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# Report T-555

# An Environmental Study of Everglades Mink (*Mustela vison*)

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# AN ENVIRONMENTAL STUDY OF EVERGLADES MINK

(*MUSTELA VISON*)

REPORT T-555

Andrew T. Smith[1]

Department of Biology

University of Miami

Coral Gables, Florida 33124

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1. Present address: Department of Zoology, Arizona State University

Tempe, Arizona 85281

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ABSTRACT

A year-long study was conducted on a population of Everglades mink (*Mustela vison evergladensis*) in the vicinity of U.S. Highway 41 and Levee - 67, adjacent to Everglades National Park, south Florida. Numerous mink were sighted and several collected from road kills. The apparent abundance of mink in the study area indicates that the subspecies extends farther east in the Everglades than was previously believed. Most sightings and specimens collected were in the wet season; very few data were gathered in the winter dry season. Almost all specimens collected were males. The diet of mink included crayfish, fish, snakes, birds and mammals. It is suggested that successful management of the Everglades mink revolves around the maintenance of natural, seasonal water levels in the Everglades.

## STATEMENT OF PROBLEM

The Everglades mink is a rare animal in Florida and is considered to be "threatened" by the Florida Committee on Rare and Endangered Plants and Animals (Brown 1978). It is apparent from the two most recent complete reviews of the Everglades mink (Layne 1974, Brown 1978) that this classification and reason for concern of the status of the subspecies is more the result of a lack of information on its biology than absolute knowledge that it is actually "threatened." In order to manage properly the Everglades mink it was deemed necessary to investigate its ecology and status.

## PROJECT OBJECTIVES

Recent observations indicated that a population of mink existed in Everglades National Park near U.S. Highway 41, especially near Levee 67 - extended (hereafter termed L-67) in and near the Park. This habitat is critical from the perspective of management because it lies directly within the influence of regulated surface water discharge at the northern edge of the Park. Hence, the project objectives were to determine the population status of the Everglades mink in the marshes of south Florida Park Service areas. Specifically, it was proposed that the population size and distribution of the mink be estimated near U.S. 41 and L-67. In addition, these parameters were to be investigated in relation to 1) habitat conditions associated with water levels, fire and habitat modification; 2) food habits; and 3) the seasonal pattern of water level fluctuations. Finally, these inclusive data were to be used to assess the need for and nature of possible management actions to assure perpetuation of the Everglades mink as part of a naturally functioning ecosystem in Park Service areas of south Florida.

## METHODS

For a one year period (1 February 1978 - 31 January 1979) intensive field work was conducted near U.S. 41 and L-67. This work involved extensive observation periods, live trapping, assessment of mink sign, collection of mink scats for diet analysis, and collection of carcasses found dead on the highway. Residents of establishments along U.S. 41 aided the investigation by providing information and/or specimens.

### *Observations of free-living mink*

Observation periods were established throughout the day, but were concentrated at dawn and dusk. At these times mink were visible, yet still active. They are considered a nocturnal species throughout their range (Burt and Grossenheider 1976). Standard observation procedures were to drive or walk slowly down U.S. 41 or a variety of the levee roads in the area, and to sit quietly in areas that appeared to be prime mink habitat. In addition, many surrounding natural areas (hammock islands, etc.) were surveyed. No standardized censuses were established in this study because of the scarcity of mink sightings. It was felt that covering as much ground as possible was the best strategy for elucidating the mink's distribution.

*Trapping*

Throughout most of the study traps were set in order to obtain live mink for eventual radio tracking. Mink are known to be difficult animals to trap, and this proved true in this study as well. Approximately 1000 trap-nights were logged during the study, yet no mink were trapped. In live trapping attempts, medium sized Tomahawk single door, collapsible wire traps were used. Traps were handled with considerable care and placed in spots within areas of suspected mink activity or where mink had been observed. Generally traps were left in one location for 2-3 weeks before they were moved. Traps were set unconcealed, covered with vegetation, floated on small wooden rafts, and buried deep in holes in banks of levees. Bait included freshly killed rabbit and road killed ducks; both live and fresh mice, chicks and ducklings; chicken necks; fresh fish and canned sardines. Musk was also tried alone and in combination with baits. Some traps were also baited with fresh mink scats. While these methods produced no mink, numerous raccoons and opossum, one alligator, a pigmy rattlesnake and a catfish were obtained.

