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The Current Status of the Cougar in the Southern Appalachian

Robert L. Downing
USDI, Fish and Wildlife Service
Denver Wildlife Research Center
Department of Forestry
Clemson University
Clemson, SC 29631

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Abstract

This paper summarizes historical evidence of cougars in the Southern Appalachians and elsewhere in the East and presents evidence of their continued existence. Wide-reaching searches for sign have produced one track and one scat suspected to be cougar. Hundreds of reports of sightings, screams, and tracks have been received as the result of publicity generated by the study but in only 3 cases has there been accompanying substantial evidence of cougars. Future efforts will be expended where the two most promising bits of evidence were collected to establish beyond doubt that viable populations of cougars are present there. Research will also be directed toward describing the normal frequency and variability of observing positive cougar sign, based on intensive surveys in several areas in Florida, the West, and elsewhere known to contain cougars. Such information is needed to plan large-scale searches of potential habitat in the future.

No subject is more controversial among professional wildlife managers and researchers in the East than the cougar (*Felis concolor*). Many people, including several biologists, have seen cougars at close range, but have not been able to produce substantial supportive evidence. Many cougars have been reported killed within the past 80 years but few of these reports have been confirmed because specimens were not preserved. The controversy came to a head in 1977 when several groups threatened to bring suit against the Forest Service unless it halted timber harvests in an area where several cougars had reportedly been seen. The Forest Service and the Fish and Wildlife Service then pooled their resources and sponsored the study reported here. I will discuss the history of cougars and cougar habitat and the effort that is being made to confirm their presence today.

I am indebted to the many employees of natural resource agencies and private parties in the Southeast who have helped me look for sign and have screened reports. Financial support for the first 2-1/2 years was shared equally by the USDI Fish and Wildlife Service and USDA Forest Service. I thank the National Park Service for providing access and radio communications and the Department of Forestry, Clemson University, for office space and other support.

Historical Aspects

Cougars disappeared from most of the eastern United States soon after it was settled by European immigrants. Settlers feared an animal large enough and cunning enough to harm them, if it wished, and they were understandably reluctant to share their livestock and game with predators. Cougars are easily hunted with dogs and many were killed.

Early settlers also killed deer, the mainstay of the cougar's diet. With the exception of a few inaccessible mountain ranges and coastal swamps, deer numbers

were greatly reduced by the late 1800's and deer did not become widespread again until they were restocked and protected in the 1930's, 1940's, and 1950's.

There is one notable exception. In the 1890's George Vanderbilt purchased a huge tract of land near Brevard and Asheville, North Carolina, and protected the few remaining deer which grew into a herd large enough to experience a disease dieoff in 1908 and to contain an estimated 1,000 deer in 1916 (Ruff 1938 and Sanders personal communication). Deer persisted, but probably were not abundant, in other isolated areas, notably in what is now Great Smoky Mountains National Park.

The Weeks Act of 1914 authorized the purchase of lands to form the National Forests. Large blocks of land were purchased that provided renewed seclusion and protection for cougars. Hunting continued on most of these lands but was better controlled and the areas were less accessible to the people because most of them had moved away. The Pisgah Game Preserve (part of Vanderbilt's estate) was incorporated into Pisgah National Forest.

Great Smoky Mountains National Park was established in the 1930's and, although 4,252 people were moved from the Park, it was historically the least accessible large tract of land in the Appalachians and was never devoid of deer and bear (Culbertson 1977). Hunting in the Park was restricted in 1930 and halted altogether in 1934. The area was so inaccessible that about 30 percent was never logged.

But how did the return of the deer herds and the increased protection from man help the cougar if it had already been eliminated from the area? There is concrete evidence that a few cougars survived the most crucial time, which probably occurred before 1900 in the vicinity of Mt. Pisgah and as late as 1930 in Great Smoky Mountains National Park. Table I contains all the reports that I could find of cougars reported killed in the eastern United States, north of Florida, since 1900. Many reports in Table I cannot be confirmed and, therefore, should be

accepted cautiously, if at all. Included are several that are known to be false (at least 2 were intentional hoaxes) to better illustrate the hazards attendant to accepting reports not backed up by substantial evidence. Nevertheless, at least 4 and possibly as many as 20 cougars were killed in or near the mountains in Georgia, Alabama, Tennessee, North Carolina, and South Carolina during the last 50 to 80 years. The fact that several cougars survived the most critical time suggests that they may have even experienced an increase in number as deer herds became larger and more widespread. Several people have argued that an increase in the number of cougars killed should have been noticed if the population has increased. The removal of permanent human dwellings, the decreased need and opportunity to prey on livestock, and the passage and observance of endangered species laws could account for the low rate of kill. However, if all the unverified kill reports of the 1970's and 1980's (Table 1) turned out to be true, the number is impressive.

