Georgia Department of Natural Resources
Coastal Resources Division
Management Plan: Tripletail
June 2017

General Objective:

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

Life History and Reproductive Biology:

The Tripletail is a, semi-migratory, pelagic fish that is found distributed throughout tropical and subtropical waters worldwide. In the Western Central Atlantic Ocean Tripletail, can be found along the South Atlantic Bight, the Gulf of Mexico, the Caribbean Sea, Bermuda, and as far south as Argentina. In the South Atlantic Bight, they are found from April to October in nearshore and estuarine waters. Their presence in Georgia coincides with rising water temperatures and may be related to spawning activity. Tripletail leave Georgia estuaries in mid to late October and move south to warmer waters in Florida. Tripletail are well known for their unusual behavior of floating just beneath the surface with one side exposed often mimicking a leaf or floating debris. It's presumed that this behavior is part of a feeding strategy that allows them to feed on smaller prey species seeking shelter under the floating debris. In Georgia, localized aggregations of Tripletail are present in early spring along Jekyll Island. Initially this presence was presumed to be associated with spawning activity. This phenomenon has been studied and no fish were found to be in spawning condition. It is now presumed that these fish are merely "staging-up" before they move into estuarine waters for the summer. Larvae have been collected in offshore waters greater than 230 feet (70m) deep at temperatures near 84 °F (28.8 °C) and salinity around 30.3 ppt. Juveniles range from 0.5" (13mm) to 1″ (25mm) in length and are usually found in nearshore waters around structures such as bulkheads, in shorelines near passes or swimming under patches of Sargassum. Growth in Tripletails occurs fastest in the first year. Females are thought to reach 50% maturity by age one at approximately 400-500 mm total length. Males are estimated to reach 50% mature at approximately 300 mm total length. This rapid reproductive development is thought to be an adaptation to the increased predation rate of small fish in the epipelagic zone. In offshore waters, adult fish can often be found associated with drifting sargassum, and other natural and manmade debris. This habitat provides shelter for the fish as well as serves to aggregate smaller prey species. In inshore waters, adult fish are often found associated near structures such as; pilings, jetties, buoys and other floating objects at the mouth of rivers, passes and bays.

Description of the Fishery:

Recreational Fishery

Recreational anglers target Tripletail during summer months around structure such as channel markers, day markers, bridge and dock pillions utilizing live shrimp and finfish as bait. Additionally, anglers have begun targeting large numbers of free-floating fish on the ocean side of barrier islands, during early spring through the summer months. According to the Marine Recreational Information Program (MRIP), the overall trend in landings is variable, with an average Catch per Unit of Effort (CPUE) of 0.007 Tripletail caught per angler trip, and an average Harvest per Unit of Effort (HPUE) of 0.004 Tripletail harvested per angler trip. These averages are for the period 2002-2016 and only for the private/rental boat and charter fishing modes, from which the majority of Tripletail are caught and harvested.

Commercial Fishery

There is no directed commercial fishery for Tripletail in Georgia. Commercial harvest of Tripletail in Georgia is limited and exists only in the form of bycatch from other fisheries. Prior to the mandatory usage of Turtle Excluder Devices (TEDs) in Georgia's shrimp trawl fleet, Tripletail and other finfish bycatch was routinely sold to local fish markets. Anecdotal information suggests that TEDs greatly reduced bycatch of Tripletail in Georgia's shrimp trawl fishery. Very few landings have been reported from 2000 to 2016. Landings for these years have remained below 250 pounds and those data are confidential.

