2ND MEETING OF THE CFMC/WECAFC/CITES/OSPESCA/CRFM WORKING GROUP ON QUEEN CONCH

SUMMARY OF THE REGIONAL QUEEN CONCH FISHERIES MANAGEMENT AND CONSERVATION PLAN: MEASURES

(draft)

1. Description of the Fishery

The queen conch is a large mollusk highly valued in the Wider Caribbean, which has been fished since Pre-Columbus times. Conch can utilize a variety of habitats and can be found routinely from shallow water to 30 m depth and potentially to 50-80m if suitable conditions occur. The fishery supports more than 20,000 fishers in the Caribbean region, and represents an important activity as it provides employment and income in remote coastal communities, contributes to export earnings as well as to food security and poverty alleviation. The species plays an important ecosystem role. The queen conch fishery is frequently integrated with the spiny lobster fishery, since diving is the main fishing technique utilized for both species.

The fishery produces mainly conch meat fillets, but in different degrees of processing. Total production has declined over time, with reductions attributed partially to overfishing, with some stocks having collapsed and yet to recover. In other cases, large reductions in catch resulted from aggressive management action to maintain sustainability. Declines in conch landings resulted also from the temporary moratoria on trade from Honduras, Dominican Republic and Haiti imposed under the second CITES Significant Review process in 2003.

In the majority of the countries of the Wider Caribbean region the fishery remains at an artisanal level. For instance, fishing in the eastern Caribbean consists of small canoes or dories of 7-10 m long, powered by outboard engines or sail and oars and carrying 1-4 divers. Fishing trips for conch are mainly daily, in which fishing lasts approximately 8 hours. Artisanal harvest conducted in distant fishing grounds is possible with the use of mother boats (10-15m long) that transport the small canoes and involve more fishers, approximately 7-10 divers, with trips lasting approximately 4 to 7 days.

Industrial fishing, on the other hand, reaches even banks located far offshore (40-160Nm from the landing sites) and takes place with the support of larger mother ships, typically steel-hulled, up to 35m in length and powered by inboard engines. These vessels can carry over 40 divers (some times more than 60 divers) plus the canoe drivers for several weeks or months at a time. Even in these industrial operations, the actual fishing uses smaller dories with outboard engines or oars that carry 1-2 divers. In addition to free/scuba diving, industrial divers can use surface compressor (Hookah) diving.

Artisanal fishing usually lands live or fresh conch, sometimes with the shell or at other times as unclean meat (with majority of organs attached). When artisanal fishing uses mother boats, landings usually are refrigerated clean meat (trimmed meat with no organs). Industrial products are usually landed in bags of frozen clean meat.

Other products in the fishery are the conch pearls and the conch shell, from which little is known at a regional basis. A kilogram of queen conch cleaned meat can be purchased at around $7-8 (US), several thousand dollars can be paid for a good queen conch pearl, while a nice conch shell is only worth a couple of dollars.

2. Management Measures

Short-term recommended management measures are:

1. **A harmonized regional closed season (potentially 1 June and 30 September)**

Justification: The queen conch can potentially reproduce the year round, but high water temperature (28-29°C) is important in controlling conch reproduction and gametogenesis. In general, the warmest months in the Caribbean are July-September, but due to recent water temperature increases, presumably a consequence of global climate change, warm temperatures and peak spawning may extend into October. A positive relationship between water temperature and reproduction is common in several stocks, thus the establishment of a queen conch closed season may overlap with other stocks, negatively affecting fishers income. A harmonized regional closed season would help reduce overall fishing mortality, contribute to the success of the conch mating and thus support reproduction and population replenishment, while at the same time facilitate the monitoring and patrolling needed to counteract illegal fishing. While most countries have a closed season at some time, the maximum benefit of this approach is only achieved if the temporal limitation in fishing effort is exercised equally over broad areas, thus allowing for population resilience and connectivity.

