Interim Core Map Documentation for the Slenderclaw Crayfish (*Cambarus cracens*)

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Draft Interim Core Map Developer: TKI

EPA Review Notes

The developers created this core map using the U.S. Environmental Protection Agency's (EPA) process available at: https://www.epa.gov/endangered-species/process-epa-uses-develop-core-maps-pesticide-use-limitation-areas. EPA reviewed the draft interim map and documentation and evaluated if: (1) the map and documentation are consistent with the agency's process; (2) areas included or excluded from the interim core map are consistent with the biology, habitat, and/or recovery needs of the species; (3) data sources are documented and appropriate; and (4) the GIS data and mapping process are consistent with the stated intention of the developer. EPA agrees that this map is a reasonable depiction of core areas for this species and was consistent with the agency's mapping process. This documentation was not prepared by EPA, but EPA may have edited this documentation for clarity or other purposes. This documentation may contain views that are not necessarily held by EPA or its staff.

The core map is based directly on critical habitat supported by element occurrences. Areas of the range not included in designated critical habitat were not included in the interim core map based on review of FWS documents. The best professional judgement level associated with this core map is limited (2). The core map developed for this species is considered interim and can be used to develop pesticide use limitation areas (PULAs). This core map incorporates information developed by 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 core map does not replace or revise any range or designated critical habitat developed by FWS.

Draft core map development for species and critical habitat

ArcGIS Pro 3.3 was used to perform all spatial operations.

Basis for Core Map: The draft core map for this species is the critical habitat.

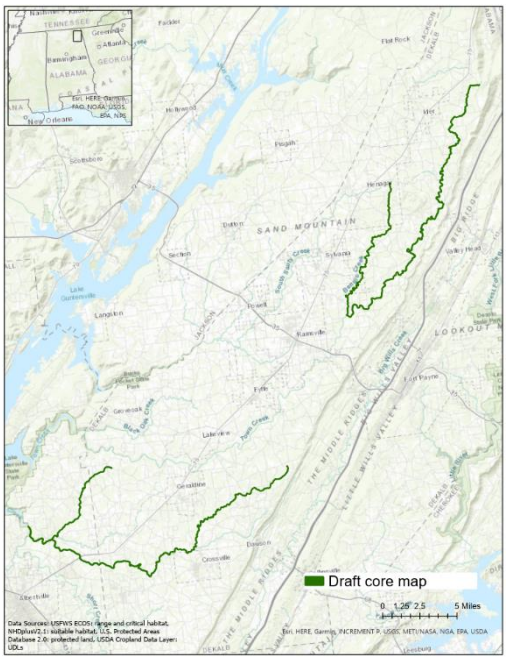

Figure 1. Draft core map for the slenderclaw crayfish based on the critical habitat.

Percentage of Interim Core Map Represented by NLCD[1] Land Covers and Associated Example Pesticide Use Sites/Types

Key Core Area Inputs

Sourced from most up-to-date documentation available on ECOS.

Habitat	Descriptions/Datasets
Range	Updated 2021
Critical habitat	Designated 2021
Suitable habitat	Recovery plan (2025): occupies small to medium flowing streams (20 feet/6 meters wide and 2.3 feet/0.7 meters deep or less) with minimal turbidity. It is a tertiary burrower so they will burrow when necessary.
Known locations (General Descriptions)	Recovery plan (2025): Endemic to two Tennessee River Basin watersheds along Sand Mountain in Alabama. The slenderclaw crayfish consists of two populations: Short Creek and Town Creek. The Short Creek population includes Shoal Creek, Scarham Creek, and Short Creek. The Town Creek population includes Town Creek and Bengis Creek (see figure below).
Element occurrences	Current/historic collection points shown in figure below. iNaturalist has 2 occurrence points with coordinates; locations are fuzzed. GBIF and NatureServe were searched for occurrence data; however, the occurrences found did not impact the core map.
Relevant recovery criteria	Recovery plan (2025): The recovery strategy is to implement actions and activities that enhance resiliency of the Short Creek and Town Creek slenderclaw populations to moderate and higher levels.

