

5-YEAR REVIEW

Iowa Pleistocene Snail (*Discus macclintocki*)

GENERAL INFORMATION:

Species: Iowa Pleistocene Snail

Date listed: August 2, 1978

FR citation(s): 43 FR 28930

Classification: Endangered

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BACKGROUND:

Most recent status review: U.S. Fish and Wildlife Service. 2013. Iowa Pleistocene snail (*Discus macclintocki*) 5-year review: summary and evaluation. Rock Island, Illinois Ecological Services Field Office, Rock Island, IL. 25 pp. Finalized August 2013.

FR Notice citation announcing this status review: 82 FR 18156, Initiation of 5-Year Status Review of Eight Endangered Animal Species and Request for Information, April 17, 2017.

ASSESSMENT:

The U.S. Fish and Wildlife Service's Illinois-Iowa Field Office conducted this 5-year review. We solicited data for this review from interested parties through a Federal Register notice announcing this review on April 17, 2017. We did not receive any new information from that request for data.

New information in this status review is largely from monitoring efforts conducted by the Illinois-Iowa Field Office and the Driftless Area National Wildlife Refuge in 2014 and 2015, and summarized in a 2015 report (Rock Island Field Office 2015). We conducted that monitoring with funding from a 2013 Cooperative Recovery Initiative award.

Throughout this status review and as described in the 2013 status review, we use the term 'location' instead of 'colony' as it relates to IPS recovery criteria described in the Recovery Plan

(U.S. Fish and Wildlife Service 1984 and 2013). Locations represent our current understanding of the biologically distinct populations of IPS.

In this status review, we continue to use the term “protected” to describe IPS locations. The 1984 recovery plan first used the term but did not define it. The 2009 and 2013 status reviews interpreted the term to mean locations where the land ownership or management (e.g., State owned and managed, conservation easements or agreements) provide the ability to control access and restrict land use that can lead to habitat degradation (e.g., timber clearing, road use, quarrying).

In this status review, we categorize location occupancy based on the presence of live snails. All locations evaluated in this review were historically occupied. We consider locations as occupied if during surveys, biologists observed live snails. If biologists did not observe live snails, we do not consider the location to be currently occupied.

Information acquired since the last status review:

1. New information on the species’ biology and life history:

No new information regarding the biology or life history of the Iowa Pleistocene snail (IPS) has become available since the last status review.

2. Spatial distribution, trends in spatial distribution (e.g., increasingly fragmented, increased numbers of corridors), or historical range (e.g., corrections to the historical range, change in distribution of the species’ within its historical range):

The spatial distribution of the IPS remains consistent with its historical range (Rock Island Field Office 2015).

3. New information on threats:

Threats at IPS locations remain similar to those described in the 2013 status review and include heavy foot traffic and trampling from recreational hiking, scientific investigations, and educational programs; invasive species; pollution; and climate change. We present additional information about invasive species, and heavy foot traffic and trampling below under *Habitat or ecosystem conditions*.

4. Abundance, population trends (e.g., increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate), or demographic trends:

Between 1980 and the present, biologists have conducted three main monitoring efforts for the IPS, the most recent of which occurred since the last status review. Frest (1981, 1982, 1985, 1986, and 1987) led the first major effort from 1980 to 1986, and documented live IPS at 38 locations in Illinois, Iowa, and Wisconsin (Table 1). Henry conducted a second major effort from 2000 to 2006, monitoring 14 of the 38 known locations and documenting live snails at 12 of the locations, relict shells at one, and no shells at one (Rock Island Field Office 2015). In 2014 and 2015, we monitored 36 of the

38 known locations (access to two sites was not permitted by the private landowner) and documented live shells at 22 locations, relict shells at ten, and no shells at four. These monitoring efforts indicate that live IPS were present at fewer sites during the 2014 and 2015 surveys than in the 1980s.

