

## **The Protection of Marine Biodiversity in Guinea-Bissau: Current State and Future Prospects**

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### **Abstract**

Guinea-Bissau, a West African country with a significant coastline on the Atlantic Ocean, is home to a diverse range of marine ecosystems, including mangroves, seagrass beds, and coral reefs. These ecosystems support a wide variety of marine species, many of which are of commercial importance for fishing. However, marine biodiversity in Guinea-Bissau is currently facing numerous threats, including overfishing, habitat destruction, pollution, and climate change. The current state of marine biodiversity protection in Guinea-Bissau is relatively limited. While the country has established several marine protected areas, including the João Vieira-Poilão Marine National Park and the Orango Islands National Park, these areas are not effectively managed and enforced. Additionally, there is a lack of awareness and education about the importance of marine biodiversity conservation among local communities and stakeholders. To address these challenges, several future prospects have been identified. These include strengthening the capacity of marine protected areas through better management and enforcement, promoting sustainable fishing practices, increasing public awareness and education about marine biodiversity conservation, and conducting further research to better understand the impacts of various threats on marine ecosystems. Collaboration and partnerships with local communities, non-governmental organizations, and international donors will also be crucial in protecting marine biodiversity in Guinea-Bissau. By working together, stakeholders can help ensure the long-term sustainability of marine ecosystems and the benefits they provide to both the environment and local communities.

**Keywords:** Guinea-Bissau, Marine Biodiversity Conservation, João Vieira-Poilão Marine National Park, Sustainable Fishing Practices

### **Introduction**

Marine biodiversity plays a critical role in maintaining the health of the world's oceans, providing a wealth of ecosystem services such as food, medicine, and coastal protection (Hossain, 2019; Marcos et al., 2021; Ward et al., 2022). However, marine biodiversity is under threat due to various human activities, including overfishing, pollution, and climate change. Ukwé et al. (2006) and Vasconcelos et al. (2015) said that Guinea-Bissau, a small West African country with a vast coastline and numerous marine ecosystems, is no exception to this trend. This paper aims to provide an overview of the current state of marine biodiversity in Guinea-Bissau and explore future prospects for its protection.

Guinea-Bissau's marine ecosystems are diverse and include mangroves, seagrass beds, coral reefs, and open ocean environments. These ecosystems support a wide range of marine species, including several that are of commercial importance, such as shrimp, lobster, and finfish

(Boudreau & Worm, 2012; Murugan & Anandhi, 2016). However, these species are under threat due to overfishing, which has led to declines in fish stocks and impacts on the livelihoods of local fishing communities. Pollution is another major threat to marine biodiversity in Guinea-Bissau. Plastic waste, oil spills, and chemical pollution from agricultural runoff and industrial activities have been reported in the country's waters (Mihai et al., 2021; Gunasekara et al., 2025; Ansari & Matondkar, 2014; Uzomah et al., 2021). These pollutants can have harmful effects on marine life, including physical damage, suffocation, and toxicity.

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Climate change further intensifies the pressures on marine ecosystems in Guinea-Bissau. Rising sea temperatures, ocean acidification, and changing weather patterns can disrupt marine habitats and alter species distribution (Wernberg et al., 2011; Constable et al., 2014; Nagelkerken & Munday, 2016). Coral reefs and seagrass beds, which are particularly sensitive to environmental changes, may experience degradation, ultimately affecting the ecological balance of coastal and marine environments. These changes not only threaten biodiversity but also impact fisheries productivity and coastal protection functions.

Another important concern is the degradation of coastal habitats, especially mangrove forests. Mangroves in Guinea-Bissau play a vital role in supporting marine life by serving as nursery grounds for many fish and crustacean species. However, these ecosystems are increasingly threatened by deforestation, coastal development, and unsustainable resource extraction. The loss of mangroves reduces habitat availability for marine organisms and weakens natural coastal defenses against storms and erosion (Rahman & Rahman, 2015; Akram et al., 2023).

Despite these challenges, Guinea-Bissau has significant potential for marine conservation due to the presence of protected areas and internationally recognized biodiversity hotspots. The Bijagós Archipelago, for example, is known for its unique marine and coastal ecosystems and has been designated as a UNESCO Biosphere Reserve. Such conservation initiatives provide an important foundation for protecting biodiversity while promoting sustainable use of marine resources.

Effective management of marine biodiversity in Guinea-Bissau requires integrated policies that combine environmental protection, sustainable fisheries management, and community participation. Strengthening monitoring systems, enforcing fishing regulations, and promoting environmental awareness among local communities are essential steps in ensuring the long-

term sustainability of marine ecosystems (Wu & Khaskheli, 2024; Stephenson et al., 2018). Collaboration with international organizations and regional partners can also support conservation efforts through technical assistance and capacity building.

