

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status and Critical Habitat for Three Beach Mice

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines endangered status and critical habitat for the Alabama beach mouse, Choctawhatchee beach mouse, and Perdido Key beach mouse. The three beach mice are endemic to the Gulf Coast of southern Alabama and northwestern Florida. They are restricted to sand dune habitat, which is being destroyed by residential and commercial development, recreational activity, and tropical storms. This rule will provide the three beach mice with the protection of the Endangered Species Act of 1973, as amended. The Service will initiate recovery actions for the three beach mice.

EFFECTIVE DATE: June 6, 1985.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours (7:00 AM-4:30 PM) at the Service's Endangered Species Field Station, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207.

FOR FURTHER INFORMATION CONTACT: Mr. David J. Wesley, Endangered Species Field Supervisor, at the above address (904/791-2580 or FTS 946-2580).

SUPPLEMENTARY INFORMATION:**Background**

The species *Peromyscus polionotus*, often known as the old field mouse, occurs in northeastern Mississippi, Alabama, Georgia, South Carolina, and Florida; 16 subspecies are currently recognized (Hall, 1981). Certain of the subspecies are endemic to the beaches and sandy fields of southern Alabama and northwestern Florida. Prior to a detailed study by Bowen (1968), involving genetics, morphology, historical geology, and habitat, only 3 subspecies were recognized in the latter region. Bowen determined that variation was much more extensive than previously thought, and he described 5 new subspecies, including the 3 that are the subjects of this final rule: the Alabama beach mouse (*P. p. ammobates*), originally found on coastal dunes from Fort Morgan to Alabama

Point, and on Ono Island, Baldwin County, Alabama; the Perdido Key beach mouse (*P. p. trissyllepsis*), originally found on much of Perdido Key, which extends along the Gulf Coast of Baldwin County, Alabama, and Escambia County, Florida; and the Choctawhatchee beach mouse (*P. p. allophrys*), originally found on the Gulf Coast of Florida from the East Pass of Choctawhatchee Bay, Okaloosa County, eastward to Shell Island, Bay County.

Beach mice have small bodies, haired tails, relatively large ears, protuberant eyes, and coloration that blends well with the sandy soils and dune vegetation of their habitat. In the Alabama beach mouse, also called the Alabama Gulf Coast beach mouse or white-fronted mouse, head and body length is 68 to 88 millimeters (mm) (2.7 to 3.4 inches (in.)), tail length is 42 to 60 mm (1.6 to 2.3 in.), the upper parts are pale gray with an indistinct middorsal stripe, the sides and underparts are white, and the tail is white with an incomplete dorsal stripe. In the Perdido Key beach mouse, also called the Perdido Bay beach mouse or Florida beach mouse, head and body length is 70 to 85 mm (2.7 to 3.3 in.), tail length is 45 to 54 mm (1.8 to 2.1 in.), the upper parts are grayish fawn to wood brown with a very pale yellow hue and an indistinct middorsal stripe, the white of the underparts reaches to the lower border of the eyes and ears, and the tail is white to pale grayish brown with no dorsal stripe. In the Choctawhatchee beach mouse, head and body length is 70 to 89 mm (2.7 to 3.5 in.), tail length is 43 to 64 mm (1.7 to 2.5 in.), the upper parts are orange-brown to yellow-brown, the underparts are white, and the tail has a variable dorsal stripe (Bowen, 1968; Ehrhart, 1978; Howell, 1920; Linzey, 1978).

The sand dune habitat of the beach mouse is not uniform. The depth of the habitat, from the beach inland, may vary depending upon the configuration of the sand dune system and the vegetation. There are commonly several rows of dunes, paralleling the shoreline and occasionally ranging up to 14 meters (46 feet) in height. The frontal dunes are sparsely vegetated with widely scattered grasses including sea oats (*Uniola paniculata*), bunch-grass (*Andropogon maritimus*), and beach grass (*Panicum amarum* and *P. repens*), and with seaside rosemary (*Ceratiola ericoides*), beach morning glory (*Ipomoea stolonifera*), and railroad vine (*I. pes-caprae*). The interdunal areas contain cordgrass (*Spartina patens*), sedges (*Cyperus* sp.), rushes (*Juncus scirpoides*), pennywort (*Hydrocotyle*

bonariensis), and salt-grass (*Distichlis spicata*). The dunes farther inland from the Gulf support growths of saw palmetto (*Serenoa repens*), slash pine (*Pinus elliotti*), sand pine (*P. clausa*), and scrubby shrubs and oaks including yaupon (*Ilex vomitoria*), marsh-elder (*Iva* sp.), scrub oak (*Quercus myrtifolia*), and sand-live oak (*Q. virginiana* var. *maritima*). Seaside goldenrod (*Solidago pauciflosculosa*), aster (*Heterotheca subaxillaris*), and *Paronychia* sp. may also be present.

Human and natural alteration of coastal ecosystems has resulted in severe declines of beach mice. Most suitable habitat has been lost because of residential and commercial development, recreational activity, beach erosion, and vegetational succession. Competition from introduced house mice (*Mus musculus*) and predation by domestic cats (*Felis catus*) also seem to be problems. Tropical storms are a constant threat to the remnant, fragmented populations of beach mice. Hurricane Eloise in 1975 and Hurricane Frederick in 1979 were especially bad, destroying large areas of habitat for all three subspecies. Bowen (1968) observed that more than two-thirds of the habitat of *P. p. allophrys* had been lost since 1950, as a result of the coastal real estate boom.

Several recent status surveys and habitat analyses have indicated that the situation continues to worsen. Holliman (1983) found *P. p. ammobates* to still survive on disjunct tracts of the sand dune system from Fort Morgan State Park to the Romar Beach area, but to have apparently disappeared from most of its original range, including all of Ono Island. Working in various parts of the habitat of the subspecies, with a total length of 20.6 kilometers (km) (12.8 miles (mi.)), he live-trapped (and released after marking) an average of 10.7 mice per 100 trap-nights of effort. He estimated *P. p. ammobates* to contain a total of 875 individuals on 134.6 hectares (ha) (332.6 acres (A)), a relatively low population size for a small mammal. A few months later, Meyers (1983), working in the same areas, live-trapped an average of only 3.6 *P. p. ammobates* per 100-trap-nights. Additional record of *P. p. ammobates* have been obtained recently by Dawson (1983) and Meyers (pers. comm.).

Humphrey and Barbour (1981) made a study of *P. p. trissyllepsis* in 1979, prior to Hurricane Frederick. They estimated that only 78 individuals of the subspecies survived, there being 52 at the Gulf Islands National Seashore on the eastern part of Perdido Key and 26 at the Gulf State Park on the western

part of the Key. Holliman (1983), working at the Gulf State Park after Hurricane Frederick, caught only a single specimen of *P. p. trissyllepsis*. Subsequently, Meyers (1983) captured 13 individual *P. p. trissyllepsis* at the Gulf State Park, but none at the Gulf Islands National Seashore. He considered the subspecies to have been extirpated from the latter area by Hurricane Frederick in 1979. Holliman (1984), trapping on the north side of State Road 182 at the west end of Perdido Key, captured only a single *P. p. trissyllepsis* in June 1984 in low dunes isolated by poor quality habitat. This drastic reduction to one population, with only a few animals occupying a restricted habitat that is highly vulnerable to destruction, probably makes the Perdido Key beach mouse one of the most critically endangered mammals in the United States.

As late as 1950, *P. p. allopnyrs* was widespread and abundant along the barrier beach between the Choctawhatchee and St. Andrew Bays. In 1979, however, Humphrey and Barbour (1981) found that the subspecies had been extirpated from 7 of the 9 localities from which it has previously been known. They also discovered it on Shell Island, a former peninsula that had been isolated by the dredging of the St. Andrew Bay entrance channel. The subspecies was estimated to contain at least 515 individuals. Meyers (1983) confirmed the survival of *P. p. allopnyrs* on Shell Island.

On June 7, 1979, the Alabama Department of Conservation and Natural Resources, Game and Fish Division, responded to a Service inquiry regarding priority ratings for candidate species that might merit addition to the U.S. List of Endangered and Threatened Wildlife, pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). The Department stated that the Alabama and Perdido Key beach mice should have the highest listing priority for mammals in Alabama.

On June 9, 1982, Dr. Stephen R. Humphrey, Associate Curator in Ecology, Florida State Museum, Gainesville, Florida, petitioned the Service to add the Perdido Key beach mouse and the Choctawhatchee beach mouse to the List. The petition included a status report prepared under contract to the Florida Game and Fresh Water Fish Commission. Portions of the report were subsequently published (Humphrey and Barbour, 1981). On June 21, 1982, the Commission gave its full support to Dr. Humphrey's petition and requested that listing be expedited. In the **Federal Register** of October 6, 1982

(47 FR 44125), the Service published a notice of petition acceptance and status review, and announced its intention to propose listing the two subspecies with critical habitat.

On October 26, 1982, Dr. Dan C. Holliman, Division of Science and Mathematics, Birmingham-Southern College, Birmingham, Alabama, petitioned the Service to add the Alabama beach mouse and the Perdido Key beach mouse to the List. In the **Federal Register** of February 15, 1983 (48 FR 6752-6753), the Service published a notice of findings that accepted this petition.

In the **Federal Register** of December 30, 1982 (47 FR 58454-58460), all three mice were included in the Service's Review of Vertebrate Wildlife. The Perdido Key and Choctawhatchee beach mice were placed in Category 1 of the Review, meaning that there was substantial information on hand to support the biological appropriateness of a listing proposal. The Alabama beach mouse was placed in Category 2, meaning that proposing to list was possibly appropriate, but substantial supporting data were not available. Such data were subsequently received, specifically the reports by Holliman (1983) and Meyers (1983).

On October 13, 1983, the petition finding was made that listing of all three beach mice was warranted but precluded by other pending listing measures, in accordance with Section 4(b)(3)(B)(iii) of the Act. Such findings require a recycling of the petitions pursuant to Section 4(b)(3)(C)(i) of the Act. When other pending measures had been processed, a new finding was made and set forth in the **Federal Register** of June 7, 1984 (49 FR 23794-23804), in conjunction with a proposed determination of endangered status and critical habitat for the three subspecies of beach mice. On July 5, 1984, the Service was requested to hold a public hearing on the proposal; in the **Federal Register** of August 13, 1984 (49 FR 32321), the Service announced a public hearing and an extension of the comment period through September 7, 1984. The hearing was held on August 28, 1984, at the Gulf State Park Resort, State Road 182, Gulf Shores, Baldwin County, Alabama. During the public comment period, June 7 through September 7, 1984, the Service received numerous comments. In the **Federal Register** of October 4, 1984 (49 FR 39179), the Service published a notice reopening the public comment period through November 5, 1984, to allow for a review of two papers received during the public comment period. In the

Federal Register of October 15, 1984 (49 FR 40196), a typographical error in the October 4, 1984, notice, was corrected.

