ASMFC Fisheries Management Report No. 17. 1990. Fishery Management Plan for Atlantic Sturgeon. Atlantic States Marine Fisheries Commission, Nov. 1990. 73 pp.

New York State Department of Environmental Conservation. 1996. DEC Announces Emergency Moratorium on Atlantic Sturgeon. News Release dated March 22, 1996.

List of Subjects

50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

50 CFR Part 227

Endangered and threatened species, Exports, Imports, Marine mammals, Transportation.

Authority: The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: September 29, 1997.

Jamie Rappaport Clark,

Director, U.S. Fish and Wildlife Service.

Dated: October 2, 1997.

David L. Evans,

Deputy Assistant Administrator for Fisheries, National Marine Fisheries Service.

[FR Doc. 97–27547 Filed 10–16–97; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AE36

Endangered and Threatened Wildlife and Plants; Proposed Rule to List Three Aquatic Snails as Endangered, and Three Aquatic Snails as Threatened in the Mobile River Basin of Alabama

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule and notice of petition findings.

SUMMARY: The Fish and Wildlife Service (Service) proposes to list the cylindrical lioplax (*Lioplax cyclostomaformis*), flat pebblesnail (*Lepyrium showalteri*), and plicate rocksnail (*Leptoxis plicata*) as endangered; and the painted rocksnail (*Leptoxis taeniata*), round rocksnail (*Leptoxis ampla*), and lacy elimia (*Elimia crenatella*) as threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). These aquatic snails are found in localized portions of the Black Warrior, Cahaba, Alabama, and Coosa rivers or their tributaries in Alabama. Impoundment and water quality degradation have eliminated the six snails from 90 percent or more of their historic habitat. Surviving populations are currently threatened by pollutants such as sediments and nutrients that wash into streams from the land surface. This proposed rule, if made final, would extend the Act's protection to these six snail species.

DATES: Comments from all interested parties must be received by December 16, 1997. Public hearing requests must be received by December 1, 1997.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, 6578 Dogwood View Parkway, Jackson, Mississippi 39213. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Mr. Paul Hartfield at the above address, or telephone 601/965–4900, Ext. 25.

SUPPLEMENTARY INFORMATION:

Background

The Mobile River Basin (Basin) historically supported the greatest diversity of freshwater snail species in the world (Bogan *et al.* 1995), including six genera and over 100 species that were endemic to the Basin. During the past few decades, publications in the scientific literature have primarily dealt with the apparent decimation of this fauna following the construction of dams within the Basin and the inundation of extensive shoal habitats by impounded waters (Goodrich 1944, Athearn 1970, Heard 1970, Stein 1976, Palmer 1986, Garner 1990).

In 1990, the Service initiated a status review of the endemic freshwater snails of the Basin. An extensive literature survey identified sources of information on taxonomy, distribution, ecology, and status of the fauna and was used to assemble a checklist of the Basin's snails and their distributions (Bogan 1992). Field surveys and collections were made for snails and other freshwater mollusks throughout the Basin (Bogan and Pierson, 1993a,b; McGregor *et al.* 1996; Service Field Records, Jackson, Mississippi 1989–1996; Bogan *in litt.* 1995; M. Pierson Field Records, Calera, Alabama, *in litt.* 1993–1994; J. Garner, Alabama Department of Conservation, pers. comm. 1996; J. Johnson, Auburn University, *in litt.* 1996).

Bogan *et al.* (1995) summarized the results of their efforts noting the apparent extinction of numerous snail species in the Coosa and Cahaba River drainages, and the imperiled state of many other aquatic snails in the Basin.

The taxonomy used in this proposal follows Burch (1989), which relies almost exclusively on shell morphology. Many of the Basin's freshwater snail species, particularly in the family Pleuroceridae, are known to exhibit marked clinal variation (gradual change in characters of a species that manifests itself along a geographic gradient) in shell form, some of which has been described as environmentally induced (e.g., Goodrich 1934, 1937). Four of the six species considered in this proposal belong to the family Pleuroceridae and their relationships to each other, as well as to other Pleuroceridae, are poorly understood. In order to better document taxonomic relationships among these snails, a genetic study was conducted during the status review of a select group of the Basin's Pleuroceridae (Lydeard *et al.* 1997). The four snails within this family considered herein (lacy elimia, round rocksnail, plicate rocksnail, and painted rocksnail) were included in the genetic study. This study supported their current taxonomic status (Lydeard *et al.* 1997).

The cylindrical lioplax (*Lioplax cyclostomaformis* (Lea 1841)) is a gill-breathing snail in the family Viviparidae. The shell is elongate, reaching about 28 millimeters (mm) (1.1 inches (in)) in length. Shell color is light to dark olivaceous-green externally, and bluish inside of the aperture (shell opening). The cylindrical lioplax is distinguished from other viviparid snails in the Basin by the number of whorls, and differences in size, sculpture, microsculpture, and spire angle. No other species of lioplax snails are known to occur in the Mobile Basin (see Clench and Turner 1955 for a more detailed description).

Habitat for the cylindrical lioplax is unusual for the genus, as well as for other genera of viviparid snails. It lives in mud under large rocks in rapid currents over stream and river shoals.

Other lioplax species are usually found in exposed situations or in mud or muddy sand along the margins of rivers. Little is known of the biology or life history of the cylindrical lioplax. It is believed to brood its young and filter-feed, as do other members of the Viviparidae. Life spans have been reported from 3 to 11 years in various species of Viviparidae (Heller 1990).

