

An Analysis of the Fisheries of Dominica

TAMU Study Abroad

Springfield, Dominica

2002

Submitted by,

John Schwarzlose

To

Dr. Lacher and Dr. Woolley

An Analysis of Dominica's Fisheries

Abstract:

The island of Dominica supports commercial and recreational marine fishing of its adjacent waters primarily in the Caribbean Sea and to a much smaller extent in the Atlantic Ocean. This project documents various locations, types of fisheries methods and gear of local fishermen, unique features of Dominican fisheries as compared to other Caribbean islands, fish market and overall importance of fishing to the island of Dominica.

Introduction:

Various methods of fishing for several species of marine life in different types of marine fisheries exist off the shore of Dominica. Most attributes of the Dominican fishing industry coincide with that of other eastern Caribbean islands, however the geological features of Dominica's shoreline make fishing Dominica unique in a few ways. This project is designed to point out current fishing practices both unique to Dominica and consistent throughout the Caribbean, and explore the islands potential to increase utilization of its natural marine fisheries in anyway possible.

Methods:

I interviewed fishermen at Scot's Head Point, Batalie Beach, Rosseau, Portsmouth, and the Crib territory as well as market vendors in Roseau. I observed deep sea, inshore, seine, hook and line, spear, and trawling fishermen in action at Scot's Head

Point, Batalie Beach, Coconut Beach, Rosseau, and Portsmouth. I also collected data from personal fishing experiences with a local fisherman and surf fishing alone. I set a date with a local fisherman who took me out in his boat to observe trolling Caribbean and Atlantic waters using inshore small game artificial lures. I also experimented in the Caribbean surf twice at Scot's Head point using inshore small game lures and tackle. I collected data on local fishing practices from the Dominican library in Rosseau. I collected data from these resources and compiled it into a report about the fisheries of Dominica.

RESULTS:

A. Location and Types of Fisheries:

Dominica is located in the eastern portion of the Caribbean Sea. The Caribbean's tropical waters create great diversity of marine life off the coast of its islands, making for productive fisheries inshore and offshore and Dominica is no exception.

Twenty-two out of the twenty-four main fishing areas or villages in Dominica are based on shallow points on a narrow island shelf which fall to deep waters of the Caribbean Sea. Scot's Head point and the Carib territory are the two out of the twenty-four main fishing areas in Dominica whose fishermen primarily use the Atlantic Ocean as opposed to the Caribbean. The Caribbean Sea meets Dominica on the west coastline of the island, and is overwhelmingly the dominant shoreline for consistent fishing activity. These fishing areas support populations of local fishermen who utilize the geological formation of the island for both inshore and offshore fishing.

Main Fishing Areas of Dominica

1. point caribe
2. Scottshead
3. Soufriere
4. Pointe Machel
5. Loubiere
6. Pottersville
7. Canefeild/massacre
8. Mahaut
9. Belfast
10. Layou
11. Mero
12. Salisbury
13. Colibistri
14. Anse Bouleau
15. Anse Gabriel
16. Colihaut
17. Anse A Liane
18. Anse Malatre
19. Bioche
20. Dublanc
21. Lower Portsmouth
22. Upper Portsmouth
23. Malalia Bay
24. Toucari

All Caribbean islands extend outward under the sea creating island shelves.

Island shelves can be wide like the ones off Antigua and Barbuda, or they can be like the island shelf of Dominica, which is extremely narrow. Typical Caribbean island shelves offer fishermen a variety of types of fisheries from which to harvest fish including: fringing reef, sea grass bed, barrier reef shelf slope, offshore banks and open sea. Each of these fisheries provides different species of consumable marine life.