Implementation advice: The adoption of a closed season at regional or sub-regional levels can be developed through existing mechanisms: CRFM, CFMC, OSPESCA, OLDEPESCA, and WECAFC. It can be adjusted in response to variability in spatial/temporal patterns once monitoring data become available. Special protocols should be in place in order to enforce this regulation. Better communication of fisheries managers beyond their frontiers can facilitate compliance with this measure.

2. **Holding restrictions of queen conch in the closed season**

Justification: To enable and facilitate enforcement of the closed season a holding restriction of live conch is established region-wide.

Implementation advice: Similar to OSPESCA Regulation OSP 02 09, a holding restriction is enforced by reporting at the start of the closed season the holdings of frozen conch by all processors, wholesalers, retailers and exporters. The volumes in store are reported on a

monthly basis to the fisheries authorities. To facilitate enforcement of the closed seasons, holding of live and fresh conch during the closed season is to be prohibited by law or specific regulations.

3. Harmonized and simplified categories of queen conch meat conversion factors.

Justification: Estimation of catch data is basic information for fishery management and for population models used to determine stock status. In the queen conch fishery, the main commodity is the meat fillet, a product resulting from different types of processing, which vary from country to country. Differences in the processing of conch meat affects the estimation of conch catch data, therefore there is need to determine and apply conversion factors to catch data so that landings can be both estimated with less error and made comparable across the region. Conversion factors exist only in some countries (i.e., Antigua and Barbuda, Bahamas, Belize, Dominican Republic, Jamaica, Honduras, Martinique, Mexico and Nicaragua) but they are necessary for all countries. A better and simplified definition of such factors allowing for their use in the catch statistics still needs to be addressed.

Implementation advice: The following are the proposed regional conversion factors:

Processing grade	Conversion factor
Dirty meat	**5.3**
50% clean	**7.9**
100% clean	**13.2**

If the above conversion factors will be endorsed during the Queen Conch Working Group Meeting in Panama, all countries and territories would be required to report to FAO the processing level and the nominal capture using the conversion factors. For regional analysis perhaps there is need to use these conversion factors also for historical data series on queen conch harvests. Countries should continue to collect weight data by processing grades to update and improve the proposed conversion factors.

4. Quantification of local consumption of queen conch meat

Justification: Local consumption of conch is often not monitored or included in the catch statistics, resulting in total conch production being under-estimated or estimated with large uncertainty. Errors can be small if the subsistence and locally marketed catches are likely to be small, but they can be significant otherwise.

Implementation advice: Agree on a methodology to estimate local conch consumption and apply this methodology as soon as possible.

5. **Improvement of catch and effort monitoring programs**

Justification: In addition to the above mentioned challenges, conch catch data are often incomplete and not organized with statistical rigor, or exist only in hard copies or account for short periods of time. Processors provide reports with catch and effort information based on their purchases (i.e., Honduras, Bahamas, Jamaica, Colombia, among others). Nevertheless, these data are also incomplete and difficult to verify. Fishing effort is calculated with an even higher level of error. The number of fishermen is increasing, but this is not necessarily correctly included in the statistics. Additionally, unknown improvements/changes in diving techniques, number and size of the mother vessels or expansion of fishing grounds also affect the parameterization of fishing effort. It is possible that fishers, vessels, and compressors concentrate in small areas, impacting some areas more than others, thus introducing a spatial component that needs to be included in the estimation of fishing effort. To overcome such difficulties managers will need to increase compliance among fishers and processors to be able to improve the way catch and effort data are being reported. A good example is in the Bahamas, where processing facilities electronically report to Department of Marine Resources the catch and effort of purchased landings, hopefully leading to more timely, complete and accurate reports. However, even these data have not been evaluated yet.

Implementation advice: Agree to form a regional advisory group that would carefully analyze current databases of catch and effort existing at sub-regional levels and propose strategies and applications for the improvement of data collection and processing, including maximizing possibilities for collaborative work and increasing compliance for reporting. Resulting strategies may need to include: design of better-structured conch survey formats; improving mechanisms to facilitate and increase fisher reporting; compiling, organizing and digitizing historical conch fishery data from analogue formats; applying conversion factors and determining the degree of conch products used for local consumption; and work in cleaning and improving existing digital databases at national or sub-regional level.

