

Bermuda Fisheries Management Plan

**Proposed by the Fishermen's Association of Bermuda
February 19, 2024**

Please note that this Draft is intended for further development in cooperation with the Government of Bermuda, in accordance with the principles of cooperative management.

Highlights intended to emphasize key points.

Bermuda Fisheries Management Plan – Fishermen’s Association of Bermuda

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1. Introduction

Cooperative Management of our fisheries resource is an approach based on shared responsibility and decision making between resource users and the Bermuda Government, acting as a regulatory body. In order to be successful, fishers must be enabled to participate in all levels of decision making, including comprehensive goal setting.

2. Goals

- a. Provide for access to marine resources for present and future generations
- b. Promote the ability of Bermudians to contribute to food security for the island, with commercial fishers providing the means for the general public to access the surrounding marine seafood resources
- c. Utilize data and evidence in adaptive management decision making
- d. Employ cooperative management of commercial and recreational fisheries
- e. Minimize complexity of management
- f. Consider the socio-economic needs and historical cultural value of Bermuda's fishing community
- g. Involve the commercial fishing industry and the public in the fisheries management process
- h. Increase trust and mutual benefit between Fishers, local authorities and scientific community, other ocean users and the general public by implementing transparent co-management principles.

3. Scope

a. **Definition of a Fisheries Management Plan**

A fishery management plan (FMP) is defined as a comprehensive document which the Government and its partners regard both as a means to implement policy and as an explanation of the intent and rationale of management direction. Fishery management plans contain factual background material, statements of rationale for selection of objectives, strategies to be applied to attain objectives, and statements of general priorities for various actions.

b. **Compliance with Fisheries Act 1972**

It is not necessarily the goal of this first draft of this document to be completely compliant with the Fisheries Act 1972. Rather, suggestions for more effective management might propose updates to the Act, or aspirational goals for potential future legislation. In particular, legislative assistance is much needed to move from full prosecution requirements to a ticketing system to deal with infractions of fishing regulations.

c. **Bermuda's Fisheries in Context of Regional International Water and International Agreements**

As above, this first draft of this document is intended to identify where Bermuda's fisheries are served, or failed, by International Agreements pertaining to marine resource management, and suggest enhancements or potential remedies for consideration of the Bermuda Government.

d. **Structure of Government Entities (DENR) and Relevant Boards (CFC, MRB)**

This first draft of a potential Fisheries Management Plan is intended to evaluate and offer constructive criticism on the systemic interactions between DENR, CFC, MRB and commercial fishers, as well as external Government agencies and other stakeholders in the marine environment of Bermuda.

How does the remit and function of DENR compare to previous Ag & Fish?

Used to be Ministry of the Environment, how has marine resource management changed in recent years?

How does DENR relate to other governmental entities on marine resource issues?

CFC and MRB are advisory boards. How well do they function, how well do they represent their respective interests, what recourse do they have when their recommendations are overruled or not carried out?

CFC and MRB member selection process, is it effective at getting the right people?

Publicly fund a Fisheries Director or Officer, to liaise between DENR and fishers, with credential requirements that would not eliminate a fisher as a candidate.

How does the current regulatory structure promote or prevent cooperative management?

4. Guiding Principles

a. **Sustainability/Stewardship**

To manage Bermuda's marine resources for current and future generations to harvest targeted fisheries and maintain the surrounding marine environment. Sustainability does not mean stasis, but rather a function where humans operate as a part of the local marine ecosystem, and manage their predation and other influence such that they are not the primary causation of a marine population's reduction below a sustainable level.

b. **Cooperative Management and Synergies with Other Ocean Users**

To employ a partnership approach, where government and the fishery resource users share the responsibility and authority for the management of a fisheries in Bermuda's waters. To facilitate communication to involve external Government agencies and community stakeholders to effect improved marine resource management. To implement systems that foster trust and cooperation between fishers, scientists, regulators and other ocean user groups.

c. **Reliance on Data Sources**

Management decisions should be based on locally produced data in the context of sustainable fisheries management science. Where recorded data is absent, fishers' collective lived and observed experience shall be considered as a notable source of information. Fishers' knowledge, experience and observations runs deep, spanning biological processes, external influences on marine ecosystems, and long term dynamic trends that give context to shifting marine population patterns.

d. **Informed Impact Management**

To monitor the current, local impact of all fishing activities and manage accordingly; focusing on equipment, vessel and licensing regulation to moderate impacts on specific marine populations. Geographic prohibitions of fishing should be targeted towards the protection of aggregation areas of species that are demonstrably over-stressed by fishing activity. Management strategies should take into account the cost and practicality of regulation implementation and enforcement, with preference given to passive methods that consider the unique characteristics of Bermuda's geographic location, fishing fleet, commercial market, and historical culture around fishing practices.