Table A. Type of Fishery Resident Marine Species

Type of Fishery	Resident Marine Species
Fringing Reef	Coral reef fishes(e.g. surgeon fishes, squirrel fish)
Sea Grass Bed	Conch, sea urchin, Coastal pelagics (e.g. Jacks, Silverside, Ballyhoo)
Barrier Reef	Coastal pelagics, crustaceans, reef fish
Shelf Slope	Slope and bank fish (e.g. Snappers, jacks, groupers)
Offshore Bank	Slope and bank fish
Open Sea	Large offshore pelagics (e.g. dolphin fish, tuna, wahoo), sea turtles, small offshore pelagics (e.g. flying fish)

The rapid increase in depth off the West Coast of Dominica (100 fathoms per ½ mile) makes the types of fisheries the island possesses differ from that of a typical Caribbean island. As opposed to an island consisting of fringing reef, sea grass bed, barrier reef, shelf slope, offshore bank, and open sea the narrow island shelf of Dominica produces fringing reef, (skips sea grass bed and barrier reef) shelf slope, and open sea.

Map of Typical Caribbean Island Shelf

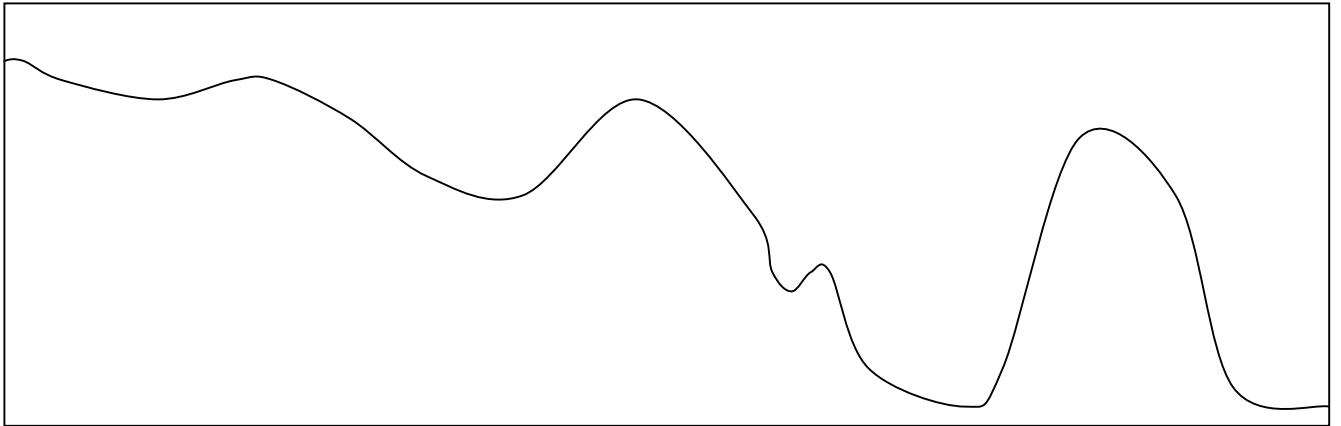
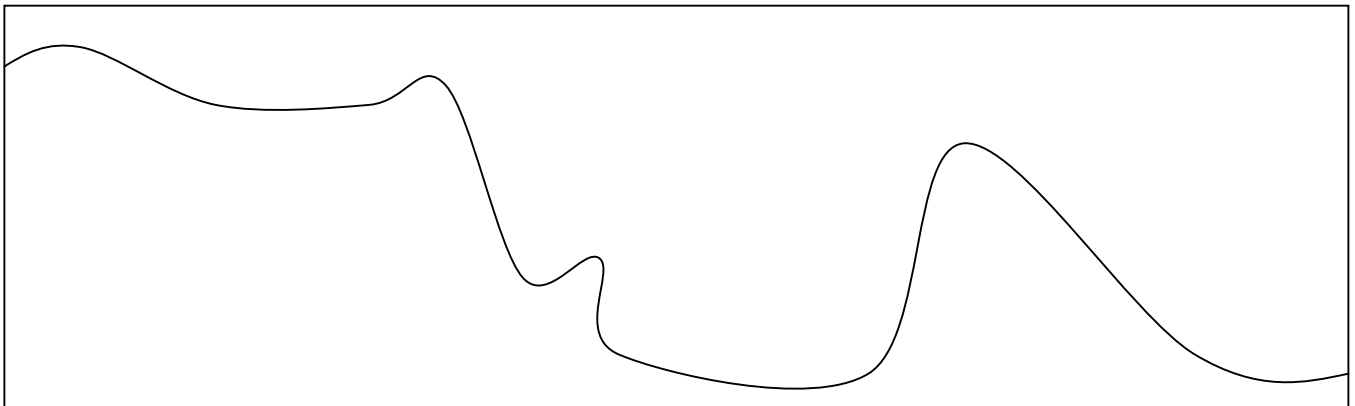


