

U.S. Fish and Wildlife Service
Sand and Bluetail Mole Skink Survey Protocol
July 26, 2002

Background

Sand skinks (*Neoseps reynoldsi*) and bluetail mole skinks (*Eumeces egregius lividus*) are found in interior peninsular Florida. Both species are most commonly associated with habitat dominated by xeric vegetation such as oak-dominated scrub, turkey oak barrens, high pine, and xeric hammocks. Skinks typically occur in habitats that contain a mosaic of open sandy patches interspersed with forbs, shrubs, and trees. Although sand skink tracks are most typically observed in open sandy areas, both species utilize a variety of other micro-habitats within xeric vegetative communities. Areas containing extensive rooted vegetation within this matrix may preclude sand skink movement and are less likely to be used by skinks. They appear to be most abundant in the ecotone between areas with abundant leaf litter and vegetative cover and adjacent open sands. Suitable bluetail mole skink habitat is restricted to xeric uplands within the Lake Wales Ridge in Highlands, Osceola, and Polk counties. Sand skink habitat occurs within the Lake Wales Ridge but is also found on the Winter Haven Ridge in Polk County and the Mount Dora Ridge in Lake, Marion, Orange, and Putnam counties.

Due to their small size and semi-fossorial to fossorial habits, both species are difficult to detect. This fact is evidenced by the paucity of locality records for these species. As of 1999, the Florida Natural Areas Inventory (FNAI) database indicated bluetail mole skinks were known from 36 locations while sand skinks were recorded at 115 sites. However, experienced herpetologists and researchers acknowledge that skinks are more widely distributed than the locality records indicate and that if searched sufficiently, most suitable habitat would yield additional records for these species.

To model potential distribution of sand skinks and bluetail mole skinks, soils data gathered by the Natural Resource Conservation Service was used to delineate soil substrates capable of supporting xeric vegetative communities known to contain skink populations. Figure 1 represents the distribution of Apopka, Aradondo, Archbold, Astatula, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Kendrick, Lake, Millhopper, Orsino, Paola, Pemello, Satellite, St. Lucie, Tavares, and Zubar soil series in interior peninsular Florida, within the known range of both species. This map provides a coarse filter showing the area in which suitable skink habitat may be found throughout their range.

Historical surveys for sand skinks were conducted primarily in native xeric habitats. However, more recent surveys of lands converted to other land uses, *i.e.*, citrus groves and residential developments, noted the presence of sand skinks in these land uses. Surveys of citrus grove noted sand skink tracks in the open sandy patches beneath the trees and in the open sandy areas between the tree rows. Surveys of residential properties noted the presence of sand skinks in remnant tracts of xeric habitats in these communities.

Impact Assessment

Areas identified in Figure 1 contain suitable soils and have the potential to be occupied by skinks. The destruction or significant alteration of current, existing land uses may result in the take of sand and bluetail mole skinks and require coordination with the Service to ensure compliance with the Endangered Species Act of 1973, as amended (U.S.C. 1531 *et. seq.*). For example, the conversion of native xeric habitats including remnant tracts in residential developments to other uses may affect sand skinks. The conversion of citrus groves to pasture lands or residential land uses may also affect sand skinks.

For the purpose of this survey protocol, suitable habitat may include remnant xeric parcels in residential communities, native xeric habitats, and active or inactive citrus groves. Therefore, site-specific assessments of parcels proposed for alteration are necessary to determine the relative risks of taking sand skinks and bluetail mole skinks. Two survey protocols are recommended to help identify these risks. The pedestrian survey, which is the least labor intensive protocol, is a meandering walking survey through suitable habitat and can determine presence but not absence. The coverboard survey is more labor intensive, is season specific, and is required to support a final determination that skinks are absent.

Pedestrian Survey - Pedestrian surveys can be conducted year round and can determine presence. Pedestrian surveys should be conducted throughout all suitable skink habitat, focusing on bare sand patches within the survey area. Sand skinks leave distinctive sinusoidal tracks in bare sand (Figure 2). These tracks can be detected under appropriate environmental conditions. Surveys should be avoided during periods when tracks are not likely to be observed, including after rainfall (tracks washed out), when the soil is moist (tracks not left), or during excessively windy conditions (tracks obliterated).

If the results of pedestrian surveys successfully detect sand skink tracks on any portion of the property, presence of sand skinks is confirmed and no further surveys are recommended. If the pedestrian survey did not locate sand skink tracks or skink tracks were located only on a portion of the parcel, more intensive coverboard surveys must be undertaken to presume absence either on the parcel or in those portions of the property where skink tracks were not observed.

Coverboard Survey (detects sand skinks, bluetail mole skink presence assumed from sand skink results)

Timing: Surveys must be conducted between March 1 and May 15. Negative survey results (no skink tracks) found during surveys conducted outside of this survey window will not be considered.

Duration: Surveys must be conducted for a minimum of four (4) consecutive weeks within the survey window described above.

Materials: Two foot by two foot (2' X 2") coverboards may be constructed of ½ inch or greater thickness plywood, masonite, rigid insulation board (without metallic sheathing), or other rigid material of the same dimensions.

Coverboard Placement: Coverboards should be placed within suitable habitat at a minimum density of 40 coverboards per acre. Coverboards should be placed in areas of bare sand or sparse vegetation adjacent to leaf litter or other detritus, ensuring full contact of the coverboard with the soil surface. Raking or grading of the soil may be needed to ensure full contact of the coverboard with the soil surface. Placement of soil from surrounding areas may be necessary under some coverboards where stems or roots preclude full contact of the coverboard with the soil surface. If insulation board is used as the coverboards, a shovel full of sand may need to be placed on top to prevent movement due to wind. While preparing coverboard sites, minimize impacts to federally listed plants.

