Food and Agriculture Organization of the United Nations

Review of Flyingfish, Conch and Lobster Fisheries Management Plans in the Eastern Caribbean

Data collection: needs, gaps, deficiencies and constraints in the WECAFC region

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Outline

Overall

* Political geography
* International, regional, national agreements

Flyingfish, Conch, Lobster

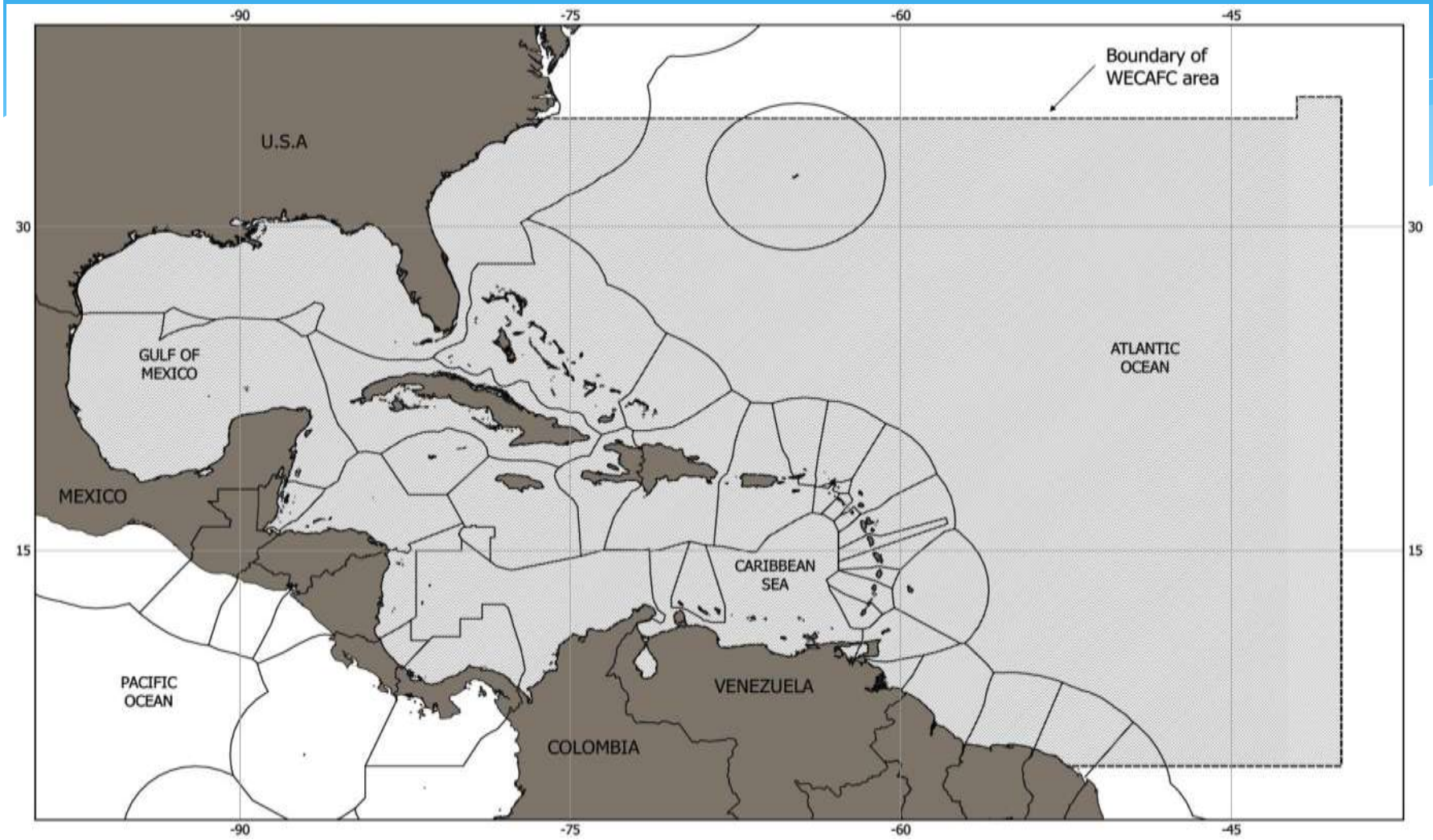
* FMP overview by stock
* Biological review
* Fishery and stock status
* Management Unit
* Data collection: needs, gaps, deficiencies and constraints
* Management and governance

Political geography

* Eastern Caribbean (Lesser Antilles) sub-region – one of the most compact multinational archipelagos in the world.

