

CUMBERLANDIAN COMBSHELL
[*Epioblasma brevidens* (Lea, 1861)]

5-Year Review:
Summary and Evaluation

U.S. Fish and Wildlife Service
Southeast Region
Cookeville Ecological Services Field Office
Cookeville, Tennessee

5-YEAR REVIEW
Cumberlandian Combshell (*Epioblasma brevidens*)

I. GENERAL INFORMATION

A. Methodology used to complete this review

This review was completed by the U. S. Fish and Wildlife Service's Cookeville Field Office. All literature and documents on file at the Cookeville Field Office were used for this review. The primary source of information used in this analysis was the final recovery plan (USFWS 2004). Public notice of this review was given in the Federal Register and a 60-day comment period was opened. During this comment period, we obtained information on the status of this species from several experts and our State partners. Since the Service did not gain any new or existing information that had not been peer reviewed, no peer review was necessary for this 5-year review.

B. Reviewers

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

Lead Field Office - Cookeville, TN: Timothy Merritt, (931) 528-6481

**Cooperating Field Offices – Frankfort, KY: Leroy Koch, (502) 695-0468;
Abingdon, VA: Roberta Hylton, (276) 623-1233**

Cooperating Regional Office – Northeast Region: Mary Parkin, (617) 876-6173

C. Background

- 1. FR Notice citation announcing initiation of this review**
70 FR 55157; Tuesday, September 20, 2005
- 2. Species status:** Stable (2005 and 2006 Recovery Data Call)
- 3. Recovery achieved:** 1 = 0%-25% recovery objectives achieved (2005 and 2006 Recovery Data Call)
- 4. Listing history**
Original Listing
FR notice: 62 FR 1647
Date listed: January 10, 1997
Entity listed: species
Classification: endangered

5. Associated actions

Designation of critical habitat for five endangered mussels (including the Cumberlandian combshell) in the Tennessee and Cumberland River basins. 69 FR 53136; August 31, 2004.

Establishment of nonessential experimental population status for 16 freshwater mussels (including the Cumberlandian combshell) and 1 freshwater snail in the free-flowing reach of the Tennessee River below the Wilson Dam, Colbert and Lauderdale Counties in Alabama. 66 FR 32250; June 14, 2001.

6. Review History

Recovery Data Call: 2006 (stable), 2005 (stable), 2004 (stable, final Recovery Plan published), 2003 (stable)

7. Species' Recovery Priority Number at start of review

Existing Recovery Priority Number: 5 (degree of threat is high, potential for recovery is low, and the taxonomy is the species level)

8. Recovery Plan or Outline

Name of plan: Recovery Plan for Cumberland Elktoe, Oyster Mussel, **Cumberlandian Combshell**, Purple Bean, and Rough Rabbitsfoot.

Date issued: May 4, 2004

II. REVIEW ANALYSIS

A. Application of the 1996 Distinct Population Segment (DPS) policy: Not applicable. The Cumberlandian combshell is an invertebrate, and therefore, not covered by the DPS policy.

B. Recovery Criteria

- 1. Does the species have a final, approved recovery plan containing objective, measurable criteria? Yes.**
- 2. Does the recovery plan contain recovery (i.e., downlisting or delisting) criteria? Yes.**
- 3. Adequacy of recovery criteria.**
 - a. Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat? Yes.**
 - b. Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and there is no new**

information to consider regarding existing or new threats)?
Yes.

4. Recovery criteria

a. Criteria for downlisting to threatened status

Through the protection of extant stream populations (e.g., continuing to use existing regulatory mechanisms, establishing partnerships with various stakeholders, using best management practices (BMPs), minimizing or eliminating threats), discovery of currently unknown stream populations, and/or reestablishment of historical stream populations, there exist at least six distinct viable stream populations of the Cumberlandian combshell in the Cumberland River system, upper Tennessee River system, and/or lower Tennessee River system. This will be accomplished by:

- 1. Protecting all extant populations (i.e., Big South Fork and Buck Creek in the Cumberland River system; lower Clinch River and Powell River in the upper Tennessee River system; Bear Creek in the lower Tennessee River system) and ensuring that all these streams have viable population status.**