Summary of Comments and Recommendations

In the proposed rule of June 7, 1984, and associated notifications, all interested parties were requested to submit relevant data and comments that might contribute to the development of a final rule. Appropriate State and Federal agencies, county governments, scientific organizations, biologists, and other interested parties were contacted and requested to comment. Newspaper notices, inviting general public comment, were published in the *Mobile Press Register* on June 30, July 29, and October 20, 1984; *Playground Daily News* on June 27 and July 28, 1984; *Montgomery Advertiser* on June 30, July 28, and October 20, 1984; *Panama City News Herald* on June 30, August 1, and October 27, 1984; *Pensacola News Journal* on July 1 and 29, and October 20, 1984; *Independent* on June 27 and July 25, 1984; *Birmingham News/Post Herald* on July 1, August 1, and October 20, 1984; *Destin Log* on June 30 and October 24, 1984; *Onlooker* on June 28 and July 29, 1984; and *Islander* on July 5, 1984.

During both comment periods, totalling 4 months, 183 comments were received and are discussed below. The public hearing was attended by 180 individuals, 27 of whom made oral statements. Numerous written comments and oral statements either supported or opposed listing the beach mice, but provided no substantive data. Support for the listing proposal was voiced by 16 environmental organizations, as well as Federal and State agencies, landowners, members of the academic community, and interested citizens.

Several Federal agencies reacted favorably to the Service's proposal. These agencies indicated that they would experience no economic or other significant impacts, that their activities would not impact beach mice or critical habitat, that they had no objection to the listing with critical habitat, that they supported the protection of the beach mice and their sand dune habitat, and/or that they would assure protection of beach mice and critical habitat pursuant to Section 7 of the Act (see "Available Conservation Measures," below). These Federal agencies were the Army Corps of Engineers; Coast Guard; Department of Transportation; Environmental Protection Agency; Bureau of Land Management; Department of the Interior; Veterans Administration; Office of Ocean and Coastal Resource

Management, National Oceanic and Atmospheric Administration; Gulf Islands National Seashore, National Park Service; and Tyndall Air Force Base, Department of the Air Force. The Service will consult with any of these or other Federal agencies on actions that might jeopardize the continued existence of the beach mice and/or adversely modify or destroy critical habitat.

Several State agencies reacted favorably to the Service's proposal to list the beach mice with critical habitat. These agencies indicated that they would be pleased to work with the Service to protect beach mice and their habitat, they would consider the beach mice and their fragile sand dune habitat, in the planning of future projects, they concur with the proposal, and/or they support recovery efforts and would provide additional protection for beach mice. These State agencies were the Alabama Historical Commission (Fort Morgan State Park); Alabama Highway Department; Alabama Division of Game and Fish; Florida Department of Environmental Regulation; Florida Game and Fresh Water Fish Commission; and Division of Recreation and Parks, Florida Department of Natural Resources. The Florida State Clearinghouse has stated that the determination of endangered status with critical habitat for the beach mice is in accord with State plans, programs, procedures, and objectives.

Opposition was generally received from developers, landowners, attorneys representing developers, and two consultants retained by development interests. The opposing comments received can be placed in a number of different categories depending on content. The comments and the Service response to each, are listed below.

Comment 1. The beach mouse population surveys used by the Service were superficial. Trapping data summarized by Griswold (undated) show that beach mouse populations have remained stable throughout this century. In addition, Dawson (1983) concluded it was premature for the Service to list the Alabama beach mouse.

Service response. The Service disagrees that its listing action is based on superficial data. The Service has based its findings on documents, including published scientific literature and status surveys, which contain data from more than 9000 trap-nights at about 50 trap sites along approximately 100 miles of Gulf Coast sand dunes. These sources document significant habitat loss that has occurred throughout the range of the three subspecies, as well as

other threats to beach mice including tropical storms, and possible competition from house mice and predation by house cats.

The conclusion drawn from Griswold's (undated) paper, that beach mouse populations have actually remained stable, is in error. The trapping data he summarized show that in some areas where beach mice occur at present, their relative abundance (number of animals trapped per 100 trap-nights) may have remained unchanged, but Griswold's analysis fails to take into account that occupied beach mouse range has been reduced to approximately one-fifth of its historic size, that habitat loss continues to be a threat, and that other threats, cited above, exist as well. The Service disagrees with Dawson's conclusion, which was based on data from 64 trap-nights at one trap site. Dawson's data are inadequate for drawing any conclusions on the overall status of the Alabama beach mouse.

Comment 2. Since experts do not know how many beach mice there are, it is unreasonable to conclude that mice are endangered.

Service response. It is not necessary to have precise population numbers to determine that the beach mice are endangered; indeed, it would probably be impossible to obtain such numbers. The Service has, however, carefully reviewed the relative population data of Holliman (1983), Humphrey and Barbour (1981), and Meyers (1983), as well as other data documenting habitat loss. Based on these data the Service has drawn its conclusion that the three beach mice are facing extinction (see "Background," above, and "Summary of Factors Affecting the Species," below).

Comment 3. Beach mice should be translocated to federally owned property, sanctuaries, or wildlife refuges to determine beach mouse adaptability to new sand dune habitat.

Service response. The Service generally agrees with this comment, and will address translocation as one type of a recovery measure in the beach mouse recovery plan. However, the potential effects of translocation are not relevant to a decision on whether to list a species. Under Section 4 of the Act, if data warrant listing, the Service must proceed to list the species. Moreover, one of the central purposes of the Act is to protect the natural habitat of listed species. Therefore, while translocation in a given setting may constitute an acceptable conservation measure, it would be inappropriate under the Act to make it the exclusive conservation mechanism for the species.

Comment 4. A translocation project should be initiated to introduce beach mice to the west end of Dauphin Island, Alabama, where no beach mice now occur. The habitat is similar (to Alabama beach mouse habitat). Translocation to Dauphin Island could be considered as mitigation for critical habitat loss due to development.

Service response. While translocation may be a means of helping a species to survive and recover, the Service must act to preserve the ability of a species to survive in its current range. One of the primary purposes of the Endangered Species Act, as stated in Section 2(b), is to provide a means whereby the ecosystems upon which endangered species depend may be conserved. Thus, the Service's policy is to attempt to conserve and recover endangered and threatened species within their known historic ranges. Dauphin Island is not known to be within the historic range of the Alabama beach mouse.

Comment 5. Variations in relative abundance data (number of animals trapped per 100 trap-nights) for beach mice could be explained by migration of beach mice inland from sand dune habitat, thus indicating beach mouse ability to occupy other habitat types. Research should be conducted to determine if beach mice migrate to inland areas, before the Service considers listing action. The Governor of Alabama was among those parties making the latter point.

Service response. There are no data to indicate that the three subspecies of beach mice in question migrate between sand dune habitat and adjacent inland habitat types. These beach mice have been documented only in sand dune habitat. Other subspecies of *P. polionotus*, and other species of *Peromyscus*, such as *P. gossypinus* (Humphrey and Barbour, 1981), inhabit adjacent habitat types. Within a beach mouse population, it is expected that there will be movement or dispersal of animals within the sand dune habitat attributed in part to young animal's efforts to establish individual territories, and to search for food, but there is no evidence that they disperse inland. The Service considers that research on beach mouse migration to inland areas, prior to any listing action, is unwarranted.

Comment 6. The Service did not use the best and most recent scientific data available, as required by Section 4 of the Act, when it proposed listing the beach mice as endangered. According to this view, the best scientific data available on the taxonomy of these mice demonstrate that *Peromyscus polionotus*

ammobates, *P. p. trissyllepsis*, and *P. p. alophrys* are not valid taxonomic entities. In support of this opinion, two unpublished papers (Dawson, 1984, Griswold, undated) were submitted, which, according to the commenter, contain data that were available to the Service but were not utilized in the preparation of the proposal. These two papers attempt to cast doubt on the taxonomic validity of the three beach mice through the use of statistical and biochemical techniques, and chromosomal analyses. The conclusion reached by both authors is that the subspecific names *ammobates*, *trissyllepsis*, and *alophrys* have been applied to beach populations of *Peromyscus polionotus* that in reality do not differ sufficiently from adjacent inland populations to warrant their recognition as valid subspecies. The commenter maintained that since the Service did not use the scientific data contained in the Dawson and Griswold papers, the statutory requirements of the Act has not been met, and the proposal therefore should be withdrawn. The commenter further requested the Service to submit the Dawson and Griswold papers to a "peer review," and recommended the names of five biologists qualified to conduct the review.

Service response. The Service rejects the argument that it failed to use the best scientific data available. The taxonomic treatment used in the proposed rule was based on the last comprehensive review of beach mice (Bowen, 1968). This review was published in a recognized scientific journal, and was accepted by Hall (1981). Neither the Dawson nor the Griswold paper has been published, and both appear to be interim reports, rather than completed studies; Dawson specifically points out that additional work needs to be done. It should be noted also that neither paper was available to the Service during the preparation of the proposed rule. Both appear to have been expressly prepared in response to publication of the proposed rule itself.

Service biologists have reviewed the Dawson and Griswold papers, and consider the data presented to form an insufficient basis for nonrecognition of the subspecific distinction of the three beach mice. Indeed, to some extent these data seem to support such distinction. In addition, the Service submitted review copies of the two papers to not only the 5 biologists recommended by the commenter, but to 13 others considered possibly knowledgeable on the subject. These 18

biologists were asked their opinion on the validity of the three subspecies in question and on whether Dawson and Griswold had demonstrated that these subspecies were not valid. Of these biologists, 8 responded, and, as anticipated, there was substantial disagreement both with regard to the taxonomic status of the beach mice and to the use of the subspecific category in general. Several of the biologists thought the three subspecies to be valid and several thought them not or probably not valid, but there was considerable uncertainty. There also was disagreement relative to the usefulness of the Dawson and Griswold papers, with half of the commenting biologists thinking the papers did not support nonrecognition of subspecific status for the beach mice, and half thinking that one or both papers did support (though did not necessarily demonstrate) such nonrecognition. The one point on which there was the most agreement, as suggested by the comments of 7 of the biologists, is that beach mouse populations in question may warrant protection and/or endangered status, whether treated as three separate subspecies, as components of a single subspecies, or as discrete and unique populations. Section 3(16) of the Act does indicate that a vertebrate population may be added to the List of Endangered and Threatened Wildlife, even if it is not a biological species or subspecies.

Comment 7. There are conflicting statements in the Service's files regarding ability of beach mice to survive hurricanes. The commenter stated that one observer had noted how beach mice can survive several hours of inundation from storm tides, but no one knows how they survive; that another observer had noted evidence of beach mouse activity the night after storm waters subsided; and that Holliman (1983) has stated that higher dunes probably served as a refuge for beach mice during Hurricane Frederick, but that Holliman added (pers. comm.) that the beach mouse population cannot take another storm. In summary, the commenter stated these data contradict the statement in the listing proposal that beach mice are destroyed by hurricanes.

Service response. The Service considers there to be no contradiction in these statements. Further, there is clearly a relationship between tropical storms and habitat loss, and beach mouse population decline and extirpation. The data cited in the "Background" and "Summary of Factors Affecting the Species" clearly explain the impacts of Hurricanes Eloise and

Frederick on beach mouse populations; some populations have been extirpated. No studies have been conducted to determine how some beach mice are able to survive tropical storm inundation. Some may seek refuge in nearby dunes with elevations above flood level.

