

**NJ Division of Fish and Wildlife
Endangered & Nongame Species Program**

Species Status Review of Terrestrial Mammals

Presented to the NJ Endangered and Nongame Species
Advisory Committee on September 26, 2012 and March 20, 2013

Prepared by:
Gretchen Fowles
and
Mick Valent
Endangered and Nongame Species Program



Executive Summary:

- Project Manager for this status review was Gretchen Fowles, Endangered & Nongame Species Program.
- The statuses of 39 terrestrial mammal species were reviewed using the Delphi process. All terrestrial, indigenous nongame mammals were included in the status review. The list of nongame mammals was taken from, 'New Jersey's Wildlife, A Checklist of Birds, Mammals, Reptiles and Amphibians'. In addition, although the bobcat (*Lynx rufus*) is listed as a game species with a closed season, it was included in the review because the Division recommended the bobcat for endangered status in 1991. After consultation with staff from the Bureau of Wildlife Management, it was agreed upon that the fisher (*Martes pennanti*) would be included in the nongame mammal status review.
- Seven reviewers participated; reviewers included experts from the Division of Fish & Wildlife, and state research and academic institutions.
- Reviewers were provided information pertaining to the species under review, including State Wildlife Grant reports prepared by ENSP for bobcats, bats, and woodrats, distribution maps by ENSP for species for which there is locational data in the Biotics database, ENSP survey summaries for bats, woodrats, and bobcats, the statuses of mammals in surrounding states, and additional literature cited in Appendix II. Information was provided to each reviewer via a CD.
- Round 1 began on September 1, 2011 and Round 4, the final round, was completed on June 8, 2012.
- Consensus was achieved on 37 out of 39 species.
- 12 species were voted Secure/Stable.
- 4 species were voted Special Concern.
- 1 species was voted Threatened.
- 6 species were voted Endangered.
- 3 species were determined to be Not Applicable because they are not native to New Jersey.
- 11 species were voted Undetermined.
- 2 species were unresolved after 4 rounds (Southern bog lemming and Meadow jumping mouse).
- On September 26, 2012, staff presented the findings of the status review to a joint meeting of the NJ Fish and Game Council and the Endangered and Nongame Species Advisory Committee (ENSAC). A vote on the statuses was postponed until a future ENSAC meeting.
- On March 20, 2013, staff presented the findings of the status review to ENSAC again, and this time included a staff recommendation for the 2 species that were unresolved after 4 rounds (Southern bog lemming and Meadow jumping mouse). ENSP staff recommended the statuses of 'Undetermined' for both species. ENSAC voted to accept the recommendations of the panel for which consensus had been reached. For those species for which consensus had not been reached, ENSAC voted to recommend 'Undetermined' for Southern bog lemming and 'Special Concern' for Meadow jumping mouse.

Results After 4 Rounds, Terrestrial Mammals:

Order	Scientific Name	Common Name	Current NJ Status	Consensus Reached Round #	Consensus Status	Confidence Level
Carnivora	<i>Lynx rufus</i>	Bobcat	Endangered	3	Threatened	6
Carnivora	<i>Martes pennanti</i>	Fisher	Undetermined	4	Undetermined	5.57
Chiroptera	<i>Eptesicus fuscus</i>	Big brown bat	Undetermined	3	Special Concern	5.33
Chiroptera	<i>Lasionycteris noctivagans</i>	Silver-haired bat	Undetermined	3	Special Concern	5.14
Chiroptera	<i>Lasiurus borealis</i>	Red bat	Undetermined	3	Special Concern	5
Chiroptera	<i>Lasiurus cinereus</i>	Hoary bat	Undetermined	2	Special Concern	5
Chiroptera	<i>Myotis leibii</i>	Eastern small-footed myotis	Undetermined	3	Endangered	5.83
Chiroptera	<i>Myotis lucifugus</i>	Little brown bat	Undetermined	3	Endangered	5.57
Chiroptera	<i>Myotis septentrionalis</i>	Northern long-eared bat	Undetermined	3	Endangered	6
Chiroptera	<i>Myotis sodalis</i>	Indiana bat	Endangered	2	Endangered	6.86
Chiroptera	<i>Perimyotis subflavus</i>	Tri-colored bat	Undetermined	3	Endangered	5.83
Rodentia	<i>Clethrionomys gapperi</i>	Red-backed vole	Undetermined	1	Secure/Stable	6.4
Rodentia	<i>Erethizon dorsatum</i>	Porcupine	Undetermined	1	Secure/Stable	6.29
Rodentia	<i>Glaucomys sabrinus</i>	Northern flying squirrel	Undetermined	2	Undetermined	6.5
Rodentia	<i>Glaucomys volans</i>	Southern flying squirrel	Undetermined	3	Secure/Stable	5.67
Rodentia	<i>Microtus pennsylvanicus</i>	Meadow vole	Undetermined	1	Secure/Stable	7.43
Rodentia	<i>Microtus pinetorum</i>	Pine vole	Undetermined	1	Secure/Stable	6.25
Rodentia	<i>Mus musculus</i>	House mouse	Undetermined	1	Not Applicable ¹	
Rodentia	<i>Napaeozapus insignis</i>	Woodland jumping mouse	Undetermined	3	Undetermined	5.86
Rodentia	<i>Neotoma magister</i>	Allegheny woodrat	Endangered	1	Endangered	7.6
Rodentia	<i>Oryzomys palustris</i>	Marsh rice rat	Undetermined	2	Undetermined	5.33
Rodentia	<i>Peromyscus leucopus</i>	White-footed mouse	Undetermined	1	Secure/Stable	7.17
Rodentia	<i>Rattus norvegicus</i>	Norway rat	Undetermined	1	Not Applicable ¹	
Rodentia	<i>Rattus rattus</i>	Black rat	Undetermined	1	Not Applicable ¹	
Rodentia	<i>Synaptomys cooperi</i>	Southern bog lemming	Undetermined	N/A	Undetermined ²	
Rodentia	<i>Tamias striatus</i>	Eastern chipmunk	Undetermined	1	Secure/Stable	7.33
Rodentia	<i>Tamiasciurus hudsonicus</i>	Red squirrel	Undetermined	1	Secure/Stable	6.57
Rodentia	<i>Zapus hudsonius</i>	Meadow jumping mouse	Undetermined	N/A	Special Concern ²	
Soricomorpha	<i>Blarina brevicauda</i>	Short-tailed shrew	Undetermined	1	Secure/Stable	6.5
Soricomorpha	<i>Condylura cristata</i>	Star-nosed mole	Undetermined	2	Secure/Stable	5.2
Soricomorpha	<i>Cryptotis parva</i>	Least shrew	Undetermined	2	Undetermined	5.33

Order	Scientific Name	Common Name	Current NJ Status	Consensus Reached Round #	Consensus Status	Confidence Level
Soricomorpha	<i>Parascalops breweri</i>	Hairy-tailed mole	Undetermined	1	Undetermined	5.25
Soricomorpha	<i>Scalopus aquaticus</i>	Eastern mole	Undetermined	1	Secure/Stable	6.4
Soricomorpha	<i>Sorex cinereus</i>	Masked shrew	Undetermined	1	Secure/Stable	5.83
Soricomorpha	<i>Sorex cinereus nigriculus</i>	Tuckahoe masked shrew	Undetermined	2	Undetermined	6
Soricomorpha	<i>Sorex dispar</i>	Long-tailed shrew	Undetermined	1	Undetermined	5.67
Soricomorpha	<i>Sorex fumeus</i>	Smokey shrew	Undetermined	2	Undetermined	5.71
Soricomorpha	<i>Sorex hoyi</i>	Pygmy shrew	Undetermined	2	Undetermined	5.5
Soricomorpha	<i>Sorex palustris</i>	Water shrew	Undetermined	1	Undetermined	6

¹ The status of "Not Applicable" was based upon these species not being native to New Jersey.

