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PARTE B

The Role of Swamps and Wetlands in Flood Control

World Wetlands Day, observed on February 2 every year around the globe, celebrates the vital role wetlands play in flood control providing a thriving habitat for countless species.

As the frequency and intensity of heavy rainfall and coastal encroachments increase, these waterlogged environments will be pivotal in mitigating potential damage and preserving ecosystems.

Mangroves, swamps, bogs, fens and marshes all fall under the umbrella term “wetlands”. When flooding occurs, these areas act as natural sponges, absorbing and storing the excess runoff.

This function helps to decrease the volume and speed of flood waters, mitigating the potential damage to urban and rural environments. To give you some context, a single wetland can store around 3,785,411 litres of water — a volume large enough to fill a football field up to 3 feet deep.

The vegetation in wetlands is also crucial to flood control. The plants and their roots can slow the water flow, so it takes longer to seep into the ground. This natural barrier minimizes the immediate impact of heavy downpours. Additionally, the plant roots help stabilize the soil, further reducing the speed of floodwaters and preventing erosion.

When the rain stops and the flood waters start to recede, the wetland soils slowly release the flow, so it doesn’t come rushing out too quickly. Besides flooding mitigation, the capacity of wetlands to absorb and store water makes it incredibly useful for coping with drought conditions. Drawing water up from the ground and slowly releasing it over time helps keep nearby streams and lakes flowing during the dry seasons.

Wetlands are essential to improving water quality. Their natural filter function removes pollutants while the vegetation increases oxygen levels before the water reaches rivers, lakes and seas. It also reduces the amount of debris carried by floodwaters into living areas. Furthermore, this process can be beneficial in filtering groundwater supplies.

Furthermore, wetlands are a key component of the agricultural system, providing filtered water for crops and livestock rearing. In some places, these areas are also used for aquaculture to combine rice production with pond fisheries. These functions are more critical than ever for food security, considering the population is expected to reach 10.9 billion people by 2100.

Many species depend on the unique ecological configuration of wetlands. Several animals, including fish, frogs and even birds, dwell in marshes and swamps, munching on the plants and breeding in the cool, muddy grounds. In turn, these animals attract predators, turning the environment into a flourishing ecosystem.

The effectiveness of wetlands in flood control is diminishing due to human-driven developments and climate change. According to the United Nations, wetlands are vanishing three times faster than forests. As a result, the risk of flood damage in coastal regions and areas surrounded by water bodies increases considerably.

The loss of biodiversity and natural habitat also raises concerns over environmental sustainability while potentially exacerbating the effects of climate change.

Protecting wetlands is a collaborative effort, though the bulk of it concerns policymakers and stakeholders. For example, the Environmental Protection Agency has set standards for compensatory mitigation where damage to wetlands from development projects is unavoidable. Such measures include restoring compromised wetlands in another area, establishing a new wetland or enhancing the properties of existing wetlands to make them more resilient.

On your end, there are several things you can do to contribute to healthier swamps and marshes:

Much of the garbage we generate can end up in the ocean. When storms occur, heavy winds can blow these waste products into wetlands and interfere with their ability to absorb and filter water.

Trees and shrubs endemic to your area can help preserve the ecological balance of nearby wetland whereas non-native species can quickly become invasive and compete for existing underground nutrients.

Phosphates commonly added in laundry agents and other household cleaning solutions can lead to algae development, which can be incredibly damaging to wetland biodiversity. So does bleached paper whose chemicals can contaminate water sources and the surrounding environment.

Find programs and organizations in your local area that actively work to protect and restore wetlands. Joining forces with these groups is something you can do to actively make a difference in the environment around you.

Not only can we cooperate with our local government, environmental organizations, community groups and NGOs to implement actions to protect swamps and wetlands, it is also worth having a system in place detailing what to do and where to go should a catastrophe strike.

Protecting these environments has become increasingly paramount as the effects of climate change grow more frequent and intense. These efforts will require extensive research into the rate of disappearance and coordinated action between governments and individuals.