Tropical storms are a threat to beach mice, and their habitat, alone and in association with other threats such as loss of habitat due to development. Holliman's personal communication actually stated that there have been tropical storms throughout recorded history, but Hurricane Frederick, coupled with increased development, has had a major impact on the Alabama beach mouse population. Holliman stated that given these circumstances, he did not believe the Alabama beach mouse population could survive another storm.

Comment 8. The Perdido Key beach mouse population level appears to have been quite small in recent years. It is possible that the lack of reproduction in the subspecies is a result of inbreeding depression, rather than poor environmental quality. A year-long study should be done before any determination of the cause for the low population level is made.

Service response. Inbreeding depression could be a factor responsible for the low population level of the Perdido Key beach mouse; this in itself could be a major threat to the survival of this mouse that justifies listing. The fact remains that the population is facing extinction and listing action is warranted.

Comment 9. The scientists who have described beach mouse habitat disagree among themselves as to the type of dunes in which beach mice live. Despite this disagreement, the Service has proceeded to determine critical habitat. In addition, the delineation of critical habitat in the proposal is unclear.

Service response. The Service thinks that the descriptions of beach mouse habitat by Humphrey and Barbour (1981), Holliman (1983), and Meyers (1983) are not in disagreement, and that the delineations of critical habitat in the proposal are accurate and clear. The Service recognizes (see above "Background") that there are significant topographical and ecological variations within the dune systems, which may be caused by numerous factors. It is obvious that the sand dune systems are not uniform. Thus, beach mouse habitat is best characterized using broad terms. The major factor is that beach mice are restricted to the undisturbed dune systems. The Service considers that its

verbal descriptions and maps of these areas in the proposal clearly delineate the critical habitat for these mice.

Comment 10. There are conflicting statements in the literature regarding the relationship between beach mice and house mice. Holliman concluded that beach mice succumb to competition from house mice that accompany human settlement. However, Holliman trapped no house mice. Meyers (1983) stated that his data did not support Humphrey and Barbour's (1981) suggestion that beach mice succumb to competition from house mice associated with human dwellings.

Service response. Refer to factor "E" in the "Summary of Factors Affecting the Species." The Service thinks that house mice may compete with beach mice for food and cover. Humphrey and Barbour (1981) speculated that one of the reasons for the disappearance of beach mice in some areas could be that beach mice succumb to competition from house mice that accompany human settlement. Their study provided possible evidence of competitive exclusion. Holliman (1983) also found that house mice and beach mice do not occur together in the same habitat, and noted Humphrey and Barbour's hypothesis as a possible explanation. On the other hand, Meyers (1983) believed that the absence of house mice in beach mouse habitat could be due to the inability of the beach/dune ecosystem to support house mouse populations. Despite these differing views, there remain sufficient grounds for the belief that house mice and beach mice do compete to the detriment of the beach mouse populations.

Comment 11. There are contradictory statements regarding the impacts of house cats on beach mice. No one has produced data showing that such predation actually occurs.

Service response. As stated in the "Background," above, and "Summary of Factors Affecting the Species," below, the Service considers that house cats may prey upon beach mice. Bowen (1968) indicated that predation by feral house cats was becoming an increasingly important factor in the reduction of beach mouse populations. During his field work (1950-1961), the impact of cats on beach mice became so apparent to him that in later years he avoided trapping wherever he found cat tracks. Bowen (1968) photographically documented an instance where beach mouse tracks and cat tracks converged on the entrance to a hole in a rotten log on the sand. Similar observations of house cat tracks following beach mouse trails have been made by Service personnel.

Humphrey and Barbour (1981) indicated that their data are consistent with the hypothesis that beach mouse populations may be extirpated by predation from house cats. Holliman (1983) stated that predator data from Ono Island suggest that house cats may be responsible for the absence of beach mice from that island. Service personnel and others have observed house cat tracks in other areas of beach mouse habitat as well. Meyers (1983) stated that the majority of the predators at Gulf Shores, Alabama, sites were dogs and cats. Cat presence was limited to Romar Beach, Alabama, where 25 percent of his trapping stations were visited by at least two cats. Humphrey (pers. comm.) pointed out, however, that no one has actually produced concrete data showing that predation by house cats occurs. The Service acknowledges that no studies have been conducted on predation of beach mice by house cats. However, the Service thinks that the data presented by Bowen (1968), Humphrey and Barbour (1981), Holliman (1983), and Meyers (1983) strongly indicate that predation by house cats may be a threat to beach mice.

Comment 12. Beach mice are vermin associated with human dwellings. Beach mice are a menace to public health, carrying parasites and diseases, such as rabies.

Service response. Beach mice do not normally occur in human dwellings, nor are they a menace to human health. According to Florida Public Health Office records, there has never been an incidence of human plague in rodents in Florida, and there are no documented cases of rabies ever occurring in mice in Florida. Likewise, according to the Alabama State Health Office there have been no reported cases of plague, and rabies in rodents is virtually unheard of, in Alabama.

Comment 13. Beach mice, feeding on sea oats and their root systems, may be a threat to sand dune stability. A reduction in beach mice might enhance sand dune development.

Service response. Beach mice evolved with sea oats in a sand dune environment. Beach mice and sea oats (*Uniola paniculata*) have coexisted for thousands of years on sand dunes. Such a condition usually indicates that the species are in some way mutually beneficial. It is almost certain that if one of these species were detrimental to the survival of the other, the weaker would have been extirpated from the shared environment long ago. At present, with beach mouse populations significantly reduced in range and numbers, they could not pose any sort of threat to the

well-being of sea oats. Further, it is thought that beach mice actually may enhance sea distribution by dispersing sea oat seeds throughout a sand dune system.

Comment 14. It is possible for beach mice to thrive in areas adjacent to high density development, and there are no valid data to support the conclusion that development adversely affects beach mice.

Service response. Available data clearly show the impact of development. In most of the historic range of beach mice, where sand dunes occupied by beach mice once existed and where beach mice were actually trapped, the dunes have been replaced or seriously degraded by development and associated impacts. Beach mice have been extirpated from these areas.

Comment 15. If proper provisions are made to preserve front dunes and corridors for repopulation of areas by beach mice after hurricanes, commercial real estate development can be made compatible with survival of beach mice.

Service response. The Service basically agrees with this observation, but considers it an oversimplification of a complex situation. The Service does agree that residential and commercial development can be designed, situated, constructed, and managed in such a manner so as to be compatible with beach mouse protection and recovery. Development must be situated inland from beach mouse habitat in order to protect the dunes and interdunal areas and associated grasses and shrubs that provide food and cover for beach mice. Pedestrian access across sand dunes must be limited to elevated boardwalks in order to preserve the sand dunes and associated vegetation. Vehicles must be strictly prohibited from the dunes. Development should be managed to discourage the presence of house cats and house mice, which may prey upon or compete with beach mice; this can be achieved by using scavenger-proof trash receptacles and maintaining them on a schedule to avoid overflow that might attract house cats and house mice.

The wise management of sand dunes to preserve their natural stormwater barrier and esthetic qualities will also serve to protect their value as beach mouse habitat. Beach mouse corridors generally are not clearly delineated strips of land, but rather are natural ill-defined pathways, probably changing seasonally, used by beach mice to provide access to different parts of their range. This general protection of habitat from destruction or adverse modification will protect the network of corridors.

Comment 16. The intent of Congress, in passing the Endangered Species Act of 1973, was not to protect subspecies. By doing so, the Department of the Interior would go beyond the intent of Congress.

Service response. This statement is incorrect. The term "species" as defined by the Act in Section 3(16), "includes any subspecies of fish or wildlife or plants."

Comment 17. The Service has failed to meet its statutory obligation by having no economic data as a prerequisite for determining critical habitat. Further, the Service has failed to demonstrate the environmental impact of the designation of critical habitat.

Service response. The Service has met its statutory obligations in the designation of critical habitat. The Endangered Species Act states that the determination of the status of a species must be based solely on the best scientific and commercial data available. Critical habitat is also proposed based on the best scientific data available. When critical habitat is reviewed for final determination the Service analyzes the scientific data, the economic impacts, and any other relevant impacts (Section 4(b)(2) of the Act). In accordance with these guidelines, the Service has completed an economic analysis and determination of effects (see "Regulatory Flexibility Act and Executive Order 12291," below). Further, the Service has determined that an environmental assessment is not required (see "National Environmental Policy Act," below).

Comment 18. The Service proposes to protect beach mice from natural forces such as hurricanes and predators; this far exceeds the scope of the Endangered Species Act. The Endangered Species Act was intended to protect species from unnatural extinction.

Service response. Section 2(a) of the Act states that various species have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation, and that the United States has pledged itself to conserve various species facing extinction. The Act further specifically states in Section 4(a)(1)(E) that both natural and manmade factors affecting a species' continued survival shall be considered whenever a species is listed as endangered or threatened. In the case of beach mice, both natural and manmade factors apply. Before development destroyed vast expanses of dunes, tropical storms probably periodically wiped out sand dune communities and associated beach mice. As the dunes recovered, beach mice surviving in

adjacent areas could repopulate the recovering area. Today, so much habitat has been lost to development that there are few beach mice remaining to repopulate areas devastated by storms.

Comment 19. During the summer of 1984, additional threats to beach mouse habitat developed when a new ferry service began between Dauphin Island and Fort Morgan, Alabama. During the first 48 days of service, 40,000 people/6,000 vehicles were transported back and forth, increasing human influx and illegal vehicular traffic across the dunes in the Fort Morgan area.

Service response. The Service acknowledges the increased threat to beach mouse habitat. See "Comment 15" and "Service response," above, regarding the need to prohibit vehicular access and to limit pedestrians to boardwalks over sand dunes in order to protect the dunes and associated wildlife, including beach mice.

Comment 20. The Service was requested to investigate the possibility of *P. p. allophrys* being on Crooked Island, Tyndall Air Force Base, Bay County, Florida.

Service response. The Service has reviewed existing data regarding beach mice on Crooked Island. Bowen (1968) showed Crooked Island to be within the range of *P. p. peninsularis*. Hall (1981) indicated that *P. p. peninsularis* is recorded from St. Andrews Point Peninsula on Crooked Island and from Cape San Blas, Gulf County, Florida. Thus, the Service concludes that the southernmost range of *P. p. allophrys* is Shell Island, Bay County.

Comment 21. A local and State chapter of a conservation organization recommended that the Service include the Santa Rosa Island beach mouse (*P. p. leucocephalus*) in the Service's listing action. These organizations maintain that this subspecies is also threatened by beach front development in Santa Rosa and Okaloosa Counties, Florida.

Service response. As the two original beach mouse petitions did not cover *P. p. leucocephalus*, the Service did not collect substantial information on that subspecies, and did not include it in the proposed rule. Upon receipt of substantial data, the Service would consider a separate proposal to list *P. p. leucocephalus*.

Comment 22. One commenter alleged that the U.S. Army Corps of Engineers' channel maintenance program and beach restoration project in the Florida panhandle will face increased costs as a result of the listing of beach mice with critical habitat. The cost of delivering spoil to outlying areas, and the cost of monitoring dredging activities, will be extremely expensive.