This report would not be complete without mentioning that all observers do not accept a kill as proof that a wild cougar existed. It is common knowledge that cougars breed readily in captivity and kittens are much in demand as pets. However, these quickly outgrow the "cute, cuddly, and easy to feed" stage and some possibly are released into the wild. I say "possibly" because the former owners will not admit releasing the animal because release is illegal in most places and because they do not wish to be liable for any damage it causes. The mystery of whether or not a kill was a wild or formerly captive cougar can be resolved only by comparing detailed skull measurements or performing parasite studies, such as those done in West Virginia in 1974.

Recent Reports of Cougars

The list of kills in Table 1 is fairly good evidence that cougars survived the most critical time but it is poor evidence for continued existence because each one killed could have been the last one in that locality. The frequent reports of people seeing cougars originally commanded the interest of conservation agencies and seem to be the strongest evidence of the continued existence of cougars. Anyone who watches television should know a cougar; until recently, cougars appeared almost daily on automobile advertisements and nature shows. Unfortunately, few reports have been fresh enough to find the sign needed to judge their authenticity in spite of the fact that fresh reports were solicited in 5 national magazines and many local newspapers and state conservation magazines, and that letters describing the need to receive reports while they were still fresh were distributed to each resource agency employee in the Southern Appalachians.

There may be no need to judge reports by persons with biological training and experience because the majority of such people should not be mistaken. Examples of reports by persons of proven ability, south of the

southern border of Virginia and Kentucky, including several reported previous to my study, are (1) Park employees watched cougars stalking deer in the Cataloochee and Noland's Creek Sections of Great Smoky Mountains National Park in 1975 and 1978, respectively; (2) the multiple sightings of a female with kittens in North Carolina along the Blue Ridge Parkway near Mt. Pisgah in 1975 and again in 1977 (one of the witnesses was a Park naturalist); (3) a forester with wildlife training saw a cougar cross the Blue Ridge Parkway in North Carolina near the Haywood-Transylvania County line in 1975; (4) a forester saw one stalking deer on the Warwoman Wildlife Management Area, Georgia, in 1977; (5) an experienced turkey hunter in 1978 reported one 40 m away crawling along a log, long tail flicking, stalking the turkeys that surrounded the hunter (Cohutta Wildlife Management Area, Georgia); (6) a widely travelled mining engineer saw one at a distance of 5 m crouched on a boulder stalking deer in 1978 (Blue Ridge Wildlife Management Area, Georgia); (7) a professional trapper had one come within 30 m of his deer stand, long tail flicking, on the Flint River, Georgia, in 1973; (8) a forestry professor saw one walk slowly across a highway 60 m from his parked car in 1979 in the South Carolina mountains; (9) a wildlife biologist saw one cross the road at Sand Hills National Wildlife Refuge, South Carolina, in 1980 (this is the same area where deer were killed, dragged, and covered, cougar style, in 1976 and 1977); (10) a game warden in Catawba County, North Carolina, watched one through binoculars hunt along a fence row and gave a good, detailed description, including measurements based on the height of the fence and surrounding vegetation; (11) there have been a dozen good-sounding reports in the last year from Tennessee Valley Authority's Land Between the Lakes, including at least 2 by employees with wildlife degrees.

But, have reports by experienced observers proven to be reliable? I received only one of the reports above in time to search for sign—in this case I found cougar-sized scratch hills, but only dog and bobcat tracks. I once asked Chris Belden, leader of the Florida Panther Recovery Team, if reports by experienced observers were mainly in areas known to contain panthers and he said "No."