* All of the eastern Caribbean countries have declared 200 nm EEZs, although most boundaries between some neighboring countries are still to be negotiated. Grenada, St. Vincent and the Grenadines, and Trinidad and Tobago have also been granted Archipelagic Status under UNCLOS .

Wider Caribbean and potential EEZs



(VLIZ, 2012) (Note that not all countries have accepted the proposed boundaries)

International, regional, national agreements

* 1982 UN Convention on the Law of the Sea (UNCLOS)
* 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement)
* 1995 UN Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement)
* 1994 Declaration of Barbados on the Sustainable Development of Small Island Developing States (SIDS)
* 1995 FAO Code of Conduct for Responsible Fisheries
* 2001 Reykjavik Declaration, representing a voluntary commitment to adopt an ecosystem-based approach to fisheries management.
* 2005 Rome Declaration on IUU Fishing, recognizing the impacts of IUU fishing on small-scale fisheries, and calling for improved national and regional monitoring, control and surveillance of unauthorized, illegal fishing and implementation of severe punitive measures.
* 2010 United Nations General Assembly Resolution "Towards the Sustainable Development of the Caribbean Sea for Present and Future Generations" (UNGA 65/155, adopted on 20 December 2010)

Flyingfish FMP overview

* 1st draft of FMP- 2001at 2nd meeting of WECAFC Ad Hoc WG on Flyingfish in the Eastern Caribbean (FAO. 2002)
* 2nd draft 2008 at the Third Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean (FAO. 2010)
* 3rd draft 2012- 2008 Draft Sub-regional FMP was amended First meeting of the CRFM/WECAFC Working Group on Flyingfish

* Shared by seven different states (Barbados, Dominica, Grenada, Martinique (France), St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago

Flyingfish: Biology and management

Biology

- 13 species of flyingfish (Exocoetidae) occur in eastern Caribbean
- Target species of the offshore flyingfish fisheries of the eastern Caribbean (accounting for ~ 99% of all flyingfish landed) is the four-wing flyingfish
- (*Hirundichthys affinis*)
- Seasonally available (November to July), patchy through ECs
- Individuals move freely between islands of the eastern Caribbean prior to spawning
- *H. affinis* likely available in commercially viable quantities beyond the present range of local fishing fleets

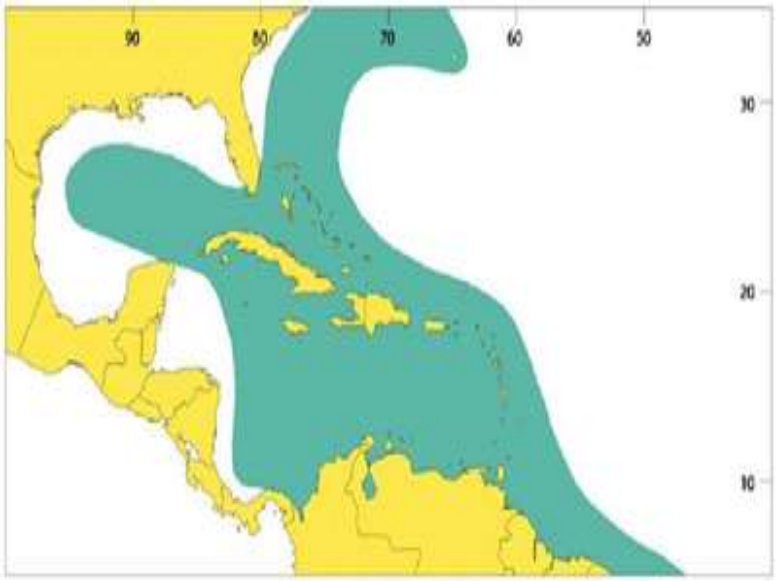
Management

- Three genetically discrete sub-regional stocks.:
  - eastern Caribbean,
  - the southern Netherlands, Antilles and
  - off northeast Brazil. spawning

Flying fish: Fishery and stock status

Fisheries

* Concentrated in southern Antilles in 3 areas
  * eastern Caribbean islands,
  * southern Netherlands Antilles and
  * northeast Brazil.