*Assessment of mink habitat*

As the study progressed and the locality of certain mink became known, effort was made to assess the habitat occupied by mink. In addition, at these sites every effort was made to find sign that could indicate the presence of mink, independent of their direct observation.

*Acquisition of study specimens*

Study specimens were found as a result of the field work and acquired from a variety of external sources. The amount of data available from each specimen resulted from 1) the state of decay of the animal; and 2) the accuracy of the data which accompanied each specimen. Normally specimens were frozen immediately and prepared at a later time. Preparation included taking standard mammalogical measurements, the making of a study skin or skeleton to be deposited in the University of Miami Vertebrate Collection, and dissection of the gut for diet analysis.

*Diet Analysis*

Analysis of the diet of Everglades mink was made from two sources: 1) stomachs and guts of dead specimens; and 2) mink scats found on the study area. Every attempt was made to identify items in the diet of mink to the finest taxonomic scale possible. For example, scales of fish and reptiles, and fur of small mammals were compared with those in reference collections available at the University of Miami. Because of the small sample of specimens and scats no elaborate quantitative measure of resource utilization by mink was possible. The data reflect only the range of resource use by mink on the study area. It is unfortunate that no temporal analysis of diets could be made from the data available.

*Interviews with the public*

To determine the historical presence of mink on the study area and the general knowledge of the public of mink, many of the residents along U.S. 41 were interviewed. They were asked if they knew what a mink was, and when and where they may have sighted mink in the area. In addition,

in response, 1) to publicity given the mink project by The Miami Herald (Liss 1978) and 2) to posters distributed throughout the study area, several persons provided information on the presence of mink within their experience.

RESULTS

The primary data gathered during this study are summarized in Tables 1 and 2 and Figure 1. Table 1 presents the sightings made (1) during the course of this study, (2) by extramural investigators, and (3) from recent park records. Tabulations of park records prior to 1974 were not presented because these can be found in Layne (1974).

Table 2 presents data collected from dead specimens of Everglades mink. The first six specimens are currently housed in the University of Miami (U of M) Vertebrate Collection. The disposition of the remainder of the specimens is indicated. Generally the skin and skull (unless the skull was crushed) have been deposited in the U of M Collection. In cases of highly decomposed specimens, skeletons or alcoholics were prepared.

Prior to the study only about 20 specimens of the subspecies were in collections other than the U of M Collection. The series of 15 new measurements (including weights) resulting from this study greatly expands the data available on the morphology of Everglades mink.

Only two specimens were females. One, killed in late April was lactating, giving the only indication of reproductive activity, in the study.

The localities of mink sightings and collections are portrayed on Figure 1. It is evident that there were many mink in the general vicinity of the study area, and that some healthy populations may exist even further east toward Miami.

*Results of Interviews*

Residents and owners of most business along U.S. 41 were asked for information on mink. The owner of Cooperstown had seen one of a few years back on the Loop Road. He said he had seen a rabbit cross the road followed by a mink. Although he had been frogging for more than 20 years, that was the only one he had seen.

The owner of Orchid Isles in the Big Cypress area said he had seen a "family" of mink living on his property a couple of years ago. He works at the Jetport Fire Tower and said he had never seen any mink around there.

A number of employees of Everglades Safari had with some regularity observed a mink using a den located on their property during April, 1978. The mink was observed coming to and leaving the den, mainly in the early morning, and did not seem to be particularly sensitive to human activities. On two occasions the mink was observed carrying food to the den: in one case a breem (about 5 inches in length) and on another a large dark rodent.

The rodent was apparently captured on the north side of U.S. 41, as the mink was seen returning from there to the den with it. The den was located on the south side of U.S. 41 about 15 feet east of a foot bridge connecting a parking lot with Everglades Safari. The den was about 10 meters from the edge of the highway and 1.5 meters from the edge of a waterway dug for airboat access. The site represented an area of considerable human activity. The den itself was in a cavity created when a car was buried under the fill dug from the waterway. Eventual excavation of the car did not yield the nest or any sign of mink presence.

In summary, a number of persons were questioned, but only these two and the Everglades Safari personnel had seen mink with certainty. Most respondents had seen several otter and were surprised there were even mink around. Little information was obtained from Miccosukee Indians who lived in the area. None that were spoken to were familiar with mink. One older man had seen only road kills.

