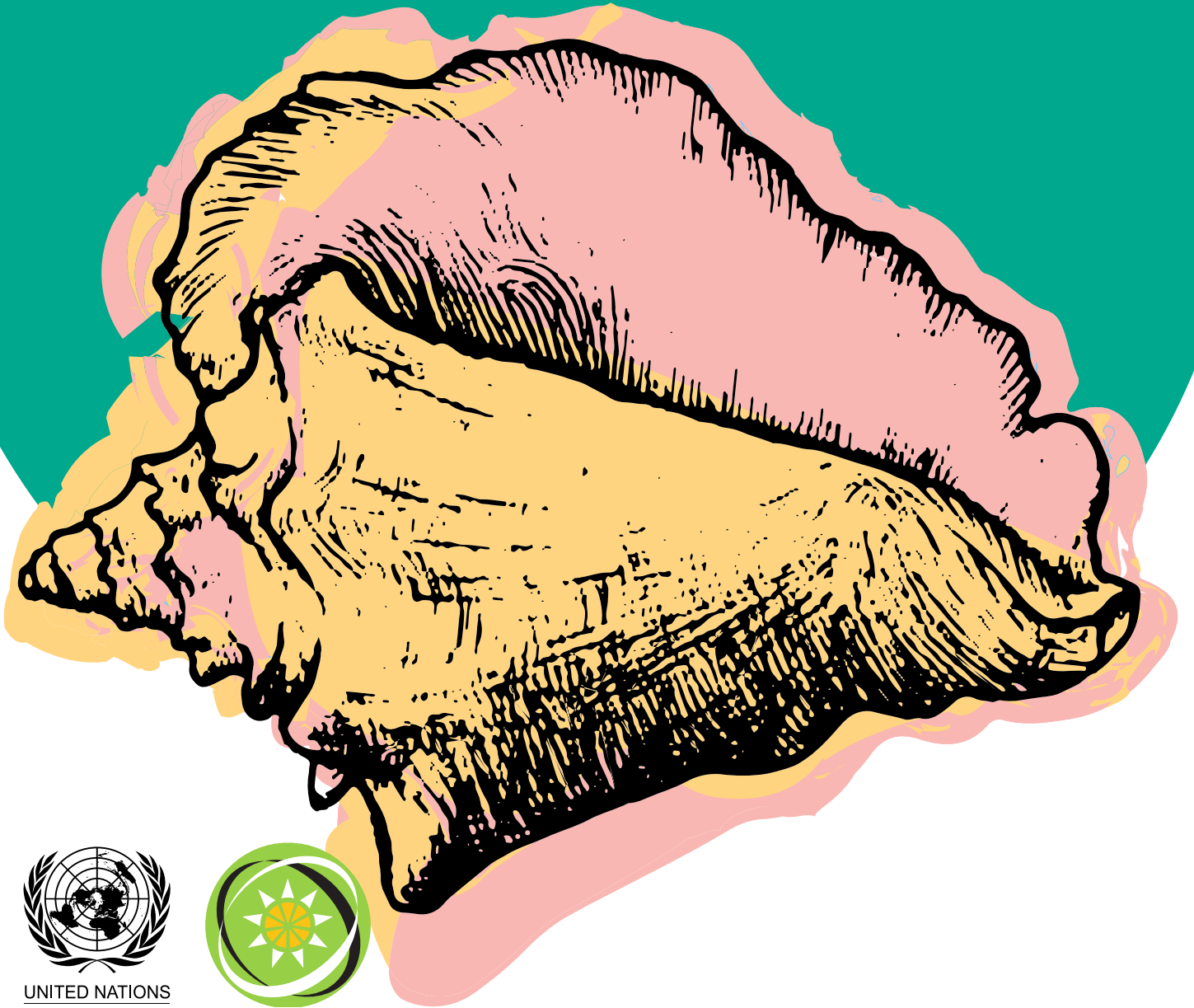




Blue BioTrade in Grenada:

Developing value for the sustainable
trade and production of queen conch
in the Eastern Caribbean
COUNTRY CASE STUDY



UNITED NATIONS
UNCTAD



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UNCTAD/TCS/DITC/INF/2022/4

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Acknowledgements

The project entitled “Seizing the trade and business potential of Blue BioTrade products for promoting sustainable livelihoods and conservation of marine biodiversity in selected Organisation of Eastern Caribbean States (OECS) Countries” (Blue BioTrade Project) is funded by the OECS and the European Union under the Regional Integration Through Growth Harmonisation and Technology (RIGHT) project, and implemented by the United Nations Conference on Trade and Development (UNCTAD), the OECS and the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

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**Co-funded by
the European Union**

Explanatory notes

References to “dollars” and “\$” indicate United States dollars, unless otherwise stated.

References to “EC\$” indicate Eastern Caribbean dollars.

Use of a dash (–) between dates representing years, e.g., 2015–2018, signifies the full period involved, including the initial and final years.

Reference to metres is represented by “m” and feet by “ft”.

Reference to kilograms is represented by “kg” and pounds by “lbs”.

Reference to nautical miles is represented by “NM”.

To reflect the closest estimate for data, decimals and percentages are rounded off. Numbers in money are rounded to the nearest dollar, unless otherwise stated.

Decimals and percentages in this publication do not necessarily add to totals because of rounding.

Acronyms and abbreviations

ACP	African, Caribbean and the Pacific
CFMC	Caribbean Fisheries Management Council
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CRFM	Caribbean Regional Fisheries Mechanism
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross domestic product
HACCP	Hazard Analysis Critical Control Point
IUU	Illegal, unreported and unregulated (fishing)
NDF	Non-detriment finding
OECS	Organisation of Eastern Caribbean States
OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
RQCFMCP	Regional Queen Conch Fishery Management and Conservation
RST	Review of Significant Trade
UNCTAD	United Nations Conference on Trade and Development
WECAFC	Western Central Atlantic Fishery Commission

Executive summary

The queen conch (*Strombus gigas*) is a highly appreciated seafood delicacy with important non-food uses, including therapeutic products and handicrafts. While global demand is booming, small-scale coastal producers in the Eastern Caribbean do not fully seize the opportunities offered by sustainable conch markets. In Grenada alone, fishery efforts have been in decline for at least a decade, making it the smallest conch fishery in Caribbean Regional Fisheries Mechanism (CRFM) countries (CRFM, 2021). This is despite the country's notable seafood processing and conch value addition capacity.

Crucially, the queen conch is a CITES Appendix II-listed species, which means that trade in specimens of the species should be subject to regulations compatible with legal, traceable and sustainable use. As of the production of this report, Grenada has been subject to a recommendation to suspend trade under CITES linked to its non-submission of annual reports since 2013, and another suspension linked to a CITES Review of Significant Trade (RST) since 2006.

In response to the need to enable sustainable trade, UNCTAD, OECS (with the financial support of the European Union) and CITES joined forces to design a pilot project to test the application of the revised UNCTAD BioTrade¹ Principles and Criteria (2020)² to the marine environment, focusing on the queen conch value chain in the countries of Grenada, Saint Lucia and Saint Vincent and the Grenadines. The project, "Blue BioTrade: Promoting sustainable livelihoods and conservation of marine biodiversity in the Caribbean region (Blue BioTrade Project)³ was launched in October 2020.⁴

This case study presents the value chain analysis of the queen conch production in Grenada. It builds on a 2021 stakeholder mapping of queen conch value chains of Grenada, Saint Lucia and Saint Vincent and the Grenadines.⁵ It is the second of three country case studies to be produced under the Blue BioTrade Project, the first being the country case study of Saint Lucia (UNCTAD, 2022). These case studies will contribute to the development of a regional Blue BioTrade Action Plan, which will be presented at a workshop to be held in 2022.

Main findings

- **Queen conch landings:** Between 2013 and 2017, a total of 143 tons of conch meat were harvested in Grenada, according to landing data from the Fisheries Division (Mitchell, 2021). During this period, an average value of \$163,783 of dirty conch was landed annually. Most conch in Grenada is landed at informal landing sites with limited or no data collection, so these figures likely represent an underestimate of conch landings in Grenada.
- **Grenada has high capacity in seafood processing and conch value addition at the commercial level:** Grenada is notable because it has two Hazard Analysis Critical Control Point (HACCP)-certified facilities (Spice Isle Fish House and Vineyard Seafoods) conducting processing necessary for the United States of America and European Union markets. Processors are known for the large variety of conch products offered, which incorporate conch trimmings that can be wasted by other processors, representing commercial best practice to maximize value.

¹ The UNCTAD BioTrade Initiative aims to contribute to the conservation and sustainable use of biodiversity through the promotion of trade and investment in BioTrade products and services. BioTrade is understood as activities related to the collection or production, transformation and commercialization of goods and services derived from biodiversity (genetic resources, species and ecosystems) under environmental, social and economic sustainability criteria, called "BioTrade Principles and Criteria" (UNCTAD, 2020).

² Since their inception in 2007, the BioTrade Principles and Criteria have been the core foundation that guides the implementation of activities of the UNCTAD BioTrade Initiative, the BioTrade programmes and other related activities. In 2020, the BioTrade Principles and Criteria were revised, complementing the evolving legal and policy framework of BioTrade (UNCTAD, 2020).

³ For further information on the OECS Blue BioTrade Project, see UNCTAD, "Blue BioTrade: Promoting sustainable livelihoods and conservation of marine biodiversity in the Caribbean region", available at <https://unctad.org/project/blue-biotrade-promoting-sustainable-livelihoods-and-conservation-marine-biodiversity>.

⁴ See Blue BioTrade Project launch event, available at <https://unctad.org/news/blue-biotrade-project-set-improve-fortunes-eastern-caribbean>.

⁵ For more information, see UNCTAD, "Stakeholder maps of the conch value chains of Grenada, Saint Lucia, and Saint Vincent and the Grenadines", available at <https://unctad.org/webflyer/stakeholder-maps-conch-value-chains-grenada-saint-lucia-and-saint-vincent-and-grenadines>.

- **Declines in fishing effort and investment in local fishery, thought to be linked to the CITES recommendation to suspend trade:** Interviewed fishers indicated that fishing efforts and the entry of new fishers to the conch market have generally declined due to CITES' recommendations to suspend trade under the RST process and failure to submit annual trade reports, hindering the export potential of harvested conch.
- **Grenada could be subject to a potential additional trade suspension under the National Legislation Project if no legislative action is taken in the next months:** This was decided at the seventy-fourth meeting of the Standing Committee in Lyon, France, 7–11 March 2022.⁶ This additional trade suspension under CITES could have a detrimental impact on the reputation of Grenada as a harvesting country of queen conch. Grenadian authorities need to consider taking urgent steps to respond to this and other recommendations to suspend trade, taking advantage of support and guidance available from the CITES Secretariat as to the necessary steps for regularisation. As of the publication of this report, Grenada has developed a tentative legislative plan and timetable for the preparation of relevant policy and draft legislation for further approval of national implementing legislation of the CITES Convention for all covered species in the country.

Priority recommendations and needs identified by the Grenada Fisheries Division

- **Enhanced cooperation with Grenadine Islands due to shared stock:** Conducting stock assessments in collaboration with neighbouring countries, primarily Saint Vincent and the Grenadines, was deemed necessary, as conch is a migratory species and fishing grounds in Grenada are near to the border with Saint Vincent and the Grenadines.
- **Development of a shared management plan with Saint Vincent and the Grenadines:** Collaborating with the relevant authorities in Saint Vincent and the Grenadines in the development of a shared management plan for conch harvest on the Grenadine bank was identified as a need, and a recommendation was made to provide sufficient resources for its execution.
- **Dive training and certification for fishers:** Mandatory training and certification for dive fishers in Grenada should be organized and monitored by the Grenadian Fisheries Division.
- **Enhanced social protection for divers:** This is necessary if divers don't possess health insurance coverage (which the majority do not). A one-time payment of EC\$10,000 is necessary for access to the local hyperbaric chamber, a cost well in excess of what is accessible to most fishers. Further collaboration is needed with national and local health authorities, and innovative financial mechanisms developed to provide financial support to divers.
- **Additional resources for fisheries support:** The need for additional financial support to the Grenadian Fisheries Division was also articulated. Additional resources are needed for staffing to provide support in areas of quality control, data collection and management, and point of entry data collection.

Study recommendations

- **Urgently take steps to address CITES' recommendations to resume trade:** Grenada is currently subject to a recommendation to suspend trade in all CITES-listed species, as it has not submitted annual reports dating back to 2013. Grenada has also been under a CITES recommendation for RST for *Strombus gigas* since May 2006. In addition, Grenada has not fully implemented the recommendations made by the CITES Animals Committee resulting from its nineteenth meeting (AC19) (August 2003). A road map to addressing this trade suspension is articulated in this report. Steps include, but are not limited to, the preparation of annual reports, improvement of fisheries data collection, design and implementation of a long-term population monitoring programme, and conducting a revision and review of recommendations outlined by the Animals Committee AC19 meeting.

⁶ For more details of this potential CITES suspension, see SC74 Sum.4 (Rev.1) (08/03/2022) – p.10: <https://cites.org/sites/default/files/eng/com/sc/74/exsum/E-SC74-Sum-04-R1.pdf>.

