Georgia Department of Natural Resources
Coastal Resources Division
Management Plan: Whelk
April 2017

General Objective:

Manage Georgia's whelk fishery to ensure the maximum aggregate social, economic, and ecological benefits to the citizens of Georgia.

Life History and Reproductive Biology:

Four species of whelk have been observed to be commercially harvested in Georgia. These are the knobbed whelk, channeled whelk, lightning whelk, and pear whelk. Directed commercial harvest of whelk in Georgia occurs via trawlers, and indirect harvest occurs from blue crab fishers encountering the species as bycatch in their traps. Recreationally, no data exists on effort or volume of whelks harvested annually, though method of harvest and location of effort has been identified to be predominantly from individuals picking up whelks by hand along barrier island beaches. Commercial volume (pounds landed) varies by fishery, with knobbed whelk dominating trawl catches and channeled whelk dominating blue crab traps.

The knobbed whelk is the most commonly harvested whelk species in trawls in Georgia. With a range from Massachusetts to Florida, these highly migratory gastropods can be found in either deep or shallow water, depending on the time of year. Migration to the offshore waters of the Atlantic occurs during the extreme weather conditions prevalent during the summer and winter months. A second migration occurs during the spring and fall months, this time to the shallow waters of near-shore mud flats. It is on these shallow-water mud flats that whelk prey on oysters, clams, and other marine bivalves found in the diet of these omnivorous marine snails. Mating and egg laying also occur during this spring and fall migration. Internally fertilized eggs are surrounded by a transparent mass and laid in a protective egg capsule to form a helicoid string called an egg case. On average, each capsule contains 0-99 eggs, with most strings having 40-160 capsules. After laying their egg cases, female whelk will bury one end of the egg case into the substrate, thus providing an anchor for the developing fertilized eggs and preventing them from washing ashore. Fertilized eggs will hatch as juvenile whelk approximately 4mm in length and continue developing into the largest shallow water snails of the Southeast coast above Florida, reaching lengths of up to 30 cm.

The smooth-shelled channeled whelk is the second most common species of whelk commercially harvested in Georgia. Reaching lengths of up to 17 cm, these marine snails inhabit the same intertidal mud flats as that of the knobbed whelk. While the range and seasonal migratory habits of the channeled whelk

typically mirror that of the knobbed whelk, noticeable differences do exist in the rhythms of activity, mating habits, sensitivity to temperature, and harvest methods. Knobbed whelk exhibit both diurnal and nocturnal rhythms of activity throughout the year, while channeled whelk display three different rhythms of activity according to the time of year. Typically nocturnal during warmer months, channeled whelk become diurnal and nocturnal during the spring and fall before engaging in primarily diurnal habits during the winter. Unlike the knobbed whelk which mates and lays eggs in both the spring and fall, channeled whelk have only one egg-laying season in the spring. Additionally, the two species differ in their sensitivity to extreme temperatures. Channeled whelk are less sensitive to lower temperatures than Knobbed whelk, whereas knobbed whelk are less sensitive to higher temperatures. A final difference between these two species is the methods by which they can be harvested. Though both are harvested in Georgia predominately by commercial trawling vessels, Channeled whelk are unique in that they are also harvested as incidental catch in crab pots.

The largest commercially harvested whelk in Georgia is the lightning whelk. Ranging from North Carolina to Florida and reaching up to 40 cm in length, the spiked shells of these gastropods greatly resemble that of the knobbed whelk, although the knobs are typically less conspicuous. The most obvious physical characteristic used to distinguish the lightning whelk is a left-opening aperture as opposed to the right-opening aperture of the knobbed whelk. Other differences between these two species include habitat preference and rhythms of activity during the migration seasons.

Though both species migrate onto the intertidal mud flats to feed on marine bivalves, knobbed whelk migrate higher up into the intertidal flats than do lightning whelk. Furthermore, unlike knobbed whelk, which are active both day and night, lightning whelk are diurnal. Though differences do exist between the knobbed whelk and the lightning whelk, many similarities also exist between these two species, including the ability to prey on thick shelled clams and oysters, a practice not possible for the thin shelled channeled whelk.

