

Alligator Snapping Turtles

Macrochelys suwanniensis,
M. apalachicola, and *M. temminckii*



Photograph by Kevin Enge, FWC.

Species Overview

Status: The Suwannee alligator snapping turtle (*M. suwanniensis*) is listed as state Threatened on Florida's Endangered and Threatened Species List.

The Apalachicola alligator snapping turtle (*M. apalachicola*), and the alligator snapping turtle (*M. temminckii*) were removed from Florida's Endangered and Threatened Species List.

Current Protections

For all three species:

- 68A-1.004, F.A.C., Take – The term take shall include taking, attempting to take, pursuing, hunting, molesting, capturing, or killing any wildlife or freshwater fish, or their nests or eggs by any means whether or not such actions result in obtaining possession of such wildlife or freshwater fish or their nests or eggs.
- 68A-4.001, F.A.C., General Prohibitions and Requirement – Prohibits the take, transport, sale, and possession of wildlife.
- 68A-25.002(6)(a)(5), F.A.C. No person shall take, possess, transport or sell any alligator snapping turtles (*Macrochelys* spp.).

Additional protection for Suwannee alligator snapping turtle:

- 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.

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 all alligator snapping turtles occurring in Florida, threats they face, and what constitutes significant disruption of essential behaviors.

Alligator snapping turtles (*Macrochelys* spp.) are the largest freshwater turtles in North America. Three species occur in Florida, 1) the alligator snapping turtle, 2) the Apalachicola snapping turtle (both occur in the western Panhandle, though with no overlap in range), and 3) the Suwannee alligator snapping turtle (restricted to the Suwannee River drainage) (see [map](#)). The Suwannee alligator snapping turtle is endemic to

Florida and the southern portion of central Georgia. The other species range from the Gulf Coast of Florida, north through the Mississippi River system to southern Illinois, and west through Oklahoma and Texas.

There is currently taxonomic uncertainty surrounding the Alligator snapping turtle and Apalachicola snapping turtle. Historically, all alligator snapping turtles in Florida have been identified as one species, *Macrochelys temminckii*, but observations by Roman et al. (1999), Echelle et al. (2010), and Thomas et al. (2014) led to the designation of three separate species (*M. temminckii*, *M. apalachicola*, and *M. suwanniensis*; all covered by these guidelines). Recent rebuttals to this taxonomic arrangement by Folt and Guyer (2015) suggest that *M. apalachicola* is invalid and those animals belong to *M. temminckii*. Taxa experts agree that *M. suwanniensis* is genetically and morphologically distinct and warrants full species status. Due to the timing of Florida's listing recommendation for the Suwannee alligator snapping turtle, members of the Biological Review Group addressed all three species for potential listing actions. Should taxa experts formally agree that *M. temminckii* and *M. apalachicola* are a single species, these Guidelines will be revised. It should be noted that the taxonomic arrangement will not affect Florida's listing status of the Suwannee alligator snapping turtle. For more information on the recent developments in understanding the taxonomy of these species, see [Species Action Plan for Florida's Alligator Snapping Turtles](#).

All three species of alligator snapping turtles occur in coastal plain rivers, streams, and associated permanent freshwater habitats, including impoundments. They can inhabit small creeks, such as sandy bottomed seepage creeks found on Eglin Air Force Base, but are most typically associated with large, flowing rivers and tributaries. Examples of these waterways include the Perdido River, Escambia River, Choctawhatchee River, Apalachicola River and the Suwannee River (Krysko et al. 2011; Map).

Within each species, male and female alligator snapping turtles are similar in appearance, though male turtles may grow to significantly larger size, reaching 75 kg (165 lbs) or more, while females often weigh below 25 kg (55lbs). All three species of alligator snapping turtles have three large longitudinal ridges that run the length of their shell, and use a worm-like appendage in their mouth as a lure to attract prey (Figure 1).