Service response. The Service disagrees with the statements referring to significant increased costs, since the Corps has not identified such costs (see "Critical Habitat" section, below).

Comment 23. Some commenters questioned the Service's statements regarding the threat of oil and gas extraction to beach mouse habitat.

Service response. The Service acknowledges the State and Bureau of Land Management positions on State and Federal oil and gas extraction facility planning along the Fort Morgan Peninsula. They stated that the threat is much less critical than was described by the Service. Further, it is unlikely that oil and gas leasing will be affected by the listing (see "Critical Habitat" section, below).

Comment 24. The U.S. Army Corps of Engineers indicated that critical habitat should be more precisely designated so as to exclude existing navigation fairways and channel maintenance disposal areas, and to permit beach nourishment.

Service response. Described below, under "Regulations Promulgation" (§ 17.95), are the major constituent elements of critical habitat that are known to require special management considerations or protection. These elements include the dunes and interdunal areas, and associated grasses and shrubs, that provide food and cover for beach mice, but do not include navigation fairways and existing channel maintenance disposal areas. Further, it would be impossible to describe in words a legal boundary that exactly follows a natural ecological zone or to precisely separate every parcel of suitable habitat from other areas that may be less suitable. Therefore, it has been the general practice of the Service in delineating critical habitat to make critical habitat conform to an easily understood border such as a road, shoreline, or section line.

Comment 25. Some of the areas proposed for critical habitat designation appear unsuitable for optimum habitat and should be excluded from critical habitat designation. The Governor of Alabama and the Alabama Department of Conservation and Natural Resources were among those parties making this point, though both indicated general support for the proposed rule.

Service response. The Service agrees that some areas proposed as critical habitat are no longer suitable beach mouse habitat. The four proposed critical habitat units in the State of Alabama have therefore been substantially reduced in size in this final rule. Approximately 6 km (3.8 mi) of

private land has been deleted from the units. The reductions were warranted primarily by habitat loss or degradation resulting from development activities that have occurred subsequent to the preparation of the June 7, 1984, listing proposal. Two of the six proposed critical habitat areas in the State of Florida have also been reduced in size in this final rule. Approximately 2.4 km (1.5 mi.) of private land has been deleted from these proposed critical habitat units. These reductions were also warranted due to habitat loss or degradation resulting from development activities that have occurred subsequent to the preparation of the listing proposal.

Comment 26. There is already sufficient land in Federal or State ownership to provide protection for beach mice; therefore, there is no need to designate private lands as critical habitat in Alabama and Florida. Each State has been treated differently in the distribution of critical habitat units.

Service response. The Service disagrees with the statement that there is enough beach mouse habitat already in Federal or State ownership and that no additional land need be designated as critical habitat. Residential and commercial development have already isolated the remaining areas of beach mouse habitat, fragmenting populations. Because of the history of devastating tropical storms, often extirpating beach mice, it is necessary to maintain several suitable areas of habitat, irrespective of ownership, if the beach mice are to have a reasonable chance of survival and recovery.

The critical habitat units have been designated based on the needs of each of the subspecies rather than on political boundaries or ownership patterns. Since the coastlines of Alabama and Florida are not identical, it cannot be expected that each State should have critical habitat units of like number, size, or ownership patterns.

Comment 27. The Florida Game and Fresh Water Fish Commission stated that the critical habitat delineations appear prudent and reasonable, but that the Commission would have preferred to have had Choctawhatchee beach mouse critical habitat component 2 extended westward to include the undeveloped coastline west of Grayton Beach, Walton County.

Service response. Subsequent to the comment from the Commission, the State of Florida signed a purchase agreement for most of the undeveloped sand dune habitat west of Grayton Beach, known as Grayton Dunes and Grayton Additions. In the future, should the Service determine that this area should be designated as critical habitat,

a proposed rule to make that determination could be initiated as a separate action.

Comment 28. The U.S. Department of Transportation, Federal Highway Administration (FHWA), after coordinating with the Florida Department of Transportation, requested that existing rights-of-way along State, County, and Federal highways not be designated as critical habitat in order to accommodate FHWA future projects.

Service response. The Service has already indicated that habitat loss is one of the primary reasons for the decline in beach mouse populations. The occupied range of beach mice in Florida has been reduced from approximately 109 km (68 mi.) of Gulf Coast sand dunes to only 14.9 km (9.3 mi.). Thus, protection of the remaining habitat is essential for the long-term survival and recovery of the beach mice regardless of the legal description of the land (i.e. right-of-way). Only approximately 2.6 km (1.6 mi.) of critical habitat for the Perdido Key and Choctawhatchee beach mice include highway right-of-way or are in close proximity to it.

Comment 29. Sand dune habitat in Okaloosa County, Florida, should have been designated as critical habitat for the Choctawhatchee beach mouse.

Service response. The Service carefully reviewed the Henderson Beach State Recreation Area, Okaloosa County, Florida, for determination as critical habitat, but concluded that the area was not essential for the conservation and recovery of *P. p. allopshys*. The area, located east of the population center of Destin, Florida, is not suitable beach mouse habitat at present because of the nature of intense pedestrian use, and because of the placement of the State Road 98 roadbed on the top of the dune system.

Comment 30. It has been suggested that, if the beach mice are listed with critical habitat, property owners could suffer a financial loss and the U.S. Government should be required to compensate the property owners for their loss.

Service response. If there is no Federal funding or authorization of the private activities, then the designation of critical habitat under the Endangered Species Act will have no impact on private activities. See "Critical Habitat" and "Available Conservation Measures" sections, below, for a description of the possible effects of the listing on Federal activities. Federal financial involvement in development within units of the Coastal Barrier Resources System, established by the Coastal Barrier Resources Act of 1982, is generally

prohibited by that Act. Coastal Barrier Resources System Units in the vicinity of designated critical habitat are described later in this rule.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Alabama beach mouse, Perdido Key beach mouse, and Choctawhatchee beach mouse should be classified as endangered species. Procedures found at Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations promulgated to implement the listing provisions of the Act (October 1, 1984, 49 FR 38900, to be codified at 50 CFR Part 424) were followed. A species may be determined to be endangered or threatened due to one or more of the five factors described in Section 4(a)(1). These factors and their application to the Alabama beach mouse (*Peromyscus polionotus ammobates*), Perdido Key beach mouse (*P. p. trissyllepsis*), and Choctawhatchee beach mouse (*P. p. allopshys*) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. The Alabama, Perdido Key, and Choctawhatchee beach mice historically ranged along approximately 166.0 km (103.1 mi.) of coastal sand dunes in Baldwin County, Alabama; and Escambia, Okaloosa, Walton, and Bay Counties, Florida. Based on recent status surveys (Dawson, 1983; Holliman, 1983, 1984; Humphrey and Barbour, 1981; Meyers, 1983), and on observations by the primary author between July 1983 and January 1985, the three beach mice are at present found on approximately 35.1 km (21.8 mi.) of Gulf Coast dunes. Thus, their range has been reduced to about one-fifth of the original size.

A substantial decline of beach mouse habitat, through destruction or adverse impact by development, has been noted just since data were collected for the proposed rule of June 7, 1984. Mainly for this reason, the amount of habitat reported to exist in that proposal has now been reduced by approximately 23 percent or 5.1 km (3.2 mi.) for the Alabama beach mouse, approximately 8 percent or 1.8 km (1.1 mi.) for the Choctawhatchee beach mouse, and approximately 9 percent or 1.6 km (1.0 mi.) for the Perdido Key beach mouse. With respect to that portion of the habitat of the Perdido Key beach mouse that was actually known to be occupied when the proposal data were collected, the reduction has been 34 percent or 1 km (0.6 mi.).

The major threat to beach mouse habitat continues to be human destruction of the coastal sand dune ecosystem for commercial and residential development (Bowen, 1968; Ehrhart, 1978; Meyers, 1983). In addition, recreational use of the sand dunes by pedestrians and vehicles can destroy vegetation essential for dune development and maintenance. Such loss of vegetation results in extensive wind and water erosion, reducing the effectiveness of coastal dunes as a protective barrier and ultimately destroying beach mouse habitat.

Intensive commercial and residential development in Florida has restricted public use of beaches. Property owners are not required to provide access to the publicly owned wet sand beaches. This results in an increasing demand on accessible public beaches, causing increased erosion and loss of beach mouse habitat. If properly managed, however, public use of beaches is compatible with maintenance of beach mouse habitat (Meyers, 1983).

Residential and commercial development isolates small areas of beach mouse habitat, thereby fragmenting populations and upsetting gene flow. Low-density residential development does not necessarily create isolation of habitat, but high density multiple housing can act as a barrier to migration between populations. If any such population segment is extirpated, it cannot be replaced by natural immigration (Meyers, 1983).

Another problem might be the routine channel maintenance program conducted by the U.S. Army Corps of Engineers. The program involves the removal of accreted sand from channels and passes, and then disposal of the sand in the vicinity of beach mouse habitat. If measures are not taken to protect beach mouse habitat during the dredging and disposal activities, the habitat could be threatened. Based on the Corps' recent planning and implementation of a maintenance project at the Perdido Pass Channel, Alabama, however, it appears that, with careful consideration of beach mouse requirements in developing and conducting the maintenance projects, habitat should not be threatened.

B. Overutilization for commercial, recreational, scientific, or educational purposes. Not now known to be applicable.

C. Disease or predation. Bowen (1968) suggested that predation by feral house cats posed an imminent threat to beach mouse populations. The absence of a beach mouse population on Ono Island may be attributable to cat predation (Holliman, 1983). The presence of feral

house cats and other predators in or near beach mouse habitat may be fostered by the existence of open refuse containers associated with residential and commercial development or recreational use (James N. Layne, Archbold Biological Station, Lake Placid, Florida, personal communication; Meyers, 1983).

D. The inadequacy of existing regulatory mechanisms. Current controls affecting development in Gulf Coast sand dunes include subdivision, building department, and coast high hazard construction regulations, including setback lines, in Baldwin County, Alabama; and building codes, subdivision regulations, and coastal construction lines in Escambia, Walton, and Bay Counties, Florida. In addition, vehicular access to the dunes is regulated. None of these controls makes special provisions for beach mouse habitat protection. They do not prevent development in such habitat, or deal with the specific needs of the mice in relation to development, but instead simply establish general requirements for the siting and construction of buildings, utilities, and access corridors. These regulatory mechanisms have not prevented the substantial loss of beach mouse habitat in the past; despite their existence, degradation and destruction of such habitat continues.

In both Alabama and Florida, State laws protect seas oats from being picked. However, these laws do not prohibit the destruction of seas oats during construction activities.

The Federal Coastal Barrier Resources Act of 1982 (CBRA) generally prohibits Federal expenditures and financial assistance in units of the Coastal Barrier Resources System (CBRS). The CBRA mandated a statutory ban on Federal flood insurance in CBRS units that went into effect on October 1, 1983. Within the range of *P. p. ammobates* is the Mobile Point Unit of the CBRS, which includes approximately 4.0 km (2.4 mi.) of beach mouse habitat. Within the historical range of *P. p. allophtys* are the Moreno Point, Four Mile Village, and St. Andrews Complex Units of the CBRS, which include approximately 12.3 km (7.6 mi.) of beach mouse habitat.

