Interim Core Map Documentation for Ash meadows Naucorid

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Draft Interim Core Map Developer: Center for Biological Diversity (CBD)
The U.S. Environmental Protection Agency (EPA) supplemented the analysis and documentation[1]

Species Summary

The Ash Meadows naucorid (*Ambrysus amargosus*; Entity ID #439) is a threatened aquatic insect. This species is endemic to the Point of Rocks Springs and their outflow in Ash Meadows National Wildlife Refuge, Nye County, Nevada. This species has no known populations outside of the refuge. The 2020 5-year review states that the Ash Meadows naucorid occupies five brooks at Point of Rocks that function as a single population. There is a designated critical habitat for this species.

Description of Core Map

The core map for the Ash Meadows naucorid is based on critical habitat. All known occurrences of this species fall within the critical habitat. EPA did not find evidence that any key areas for this species exist outside of the designated critical habitat. A long-term recovery action for this species is to protect the current and historic locations of the Ash Meadows naucorid, and these locations fall within the critical habitat. **Figure 1** depicts the interim core map for the Ash Meadows naucorid (green areas on map). The core map represents approximately 0.135 acres.

The Ash Meadows naucorid is endemic to the Point of Rocks springs in Ash Meadows National Wildlife Refuge. Landcover categories within the core map area are included in **Table 1**. Landcover within the core map is shrub/scrub and woody wetland, which surround the spring in approximately equal amounts. Agricultural areas are not located within the critical habitat.

The core map developed for the Ash Meadows naucorid is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Ash Meadows naucorid. This core map incorporates information developed by the U.S. Fish and Wildlife Service (FWS) and made available to the public; however, the core map has not been formally reviewed by FWS. This interim core map may be revised in the future to incorporate expert feedback from FWS. This interim core map has a "limited" best professional judgment classification because it consists of the species' critical habitat without additions or subtractions. However, EPA did limit the core map only to designated critical habitat based on interpretation of FWS documentation. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

[1] CBD sent EPA a draft core map for this species before EPA released its mapping process document and example documentation. EPA used CBD's map as the basis for this core map and modified it based on re-evaluation of the available information. EPA supplemented the documentation and supporting analysis for consistency with recent documentation for other maps.

Figure 1. Interim core map for the Ash Meadows naucorid. Total acreage of the interim core map is approximately 0.135 acres (5,872 square feet).

Table 1. Percentage of Interim Core Map (Critical Habitat) Represented by NLCD[2] Land Covers and Associated Example Pesticide Use Sites/Types.

Example pesticide use sites/types	NLCD Landcover (Value)	% of core map represented by landcover	% of core map represented by example pesticide use
Forestry	Deciduous Forest (41)	0	0
Forestry	Evergreen Forest (42)	0	0
Forestry	Mixed Forest (43)	0	0
Agriculture	Pasture/Hay (81)	0	0
Agriculture	Cultivated Crops (82)	0	0
Mosquito adulticide, residential	Open space, developed (21)	0	0
Mosquito adulticide, residential	Developed, Low intensity (22)	0	0
Mosquito adulticide, residential	Developed, Medium intensity (23)	0	0
Mosquito adulticide, residential	Developed, High intensity (24)	0	0
Invasive species control	Woody Wetlands (90)	50	100

Example pesticide use sites/types	NLCD Landcover (Value)	% of core map represented by landcover	% of core map represented by example pesticide use
Invasive species control	Emergent Herbaceous Wetlands (95)	0	100
Invasive species control	Open water (11)	0	100
Invasive species control	Grassland/herbaceous (71)	0	100
Invasive species control	Scrub/shrub (52)	50	100
Invasive species control	Barren land (rock/sand/clay; 31)	0	100
Total Acres	**Interim Core Map Acres**	**~0.135**	

Evaluation of Known Location Information

There are four datasets with known location information for this species:

- Descriptions of locations provided by FWS,
- Occurrence locations in iNaturalist;
- Occurrence locations in GBIF; and
- Occurrence locations in NatureServe.

EPA evaluated these sets of data before selecting the type of and developing the core map. FWS' Recovery Plan and most recent 5-year review (2020) detailed known locations of this species. FWS described one documented occurrence of an extant population. iNaturalist had one research grade observation. A map from NatureServe showed one location but did not contain any details or exact coordinates. GBIF contained no additional data that were not already included in iNaturalist or NatureServe. The iNaturalist and NatureServe data had a coarse resolution, and EPA could not determine conclusively if these data fell within the critical habitat; however, they generally appear to be consistent with the locations of the range and critical habitat. **Appendix 1** includes more information on the available known location information.

