

Striped Newt

Notophthalmus perstriatus



Photograph by Kevin Enge, FWC.

Executive Summary

The striped newt is listed as state Threatened on Florida's Endangered and Threatened Species List. This document describes protections for this species and the biological background necessary to understand when a permit may be necessary for this species. The document also provides voluntary conservation measures for which no permit is necessary, measures to avoid take, and permitting options as well as minimization and mitigation when take is unavoidable.

Striped newts have a complex life cycle that requires both uplands and wetlands. Striped newts breed within seasonally dry herbaceous wetlands, and they rely on the surrounding xeric uplands (i.e., sandhill, scrub, scrubby flatwoods, mesic flatwoods) within at least 1,640 ft (500 m) of their breeding wetlands.

Rule 68A-27.003, Florida Administrative Code (F.A.C.), prohibits take of this species, which includes harm and harassment. Take can be either intentional or incidental to an otherwise lawful activity. Harm includes injury, mortality, or significant habitat modification of breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands. Capturing, handling, marking, taking biological samples from, or collecting these species or their eggs are other forms of take.

These guidelines include measures to avoid take, as well as circumstances under which take is authorized without a permit. If take is unavoidable during otherwise lawful activities, the Florida Fish and Wildlife Conservation Commission (FWC) may issue incidental take permits, which must provide a scientific or conservation benefit to the species. Conservation benefit typically is achieved through a combination of minimization measures, which reduce the take that occurs, and mitigation measures, which counterbalance the take and provide an additional benefit. Relatively little is known about behavior patterns and habitat features used by striped newts outside of known breeding wetlands and nearby uplands, and striped newts are difficult to detect. Therefore, if striped newts are encountered during a project activity outside of known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands, incidental take is authorized for the duration of the activity without a permit, provided the individual submits information on the location and habitat characteristics of the observation to Imperiled@MyFWC.com. Within known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands, incidental take is prohibited without a permit or other authorization. The FWC also issues Scientific Collecting Permits for some forms of intentional take, including research and collection or possession for educational use.

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 threatened species included in this subsection or parts thereof or their nests or eggs except as authorized by Commission rule or by permit from the Commission or when such conduct is authorized in a management plan as defined in this chapter and approved by the Commission, or as authorized in Commission-approved guidelines.
- 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 an 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, as described in FWC’s policy on permitting standards for incidental take of cryptic species in Florida’s [Imperiled Species Management Plan](#) (ISMP). Striped newts are known to use breeding wetlands on over a dozen properties (FWC 2022). However, due to low detectability, the species’ full range-wide distribution is probably unknown and much of its terrestrial life history is unknown. Therefore, the striped newt is considered a cryptic species outside of known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands. Below is a summary of the permitting implications for this species:

- A known breeding wetland is defined as:
 - A currently or historically occupied wetland on a landscape (i.e., property boundaries) which has had a striped newt documented on that landscape within the 15 years preceding habitat modification.
 - A wetland that has had a striped newt observed within 1,640 ft (500 m) of delineated boundaries within the 15 years preceding habitat modification.
- Within known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands:
 - Pre-project surveys are not recommended. Surveys with a scientific or conservation purpose are conducted either under a [scientific collecting permit](#) or to provide [scientific benefit](#) for striped newts as part of an [incidental take permit](#).
 - Take of striped newts is prohibited without a FWC incidental take permit or authorization. The incidental take permit must contain mitigation measures that provide either a scientific or conservation benefit, with a focus on activities that contribute to management and information needs identified in the Species Action Plan (SAP) for the striped newt (FWC 2022).

- Outside of known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands:
 - Pre-project surveys are not recommended for this species. Surveys with a scientific or conservation purpose are conducted under a [scientific collecting permit](#).
 - If striped newts are encountered during a project activity, incidental take (i.e., take incidental to otherwise lawful activities) is [authorized](#) for the duration of the activity without a permit, provided the individual submits information on the location and habitat characteristics of the observation to Imperiled@MyFWC.com.
 - FWC encourages, but does not require, [minimization](#) measures to reduce impacts to the striped newt.

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 striped newt, and what constitutes take for this species. For more information about life history and conservation actions for the striped newt, please refer to the [SAP](#) for the striped newt (*Notophthalmus perstriatus*; FWC 2022). Striped newts have a complex life cycle with multiple life stages: eggs, larvae, paedomorphs, efts, and adults ([Figure 1](#)). Larvae are tan to greenish brown with a dark line through their eyes that extends from their snout to their bushy gills. Depending on breeding pond characteristics, larvae will either change into efts when they reach roughly six months in age and at least 0.7-1.18 in (1.8–3 cm) snout-vent-length (SVL), or they will remain in the pond for an additional six months and become paedomorphs (Johnson 2002b). Paedomorphs are sexually mature adults that retain larval features such as external gills. Paedomorphs have similar coloration to the terrestrial adults but often lack red dorsolateral stripes. Efts are the juvenile land-dwelling stage of newts and have orange coloration with two red dorsolateral stripes extending from head to tail. Efts have rougher skin compared to adults and their tails are more rounded compared to other life stages. Adults are olive green to dark brown with two red dorsolateral stripes that can be outlined in black, with some individuals having red spots along the stripes. Their ventral area is yellow with small black spots (Krysko et al. 2019). Courtship, breeding, and egg laying occur in the water after adults migrate to breeding ponds, usually during rain events in the fall and winter, but some individuals will migrate in the spring or summer (Johnson 2002a). Females can take several months to deposit all eggs (Johnson 2005), which are attached singly or in small clumps to aquatic vegetation or other objects in the pond (Carr and Goin 1955). Sexual maturity is reached at roughly 1 in (2.5 cm) SVL (Johnson 2002b).