6. **Non-Detriment Finding for export of queen conch meat and its by-products**

Justification: Any country wanting to export conch in whatever form is required under CITES to prepare and update an NDF, demonstrating that conch stocks are healthy and managed sustainably.

Implementation advice: It is recommended that a regionally agreed upon and standardized NDF methodology be applied as a minimum standard for complying with the export NDF requirement. This NDF methodology can be implemented in a cost effective manner, and cost of implementation should be covered partially by the exporters and importers involved.

7. **A minimum weight limit for conch meat**

Justification: Considering that a high number of countries land only conch fillets, there is a need to apply the precautionary principle by establishing a minimum weight for those fillets, even if it is not necessarily tied to a reproductive stage. This measure would reduce the probability of capturing individuals that are too small, thus increasing yield per recruit and

potentially increasing spawning stock. Existing regulations in several countries already establish a minimum weigh in 125g of 100% clean conch meat. This measure would preclude the export of conch trimmings.

Implementation advice: Agree to trade only conch fillets having a minimum weight of 125g of 100% clean conch meat. This minimum can be adjusted once conversion factors in the region are agreed and implemented. This measure implies a ban on exports of conch trimmings.

8. A minimum conch shell size (length/lip thickness) limit

Justification: More than two decades of research have indicated the shell length or shell thickness are two measurements useful for discriminating adult and juvenile conch. Unfortunately, complex growth and morphology patterns indicate that these measures cannot always assure a particular conch reached maturity or reproduced. Nevertheless,the establishment of a regional minimum size(s) for harvesting of queen would contribute to increasing yield per recruit and enhancing the spawning stock. If conch shells are not landed, this measure is difficult to enforce.

Implementation advice: Agree to establish a minimum conch shell length of 19cm and a minimum conch lip thickness of 10mm. The measure requires a high level of compliance, the establishment of observers program, and/or the landing of live animals.

9. Landing of only live conch (in the shell).

Justification: The conch shells in many occasions are piled on the fishing grounds, reducing the full utilization of the fishery products. The landing of whole live conch improves the quality of the meat, thus increasing its commercial value. The measure requires that fishing trips last only few days, and may be costly for fishers, however could have important benefits in terms of food safety, quality of the product, and tourism. This measure is difficult to implement but it can contribute to the reduction of the illegal trade of queen conch pearls.

Implementation advice: Agree in requiring that conch should be landed alive (in their shells) and to make adjustments in the fishing technologies to improve the survival of the captured individuals.

10. Licensing of all queen conch fishers, processors and exporters

Justification: Only through licensing will it be possible for managers to get an idea of the number of people involved in the activity, secure their compliance toward reporting and management measures and ensure proper management and conservation of the resource. Licensing will support data and information collection efforts, enforcement efforts and will also allow the fisheries authorities to communicate management measures to the fishers in an effective manner.

Implementation advice: The costs of licenses will be borne by the users, so this measure is cost-neutral to the government. The provision/renewal of a license should be annual and

linked to the provision of logbook, landing, processing, export and catch data and other information, as well as depend on whether sustainable and legal practices are applied. In the fight against Illegal, unreported an unregulated (IUU) fishing, the use of licenses is essential.

11. Promote the use of free diving, and adoption of stricter regulations in autonomous diving techniques

Justification: The use of autonomous diving techniques for fishing imposes great challenges to the safety of divers, and allows harvest of conch from deep-water refuges, where a high proportion of spawning adults may survive. OSPESCA, under regulation 02-09, prohibited the use of SCUBA diving in the lobster fishery (Belize, Honduras, Guatemala, Nicaragua, Panama and Dominican Republic) since 2011, but its implementation has been delayed until 2015 and perhaps will be extended again next year. Data from the Centro Hiperbárico La Bendición in Honduras reports that in that country only, there are around 100 diving accidents annually in the lobster fishery, plus 19-25 in the conch fishery; but conch divers have 5 times higher re-incidence rate. Lack of training, improper equipment, poor maintenance, and work under strenuous physiological conditions are key factors contributing to these sad results. With improvements in the hyperbaric treatments, there has been a 50-60% reduction in diving accidents. However, more governmental control and better preventive protocols still need to be enforced. Diving in the lobster and the queen conch should be treated similarly since the two fisheries operate synergistically.

