ECOSYSTEM AND BYCATCH IN SOMALIA: AN OVERVIEW

Somalia is a country with diverse ecosystems, ranging from arid plains to lush savannas, that support a variety of wildlife and plant species. However, these ecosystems are also vulnerable to the impacts of climate change, overfishing, and other human activities. Bycatch, the incidental capture of non-target species in fishing gear, is one of the major threats to the marine biodiversity and ecosystem health in Somalia. Bycatch can affect endangered, threatened and protected species, such as sea turtles, sharks, rays, and dolphins, as well as species that are important for the food security and livelihoods of local communities. The International Commission for the Conservation of Atlantic Tunas (ICCAT) has established a subcommittee on ecosystems and bycatch to monitor and assess the status of these species and to develop indicators and reference levels for the ecosystem report card. The subcommittee also provides recommendations for the implementation of the ecosystem-based approach to fisheries management and the adoption of best practices to reduce bycatch and its impacts. This abstract aims to provide an overview of the current state of knowledge on the ecosystem and bycatch in Somalia and to highlight the challenges and opportunities for conservation and management.

ABSTRACT

Somalia's coastline is located in the Horn of Africa, and it stretches from the Gulf of Aden in the north to the Indian Ocean in the east. The coastline is home to a variety of marine life, including fish, sharks, and turtles. However, the coastline is also vulnerable to environmental threats, such as pollution and overfishing. Despite these challenges, Somalia's coastline has the potential to be a major source of economic and environmental benefits for the country. With proper management, the coastline can be a source of sustainable food and income for Somalis, and it can also help to protect the country's marine environment.

The fishing season in Somali waters is governed by the monsoon winds, which bring high waves and strong winds between May and September, the major upwelling created by the Southwest monsoon that supports much fish. As a result of the nutrient-rich water upwelling from the depths of the Indian Ocean are considering to be one of the productive ecosystems According to the local fisheries Experts.

Bycatch is the unintended catch of non-target species, and can have a significant impact on marine ecosystems. In Somalia, bycatch is a major problem, with sharks, rays, and turtles being particularly vulnerable. The main causes of bycatch in Somalia illegal fishing (IUU) , poor management, insecurity, luck of awareness, and no target species to the locals.

The illegal fishing in Somali waters has had a devastating impact on the marine ecosystem. Bycatch, the unintended catch of non-target species, is a major problem, with sharks, rays, and turtles being particularly vulnerable. These species play an important role in the marine food web, and their decline can have a ripple effect on the entire ecosystem.

To address the problem of illegal fishing is to strengthen the Somali government's capacity to enforce its fisheries laws. This could be done by providing training and equipment to the Somali Coast Guard, and by increasing cooperation between the Somali government and international partners.

In addition, it is important to raise awareness of the problem of bycatch among fishermen and consumers. This can be done through education and outreach programs. By taking these steps,

- Somalia can protect its valuable marine resources and ensure that its fisheries are sustainable for future generations.
- The importance of ecosystem-based fisheries management in Somalia.
  The need for international cooperation to address the problem of bycatch in Somalia.
- The potential for sustainable fisheries to contribute to poverty reduction and food security in Somalia.

ECOSYSTEM STATUS AND TRENDS

One of the most important types of ecosystems in Somalia is coral reefs, which are home to a rich diversity of fish and invertebrates. Coral reefs provide many ecological functions and services, such as habitat provision, nutrient cycling, coastal protection, tourism attraction, and fishery production. However, coral reefs in Somalia are facing multiple threats and pressures, such as rising sea temperatures, coral bleaching, ocean acidification, sedimentation, overfishing, destructive fishing practices, and coastal development. According to the International Union for Conservation of Nature (IUCN), coral reefs in Somalia are classified as vulnerable or endangered1, with an average coral cover of 20%.

The coral cover has declined by about 50% since 1998, mainly due to mass bleaching events caused by El Niño events.

BYCATCH IMPACTS AND MITIGATION

Bycatch is defined as the incidental capture of non-target species in fishing gear. Bycatch can have negative impacts on different species groups, such as marine turtles, sharks, rays, dolphins. These species are often long-lived, slow-growing, late-maturing, and low-fecundity, which makes them vulnerable to overexploitation. Bycatch can reduce their population size, growth rate, reproductive potential, genetic diversity, as well as alter their behaviour, distribution, diet, trophic interactions, etc. The magnitude and spatial extent of bycatch in Somalia are difficult to estimate due to the lack of reliable data sources. However, some studies have reported high bycatch rates for some fishing methods in some areas.

ECOSYSTEM AND BYCATCH ISSUES IN SOMALIA FISHERIES:

- Somalia has a long coastline and a diverse marine ecosystem that supports various fish species and provides ecological functions and services.
- However, the ecosystem is threatened by climate change, overfishing, pollution, habitat degradation, invasive species, and other human activities.
- Bycatch is one of the major threats to the marine biodiversity and ecosystem health in Somalia. Bycatch is the incidental capture of non-target species in fishing gear, such as sea turtles, sharks, rays, and dolphins.
- Bycatch can have negative impacts on the population dynamics, reproductive potential, genetic diversity, and trophic interactions of these species, as well as on the food security and livelihoods of local communities.
- The magnitude and spatial extent of bycatch in Somalia are difficult to estimate due to the lack of reliable data sources. However, some studies have reported high bycatch rates for some fishing methods in some areas.
- There are some existing bycatch mitigation practices and gear modifications that can reduce bycatch or increase escapement, such as circle hooks, turtle excluder devices, and selective fishing nets.
- There is also a need for the implementation of the ecosystem-based approach to fisheries management (EBFM) and the adoption of best practices to reduce bycatch and its impacts.
- Somalia has recently passed a new fisheries law that includes provisions on endangered species, sharks, seabirds, marine mammals, and marine turtles.

