# Saltmarsh Topminnow

## *Fundulus jenkinsi*

*Male topminnow, Photograph courtesy Gretchen Grammer.*

## Species Overview

**Status:** Listed as state Threatened on Florida's Endangered and Threatened Species List.

**Current Protections**

- 68A-27.003(2)(a), F.A.C. No person shall take, possess, or sell any of the endangered or threatened species included in this subsection, or parts thereof or their nests or eggs except as allowed by specific federal or state permit or authorization.
- 68A-27.001(4), F.A.C. Take – to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. The term "harm" in the definition of take means an act which actually kills or injures fish or wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. The term "harass" in the definition of take means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering.

## Biological Background

This section describes the biological background for this species and provides context for the following sections. It focuses on the habitats that support essential behaviors for the saltmarsh topminnow, threats faced by the species, and what constitutes significant disruption of essential behaviors.

The saltmarsh topminnow is among the smallest of the *Fundulus* minnows, usually between 35 and 45 mm (1.38 and 1.77 in) standard length, with some females reaching 60 mm (2.36 in) (Gilbert and Relyea 1992, Thompson 1999). The key distinguishing feature is 1 or 2 rows of 12-30 dark round spots along the midsize of the body from above the pectoral fin to the base of the caudal fin (tail fin). In addition, males may have a lemon-yellow color on the anal fin (Gilbert and Relyea 1992, National Marine Fisheries Service [NMFS] 2009).

The saltmarsh topminnow is a batch spawner (sheds eggs multiple times throughout a spawning season rather than within a short period). Spawning usually occurs after spring tides, from late February-August (Lopez et al. 2010). It is believed that most topminnows have a limited life span (less than 1 year) which could have a significant effect on population levels (Thompson 1999).

The saltmarsh topminnow has been collected from Galveston Bay, Texas to Pensacola and Escambia Bay, Florida. Recent work by Lopez et al. (2011) indicates that the species may be more widely distributed than initially thought. In Florida, the range is limited to Perdido Bay, Pensacola and Escambia Bay estuaries (Gilbert and Relyea 1992, Thompson 1999, Peterson et al. 2003, NMFS 2009, Lopez et al. 2011). Studies have been conducted to verify the extent of the known range of this species but no specimens were found east of Pensacola and Escambia Bay estuaries (Lopez 2011).

### Habitat Features that Support Essential Behavioral Patterns

The saltmarsh topminnow typically occurs in cordgrass (*Spartina* spp.) and needlerush (*Juncus* spp.) marshes, and shallow water with salinity less than 16 parts per thousand (Lopez et al. 2010, Peterson et al. 2003). Lopez et al (2011) also found that the small, dendritic (many branches stemming off from main waterway) creeks off the main channel are significant features that allow the species to have access to the higher marsh habitats. Potential habitat can be found in Santa Rosa and Escambia counties and is located on the following conservation lands: International Paper Company Conservation Easement, Northwest Florida Water Management District lands in Escambia County, and Eglin Air Force Base. The Garcon Ecosystem and Escribano Point Florida Forever Projects both contain potential saltmarsh topminnow habitat.

### Threats

Primary threats to this species include changes in salinity, water quality, and quantity, channelization or ditching in saltmarshes, dredging, habitat alteration, encroachment of urbanization, and point source and non-point source pollution. The use of seawalls and other hardened structures at the upland interface with saltmarsh causes additional erosion and changes in the saltmarsh community. These structures and their impacts are a major threat to the species' habitat (Mattheus et al. 2010). Living shorelines can be used to mitigate these threats by using a combination of natural breaks (e.g., created oyster reefs) coupled with planting of seagrass behind the breaks.

The known locations within the Escambia River, Blackwater River Delta and Bay, and Garcon Point areas are fragmented and may limit gene flow between populations. The extent of suitable habitat is unknown. Some of the areas may not be currently inhabitable and may also contain species that out-compete the saltmarsh topminnow. There may be more connections that are unknown due to limited survey information. This species may also be used as bait by some fishermen and may be subject to incidental or intentional take by fishermen.

### Potential to Significantly Impair Essential Behavioral Patterns

Due to the limited range, limited lifespan, and limited dispersal capability of this fish, there are a number of activities that could potentially prevent breeding, feeding, or sheltering of the saltmarsh topminnow. Changes in river or estuary management or construction activities within Pensacola Bay, Perdido Bay, Escambia Bay, and Blackwater Bay that cause changes in water quality parameters such as salinity, turbidity, dissolved oxygen, or sedimentation may cause take of this species. Removal or degradation of saltmarsh vegetation, such as increases in sedimentation, dredging, and coastal armoring or shoreline hardening can also negatively impact the habitats occupied by this species. Proactive partnerships with public and private landowners and land managers could be utilized to ensure that any saltmarsh habitat found to harbor saltmarsh topminnows remain suitable and as undisturbed as possible.