What about the other reports, those that were made by persons without biological training or proven ability and those sightings that were of short duration, long range, poor lighting, or other unfavorable conditions? Unfortunately, there are areas with no cougars where 100 percent of the reports are false. But even in areas that actually contain cougars, I would expect 90 percent of the reports by persons of unproven ability to be false because there are more sightings than one would expect for such a secretive animal and because there are many other things to see, and misidentify, besides cougars. The problem is, how do you tell which groups of sightings are most likely to contain "true" reports when the "fog" of false reports is at least 9 out of 10 and possibly 10

of 10? Unless several of the sightings are by persons of proven ability, there is no way to tell the good areas from the bad ones.

Culbertson (1977) noticed that sighting locations in Great Smoky Mountains National Park correlated well with the distribution of deer. I do not deny that such a relationship should exist and I usually make note of the amount of deer sign in the area of a sighting report as a measure of likelihood of a cougar remaining in the area. However, this does not mean that I consider clusters of sightings around deer herds to mean there are cougars there—the people may have been seeing deer, not cougars.

I am not a psychologist, yet I must mention the role of human judgment and background in interpreting and relating what they have seen. Audubon and Bachman (1851:309), after recounting several reports of cougar attacks on people, said these "... must be received with some caution, making due allowance for a natural disposition in man to indulge in the marvelous." I am not aware that any of the reports I have received were purposely fabricated or embellished, yet I am fascinated by the tendency for people who get only a fleeting glimpse of an animal to make a split second interpretation that it was the rarest animal in the East (a cougar) rather than a common one (a dog or deer). A few people have told me that their first impression was dog or deer and that they had to change that impression as the cougar came closer—these I tend to believe. I also tend to believe those few (less than one-half dozen) who have told me about seeing the tail flicking, since this is behavior that is seldom publicized. Everyone apparently knows that a cougar's tail is carried low and turns up at the end, so it's not surprising that a majority of reports contain this detail. Some black animals, such as Labrador retrievers, are reported to be black panthers because that's the color panthers are supposed to be, according to folklore.

I get many reports of cougars screaming and I generally regard these as the least reliable evidence. House cats and bobcats can both make the woods ring with sound on a still night, as can foxes and owls. Two people have sent me tape recordings of screams and they both sounded exactly like grey foxes barking. Once again, there seems to be a tendency for people to hear a sound that is unfamiliar to them and, instead of associating it with a common animal, they report it as the rarest of all, the cougar. However, one person heard my tape of a cougar in heat and said it sounded exactly like the screams they had heard in Maine.

There have been many instances when people found tracks and reported them to me as being cougar, but did not see the animal. In the 40 instances where I saw the track, a photo of it, or a cast, 38 turned out to be dog, bobcat, or bear tracks or were too indistinct to tell for sure. The two remaining photographs, from West Virginia and Connecticut, look very much like cougar tracks in many ways, but I have not been able to visit either area to look for more positive evidence. I hope to visit the West Virginia site in the near future. Many more dog,

bobcat, and bear tracks probably would have been reported to me had I not realized that easterners lacked experience in tracking cougars. Therefore, I circulated about 600 diagrams and descriptions of their tracks and about 100 sets of plaster casts to key biologists and other interested persons to use to screen out many of the dog tracks before they reached me.

I cannot overemphasize the importance of *thoroughly* learning the differences between the tracks of dogs and cougars. A degree in wildlife biology is no guarantee that one knows the difference, and at least two persons who have written books on cougars (B.S. Wright and E.A. Goldman) were sometimes mistaken in their track identification. If these prestigious gentlemen could make such a mistake, so can you, so learn well and be prepared.

Only two photographs of covered deer kills were received during the study and it was not possible to determine how far the cat reached to collect debris, a key indicator, in either report. One covered kill that I saw in Shenandoah National Park had been disturbed by a bear, but Dr. Paul Leyhausen, internationally known cat expert, had seen it the day before and believed that it was originally covered by a cougar-sized cat.

Early in the study we became aware of the potential for identifying the inhabitants of an area by chemical analysis of the bile steroids in their scats (Major et al. 1980), and gave some monetary support to refine such a technique. At the present stage of development, the technique is not sufficiently accurate to be useful—less than 50 percent were correctly identified in the two most recent tests involving 28 known cougar, bobcat, and fox scats conducted for Chris Belden and me.

The best looking scats, those 30 mm or more in diameter and composed of deer hair and bone slivers, have come from the following areas: Standing Indian Wildlife Management Area, North Carolina; Beech Gap, Blue Ridge Parkway, North Carolina; coastal pocosin, Croatan National Forest and Pamlico County, North Carolina; Dismal Swamp National Wildlife Refuge, Virginia; Shenandoah National Park, Virginia; Bath County, Virginia; Tucker County, West Virginia; and Mercer County, West Virginia.

