Petition to Reclassify the Striped Newt (*Notophthalmus perstriatus*) as a Threatened Species in Florida Based on New Status Information

Introduction

By this petition, the Florida Fish and Wildlife Conservation Commission (FWC) is requested to reclassify the striped newt (*Notophthalmus perstriatus*) from unlisted to a Threatened Species (Rule 68A-27.004, F.A.C.) under the provisions established in Rule 68A-27.0012, F.A.C. Florida Natural Areas Inventory (FNAI) staff evaluated the striped newt using the ranking process described in Millsap *et al.* (1990) in 2018 and determined that the striped newt had a biological score of 31.6. This score has been reviewed and accepted by FWC Habitat and Species Conservation and Fish and Wildlife Research Institute staff as accurate. Reclassifying the striped newt as a threatened species will more accurately reflect the status of this species. Furthermore, if the striped newt fails to meet the criteria for state listing when evaluated at the species level, the western populations should be evaluated separately due to recent genetic evidence that suggests these populations are a separate evolutionarily significant unit from eastern populations (May *et al.* 2011). The boundaries of the western population are defined by May *et al.* 2011, and all currently extant populations are designated as eastern or western populations in Farmer *et al.* (2017).

Biological Information

The procedures for listing species on Florida's endangered and threated list (Rule 68A-27.0012, F.A.C.) stipulate that species may be petitioned through a species evaluation request submitted by the public or FWC staff. According to this rule, this request must include a biological score calculated using the process described by Millsap *et al.* (1990), the supporting data, or references to the data, and the score assigned for each biological variable used to determine the biological score. A recent FNAI staff evaluation using the ranking process described in Millsap *et al.* (1990) determined that the striped newt (*Notophthalmus perstriatus*) had total biological scores of 31.6, and these scores have been reviewed and accepted by FWC staff as accurate. Individual biological scores and references to supporting information are presented below. These scores are based on the best scientific data available for this species at this time.

The biological score for the striped newt was based on the component scores described below. This species was assigned a population size score of 2 based on the recent population study of Farmer *et al.* (2017), which estimated 103 active breeding ponds in Florida, and 11 in Georgia. This suggests a large population greater than 10,000, even though data on the number of individuals present in these populations are not available. However, it should be noted that amphibian populations tend to be very large and can experience extreme fluctuations in population size, thus an amphibian population can have over 10,000 individuals and still be in danger of extinction (Pechmann *et al.* 1991, Gibbons *et al.* 2006). In contrast, 114 active breeding ponds should not be considered a large number of breeding ponds given that the range of this species includes large areas of South Georgia and North Florida. These ponds most likely do not represent independent populations, but rather clusters of ponds are theorized to be necessary to support individual populations since not all wetlands are suitable for successful reproduction in any given year (Johnson 2005). If we consider 1 km to be the likely dispersal distance of this species based on Johnson (2005) and consider the proximity of ponds on individual properties, the

107 active breeding ponds currently known in Florida (4 additional ponds have been discovered since the Farmer et al. 2017 publication) represent approximately 37 populations (FWC/FWRI unpublished data, provided). Furthermore, genetic data show little gene flow between Florida or Georgia populations suggesting that these populations are essentially isolated from each other (Johnson 2005, FWC/FWRI unpublished data).

The striped newt was assigned a population trend score of 10 based on evidence the species has declined in both Florida (Franz and Smith 1993, Means and Means 1998, Farmer *et al.* 2017) and Georgia (Dodd and LaClaire 1995, Farmer *et al.* 2017). These declines have been most severe in the western portion of the species' range in the Florida panhandle and southwestern Georgia; which is considered to represent a discrete evolutionarily significant unit from eastern populations based on recent genetic studies (May *et al.* 2011, Farmer *et al.* 2017). Dramatic population declines in Apalachicola National Forest in the Florida panhandle and on Fort Stewart and Ichauway Reserve in southern Georgia have occurred over the last 20 years, are poorly understood, and appear to be ongoing (Farmer *et al.* 2017).

This species was assigned a range size score of 4 based on the Florida range of the species because of the very low potential for demographic or genetic exchange between Georgia and Florida populations (Farmer *et al.* 2017). Known Georgia populations appear to be isolated from each other and Florida populations by large expanses of unsuitable habitat (Farmer *et al.* 2017). In Florida, historical locations include areas as far south as Osceola County, as far north as the Georgia border, and as far west as the Apalachicola River in the Florida panhandle (Farmer *et al.* 2017).

Since European settlement, the area of occupancy of the striped newt has declined substantially in Georgia and parts of Florida. This species is currently only found in five widely separated locations in Georgia, whereas the original range of the species in Georgia included the Fall Line Sandhills and most of the Coastal Plain (Farmer *et al.* 2017). In Florida, the striped newt has disappeared from 9 counties with historical records, and native (natural, non-translocated) populations in Leon County have been reduced to a single breeding pond (Farmer *et al.* 2017). While the original area of occupancy is not fully known, a comparison of historical and recent records suggests the area occupied by the species has declined at least 50% (Farmer *et al.* 2017). Therefore, the species was assigned a score of 5 for distribution trend.

Adult striped newts congregate annually at breeding ponds when weather and hydrological conditions are suitable (Dodd et al. 2005). This species was assigned a population concentration score of 2 based on an estimate of 114 active breeding ponds (Farmer *et al.* 2017).

Reproductive potential for recovery scores were based on the following subscores. The clutch size (number of eggs laid at a time) for the striped newt is currently unknown, as females place eggs in vegetation one at a time or in small clumps of 2-5 eggs (Dodd *et al.* 2005). Females may not reproduce annually due to drought or other factors (Dodd 2003). The number of eggs laid per female was estimated to be between 10 and 100, and the species was given a score of 1 for the average number of eggs or live young produced per adult female per year. Striped newts have a complex cycle and can either become reproductively mature as a paedomorph (gilled adult) within their natal (birth) pond or transform into an eft (a non-reproductive juvenile stage) at the end of their larval stage (Johnson 2002, 2005). However, the paedomorphic strategy, though common in some populations, is less common overall and can only occur in ponds with longer hydroperiods (Johnson 2005). Evidence suggests that some paedomorphs can reproduce at 1 year of age (Johnson 2002, 2005). A study in peninsular Florida found that efts spent an average of 416 days in the uplands before returning to wetlands to breed as

mature adults (Johnson 2002). Given that the larval period of the species is between 4.5–6 months (Johnson 2002, Dodd *et al.* 2005), this suggests that most striped newts become reproductively mature around 2 years old. Petranka (1998) estimated that the striped newt reached sexual maturity in 8–24 months based on the closely related eastern newt (*Notophthalmus viridescens*). Therefore, the species was given a score of 1 for the minimum age at which females typically reproduce.

The striped newt is a dietary generalist that eats a wide variety of prey items (Christman and Franz 1973, Dodd *et al.* 2005) so it was assigned a 0 for the dietary specialization score. However, the species was assigned a reproductive specialization score of 3.3 for its requirement for fish-free, ephemeral wetlands with sufficient herbaceous vegetation for egg attachment (Dodd *et al.* 2005). This species also received a 3.3 score for other specializations because of its requirement for breeding wetlands to be surrounded by frequently burned xeric uplands with herbaceous groundcover (Farmer *et al.* 2017).

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