Approach Used to Create Core Map

The core map was developed using the "Process EPA Uses to Develop Core Maps for Draft Pesticide Use Limitation Areas for Species Listed by the U.S. Fish & Wildlife Service (FWS) and their Designated Critical Habitats"[3] (referred to as "the process"). This core map was developed by EPA and was developed using the 4 steps described in the process document:

1. Compile available information for a species;
2. Identify core map type;
3. Develop the core map for the species; and
4. Document the core map.

[3] Dated 2024, available online at: https://www.epa.gov/endangered-species/process-epa-uses-develop-core-maps-pesticide-use-limitation-areas

For step 1, the developer compiled available information for the Ash Meadows naucorid from FWS as well as observational information available from various publicly available sources (discussed in previous section). The information compiled for the Ash Meadows naucorid is included in **Appendix 1**.

For step 2, EPA used the compiled information to identify the core map type, including the species range, critical habitat, and known location information. EPA compared known location data to the range and critical habitat and found that the FWS known locations of currently existing (extant) populations are consistent with the location of the designated critical habitat. The species range is not likely limited to the areas containing habitat of the species and is much larger than the areas where known locations occur. Based on this information, designated critical habitat was chosen as the core map.

For step 3, the designated critical habitat provided by FWS for Ash Meadows Naucorid was used (https://ecos.fws.gov/ecp/).

Discussion of Approaches and Data that were Considered but not Included in Core Map

The core map was initially chosen as the boundaries of the Ash Meadows National Wildlife Refuge. EPA notes that there are several listed species within the Ash Meadows Wildlife Refuge. Core maps will be developed for each species. However, the combined map for the refuge is much larger than the critical habitat and the range. Re-evaluation determined the critical habitat is sufficient to capture all extant population.

Appendix 1. Information Compiled for Species During Step 1

1. **Recent FWS Documents/Links**
   - FWS, "Recovery Plan for the Endangered and Threatened Species of Ash Meadows Nevada," – (9/28/1990)
   - FWS. "5-YEAR REVIEW Ash Meadows Naucorid (*Ambrysus Amargosus*)" - (9/30/2020)
   - There is no Species Status Assessment currently available.

2. **Background information**
   - **Status**:
     - Federally listed as threatened in 1985
   - **Taxonomy**:
     - The Ash Meadows naucorid is an aquatic insect (Order Hemiptera, Family Naucoridae).
   - **Resiliency**, **Redundancy**, **Representation**:
     - No discussion of the resiliency, redundancy, and representation is available in the Recovery Plan or 2020 5-year review.
     - Due to the small endemic nature of the species, redundancy and representation are expected to be low.
   - **Habitat, Life History, and Ecology:**
     - **Habitat**:
       - "This aquatic insect is known to occupy an extremely restricted habitat where flowing water passes over rock and pebble substrates at Point of Rocks Springs (La Rivers 1953)." (FWS, 1990)
     - **Reproduction:**
       - "Reproduction occurs during early spring and summer. Female naucorid bugs deposit demersal eggs that adhere to the substrate during incubation (Usinger 1946). The small size and vulnerability of its habitats makes the naucorid highly susceptible to extirpation." (FWS, 1990)
     - **Life History Information:**
       - **"**Although little is known about its life history or habitat requirements, food for closely related naucorids includes aquatic insect larvae that are preyed upon while the bug swims over and through the substrate (La Rivers 1951, Polhemus 1979)." (FWS, 1990)
   - **Essential Physical Biological Features (PBFs) for Designated Critical Habitat:**
     - None found in any documents.
   - **Relevant Pesticide Use Sites in FWS Documents**
     - None found in FWS documents.
   - **Relevant Recovery Criteria and Actions**