5. Fisheries Management Considerations

a. Fishing Activities that Impact Fishery Resources

- i. Extraction Methods – Appropriate local management practices
 1. Rod and Reel – targeted nature of this method means very little by-catch, and a naturally limited catch capacity.
 2. Long lining – fixed gear is a restricted entry fishery, limited to number of hooks and lines for vertical lines, and distance from shore for pelagic lines. The limited number of boats, and the small size of the boats, naturally limits capacity. The reality of high labor and other costs in Bermuda also must be considered, with consultation with fishermen, as a limiting factor in capacity that also functions as an intrinsic conservation factor. Advances in long line technology (circle hooks, deep setting) have improved sustainability and should be researched.
 3. Traps – spiny lobster and guinea chick only. Government provided pots mean equipment limitations is an easy way to limit and control catch capacity. Size and sex restrictions based on population mechanics. Fishermen should be involved in the design and implementation of traps and other factors.
 4. Netting – limited entry fishery, best management technique is through equipment limitation. Restrictions on net depth and length effectively eliminate net fishing from all off-shore activity, and 90% of in-shore areas. While not legally restricted, the size of boats generally used in this fishery also limit catch capacity.
 5. Spear Fishing – currently limited to one mile off shore (except lion fish), and limited to rubber band spears and no scuba, all of which limits catch capacity. License required, with reporting element.

- ii. Biological Impacts to Targeted Species

Government to maintain list of common commercial species, how to best conduct stock analysis and measure human impact.

 1. Stock analysis
 2. Life cycle, reproduction process
 3. Evaluate size or sex limitations
 4. Role in eco-system, knock on effects
 5. Evaluation of natural ebb and flow of population levels
 6. Rate of natural death vs human predation
 7. Environmental influences on population dynamics

All elements must be known and understood for commercially targeted species. This is a primary responsibility of government regulators and is critical for management decisions to be made. Catch statistics can be one element of data collection, but as they are often affected by other factors besides fish populations, such as weather, market trends, fishing fleet

dynamics, etc, they cannot be the only source of data. Alternative possible methods of data collection include but are not limited to genetic analysis, identification and monitoring of aggregation sites, and tag-release-recapture.

All methods of data collection require and benefit from a cooperative relationship between fishers and regulators/scientists. This is imperative, as fishers' deep and broad knowledge of target species and the marine environment provides context to a variety of factors that can affect fish movements and catch rates.

1. Fishers should be compensated market rates for their research contributions.
2. Peer reviewed data analysis
3. Industry involvement of policy decisions based on data gathered
4. Peer review of policy decisions, third party mediation of disputes

iii. Determination of Maximum Sustainable Yield

Maximum sustainable yield to be determined per species based on scientifically sound analysis, adjusted based on direct observations, and communicated clearly and cooperatively with the fishing industry.

iv. Bycatch

Very little bycatch occurs with fishing methods currently employed in Bermuda. Ongoing analysis of bycatch should be used to determine equipment based regulations and design.

v. Habitat Alteration or Loss

Current fishing methods typically don't directly result in significant habitat alteration or loss. Fishers' cooperation should be engaged to monitor habitat change and analyze root causes. Management decisions and recommendations to other responsible Government agencies should be targeted to observed and documented threats to the physical environment. Where habitat impacts due to fishing activities are observed, communication and education, in both directions, are critical to determine the best mitigation practices.

b. Licensing and Reporting Requirements

i. Commercial

Separate industry management (ie licensing requirements) and fishery resource management for reporting purposes. Fisheries resources should be managed by stock analysis, not just catch effort. **Currently too much systemic disincentive for accurate reporting.**

Shift license to a fishing business model

Lobster tags to start?

Privileges

Resource allocation

Changes must be deliberated, decided and communicated, whenever possible, one year in advance of implementation to allow for adaptation of economic models for fishers.

ii. Recreational

Fishing for fun and personal consumption is a time honored tradition in Bermuda, and enjoyed by a large percentage of the population.