Despite all of these regulatory devices of the county, State, and Federal governments, beach mouse habitat continues to be rapidly destroyed or degraded by construction activities. In the Coastal Barrier Resources System Units, construction is still proceeding rapidly with no Federal involvement. While vehicular access to the dunes is prohibited in most cases, there is evidence that it still occurs intermittently.

In Alabama, *P. p. ammobates* and *P. p. trissyllepsis* have no legal status. The Alabama Nongame Wildlife Committee prepared a list of vertebrate wildlife in Alabama (Auburn University, 1984). The list identifies *P. p. ammobates* and *P. p. trissyllepsis* as endangered. It is anticipated that the list will be used by governmental agencies and others in making decisions that will affect the beach mice. The list, however, affords the beach mice no legal protection. The only protection afforded the mice in Alabama is through the permit system which requires a permit for scientific collecting. The Alabama Coastal Area Management Program (ACAMP) (U.S. Department of Commerce and Alabama Coastal Area Board, 1979) states that it is the policy of the Coastal Area Board (functions assumed by the Alabama Department of Environmental Management) to promote and encourage the preservation of the critical habitat of recognized endangered species. The ACAMP states that limited extent and uniqueness of some habitats, coupled with destructive activities, has resulted in a number of rare and endangered species occurring in the coastal area. The ACAMP list of endangered and threatened species in coastal Alabama as designated by the State of Alabama includes *P. p. ammobates* and *P. p. trissyllepsis* as endangered. Despite the recognition of the threat to these mammals, habitat loss is permitted to continue. The Florida Endangered and Threatened Species Act of 1977 lists *P. p. trissyllepsis* and *P. p. allophtys* as threatened. Title 39-27.02 of the Florida Administrative Code affords them protection from taking, possession, and sale, except by permit, but does not protect their habitat. The Florida Coastal Management Program (FCMP) (U.S. Department of Commerce and State of Florida, 1981) states that it is the policy of the State to conserve its resources, particularly endangered and threatened species. The FCMP cites Title 39-27.02 of the Administrative Code and the Florida Endangered and Threatened Species Act of 1977 discussed above. Despite the recognition of the threat to beach mice, habitat loss has continued.

E. Other natural or manmade factors affecting its continued existence. Tropical storms periodically devastate Gulf Coast sand dune communities, dramatically altering or destroying habitat, and either drowning beach mice or forcing them to concentrate on high scrub dunes (Blair, 1951) where they are exposed to predators. The habitat of *P. p. ammobates* includes the Fort Morgan, Alabama area, which was severely

flooded by Hurricane Frederick on September 13, 1979. Washovers completely destroyed the primary dune system at Fort Morgan, Gulf Highlands, Pine Beach, Gulf Shores, the Gulf State Park, and Romar Beach. Only remnants of the secondary and tertiary lines were left; most sand was removed inland beyond the beach dune complex. The habitat of *P. p. trissyllepsis* includes three areas on Perdido Key in Alabama and Florida. The western end of Perdido Key is part of the Gulf State Park and includes Florida Point, Alabama. It was completely covered by sand south of State Road 182 by Hurricane Frederick on September 13, 1979. Beach mouse habitat remained only on the unflooded elevations (Holliman, 1983). In the central part of Perdido Key is the Perdido Key State Preserve, which also contains beach mouse habitat, and which also was overwashed during Hurricane Frederick. The eastern end of Perdido Key is included in the Gulf Islands National Seashore, Escambia County, Florida. Eighty percent of the National Seashore was overwashed during Hurricane Frederick. The habitat of *P. p. allopshys* includes the Topsail Hill area of coastal Walton County and the Grayton Beach State Recreation Area, both of which were heavily damaged by Hurricane Eloise in 1975.

House mice (*Mus musculus*), which are associated with human development, may compete with beach mice for food and cover (Humphrey and Barbour, 1981). The significance of such competition is presently unknown, and some have doubted its significance (Holliman, 1983). Competition has been documented, however, between house mice and the subspecies *Peromyscus polionotus lucubrans* (Briese and Smith, 1973). Over-wintering savannah sparrows may also affect beach mice by competing for food (Holliman, 1983; Humphrey and Barbour, 1981).

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 make this rule final. Based on this evaluation, the preferred action is to list the Alabama beach mouse, Perdido Key beach mouse, and Choctawhatchee beach mouse as endangered. Due to the low population levels and the threats posed to the species and their habitat, threatened status is inappropriate. Critical habitat, discussed below, is being determined for the protection and recovery of the species. The areas of sand dune habitat used by the beach mice are generally well defined.

Critical Habitat

Critical habitat, as defined by Section 3 of the Act means: (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) which may require special management considerations 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 requires that critical habitat be designated to the maximum extent prudent and determinable concurrently with the determination that a species is endangered or threatened. Critical habitat is being designated for the Alabama, Perdido Key, and Choctawhatchee beach mice to include 53.2 km (33.0 mi.) of coastline along the Gulf of Mexico in Baldwin County, Alabama, and Escambia, Walton, and Bay Counties, Florida, divided into 10 separate parts. Of the total critical habitat, 35.1 km (21.8 mi.) is actually now inhabited by the beach mice and 18.2 km (11.2 mi.) is not currently occupied. In the case of the Alabama beach mouse, all 17.2 km (10.6 mi.) of the critical habitat is now inhabited. The precise metes and bounds of each critical habitat unit are described in the "Regulations Promulgation" section.

The critical habitat of the Perdido Key beach mouse is 15.8 km (9.8 mi.) in total length, of which 1.9 km (1.2 mi.) is now inhabited and 13.9 km (8.6 mi.) is unoccupied. The occupied portion is in the Gulf State Park at the western end of Perdido Key. The unoccupied portions are in the Perdido Key State Preserve on the central part of the key and in the Gulf Islands National Seashore on the eastern end of the key. The two unoccupied areas were originally within the range of the Perdido Key beach mouse, and the protection of these areas is essential for the conservation of the animal. If populations could not be reestablished in these areas, the beach mouse would survive only in a small stretch of suitable habitat, which would be constantly subject to destruction by tropical storms and other deleterious factors. Prior to Hurricane Frederick in 1979, a population of *P. p. trissyllepsis* did exist in the Gulf Islands National Seashore. It was destroyed by the hurricane, but fortunately the population in Gulf State Park was not completely extirpated. This experience demonstrates the necessity of

maintaining several currently occupied or potentially suitable areas of habitat for the beach mouse, if it is to have a reasonable chance for survival and recovery.

The critical habitat of the Choctawhatchee beach mouse is 20.2 km (12.6 mi.) in total length, of which 15.9 km (10.0 mi.) is now inhabited and 4.3 km (2.6 mi.) is not occupied. The occupied portions are in the Topsail Hill area of coastal Walton County and on the Shell Island portion of the St. Andrews State Recreation Area, Bay County. The unoccupied portions are in the Grayton Beach State Recreation Area and adjacent private land, and on the mainland portion of the St. Andrews State Recreation Area. The two unoccupied areas were originally within the range of the Choctawhatchee beach mouse, and their protection is essential for the conservation of the animal. The rationale is basically the same as given above for *P. p. trissyllepsis*. In the case of *P. p. allopshys*, Hurricane Eloise in 1975 had a severe impact. The population of beach mice at the Grayton Beach State Recreation Area may have been extirpated at that time; the Topsail Hill area was also heavily damaged in the same storm.

As indicated above in factor "A" of the "Summary of Factors Affecting the Species," the Service has learned of the loss of a substantial amount of beach mouse habitat, since data were collected for the proposed rule of June 7, 1984. This loss, plus minor adjustments based on reevaluation of constituent elements, are reflected in the reduced size of the critical habitat being designated in this final rule. In area, the total reduction amounts to about 183 ha (452 A). This area consists of portions of each component of the critical habitat of the Alabama beach mouse, a total reduction of 126 ha (313 A); portions of the Alabama component and Florida component 2 of the critical habitat of the Perdido Key beach mouse, a total reduction of 28.4 ha (70 A); and a portion of component 1 of the critical habitat of the Choctawhatchee beach mouse, a reduction of 27.9 ha (69 A).

In considering designation of critical habitat, 50 CFR 424.12 requires focus on the biological or physical constituent elements within the defined area that are essential to the conservation of the species involved. With respect to the Alabama, Perdido Key, and Choctawhatchee beach mice, the areas designated as critical habitat currently or potentially satisfy known criteria for the physiological, behavioral, ecological, and evolutionary requirements of the animals. Meyers (1983) found optimal

beach mouse habitat to be characterized by: (1) High maximum elevation of the coastal sand dunes. (2) relatively great differences between maximum dune height and minimum interdunal elevation. (3) close proximity of forest. (4) a sparse cover of ground vegetation with a moderate number (average 3.5) of plant species. and (5) a relatively low cover of sea oats. Such conditions of topography and vegetation provide necessary food and cover for populations of beach mice. and allow attainment of reproductive potential. Meyers also reported that the minimum area needed to maintain a population of beach mice is 50 hectares (ha) (124 acres (A)), that preferable size is at least 100-200 ha (247-494 A), and that there should be natural corridors for migration between areas. Such requirements were considered in the delineation of the critical habitat. The protection of several separate areas of habitat for each species of beach mouse is essential for the conservation of these animals. Should a species of beach mouse exist in only one small stretch of suitable habitat, it would be much more vulnerable to extinction through the effects of tropical storms and other deleterious factors (see above discussion of Perdido Key beach mouse).

Section 4(b)(8) of the Act requires, for any proposed or final regulation that designates critical habitat, a brief description and evaluation of those activities (public or private) which may adversely modify such habitat or may be affected by such designation. Activities most likely to adversely modify the critical habitat of the three beach mice are the continued destruction of sand dunes for residential and commercial development. Indiscriminate pedestrian and vehicular use also adversely impacts the sand dunes.

There are several Federal activities in the coastal parts of Alabama and Florida that may have involvement with the critical habitat designation. One form of involvement is the flood insurance provided by the Federal Emergency Management Agency (FEMA). County regulations in Baldwin County, Alabama, and Escambia, Walton, and Bay Counties, Florida, qualify the coastal strand under the National Flood Insurance Program (NFIP) administered by FEMA. Insurance is provided only for completed structures. FEMA indicated on October 9, 1984, that it has a requirement through the NFIP to "prohibit manmade alteration of sand dunes . . . which would increase

potential flood damage." As a result of this requirement, FEMA believes that alteration of the sand dune system should be significantly reduced.

The Department of the Interior, Office of the Solicitor, reviewed the application of Section 7 of the Act to Federal flood insurance. It concluded in an August 21, 1984, opinion that if the determination of eligibility for flood insurance by the FEMA authorizes and/or in effect partially subsidizes construction activity that may affect listed species or their critical habitat, then such construction becomes an action authorized or funded by a Federal agency for purposes of Section 7 and the FEMA would be obligated to request the initiation of formal Section 7 consultation. The consultation will assure that the beach mice and critical habitat are considered in the FEMA's determination of a community's eligibility for Federal flood insurance. Should the flood insurance program be restricted on parts of the Alabama and Florida Gulf Coasts, increased risk or increased insurance costs could result. Due to the unknown or hypothetical nature of the consultations that may occur, however, it is not now known whether any activities or FEMA's management costs will be affected.

