Bluetail Mole Skink

Plestiodon [Eumeces] egregius lividus

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 = Threatened
FWC = Threatened

Trend: Current population status unknown but thought to be declining given the ongoing habitat loss and degradation across its range. Bluetail mole skinks are exceedingly rare and difficult to study given their semifossorial nature.

Threats: Primary threat is habitat loss, degradation and fragmentation due to development and agriculture. On the Lake Wales Ridge in Central Florida, much of the scrub has been lost to development and agriculture. The remainder not already on protected areas is highly fragmented and susceptible to future development. On protected areas, habitat degradation due to lack of proper management is a moderate threat due to the cost of habitat restoration and issues associated with land management such as prescribed fire.

Note: There is discussion in the literature about the taxonomy and appropriate scientific names for a number of skinks. The USFWS 5-year review recommends using the generic name *Plestiodon* to replace *Eumeces*.

Prioritization information:

PLCP PVA proportion of pops modeled to persist on public lands = **0.72**
PLCP PVA probability of a 50% decline on public lands = 0
Millsap updated biological score = **32.3**
Millsap updated supplemental score = **17**
Legacy population trend = medium
Legacy population status = **declining**
Summary: This species triggers 4 of the 6 statewide prioritization parameters, making it a high priority.

Life History: The bluetail mole skink is a subspecies of the mole skink (*Plestiodon egregius*). Very little information is available on the life history or distribution of the bluetail mole skink. Found in well-drained sandy uplands above 30 m (100 ft) in elevation, this taxon is known to occur only on the Lake Wales Ridge in Polk, Highlands and western Osceola counties. Bluetail mole skinks are often found 2.5-5 cm (1-2 in) deep in sand under pine needles, leaves, logs or palmetto fronds. Like the sand skink (*Plestiodon reynoldsi*), the bluetail mole skink has legs that are reduced in size and not used when "swimming" through the sand. However, the legs are functional and allow individuals to walk on the surface.

Information on life history characteristics of the bluetail mole skink is not available, but it is thought to be similar to other mole skinks. Mole skinks mate in

the winter and have a clutch size of 3-7 eggs. Reproduction occurs annually. Nest cavities are constructed less than a foot deep in sand, and females remain with the eggs for up to 51 days until hatching occurs. Mole skinks eat small invertebrates, such as crickets, roaches and small spiders.

Bluetail mole skinks are not known to disperse well, even when surrounded by suitable, unoccupied habitat. They are more often found concentrated in localized pockets and not distributed throughout suitable habitat. Sand skinks are about 20 times more likely to be encountered in optimum habitat using standard collecting techniques such as raking or pitfall trapping than bluetail mole skinks. However, this may be a factor of seasonal variation in activity and has not been confirmed with year-round surveys over a period of several years.

Little is known about specific habitat requirements for the bluetail mole skink, but it is generally thought that the microhabitat conditions suitable for sand skinks are also suitable for this species. Leaf litter may be more important for the bluetail mole skink than the sand skink. Areas with loose sand and sunny exposure are preferred. Soil compaction affects skink activity, and areas with low soil compaction appear to be favored. Soils with low soil moisture and larger particle sizes appear to be preferred. Low understory vegetation and a higher percent of bare, loose sand are also important habitat components, but conditions within the soil are more important than vegetative conditions. These parameters are important to consider as they affect thermoregulation and encourage a range of temperature conditions for skinks.

Translocation as a means for establishing bluetail mole skink populations in unoccupied areas has not been explored. Bluetail mole skinks are not known to be as genetically distinct as sand skinks, but they do show some genetic variation geographically. Given the paucity of research on this species, the most effective means for increasing current populations or establishing new ones are not known. However, protecting and managing scrub habitats on the Lake Wales Ridge are crucial to the long-term persistence of this species and should be a priority.

Minimum Habitat Requirement:

From PVA: populations with > 15 females.
From Literature: NA.