Barbados : Two thirds of regional catch

* 1950-1970 landings ranged 1,025 to 2,523 t
* 1980 and 2007 range 2,121 to 4,725
* 2002 - 2007 average annual landings 2,512 t.
* Ex-vessel value USD 2.65 million
* GDP value :12 million (2007):

Stock status

* Precautionary approach warranted
* Trigger points in landings to monitor catch
* Uncertainty in catch and effort

Atlantic Four-winged Flying fish:

Eastern Caribbean fishery concentration

Regional Data needs to achieve management objectives

Sustained resource biological

Sustained resource

- CPUE sustained long term temporally and spatially
- Annual catch <-trigger point (5,000 tonnes)
- Total effort <- optimum capacity

Accurate information

- Sufficient coverage by landing site (CPUE, effort)
- Sample coverage stratification (time, area) and design

Effective management

- Effective data collection
- Harmonized regional database

Adequate legislation and regulations for monitoring and compliance

- Fleet size,
- annual landings,
- CPUE,
- mean size

Regional data needs:

Optimize long-term benefit - socio–economics

* Employment level,
* Return on investment
* Credit access

Affordable food

* Per capita consumption
* Percentage of population consuming flyingfish
* Market price of flying fish
* Relative market price

Fair access to grounds

* Vessel and permit registries

Sustained ecosystem health –

* **Healthy and resilient ecosystems**

  water quality parameter,

  marine debirs pollution occurrence,

  habitat metrics

  species composition,

  tropic composition

Flyingfish: Gaps, deficiencies, constriants

* Catches considered underreported (directed and bait fishery)
* Gaps in historical time series of landings and IUU removals
* Effort units not well documented across sectors
* Fishing power not quantified across sectors (q)
* Optimum Capacity (effort) not quantified
* Biological information not routinely collected (track recruitment)
* Seasonality and spatiatiality a factor in fishery production thus in data collection
* Stock status indicators (total catch trigger) recommended but basis for not well documented nor uncertainty in
* Inputs on predation (e.g., dolphinfish and other HMS species), food supply and critical habitat (e.g., impact on scarcity of sargassum)
* Seasonality adds additional uncertainty to management inputs and output controls (i.e, large increases in price seasonally)
* Data collection management (FMP recommended CRFM collaboratively with CRFM/WECAFC WG)
* Harmonization of licensing and vessel registrys

Flyingfish: Governance issues

* Currently open access
* Lack of a regional mechanism for managing shared resources;
* Inadequate fishery information and statistics (particularly socio-economic data) for planning and management;
* Inadequate human capacity in fishery departments to conduct required level of research and data analysis;
* Inadequate development of participatory management with all stakeholders at national and sub-regional levels;
* Limited facilities for disposal or use of fish offal at landing sites;
* Limited landing site and marketing facilities in some countries;
* IUU fishing
* Lack of, or inadequate monitoring, surveillance and enforcement;

Caribbean Spiny lobster (*Panulirus argus*)

Lobster management overview

No regional management plan:

OSPESCA/WECAFC/CRFM/CFMC Working group (2014) focus on need for sub/regional plan

Subregional Initiatives include:

CRFM/OSPESCA joint Action Plan 2012

- Promotes regional management in collaboration with SICA
- Promotes development of regional database
- Promotes strengthening of monitoring, control, surveillance (MCS) to combat IUU

CRFM/WECAFC Working group (initiated in 2014)

OSPESCA regional Plan: MARPLESCA Plan (developed through CLME/UNOPS)

- Objective is to ensure sustainability of stocks
- Strengthen application of regulation OSP-02-09
- Promote regional participatory management harmonization

Bahamas Spiny lobster working group (2012)

- Aims include use of FIPS to achieve MSC certification
- Evaluate sustainability of Bahamas lobster casita fishery

Belize spiny lobster adaptive management framework (2014-draft)

Brazil Lobster Management Plan (date?)

Netherlands' national fishery legislation policy

Lobster: Biology and management

Biology:

* Panmitic population
* Single species targeted (*Panulirus argus*)
* Larval period long 6-9 months
* Longevity ~ 20 years
* Connectivity between regions high adds challenge to quantify regional and sub-regional productivity levels

Management:

* Closed seasons, size (tail) limits, gear (traps only in some countries), escape doors and biodegradable panels, landing condition (whole vs tail)
* Licensing system most countries
* Harvest control (Bahamas, OSPESCA countries)
* Marine reserves
* Prohibition on harvesting/possession of lobster in berried or molting condition

