Slender Campeloma
(*Campeloma decampi, Binney*)

5-Year Review:
Summary and Evaluation

Photo Credit: Jeff Selby, AST Environmental, Decatur, Alabama

U.S. Fish and Wildlife Service
Southeast Region
Alabama Ecological Services Field Office
Daphne, Alabama

5-YEAR REVIEW

Slender Campeloma / *Campeloma decampi*

I. GENERAL INFORMATION

1. Methods used to complete the review:

This review was completed by the U.S. Fish and Wildlife Service (Service), Alabama Field Office (AFO), Daphne, Alabama (Anthony Ford and Jeffrey Powell). The primary sources of information used in this analysis were the 2000 final listing rule (65 FR 10033), peer-reviewed reports, unpublished survey data and reports, and personal communication with recognized experts. All literature and documents used for this review are on file at the AFO. All recommendations concluded in this review are the result of reviewing the best available information on the slender campeloma. Comments and suggestions regarding this review were received from peer reviewers from outside the Service (see Appendix A). No part of the review was contracted to an outside party. In addition, this review was announced to the public on August 2, 2007 (72 FR 42425) with a 60-day comment period. Comments received were evaluated and incorporated as appropriate.

2. Reviewers

Lead Region: Southeast Region, Atlanta, GA: Kelly Bibb (404) 679-7132

Lead Field Office – Alabama Ecological Services Field Office, Daphne, AL:
Anthony Ford (251) 441-5838
Jeffrey Powell (251) 441-5858

3. Background

1. Federal Register Notice citation announcing initiation of this review: 72 FR 42425; August 2, 2007

2. Species status: Stable (2011 Recovery Data Call). The potential impacts from urban sprawl and infrastructure development continue to plague the slender campeloma.

3. Recovery achieved: 1 (1 = 0-25% species' recovery objectives achieved)

4. Listing history
Original Listing
FR notice: 65 FR 10033
Date listed: February 25, 2000
Entity listed: species

Classification: endangered

5. Associated rulemakings: None.

6. Review History:
Recovery Data Call**:** 2011- 1998

7. Species' Recovery Priority Number at start of review (48 FR 43098): 5. This number indicates a high degree of threat, and a low recovery potential.

II. REVIEW ANALYSIS

1. **Application of the 1996 Distinct Population Segment (DPS) policy**:

The Act defines species as including any subspecies of fish, wildlife, or plant, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing DPSs to only vertebrate species of fish and wildlife. Because the species under review is an invertebrate, the DPS policy is not applicable and will not be addressed further in this review.

2. Recovery Criteria

1. **Does the species have a final, approved recovery plan containing objective, measurable criteria?** No.

3. Updated Information and Current Species Status

1. Biology and Habitat

a) Biology and Life History:

Relatively little is known about life history and ecology of the slender campeloma. The slender campeloma belongs to the family Viviparidae and as with other members of this family, they are live bearers, giving live birth instead of laying eggs (65 FR 10033). The shell is medium to large in size and typically between 5 mm to 35 mm in length (ARC 1997, 65 FR 10033). The slender campeloma is identified in the field by its larger size for this type of snail, ovately conic shell, and tapered pointed spire (Burch 1989, Garner 2004b). The slender campeloma is typically found burrowing in soft sediments (sand or mud) or detritus (ARC 1997). While the food habits of the slender campeloma are not known, it is thought that they most likely feed on detritus (65 FR 10033).

b) Abundance/population trends:

Haggerty and Garner (2007, 2008) found live and/or fresh dead slender campeloma snails at 47 percent (14 of 30 sites) of the sampling locations within Limestone, Piney, and Round Island Creeks. Within the Limestone Creek watershed, the slender campeloma was found at all sites that were surveyed downstream of river mile 14.5. Upstream of river mile 14.5, the snail was not found (Haggerty and Garner 2007, 2008). Piney Creek had the lowest detection rate (40 percent) among sites and also had the greatest distance between detections. The most upstream extent within Piney Creek was approximately river mile 19.3 (Haggerty and Garner 2007, 2008). In the Round Island Creek watershed, the snails were found at 57 percent of the locations, up to river mile 7.8. Haggerty and Garner (2007, 2008) found more snails per search effort in Round Island Creek than in either of the other two watersheds. This was presumably due to the presence of more suitable habitat.

c) Genetics, genetic variation, or trends in genetic variation:

Dr. David Campbell while at the University of Alabama (currently at the Paleontological Research Institution, Ithaca, New York) did some preliminary genetic work to differentiate several species of *Campeloma*, including *Campeloma decampi* and *C. decisum* from Limestone Creek, Piney Creek, the Flint River, Beaverdam Creek, and other Tennessee River drainage areas; however, results at this time have been inconclusive.

d) Taxonomic classification or changes in nomenclature:

The slender campeloma was originally described as *Melantho decampi* (see Figure 1 for original plate), for its discoverer W. H. DeCamp (Binney 1865). It is a medium to large (generally less than 35 mm) snail of the ovoviviparous family Viviparidae (65 FR 10033). Clench and Turner (1955) suggest that the type locality for the species is Decatur, Alabama, and that the type locality given by Binney (1865) in the original description (Huntsville or Stevenson) was in error. Clench and Turner (1955) state that the original label on the specimens by W. H. DeCamp lists Decatur, Alabama, as the locality.