- **Conduct a stock assessment in association with other OECS countries:** A more robust data collection programme and queen conch stock assessment are necessary to identify fishing grounds with different densities of young and adult queen conch and determine the biomass and proportion of the population that is available to the fishery. This information will help to establish protected nursery areas to prevent illegal fishing of immature conch and allow for the establishment of a total allowable catch for the fishery. Collaboration with other OECS countries, in particular Saint Vincent and the Grenadines, should be considered, as they share neighbouring fishing grounds. Sharing the costs associated with stock assessments across countries could reduce the financial burden of conducting these important studies. The Blue BioTrade Project is currently seeking donor support to conduct a queen conch stock assessment in Grenada.
- **Maximize domestic value of queen conch through partnership with tourism operators:** Until the legal export of queen conch is enabled, the value of harvested conch could be maximized through further partnership with local tourism operators and restaurants. Partnerships focused on promoting sustainable consumption could provide more benefits to coastal communities in the long run. Domestic tourism oriented around promoting sustainable conch consumption should be considered, as international tourism remains volatile due to the coronavirus disease (COVID-19) pandemic.
- **Establish a closed season based on local research:** Even though there is a reduction of queen conch fishing effort during the spiny lobster fishing period (September–April), there is still a need to protect the fishery from the harvesting of adult spawning individuals during the peak spawning season. A field study is needed to determine the key spawning grounds and peak spawning season (as determined by the number of mating individuals and egg masses found during a specific period during the year) to establish an appropriate closed fishing season.
- **Invest in secondary/informal landing site infrastructure:** As queen conch is landed at several secondary landing sites that are largely informal and lacking basic infrastructure, investment is needed at these sites – not only for data collection purposes, but more importantly for health and safety reasons.
- **Invest in data collection at secondary/informal landing sites:** Data collection at these sites is limited, and the large number of secondary sites puts pressure on the limited personnel capacity of the Grenada Fisheries Division. Methods of submitting data on landing electronically and remotely should be explored.
- **Capitalize on existing high-capacity certified facilities:** With two HACCP-certified processors, Grenada is well placed to move towards the exportation of queen conch to high-value markets. The high volumes of trade of non-conch products with the United States by these certified facilities represents a strength of this value chain that could be leveraged for the exportation of queen conch.
- **Promote use of the BioTrade Self-Assessment Tool⁷ by large processors:** The use of the BioTrade Self-Assessment Tool by processors is the first step in understanding sustainability in their processes and supply chains. This is particularly beneficial for larger export-oriented stakeholders who are interested in participating in high-value export markets. The use of the BioTrade Self-Assessment Tool will:
 - (a) Enable processors in Grenada to understand existing strengths and weaknesses of their value chain against important social, economic and sustainability criteria. For larger processors, it will also help to identify the necessary steps towards accessing high-value export markets.
 - (b) Enhance understanding of what BioTrade is about and how far the actors are from the point of view of sound sustainability criteria. In doing so, important actions to improve the position of the value chain in the future through the Regional Plan of Action for queen conch in the OECS could be identified.
 - (c) Help in the development of a road map towards specific internationally recognized good practices verification and/or (voluntary) sustainability standards certifications, such as the Union for Ethical BioTrade certification and verification schemes.⁸

⁷ Available at www.sustainabilitymap.org/biotrade_unctad.

⁸ See www.ethicalbiotrade.org for more details.

- **Capitalize on demand from geographically proximate markets:** Demand for queen conch from Grenada is high in Trinidad and Tobago for both processed and unprocessed conch. Stakeholders consulted identified Trinidad and Tobago as an important target market where Grenada has a comparative advantage due to proximity and strong transportation links.
- **Conduct public awareness campaigns targeted at subsistence fishers:** Due to its relatively shallow waters on the eastern and south-eastern coasts, subsistence fishing for conch by freediving is possible. Scuba gear is used for commercial fishing in waters from 60 to 100 ft. The effects of this type of conch fishing on the health of the resource is unclear. It is recommended that awareness-raising campaigns on the importance of not harvesting juvenile conch be conducted as a precaution.
- **Seek research partnerships to understand environmental challenges to fishery health:** Land-based sources of pollution and coastal development are significant challenges to the conch fishery across Grenada. Land-based runoff due to deforestation, particularly in Petite Martinique and Carriacou, presents challenges to coastal water quality and conditions. Further, coastal development for tourism purposes and marine-based pollution from ship repair services also present a challenge to fishery ecology. Research partnerships should be sought with regional academic institutions to understand the effects of these environmental changes on the health of the fishery.
- **Further research on the health impacts of conch fishing on coastal communities:** Dive-based fishing activities such as conch and lobster fishing have health risks for fishers. Further research is needed to better understand the effect of this type of fishing on fishers' health at the population level. As a precaution, further investment in diver training, guidance on safe diving practices, and the implementation of diver insurance schemes should be considered by Grenada and other OECS members.

1. INTRODUCTION

Queen conch (*Strombus gigas*), known as "lambi" in Grenada, is an appreciated seafood delicacy with additional non-food uses, including therapeutical products and handicrafts. While global demand for queen conch meat is booming, small-scale coastal producers in Grenada could further improve the income earned from this resource by exploring sustainable conch markets, seeking cost reduction methods, and adding value to conch by-products. So far, Grenada has been subject to two recommendations to suspend trade in queen conch under (a) the CITES RST, which has prohibited the export of conch to receiving countries since May 2006; and (b) a suspension of trade in all CITES-listed species from Grenada (which includes the queen conch), due to failure to submit annual trade reports since 2013.

In 2020, UNCTAD, OECS (with the support of the European Union) and CITES joined forces to design a pilot project to test the application of the revised UNCTAD BioTrade⁹ Principles and Criteria (2020)¹⁰ to the marine environment, focusing on the queen conch value chain in the countries of Grenada, Saint Lucia and Saint Vincent and the Grenadines.

The Blue BioTrade Project aims to promote trade and investment in marine biological resources in line with social, economic and environmental sustainability criteria, known as the BioTrade Principles and Criteria (revised in 2020) (UNCTAD, 2018, 2020). Integrating BioTrade Principles and Criteria into the marine environment can promote the sustainable use of scarce and vital oceanic living resources (at the genetic, species and ecosystem levels), and can lessen the negative impacts of human and economic activity over marine ecosystems. Blue BioTrade is a spinoff of UNCTAD's Oceans Economy and Fisheries Programme¹¹ and the BioTrade Initiative.¹²

1.1 Background

Grenada is one of the southernmost of the Lesser Antilles in the Eastern Caribbean. It is located to the south of Saint Vincent and the Grenadines, north of Trinidad and Tobago, and west of Barbados.

In 2020, Grenada had a population of 113,000 people and a gross domestic product (GDP) of approximately \$1.042 billion and GDP per capita of \$9,513 (World Bank Databank, 2022). Like many other islands in the region, tourism dominates the economy, accounting for 45.05 per cent of GDP (World Bank, 2021). Official figures indicate that fisheries account for 1.4 per cent of GDP, but this is likely a significant underestimate of the true contribution of fisheries to the economy (Food and Agriculture Organization of the United Nations [FAO], 2019). Despite its relatively small contribution to GDP, fisheries represent an important social and economic safety net in the face of macroeconomic shocks such as hurricanes or declines in tourism revenue (due to the COVID-19 pandemic or other global crises). The Grenadian fisheries sector is dominated by the harvest of tuna or tuna-like species, accounting for approximately 70–75 per cent of landings by weight (FAO, 2019).

1.2 Methodology

This report is the second of three country case studies to be completed as part of phase 1 of this project. The primary objective of this study is to assess the potential of Grenada to produce queen conch and conch-based

⁹ The UNCTAD BioTrade Initiative aims to contribute to the conservation and sustainable use of biodiversity through the promotion of trade and investment in BioTrade products and services. BioTrade is understood as activities related to the collection or production, transformation and commercialization of goods and services derived from biodiversity (genetic resources, species and ecosystems) under environmental, social and economic sustainability criteria, called "BioTrade Principles and Criteria" (UNCTAD, 2020).

¹⁰ Since their inception in 2007, the BioTrade Principles and Criteria have been the core foundation that guides the implementation of activities of the UNCTAD BioTrade Initiative, the BioTrade programmes and other related activities. In 2020, the BioTrade Principles and Criteria were revised, complementing the evolving legal and policy framework of BioTrade (UNCTAD, 2020).

¹¹ For more information, see UNCTAD, "Oceans Economy and Fisheries", available at <https://unctad.org/topic/trade-and-environment/oceans-economy>.

¹² For more information, see UNCTAD, "BioTrade", available at <https://unctad.org/topic/trade-and-environment/biotrade>.

products, and importantly the necessary steps to be taken to address the current CITES trade suspension. To achieve this objective, the report is guided by the methodology to support value chains for BioTrade products.¹³ The value chain is an “interdependent system or network of productive activities that exists both within and between firms”, which when analysed can provide insights as to opportunities to improve sustainability, value addition employment, income generation and benefit-sharing (Porter, 1990; UNCTAD, 2018).

This country case study aims to provide details on the reality of queen conch production in Grenada, identify challenges and BioTrade opportunities considering the development of the local value chain. It also aims to help local stakeholders better understand ecological consequences of illegal and unsustainable fishing of the queen conch, the economic potential of sustainable production and utilization of its products and by-products, as well as their market potential, through implementation of sustainability guidelines such as the BioTrade Principles and Criteria. Further, this study is intended to support local stakeholders in understanding legal export requirements.

For this publication, the authors conducted a desk review of available information on the Grenadian conch fishery and conducted interviews with key national stakeholders within the industry. Interviews were conducted with 13 stakeholders playing various roles in the conch industry. For an outline of this semi-structured interview, see the annex to this report.

Figure 1. Fishing boats in Petite Martinique, Grenada



Source: Alexander Girvan (2021).

¹³ For further information on this methodology, see UNCTAD, “BioTrade”, available at www.biotrade.org/ResourcesPublications/unctad_ditc_bcc_2008_1_Eng.pdf.

2. PRODUCT ASSESSMENT

2.1 Location of stock

Grenada has a land area of 344 km² and an exclusive economic zone in the sea of 26,000 km², approximately 75 times larger than its land area (CARICOM, 2019). Most of the sea area is deep oceanic water, with a relatively small area of shallow shelf off the eastern and south eastern coasts of mainland Grenada, and on the isles of Carriacou and Petite Martinique (figure 2). This has determined the nature of the fishery, which is dominated by large oceanic pelagic species such as tuna. The other principal constituents of the fishery are demersal (reef fish such as snapper, grouper and parrotfish) and small pelagics (mostly scads) caught close inshore. Shellfish (lobster and conch) are caught in small quantities, but as they are disproportionately valuable, make a significant economic contribution (ACP Fish II, 2012).

At present, queen conch fishing is conducted using oxygen dive tanks on the eastern and south-eastern coasts of the mainland of Grenada, and south-east of sister isles Carriacou and Petite Martinique. The fishery has become relevant especially for the fishers on the eastern coast of Grenada and those in Carriacou and Petite Martinique (Mitchell, 2021).

2.2 Available information on health of local stock

Based upon the limited amount of conch landed (which is partially due to CITES-related restrictions and the decline of investors interested in this particular fishery), it can be concluded that the fishing effort for queen conch, especially on mainland Grenada, has declined significantly (Mitchell, 2021). While this may suggest the possibility of larger and healthier queen conch stocks, improving data collection and a national queen conch stock assessment determining the status of the stock will provide valuable information on the actual structure and health of the population, and would facilitate compliance with CITES requirements.

Figure 2. Political map of Grenada



Source: Peter Hermes Furian - Adobe Stock.

3. REGULATORY FRAMEWORKS AND MANAGEMENT PLANS

3.1 National regulations and management plans

The Grenada Fisheries Act of 1986¹⁴ (“the Fisheries Act”, subsequently amended by the Amendment Act of 1999¹⁵) governs the country’s development, management and regulation of fisheries and fishing-related activities in the waters of Grenada. It provides the framework under which the Fisheries Division and the Minister of Agriculture manage fisheries as well as access and use of marine resources. It is also the basis for regulating (a) the processing of fishing products and (b) the exportation of fishing products, among others in the country. The Fisheries Act, together with its related fisheries regulations, has become a part of the Harmonised Fisheries Regulations for the OECS (FAO, 1989).

Under section 3 (Part II) of the Fisheries Act, the Minister of Fisheries has the authority to create new implementing regulations (as he/she sees fit) to ensure the optimum utilization of the fisheries resources in the fishery waters of Grenada. Such regulations would ensure that the provisions of the Fisheries Act are interpreted through specific requirements. In the case of queen conch conservation, section 18 (Part V) of the Fisheries (Amendment) Regulations 1996¹⁶ stipulates:

- (1) No person shall take, sell, purchase or have in his possession any “immature conch”.
- (2) The Minister may by notice published in the Gazette and in a newspaper printed or circulated in the State declare any period as a closed season for conch.
- (3) No person shall fish for conch during the period of the closed season.
- (4) In this Regulation, “immature conch” means:
 - (a) a conch the shell of which is smaller than 18 centimetres (9 ¼ inches) in length; or
 - (b) a conch the shell of which does not have a flared lip; or
 - (c) a conch with a total meat weight of less than 255 grams (8 ounces) after the removal of the digestive gland.

Section 18 (2) delegates power to the Minister to declare any period as a closed season for the queen conch. Seasonal closure under section 18 (3) could, in principle, ensure unhindered reproduction, reduce mortality and sustainably increase productivity of the species. However – as the ministerial power in section 18(2) is discretionary in nature and considering that information on spawning grounds and the queen conch reproductive period in Grenada may be limited – there is currently neither a legislative instrument nor administrative guidance for a closed fishing season for the queen conch.

In the national reports of the Government of Grenada in 2012 and 2014 (as presented in the 2017 FAO Regional Queen Conch Fisheries Management and Conservation Plan), a closed fishing season during the period of July to August was indicated (FAO, 2017). However, further information and/or confirmation of whether this is in fact in place and how it is being implemented are yet to be confirmed by the Fisheries Division. Interestingly, despite the lack of closed fishing season validated by a ministerial notice, the fisherfolk of Grenada utilize traditional knowledge and harvest queen conch primarily during the months of September to April and are well informed of the minimum legal size limit of mature conch. Immature conch (as defined in section 18 (4) (a) to (c)) is seized by Fisheries Inspectors (Mitchell, 2021), who visit queen conch landing sites on a regular basis to ensure that fishers comply with the regulations.

Additional legislation that applies to the fisheries sector in general in Grenada includes:

¹⁴ For the full text, see www.fao.org/faolex/results/details/en/c/LEX-FAOC129300/.

¹⁵ The Amendment Act of 1999 additionally sets out provisions relating to seafood hygiene, for which the Chief Public Inspector (Ministry of Health) regulates post-harvest activities, including those related to the exportation of seafood products.

¹⁶ For more information see <http://extwprlegs1.fao.org/docs/pdf/grn6904.pdf>.

- (a) Fisheries (Marine Protected Areas) Order (Cap. 108). 2013-12-23;¹⁷
- (b) Fisheries (Marine Protected Areas) Regulations (Cap. 108). 2013-12-23;¹⁸
- (c) Fisheries (Fishing Vessels Safety) Regulations 1990 (S.R.O. No. 3 of 1990). 1989 10 31.¹⁹

In 2012, the Fisheries Policy for Grenada²⁰ was developed under the African, Caribbean and the Pacific (ACP) Fish II – Strengthening fisheries management in ACP States project.²¹ The objective of the project was to support the formulation of a fisheries and aquaculture policy for the Commonwealth of Dominica, Grenada, and Saint Vincent and the Grenadines. The policy was endorsed and approved by the Government of Grenada but has not been implemented yet. The latter may be a contributing factor as to why no regulation regarding closed seasons is in place so far.

The ACP Fish II fisheries policy document includes five key themes that were chosen to represent the main concerns expressed by stakeholders and to provide coherence to the wide range of policy issues covered.