Figure 1. Striped newt life stages (clockwise from top left): larva, paedomorph, adult, and eft. Photographs by Pierson Hill and Kevin Enge, FWC.



Figure 2. Comparison of the eastern newt (eft, top left; adult, bottom left) and the striped newt (eft, top right; adult, bottom right). Notice the lack of stripes on the eastern newt. Photographs by Pierson Hill and Kevin Enge, FWC.

Eastern newts (*Notophthalmus viridescens*), a species in the same genus, can also be found throughout Florida. The eastern newt has a similar appearance to the striped newt and can be found in the same life stages as striped newts (larva, eft, paedomorph, and adult), but it is not a listed species. Adult and eft eastern newts can be distinguished by the lack of dorsal striping (Figure 2), but a professional biologist should be consulted to distinguish between species in other life stages. Because striped newt larvae and paedomorphs typically lack red dorsal stripes, they are more difficult to distinguish from eastern newts. Two subspecies of eastern newt occur in Florida, the central subspecies (*N. v. louisianensis*) occurs in the Panhandle through the northeastern portion of the peninsula, and the peninsula subspecies (*N. v. piaropicola*) occurs throughout the peninsula to the Everglades. However, because peninsula newts lack an eft stage, they typically cannot colonize the isolated wetlands used by striped newts.

Habitat Features that Support Essential Behavioral Patterns

Striped newts have a complex life cycle that requires both uplands and wetlands (Johnson 2005). Adults and efts primarily use xeric upland habitats, most frequently sandhill (Figure 3), but can also inhabit scrub, scrubby flatwoods, mesic flatwoods, upland pine forest, dry prairie, xeric hammock, and disturbed areas that surround breeding ponds during the non-breeding season (Kevin Enge, unpublished FWC data). Striped newts are rarely found in unburned sandhills that are invaded by hardwoods (Greenberg et al. 2003). Little is known regarding the terrestrial existence of efts and adults, although newts (primarily efts) are occasionally found under logs.

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Figure 3. Suitable sandhill habitat near a striped newt breeding pond. Photograph by Kevin Enge, FWC.

Striped newts mainly use depression marshes for breeding ponds but are known to also use ephemeral or semipermanent basin marshes, dome swamps, sinkhole ponds, borrow pits, and sandhill lakes that lack predatory fish species (Figure 4; Christman and Means 1992, Dodd et al. 2005, Enge et al. 2014; Kevin Enge, unpublished FWC data). Breeding ponds typically have diverse herbaceous vegetation, such as maidencane (*Panicum hemitomon*), witch grasses (*Dichantheium* spp.), spikerushes (*Eleocharis* spp.), lesser creeping rush (*Juncus repens*), and dotted smartweed (*Persicaria punctata*; FWC 2020). Successful metamorphosis from larvae into pedomorphs requires a breeding pond to hold water for at least a year with an additional six months of suitable hydroperiod needed for larvae produced by these pedomorphs to mature (Johnson 2005). Scrub communities near suitable breeding ponds can have characteristics that may be suitable or unsuitable for efts and adults resulting in populations primarily persisting as pedomorphs (Enge et al. 2014). Striped newts were found to migrate more than 1,640 ft (500 m) into uplands from their ponds (Dodd and Cade 1998, Johnson 2003). Striped newts will use the same wetlands for breeding, typically entering wetlands in the fall and leaving in the spring, provided environmental conditions remain stable (Dodd 1993).

Threats

The loss and alteration of xeric upland habitats due to agriculture, silviculture, commercial and residential development, and mining are the greatest threats to striped newts (USFWS 2011, Farmer et al. 2017). Fire suppression and infrequent burning of sandhill and upland pine forests degrade critical upland and wetland habitat. Alteration of fire regimes changes the vegetation composition in xeric upland habitats allowing woody-stemmed, broad-leafed vegetation to replace herbaceous ground cover, which provides important microhabitat for striped newts. Non-native plants, such as cogon grass (*Imperata cylindrica*), invade longleaf pine systems, which can result in hotter and more intense fires that kill most above-ground vegetation (Lippincott 2000) and possibly amphibians, including ones sheltering underground (Enge et al. 2014). Fire suppression in wetlands often leads to peat build-up, shrub encroachment, reduction of emergent herbaceous vegetation, and increased evapotranspiration that shortens hydroperiods in striped newt breeding ponds (LaClaire 2001), which can lead to population extirpations. Unpaved roads adjacent to breeding ponds can degrade wetlands through siltation and sedimentation; also, runoff from paved roads can pollute ponds with petrochemicals and other toxic substances (LaClaire 2001). Off-road vehicle activity within and adjacent to breeding ponds can destroy vegetation and break up the organic hardpan beneath the