e) Spatial distribution, trends in spatial distribution, or historic range:

Previously known to occur only within three short stream reaches in Limestone, Piney, and Round Island Creeks (Figure 2),

Limestone County, Alabama (Burch 1989, Garner 2004b), recent surveys have expanded the range (Figure 2) of the slender campeloma into Beaverdam Creek, Limestone County, Alabama (Campbell pers. comm. 2007), the Flint River, Madison County, Alabama (AST 2007), and Cypress Creek in Lauderdale County, Alabama (Garner pers. comm. 2012). A 2012 survey by AST Environmental also provided a range extension within the Piney Creek drainage, documenting a population within the lower extent of Little Piney Creek above the crossing at Huntsville Browns Ferry Road (AST 2012).

The habitat of the slender campeloma snail still remains reduced, by as much as three-quarters of its historical distribution (65 FR 10033). Historically, the snail was also known from Bass and Swan Lakes in Limestone County, Brim (=Braham) Lakes, Madison County, and an unspecified location within Jackson County (Clench and Turner 1955, 65 FR 10033). The construction of the Tennessee River impoundments significantly reduced its historic range, and caused the remaining populations to be isolated (65 FR 10033).

While the slender campeloma may now also occur within Beaverdam Creek, Limestone County, Alabama, the Flint River, Madison County, Alabama, and Cypress Creek, Lauderdale Co, Alabama, these records have only been documented at single locations and the full range of occurrence in these systems has not been fully assessed. We believe these new occurrences need to be further investigated with additional surveys and genetic work so that the range and extent of this species can be better understood.

f) Habitat:

The slender campeloma is found in the Flint River and Limestone, Piney, Beaverdam, Round Island, and Cypress creek watersheds, which lie within the Tennessee Valley District of the Interior Low Plateau Physiographic Province. The underlying geology (Figure 3) of the creeks is similar, primarily dominated by Tuscumbia Limestone in the lower reaches, and Fort Payne Chert in the middle and upper reaches. Some of the upper reaches within Limestone Creek also have exposed undifferentiated sediments of the Ordovician System (Haggerty and Garner 2007, 2008).

The slender campeloma snail is typically found burrowing in soft sediment or detritus (ARC 1997). It may sometimes be found burrowing in gravel substrates, where it may occur anywhere from the margins to midstream (Garner pers. comm. 2008). It is often

found burrowing at shallow depths in substrates composed of clay and mud or in relatively large patches of water willow (*Justica virginiana*) (Haggerty and Garner 2007, 2008).

Haggerty and Garner (2007) attempted to characterize and compare the general habitat conditions used by the slender campeloma snail within Limestone, Piney, and Round Island creeks with the following 11 physical and chemical measurements: stream width, stream depth, stream velocity, temperature, dissolved oxygen, dissolved oxygen percent saturation, specific conductance, total hardness, calcium hardness, magnesium hardness, and pH. The depth (0.46-0.77 cm), width (13.3-13.9 m), and velocity (0.17-0.35 m/s) of the three creeks were similar. The water chemistry was also similar, with mean temperature (26-27.7 °C), dissolved oxygen (4.2-6.4 mg/l), dissolved oxygen percent saturation (45.7-77.3 %), pH (7.5-8.3 units), specific conductance (128-138 µS/cm), total hardness (58-69 ppm), calcium hardness (43-47 ppm), and magnesium hardness (12-24 ppm), comparable among all sites. Haggerty and Garner (2007) noted that a much more thorough analysis of the physiochemical parameters of these streams throughout the year is needed, as well as more detailed microhabitat measurements.

2. Five-Factor Analysis

a. Present or threatened destruction, modification or curtailment of its habitat or range:

Human-related activities and development within the Round Island, Limestone, and Piney Creek basins have continued to impact the snail's habitat and resources. Some of the threats include: habitat modification from increased development (commercial and residential), indiscriminate logging, agriculture (sod farms, row crops, and livestock), unregulated water withdrawals, road and bridge construction, open cut trenching, and various other point and nonpoint pollution discharges. These impacts continue to increase as human activities migrate out from the cities of Huntsville, Madison, Decatur, and Athens into the Limestone and Piney Creek watersheds.

One potential threat to the slender campeloma snail is the 2,010 acre site located approximately 1-2 miles to the west of Piney Creek, designated as a TVA Megasite. This site has been marketed as and certified to meet the needs for an automotive assembly plant or other large scale industry. Even though this site would greatly boost the local workforce, the growth associated with a major automotive manufacturing plant would likely encroach and degrade upon the finite habitat for this listed snail.

During the fiscal years 2006-2012, the Service consulted, under Section 7 of the Endangered Species Act (ESA), informally on 18 projects that could potentially impact the slender campeloma and formally on 3 projects within the Round Island, Limestone, and Piney Creek drainages. The projects included: water/sewer line crossings, road/bridge improvements, stream relocation (tributary), residential/commercial developments, oil/gas pipelines, pesticide usage, and clearing and snagging.