Lobster:Fishery and stock status

- Fishery located throughout region
- 2012 Landings ~ 36,000 tonnes
- 2011 Region Exports ~ 378 tonnes
- Fisheries artisanal except OSPESCA countries
- Value (2012) ~ 500million (WECAFC countries)
- Employment (2014) ~ 100 000 fishers (WECAFC)
- region)
- Value (2014) ~ 900 million worldwide

Stock status	Countries
Fully fished or stable	Anguilla, Antigua and Belize, Bahamas, Cuba, Mexico, Nicaragua
Unknown	Brazil, Caribbean Netherlands, Dominican Republic, France, Honduras, Panama, United States of America,

Total Production		**(2012)**
Anguilla		na
Antigua and Barbuda		220
Bahamas		12 000
Belize		660
Brazil		7 389
Caribbean Netherlands		na
Cuba		4 467
Dominican Republic		2 505
France	Guadeloupe	na
	Martinique	na
Haiti		250
Honduras		1 555
Mexico		547
Nicaragua		4 249
Panama		47
United States of America		1 784
Total		35 673

Data needs to achieve management objectives

Regional Governance

* Adequate Country level information
* Ability to implement country and regional regulations compliance and monitoring
* Sufficient surveillance and monitoring

Access Regime and Investigations (Sustained resource)

* Regional and harmonized standardized databases (catch, landings, effort, biological)
* Adequate monitoring (landings, effort, species composition, size and age)
* Comprehensive listings of vessel types by fleet and spatial area
* Best fishing practices

Economic, Social and Marketing and Consumption

* Contribution to exports
* Employment generation
* Size of industrial and artisanal fleet
* Market - products pricing and target markets
* Social characteristics of communities
* No of employees - crew on vessels
* Employment in processing plants
* Service employment
* Percentage and value of exports and gdp
* Processing

Lobster: Data gaps, deficiencies, constraints

- Landings uncertainty (recreational in particular)
- Absence of historic landings levels
- Challenges in landings survey design (lack of coverage at all times when/where lobster landed
- Lack of information on recreational landings
- Lack of regional standardized abundance indices (particularly juveniles)
- Absence of standard data collections throughout the region
- Absence of standard data base of scientific information for use in regional and subregional stock assessments
- Uncertainty in mortality on juveniles/undersized lobster (e.g., as used for bait)
- Lack of information on effects of environmental drivers on recruitment (red tide)

Lobster:Data needs, gaps and issues deficiencies

- Further need to prioritize research and data needs regionally updated growth characterizations,
  - impact from use of casitas,
  - larval recruitment indices, mortality level from use as bait in traps,
  - environmental drivers,
  - population demographics
- Need to engage in collaborative management,
- Need data and information exchange to enhance sustainability of stocks regionally

Lobster: Governance issues

- Uncertainty in impact of management measures on fishery
- Mechanism to promote intraregional cooperation in harmonized data collection, data sharing and regional initiatives to promote sustainable stocks regionally
- Ability to control effort
- Timely implementation & enforcement of management measures
- Mechanisms to ensure compliance and control IUU

Conch (*Strombus gigas*)

- Endemic to the Caribbean
- Utilized in the region since pre-Columbian
- Important fishery and cultural resource
- Value of $60 million (US) value in 2003
- Economic value highly variable and related to quantity and quality of shelf area

Conch FMP overview

CFMC/WECAFC/OSPESCA/CRFM/CITES 2012

* Regional queen conch fisheries management and conservation plan
  - Promotes ecosystem-based management approach
  - Enhanced partnerships and collaboration throughout the Wider Caribbean region
  - CLME Strategic Action Plan (action 4B)

Conch: Biology and management

Range:

- Caribbean Sea and its surrounding waters,
- Southern Florida and parts of the Gulf of Mexico
- As far North as Bermuda and
- As far southeast along Atlantic coast of northern Brazil

Biology:

- Larval duration : 18-60 days
- Maximum up to 20 years (average ~ 6?),
- Reach sexual maturity @ ~ 2- 4 years
- Maximum size @ 3.5 -5 years (~ 30 cm, 2.3 kg)
- Highly variable growth throughout the region
- Reproductive success dependent on habitat quality, water quality