Best Management Practices:

- Prescribed fire is the preferred habitat management technique for bluetail mole skink habitat. Patchy burns may be preferable as they provide a mosaic of burned and unburned habitats within a given management unit.
- Mechanical treatments are often used to prepare fire lines and perimeters of burn units and also to reduce vegetation within a burn unit in order to safely apply prescribed fire. If mechanical equipment is used, soil compaction is likely and would be detrimental to bluetail mole skinks. Avoid the use of mechanical equipment and/or use caution with heavy equipment in areas that are priority for this species.

Monitoring Protocol:

- Coverboards are thought to be more efficient for detecting skink presence than pitfall traps, but both methods were found to be successful in detecting presence. To increase our knowledge on the status of the species, the USFWS suggests year-round monitoring in appropriate locations.

For more information on monitoring:

USFWS. 2002. Sand and Bluetail Mole Skink Survey Protocol. http://www.fws.gov/northflorida/Skink/Skink-Survey-Protocol-072602.htm

PVA Summary: Little is known about the demography of the bluetail mole skink. The Wildlife Habitat Conservation Needs in Florida project created a PVA (http://research.myfwc.com/features/view_article.asp?id=29815) for this species was conducted using information from a related subspecies, the peninsula mole skink (*E. e. onocrepis*). The PVA for the bluetail mole skink was conducted based on a 420 m neighborhood distance and a potential habitat of over 30,000 ha statewide, of which only 18% (5,400 ha) is on public lands. This resulted in a metapopulation with 347 populations statewide but only 105 on public lands. An estimate of 15.5 females/ha for carrying capacity and an initial abundance of 12.4 females/ha were used in this analysis. As the literature indicates this species has a patchy distribution even in potential habitat, this model likely overestimated the initial population size and connectivity of populations. This is because the model assumes all potential habitat is occupied at the specified density of 12.4 females/ha. As such, the results of the PVA may be overly optimistic.

Baseline models for all potential statewide habitat and managed habitat alone resulted in a baseline growth rate of 1.00573, indicating a moderate sensitivity to changes in survival and fecundity. The probability of extinction in the next 100 years was zero for both statewide and managed habitat, assuming no changes or catastrophic events. Abundance was reduced on managed lands alone because this model considered only 18% of all potential bluetail mole skink habitat.

Sensitivity analysis indicated that survival rates have the most influence on population growth. This suggests that research and management for this species should focus on adult survival as this appears to impact the population.

2003 Landcover types used for model:

Xeric oak scrub
Sand pine scrub
Sandhill
Hardwood hammocks and forest
Pinelands
Shrub and brushland
Bare soil/clearcut

FNAI Natural Communities used:

Sandhill
Scrub
Xeric Hammock
Scrubby flatwoods

FNAI field guide description of habitat: Well-drained sandy uplands above 100 ft (30 m), usually with an abundance of scattered shrubs and lichens. Favors rosemary, oak, and sand pine scrubs; occasional in turkey oak barrens, sandhill, and xeric hammock. Requires loose sand (for burrowing) with patches of sparse to no ground cover or canopy; often found in leaf litter.

Important Links:

USFWS Multi-species Recovery Plan: Bluetail Mole Skink
http://www.fws.gov/verobeach/images/pdfLibrary/btms.pdf

USFWS Species profile, including links to management plan and 5-year review:
http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C03T

Pertinent Documents/Literature:

Ashton, K.G. 2005. Life history of a fossorial lizard, *Neoseps reynoldsi*. Journal of Herpetology 393): 389-395.

Branch, L.C., A.-M. Clark, P.E. Moler and B.W. Bowen. 2003. Fragmented landscapes, habitat specificity, and conservation genetics of three lizards in Florida scrub. Conservation Genetics 4: 199-212.

Cristman, S.P. 1996. Bluetail Mole Skink (*Eumeces egregius lividus* Mount) *in* Rare and Endangered Biota of Florida (P.E. Moler, Ed.) Vol III. Amphibians and Reptiles. pp 135-140.

Hipes, D., D.R. Jackson, K. NeSmith, D. Printiss, and K. Brandt. 2000. Field guide to the rare animals of Florida. Florida Natural Areas Inventory, Tallahassee.

USFWS. 2007. 5 year review: Summary and Evaluation for the Bluetail Mole Skink (*Eumeces egregious lividus*) and Sand Skink (*Neoseps reynoldsi*). USFWS, Vero Beach, FL.