For example, the US Army Corps of Engineers (ACOE) recently formally consulted with the Service on a Section 404 permit for a utility company, where the project called for a crossing of an aerial sewer line that required a temporary coffer dam within the creek and the installation of supporting piers for the aerial sewer line. The crossing resulted in the incidental take of the slender campeloma and endangered armored snail. The project did not rise to the level of jeopardy under the ESA but resulted in the permitted take of 680 square feet of occupied habitat, though measures were taken to minimize impacts to the species.

The area surrounding the creeks with slender campeloma habitat remains heavily agricultural (Figure 4) (e.g., cotton production, livestock, and sod farming) (ADEM 2001, 2002a, 2002b, 2006, 2008), thereby, increasing the exposure of slender campeloma to a variety of agricultural pesticides and fertilizers, excessive irrigation, and sedimentation (Garner 2004b, Haggerty and Garner 2007).

b. Overutilization for commercial, recreational, scientific, or educational purposes:

The slender campeloma is not known to have any commercial value and overutilization has not been a problem, therefore, overutilization is not believed to be a threat at this time. However, because this snail is generally found in low numbers (Haggerty and Garner 2008) and occurs in specific habitat, collection in general could pose a threat to small populations and could disturb natural reproduction. Therefore, we will continue working with partners in evaluating and minimizing this threat.

c. Disease or predation:

Diseases of aquatic snails are for the most part unknown. Several fishes, mammals, and potentially birds, consume snails, and are undoubtedly a normal aspect of the population dynamics of the slender campeloma (65 FR 10033).

d. Inadequacy of existing regulatory mechanisms:

The slender campeloma is afforded protections against take under Section 9 of the ESA and by the State of Alabama under their Invertebrate Species Regulation (Alabama Administrative Code 220-2-.98). While the slender campeloma may have species protections afforded to it by both state and federal governments, the majority of people are unaware of its presence and protected status, and fail to take any additional precautionary measures to aid in the recovery of this species.

Section 7 of the ESA requires federal agencies to ensure that their activities, in consultation with the Service, are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitats. Consultation with the Service is required by federal agencies on projects that may impact endangered or threatened species or critical habitat and recommendations are made to minimize potential impacts.

The Clean Water Act (CWA) is the primary federal law in the United States governing water pollution. One primary role of the CWA is to regulate the point source discharge of pollutants to surface waters. This is regulated by the permit process with a permit from the National Pollutant Discharge Elimination System (NPDES). The NPDES permit process is usually delegated by the Environmental Protection Agency (EPA) to its state cohort; in Alabama this authority has been delegated to the Alabama Department of Environmental Management (ADEM). Currently ADEM (Alabama Administrative Code, Title 22, Section 22-22-1 et seq.) requires that discharges not exceed state water quality standards. Since there is no information on the species' sensitivity to common pollutants, federal (e.g., CWA) and state water quality laws may or may not be protective of the slender campeloma.

Section 303d of the CWA requires each state to list its polluted water bodies and to set priorities for their clean up with a watershed restoration action plan called a "Total Maximum Daily Load" (TMDL) for each impaired water body. TMDLs establish the maximum amount of a pollutant that a water body can assimilate without causing exceedances of water quality standards. Currently portions of the Flint River (turbidity) and Limestone Creek (metals-mercury) have been identified as impaired for water quality under Section 303d under the CWA (ADEM 2012). TMDLs have been developed for Limestone Creek (ADEM 2001, 2002a) and Round Island Creek (ADEM 2002a, 2002b) for sedimentation and nutrients (Biochemical Oxygen Demand). French Mill Creek (tributary of Piney Creek) (ADEM 2006) and the Flint River (ADEM 2008) have both had TMDLs developed for fecal coliform.

Section 404 under the CWA is administered by the ACOE and regulates the discharge of dredged or fill material into waters of the United States,

including wetlands. Any activities in waters of the United States are regulated under this program, and often include fill related to development, such as water resource projects, infrastructure development, and mining projects.

Section 26a of the TVA Act requires TVA's approval be obtained prior to the construction, operation, or maintenance of any dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations along or in the Tennessee River or any of its tributaries. Within these Tennessee River drainages where slender campeloma occur, TVA's Section 26a permits are usually applied for concurrently with the ACOE Section 404 permits.

While a single project (e.g., Section 404 or Section 26a permit) will usually not jeopardize the continued existence of slender campeloma, the cumulative effects on the slender campeloma's finite habitat may have a larger impact and is usually not assessed on a permit-by-permit case either due to no federal nexus or no combined assessment of all project impacts.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is intended to protect against "unreasonable human health or environmental effects". While pesticides are usually tested on standard biological media (e.g., honey bees, daphnia, bluegill sunfish, rainbow trout, mice) for toxicity, this information may not relate well to the slender campeloma. Commercial applicators must also be tested and permitted on the proper application of pesticides, but applicators may not necessarily be aware of the presence of the slender campeloma.

Regardless of the federal or state regulatory mechanism, enforcement of these regulations is necessary to provide the intended protections. Quite often enforcement is inadequate due to budget and staff constraints.

e. Other natural or manmade factors affecting its continued existence:

Natural factors such as drought can potentially threaten the continued existence of the slender campeloma. Natural droughts can potentially have negative impacts on water quality (e.g. dissolved oxygen) and waste dissemination of point source discharges. Droughts may also reduce the amount of habitat available to the snail by dewatering habitat, and may also lead to direct mortality by stranding snails. Drought may also isolate sections of stream into stagnate pools.