Current Regulations with Chronology:

Georgia Regulations
DNR Board Rule 391-2-4-.04(3)(y) Tripletail

Minimum-size:	18-inch TL
Daily creel limit:	2 fish per person per day
Season:	Open year-round

Federal Regulations
Exclusive Economic Zone (3 – 200 miles offshore) - None

Chronology of Tripletail Management Actions in Georgia:

1989 State implements authority of Board of Natural Resources to establish open/closed seasons, daily creel limits, and minimum-size requirements for designated marine species. (O.C.G.A. 27-4-130.1)

Season:	All year
Minimum-size:	18-inch TL
Daily creel limit:	5 fish per person per day
Season:	Open all year

2006 Creel limit reduced through amendment to O.C.G. 27-4-130.1 (c)

Season:	All year
Minimum-size:	18-inch TL
Daily creel limit:	2 fish per person per day
Season:	Open all year

2012 Georgia General Assembly reformed/amended Title 27 - Game and Fish Code (HB869). Among the amendments, regulatory authority to establish harvest regulations for all managed saltwater species, including Tripletail, was given back to the Board of Natural Resources within specified parameters (O.C.G.A. 27-4-10). The Board of Natural Resources implemented the necessary requirements of the Legislative repeal while keeping Tripletail management intact, with the exception of resorting/renumbering of species; Tripletail became 391-2-4-.04(3)(y).

Prioritized Issues of Concern:

1. Little is known regarding the life history of Tripletail; projects need to focus on determining the most basic aspects of Tripletail biology in order to provide accurate management measures. Information on growth rate, fecundity, age at maturity, max age/max length, spawning location, residency and mortality will all be vital for managing Tripletail populations in Georgia.
2. As the population of Coastal Georgia continues to increase, so will the number of saltwater anglers and fishing pressure on Tripletail. Therefore, information on fishing pressure in Georgia is imperative to effectively manage Tripletail populations in Georgia.
3. Inland 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.
4. Likewise, the population of coastal Georgia continues to increase with concomitant urbanization of areas adjacent to the estuary.

5. Currently, there have been no regional or Georgia specific stock assessments conducted on Tripletail.
6. There are no accurate species-specific estimates of the impact of the marine recreational fishery on the economy of Georgia. With these kinds of estimates, an accurate value could be assigned to the recreational Tripletail fishery and a strong case could be made for investing greater human and fiscal resources in the research and population monitoring needed for effective management.
7. Both private boat anglers and for-hire fishers more frequently target Tripletail during the spawning period. No measurement of this mortality currently exists and, thus the impact of this mortality on the spawning stock biomass cannot be determined.
8. There is no estimate of post-hooking mortality for Georgia. The effectiveness of existing or proposed harvest regulations can only be fully evaluated with accurate estimates for fish in this area.
9. There are nine major estuarine systems along the coast of Georgia. Each has defining biotic and abiotic characteristics. Thus, it is reasonable to assume the suitability of each of these estuaries as Tripletail habitat might vary greatly from year to year. Similarly, natural and fishing mortality in each of these estuaries can vary from year to year. Consequently, it can be expected that recruitment to the adult population, either on an estuarine-specific or coastwide basis, may vary greatly through time.

Current Data Sources:

Fishery Dependent Data Sources

Marine Recreational Information Program (MRIP)

Since March of 2000, biologists with the Georgia Department of Natural Resources' Coastal Resources Division (GADNR CRD) have been working in conjunction with the federal NOAA Fisheries to conduct a survey of recreational saltwater anglers in coastal Georgia. This MRIP survey, entitled the Access Point Angler Intercept Survey (APAIS) produces estimates of recreational finfish catch (including fish released as well as those retained as harvest). Additionally, the NOAA Fisheries conducts surveys to estimate numbers of recreational saltwater anglers (participation) and numbers of fishing trips (effort). These data are necessary for determining appropriate regulations (e.g., creel and length limit laws), provide catch data for fishery management plans, and track trends in angler participation and landings. Figure 1 below shows the annual Tripletail landings and effort from the MRIP survey from 2002-2016. Figure 2 shows the annual Tripletail landings per unit effort from 2002-2016.