Implementation advice: Several measures are proposed: a) Promote the use of free diving in the queen conch fishery; b) require dive certification for all fishers/divers; c) Conduct dedicated training and equipment safety inspections in those places using scuba diving; d) Prepare dive plans and log all completed dives; e) Develop international agreements for the use of hyperbaric chambers in the region to treat decompression sickness; and as precaution, f) Ban the use of hookah, until the safety of its use can be demonstrated.

12. Prohibition of destructive fishing gears and methods

Justification: The use of trawling and entanglement nets should not be allowed as these methods are not-selective, can cause catch of juveniles, increase by-catch of other species, damage the aquatic habitat and aquatic biodiversity, and overcome deep refuges.

Implementation advice: The sale and use of these nets for queen conch harvest should be prohibited by the range states through national laws and regulations. Conch habitats often coincide with habitats of other “vulnerable” aquatic animals (e.g. turtles, various reef species) and the chances of doing long-term damage to the habitats and aquatic biodiversity can only be avoided by region-wide prohibition of these fishing methods for conch.

13. Organized patrolling

Justification: Enforcement personnel need training in conch biology, ecology and morphology to recognize if fishing activity is legal or illegal. Success of patrolling in many cases depends on effective coordination between many stakeholders including the military. Military personnel are frequently rotated, so training should be incorporated during their basic courses, with frequent refreshments. Fisheries managers need to process fishing

violations through civil or penal judicial systems, so they need to be aware of: a) The importance of collecting good evidence; b) How to keep a good chain of custody; and c) How to interact within the national and international legal systems. For that, they would need the support from their legal offices, which are not routinely available to them. National regulations resulting in fines that are inappropriately either too low or too high negatively affect fishermen compliance, thus undermining the effectiveness of the legislation. When people from different nationalities are involved in the fishery, the foreign affairs ministries, health departments and migratory authorities will need to be involvement. With such a complex situation, enforcement demands that good regional coordination be in place.

Implementation advice: Three main measures are proposed: a) Develop a detailed protocol for attending to and facilitating enforcement and surveillance in Caribbean isheries including violations in the queen conch fishery; b) Evaluate the cost/effectiveness and applicability of the fishing regulations; and c) Create and implement an observer program.

14. Extend the use of VMS systems for boats larger than 10m-long

Justification: The use of Vessel Monitoring Systems (VMS) in Caribbean fisheries is progressively being implemented because the system facilitates the attention of emergencies at sea, the identification of potential illegal fishing activities, while at the same time providing data to analyze spatial/temporal patterns of the fishery. However, the system is expensive (but getting cheaper rapidly), demands technical assistance and requires regional coordination to make adjustments in the way the data are obtained and managed so that they are compatible across the region.

Implementation advice: Progressively introduce the use of VMS on a regional basis, and in a way that the data collected are compatible.

15. Develop continuous education and outreach programs for stakeholders

Justification: Despite the great importance of the queen conch fishery, there are few and isolated activities being developed to sensitize the public and create awareness about environmental issues and conservation of marine resources, included the queen conch. As a result progress in fisheries management, compliance and implementation of the co-management strategies remains low.

Implementation advice: Develop education and outreach programs aimed to: a) Understand the importance of data collection, scientific analysis, research, training, and capacity building to manage a shared living marine resource - oriented to higher government officials/decision-makers; b) Understand the purpose and use of the data collected and why they need to be accurate - oriented toward inspectors/enumerators; c) Awareness of the species's ecology, ecosystem role and the impact of fishing and market demand on the sustainability of the stock - oriented to fishermen and processors; and d) Understand the need for environmental protection and conservation of marine resources – oriented primarily toward school children and high-school students, and extended to the general public.