Collection records for the cylindrical lioplax exist from the Alabama River (Dallas County, Alabama), Black Warrior River (Jefferson County, Alabama) and tributaries (Prairie Creek, Marengo County, Alabama; Valley Creek, Jefferson County, Alabama), Coosa River

(Shelby, Elmore counties, Alabama) and tributaries (Oothcalooga Creek, Bartow County, Georgia; Coahulla Creek, Whitfield County, Georgia; Armuchee Creek, Floyd County, Georgia; Little Wills Creek, Etowah County, Alabama; Choccolocco Creek, Talladega County, Alabama; Yellowleaf Creek, Shelby County, Alabama), and the Cahaba River (Bibb, Shelby counties, Alabama) and its tributary, Little Cahaba River (Jefferson County, Alabama) (Clench and Turner 1955). A single collection of this species has also been reported from the Tensas River, Madison Parish, Louisiana (Clench 1962), however, there are no previous or subsequent records outside of the Alabama-Coosa system, and searches of the Tensas River in Louisiana by Service biologists (1995) and others (Vidrine 1996) have found no evidence of the species or its typical habitat.

The cylindrical lioplax is currently known only from approximately 24 kilometers (km) (15 miles (mi)) of the Cahaba River above the Fall Line in Shelby and Bibb counties, Alabama (Bogan and Pierson 1993b). Survey efforts by Davis (1974) failed to locate this snail in the Coosa or Alabama rivers, and more recent survey efforts have also failed to relocate the species at historic localities in the Alabama, Black Warrior, Little Cahaba, and Coosa rivers and their tributaries (Bogan and Pierson 1993a, 1993b; M. Pierson *in litt.* 1993, 1994; Service Field Records 1991, 1992, 1993).

The flat pebblesnail (*Lepyrium showalteri* (Lea 1861)) is a small snail in the family Hydrobiidae; however, the species has a large and distinct shell, relative to other hydrobiid species. This snail's shell is also distinguished by its depressed spire and expanded, flattened body whorl. The shells are ovate in outline, flattened, and grow to 3.5 to 4.4 mm (0.1–0.2 in) high and 4 to 5 mm (0.2 in) wide. The umbilical area is imperforate (no opening), and there are 2 to 3 whorls which rapidly expand. The anatomy of this species has been described in detail by Thompson (1984). The flat pebblesnail is found attached to clean, smooth stones in rapid currents of river shoals. Eggs are laid singly in capsules on hard surfaces (Thompson 1984). Little else is known of the natural history of this species.

The flat pebblesnail was historically known from the mainstem Coosa River in Shelby and Talladega counties, the Cahaba River in Bibb and Dallas counties, and Little Cahaba River in Bibb County, Alabama (Thompson 1984). The flat pebblesnail has not been found in the Coosa River portion of its range since the construction of Lay and Logan Martin Dams, and recent survey efforts have failed to locate any surviving populations outside of the Cahaba River drainage (Bogan and Pierson, 1993a,b; McGregor *et al.* 1996; Service Field Records, Jackson, Mississippi 1989–1996; Bogan *in litt.* 1995; M. Pierson Field Records, Calera, Alabama, *in litt.* 1993–1994; J. Garner pers. comm. 1996; J. Johnson *in litt.* 1996). The flat pebblesnail is currently known from one site on the Little Cahaba River, Bibb County, and from a single shoal series on the Cahaba River above the Fall Line, Shelby County, Alabama (Bogan and Pierson 1993b).

The lacy elimia (*Elimia crenatella* (Lea 1860)) is a small species in the family Pleuroceridae. Growing to about 1.1 centimeters (cm) (0.4 in.) in length, the shell is conic in shape, strongly striate, and often folded in the upper whorls. Shell color is dark brown to black, often purple in the aperture, and without banding. The aperture is small and ovate. The lacy elimia is easily distinguished from other elimia species by a combination of characters (i.e., size, ornamentation, color).

In a recent genetic sequence study of the 16S rRNA gene, the lacy elimia was found to be very similar to the compact elimia (*Elimia showalteri*) (Lydeard *et al.* 1997). Despite their apparent close genetic relationship, the authors made no suggestion that the two species represented a single species. Upon review of Lydeard *et al.* (1997), Dillon (College of Charleston, Charleston, South Carolina, *in litt.* 1997) suggested that additional genetic studies were needed to demonstrate the genetic uniqueness of the lacy elimia. However, the Lydeard *et al.* (1997) genetic study addressed only one small genetic character of the genome of these species, and other characters strongly support the taxonomic status of the lacy elimia. The two species are allopatric (the compact elimia occurs in the Cahaba River, whereas the lacy elimia was found in the Coosa River and tributaries), and are strikingly different in size, appearance, and behavior. The compact elimia has a large, robust, smooth shell boldly colored brown and/or green, whereas the lacy elimia has a small, delicate, darkly colored, and ornamented shell. The lacy elimia is one of the few elimia snails in the Basin that does not exhibit clinal variation (Goodrich 1936). In addition, compact elimia are found grazing individually throughout shoal habitats, whereas the lacy elimia is usually found in tight clusters or colonies on larger rocks within a shoal (P. Hartfield, Jackson, MS, pers. obsv.). Allopatry, morphology, and behavior are strong characters supporting species specific status of the lacy elimia.

Elimia snails are gill breathing snails that typically inhabit highly oxygenated waters on rock shoals and gravel bars. Most species graze on periphyton growing on benthic substrates. Individual snails are either male or female. Eggs are laid in early spring and hatch in about 2 weeks. Snails apparently become sexually mature in their first year, but, in some species, females may not lay until their second year. Some elimia may live as long as 5 years (Dillon 1988).

The lacy elimia was historically abundant in the Coosa River main stem from St. Clair to Chilton County, Alabama, and was also known in several Coosa River tributaries—Big Will's Creek, DeKalb County; Kelley's Creek, St. Clair County; and Choccolocco and Tallaseehatchee creeks, Talladega County, Alabama (Goodrich 1936). The lacy elimia has not been recently located at any historic collection site. However, as a result of the recent survey efforts previously unreported populations were discovered in three Coosa River tributaries—Cheaha, Emauhee, and Weewoka creeks, Talladega County, Alabama (Bogan and Pierson 1993a). The species is locally abundant in the lower reaches of Cheaha Creek. This stream originates within the Talladega National Forest; however, no specimens of the lacy elimia have been collected on Forest Service lands. The species has also been found at single sites in Emauhee and Weewoka creeks, where specimens are rare, and difficult to locate.