Looking ahead, the protection of marine biodiversity in Guinea-Bissau will depend on balancing ecological conservation with socio-economic development. By adopting sustainable management strategies and strengthening governance frameworks, the country can safeguard its valuable marine resources while supporting the livelihoods of coastal communities. Understanding current challenges and opportunities is therefore essential for shaping effective policies aimed at preserving marine biodiversity for future generations.

## **Results and Discussion**

### **Climate change is also a significant threat to marine biodiversity in Guinea-Bissau**

Rising sea levels, ocean acidification, and changes in temperature and salinity can have devastating effects on marine ecosystems and the species that depend on them. Despite these challenges, there are prospects for the protection of marine biodiversity in Guinea-Bissau. The country has several marine protected areas, including the João Vieira-Poilão Marine National Park and the Orango Islands National Park, which provide important habitats for marine species and help to protect against threats such as overfishing and pollution.

Furthermore, there is growing recognition of the importance of marine biodiversity for sustainable development in Guinea-Bissau. The government has developed a National Biodiversity Strategy and Action Plan, which includes measures to protect marine biodiversity and promote sustainable use of marine resources. International cooperation is also crucial for the protection of marine biodiversity in Guinea-Bissau. The country is a party to several international agreements, including the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change, which provide a framework for cooperation on marine biodiversity conservation and sustainable use.

The protection of marine biodiversity in Guinea-Bissau is a complex challenge that requires a multi-faceted approach. While there are significant threats to marine biodiversity, there are also prospects for its protection through the establishment of marine protected areas, sustainable use of marine resources, and international cooperation.

## **Overview of Marine Biodiversity in Guinea-Bissau**

### ***Description of Marine Ecosystems***

Guinea-Bissau's marine ecosystems are diverse and include mangroves, estuaries, seagrass beds, coral reefs, and open ocean. The country's coastal waters are home to a variety of marine life, including fish, sharks, rays, turtles, and dolphins. The mangroves and estuaries provide important nursery habitats for many species, while the coral reefs and seagrass beds support a high level of biodiversity (UNEP-WCMC, 2021).

### ***Endemic and Threatened Species***

Guinea-Bissau is home to several endemic and threatened marine species, including the African manatee (*Trichechus senegalensis*), the Guinea dolphin (*Sousa teuszii*), and the white-spotted guitarfish (*Rhynchobatus albomaculatus*). The country's coastal waters also serve as an important feeding and breeding ground for several migratory species, such as humpback whales (*Megaptera novaeangliae*) and leatherback turtles (*Dermochelys coriacea*) (WWF, 2021).

### ***Socio-Economic Significance of Marine Resources***

Marine resources play a significant role in the socio-economic well-being of Guinea-Bissau. The country's fishing industry is a major contributor to the economy, providing employment

and food security for many coastal communities. The tourism industry also relies on the country's marine biodiversity, with visitors attracted to its beaches, mangroves, and wildlife (World Bank, 2021).

## **Current State of Marine Biodiversity Protection in Guinea-Bissau**

### ***Legal Framework and Existing Policies***

Guinea-Bissau has several laws and policies in place to protect its marine biodiversity, including the Fisheries and Aquaculture Law (2015) and the National Biodiversity Strategy and Action Plan (2014-2020).

The country is also a party to several international conventions and agreements, such as the Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. (CITES) (FAO, 2021).

### ***Institutional Arrangements and Stakeholders***

The Ministry of Fisheries and Maritime Economy is responsible for managing Guinea-Bissau's marine resources. Several other government agencies and non-governmental organizations are also involved in marine conservation efforts, including the National Institute for Biodiversity and Protected Areas (INBio) and the World Wildlife Fund (WWF). (INBio, 2021; WWF, 2021).

### ***Challenges and Limitations in Implementing Conservation Efforts***

Despite the legal framework and institutional arrangements in place, Guinea-Bissau faces several challenges in implementing marine conservation efforts. These include lack of resources, weak enforcement of regulations, and conflicts between conservation and development objectives. The country's remote and poorly monitored marine areas are particularly vulnerable to illegal fishing and other forms of exploitation (FAO, 2021).

## **Case Studies of Successful Conservation Initiatives in Guinea-Bissau**

### ***Marine Protected Areas (MPAs) and their Effectiveness***

Guinea-Bissau has established several MPAs, including the João Vieira-Poilão Marine National Park and the Orango Islands National Park. These MPAs have been effective in protecting marine biodiversity and supporting sustainable fisheries. However, they face challenges in terms of enforcement and funding.