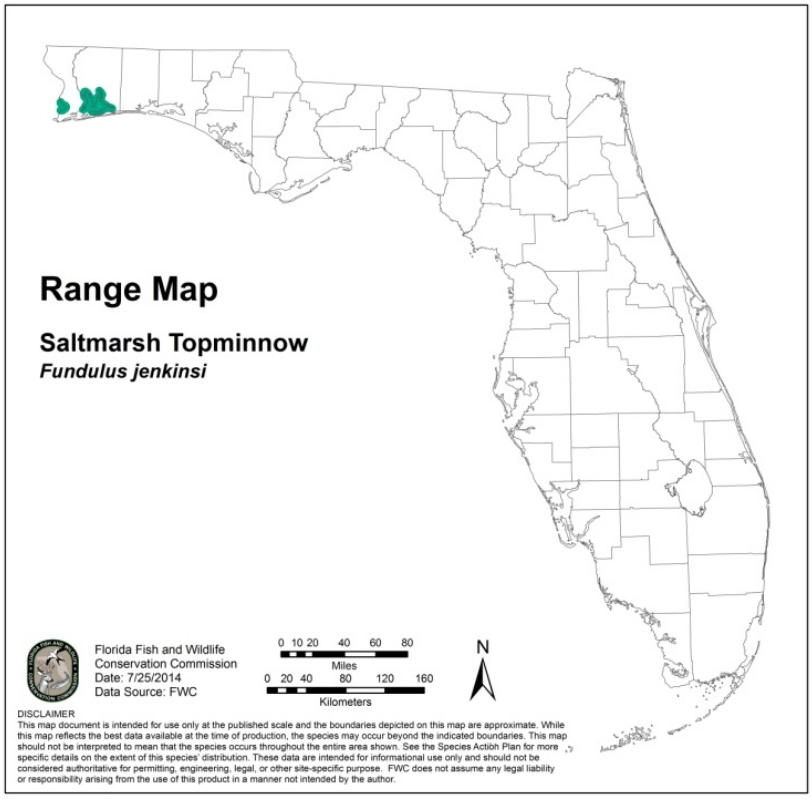
## Distribution and Survey Methodology

The range map (below) represents the principle geographic range of the saltmarsh topminnow, including intervening areas of unoccupied habitat. This map is for informational purposes only and not for regulatory use.

**Counties:** Santa Rosa and Escambia.

**Recommended Survey Methodology**

Surveys are not recommended for saltmarsh topminnows because of the limited range and difficulty accessing suitable habitats. Saltmarsh topminnows can be trapped using Breder traps and Gee minnow traps. Though not recommended, trap surveys can be conducted during project planning by applicants that have a scientific collecting permit (see below). Visual surveys are not recommended but would not require a permit. If saltmarsh topminnows are detected, the applicant should coordinate with FWC.




## Recommended Conservation Practices

Recommendations are general measures that could benefit the species but are not required. No FWC permit is required to conduct these activities.

- Avoid causing changes that would degrade aquatic habitats inhabited by saltmarsh topminnows. Specifically, avoid creating artificial impoundments, dredging channels in rivers or saltmarsh habitats, or using hardened structures like sea walls or coastal armoring.
- Use living shorelines to create natural breaks, such as oyster reefs coupled with planting seagrass behind the breaks.
- Avoid activities that would degrade or alter saltmarsh or estuarine zones adjacent to areas inhabited by saltmarsh topminnows. Maintaining a minimum buffer of 50 m (164 ft) between the bay or estuary and upland activities would benefit the species, and a buffer of 100–200 m (328–656 ft) would likely prevent impacts to most other listed species that occur in inhabited waterways (U.S. Fish and Wildlife Service [USFWS] 2001).
- Maintain vegetation such as cordgrass and needlerush. These saltmarsh species provide a natural buffer from tropical storms, floods, and erosion. In many cases, controlled burns are necessary to prevent encroachment of shrubs, upland plants, or non-native species.
- Restore natural hydrology and vegetative structure of altered saltmarsh habitat in the Perdido and Escambia bay systems.

- Provide adequate buffers between septic systems and bays/saltmarsh habitat.
- Locate stormwater management systems to provide the maximum treatment for any potential input into saltmarsh habitat.