There were several responses to the article in The Miami Herald concerning the mink project. Most persons indicated that they had seen mink sometime in the past while on airboats in the Everglades. It was impossible to verify the reliability of these reports, and none were of recent sightings.

Other persons familiar with the area have also reported mink sightings. Fred Dayhoff, Ranger at Big Cypress National Preserve, indicated that "mink were common" in the Pinecrest area. Further, Dr. Stephen Humphrey (personal communication) has suggested that mink may be abundant in the Fakahatchee Strand. Currently Humphrey is conducting a one year study of Everglades mink in that area. Hopefully his results will complement this study yielding a more comprehensive picture of the subspecies throughout south Florida.

*Observations of mink*

No direct observations of mink during this study yielded in-depth data on any aspect of their biology. Most sightings (Table 1) were of very brief duration, generally the time it took for a mink to cross a road or levee. Initially it was hoped that radio tracking of mink would yield significant data on the foraging strategies and social organization of mink. But as mentioned earlier, in spite of extensive live trapping, no mink were captured. Only the observations of the female mink at Everglades Safari and that of Roy Martinez (Table 1), who saw 4 mink walking together down a levee, could be construed as indicating the behavior of mink. And it is impossible to judge whether these were common behaviors or not.

*Habitat analysis*

While attempts to observe mink were made in all habitat types in the study area, because of their accessability, roads and levees were followed with greatest frequency. It was also along these artificial structures that most observations were made and specimens collected. Only two animals (A and I in Table 1) were seen isolated from disruptive man-made structures. In fact, the presence of the lactating female at Everglades Safari indicates that mink do not actively avoid sites of human activity.

It could be that the population density of mink has been enhanced by the presence of canals and levees. Not only were most sightings found associated with these structures, but it was here that most mink tracks and scats were found. It was also along some of the canals where scats were found and mink sighted that narrow, well-defined trails were found. These were generally within 3 meters of the edge of the levee and appeared to have been used for some time; no new grass was growing in them. They were 4-6 inches wide and well worn with a silt bottom. The trails occasionally came up to the banks. Scats were found in some of these trails. Because of the association of other mink sign with these trails gives strong evidence that they were made by mink. More of these trails were found along L-67 north of U.S. 41 than at any other locality.

*Diet Analysis*

Prey captured by mink were assessed using two sources: 1) stomachs and intestines of dead specimens; and 2) scats found in natural habitat. Diet of mink was broad. Items found in gut analysis were crayfish, fish, snakes, birds and mammals (Table 2). Scats contained insects crayfish, fish, and mammals (Table 3). Some stomachs were empty (Table 2). It was not possible to correlate data on diet with food availability because of small sample size and not knowing the microhabitat the mink had been foraging in or how long it had been since they had eaten.

DISCUSSION

The distribution of Everglades mink is enigmatic. It was originally described as a separate subspecies by Hamilton (1948) on the basis of a single specimen collected 5 miles southeast of Royal Palm Hammock, Collier County. As currently reported the mink has an apparent disjunct distribution with one population around Lake Okeechobee and the other in the Big Cypress Swamp and Everglades areas of south Florida (Layne 1974, Brown 1978). Layne (1974) reviewed thoroughly all available records of Everglades mink to that time and concluded that the largest number of mink had been collected or sighted in Collier County. No explanation could be given for the apparent gap in the distributional range of the subspecies. Concentrating on the southern population, the only references given by Layne (1974) to mink east of about the middle third of south Florida are found in the unpublished manuscripts of Bailey (1930) and Howell (MS). That most of the records from the present study (Figure 1) were from the eastern half of the south Florida penninsula, and that several of them were quite far east, indicates that the range of the mink was either improperly known prior to the initiation of this study or that the mink population has expanded in the study area in recent years. It is difficult to discriminate between these two possibilities on the basis of available data.