Datasets Used in Core Map Development

- ECOS Datasets:
  - Most recent species range: https://ecos.fws.gov/docs/species/shapefiles/usfws_complete_species_current_range.zip
  - Most recent species critical habitat downloaded via aggregate feature class, current update status checked on individual species page: https://ecos.fws.gov/ecp/report/critical-habitat
  - Recovery Plan for Slenderclaw Crayfish: 2025 https://ecos.fws.gov/docs/recovery_plan/082445%2020250320_SlenderclawCrayfish_RP.pdf
  - Species Status Assessment Report for the Slenderclaw Crayfish: 2019 https://iris.fws.gov/APPS/ServCat/DownloadFile/204186

[1] Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, https://doi.org/10.5066/P9JZ7AO3

    - Species Status Assessment Report for the Slenderclaw Crayfish: 2018 https://iris.fws.gov/APPS/ServCat/DownloadFile/156286

- Other GIS Datasets:
    - USGS NHDPlus v2 HD https://pubs.usgs.gov/publication/ofr20191096

Deciding Factors for Core Map Formation

- Current populations align with the critical habitat (see figures below).
    - Short Creek population includes Shoal Creek, Scarham Creek, and Short Creek (already captured by critical habitat).
    - The Town Creek population includes Town Creek and Bengis Creek (already captured by critical habitat).
- The critical habitat shapefile downloaded from ECOS is a polygon and follows the waterways well, according to aerial imagery and comparison with the NHD v2 HD hydrography dataset. This polygon is used directly as the core map.

Core Map Development

- Most recent species range and critical habitat shapefiles were downloaded from ECOS.
- The critical habitat feature is used directly as the core map.

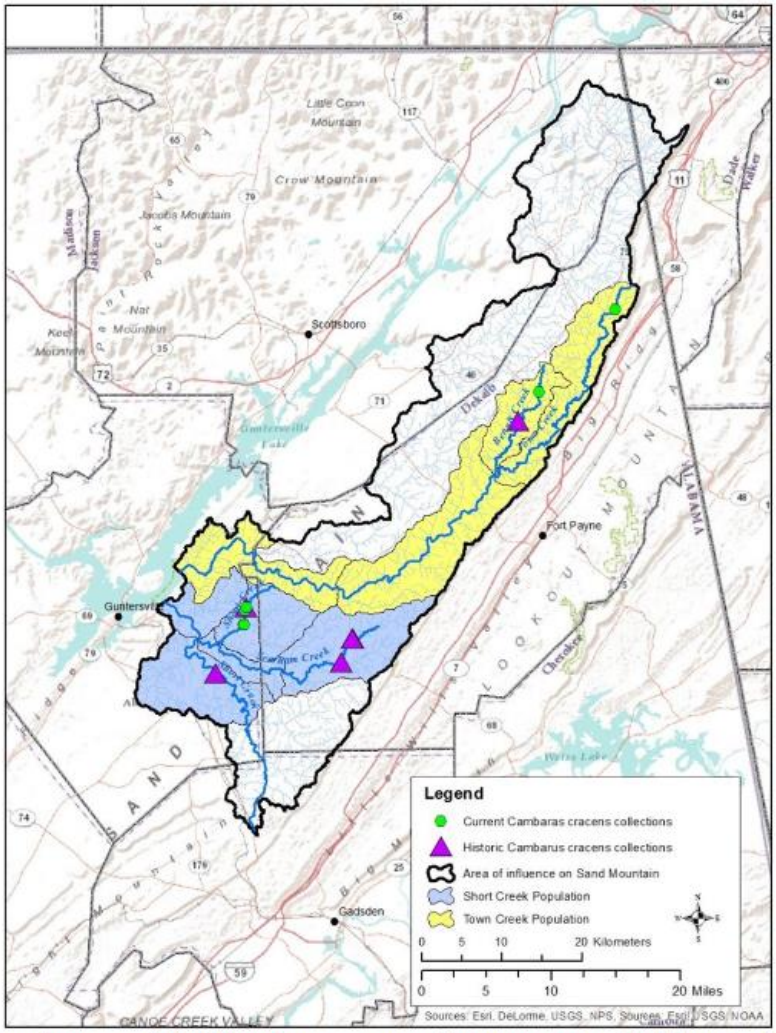

Figure 1. Slenderclaw crayfish (*Cambarus cracens*) range map with historic (purple triangles) and currently known (green dots) occupied sites. Two populations, Short Creek (shaded purple) and Town Creek (shaded yellow), are delineated based on HUC-12 watershed boundaries and tributaries flowing into Guntersville Lake on the Tennessee River. Larger tributaries (HUC-10s) likely to influence slenderclaw crayfish habitat watersheds are outlined in black (Service 2019, p. 11).