The themes – neither in order of priority, nor as completely discrete, separate entities, as there are large areas of overlap – are as follows:

- (a) Theme 1: Enhancing the status and capability of fishers
- (b) Theme 2: Sustainable stewardship and conservation of aquatic resources
- (c) Theme 3: Realizing the development potential inherent within the fisheries sector
- (d) Theme 4: Maintaining the sector's role in sustaining livelihoods of the poor
- (e) Theme 5: Generating a positive interaction with the wider economic community of Grenada.

3.2 Key policy statements

The most recent fisheries policy document is the aforementioned 2012 Fisheries Policy for Grenada, which provides a series of relevant statements that are still valid today and describe the range of topics encountered in a comprehensible manner, and again reflects the five key themes mentioned above. For each policy topic, objectives are described, and indicative priority ranking, and scheduling are given. The policy is formulated in line with a realistic view of the capacity of the Fisheries Division and the institutions that it depends upon:

- (a) Theme 1: Enhancing the status and capability of fishers:
 - (i) Licensing and registration: Fishing boats should be licensed, and fishers registered as a basic management requirement
 - (ii) Fishers' associations: Fishers will be encouraged to form appropriate associations that are seen as central to the sector's development and management in the longer term
 - (iii) Improving fishers' commercial know-how: Developing commercial acumen within the fishing industry is seen as being important for both livelihoods and the industry itself: "Strengthening fisheries management in ACP States"
 - (iv) Encouraging fishers to take responsibility for managing the resource they depend upon through co-management and community-based management is rightly a crucial long-term goal of the authorities
 - (v) Fishers taking more responsibility for their own socioeconomic situation: This includes pension provision and critical equipment insurance

¹⁷ For more information, see www.fao.org/faolex/results/details/en/c/LEX-FAOC129302.

¹⁸ For more information, see www.fao.org/faolex/results/details/en/c/LEX-FAOC129303.

¹⁹ For more information, see www.fao.org/faolex/results/details/en/c/LEX-FAOC004295.

²⁰ For more information, see Fisheries Policy for Grenada at <http://acpfish2-eu.org/uploads/projects/id140/11544%20-%20ACPFISH%20II%20-%20CAR%20-%201.2%20-%20B2b%20-%20Policy%20Grenada%20-%2001.pdf>.

²¹ Project implementation report is available at http://acpfish2-eu.org/uploads/projects/id140/FTR_new.pdf.

- (vi) Safety at sea remains a high priority, but one where fishers should take a more responsible role, rather than relying upon enforcement by the authorities
- (b) Theme 2: Sustainable stewardship and conservation of aquatic resources:
 - (i) Sustainable use of large pelagic resources (shared migratory stocks) where the offtake of Grenada is tiny in comparison with the total catch: Management of the stocks is largely out of Grenadian hands, but Grenada should still be involved where practicable
 - (ii) Sustainable use of the demersal species and small pelagics, which are largely locally recruited and so managing these stocks is clearly a domestic matter, requiring increased commitment by the Grenadian authorities
 - (iii) Maintaining effective data collection, analysis and reporting systems: Closely tied in with the point above, the Fisheries Division needs to establish a capable data collection and analysis system
 - (iv) A rational response should be made to the international obligations of Grenada, honouring those already signed, while judging new agreements in terms of their net practical benefit to Grenada
 - (v) Monitoring control and surveillance and reducing illegal, unregulated and unreported (IUU) fishing in Grenadian waters: Continuing to oppose IUU fishing within the Grenadian exclusive economic zone to the extent that national capacity allows and involving the fishing community in surveillance where possible
 - (vi) Marine protected areas: Following the successful start of the ACP Fish II Programme, with expansion in line with Caribbean Challenge goals (20 per cent of coastal waters by 2020)
 - (vii) The ecosystem approach to fisheries management will be adopted where pragmatically possible, especially regarding land–water interface issues that are now seen to be crucial
- (c) Theme 3: Realizing the development potential inherent within the fisheries sector:
 - (i) Maximizing the economic benefit from the aquatic bioresource for all Grenadian people remains an overriding guiding principle, subject to the wise stewardship of the resource base
 - (ii) The seafood processing and export industry: The seafood post-harvest industry of Grenada will continue to be supported through maintaining an effective hygiene and food safety regime, in cooperation with the Ministry of Health as the competent authority
 - (iii) Aquaculture: Although aquaculture has yet to contribute to production, it is important to prepare for a time when it may do so. Appropriate measures to support farmers and protect the environment are set out
 - (iv) Subsidies and concessions: Subsidies to the fishing industry are justified politically but not necessarily economically, and accordingly should be reviewed periodically. They should, however, be administered efficiently and in a timely manner
- (d) Theme 4: Maintaining the sector's role in sustaining livelihoods of the poor:
 - (i) Fisheries livelihoods for the poor: The need to retain fishing as a traditional fallback for those with little alternative economic recourse is accepted as an essential guiding principle for “Strengthening fisheries management in ACP States”
 - (ii) Segments of the fishery available to the poor: The stocks most accessible to the poor, the small pelagics (jacks) and close inshore demersal fish, should be preserved for their exploitation should the need for such measures arise
 - (iii) Interaction between fisheries and the wider economy: The potential for conflict between the poorer segments of the fishing industry and alternative users of the coastal zone is recognized, as is the need for mitigation measures.
- (e) Theme 5: Generating a positive interaction with the wider economic community of Grenada:

- (i) The tourism and leisure industries' interaction with fisheries: The need for fisheries policy to address the wider economy is evident given a common dependence upon the marine resource, the potentially conflicting demands, and the importance of tourism
- (ii) Preserving high-profile species: In this connection, the future need to further conserve "flagship" species with high tourism and amenity appeal, such as turtles, is recognized
- (iii) The tourism-driven market for fish as a key area where imports can be reduced, and Grenadian fisheries benefitted should be supported through the widespread adoption of the necessary quality and hygiene measures.

3.3 Level of implementation of regional and international regulatory frameworks

In 2017, the Regional Queen Conch Fishery Management and Conservation Plan (RQCFMCP) was published by FAO following the recommendations of the first meeting of the Western Central Atlantic Fishery Commission (WECAFC)/Caribbean Fisheries Management Council (CFMC)/Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA)/CRFM Working Group, held in Panama from 23 to 25 October 2012. The initiative was funded by FAO, its WECAFC and CFMC, in partnership with CITES, CRFM and OSPESCA.

The RQCFMCP proposed to implement a set of management measures that could be applied at the regional or subregional level for the sustainability of queen conch populations, the maintenance of a healthy fishery and the sustenance of fishers and fishing communities. This regional plan recommended an ecosystem-based management approach that could enhance partnership and collaboration throughout the wider Caribbean region.

The 14 management measures recommended in the RQCFMCP were analysed by experts participating at the Second Meeting of the WECAFC/CFMC/OSPESCA/CRFM Working Group, held in Panama from 18 to 20 November 2014.²² There was consensus that these measures could strengthen regional management of the queen conch fishery, even though, at this point, the plan is not binding, as the 14 measures are just recommendations. The adoption of the RQCFMCP by the relevant authorities of the queen conch range States received the support of a vast group of experts, and the plan's implementation can be achieved through existing national and regional management arrangements. In fact, the majority of the proposed regional management measures are already being aligned and applied at national levels in most Caribbean countries and territories involved in the queen conch fishery.

The authors of this report conducted a review of the management measures outlined in the RQCFMCP against the level of implementation by Grenada and observations and further implementation efforts are pointed out (table 1).

²² The meeting document is available (in English and Spanish) at www.fao.org/3/i5587t/i5587t.pdf.

Table 1. Assessment of level of implementation of WECAFC-recommended queen conch management measures in Grenada

WECAFC-recommended management measures	Level of implementation by Grenada Fisheries Division	Observations and further implementation efforts
(a) Establish harmonized and simplified categories of queen conch	Grenada has adopted harmonized and simplified categories for queen conch for “dirty meat” and 100 per cent clean meat (white fillet) in conformity with the RQCFMCP. The 60 per cent clean category is not in the RQCFMCP but is a national category and is acceptable.	No further recommendations.
(b) Establish meat conversion factors	Processing categories for queen conch have been established at a conversion ratio of 5.3 for “dirty meat”, which refers to the animal without the shell, and 7.9 for 60 per cent “clean meat”, which refers to the animal with the operculum (claw) and visceral bag removed. A conversion ratio for 100 per cent clean (white fillet) has not been established yet.	The Grenada queen conch meat conversion factor of 5.3 for “dirty meat” is consistent with the conversion factor recommended in the RQCFMCP. Grenada’s queen conch conversion factor of 7.9 for 60 per cent clean is slightly different from the RQCFMCP but is acceptable. Grenada needs to establish its conversion factor for 100 per cent clean meat (white fillet) to ensure that catch landings and number of animals harvested are accurately reported to FAO.
(c) Improvement of catch and effort monitoring programmes	Catch landings and fishing effort data are being collected in some locations where queen conch landings occur, but there is a general lack of data from informal/secondary landing sites.	Monitoring of catch per unit effort data collection should continue and be strengthened to determine trends in catches and effort over time, which could serve as a proxy for conch abundance in the sea.
(d) A synchronized regional closed season (1 June–30 September)	There is no closed fishing season for queen conch.	There is a need to establish a closed season for queen conch during the peak spawning season (field research is needed to determine this period in Grenada).
(e) Develop non-detriment finding (NDF) for export of queen conch meat and its by-products	No NDF has been prepared for the export of queen conch meat.	An NDF for queen conch should be developed as soon as possible if legal export of conch meat and its by-products is to be realized.
(f) License all queen conch fishers, processors and exporters	Fishers and processors of queen conch meat are licensed by the Division of Fisheries.	The Grenada Fisheries Act of 1986 (ACP Fish II, 2012) requires the licensing of fishers and fishing vessels.
(g) Adoption of stricter regulations on autonomous diving techniques	Autonomous diving is used for harvesting of queen conch, but there is no mandatory requirement that fishers undergo professional training for use of this equipment to conduct fishing for queen conch.	Certification of professional training on proper use of scuba gear should be done by every diver to avoid accidents and deaths. Scuba certification is expensive, and therefore collaborative efforts of the Fisheries Division, queen conch processors and exporters, and non-governmental organizations must be sought.
(h) Organized patrolling	A robust enforcement of monitoring, control and surveillance operations, both in primary and secondary sites, is done to ensure that no immature conch is being harvested and landed.	Coastal patrolling and enforcement of fisheries laws should be strengthened to reduce (and eventually eliminate) illegal fishing and illegal exports of queen conch to neighbouring islands. Subregional (OECS) patrolling to reduce IUU fishing should be done in collaboration with neighbouring countries.
(i) Extended use of satellite-based vessel monitoring system (VMS) for boats with a length exceeding 10 m	There is no legal requirement for use of satellite-based VMS systems in fishing vessels.	The installation of VMS systems on fishing boats larger than 10 m should be required by law.

WECAFC-recommended management measures	Level of implementation by Grenada Fisheries Division	Observations and further implementation efforts
(j) Continuous education and outreach programmes for stakeholders	Outreach and educational programmes for stakeholders are ongoing.	Queen conch education and outreach should be expanded to include students, fishers and their organizations.
(k) National level queen conch conservation and management plans	No national queen conch management plan exists at present.	A national queen conch management plan should be developed as soon as possible and be based on the outcomes of the Blue BioTrade Project and the forthcoming regional Blue BioTrade action plan.
(l) Traceability of queen conch throughout the value chain	No traceability programme is in place for queen conch.	Traceability of the queen conch value chain should be done as soon as possible. A regional OECS scheme should provide economies of scope and scale for such an undertaking.
(m) Develop collaborative arrangements needed to generate habitat maps at the scale needed for better fisheries management	There are no queen conch habitat maps developed for the fishery.	The development of habitat maps should be done to assist in the implementation of queen conch surveys, which will provide information for the establishment of a catch quota.
(n) Adoption of subregional mechanisms to evaluate the fishery potential of queen conch using fishery dependent and independent factors	No subregional mechanism is in place to assess the status of queen conch.	The development of a subregional arrangement to conduct scientific queen conch assessments is very important for the sustainable use and conservation of queen conch and therefore should be pursued as a regional priority.
(o) Progressive inclusion of co-management strategies	No co-management agreements with non-governmental organizations have been developed yet for the management of queen conch.	Co-management arrangements with non-governmental organizations can potentially identify and secure resources to assist in the management efforts for queen conch and therefore should be encouraged and supported by countries.

3.4 Convention on International Trade in Endangered Species of Wild Fauna and Flora

Grenada became a party to CITES on 30 August 1999, and the agreement entered into force on 20 November 1999.²³ In August 2003, at its nineteenth meeting, the CITES Animals Committee, placed under a Review of Significant Trade²⁴ process the queen conch, which was categorized as being of “urgent concern” for three range States and of “possible concern” for 13 range States, including Grenada (see CITES AC19 Summary Record²⁵), and recommendations (see table 2) were formulated.

Since no response was received from Grenada to the consultation process conducted by CITES, on 12 May 2006, the CITES Secretariat informed the parties that the Standing Committee recommended all parties to suspend imports of queen conch from Grenada (Notification No. 2006/034).²⁶ Queen conch from Grenada remains to this day subject to a CITES Standing Committee recommendation to suspend trade.²⁷

²³ Available at <https://cites.org/eng/parties/country-profiles/gd>.

²⁴ Available at <https://cites.org/sites/default/files/document/E-Res-12-08-R18.pdf>.

²⁵ Available at <https://cites.org/eng/com/ac/19/index.shtml>.

²⁶ Available at <https://cites.org/sites/default/files/eng/notif/2006/E034.pdf>.

²⁷ Available at <https://cites.org/sites/default/files/notifications/E-Notif-2020-006.pdf>.