Diagram of Dominica's Western Island Shelf



B. Gear and Methods:

Fishing Boats:

The biggest investment for any fishermen is his boat. The type of boat which a fisherman can afford determines how far offshore he can fish, species of fish to catch, how much fish he can bring back to sell, and how safe and comfortable he will be at sea.

There are several types of fishing vessels commonly used in the Caribbean by fishermen, the most common being a 3-6 meter wooden boat with a "v" shaped bow and

a square stern or transom called a pirogue. An outboard motor is usually mounted on the transom of a pirogue. Canoes are also used throughout the Caribbean. They are hollowed out of cotton or gommier trees and can be as long as 10 meters depending on how far a fisherman has to travel out over his island's shelf to reach open sea. Canoes also have small outboard motors mounted on a narrow transom. Due to Dominica's narrow island shelf canoes used by Dominican fishermen seldom exceed 3 meters. The typical Dominican canoe is equipped with 30hp to 40hp yamaha outboard motors purchased from Martinique.

Typical Dominican fishing canoe

The largest boat used by small-scale commercial fishermen in the Caribbean is the trap fishing sloop, powered by sails or inboard motors. These boats are common on islands with wide island shelves, that require fishermen to travel up to 20 miles off shore to set traps in the open sea. Sloops are almost nonexistent on Dominica, because of Dominica's narrow island shelf.

Fishing Traps or Pots:

Fishing traps or pots are the traditional way of catching reef fish and lobsters from the island shelves of the eastern Caribbean. The basic design for these traps originated in

Africa and has remained unchanged for centuries. These traps are cages with funnel entrances that make entering the traps a lot easier for the fish who are lured into the trap with some sort of dead bait (e.g. flying fish or other meat) placed inside the cage. The three most common designs for the traps are arrowhead, rectangular, and the antillian Z-shaped trap. They are created with chicken wire walls connected to thin wooden frames.

(a)Arrowhead trap, (b)Rectangular trap, (c)Antillean Z-trap

These traps are most commonly used on Dominica as in the rest of the Caribbean inshore in fringing reef, and less commonly used for catching snapper and grouper on shelf slope or offshore banks.

Hook and Line:

Hook and line methods are the most commonly used fishing tactics of sport fishermen in the Caribbean, but are also used by small-scale commercial fishermen throughout the Caribbean Sea especially in Dominica.

Big game sport fishing is done in open sea, with rod and reel by trolling or towing a piece of bait or an artificial lure behind a slowly moving boat enticing large pelagics to bite the bait only to get hooked and reeled into the boat. This is the only substantial form of sport fishing off the island of Dominica, but other Caribbean islands support inshore

sport fishing from smaller boats or the shore using smaller rods and reels for small pelagics.

Local small-scale commercial fishermen use hand rope with no rod or reel to catch fish by hook and line. They troll for large pelagics in open sea or fish on the bottom with dead fish on a hook to catch snapper on shelf slopes or offshore banks.

Longlining:

Longlining is an important fishing technique throughout the Caribbean as well as in Dominica. Longlines are baited hooks set every so often along a rope which either floats on the ocean's surface in search of pelagics or is weighted so the line lies along the bottom for catching snapper. Some longlines have been known to be 40 miles long and have thousands of hooks.