ponds, leading to shortened hydroperiods (LaClaire and Franz 1990). Climate change may lead to long-term droughts through variation in the amount of winter precipitation in peninsular Florida (Seager et al. 2009, IPCC 2013, Enge et al. 2014, Dahl et al. 2019). This could potentially impact breeding wetland hydrology and upland habitat conditions (FWC 2011, Zhu et al. 2017) by reducing opportunity for land managers to safely implement prescribed fires (Kupfer et al. 2020). Groundwater withdrawal from anthropogenic activities can further impact breeding ponds by shortening hydroperiods or even eliminating ephemeral wetlands (FWC 2020). The introduction of pollution, pesticides, and predatory fish into breeding wetlands may also negatively impact striped newts.



Figure 4. A depression marsh (left) and large borrow pit (right) provide suitable breeding wetlands in sandhills. Photographs by Kevin Enge, FWC.

Amphibian diseases could significantly harm striped newts. For example, established and emerging fungal diseases (*Batrachochytrium dendrobatidis* [Bd] and *Batrachochytrium salamandrivorans* [Bsal]), viruses (*Ranavirus* spp.), parasites (*Amphibiocystidium viridescens*), and bacteria (*Mycobacterium* spp.) have been tied to major amphibian mortality events (Raffel et al. 2008, Gray et al. 2009, Yap et al. 2017, Longo et al. 2019), and have caused severe disease in striped newts (Hartmann et al. 2022). The habitat threats listed above may stress existing striped newt populations, making them more susceptible to diseases (FWC 2020). Common clinical signs of disease include hemorrhage, inflammation, necrosis, and erythema (Figure 5). Outbreaks may have strong and lasting impacts on population structure, and it may take several years before populations recover.



Figure 5. Clinical sign of ranavirus in a striped newt pedomorph. Photographs by Arik Hartmann, University of Florida.

Potential to Significantly Disrupt or Impair Essential Behavioral Patterns

Striped newts rely on ephemeral or semi-permanent wetlands and the surrounding uplands (i.e., sandhill, scrub, scrubby flatwoods, mesic flatwoods) within at least 1,640 ft (500 m) of their breeding wetlands. They are dependent on breeding wetlands with hydroperiods that last at least 6 months and remain predator free. Impacts to occupied wetlands and uplands within 1,640 ft (500 m) of wetlands can result in take by significantly disrupting their breeding and sheltering activities. Introducing predatory fish into breeding wetlands significantly disrupts breeding and development. Activities that significantly modify striped newt habitat include, but are not limited to, clearing, grading, paving, bulldozing, digging, and construction. Activities that prevent or reduce water retention in breeding wetlands, such as breaking up the hardpan, draining a wetland, and changing the contour, will result in significant habitat modification. Any activities that impact water quality or water levels, such as sedimentation, pollution, or runoff, will negatively impact striped newt populations by degrading the habitat. Damaging or killing native herbaceous vegetation, such as with pesticides, mechanical equipment, off-road vehicles, or heavy machinery, can lead to unsuitable breeding wetlands.

Distribution and Survey Methodology

The map (right) represents the geographic range of the striped newt, including intervening areas of unoccupied habitat. This map is for informational purposes only and not for regulatory use.

Counties: Alachua, Baker, Bradford, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Franklin, Gilchrist, Hamilton, Hernando, Jefferson, Lafayette, Lake, Leon, Levy, Marion, Nassau, Orange, Osceola, Putnam, Seminole, St. Johns, Sumter, Suwannee, Taylor, Volusia, Wakulla.

Recommended Survey Methodology

Because the striped newt is difficult to detect, the FWC does not recommend striped newt surveys prior to most activities. FWC recommends contacting the FWC for updates and locality data at ConservationPlanningServices@MyFWC.com prior to habitat modification if projects are scheduled to occur in or within 1,640 ft (500 m) of suitable wetlands (see [Habitat Features that Support Essential Behavioral Patterns](#)) embedded within sandhill, scrub, or scrubby flatwoods in the striped newt's range (see [Range Map](#), right). FWC's Office of Conservation Planning Services may coordinate sharing of Geographic Information System data in accordance with Chapter 379.1026, Florida Statutes. Most known striped newt populations are on public lands (FWC 2022). If striped newts are known to be present at locations where habitat modification is planned, the FWC recommends coordination with the agency to determine strategies to avoid take and provide conservation benefit. If take is unavoidable, permitting options can be coordinated with the FWC (see [FWC Permitting: Incidental Take](#)).