Table 1. IPS presence and absence information from monitoring efforts conducted since 1980.

| IPS Site Number | Site Name | Protection Status | Frest 1980-1986 ¹ | Henry 2001-2007 ² | CRI 2014-2015 ³ |
|-----------------|------------------------|-------------------|------------------------------|------------------------------|----------------------------|
| 1 | Bankston East | Protected | Yes | Not Monitored | No |
| 2 | Bankston West | Protected | Yes | Yes | Yes |
| 3 | Bear Creek 3 | Unprotected | Yes | Not Monitored | Yes |
| 4 | Bear Creek 4 | Unprotected | Yes | Not Monitored | Yes |
| 5 | Bear Creek 5 | Unprotected | Yes | Yes | Yes |
| 6 | Bixiby East 1 | Protected | Yes | Not Monitored | No |
| 7 | Bixiby East 2 | Protected | Yes | Not Monitored | No |
| 8 | Bixiby West | Protected | Yes | Yes | Yes |
| 9 | Bluebell Hollow 2 | Unprotected | Yes | Not Monitored | Yes |
| 10 | Private Lands | Unprotected | Yes | Not Monitored | Not Monitored |
| 11 | Brush Creek East | Protected | Yes | Relict Shells | Yes |
| 12 | Buck Creek Tributary | Unprotected | Yes | Not Monitored | Yes |
| 13 | Buck Creek 1 | Protected | Yes | Yes | Yes |
| 14 | Buck Creek 2 | Protected | Yes | Yes | Yes |
| 15 | Buck Creek 3 | Protected | Yes | Not Monitored | Yes |
| 16 | Buck Creek 7 | Protected | Yes | Not Monitored | Yes |
| 17 | Buck Creek 5 | Protected | Yes | Not Monitored | Yes |
| 18 | Buck Creek 6 | Protected | Yes | Not Monitored | Yes |
| 19 | Cowbranch West | Protected | Yes | Yes | Relict Shells |
| 20 | Elk River | Unprotected | Yes | Not Monitored | Relict Shells |
| 21 | Fern Ridge (Slope) | Protected | Yes | Not Monitored | Relict Shells |
| 22 | Fern Ridge (Drainage) | Protected | Yes | Yes | Yes |
| 23 | Fern Ridge (Spring) | Protected | Yes | Yes | Yes |
| 24 | Fern Ridge (Private) | Unprotected | Yes | Yes | Yes |
| 25 | Hewett Creek | Unprotected | Yes | Not Monitored | Relict Shells |
| 26 | Howard Creek 2 (Slope) | Protected | Yes | Not Monitored | No |
| 27 | Howard Creek 3 (Cliff) | Protected | Yes | Yes | Yes |
| 28 | Little Maquoketa 1 | Unprotected | Yes | Not Monitored | Relict Shells |
| 29 | Little Maquoketa 2 | Unprotected | Yes | Not Monitored | Relict Shells |
| 30 | Louse Hollow 5 | Unprotected | Yes | Not Monitored | Yes |
| 31 | Lytle Creek 6 | Protected | Yes | Yes | Yes |
| 32 | Pine Creek 2 | Protected | Yes | Not Monitored | Yes |

¹ Frest 1981, 1982, 1985, 1986, 1987

² Driftless Area National Wildlife Refuge 2015

³ Rock Island Field Office 2015

| IPS Site Number | Site Name | Protection Status | Frest 1980-1986 ¹ | Henry 2001-2007 ² | CRI 2014-2015 ³ |
|-----------------|----------------------|-------------------|------------------------------|------------------------------|----------------------------|
| 33 | Private Lands | Unprotected | Yes | Not Monitored | Not Monitored |
| 34 | Steele's Branch 3 | Unprotected | Yes | Not Monitored | Yes |
| 35 | White Pine Hollow 2 | Protected | Yes | Yes | Relict Shells |
| 36 | White Pine Hollow 55 | Protected | Yes | Not Monitored | Relict Shells |
| 37 | White Pine Hollow 46 | Protected | Yes | Not Monitored | Relict Shells |
| 38 | Yonkers Bluff | Protected | Yes | No | Relict Shells |

Characterizing the status of IPS populations at these locations as increasing, stable, or decreasing is complicated by several factors. First, researchers for these three monitoring efforts used different survey methodology making comparing the results difficult. Also, we observed from Henry's monitoring effort that there is high inter-annual variability for snail encounters; where many snails were encountered in one year in one location, few or no snails were likely to be encountered in the same location in subsequent years (Rock Island Field Office 2015). In addition, past population estimates suggest snail abundance varies temporally and spatially within a location (Rock Island Field Office 2015). Because of these factors, the existing information does not allow us to assess population trends, and creates uncertainty about population numbers and any conclusions about whether a location is extirpated.

5. Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding):

Biologists collected DNA samples from IPS during the 2014 and 2015 survey efforts. Researchers completed analyses to confirm that biologists in the field are highly accurate (99.5%) in species identification of IPS (Rock Island Field Office 2015). Researchers need at least 20 samples per location in order to analyze genetic diversity. During these efforts, biologists only collected a sufficient number of samples at four of the IPS locations. Biologists would need to collect additional samples in the future to support further population genetic analyses.