Figure 2. Figure from the recovery plan (2025) showing range and two populations delineated by HUC12 boundaries, as well as the current and historical occurrences. Current occurrences can be seen only on Shoal Creek, Bengis Creek, and the northernmost section of Town Creek.

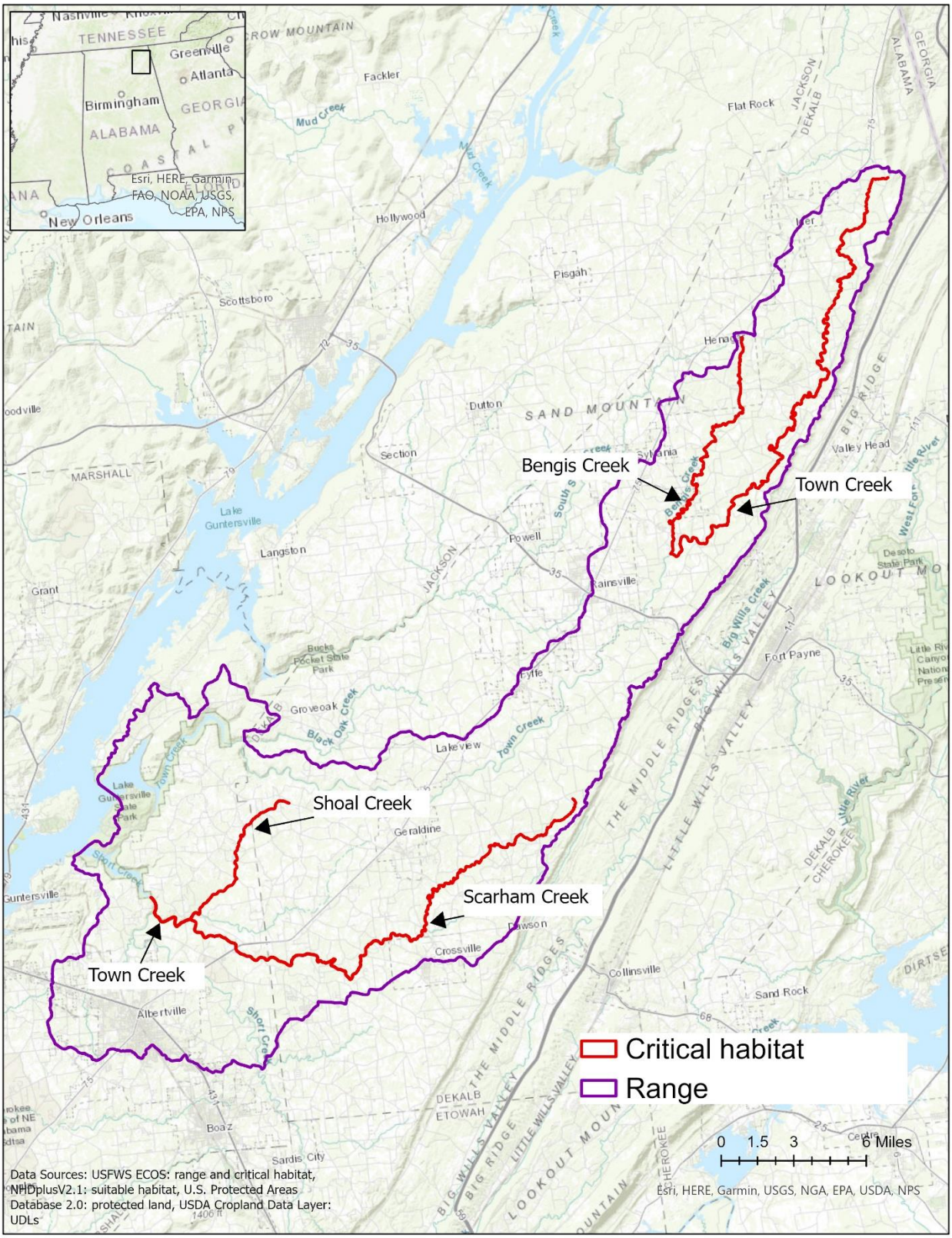

Figure 3. Range and critical habitat for the slenderclaw crayfish, with the critical habitat sections labeled.