

Sherman's Short-tailed Shrew

Blarina shermani



Photograph by Justin Davis, FWC.

Species Overview

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

Current protections

- 68A-27.003(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.

Cryptic Species

Cryptic species are those that may be difficult to detect due to behavior, habitat, or physical features, even when using standardized survey techniques in occupied habitat. Interpretation of when harm or harassment may occur is difficult without a clear understanding of essential behavioral patterns of the species or habitat features that may support those behavioral patterns. The documented difficulties in detecting cryptic species and the lack of a reliable detection methodology leads to different considerations for take due to harm.

- The permitting standards for incidental take policy in Florida's Imperiled Species Management Plan (ISMP) identifies the Sherman's short-tailed shrew (SSTS) as a cryptic species.
- Permitting standards for the SSTS will focus on cooperation and acquiring information, with the understanding that as information is gained, permitting standards may need to be adjusted.
- Detection of the SSTS is difficult and because little is known about the life history, behavior, or biology of this species information on distribution and habitat use may constitute a [scientific benefit](#).

Biological Background

A species' biological background provides context for conservation measures and permitting guidelines. It focuses on the habitats that support essential behavioral patterns, threats to the species, and what may constitute significant disruption of essential behavioral patterns.

The Sherman's short-tailed shrew (SSTS; *Blarina shermani*) was first described by Hamilton (1955) from specimens collected in Lee County, north of the Caloosahatchee River. Since this time, few specimens of the SSTS have been documented. Recently, Benedict et al. (2006) compared cranial morphometrics of the species with 2 other short-tailed shrews found in Florida, *Blarina carolinensis carolinensis* and *Blarina carolinensis peninsulae*. They found SSTS to be significantly larger in all measurements analyzed, with the extent of the difference being of the same magnitude seen between other species within the genus *Blarina*. Furthermore,

specimens appeared to be considerably smaller than those of *B. brevicauda* from Georgia, suggesting the southwest population in Florida is not a relict isolate of this species. These results lead Benedict et al. (2006) to designate the SSTS as a separate species.

The SSTS is a medium-sized shrew with short legs and fusiform body shape (wide in the middle and tapered at both ends). Like other shrews in Florida, they are semi-fossorial and are insectivorous.

Habitat Features that Support Essential Behavioral Patterns

Because of the cryptic nature and rarity of the SSTS, little is known about the species' life-history. As such, summary information is provided for the closely related species *Blarina carolinensis*.

B. carolinensis is a habitat generalist, occurring in a wide variety of localities including hardwood and pine forests, thickets, brushy areas, sedge fields, swamps, bogs, old fields, tidal marshes, canebreaks, and bayheads. Short-tailed shrews in Florida are typically found in dense, herbaceous habitats or moist forests (Layne 1992). *B. carolinensis* is primarily insectivorous in its dietary habits, with studies from South Carolina documenting consumption of slugs, snails, earthworms, beetles, centipedes, flies, spiders, and hypogeous fungi (McCay 2001).

Reproduction of *B. carolinensis* is bimodal with peaks from March to July and September to November. Litters range between 2-6 young (Moore 1946, Genoways and Choate 1998, McCay 2001). *Blarina* spp. typically do not breed during the season in which they are born; average age of reproduction is 9 months (Whitaker and Hamilton 1998). Average home range size has been calculated at 0.96 ha (2.37 ac) according to the minimum area method (Faust et al. 1971), while population density varies widely between 1.3 and 17.0 individuals per ha (Genoways and Choate 1998).

Threats

A Biological Status Review (BSR) found that the SSTS meets criteria for listing as state Threatened in Florida (FWC 2011, FWC 2013). The BSR identifies habitat loss from increased urbanization and agricultural practices as the primary threat to this species (Zwick and Carr 2006, FWC 2008, FWC 2011). Development that leads to a reduction of cover, particularly in a loss of coarse woody debris, or drying of soils would be detrimental to local shrew populations (Layne 1992, Davis et al. 2010). Using the range maps from Benedict et al. (2006), FWC developed potential habitat maps for the SSTS. The extent of occurrence (EOO; range) was estimated to be 6,073 km² (2,345 mi²) and area of occupancy (AOO; potential occupied habitat) was estimated to be 1,274 km² (492 mi²). Based on the range maps of Endries et al. (2009, unpublished SSTS data prepared for report) only 32.8% of the species' potential habitat is on conservation lands, the other 67.2% is vulnerable to degradation or conversion to other uses (FWC 2013).

