GEORGIA'S JELLYBALL INDUSTRY

Georgia has a rich tradition of commercial fishing along the coast. Historically, shrimp, blue crabs and shellfish made up the bulk of landings in the state, but recently **jellyfish have become one of Georgia's largest seafood commodities.**

The cannonball or cabbagehead jellyfish (*Stomolophus meleagris*), locally referred to as a "jellyball," is one of the most common jellyfish species in the Southeast and Gulf regions. They play an important role in the marine food web, serving as a food source for sea turtles, especially the leatherback sea turtle as well as fish such as spadefish, harvestfish and butterfish.

Georgia's jellyfish industry is relatively new, but they have been harvested in other parts of the world for centuries[1]. Asian countries are major consumers of jellyfish and consider them a delicacy. While primarily used as a food source, they also have been used for medicinal purposes to treat blood pressure and bronchitis[2]. There is also a growing interest among the pharmaceutical industry to utilize jellyfish for other biomedical purposes.

Increase in demand for jellyfish in overseas markets and growing interest from U.S.-based Asian food stores and restaurants has paved the way for expanding the industry in the Southeast. The first commercial harvest of jellyfish in the U.S. began in Florida in the early 1990s and soon spread to other states[3]. In 1998, the Georgia Department of Natural Resources (DNR) issued the first experimental fishing permit for the commercial harvest of jellyfish off Georgia's coast. Fifteen years later, jellyfish became a legislatively regulated fishery in Georgia.

According to DNR, jellyfish make up the largest commercial seafood commodity by landings in Georgia. Several million pounds of jellyfish have been harvested in a given year. Most locally-harvested jellyfish are exported to China and Japan, but small quantities are shipped directly to Asian markets in the U.S.

[1] Omori and Nakano, 2001; [2] Dong et. al., 2009; [3] Geer et al., 2017

DID YOU KNOW?

Jellyfish are considered a nuisance to Georgia shrimpers. In fact, the first TED was created by a Georgia shrimper named Sinkey Boone to exclude jellyfish from his catch. Now that jellyballers want to catch the largest, most valuable jellyfish, new TEDs are being designed so they can catch the largest jellyballs while still meeting management and conservation requirements.

Harvesting Jellyfish

The commercial harvest of jellyfish in Georgia's state waters (which extend 3 miles from the coast) typically occurs from late fall to late spring. Fishing in federal waters is open year-round, with the highest landings reported from November through May. Most jellyfish fishermen, or "jellyballers," are shrimpers who swap out their nets at the close of shrimp season in preparation for jellyball trawling.

Jellyfish are harvested using trawl nets that have a larger mesh size than nets used for shrimping. Nets and trawl doors have extra floats on them to help fishermen target jellyballs throughout the water column. Vessels fishing in state waters are required to limit their tow times to 30 minutes or less and must have National Marine Fisheries Service-approved turtle excluder devices (TEDs) in their nets. The use of TEDs reduces bycatch, which includes fish and other marine life incidentally caught in the net.

Unfortunately, the standard TEDs required of shrimpers don't work as well with jellyballs. The maximum four-inch bar spacing that prevents turtles from getting caught in the net also excludes some of the largest, most valuable jellyballs.

In 2014, Georgia Sea Grant funded the development and testing of an experimental TED to help fishermen trawling for cannonball jellyfish operate more efficiently. The project was proposed by the Georgia DNR, the College of Coastal Georgia, and Marine Extension and Georgia Sea Grant, all of whom recognize the benefits of the commodity to both commercial fishermen and the economy. The research team worked with commercial fishermen to design a gridded TED with bar spacing wide enough to let larger jellyballs into the net but narrow enough to keep sea turtles out. While initial tests showed some promise, additional testing and refinement of the experimental TED is needed for DNR to allow its use in state waters[4] .