6. Taxonomic classification or changes in nomenclature:

There are no changes to the taxonomic classification or nomenclature of the IPS since the last status review.

7. Habitat or ecosystem conditions (e.g., amount, distribution, and sustainability of the habitat or ecosystem):

Since the last status review, we have new information on the distribution of IPS habitat and on changes in the plant species composition of IPS habitat. In 2014 and 2015, we monitored 129 algific talus slopes for IPS and evaluated if habitat was present (Rock Island Field Office 2015). We considered a slope to have IPS habitat if suitable plant species and cold air vents were present. Of these 129 slopes, biologists determined 58 slopes were unsuitable to support IPS, but 71 slopes had IPS habitat. We will incorporate this information to focus future monitoring efforts on slopes with IPS habitat and any

new slopes we determine could have habitat. We do not recommend re-monitoring the 58 slopes without habitat.

During the 2014 and 2015 monitoring effort, biologists observed changes in plant species composition that may impact IPS (Rock Island Field Office 2015). Based on feeding trials conducted by Frest, IPS forage on a number of different species including paper and yellow birch, but Frest observed IPS did not eat basswood (1981). During the 2014 and 2015 monitoring effort, biologists observed that basswood recruitment was high at multiple algific talus slopes at IPS locations. They also noted similarly to our 2009 status review (U.S. Fish and Wildlife Service 2009) that buckthorn and garlic mustard were invading multiple priority algific talus slopes. The increased occurrence of these plant species may be resulting in a decline in suitable IPS forage species. Although biologists made no quantitative measure of birch trees (the preferred forage in Frest's trials) during the 2014 and 2015 monitoring, they anecdotally observed birch mortality throughout their efforts (Rock Island Field Office 2015). We cannot make strong conclusions about IPS habitat from these observations, but it does suggest suitable forage species may be declining at IPS locations. Further monitoring to inform this data gap should be completed.

Although we do not have new, specific information, we continue to be concerned about heavy foot traffic and trampling and their impacts to the fragile algific habitat where IPS occur. Recreational hiking, educational programs, scientific investigations and research, and population monitoring are all sources of trampling and habitat disturbance. Whether we consider a location to be "protected" or not, restricting access and foot traffic in all IPS locations may be required to minimize further habitat degradation.

Summary:

Based on the information we collected since the last status review and our assessment of existing data, the criteria for downlisting the IPS have not been met. The downlisting criteria are 16 permanently protected locations (colonies) with stable or increasing populations. As previously described, existing data does not allow us to accurately assess population trends, so we are unable to assess whether populations at IPS locations are stable or increasing. Furthermore, although we consider 24 of the historically occupied locations to be permanently protected, only 14 of these locations currently are occupied by IPS (Rock Island Field Office 2015). In addition, monitoring efforts suggest negative changes in plant species composition at some IPS locations. And lastly, we have not documented reductions in threats to the IPS. Based on these factors, the best scientific information currently available does not meet the criteria to downlist the species from endangered to threatened.

Conclusion:

After reviewing the best available scientific information, we conclude that the Iowa Pleistocene snail remains an endangered species. The evaluation of threats affecting the species under the factors in 4(a)(1) of the Act and analysis of the status of the species in our 2013 status review remains an accurate reflection of the species current status.

RECOMMENDATIONS FOR FUTURE ACTIONS:

- Develop a study to evaluate changes in plant species composition at IPS locations. Results would be used to assess habitat at IPS locations, and inform future restoration and habitat management efforts in order to recover the species.
- Develop and incorporate best management practices into future monitoring efforts to reduce any impacts from biologists conducting the monitoring.
- Develop and implement a consistent monitoring protocol for IPS that will allow results to be compared and used to assess population number and trends. This would be used to assess recovery of the species.
- Develop standards to evaluate and determine extirpation of IPS locations where live snails were documented in the past. This would inform future monitoring efforts and our assessment on recovery of the species.
- Work with others to conserve unprotected lands where biologists have encountered live IPS. This would directly support achieving recovery of the species.

Current Classification: Endangered

Recommended Classification:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change is needed

Field Supervisor, Illinois-Iowa Field Office, Fish and Wildlife Service

Approve _____ Date _____

LITERATURE CITED:

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