

The Status of the Cumberland Island
Pocket Gopher (Geomys cumberlandius)
on Cumberland Island National Seashore,
Georgia

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In order to make data and results from managerial studies more easily and quickly available to interested scientists, the U.S. National Park Service Cooperative Unit at the Institute of Ecology has initiated a numbered technical report series. This series produces limited printings of data matrices, bibliographies, review papers and scientific project reports concerning U.S. National Parks and park-related problems. The reports are from various sources, not all federally funded, and are intended to supply scientific information rather than deal with park policy. The reports are subject to technical editing and review for scientific accuracy by Institute staff, but are not necessarily reviewed by external experts and are not refereed in regard to overall quality or importance to the scientific community.

Abstract

The current status of the Cumberland Island pocket gopher (originally described as Geomys cumberlandius) is reviewed. Historical records and descriptions on the location and abundance of pocket gophers on the island are presented. Field surveys were conducted to locate any remaining evidence of pocket gopher activity on Cumberland Island, but no gophers or burrows were found. Recent taxonomic studies provide grounds for placing G. cumberlandius into synonymy with G. pinetis pinetis. Park resources management staff should consider the pocket gopher to be extirpated until new sightings of gophers or burrows can be confirmed by three or more independent observers.

Introduction

The population size and distribution of the Cumberland Island pocket gopher (described as Geomys cumberlandius) has changed in recent years from one of abundance to scarcity and finally, to extinction. Cumberland Island was designated as a National Seashore in 1972 and placed under the protection and management of the National Park Service. Since then, the National Park Service has restricted activities on park property that could jeopardize any remaining pocket gophers on Cumberland Island.

Although G. cumberlandius was reported to be extinct in 1975, (Hillestad et al. 1975), its status has remained somewhat questionable. Development of future National Park Service resource management plans for Cumberland Island National Seashore necessitate a determination of the current status of the Cumberland Island pocket gopher. Thus, this report presents a compilation of historical records for pocket gophers on Cumberland Island, a brief summary of past and present taxonomic classification and results of recent field surveys conducted exclusively to locate any current pocket gopher activity at sites historically supporting pocket gopher populations.

Background

Pocket gophers (Geomyidae) are small fossorial rodents characterized by fur-lined external cheek pouches, large (always exposed) incisors,¹ large front claws, small eyes, ears, and naked tail. Their presence is often easily indicated by the fan-shaped mounds of earth formed as individuals push soil out from excavated tunnel systems (Burt and Grossenheider 1964). The southeastern pocket gopher, Geomys spp., has been described as a closely related complex of four nominal species: G. colonus, G. fontanelus, G. cumberlandius, and G. pinetis. Geomys pinetis is polytypic, including the five named subspecies, and is widespread throughout Alabama, Florida and Georgia. Geomys colonus, G. fontanelus and G. cumberlandius are monotypic and known only from their type localities in Georgia (Hall and Kelson 1959).

Pocket gophers have been reported on two islands in Georgia. In the spring of 1773, while exploring Colonel's Island located across from the town of Sunbury, Georgia, Harper (1975) observed: "there is a large ground rat, more than twice the size of the common Norway rat. In the night time, it throws out the earth, forming little mounds or hillocks." Presumably he was referring to a pocket gopher (Geomys sp.).

Actual collections of pocket gophers have been made from only one of the thirteen Georgia coastal islands. The Cumberland Island pocket gopher was first reported by Bangs (1898), who collected thirteen individuals from the old fields around "the Stafford Place." These were identified as a species distinct from pocket gophers of the adjacent mainland. Variations in cranial structure, particularly the large skull with its differently shaped zygoma, large body size, long tail and pelage coloration, were the physical

characteristics used to separate animals collected on Cumberland Island from those representing G. colonus or G. tuza (=pinetis) on the mainland. This classification scheme remained unchanged until recently.

Due to the apparent uniqueness of this species, its general abundance and ease of capture, 73 specimens of G. cumberlandius are located in seven museum collections in the United States. Several accounts indicate the relative abundance of pocket gophers on Cumberland Island. Bangs (1898) collected specimens from a colony that "was centered in some old fields on the Stafford Place, but the hills straggled off through the pine woods for miles." He also reports that a Mr. Brown, who visited the island in 1897, did most of his trapping at the northern end where he took thirteen additional specimens. Notes from E. B. Chamberlain of the Charleston Museum, 1932 and 1933, revealed that there are some "nice colonies on the island with the largest colonies located on the golf links at Stafford Place." (Johnson et al. 1974).