Table 2. Recommendations formulated by the CITES Animals Committee (AC19) and outcomes for Standing Committees 66 and 70

Taxonomy	Suspension valid from	Recommendations and deadlines resulting from AC19 (August 2003)	SC66 outcome (2015)	SC70 outcome (2018)
<i>Strombus gigas</i> (<i>S. gigas</i>)	12 May 2006	Within 12 months:	The trade suspension was maintained on the basis that further information was required in line with the draft format and guidelines for NDF assessments for <i>S. gigas</i> proposed at AC28, incorporating the status of stocks and addressing the AC recommendations and considering recommendations arising from the second CFMC/OSPESCA/WECAFC/CRFM Working Group meeting on queen conch.	The trade suspension was maintained on the basis that it was not possible to determine whether any progress had been made in addressing AC recommendations. On the basis of no response by Grenada, it was not possible to identify any challenges faced or in-country needs in relation to lifting of trade suspensions, although recent trade indicated an intent to trade in the future.
		(a) Establish cautious catch and export quotas, communicate these to the Secretariat and provide information for the basis of these quotas.		
		(b) Establish a standardized minimum meat weight that corresponds to adult specimens of unprocessed and processed meat.		
		(c) Design and implement a fishery data collection programme. This programme is designed to collect catch and effort data and shall include (i) a system of permits and licenses for commercial harvesters and exporters, and (ii) regular reporting of landing and export data.		
		(d) Design and implement a long-term population monitoring programme for the designated commercial fishing areas. This programme should provide reliable estimates of adult and juvenile densities within commercial fishing areas, at a minimum.		
		Within 24 months:		
		(a) Apply adaptive management procedures to ensure that further decisions about harvesting and management of the species concerned will be based on the monitoring of the impact of previous harvesting and other factors.		
(b) Give serious consideration to the recommendations of the June 2003 International Queen Conch Initiative meeting ²⁸ and commit specifically to those recommendations on: (i) Development of a regional management regime, including cooperative quota setting (ii) Law enforcement capacity and effectiveness (iii) Population assessments and other research relating to the management of queen conch.				

CITES annual reports were submitted by Grenada in 2010 and 2011, but the reports for 2012 to 2020 have not been submitted to CITES. On the basis of non-submission of annual reports, Grenada has been subject to a Standing Committee recommendation to suspend trade in all CITES-listed species since 2016.²⁹

²⁸ The International Queen Conch Initiative and CITES workshop, *Strombus gigas* Significant Trade Review – organized by the Caribbean Fisheries Management Council, funded by the United States, from 11 to 12 June 2003 in Montego Bay, Jamaica – brought together fisheries and management authorities from the range States, CFRM, FAO, other experts, the CITES secretariat and TRAFFIC Europe, to discuss the draft report, provide additional information, and formulate a number of recommendations related to both the RST and wider capacity-building issues. See <https://cites.org/sites/default/files/eng/com/ac/19/E19-08-3.pdf> for details of these recommendations.

²⁹ For more information, see <https://cites.org/sites/default/files/notif/E-Notif-2016-022.pdf>.

To date, Grenada has not published any CITES export quotas for queen conch, but according to the CITES Trade Database, direct trade in *S. gigas* from Grenada in 2010–2019 predominantly consisted of 3,880 kg of wild-sourced (W) meat exported to Trinidad and Tobago for commercial purposes, as reported by Grenada in 2010–2011 (see table 3). The United States reported imports of 138 kg of confiscated or seized meat (I) traded for personal (P) (83 per cent) and commercial (T) (17 per cent) purposes. Lower quantities of wild-sourced bodies (14 kg) and confiscated shells (22) were also reported by importers over the 10-year period.

Indirect trade in *S. gigas* originating from Grenada consisted of 12 kg of confiscated or seized meat re-exported by Haiti to the United States for personal purposes in 2015, as reported by the United States only.

Table 3. Direct exports of *Strombus gigas* from Grenada, 2010–2019

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total			
Bodies	kg	P	W	Exporter			–	–	–	–	–	–	–	–				
				Importer						14						14		
Meat	kg	T	W	Exporter	1 602	2 278	–	–	–	–	–	–	–	–	–	3 881		
				Importer														
				P	I	Exporter			–	–	–	–	–	–	–	–	–	
						Importer	45	26	9	7	1	8	16	5			115	
T	I	Exporter			–	–	–	–	–	–	–	–	–	–				
		Importer	12									11		23				
Shells	–	P	I	Exporter			–	–	–	–	–	–	–	–				
				Importer	20	2										22		

Note: Quantities have been rounded to the nearest whole number, where relevant. Hyphens indicate years for which exporter CITES annual reports have not yet been received (wild-sourced [W], seized meat [I], personal [P], commercial [T]).

Source: CITES Trade Database, UNEP-WCMC, Cambridge, United Kingdom, downloaded on 7 October 2021.

It is noted that 3,880 kg of wild-sourced (W) meat was exported to Trinidad and Tobago for commercial purposes in 2010–2011. This importation by Trinidad and Tobago of queen conch from Grenada was not in alignment with the recommendation of the CITES Standing Committee to suspend imports of queen conch from Grenada, which has been in place since 2006. There is a need for the states involved to comply with their obligations under CITES.

3.5 Overview of CITES Review of Significant Trade suspension for Grenada

The queen conch was selected for phase V of the RST (following previous selection and review in phase III of the RST) at AC17 in August 2001. This information is found in CITES AC17 Summary Record which states that it was “owing to continuing concern regarding the implementation of Article IV” (AC19 Doc. 8.3 (Rev. 1)).

A review of queen conch from Grenada was produced for CITES Standing Committee meeting 66 (SC66) in 2015 (SC66 Doc. 31.2; SC66 Doc. 31.2 Annex 2) and updated for SC70 in 2018 (SC70 Doc. 29.2; SC70 Doc. 29.2 Annex 2). Grenada did not respond to the consultations relating to the RST, and it was not possible to determine whether it had compiled with the Animals Committee recommendations. The Standing Committee, at its sixty-sixth and seventieth meetings, reviewed the recommendations to suspend trade, and agreed that it should be maintained (SC66 Summary Record; SC70 Summary Record). In the review for SC66, exports of queen conch meat from Grenada were reported by Grenada for the years 2009–2011, despite the trade suspension being in place since 2006, although no corresponding trade was reported by countries of import, indicating that the trade may not have taken place. In the updated account for SC70, imports of source I (seized/confiscated) meat were reported in all three years 2014–2016 by the United States, indicating that Grenada had recently exported

the species while the trade suspension was in place (no annual reports had been submitted by Grenada for the period 2014–2021).

3.6 Opportunities and challenges to preparing a non-detriment finding in Grenada

An NDF is a conclusion by a scientific authority of a producing/exporting country that the export of specimens of a particular species (CITES Appendix I and II list of species) will not impact negatively on the survival of that species in the wild.³⁰ The preparation of an NDF for the queen conch of Grenada is an extremely important component of the management regime that is needed to ensure the biological sustainability and legal exportation of this valuable fishery resource to neighbouring island countries such as Trinidad and Tobago. Grenada will likely capitalize on the economic earnings derived from export trade of queen conch. An important management component of the conch fishery is the monitoring and data collection done by Fisheries Extension Officers. These officers are responsible for the inspection of conch landing sites as well as inspections before exporting. As it relates to enforcement of the fisheries laws and regulations, the designated Fisheries and Coast Guard officers should continue to collaborate to initiate any enforcement activities at sea, and especially where there are reasons to believe that an offence may have been committed in the harvesting of queen conch.

3.7 Needs and next steps for addressing CITES recommendations to suspend trade³¹

Grenada has been under CITES recommendation for trade suspension for queen conch since 2006. Furthermore, it has failed to submit CITES annual reports since 2012 for three consecutive years, and without having provided adequate justification, required under article VIII, paragraph 7 (a) of the Convention.³²

To lift the trade suspension related to annual reports, Grenada is required to prepare and submit its outstanding CITES annual trade reports from 2013 to 2020. The CITES annual reports should be transparent and include all trading of queen conch products.

On the other hand, to lift the trade suspension related to RST, Grenada needs to conduct a review of the recommendations made by the CITES Animals Committee (AC19) (August 2003) as shown in table 2, and identify which, if any, of the recommendations have been implemented so far. Data collection and a national queen conch stock assessment need to be undertaken to determine the status of the stock, which should provide valuable information on the structure of the population (shell length and lip thickness), density, biomass availability and portion of the stock that is available to the fishery (used to estimate catch quota) to make an NDF. This review needs to be undertaken as a matter of urgency, and a report including management recommendations needs to be submitted to CITES to enable compliance.

In addition to the submission of reports and NDF to CITES, the legal export of queen conch will require the proper processing of the meat in accordance with international seafood processing standards, as discussed in section 4.6.

3.8 Institutional actors

Table 4 summarizes the main institutional actors that have a role in the conch fishery. The conch fishery in Grenada is primarily managed by the Fisheries Division,³³ a unit of the Ministry of Climate Resilience, the Environment, Forestry, Fisheries Disaster Management and Information.

As of 1 February 2022, the Fisheries Division has 13 technical members at its main office. Led by a Chief Fisheries Officer, the Division also has a biologist, extension officers, a protected areas coordinator, data entry clerks, refrigeration technicians and administrative support staff.

³⁰ See CITES Resolution (2016). Conf. 16.7 (Rev. CoP17) on non-detriment findings, available at https://cites.org/sites/default/files/document/E-Res-16-07-R17_0.pdf.

³¹ See section VII – Recommendations, for specific steps to address CITES trade suspensions.

³² For more information, see <https://cites.org/sites/default/files/notif/E-Notif-2016-022.pdf>.

³³ For more information, see <https://gov.gd/mocr/about-fisheries>.

The Fisheries Division also has 33 staff members located at district fisheries centres on mainland Grenada, and four in Carriacou. Staff at these sites include landing site/fish market managers, supervisors, data officers/clerks, fisheries clerks, cleaners and refrigeration technicians.

Unfortunately, the Grenadian Fisheries Division is understaffed, with key gaps in the areas of fisheries biology, data collection, data management and extension methodology (Government of Grenada, 2021).

The Grenada Fisheries Division oversees licensing and registration of fishing vessels. Vessels must be registered with the District Fisheries Officer, with information on the physical details of the vessel, details of crew members and details of the type of fish targeted by the boat all required. A fishing license is required to be kept on the boat, and a coloured fishing permit is required to be prominently displayed on the boat, so it is visible to the Coast Guard.

The Grenadian Fisheries Division is active in its outreach to fishers, processors and consumers in the conch fishery. At all landing sites, the Division displays posters indicating the Fisheries (Amendments) Regulations 1996 as they relate to conch, including images and descriptions of “immature conch”. The Division also conducts outreach and education programmes with supermarkets, hotels and restaurants on conch size limitations, and the need to adhere to regulations, as seen in figure 3.

Table 4. Main institutional actors that are important to the Grenadian conch fishery and their roles

Actor	Role in conch fishery
Fisheries Division	<ul style="list-style-type: none"> • Boat registration and licensing • Data collection • Enforcement of fisheries regulations, in particular size regulations • Education and outreach to fishers
Grenada Coast Guard and district police ³⁴	<ul style="list-style-type: none"> • Monitoring of illegal conch importation and exportation • Monitoring of Grenada fishing grounds for illegal fishing • Enforcement of fisheries regulations at sea
Environmental Health Division of the Ministry of Health	<ul style="list-style-type: none"> • European Union-recognized competent authority for inspection of seafood products • Conducts inspections and performs official controls throughout seafood production chain • Provides health certificates necessary for seafood export
Grenada Ports Authority	<ul style="list-style-type: none"> • Administration and operation of Saint George’s Port, Grenville Harbour and Tyrell Bay on Carriacou
Forestry Division ³⁵	<ul style="list-style-type: none"> • The Forestry Division is the Grenadian CITES national focal point responsible for the submission of CITES reports and liaising with the CITES Secretariat
Grenada Bureau of Standards	<ul style="list-style-type: none"> • Home to Laboratory³⁶ with ISO/IEC 17025³⁷ accreditation, could play a potential role in future export certification, for example voluntary certifications schemes
Produce Chemist Laboratory	<ul style="list-style-type: none"> • Issues certificate of origin for export of commodities and agroprocessed products • Provides analytical (chemical and microbiological, toxicology) testing
Grenada Scuba Divers Association ³⁸	<ul style="list-style-type: none"> • Dive shops operating scuba gear are required to be registered with this association. The association coordinates marketing of tourism-related scuba diving and an annual dive festival. Could play an important role in promoting safe dive practices and implementation of conservation activities
Fisherfolk Cooperatives	<ul style="list-style-type: none"> • Except for the Gouyave Fishermen Cooperative Society Limited, most communities do not have active fisherfolk cooperatives

³⁴ For more information, see www.rgpf.gd/index.php/departments/grenada-coast-guard.

³⁵ For more information, see <https://gov.gd/mocr/forestry>.

³⁶ For more information, see www.gdbs.gd/Services.html.

³⁷ For more information, see www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html.

³⁸ For more information, see www.puredivinggrenada.com/grenada-carriacou-dive-shops.html.

Figure 3. Public notice on the sale and possession of queen conch

Queen Conch (*Strombus gigas*) Fishery Regulations

Fisheries (Amendment) Regulations SRO No. 24 of 1996

Part VI Section 18. Conch

1. No person shall take, sell, purchase or have in his possession any "immature conch":
2. The Minister may by notice published in the *Gazette* and in a newspaper printed or circulated in the State declare any period as a closed season for conch;
3. No person shall fish for conch during the period of the closed season;
4. In this Regulation "immature conch" means:
 - (a) a conch the shell of which is smaller than 18 centimeters (9 1/4 inches) in length; or
 - (b) a conch the shell of which does not have a flared lip; or
 - (c) a conch with a total meat weight of less than 225 grams (8 ounces) after the removal of the digestive gland.

Conch is locally known as "Lambie"

IMMATURE CONCH

- Less than 18 cm. (9 1/4 ins.) in length
- Does not have a flared lip
- Conch meat weighs less than 225 grams (8 ounces)

X

MATURE CONCH

- More than 18 cm. (9 1/4 ins.) in length
- Has a flared lip
- Conch meat more than 225 grams (8 ounces)

✓

REPORT INCIDENT OF ILLEGAL FISHING TO THE NEAREST POLICE STATION OR THE FISHERIES DIVISION AT 440-3814/2708

PUBLIC NOTICE

THE PUBLIC IS HEREBY REMINDED THAT ACCORDING TO FISHERIES (AMENDMENT) REGULATIONS # 24 OF 1996, NO PERSON SHALL TAKE, PURCHASE OR HAVE IN HIS POSSESSION, ANY "IMMATURE CONCH".

In this Regulation "**immature conch**" means:

- (a) A conch the shell of which is smaller than 18 centimeters (9 1/4 inches) in length; or
- (b) A conch the shell of which does not have a flared lip; or
- (c) A conch with a total meat weight of less than 225 grams (8 ounces) after the removal of the digestive gland.

PLEASE REPORT ANY INCIDENT OF ILLEGAL CONCH FISHING TO THE NEAREST POLICE STATION OR THE FISHERIES DIVISION AT 440-3814

FISHERIES DIVISION
MINISTRY OF AGRICULTURE, FORESTRY AND FISHERIES
MINISTERIAL COMPLEX, TANTEEN, ST. GEORGE'S, GRENADA.
PHONE: +473-440-3814/2708
EMAIL: fisheries@gov.gd

Source: Fisheries Division of Grenada (2021).

