Appendix E

Rare Species Index and Blanding's Turtle Information

Environmental Review Fact Sheet Series

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(*Emydoidea blandingii*)

Minnesota Status:	Threatened	State Rank[1]:	S2
Federal Status:	none	Global Rank[1]:	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	**List 2. *Additional* recommendations for areas known to be of state-wide importance to Blanding's turtles.**
GENERAL	
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETLANDS	
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROADS	
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.	
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.
UTILITIES	
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).	
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.	
LANDSCAPING AND VEGETATION MANAGEMENT	
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.
Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is ***very important*** that the fencing be **removed <u>before August 1st</u>** so the young turtles can escape from the nest when they hatch!

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

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Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.

Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.

Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.

CAUTION

BLANDING'S TURTLES

MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-259-5764).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING'S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harms way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

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Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109

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Index Report of records within 1 mile radius of:
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Multiple TRS
Hennepin and Ramsey Counties

Element Name and Occurrence Number	Federal Status	MN Status	State Rank	Global Rank	Last Observed Date	EO ID #
Anoka, Dakota, Hennepin, Ramsey, [...] County, MN						
Ligumia recta (Black Sandshell) #337 Location Description: T32N R25W S29, T28N R23W S28, T33N R26W S26, T28N R23W S20, T [...]		SPC	S3	G5	2007-09-26	30421
Anoka, Hennepin County, MN						
Truncilla donaciformis (Fawnsfoot) #4 Location Description: T30N R24W S34, T118N R21W S12, T30N R24W S27		N/A	SNR	G5	2007-08-13	34655
Anoka, Ramsey County, MN						
Sedimentary unit or sequence (late wisconsin) (Sedimentary Unit or Sequence (Late Wisconsin)) #30 Location Description: T30N R23W S31, T30N R23W S30, T30N R24W S25, T30N R24W S36		N/A	SNR	GNR	1984	5988
Blue Earth, Brown, Carver, Chippewa, [...] County, MN						
Polyodon spathula (Paddlefish) #4 Location Description: T27N R24W S23, T115N R23W S16, T115N R23W S17, T115N R38W S28, T [...]		THR	S2	G4	2004-12-04	16501
Dakota, Hennepin, Ramsey County, MN						
Elliptio dilatata (Spike) #201 Location Description: T28N R23W S23, T28N R23W S21, T29N R23W S30, T29N R24W S25, T [...]		SPC	S3	G5	2000-06-PRE	33668
Truncilla donaciformis (Fawnsfoot) #1 Location Description: T28N R23W S17, T28N R22W S6, T28N R23W S21, T28N R23W S22, T [...]		N/A	SNR	G5	2007-09-12	34325
Dakota, Hennepin, Ramsey, Scott County, MN						
Quadrula nodulata (Wartyback) #10 Location Description: T28N R22W S7, T28N R23W S28, T28N R23W S14, T27N R24W S27, T [...]		END	S1	G4	2007-09-26	17141
Hennepin County, MN						
Acipenser fulvescens (Lake Sturgeon) #204 Location Description: T28N R24W S9, T28N R24W S8, T28N R24W S16, T28N R24W S17		SPC	S3	G3G4	1998-10-20	29926
Bat Colony (Bat Concentration) #29 Location Description: T29N R24W S25		N/A	SNR	GNR	1988	9606
Bat Colony (Bat Concentration) #40 Location Description: T29N R24W S23		N/A	SNR	GNR	2000-02-20	26176