Human-induced random events such as toxic spills could also jeopardize the slender campeloma if pollutants are spilled within the drainage. The

range of the slender campeloma is already reduced and a toxic spill could potentially reduce the occupied range even further.

4. Synthesis

The existence of the slender campeloma continues to be threatened by its limited range and continued impacts to its habitat. Its range is limited to the lower 14.5 miles of Limestone Creek, the lower 19.3 miles of Piney Creek, and the lower 7.8 miles of Round Island Creek (Garner 2008). While it has been recently collected from Cypress Creek, Beaverdam Creek, and the Flint River, these collections have been limited to single collections and its full extent of range in these streams is not currently known. Because the slender campeloma is only known to occupy these few stream reaches, catastrophic events such as spills or natural events (e.g. drought) could greatly reduce the geographic or genetic viability of the snail.

Habitat destruction or modification is presently the largest threat to this species. Agriculture and development continue to impact the quality of streams as evidenced by sections of the range being listed as impaired under Section 303d of the CWA for low dissolved oxygen, pathogens (associated with pasture grazing), and sediment. The threat of development and the associated point and non-point discharges increases within the basin as human activities migrate out from the growing cities of Huntsville, Madison, Decatur, and Athens. Presently, forested lands and agricultural (present and historic) fields are increasingly becoming converted to commercial or residential developments.

Based on the preceding information in this review, we believe that downlisting the slender campeloma from endangered to threatened, or reassigning a new recovery priority number is not warranted at this time. This is based on our limited knowledge of the species' life history, its limited distribution, and potential threats to its habitat.

III. RESULTS

Recommended Classification: No change is needed

IV. RECOMMENDATION FOR FUTURE ACTIONS

- Complete and finalize a recovery plan for this species.

- Conduct quantitative surveys within known habitats; survey the tributaries of both Limestone and Piney creeks for occurrences, and survey additional creeks within northern Alabama for additional populations.

- Develop a contingency plan for response to a spill or natural disaster within occupied snail habitat.

- Develop partnerships and utilize conservation initiatives with landowners along the riparian habitats and within the recharge zone of the known range.

- Conduct genetic work to draw comparisons between closely related species within the known range of the slender campeloma, and examine the genetics of recently discovered populations within Beaverdam and Cypress creeks and the Flint River.

- Provide public outreach and education on the slender campeloma snail to property owners and farmers along the creeks.

- Pursue opportunities including land acquisition, conservation easements, etc. to secure and protect habitat.

- Conduct a detailed analysis of habitat requirements, including physicochemical parameters of the stream and more specific measurements of the microhabitat used by the snail.

- Develop propagation techniques.

- Conduct life history studies.

V. REFERENCES

Alabama Department of Environmental Management [ADEM]. 2001. Draft TMDL development for Limestone Creek AL/0603002-300_01, Low Dissolved Oxygen/Organic Loading. Report prepared by Charles Reynolds, Water Quality Branch. 122pp.

----. 2002a. Final Siltation TMDL development for 22 Segments in the Lower Tennessee River Basin. Report prepared by ADEM/Water Quality Branch. 78pp.

----. 2002b. Final TMDL development for Round lsland Creek / AL06030002-4000_01, Low Dissolved Oxygen/Organic Loading. Report prepared by Paul Vaccaro, Water Quality Branch. 27pp.

----. 2006. Final Total Maximum Daily Load (TMDL) for French Mill Creek, Waterbody ID # AL/06030002-0802-201, Pathogens (fecal coliform). Report prepared by ADEM/Water Quality Branch. 21pp.

----. 2008. Final Total Maximum Daily Load (TMDL) for Flint River Assessment Unit ID # AL06030002-401-102_01, Pathogens (fecal coliform). Report prepared by Water Quality Branch. 33pp.

----. 2012. 2012 Draft Alabama §303(d) List. Accessed online on July 20, 2012 at (http://www.adem.state.al.us/programs/water/303d.cnt).

Aquatic Resources Center [ARC]. 1997. Survey for selected species of gastropods in the Tennessee River drainage of northern Alabama. Report prepared for U.S. Fish and Wildlife Service, Asheville, North Carolina. 69pp.

AST Environmental [AST]. 2007. Federally protected species report for the proposed Memphis-to-Atlanta corridor, between U.S. Highways 231 and 431, Huntsville, Alabama. Report prepared for the Alabama Department of Transportation. 43pp.

____. 2012. Debris removal along Huntsville Browns Ferry Road, Piney Creek and Little Piney Creek, protected species/biological assessment, Limestone County, Alabama. Report prepared for Limestone County Engineer. 9pp.

Binney, W.G. 1865. Descriptions of new species of North American land and fresh water shells. Journal of Conchology 1:49-51, ill. pl.7, fig. 2,3.

Burch, J.B. 1989. *North American Freshwater Snails*. Malacological Publications, Hamburg, Michigan, 365pp.

Clench, W.J. and R.D. Turner. 1955. The North American genus Lioplax in the Family Viviparidae. Occasional Papers on Mollusks, 2:1-20.

Garner, J.T. 2004a. Slender Campeloma, *Campeloma decampi* (Binney). Page 118 *in* R.E. Mirarchi, J.T. Garner, M.F. Mettee, P.E. O'Neil, eds. Alabama Wildlife. Volume 2. Imperiled Aquatic Mollusks and Fishes. The University of Alabama Press, Tuscaloosa, Alabama.