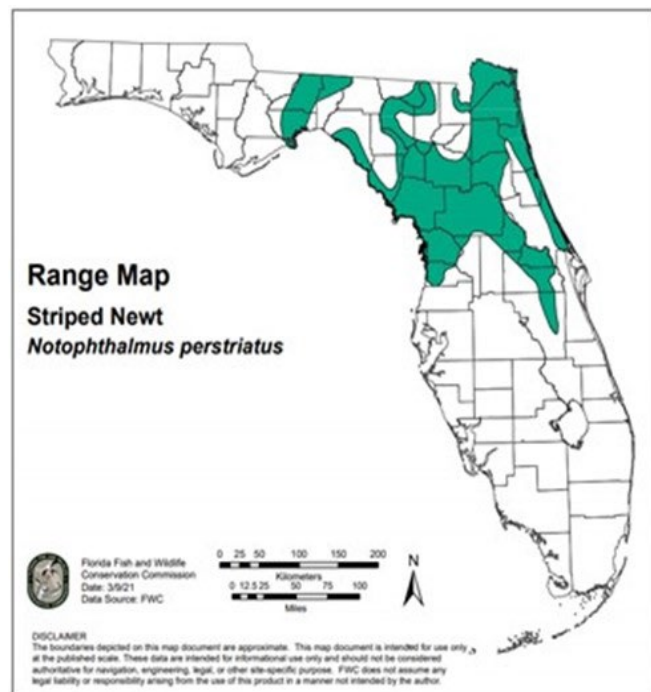


Figure 6. Distribution of the striped newt in Florida.

The following survey recommendations are for surveys with a scientific or conservation purpose or that are conducted to provide [scientific benefit](#) under an [incidental take permit](#). Any activity that requires handling striped newts requires a permit from the FWC. A [scientific collecting permit](#) is required for surveys that involve capturing or collecting individuals (see [intentional take permits](#)). Upland surveys (i.e., drift-fence) are not recommended for documenting species presence due to the difficulty of finding terrestrial life stages, although upland surveys as a form of scientific benefit may be beneficial to fill life history data gaps. The following survey recommendations are for surveys with a scientific or conservation purpose or that are conducted to provide scientific benefit under an [incidental take permit](#). Any activity that requires handling striped newts requires a permit from the FWC.

A [scientific collecting permit](#) is required for surveys that involve capturing or collecting individuals (see [intentional take permits](#)). Upland surveys (i.e., drift-fence) are not recommended for documenting species presence due to the difficulty of finding terrestrial life stages, although upland surveys as a form of scientific benefit may be beneficial to fill life history data gaps. Dipnet surveys are the best method for documenting the presence of striped newts in breeding ponds. Dipnet surveys for striped newts are typically performed in conjunction with scientific studies or monitoring efforts. Anyone (i.e., researchers, biologists, land managers, etc.) conducting dipnet surveys should coordinate with the FWC during the planning phase.



Figure 7. Comparison of the striped newt (top) and the eastern newt (bottom) larval stages. Variation in larval appearance can lead to misidentifying these species. Photographs by Pierson Hill, FWC.

- Dipnet surveys should follow standard amphibian disinfection protocol. A list of suitable procedures can be found on the [North American Bsal Task Force](#) website.
- Dipnet surveys should be conducted:
 - Between February and June to maximize the chance of encountering all three aquatic life stages (larvae, pedomorphs, and adults) in breeding ponds (Johnson 2002b, K. Enge, pers. comm.)
 - In ponds that retain water for at least 6 consecutive months.
- Dipnet surveys should not be conducted:
 - During periods of heavy rain.
 - During periods of drought.
- Because striped newt larvae are difficult to distinguish from other salamander larvae ([Figure 7](#)), a trained biologist should confirm identification.
- Coordinate with FWC staff prior to conducting dipnet surveys and refer to Enge et al. (2014) for additional survey recommendations and considerations.
- Recommended dipnet survey methodology:
 - Surveyor stands in the water 3 ft (about 1 m) from the edge of the pond and dips the net into the water extending the net away from them at arm's length until it hits the bottom of the pond.
 - Surveyor drags the net across the bottom of the pond pulling the net towards them.
 - Surveyor should repeat this process in three step intervals around the perimeter of the pond.

- If any newts are observed with clinical sign of disease, surveys should be immediately halted, equipment disinfected, and the surveyor should coordinate future actions with the FWC.

In situations involving the capture of larval, paedomorphic, or adult striped newts, newts may be secured individually in a plastic container filled with enough water from their pond to fully submerge them.

Containers with newts should be of a length that is at least double the body length, with a width that is equal to the body length, and a height that will permit the animal to rest naturally with head clearance. Containers with newts should have air holes in the lid and not be allowed to overheat. Newt containers must be cleaned between uses and use fresh pond water with each capture. Efts may be kept in a secure container with a damp paper towel to provide moisture and prevent desiccation. During any transport of newts, they should be secured in a dark, climate-controlled space.