- Downlisting criteria: The following criteria must be met for a period of 5 years to downlist the Ash Meadows naucorid and other threatened species in the Ash Meadows ecosystem. (FWS, 1990)
    1. All non-native animals and plant species must be eradicated from essential habitat.
    2. Secure and protect the Ash Meadows aquifer so that all spring flows return to historic discharge rates, and the water level in Devil's Hole is maintained at a minimum level of 1.4 feet below the copper washer.
    3. Reestablish water to historic springbrook channels which are free of barriers that eliminate genetic exchange between populations by preventing movement of native fishes throughout their historic range.
    4. The essential habitat must be secure from detrimental human disturbances including mining, off-road vehicles, and introduction of non-native species.
    5. All listed fish species are present in all the springs that they have occupied historically as identified in Appendix A, Table XIII.
    6. Amargosa niterwort is present in all localities that it has occupied historically as identified in Appendix A, Table XV.
    7. Establish and protect refugia populations of Devil's hole pupfish at hoover Dam and Amargosa Pupfish Station.
    8. Maintain a population off not less than 300 Devil's Hole pupfish individuals during the winter and 700 during late summer and early autumn.
- De-listing criteria include: The following criteria must be met for a period of 5 years to de-list the Ash Meadows naucorid and other threatened species in the Ash Meadows ecosystem. (FWS, 1990)
    1. Criteria shown above for downlisting.
    2. Secure, protect, and maintain in natural vegetation corridors and adjacent buffer areas for gene flow and dispersal of listed plant species within the essential habitat.
    3. Native plant communities and aquatic communities have been reestablished to historic structure and composition within all essential habitats.
    4. Each individual spring or stream population of Warm Springs pupfish, Ash Meadows Amargosa pupfish, and Ash Meadows speckled dace have sex ratios and juvenile-to-adult ratios that support self-sustaining populations as determined by Task 626.
    5. The listed Ash Meadows naucorid, the two candidate aquatic insects, and 13 candidate snails are present in all locales that they have historically occupied as identified in Appendix A, Table XIII.
    6. All the listed plant species and the four candidate plant species are present in all the sites that they have historically occupied as identified in Appendix A, Table XV and within each critical habitat unit, the listed plant has a frequency value equal to or greater than the frequency value determined by Task number 644 needed as an indicator of a self-sustaining plant population.

- **Overall threat statement**
    - "This species was the first insect to be listed as threatened under the Act. Threats to the Ash Meadows naucorid that were identified when it was listed included ground water depletion causing reduced spring discharge and spring modification (Factor

A); scientific over collection (Factor B); and predation by introduced fish and crayfish (Factor C). The threat of scientific over collection is reduced as a result of its listing" (FWS, 2020)

- **Evidence of pesticide threat**
  - Pesticides are not mentioned in the 1990 Recovery Plan for the species of Ash Meadows NWR.
  - There is no agriculture within the NWR.
  - In a document found via an internet search, the label for Vargon mentions that the product should not be used within the occupied habitat (burrow) of the threatened Ash Meadows naucorid in Nye County, Nevada (https://www3.epa.gov/pesticides/chem_search/ppls/072919-00001-20030324.pdf)
- **Relevant pesticide use sites**
  - Pesticides are not mentioned in the 1990 Recovery Plan for the species of Ash Meadows NWR.

3. Description of the species range

- The current geographic range is restricted to the Point of Rocks Springs in Ash Meadows National Wildlife Refuge, Nye County, Nevada (FWS, 2020).
  - Figure A1-1 depicts the current FWS species range (last updated Nov. 5, 2021) and critical habitat.
  - The species range is approximately 444 acres.