² Consensus was not reached by the panelists after four rounds for these four species. Therefore, their status was determined following ENSP staff recommendation, and then review, discussion, and vote by the NJ Endangered and Nongame Advisory Committee on March 20, 2013.

Endangered & Nongame Species Program Staff Recommendation for "No Consensus" Species

The Delphi process status review failed to reach consensus on two species: Southern bog lemming (*Synaptomys cooperi*) and Meadow jumping mouse (*Zapus hudsonicus*). Endangered & Nongame Species Program staff reviewed the comments, voting, and confidence levels over the 4 rounds for each of the species, and made the following recommendations:

Southern bog lemming: Undetermined

Justification: The voting after 4 rounds was 5 (U) to 2 (SC) in favor of an 'Undetermined' status. The only dataset available was from a study from 2004 to 2009 in the southern portion of the state. It is the understanding of staff that the study was conducted in a small area in this region, [REDACTED]. Regionally, the species has a status of S2 in MA, S3 in CT, VT, MD and WV and is otherwise S4 or S5 in ME, NH, NY, PA, and VA. While it is clear that more effort is needed to understand the current distribution and abundance in New Jersey, the results of one small-scale study are insufficient to justify a status of anything other than 'Undetermined' at this time.

Meadow jumping mouse: Undetermined

Justification: The voting after 4 rounds was 5 (SC) to 2 (U) in favor of a 'Special Concern' status. There appears to be very limited data available. Regionally, the species has a status of S4 in all states other than WV, where it is S3. It is clear that more effort is needed to understand the current distribution and abundance in New Jersey. We agree with the one reviewer in round 3 who commented that "the only substantive comments based on personal experience with the species come from individuals who recommended U or S". Inadequate data exists to justify a status of anything other than 'Undetermined' at this time.

APPENDIX I

SPECIES LIST

TERRESTRIAL MAMMALS								
Order	Scientific Name	Common Name	IUCN Classification	Global Rank ¹	NJ State Rank ¹	NJ State Status	NJ Native	Status In Surrounding States ¹
Carnivora	<i>Lynx rufus</i>	Bobcat	Least concern	G5	S1	Endangered	Yes	CT (S2?), NY (S4), PA (S3S4)
Carnivora	<i>Martes pennanti</i>	Fisher	Least concern	G5	SNR	Undetermined	Yes	CT (S2), NY (S4), PA (S2S4)
Chiroptera	<i>Eptesicus fuscus</i>	Big brown bat	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Chiroptera	<i>Lasionycteris noctivagans</i>	Silver-haired bat	Least concern	G5	SU	Undetermined	Yes	CT (SNA), DE (SU), NY (S4B), PA (SUB)
Chiroptera	<i>Lasiurus borealis</i>	Red bat	Least concern	G5	SU	Undetermined	Yes	CT (S3), DE (S5), NY (S5B), PA (S5B)
Chiroptera	<i>Lasiurus cinereus</i>	Hoary bat	Least concern	G5	SU	Undetermined	Yes	CT (S3), NY (S4B), PA (S4B)
Chiroptera	<i>Myotis leibii</i>	Eastern small-footed myotis	Least concern	G3 *(G1G3)	SNR	Undetermined	Yes	CT (SHN), NY (S2), PA (S1B,S1N)
Chiroptera	<i>Myotis lucifugus</i>	Little brown bat	Least concern	G5 *(G3)	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S1)
Chiroptera	<i>Myotis septentrionalis</i>	Northern long-eared bat	Least concern	G4 *(G1G3)	SU	Undetermined	Yes	CT (SU), DE (SU), NY (S3S4), PA (S1)
Chiroptera	<i>Myotis sodalis</i>	Indiana bat	Endangered	G2	S1	Endangered	Yes	CT (SHN), NY (S1) PA (SUB,S1N)
Chiroptera	<i>Perimyotis subflavus</i>	Tri-colored bat	Least concern	G5 *(G3)	SU	Undetermined	Yes	CT (S4), DE (S4), NY (S3), PA (S1)
Rodentia	<i>Clethrionomys gapperi</i>	Red-backed vole	Least concern	G5	S4	Undetermined	Yes	CT (S5), NY (S5), PA (S5)
Rodentia	<i>Erethizon dorsatum</i>	Porcupine	Least concern	G5	S4	Undetermined	Yes	CT (S5), NY (S5), PA (S5)
Rodentia	<i>Glaucomys sabrinus</i>	Northern flying squirrel	Least concern	G5	SU	Undetermined	Yes	NY (S5), PA (SU)

TERRESTRIAL MAMMALS								
Order	Scientific Name	Common Name	IUCN Classification	Global Rank ¹	NJ State Rank ¹	NJ State Status	NJ Native	Status In Surrounding States ¹
Rodentia	<i>Glaucomys volans</i>	Southern flying squirrel	Least concern	G5	S4	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Rodentia	<i>Microtus pennsylvanicus</i>	Meadow vole	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Rodentia	<i>Microtus pinetorum</i>	Pine vole	Least concern	G5	SNR	Undetermined	Yes	CT (SNA), DE (SNA), NY (SNA), PA (SNA)
Rodentia	<i>Mus musculus</i>	House mouse	Least concern	G5	SNA	Undetermined	No	CT (SNA), DE (SNA), NY (SNA), PA (SNA)
Rodentia	<i>Napaeozapus insignis</i>	Woodland jumping mouse	Least concern	G5	S4	Undetermined	Yes	CT (S5), NY (S5), PA (S5)
Rodentia	<i>Neotoma magister</i>	Allegheny woodrat	Near threatened	G3G4	S1	Endangered	Yes	CT (SH), NY (S1), PA (S3)
Rodentia	<i>Oryzomys palustris</i>	Marsh rice rat	Least concern	G5	SNR	Undetermined	Yes	DE (S3), PA (SX)
Rodentia	<i>Peromyscus leucopus</i>	White-footed mouse	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Rodentia	<i>Rattus norvegicus</i>	Norway rat	Least concern	G4	SNA	Undetermined	No	CT (S5), DE (S4), NY (S5), PA (S5)
Rodentia	<i>Rattus rattus</i>	Black rat	Least concern	G5	SNR	Undetermined	No	DE (SNA), NY (SNA), PA (SNA)
Rodentia	<i>Synaptomys cooperi</i>	Southern bog lemming	Least concern	G5	SNR	Undetermined	Yes	CT (S3), NY (S4), PA (S4)
Rodentia	<i>Tamias striatus</i>	Eastern chipmunk	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Rodentia	<i>Tamiasciurus hudsonicus</i>	Red squirrel	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S3), NY (S5), PA (S5)
Rodentia	<i>Zapus hudsonius</i>	Meadow jumping mouse	Least concern	G5	S4	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Soricomorpha	<i>Blarina brevicauda</i>	Short-tailed shrew	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Soricomorpha	<i>Condylura cristata</i>	Star-nosed mole	Least concern	G5	S4	Undetermined	Yes	CT (S5), DE (S4), NY (S5), PA (S5)

