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FOOD OF COUGARS IN THE CASCADE RANGE OF OREGON¹

Dale E. Toweill² and Chris Maser³

ABSTRACT.— Animal and nonanimal items were identified in the digestive tracts of 61 cougars (*Felis concolor*) collected between 1978 and 1984 from the western slopes of the Cascade Range in Oregon. Forty-two (69%) of the cougars were taken by hunters in December and January, 18 (30%) were killed at other times of the year because of their proximity to livestock, and one animal was illegally killed in November. Black-tailed deer (*Odocoileus hemionus columbianus*) was the most common prey item, although domestic sheep (*Ovis aries*), porcupines (*Erethizon dorsatum*), and a variety of small mammals were also recorded. Masticated grass was the most common nonanimal item.

The cougar was placed under jurisdiction of the Oregon State Game Commission in 1967 because of a suspected decline in numbers in the 1950s and early 1960s (Oregon State Game Commission 1967). Prior to 1967, the cougar had been subjected to the bounty system established by the Oregon Territorial Government in 1843. The bounty system was repealed by the Oregon Legislature in 1961 (Kebbe 1961), but the cougar was not protected until it was declared a game animal in 1967. It was then protected until 1971, except for individuals that were killing livestock.

The first controlled hunt for cougars in Oregon took place in 1971; 13 were killed. Information on food habits from those 13 animals (3 from the Cascade Range) and from 12 taken in 1972 (none from the Cascade Range) was reported by Toweill and Meslow (1977). The purpose of this paper is to present data on foods of cougars from the Cascade Range of Oregon and to compare these data with other data from Oregon (Maser and Rohweder 1983, Toweill and Meslow 1977) and elsewhere.

METHODS

Most of the animals examined during this study were taken legally by hunters during the annual controlled season in December and January; one cougar illegally killed in

November and confiscated by Oregon State Police was also examined. Successful hunters were required to present their cougars to personnel of the Oregon Department of Fish and Wildlife within 48 hours, at which time biological data were collected and ownership of the pelt was validated. Additional cougars, killed to protect livestock (primarily domestic sheep), were obtained throughout the year.

Sex, weight, and physical measurements were recorded for each animal either by personnel of the Oregon Department of Fish and Wildlife or by us. Digestive tracts and reproductive organs were removed, labeled, and frozen for later analysis. Each complete digestive tract was examined as three separate elements: stomach, small intestine, and colon. Because some animals were eviscerated in the field by hunters, many of whom brought in only stomachs, more stomachs than colons were available for analysis. Weight of stomach contents was recorded to the nearest gram. Endoparasites were also preserved.

Complete digestive tracts normally represented at least two meals: one in the stomach and one in the colon, with elements from both often found in the small intestine (Maser and Rohweder 1983). Items from stomachs and from colons were recorded separately. Nonanimal items, particularly fragments of vegetation, were identified to provide insight about the habitats in which meals were ingested.

¹This paper is dedicated to the memory of Ronald Rohweder, an employee of the Oregon Department of Fish and Wildlife, who helped initiate the study on cougars of Oregon. Ron was electrocuted 1 July 1984.

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RESULTS AND DISCUSSION

Digestive tracts of 61 cougars containing food items were examined. Information, considered to represent 115 separate meals, was obtained from 61 stomach samples and 54 colon samples.

All cougars examined in this study were collected from the western slopes of the Cascade Range in Oregon between 1978 and 1984, 40 (66%) from Douglas County, 19 (13%) from Lane County, and 1 each from Curry and Hood River counties. Because of hunt unit boundaries and because animals taken to control livestock predation were killed near human habitations, all cougars were taken at elevations below approximately 600 m (2000 ft).

Cougars taken throughout the year were examined, although most were taken during the December-January controlled season. Numbers of animals in this sample by month killed were as follows: January—14, March—6, April—3, May—1, June—1, July—2, September—4, October—1, November—2, and December—27. Data were recorded as legal hunter kills (42) and others (19).

The sex ratio of cougars in our sample was essentially even, 33 males and 28 females. Of these, 20 males and 22 females were taken during the December-January period, and 13 males and 6 females were taken at other times of the year.

Weight of stomach contents ranged from less than 1 g (traces of hair) to 3.97 kg (9 lbs).

Black-tailed deer was the food item most commonly found in cougars in winter. The dominance of deer in the diet seems a constant throughout North America, as is evidenced by studies conducted in Oregon (Maser and Rohweder 1983, Toweill and Meslow 1977), Washington (Schwartz 1943 in Young and Goldman 1964), Idaho (Hornocker 1970), California (Dixon 1925), Utah and Nevada (Robinette et al. 1959), Utah (Ackerman et al. 1984), Arizona and New Mexico (Hibben 1937), British Columbia (Spalding and Lesowski 1971), and throughout the western United States (Sperry in Young and Goldman 1964). Hippoboscoid flies (*Lipoptena depressa pacifica*), a common ectoparasite of black-tailed deer, were recovered from the stomachs of four cougars.