1. What is the main purpose of World Wetlands Day, observed on February 2 each year?

A) To recognize the role of wetlands in flood control and habitat provision
B) To promote tourism in wetland areas
C) To highlight the economic benefits of wetlands
D) To celebrate biodiversity in general

2. Which of the following terms does *not* fall under "wetlands"?

A) Bogs
B) Fens
C) Mangroves
D) Prairies

3. How do wetlands help to mitigate flood damage in urban and rural areas?

A) By redirecting water to rivers
B) By acting as natural sponges to absorb excess runoff
C) By increasing rainfall
D) By preventing all water flow

4. Approximately how much water can a single wetland store?

A) About 8,375,141 litres
B) Approximately 7,385,114 litres
C) Around 3,785,411 litres
D) Rough 4587,401 litres

5. Why is wetland vegetation crucial in controlling floods?

A) It absorbs all the floodwater
B) The plants can store water directly
C) It diverts floodwaters back to rivers
D) The roots slow water flow and stabilize soil

6. How do wetlands help maintain water levels in nearby streams during dry seasons?

A) By quickly releasing all stored water
B) By storing and slowly releasing water over time
C) By blocking water from leaving the wetland
D) By decreasing groundwater levels

7. Wetlands improve water quality by performing which of the following functions?

A) Absorbing all bacteria
B) Adding minerals to the water
C) Filtering pollutants and increasing oxygen levels
D) Reducing water flow to rivers

8. Which of the following contributes to food security through wetland usage?

A) Forest preservation
B) Freshwater supply regulation
C) Reduction in biodiversity
D) Aquaculture and crop irrigation

9. According to the passage, what role do wetlands play in biodiversity?

A) Wetlands are home to few species
B) They are biodiversity hotspots, supporting species like fish, frogs, and birds
C) They limit the species that can inhabit them
D) They only attract migratory birds

10. Why are wetlands currently disappearing faster than forests?

A) Because of human-driven development and climate change
B) Due to natural climate changes only
C) Since forests are more resilient
D) Due to deforestation policies

11. What is the consequence of wetland loss mentioned in the passage?

A) Decreased urban flooding
B) A higher risk of flood damage in coastal areas
C) Increased forestation
D) More resilient wetland species

12. The Environmental Protection Agency promotes which of the following measures for wetland protection?

A) Prohibiting all development projects
B) Compensatory mitigation such as wetland restoration and establishment
C) Disallowing local involvement in protection
D) Only monitoring water levels

13. What are some individual actions people can take to help protect wetlands?

A) Avoid local participation and focus on national efforts
B) Only support governmental programs
C) Limit garbage and plant native trees
D) Only avoid phosphate cleaning agents

14. Why is it important to avoid planting non-native species near wetlands?

A) They are less resistant to water logging
B) They can become invasive and disrupt the ecosystem
C) They attract more animal species
D) They increase flood control

15. Why should phosphate-based cleaning products be avoided near wetlands?

A) They clean better than others
B) They reduce biodiversity
C) They don't affect the water quality
D) They can cause damaging algae growth

16. How can participating in local wetland protection programs benefit the environment?

A) By making government intervention unnecessary
B) By encouraging better cleaning products
C) By supporting conservation and raising awareness
D) By reducing government spending on wetlands

17. Which of the following is NOT a benefit provided by wetlands according to the passage?

A) Immediate release of floodwaters
B) Stormwater management
C) Biodiversity support
D) Pollutant filtration

18. What are governments and local communities encouraged to do in preparation for natural catastrophes affecting wetlands?

A) Only document the wetland ecosystem changes
B) Create protective programs and establish emergency plans
C) Prevent any and all rainfall
D) Avoid public knowledge of flood risks

19. How does the passage describe the future of protecting wetlands against climate change?

A) As increasingly unnecessary
B) As a simple task
C) As requiring extensive research and coordinated efforts
D) As dependent on individual efforts alone

20. Why are coordinated actions between governments and individuals essential for wetland protection?

A. Because of the decreasing frequency of climate events
B. To ensure wetlands provide recreational spaces
C. To adequately address the worsening effects of climate change
D. To prevent any wetland development