The pear whelk is the least common whelk commercially harvested in Georgia. This species ranges from North Carolina to Florida, reaching up to 14 cm in length. Distinguishing characteristics include a large body whorl encompassing over half of its thin shell and no presence of knobs. Shell coloration of this species is whitish with wavy, reddish brown vertical streaks.

Description of the Fishery:

Recreational Fishery

Recreational harvest of whelk is limited to 1 bushel/per person. There is no minimum size, closed season or closed area. A recreational fishing license is required, including for hand harvest from the beach.

Commercial Fishery

An experimental fishery permit was issued by the Department in 1980 to an individual participating in the winter crab trawl fishery to allow the use of a large mesh webbing trawl for the commercial harvest of whelk from Georgia's waters. Local interests continued to grow, and by its fourth year in existence (1983), this fishery had become the state's most valuable molluscan fishery.

Managed under the blue crab trawl fishery until 1998, this fishery has historically had a limited number of participants and has taken place as a directed fishery only during the winter/spring season, generally after closure of the shrimping season (January through April). Though participation is annually variable and correlated with the success/failure of the previous food shrimp season, typically less than 5 shrimp trawling vessels convert to a minimum of 4-inch large mesh whelk/crab trawling gear with the close of the shrimp trawling season in state waters.

Though trawl gear is the primary gear used to target whelk, they are also harvested as bycatch in the commercial blue crab fishery. Previous observer data indicates that the majority of whelk captured in the blue crab fishery are channeled whelk, though other whelk species may be captured in crab pots. As is the case with the whelk trawl fishery, no size or creel limit exist for whelk captured in blue crab traps.

Prices for whelk (shell-on) have fluctuated over the years from $0.50 per pound (trawl fishery) and $1.50 per pound (crab fishery), with an average price for (shell-on) whelk at .50 per pound in recent years. Due to the inherent damage whelk fishing causes to a trawling vessel and associated equipment and a low profit margin, most private boat owners use the whelk fishery only as a means to supplement their income following a lean food shrimp trawling season.

Between 1983 and 2001, whelk landings averaged 547,276 lbs annually. The average annual value of the commercial whelk fishery between 1980 and 2001 exceeded $270,000. Since 2002, this fishery has experienced a drastic decline in both harvest and subsequent value. In fact, between 2001 and 2011 the value of this fishery declined from $245,330 to $39,145, an 84% reduction in value in 11 years (Figure 1). Furthermore in recent years, the majority of whelks reported were not harvested via trawl gear, but instead were taken as bycatch from commercial crab pots. Multiple factors have contributed to these recent declines in landings, including a loss in the number of processing houses, a reduction in fishing effort, the requirement of TEDs in the trawl fishery, and potential changes in stock status.

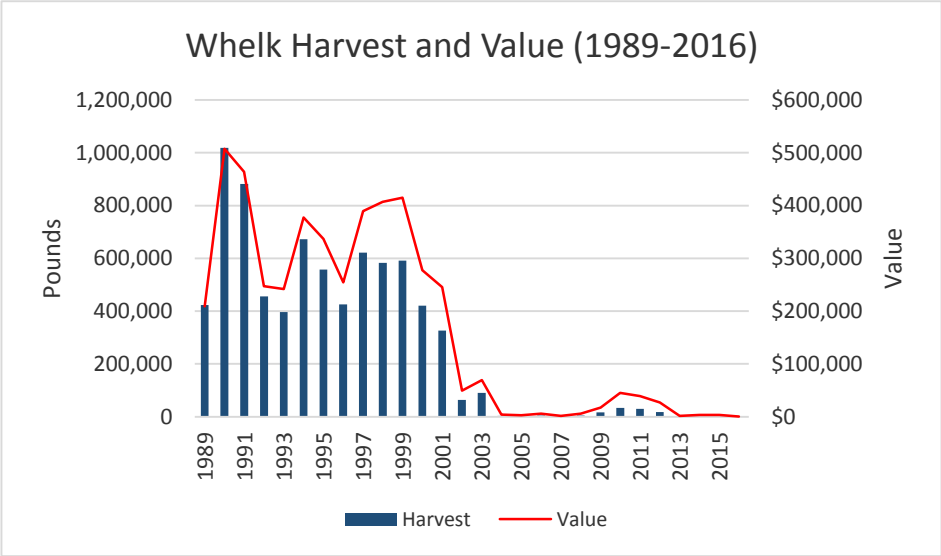

Figure 1. Whelk harvest in Georgia from 1989 to 2016. 2016 data are preliminary.