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Hennepin County, MN						
Colonial Waterbird Nesting Area (Colonial Waterbird Nesting Site) #988 Location Description: T28N R24W S23, T28N R24W S22		N/A	SNR	GNR	1998	23723
Colonial Waterbird Nesting Area (Colonial Waterbird Nesting Site) #1037 Location Description: T118N R21W S13, T29N R24W S3, T118N R21W S12		N/A	SNR	GNR	2004-03-23	31550
Decodon verticillatus (Waterwillow) #1 Location Description: T118N R21W S9, T118N R21W S10, T118N R21W S4, T118N R21W S2, T [...]		SPC	S3	G5	1953-08-12	4428
Decodon verticillatus (Waterwillow) #2 Location Description: T118N R21W S15, T118N R21W S11, T118N R21W S10, T118N R21W S14, T [...]		SPC	S3	G5	1946-08-07	4429
Empidonax virescens (Acadian Flycatcher) #40 Location Description: T28N R24W S9		SPC	S3B	G5	1983-06-05	2946
Emydoidea blandingii (Blanding's Turtle) #100 Location Description: T28N R24W S2, T29N R24W S35		THR	S2	G4	1986-05-14	1742
Emydoidea blandingii (Blanding's Turtle) #119 Location Description: T28N R24W S23, T28N R24W S22		THR	S2	G4	1986-09-24	6823
Emydoidea blandingii (Blanding's Turtle) #423 Location Description: T28N R23W S18		THR	S2	G4	1989-09-20	10310
Emydoidea blandingii (Blanding's Turtle) #481 Location Description: T28N R24W S13, T28N R24W S12		THR	S2	G4	1989-07-01	11209
Emydoidea blandingii (Blanding's Turtle) #943 Location Description: T29N R24W S19, T29N R24W S20		THR	S2	G4	2000-09-29	27256
Erythronium propullans (Dwarf Trout Lily) #47 Location Description: T029N R24W S29	LE	END	S1	G1	2005-04-20	32311
Etheostoma microperca (Least Darter) #16 Location Description: T29N R24W S6, T29N R24W S5		SPC	S3	G5	1931-05-14	6530
Etheostoma microperca (Least Darter) #192 Location Description: T29N R24W S33		SPC	S3	G5	2006-08-21	34710
Falco peregrinus (Peregrine Falcon) #43 Location Description: T29N R24W S22	No Status	THR	S2B	G4	2006	9565

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Hennepin County, MN						
Falco peregrinus (Peregrine Falcon) #65 Location Description: T29N R23W S30, T29N R24W S25, T29N R24W S26	No Status	THR	S2B	G4	2006	2789
Falco peregrinus (Peregrine Falcon) #67 Location Description: T29N R24W S23, T29N R24W S26	No Status	THR	S2B	G4	2006	26813
Falco peregrinus (Peregrine Falcon) #76 Location Description: T29N R24W S3	No Status	THR	S2B	G4	2007	26817
Falco peregrinus (Peregrine Falcon) #82 Location Description: T29N R24W S27	No Status	THR	S2B	G4	2006	31265
Gaura biennis (Biennial Gaura) #1 Location Description: T28N R23W S18, T28N R23W S17		NON	SNR	G5	1971-10-16	4720
Huperzia porophila (Rock Clubmoss) #3 Location Description: T28N R23W S17, T28N R23W S18		THR	S2	G4	1902-09-24	4971
Mesic Prairie (Southern) Type #5 Location Description: T28N R23W S19, T28N R23W S17, T28N R23W S20, T28N R23W S18		N/A	S2	GNR	1990-07	312
Microtus ochrogaster (Prairie Vole) #14 Location Description: T28N R23W S17, T28N R23W S18		SPC	S3	G5	1917-04	2650
Notropis anogenus (Pugnose Shiner) #45 Location Description: T28N R24W S9, T28N R24W S8, T28N R24W S16, T28N R24W S17		SPC	S3	G3	1948-05-13	6500
Notropis anogenus (Pugnose Shiner) #46 Location Description: T29N R24W S30, T29N R24W S32, T29N R24W S31, T29N R24W S29		SPC	S3	G3	1941-06-05	6499
Pipistrellus subflavus (Eastern Pipistrelle) #19 Location Description: T29N R24W S25		SPC	S3	G5	1988	9605
Pipistrellus subflavus (Eastern Pipistrelle) #28 Location Description: T29N R24W S23		SPC	S3	G5	2000-02-20	26175
Psathyrella rhodospora (A Species of Fungus) #3 Location Description: T29N R23W S32, T29N R23W S30, T29N R23W S31		END	S1	G1?	2001-06-13	31914
Rana catesbeiana (Bullfrog) #30 Location Description: T29N R24W S17		NON	S4	G5	2006-08-03	33381
Southern Wet Ash Swamp Class #38 Location Description: T28N R23W S18, T28N R23W S17		N/A	S2	GNR	1994-05-12	20938