Recommended Conservation Practices

Recommended Conservation Practices are general measures that could benefit the striped newt by lessening the impact of activities to their populations but are not required. No FWC permit is required to conduct these activities, but coordination with the FWC is recommended. Additional actions that benefit striped newts can be found in the [SAP](#) (FWC 2022).

- Developing and implementing a prescribed fire regime in potential or occupied habitat ([Figure 8](#)) that is compatible with the life history and habitat needs of striped newts.
 - Growing season burns (May through September) with appropriate fire intervals for the natural community type are ideal because they mimic historical fire regimes that will provide or maintain suitable habitat (Means 2006, FNAI 2010).
 - Fire breaks should not be installed around wetlands where the species occurs because they would prevent fires originating in the uplands from burning into the wetlands and might facilitate colonization by fish.
 - Whenever possible, fire should be allowed to enter and burn through wetland basins when they are dry or mostly dry.
 - To maintain suitable pond characteristics, breeding ponds can be burned individually while dry.
- Establishing conservation easements that maximize the conservation of suitable and occupied habitat, including an upland buffer of at least 1,640 ft (500 m) around wetlands.
- Maintaining or increasing the size and quality of uplands such as sandhill, scrub, scrubby flatwoods, and mesic flatwoods which contain suitable breeding ponds or habitats.
- Maintaining the size and quality of wetlands such as depression marsh, basin marsh, dome swamp, sinkhole pond, and sandhill lake.
- Implementing non-native invasive plant and/or animal control methods in and around suitable and occupied habitat.



Figure 8.. Sandhill after a prescribed fire. Photograph by Kevin Enge, FWC.

- Prior to using herbicides or pesticides in or around suitable or occupied habitat, reviewing labels for potential effects on non-target organisms, particularly amphibians. Use only herbicides that are labeled for aquatic use and check that any adjuvants are aquatic compatible.
- To prevent disease introduction, using standard cleaning techniques for equipment before entering and after exiting ponds known to support striped newts. Disinfection procedures are provided by the [North American Bsal Task Force](#).
- Reporting trespassing, illegal dumping, and off-road vehicle activity in or around striped newt habitat to the landowner or land manager.
- Detecting striped newts can be viewed as a [Scientific Benefit](#), and reporting observations to the FWC is strongly encouraged.

Measures to Avoid Take

Avoidance Measures that Eliminate the Need for FWC Incidental Take Permitting

This section describes all measures that would avoid the need for an applicant to apply for an FWC [Incidental Take](#) permit.

- Maintaining an upland buffer of at least 1,640 ft (500 m) from known breeding wetlands.
- Avoiding the conversion or degradation of occupied wetlands and of uplands within 1,640 ft (500 m) of occupied striped newt wetlands. Examples of activities that may degrade striped newt wetlands include, but are not limited to:
 - Creating impoundments or modifying adjacent uplands in a way that may degrade water quality and quantity.
 - Engaging in activities that impact wetlands through pollution (e.g., septic-tank effluent, fertilizers, pesticides, hazardous waste, farm waste, oils) or surface runoff (i.e., siltation).
 - Clearing, grading, paving, bulldozing, or digging associated with construction.
 - Preventing or reducing water retention in breeding wetlands, such as breaking up the hardpan, draining a wetland, or changing its contour.

Examples of Activities Not Expected to Cause Take

This list is not an exhaustive list of exempt actions. Please contact FWC at Imperiled@MyFWC.com if you are concerned that you could potentially cause take of striped newts.

- Activities that occur in natural communities not known to be used by striped newts.
- Activities that occur in uplands outside of 1,640 ft (500 m) from occupied or suitable striped newt breeding wetlands.
- Activities that occur within 1,640 ft (500 m) of occupied striped newt breeding wetlands but do not involve land use conversion, habitat degradation, or intentional take (e.g., hiking, hunting).

Other Authorizations for Take

- As described in Rule 68A-27.007(2)(c), F.A.C., land management activities (e.g., aquatic habitat management, prescribed fire, mechanical removal of invasive species, herbicide application, mowing, and site management that maintains or enhances occupied or potential habitat) that benefit wildlife and are not inconsistent with FWC management plans are authorized and do not require a permit authorizing incidental take.

- As described in Rule 68A-27.007(2)(d), F.A.C., Agriculture, as defined in Section 570.02, F.S., conducted in accordance with Chapter 5I-8, F.A.C., effective 10-21-14, or Chapter 5M-18, F.A.C., effective 6-17-15, and the wildlife best management practices (BMPs) adopted in Rule 5I-8.001, F.A.C., by the Department of Agriculture and Consumer Service pursuant to Section 570.94, F.S., is authorized and does not require a permit authorizing incidental take despite any other provision of this section.
- Emergency actions necessary for human health and safety, such as water management activities for flood control.
- If striped newts are encountered outside of known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands during a project activity, incidental take is authorized for the duration of the activity without a permit, provided the individual submits information on the location and habitat characteristics of the observation to Imperiled@MyFWC.com. The FWC also may request cooperation during the habitat modification process. For example, FWC may ask that agency staff or site biologists perform striped newt surveys or collect habitat data.