Searches for Sign

Several years before the present study was begun in 1978, National Forest personnel in North Carolina became interested in the possibility that cougars existed in the region and enlisted the help of David Lee, North Carolina State Museum, to compile and investigate cougar reports statewide (Lee 1977) and Dick Brown, University of North Carolina at Charlotte, to do a detailed analysis of those on Uwharrie National Forest. Both investigators recommended more field searches for sign so a professional cougar hunter from Colorado was brought in for a month in 1977 for this purpose. When this effort failed to provide positive evidence of the presence of cougars, the present study was organized. The major strategy was to solicit and investigate fresh

reports and to search for tracks in remote areas during snow. Snow was emphasized since many of the roads are paved and dirt roads in the area seldom provide a useful tracking medium due to their hard, rocky composition.

Table 2 shows the amount of effort I expended in each state to find cougar sign. Only one possible track was found in snow (Blue Ridge Parkway, North Carolina). The track had been covered with new snow so the only clues were its behavior and distance between tracks (center to center). It was obviously a cat since it walked logs and wooden guardrails at every opportunity. In one instance it jumped almost 2 m from one log to another. In its normal travels, the distance from track to track was similar to a bobcat's 40-50 cm, but when crossing the highway (several times), it had a distance of 65-80 cm, beyond the range of any bobcat yet measured under similar conditions. However, repeated searches in the same area failed to reveal any more "long-stepping log-walkers," only bobcats.

Snow was not nearly as good a tracking medium as I had hoped. Snows here often occur only at high elevation and usually are followed by several days of high winds and bitter cold. Deer seem to know this and move to lower elevation where it does not snow often. The majority of deer also do their feeding before and during the snowstorm, not in the fresh snow afterward. It often takes 2 days or more for deer to become active again, and by then the snow normally has either blown away, melted, or developed a hard crust. Bobcats do a great deal of walking in the fresh snow and I am told that cougars usually do too. However, as I attempt to explain why I have not seen cougar tracks, I suggest that this may be true for cougars only where the snow cover is widespread and of long duration. Where it normally occurs only at high elevation and for short duration, the cougars may wait several days for the snow to melt or the deer to begin moving again before they become active.

Much of the dirt tracking I have done (Table 2) has been in the piedmont and coastal plain because conditions are rarely suitable in the mountains. Road surfaces are soft enough to register tracks in the mountains only during the spring thaws. At night, when cougars usually prowl, these roads usually freeze hard again, preventing further tracks and deforming those already present. Mid-summer dust is a rare commodity in the mountains due to the frequent severe thunderstorms. An indistinct track found in a mudpuddle in West Virginia, when considered with other evidence (nearby scat, sighting by highly experienced biologist the year before, and recent predation on sheep), suggests the presence of a cougar there. A more distinct track will be needed to prove it and I plan to visit the area again when it snows.

Several western researchers and professional hunters have suggested that the most efficient way to determine if cougars are in an area is to look for their "scratch-hills," piles of leaf-litter that are scratched up

and urinated upon by males. These scratch-hills may persist until the next leaf-fall and therefore become more or less permanent testimony of the presence of a male cougar.

We have a severe problem in many parts of the Appalachians because there are many other species that disturb the leaf-litter and make what appear to the non-professional to be scratch-hills. Wild boar are perhaps the worst offenders followed by bobcats, ruffed grouse, turkey, black bear, dogs, squirrels, skunks, and foxes. It is extremely frustrating to search for scratch-hills in Great Smoky Mountains National Park, for example, because the numerous wild boar have rooted the leaves into what looks superficially like a continuous series of scratch-hills. I have seen cougar scratch-hills in Florida and Colorado and feel that I could correctly differentiate between them and hog rootings most of the time in paired comparisons. Nevertheless, repetition tends to dull your sensitivity and after viewing several thousand hog rootings, I'm afraid I would stumble over an intermingled cougar scratch-hill without even noticing. Except where there are boar, scratch-hill-like disturbances are uncommon enough to get your attention and arouse your curiosity; but since bobcats occasionally make scratch-hills that look, to me, like cougar, such markings are not conclusive evidence of the presence of cougars.