Planned activity in the coastal strand includes a variety of commercial and residential developments. The Federal Housing Administration and the Veterans Administration do not expect to receive requests for housing project approval in critical habitat. Therefore, it appears unlikely that Federal loans will be affected by the designation of critical habitat.

The Bureau of Land Management (BLM), U.S. Department of the Interior, and the Alabama Department of Conservation and Natural Resources have stated that oil and gas leasing is not expected to be affected by the listing, and that beach mice habitat is not likely to be destroyed or modified by future oil and gas activity. Thus, the Federal Coastal Energy Impact Program, National Oceanic and Atmospheric Administration, which provides grants and loan assistance for a variety of activities associated with energy-related facility sitings, will not affect critical habitat or be affected by the designation.

The U.S. Army Corps of Engineers' proposed beach restoration project in the area from Phillips Inlet, Bay County, Florida, eastward to, and including, the mainland portion of the St. Andrews State Recreation Area (SRA) has been cancelled because local communities were unable to fund their share of the

project's total cost. Thus, there will be no impact of or on the beach restoration project. The Corps' routine maintenance program for the Mobile Bay Main Channel, the Perdido Pass Channel, the Pensacola Bay Channel, and the St. Andrew Bay Entrance Channel may actually enhance beach mice habitat if care is taken in the planning and implementation of the operations. The Corps has stated that the designation of critical habitat should not significantly affect the operation and maintenance of these Corps projects.

The Gulf Islands National Seashore (GINS), administered by the National Park Service, includes the east end of Perdido Key. This area of the Seashore is designated as critical habitat. The Park Service sees no impacts arising from critical habitat designation and will consult with the Service under Section 7 as appropriate.

Fish and Wildlife Service involvement in the critical habitat area would include the acquisition of additional land, and the management and development, at the Bon Secour National Wildlife Refuge (NWR). The proposed acquisition boundary includes approximately 6.0 km (3.7 mi.) of Alabama beach mouse habitat, of which about 4.3 km (2.7 mi.) has been purchased to date by the Service.

The Office of Ocean and Coastal Resource Management (OCRM), National Oceanic and Atmospheric Administration, may be affected by the critical habitat designation. When the States of Alabama and Florida propose to revise their approved coastal management programs under the Coastal Zone Management Act, OCRM is required to consult with the Service under Section 7 of the Endangered Species Act to insure that OCRM's action approving a State's coastal management program revision is not likely to jeopardize the continued existence of the beach mice or result in the destruction or adverse modification of their critical habitat. It is not possible to provide a quantitative estimate of the impacts that may result from future revisions of coastal management programs, due to the unknown nature of the consultations that may occur concerning critical habitat areas.

The Rural Electrification Administration (REA), U.S. Department of Agriculture, may be affected by the critical habitat designation when the REA receives loan applications from, or administers loans to, local utility corporations for the operation and/or expansion of electric or telephone services. The REA is required to consult with the Service under Section 7 of the

Act to insure that REA's action in approving loans will not result in actions that would be likely to jeopardize the continued existence of the beach mice or result in the destruction or adverse modification of their critical habitat.

The Department of the Air Force indicated there would be no economic impact on Tyndall Air Force Base from the critical habitat designation. The Air Force already has a wildlife law enforcement officer on its staff to protect the dune habitat and associated wildlife, as well as outdoor recreation participants, on Shell Island.

The Alabama Historical Commission and the Service have entered into a cooperative management agreement regarding lands within the Fort Morgan State Park, including approximately 3.0 km (1.9 mi.) of beach mouse habitat. This cooperative agreement is compatible with the designation of critical habitat. The Service does not expect that its management costs for implementing the agreement will be affected as a result of the critical habitat designation.

At this time, developers are installing individual wastewater treatment facilities in the Gulf Shores area in Alabama because the municipal system cannot accommodate new growth. Therefore, the Environmental Protection Agency (EPA) decided in February, 1985, to prepare an Environmental Impact Statement (EIS) on wastewater facility planning for the Gulf Shores area. Currently, it is not known how EPA will define "Gulf Shores area." If this area is defined within the city limits of Gulf Shores, then EPA's involvement is not expected to affect or be affected by the critical habitat designations. If the area is defined to include development along the Fort Morgan Peninsula, then EPA activities may affect or be affected by the critical habitat designations. It is not possible at this time to evaluate EPA's possible involvement, because of the uncertainties concerning the definition of "Gulf Shores area" and the unknown nature of the consultations that may occur.

A city water line is currently being installed to serve the drinking water needs of the Fort Morgan peninsula in Alabama. EPA is only involved in this project to ensure that the quality of the drinking water from this line conforms to national drinking water quality standards. The project is also located outside critical habitat. For these reasons, this water line project is not expected to affect or be affected by the proposed critical habitat designations.

The critical habitat does contain some road rights-of-way. Currently, there are

no known road or bridge construction or maintenance projects involving Federal funds or permits that might affect or be affected by the critical habitat designations. The roads adjacent to critical habitat are not expected to be expanded toward the Gulf of Mexico due to the dynamic nature of the sand dune system that hinders road maintenance and leaves roads vulnerable to destruction by storm damage. At this time, it is not possible to provide a quantitative estimate of the road and bridge cost impacts that might result from the designation of critical habitat, due to the unknown or hypothetical nature of the consultations that may occur.

BLM owns a few small parcels of land within the designated critical habitat. BLM anticipates disposing of these parcels by transferring them to the Bon Secour National Wildlife Refuge and the Gulf Islands National Seashore. BLM's actions will not affect critical habitat designation or be affected by the designation.

Section 4(b)(2) of the Act requires the Service to consider economic and other impacts of designating a particular area as critical habitat. To obtain this information, the Service contacted Federal agencies that might possibly be involved in authorizing or funding projects within the critical habitat as proposed. The Service has considered the critical habitat designation in light of relevant additional information obtained and concluded in its economic analysis document that no adjustments to the areas proposed as critical habitat are warranted based on the economic and other impact information that was obtained. In conducting its economic impact analysis, the Service reviewed the economic consequences of designating critical habitat on 1,037 acres of Federal land, 1,089 acres of State land, and 1,029 acres of private land. The 29 page economic assessment document is incorporated here by reference and copies may be obtained either from the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240, or the Service's Jacksonville Endangered Species Field Station (see "ADDRESSES" section).

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species 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 Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. 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 critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402 and are now under revision (see proposal at 48 FR 29990; June 29, 1983). 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. 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 may be affected in this regard, with respect to the listing of the Alabama, Perdido Key, and Choctawhatchee beach mice, are described above under "Critical Habitat."

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of a 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 such wildlife that had 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 wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. 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. In some instances, permits may be issued during a specified period of time to relieve undue economic hardship that would be

suffered if such relief were not available.

Several important State commitments have been made regarding beach mouse conservation measures. The Governor of Alabama indicated that the State will assist in beach mouse translocation research and in critical habitat management in any feasible manner. The Alabama Division of Game and Fish stated that it is committed to coordinating the protection and enhancement of beach mice on State lands. Further, the Alabama State Parks Division has indicated it will seek the Game and Fish Division's input in managing the critical habitat on the Gulf State Park units at Gulf Shores and Perdido Key. The Alabama Historical Commission, which administers the Fort Morgan State Park, signed a Wildlife Resource Management Agreement on June 12, 1984, with the U.S. Fish and Wildlife Service, granting to the Service the wildlife resource management responsibilities for the Fort Morgan State Park, Baldwin County. The agreement is implemented by the staff of the nearby Bon Secour National Wildlife Refuge. Through this agreement, protection and management of Alabama beach mouse habitat should be achieved. The Florida Division of Recreation and Parks, Department of Natural Resources, which manages the Perdido Key State Preserve and the Grayton Beach and St. Andrews State Recreation Areas, including Shell Island, indicated that it may be necessary in the future to provide additional boardwalks in some locations to protect the beach mouse habitat from foot traffic.

This rule is effective immediately upon publication. Any delay could adversely impact the three beach mice by delaying the initiation of Section 7 consultations that would assure the consideration of the mice and their critical habitat with respect to Federal actions in areas where residential and commercial development has destroyed and will continue to destroy sand dune habitat at a very rapid rate. The Service, therefore, finds that "good cause" exists, within the terms of 5 U.S.C. 553(d)(3) of the Administrative Procedures Act, for these regulations to take effect immediately upon publication.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined by the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination

was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

Regulatory Flexibility Act and Executive Order 12291

The Department of the Interior has determined that designation of critical habitat for these species will not constitute a major action under Executive Order 12291 and certifies that this designation will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). It is not expected that the critical habitat designations will result in any significant changes in management costs for the Federal agencies affected by the designations. No significant economic or other impacts are expected to result from the designations of critical habitat on Federal, State, or private land in Baldwin County, Alabama, or Escambia, Walton, or Bay Counties, Florida. These conclusions are based on the following: (1) The Service's management of the Bon Secour NWR and agreement to manage wildlife resources within Fort Morgan State Park; (2) the National Park Service's management of GINS; (3) Tyndall Air Force Base's management of Shell Island; (4) BLM's planned transfer of scattered oil and gas leasing lots to Bon Secour NWR and GINS; (5) management of CBRS units under CBRA restrictions; (6) management of State-owned critical habitat areas by the States of Florida and Alabama; (7) Army Corps of Engineers maintenance of Mobile Bay Main Channel and adjacent channels and passes; (8) absence of ongoing or planned road and bridge construction or maintenance; (9) FEMA, REA, EPA, NOAA, and Corps awareness of the critical habitat designations and compatible management objectives for these areas; (10) absence of applications for or existing Federal loans for residential or commercial construction projects within or in the vicinity of the proposed critical habitat designations; and (11) the unquantifiable benefits that may result from the designations of critical habitat for the three beach mice. In addition, no significant impact on the economy or present economic status of Baldwin County, Alabama, or Escambia, Walton, or Bay Counties, Florida, is expected as a result of the critical habitat designations. These determinations are based on a Determination of Effects that is available at the Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

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Author

The primary author of this rule is Ms. Robin H. Fields, Endangered Species Field Station, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207 (904/791-2580 or FTS 946-2580).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulations Promulgation

PART 17—[AMENDED]

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

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

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. Amend § 17.11(h) by adding the following three entries, in alphabetical order under "Mammals," to the List of Endangered and Threatened Wildlife:

§ 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						
MAMMALS							
Mouse, Alabama beach	<i>Peromyscus polionotus ammobates</i>	U.S.A. (AL)	Entire	E	183	17 95(a)	NA
Mouse, Choctawhatchee beach	<i>Peromyscus polionotus aliphrys</i>	U.S.A. (FL)	Entire	E	183	17 95(a)	NA
Mouse, Perdido Key beach	<i>Peromyscus polionotus trisyllepsis</i>	U.S.A. (AL, FL)	Entire	E	183	17 95(a)	NA

3. Amend § 17.95(a), "Mammals," by adding critical habitat of the Alabama, Choctawhatchee, and Perdido Key beach mice, as follows: The position of these entries under § 17.95(a) will follow the same sequence as the species occur in § 17.11.