No relative or absolute densities of mink could be determined from the data in this study. Sightings of mink were too few and of too diverse a nature to portray accurately any index of density. In addition to this problem, 90 percent of all animals sexed were males (Table 2). This strong sex bias among specimens indicates that social functions within the mink population may have contributed to the excess of males. Regardless of the nature of this bias, assumptions of most density estimators or indices would probably have been violated even is sample sizes had been larger. Assuming cars are equally likely to hit either sex, the

skewed sex-ratio of collected specimens suggests that males foray either more frequently and/or over greater distances than females. As both adult and juvenile males were collected (Table 2), a likely scenario is that males are promiscuous and patrol an area encompassed by several females. This is supported by the observations of the lactating female at Everglades Safari; no other mink (viz. males) were seen aiding in the parental care of her litter. In any case, an animal population is only as healthy as its breeding unit: the female. In this study only two females were collected, hence no strong inferences can be made as to the well-being of the mink population on the study area. It could be said that the mink have only recently colonized the study area, in which case more males may be expected. However, all six specimens in the U of M collection, five of which are known to be from Collier County, are males. And it is in Collier County that the population status of the subspecies is reported to be healthiest (Layne 1974). It appears impossible to reconstruct the historical status of the mink on the study area.

All except one of the sightings or specimens collected were from artificial habitats (i.e. roads, levees, etc.) (Tables 1 and 2). The female at Everglades Safari was denning in a buried abandoned car near a road, parking lot for touists, and a foot bridge. It appears that the scarcity of mink data reflects their secretive nature rather than their avoidance of man. Further, these data indicate that the network of roads and levees that honeycomb the true Everglades may have increased the carrying capacity of mink in the area -- although this hypothesis will be diffiult to test.

The diet of mink appeared broad (Table 2), but without data on mink foraging strategy, prey availability, etc. it is difficult to determine whether food may be limiting. However, the high population densities on the study area of most food items taken by mink would argue that food is most likely not limiting.

MANAGEMENT RECOMMENDATIONS

It is difficult on the basis of the data collected during this study to formulate specific management recommendations. Further, whatever recommendations are made must assure perpetuation of the mink in a naturally functioning ecosystem. Single species management objectives are simply not appropriate. In this light the most parsimonious management objective that is commensurate with the sum of data presented would be to attempt the maintenance of as natural a hydrological regime as possible. Apparently road deaths and den flooding may be caused by artificially high water levels. The social system and habitat selection leading to selection of den sites have been selected through evolutionary time. It would be naive to assume that a disruption in the temporal patterning or magnitude of water level fluctuations would not exert an influence on a semi-aquatic species such as mink.

In summary, while data gathered in this study indicate that the range of the Everglades mink extends into the true Everglades region of Dade County and that it may currently possess healthy populations, the subspecies is still threatened. Changes from the natural hydrology of the Everglades and of water discharge into the Park could seriously impair the health of the mink population.

## SUGGESTIONS FOR FURTHER STUDY

Given the difficulty of studying mink in general, and the problems that were encountered in this study it is difficult to suggest further in-depth studies at this time. I do not believe it would be cost effective to initiate another live-trapping study. I believe that the Park Interpreters at the Shark Valley Tram and research personnel should be attentive to mink sightings and dead on the road specimens as an indicator (albeit poor) of the mink population. The trouble with this measure, as suggested by this study, is that sightings and road kills may be more frequent when the mink is stressed, such as by high water levels, and may not reflect healthy free-living populations. In any case, an ongoing tally of these data sets should be initiated, and frequency of road kills should be correlated with water level. Such a survey would be most productive in the area around Everglades Safari on U.S. 41. Time spent searching per specimen would probably be less on adjoining levee roads than on the highway. Driving slowly down the highway and investigating every roadside sighting that could be a mink will yield more data than driving the highway at a rapid rate but more often. Mink found should be prepared as standard museum specimens and deposited in the University of Miami mammal collection. This collection now has the largest concentration of the subspecies. In addition, diet analysis should be performed on each specimen. Time of death should be reported for freshly killed specimens. With more data on diet an unbiased frequency of food selection will hopefully emerge.