Conch:Fishery and stock status

Fishery

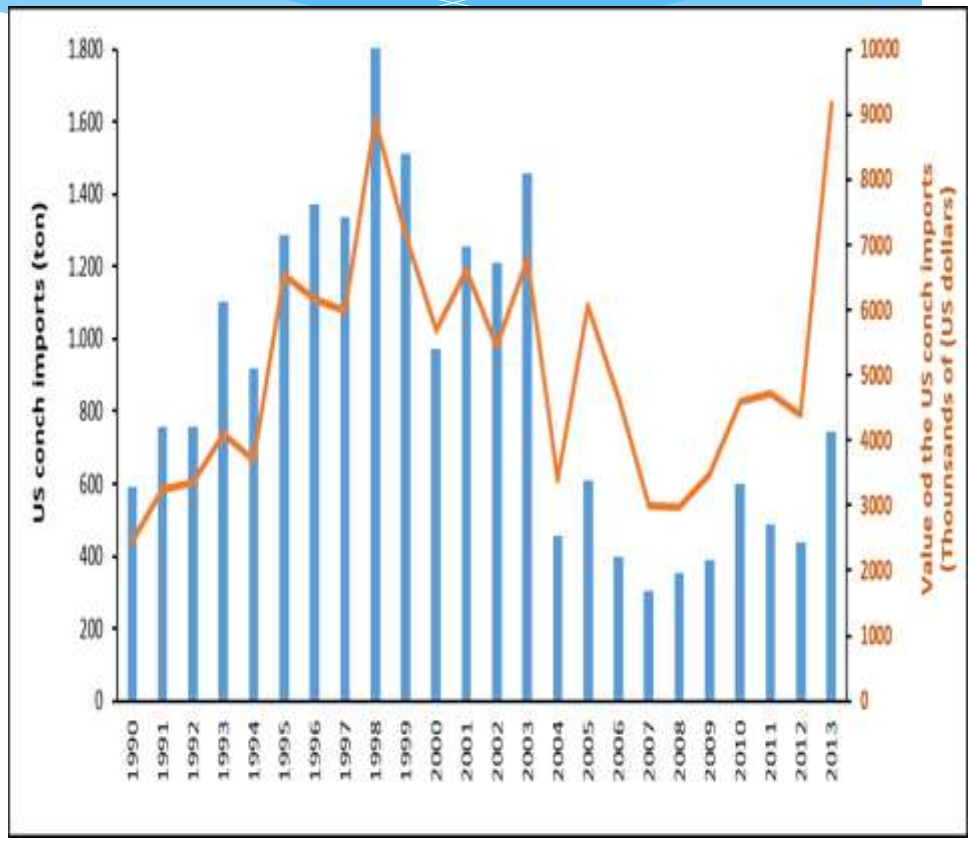
- Concentrated in deeper waters mainly
- Viable fisheries absent in many regions due to low densities

Status

- Uncertain in many areas
- Overexploited in many areas
- Fishery closed for varying periods in Bonaire, Cuba, and Venezuela.
- There are marine protected areas,

Management:

- size limits, quotas, closed seasons and areas, and gear restrictions



Exports :

- 60% of harvests (US/EU)
- 29% within the French West Indies
- 11% is used for local consumption.
- Value of exports:

Lobster data needs to achieve Management objectives

Determine stock status (ensure sustainable resource)

- Adequate information (landings, CPUE, density, effort, size, maturity) by appropriate spatial (deeper) and temporal scale)
- Harmonization of data collection regionally and subregionally

Stable fisherman income

- Harmonization of fishing seasons
- Licensing all participants
- Best practices for fishers
- Application of trade traceability systems
- Increased country level adoption of FMP
- Employment and income

Lobster Data Needs to Achieve Management objectives (continued)

Regional coordination and cooperation

- Patrolling (surveillance)
- VMS
- Education and outreach

Integrating Precautionary principles

- Collaborative regional and subregional agreements
- adoption of objectives leading to sustainable resources,
- comprehensive habitat mapping,
- standardized survey protocols

Harmonized adoption of regional and sub regional management plans

Harmonized agreements on procedures and rules to allow broader participation of stakeholders

Conch: Data gaps, deficiencies, constraints

- Gaps in catch and effort data across the region
- Gaps conch densities (<- 25m-deep, where easily monitored)
- Limited survey information (deeper habitats) where many conch fisheries
- Constraints and technical problems in sampling deeper habitats
- Lack of standardized surveys throughout region
- Prioritization of research regionally needed to enhance potential for ensuring sustainable stocks
- Recognition of the need for develop a harmonized sub-regional plan for the management of queen conch

Conch Governance issues

- Sustainable regional fisheries management must incorporate complex biological, spatial and fisheries characteristics
- Regional/sub-regional initiatives have been limited due to the lack of broad cooperation and political support across the region.

Thank You!

Gracias

Merci!