____. 2004b. Slender Campeloma, *Campeloma decampi* (Binney). Page 118 *in* R.E. Mirarchi, J.T. Garner, M.F. Mettee, P.E. O'Neil, eds. Alabama Wildlife. Volume 4. Conservation and Management. The University of Alabama Press, Tuscaloosa, Alabama.

Haggerty, T.M. and J.T. Garner. 2007. Water quality investigation and status survey of the armored snail and slender campeloma in Limestone, Piney, and Round Island creeks, Alabama, year 1 report – qualitative survey and preliminary physicochemical analyses. Report prepared for U.S. Fish and Wildlife Service. 17pp.

Haggerty, T.M. and J.T. Garner. 2008. Distribution of the armored snail (*Marstonia pachyta*) and slender campeloma (*Campeloma decampi*) in Limestone, Piney, and Round Island Creeks, Alabama. Southeastern Naturalist 7:729-736.

Peer-Reviewers - See Appendix A

Provided new/updated information

Dr. David Campbell, Collections Assistant
Paleontological Research Institution, Ithaca, New York

Mr. Jeff Garner, Alabama State Malacologist
Alabama Department of Conservation and Natural Resources, Florence, AL

Dr. Thomas Haggerty, Professor of Biology
University of North Alabama, Florence, AL

Mr. Chuck Howard, Aquatic Biologist
Tennessee Valley Authority, Knoxville, TN

Mr. Rob Hurt, Assistant Refuge Manager
Fish and Wildlife Service, Wheeler National Wildlife Refuge, Decatur, AL

Dr. Terry Richardson, Associate Professor of Biology
University of North Alabama, Florence, AL

Mr. Jeff Selby, Malacologist
AST Environmental Group, LLC, Decatur, AL

"Description. – Shell ovate, oblong, imperforate, rather thick, irregularly roughened by occasional coarse wrinkles of growth, decussated by delicate revolving and longitudinal striae; greenish olive, with revolving dark broad lines when young, darker when old; suture impressed, spire elevated, but truncated; remaining whirls, three, of which the two upper are flattened, the lower sub-convex, with a median obtuse carina, reaching to and modifying the peristome: aperture higher than broad, roundly lunate, produced below: bluish within: peristome simple, acute, sinous, angular above at the termination of the carina.

Greater diameter, including aperture, 22 mill.; length, 35 mill.; length of the aperture, 20 mill.; diameter, 10 millimeters."
(Binney 1865)

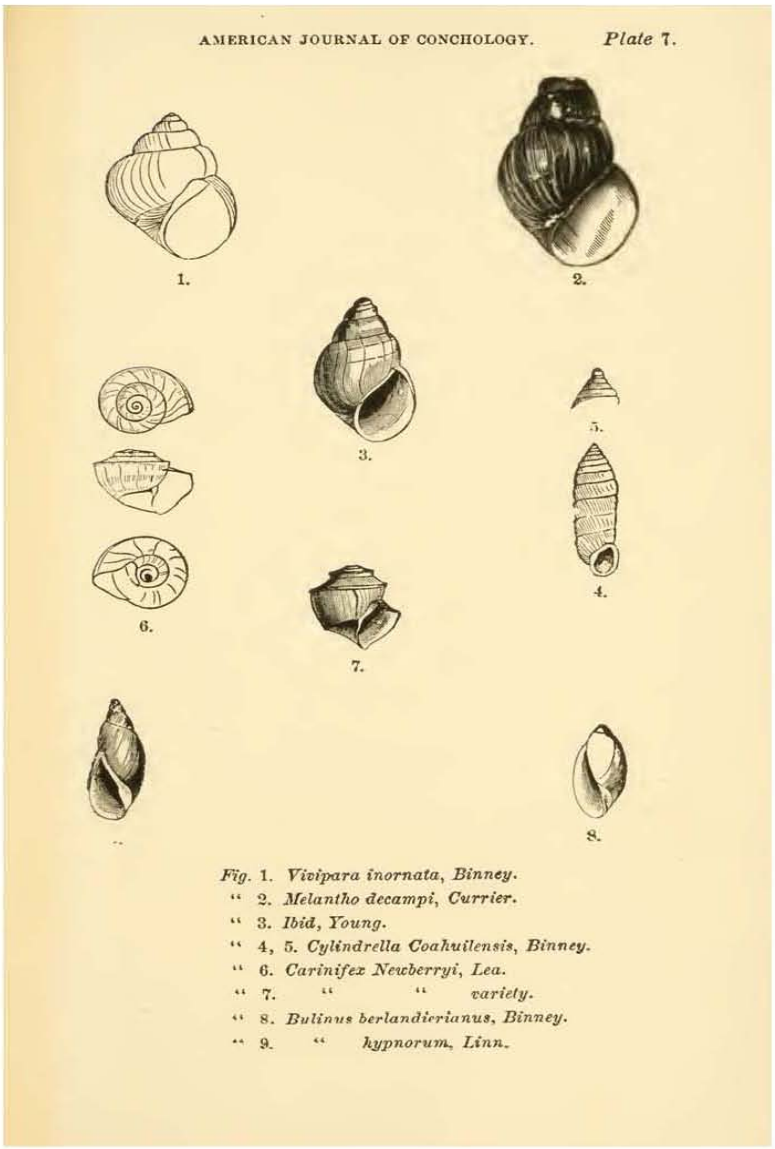

Figure 1: Original species description (Pages 49-50) and illustration (Plate 7, Figures 2 and 3) for *Melantho* [=*Campeloma*] *decampi* published in the Journal of Conchology by W. G. Binney (Binney 1865).