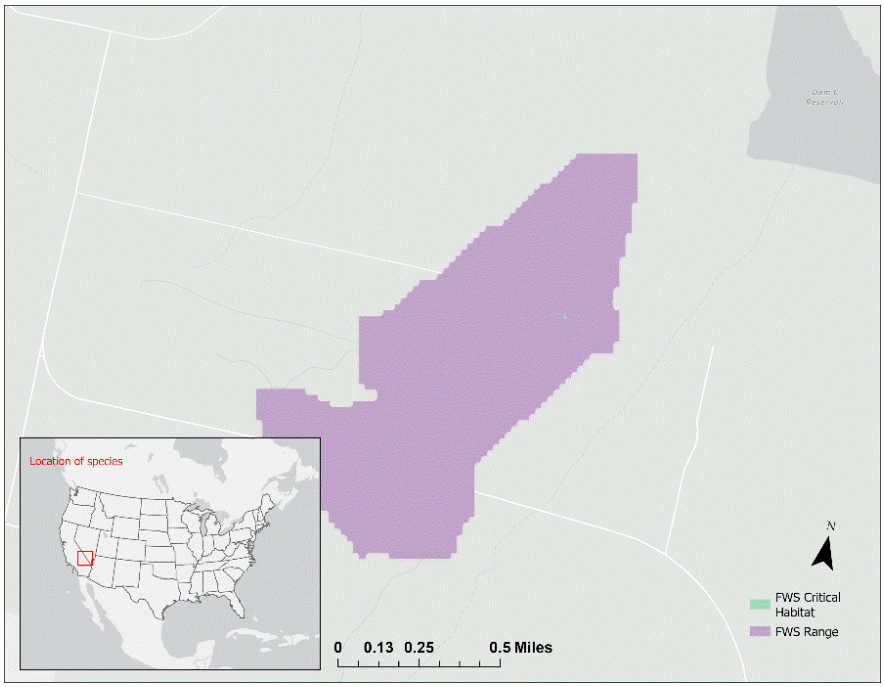

Figure A1-1. FWS Range and Critical Habitat of the Ash Meadows naucorid.

4. Critical Habitat (Source: 2020 Five Year Review)

- The Ash Meadows naucorid critical habitat designation was established in 1985.
- The critical habitat is approximately 0.135 acres (5,872 square feet).

- Figure A1-2 depicts the current critical habitat.

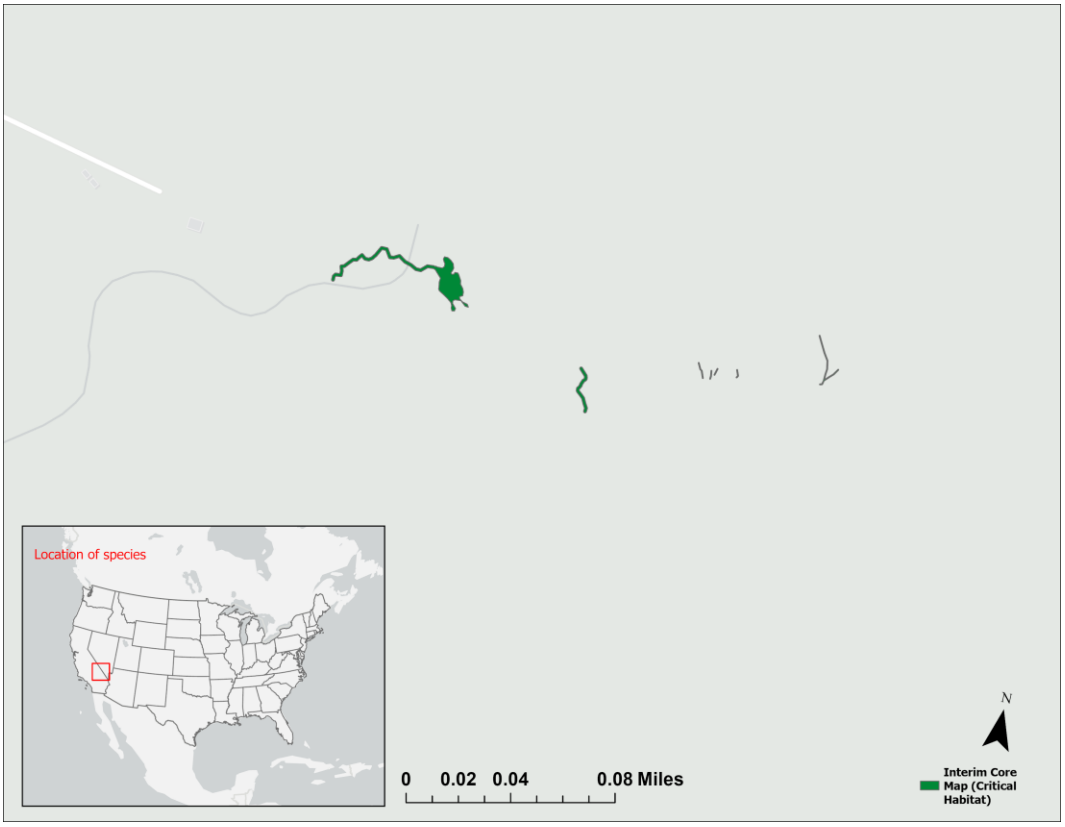

Figure A1-2. FWS critical habitat of the Ash Meadows naucorid.