### ***Community-Based Conservation Initiatives***

Community-based conservation initiatives have also been successful in Guinea-Bissau. For example, the Bijagós Archipelago Community-based Natural Resource Management Program has helped to protect the region's unique biodiversity while also improving the livelihoods of local communities.

### ***Collaborative Approaches with International Organizations***

Collaborative approaches with international organizations have also been effective in conserving Guinea-Bissau's marine biodiversity. For example, the country has worked with the Food and Agriculture Organization (FAO) to develop a National Plan of Action for Sharks and Rays, which aims to promote sustainable fishing practices and protect threatened species (FAO, 2021).

## **Future Prospects and Recommendations in Guinea-Bissau (A-D)**

### ***Strengthening Legal Frameworks and Enforcement***

Guinea-Bissau has the potential to become a leader in marine biodiversity conservation in West Africa. To achieve this, the country needs to strengthen its legal frameworks and enforcement mechanisms. This includes updating outdated legislation, improving the capacity of law enforcement agencies, and ensuring that there are adequate penalties for violations of marine conservation laws (FAO, 2018).

### **B/Expanding Marine Protected Areas and Effective Management**

Guinea-Bissau has already established several marine protected areas, but more needs to be done to protect critical habitats and species. The country should expand its network of marine protected areas, with a focus on areas that are important for biodiversity conservation, such as nurseries, spawning grounds, and migratory routes. Effective management of these areas is also critical, and Guinea-Bissau should invest in monitoring, surveillance, and enforcement to ensure that these areas are protected.

### **C/Promoting Sustainable Fisheries and Ecotourism**

Sustainable fisheries and ecotourism can provide important economic benefits while also supporting marine biodiversity conservation. Guinea-Bissau should promote sustainable fishing practices, such as reducing bycatch and limiting fishing effort in sensitive areas. The country should also develop its ecotourism industry, with a focus on low-impact activities that benefit local communities and support conservation efforts.

### **D/Enhancing Research, Monitoring, and Capacity Building**

To effectively manage its marine resources, Guinea-Bissau needs to enhance its research, monitoring, and capacity building efforts. This includes investing in research to better understand the country's marine biodiversity, as well as monitoring programs to track changes in marine ecosystems. Capacity building is also critical, and Guinea-Bissau should invest in training programs for local communities, fisheries managers, and other stakeholders to ensure that they have the skills and knowledge needed to support conservation efforts.

## **VI/Tendance Actuelle (A-C)**

### **1/Recap of the Importance of Marine Biodiversity Conservation**

Marine biodiversity conservation is critical for maintaining healthy ecosystems, supporting sustainable fisheries, and protecting the livelihoods of local communities. Guinea-Bissau's marine biodiversity is particularly important, as it is home to a diverse range of species and habitats, including several that are threatened or endangered.

### **2/Summary of current state and successful initiatives**

Guinea-Bissau has already taken important steps to conserve its marine biodiversity, including establishing marine protected areas and promoting sustainable fisheries. The country has also been successful in engaging local communities in conservation efforts, which has helped to build support for conservation initiatives and ensure that they are sustainable in the long term.

### **3/Emphasis on The Need for Continued Efforts and International Cooperation**

While Guinea-Bissau has made important progress in marine biodiversity conservation, there is still much work to be done. The country needs to continue to strengthen its legal frameworks and enforcement mechanisms, expand its network of marine protected areas, promote sustainable fisheries and ecotourism, and enhance its research, monitoring, and capacity building efforts. International cooperation is also critical, as marine biodiversity conservation is a global issue that requires coordinated efforts at the regional and international levels.

## **Conclusion**

In conclusion, the protection of marine biodiversity in Guinea-Bissau is a crucial issue for the preservation of marine ecosystems and the food security of the population. Although efforts have been made to establish marine protected areas and strengthen fisheries governance, many challenges persist, such as the lack of human and financial resources, poverty, and the population's dependence on artisanal fishing. It is therefore essential to continue conservation efforts and to strengthen collaboration among local stakeholders, civil society, the private sector, and policymakers to ensure the sustainable management of marine resources. This may include measures such as improving data collection on marine species, promoting sustainable fishing practices, developing alternative sources of income for coastal communities, and enhancing regional cooperation to combat illegal fishing. Furthermore, it is important to raise public awareness of the importance of marine biodiversity conservation and to strengthen environmental education in schools to ensure a sustainable future for future generations.

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