Hatchlings resemble adults. Alligator snapping turtles of any species are differentiated from common snapping turtles in the following ways: alligator snapping turtles have short necks and common snapping



Figure 1: Juvenile Suwannee alligator snapping turtle (top; note the three longitudinal ridges on the carapace), Reduced plastron (middle), and the head and mouth of a Suwannee alligator snapping turtle displaying the lure (bottom). Photographs by Kevin Enge, FWC.

turtles have long necks that can reach over half way down their shell, alligator snapping turtles have a smooth tail and common snapping turtles have a sharply keeled tail, and alligator snapping turtles have a

dark mottled mouth with a pink lure and common snapping turtles have a pink mouth (Figure 2). Alligator snapping turtle species prey primarily on fish, turtles, snakes, birds, and other aquatic wildlife. Vegetation, including fruits and nuts make up a small portion of their diet (Elsey 2006). Alligator snapping turtle species are chiefly nocturnal and sedentary during daylight hours and are active year-round (Enge et al. 2014).



Figure 2: Common snapping turtle. Note the smooth carapace when compared to alligator snapping turtles.

A short nesting season occurs in the springtime, from April through May. Females may lay a single clutch of 17 to 52 eggs a year. Incubation time is typically over 100 days and hatchlings will remain in the nest cavity for several weeks (Ewert and Jackson 1994). The sex of alligator snapping turtles of all species is temperature-dependant, higher temperatures favor female turtles. The use of artificial nesting sites (i.e., spoil mounds) has produced more female hatchlings due to higher levels of sun exposure (Ewert and Jackson 1994). The lifespan for wild each species of alligator snapping turtle is unknown, although a captive animal lived for 70 years (Snider and Bowler 1992). Sexual maturity is suggested to be 13 – 21 years in females and 11 – 21 years in males. Enge et al. (2014) determined the population size of the Suwannee alligator snapping to be 780 – 1,171 adults, excluding the estuary and tributaries.

Further background information pertaining to each species of alligator snapping turtle may be found in the Alligator Snapping Turtle Species Biological Status Review Report (FWC 2017) and A Species Action Plan for Florida's Alligator Snapping Turtles (FWC 2018).

Habitat Features that Support Essential Behavioral Patterns

Because the Suwannee alligator snapping turtle is the only one of the three species listed as state Threatened, this section focuses exclusively on this species. The definition of take for state-Threatened species include disruption of essential behavioral patterns.

Suwannee alligator snapping turtles are found in high-quality waterways in north central Florida. In Florida, Moler (1996) found that all three species have similar life history and habitat requirements. Suwannee alligator snapping turtles were most abundant in the middle reaches of the Suwannee River, where spring and riverbed leakage increased the productivity of the water (Enge et al. 2014).

Undercut riverbanks and submerged logs are an important habitat feature for alligator snapping turtles (Enge et al. 2014). Undercut banks are preferably selected when both refugia are present in river systems. In the middle reaches of the Suwannee River, sonic telemetry revealed alligator snapping turtles primarily used woody debris which was the most abundant cover in the river (Enge et al. 2014). All monitored turtles had a mean of 4 activity sites about 300m apart (Enge et al. 2014). Nesting habitat includes river berms, high banks, and artificial spoil mounds, generally 2 – 3 m (6.5 – 10 ft) high.

Variation in riverine habitat is important to alligator snapping turtles. Enge et al. (2014) found that Suwannee alligator snapping turtles foraged in inundated floodplains, and that some turtles would use both river and floodplain habitat during periods of low water.

Threats

All species of alligator snapping turtles have been historically harvested, both intentionally and accidentally for commercial and personal use, primarily for meat, but also for use as pets (Sloan and Lovich 1995, Ewert et al. 2006). The take of alligator snapping turtles was prohibited by the FWC in 2009. The current amount of

targeted take for each species is unknown, although evidence suggests that the Suwannee alligator snapping turtle may have been spared heavy harvest in the past (FWC 2017). Bycatch of turtles by anglers is a threat. Trotlines (lines of submerged baited hooks), setlines (single hooks attached to the bank), and bush hooks (single lines attached to branches) can cause mortality. Turtles may both ingest hooks (Enge et al. 2014) or drown from entanglement in fishing line (Mays et al. 2015). The impact of these hooks and lines to each species of alligator snapping turtles at the population level is unknown.