The painted rocksnail (*Leptoxis taeniata* (Conrad 1834)) is a small to medium snail about 19 mm (0.8 in.) in length, and subglobose to oval in shape. The aperture is broadly ovate, and rounded anteriorly. Coloration varies from yellowish to olive-brown, and usually with four dark bands. Some shells may not have bands and some have the bands broken into squares or oblongs (see Goodrich 1922 for a detailed description). All of the rocksnails that historically inhabited the Basin had broadly rounded apertures, oval shaped shells, and variable coloration. Although the various species were distinguished by relative sizes, coloration patterns, and ornamentation, identification could be confusing. However, the painted rocksnail is the only known survivor of the 15 rocksnail species that were historically known from the Coosa River drainage.

Rocksnails are gill breathing snails found attached to cobble, gravel, or other hard substrates in the strong currents of riffles and shoals. Adult

rocksnails move very little, and females probably glue their eggs to stones in the same habitat (Goodrich 1922). Heller (1990) reported a short life span (less than 2 years) in a Tennessee River rocksnail. Longevity in the painted and the Basin's other rocksnails is unknown.

The painted rocksnail had the largest range of any rocksnail in the Mobile River Basin (Goodrich 1922). It was historically known from the Coosa River and tributaries from the northeastern corner of St. Clair County, Alabama, downstream into the mainstem of the Alabama River to Claiborne, Monroe County, Alabama, and the Cahaba River below the Fall Line in Perry and Dallas counties, Alabama (Goodrich 1922, Burch 1989). Surveys by Service biologists and others (Bogan and Pierson 1993a, 1993b; M. Pierson, *in litt.* 1993) in the Cahaba River, unimpounded portions of the Alabama River, and a number of free-flowing Coosa River tributaries have located only three localized Coosa River drainage populations.

The painted rocksnail is currently known from the lower reaches of three Coosa River tributaries—Choccolocco Creek, Talladega County; Buxahatchee Creek, Shelby County (Bogan and Pierson 1993a); and Ohatchee Creek, Calhoun County, Alabama (Pierson *in litt.* 1993).

The round rocksnail (*Leptoxis ampla* (Anthony 1855)) grows to about 20 mm (0.8 in) in length. The shell is subglobose, with an ovately rounded aperture. The body whorl is shouldered at the suture, and may be ornamented with folds or plicae. Color may be yellow, dark brown, or olive green, usually with four entire or broken bands (Goodrich 1922). Round rocksnails inhabit riffles and shoals over gravel, cobble, or other rocky substrates.

Lydeard *et al.* (1997) found slight differences in DNA sequencing between the painted rocksnail and the round rocksnail, and considered them to be sister species. Following analysis by allozyme electrophoresis on these same species, Dillon (*in litt.* 1997) speculated that the two species represented isolated populations belonging to a single species. The two species are geographically separated, with the painted rocksnail inhabiting Coosa River tributaries, while the round rocksnail is the only surviving rocksnail species in the Cahaba River drainage. Both species are currently recognized by the malacological community (e.g., Burch 1989; Turgeon *et al.* 1988, revision in review), and are treated as distinct in this proposed rule.

The round rocksnail was historically found in the Cahaba River, and its tributary, Little Cahaba River, Bibb County, Alabama; and the Coosa River, Elmore County, and tributaries—Canoe Creek and Kelly's Creek, St. Clair County; Ohatchee Creek, Calhoun County; Yellowleaf Creek, Shelby County; and Waxahatchee Creek, Shelby/Chilton counties, Alabama (Goodrich 1922).

The round rocksnail is currently known from a shoal series in the Cahaba River, Bibb and Shelby counties, Alabama, and from the lower reach of the Little Cahaba River, and the lower reaches of Shade and Six-mile creeks in Bibb County, Alabama (Bogan and Pierson 1993b).

The plicate rocksnail (*Leptoxis plicata* (Conrad, 1834)) grows to about 20 mm (0.8 in) in length. Shells are subglobose with broadly rounded apertures. The body whorl may be ornamented with strong folds or plicae. Shell color is usually brown, occasionally green, and often with four equidistant color bands. The columella (central column or axis) is smooth, rounded, and typically pigmented in the upper half. The aperture is usually bluish-white, occasionally pink or white. The operculum (plate that closes the shell when the snail is retracted) is dark red, and moderately thick (Goodrich 1922). Although morphologically similar to the Basin's other three surviving rocksnail species, the plicate rocksnail is genetically distinct (Lydeard *et al.* 1997, Dillon *in litt.* 1997).

The plicate rocksnail historically occurred in the Black Warrior River and its tributary, the Little Warrior River, and the Tombigbee River (Goodrich 1922). Status survey efforts found populations of plicate rocksnails only in an approximately 88km (55 mi) reach of the Locust Fork of the Black Warrior River, Jefferson and Blount counties, Alabama (Service Field Records, Jackson, Mississippi 1991, 1992; Malcolm Pierson, Calera, Alabama, Field Notes 1993). Surveys during 1996 (Garner in progress) indicate that the snail has recently disappeared from the upstream 4/5 portion of that habitat and now appears restricted to an approximately 17.6 km (11 mi) reach in Jefferson County.

Previous Federal Action

The six aquatic snails were identified as Category 2 species in notices of review published in the **Federal Register** on November 21, 1991 (56 FR 58804), and November 15, 1994 (59 FR 58982). At that time, a Category 2 species was one that was being considered for possible addition to the Federal List of Endangered and Threatened Wildlife, but for which conclusive data on biological vulnerability and threat were not available to support a proposed rule. Designation of Category 2 species was discontinued in the February 28, 1996, Notice of Review (61 FR 7956). The six snails considered in this proposal were approved as Candidate species by the Service on November 9, 1995, and identified as Candidates in the 1996 Notice of Review. A Candidate species is defined as a species for which the Service has on file sufficient information on biological vulnerability and threats to support issuance of a proposed rule.