## ACKNOWLEDGEMENTS

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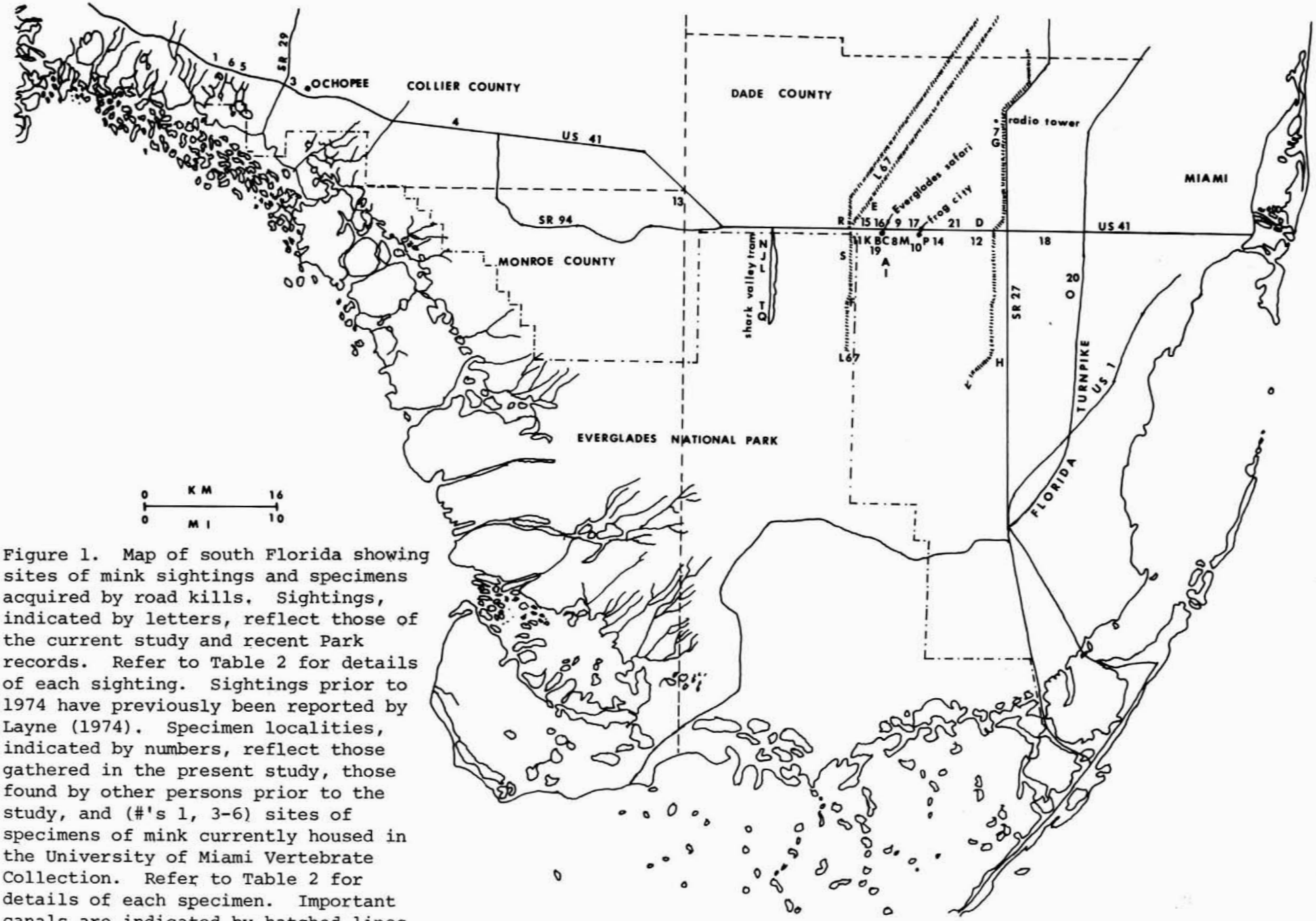


Figure 1. Map of south Florida showing sites of mink sightings and specimens acquired by road kills. Sightings, indicated by letters, reflect those of the current study and recent Park records. Refer to Table 2 for details of each sighting. Sightings prior to 1974 have previously been reported by Layne (1974). Specimen localities, indicated by numbers, reflect those gathered in the present study, those found by other persons prior to the study, and (#'s 1, 3-6) sites of specimens of mink currently housed in the University of Miami Vertebrate Collection. Refer to Table 2 for details of each specimen. Important canals are indicated by hatched lines.