Riverine alteration, habitat loss, and habitat degradation are threats, although as large areas of suitable habitat are already protected by forms of conservation (e.g., Outstanding Florida Waters), outright destruction of habitat is probably minimal. Alterations to habitat by dredging or modifying water flow levels may change the amount of suitable nesting habitat. Alterations to water quality by pollution or siltation can reduce the amount of habitat available to each species of alligator snapping turtle. Additionally, deadhead logging (the removal of submerged logs for profit) may reduce the amount of shelter and foraging locations. In the Suwannee River, Enge et al. (2014) found that submerged woody debris was the most commonly used cover by tracked Suwannee alligator snapping turtles. Common to other turtles, nests are vulnerable to predation by raccoons (*Procyon lotor*), wild hogs (*Sus scrofa*), striped skunks (*Mephitis mephitis*), and red imported fire ants (*Solenopsis invicta*).

Distribution and Survey Methodology

The range map represents the principle geographic range of the Suwannee alligator snapping turtle, as well as the other species of alligator snapping turtles that occur in Florida. The map includes intervening areas of unoccupied habitat. This map is for informational purposes only and not for regulatory use.

County list

Suwannee alligator snapping turtle:

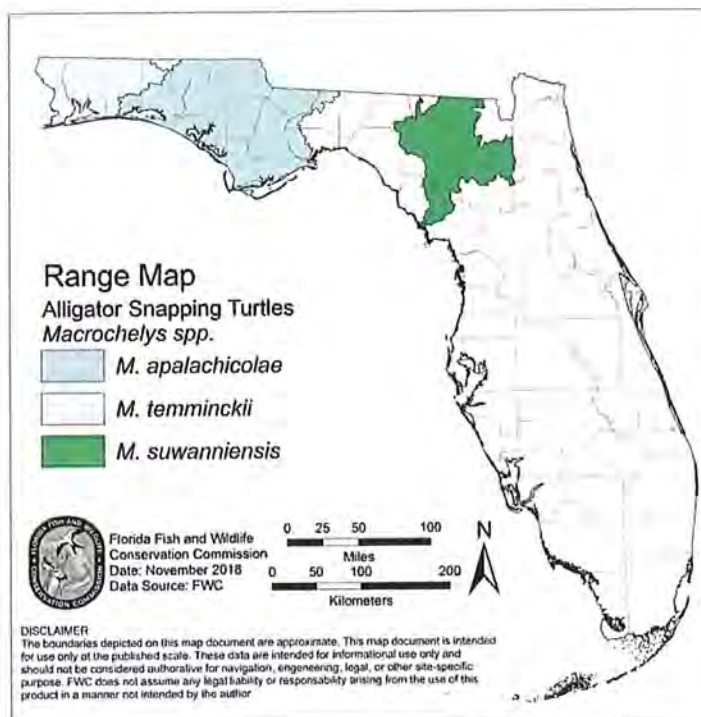
Madison, Lafayette, Dixie, Hamilton, Columbia, Gilchrist, Union, Bradford, Alachua.

Apalachicola alligator snapping turtle:

Okaloosa, Walton, Holmes, Washington, Bay, Jackson, Calhoun, Gulf, Gadsden, Liberty, Franklin, Leon, Wakulla.

Alligator snapping turtle (*M. temminckii*):

Escambia, Santa Rosa, Okaloosa, and Walton.



Recommended Survey Methodology

Surveys are not required. Because these species rarely bask (Carr et al. 2011, Elsey and Burgeois 2014, Mays and Hill 2015), and are only infrequently seen out of the water, surveys are not recommended unless as a component of Scientific Benefit and in coordination with the FWC. Any activity that requires handling an alligator snapping turtle of any species, in any capacity, requires a permit.