A status review summary, that included these six snails, was mailed on August 23, 1994 (62 letters), to appropriate species authorities, State and Federal agencies, private organizations, and interested individuals. A cover letter provided notification that a status review was in progress by the Service, stated that the species appeared to qualify for listing under the Act, and requested a review of the status review summary for accuracy regarding taxonomy, distribution, threats, and status. Three species authorities responded by telephone concurring with the status reviews. No other comments were received as a result of this notification.

An updated status report, along with a review request, was mailed on March 11, 1997 (157 letters), following elevation of the snails to Candidate status. One snail authority concurred with the status review analysis; however, he recommended additional genetic studies on the lacy elimia (see *Background* section above). Two other snail authorities responded concurring with the analysis, as well as the taxonomic treatment of the six species.

On September 5, 1995, the Service received two petitions, dated August 31, 1995, from a coalition of environmental organizations (Coosa-Tallapoosa Project, Biodiversity Legal Foundation, and Alabama Wilderness Alliance) represented by Mr. Ray Vaughan. The petitioners requested the Service to list the plicate rocksnail as endangered and to designate critical habitat for this species. The second petition requested the Service to list the lacy elimia as a threatened species and to designate critical habitat.

Section 4 (b)(3)(A) of the Act and implementing regulations at 50 CFR part 424.14 require that, to the extent practicable, the Service make a finding of substantiality on any petition within 90 days of its receipt, and publish a notice of its finding in the **Federal Register**. If a substantial 90-day finding is made, the Service is required, to the

extent practicable, within 12 months of receipt of the petition, to make a finding as to whether the action requested in the petition is (a) not warranted, (b) warranted, or (c) warranted but precluded. Because of budgetary constraints and the lasting effects of a congressionally imposed listing moratorium, the Service is processing petitions and other listing actions according to the listing priority guidance published in the **Federal Register** on December 5, 1996 (61 FR 64475). The guidance clarifies the order in which the Service will process listing actions during fiscal year 1997. The guidance calls for giving highest priority to handling emergency situations (Tier 1) and second highest priority (Tier 2) to resolving the status of outstanding proposed listings. Third priority (Tier 3) is given to resolving the conservation status of Candidate species and processing administrative findings on petitions to add species to the lists or reclassify threatened species to endangered status. The processing of these two petitions and the proposed rule falls under Tier 3. At this time, the Southeast Region has no pending Tier 1 actions and is near completion of its pending Tier 2 actions. Additionally, the guidance states that ''effective April 1, 1997, the Service will concurrently undertake all of the activities presently included in Tiers 1, 2, and 3'' (61 FR 64480). This proposal constitutes the 90-day and 12-month finding on the petitioned actions.

Summary of Factors Affecting the Species

Section 4 of the Act and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the cylindrical lioplax (*Lioplax cyclostomaformis*), flat pebblesnail (*Lepyrium showalteri*), plicate rocksnail (*Leptoxis plicata*), painted rocksnail (*Leptoxis taeniata*), round rocksnail (*Leptoxis ampla*), and lacy elimia (*Elimia crenatella*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The cylindrical lioplax, flat pebblesnail, lacy elimia, round rocksnail, painted rocksnail, and plicate rocksnail have all disappeared from more than 90 percent of their historic ranges. All of these snails were historically, and continue to be, strongly associated with river or stream habitats characterized by flowing currents, and hard, clean bottoms (e.g., bedrock, boulder, gravel) (Goodrich 1922, 1936; Clench and Turner 1955). The curtailment of habitat and range for these six species in the Basin's larger rivers (Coosa, Alabama, Tombigbee and Black Warrior) is primarily due to extensive construction of dams and the inundation of the snail's shoal habitats by impounded waters. Thirty dams have changed this system from a continuum of free-flowing riverine habitats into a series of impoundments connected by short, free-flowing reaches. On the Alabama River there are 3 dams (built between 1968–1971); the Black Warrior has 5 (1915–1959); the Coosa 10 (1914–1966), and the Tombigbee 12 (1954–1979). Dams impound approximately 1,650 km (1,022 mi) of river channel in the Basin.

These six snail species have disappeared from all portions of their historic habitats that have been impounded by dams. As noted earlier, they are all associated with fast currents over clean, hard bottom materials. Dams change such areas by eliminating or reducing currents, and allowing sediments to accumulate on inundated channel habitats. Impounded waters also experience changes in water chemistry which could affect survival or reproduction of riverine snails. For example, many reservoirs in the Basin currently experience eutrophic conditions, including chronically low dissolved oxygen levels (Alabama Department of Environmental Management (ADEM) 1994, 1996). Such physical and chemical changes can affect feeding, respiration, and reproduction of these riffle and shoal snail species.

A site on the Locust Fork River is currently considered for the construction of a water supply impoundment (C. Waldrep, Gorham & Waldrep, P.C., Montgomery, Alabama, *in litt.* 1995). If constructed, this impoundment would bisect and threaten the only single surviving population of the plicate rocksnail. Plicate rocksnails occurred in riffle and shoal habitats above and below the reservoir site in 1994. In 1996, plicate rocksnails could not be relocated in the portion of the river to be flooded by the reservoir; however, they were confirmed to continue to survive in an approximately 17.6 km (11 mi) reach of river below the proposed dam site, which would be subject to impacts from construction activities and post-construction changes in water quality (Garner pers. comm. 1996).

In addition to directly altering snail habitats, dams and their impounded waters also formed barriers to the movement of snails that continued to live below dams or in unimpounded tributaries. It is suspected that many such isolated colonies gradually disappear as a result of local water and habitat quality changes. Unable to emigrate, the isolated snail populations are vulnerable to local discharges as well as any detrimental land surface runoff within their watersheds. Although many watershed impacts have been temporary, eventually improving or even disappearing with the advent of new technology, practices, or laws, dams and their impounded waters prevent natural recolonization by snail populations surviving elsewhere.