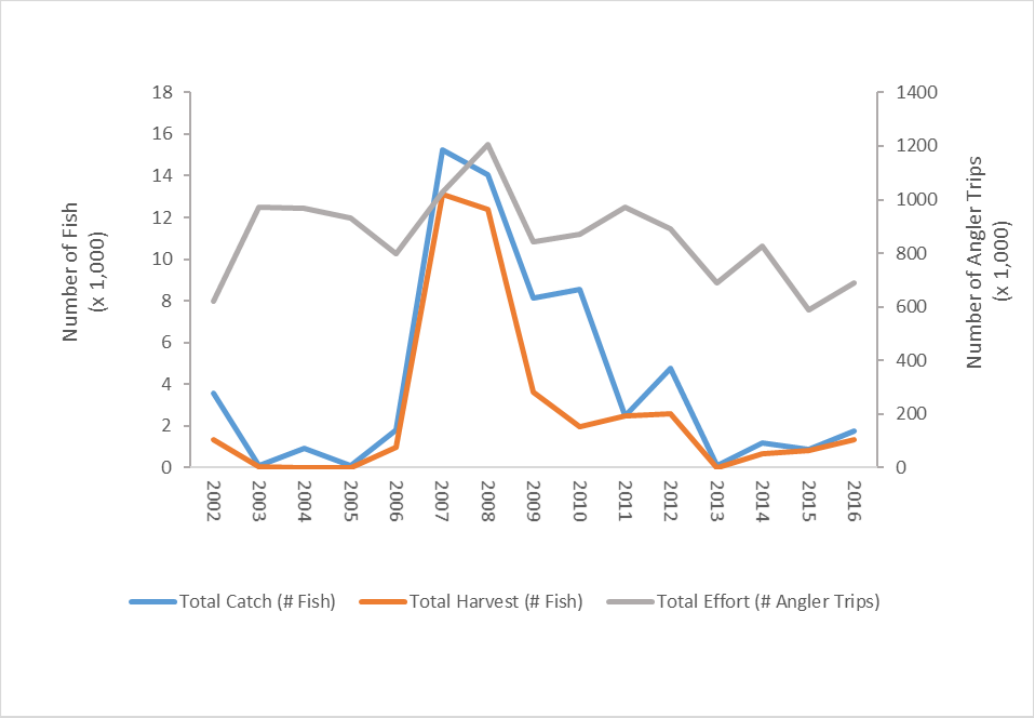

Figure 1. Annual Tripletail Landings and Effort.