5. **Known Locations**
    - **Described in FWS Documents**
        - There is currently one known occurrence of **Ash Meadows naucorid**.
        - **Figure A1-3** depicts the known location data in FWS' most recent 5-year review.
        - When considering the location of the current extant populations (**Figure A1-3**), it is consistent with the location of the critical habitat (**Figure A1-2**).
        - NatureServe included one location but did not contain any details or exact coordinates.
        - GBIF contained no additional data that were not already included in iNaturalist or NatureServe.

    - **Occurrences in iNaturalist**
        - iNaturalist was searched on Feb. 27, 2025.
        - https://www.inaturalist.org/observations/export?verifiable=true&page=1&spam=false&taxon_id=213347&place_id=any&user_id=&project_id=&quality_grade=research

- iNaturalist had one research grade observation.
- The iNaturalist data had a coarse resolution (Public positional accuracy = 28,534 m), and EPA could not determine conclusively if these data fell within the critical habitat; however, they generally appear to be consistent with the locations of the range and critical habitat.

- **Occurrences in NatureServe**
  - NatureServe was searched on Feb. 27, 2025.
  - https://explorer.natureserve.org/pro/Map?taxonUniqueId=ELEMENT_GLOBAL.2.118801
  - NOTE: Feature layers (polygons and points) were empty in the geodatabase downloaded from NatureServe.
  - Based on the map on their website, the data generally appear to be consistent with the locations of the range and critical habitat.

- **Occurrences in GBIF**
  - GBIF was searched on 2Feb. 27, 2025.
  - https://www.gbif.org/occurrence/charts?basis_of_record=HUMAN_OBSERVATION&basis_of_record=OBSERVATION&basis_of_record=OCCURRENCE&taxon_key=2020311&year=2010,2025
  - There was one human observation made from 2010 -> 2025.
  - The GBIF data had a coarse resolution (Coordinate Uncertainty = 28,534 m), and EPA could not determine conclusively if these data fell within the critical habitat; however, they generally appear to be consistent with the locations of the range and critical habitat.

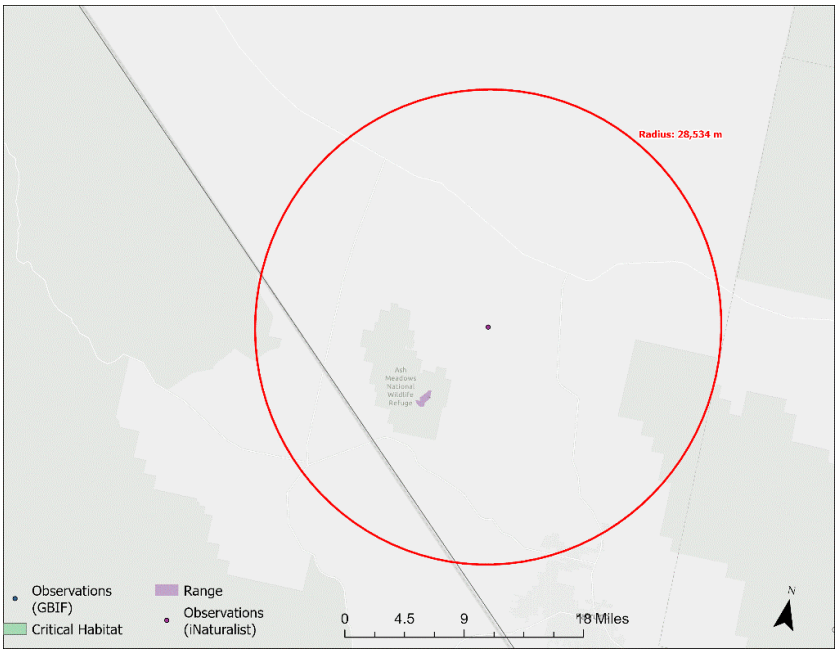

Figure A1-3. Known locations of Ash Meadows naucorid.

All sources of occurrence data report one population at the same location and all sources report the same coarse spatial resolution (28,534 m). Considering this uncertainty, it cannot be shown that the population is outside the critical habitat (**Figure A1-3**). Therefore, the occurrence data from iNaturalist, NatureServe, and GBIF do not support expanding the core map beyond the designated critical habitat.