It is possible to capture turtles using aquatic traps, such as hoop traps (see methods used in Mays et al. 2015). The use of traps to monitor any species of alligator snapping turtle may be time consuming and expensive. Trap use may capture non-target species, including other Threatened species, and thus is not recommended for surveys unless in coordination with FWC. A scientific collecting permit will be required for any activity that may trap or capture any species of alligator snapping turtle. Each species is capable of delivering a bite that may cause harm to humans. Anyone handling an alligator snapping turtle should be trained in proper handling and restraint techniques.

- Baited traps should be placed upstream of potential refugia (woody debris and undercut banks).
- Traps should minimally be checked daily, and well secured to prevent theft and vandalism.
- Traps should be deployed in a manner that allows turtles to surface for air.
- All three species of alligator snapping turtle are similar in appearance. If a turtle is trapped from the wild, the river drainage can be used to infer species identification. If the origin of the animal is dubious genetic testing can reveal lineage.
- The objective of surveys is detection; thus, if observers detect this turtle there is no need to continue surveying. If any alligator snapping turtle species is found, the applicant should coordinate with FWC.

Recommended Conservation Practices

Recommendations are general measures that could benefit all three species of alligator snapping turtle but are not required. No FWC permit is required to conduct these activities.

- Avoid causing changes that would degrade aquatic habitats inhabited by any species of alligator snapping turtle. Specifically, avoid creating artificial impoundments, dredging channels in rivers, and creating dredge spoils within rivers.
- The removal of submerged logs, called deadhead logging, is particularly bad for riverine turtles and should be avoided.
- Avoid activities that would remove excess water from rivers, especially during times of drought.
- Avoid activities that would degrade or alter riparian zones and uplands adjacent to rivers occupied by any species of alligator snapping turtle. Specifically, avoid removing trees and shrubs, disturbing soil and groundcover, and operating off-road vehicles in riparian zones. Maintaining a buffer of 100-200 m (328-656 ft) around riparian zones can benefit many turtle species that occur in inhabited waterways (Ewert and Jackson 1994, Wegner 1999, U.S. Fish and Wildlife Service [USFWS] 2001, Steen et al. 2012).
- Minimize or eliminate activities that degrade water quality (e.g., siltation and pollution) in waterways inhabited by any species of alligator snapping turtle. Guidelines for minimizing erosion and runoff from roadways can be found in the State of Florida Best Management Practices (BMP's) for stormwater runoff and within the Florida Department of Consumer Services (FDACS) silviculture BMP's.
- Minimize livestock access to waterways inhabited by any species of alligator snapping turtle.
- Site stormwater management systems to provide the maximum treatment for any potential input into occupied habitat.

Measures to Avoid Take

Avoidance Measures that Eliminate the Need for FWC Take Permitting

The following measures will eliminate the need for an FWC take permit for the single state-Threatened species, the Suwannee alligator snapping turtle.

- Avoid disturbing moderate to high sandy beaches, natural berms, and uplands extending 100 m (328 ft) beyond the floodplain especially during the nesting season (April – May) areas inhabited

by Suwanee alligator snapping turtles. Boat landings on exposed sandbars should be avoided during the nesting season (April – May).

- Avoid activities that cause channelization or altered water flow in areas inhabited by Suwanee alligator snapping turtles.
- Avoid activities that degrade water quality (i.e., siltation and pollution) in waterways inhabited by Suwanee alligator snapping turtles.
- Avoid activities that degrade riparian zones. A 61 m (200 ft) buffer, such as those on both sides of Outstanding Florida Waters is sufficient to avoid take for Suwanee alligator snapping turtles.

Examples of Activities Not Expected to Cause Take

These actions are not considered likely to cause take. This is not an exhaustive list. Please contact FWC if you are concerned that you could potentially cause take.