TABLE 1. Sightings of Everglades Mink. Map localities are presented in Figure 1.

| Map Letter | Date | Locality | Comments |
|---|---|---|---|
| A | December 1978 | 1.5 miles south of U.S. 41 @ Everglades Safari | Animal seen at edge of small tree island |
| B | April 1978 | Everglades Safari on U.S. 41 | Female using den (buried car)--seen over a period of a few weeks. Was seen to bring breem and small mammals to nest. Killed on highway--#8 in Table 2 on Fig. 1. |
| C | 4 June 1978 | 300 yards west of Everglades Sarfari on U.S. 41 | 9:15 AM after rain. Ran across road. Couldn't be followed |
| D | 30 June 1978 | On U.S. 41, First flood gate east of State Road 27 (about 1.5 miles) | 6:00 PM Near new construction, hence disturbance. Ran across road, couldn't be followed. |
| E | 23 July 1978 | About 1 mile north of U.S. 41 on eastern extension of L 67 | 7:45 PM Did not reappear before 9:00 PM when it became too dark to see. |
| F | September 1978 | On L 67, near pond, about 7 miles south of U.S. 41 | about 3:00 PM |
| G | November 1978 | West of State Road 27 and about 1.5 miles south of Radio Tower | This observation is peculiar in that 4 mink were seen walking along levee top at 6:00-7:00 PM Observation made by Roy Martinez--a U.S. Fish and Wildlife officer who provided two DOR mink at another time--hence knew identification |
| H | January 1979 | State Road 27 south of U.S. 41 near Glider Port | 9:30 PM Observed crossing State Road 27 by Dr. Oscar T. Owre and Shiela Gaby |
| I | January 1979 | On tree island south of Everglades Safari about 3 miles (an abandoned indian camp) | 10:00 AM |

TABLE 1. Continued.

| Map Letter | Date | Locality | Comments |
|---|---|---|---|
| J | October 1975 | Shark Valley Tram | Park Record |
| K | November 1975 | 1.5 miles East of L 67 on U.S. 41 | Park Record |
| L | October 1975 | Shark Valley Tram | Park Record |
| M | 7 February 1977 | Tamiami Trail-West of 5 towers | Observation by M. Kushlan, Park Record |
| N | 15 November 1974 | North of Otter Cave on Shark Valley Tram Road | Park Record--observation by Park interpreters and related to J. Tilmant |
| O | 20 October 1974 | 3 miles north of Snapper Creek Service Plaza on Florida Turnpike extension | Specimen found by J. Tilmant. Park Record |
| P | 12 October 1974 | U.S. 41 9.5 miles west of State Road 27 | Specimen found by J. Tilmant. Park Record |
| Q | 18 May 1974 | Just north of tower on Shark Valley Tram Road | Observed by S. Dayhoff and related to J. Tilmant. Park Record |
| R | January 1974 | Intersection of L 67 and U.S. 41 | Old specimen found by J. Tilmant. Park Record |
| S | 14 May 1974 | 1.9 miles south of U.S. 41 and L 67 | Observation by John Ogden and MaryAnn Biggers and related to J. Tilmant. Park Record |

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TABLE 2. Summary of data collected from specimens of Everglades Mink. Map number refers to Figure 1. Standard mammal measurements are 1) total length, 2) length of tail, 3) hind foot and 4) ear to the notch.

| Map Number | Date Collected | Locality | Sex | Weight (g) | Measurements (mm) | Comments |
|---|---|---|---|---|---|---|
| 1 | 17 May 1946 | "Trail Road, 6 miles west of Everglades City" | Male | ? | 609-171-63-22 | Collector Homer Rhoades U of M #73 |
| 2 | 20 Nov. 1950 | "West of Miami" | Male | ? | ? | No data. Collector Homer Rhoades. U of M #404. Not on Map |
| 3 | 4 July 1953 | "Carnestown" | Male | ? | 610-192-72-27 | U of M #466 |
| 4 | 28 Jan. 1955 | "Collier Co., 9 mi east of Ochopee on U.S. 41" | Male | ? | 550-155-60-20 | U of M #469 |
| 5 | 24 June 1955 | "Collier Co., 5.4 mi west of Carnestown" | Male | ? | ? | No data. complete skeleton. U of M #478 |
| 6 | 21 Oct. 1956 | "Collier Co., 11.4 mi east of Royal Palm Hammock on U.S. 41" | Male | ? | 520-165-59-27 | U of M #481 |
| 7 | late Feb. 1978 | 1 mile south of Radio Tower on State Road 27 | Male | 831 | 495-185-52-23 | Stomach: unidentified fish with scales; *Ictaluras sp.*; intestine contents: small mammal bones, nail and fur; skin and scales of water snake *Natrix sp.* Disposition: U of M #501, skin and skull. |
| 8 | late April 1978 | U.S. 41 at Everglades Safari | Female | 480 | 465-151-52-19 | Specimen had a den at Everglades Safari and was seen by employees carrying centrarchids and small mammals. When found dead mammary glands were enlarged and animal was lactating. Stomach: macerated and unidentifiable small bird. Intestine: small mammal bones and fur. Disposition: U of M #502, skin and skull |