4. VALUE CHAIN ANALYSIS

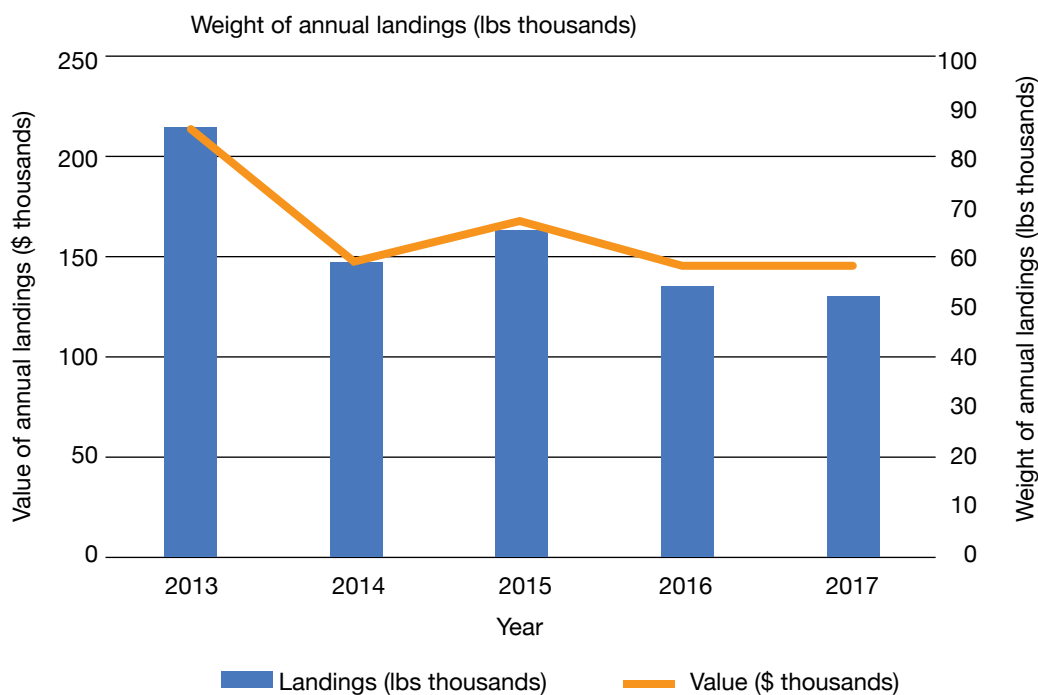
4.1 Overview

Grenada has approximately 105 fishers and 35 small vessels participating in the conch fishery, with the majority operating on a part-time basis (Mitchell, 2021). This figure includes divers, boat captains and boat hands who participate in the fishery. Between 2013 and 2017, a total of 143 tons of conch were harvested in Grenada, according to landing data from the Fisheries Division. During this period, an average value of \$163,783 of dirty conch was landed annually (figure 4).

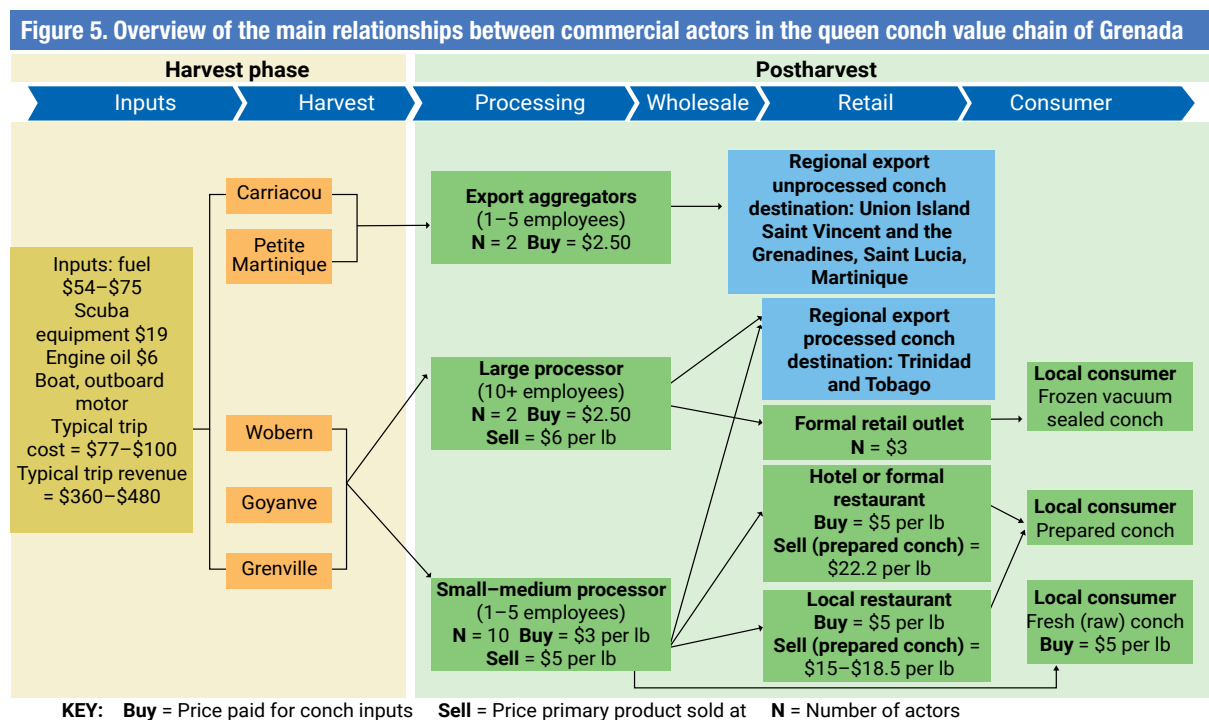
Conch is primarily harvested in the northern islands of Carriacou and Petite Martinique, and the southern and eastern coast of mainland Grenada. Subsistence fishing of conch is practiced island wide.

Despite being under a CITES recommendation to suspend trade, some trade in contravention of the CITES trade suspension appears to occur between Grenada and Trinidad and Tobago, Saint Vincent and the Grenadines, Saint Lucia and Martinique. In terms of value, conch is the second most valuable non-fish seafood product, after spiny lobster. The relationship between the spiny lobster fishery and the queen conch fishery of Grenada is notable, as harvest by hand using scuba gear is the primary method used for both. Additionally, as Grenada has a closed season for spiny lobster, which commands a higher price than queen conch (\$6.50 per pound vs \$2.50 per pound respectively), divers prefer to fish spiny lobster when that season is open.

Figure 4. Value and weight of annual queen conch landings in Grenada



Source: Fisheries Division of Grenada, 2021.



Source: UNCTAD, 2022.

4.2 Pre-harvest phase

The fishing gear used in conch fishing in Grenada is similar to that of other project countries,³⁹ with standard inputs including a marine ply or fiberglass boat, outboard motor, fuel, scuba gear, float bags (typically marine bumpers) and mesh wire for the construction of float baskets. Boats used in Grenada vary significantly in size, from 5 to 10 m and, notably, boats are constructed locally in Carriacou and Petite Martinique for fishing, including conch fishing. Local boatbuilding and repair capacity are important economically, as they reduce the input and maintenance costs for local fishers. Refilling of dive tanks is not typically available at most landing sites, except for Petite Martinique. Most divers resort to using local private dive shops, whose primary customers are in the tourism market.⁴⁰ Fuel for fishing vessels is available at or near most landing sites in Grenada, and registered fishers receive fuel at subsidized rates. For more details on input costs, please see table 5.

Table 5. Typical input costs to the conch fishery

Input	Unit cost (\$) ⁴¹	Units used during typical trip	Typical trip cost
Filling of 1 dive tank	4.63	4	18.52
1 gallon of fuel, registered fisher	4.44	12	53.28
1 gallon of fuel, unregistered	6.29	12	75.48
1 litre of engine oil	5.55	1	5.55
Total cost registered fisher (subsidized rate)	77.35		
Total cost, unregistered fisher	99.55		

³⁹ Blue Bio Trade countries are Saint Lucia, Saint Vincent and the Grenadines and Grenada.

⁴⁰ Stakeholder interviews between 1 October and 8 December 2021.

⁴¹ All figures in \$ as per notes. The EC\$ has been pegged to the \$ at a fixed rate of EC\$2.70 to \$1.00 since 7 July 1976. Thus, the exchange rate remains the same over the study period.

Figure 6. Lobster and conch fishers preparing for a day of fishing in Petite Martinique (using scuba as a method for fishing is typical in Grenada)



Source: Photo by Alexander Girvan (2019).

4.3 Harvest phase

Most conch in Grenada is harvested by a three-person crew comprised of a boat captain, a diver and a “float man”. Fishers in Grenada comprise both part-time and full-time divers, with lobster divers participating in the harvesting of conch in the lobster closed season, which runs from 1 May to 31 August (four months). Fishers typically conduct five-to-six-hour trips, leaving at 6 a.m.

Conch is mostly fished on the Atlantic side of Grenada, Carriacou and Petite Martinique. Fishers use traditional triangulation techniques, using landmarks to navigate and locate fishing grounds. Global positioning systems are not typically used by conch fishers. Once fishers arrive to the dive site, the diver will descend 60–80 ft (occasionally 90–100 ft). Then the float man will place weights in a large basket made from fencing wire, attached to the boat by a rope, and guide the descent of this basket to the seabed. The diver will begin conch collection by filling this basket with 25–150 live conch, depending on basket size. Once the basket is filled with conch, the diver will inflate three or four float bags to guide the basket to the surface for loading into the boat by the float man and the boat captain. Divers typically use four scuba tanks on one fishing trip, and report taking significant breaks between dives, which account for long dive times. On a typical trip, fishers report collecting 175–200 lbs of conch.⁴² Unlike those in Saint Lucia, divers in Grenada did not report underwater currents as a challenge during conch harvest. This is likely why divers here can collect larger volumes of conch on the sea floor prior to floating.

As is typical in the region, conch is “knocked” (hit with a hammer or axe) and the body of the conch is removed from the shell on the return portion of the fishing trip or at a site offshore near the landing site. Once the body is

⁴² Stakeholder interviews from 4 May to 21 July 2021.

removed from the shell, the digestive glands are removed from the rest of the body. Both shells and the digestive gland are deposited at sea, representing potentially underutilized by-products.

Across Grenada, Carriacou and Petite Martinique, there are approximately 45 landing sites for seafood products – of these, seven are considered primary landing sites, including fish markets, port infrastructure and other facilities (FAO, 2019). Other landing sites are secondary landing sites, typically beaches with no formal infrastructure.

Landing data on conch are collected primarily at the landing sites of Grenville and Carriacou. Table 6 shows landing data available from the Fisheries Division of Grenada. Unfortunately, a significant amount of landing data on conch are not collected, as conch is landed across several informal sites and beaches across Grenada.

Table 6. Quantity and value of Grenadian queen conch production, 2013–2017

Annual production		
Grenada, Carriacou and Petite Martinique		
Year	Quantity (lbs)	Value (\$)
2013	86 277.28	213 886.69
2014	58 894.73	148 444.79
2015	65 497.14	167 440.65
2016	54 016.20	144 844.39
2017	52 337.72	144 301.21

Source: Data provided by the Grenadian Fisheries Division (2021).

4.4 Post-harvest phase ⁴³

Conch removed from the shell and without the digestive gland, is considered “dirty conch” meat, and enters the next phase of the value chain. In this post-harvest phase, conch reaches final consumers along several channels, depending on the landing site.

Fishers based in Carriacou and Petite Martinique generally sell their “dirty” conch meat catch directly to large processors, or to intermediary aggregators who resell large volumes of conch in Union Island (see map of Grenada, figure 2). Fishers report selling dirty conch meat directly to large processors in Union Island in volumes of 100–200 lbs at a price of \$2.50 (EC\$6–6.50) per lbs. Fishers who sell to intermediary aggregators report selling conch at volumes of 30–100 lbs for similar prices.

A smaller proportion of conch remains in Carriacou and Petite Martinique to satisfy demand from local consumers and restaurants. Fishers will sell conch to small processors (individual operators or operators with one or two employees), who will take dirty conch and resell to restaurants in 5–10 lbs bags, and to local consumers in 2 lbs bags. Vacuum-sealed bags could be considered by small processors as an option to improve safety and quality when delivering to restaurants or formal distribution channels, when economically feasible.

On mainland Grenada, a similar pattern is followed, with fishers typically selling their catch along two channels: to small processors and vendors, and to large processors.

On the mainland, small processors/vendors operate out of the landing sites of Grenville and Gouyave, and in the community of Woburn, where processors operate small informal facilities, typically where the owner/operators’ places of residence are. These processors break conch down to the 75 per cent level and package the conch for retail. For individual retail consumers, conch is typically sold in 2 lbs bags with four to six conch (figure 9). For restaurants, conch is also cleaned to the 85 per cent level and is normally sold in 5–10 lbs bags along this channel.

⁴³ Stakeholder interviews between 4 May and 21 July 2021.

Figure 7. Two lbs bags of conch for sale directly to local consumers at the Carriacou fish market



Source: Photo by Alexander Girvan (2019).

4.5 Large processors

Large processors (those with over 10 employees) play an important role in the queen conch value chain in Grenada, particularly regarding the potential export of queen conch. Two notable large processors of queen conch operate on the island of Grenada: Vineyard Limited, operating out of the Gouyave fish market complex and with retail locations in Saint George; and Spice Isle Fish House, operating out of Grand Mal Bay.

Spice Isle Fish House⁴⁴ operates with approximately 30 employees and focuses on the export of yellowfin tuna to the United States market.⁴⁵ Its facility is located approximately 20 minutes from the Maurice Bishop International Airport, facilitating easy export of products via air freight. Spice Isle Fish House has an HACCP-certified facility, and exports non-queen conch products primarily to the United States, the United Kingdom of Great Britain and Northern Ireland, and other Caribbean islands. Queen conch is one of the products processed and sold by this company domestically, but it is not one of its main items.

Vineyard Limited (“Vineyard”) is another large processor, with approximately 10 employees operating on the north-western coast of Grenada at Gouyave. While smaller than Spice Isle Fish House, Vineyard is comparatively more important for the Grenadian conch value chain. Vineyard currently purchases conch directly from fishers at Gouyave and processes conch to the 100 per cent level and freezes and vacuum-seals at one of its Gouyave facilities. Frozen vacuum-sealed conch is also sold directly to local supermarkets and retail consumers and has

⁴⁴ For more information, see www.sifhgroup.com/fish-house.

⁴⁵ For more information, see <https://marfisheco.com/wp-content/uploads/2019/04/Techno-economic-performance-report-Grenada.pdf>.