While we have not met this criterion yet, we are working with our State and Federal partners and The Nature Conservancy (TNC) to protect all five extant populations of the Cumberlandian combshell. Our Partners for Fish and Wildlife program has had projects in all five watersheds and continues to look for additional opportunities to work with landowners in Tennessee and Kentucky to improve stream habitats for the Cumberlandian combshell. The Tennessee Wildlife Resources Agency (TWRA) has purchased the Kyles Ford tract on the lower Clinch River using section 6 Recovery Land Acquisition grant funding. This area contains one of the most diverse mussel communities in Tennessee. It is home to 10 federally listed mussel species including the Cumberlandian combshell. TWRA plans to install buffer strips, stabilize stream banks, and prevent runoff and sedimentation along approximately 3 miles of river.

- 2. Reestablishing a viable stream population in one of the following streams: (a) Cumberland River system (e.g., Rockcastle River, Little South Fork, Red River); (b) upper Tennessee River system (e.g., upper Holston River/North Fork Holston River, lower Holston River, lower French Broad River); or (c) lower Tennessee River system (e.g., Paint Rock River, Elk River, Tennessee River at Muscle Shoals, Duck River, Buffalo River).**

This criterion has not been met. We are presently working on a nonessential experimental population (NEP) rule for the Lower French Broad/Lower Holston Rivers in Tennessee that would include the Cumberlandian combshell. In Kentucky, we are working with our State partners to reintroduce mussels into the Rockcastle River. The Cumberlandian combshell will eventually be one of these mussels, once studies have documented that non-listed mussel species (which are used as surrogates) have been established. In Alabama, we have a NEP designation in place for the free-flowing reach of the Tennessee River below Wilson Dam. The Cumberlandian combshell is one of the species that we plan to reintroduce. Big South Fork National River and Recreational Area has a mussel reintroduction plan that includes the Cumberlandian combshell and should have funding in FY 2007 to reintroduce this species with assistance from Virginia Cooperative Fish and Wildlife Research Unit of the United States Geological Survey at Virginia Polytechnic Institute and State University (VPI).

- 3. One distinct naturally reproduced year class exists within each of the viable populations. The year class must have been produced within 5 years prior to the time the species are reclassified from endangered to threatened. Within 1 year before the delisting date, gravid females of the mussels and their host fish must be present in each viable population.**

This criterion has not been met. There are presently two extant populations (Clinch River and Big South Fork) that meet this criterion (S. A. Ahlstedt, United States Geological Survey, retired mussel biologist, personal communication (pers. comm.), 2005, J. W. Jones, U. S. Fish and Wildlife biologist, pers. comm., 2005, USFWS 2004). The remaining three extant populations (Powell River, Buck Creek, and Bear Creek) are much smaller and exhibit more sporadic recruitment, but seemingly are viable (J.W. Jones, pers. comm., 2005, USFWS 2004).

- 4. Research studies of the mussels' biological and ecological requirements have been completed and any required recovery measures developed and implemented from these studies are beginning to be successful (see Recovery Tasks 1.4.1, 1.4.2, 1.4.5, and 1.4.6), as evidenced by an increase in population density of approximately 20 percent and/or increase in the length of the river reach of approximately 10 percent inhabited by the species as determined through biennial monitoring (see Recovery Task 5).**

Recovery task 1.4.1 involves conducting life history research on the Cumberlandian combshell. Nine native fish species have been identified as hosts: wounded darter (*Etheostoma vulneratum*), redline darter (*E. rufilineatum*), bluebreast darter (*E. camarum*), snubnose darter (*E. simoterum*), greenside darter (*E. blennioides*), banded sculpin (*Cottus carolinae*), black sculpin (*C. baileyi*), mottled sculpin (*C. bairdi*), and logperch (*Percina caprodes*) (USFWS 2004). No additional life history research has occurred since the Recovery Plan was approved in May 2004.

Recovery task 1.4.2 involves characterizing the species' habitat for all life history stages. No additional work has occurred on this task since the Recovery Plan was approved.

Recovery task 1.4.5 deals with investigating the need for management, including habitat improvement.

No additional work has occurred on this task since the Recovery Plan was approved.

Recovery task 1.4.6 involves determining the number of individuals and the sex ratio required to maintain long-term viable natural populations. No additional work has occurred on this task since the Recovery Plan was approved.