Mid-term recommended management measures are:

16. Adopt sub-regional mechanisms and protocols to conduct conch surveys

Justification: Underwater visual census is an alternative approach to estimate conch densities and size distributions and ultimately population abundance and biomass for the determination of sustainably harvestable biomass. Surveys also provide a way to study conch demography and reproductive output in fished and unfished sites, even if fishery dependent data are available. At present, several countries rely on surveys to define their catch quotas (i.e., Jamaica, Belize, Honduras, Nicaragua, and Colombia, among others). However, different countries apply different survey methods. Independently of the survey method used, proper survey planning demands access to habitat maps, nautical charts, trained divers, safe diving protocols and proper working platforms. Towed underwater video systems would require additional time for post-processing. Perhaps more importantly, the surveys need to be placed on a sound statistical basis for both design and analysis and thus need the appropriate level of statistical expertise. Sampling at deeper habitats (30-50m) may require special underwater video systems, or specialized diving techniques. Surveys need training, and to secure enough funding especially if repeated at periodic intervals.

Implementation advice: Agree to create a regional advisory group to analyze existing surveys protocols and adopt the most convenient sub-regionally. Look for mechanisms for international cooperation in conducting conch surveys, including the formation of teams integrated by scientists, managers and fishers.

17. Sub-regional research and monitoring programs addressing fisheries dependent and independent factors

Justification: Because of the complex biology of the species (highly variable rates of growth, natural mortality and recruitment, which may be density and habitat-dependent), the determination of reliable indices of stock abundance is hard. There is need to regionally defined priorities in research and monitoring, for collecting time series data for more sophisticated stock assessments, and for understanding of the species role in the ecosystem, climate change effects or genetic connectivity, among other issues.

Implementation advice: Agree in the selection of priorities in research and monitoring sub-regionally, enhancing collaborative mechanisms already in place. This agenda should be defined in the next two years followed by its progressive implementation and the promotion of bottom-up strategies.

18. Spawning and nursery areas are identified and conserved through closure

Justification: Closure of areas that can be considered nursery areas will benefit the production of conch in neighboring areas. Marine Protected Areas (MPAs) for queen conch nursery areas have proven to be effective and actually increases catches of adult size conch in neighboring areas, contributing to overall productivity.

Implementation advice: Fisheries and environmental authorities as well as fishers have a joint duty to conserve the stock of queen conch and ensure sufficient reproduction and

recruitment. Decisions on allocation of areas as MPAs should be taken in consultation with the fishing communities dependent upon these; the identification and allocation should be based on representation and networking criteria and the effectiveness should be monitored and evaluated at least every 5 years.

19. Harvest limits per area are established by the national governments

Justification: Based on the information from stock assessments and Non-detriment Findings (NDFs) it is preferrable to determine the maximum sustainable yield (MSY). Scientific evidence shows that a minimum density of 50 adult conch/hectare (but desirable of 100 adult conch/hectare) is a standing yield that is sustainable in most areas of the Caribbean. In areas below the minimum density it is not recommended to harvest conch commercially.

Implementation advice: Recognizing the costs of stock assessment, the lack of data and the extension of fished areas, it is recommended to conduct stock assessments at least every 5 years. A regionally agreed stock assessment methodology for queen conch is available and can be followed. Moreover, it is advised to make use of local knowledge in the fishing communities when conducting these assessments.

20. Bag limit of 5 Conch per day for recreational fishers

Justification: Recognizing that recreational fishing for conch is practiced widely and is difficult to control or monitor, it is advised to regulate this through a bag limit of 5 conch per person per day. This measure will establish the distinction between commercial and recreational fishers for conch. Recreational fishers are not allowed to sell their catch and are not obliged to report their catch.