TERRESTRIAL MAMMALS								
Order	Scientific Name	Common Name	IUCN Classification	Global Rank ¹	NJ State Rank ¹	NJ State Status	NJ Native	Status In Surrounding States ¹
Soricomorpha	<i>Cryptotis parva</i>	Least shrew	Least concern	G5	SU	Undetermined	Yes	CT (S1), DE (SNR), NY (SH), PA (S1)
Soricomorpha	<i>Parascalops breweri</i>	Hairy-tailed mole	Least concern	G5	SU	Undetermined	Yes	CT (S5), NY (S5), PA (S5)
Soricomorpha	<i>Scalopus aquaticus</i>	Eastern mole	Least concern	G5	S5	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Soricomorpha	<i>Sorex cinereus</i>	Masked shrew	Least concern	G5	S4	Undetermined	Yes	CT (S5), DE (S5), NY (S5), PA (S5)
Soricomorpha	<i>Sorex cinereus nigriculus</i>	Tuckahoe masked shrew	NA	G5T1Q	SNR	Undetermined	Yes	
Soricomorpha	<i>Sorex dispar</i>	Long-tailed shrew	Least concern	G4	SNR	Undetermined	Yes	NY (S4), PA (S3)
Soricomorpha	<i>Sorex fumeus</i>	Smokey shrew	Least concern	G5	SU	Undetermined	Yes	CT (S5), NY (S5), PA (S5)
Soricomorpha	<i>Sorex hoyi</i>	Pygmy shrew	Least concern	G5	SNR	Undetermined	Yes	NY (S4?), PA (SNR)
Soricomorpha	<i>Sorex palustris</i>	Water shrew	Least concern	G5	SU	Undetermined	Yes	CT (S3S4), NY (S4), PA (SNR)

¹ Global (G) and State (S) ranks are NatureServe Conservation Status Ranks assigned by NatureServe in the case of G ranks and by each state in the case of S ranks. The conservation status of a species is designated by a number from 1 to 5. The numbers have the following meaning: 1 = critically imperiled; 2 = imperiled; 3 = vulnerable; 4 = apparently stable; 5 = secure (<http://www.natureserve.org/explorer>) (Refer to <http://www.natureserve.org/explorer/ranking.htm> for more detail about the rank definitions.)

*(G#) - Updated GRANKS for several bat species as of October 2012, which was after the NJ Terrestrial Mammal Status Review took place.

APPENDIX II

SPECIES: Bobcat
Lynx rufus

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes		6	1				
Ave Confidence		6	5				

Round 1 Comments:

The species appears to be doing well in its core habitat areas and is now much more common than 30 years ago when it was nearly extirpated. Its ability to expand its range in NJ may be limited based on habitat use studies showing roads as a possibly limiting factor to dispersal and expansion. (SC)

Very low population size (<100) and high mortality rates. Habitat fragmented and threatened by development. Relatively low populations in neighboring states (measured in the thousands compared to tens or hundreds of thousands in southern states). (E)

Population continues to need protection to increase population size to a stable number (E)

Numerous sighting reports of this species are regularly reported by trappers and hunters in general. Also, several are captured each trapping season by trappers. Varmint callers report sightings of this animal regularly. Most sites (in Sussex, Morris and Warren Co) examined for presence of furbearers during winter of 2011 showed presence of bobcat (tracks) at least once during the winter. (S)

I have no further information beyond what has been provided to me. (SC)

The population appears to be increasing in the state and surrounding region. However, in NJ the majority of the population is confined to a relatively restricted area of the state bounded roughly by Rt. 287 to the east and Rt. 80 to the south. Very few records for the species exist south of Rt. 80 despite the presence of suitable habitat and considerable efforts expended to locate them. Major roads appear to be a significant barrier to their movements. Therefore, it is unlikely that the population will expand rapidly in areas south of Rt. 80. Few records occur for south Jersey. Due to barriers that exist in the form of urbanization, land use, habitat and roadways, it is unlikely that there will ever be movement of individuals between northern and southern populations within the state. (T)

Round 2 Comments:

The recent genetic information shows that the Ne is very small and that this is not a stable population, safe from genetic drift or stochastic collapse. (T)

At least north of the Rt 80 corridor the pop. seems to be increasing. (S)

Given the new information on the genetic components of the population, continued protection is needed to restore an effective population size that has promise of viability. (E)

Although the species has made a significant comeback since reintroduction 30 years ago it still appears to be vulnerable based on the relatively small population estimated from the DNA analysis and the fact that it is still relatively uncommon in the state south of Rt. 80. (T)

Current estimates of population warrants SC status. (SC)

Round 3 Comments:

In addition to the previously mentioned threats (habitat fragmentation, roads, limited range in the state), bobcats appear to be highly vulnerable to trapping. Several bobcats were reported captured in snares during the 2011-2012 season. One trapper captured three female bobcats, two of which died in the snare. One was successfully released and required minor medical treatment. Efforts to release snared bobcats have met with mixed results. To date, less than 50% of reported bobcats have been successfully released from snares. The argument can be made that bobcats are more susceptible to trapping mortality in NJ than they are in PA, a state that has a legal bobcat trapping season. In PA the trapping season for bobcats is short (Dec. 17 - Jan. 8) and the bag limit is one bobcat per license year and all licensed trappers may obtain a bobcat permit. In NJ, the trapping season extends from Nov. 15 - Mar. 15. In PA, trappers can legally use steel jawed leghold traps. Bobcats can be successfully released from leghold traps, typically without injury, whereas there is a much greater mortality rate from snares as we have seen in NJ. (T)

This species seems to require active management for to reach a population size that will protect genetic diversity. (T)

Although leaning more toward an SC status, the threatened status is more justifiable than endangered status. (T)

Uncommon and vulnerable (T)

SPECIES: Fisher
Martes pennanti

ROUND: 3 CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes					7		
Ave Confidence					5.57		

Round 1 Comments:

Fishers have been documented from several locations in northern NJ. Their presence is likely due to reintroduction/restoration efforts that have been conducted in the surrounding states of NY, PA and WV. (U)

Fisher pops are increasing in NY, but still quite sparse in NJ (SC)

Individuals just beginning to recolonize state after extirpation, habitat specialists within declining habitat (E)

A species which also increasing as a result of range expansion from reintroduced animals in NY. Although it appears to be increasing it is not yet well established in the state. (SC)

Fisher, a native species extirpated prior to the 20th century, have returned to the State via re-introduction efforts in New York and Pennsylvania where they are currently listed as a furbearer species with an open trapping season. The NJ Fish and Game Council granted furbearer status to fishers (no open season) in 2009. While fisher populations are currently too low to support an open trapping season, it is expected that Council will authorize a science-backed open season in the future as the fisher population increases. (U)

Wide-ranging individuals will probably continue to be found. I have checked three mustelids from Princeton and Plainsboro Townships; all were minks. (NO)

Round 2 Comments:

I don't believe there is enough information about this species in New Jersey to justify anything other than an unknown status. (U)

Like bobcats, fishers are very prone to road induced mortality, although they readily attempt to cross roads. The species will likely recover significantly due to spill over from neighboring states, where they are quite tolerant of human disturbance, but it should still be protected. (SC)

I've never had a sighting or seen their tracks/scat in the prime habitat of NW NJ. (U)

While there is a lack of sufficient data to accurately estimate population numbers within the state, individuals are known to be recolonizing into preferred habitat locations. Protections to increase the ability for recolonization should be put forth in order to increase population size within the state. (E)

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

Round 3 Comments:

I prefer Unknown status, we have no real basis for any other designation. (U)

This species is found in urban areas in New York (Albany) and is highly tolerant of human disturbance. It warrants attention, but does not need active management. (SC)

More field data needed before assigning a status for this species (U)

Given current recolonization efforts within prime habitat the species needs at least some protection. (SC)