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 coordinates with the Florida Department of Environmental Protection (FDEP) and the Florida Forest Service (FFS) to develop fire plans suitable to species occurring in specific natural communities. The FWC coordinated with the U.S. Fish and Wildlife Service (USFWS) on reviewing the Species Status Assessment. The FWC assists with applying for grants and providing technical review, project guidance, equipment purchasing, and staff for monitoring needs.

The FWC, USFWS, and FDEP coordinate and use collaborative efforts to ensure the Clean Water Act (CWA) 404 program and other permitting programs are implementing future processes and procedures to protect the surface waters and wetlands of Florida. These agencies work together to ensure the conservation of Florida's federally and state-listed wildlife and their habitats with the understanding that many wildlife species, including those that are threatened or endangered, depend on wetlands to complete all or part of their life cycle. The CWA 404 permitting program is reviewed by the U.S. Army Corps of Engineers (USACE) to regulate activities that discharge dredged or fill material into waters of the U.S., including wetlands.

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 the requirements for issuing a state-Threatened species incidental take permit, the FWC will consider those 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 by another agency. These permits would be issued based on the understanding that the implementation of project commitments will satisfy the requirements of Rules 68A-27.003 and 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

- The FWC, in coordination with other state agencies, provide comments to federal agencies (e.g., the USACE) on federal actions, such as projects initiated by a federal agency or permits being approved by a federal agency.

- The FWC 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.
- The FWC coordinates with state agencies such as the FDEP and the five Water Management Districts in the Environmental Resource Permitting (ERP) program. The ERP program 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, single-family developments for homes, boat ramps, and artificial reefs.

FWC Permitting: Incidental Take

Take of striped newts can be either incidental or intentional. Under Chapter 68A-27.001, F.A.C., incidental take is defined as take that is incidental to, and not the purpose of the carrying out of an otherwise lawful activity. This type of take is prohibited without an incidental take permit or other authorization. Construction activities near wetlands that cause accidental death or injury of striped newts is an example of incidental take. Intentional take is not incidental to an otherwise lawful activity and requires a Scientific Collecting permit, unless authorized under certain circumstances involving risks to human health and safety. Capturing and handling striped newts for research is an example of intentional take. Consult the sections [Recommended Conservation Actions](#) and [Measures to Avoid Take](#) for guidance on actions that would avoid needing an FWC permit.

For activities that could result in impacts to striped newts, an incidental take permit from the FWC may be required (see above for actions that do not require a permit). Incidental take permits may be issued when there is a scientific or conservation benefit to the species and the applicant shows 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.

The FWC recommends contacting ConservationPlanningServices@MyFWC.com for updates and locality data prior to habitat modification if projects are scheduled to occur near or within 1,640 ft (500 m) of suitable wetlands (see [Habitat Features that Support Essential Behavioral Patterns](#)) embedded within sandhill, scrub, or scrubby flatwoods in the striped newt's range (see Range Map above). FWC's Office of Conservation Planning Services may coordinate sharing of Geographic Information System data in accordance with Chapter 379.1026, Florida Statutes. Two scenarios apply:

1. For projects within known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands, the FWC will evaluate incidental take permit applications on a case-by-case basis and coordinate with permittees on appropriate minimization and/or mitigation options. Most known striped newt wetlands are on public lands (FWC 2022).
2. Outside of known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands, the striped newt is considered a cryptic species, and no incidental take permit is necessary. If striped newts are encountered during a project activity, incidental take (i.e., take incidental to otherwise lawful activities) is [authorized](#) for the duration of the activity without a permit, provided the individual submits information on the location and habitat characteristics of the observation to Imperiled@MyFWC.com. Live and dead observations must be reported to the FWC and must include

latitude, longitude, habitat characteristics, and photographs (required for verification purposes). The FWC also may request cooperation during the habitat modification process. For example, FWC may ask that agency staff or site biologists perform striped newt surveys in wetlands in which newts were found or collect habitat data.

This section describes 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. As more information is learned about this species mitigation options may change.

Minimization Options

The options below are intended to address the evaluation factors the FWC considers when issuing an incidental take permit. All of the options below assume that adhering to avoidance measures that eliminate the need for FWC permitting described above is not possible, and that some level of take may occur. These options can lessen the impact of activities, and ultimately may reduce what is needed to achieve a conservation or [scientific benefit](#). The FWC does not recommend surveys to determine the presence of striped newts except as a component of a [scientific collecting permit](#) or through coordination with the agency as a part of mitigation.

Seasonal, Temporal, and Buffer Measures

- If road construction adjacent to suitable striped newt habitat is necessary, use unimproved dirt roads to the maximum extent possible. Guidelines for minimizing erosion and runoff can be found in the State of Florida [Best Management Practices](#) (BMPs) for stormwater runoff, within the Florida Department of Agriculture Consumer Services (FDACS) silviculture BMPs (FDACS 2008).
- Unless as a part of active wetland restoration, avoid application of herbicides or pesticides within 200 ft (61 m) of ponds containing striped newts.
- Establish a buffer zone of 200 ft (61 m) around jurisdictional wetland boundaries of suitable or occupied habitat to reduce the potential for runoff or pollution to enter habitats.
- Store hazardous chemicals, fertilizers, and petroleum products in safe, spill proof containers a minimum of 300 ft (91.4 m) away from suitable or occupied breeding habitat.