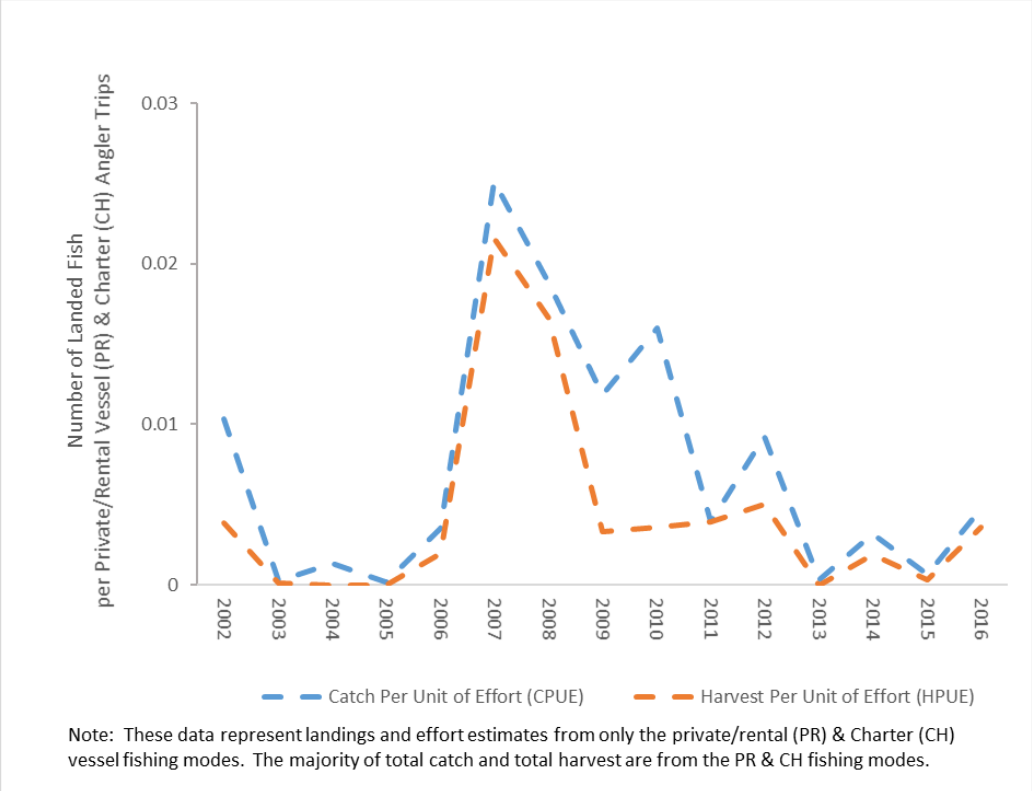

Figure 2. Annual Tripletail Landings per Unit of Effort

Carcass Recovery Project (CRP)

Starting in the autumn of 1997 staff with the Marine Fisheries Section have managed the Carcass Recovery Project (CRP). The CRP is a cooperative project that utilizes carcasses recovered from recreational angler catches as a valuable source of life-history information for select fish species. To gather these fish, chest freezers have been placed and maintained near the fish cleaning stations at selected locations along the Georgia coast. Each freezer is marked with an identifying sign and a list of target fish species. Inside the freezer is a supply of plastic bags, information cards, and pens. Cooperating anglers can place the filleted carcasses, with head and tail intact, in a bag, drop in a completed angler information card, and then place the bag in the freezer. Participants are given an incentive award for each three bags of fish donated to the project. These discarded fish carcasses provide invaluable data for fishery managers. The life history information provided by fish carcasses is used in a variety of analyses which aid in defining the status of Georgia's coastal fish populations. These data can be used in a descriptive manner to examine trends in the size and age structure of a population or used in a more sophisticated analysis such as a stock assessment.

From 1997-2016, 187 Tripletail ranging in size from 276 mm centerline length (CL) to 825 mm CL (Figures 3 and 4) have been collected by the CRP.