CURRENT CHALLENGES AND POTENTIAL SOLUTIONS ON ECOSYSTEM AND BYCATCH IN SOMALIA

- **Challenge**: Somalia is facing a devastating humanitarian crisis due to drought, famine, and conflict, which affect the food security and livelihoods of millions of

people. The drought also exacerbates land degradation, desertification, and loss of biodiversity.

- **Solution**: The international community should provide urgent humanitarian assistance to Somalia, as well as support the implementation of the new fisheries law that includes provisions on endangered species, sharks, seabirds, marine mammals, and marine turtles . The U.N. should also exempt humanitarian deliveries from sanctions and legal action to avoid delays and hampering of aid.
- **Challenge**: Somalia has a diverse marine ecosystem that supports various fish species and provides ecological functions and services. However, the ecosystem is threatened by overfishing, pollution, habitat degradation, invasive species, and lack of marine and coastal management.
- **Solution**: Somalia should adopt an ecosystem-based approach to fisheries management (EBFM) that considers the impacts of fishing on the whole ecosystem, not just on the target species2. Somalia should also implement bycatch mitigation practices and gear modifications that can reduce bycatch or increase escapement, such as circle hooks, turtle excluder devices, and selective fishing nets
- **Challenge**: Bycatch is one of the major threats to the marine biodiversity and ecosystem health in Somalia. Bycatch is the incidental capture of non-target species in fishing gear, such as sea turtles, sharks, rays, and dolphins. Bycatch can have negative impacts on the population dynamics, reproductive potential, genetic diversity, and trophic interactions of these species.
- ***Solution***: Somalia should improve its data collection and monitoring of bycatch using bycatch rate estimation methods, such as observer programs, self-reporting, and modeling3. Somalia should also evaluate the biological effects of bycatch on the target and non-target species using indicators such as mortality rate, reproductive rate, and genetic diversity3. Somalia should also cooperate with regional and international organizations to develop and implement bycatch management plans.

HOW CAN WE INVOLVE LOCAL COMMUNITIES IN ECOSYSTEM AND BYCATCH MANAGEMENT?

Local communities play a key role in ecosystem and bycatch management, as they are often the primary users and stewards of natural resources. However, to involve local communities effectively, it is important to consider the following aspects:

- Recognize and respect the rights and interests of local communities in biodiversity conservation and management.

  This includes acknowledging their traditional knowledge, practices, and institutions, as well as their customary rights to access and use natural resources.

- Engage local communities in the design, implementation, monitoring, and evaluation of ecosystem and bycatch management plans.

  This includes ensuring their participation in decision-making processes, providing them with relevant information and capacity building, and addressing their needs and concerns.

- Support local communities to develop and implement their own initiatives for ecosystem and bycatch management.

  This includes providing them with technical and financial assistance, facilitating their access to markets and alternative livelihoods, and creating incentives and rewards for their conservation efforts3.

- Promote collaboration and cooperation among local communities and other stakeholders, such as governments, NGOs, private sector, and researchers.

This includes establishing platforms for dialogue and coordination, sharing best practices and lessons learned, and resolving conflicts and disputes.

CONCLUSION AND RECOMMENDATIONS

Somalia is a country with a long coastline and a diverse marine ecosystem that supports various fish species and provides ecological functions and services. However, the ecosystem is also threatened by climate change, overfishing, pollution, habitat degradation, invasive species, and other human activities. One of the major threats is bycatch, which is the incidental capture of non-target species in fishing gear, such as sea turtles, sharks, rays, and dolphins. Bycatch can have negative impacts on the population dynamics, reproductive potential, genetic diversity, and

trophic interactions of these species, as well as on the food security and livelihoods of local communities.

TO ADDRESS THESE ISSUES, THE FOLLOWING RECOMMENDATIONS ARE SUGGESTED:

- The international community should provide urgent humanitarian assistance to Somalia, as well as support the implementation of the new fisheries law that includes provisions on endangered species, sharks, seabirds, marine mammals, and marine turtles.
- The U.N. should also exempt humanitarian deliveries from sanctions and legal action to avoid delays and hampering of aid.
- Somalia should adopt bycatch mitigation practices and gear modifications that can reduce bycatch or increase escapement, such as circle hooks, turtle excluder devices, and selective fishing nets23. These practices can improve the survival rate and reduce the injury rate of non-target species, as well as increase the catch efficiency and quality of target species.
- Somalia should adopt an ecosystem-based approach to fisheries management (EBFM) that considers the impacts of fishing on the whole ecosystem, not just on the target species. EBFM can help maintain or restore the ecosystem structure, function, and resilience, as well as enhance the social and economic benefits of fisheries.

- Somalia should cooperate with regional and international organizations to develop and implement bycatch management plans3. These plans can help harmonize data collection and monitoring methods, establish common indicators and reference levels, and coordinate actions and policies.

Addressing ecosystem and bycatch issues in Somalia is important for both ecological and social reasons. It can help conserve the marine biodiversity and ecosystem services that are vital for the survival and well-being of millions of people. It can also help promote peace and stability in a region that has been plagued by conflict and violence for decades. Future research or action on this topic should focus on improving the data collection and monitoring of bycatch in Somalia, evaluating the biological effects of bycatch on the target and non-target species, implementing the bycatch mitigation practices and gear modifications that are suitable for local conditions, applying the ecosystem-based approach to fisheries management in Somalia, and enhancing the regional and international cooperation on bycatch management.