5. No foreseeable threats exist that would likely impact the survival of any of the species over a significant portions of their ranges (see Recovery Tasks 1.4.3 and 1.4.4).

Recovery task 1.4.3 involves addressing present and foreseeable threats. Our Partners for Fish and Wildlife biologists in Tennessee, Kentucky, Alabama, and Virginia are looking for additional opportunities to work with private landowners to protect watersheds that contain threatened and endangered species, including the Cumberlandian combshell. Our State partners are working with us to identify and address threats to mussel resources throughout the Cumberlandian region. One foreseeable threat on the Clinch River is coal mining wastes from Virginia coal processing plants. Coal particles are becoming more abundant in the substrate in the Tennessee section of the Clinch River. We are working with the States of Tennessee and Virginia to address this threat. No other threats have been addressed since the Recovery Plan.

Recovery task 1.4.4 deals with determining contaminant sensitivity for each life history stage. We have an ongoing project that is

looking at sediment toxicity in the Clinch, Powell and Big South Fork systems. The results of this study are not available yet.

- 6. Within larger streams (e.g., Rockcastle River, Big South Fork, Clinch River, Powell River, upper Holston River/North Fork Holston River, Elk River, Duck River, Buffalo River), the species are distributed over a long enough reach that a single catastrophic event is not likely to eliminate or significantly reduce the entire population in that stream to a status of nonviable (see Recovery Task 4.1).**

Recovery task 4.1 involves refining techniques and methodologies for propagating and translocating mussels as a prelude to potential augmentation and reintroduction efforts. Virginia Tech University is at the forefront of this work, having propagated and released juvenile mussels from 25 species, including 12 that are federally listed. Cumberlandian combshell juvenile mussels were released in the Big South Fork (16,277) and at two sites on the Clinch River (8,286) in 2005. The States of Kentucky, Tennessee, and Virginia are also working on refining mussel propagation techniques and methodologies. Virginia has released 310 juvenile Cumberlandian combshells in 2003, 1,269 juveniles in 2005. All were released in the Clinch River in Tennessee and Virginia. In 2006, 6,573 juvenile mussels have been produced and are being held for longer grow out and will eventually be released into the Powell River. Kentucky and Tennessee have not released any Cumberlandian combshells to date. The Service, with our partners, is developing a comprehensive plan for mussel augmentations and reintroductions in the Tennessee and Cumberland watersheds. This plan is in draft form and should be finalized in FY 2007.

- 7. Biennial monitoring of the five species yields the results outlined in “criterion 1 and 2” over a 10-year period (see Recovery Task 5).**

Biennial monitoring has not occurred to date, primarily due to insufficient funds. Some yearly monitoring does occur by our partners on a site-by-site basis.

b. Criteria for delisting

Through the protection of extant stream populations (e.g., continuing to use existing regulatory mechanisms, establishing partnerships with various stakeholders, using BMPs, minimizing or eliminating threats), discovery of currently unknown stream populations, and/or reestablishment of historical stream populations, there exists at least

nine (six for downlisting) distinct viable stream populations of the Cumberlandian combshell in the Cumberland River system (3), upper Tennessee River system (4), and lower Tennessee River system (2). **Two** (one for downlisting) distinct naturally reproduced year classes exist within each viable population. All other downlisting criteria remain the same for the delisting criteria.

All the work to-date for this species has been described above under the "Criteria for downlisting." There are presently only 5 extant populations of the Cumberlandian combshell.