Sampling: Coverboards must be lifted and checked for tracks a minimum of once per week. Upon lifting each coverboard, check for tracks and then lightly rake the top several inches of soil with fingers or hand-held garden trowel to expose skinks, if present. After checking for tracks

and skinks, smooth the soil surface with the edge of the coverboard and replace coverboard. During each site visit, look for and note tracks in sandy patches between coverboard locations.

Survey Results: Positive findings from one or more coverboards indicates presence of sand skinks and bluetail mole skinks. Habitat alteration is likely to have a high risk of taking skinks within the surveyed area and contiguous suitable habitat. Absence of skink tracts within the surveyed area suggests a decreased risk of taking skinks.

Other Considerations: The use of gloves during sampling is highly recommended as coverboards often attract venomous insects and reptiles.

Report - Provide the Service with a final report that includes the following, as applicable:

- A. Field data sheets that include:
 - 1. dates and starting and ending times of all surveys conducted;
 - 2. weather conditions during all surveys, including average temperature, wind speed and direction, visibility, and precipitation; and
 - 3. total number of sand skink tracks observed.
- B. Aerial photographs or vegetation maps:
 - 1. the entire area of interest and;
 - 2. sand skink track locations and habitat descriptions.

C Biological Report

In general, the report should include a project introduction, proposed action, project habitat descriptions, species effects, recommendations to minimize species effects, and conclusions and commitments. The report should also include the survey protocol and survey data sheets. Refer to the Service's *Outline Example for a Biological Assessment or a Biological Evaluation (2002)* for a more detailed discussion of report requirements, format, explanations of common ESA questions, and level of detail needed in the report.

Figure 1. Distribution of xeric soils within the known range of sand skinks and bluetail mole skinks in peninsular Florida.

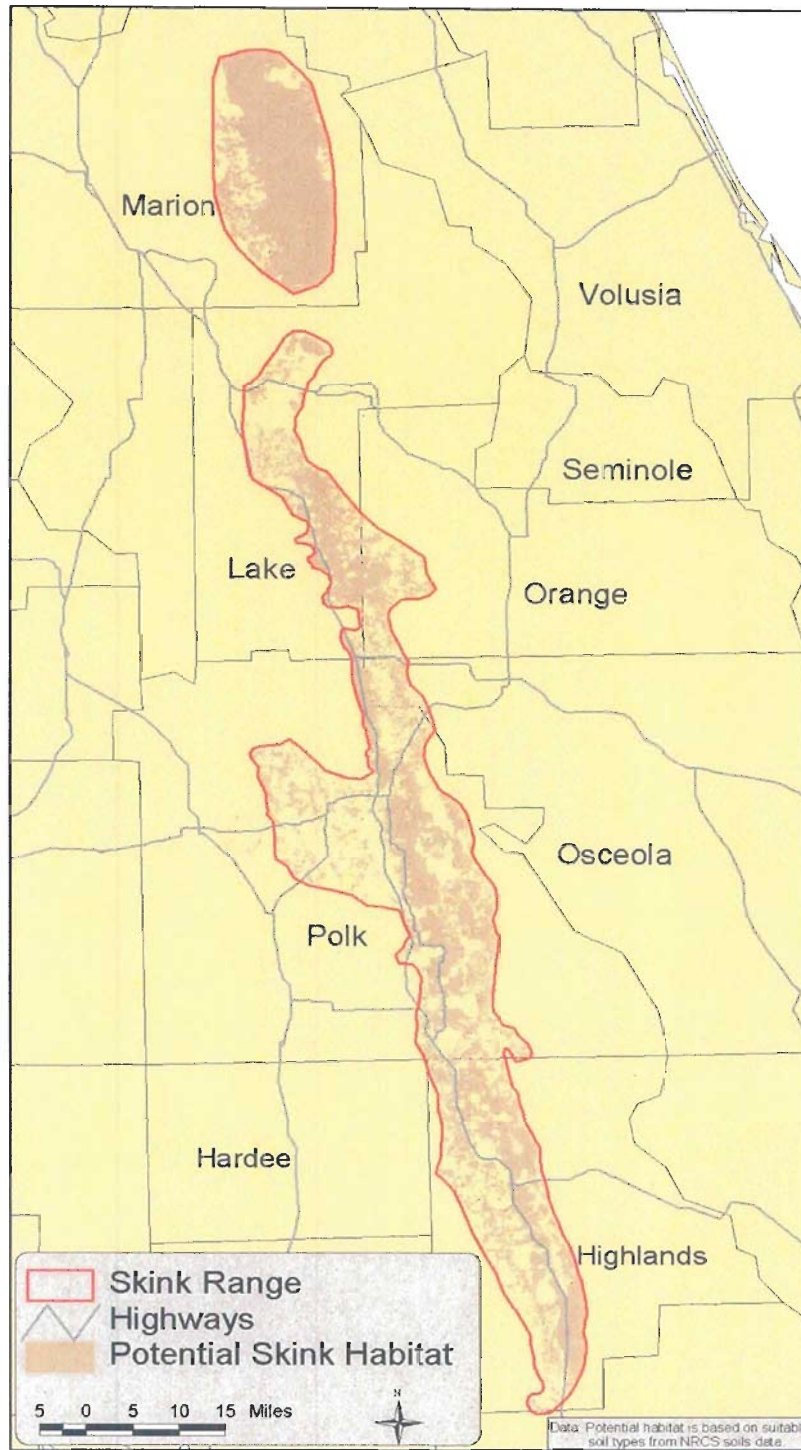


Figure 2. Typical sinusoidal track of the sand skink (photographs courtesy of Randy Mejeur; Glatting Jackson Kercher Anglin Lopez Rinehart, Inc; 2000).