There is just too little known about this species in NJ to give it anything other than an unknown status. We do know it did not occur here prior to the reintroductions...everything else is conjecture. (U)

Almost no documentation exists beyond <6 or so trail camera photos. This species is listed as a furbearer with no open season and is thus protected. Populations are still too small to justify any other status other than U. (U)

There is currently no data to support a status of E, T or SC. Research needs to be conducted to determine population size for NJ. Limited habitat and fragmentation will likely severely limit the population size in NJ. (U)

Round 4 Comments:

Too little is known and there's too little data about this species in NJ to give it anything other than an unknown status. (U)

SPECIES: Big brown bat
Eptesicus fuscus

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes		1	6				
Ave Confidence		6	5.33				

Round 1 Comments:

WNS taking its toll on the species in NJ (SC)

Eptesicus fuscus have been confirmed as being affected by WNS but seemingly to a lesser degree. No evidence of widespread winter or summer mortality has been documented within the state or the region. However, little is known about the hibernation locations for this species. Summer maternity colony monitoring has shown no evidence of population declines and at some colonies that have been monitored for several years the numbers are increasing. Summer mist netting efforts indicate that the species remain relatively common. However, other states within the region have reported declines in *E. fuscus* populations. (SC)

White-nose syndrome (E)

One of the species most hard hit by white-nose syndrome. (SC)

Although still common, all bats are of special concern. (SC)

Round 2 Comments:

Based on summer bat counts over the past several years, big brown bat colonies that are monitored have experienced an increase. To summarize, we have pre-WNS data from 42 sites (summer bat roosts) At sites where the species ID has been confirmed big brown colonies remained stable in 2009 (the first summer after WNS was confirmed in NJ). In 2010, big brown bat colonies increased 41% (n=9) from baseline (baseline = pre-WNS colony size). Reproduction in 2010 for big browns also appeared normal at several monitored colonies as the post-volant counts increased 88% (n=5) compared to the pre-volant counts. In 2011, big brown bat colonies (n=4) were 31% above baseline. At 7 monitored big brown bat colonies the post-volant counts were 109% higher than the pre-volant counts, suggesting that reproduction for the year was good. Although big brown bat populations appear to be holding their own in the face of WNS we need to keep a close eye on their status. (SC)

Given recent reports on WNS, existing populations need as much protection as possible in order to provide for maximum genetic diversity for future populations (if any).

US FWS press release 1/17/2012:

http://us.vocuspr.com/Newsroom/Query.aspx?SiteName=fws&Entity=PRAsset&SF_PRAsset_PRAssetID_EQ=129322&XSL=PressRelease&Cache=True (E)

This species has been less hard hit than *M. lucifugus*, but it's continued existence is still a serious concern. (SC)

Round 3 Comments:

Comments in both Round 1 and Round 2 from one individual that recommended SC both rounds provided substantial information to support the recommended status...conversely, both E recommendations provide no substantive information to support that status. (SC)

I believe that this species needs a high level of protection, but I'm not convinced it rises to the level of Endangered. How about Threatened? (T)

Given data included in Round 2 comments (SC)

same comment as Round 2 (Based on summer bat counts over the past several years, big brown bat colonies that are monitored have experienced an increase. To summarize, we have pre-WNS data from 42 sites (summer bat roosts) At sites where the species ID has been confirmed big brown colonies remained stable in 2009 (the first summer after WNS was confirmed in NJ). In 2010, big brown bat colonies increased 41% (n=9) from baseline (baseline = pre-WNS colony size). Reproduction in 2010 for big browns also appeared normal at several monitored colonies as the post-volant counts increased 88% (n=5) compared to the pre-volant counts. In 2011, big brown bat colonies (n=4) were 31% above baseline. At 7 monitored big brown bat colonies the post-volant counts were 109% higher than the pre-volant counts, suggesting that reproduction for the year was good. Although big brown bat populations appear to be holding their own in the face of WNS we need to keep a close eye on their status.) (SC)

No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (SC)

SPECIES: Silver-haired bat
Lasionycteris noctivagans

ROUND: 3 CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes			7				
Ave Confidence			5.14				

Round 1 Comments:

All bats should be of special concern; I have no recent records of this one. (SC)

Existence in NJ compromised by white-nose syndrome (E)

Round 2 Comments:

Very little is known about these migrational bats throughout their range, including their population size in NJ. Wind turbines do put them at risk and thus warrant special concern.

Species known to be taken at wind turbines:
<http://www.mesc.usgs.gov/BatsWindmills/> (SC)

No experience or knowledge of this species other than what is provided. (E)

There is no evidence that any species of tree bats are affected by WNS. Wind energy development is a relatively recent source of mortality for the species. Not enough known about the population status in NJ. (U)

All resident bats should be of special concern. In addition to WNS, mortality at wind turbines is also a concern. (SC)

Round 3 Comments:

Relatively recent threat to this species by wind energy development warrants a status of special concern. (SC)

No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (SC)

Species at risk from wind turbines (SC)

SPECIES: Red bat
Lasiurus borealis

ROUND: 3 CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes			7				
Ave Confidence			5				

Round 1 Comments:

New data needed on population status (U)
Although migratory and difficult to survey, all bats are of special concern. (SC)

Round 2 Comments:

No experience or knowledge of this species other than what is provided. (SC)
Very little is known about these migrational bats throughout their range, including their population size in NJ. Wind turbines do put them at risk and thus warrant special concern.
Species known to be taken at wind turbines:
<http://www.mesc.usgs.gov/BatsWindmills/> (SC)
Commonly captured during summer mist netting but not in large numbers. Frequent "patients" at bat rehabilitation facilities. Not enough known about the population status in NJ. Wind energy development is a relatively recent mortality factor. There is no evidence that any species of tree bats are affected by WNS. (U)

Round 3 Comments:

I remain convinced that Special Concern status is appropriate. (SC)
No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (SC)
Species at risk from wind turbines (SC)
No experience or knowledge of this species other than what is provided. (SC)
Relatively recent threat to this species by wind energy development warrants a status of special concern. (SC)

SPECIES: Hoary bat
Lasiurus cinereus

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes			5		1	1	
Ave Confidence			5		5	1	

Round 1 Comments:

All bats are of special concern. (SC)

New data needed on population status (U)

Round 2 Comments:

The precautionary principle would dictate that all bats are of special concern given the current WNS situation. (SC)

Although there is no evidence that tree bats are affected by WNS, a relatively new source of mortality exists in wind energy development. I don't think enough data currently exists for this species to accurately assign a status. However, NJ has begun to conduct statewide acoustic monitoring surveys and may have new data available in the next few years. (U)

Very little is known about these migrational bats throughout their range, including their population size in NJ. Wind turbines do put them at risk and thus warrant special concern.

Species known to be taken at wind turbines:
<http://www.mesc.usgs.gov/BatsWindmills/> (SC)

No knowledge of this species other than what is provided. (SC)

SPECIES: Eastern small-footed myotis
Myotis leibii

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes	6		1				
Ave Confidence	5.83		6				

Round 1 Comments:

Existence in NJ compromised by white-nose syndrome (E)

Another *Myotis* spp. that has been shown to be affected by WNS. Like the No. Long-eared bat, little information exists on summer and winter locations. This species is currently under petition to the USFWS for consideration for listing under the ESA. (E)

All bats should be of special concern; I have no records of this one. (SC)

Round 2 Comments:

Given recent reports on WNS, existing populations need as much protection as possible in order to provide for maximum genetic diversity for future populations (if any).