Design Modification

- Maximize retention and quality of suitable or occupied habitat.
- Maximize retention and quality of uplands and wetlands surrounding suitable or occupied habitat.
- Design projects to promote appropriate prescribed fire regimes or the ability to use fire in adjacent habitat.
- Use the [Silviculture](#) Best Management Practices (BMPs; FDACS 2008) as they relate to wetlands, stream crossings, timber harvesting, and pesticide and fertilizer application to reduce impacts to this species.
- Use the FDACS [BMPs](#) for Water Quality/Quantity for specific operations (Cow/Calf, Dairy, Equine, Nurseries, Poultry, Sod, Specialty Fruit and Nut Crops, Vegetable and Agronomic Crops), as they relate to waste management, water resource protection, irrigation, erosion control, sediment control, stormwater management, etc. to reduce impacts to this species if these operations occur within or adjacent to suitable or occupied striped newt habitat.

Method Modification

- Store hazardous chemicals, fertilizers, and petroleum products in safe, spill proof containers a minimum of 300 ft (91.4 m) away from suitable or occupied breeding habitat.

- Use sediment screens, bales, or other materials and methods to limit runoff from upland site activity.

Mitigation Options

Mitigation is scalable depending on the impact, with mitigation options for significant impairment or disruption of essential behavioral patterns. Mitigation must provide either a scientific or conservation benefit. To achieve conservation benefit, mitigation must counterbalance the take that occurs and provide an additional benefit. Potential options for mitigation are described below. References to specific actions within the [SAP](#) are provided in parentheses.

Scientific Benefit

This section describes research and monitoring activities that provide a 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, provided FWC staff approve the objectives and methods submitted as part of the permit application. These projects must be conducted with input from the FWC to achieve results in concert with ongoing management actions. Since this species is cryptic and there is limited information available to completely define their essential behavioral patterns, the options provided below are subject to change as new information becomes available. Projects that help improve existing survey methodology for the striped newt would need to be conducted with FWC cooperation. For projects within known breeding wetlands and uplands within 1,640 ft (500 m) of those wetlands:

- Scientific studies provide scientific benefit if they fill data gaps in the species' life history, including reproduction, habitat requirements in different natural communities, diet and refuge use, impact of habitat fragmentation, patch size, population demographic parameters (i.e., productivity, survivorship, and mortality rates), and disease dynamics (SAP Actions 5,6).
- Mark and recapture surveys provide scientific benefit if they provide data on habitat requirements, dispersal distances, and demography of striped newts. Such surveys also provide scientific benefit if they explain how the species reacts to environmental changes, such as water level fluctuation or invasive species (SAP Actions 4,6,8,9,10).

Habitat

- Acquire striped newt habitat that provides suitable areas for the species' essential behavioral patterns (SAP Action 1).
- Implement prescribed fire regimes on upland habitats and wetlands suitable for striped newts (SAP Actions 2,3).
- Control, reduce and remove hardwoods and invasive plants encroaching on occupied and potentially suitable wetlands adjacent to occupied habitat. (SAP Action 3).
- Investigate the effects of anthropogenic water withdrawals on striped newt populations and implement strategies to maintain natural hydroperiods (Actions 8, 9).

Funding

- Mitigation may take the form of a financial contribution to the [Fish and Wildlife Foundation of Florida's](#) Imperiled Species Permitting Conservation Fund. Mitigation contributions will be used to fund priority actions included in or consistent with the objectives of the [SAP](#). Funding options as part of mitigation will be considered on a case-by-case basis but must be sufficient to counterbalance the take that will occur and provide a benefit to the species. For example, applicants could consider the cost of habitat restoration, by using mechanical, chemical, and/or prescribed fire techniques for a similarly-sized wetland with potential to support striped newts.

Information

- This form of mitigation can be part of a mitigation package but shall not be the sole form of mitigation. The information options include: live and dead observations reported to the FWC, and including latitude, longitude, habitat characteristics, and photographs (required for verification purposes) by email to Imperiled@MyFWC.com. Provide any dead specimens discovered to the FWC as vouchers that can fill in data gaps for new locations, disease screening, and future genetics work. Arrangements for the transport or shipping of vouchers may be arranged by contacting Imperiled@MyFWC.com.

Programmatic Options

- FWC's Landowner Assistance Program is a voluntary program that offers guidance to landowners who implement conservation plans. This program allows the FWC to gather information on private lands slated for development and assistance in evaluating development practices to create suitable avoidance, minimization, and mitigation options for specific properties.