What about an area that has no scratch-hills; can we say that it does not contain male cougars? According to discussions at the 1976 Mountain Lion Workshop (Pages 89-90), there are cougar-occupied areas in the West where few, if any, scratch-hills can be found. One hunter who has caught 31 cougars has never seen a scratch-hill in the area and another that has caught 18 has seen no more than a half-dozen. The reason is not clear, but areas with high-density, stable cougar populations generally have lots of scratch-hills, whereas exploited populations composed mainly of transients and sub-adults may not. Eastern populations, if they exist, are certainly low density and, therefore, may not be expected to contain many scratch-hills. If there truly was a cougar killed in Richmond County, North Carolina, February 4, 1981 (Table 1), then North Carolina cougars do not make many scratch-hills. My wife and I spent 6 days during mid-February and early March walking out the likely travel-ways within 5 miles of the alleged kill site and failed to find any evidence of cougars, past or present. A heavy rain had fallen between the kill date and our first visit so tracks were not expected; but if the cougar was a resident and left abundant scratch-hills like the researchers elsewhere say they do, we should have found some.

The purpose of scratch-hills is not entirely clear. If it is to warn away neighboring males, there may be no incentive to mark if there is no neighbor. However, Belden (personal communication) says the 2 adult males he is presently tracking have overlapping home ranges and therefore do not recognize exclusive territo-

ries. Belden also mentioned that scratch-hills are not made year-round, but are primarily made in February, the peak of breeding. Perhaps scratch-hills have a territorial function during the breeding season but are ignored at other times.

Since I am on the subject of sign abundance or lack of it, I should mention two behavioral traits, noted in captive cougars, that may tend to conceal sign. Silvio Martinat of Lenoir, North Carolina, has noticed that his captive cougars usually defecate while sloshing their hindfoot up and down in their water buckets. He interprets this behavior as a desire to defecate in water. Because there is much open water in the East, cougars would not have much difficulty hiding their scats. However, Chris Belden finds plenty of cougar scats in Florida where water is accessible.

I once tried to get one of Silvio Martinat's cougars to make some tracks for me in a mudpuddle that I had prepared. After daintily testing the wet area with its foot, the cougar, on a leash, could not be forced to step in the mud. If they all act that way, we have a problem; but Belden (personal communication) feels that the behavior of captive animals is seldom manifested in wild ones. Belden has observed similar mud-aversion behavior in captives but says wild ones do not hesitate to step in the mud. During the rainy season, wild Florida panthers have little choice.

One promising technique that I have not tried is the use of catnip to attract cougars to camera sets or track plots. One reason I have not tried it is that I cannot find a source of strong-smelling catnip oil and the synthetic products now on the market do not contain the proper compound, nepetalactone, according to a chemist I consulted. Since catnip grows wild throughout the East, wild cougars here may not respond to it anyway. Several states have used urine-scented plots to monitor populations of bobcats and other predators but none has reported cougar tracks in the plots.

Research Needs

As long as there are people who think they have seen a cougar, there will be public demands that conservation agencies take special steps to protect the cougars from the people or protect the people from the cougars. The Forest Service has already been threatened with a lawsuit if it did not halt timber harvesting on a 29,000 ha tract of land, and I would not be surprised in the future if someone suggested closing the hunting season in several counties because a few cougars were seen. Many agencies have adopted the defensive attitude that they will not consider such radical measures until cougars have been proven to exist. Unfortunately, such proof is extremely difficult to obtain, and only three bits of evidence suggestive of cougars has come to me in 3 years, none of them from the area where the original controversy arose. Obviously, if we want to find proof of cougars in a particular area, we have to go there and look for sign. But what do we look for? Where do we look? How

much effort does it take? These are all important questions if we do not want to waste time and money looking for the wrong things in the wrong places.

Unfortunately, the information collected in searches for sign to date does not answer any of the above questions. The possible track and scat found in West Virginia were not conclusive evidence and no better ones could be found in 2 days of searching because there were few muddy areas that would preserve a track. There may have been cougars present in several other areas where I searched but, if so, I did not spend enough time, in the right places, looking for the right things. My search strategy may have been faulty in only one of the above ways, or in all three.