Prior to the passage of the Clean Water Act and the adoption of State water quality criteria, water pollution may have been a significant factor in the disappearance of snail populations from unimpounded tributaries of the Basin's impounded mainstem rivers. For example, Hurd (1974) noted the extirpation of freshwater mussel communities from several Coosa River tributaries, including the Conasauga River below Dalton, Georgia, the Chatooga River, and Tallaseehatchee Creek, apparently as a result of textile and carpet mill waste discharges. He also attributed the disappearance of the mussel fauna from the Etowah River, Talladega and Swamp creeks, and from many of the lower tributaries of the Coosa River, to organic pollution and siltation.

Short-term and long-term impacts of point and nonpoint source water and habitat degradation continue to be a primary concern for the survival of all these snails, compounded by their isolation and localization. Point source discharges and land surface runoff (nonpoint pollution) can cause nutrification, decreased dissolved oxygen concentration, increased acidity and conductivity, and other changes in water chemistry that are likely to seriously impact aquatic snails. Point sources of water quality degradation include municipal and industrial effluents.

Nonpoint source pollution from land surface runoff can originate from virtually all land use activities, and may include sediments, fertilizers, herbicides, pesticides, animal wastes, septic tank and gray water leakage, and oils and greases (ADEM 1996). During many recent surveys for these snails, sediment deposition and nutrient enrichment of stream reaches was noted as being associated with the absence of snails from historic collection localities (Bogan and Pierson 1993a, 1993b; Hartfield 1991; Service Field

Observations 1992–1994, Jackson Field Office, MS).

Excessive sediments are believed to impact riverine snails requiring clean, hard shoal stream and river bottoms, by making the habitat unsuitable for feeding or reproduction. Similar impacts resulting from sediments have been noted for many other components of aquatic communities. For example, sediments have been shown to abrade and/or suffocate periphyton (organisms attached to underwater surfaces, upon which snails may feed); affect respiration, growth, reproductive success, and behavior of aquatic insects and mussels; and affect fish growth, survival, and reproduction (Watters 1995).

Sediment is the most abundant pollutant produced in the Basin (ADEM 1989). Potential sediment sources within a watershed include virtually all activities that disturb the land surface, and all localities currently occupied by these snails are affected to varying degrees by sedimentation. The amount and impact of sedimentation on snail habitats may be locally correlated with the land use practice. For example, the use of agriculture, forestry, and construction Best Management Practices can reduce sediment amounts and impacts.

Land surface runoff contributes the majority of human-induced nutrients to water bodies throughout the country (Louisiana Department of Environmental Quality 1995). Excessive nutrient input (from fertilizers, sewage waste, animal manure, etc.) can result in periodic low dissolved oxygen levels that are detrimental to aquatic species (Hynes 1970). Nutrients also promote heavy algal growth that may cover and eliminate clean rock or gravel habitats of shoal dwelling snails. Nutrient and sediment pollution may have synergistic effects on freshwater snails and their habitats, as has been suggested for aquatic insects (Watters 1995).

The cylindrical lioplax, flat pebblesnail, and the round rocksnail currently survive in localized reaches of the Cahaba River drainage. Water quality studies in the upper Cahaba River drainage by the Geological Survey of Alabama (Shepard *et al.* 1996) found that discharges from 34 waste water treatment plants (WWTPs) in the upper drainage have contributed to water quality impairment. This was reflected by low levels of dissolved oxygen downstream of Birmingham; ammonia and chlorination by-products in excess of recommended water quality criteria; and eutrophication due to excessive levels of phosphorus and nitrogen. The study noted that these problems are chronic and have been a factor in a loss of mollusk and fish diversity throughout the drainage. Their results indicate that the upper Cahaba River drainage is primarily impacted by nonpoint runoff and WWTPs through physical habitat destruction by sedimentation, and chronic stress from exposure to toxics and low dissolved oxygen. The middle Cahaba River is primarily impacted by eutrophication and associated affects.

The lacy elimia is now restricted to three small stream channels in Talladega County, Alabama—Cheaha, Emauhee, and Weewoka creeks (Coosa River drainage). The painted rocksnail currently survives in localized reaches of three other Coosa River tributaries, Choccolocco, Buxahatchee, and Ohatchee creeks. The plicate rocksnail inhabits a single short reach of the Locust Fork River in Jefferson County, Alabama (Black Warrior River drainage). All of these streams are variously impacted by sediments and nutrients from a variety of upstream rural, suburban, and/or urban sources. The streams are all small to moderate in size and volumes of flow, and their water and habitat quality can be rapidly affected by local and offsite pollution sources.

Habitat fragmentation and population isolation are a significant threat to the continued survival of the lacy elimia and painted rocksnail. The known populations of these two species are isolated by extensive areas of impoundment, and there is little, if any, possibility of genetic exchange between them. Over time, this isolation may result in genetic drift, with each population becoming unique and vulnerable to environmental disturbance.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* The six aquatic snail species addressed in this proposed rule are currently not of commercial value, and overutilization has not been a problem. However, as their rarity becomes known, they may become more attractive to collectors. Unregulated collecting by private and institutional collectors poses a threat. The cylindrical lioplax, flat pebblesnail, plicate rocksnail, painted rocksnail, round rocksnail, and lacy elimia inhabit shallow, fast-flowing waters of shoals and riffles. Because of their occurrence and exposure in such areas, they are readily vulnerable to overcollecting and/or vandalism. In these areas, the snails are also exposed to crushing by recreational activities such as canoeing, wading, swimming, or fishing; however, normal recreational activities are not believed to be a factor in their decline.

C. *Disease or predation.* Aquatic snails are consumed by various vertebrate predators, including fishes, mammals, and possibly birds. Predation by naturally occurring predators is a normal aspect of the population dynamics of a species and is not considered a threat to these species. However, the potential now exists for black carp (*Mylopharyngodon piceus*), a nonselective molluskivore recently introduced into waters of the United States, to eventually enter the Mobile River Basin. Exotic black carp recently escaped to the Osage River in Missouri when hatchery ponds were flooded during a 1994 spring flood of the river (LMRCC newsletter, 1994). The extent of stocking black carp for snail control in aquaculture ponds within the Basin is unknown; however, black carp are currently cultured and sold within the State of Mississippi (D. Reike, Mississippi Department of Wildlife, Fisheries, and Parks, 1997).