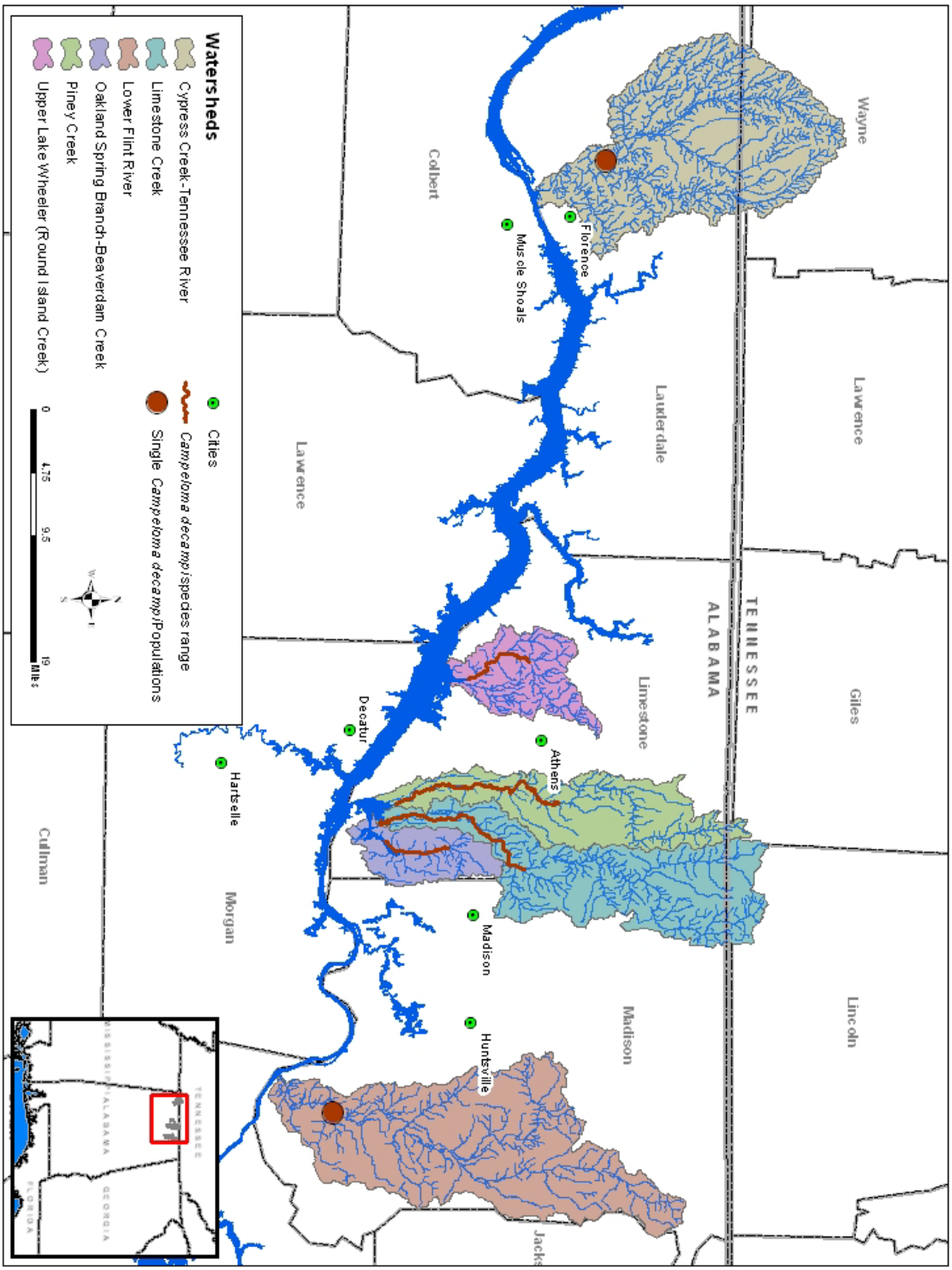

Figure 2: Range of the slender campeloma (*Campeloma decampi*). Map created by the U.S. Fish and Wildlife Service, Alabama Field Office, Daphne, Alabama.