The only way I know to devise a search strategy that is not deficient in one or more ways is to thoroughly study, within areas known to contain cougars, the frequency of observing each kind of sign in each type of terrain and from that frequency (and its variability) estimate the effort required to find positive evidence of cougars 90 percent of the time, if present. The frequency of observing each kind of sign depends on its abundance, distribution, persistence, and distinctiveness, and how efficient the observer is in noticing sign. Each of these factors may vary according to habitat, terrain, climate, the cougars' sex, age, density, and distribution, and human influences.

Considerable effort will be expended to confirm the presence of cougars near the site of the covered deer carcass in North Carolina and in the two locations where possible tracks were found in West Virginia. These locations are especially important because many of the variables above are similar to other potential cougar habitats in the East. There are cougar populations in Florida and in the West and possibly in Arkansas and Minnesota that live in habitats similar enough to ours to be equally useful study subjects in some respects. Several localities need to be studied so that we can learn to predict how the frequency of observing sign will change in response to the many variables. For each combination of variables, we need to devise a search strategy that gives the maximum likelihood of observing positive cougar sign with the lowest expenditure of time and energy.

The need to develop *efficient* search strategies cannot be overstressed because the amount of area to be searched is potentially enormous. Biologically, we cannot afford to under-search an area and thereby fail to detect cougars that may be present, and economically, we cannot afford to over-search each area because of the limited funds and energy available. And we cannot afford to wait any longer for the cougars to come to us, so to speak, through the reports of the public; we have tried that approach and it is far too inefficient. It's time we made a concerted, systematic effort to find them, or to find where they do not exist if that is the case, to give land managers a basis for planning the proper management.

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Table 1. Cougars reported killed in the eastern U.S., north of Florida, since 1900. Included are a few reports that were checked and found to be false as a reminder that some people purposely make false reports and others are mistaken even when the animal is in their hand. Many others could not be checked for authenticity.

Georgia

- 1903—Bulloch County (Statesboro). Mounted specimen displayed, photo in files at University of Georgia (Golley 1962).
- 1925—Harper (1927) mentions one killed in southern part of Okefenokee Swamp.
- 1927—89-year-old Bill Freeze of Ellerbe, N.C., told Downing about killing one that threatened to attack him while frog hunting between Toccoa, Ga., and Madison, S.C. He was of the opinion that it had escaped from a wrecked circus train. Freeze has western cougar experience.
- Mid-1960's—Malcolm Edwards has photo of young African lion claimed to have been killed by 2 deer hunters near Blue Ridge. Rumored to have been a pet but became unmanageable and was destroyed.
- 1975—Nowak (1976) mentions an unconfirmed kill near Stockbridge in Henry County.
- 1979—Hunters claimed photo of them with a cougar in the mountains was a hoax designed to frighten hikers away from the area.
- 1980—Rumor of 93# female being killed near Rincon (north of Savannah) could not be confirmed by enforcement agents.
- 1980—Downing has second-hand report that a man in northwest Georgia has killed three there in his lifetime.

Alabama

- 1921—Howell (1921) reported a specimen from near Blakely (county unknown).
- 1942—Article by Hardison (1976) quotes Fred Barkalow that a 109# cougar was killed in TVA lakes region of northern Alabama. Mentions that this was the same year Fontana Dam was built and that several were flushed while clearing lake bed (200 miles from kill site).
- 1948—Many authors cite a killing March 16 west of Asheville in St. Clair County. Also weighed 109#.
- 1953—One killed at Lock 14 in Tuscaloosa (Holliman 1963).
- 1956—Some confusion—Jenkins (1971) says one was killed in north Alabama near Georgia line, Golley (1962) seems to quote from Alabama Conservation that it was killed in Dale county in southeastern Alabama.

Mississippi

- 1900—Horan's (1976) map shows a kill in north-central Mississippi.

Louisiana

- 1905—Specimen in U.S. National Museum collected near Vidalia, Concordia Parish.
- 1931—Lowery (1936) reported one killed at Waverly, Madison Parish.
- 1965—One killed (preserved) near Keithville, Caddo Parish, now at LSU Museum.

Arkansas

- 1948—One killed near Mena, Polk County (Nowak 1976).
- 1949—One killed near Mount Ida in Montgomery County (Nowak 1976).
- 1969—Large male killed 6 miles east of Hamberg, Ashley, County. Specimen at LSU Museum.
- 1975—An 118# male killed in Logan County. Mounted specimen in Arkansas Game and Fish Commission Offices.
- 1979—Phone call to Downing reported finding a dead cougar. Barkley investigated and found it was a dog.