§ 17.95 Critical habitat—fish and wildlife.

(a)

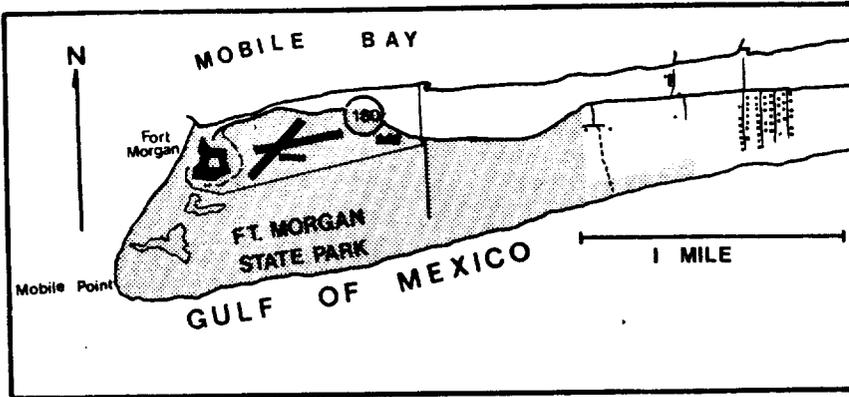
Alabama beach mouse
(Peromyscus polionotus ammobates)
Alabama. Areas of land, water and airspace in Baldwin County with the following components (St. Stephens Meridian): (1) That portion of the Fort

Morgan Peninsula south of State Road 100 and west of 87°59'35" W, except for that part each of Fort Morgan State Park and more than 152.5 meters (500 feet) inland from the mean high tide line of the Gulf of Mexico; (2) those portions of T9S R3E Sec. 30 and T9S R2E Sec. 25-28 and E15/16 Sec. 29 extending 152.5 meters (500 feet) inland from the mean high tide line of the Gulf of Mexico; (3) that portion of the Gulf Shores unit of the Gulf State Park south of State Road 182 in T9S R4E Sec. 14-15 and Sec. 21-23.

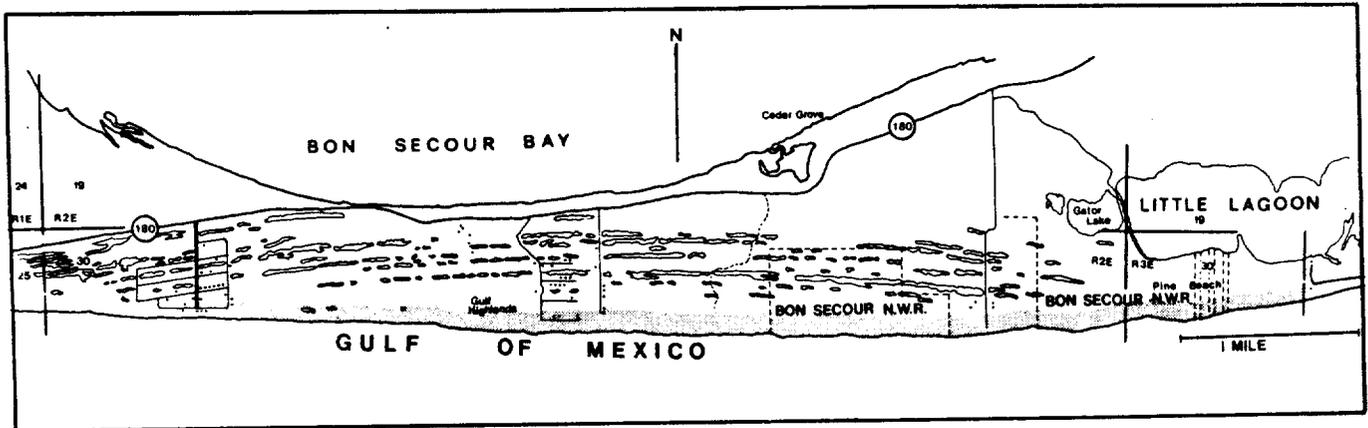
Within these areas the major constituent elements that are known to require special management considerations or protection are dunes and interdunal areas, and associated grasses and shrubs that provide food and cover.

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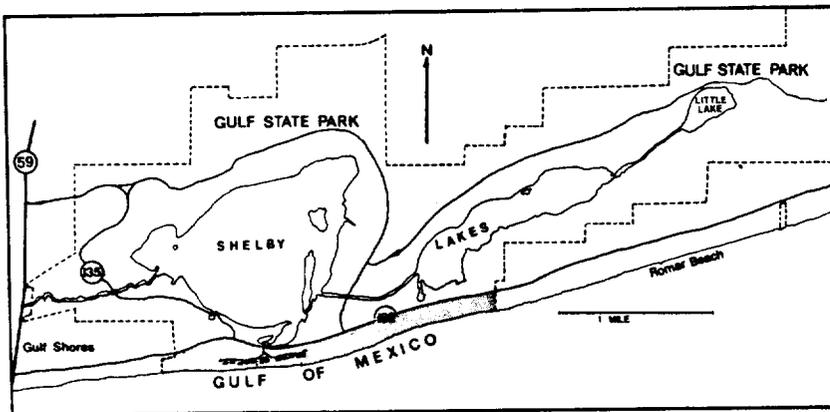
Alabama Beach Mouse Critical Habitat (1)



Alabama Beach Mouse Critical Habitat (2)



Alabama Beach Mouse Critical Habitat (3)



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Choctawhatchee beach mouse

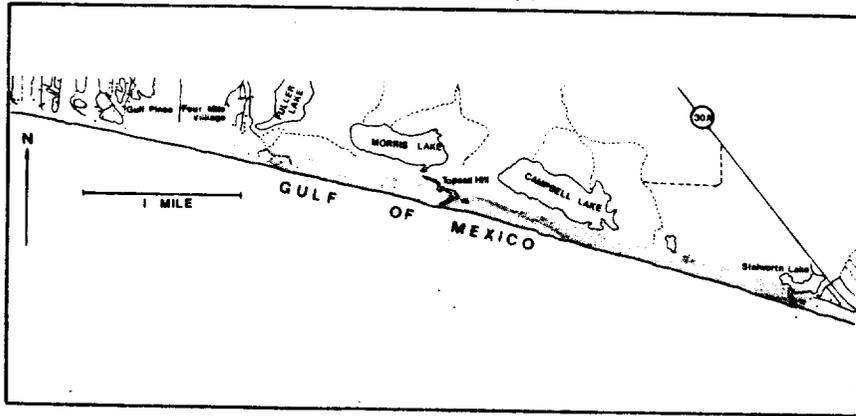
(Peromyscus polionotus allophrys)

Florida. Areas of land, water, and airspace in Walton and Bay Counties with the following components (Tallahassee Meridian): (1) Those portions of T2S R21W E½ Sec. 35, Sec. 36, T2S R20W S¼ Sec. 31, and T3S R20W W¼ Sec. 4, N½ Sec. 5, and NE¼ Sec. 6 extending 152.5 meters (500 feet) inland from the mean high tide line of the Gulf of Mexico; (2) those portions of T3S R19W W¼ Sec. 15 and Sec. 16 extending 152.5 meters (500 feet) inland from the mean high tide line of the Gulf of Mexico; (3) those

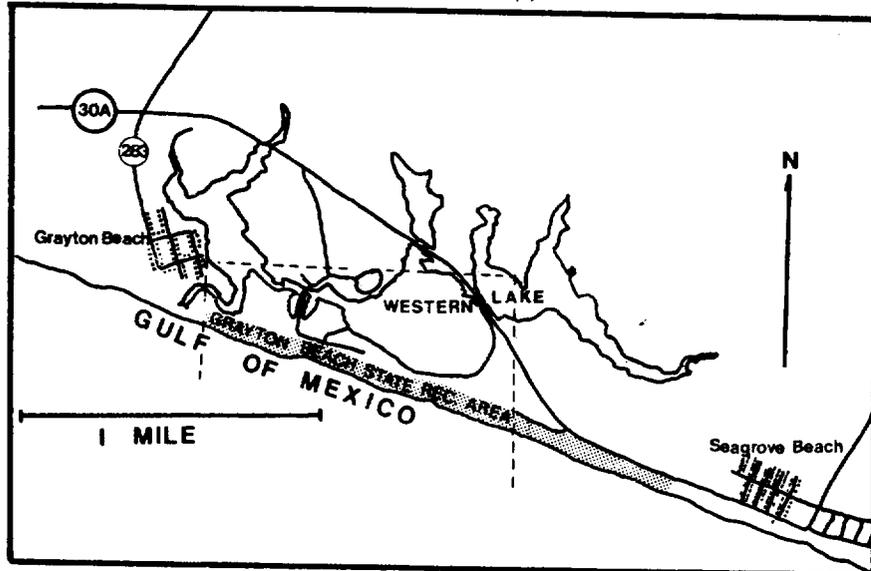
portions of the mainland part of the St. Andrews State Recreation Area in T4S R15W Sec. 21 and Sec. 22 extending 152.5 meters (500 feet) inland from the mean high tide line of the Gulf of Mexico; (4) those portions of Shell Island in T4S R15W Sec. 25-27 and Sec. 36, T4S R14W Sec. 31, and T5S R14W Sec. 4-6 extending 152.5 meters (500 feet) inland from the mean high tide line of Gulf of Mexico.

Within these areas the major constituent elements that are known to require special management considerations or protection are dunes and interdunal areas, and associated grasses and shrubs that provide food and cover.