D. *The inadequacy of existing regulatory mechanisms.* Although the negative effects of point source discharges on aquatic communities have probably been reduced over time by compliance with State and Federal regulations pertaining to water quality, there is currently no information on the sensitivity of the Mobile River Basin snail fauna to common industrial and municipal pollutants. Current State and Federal regulations regarding such discharges are assumed to be protective; however, these snails may be more susceptible to some pollutants than test organisms currently used in bioassays. A lack of adequate research and data currently prevents existing authorities, such as the Clean Water Act (CWA), administered by the Environmental Protection Agency (EPA) and the Army Corps of Engineers, from being fully utilized. The Service is currently working with EPA to develop a memorandum of agreement (MOA) that will address how EPA and the Service will interact relative to CWA water quality criteria and standards within the Service's Southeast Region.

Lacking State or Federal recognition, these snails are not given any special consideration under other environmental laws when project impacts are reviewed.

E. *Other natural or manmade factors affecting its continued existence.* The narrow distribution of extant populations of all six snail species and the nature of their habitats (i.e., small to moderate sized streams) renders them vulnerable to a natural catastrophic event (e.g., flood, drought).

The Service has carefully assessed the best scientific and commercial

information available regarding the past, present, and future threats faced by these species in determining to propose this rule. Based on these evaluations, the preferred action is to list the cylindrical lioplax, flat pebblesnail, and plicate rocksnail as endangered; and the painted rocksnail, round rocksnail, and lacy elimia as threatened. All of these species have been rendered vulnerable due to significant loss of habitat and severe range restriction.

The cylindrical lioplax is confined in distribution to a short reach of the Cahaba River. The flat pebblesnail currently survives in localized portions of the Cahaba River and the Little Cahaba River. Both species are vulnerable to extinction by their confined ranges, and current impacts from water quality degradation in the Cahaba River drainage. The single known population of the plicate rocksnail is threatened by the proposed construction of an impoundment within its remaining habitat in the Locust Fork, and water quality degradation. The plicate rocksnail has also experienced a significant reduction in range within the Locust Fork within the past 2 years, apparently due to pollution of its habitat from nonpoint sources. Endangered status is appropriate for these three species due to their single populations, restricted numbers within these populations, existing threats to their occupied habitats, and in the case of the plicate rocksnail, an ongoing decline in range.

The lacy elimia, painted rocksnail, and round rocksnail are each currently known from three distinct drainage localities. Extant populations and colonies of these three species are localized, isolated, and are vulnerable to water quality degradation, future human activities that would degrade their habitats, and random catastrophic events. Threatened status is considered more appropriate for these species due to the larger number of populations or colonies, and the less immediate nature of these threats.

Critical Habitat

Critical habitat is defined in section 3 of the Act as: (i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protection and; (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. Service regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist (1) The species is threatened by taking or other activity and the identification of critical habitat can be expected to increase the degree of threat to the species or (2) such designation of critical habitat would not be beneficial to the species. The Service finds that designation of critical habitat is not presently prudent for any of these six aquatic snails.

Critical habitat designation, by definition, directly affects only Federal agency actions. Since these snail species are aquatic throughout their life cycles, Federal actions that might affect these species and their habitats include those with impacts on stream channel geometry, bottom substrate composition, water quantity and quality, and stormwater runoff. Such activities would be subject to review under section 7(a)(2) of the Act, whether or not critical habitat was designated. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. The cylindrical lioplax, flat pebblesnail, plicate rocksnail, round rocksnail, painted rocksnail, and lacy elimia have become so restricted in distribution that any significant adverse modification or destruction of their occupied habitats would likely jeopardize their continued existence. This would also hold true as the species recovers and its numbers increase. Therefore, habitat protection for these six species can be accomplished through the section 7 jeopardy standard and there is no benefit in designating currently occupied habitat of these species as critical habitat.

Recovery of these species will require the identification of unoccupied stream and river reaches appropriate for reintroduction. Critical habitat designation of unoccupied stream and river reaches may benefit these species by alerting permitting agencies to potential sites for reintroduction and allow them the opportunity to evaluate projects which may affect these areas. The Service is currently working with the State and other Federal agencies to periodically survey and assess habitat potential of stream and river reaches for listed and candidate aquatic species within the Mobile River basin. This process provides up to date information on instream habitat conditions in response to land use changes within watersheds. Information generated from surveys and assessments is disseminated through Service coordination with other agencies. Should this rule become final, the Service will work with State and Federal agencies, as well as private property owners and other affected parties, through the recovery process to identify stream reaches and potential sites for reintroduction of these species. Thus, the benefit provided by designation of unoccupied habitat as critical will be accomplished more effectively with the current coordination process and is preferable for aquatic habitats which change rapidly in response to watershed land use practices. In addition, the Service believes that any potential benefits to critical habitat designation are outweighed by additional threats to the species that would result from such designation, as discussed below.

Though critical habitat designation directly affects only Federal agency actions, this process can arouse concern and resentment on the part of private landowners and other interested parties. The publication of critical habitat maps in the **Federal Register** and local newspapers, and other publicity or controversy accompanying critical habitat designation may increase the potential for vandalism as well as other collection threats (See Factor B under ''Summary of Factors Affecting the Species''). For example, in 1993 the Alabama sturgeon was proposed for endangered status with critical habitat (59 FR 33148). Critical habitat included the lower portions of the Alabama, Cahaba, and Tombigbee rivers in south Alabama. The proposal generated thousands of comments with the primary concern that the actions would devastate the economy of the State of Alabama and severely impact adjoining States. There were reports from State conservation agents and other knowledgeable sources of rumors inciting the capture and destruction of Alabama sturgeon. A primary contributing factor to this controversy was the proposed designation of critical habitat for the sturgeon.