Oklahoma

- 1968—Lewis (1969) reported one killed 10 miles west of Checotah, Oklahoma, +60 miles west of Ft. Smith, Arkansas. Skeleton is at Oklahoma State University.
- 1975—Nowak (1976) cites an adult found dead near Stringtown, Atoka County in southeastern Oklahoma.

Missouri

- 1927—Schwartz and Schwartz (1959) reported one killed.

Iowa

- 1909—Bowles (1971) listed this date but doubted its authenticity.

Tennessee

- 1929—Allen (1942) mentions one killed in the Holston Mountains, Johnson County.
- 1941—Culbertson (1977) claims Glen Branam (Park dispatcher) and a friend treed and killed two 20# kittens near Hillis Creek in the Greenbrier section of Great Smoky Mountains National Park. Good description. Brother doubtful.
- 1970's—Photo of a black panther killed near Cosby, Tennessee, published in now defunct Newport, Tennessee, newspaper. Park ranger J.R. Buchanan and Mike Pelton examined fresh specimen and said it was large housecat. It was mounted and displayed anyway.

1971—Mr. Buckner of Decherd, Tennessee, killed one north of Crossville while deer hunting. Mount has no Florida panther pelage characteristics. Toenails not visible on 4 main toes, so may be former captive. Skull is in mount but Bucker will not give it up.

1981—April Fool's Day article in small newspaper in Linden, Tennessee, was obvious hoax.

1981—Rumor of one being killed in southwestern Tennessee near Bolivar in late April was a hoax.

Kentucky

1960—Jenkins (1971) cites Tramel (personal communication) that one was killed and photographed near Central City, Kentucky. Rumored to have escaped from a roadside zoo.

South Carolina

1916—Golley (1966) mentions one killed near Camden, S.C.

1942/1943—Sass (1954) tells of one being hit and killed by a truck driven by Alan G. Broun, Jr., in Georgetown County. So large that it was difficult to drag by its long tail.

1952—Sass (1954) lists one found mangled in road by Benjamin M. Badger of Charleston. Also difficult to drag by long tail. Neither specimen was preserved.

Early 1960's—Downing talked with a man who, while living near Seneca, S.C., killed cougar (judging from good description) that was catching chickens from a tree in his yard.

1961—Beaufort paper mentions one killed.

1979—Black panther reported killed near Central, S.C., turned out to be housecat.

North Carolina

1900—David Lee's files contain good report of one trapped in a pocosin in Craven County.

1908/1909—Culbertson (1977) talked with a Rev. Conrad who said a friend of his killed an adult and 2 kittens near Tines Creek, Big Cataloochee Area of Great Smoky Mountains National Park.

1913—Hutchinson (1979) relates how R.J. Williams killed one on Little Pisgah near Fairview. Good description.

1920—Several authors refer to the one killed by W. Orr near Fontana Village.

1930's—Hutchinson (1979) mentions one being killed in the Great Smokies near Bryson City.

Early 1930's—Mr. and Mrs. McCall told Downing they saw one alive repeatedly and then after it was killed on Waterrock Knob near Addie in Jackson County. Good description. Close enough to possibly be the Bryson City specimen above.

1949—Lee's files contain report of a cougar killed in a pocosin in Pitt County. Low credibility.

1950—Lee's files contain report of cougar killed in Tyrrell County.

1952—Dewalt Hyde reports one killed near Robbinsville.

1959—Eaton (1973) says a 79# male was killed on Horse Face Mountain in Cherokee County, N.C.

1966—Dave Lee's report to the Forest Service lists a secondhand report of one killed off Highway 321 between Blowing Rock and Lenoir. Lee gave report a low credibility rating.

Late 1960's—Lee's files contain report of cougar killed in Green Swamp.

1970's—Secondhand report to Downing of one being killed and carcass thrown off road between Bat Cave and Black Mountain.

1975—Brevard man told Dick Brown and Downing that he killed one that was molesting his hogs. The only bones found near where he left carcass were dog.

1979—Skull from carcass that was thought to be cougar turned out to be bobcat.

Late 1970's—Boasted cougar kill in mountains investigated by David Allen turned out to be a female African lion salvaged from a dumpster.