(a) surface longline, (b) a bottom set longline

Flying Fish Fishing:

Flying fish are mainly caught in the southeast Caribbean. They are sold for food and make great bait for trolling or longlining in search for large pelagics. The method of catching flying fish is very unique. Fishermen send out ropes with bundles of coconut attached to them. The fish gather around the lines and the fishermen slowly pull the fish towards the boat and throw nets on the fish. Flying fish are most susceptible to this during spawning season, because they attempt to lay eggs on anything that floats.

Seine Fishing:

Using seine nets along beaches is the most common method of fishing in Dominica, while in most Caribbean islands it is not. Dominicans use seines to harvest ballyhoo, big eyed scad, skip jack, crevalle jack, and tuna in the shallow beach areas bordered by deep open sea.

Fishermen often sit on the beach while one of their buddies snorkels in the bay searching for schools of fish. When the snorkeler locates a school he signals the other fishermen on shore who surround the school of fish with a seine net. The dominant gear in the beach seine fishery of Dominica is a threaded nylon beach seine, which is a rectangular, mesh net. The net mesh hangs from a float line maintained by a series of buoys, while the bottom of the net is weighted to the bottom of the ocean by a series of lead sinkers or stones. A hauling rope attaches to each flank of the net and is used for hauling the net ashore.

Typical Dominican Beach Seine

C. Fishing Stock:

The waters of the Caribbean Sea are home to many species of warm water fish that are great for sport or for the market such as: wahoo, snapper, grouper, mackerel, dolphin fish, jacks, tuna, ballyhoo, flying fish, marlin, pompano, permit, snook, and tarpon. While all these fish are abundant throughout the Caribbean, not all of them are available in the fisheries off the West Coast of Dominica. The common fish caught by Dominican fishermen are: wahoo, snapper, dolphin fish, jacks, tuna, allyhoo, flying fish, and marlin. While at times some of these pelagic fish are harvested in the limited shallow waters of Dominica's West Coast these fish spend most of their life at sea.

Table B. *Species and Characteristics of Fish Commonly Harvested Off the Coast of Dominica*

COMMON NAME	FAMILY	SIZE	METHODS	PELAGIC OR BOTTOM	MISC. CHAR.
Wahoo	Scombridae	Up to 183 lbs.	Trolling with artificial	Pelagic	2 moveable jaws
Tuna	Scombridae	Varies with species 10lbs-1,500lbs	Trolling with artificials, drifting with natural baits	Pelagic	Commercial Importance

Snapper	Lutjanidae	35lbs	Bottom fishing with natural baits	Bottom	
Dolphin fish					
Blue marlin	Istiophoridae	2,000lbs	Trolling	Pelagic	Biggest bill fish
Crevalle jack	Carangidae	55lbs	Trolling with artificials / drifting with natural baits	Pelagic	Found inshore and open sea

The fish common in many Caribbean fisheries that are not caught off the Caribbean side of Dominica are fish that prefer to live inshore e.g. snook, tarpon, pompano, and permit.

D. Local Fishermen:

On the island of Dominica there are no large-scale commercial fishermen. There are only small-scale commercial fishermen who supply fish for the rest of the island, village, or at times just family and friends. Most fishermen sell their daily harvest to market vendors for \$5.00 per pound, regardless of species, and the vendors turn around and sell the catch for \$7.00 per pound. After costs for gas, boats, nets, ect. and considering the uncertain nature of the business these fishermen make just enough profit to get by. Most live in empty, one room, often dirt floor shacks and wear the same clothes everyday. The fishermen I spoke with neither know nor care how much their annual income is. All they know is how to barely catch enough fish to barely exist.

Discussion:

The main difficulty I had in gathering information was communicating with local fishermen. The words they use to describe fish species, techniques, and equipment differ

from words used in the United States. This made asking questions about these topics a little difficult, but not impossible. It also took a while to get the locals to stop trying to sell me stuff long enough to talk fishing with them. The key to this is to take time to make friends with the local fishermen by chatting about the states or whatever, buy some fruit from the guy that you could easily pick on your way home, and then start drilling your new best friend with questions about fishing.