Recent records of pocket gophers on Cumberland Island, however, are scarce. The last museum specimens were collected in 1956 (Laerm 1981). On 18 March 1970, recent pocket gopher activity was seen on a small planted field at Stafford Place, the only pocket gopher evidence found on the island during "a pretty intensive search from 16-22 March 1970." Subsequent return to this area on 18 April 1970, after the field had been recently plowed, revealed no pocket gopher tunneling evidence (Hillestad et al. 1975).

The last report of pocket gopher mounds or activity was on 12 and 13 December 1979. Approximately 60 mounds were seen in small area located on Cedar Dock Road about 0.7 mile north of its intersection with Shell Creek Road (east-west road running through the Candler Compound. Slides taken

these mounds were identified as apparent pocket gopher mounds by Dr. Charles Hundley, Curator of Mammals, United States National Museum. At this time, no attempt was made to collect specimens and no animals were seen (Neuhauser, 1979). The area where mounds were last seen has been searched thoroughly several times since 1979. No evidence of pocket gophers has been noted since, there or anywhere else on Cumberland Island (C. Ruckdeschel, personal communication).

Taxonomy

Two recent studies (Williams and Genoways 1980, Laerm 1981) treat the taxonomic classification of southeastern U.S. pocket gophers. These are based on morphometric comparisons of various museum specimens and, in one study, a combination of morphometric and molecular genetic features using live specimens. Bangs (1898) based his species separation of pocket gophers on physical differences in body size, differences in cranial characteristics and variations in pelage coloration.

Williams and Genoways (1980) used three external and thirteen cranial measurements to compare 57 specimens of G. cumberlandius to specimens of G. colonus and G. pinetis available from mainland populations in Camden County, Georgia. Their results indicated very little variation among these three populations. The variation that existed did not fit any taxonomic scheme proposed up to that time. They concluded that G. colonus and G. cumberlandius should be recognized as different populations of G. pinetis pinetis. These authors also noted that the Cumberland Island pocket gopher was usually larger than its mainland counterparts. However, this is not uncommon among insular populations of small mammals, which are often larger than mainland forms; insular forms of lagomorphs and larger mammals, in contrast, are usually smaller than mainland counterparts. Simple body size differences are seldom considered adequate for taxonomic differentiation (Case 1978). Thus, the large body size of G. cumberlandius alone would not qualify it for species level recognition (Laerm 1981).

Laerm (1981) provides two more cases of indirect evidence to support his conclusions. First, in molecular genetic studies conducted by Avise et al.

(1979) and Laerm et al. (1982), it was found that populations of pocket gophers throughout eastern Georgia share a common lineage. Second, he states that Cumberland Island was connected to mainland Georgia 5,000-7,000 years ago. Isolation for this time period generally would be regarded as too short of time for Cumberland Island pocket gopher populations to diverge sufficiently from those of the mainland to warrant full species status.

The above information indicates that the Cumberland Island pocket gopher should no longer be considered a valid taxon. This conclusion would not preclude it from endangered species protection, since populations of vertebrates not taxonomically characterized are eligible for listing under the auspices of the Federal Endangered Species Act of 1978. However, the Cumberland Island populations would doubtfully be considered meritorious of protection in this capacity. On a state level, the species under which Cumberland Island populations are currently grouped is not on the state endangered species list. A park should have local concern for gene pools specific to the park site, and management should be prepared to manage the gopher and its habitat, should any individuals be located at a future time. However, Park management does not have a legal obligation to continually survey for G. pinetis pinetis on Cumberland Island, since it is not protected in any way through endangered species legislation at the present time.