1981—Bill Freeze and a neighbor saw and weighed (169#) a large male killed Feb. 4 by truck of unknown persons near Ellerbe in Richmond County, N.C. Specimen not yet recovered. Possible hoax.

1981—Danny Armstrong found skeleton near Brevard. Skull large enough to be cougar but judging by telephoned description does not have proper dental formula—probably bobcat but skull has since become lost.

Virginia

1978—Unsubstantiated rumor of one being poached in Shenandoah National Park.

West Virginia

1950's—Larson (1966) mentions 3 hoaxes involving Mexican and western cougars.

1974—One killed and one captured had parasite loads and behavior suggestive of recent captivity.

Maryland

1913—Shoemaker (1917) mentions one killed a few miles north of Washington, D.C.

1920's—David Lee has photo and data on cougar kitten shot in Garrett County.

Pennsylvania (reports compiled by Helen McGinnis)

- 1901—Shoemaker (1943) reported that Delbert Reynolds saw one caught in a trap and shot it in Tioga County.
- 1902—Shoemaker (1943) tells of a very old cougar being shot on Scootac (Tangascootac Creek?, Clinton County) while attempting to steal hams at a lumber camp.
- 1903—Shoemaker (1943) tells of another cougar killed on Scootac by Earl Monaghan.
- 1905—Shoemaker (1943) lists a "doubtful newspaper report" for Clinton County but does not mention it again in the 1943 article.
- Early 1900's—Charles Thomas, now deceased, told Bob Webber details of a cougar his relatives killed near Orviston and Monument.
- 1914—Shoemaker (1917; 1943) cites the Lewisburg Journal account of one being killed on Paddy Mountain (Union County?).
- 1916—Shoemaker (1917) listed 2 unconfirmed kills in Mifflin County but may have determined that these were not reliable since they were not on his 1943 list.
- 1918—Niece of Willard Smoyer (deceased) told McGinnis of seeing mounted skin her uncle killed. Train also stopped to see it.
- 1921—Henry Masker told McGinnis he killed a young panther and speculated that it escaped from a nearby circus.
- 1946—Carload of deer hunters, with 6' long cougar tied to the fender, passed Robert Frazier between Showshoe and Renova.
- Late 1940's—Game protector Theodore E. Carlson (now deceased) shot cougar, probably in Elk County, and told two fellow employees. One of them saw the skin.
- 1940's—Captive cougar escaped near Kane and shot by State Patrolman several miles away.
- 1967—Small (48#) young adult female killed by John D. Gallant near Edinboro. Specimen (Carnegie Museum 59525) described by Douth (1968). Deformities suggest former captivity. Larger companion escaped.

Massachusetts

- 1927—Leo Daly has photo of one killed in Shutesbury. Reportedly had a tufted tail but is obviously a cougar.

Maine

- 1906—Jackson (1922) mentions a kill near Mount Kineo.
- 1915—South LaGrange (Wright 1972).
- 1938—Little St. John's Lake (Wright 1972).
- 1949—Skull of one killed this date submitted to Safari Club International.
- 1974—A truck driver told Virginia Fifield that his uncles killed 2 cougars, including a 220# male, near Rangely.

Ohio

- 1966—McGinnis files mention tame cougar shot the day after it escaped.
- 1960's—East (1979) mentions young cougar killed by car near West Virginia line.

Wisconsin

- 1903—Jackson (1961) listed a kill in Barron County.
- 1908—Jackson (1961) listed one killed in Douglas County.

Table 2. Effective night/miles¹ of tracking, looking for cougar sign.

	1978-79	1979-80	1980-81
Georgia			
Snow	28	56	0
Dirt	2	5	40
Leaves	10	8	35
South Carolina			
Snow	0	61	0
Dirt	24	22	16
Leaves	2	10	2
North Carolina			
Snow	442	384	95
Dirt	4	10	30
Leaves	30	40	35
Virginia			
Snow	19	130	0
Dirt	0	6	2
Leaves	4	8	0
Tennessee			
Snow	9	7	0
Dirt	0	1	0
Leaves	5	10	12
West Virginia			
Snow	0	0	0
Dirt	0	0	8
Leaves	0	0	3
Totals			
Snow	498	638	95
Dirt	30	44	98
Leaves	51	76	103

¹Miles times probability of observing track times nights since snow/rain.