C. Updated Information and Current Species Status

1. Biology and Habitat

- a. Abundance/population trends:** The largest extant population of Cumberlandian combshell occurs in the Clinch River in Tennessee (USFWS 2004). Biologists have recently documented the presence of significant number of adults and verified recent recruitment with the presence of juvenile specimens from muskrat middens in the Clinch River. However, Ahlstedt (2007) reported declining numbers in the Virginia portions of the Clinch River. The Big South Fork population is also sizable and recruiting (USFWS 2004). Recent evidence of recruitment has also been detected in the Powell River (USFWS 2004). Extant populations in other stream reaches are small and of questionable long-term viability (e.g., Buck Creek and Bear Creek) (Wolcott and Neves 1994, Hagman 2000, McGregor and Garner 2004, and USFWS 2004).
- b. Genetics:** No new information since the Recovery Plan.
- c. Taxonomic classification or changes in nomenclature:** None.
- d. Spatial distribution:** No new information since the Recovery Plan.
- e. Habitat or ecosystem conditions:** The decline of the Cumberlandian combshell in the Powell River has been attributed in part to general stream degradation caused by coal mining activities (USFWS 2004). This phenomenon appears to be affecting the mussel fauna of the Clinch River in Virginia, and coal particles are increasingly abundant in the substrate of the lower Clinch River in Tennessee. Several mussel experts believe the increase in coal particles in substrates of the Clinch River in Tennessee and Virginia portends an eventual decline in this river's mussel populations similar to what occurred in the Powell River.

This concern was a central topic of discussion during the Cumberlandian Region Mussel Meeting, convened by multiple agencies and NGOs during February 7-8, 2006. Studies are underway to investigate the mechanisms by which pollution stemming from coal mining affects mussel populations, in order to provide knowledge needed to conserve these species in rivers where coal mining occurs. Because of a shared anticipation of future declines in the Clinch River mussel fauna, the Service, Tennessee Wildlife Resources Agency, The Nature Conservancy, Tennessee Valley Authority, and the US Geological Survey are collaborating to fund and implement a project to establish populations of several listed and candidate species in drainages containing suitable habitat and for which evidence of the historic presence of those species exists. The designation of a non-essential experimental population (NEP) status in the lower French Broad and Holston rivers provides possible locations for establishing Cumberlandian combshell populations.

2. Five Factor Analysis (threats, conservation measures and regulatory mechanisms).

Factor A. The present or threatened destruction, modification, or curtailment of its habitat or range: Oil, gas, and coal exploration and development are on the increase in the upper Clinch River watershed (J. Jones, U. S. Fish and Wildlife Service biologist, personal communication (pers. comm.), 2006) and the New River watershed (Steve Bakaletz, National Park Service biologist, pers. comm., 2006). The largest Cumberlandian combshell populations occur in the lower Clinch River and coal fines are already being found in increasing amounts in these populations (D. Hubbs, Tennessee Wildlife Resources Agency biologist, pers. comm., 2006). The New River is a major tributary to the Big South Fork that influences the quality of the Cumberlandian combshell habitat. The potential negative impacts to mussels and their habitat will have to be monitored closely as exploration and development increase. We have an ongoing project that is looking at the sediment toxicity in the both systems. The results of this study are not available yet.

Another potential threat that seems to be increasing in magnitude is the municipal water needs for the communities within the Clinch and Powell River watersheds. As these communities continue to grow, there is a need for an increase in municipal water. Many of these communities have identified the Clinch and Powell Rivers as the source for this increasing need. The Service will need to monitor these proposals closely to ensure that the mussels and their habitats

in these rivers are considered and not negatively impacted from the increase in water withdrawals.

The recovery plan for Cumberlandian combshell identifies channelization, gravel mining, contaminants, and sedimentation as threats to the species' populations in Buck and/or Bear creeks (USFWS 2004). There are no known additional habitat threats to the Cumberlandian combshell populations in Buck or Bear Creeks beyond those listed in the Recovery Plan.

Factor B. Overutilization for commercial, recreational, scientific or educational purpose: The overutilization for commercial, recreational, scientific or educational purposes was not considered to be a limiting factor in the Recovery Plan. We have no new information to indicate that this has changed.

Factor C. Disease and predation: The Recovery Plan stated that there is little data indicating that disease or predation are limiting factors for this species. The level of depredation by muskrats on Cumberlandian combshells has declined dramatically in the Clinch River, presumably due to the introduction of river otters and their predation on muskrats. Any negative effect from depredation on adult mussels has been ameliorated by the presence of river otters. We have no other information on disease or predation of the Cumberlandian combshell. We continue to believe that disease and/or predation are not limiting factors for this species.

Factor D. Inadequacy of existing regulatory mechanisms: We have no new information on the inadequacy of existing regulatory mechanisms for protecting the Cumberlandian combshell and its habitat. The sediment toxicity studies being conducted on the Clinch River, Powell River and Big South Fork systems may provide some insights into potential water quality issues associated with the Clean Water Act. However, the results of these studies are not available yet.