Field Survey

A Cumberland Island field survey was initiated to survey former pocket gopher locations and investigate any other sites with potentially suitable habitat. A thorough ground survey of former locations was conducted from 9-13 July 1985. The largest area of non-forested land containing vegetation suitable for pocket gopher colonies was the large field with its airplane landing strip at the Stafford House field. This area was searched by walking a series of six transect lines in a generally north-south direction. Two additional transect lines approximately 50 m apart were also run through the surrounding woods on each of the four sides of the field. No pocket gopher mounds or other signs of activity were found. Five gopher tortoise (Gopherus polyphemus) burrows were located, with one burrow appearing to be in use. No gopher tortoises were seen. One old burrow had been enlarged, possibly by an armadillo (Dasypus novemcinctus). All these burrows were located on the northeastern end of the field approximately 120 m south of the chain-link fence bordering a small private homesite. This field is grazed intensively by several groups of feral horses (Equus caballus), several burros (Equus asinus) and white-tailed deer (Odocoileus virginianus). It is burned periodically to control woody vegetation. A small area is mowed occasionally to serve as the landing strip. The field has the physical characteristics that would provide suitable habitat for pocket gophers. It is underlaid by deep sandy soils and contains similar vegetation types found in areas supporting pocket gopher populations on the mainland (Ford 1980).

The next area surveyed was the general area of the suspected 1979 pocket

gopher mounds. This is on the northeastern end of the island, bounded by Candler Road on the side, the marshes of Christmas Creek on the west, and the inward most line of beach dunes on the east. The site extends northward to (Long Point). Several different vegetation types occur throughout this area, from large wet areas of Juncus sp. to drier sites characterized by Andropogon, and small areas of live oak (Quercus virginiana) associations. The vegetation suggests that much of this area is subject to periodic inundation, which would restrict any pocket gopher occupation to seasonal utilization of habitat. However, several small areas of slightly higher elevation do exist, particularly along Cedar Dock Road that runs from Candler Road north to Cedar Dock. This site might have supported a very small pocket gopher colony in the past. Transect lines were run throughout this area, every 50 m or so apart, covering any area of potential habitat. No pocket gopher evidence was seen. Overall, this area seems to represent marginal habitat that in the past would have supported a very restricted pocket gopher population at best.

Additional surveys were conducted at numerous sites on the island north of Stafford Place. Many of these were small fields shown on the Place Names Map, Cumberland Island Camden County, Georgia 1975 (Hillestad et al. 1975). The majority of these sites subsequently have been planted with pine or abandoned. No suitable habitat or pocket gopher activity was found.

Discussion

Recent field surveys failed to locate evidence of pocket gophers on Cumberland Island National Seashore. The Cumberland Island pocket gopher was regarded by Hillestad et al., (1975) as extinct, because these authors were unable to document pocket gopher activity after March 1970. The Georgia Department of Natural Resources Game and Fish Division, Endangered Species Program, prepared a list of 23 wildlife species that deserved special protection due to rare or unusual occurrence within the state. This list included two of the four species of Georgia pocket gophers; G. colonus and G. fontanelus (Odom et al. 1977). G. cumberlandius was not included on this list due to its presumed extinct status (R. Odom, personal communication). Although the cause of population decline on Cumberland Island is not known, habitat alteration, such as the plowing of Stafford field, is a possible factor. Another possible contributor is direct control measures initiated by local land owners. In addition, the species was not protected prior to the establishment of the park, and may have been over-collected.

Park resources managers making decisions concerning the management of other species, island habitats or successional processes should consider the gopher extirpated from the island, and therefore unaffected by possible impacts of management action. However, all reports of gopher activity should be investigated and confirmed by three or more independent expert observers. If gophers are found, immediate action should be taken to protect the population from unnatural disturbance, including scientific collecting.

Since the gopher has, in all probability, been extirpated, rein-

troductiion could be considered. A possible strategy is to wait for at least 10 to 15 years from the last sighting (1979) before considering introduction of animals from a "non-Cumberland" gene pool. This additional time would provide researchers further opportunity to survey habitats, therefore guaranteeing that no animals of the original Cumberland Island population remain on the island. Thus, 1990 would be the earliest date when introduction of the most closely related sub-species onto the island could be considered. A possible site for introduction is Stafford Field, which is prime habitat and would provide a good observation area for park visitors. The area of the 1979 sightings is marginal habitat, and probably would not support a viable population over a period of several decades or more.

Summary

No evidence of pocket gopher activity was found during recent field trips and no evidence of its existence has been seen since 1979. Thus, Cumberland Island populations should be regarded as extirpated. Recent taxonomic studies have recommended that Cumberland Island populations be accorded no taxonomic distinction; thus, G. cumberlandius is considered a synonym of the subspecies G. pinetus pinetis.

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