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Hennepin County, MN						
Tamarack Swamp (Southern) Type #97 Location Description: T29N R24W S30, T29N R24W S29		N/A	S3	GNR	1998-01-26	22787
Valeriana edulis ssp. ciliata (Valerian) #25 Location Description: T28N R24W S5, T29N R24W S28, T29N R24W S32, T29N R24W S31, T [...]		THR	S2	G5T3	1891-05	5850
Wilsonia citrina (Hooded Warbler) #16 Location Description: T29N R24W S30, T29N R24W S20, T29N R24W S29, T29N R24W S19		SPC	S3B	G5	1979-05-10	25060
Hennepin, Ramsey County, MN						
Actinonaias ligamentina (Mucket) #6 Location Description: T28N R23W S19, T28N R23W S17, T28N R23W S16, T28N R23W S8, T [...]		THR	S2	G5	1977-08	1410
Alasmidonta marginata (Elktoe) #114 Location Description: T28N R23W S22, T28N R23W S21, T28N R23W S20, T28N R23W S17		THR	S2	G4	2001-07-19	31513
Carex formosa (Handsome Sedge) #2 Location Description: T28N R23W S8, T29N R23W S31, T28N R23W S5, T28N R23W S6, T [...]		END	S1	G4	1924-06-11	3982
Carex plantaginea (Plantain-leaved Sedge) #1 Location Description: T28N R23W S18, T28N R23W S20, T28N R23W S17		END	S1	G5	1903-05-06	4074
Cycleptus elongatus (Blue Sucker) #49 Location Description: T28N R23W S17		SPC	S3	G3G4	2003-05-16	21082
Cycleptus elongatus (Blue Sucker) #92 Location Description: T28N R23W S17, T28N R23W S20		SPC	S3	G3G4	2007-04 and 08	28393
Falco peregrinus (Peregrine Falcon) #63 Location Description: T28N R23W S17	No Status	THR	S2B	G4	2005	5720
Lampsilis higginsi (Higgins Eye) #34 Location Description: T28N R23W S8	LE	END	S1	G1	2002-05-30	33164
Ligumia recta (Black Sandshell) #19 Location Description: T28N R23W S19, T28N R23W S17, T28N R23W S16, T28N R23W S8, T [...]		SPC	S3	G5	1977-08	2526
Ligumia recta (Black Sandshell) #260 Location Description: T28N R23W S17		SPC	S3	G5	2000-08-18	28348
Native Plant Community, Undetermined Class #907 Location Description: T28N R23W S18, T28N R23W S17		N/A	SNR	GNR	1994-08-10	20940

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Hennepin, Ramsey County, MN						
Quadrula nodulata (Wartyback) #29 Location Description: T28N R23W S5, T29N R23W S30, T29N R24W S25, T28N R23W S8, T29N R23W S31		END	S1	G4	2001-07-17	31456
Stream erosion (holocene) (Stream Erosion (Holocene)) #4 Location Description: T28N R23W S18, T28N R23W S8, T28N R23W S7, T28N R23W S17		N/A	SNR	GNR	1972	142
Ramsey County, MN						
Carex formosa (Handsome Sedge) #1 Location Description: T28N R23W S17, T28N R23W S20		END	S1	G4	1937-06-17	3981
Cicindela lepida (Little White Tiger Beetle) #6 Location Description: T29N R23W S21, T29N R23W S16, T29N R23W S17		THR	S2	G3G4	1924-07-08	26810
Elaphe vulpina (Western Fox Snake) #17 Location Description: T28N R23W S4, T29N R23W S33, T28N R23W S3, T29N R23W S27, T [...]		NON	S4	G5	1939-10-12	8075
Liparis liliifolia (Lilia-leaved Twayblade) #1 Location Description: T29N R23W S17, T29N R23W S16, T29N R23W S20, T29N R23W S21		NON	SNR	G5	1969-06-06	4922
Nicrophorus americanus (American Burying Beetle) #6 Location Description: T29N R23W S22, T29N R23W S16, T29N R23W S21		NON	SX	G2G3	1935-07-05	11815
Nicrophorus americanus (American Burying Beetle) #7 Location Description: T29N R23W S29, T29N R23W S20, T29N R23W S21		NON	SX	G2G3	1921	11816
Psathyrella rhodospora (A Species of Fungus) #4 Location Description: T29N R23W S21		END	S1	G1?	2004-10	31930

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