Factor E. Other natural and manmade factors affecting its continued existence: The Recovery Plan listed the presence or potential introduction of alien species (especially zebra mussels and black carp), insufficient densities of host fish species, inbreeding depression and other genetic considerations, and possible weak links in the species' life cycles. We have no new information on any of these issues.

D. Synthesis

Historically, the Cumberlandian combshell ranged throughout the Cumberlandian Region, occurring in three physiographic provinces (Interior Low Plateau, Cumberland Plateau, and Ridge and Valley) and five states (Alabama, Kentucky, Mississippi, Tennessee, and Virginia). It has been extirpated from a large percentage of its former range, including the main-stems of the Cumberland and Tennessee Rivers (USFWS 2004). Extant populations exist in the Clinch River, Powell River, Big South Fork, Buck Creek and Bear Creek. The Clinch River and Big South Fork populations are doing the best with good recruitment occurring. The Powell River population is showing some recruitment but it is a much smaller population. The Buck Creek and Bear Creek populations are small and showing only sporadic recruitment.

The Recovery Plan listed excessive sedimentation (primarily resulting from nonpoint-source loading), coal mining, gravel mining, reduced water quality below existing dams, developmental activities, water withdrawal, impoundments, and alien species as threats to the Cumberlandian combshell and its habitat. Because of the past occurrence of multiple pollution events in the Powell and Clinch rivers and the declines in mussel populations that resulted from those spills, toxic spills are considered a threat that could either reduce Cumberlandian combshell populations to non-viable status or eliminate them completely in portions of the species' restricted range. All of these threats remain. As discussed above in Section C, the Clinch River and Big South Fork watersheds are also experiencing an increase in oil, gas, and coal exploration and development. The effects of an increase in these activities on the Cumberlandian combshell and its habitat are unknown at this time.

Since the Recovery Plan was written in May 2004, the following has occurred:

1. The Service's Partners for Fish and Wildlife program is working with landowners in the watersheds where the Cumberlandian combshell occurs and continues to look for additional opportunities.
2. The Tennessee Wildlife Resources Agency has purchased a tract of land along the Clinch River that includes Kyles Ford. Kyles Ford is one of the most important mussel beds on the Clinch River.
3. VPI and the State of Virginia continue to raise and release juvenile Cumberlandian combshells into the Clinch, Powell, and Big South Fork Cumberland Rivers.
4. A NEP has been proposed for the lower French Broad/lower Holston Rivers below the dams.
5. A study of the toxicity of the water column and sediments in the Clinch, Powell and Big South Fork Rivers is ongoing.

The recovery criteria listed in Section B above have not been met for delisting or downlisting the species. Because of the Cumberlandian combshell's limited distribution and continued threats to the five extant populations, it

remains in danger of extinction throughout all or a significant portion of its range. Therefore, the status of the Cumberlandian combshell should remain as endangered.

At the time of listing (USFWS 1997), this species had a high degree of threat and a low recovery potential, which results in a Recovery Priority Number of 5 for the taxonomic level of species. The Recovery Plan (USFWS 2004) also describes this species as having a high degree of threat and a low recovery potential. While the Service and the State have worked to protect some significant habitat areas, the degree of threat remains high for this species. Coal mining is an increasing threat in the upper Clinch River watershed. Oil, gas, and coal exploration and development are increasing threats in the upper Big South Fork Cumberland watershed. Water supply demands are increasing in both the Clinch and Powell watersheds. Pollution and sedimentation continue to be threats to all the extant populations. A detailed description of the past and present threats to this species can be found in the Recovery Plan. We continue to believe that the threats to this species remain high and that the recovery potential remains low, even with the juvenile mussel augmentations that are taking place, since it is not presently known if the juvenile mussels are surviving to adulthood. Therefore, a change to the existing Recovery Priority Number is not warranted.

III. RESULTS

- A. **Recommended Classification:** No change is needed for the existing classification of endangered.
- B. **New Recovery Priority Number:** No change is needed for the existing Recovery Priority Number of 5.