While the narrow island shelf of the Caribbean side of Dominica has quite an effect on the fisheries of Dominica, the northeast portion of Dominica's island shelf is not near as narrow descending at a rate of 20 fathoms per 1 mile in some locations. This area north of Castle Bruce to about 3 miles north of Marigot could potentially harbor many species of game fish that would attract recreational fishermen and their money from all over the world. Such highly sought after fish such as snook, permit, and tarpon are common in most Caribbean inshore fisheries, but are not fished for in the northeast coast of the island. One possible explanation for the lack of fishing attention this portion of the island receives is that the type of fish harvested here may not be productive for locals in the traditional sense. While numbers or size of these fish may not produce enough food to feed an island they would attract recreational fishermen who have nothing better to do than dump money into expensive tropical fishing trips.

Inshore fish populations that live the course of their life in shallow bays or beach areas are more susceptible to over fishing. It is quite possible that early Dominican fishermen using seine nets and traps, completely fished out the northeast shore of Dominica. Then they may have decided that the fishing in this area was poor, moved to the Caribbean side where the deep sea butts heads with shallow bays keeping this area

stocked with offshore pelagics, setup shop, and never left. The fishermen I spoke with have no desire to explore new ways or locations good for making money in the fishing industry. They are content fishing enough to barely get by, the exact same way their ancestors have done for centuries.

Saltwater fly-fishing is the recreational fishing world's fastest growing craze. The large inshore, warm water fish (permit, snook, and tarpon) that are found in most under water terrain of the Caribbean, similar to that of the island shelf off the northeast portion of Dominica, are an extremely popular target for these fishermen. There are thousands of weekend anglers back in the states and all over the world who would be more than happy to spend a small fortune to fish a whole week for the chance to catch one tarpon only to release the mighty fish back into the water after one snapshot. One morning of guided tarpon fishing out of Galveston, TX can cost as much as \$1,000.00. Imagine how much profit a recreational fishing industry could bring to Dominica when you throw in lodging, food, tackle, ect.

What would keep this fishery from being over fished? Recreational fishermen do not fish for food, money, or lively hood. The number of fish they harvest is of no consequence. They fish for fun, and after the fight is over so is the fun. Catch and release is becoming a more and more common fishing practice and would be easy to implement among the consumers of this proposed market.

My project was not designed to discover a fishing industry of Dominica that does not already exist, but to document the current fisheries of Dominica. However, I believe the potential for an inshore recreational fishing industry on the northeast coastline of the island does exist. Considering how much the economy of Dominica stands to benefit

from such an endeavor, the northeast fishery should be investigated. For this purpose I suggest a follow up experiment comparing the fish species of the northeast to the west and southeast coast of Dominica.

Conclusion:

The extremely narrow island shelf on the Caribbean or West Coast side of Dominica makes Dominican fisheries unique from that of most Caribbean islands. Pelagic fish that live in the open sea come into the limited shallow areas of Dominica's west coast sporadically searching for food, because the shallow areas so abruptly meet deep, open sea, where in other Caribbean islands shallow areas gradually descend into open waters. This allows some Dominican fishermen to rely solely on these schools of large offshore fish that are harvested inshore with seine nets. Those who choose to fish for large offshore bottom dwelling fish or go deep sea fishing for pelagics can do so in smaller less expensive boats off the coast of Dominica, because open sea is only ¼ mile - ½ mile off shore. This differs from other Caribbean islands where one may have to travel as far as 20 miles to reach open sea. The fisheries of the west Dominican island shelf go from fringing reef to open sea. This makes larger more plentiful offshore fish species easily accessible to the local fishermen of Dominica, but limits the amount of inshore game fishing in this area of the island.

Works Cited

Conway, Daniel 1984. Fisheries of Dominica. Ministry of Tourism, Dominica

Finlay, James 1988. Rights Based Fishing in the Beach Seine Fisheries.

Kinderly, Dorling 1994. The Dorling Kinderly Encyclopedia of Fishing.

Dorling Kinderly Limited, London.