Since the time of Hamilton's (1955) description of the original SSTS, increased development in southwestern Florida has likely impacted the species through habitat loss and potential predation from house cats. Anecdotal observations suggest that shrews, in general, are susceptible to other human-influenced sources of mortality such as swimming pools and lawn-maintenance activities. Recent efforts to capture the SSTS were unsuccessful (FWC 2013). Thirty-five sites over 14 public conservation lands were surveyed for a total of 2,100 trap nights, yielded no captures of *Blarina* spp. (FWC 2013). Ongoing threats have likely further reduced the population of the SSTS, a species that was thought to be uncommon when first described in the 1950s.

Distribution and Survey Methodology

The range map represents the geographic area encompassing all observations of individuals of a species, including intervening areas of unoccupied habitat. This map is informational only and is not for regulatory purposes.

Counties: Lee and Collier.

Recommended Survey Methodology

FWC does not require or recommend SSTS surveys for most activities unless as a component of scientific benefit (see Scientific Benefit Section). However, any survey performed should be coordinated with FWC. Because this is a cryptic species, surveys conducted in accordance with the methodology described below may not detect this species. Any activity that requires handling a SSTS in any capacity requires a permit.



The use of drift-fence arrays with pitfall traps is the preferred trapping method for detecting shrews (Layne 1992, Teets and Doonan 2015). Teets and Doonan (2015) recommended a modified drift-fence design for Homosassa shrew (*Sorex longirostris eionis*) surveys in Florida that uses shorter 50'-long array arms and 1-gallon buckets to allow for easier installation; such a modified design could also be used for SSTS. Smaller buckets reduced the capture of larger, non-target species (Teets and Doonan 2015). In order to minimize shrew mortality, drift-fence buckets should be perforated to allow drainage of excess rainwater and checked daily (Teets and Doonan 2015). Some sites may not be conducive to the installation of drift fences, but other methods such as Sherman box traps and/or pitfall traps can be used in areas with existing downed woody debris by setting traps along the edges of downed logs (FWC 2013). Coverboards can be used in areas with little to no downed woody debris (FWC 2013).

Recommended Conservation Practices

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

- Maintain downed coarse woody debris during timber-removal operations (this includes leaving logging slash created from limbing gates and timber operations onsite and even spreading across the landscape, if possible), and limit fuelwood harvests that remove coarse woody debris or existing stumps and logs.
- Leave snags standing when safety allows; sites with snags may support more shrews than those without.
- Reduce soil compaction and disturbance to the uppermost layers (humus and topsoil), particularly during peak breeding seasons (March to July and September to November), by limiting the use of heavy equipment in undisturbed habitats, especially in riparian areas or hardwood hammocks.
- Reduce mortality from cats by keeping cats indoors. Do not maintain feral cat colonies.

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.

- Avoid impacts to undisturbed habitats used by SSTS.

Examples of Activities Not Expected to Cause Take

This 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 impacted land not consistent with SSTS habitat.
- Activities that avoid compacting soils or removal of the uppermost soil layers.

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

- Due to its geographic distribution, this species is not included in the Florida Forestry Wildlife BMP's or Florida Agricultural Wildlife BMP's program. However, the application of BMPs are expected to minimize impacts to the SSTS from land use activities, particularly in riparian areas and wetland zones.

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.

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. The 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 of the 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 no additional 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-27.005 and 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, provide comments to federal agencies on actions such as initiated projects or permits under review 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 (DEP) 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.

- During the ERP process, the FWC staff will provide guidance on avoidance, minimization, and mitigation measures for SSTS.
- FWC staff will also work with DEP, water management districts, and the applicants during the ERP process so that ERP mitigation will satisfy the applicant’s responsibilities under rule 68A-27, F.A.C. and associated rule enforcement policies (see FWC Incidental take Permitting Process below).
- Conservation benefit as defined under rule 68A-27, F.A.C. can be accomplished through avoidance, minimization, and mitigation measures outlined in the ERP permit. The existing ERP requirements for wetland mitigation include replacement of functional loss from impacts to wetlands. The mitigation includes provisions for perpetual conservation and management. Mitigation achieved through the ERP process could be considered a conservation benefit when mitigation sites include suitable wetlands where natural hydrology is maintained.
- Management practices and management zones established along streams or other water bodies to protect habitats and water quality can benefit the SSTS.

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 SSTS 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 demonstration 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

- Seasonality of SSTS is not known, although activity levels likely increase during peak reproduction (March to July and September to November). However, we are uncertain about how increased activity levels and likelihood of incidental take may be related.

Design Modification

- Design projects to leave leaf litter and coarse woody debris intact.
- Minimize the area of soil compaction and tilling of the upper soil layers.
- Minimize amount of suitable habitat (i.e., hardwood swamps, mixed wetland forests, mixed hardwood-pine forests) converted to other land uses.
- Design projects to minimize changes in timing, quantity, or quality of water that could degrade hydrologic features associated with wetland habitats (i.e. rutting, bedding, or plowing).