## Measures to Avoid Take

### Avoidance Measures that Eliminate the Need for FWC Take Permitting

This section describes all measures that would avoid the need for an applicant to apply for an FWC take permit.

- Upland activities that have no connection to waterbodies and do not cause runoff, saltmarsh habitat conversion, or other impacts.
- Activities that avoid degradation of saltmarsh or estuarine zones. A 61 m (200 ft) buffer on both sides of Outstanding Florida Waters is sufficient to avoid degradation (FDACS 2008, Florida Department of Environmental Protection [DEP] 2011).
- Bridge/culvert work that follows standard road construction best management practices and does not have a major instream impact.

### Examples of Activities Not Expected to Cause Take

This list is not an exhaustive list of exempt actions. Please contact the FWC if you are concerned that you could potentially cause take.

- Activities that occur on uplands not adjacent to saltmarsh topminnow habitat.
- Silvicultural activities that follow the Silvicultural BMPs for streamside management zones (SMZ).

### Florida Forestry Wildlife BMP's and Florida Agricultural Wildlife BMP's

- The Florida Department of Agriculture Consumer Services Florida Forestry Best Management Practices for state-listed species does not include the saltmarsh topminnow. However, BMP practices relating to the SMZ's would be beneficial for this species.

### Other Authorizations for Take

- As described in Rule 68A-27.007(2)(c), F.A.C., land management activities (e.g., wetland restoration, prescribed fire, mechanical removal of invasive species; and herbicide application) that benefit wildlife and are not inconsistent with FWC Management Plans are authorized and do not require a permit authorizing incidental take.
- In cases where there is an immediate danger to the public's health and/or safety, including imminent or existing power outages that threaten public safety, or in direct response to an official declaration of a state of emergency by the Governor of Florida or a local governmental entity, power restoration activities and non-routine removal or trimming of vegetation within linear right of way in accordance with vegetation management plan that meets applicable federal and state standards does not require an incidental take permit from the state.
- Emergency water management actions for human health and safety, such as flood control.

## Coordination with Other State and Federal Agencies

The FWC participates in other state and federal regulatory programs as a review agency. During review, FWC identifies and recommends measures to address fish and wildlife resources to be incorporated into other agencies' regulatory processes. FWC provides recommendations for addressing potential impacts to state listed species in permits issued by other agencies. If permits issued by other agencies adequately address all

requirements for issuing a state-Threatened species take permit, the FWC will consider these regulatory processes to fulfill the requirements of Chapter 68A-27, F.A.C., with a minimal application process. This may be accomplished by issuing a concurrent take permit from the FWC, by a memorandum of understanding with the cooperating agency, or by a programmatic permit issued to another agency. These permits would be issued based on the understanding that implementation of project commitments will satisfy the requirements of Rule 68A-27.007, F.A.C.

**Review of Land and Water Conversion projects with State-Listed Species Conditions for Avoidance, Minimization and Mitigation of Take**

- FWC staff, in coordination with other state agencies, provides comments to federal agencies (e.g., the Army Corps of Engineers) on federal actions, such as projects initiated by a federal agency or permits being approved by a federal agency.
- FWC staff works with landowners, local jurisdictions, and state agencies such as the Department of Economic Opportunity on large-scale land use decisions, including long-term planning projects like sector plans, projects in Areas of Critical State Concern, and large-scale comprehensive plan amendments.
- FWC staff coordinates with state agencies such as the Department of Environmental Protection and the five Water Management Districts on the Environmental Resource Permitting (ERP) program, which regulates activities such as dredging and filling in wetlands, flood protection, stormwater management, site grading, building dams and reservoirs, waste facilities, power plant development, power and natural gas transmission projects, oil and natural gas drilling projects, port facility expansion projects, some navigational dredging projects, some docking facilities, and single-family developments such as for homes, boat ramps, and artificial reefs. FWC will continue to coordinate with these entities to ensure permitted activities do not degrade saltmarsh topminnow populations or habitat.
- Sector plans, developments of regional impacts, and county comprehensive plans are all reviewed, and FWC suggests the inclusion of conditions that would be beneficial to saltmarsh topminnows.
- Some of the waterbodies inhabited by the saltmarsh topminnow are designated as Outstanding Florida Waters, specifically the Perdido River and Blackwater River. For Outstanding Florida Waters, the riparian buffer is 61 m (200 ft) on either side of the stream or waterbody.
- In areas with federally listed species, following the USFWS requirements is sufficient to protect saltmarsh topminnows. In sector planning, a percentage of property must be set aside as conservation – focusing on saltmarsh habitat will benefit the saltmarsh topminnow.