US FWS press release 1/17/2012:

http://us.vocuspr.com/Newsroom/Query.aspx?SiteName=fws&Entity=PRAsset&SF_PRAsset_PRAssetID_EQ=129322&XSL=PressRelease&Cache=True (E)

Only one *M. leibii* was recorded [REDACTED] during the 2010-11 hibernation season and the species has been absent from several previous year's surveys at the site. They either do not occur [REDACTED] on a regular basis or they select microhabitats where they are missed by surveyors. Only a very few *M. leibii* have been documented in winter surveys of NJ hibernacula over the past two decades. This species has been found in surrounding states during winter surveys so it does not appear that they avoid abandoned mines during winter. 21 *M. leibii* were captured by researchers in the fall of 2011 during 9 nights of pre-hibernation surveys conducted [REDACTED]. *M. leibii* have been documented as using other habitats in winter such as rock crevices and under boulders in talus habitats but no such records have been reported in NJ. The species is infrequently captured by researchers conducting mist net surveys in NJ during the summer months. Severe population declines have been reported from surrounding states due to WNS. (E)

I agree that, given WNS, all bats should be considered at least SC. Since this species is under consideration for federal E status and its status is uncertain in NJ, it should be considered to be at least T. It is SC in NY (T)

Round 3 Comments:

No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (E)

Same comments as Round 2 (Only one *M. leibii* was recorded [REDACTED] during the 2010-11 hibernation season and the species has been absent from several previous year's surveys at the site. They either do not occur [REDACTED] a regular basis or they select microhabitats where they are missed by surveyors. Only a very few *M. leibii* have been documented in winter surveys of NJ hibernacula over the past two decades. This species has been found in surrounding states during winter surveys so it does not appear that they avoid abandoned mines during winter. 21 *M. leibii* were captured by researchers in the fall of 2011 during 9 nights of pre-hibernation surveys conducted [REDACTED]. *M. leibii* have been documented as using other habitats in winter such as rock crevices and under boulders in talus habitats but no such records have been reported in NJ. The species is infrequently captured by researchers conducting mist net surveys in NJ during the summer months. Severe population declines have been reported from surrounding states due to WNS.) (E)

Endangered status is a big step, but it is probably warranted with most hibernating bats. (E)

Although not discounting WNS's observed impact on species in other states, there is no information provided by other Delphi participants that suggests a dramatic shift in NJ occurrences of this species. [REDACTED] information does not support an E status and if anything suggests along with the historical winter hibernacula data, this species has always been either rare in NJ or not easily observed, sampled, etc. Curious to know if there is any baseline data [REDACTED] that puts the recent capture of 21 specimens in perspective. This may be the largest number of *M. leibii* ever captured or observed at or near any one location in NJ. (SC)

SPECIES: Little brown bat
Myotis lucifugus

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes	7						
Ave Confidence	5.57						

Round 1 Comments:

White nose syndrome has decimated this species in NY throughout the northeast and beyond. It is the most susceptible to this disease. (SC)

Although still common, probably all bats are a special concern at this time. (SC)

WNS taking its toll on the species in NJ (SC)

Severe decline in state and regional populations due to mortality associated with White-nose Syndrome (WNS). Mortality continues at affected sites with no evidence of abatement and no treatment/cure in sight. LBBs have a low biotic potential so even if mortality ended today it would take decades for the populations to recover to former levels. The USFWS is currently reviewing the status of *M. lucifugus* in consideration for listing under the ESA. (E)

White-nose syndrome, current winter bat survey data (E)

Round 2 Comments:

No knowledge of this species other than what is provided. (E)

Little brown bat numbers continue to decline [REDACTED], the state's largest known winter population. During 2011 approx. 750 little brown bats were counted [REDACTED], down from approx. 1,750 the previous year. Based on summer bat counts, little brown bat colonies that have been monitored since 2008 are down 86% (n=6) compared to baseline (baseline = pre-WNS numbers). (E)

WNS has reduced populations significantly. (SC)

Given recent reports on WNS, existing populations need as much protection as possible in order to provide for maximum genetic diversity for future populations (if any).

US FWS press release 1/17/2012:

http://us.vocuspr.com/Newsroom/Query.aspx?SiteName=fws&Entity=PRAsset&SF_PRAsset_PRAssetID_EQ=129322&XSL=PressRelease&Cache=True (E)

This species is in danger of total extinction. The remaining populations need protection. (E)

Round 3 Comments:

No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (E)

This species is in trouble in New Jersey (E)

The comments seem to support Endangered status, even if substantial populations are known. (E)

Hardest hit by WNS. (E)

Little brown bat numbers have continued to decline in 2011-2012 at monitored hibernacula. Little brown bat numbers [REDACTED] have declined to approx. 600-650 based on a recent survey. Observations of little brown bats flying out of [REDACTED] during Jan. 2012 support the fact that WNS is still causing mortality at confirmed sites. (E)

If any bat deserves endangered status, this one does, given the mortality of the last 6 years. (E)

SPECIES: Northern long-eared bat
Myotis septentrionalis

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes	6					1	
Ave Confidence	6					1	

Round 1 Comments:

All bats should be a special concern; I have no records of this one. (SC)

All *Myotis* spp. are affected by WNS. Relatively little information exists in NJ on the winter and summer populations for this species but it is presumed that WNS is having a negative impact on the species. This is supported by the reduced number of captures by bat researchers during the active season. This species is currently under petition to the USFWS for consideration for listing under the ESA. (E)

One of the species most hard hit by white-nose syndrome. (SC)

White-nose syndrome, current winter bat survey data (E)

Round 2 Comments:

Given recent reports on WNS, existing populations need as much protection as possible in order to provide for maximum genetic diversity for future populations (if any).

US FWS press release 1/17/2012:

http://us.vocuspr.com/Newsroom/Query.aspx?SiteName=fws&Entity=PRAsset&SF_PRAsset_PRAssetID_EQ=129322&XSL=PressRelease&Cache=True (E)

Very hard hit by WNS. (T)

Small numbers of northern bats have historically been counted [REDACTED] but recent surveys have failed to find any. (E)

No experience or knowledge of this species other than what is provided. (E)

Round 3 Comments:

Summer captures of this species by researchers and consultants have been extremely low since WNS was confirmed in NJ. Counts for this species at monitored hibernacula are down more than 90%. (E)

No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (E)

No experience or knowledge of this species other than what is provided. (E)

Hard hit by WNS (E)

Very hard hit by WNS. (E)

The comments are convincing in favor of Endangered status. (E)

SPECIES: Indiana bat
Myotis sodalis

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes	7						
Ave Confidence	6.86						

Round 1 Comments:

All bats should be a special concern; I have no records of this one. (SC)

Previous reports of occurrences [REDACTED] (E)

Endangered throughout its range (E)

The recovery of this federally listed endangered species has been interrupted by WNS. (E)

NJ and national populations were considered Endangered prior to the arrival of WNS. WNS has had a major impact on regional and state populations thus exacerbating the situation for this species. (E)

Round 2 Comments:

WNS has decimated populations of this federally listed species at numerous locations throughout the northeast. Only 1 Indiana bat was tallied during a survey [REDACTED] in 2011. The last pre-WNS survey conducted [REDACTED] in 2009 counted 148 Indiana bats. Only two sites in NJ are known to support a winter population of Indiana bats and both were confirmed positive for WNS in the winter of 2009. (E)

This already endangered species is gravely threatened by WNS. (E)

Federally-listed species at risk throughout its range. (E)

No knowledge of this species other than what is provided. (E)

SPECIES: Tri-colored bat
Perimyotis subflavus

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes	6					1	
Ave Confidence	5.83					1	

Round 1 Comments:

White-nose syndrome, current winter bat survey data (E)

One of the species most hard hit by white-nose syndrome. (SC)

Yet another cave bat that has been shown to suffer significant mortality from WNS. *Perimyotis subflavus* numbers are down sharply at several known winter hibernacula throughout the state and the region. (E)

Round 2 Comments:

No experience or knowledge of this species other than what is provided. (E)

Summer capture by mist net surveyors is down sharply. No tri-colored bats counted in 2011 [REDACTED]. (E)

Given recent reports on WNS, existing populations need as much protection as possible in order to provide for maximum genetic diversity for future populations (if any).