- Commercial and recreational fishing are not subject to take of incidentally captured alligator snapping turtles of any species if they are using approved and legal fishing methods (68A-23 F.A.C.). Trotlines, including bush hooks) should be used following FWC regulations (68A-23.004, F.A.C.).
- Recreational fisherman should release turtles hooked accidentally by removing the hook when possible. If a turtle has ingested a hook that can't be dislodged or removed the line should be cut as close to the hook as possible.
- Lawful and recreational boating within river channels is not likely to cause take. Boaters who accidentally strike any species of alligator snapping turtle are encouraged to report the strike to the FWC and may not be subject to prosecution if they were operating the boat in a lawful manner.
- Florida Department of Agriculture Consumer Services Florida Forestry [Wildlife Best Management Practices](#) and [BMPs for silviculture](#), as they relate to stream crossings, are not likely to cause take of all three species of alligator snapping turtles through the application of Special Management Zones (SMZ's).
- 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. are not likely to cause take of all three species of alligator snapping turtles.

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, 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 for Suwanee alligator snapping turtles.
- 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 for Suwanee alligator snapping turtles.
- Emergency water management actions for human health and safety, such as flood control.
- The following 'Good Samaritan' provisions apply to one-time, irregular, or highly infrequent occurrences, where an individual is in temporary possession of an alligator snapping turtle to immediately transport an injured turtle or move a turtle out of immediate harm's way, otherwise a permit is required to possess alligator snapping turtles. A 'Good Samaritan' should never place themselves in harms way while attempting to assist or capture any wildlife.

- Temporarily possessing any species of alligator snapping turtle to move it off a road or out of immediate harm's way is authorized without a permit. When encountering an alligator snapping turtle, the best option is to leave the turtle where it is found, unless the turtle is in immediate danger. Always place alligator snapping turtles in a vegetated area in the same direction they were traveling. Never lift any turtle by its tail and never move a turtle to a different location, even if the area where the turtle was found seems unsuitable. Because their bite can cause serious injury, the safest method to move an alligator snapping turtle is to use an object such as a branch or shovel to move the turtle from behind.
- If there are signs that the turtle is injured or has suffered recent trauma, individuals are authorized to temporarily possess the turtle in order to transport it to a licensed wildlife rehabilitator. This does not apply to turtles that have ingested fishing hooks (see guidance above). If you encounter an alligator snapping turtle and need assistance, please contact Wildlife Alert at 888-404-FWCC.

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. For example, the FWC participated in the Species Status Assessment (SSA) created for the Barbour's map turtle (*Graptemys barbouri*) conducted by the U.S. Fish and Wildlife Service.

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, FWC will consider those 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 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 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

For the Suwannee alligator snapping turtle

- FWC staff, in coordination with other state agencies, provide 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.
- Sector plans, developments of regional impacts, and county comprehensive plans are all

reviewed currently and FWC provides conditions that would be beneficial to alligator snapping turtles. Most of the rivers or river systems inhabited by alligator snapping turtles are designated as Outstanding Florida Waters, specifically the Suwannee River. See Appendix 1 of A Species Action Plan for Florida's Alligator Snapping Turtles (FWC 2018) for more information.

FWC Permitting: Incidental Take

Applies only to the Suwannee alligator snapping turtle

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 Suwannee alligator snapping turtles may 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 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 suite of options below can help to reduce or minimize take of the species and lessen the mitigation necessary to counterbalance take. 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 (see below). The FWC does not recommend surveys to determine the presence of Suwannee alligator snapping turtles unless as a component of Scientific Benefit.

Seasonal, Temporal, and Buffer Measures

- Alligator snapping turtle nesting peaks between April and May, and hatchlings emerge from nests through the fall. Destruction or disturbance of nesting sites, primarily elevated sandy beaches and uplands adjacent to floodplains, should be avoided or minimized during this time to prevent take of eggs and hatchlings.
- Alligator snapping turtles are sensitive to riparian zone degradation, particularly actions that reduce or eliminate undercut banks. Upland activities that have the potential to disturb riparian zones should follow Outstanding Florida Waters recommendations and minimize activities within 60-91 m (200-300 ft) of the waterway (DEP 2011).

Design Modification

- Minimize the amount of channelization required for riverine modifications.
- Design projects that minimize the number of impoundments created along waterways.
- Minimize activities that would result in the displacement and removal of snags and rocks, and that would disturb naturally occurring sandbars.
- 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.
- Follow buffer measures (above) to limit the amount of runoff entering waterways.