IV. RECOMMENDATIONS FOR FUTURE ACTIONS

- Continue to refine propagation technology.
- Augment and expand the range of extant populations to ensure their viability.
- Reestablish viable populations in other streams within the historical range that have suitable habitat and water quality.
- Determine the degree of threat that increased coal mining, and oil and gas drilling may have on this species.
- Protect habitat through acquisitions and easements.

V. REFERENCES

- Ahlstedt, S. A., and J. D. Tuberville. 1997. Quantitative reassessment of the freshwater mussel fauna in the Clinch and Powell Rivers, Tennessee and Virginia. Pages 72-97 in K. S. Cummings, A. C. Buchanan, C. A. Mayer, and T. J. Naimo, eds. Conservation and management of freshwater mussels II: initiatives for the future. Proceedings of a UMRCC symposium, 16-18 October 1995, St. Louis, Missouri. Upper Mississippi River Conservation Committee, Rock Island, Illinois.

Ahlstedt, S. A., J. R. Powell, R. S. Butler, M. T. Fagg, D. W. Hubbs, S. F. Novak, S. R. Palmer, and P. D. Johnson. 2004. Historical and current examination of freshwater mussels (Bivalvia: Margaritiferidae: Unionidae) in the Duck River basin, Tennessee. Final report to the Tennessee Wildlife Resources Agency, contract FA-02-14725-00. 213 pp.

Ahlstedt, S. A., M. T. Fagg, R. S. Butler, and J. F. Connell. 2005. Long-term trend information for freshwater mussel populations at twelve e fixed-station monitoring sites in the Clinch and Powell Rivers of eastern Tennessee and southwestern Virginia (1979-2004). Final report submitted to the U. S. Fish and Wildlife Service, Ecological Services, Cookeville, TN 38501. 38 pp.

Hagman, T. E. 2000. Stress analysis and mussel (Bivalvia: Unionidae) bed mapping of Buck Creek in Pulaski County, Kentucky, utilizing Geographic Information Systems with special emphasis on the four endangered mussel species living in the stream. Unpublished M.S. Thesis, Eastern Kentucky University, Richmond. 90 pp.

McGregor, S. W., and J. T. Garner. 2004. Changes in the freshwater mussel (Bivalvia : Unionidae) fauna of the Bear Creek system of Northwest Alabama and Northeast Mississippi. *American Malacological Bulletin* 18:61-70.

Tennessee Valley Authority. 2002. Nolichucky Reservoir flood remediation. Draft Environmental Impact Statement, Tennessee Valley Authority, Norris, Tennessee.

U. S. Fish and Wildlife Service. 1997. Endangered and Threatened Wildlife and Plants; Endangered Status for the Cumberland Elktoe, Oyster Mussel, **Cumberlandian Combshell**, Purple Bean, and Rough Rabbitsfoot (FR Vol 62, No. 7; Friday, January 10, 1997; 1647-1658).

U. S. Fish and Wildlife Service. 2004. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Five Endangered Mussels in the Tennessee and Cumberland River Basins (FR Vol. 69, No. 168; Tuesday, August 31, 2004; 53136-53180).

U. S. Fish and Wildlife Service. 2004. Recovery Plan for Cumberland Elktoe, Oyster Mussel, **Cumberlandian Combshell**, Purple Bean, and Rough Rabbitsfoot. Atlanta, Georgia. 168 pp.

Wolcott, L. T., and R. J. Neves. 1990. Impacts of siltation on the mussel fauna of the Powell River, Virginia. Unpublished report to the U. S. Fish and Wildlife Service, Asheville, North Carolina. 116 pp.

**U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW OF CUMBERLANDIAN COMBSHELL**

Current Classification: Endangered
Recommendation resulting from the 5-Year Review:

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

Appropriate Listing/Reclassification Priority Number, if applicable _____

Review Conducted By: Timothy Merritt

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve *Leah Barclay* Date 11/7/06

The lead Field Office must ensure that other offices within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. The lead field office should document this coordination in the agency record.

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 *Noreen E. White* Date 6/25/07

The Lead Region must ensure that other regions within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. If a change in classification is recommended, written concurrence from other regions is required.

Cooperating Regional Director, Fish and Wildlife Service

Concur Do Not Concur

Signature *Thomas J. Healy* Date 9-19-07
Thomas J. Healy Acting