal point at International Treaty Conventions and within the World Wildlife Fund organization due to the high number of species present in wetlands, the small global geographic area of wetlands, the number of species which are endemic to wetlands, and the high productivity of wetland systems. Hundred of thousands of animal species, 20,000 of them vertebrates, are living in wetland systems. The discovery rate of fresh water fish is at 200 new species per year. The impact of maintaining biodiversity is seen at the local level through job creation, sustainability, and community productivity. A good example is the Lower Mekong basin which runs through Cambodia, Laos, and Vietnam. Supporting over 55 million people, the sustainability of the region is enhanced through wildlife tours. The U.S. state of Florida has estimated that US$1.6 billion was generated in state revenue from recreational activities associated with wildlife.

**Biodiverse river basins:** The Amazon holds 3,000 species of freshwater fish species within the boundaries of its basin, whose function it is to disperse the seeds of trees. One of its key species, the Piramutaba catfish, *Brachyplatystoma vaillantii*, migrates more than 3,300 km (2,100 mi) from its nursery grounds near the mouth of the Amazon River to its spawning grounds in Andean tributaries, 400 m (1,300 ft) above sea level, distributing plants seed along the route.

**Productive intertidal zones:** Intertidal mudflats have a level of productivity similar to that of some wetlands even while possessing a low number of species. The abundance of invertebrates found within the mud are a food source for migratory waterfowl.

**Critical life-stage habitat:** Mudflats, saltmarshes, mangroves, and seagrass beds have high levels of both species richness and productivity, and are home to important nursery areas for many commercial fish stocks.

**Genetic diversity:** Populations of many species are confined geographically to only one or a few wetland systems, often due to the long period of time that the wetlands have been physically isolated from other aquatic sources. For example, the number of endemic species in Lake Baikal in Russia classifies it as a hotspot for biodiversity and one of the most biodiverse wetlands in the entire world. Evidence from a research study by Mazepova *et al.* suggest that the number of crustacean species endemic to Baikal Lake (over 690 species and subspecies) exceeds the number of the same groups of animals inhabiting all the fresh water bodies of Eurasia together. Its 150 species of free-living Platyhelminthes alone is analogous to the entire number in all of Eastern Siberia. The 34 species and subspecies number of Baikal sculpins is more than twice the number of the analogous fauna that inhabits Eurasia. In southern Baikal, about 300 species of free-living nematodes were found in only six near-shore sampling localities. "If we will take into consideration, that about 60% of the animals can be found nowhere else except Baikal, it may be assumed that the lake may be the biodiversity center of the Eurasian continent."
Human impact: Biodiversity loss occurs in wetland systems through land use changes, habitat destruction, pollution, exploitation of resources, and invasive species. Vulnerable, threatened, and endangered species number at 17% of waterfowl, 38% of fresh-water dependent mammals, 33% of freshwater fish, 26% of freshwater amphibians, 72% of freshwater turtles, 86% of marine turtles, 43% of crocodilians and 27% of coral reef-building species. Introduced hydrophytes in different wetland systems can have devastating results. The introduction of water hyacinth, a native plant of South America into Lake Victoria in East Africa as well as duckweed into non-native areas of Queensland, Australia, have overtaken entire wetland systems suffocating the wetlands and reducing the diversity of other plants and animals. This is largely due to their phenomenal growth rate and ability to float and grow on the surface of the water.

From Wikipedia: Wetland § Additional functions and uses of wetlands

Some types of wetlands can serve as fire breaks that help slow the spread of minor wildfires. Larger wetland systems can influence local precipitation patterns. Some boreal wetland systems in catchment headwaters may help extend the period of flow and maintain water temperature in connected downstream waters. Pollination services are supported by many wetlands which may provide the only suitable habitat for pollinating insects, birds, and mammals in highly developed areas. It is likely that wetlands have other functions whose benefits to society and other ecosystems have yet to be discovered.

Wetland conservation

From Wikipedia: Wetland conservation

Wetland conservation is aimed at protecting and preserving areas where water exists at or near the Earth’s surface, such as swamps, marshes and bogs. Wetlands cover at least six per cent of the Earth and have become a focal issue for conservation due to the ecosystem services they provide. More than three billion people, around half the world’s population, obtain their basic water needs from inland freshwater wetlands. The same number of people rely on rice as their staple food, a crop grown largely in natural and artificial wetlands. In some parts of the world, such as the Kilombero wetland in Tanzania, almost the entire local population relies on wetland cultivation for their livelihoods.

Fisheries are also an extremely important source of protein and income in many wetlands. According to the United Nations Food and Agriculture Organization, the total catch from inland waters (rivers and wetlands) was 8.7 million metric tonnes in 2002. In addition to food, wetlands supply fibre, fuel and medicinal plants. They also provide valuable ecosystems for birds and other aquatic creatures, help reduce the damaging impact of floods, control pollution and regulate the climate. From economic importance, to aesthetics, the reasons for conserving wetlands have become numerous over the past few decades.

Wetlands and sustainable livelihood

Wetlands are vital ecosystems that provide livelihoods for the millions of people who live in and around them. The Millennium Development Goals (MDGs) called for different sectors to join forces to secure wetland environments in the context of sustainable development and improving human wellbeing.

A three-year project carried out by Wetlands International in partnership with the International Water Management Institute found that it is possible to conserve wetlands while improving the livelihoods of people living among them. Case studies conducted in Malawi and Zambia looked at how dambos – wet, grassy valleys or depressions where water seeps to the surface – can be farmed sustainably to improve livelihoods. Mismanaged or overused dambos often become degraded, however, using a knowledge exchange between local farmers and environmental managers, a protocol was developed using soil and water
management practices. Project outcomes included a high yield of crops, development of sustainable farming techniques, and adequate water management generating enough water for use as irrigation. Before the project, there were cases where people had died from starvation due to food shortages. By the end of it, many more people had access to enough water to grow vegetables. A key achievement was that villagers had secure food supplies during long, dry months. They also benefited in other ways: nutrition was improved by growing a wider range of crops, and villagers could also invest in health and education by selling produce and saving money.

See also

- Constructed wetlands (category)

External links

- Wetland

References