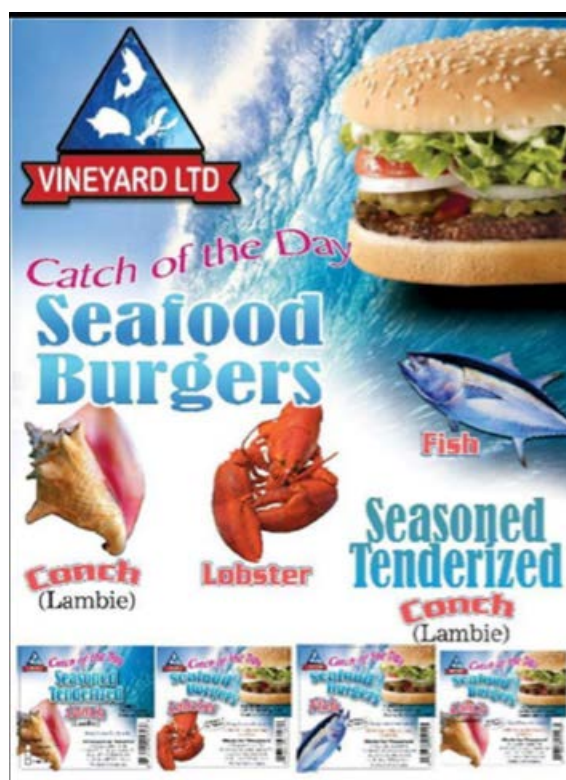
historically been reported to be exported occasionally to Trinidad and Tobago.⁴⁶ Vineyard also processes conch meat into vacuum-sealed burgers and packaged seasoned conch meat for sale directly to consumers.

Conch burgers, conch wraps, and conch soup are also sold prepared directly to walk-in retail consumers at Vineyard's Saint George facility or delivered (see figure 8 for an example of products for sale). The variety of uses of conch meat at Vineyard and the number of value-added products could be replicated by other producers across the region and should not be overlooked as a strength of this operator and the Grenada value chain.

Vineyard Limited is notable as it has an approved HACCP plan for the export of spiny lobster to the United States and China.

Both processors can be considered high capacity considering their existing HACCP certification, active export of high-quality products, high processing capacity and ability to create value added products. This existing strength of the Grenadian value chain should not be overlooked.

Figure 8. Advertisement by Vineyard Limited on value added conch products



Source: Vineyard Limited Facebook page.⁴⁷

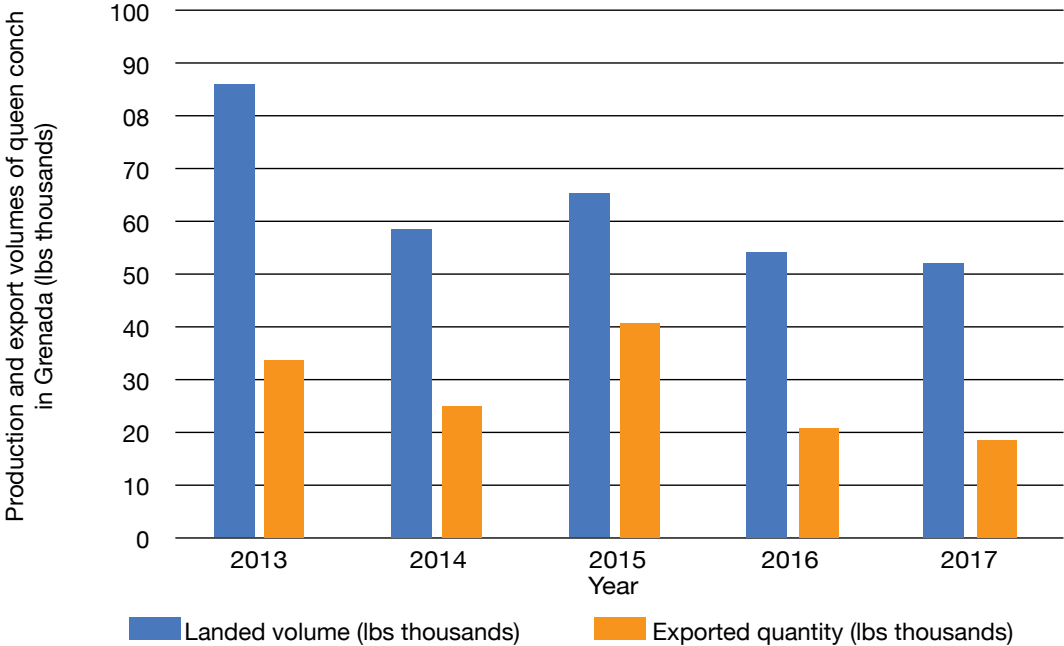
4.6 Assessment of market access potential

Unfortunately, without addressing the current CITES trade suspension, Grenada is unable to legally export queen conch product. Despite this suspension, according to data presented by the Fisheries Division, 36–62 per cent of conch landed between 2013 and 2017 was exported in contravention of the CITES trade suspension, according to available data (Mitchell, 2021). Figure 9 shows the volume of landed conch and the volume of conch exported. Figure 10 shows the value and volume of exported queen conch from Grenada.

⁴⁶ Taken from feedback in the interviews undertaken by the authors.

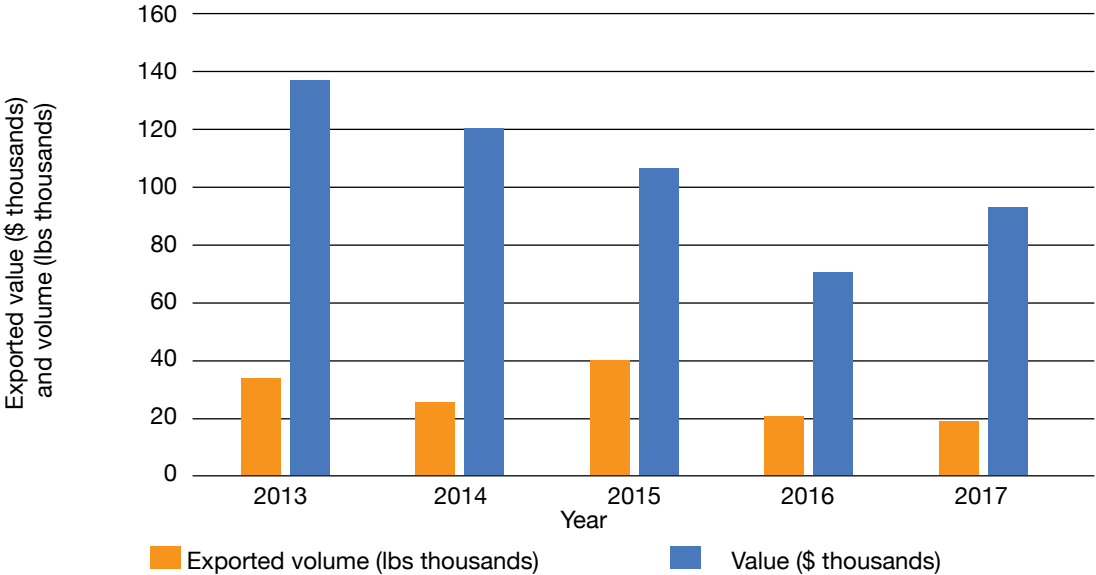
⁴⁷ For more information about Vineyard Limited, see www.facebook.com/Vineyard-LTD-728750000567594/photos/728801773895750.

Figure 9. Queen conch production and export volumes, 2013–2017



Source: Data provided by the Grenadian Fisheries Division, 2021.

Figure 10. Value and volume of queen conch exported from Grenada, 2013–2017



Source: Data provided by the Grenadian Fisheries Division, 2021.

4.7 Regional markets

Historically, significant trade in contravention of the CITES suspension between Grenada and Trinidad and Tobago has occurred. The location of mainland Grenada as the southernmost of the OECS countries, strong economic links between traders of agricultural produce, and high regularity of inter-island connections place Grenadian conch traders at a comparative advantage in supplying this market. Trinidad and Tobago have limited conch grounds (mainly in Tobago), a comparatively large population of 1.3 million and a high level of economic development, making it a lucrative regional market for queen conch products.

In interviews,⁴⁸ it has been reported that Grenadian conch is exported both frozen from large processors for retail in supermarkets and formal retail outlets, and fresh (on ice) from small processors and aggregators to local markets and directly to restaurants. Agricultural produce for Trinidadian markets is sent weekly from Grenada via a produce boat, and smaller volumes of conch (100–300 lbs) are frequently traded this way.

Regionally, trade has been reported between Carriacou, Petite Martinique and Union Island of Saint Vincent and the Grenadines. Some trade with Saint Lucia and as far as Martinique also occurs. This trade, in contravention of the CITES trade suspension, poses a challenge to the management and sustainability of the domestic fishery, but represents existing demand and potential legal end markets, provided CITES issues are addressed.

The regional markets of Trinidad and Tobago, Saint Vincent and the Grenadines and Saint Lucia are all members of the Caribbean Community single market and economy,⁴⁹ which means queen conch products are tariff-free if traded regionally. The Caribbean region could be considered a potential export market for development by members of the Grenadian queen conch industry.

4.7.1 United States of America

The United States remains one of the largest markets for queen conch globally (CITES, 2021). Further, the United States represents the largest market for seafood products produced in Grenada, taking more than 90 per cent of total seafood exports from Grenada (Van Anrooy et al., 2018). This trade largely focuses on fresh and to a lesser extent frozen yellowfin tuna. Exports are facilitated by the two large processors operating in Grenada, Spice Isle Fish House and Vineyard Limited. As mentioned above, both facilities are HACCP-certificated for the export of yellowfin tuna. As Grenada has good connections to the United States for tourism, the frequency and regularity of airlift connections facilitate the trade of seafood products.

With these existing trade relations and demonstrated capacity in meeting and keeping HACCP certification, the United States should be considered a potential end market for Grenadian conch. Queen conch is a mollusc with different processing steps from that of tuna processing, and thus different associated risks. Compatibility of current HACCP practices by processors in Grenada, particularly for shellfish (including for queen conch) into the European Union should be assessed to improve potential for exports.

With existing trade of other seafood products with the United States, the higher market prices paid for queen conch in this country, existing logistical capacity and transport links, the United States should be strongly considered as a potential end market for Grenadian queen conch. For mollusc exports, it is necessary to have a specific HACCP plan for processing and exports of the queen conch to the United States market.

As noted above, to export queen conch to the United States, processing facilities would have to be approved for export by developing, implementing and having certified an HACCP plan for the processing and packaging of queen conch.

4.7.2 European Union

Fishers have noted that trade has historically occurred indirectly between the northern Island of Grenada (Petite Martinique and Carriacou) and the European Union, through aggregation with catch in Saint Vincent and the Grenadines destined for Martinique. However, as this is unregistered trade, it is difficult to verify current trade

⁴⁸ Interviews were conducted between 1 October 2021 and 15 February 2022.

⁴⁹ For more information, see <https://caricom.org/projects/caricom-single-market-and-economy/>.

volumes. As noted above, the United States remains the major destination market for seafood products. However, France is the second largest importer of seafood products from Grenada (Van Anrooy et al., 2018). It remains unclear if this is mainland France, or its overseas territories of Martinique and Guadeloupe.

Exporting seafood products to the European Union requires the products to be officially certified by a competent authority. The competent authority is a public entity in the non European Union country recognized by the European Commission as capable of carrying out hygiene and public health checks. In addition, the competent authority must provide guarantees that the areas of production of the product are monitored for contamination. It must also inspect, approve and certify vessels conducting the harvesting of seafood products such as queen conch. There is also a need to have catch certificates for the exported products. Furthermore, it is important to note that – for live bivalve molluscs, echinoderms, tunicates and marine gastropods – the European Union requires production areas⁵⁰ to be defined, inspected for relevant health risks, monitored and approved by the local competent health authority.

Grenada is notable for having a European Union-recognized competent authority, which is the Ministry of Health (ACP Fish II, 2012), for the issuance of health certificates required for seafood exports. Grenada has two cold stores, five freezing vessels and three processing plants, all approved for the export of fishery products to the European Union⁵¹ (Government of Grenada, Trade and Export Development Division, Ministry of Foreign Affairs, Environment, Foreign Trade and Export Development, 2011). This largely is for the export of tuna and finfish products to the European Union. For the export of queen conch, there are currently no approved areas of production by the competent national authority.

⁵⁰ Production zones for these products must be in compliance with provisions laid down in annex II, chapter II (A)(3) of the Regulation (EC) 854/2004.

⁵¹ See <https://webgate.ec.europa.eu/tracesnt/directory/publication/establishment/GD-FFP-2-en.pdf>.

5. CHALLENGES IN THE GRENADIAN QUEEN CONCH VALUE CHAIN

5.1 Environmental challenges

Data challenges exist regarding stock size and location, landing data and spawning season in Grenada. Spawning season of queen conch varies from location to location, based on local conditions and temperatures. As the southernmost of the OECS countries, Grenada is likely in need of detailed assessments of the spawning times in its local waters to establish a closed season. It should not be assumed that a closed season that is appropriate for the western and northern Caribbean coincide with the Grenadian spawning season.

As fishers in Grenada primarily use landmarks to triangulate location and find fishing grounds, recent Saharan dust events⁵² in the Caribbean, which reduce visibility, have threatened the effective use of this method for navigation. Saharan dust events reduce the number of days appropriate for fishing, and increase the risks associated with sea navigation and being lost at sea. Additionally, this can complicate traditional methods of rotating fishing grounds to manage fishing pressure. Fishers have indicated a desire for the use of handheld global positioning systems to navigate the sea and locate fishing grounds.

Land-based sources of pollution – including silt, agricultural runoff and plastics – pose a threat to the health of ecosystems that support queen conch. Land-based sources of pollution are a particular threat in Grenada and Carriacou, where overgrazing results in erosion and runoff of silt into coastal waters. Climate change-driven ocean warming and ocean acidification are additional threats to the health of queen conch habitats (CANARI, 2020).

As queen conch is landed at several informal landing sites, climate change-associated damage to beaches and coastal infrastructure due to extreme events, coastal erosion and sea level rise pose a significant threat to the fishery.

Dumping of queen conch shells also poses a persistent challenge around formal and informal landing sites. Dumping of queen conch shells creates an eyesore and potentially changes local ecology. Figure 11 shows an informal landing site on the western side of Carriacou. Conch shells have the potential to be used as artificial reefs, which should be further explored in Grenada.

Figure 11. Discarded conch shells at informal landing site on western Carriacou



Source: Photo by Alexander Girvan (2019).

⁵² For more information, see www.nasa.gov/directorates/spacetech/spinoff/Saharan_Dust_Forecasts_Minimize_Health_Risks_in_the_Caribbean.