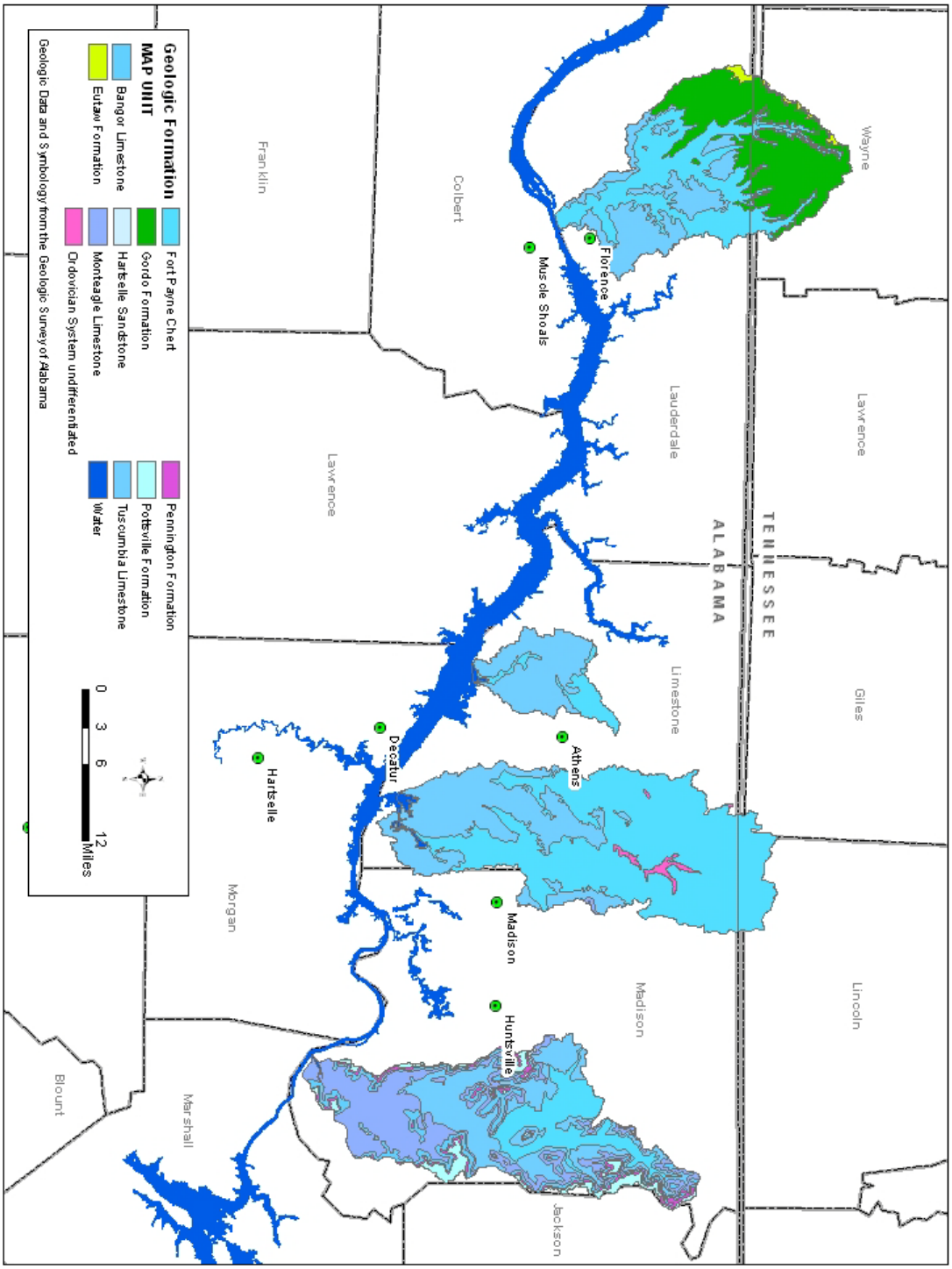

Figure 3: Geology within the habitat range of the slender campeloma. Map created by the U.S. Fish and Wildlife Service, Alabama Field Office, Daphne, Alabama.