US FWS press release 1/17/2012:

http://us.vocuspr.com/Newsroom/Query.aspx?SiteName=fws&Entity=PRAsset&SF_PRAsset_PRAssetID_EQ=129322&XSL=PressRelease&Cache=True (E)

Another bat species in trouble due to WNS. (T)

Round 3 Comments:

Hard hit by WNS (E)

No experience or knowledge of this species other than what is provided. Considering data/comments provided all bats should be listed as at least SC. (E)

Recent surveys [REDACTED] failed to tally a single tri-colored bat. Limited surveys at other known hibernacula have not tallied a single tri-colored bat. During nine nights of pre-hibernation sampling [REDACTED], only 3 tri-colored bats were captured representing only 0.6% of the total capture. (E)

Rated based on information provided (E)

SPECIES: Red-backed vole
Clethrionomys gapperi

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				5	1	1	
Ave Confidence				6.4	6	1	

Comments:

A specimen was confirmed from an owl pellet collected in Sussex county but attempts to collect the species were not successful. (U)

I haven't surveyed nor trapped this species lately, but know of no reason why it should decline. (S)

SPECIES: Porcupine
Erethizon dorsatum

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				7			
Ave Confidence				6.29			

Comments:

This is an increasing species but since there is no such status designation it is listed as stable since it should continue to increase. (S)

I believe this species is very well re-established. (S)

A peripheral species that is documented from four counties in northern NJ. (S)

Populations of this species exist along the Kittatinny Ridge and eastward to the Bearforts where habitat exists. Del. Wat. Gap Nat. Rec. Area has a stable population which is probably contiguous with the population in Pennsylvania. This animal spends much of its days in rock dens or in the top of trees where it is not evident to the casual observer. Tracks observed in snow in winter show that these animals are present and that all but hardy hikers will never see this evidence of presence.

Distance to and limitations of continuous habitat may limit this species. Have seen (in the last year, 3 of this species dead as veh. morts. south of Newton on Rt 206. (S)

SPECIES: Northern flying squirrel
Glaucomys sabrinus

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes		1			4	2	
Ave Confidence		4			6.5	6	

Round 1 Comments:

Loss of Tsuga habitat due to Woolly Adelgid, etc. reducing any limited coniferous habitat present in northern portion of the state. (T)

Not aware of any specimens from NJ (U)

I don't know of any New Jersey specimens. (NO)

Not aware of any documented occurrences for this species in the state. (NA)

Lack of data on population status, habitat specialist, listed as endangered in PA (SC)

Round 2 Comments:

Loss of habitat due to woody adelgid and risk of fatal Strongyloides infection from *G. volans* put this species at greater risk. (T)

This species is on the edge of its range in NJ and I am unaware of its status. (NO)

Field data needed to see if this species even occurs in NJ (U)

I do not believe that there are any records/specimens for this species in NJ. Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

SPECIES: Southern flying squirrel
Glaucomys volans

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes				6	1		
Ave Confidence				5.67	5		

Round 1 Comments:

Strictly nocturnal, this species is present in greater numbers in the northwestern counties than the casual daytime observer would believe. (SC)

I don't think this species has any major problems, but I don't have any current records. (S)

New data needed on population status (U)

Round 2 Comments:

In the mid to late 1990's, I frequently captured *G. volans* in relatively small forest fragments in Middlesex county where they seemed to be quite common. I also had friends with flying squirrels living in their attic in Mercer County in the early 2000's. Flying squirrels are rarely seen or heard in the forest and seem to enter ground traps irregularly, but I suspect they are fairly common. We need more information before we can be sure. (U)

Appears to be quite common in NW NJ (S)

Round 3 Comments:

More data needed (U)

Common in Sussex County (S)

Common, at least in NWestern counties. (S)

SPECIES: Meadow vole
Microtus pennsylvanicus

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				7			
Ave Confidence				7.43			

Comments:

Very abundant in field habitats and woodland edge. Especially visible in late winter/early spring. Is a valuable food source for raptors (night and day), mustelids, foxes and *F rufus*. (S)

It seems as abundant as ever. (S)

Ubiquitous and locally abundant (S)

SPECIES: Pine vole
Microtus pinetorum

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				4		3	
Ave Confidence				6.25		2.5	

Comments:

I don't have any current information about this species. (NO)

I believe this species to be uncommon but stable in New Jersey (S)

SPECIES: House mouse
Mus musculus

ROUND: one

CONSENSUS: N/A (Non-indigenous species)

Status	E	T	SC	S	U	NO	NA
# of Votes				6		1	
Ave Confidence				7.2			

Comments:

This seems to be a stable population. (S)

Is a non-indigenous species and should not be considered with native species. Generally is associated with human habitation more than other ENSP species, other than *Rattus rattus* and *Rattus norvegicus* which are also non-indigenous. Is and should always be considered a highly invasive species and as such should have no consideration for protection. (S)

Why does this exotic species still appear on the nongame species list which affords it protection? (S)

SPECIES: Woodland jumping mouse
Napeozapus insignis

ROUND: 3

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes					7		
Ave Confidence					5.86		

Round 1 Comments:

Although uncommon, and on the margins of its range, there is no reason to suspect a decline. (S)

Round 2 Comments:

New data needed on population status (U)

Like the Meadow jumping mouse, this is a difficult species to study since it seems to enter traps much less readily than *Peromyscus* and other rodents. Or, maybe it is just really rare. I have trapped extensively in appropriate habitat in NJ and NY have encountered this species very rarely. It needs more study. (U)

Although I have encountered this species on a number of occasions, I know of no systematic evaluation of this species in the state. (U)

Round 3 Comments:

To support further study, I will support Unknown status. (U)

This species is present in Sussex County. Species-targeted trapping needed to fully assess the status of this species (U)

There is currently no data to support a status of E, T or SC. Research needs to be conducted to determine distribution and abundance in NJ. (U)

New data needed. (U)

New data needed (U)

SPECIES: Allegheny woodrat
Neotoma magister

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes	5		1			1	
Ave Confidence	7.6		5				

Comments:

Personally sampled or supervised sampling of nearly all the suitable habitat in the state and certain that the Palisades population is the only population with any chance of long term viability. (E)

Declining population information from survey, habitat specialist at risk throughout range, infection from raccoon roundworm (E)

Species has been extirpated in NY and CT and has disappeared from all former locations in NJ with the exception of the Palisades. Population declines have also occurred in PA and MD. Genetic analysis of the NJ population has revealed that inbreeding depression poses a significant threat. Other documented threats include complete genetic isolation of the population and infection by raccoon roundworm. Continued monitoring and active management of the population is crucial to their survival in the state. (E)

Never have seen/found any sign (toilets/droppings, nests) in the northwestern area of the Kittatinny Ridge of Sussex/Warren Co. or areas of the Bearforts in Passaic/Sussex Co. to indicate presence of this species. Have spent considerable time in these areas. (E)

I still think we may find other extant populations; we need further surveys, but there won't be many individuals in any case. (SC)