Method Modification

- When activities must occur within rivers and streams occupied by Suwannee alligator snapping turtles, refer to the Seasonal and Temporal Restrictions (above) to minimize take.
- Allow any turtles observed during construction or restoration activities to move safely away

from an area by ceasing activity until the animal has moved away. All sightings observed within construction sites should be immediately reported to the FWC.

- Provide turtle identification information to project personnel.
- When creating waterway crossings, top down bridge construction would minimize impacts to alligator snapping turtles 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 take that significantly impairs or disrupts essential behavioral patterns. The DEP's ERP process forms a basis of mitigation for loss or degradation of Suwannee alligator snapping turtle breeding, feeding and sheltering habitat. Following the ERP process, the FWC will review the resulting wetland mitigation to assess whether the mitigation meets the definition of conservation benefit for Suwannee alligator snapping turtles. In most cases, wetland mitigation through the ERP process will satisfy the applicants' responsibilities under Chapter 68A-27, F.A.C. Under certain circumstances, the FWC may require additional measures to achieve scientific or conservation benefit specific for the take of Suwannee alligator snapping turtles. Potential options for mitigation are described below. References to specific actions within the Species Action Plan for Florida's Alligator Snapping Turtles (FWC 2018; Actions) are provided. This list is not an exhaustive list of options.

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. As new information becomes available the options below are subject to change.

- Following established survey methods, projects to fill data gaps related to information on nesting sites, predation, extents of habitation in occupied or potentially occupied waterways, and population sizes and demographics (Actions 3, 6, 7, 8, 9, 10, 11, 13)
- Scientific studies (i.e., radio telemetry) can help address life history questions and help inform estimates of population size and demographics. Collecting movement data and habitat data can provide information on metapopulation dynamics, dispersal, and explain how turtles react to habitat restoration. These projects should be conducted with input from the FWC to achieve results in concert with ongoing management actions.

Habitat

- Habitat acquisition may be a mitigation option. Acquiring river floodplains and adjacent uplands that extend at least 200 m (656 ft) through easements or land use agreements will provide suitable areas for turtles to nest (Action 1)
- Habitat restoration options include those that maintain the natural flow, water volume, and channel structure of rivers within the range of the Suwannee alligator snapping turtle. Additionally, the restoration of artificial channels and removal of dams are considered desirable habitat restoration outcomes (Actions 2, 4).
- Enhanced management of riparian zones can qualify as habitat restoration. These strategies include maintaining a natural community within these zones and controlling runoff that may degrade water quality. In some circumstances management of riparian zones may include predator control (Action 3).
- To limit runoff, convert heavily traveled dirt and earthen roads to paved roads.

Funding

- No funding option has been identified at this time. Funding options as a part of mitigation will be considered on a case by case basis. Potential options that could be supported include developing

outreach materials or installing educational kiosks and signage at boat ramps (Action 19).

Information

- Sharing alligator snapping turtle sightings data (live and dead observations) with FWC, including latitude and longitude. If possible, a photograph should be submitted with sightings data.
- Provide dead specimens to FWC for location vouchers, disease monitoring, and future genetics work.
- Sharing invasive species sightings in riparian areas bordering rivers occupied by alligator snapping turtles.
- Sharing sightings of turtle nest predation where nests are found in areas consistent with alligator snapping turtle nesting habitat. Because several species of turtles use the same nesting habitat, photographs showing signs of predation are necessary.

Programmatic Options

- FWC's Landowner Assistance Program is a voluntary program that can offer financial assistance to landowners who implement conservation plans. This program allows the FWC to gather information on private lands slated for development and provide assistance in evaluating development practices to create suitable avoidance, minimization and mitigation options for specific properties.
- Conservation banking may be an option for mitigation if the conservation bank is in the same watershed or river system as the Suwannee alligator snapping turtle.
- A watershed-based Habitat Conservation Plan (HCP) for multiple aquatic species may be a mitigation option. Currently, there is no HCP for the Suwannee alligator snapping turtle and the HCP option is only suitable for large-scale projects. Close coordination with the FWC is required for this option.