## FWC Permitting: Incidental Take

As defined in Rule 68A-27.001, F.A.C., incidental take is take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Activities that result in impacts to saltmarsh topminnows can require an Incidental Take Permit from the FWC (see above for actions that do not require a permit). Permits may be issued when there is a scientific or conservation benefit to the species and only upon showing by the applicant that that the permitted activity will not have a negative impact on the survival potential of the species. Scientific benefit, conservation benefit, and negative impacts are evaluated by considering the factors listed in Rule 68A-27.007(2)(b), F.A.C. These conditions are usually accomplished through a combination of avoiding take when practicable, minimizing take that will occur, and mitigating for the permitted take. This section describes the minimization measures and mitigation options available as part of the Incidental Take Permit process for take of this species. This list is not an exhaustive list of options.

## Minimization Measure Options

The options below are intended to address the evaluation factors required for consideration when issuing an incidental take permit. These options can lessen the impact of activities, and ultimately may reduce what is needed to achieve a conservation or scientific benefit (see below).

### Seasonal, Temporal, and Buffer Measures

- Upland activities that have the potential to disturb riparian zones should follow Outstanding Florida Waters recommendations and minimize activities within 61-91 m (200-300 ft) of the waterway; the recommended buffer is 15.2 m (50 ft) minimum in all other areas (DEP 2011, Wegner 1999).

### Design Modification

- Avoid activities that would impact/remove saltmarsh vegetation.
- Place roads at least 61 m (200 ft) away from saltmarsh habitat and waterbodies.
- Minimize the amount of sedimentation and erosion to waterways by using turbidity and sediment screens and by following guidelines described within the Silviculture BMP Manual (FDACS 2008).
- Increase estuarine buffers where possible.

### Method Modification

- Sediment screens, bales, other methods to limit sedimentation from upland site activity.
- Turbidity screens instream to limit sedimentation within the estuary or waterbody.
- Stage construction materials at least 91.5 m (300 ft) away from the waterbody or saltmarsh habitat.
- When creating waterway crossings, top down bridge construction would minimize impacts to saltmarsh topminnow and other aquatic species. Specific project guidance can be obtained by contacting the Florida Department of Transportation.

## Mitigation Options

Mitigation is scalable depending on the impact, with mitigation options for significant impairment or disruption of essential behavioral patterns constituting take. Potential options for mitigation are described below.

### Scientific Benefit

This section describes research and monitoring activities that provide scientific benefit, per Rule 68A-27.007, F.A.C. Conducting or funding these activities can be the sole form of mitigation for a project.

- Projects to fill data gaps related to information on species discussed in the Species Action Plan for the saltmarsh topminnow. Contact FWC for additional information on appropriate methodology or permits relating to scientific collection of these species.
- Scientific studies can help address life history questions. These projects should be conducted with input from FWC.
- Sharing sightings data (live and dead observations) with FWC, including latitude and longitude and photographs when available

### Habitat

Habitat acquisition may be a mitigation option.

- Much of riparian buffers are in public ownership in northwest Florida, acquisition efforts should target areas in Perdido Bay, Escambia Bay, and Blackwater Bay.
- Targeting in-holdings would be beneficial.

### Funding

- No funding option has been identified at this time. However, funding options as part of mitigation will be considered on a case by case basis.

### Information

- All data (negative and positive) from surveys should be provided and can provide a benefit in addition to minimization options.

### Programmatic Options

- No programmatic option available for this species.

### Multispecies Options

- Other species with overlap include federally listed mussels, Gulf sturgeon, and wading birds. Activities that benefit these species will also benefit the saltmarsh topminnow.

## FWC Permitting: Intentional Take

Intentional take is not incidental to otherwise lawful activities. Per Rule 68A-27, F.A.C., intentional take is prohibited and requires a permit. For state-Threatened species, intentional take permits may only be considered for scientific or conservation purposes (defined as activities that further the conservation or survival of the species taken). Permits are issued for state-Threatened species following guidance in Rule 68A-27.007(2)(a), F.A.C.

### Intentional take for human safety

- There are no circumstances for which saltmarsh topminnows may be taken for human safety.
- Permits will be issued only under limited and specific circumstances, in cases where there is an immediate danger to the public's health and/or safety, including imminent or existing power outages that threaten public safety, or in direct response to an official declaration of a state of emergency by the Governor of Florida or a local governmental entity. Applications submitted for this permit must include all information that is required from any other applicant seeking a permit, along with a copy of the official declaration of a state of emergency, if any. An intentional take permit may be issued for such purposes.