Only one population remaining in NJ, susceptible to inbreeding depression and mortality from Baylisascaris procyonis. This population definitely needs to be managed for recovery. (E)

SPECIES: Marsh rice rat
Oryzomys palustris

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes					6	1	
Ave Confidence					5.33	1	

Round 1 Comments:

The species is documented from areas of southern NJ, however, little is known of their presence outside of this region within the state. Nothing has been documented regarding the abundance of this species in areas where it has been documented. (NO)

Although rarely encountered and on the margins of its range, there is no reason to suspect a decline. (S)

New data needed on population status (U)

This species appeared to be locally common where sampled in marsh ecotones in south Jersey but not aware of how extensive its distribution or abundance may be. (U)

Round 2 Comments:

New data needed of this species/population. (U)

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

SPECIES: White-footed mouse
Peromyscus leucopus

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes			1	6			
Ave Confidence			8	7.17			

Comments:

At least in the northern 1/3 of NJ, P leucopus is extremely common/abundant. Is the most prevalent species trapped as vermin (more common than Mus musculus) in human habitation near woodlands/fields. (S)

It seems as abundant as ever. (S)

SPECIES: Norway rat
Rattus norvegicus

ROUND: one

CONSENSUS: N/A (Non-indigenous species)

Status	E	T	SC	S	U	NO	NA
# of Votes				6		1	
Ave Confidence				7.33			

Comments:

Despite persecution, it seems as abundant as ever. (S)

Why does this exotic species still appear on the nongame species list which affords it protection? (S)

Is a non-indigenous species and should not be considered with native species. Generally is associated with human habitation more than other ENSP species, other than *Rattus rattus* and *Mus musculus* which are also non-indigenous. Is and should always be considered a highly invasive species and as such should have no consideration for protection. (S)

SPECIES: Black rat
Rattus rattus

ROUND: one

CONSENSUS: N/A (Non-indigenous species)

Status	E	T	SC	S	U	NO	NA
# of Votes				3	1	3	
Ave Confidence				7.33	4		

Comments:

I would think that this speices periodically re-invades port cities, but it doesn't seem to survive. (U)

Is a non-indigenous species and should not be considered with native species. Generally is associated with human habitation more than other ENSP species, other than *Rattus norvegicus* or *Mus musculus*, which are also non-indigenous. Is and should always be considered a highly invasive species and as such should have no consideration for protection. (S)

Why does this exotic species still appear on the nongame species list which affords it protection? (NO)

SPECIES: Southern bog lemming
Synaptomys cooperi

ROUND: 4

CONSENSUS: No

Status	E	T	SC	S	U	NO	NA
# of Votes			2		5		
Ave Confidence			5.5		6		

Round 1 Comments:

New data needed on population status, habitat specialist for declining available habitat (SC)

I know of a probable site in Sussex County based on owl pellet recoveries. It needs to be surveyed. (SC)

Round 2 Comments:

Field data needed (U)

No experience or knowledge of this species other than what is provided. (SC)

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

As a forage and habitat specialist, this species is particularly vulnerable to environmental change - anthropogenic or otherwise. Such vulnerability in a species that normally maintains a small population size with small home range in ideal habitat warrants special concern. (SC)

Round 3 Comments:

There is currently no data to support a status of E, T or SC. Research needs to be conducted to determine distribution and abundance in NJ. (U)

No experience or knowledge of this species other than what is provided. (U)

Recent trapping of this species from 2004-2009 in the southern portion of the state show that it is very restricted to specialized habitats and does not establish populations in the presence of overly abundant competing species (meadow vole). Special status is warranted to protect currently established populations. (SC)

Field data needed to properly assess the status of this species in NJ (U)

Round 4 Comments:

Same comment as round 3: Recent trapping of this species from 2004-2009 in the southern portion of the state show that it is very restricted to specialized habitats and does not establish populations in the presence of overly abundant competing species (meadow vole). Special status is warranted to protect currently established populations. (SC)

I have never captured this species in NW NJ and so I'm inclined to assign an Unknown Status. However, if indeed there are "currently established populations" in the southern portion of the state as indicated by one reviewer in round 3, then I would assign a SC Status for this species. (SC)

SPECIES: Eastern chipmunk
Tamias striatus

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes			1	6			
Ave Confidence			8	7.33			

Comments:

From my observations, this species may be increasing. (S)

Extremely common in every county of NJ where habitat is present. Should not be considered anything other than very abundant. (S)

SPECIES: Red squirrel
Tamiasciurus hudsonicus

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				7			
Ave Confidence				6.57			

Comments:

I don't think this species has major problems, but I don't have any current knowledge. (S)

Extremely common in every county of NJ where habitat is present. Particularly in mature conifers (Picea, Pinus, Tsuga,) stands, but is present in mixed coniferous/deciduous forest and even in areas of successional edge where Juniperus. virginiana is common. (S)

SPECIES: Meadow jumping mouse
Zapus hudsonicus

ROUND: 4

CONSENSUS: No

Status	E	T	SC	S	U	NO	NA
# of Votes			5		2		
Ave Confidence			5.6		7		

Round 1 Comments:

I know of no reason to think it is declining from its preferred habitats. (S)

New data needed on population status, habitat specialist for declining available habitat (SC)

Round 2 Comments:

More field data needed to properly assess the status of this species (S)

No experience or knowledge of this species other than what is provided. (SC)

This is a difficult species to study since it seems to enter traps much less readily than *Peromyscus* and other rodents. Or, maybe it is just really rare. I have trapped extensively in appropriate habitat in NJ and NY and I can count on one hand the number of times I have captured this species. It needs more study. (U)

This species was encountered on a regular basis captured in bog turtle traps at sites throughout northern NJ in suitable habitat. (S)

As a habitat specialist, this species is particularly vulnerable to environmental change - anthropogenic or otherwise. Such vulnerability in a species that normally maintains a small population size in ideal habitat warrants special concern. (SC)

Round 3 Comments:

It appears obvious that insufficient data exists in NJ to support a status of E, T or SC and therefore research is needed to support a status. (S)

More field information is certainly needed on this species and I guess the way to get it is to give it a status. (SC)

Species at risk to environmental change based on habitat specialization (SC)

This species is present in Sussex County. Species-targeted trapping needed to fully assess the status of this species (SC)

Little or no experience or knowledge of this species other than what is provided. (SC)

The only substantive comments based on personal experience with the species come from individuals who recommended U or S. The comment from S informs U's suggestion that it may not be adequately sampled by conventional small mammal trapping techniques since S captured them in wet meadows with partially submerged funnel traps. I do believe that trapping effort was over a relatively large geographic area of northwest NJ. (U)

Round 4 Comments:

As previously noted this is a species at risk to environmental change based on the fact that it is a habitat specialist. If this is indeed a species that normally maintains a small population size in ideal habitat it definitely deserves SC. (SC)

We know it's here in NW NJ and we know that it shows up infrequently using conventional trapping protocols. It's either a species of special concern or one that requires species-specific surveying methods - I'm going with SC (SC)

No evidence to suggest a status of S is warranted. Species is difficult to catch within known habitats and decline of preferred habitats warrants some protection. (SC)

Once again, I have rarely captured this species anywhere and I believe it needs more study. However, I will go with a consensus for SC if the habitat is considered threatened. (SC)

SPECIES: Short-tailed shrew
Blarina brevicauda

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				6		1	
Ave Confidence				6.5		1	

Comments:

This species still seems to be common and widespread. (S)

SPECIES: Star-nosed mole
Condylura cristata

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes			1	5	1		
Ave Confidence			6	5.2	6		

Round 1 Comments:

I believe this is a common mammal; I have some records. (S)

New data needed on population status (U)

Round 2 Comments:

Common in the wet areas of Stokes. (S)

I believe this species may be in decline due to development, etc. I recall seeing them regularly as cat-kills, etc. 20 or 30 years ago, but I have not seen one anywhere in many years. (U)

SPECIES: Least shrew
Cryptotis parva

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes			1		6		
Ave Confidence			4		5.33		

Round 1 Comments:

I have only limited experience with this taxon. (U)

Unknown population size within the state, listed as endangered in nearby states (SC)

Round 2 Comments:

No knowledge of this species other than what is provided. (U)

This appears to be rare species throughout its range, although this may simply be due to lack of information. We desperately need more information on this species. I know that i have never caught it. (SC)

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

More field data needed (U)

SPECIES: Hairy-tailed mole
Parascalops breweri

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes					4	3	
Ave Confidence					5.25	1	

Comments:

New data needed on population status (U)

No known records from NJ, only from nearby PA. (U)

I have no information about this taxon. (U)

SPECIES: Eastern mole
Scalopus aquaticus

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				5		2	
Ave Confidence				6.4		1	

Comments:

I believe this is a common mammal; I have some records. (S)

SPECIES: Masked shrew
Sorex cinereus

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes				6		1	
Ave Confidence				5.83		1	

Comments:

This species seems abundant in a wide range of environments. (S)

SPECIES: Tuckahoe masked shrew
Sorex cinereus nigriculus

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes					6	1	
Ave Confidence					6	6	

Round 1 Comments:

New data needed on population status and subspecies designation (U)

I have no experience with this taxon. (NO)

The subspecies status *Sorex c. nigriculus* was confirmed through DNA analysis of specimens captured in Cape May county in the 90's. Although it may be common where it was confirmed, I am not aware of sampling adequate enough to know its true status. (U)

Round 2 Comments:

Virtually all the *Sorex* shrews need study. They are so difficult to distinguish in the field that most go unidentified. Outreach to anyone with a small mammal trapping permit would likely produce many specimens that were killed accidentally in traps set for other small mammals. This would give a better picture of all the *Sorex* species. (U)

No experience or knowledge of this species other than what is provided. (U)

DNA analysis needed on all future *Sorex* sp. captures to determine its status in NJ (U)

New data needed on population status and subspecies designation (U)

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

SPECIES: Long-tailed shrew
Sorex dispar

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes					4	3	
Ave Confidence					5.67	2.5	

Comments:

I have no experience with this taxon. (NO)

Several sampling efforts to capture this species were conducted in the 1990's without success including sampling at the one location in Sussex County where it was previously collected. It is likely rare if it still occurs at all in NJ. (U)

New data needed on population status (U)

SPECIES: Smokey shrew
Sorex fumeus

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes					7		
Ave Confidence					5.71		

Round 1 Comments:

New data needed on population status (U)

A study I conducted in the Delaware Water Gap NRA in 1993 found *Sorex fumeus* to be relatively abundant in the hemlock ecotype sampled. Prior to this study, specimens existed for Morris and Essex counties giving it a relatively wide distribution across the northern part of the state. If it is associated with hemlock forest, its future may be uncertain due to the woolly adelgid's impact on hemlock forest. (U)

Although regularly reported, the species has a restricted range in New Jersey. (U)

Round 2 Comments:

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

Although this species appears to be one of the more common small shrews in the northern part of the state, a widespread systematic trapping effort is needed to really get a handle on this species abundance. (U)

No experience or knowledge of this species other than what is provided. (U)

I agree that much more data are needed regarding this species. (U)

SPECIES: Pygmy shrew
Sorex hoyi

ROUND: 2

CONSENSUS: YES

Status	E	T	SC	S	U	NO	NA
# of Votes			1		6		
Ave Confidence			6		5.5		

Round 1 Comments:

New data needed on population status (U)

This species has a wide range, but is rarely reported. (U)

Trapped two individuals in pitfalls - represented less than 1% of total captures of *Sorex* sp. (SC)

This species was first confirmed in NJ through the study I conducted in the DWGNRA in 1993 where 5 specimens were caught. 8 specimens were also captured across the river in Pa in a similar habitat during the same study. I am not aware of any other sampling that would indicate its relative abundance or distribution in NJ (U)

Round 2 Comments:

This is a difficult species to evaluate due to its small size and cryptic habits. A concerted effort to assess populations using pitfall arrays is needed. (SC)

Unless there is data available for this species it should be assigned an unknown status. Data should be collected to support a status. (U)

No experience or knowledge of this species other than what is provided. (U)

SPECIES: Water shrew
Sorex palustris

ROUND: one

CONSENSUS: Yes

Status	E	T	SC	S	U	NO	NA
# of Votes					5	2	
Ave Confidence					6	2.5	

Comments:

I have no experience with this taxon. (NO)

New data needed on population status (U)

Not aware of any documented specimens captured in NJ although it has been documented relatively close by in Northeast Pa. Suitable habitat is present in NJ so it may occur in the northern quarter of the state. (U)

APPENDIX III

TERRESTRIAL MAMMALS - REFERENCES

- Buchanan, Alicia Nicole. 2006. Ecology of Small Mammals in the New Jersey Pinelands with Special Reference to the Southern Bog Lemming (*Synaptomys cooperi*) and Meadow Jumping Mouse (*Zapus hudsonius*). MS thesis, Drexel University.
- Craig, Lyda J., and David S. Dobkin. 1993. Community Dynamics of Small Mammals in Mature and Logged Atlantic White Cedar Swamps of the New Jersey Pine Barrens. New York State Museum Bulletin.
- FitzGerald, Randall W. Sampling Northwestern New Jersey for *Sorex palustris*, *Microtus chrotorrhinus*, and *Desmognathus ochrophaeus*. Report submitted as partial fulfillment of an agreement between New Jersey Division of Fish, Game, and Wildlife's Endangered and Nongame Species Program and the author. Montclair State University.
- Fuentes, S. 2011. Genetic diversity of bobcats in New Jersey and Pennsylvania. MS thesis, East Stroudsburg University.
- Geller, Michael D. A review of the status of the rice rat, *Oryzomys Palustris*, in New Jersey. Stockton State College.
- Hall, John S. A Report on the Status of Three Species of Small Mammals in Northern New Jersey.
- Kathleen E. Clark, James E. Applegate, Lawrence J. Niles, and David S. Dobkin. 2006. An Objective Means of Species Status Assessment: Adapting the Delphi Technique. Wildlife Society Bulletin 34 (2), 419-425.
- Roberts NM, Crimmins SM. 2010. Bobcat population status and management in North America: evidence of large-scale population increase. Journal of Fish and Wildlife Management 1(2):169–174.
- Sciascia, James C., Pehek, Ellen. 1994. Small Mammal and Amphibian Populations and Their Microhabitat Preferences Within Selected Hemlock Ecosystems in the Delaware Water Gap National Recreation Area. New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered and Nongame Species Program, Trenton, NJ.
- Snoddy, Heather W., Kirkland, Gordon L., Nelson, Kimberlyn. August 1996. Taxonomic Description and Mitochondrial DNA Analysis of the Tuckahoe Masked Shrew, *Sorex cinerus nigriculus*. Report submitted as partial fulfillment of an agreement between New Jersey Division of Fish, Game, and Wildlife's Endangered and Nongame Species Program and the author.
- Van Gelder, Richard G. 1984. The mammals of the State of New Jersey: a preliminary annotated list. 143. Bernardsville, New Jersey: Department of Natural History, New Jersey Audubon Society.