Because the fishery is not managed at the federal level most fishermen target jellyballs beyond three miles where the state's tow time restrictions and TED regulations are not required. However, jellyball tows rarely exceed 30 minutes due to the large quantities that can be caught in a given area. Fishermen bring their catch on board and deposit the load in the vessel's hold. Depending on the size of the vessel, over 100,000 pounds of jellyballs can be harvested in a single trip. Concerns about potential bycatch have been raised, but more than 12 years of onboard observer data indicate bycatch is typically less than one percent of the total weight per catch[5]. This low percentage can be attributed to relatively short tow times, high concentrations of jellyfish, larger

mesh sizes, and trawling closer to the surface where there's generally less marine life. Examples of documented bycatch include harvestfish, cownose ray, Atlantic bumper, butterfish and blue crab. Even though bycatch is minimal, some concerns remain about potential interactions with protected species like sea turtles and dolphins while jellyballing. In addition, managers recognize the need to collect additional data on the status of jellyfish populations and estimates of abundance to support the long-term viability of the industry[6].

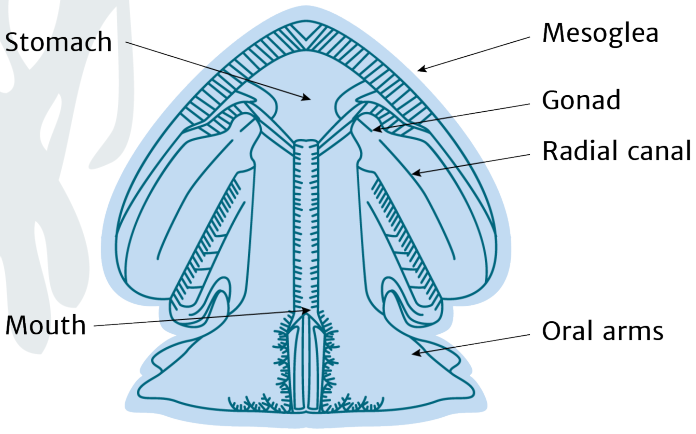
When fishermen arrive back at the dock, they transfer the jellyballs from the boat to a processing facility where the bells are separated from the trunks and they are graded and washed to remove excess slime and residue. Salt and alum are then added to dehydrate the product. After several days of drying the jellyfish are packaged and shipped overseas where they undergo final processing before being consumed.

[4] Geer et al., 2017; [5] Page, 2015; [6] Georgia Department of Natural Resources, 2017

WHAT DO THEY TASTE LIKE?

Jellyfish have a crunchy texture and can be served hot, cold, cooked or raw. They essentially take on the flavor of the other food or condiments they are served with. Jellyfish are commonly cut into strips and served in salads, but they can also be used in egg rolls, stir-fry and sushi wraps. Nutritionally, they are a good source of protein (mainly collagen) and low in fat.

CANNONBALL JELLYFISH ANATOMY



Cannonball jellyfish have a ball-shaped bell bordered with brown or purple pigment and short protruding oral arms. At the base of the bell are a number of secondary mouthfolds. Jellyfish can grow to 10 inches in diameter and have a lifespan of three to six months.

The Future of the Industry

Jellyfish is now an established commercial fishery in Georgia, but there are challenges to growing the industry. The fishery has been limited to ten vessels or less, which is largely due to the number of processors on the coast[7]. By law, fishermen must document that an approved dealer will buy their catch to obtain a permit from DNR. Only two facilities, both located in McIntosh County, have been approved to accept jellyfish in the past. Currently, only one of those facilities is capable of processing jellyfish in Georgia. Issues with water discharge, smells associated with processing jellyfish, and opposition from some residents has prevented the establishment of new processing facilities. Fishermen have limited places to unload their catch and many vessels are not equipped to handle the large volumes of jellyfish often encountered while trawling. Because of these constraints, some fishermen are unwilling or unable to invest in the fishery.

Despite these challenges, jellyball landings have steadily increased since it began as an experimental fishery and jellyballers and processors have reported profits. There's still a wide variation in annual jellyball landings, and exact quantities and associated values are not publicly available due to federal confidentiality policies associated with having three or fewer dealers or fishermen in the fishery[8].

The long-term success of the industry will depend largely on global demand as well as management strategies and regulations. While variability in global markets is largely out of the industry's control, there is an opportunity to capitalize on the growing local foods movement and explore the possibility of introducing a domestic product for U.S. consumers.

[7,8] Georgia Department of Natural Resources, 2017

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