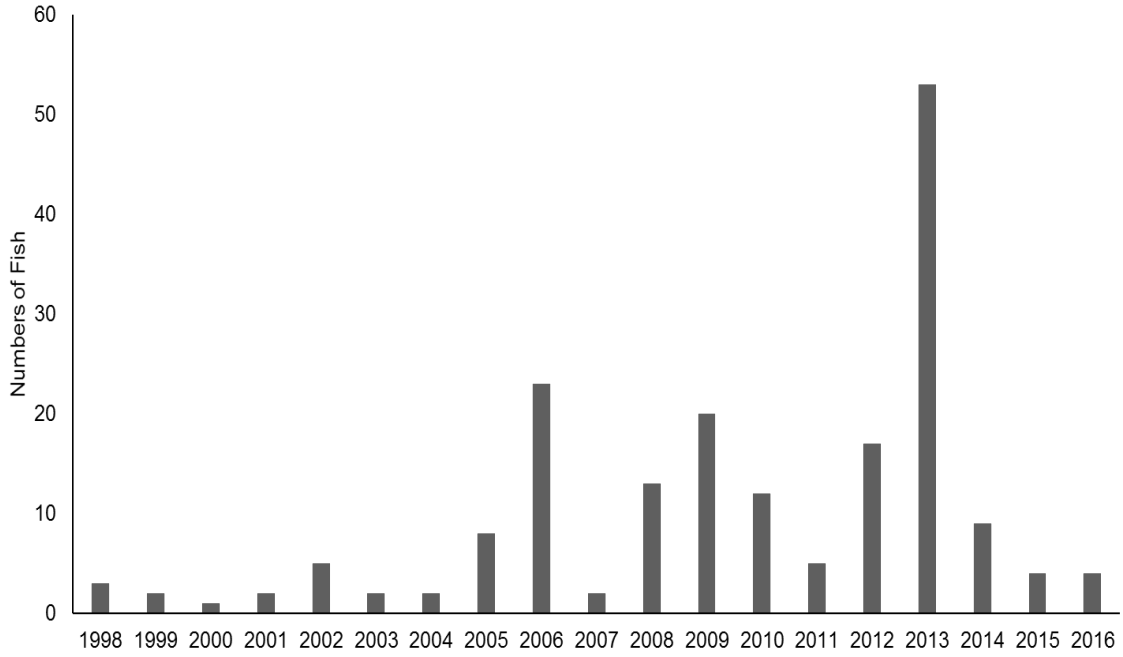

Figure 3. Number of Tripletail collected in the Carcass Recovery Project 1997-2016.

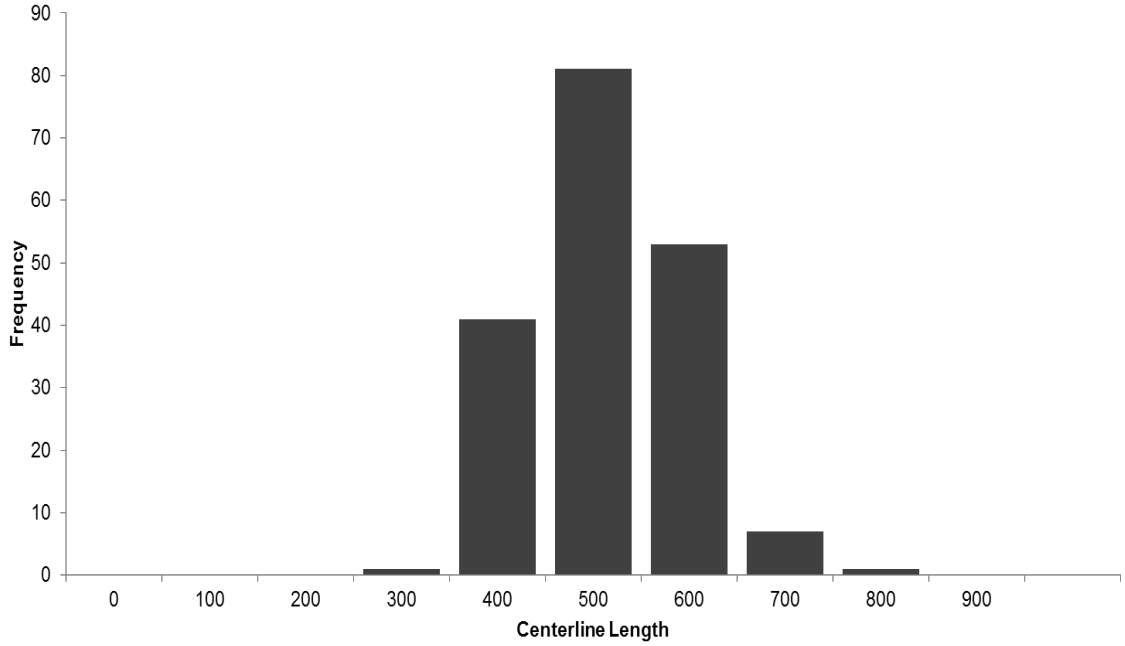

Figure 4. Length frequency distribution (CL) for Tripletail collected in the Carcass Recovery Project 1997-2016.