The six snail species addressed in this proposal are especially vulnerable to vandalism. They all are found in shallow shoals or riffles in restricted stream and river segments. The flat

pebblesnail, plicate rocksnail, round rocksnail, painted rocksnail, and lacy elimia attach to the surfaces of bedrock, cobble, or gravel, while the cylindrical lioplax is found under large boulders. The six species are relatively immobile and unable to escape collectors or vandals. They inhabit remote but easily accessed areas, and they are sensitive to a variety of easily obtained commercial chemicals and products. Because of these factors, vandalism or collecting could be undetectable and uncontrolled. For example, the plicate rocksnail recently disappeared from approximately 80 percent of its known occupied habitat. While the Service has been unable to determine the cause of this decline, the disappearance illustrates the vulnerability of this and the other snail species.

All known populations of these six snail species occur in streams flowing through private lands. The primary threat to all surviving populations appears to be pollutants in stormwater runoff that originate from private land activities (see Factor A). Therefore, the survival and recovery of these snails will be highly dependent on landowner cooperation in reducing land use impacts.

Controversy resulting from critical habitat designation has been known to reduce private landowner cooperation in the management of species listed under the Act (e.g., spotted owl, golden cheeked warbler). The Alabama sturgeon experience suggests that critical habitat designation could affect landowner cooperation within watersheds occupied by these six snails.

Based on the above analysis, the Service has concluded critical habitat designation would provide little additional benefit for these species beyond those that would accrue from listing under the Act. The Service also concludes that any potential benefit from such a designation would be offset by an increased level of vulnerability to vandalism or collecting, and by a possible reduction in landowner cooperation to manage and recover these species. The designation of critical habitat for these six snail species is not prudent.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) requires Federal agencies to confer informally with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal activities that could occur and impact these species include, but are not limited to, the carrying out or the issuance of permits for reservoir construction, stream alterations, discharges, wastewater facility development, water withdrawal projects, pesticide registration, mining, and road and bridge construction. It has been the experience of the Service, however, that nearly all section 7 consultations have been resolved so that the species have been protected and the project objectives have been met. Other than a potential dam on the Locust Fork River, Jefferson and Blount counties, Alabama, no other Federal activities that may affect these species are currently known to be under consideration.

The Act and its implementing regulations found at 50 CFR 17.21 for endangered species, and 17.21 and 17.31 for threatened species set forth a series of general prohibitions and exceptions that apply to all endangered or threatened wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect, or to attempt any of these), import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered or threatened wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23 for endangered species and 17.32 for threatened species. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities. For threatened species, there are also permits for zoological exhibition, educational purposes, or special purposes consistent with the purposes of the Act.

It is the policy of the Service published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify, to the maximum extent practicable, those activities that would or would not constitute a violation of section 9 of the Act if these species are listed. The intent of this policy is to increase public awareness as to the effects of these proposed listings on future and ongoing activities within a species' range.

Activities which the Service believes are unlikely to result in a violation of section 9 for these six snails are:

(1) Existing discharges into waters supporting these species, provided these activities are carried out in accordance with existing regulations and permit requirements (e.g., activities subject to sections 402, 404, and 405 of the Clean Water Act and discharges regulated under the National Pollutant Discharge Elimination System (NPDES)).

(2) Typical agriculture and silviculture practices.

(3) Development and construction activities designed and implemented pursuant to State and local water quality regulations.

(4) Existing recreational activities such as swimming, wading, canoeing, and fishing.

Activities that the Service believes could potentially result in ''take'' of these snails, if they should be listed, include:

(1) The unauthorized collection or capture of the species;

(2) Unauthorized destruction or alteration of the species habitat (e.g., instream dredging, channelization, discharge of fill material);

(3) Violation of any discharge or water withdrawal permit;

(4) Illegal discharge or dumping of toxic chemicals or other pollutants into waters supporting the species.

Other activities not identified above will be reviewed on a case-by-case basis to determine if a violation of section 9 of the Act may be likely to result from such activity should these snails become listed. The Service does not consider these lists to be exhaustive and provides them as information to the public.

Questions regarding whether specific activities may constitute a future violation of section 9 should these snails be listed should be directed to the Field Supervisor of the Service's Jackson Field Office (see **ADDRESSES** section). Requests for copies of regulations regarding listed species and inquiries about prohibitions and permits should be addressed to the U.S. Fish and Wildlife Service, Ecological Services Division, 1875 Century Boulevard, Atlanta, Georgia 30345 (Phone 404/679–7313; Fax 404/679–7081).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited. Comments particularly are sought concerning:

(1) biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to this species;

(2) the location of any additional populations of this species and the reasons why any habitat should or should not be determined to be critical habitat as provided by Section 4 of the Act;

(3) additional information concerning the range, distribution, and population size of this species; and

(4) current or planned activities in the subject area and their possible impacts on this species.

Final promulgation of the regulations on these species will take into consideration the comments and any additional information received by the Service, and such communications may lead to final regulations that differ from this proposal.

The Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal in the **Federal Register**. Such requests must be made in writing and addressed to the Field Supervisor (see **ADDRESSES** section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Act. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Required Determinations

The Service has examined this regulation under the Paperwork Reduction Act of 1995 and found it to contain no information collection requirements.

References Cited

A complete list of all references cited herein, as well as others, is available upon request from the Field Supervisor (see **ADDRESSES** section).