TABLE 2. Continued.

| Map Number | Date Collected | Locality | Sex | Weight (g) | Measurements (mm) | Comments |
|---|---|---|---|---|---|---|
| 9 | May - June 1978 | U.S. 41, 10 miles west of State Road 27 | Male | 818 | 493-168-59-23 | Disposition: U of M #503, skin only. |
| 10 | 11 June 1978 | 200 yards east of Frog City on U.S. 41 | Male | 542 | 476-149-60-18 | Stomach: bird of apx. 50-60 gm, feathers were shreded--possibly a king rail. Disposition. U of M #504, skin only. |
| 11 | 1 July 1978 | U.S. 41, 0.9 miles east of L 67 | ? | ? | 454-171-54-22 | Stomach missing--found gutted on road. Possibly female. U of M #505, entire body in alcohol. |
| 12 | 18 August | U.S. 41, 2.2 miles west of State Road 27 | Male | 952.5 | 580-189-63-24 | animal shot-skin full of holes. lots of fat. stomach: empty. Intestine: a few cray-fish parts. Disposition: U of M #506, skin and skull. |
| 13 | 3 Oct. 1978 | U.S. 41-Dade-Collier | Male | 620 | 522-190-60-24 | stomach: small mammal fur and bones; unidentified fish parts with scales. Disposition: U of M #507, skin and skull |
| 14 | 14 Nov. 1978 | U.S. 41, 3.3 miles east | Female | 456 | 462-148-51-22 | Stomach and Intestines empty Disposition: U of M # 508, skin and skull. |
| 15 | 15 Nov. 1978 | U.S. 41, 10 miles west | Male | 957 | 552-188-59-24 | lots of fat. stomach: unidentified fish bones and scales. Disposition: U of M #509, skin and skull |

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TABLE 2. Continued.

| Map Number | Date Collected | Locality | Sex | Weight (g) | Measurements (mm) | Comments |
|---|---|---|---|---|---|---|
| 16 | 25 Nov. 1978 | U.S. 41, 10.2 miles west of State Road 27 | Male | 369 | 440-146-57-22 | Hit at about 3:30 PM Disposition: skin and skull at Archbold Biological Station, Lake Placid, FL. No parasites n.b. Dr. James Layne matched fur from this animal to patches of fur found in a recently acquired panther stomach. |
| 17 | 2 Jan. 1979 | U.S. 41, 7.1 miles west State Road 27 | Male | 842 | 542-189-60-24 | large amount of fat. some nematodes under skin at base of tail. Stomach full: *Ictaluras nebulosus*. Intestine: small mammal bones and fur. Disposition: U of M #510, skin only |
| 18 | 16 Dec. 1977 | U.S. 41, 4 miles east of State Road 27 | Male | 650 | 534-186-54-24 | lots of fat. Stomach empty. Intestine: crayfish parts. Disposition: U of M #511, skin and skull. |
| 19 | Spring 1978 | U.S. 41, near Everglades Safari | Male | 420 | 415-153-53-22 | stomach and intestine empty U of M #512, skin only |
| 20 | 20 Sept. 1976 | Marker 23 of Florida Turnpike | Male | 625 | 535-180=63-24 | Collector: Clive Petrovic. Disposition: U of M #513, skeleton only. |
| 21 | 1972 | 0.5 miles west of Coopertown on U.S. 41 | Male | 578 | 508-180-55-19 | Collector: Clive Petrovic. U of M #514, skeleton only. |

TABLE 3. Frequency of occurrence of prey items in 16 mink scats.

| Item | Number of scats |
|---|---|
| Unidentified insects | 1 |
| Crayfish | 11 |
| Fish | 3 |
| Small Mammal | 3 |

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