5.2 Regulatory challenges

Grenada is notable for its large number⁵³ of informal/secondary landing sites across its three inhabited islands. For this reason, there are currently significant gaps in the collection of basic landing data associated with queen conch. Management and regulation of the fishery require detailed data collection on landings and observation at landing sites. It is unclear if data collection on conch is limited because it is not a primary export product, or because of capacity and resources.

The proximity of the major conch-producing areas of Carriacou and Petite Martinique to major conch processing buyers in Saint Vincent and the Grenadines creates persistent conditions for unrecorded and thus unregulated trade in queen conch across national borders, in contravention of the CITES trade suspension.

The absence of a closed season for queen conch in Grenada is another significant regulatory challenge. Pressure on the fishery is theoretically limited, as many conch fishers only fish conch during the lobster closed season. However, without data on queen conch stocks and spawning times, it is unclear what effect overall effort has on the health of the fishery. The ability to enact a closed season is stipulated in the Grenada Fisheries Act of 1986. Hence, a closed season could be implemented as a precaution and adjusted, provided there are detailed data on stock health and spawning grounds and times.

As discussed earlier in this report, the recommendation for Grenada to suspend trade under CITES remains a persistent regulatory and socioeconomic challenge to the Grenadian conch fishery. Completing the necessary submission of reports, data collection, stock assessments and other research is essential for effective regulation and value maximization.

5.3 Socioeconomic challenges

Subsistence fishing of conch still occurs by freediving on the southern and eastern coasts of Grenada. On weekends, free divers will collect small amounts of conch for personal consumption and occasionally sell to local consumers. This type of fishing has cultural importance as well as acting as supplementary income and nutrition. Unfortunately, as this is a largely unregulated type of fishing, the risk of the harvest of juvenile conch is higher. Furthermore, data on landings and fishing pressure are largely unrecorded. This ultimately poses a major challenge to the overall management of the fishery.

Regarding the health impact of the fishery, most divers in Grenada (70 per cent [Mitchell, 2021]) are trained in safe scuba diving techniques. Interviews with the Fisheries Division indicate that major dive-related health incidents occur on average once per year, with minor incidents occurring 6–10 times per year. It is unclear what proportion of these dive-related accidents are related to the conch fishery or lobster fishery. Grenadian conch fishing grounds are slightly shallower and have gentler currents than other countries such as Saint Lucia, which could imply lower dive risk.

As significant volumes of conch are landed at informal/secondary landing sites, infrastructure for protection of boating and fishing gear, processing of fisheries products and cold storage are generally insufficient. Figures 12 and 13 illustrate some of the conditions under which queen conch is processed. In figure 12, note the discarded conch trimmings on the sand at the centre left. These trimmings represent a potentially underutilized by-product of queen conch that can be used as animal feed. Investment in the improvement of existing landing site infrastructure and secondary landing site infrastructure is necessary.

⁵³ A total of 37 of 45 landing sites in Grenada are secondary.

Figure 12. Processing of queen conch at informal landing site



Source: Fisheries Division of Grenada (2021).

Figure 13. Processing of queen conch at informal landing site



Source: Fisheries Division of Grenada (2021).

6. OPPORTUNITIES AS THEY RELATE TO THE BIOTRADE PRINCIPLES AND CRITERIA

Recognizing the desire of stakeholders to improve income earned and sustainability of the queen conch value chain in Grenada and bring the fishery in line with international regulations such as CITES, this section presents opportunities to address the challenges articulated above using the BioTrade Principles and Criteria⁵⁴ as a guide.

In 1996, UNCTAD created the concept of “BioTrade” with a view to highlight the use of biodiversity as a strategy for sustainable development based on the three key objectives of the Convention on Biological Diversity: conservation of biodiversity, the sustainable use of the components of biodiversity and the fair and equitable sharing of benefits arising out of this utilization.⁵⁵ “Biotrade” as a concept is defined by UNCTAD as, “activities related to the collection or production, transformation and commercialization of goods and services derived from native biodiversity (genetic resources, species and ecosystems) according to environmental, social and economic sustainability criteria called “BioTrade Principles and Criteria”.⁵⁶

This set of guidelines is used by businesses, governments and civil society wishing to support the conservation and sustainable use of biodiversity, as well as the fair and equitable sharing of benefits through trade. Over the years, the BioTrade Principles and Criteria have been reviewed and updated so that they also build on key principles and objectives of CITES, the Nagoya Protocol on Access and Benefit Sharing, the Ramsar Convention on Wetlands,⁵⁷ the Paris Agreement and other multilateral environmental agreements. Moreover, the Principles and Criteria aim to contribute to the new post-2020 global biodiversity framework, and are aligned and supportive of UNCTAD mandates, including the Nairobi Maafikiano,⁵⁸ and the Bridgetown Covenant⁵⁹ adopted at the fifteenth quadrennial session of UNCTAD in October 2021.^{60, 61}

This section seeks to undertake a first analysis of the status of the sustainability and equitability of the Grenadian queen conch value chain vis-à-vis the BioTrade Principles and Criteria and is based on the findings of the report and interviews undertaken. Business operators and fishers’ associations could get a more customized analysis by using the BioTrade Self-Assessment Tool⁶² to obtain a more precise and complete assessment. This section also introduces the status of the queen conch value chain in Grenada and potential application of sustainability and equity guidelines under the BioTrade Principles and Criteria. Furthermore, it presents recommendations to improve its performance “to empower small-scale coastal producers from OECS member States to produce and trade queen conch products in domestic, regional and international markets under the Blue BioTrade environmental, social and economic sustainability criteria, including CITES”.

Table 7 summarizes the main BioTrade Principles and Criteria relevant to the Grenadian queen conch value chain, the status of the value chain against these criteria, and the main recommendations for the implementation of these Principles and Criteria.

⁵⁴ For more information on BioTrade conceptual framework and its Principles and Criteria, see <https://unctad.org/topic/trade-and-environment/biotrade/principles-and-criteria>.

⁵⁵ The objectives under art. 1 of the Convention include: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. For more details, see www.cbd.int/convention/text/.

⁵⁶ Since their inception in 2007, the BioTrade Principles and Criteria have been the core foundation that guides the implementation of activities of the UNCTAD BioTrade Initiative, the BioTrade programmes and other related activities. In 2020, the BioTrade Principles and Criteria were revised, complementing the evolving legal and policy framework of BioTrade (UNCTAD, 2020).

⁵⁷ The Ramsar Convention on Wetlands of International Importance, Especially as Waterfowl Habitat.

⁵⁸ For more information, see TD/519/Add.2, available at https://unctad.org/system/files/official-document/td519add2_en.pdf.

⁵⁹ For more information, see TD/541/Add.2, available at https://unctad.org/system/files/official-document/td541add2_en.pdf.

⁶⁰ For more information, see <https://unctad.org/meeting/fifteenth-session-United-Nations-Conference-Trade-and-Development-UNCTAD-15>.

⁶¹ For more information, see TD/L.435, available at https://unctad.org/system/files/official-document/td-l-435_en.pdf.

⁶² Available at www.sustainabilitymap.org/biotrade_unctad.

Table 7. Assessment of queen conch value chain in Grenada according to the BioTrade Principles and Criteria (adapted from Assessment of queen conch value chain in Saint Lucia)

	Relevant BioTrade criteria	Status of the queen conch value chain in Grenada	Recommendations for the implementation of relevant BioTrade Principles and Criteria
Principle 1: Conservation of biodiversity	1.1 1.3	<p>Government:</p> <ul style="list-style-type: none"> Grenada has adopted its National Biodiversity Strategy and Action Plan 2016–2020. This Plan articulates the need to build fisher capacity in sustainable production, and the need to develop sustainable use plans for important fisheries. Queen conch is not explicitly discussed in the Plan. Grenada has a draft Fisheries Policy developed in 2012 that articulates sustainable stewardship and conservation of aquatic resources as a theme. Grenada has four marine protected areas (Molinere-Beausejour, Sandy Island Oyster Bed, Woburn Bay and Grand Anse). There is no clarity on the status of the stocks. There are important data and information limitations to undertake stocks assessments (also related to Principle 2). Although biological data have been collected in the past for this species, the collection of such data has not been sustained after the termination of externally funded projects. The Grenada Integrated Coastal Zone Management Policy for Grenada, Carriacou and Petite Martinique (2015)⁶³ articulates policy goals against the pollution of near-shore environments, and the need to establish and enforce standards related to coastal zone discharges and pollution. <p>Private sector (fishers, processors and other relevant actors):</p> <ul style="list-style-type: none"> There is no record of protocols or practices for conservation or adaptive management by fishers' associations or processors. 	<p>It is recommended that Grenada urgently present missing annual trade reports for the period 2012–2020 to align its efforts with compliance requirements under CITES.</p> <p>There is also a pressing need to undertake more robust data collection to facilitate an up-to-date stock assessment. This is fundamental to be able set total allowable catch and subsequent conservation and adaptive measures.</p> <p>There is a need to establish a continuous monitoring system for the stock assessments.</p> <p>It will be important to map if current marine reserves are sufficient to ensure queen conch life cycle to maintain stocks or ensure they are below maximum sustainable yield.</p> <p>Interdepartmental/ministerial cooperation and coordination will be needed (supported by stakeholder participation) to implement conservation activities, e.g., closed season for queen conch. Information regarding such activities should be compiled and disseminated effectively to maximize efforts.</p>

⁶³ For more information, see extwprlegs1.fao.org/docs/pdf/grn181100.pdf.

	Relevant BioTrade criteria	Status of the queen conch value chain in Grenada	Recommendations for the implementation of relevant BioTrade Principles and Criteria
Principle 2: Sustainable use of biodiversity	2.1 2.2 2.3	<p>Government:</p> <ul style="list-style-type: none"> Conch is managed by the Grenada Fisheries Act, 1986 (Cap. 108) and the 1996 Fisheries (Amendment) Regulations (Statutory Rules and Orders No. 24) of 1996 (ACP Fish II, 2012). This legislation outlines fisheries management and development, marine reserves and conservation methods, and enforcement. It also contains provisions of minimum criteria to harvest conch (e.g., sizes and level of maturity), prohibited fishing methods and gear. There is a Regional Queen Conch Fisheries Management and Conservation Plan (FAO, 2017). There is not yet a national implementing conch management plan in place. <p>Private sector (fishers, processors and other relevant actors):</p> <ul style="list-style-type: none"> There are no records of protocols or practices for sustainable use by fishers or processors. 	<p>Based on an up-to-date queen conch stock assessment, there will be a need to undertake the CITES-required NDF exercise as well as to put in place a monitoring programme with relevant conservation and sustainable use measures in case the stocks show signs of deterioration or depletion.</p> <p>A robust CITES permit system documenting exports and imports of queen conch should be developed. Recommendations under the Regional Queen Conch Management Plan have to be implemented nationally.</p> <p>Additional sustainable use, adaptive and ecosystem-based measures besides those already in place could include the setting of seasons, establishment of conch nursery areas and a simple compilation of best fishing and other practices (e.g., for use of all parts for bait, fertilizers or handicrafts, etc.) for small-scale and subsistence fishers. It is important to note that, even if nurseries are established and operational, this would not preclude the application of CITES-related obligations.</p>
Principle 3: Fair and equitable sharing of benefits	3.1 3.2 3.3 3.4 3.5	<p>Government:</p> <ul style="list-style-type: none"> The main benefit-sharing mechanism is the “market price” in internal and international markets. As there are no clearly established sustainable value chain practices (e.g., BioTrade), there is no chance yet to get recognition from buyers. Grenada is a party to the Convention on Biological Diversity but not to the Nagoya Protocol. No policies or regulations on access and benefit-sharing of biodiversity were found in Grenada. <p>Private sector (fishers, processors and other relevant actors):</p> <ul style="list-style-type: none"> There are potential markets for Grenadian queen conch in Trinidad and Tobago, the United States, Europe and Asian markets, not only for the meat but for other parts of the conch. There is no coordinated effort by private actors to list and comply with export market requirements. Fisheries research requires a permit by the Chief Fisheries Officer based on research plans submitted. No reference is made to benefit or results sharing (Grenada Fisheries Act, 1986 [Cap. 108]). 	<p>There is a need to encourage buyers to give a “prime” price to responsible fishers. This could start with restaurants and hotels. For that, a set of best practices needs to be compiled under the BioTrade approach.</p> <p>Establishing long-term mutually beneficial partnerships along the queen conch value chain based on transparency and mutual dialogues (assessment of the actual value of the queen conch as a BioTrade product) could provide opportunities to explore fair sharing of benefits.</p> <p>Non-monetary benefits that could be shared among the stakeholders in the queen conch value chain could be transfer of know-how (e.g., trainings on sanitary practices), capacity-building and information-sharing on studies conducted by the government and/or projects such as the Blue BioTrade Project.</p> <p>It is recommended that Grenada becomes a party to the Nagoya Protocol on Access and Benefit Sharing.</p> <p>The Fisheries Department could consider implementing a set of incentives for private actors to formalize their international trading activities, and to list and comply with export markets' requirements.</p>

	Relevant BioTrade criteria	Status of the queen conch value chain in Grenada	Recommendations for the implementation of relevant BioTrade Principles and Criteria
Principle 4: Socio-economic sustainability	4.1 4.2 4.3	<p>Government:</p> <ul style="list-style-type: none"> Understanding of BioTrade Principles and Criteria is moderate; nevertheless, government officials have participated in UNCTAD and OECS capacity-building activities. The Grenada Fisheries Act, 1986 includes regulations on permits and sanitary measures for processing establishments (also related to Principle 5). There is limited national infrastructure for processing and marketing of queen conch meat. Therefore, fishers generally sell their catch to buyers at the beach/landing site, or they do personal delivery to buyers. <p>Private sector (fishers, processors and other relevant actors):</p> <ul style="list-style-type: none"> Despite the higher value and diversification opportunities offered by pearls and alternative use of shells and other parts of the animal discarded (such as viscera, claw, operculum, tips of proboscis, eye stalk and verge), there are limited efforts to make further use of them. Understanding of BioTrade Principles and Criteria is very limited in the value chain. So far, two specific workshops have been organized by UNCTAD and OECS, but both were online due to the COVID-19 pandemic. There is little or no evidence that fishers strictly implement and are required to comply with a quality control system. There is no system for catch certificates for queen conch, or subsequent traceability systems among fishers or processors. The value chain is not yet ready for any sustainability certification. In this regard, the BioTrade Principles and Criteria offer a first and significant step towards sustainability. 	<p>It is recommended to expand and conduct more training activities for a better understanding of the content, application and benefits of BioTrade Principles and Criteria.</p> <p>Simple visual guidance on pearl value and pearl appraisal principles and best sanitary practices for queen conch harvesting and handling could be produced and shared with fishers.</p> <p>Fishers' cooperatives, once mobilized, may also provide effective platforms for awareness-raising. Per Principle 3, these activities should provide incentives to fishers (economic and social, as required).</p> <p>Processing facilities have HACCP certification in Grenada, but additional certification is necessary for the exportation of queen conch. The development of queen conch-specific HACCP plans for existing export processing facilities, and audit of these facilities under the seven principles of HACCP, could improve opportunities for export and increase the value added to products.</p> <p>There is a need to explore options for accessible low-cost, simple and small-scale fisher-targeted catch verification/certification and traceability systems for the queen conch value chain. The effort could be led initially by processors, as they can train and support the application by small-scale fishers on what type of raw material they need.</p> <p>Support is needed to enhance the effectiveness of existing fisherfolk cooperatives.</p> <p>In addition, and as a first step, interested business operators and fishers' associations may also undertake the UNCTAD–International Trade Centre BioTrade Self Assessment Tool⁶⁴ to benchmark their sustainability practices against private, public and international (voluntary) standards.</p>

⁶⁴ Available at www.sustainabilitymap.org/biotrade_unctad.