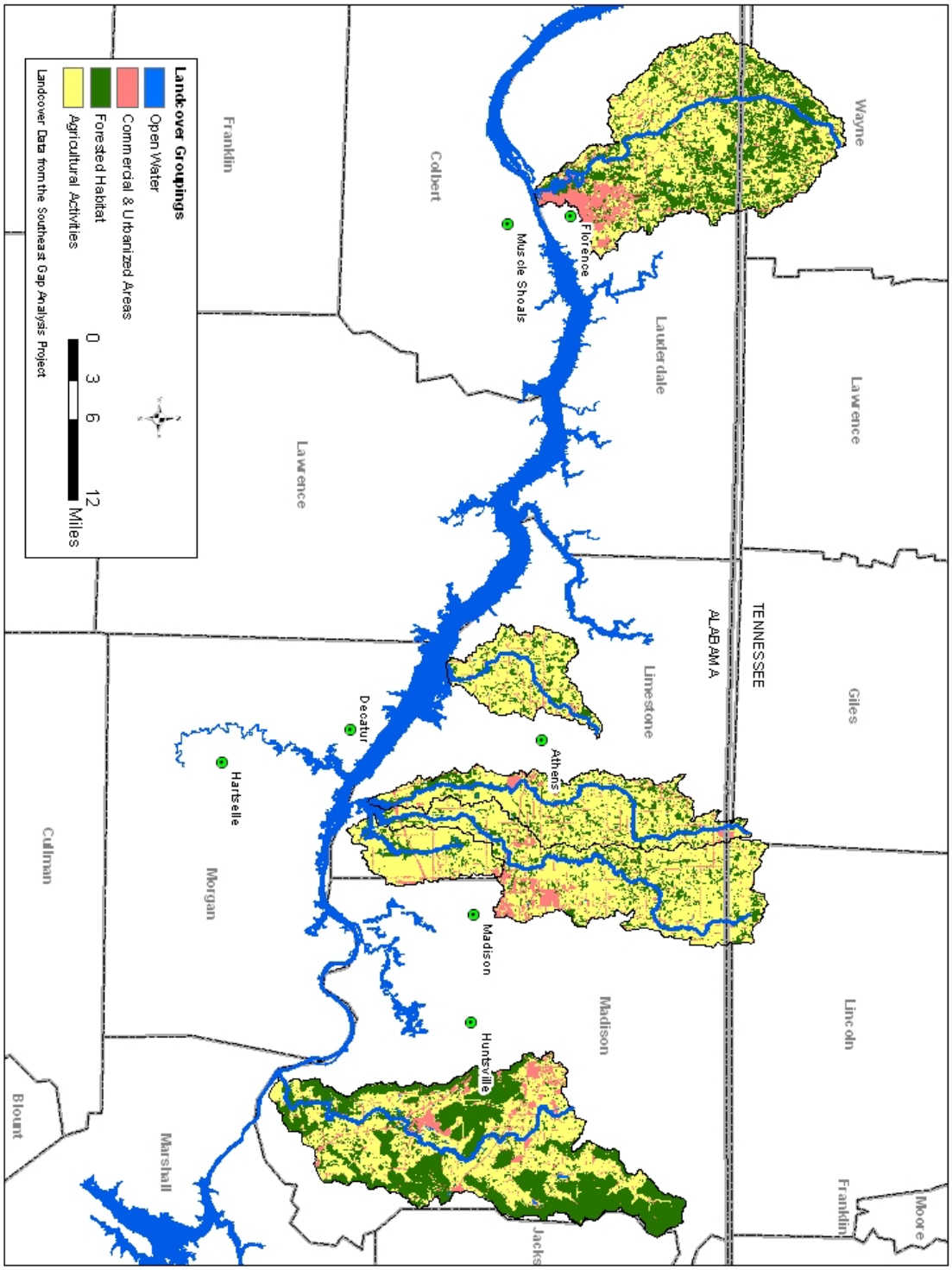

Figure 4: Land-use cover (2006 data) within the habitat range of the slender campeloma. Map created by the U.S. Fish and Wildlife Service, Alabama Field Office, Daphne, Alabama.

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of the Slender Campeloma (*Campeloma decampi)*

Current Classification: Endangered

Recommendation resulting from the 5-Year Review:

__X__ No change needed

Review Conducted By: Anthony D. Ford and Jeffrey R. Powell, Alabama Field Office

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve _____ Date 7-30-2012

REGIONAL OFFICE APPROVAL:

The Regional Director or the Assistant Regional Director, if authority has been delegated to the Assistant Regional Director, must sign all 5-year reviews.

for **Lead Regional Director, Fish and Wildlife Service**

Approve _____ Date 8/17/12

APPENDIX A: Summary of peer review for the 5-year review of the Slender Campeloma / *Campeloma decampi*

A. Peer Review Method: see below

B. Peer Review Charge: see below

Requests were made to each peer reviewer via personal phone request and email request (March 18, 2011). Peer reviewers were chosen based on the expertise that each possesses and the broad ranging knowledge that they could offer in giving a complete and thorough review. Each reviewer was asked to give a complete review with a focus on areas of personal expertise, but not to review the status recommendation.

Peer reviewers included: (1) Mr. Jeff Garner, the Alabama State Malacologist with the Alabama Department of Conservation and Natural Resources in Florence, AL. Mr. Garner is the mussel management supervisor and malacologist for ADCNR and has direct survey experience and expert knowledge of the slender campeloma. (2) Mr. Chuck Howard, an Aquatic Endangered Species Biologist with the Tennessee Valley Authority in Knoxville, TN. Mr. Howard is a malacologist with TVA's Heritage Program. TVA is the federal resource agency with expertise of the Tennessee River basin and they also maintain an extensive database on the natural history and species occurrences. (3) Dr. David Campbell at the time of this review was with the University of Alabama as a post doctoral research associate in Tuscaloosa, AL. At the University of Alabama, Dr. Campbell worked on, among other things, the genetics of Alabama gastropods. However, Dr. Campbell is currently employed by the Paleontology Research Institution, Ithaca, New York where he is the Collections Assistant. The Paleontology Research Institution houses a modern mollusk collection that numbers over 250,000 cataloged specimens.

C. Summary of Peer Review Comments/Report

Mr. Jeff Garner, ADCNR, Florence, AL: Mr. Garner stated that the slender campeloma may sometimes be found burrowing in gravel substrates, where it may occur from near the margins to midstream.

Dr. David Campbell, Paleontological Research Institution, Ithaca, New York: Dr. Campbell suggested that the slender campeloma may also be found in the Beaverdam Creek system, adding that those specimens are a bit unusual and are being investigated.

Mr. Chuck Howard, Tennessee Valley Authority, Knoxville, TN: Mr. Howard reported that Mr. Charlie Saylor, TVA, had recently collected slender campeloma within Limestone Creek (April 9, 2008) and Beaverdam Creek (June 24, 2008), and also supplied additional historic or recent collections within the Heritage Program database.

D. Response to Peer Review: All comments were reviewed and incorporated as appropriate into the document.