Current Regulations:

Georgia Regulations

O.C.G.A 27-4-133

Minimum-size:	none
Daily creel limit:	none
Gear:	Whelk may be taken during shrimp season with approved shrimp trawls; during official whelk season (when shrimp season is closed) trawl gear must be of 4" stretch mesh. Trawlers must utilize approved Turtle Excluder Devices (TEDs) for whelk trawling.
Season:	Whelk trawl season typically opens after the close of the food shrimp season and closes by April 30. Whelks may also be harvested with trawls anytime shrimp season is open. No season exists on the harvest of whelk recreationally or as bycatch in commercial crab pots.

Federal Regulations

Exclusive Economic Zone (3 - 200 miles offshore)

Minimum-size:	none
Daily creel limit:	none
Gear:	none
Season:	none

Chronology of Georgia Regulations:

1980	Experimental fishery permit granted to examine feasibility of trawl fishery for whelk.
1981 – 1997	Fishery regulated under O.C.G.A. Rule 27-4-133 (f) pertaining to the crab trawl fishery.
1998	Authority granted to manage fishery independently of crab trawl season.
2000	Required use of approved NC flounder TED for whelk trawl vessels effective opening day of whelk season (12/21/2000).
2006 - 2012	Requirement of a free Letter of Authorization (LOA) given by Department personnel to permitted whelk trawlers for the purpose of tracking user group and effort.
2017	License requirements were amended by the Georgia legislature to include a vessel crew license, species endorsements, and a seafood dealer license. The species endorsement, set to go into effect beginning fishing season 2018, will replace previously required letters of authorization.

Prioritized Issues of Concern:

1. No information is currently known on the population status or estimates of abundance for any of the commercially harvested whelk species.
2. There are no estimates of total mortality or natural mortality for whelk.
3. The population of coastal Georgia continues to increase with concomitant urbanization of areas adjacent to the estuary.
4. Interior land and water use patterns are changing so that the quality and quantity of freshwater entering the estuaries may be altered to the point of comprising ecosystem function.
5. Though no size limit exists for whelk; market conditions determine acceptable sizes. As a result, there is no estimate of harvested whelk versus discarded whelk. Furthermore, the effectiveness of TEDs in potentially excluding larger whelk from passing through the grid results in the exclusion of larger whelk from being harvested, and thus no information can be gathered on the excluded individuals. Only harvested whelk are enumerated as commercial landings.
6. There is no estimate of total spawning biomass or recruitment of whelk.
7. More information is needed on the early life history of whelk species in Georgia. General information on spawning season continues is known, but specific information on preferred environmental and habitat conditions are largely unknown.

Goals and Objectives for Management:

1. Continue to examine status of fishery on long-term basis.

Prioritized Research and Monitoring Needs:

1. Estimate relative abundance with fishery independent survey.

   Field Methods
   Utilize existing and ongoing trawl survey (Ecological Monitoring Trawl Survey) examining finfish and crustaceans in the Wassaw, Ossabaw, Sapelo, St. Simons, St. Andrew, and Cumberland Sound Systems.

   Analytical Methods
   The methods listed above will be used to develop an index of relative abundance based on numbers of captured individuals per unit of effort.

Activities for FYs 2017 – 2022:

Collection of catch/harvest/effort data from the commercial fishery.

Purpose
To describe the size distribution and quantity of whelk caught and landed by commercial fishers.

Method
Continued collection of landings data reported by fishers.

Collection of relative abundance data to produce fishery-independent indices of abundance.

Purpose
To produce a relative index of abundance for whelk populations in six Georgia sound systems.

Method
Continue trawling activities aboard the *R/V Anna* to examine abundance and CPUE estimates.