Multispecies Options

- State and federally listed species that have overlapping ranges and habitat preferences, such as the Barbour's map turtle may benefit from measures that protect alligator snapping turtles.
- The ERP process can serve as a multi-species option for Alligator snapping turtles and other species that use large rivers and their tributaries. In many circumstances, mitigation provided through the ERP process may be sufficient to cover take of Suwannee alligator snapping turtles and other State-Threatened wetland dependent species.

FWC Permitting: Intentional Take

Applies only to the Suwannee alligator snapping turtle

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 Suwannee alligator snapping turtles 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. This permit process may be handled after the fact or at least after construction activities have already started. An intentional take permit may be issued for such purposes.

Aversive Conditioning

- Not applicable for Suwanee alligator snapping turtles.

Permits Issued for Harassment

- Not applicable for Suwanee alligator snapping turtles.

Scientific Collecting and Conservation Permits

- Scientific collecting permits may be issued for the Suwanee alligator snapping turtles 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. Alligator snapping turtles that are used for education and outreach events should have a Scientific Collecting permit. A scientific collecting permit will not be issued for the sole purpose of removing a turtle from the wild to use as an educational or outreach animal. Alligator snapping turtles permitted for educational and outreach purposes should be used for a minimum of 12 educational engagements equating to a minimum of 48 hours of contact time.

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 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 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 Permits for Suwanee Alligator Snapping turtles

- Visual encounter surveys that do not involve handling animals do not require a permit.
- Any activity that requires trapping or handling an alligator snapping turtle requires a permit. For example, these activities include collecting blood or genetic material for taxonomic analyses.
- Applications must include a proposal that clearly states the objectives and scope of work for the project, including a justification of how the project will result in a conservation benefit to the species. The proposal should also include a thorough description of the project's methods, timeframe, 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).
- 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.
- 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 turtles.
- Methodologies for any procedures, including radio transmitter attachment, should be clearly described, including measures taken to reduce stress and injury to the turtles.
- Methodologies for any collection of tissues such as blood and should be clearly spelled out, including measures taken to reduce stress and injury to the turtles.
- 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.
- 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.

Prohibitions and Permitting

Applies only to the Apalachicola alligator snapping turtle and the alligator snapping turtle

Two species of alligator Snapping turtles (*M. temminckij* and *M. apalachicola*) are protected by the general prohibitions outlined in Rule 68A-4.001, F.A.C.: no wildlife or freshwater fish or their nests, eggs, young, homes, or dens shall be taken, transported, stored, served, bought, sold or possessed in any manner or quantity at any time except as specifically permitted by these rules nor shall anyone take, poison, store, buy, sell, possess or wantonly or willfully waste the same except as specifically permitted by these rules. The reptile rule, 68A-25.002 states that no person shall take any species of snapping turtles from the wild. Take is defined in Rule 68A-1.004, F.A.C., as pursuing, hunting, molesting, capturing, or killing (or attempting to do those things). A permit is required for any other activity that involves the possession, capture, sale, purchase, transport, hunting or killing of alligator snapping turtles. These permits are issued for justifiable purposes as outlined in Rule 68A-9.002, F.A.C. Justifiable purposes are scientific, educational, exhibition, propagation, management or other justifiable purposes. For any other justifiable purpose permit that does not fall under scientific collecting or educational use, please submit your request to WildlifePermits@myfwc.com.

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 regional information, visit <http://myfwc.com/contact/fwc-staff/regional-offices/>.