License vessel? Or individual? Individual, which encourages multiple people per vessel

License holder responsible for data submission, renewal is dependent on submission

Education value for reporting

No license for 12 & under, but encourage all reporting

App based reporting – ie Go Outdoors

Bag limits – 1 or 2 pelagics per person per day

Charter customers covered by boat/captain's license

How to limit rec catch into market

Mechanism for restaurant owners to anonymously submit info about unlicensed sales

iii. Foreign

1. Sport

Restricted to pelagics, and only for own use

Bag limits, same as recreational

Link fees directly to fisheries management

2. Industrial

Limit all commercial fishing activity within Bermuda's marine EEZ to locally owned and operated boats, monitoring and enforcement assisted by Blue Shield.

c. Enforcement

- i. Current loopholes to be identified
 1. Prosecution is cumbersome – move to ticket system
 2. Simplify whenever possible
- ii. Recommendations for current resource allocation
 1. Use of Coast Guard, training of fisheries regulations
 2. Off-shore presence
 3. Monitor common entry routes as opposed to landing sites – Watford Bridge, etc
 4. Random landing site inspections
- iii. Additional resources required
 1. Additional fisheries wardens on Coast Guard boats

d. Marine Spatial Plan

- i. Identify Threats to Habitats, general or specific

Development
Mooring
Recreational boating/anchoring
Pollution
Ecological dynamics

- ii. Targeted Management of Habitat

Mangroves – protect from development – real consequences for destruction are needed

Seagrass – active management of turtle population

Coral reef – manage development, require environmental impact study for any proposed development.

- iii. Threats to Species, general or specific due to habitat degradation

Climate change, ocean warming
Decline of turtle grass – spiny lobsters
Pollution at airport dump – anchovies, barracuda, etc
Overfishing of identified aggregation sites

e. Other Human Activities that Impact Fishery Resources and Fisheries

- i. Moorings affect in-shore fisheries by blocking access to bays and degrading seagrass beds
 1. Currently managed by Marine & Ports under the Ministry of Transport
 2. Abandoned moorings clogging up bays
 3. All boats or moorings should have proof of salvage insurance for registration renewal. Insurance policies should cover salvage, and also wreck removal of boats in the water prior to any new legislation.

- ii. Pollution affects primarily in-shore fisheries by degrading habitats for a variety of species.
 1. Heavy rain run off
 2. Pesticides from golf courses
 3. Airport dump
 4. Trash in mangroves
 5. Bottom paint
 6. Sedimentation stirred up from commercial shipping, BIOS research vessel

- iii. Human Related Disaster Management (ship wrecks, oil spills, etc)
 1. Lack of government preparedness
 2. Example of fertilizer ship
 3. Ship wrecks as artificial reefs, but pollution from bottom paint, etc

- iv. Other

f. Ecosystem Factors that Impact Fishery Resources

- i. Environmental Variation (water temperature, salinity, etc)
 1. Change over time, effect on marine populations, research or lack thereof.
 2. How can fishers help study?

- ii. Ecological Interactions (under/over predation, etc)
 1. Cyclical nature of population changes
 2. Shifts in population mechanics
 3. How can fishers and scientists cooperate and appreciate each other's wealth of knowledge?

- iii. Climate Change and Ocean Acidification
 1. Research or lack thereof, impact on commercially targeted species, and non-commercial species.

2. Possible impact on lobster population, juvenile shell development
How can fishers help study?
3. It is in the interest of the fishing industry and the general public to understand the impacts these global trends are having on our local marine environment, as well as the scale of the impact relative to that caused by fishing activity. Marine populations will inevitably change due to changing ocean temperatures and other factors, which has the potential to affect maximum sustainable yield of certain populations. Fishers' presence on the water gives them a unique opportunity to witness these changes at close range. Whether they cooperate in the process of documenting these changes is highly dependent on the level of mutual trust and respect that exists between fishers, regulators and scientists.

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6. Fisheries in the Greater Community Context

a. Market Development and Security

- i. Legislation requiring all imported fish that is competitive with locally caught fish to be certified sustainable by the Marine Stewardship Council (or similar body)
- ii. Marketing campaigns with Bermuda Tourism Authority promoting local fishers and their products, partnerships with participating restaurants that commit to buying local

b. Research and Education

- i. Government research resources
- ii. Historical projects, potential new projects
- iii. Education resources for current fishermen, those attempting to enter the industry
- iv. Partnerships with local scientists, development of Bermuda based sustainable fisheries science hub
- v. Partnerships with international research projects

c. Non-Fishing Recreation and Tourism

- i. Avoidance of fishing at dive sites
- ii. Partnerships in observational research, data collection

d. Renewable Energy

- i. Consultation with fishing industry on placement of marine energy projects
- ii. Consideration of fishing exclusion zones
- iii. Environment impact studies must take into account fishers' knowledge and experience

e. Mariculture/Aquaculture

- i. Not for profit rear and release potential
- ii. For profit potential projects, support

f. Fishers/Regulators/Scientists/Community Relationships

- i. Necessary trust for reliable catch statistics
- ii. Recognition of Fishers' expertise and experience
- iii. Regulations and the communication thereof affect public perception of Fishers' impact on the environment – the purpose and goal of rules should be clear and specific as to the harm they are meant to prevent.
- iv. Encouragement for Fishers' participation in research projects – they must be able to trust in outcomes, that participation will not result in needless limitations on the fishing industry.