### Aversive Conditioning

- Not applicable for the saltmarsh topminnow.

### Permits Issued for Harassment

- Not applicable for the saltmarsh topminnow.

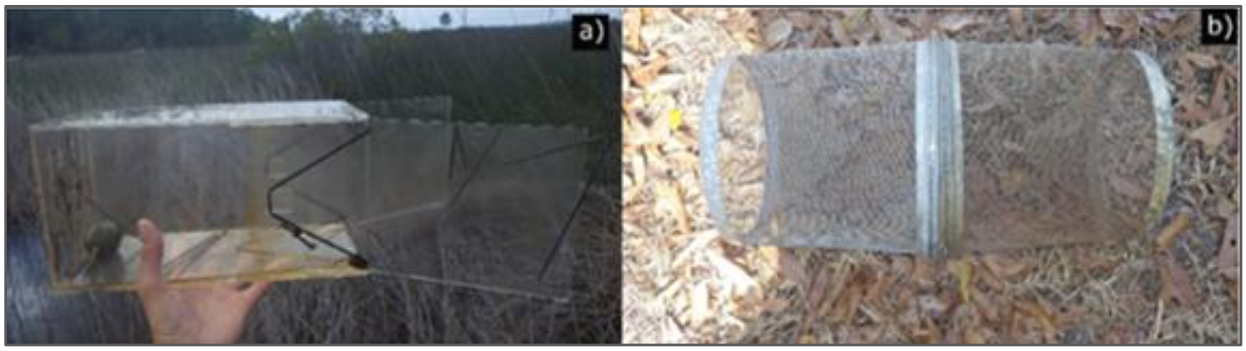
### Scientific Collecting and Conservation Permits

- Scientific collecting permits may be issued for the saltmarsh topminnow using guidance found in Rule 68A-27.007(2)(a), F.A.C. Activities requiring a permit include any research that involves capturing, handling, or marking wildlife; conducting biological sampling; or other research that may cause take. A Scientific Collecting permit is needed to use saltmarsh topminnow for education and outreach.

### Considerations for Issuing a Scientific Collecting Permit

1) Is the purpose adequate to justify removing the species (if the project requires this)?
    - Permits will be issued if the identified project is consistent with the goal of the Species Action Plan for the saltmarsh topminnow (i.e., improvement in status that leads to removal from Florida's Endangered and Threatened Species List), or addresses an identified data gap important for the conservation of the species.

2) Is there a direct or indirect effect of issuing the permit on the wild population?
3) Will the permit conflict with program intended to enhance survival of species?
4) Will purpose of permit reduce likelihood of extinction?
    - Projects consistent with the goal of the Species Action Plan for the saltmarsh topminnow or that fill identified data gaps in species life history or management may reduce the likelihood of extinction. Applications should clearly explain how the proposed research will provide a scientific or conservation purpose for the species.
5) Have the opinions or views of other scientists or other persons or organizations having expertise concerning the species been sought?
6) Is applicant expertise sufficient?
    - Applicants must have prior documented experience with this or similar species, have met all conditions of previously issued permits, and have a letter of reference that supports their ability to handle the species.




*Sampling gears used to sample saltmarsh topminnows: a) Breder Trap, b) Gee minnow trap.*

**Relevant to all Scientific Collecting for saltmarsh topminnows**

- No more than 5 whole specimens must be provided to FWC's Fish and Wildlife Research Institute, 3 for genetic analysis and the remainder to be provided to the Florida Museum of Natural History.
- Format of data needed to be provided to FWC included in the Species Action Plan for the saltmarsh topminnow. Spreadsheet and electronic submission is allowed. As a minimum, GPS coordinates (DD), habitat, date, time of day, aquatic vegetation present, number collected, and disposition of specimens.
- Any mortality should be reported immediately to the FWC at the contact information below. The FWC will provide guidance on proper disposition of specimens.
- Geographical or visual data gathered must be provided to FWC in the specified format.
- A final report should be provided to the FWC in the format specified in the permit conditions.

## Additional information

Information on Economic Assessment of this guideline can be found at http://myfwc.com/wildlifehabitats/imperiled/management-plans/

## Contact

For more species-specific information or related permitting questions, contact the FWC at (850) 921-5990 or WildlifePermits@myfwc.com. For more regional information visit http://myfwc.com/contact/fwc-staff/regional-offices.

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