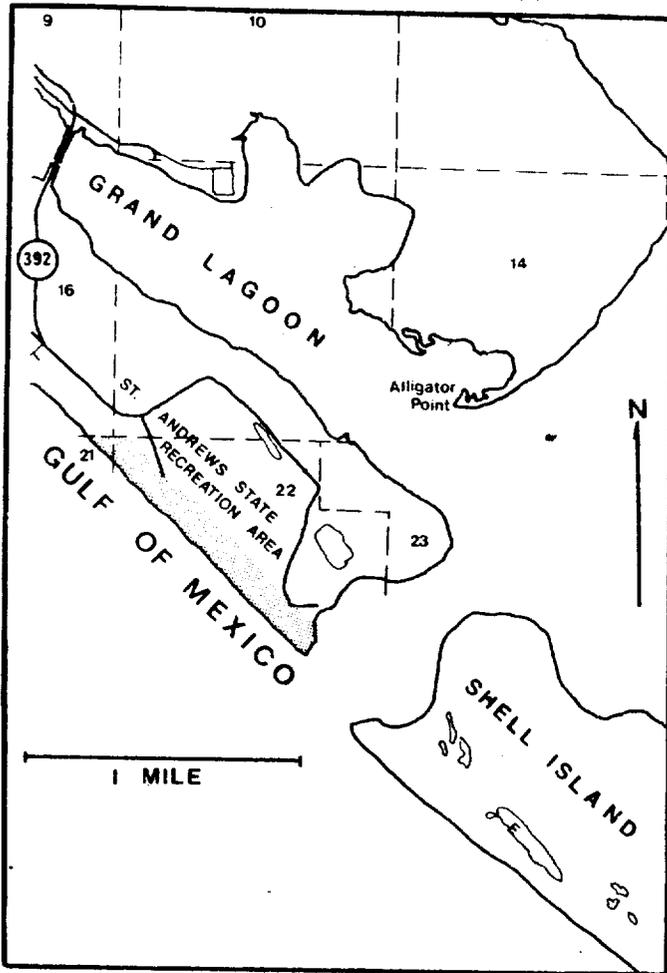
Choctawhatchee Beach Mouse Critical Habitat (1)



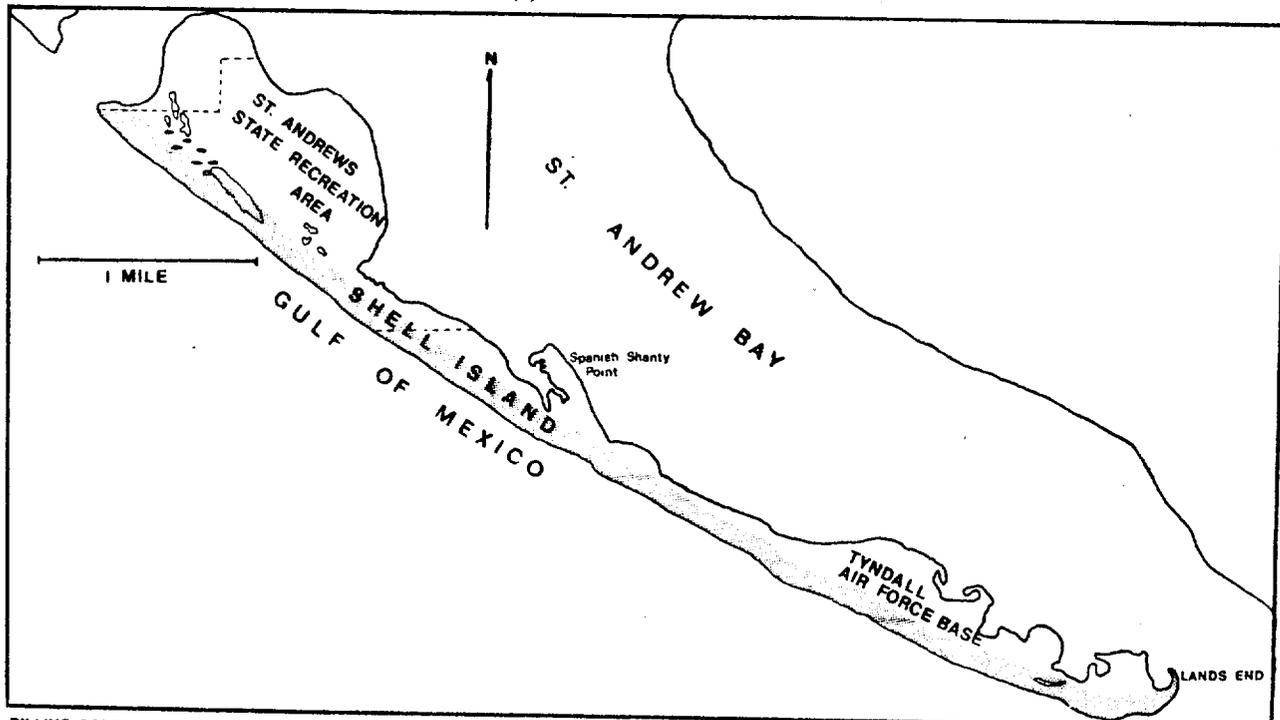
Choctawhatchee Beach Mouse Critical Habitat (2)



Choctawhatchee Beach Mouse Critical Habitat (3)



Choctawhatchee Beach Mouse Critical Habitat (4)



Perdido Key beach mouse

(Peromyscus polionotus trissyllepsis)

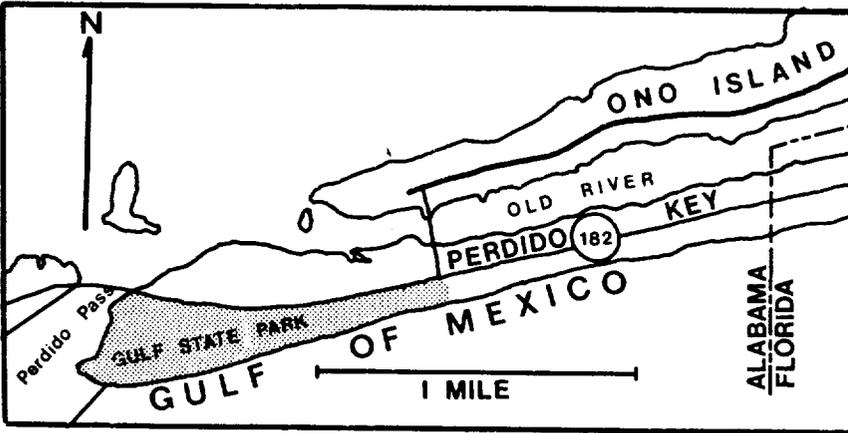
Alabama. An area of land, water, and airspace in Baldwin County with the following component (Tallahassee Meridian): That portion of the Perdido Key unit of the Gulf State Park south of State Road 182 in T9S R33W Sec. 2-3.

Florida. Areas of land, water, and airspace in Escambia County with the following components (Tallahassee Meridian): (1) That portion of the Perdido Key State Preserve south of State Road 292 in T3S R32W Sec. 32-

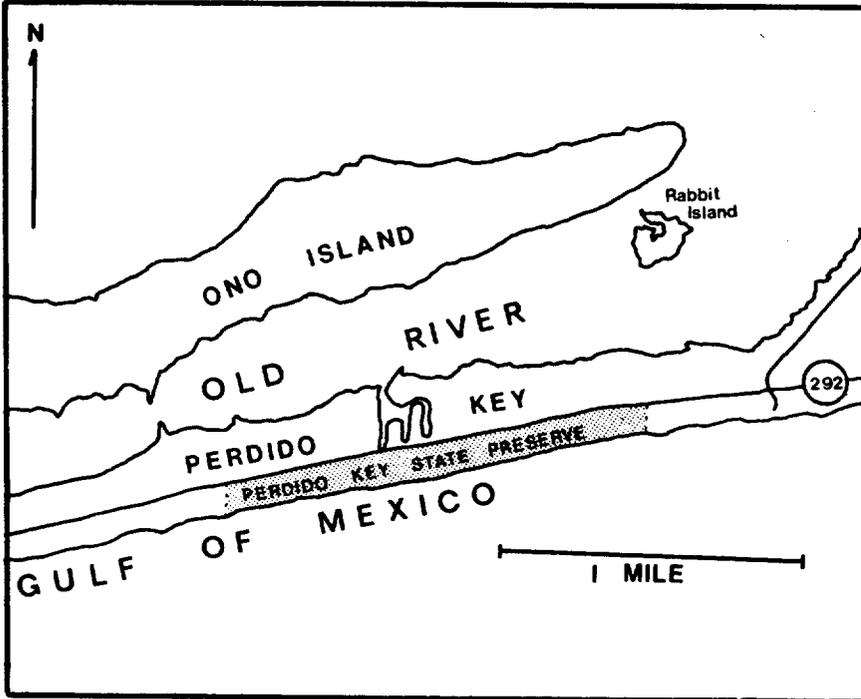
33 and T4S R32W Sec. 5; (2) those portions of Perdido Key in T3S R31W Sec. 25-26 and Sec. 28-34, and in T3S R32W E½ Sec. 36, and W½ Sec. 36 south of the entrance road, parking lot, and Johnson Beach recreational facilities at the Gulf Islands National Seashore.

Within these areas the major constituent elements that are known to require special management considerations or protection are dunes and interdunal areas, and associated grasses and shrubs that provide food and cover.

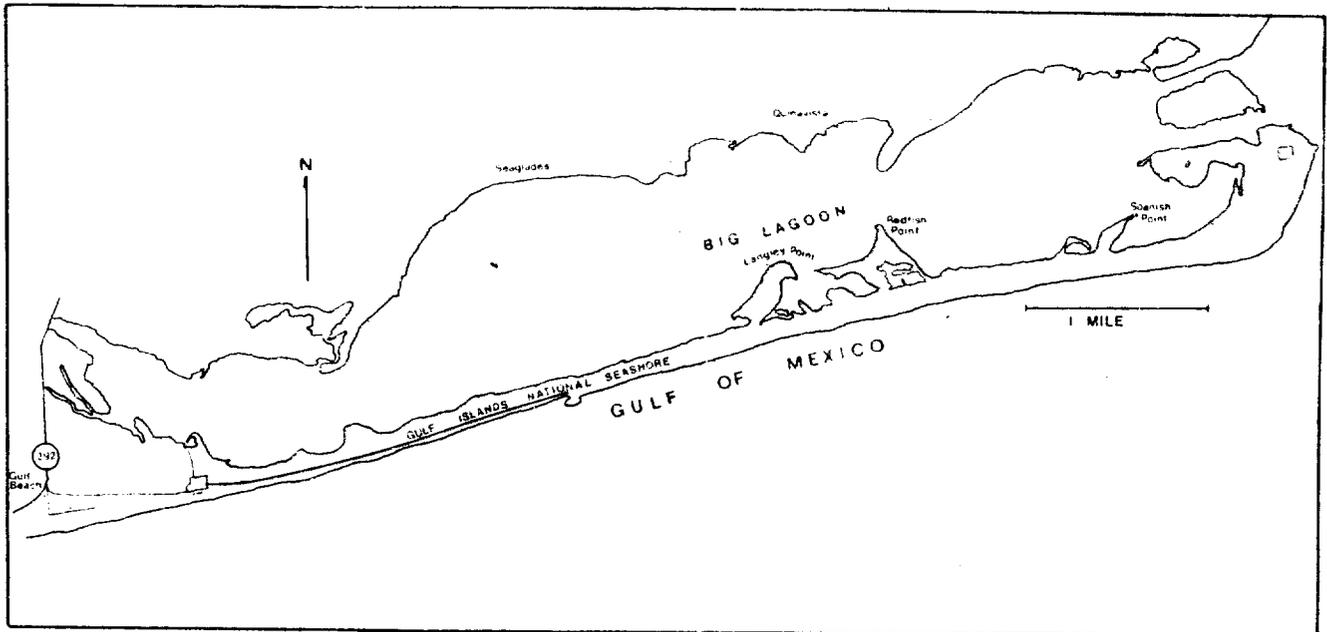
Perdido Key Beach Mouse Critical Habitat (Alabama)



Perdido Key Beach Mouse Critical Habitat (Florida—1)



Perdido Key Beach Mouse Critical Habitat (Florida—2)



Dated: May 22, 1985.

J. Craig Potter,

*Acting Assistant Secretary for Fish and
Wildlife and Parks.*

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