8.1 Frosted flatwoods salamander

Potential breeding pond habitats for this species (isolated depressional wetlands forested with pond cypress (*Taxodium ascendens*), black gum (*Nyssa biflora*), slash pine (*Pinus elliottii*), and myrtle-leaved holly (*Ilex myrtifolia*) were visited in December, 2018. Each wetland (25 total) was evaluated as to its potential suitability for the frosted flatwoods salamander based on a ranking system developed by Palis (2002). For each wetland; the hydrology, fire history, presence/absence of graminaceous vegetation within the pond basin (including *Carex*, *Rhynchospora*, *Eriocaulon*, *Xyris*, *Panicum* spp.) as well as the condition of pine uplands (e.g., fire history, integrity of ground cover, soil type and disturbance) surrounding the wetland was considered. Pine uplands on-site, although underlain by hydric-to-mesic flatwoods soils that historically may have supported the specific pine savannah habitats required by flatwoods salamanders (Palis 1996, 1997; US FWS 1999; Jensen and Stevenson 2008); are grossly degraded from commercial forestry operations (e.g., bedding) that date to the 1970s. Today, these uplands no longer support intact ground vegetation (e.g., wiregrass, *Aristida stricta*). Similarly, isolated wetlands on-site are also in poor condition due to bedding, ditching, historic fire suppression and other disturbances.

A total of 12 survey ponds were sampled from February 27 – March 9, 2019. The surveys included 17.25 person-hours dip netting and 175 trap-nights. No frosted flatwoods salamander larvae were found. On these surveys, 2 species of salamanders, 6 species of anurans, 9 species of fishes, and 4 species of snakes were captured. During the same period frosted flatwoods salamander larvae were found on Fort Stewart, Georgia, indicating the species bred at this site during the fall-winter of 2018-2019 (Chris Coppola, U.S. Fish and Wildlife Service, pers. Comm., 2019).

The disappearance of the frosted flatwoods salamander from Chesser Island and Okefenokee National Wildlife refuge lands is most likely attributed to anthropogenic disturbances the region suffered prior to being acquired by the U.S. Fish and Wildlife Service (Jensen 1995). Large-scale declines and extirpations of frosted flatwoods salamanders have been attributed to habitat loss and degradation from commercial forestry practices (Means et al. 1996, Palis 1997). In fact, the impetus, in part, for the federal listing of the species in 1999 was widespread loss of habitat due to silviculture (USFWS 1999). It is probable that the inability to document frosted flatwoods salamanders as well as two easily sampled frog species typical of pine flatwoods habitats on the site (the southern chorus frog (*Pseudacris nigrita*) and ornate chorus frog (*Pseudacris 23rnate*) is due to their extirpation, historically, from habitat changes caused by forestry operations.

The uplands on the site – although in some areas underlain by hydric-to-mesic flatwoods soils that historically may have supported the specific pine savannah habitats required by frosted flatwoods salamanders– are, as detailed above, grossly degraded from commercial forestry operations that (based on a review of aerial photographs) date at least to the early 1970s. Today, these uplands no longer support intact ground vegetation (e.g., wiregrass, Aristida stricta) as is typical of habitat still occupied by this species. The proposed project is not likely to have an effect on the frosted flatwoods salamander.

8.2 Striped newt

Until recently the striped newt was considered a candidate for federal listing under the Endangered Species Act. In December 2018, the U.S. Fish and Wildlife Service determined that federal listing is not warranted at this time. This amphibian is known to have declined and disappeared from portions of its historic range on Trail Ridge, near the Okefenokee National Wildlife Refuge, due to commercial forestry operations (Dodd and LaClaire 1993, Farmer et al. 2017).