

Striped Newt
Notophthalmus perstriatus

This profile is a short summary of information to introduce the species and does not summarize all available information on the species.

Listing status: USFWS = None (recently petitioned to list as threatened)
FWC = None

Trend: Populations are considered to be declining due to lack of recent records at historic sites and scarcity of populations on private land (Franz and Smith 1993, Dodd et al. 2005)

Threats: Its complex life history requires specific aquatic and terrestrial habitats in close proximity. Primary threats to striped newt populations are loss of breeding ponds due to development, agriculture, or intensive pine silviculture. Other threats include degradation of breeding ponds due to OHV traffic, introduction of predatory fish, and suppression of fire.

Notes: Striped newts have several life stages including egg, larval, eft, transformed adult, and neotenic adults (sexually mature individuals that retain larval characteristics).

Prioritization information:

PLCP PVA proportion of pops modeled to persist on public lands = 0.80

PLCP PVA probability of a 50% decline on public lands = 0

Millsap biological score = **29**

Millsap supplemental score = **20**

Legacy population trend = **Declining**

Legacy population status = **Low**

Summary: Striped newt triggers 4 of 6 parameters and is a moderate to high-priority species based on Millsap and Legacy parameters. Due to the lack of solid demographic information, the PVA model required several assumptions that may overestimate initial abundance and fecundity. One should consider the potential sources of error in the model when considering the rate of decline and loss of populations parameters, as they may be higher than reflected in the model.

Life History: The striped newt is found in southeast Georgia and north Florida west to Tallahassee and south to Orlando. Habitat is restricted to isolated ephemeral ponds in sandhill and pine flatwoods communities (Christman, 1992). The adults and terrestrial red eft stage wander up to ½ mile (800 m) away from breeding ponds in the surrounding uplands.

Breeding occurs primarily from November through March, with terrestrial adults moving overland to ponds during that time. Movements often coincide with rain and may occur any time of the year. This may be an attempt to take advantage of suitable breeding conditions when available, particularly during prolonged droughts. Eggs are attached to vegetation singly or in small clumps of 2

to 5 eggs. A female may lay more than 200 eggs in a season. Eggs hatch in three weeks to a month. Larvae may be fully metamorphosed in as little as three months, but larval period varies probably due to temperature, hydroperiod or food resources. Striped newt populations occasionally exhibit neoteny, which is the development of a paedomorphic phenotype (sexually mature larva). There appears to be a strong genetic component to paedomorphosis, because it seems to occur more frequently in certain populations. These paedomorphs can reproduce at approximately one year of age and then complete metamorphosis, or if the ponds dry, they can transform to the terrestrial form.

Adults and efts seek refuge underground and are sometimes found under fallen logs. Fire is an important component for maintaining breeding ponds and upland habitat.

Metamorphosed and larval striped newts opportunistically prey upon small invertebrates, and food items include frog eggs, worms, snails, fairy shrimp, spiders, and insects.

Preferred Habitat Parameters:

Longleaf pine forest with native ground cover; prescribed burning of uplands and wetlands (interval depends on habitat, sandhill vs. scrub); avoid mechanical disturbance of ground cover and soils; no sand pine silviculture

Minimum Habitat Requirement:

From PVA: Populations of < 20 females unlikely to persist.

From Literature: No estimates found.

Best Management Practices:

Apply fire at the appropriate frequency in dry breeding ponds and adjacent uplands. Avoid high basal area silviculture and extensive site preparation that alters hydrology. Protect areas with open canopy longleaf pine and native ground cover.

Monitoring Protocol:

Several known striped newt populations are monitored locally in Apalachicola National Forest by Coastal Plains Institute and in Ocala National Forest by Cathryn Greenberg and George Tanner. Monitoring techniques vary from drift fences encircling breeding ponds to dipnet surveys. Dipnetting breeding ponds from April through June for larvae and adults is the most efficient monitoring protocol.

PVA Summary: The Wildlife Habitat Conservation Needs in Florida project created a PVA (http://research.myfwc.com/features/view_article.asp?id=29815) for striped newt under two statewide scenarios; one that considered all potential habitat and one that considered managed (i.e., public) lands only. The all-potential-habitat model consisted of 401 populations, and 188 populations were in the managed lands habitat model. Based upon demographic data primarily from two studies in Florida (Dodd 1993, Johnson 2002) a two-stage model that assumed reproduction

beginning at age 1 was constructed. Adult fecundity was calculated as 0.672 based on the assumption that only 30% of young survive the first year and all adults breed each year. The baseline growth in the model was calculated as 1.0173. An estimate of carrying capacity of one female per hectare was used for modeling and initial abundance was estimated at 75% of carrying capacity. This resulted in an optimistic and highly unlikely initial population of 3.5 million females.

The probability of extinction was zero and no risk of decline was detected for both the all potential habitat and managed habitat models. The abundance was reduced on the managed habitat model and a slightly increased risk of decline (3% probability of a 50% decline). 10% reductions in adult survival had little effect on persistence but increased the chance of decline (100% probability of 50% decline) and a similar effect was found with a 10% reduction in adult fecundity (60% probability of 50% decline). Only the largest populations (≥ 20 females) persisted for 100 years. Dispersal between smaller populations may be critical to maintaining them in the long-term.

Due to weaknesses in the model this PVA may not be included in the Closing the Gaps update final report.

2003 Landcover used for model:

Xeric Oak Scrub	Bay Swamp
Sand Pine Scrub	Cypress Swamp
Sandhill	Open Water
Hardwood Hammocks and Forest	Shrub and Brushland
Pinelands	

FNAI Natural Communities used:

Sandhill	Mesic Flatwoods
Scrub	Basin Swamp
Scrubby Flatwoods	Depression Marsh
Xeric Hammock	Dome Swamp

FNAI field guide description of habitat: Xeric upland communities, principally sandhill but also scrub; occasionally in pine flatwoods. Breed in isolated ephemeral wetlands (e.g., depression marshes, sinkhole ponds, dome swamps) that lack predatory fishes as a result of periodic drying cycles. Occasional fire and relatively undisturbed soil and vegetative ground cover are important terrestrial habitat components.

Important Links:

FNAI field guide:

http://www.fnai.org/FieldGuide/pdf/Notophthalmus_perstriatus.pdf

Amphibiaweb species account:

http://amphibiaweb.org/cgi/amphib_query?where-genus=Notophthalmus&where-species=perstriatus

Pertinent Documents/Literature:

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- Franz, R., and L. L. Smith. 1993. Distribution of the striped newt and Florida gopher frog in peninsular Florida. Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Final Report, Tallahassee, Florida, USA.
- Gregory, C. J., R. R. Carthy, and L. G. Pearlstine. 2006. Survey and monitoring of species at risk at Camp Blanding Training Site, northeastern Florida. *Southeastern Naturalist* 5:473–498.
- Johnson, S. A. 2001. Life history, ecology, and conservation genetics of the striped newt (*Notophthalmus perstriatus*). Dissertation, University of Florida, Gainesville, Florida, USA. 156pp.
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- Means, D. B., and R. C. Means. 2005. Effects of sand pine silviculture on pond-breeding amphibians in the Woodville Karst Plain of North Florida. Pages 56–61 in W. E. Meshaka, Jr., and K. J. Babbitt, editors. Amphibians and reptiles: status and conservation in Florida. Krieger, Malabar, Florida, USA.