Literature Cited

- Carr, J. L., S. R. Holcomb, M. J. Ray. 2011. Basking in the alligator snapping turtle, *Macrochelys temminckii* (Testudines: Chelydrae). *Reptiles & Amphibians: Conservation and Natural History* 18:2-5.
- Echelle, A. A., J. C. Hackler, J. B. Lack, S. R. Ballard, J. Roman, S. F. Fox, D. M. Leslie, Jr., and R. A. Van Den Bussche. 2010. Conservation genetics of the alligator snapping turtle: cytonuclear evidence of range-wide bottleneck effects and unusually pronounced geographic structure. *Conservation Genetics* 11:1375-1387.
- Eelsey, R. M. 2006. Food habits of *Macrochelys temminckii* (alligator snapping turtle) from Arkansas and Louisiana. *Southeastern Naturalist* 5:443-452.
- Eelsey, R. M. and R. Bourgeois. 2014. *Macrochelys temminckii* (alligator snapping turtle) juvenile basking. *Herpetological Review* 45:688-689.
- Enge, K. M., T. M. Thomas, and E. Suarez. 2014. Population status and distribution of the alligator snapping turtle in the Suwannee River, Florida. Florida Fish and Wildlife Conservation Commission, Conserve Wildlife Tags Grant Project No. CWT 1112-04, Gainesville, Florida.
- Ewert, M. A., and D. R. Jackson. 1994. Nesting ecology of the alligator snapping turtle (*Macrochelys temminckii*) along the lower Apalachicola River, Florida. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Report NC89-020, Tallahassee.
- Ewert, M. A., P. C. H. Pritchard, and G. E. Wallace. 2006. *Graptemys barbouri* – Barbour’s map turtle. Pages 260-272 in P. A. Meylan, editor. *Biology and conservation of Florida turtles*. Chelonian Research Monographs No. 3.
- Florida Department of Environmental Protection. 2011. Outstanding Florida waters fact sheet. <https://floridadep.gov/dear/water-quality-standards/content/outstanding-florida-waters-fact-sheet>. Accessed 01 April 2018.
- Florida Fish and Wildlife Conservation Commission. 2017. Alligator snapping turtle species biological status review report. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.
- Florida Fish and Wildlife Conservation Commission. 2018. A species action plan for Florida’s alligator snapping turtles *Microchelys suwanniensis*, *Macrochelys apalachicola*, and *Macrochelys temminckii*. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.
- Folt, B., and C. Guyer. 2015. Evaluating recent taxonomic changes for alligator snapping turtles (Testudines: Chelydridae). *Zootaxa* 3947(3):447-450.
- Krysko, K. L., K. M. Enge, and P. E. Moler. 2011. Atlas of amphibians and reptiles in Florida. Final report to Florida Fish and Wildlife Conservation Commission, Tallahassee. Submitted 15 December 2011. <http://www.flmnh.ufl.edu/herpetology/reptiles.htm>. Accessed 4 March 2018.
- Mays, J., T. Thomas, and K. Enge. 2015. Alligator snapping turtle survey. Final Report 9157-295-6263. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.
- Mays, J. and P. Hill. 2015. *Macrochelys apalachicola* (Apalachicola alligator snapping turtle) aerial basking. *Herpetological Review* 46:618-619.
- Moler, P. E. 1996. Alligator snapping turtle distribution and relative abundance. Final Report 7544, Florida Game and Fresh Water Fish Commission, Tallahassee, Florida.
- Roman, J., S. D. Santhuff, P. E. Moler, and B. W. Bowen. 1999. Population structure and cryptic evolutionary units in the alligator snapping turtle. *Conservation Biology* 13:135-142.
- Sloan, K. and J. E. Lovich. 1995. Exploitation of the alligator snapping turtle, *Macrochelys temminckii* in Louisiana: a case study. *Chelonian Conservation and Biology* 1:221-222.

- Snider, A. T. and J. K. Bowler. 1992. Longevity of North American reptiles and amphibians in North American collections, 2nd edition. Society for the Study of Reptiles and Amphibians.
- Thomas, T. M., M. C. Granatosky, Jason R. Bourque, K. L. Krysko, P. E. Moler, T. Gamble, E. Suarez, E. Leone, K. M. Enge, and J. Roman. 2014. Taxonomic assessment of alligator snapping turtles (Chelydridae: *Macrochelys*), with the description of two new species from the southeastern United States. *Zootaxa* 3768(2):141–165.