Cooperative Angler Tagging Project (CATP)

The Cooperative Angler Tagging Project provides growth, movement, and habitat preference data on selected species. Currently, Red Drum, Tripletail, and Black Drum are target species of the CATP. Incentives, such as hats and T-shirts, are utilized to encourage anglers to tag as well as report recaptures. To date, 1872 Tripletail have been tagged (since 2001) through the CATP. Additionally, 194 for those fish have been recaptured.

Fishery Independent Data Sources

There is currently no ongoing Fishery Independent sampling designed to target Tripletail in Georgia. None the current Coastal Resources Fishery Independent sampling programs effectively sample Tripletail therefore encounter rates are too low to produce any useable data on Tripletail populations in Georgia.

Goals and Objectives for Management:

1. Define and manage for Optimum Sustainable Yield (OSY).
2. Identify and protect Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC).

Prioritized Research and Monitoring Needs:

1. Provide consumption recommendations on Tripletail to the general public and sensitive populations such as pregnant women, nursing mothers and young children**.**

Field Methods
Anglers and charter captains coupled with CRD staff will collect Tripletail utilizing conventional hook and line gear. Twenty Tripletail ≥ 18" (457mm) will be collected from Ossabaw, Altamaha, and St. Simons Estuaries.

Analytical Methods
Sacrificed fish will be aged, sex determined, processed following EPDs methods, and delivered to EPD for laboratory analysis. Individual fish will be analyzed to determine presence and concentration of 43 different contaminants.

2. Establish a genetic blueprint of Georgia's Tripletail stock.

Field Methods
Utilizing conventional hook and line gear and / or purse seines, staff will collect tissue samples from Tripletail for DNA analysis.

Analytical Methods
Samples of DNA will be analyzed to determine a genetic fingerprint using both mitochondrial DNA and microsatellite DNA alleles.

3. Determine post-hooking survival of adult Tripletail.

Field Methods
Pop-up tags will be attached to a minimum of ten adult Tripletail caught with conventional angling gear during the operations of for-hire fishers. This tag will remain attached to the fish for a minimum of 30 days or as long as the fish is mobile. After 30 days or possibly sooner if the fish were to die, the tag will detach, float to the surface, and transmit recorded data via satellite to a remotely located information management system.

Analytical Methods
Time at large between tagging and tag detachment will provide empirical data on the fate of the hook-caught Tripletail. Thus, both acute and chronic mortality may be documented and the fate of the fish following release determined. In addition, evaluation of the archived data on water temperature, depth, and latitude/longitude will provide insight to the habitat preferences and movements of adult Tripletail in Georgia's coastal waters and within the South Atlantic Bight.

5. Characterize socioeconomic aspects of the recreational Tripletail fishery in Georgia.

Approach
Contract with the appropriate service provider to conduct a socioeconomic study of Georgia's marine recreational fishery.

Analytical Methods
The methods will be chosen as appropriate to provide a thorough understanding of the socio-cultural and economic aspects of recreational fishing in the coastal waters of Georgia.

Activities for FYs 2017 – 2022:

Collection of catch/harvest/effort data from the recreational Tripletail fishery.

Purpose
To describe the size distribution and quantity of Tripletail caught and landed by recreational anglers.

Method
Continued participation in the NOAA Fisheries MRIP

Process Tripletail carcasses collected through the Marine Sportfish Carcass Recovery Project

Purpose
To collect biological data from Tripletail harvested by recreational anglers.

Method:
Anglers will be encouraged to donate filleted carcasses of Tripletail. Chest freezers are located at selected public access points along the Georgia coast.

Cooperative angler tagging of Tripletail

Purpose
Enhance our knowledge of homing behavior, site fidelity, and exploitation by the fishery through cooperative angler tagging studies.

Method
Continue providing selected anglers and charter captains with fish tagging kits containing sequentially-numbered plastic dart tags, tag applicators, data cards and collecting / analyzing recapture data. Angler incentives such as hats, shirts and stickers will be utilized to encourage anglers to report recapture of tagged fish.