- Avoid placement of impermeable surfaces, such as roads or parking lots in and adjacent to undisturbed habitats, wetlands, and hardwood swamps.
- Incorporate culverts into new road designs that will maintain population connectivity.

Method Modification

- Provide information to project personnel on identifying and avoiding directly crushing SSTS and other cryptic species found in similar habitats (SAP Action 1, Action 13, Action 14).

Mitigation Options

Mitigation is scalable depending on the impact, with mitigation options for significant impairment or disruption of essential behavioral patterns constituting take. The SSTS is a cryptic species. Therefore, the permittee would satisfy mitigation under scientific benefit by providing any shrew sighting information for this species. In most cases, requirements outlined by the county will satisfy the applicant's responsibilities under Rule 68A-27, F.A.C., and associated enforcement policies. However, under certain circumstances, the FWC may require additional measures to achieve scientific or conservation benefit specific for take of SSTS. 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. Since this species is cryptic and there is limited information available, the options provided below are subject to change as new information becomes available. Where relevant, the specific action(s) from the [Species Action Plan for the Sherman's Short-Tailed Shrew](#) (FWC 2013) are listed.

- A study of habitat preferences and seasonality patterns, including notes on natural history observations when applicable (e.g., sex, age, prey items, etc.).
- Mitigation can be applied to support research projects consistent with actions in the Species Action Plan when methodologies are approved by FWC.
- Monitoring options can include multi-year monitoring or funding for multi-year monitoring that contributes to a portion of a rangewide survey (SAP action 5).
- Collect tissue samples from any *Blarina* collected from research activities to conduct genetic testing to identify genetic uniqueness among individuals and populations (SAP action 7)
- Provide data on SSTS specimens with latitude and longitude data to FWC for use in determining distribution, habitat associations, and deceased specimens for taxonomy (SAP action 8).

Habitat

- No habitat option has been identified at this time.

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

- The information option for this cryptic species may rise to the level of scientific benefit for SSTS.

Programmatic Options

- No programmatic option available.

Multispecies Options

- Protections provided for this species will also benefit the Homosassa shrew (*Sorex longirostris eionis*). Homosassa shrews are cryptic species and occupy similar habitats. Minimization options and mitigation recommendations are similar and beneficial for these two species.

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.

Risks to Property or People

Intentional take for human safety

- There are no circumstances for which the SSTS may be taken for human safety.

Aversive Conditioning

- Not applicable for the SSTS.

Permits Issued for Harassment

- Not applicable for the SSTS.

Scientific Collecting and Conservation Permits

Scientific collecting permits may be issued for the SSTS 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 shrews within the SSTS range; conducting biological sampling of SSTS; or other research that may cause take of this species.

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 (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 be a direct or indirect effect of issuing the permit on the wild population?
- 3) Will the permit conflict with goals intended to enhance survival of the species?
- 4) Will the purpose of permit reduce likelihood of extinction?
 - Projects consistent with the goal of the Species Action Plan 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 benefit 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; applicants should have met all conditions of previously issued permits; and applicants should have a letter of reference that supports their ability to handle the species.

Relevant to all Scientific Collecting for Sherman's Short-tailed Shrew

- Walking, visual encounter, and opportunistic surveys that do not involve touching the animals or altering the microhabitat do not require a permit.
- Any activity that requires trapping or handling a SSTS requires a permit (includes taking hair or tissue samples for taxonomic analyses).
- Permits may be issued to display a specimen if the specimen was obtained via a rehabilitation

facility or was encountered dead.

- Permits may be issued for captive possession (removal from the wild) if the individual is deemed non-releasable.
- Applications must include a proposal that clearly states the project objectives and scope of work, including a justification of how the project will result in a scientific or conservation benefit to the species. The proposal also must include a thorough description of the project's methods, time frame, and final disposition of all individuals. Permit amendment and renewal applications must be "stand alone" (i.e., include all relevant information on objectives and methods).
 - Capturing and handling protocols, and a justification of methods, must be included in the permit application and should identify measures to lessen stress for captured shrews.
 - Methodologies for any collection of tissues should be clearly stated, including measures taken to reduce stress and injury to shrews.
 - Disposition involving captive possession for any period of time must include a full explanation of whether the facility has the appropriate resources for accomplishing the project objectives and for maintaining the animals in a safe and humane manner.
- Any mortality should be reported immediately to the FWC at the contact information below. The FWC will provide guidance on proper disposition of specimens.
- A final report should be provided to the FWC in the format specified in the permit conditions.

Additional information

Information on the economic impacts assessment of the Species Conservation Measures and Permitting Guidelines for the SSTS shrew can be found at <http://myfwc.com/wildlifehabitats/imperiled/management-plans/>

Contact

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

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