

Enhancing the Economics and Sustainability of Queen Conch Fisheries through Value-Added Markets in Puerto Rico

Mejorando la economía y la sostenibilidad de las pesquerías de caracol rosado a través de mercados de valor agregado en Puerto Rico

Amélioration de l'économie et de la viabilité des pêches de Caracol Rosado dans les marchés de valeur agrégés à Porto Rico

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EXTENDED ABSTRACT

Puerto Rico's artisanal queen conch (*Aliger gigas*) fishery is a vital economic resource for coastal communities, with conch meat primarily consumed locally and with minimal export. For generations, countless livelihoods have depended on the fishing of queen conch; a culturally and economically significant species. However, the sustainability of the fishery has been increasingly threatened by overfishing, environmental degradation, and changing ocean conditions. These challenges have driven the need for the fishers of Puerto Rico to dive deeper, as warming waters and other environmental pressures push queen conch populations further offshore. The additional costs and risks associated with deeper dives place a significant burden on local fishers, many of whom operate small-scale operations with limited resources.

The market value of queen conch meat ranges from \$9 to \$14 per pound, making it a valuable but increasingly difficult commodity to harvest sustainably. While conch shells hold potential commercial value, they are often discarded by fishers at sea rather than brought to shore. This is largely due to logistical constraints, as hauling heavy shells reduces fuel efficiency and increases operational costs. As a result, the shell remains an underutilized resource, despite its potential for value-added markets.

These pressing issues highlight the urgent need for innovative solutions to preserve the queen conch fishery while ensuring economic stability for local fishing communities. In response, a collaboration between FAU Harbor Branch Oceanographic Institute, Conservación ConCiencia, and Naguabo Fishing Association has led to two Saltonstall-Kennedy NOAA Fisheries funded projects aimed at developing value-added markets for both queen conch meat and shells. These initiatives, based in Húcares Beach and San Juan, Puerto Rico, offer a multifaceted approach to addressing sustainability challenges while creating new economic opportunities.

The first project, launched in 2024 in Húcares Beach, focused on diversifying income streams for local fishers by establishing a market for whole queen conch shells, which are typically discarded. The initiative involved purchasing up to 100 conch shells at \$3 per shell from local fishers at the Naguabo Fishing Association, which created a new revenue stream. In addition, a collaboration with professional artisan Dan Simmonds from Wampum Wear Designs was established. Dan led a two-day workshop hosted at the Naguabo Fishing Association and Aquaculture Center on August 4th and 5th, 2024, where 17 local licensed artisans received hands-on instruction in carving queen conch shells and creating custom jewelry (Fig. 1). The goal of this initiative was to establish a market for shell-based crafts, with finished pieces selling for anywhere from \$20 to \$200, depending on the design and craftsmanship. The potential financial impact is particularly significant for low-income households, where even a modest increase in income can make a meaningful difference, especially when economic opportunities are extended to women in the community. The project also worked closely with Puerto Rico's Economic Council to seek assistance in getting the word out to local licensed artisans.

The second project, completed in 2023, focused on enhancing the culinary value of queen conch meat by increasing its market price through high-end culinary applications. By integrating queen conch into refined Puerto Rican cuisine, this initiative sought to elevate consumer demand and, in turn, increase earnings for local fishers. In collaboration with renowned chef, Martin Louzao, the project resulted in the development of gourmet recipes inspired by various Caribbean culinary traditions, culminating in the publication of a cookbook titled *Connecting Cultures Through the Preparation of Queen Conch* (Fig. 2).

To promote this effort, Chef Martin hosted exclusive dining events at his San Juan restaurant, Cocina Abierta, where he prepared sophisticated queen conch dishes using conch sourced from the Naguabo Fishing Association. These events helped to position queen conch as a premium ingredient while fostering interest among consumers and other local restaurateurs. By shifting perceptions of queen conch from a traditional seafood item to a high-value delicacy, the project aimed to



Figure 1. Jewelry made from a queen conch shell at the August 2024 shell carving workshop.

strengthen demand and improve profitability for fishers who rely on its harvest.

Finally, the success of these two value-added projects have generated interest beyond Puerto Rico. Caribbean nations, such as The Bahamas, have an expanding conch carving industry, and other countries are exploring similar programs to provide diverse economic opportunities for their fishing communities. This growing regional interest underscores the potential for these initiatives to become part of a larger, shared initiative to help ensure the long-term viability of the queen conch

fishery, provide economic resilience, and promote marine conservation across the Caribbean.

KEYWORDS: *Aliger gigas*, queen conch, shell craft, value added, Puerto Rico, fishers, community



Queen Conch Carpaccio with Citrus and Avocado

Serves: 4

INGREDIENTS

- 12 oz fresh Queen Conch meat, cleaned and thinly sliced
- 2 limes, zested and juiced
- 2 oranges, zested and juiced
- 1 lemon, zested and juiced
- 1/4 cup extra virgin olive oil
- Salt and freshly ground black pepper, to taste
- 1 large ripe avocado, thinly sliced
- 1/2 small red onion, thinly sliced
- 1/4 cup fresh cilantro leaves, for garnish
- 1/4 cup toasted pine nuts, for garnish (optional)

DIRECTIONS

1. In a shallow dish, arrange the thinly sliced conch in a single layer. Set aside.
2. In a small mixing bowl, whisk together the lime, orange, and lemon zest and juice. Slowly whisk in the extra virgin olive oil to create a citrus vinaigrette. Season the vinaigrette with salt and black pepper to taste.
3. Pour the citrus vinaigrette over the sliced conch, ensuring that all the pieces are well coated. Cover the dish with plastic wrap and refrigerate for at least 30 minutes, or up to 2 hours, to allow the conch to marinate and the flavors to meld.
4. To serve, arrange the marinated conch slices on individual plates or a large serving platter. Place the avocados and red onion slices in between the conch pieces, creating an attractive presentation.
5. Drizzle any remaining citrus vinaigrette over the dish. Garnish the Queen Conch Carpaccio with fresh cilantro leaves and toasted pine nuts (if using). Enjoy this light and refreshing Caribbean dish as a delicious and satisfying appetizer or main course.

Figure 2. A cookbook featuring gourmet recipes by Chef Martin Louzao, inspired by various Caribbean culinary traditions, titled Connecting Cultures Through the Preparation of Queen Conch.