Implementation advice: This measure is hard to monitor, but makes small harvests for personal household consumption legal, while communicating to the recreational sector that not everything is allowed. It will increase clarity and reduce conflicts between the commercial and recreational sector and limit the overall take by recreational fishers.

21. National level queen conch conservation and management plans

Justification: In order to effectively implement this regional harmonized management plan, it is required that fisheries authorities, queen conch fishers and other relevant stakeholders, develop at the national level the required national plan for ministerial endorsement, as well as related regulations that will enable implementation and enforcement of the plan.

Implementation advice: National plans are required to guide the sector towards sustainability, to generate findings for certain measures, as well as to communicate joint goals, measures and efforts to all stakeholders in the sector. The use of an Ecosystem Approach to Fisheries is essential to create buy-in and ownership for the plan and ensure implementation after the planning phase. National management plans will follow guidelines given in the regional management plan.

22. Traceability of queen conch throughout the value chain

Justification: Export markets and consumers increasingly demand traceability of food products throughout the value chain. Moreover, in the joint efforts to reduce IUU fishing of queen conch, traceability (including catch certification) plays an important role.

Implementation advice: While traceability is often considered extra work and a hassle by primary producers, it is already required by export markets and is increasingly demanded by the tourism industry (domestically and Caribbean wide). Traceability has the advantage that legal and illegal fishing practices can be separated and allows legally harvested products to fetch higher prices. In contrast, the market opportunities for illegal conch products will be reduced. Associated benefits in terms of supporting hygienic handling of the product, quality and food safety are large as well.

23. Develop and progressively implement a certification program to promote legal conch consumption in the Wider Caribbean.

Justification: Queen conch meat may be deteriorated or contaminated (i.e., *E. coli* bacteria) due to the lack of ice during fishing trips, especially those lasting several days; therefore the landed conch do not meet sanitary conditions for human consumption. Sanitary conditions are becoming stricter with the establishments of EU and US health, food safety and handling standards imposed on imports. Some countries are working towards improving these standards; however, they need to be applied across the region in order to be successful.

Implementation advice: With the support of sub-regional organizations, countries will work collaboratively in developing mechanisms to obtain HACCAP (Hazard Analysis and Critical Control Points) certification in the queen conch fishery.

Long-term recommended management measures are:

24. Develop and implement a digital catch and effort data entry and analysis system

Justification: In order to establish a sustainable queen conch fishery a regional harvest strategy needs to be developed. Such a strategy would include improving data collection, performing credible data analysis, defining control rules, and applying scientific recommendation using the control rules. For that, data should be digitalized, proofed and organized in a way that facilitates stock assessments.

Implementation advice: Agree to progressively compile national and regional fishery-dependent databases for better stock assessments. The developing of a digital system based on an ID verification would maximize the benefits of this complex analysis. The ID verification system will allow viewing, retrieving and modifying specific sets of files stored in the platform. Fishers can access the online platform. Case studies in the Bahamas or Belize, where digital systems are being utilized, can be analyzed for further development.

25. Progressive inclusion of co-management strategies

Justification: Decisions regarding fisheries in general and the queen conch fishery in particular, are being taken by high-level government officials, with insufficient involvement of the stakeholders in most places. Fishermen understand problems in the fishery and many times express their concerns, or recommendations, but usually these inputs are not going through due to low levels of fishermen organization and empowerment, resulting in fisheries co-management in the Caribbean remaining at the pre-implementation phase.

Implementation advice: Agree to define a proper legal framework for the promotion of co-management in fisheries, and work with the local communities to increase their willingness to participate.

26. Develop collaborative arrangements needed to generate habitat maps at the scale needed for better fisheries management.

Justification: The majority of the queen conch fishing grounds lack good bathymetry and benthic habitat maps of the seascape at a useful scale. Developing of these kinds of maps demands special resources, technology and funding. The lack of proper maps have limited the development and application of spatially defined fisheries management measures.

Implementation advice: Work collaboratively to join human, technical and financial resources that result in better habitat mapping, including deeper areas where much of the queen conch fishing is currently taken place.