	Relevant BioTrade criteria	Status of the queen conch value chain in Grenada	Recommendations for the implementation of relevant BioTrade Principles and Criteria
Principle 5: Legal compliance	5.1	<p>Government:</p> <ul style="list-style-type: none"> Grenada has ratified and is a party to the United Nations Convention on the Law of the Sea, the United Nations Fish Stocks Agreement, the Convention on Biological Diversity, CITES, the Paris Agreement, and the Ramsar and Cartagena Conventions. Grenada is a party to CITES, but currently faces two recommendations to suspend trade, due to non submission of annual trade reports and implementation reports.⁶⁵ All local fishing vessels must be registered, and licensed, and special conditions are applied (e.g., permission to use various gear types such as scuba). The Grenada Fisheries Act, 1986 contains enforcement and compliance measures. The Fisheries (Amendment) Regulations, 1996 include requirements for harvesting queen conch – e.g., maturity and size, as well as provisions for the closed season. 	<p>Grenada must urgently implement the recommended steps of this study to address the CITES recommendations to suspend trade, including but not limited to:</p> <ul style="list-style-type: none"> Conducting stock assessments and making an NDF Submitting annual reports Submission of annual trade reports <p>Digitalization of information on supply chain, fishery management and upgrading of human resources skills could assist in traceability, monitoring and surveillance to mitigate the negative environmental impact of the queen conch fishery (also related to Principles 2 and 4).</p>
	5.2 5.3 5.4		

⁶⁵ For more information, see <https://cites.org/eng/parties/country-profiles/lc/compliance-status>.

	Relevant BioTrade criteria	Status of the queen conch value chain in Grenada	Recommendations for the implementation of relevant BioTrade Principles and Criteria
Principle 6: Respect for actors' rights	6.1	Government:	<p>Social protection may need to be extended for fishers, farmers and other informal and vulnerable workers of the value chain. Associativity and/or high-level (at policymaker/regulator level) cooperation/coordination are essential to ensure this happens.</p> <p>Formalization of queen conch fisherfolk harvesting and trade may address the issues on provision of social protection and inclusion. If formalization is considered, this process should be straightforward and accessible, so it does not become a barrier for participation.</p> <p>Special insurance schemes could be developed with the private sector and processors for fishers and other risky professions.</p> <p>Awareness-raising at the grassroots level is as important as establishing these rights.</p> <p>Grenada could assess the importance of ratifying the International Labour Organization Work in Fishing Convention, 2007 (No. 188).⁶⁷</p> <p>Consultations to validate the findings of this report should be undertaken with fishers in an understandable and accessible manner.</p>
	6.2 6.3	<ul style="list-style-type: none"> Grenada respects fundamental human rights, has a rule of law, and respects basic labour rights.⁶⁶ <p>Private sector (fishers, processors and other relevant actors):</p> <ul style="list-style-type: none"> Fishers are usually autonomous and informal workers. Interviews suggest that processors apply national labour laws. Conch divers do not have medical insurance coverage to support treatment for decompression sickness and other labour risks. 	
Principle 7: Right to use and access natural resources	7.1	Government:	<p>Traditional best practices and knowledge that could be beneficial for the conch fisheries should be compiled and recorded.</p> <p>Management of the queen conch species and its ecosystems should be transparent and inclusive with coastal, local and indigenous communities, the private sector and the government working collaboratively to respect and enforce tenure rights equitably.</p>
	7.2 7.4	<ul style="list-style-type: none"> Access to the resource is based on a licensing and registration system that is enforced in accordance with Grenada Fisheries Act, 1986. <p>Private sector (fishers, processors and other relevant actors):</p> <ul style="list-style-type: none"> In principle, fishers comply with legislation, and access to the resource exists without quotas or taking seasons, but cases of IUU fishing have been reported. Trading with Saint Vincent and the Grenadines to Carriacou remains a concern. Fishers apply traditional practices such as rotation of grounds and knowledge that could be beneficial for the fisheries of conch, but they have not been compiled. 	

Source: Adapted for Grenada from UNCTAD (2022).

⁶⁶ For more information, see the Grenada Employment Act, 1999, available at www.ilo.org/dyn/natlex/docs/WBTEXT/53925/65176/E99GRD01.htm; and the Grenada Labour Relations Act, 1999, available at www.ilo.org/dyn/natlex/docs/WBTEXT/53926/65177/E99GRD02.htm.

⁶⁷ For more information, see www.itfglobal.org/en/sector/fisheries/-ilo-work-in-fishing-convention-188#:~:text=Convention%20188%20came%20into%20force,safety%20on%20board%20fishing%20vessels.

7. RECOMMENDATIONS AND CONCLUSIONS

Current production of queen conch in Grenada is low when compared with other project countries. This could be due to a combination of low fishing intensity, low export market access, gaps in data collection and availability of more lucrative fisheries, such as yellowfin tuna. However, the potential to enhance value and sustainability of this value chain should not be overlooked. This study outlines key recommendations and conclusions from the country case study that should be presented to Grenadian stakeholders for further validation.

Urgently take steps towards improving implementation of CITES, including lifting trade suspension:

The road map to achieve the lifting of the two queen conch trade suspensions imposed by CITES to Grenada is as follows:

- (a) In general terms, it is imperative to implement CITES-related obligations properly by making a legal acquisition finding and non-detriment finding for future trade.
- (b) To lift the trade suspension related to annual reports, Grenada needs to prepare outstanding annual reports for the period 2013–2020 and submit them to the CITES secretariat as soon as possible.
- (c) To lift the trade suspension related to RST, Grenada needs to conduct a review of the recommendations made by the CITES Animals Committee at its nineteenth meeting (AC19) (August 2003) and identify which, if any, of the recommendations have been implemented so far.
- (d) The most urgent actions Grenada needs to undertake to achieve the lifting of the queen conch trade suspension under RST are as follows:
 - (i) Establish catch and export quotas, communicate these to the CITES secretariat and provide information for the basis of these quotas.
 - (ii) Design and implement a fishery data collection programme, including catch and effort data, and introduce a system of permits and licenses for commercial harvesters and exporters, and regular reporting of landing and export data, in particular, the collection of landing data from secondary sites.
 - (iii) Design and implement a long-term population monitoring programme for the designated commercial fishing areas. This programme should provide reliable estimates of adult and juvenile densities within commercial fishing areas, at a minimum.
 - (iv) Apply adaptive management procedures to ensure that further decisions about harvesting and management of the species concerned will be based on the monitoring of the impact of previous harvesting and other factors.
 - (v) Give serious consideration to the recommendations of the June 2003 International Queen Conch Initiative meeting,⁶⁸ and commit specifically to those recommendations on the development of a regional management regime, including cooperative quota setting, law enforcement capacity and effectiveness, and population assessments and other research relating to the management of queen conch.

Establish a closed season based on scientific local research: Even though there is a reduction of queen conch fishing during the spiny lobster fishing period extending from September to April, there is still a need to prevent fishing of the adult spawning individuals during the peak spawning season, which in the Eastern Caribbean could extend from July to September. A field study to determine the peak spawning season (as determined by the number of mating individuals and egg masses found during a specific period during the year) is necessary to establish an appropriate closed fishing season. This is particularly important as Grenada is located south of most queen conch-producing countries in the OECS, and thus likely has a unique spawning season. A queen conch stock assessment is also necessary to identify fishing grounds with different densities of young and adult queen conch, to determine biomass and proportion of the population that is sustainably available to the fishery. This information will help to establish the nursery areas, for monitoring and prevention of illegal fishing of immature conch, and to establish a catch quota for the fishery.

⁶⁸ Available at <https://cites.org/sites/default/files/notifications/E-Notif-2020-006.pdf>.

Expand existing value addition efforts through dissemination of information on value addition best practices: Vineyard Limited is notable for the large variety of conch products offered, which incorporate conch trimmings that can be wasted by other processors. Efforts to collect conch trimmings could be expanded to other processors through sharing of best practices on the creation of value-added products. This practice could be shared with OECS members such as Saint Lucia, enhancing the long-term sustainability of production of queen conch in other countries.

Invest in secondary landing site infrastructure: As queen conch is landed at several secondary/informal landing sites, which are largely informal and lack basic infrastructure, investment is needed at these sites for management, health and safety reasons. The processing and cleaning of queen conch meat for domestic consumption would be improved through the establishment of official landing sites that should be equipped with clean running potable water, cleaning/working tables, proper waste disposal arrangements and storage facilities for fishers to ensure proper hygiene, good sanitary conditions and safety of conch meat for human consumption.

Invest in data collection at secondary landing sites: Data collection at these sites is limited, and the large number of secondary sites puts pressure on the limited personnel capacity of the Fisheries Division. Methods of submitting data on landing electronically and remotely should be explored.

Capitalize on existing high-capacity certified facilities: With two HACCP-certified processors and a European Union-recognized competent authority for the issuance of health certificates for food exports, Grenada is well placed to move towards the exportation of queen conch to these high-value markets. Also, high volumes of trade with the United States by these certified facilities represent a strength of this value chain that could be leveraged for the exportation of queen conch.

Apply/implement the BioTrade Principles and Criteria: The use of the BioTrade Self-Assessment Tool⁶⁹ by Spice Isle Fish House and Vineyard Limited would allow for deeper understanding of the level of implementation of the BioTrade Principles and Criteria by these important export-oriented stakeholders involved in the value chain. Further, the use of the Self-Assessment Tool could provide opportunities to collaborate with other stakeholders with interests in BioTrade. This would enable knowledge-sharing and associativity within and beyond normal markets. Additionally, the use of Self-Assessment Tool will:

- (a) enable processors in Grenada to understand their existing strengths and weaknesses of the value chain against important social, economic and sustainability criteria, as well as increase their knowledge on steps towards accessing high-value export markets
- (b) allow actors to understand how their processes fare against important sustainability criteria and, in doing so, allow for the identification of important actions to improve the position of their value chain/s in the future Regional Plan of Action for queen conch in OECS
- (c) help in the development of a road map towards specific voluntary good practice verification/certification standards, such as Union for Ethical BioTrade certification⁷⁰

Capitalize on demand from geographically proximate markets: Demand for queen conch from Grenada is high in Trinidad and Tobago for both processed and unprocessed conch. Stakeholders consulted identified this market as an important target market where Grenadian stakeholders have a comparative advantage, due to proximity and strength of transportation links.

Improve diver safety: While comparatively safer than conch diving in countries with deeper fishing grounds and faster currents, such as Saint Lucia, diver safety remains a concern in Grenada. Training and awareness-raising among divers on safe diving practices are essential and could be expanded through cooperation with bodies such as the Grenadian Dive Association. Social protection schemes for divers do not exist in Grenada. Insurance facilities and other social protection schemes should be considered to provide some form of economic support to fishers using dive methods for harvesting, such as conch fishers.

⁶⁹ Available at www.sustainabilitymap.org/biotrade_unctad.

⁷⁰ See www.ethicalbiotrade.org for more details.

Conduct public awareness campaigns targeted at subsistence fishers: Due to its relatively shallow waters on the eastern coast, fishing for conch by freediving is possible. Subsistence fishers harvest small amounts of conch for personal consumption and occasionally local sale to supplement their incomes. The effects of this type of conch fishing on the health of the resource is unclear. It is recommended that awareness-raising campaigns on the importance of not harvesting juvenile conch be conducted as a precaution. Providing resources, research and local monitoring of this type of fishing would be beneficial.

Seek research partnerships to understand environmental challenges to fishery health: Land-based sources of pollution and development of coastal habitats for conch are a significant challenge to the conch fishery across Grenada. Land-based runoff due to deforestation, particularly in Petite Martinique and Carriacou, presents challenges to coastal water conditions. Further coastal development for tourism purposes and marine-based pollution from ship repair services also present a challenge to fishery ecology. Research partnerships should be sought with regional academic institutions to understand and mitigate (and eliminate in the long run) the effects of these environmental changes on the health of the fishery.

ANNEX. INTERVIEW QUESTIONNAIRE FOR KEY INFORMANTS IN THE QUEEN CONCH VALUE CHAIN

Name:

Gender:

Location:

Age:

Introductory questions:

1. What is your name and role in the conch industry?
 - a. Are you a part-time or full-time conch fisher?
2. How long have you been in this role?
3. Do you own your own your business or boat, and is it registered (government entity, private entity, community-based organization, other)?
4. How many people do you employ and/or work with you?
 - a. How many are women?

Production questions:

5. What are the total start-up costs for a conch diving operation?
6. What months do you fish conch?
7. How many fishing trips do you take per month during the conch season?
8. What is the average landing in weight per trip?
9. What geographic areas do you fish?
10. Have you noticed any changes in the amount of conch available in the sea?
 - a. More
 - b. Less
 - c. Same
 - d. Comments:
11. To whom do you sell your products? At what average cost?

Challenges:

12. What are the main challenges you face in the conch industry?
 - a. Environmental:
 - b. Economic:
 - c. Regulations:

Opportunities:

13. What are the main opportunities to increase income in the conch industry?

Information flows and gender:

14. Do you employ women in your operations? What role do they play in the conch industry?

15. Is there any information/special knowledge that gives you an edge in this industry? What advantage do you have?
16. What information do you think would help you improve your income/position in the industry? What information can we provide?

Draft map validation and closing:

17. When you look at this diagram of the industry, do you think we are missing any key stakeholders?
18. For what other actors in the industry could you give us contacts?
19. Do you have any other data or information you would like to share about your role as a stakeholder in the conch industry?

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