Multi-species Options

- No multi-species permitting options have been identified at this time, but multispecies options may be available for projects that impact other state-listed species in sandhill habitat. It may also be possible to include state Threatened species in Federal Habitat Conservation Plans developed in coordination with the U.S. Fish and Wildlife Service for federally listed species that occur within the same habitat types. Contact WildlifePermits@MyFWC.com for permitting options.

FWC Permitting: Intentional Take

Intentional take is not incidental to otherwise lawful activities. In accordance with Rule 68A-27, F.A.C., intentional take is prohibited without a permit or other authorization. For state-Threatened species, intentional take permits may only be considered for scientific or conservation purposes (defined in FWC's [ISMP](#) as activities that further the conservation or survival of the species taken). Permits are issued for intentional take of state-Threatened species following the guidance in Rule 68A-27.007(2)(a), F.A.C.

Intentional Take for Human Safety

- There are no known circumstances for which striped newts may be taken for human safety.

Aversive Conditioning

- Not applicable for the striped newt.

Permits Issued for Harassment

- Not applicable for the striped newt.

Scientific Collecting and Conservation Permits

- Scientific collecting permits may be issued for the striped newt using guidance found in Rule 68A-27.007(2)(a), F.A.C. ([SAP](#) Action 11). Activities requiring a permit include any research that involves capturing, handling, or marking wildlife; conducting biological sampling; other research that may cause take; or captive breeding for reintroduction efforts or population augmentation. Those possessing a striped newt for education and outreach events must have a scientific collecting permit.
- A scientific collecting permit will not be issued for the sole purpose of removing a newt from the wild to use for education or outreach. Striped newts used for education and outreach will require a scientific collecting permit and should be used for a minimum of 12 educational engagements equating to a minimum of 48 hours of contact time per year. When applying for an education and

outreach permit, please include a description of how the animal will be housed, both permanently and when being used for outreach, and include any lesson plans or summaries of educational activities.

Considerations for Issuing a Scientific Collecting Permit

1. Is the purpose adequate to justify removing the species from the wild (if the project requires this)?
 - Permits will be issued if the identified project is consistent with the goal of the [SAP](#) (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?
 - Applicants must include detailed methods, including measures taken to minimize take. Applications also must include proposed study duration, timeframe, sample size, and disposition of individuals, as appropriate.
 - Applications proposing to trap, capture, or handle striped newts must include trapping and handling protocols. Trapping and handling protocols must identify measures to lessen stress for captured individuals and to lessen impacts to striped newt populations (e.g., measures to minimize disease transmission).
 - Methodologies for any collection of tissues must be clearly spelled out, including measures taken to reduce stress/injury and disease transmission.
3. Will the permit conflict with any program intended to enhance survival of species?
 - Applications must include clear objectives to ensure that the project does not conflict with other conservation efforts for the species.
 - Applications must identify the project location, such as where trapping or handling will occur (privately owned or public lands).
4. Will the purpose of the permit reduce likelihood of extinction?
 - Projects consistent with the goal of the [SAP](#) or that fill identified data gaps in species life history or management may reduce the likelihood of extinction.
 - Applications must include clear project objectives and justification of why the proposed project has a scientific or conservation purpose, including how the project advances conservation of 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 may include a letter of reference that supports their ability to handle the species.
 - The application must describe the qualifications (e.g., experience or training) of staff overseeing the work and the resources and facilities available to conduct the proposed work.
 - Disposition involving captive possession for any period of time must include a full explanation of whether the facility has appropriate resources for accomplishing the project objectives and for maintaining the animals in a safe and humane manner.

Information Relevant to all Scientific Collecting Permits for Striped Newts

- Permit amendment and renewal applications must be “stand alone” (i.e., include all relevant information on objectives and methods, even if previously submitted for a predecessor permit).
- Applications must include a proposal that contains the elements in the [Considerations for Issuing a Scientific Collecting Permit](#) section above.
- Applications must include detailed qualifications or training for all individuals who will be capturing or handling striped newts. For those likely to submit multiple applications over time, applicants are encouraged to upload minimum qualifications as part of an application for a Registered Agent permit in the [online permitting site](#). The FWC also encourages applicants to include qualifications of sub-permittees in the Registered Agent permit. This will allow applicants to upload minimum qualifications only once rather than repeatedly uploading them in each scientific collecting permit application.
- Visual encounter surveys that do not involve handling animals do not require a permit.
- Any activity that requires trapping or handling a striped newt requires a permit. For example, these activities include collecting genetic material for taxonomic analyses.
- Permits may be issued to display a specimen if the specimen was obtained via rehabilitation facility or was encountered dead.
- Permits may be issued for captive possession (removal from the wild) if the individual is deemed non-releasable.
- 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 format specified in the permit conditions.
- A final report must be provided to the FWC in the format specified in the permit conditions.

Contact

For permitting questions or to report mortalities that occur during permitted activities, contact the FWC at (850) 921-5990 or WildlifePermits@myfwc.com. For regional information, visit <http://myfwc.com/contact/>. To report a wildlife violation please visit <https://myfwc.com/contact/wildlife-alert/> or call 1-888-404-FWCC (3922).

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