Author: The primary author of this proposed rule is Paul Hartfield (see **ADDRESSES** section)(601/965–4900, Ext. 25).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, the Service hereby proposes to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Section 17.11(h) is amended by adding the following, in alphabetical order under SNAILS, to the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*	*	
SNAILS							
*	*	*	*	*	*	*	
Elimia, lacy	*Elimia crenatella*	U.S.A. (AL)	NA	T		NA	NA
*	*	*	*	*	*	*	
Lioplax, cylindrical	*Lioplax cyclostomaformis.*	U.S.A. (AL)	NA	E		NA	NA
*	*	*	*	*	*	*	
Pebblesnail, flat	*Lepyrium showalteri*	U.S.A. (AL)	NA	E		NA	NA
*	*	*	*	*	*	*	
Rocksnail, painted	*Leptoxis taeniata*	U.S.A. (AL)	NA	T		NA	NA
*	*	*	*	*	*	*	
Rocksnail, plicate	*Leptoxis plicata*	U.S.A. (AL)	NA	E		NA	NA
*	*	*	*	*	*	*	
Rocksnail, round	*Leptoxis ampla*	U.S.A. (AL)	NA	T		NA	NA

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*

Dated: September 12, 1997.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

[FR Doc. 97–27548 Filed 10–16–97; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AE41

Endangered and Threatened Wildlife and Plants; Proposal to List the St. Andrew Beach Mouse as Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service (Service) proposes endangered status for the St. Andrew Beach Mouse (*Peromyscus polionotus peninsularis*) pursuant to the Endangered Species Act of 1973, as amended (Act). This subspecies is restricted to coastal sand dunes and had a historic distribution that included the northeast Florida panhandle from Gulf County into portions of Bay County. Its current range is limited to a portion of the St. Joseph Peninsula in Gulf County. Habitat impacts causing loss of mice and the species' local capability to recover from such impacts are primarily responsible for the range curtailment. Threats to beach mouse habitat include severe storms, coastal land development and its associated activities, and non-storm related, natural shoreline erosion. Additional threats include predation by free-ranging domestic cats and displacement by house mice. This proposal, if made final, would implement the protection provisions provided by the Act for this beach mouse.

DATES: Comments from all interested parties must be received by December 16, 1997. Public hearing requests must be received by December 1, 1997.

ADDRESSES: Comments and materials concerning this proposal should be sent to Michael M. Bentzien, Assistant Field Supervisor, U.S. Fish and Wildlife Service, 6620 Southpoint Drive South, Suite 310, Jacksonville, Florida 32216. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Dr. Michael M. Bentzien, at the above address (telephone 904/232–2580, ext. 106; facsimile 904/232–2404).

SUPPLEMENTARY INFORMATION:

Background

The oldfield mouse (*Peromyscus polionotus*) occurs in northeastern Mississippi, Alabama, Georgia, South Carolina, and Florida. Beach mice are coastal subspecies of the oldfield mouse restricted to beach and sand dune habitat. Hall (1981) recognized eight coastal subspecies whose common distinguishing characteristics include white feet, large ears, and large black eyes. Their fur is variously patterned in shades of white, yellow, brown, and grey. The head, back, and rump are darkly patterned, though to a lighter and less extensive degree than inland oldfield mice. The all-white underparts extend higher up to the sides than on the inland subspecies (Sumner 1926, Bowen 1968). Howell (1939) described the type (original) specimen of the St. Andrew beach mouse as having a very pale, buff-colored head and back with extensive white coloration underneath and along the sides. Bowen (1968) noted two distinct rump color pigmentations, one a tapered and the other a squared pattern, which extended to the thighs. Head and body lengths average 75 millimeters (mm) (2.95 inches (in)), tail mean length 52 mm (2.05 in), and hind foot mean length 18.5 mm (0.73 in) (James 1992).

Beach mice subspecies historically occurred on both the Atlantic Coast of Florida from St. Johns through Broward counties and the eastern Gulf of Mexico from Gulf County, Florida, to Baldwin County, Alabama (Ivey 1949, Bowen 1968, James 1992, Stout 1992, Gore and Schaefer 1993). The St. Andrew beach mouse is the easternmost of the five Gulf coast subspecies. Howell (1939) collected the type specimen at St. Andrew Point on Crooked Island, Tyndall Air Force Base, Bay County, Florida (type locality). Other historic collection records for the subspecies include nine additional specimens from the type locality, seven mice from St. Joseph Point and four mice from Cape San Blas on the St. Joseph Peninsula in Gulf County, 48 individuals at or near the town of Port St. Joe located on the central Gulf County coastal mainland, and four specimens near Money Bayou in eastern Gulf County (Bowen 1968). Based on these records, Bowen (1968) and James (1992) described the former range of the St. Andrew beach mouse as likely extending from the St. Joseph Spit (Peninsula) northwest along the coastal mainland adjacent to St. Joseph Bay, to Crooked Island at the East Pass of St. Andrews Bay. This range also included about 0.6 kilometer (km) (1 mile (mi)) of mainland sand dune habitat east of the landward end of the St. Joseph Peninsula to Money Bayou on the Gulf of Mexico. The absence of past collection records and lack of beach mouse sign and trapping success in the area east of Money Bayou to the southeastern corner of Gulf County (James 1987; J. Gore, Florida Game and Fresh Water Fish Commission, in litt. 1994) suggest that this area may not be part of the subspecies' historic range.

Coastal tidal marsh and upland habitat between the mainland city of Port St. Joe and the St. Joseph Peninsula naturally divided the former range of the St. Andrew beach mouse into two segments. Initial genetic analysis of a small sample of mice from these segments and another subspecies, the Choctawhatchee beach mouse (*P. polionotus allophrys*), from nearby habitat found similarities between the Crooked Island and St. Joseph Peninsula samples at one gene location (locus). The Crooked Island sample was distinctly different from the Choctawhatchee beach mouse sample at the same locus. Additional work is needed to determine if these patterns are consistent at several loci (Moyers 1997).

Typical beach mouse habitat generally consists of several rows of sand dunes paralleling the shoreline. Prevailing wind, beach sand, and vegetation combine to form and shape coastal dunes. A common complex of animal species, vegetation, and habitat types characterize the coastal sand dune ecosystem. The types and amount of animals, vegetation, and habitat may differ, however, among specific sites. The common types of sand dune habitat include frontal dunes, primary dunes, secondary dunes, inter and intradunal swales, and scrub dunes. Frontal dunes and primary dunes are those closest to