Absence of Roosevelt elk (*Cervus elaphus roosevelti*) in the diet of cougars from the Cascade Range is puzzling. Despite their size, elk are commonly reported in the diet of cougars where ranges of the two species overlap (Ackerman et al. 1984, Hornocker 1970, Maser and Rohweder 1983, Robinette et al. 1959, Toweill and Meslow 1977). Roosevelt elk are relatively common throughout Douglas and Lane counties, although they are most often found at elevations above 600 m (2000 ft) and away from human habitations. We suspect that the lack of elk in the diet of these cougars was a result of the small sample size and low elevations at which the cats were taken.

Depredation of domestic sheep by cougars occurred all year at low frequency but seemed most common during spring. All occurrences of domestic sheep in our sample came from cougars killed because of livestock damage. The high frequency of occurrence of sheep in the diet of these cougars results from the bias introduced by the inclusion of cougars killed as a result of livestock depredations. Our data indicate that these cougars had usually fed on sheep for at least two consecutive meals.

Porcupines were recorded in the cougar diet with some regularity, and many of the cougar carcasses examined showed evidence of contact with porcupines in the form of embedded quills. The importance of porcupines in the cougar diet has been noted by Maser and Rohweder (1983) and Young and Goldman (1964). Deer, porcupines, and grass have been the most commonly reported staples of the cougar diet (Dixon 1982).

The domestic dog (*Canis familiaris*) found in the stomach of one cougar may represent feeding on carrion. Fly larvae, found among clumps of dog hair, indicated that the dog had been dead several hours before it was consumed by the cougar.

Other animals found in the diet of cougars during this study included mountain beaver (*Aplodontia rufa*), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), northern flying squirrel (*Glaucomys sabrinus*), dusky-footed woodrat (*Neotoma fuscipes*), Trowbridge shrew (*Sorex trowbridgei*), and hare (*Lepus* sp.) and may represent opportunistic feeding (Table 1). Such small mammals have

also been found in other studies of cougar food habits but usually total less than 10% of the diet by frequency of occurrence and considerably less in terms of relative biomass consumed. Exceptions have been noted, however, in Arizona (Hibben 1937) and southern Utah (Ackerman et al. 1984).

We assumed that fish bones, found in the stomach of one cougar reportedly caught in a leg-hold trap, represented trap bait since only skull bones were found. Further, the bones were associated with litter (Douglas-fir (*Pseudotsuga menziesii*) needles, twigs, pebbles, and soil) typical of ground cover within a closed-forest stand.

Masticated green grass was found in many of the digestive tracts (Table 1), often in large amounts. Although of negligible food value (evidenced by its resistance to digestion), such grass may have served to purge some of the tapeworms commonly found in cougar intestinal tracts. We have observed, in the course of field work, recently passed seats consisting almost entirely of masticated grass with entwined tapeworms.

Vegetation associated with food items suggested that cougars fed most commonly among closed-forest habitats during the winter. Needles of Douglas-fir were found in 62% of the stomachs and 89% of the colons of cougars killed in December and January and

were associated with plant remains from ponderosa pine (*Pinus ponderosa*), vine maple (*Acer circinatum*), western redcedar (*Thuja plicata*), Oregon grape (*Berberis nervosa*), and fern (*Polystichum* sp.). Douglas-fir needles were also commonly found in association with food of cougars killed other than during December and January (24% of stomach samples and 63% of colon samples). Several plant species characteristic of dry, open canopy vegetation types, not recorded from cougars taken during winter, were found in cougars collected at other times of the year: oak (*Quercus garryana*), snowbrush ceanothus (*Ceanothus velutinus*), and Pacific poison oak (*Rhus diversiloba*).

Soil, pebbles, and dry wood, evidence of a cougar having cleaned up a kill, were also found.

CONCLUSION

Black-tailed deer, porcupines, and grass are staples of a cougar's diet in the Cascade Range of Oregon, as elsewhere in North America. Cougars prey on domestic sheep when available and may take a number of species of smaller mammals (and perhaps carrion) as available. Data suggest that most feeding by cougars was done in closed-canopy vegetation types during winter and that

TABLE 1. Items identified from digestive tracts of 61 cougars collected from the western Cascade Range of Oregon. Data presented as number and frequency (in parentheses) of occurrence.

Food items	Stomach ^a		Colon ^a	
	Winter	Other	Winter	Other
Black-tailed deer	27 (64)	3 (16)	23 (61)	4 (25)
Domestic sheep ^b	6 (14)	7 (37)	3 (8)	5 (31)
Domestic dog	0	1 (5)	0	0
Cougar ^c	8 (19)	3 (16)	12 (32)	3 (19)
Porcupine	1 (2)	1 (5)	1 (3)	2 (13)
Mountain beaver	1 (2)	0	1 (3)	1 (6)
Muskrat	1 (2)	0	1 (3)	0
Beaver	1 (2)	0	0	0
Northern flying squirrel	0	0	1 (3)	0
Dusky-footed woodrat	1 (2)	0	0	1 (6)
Trowbridge shrew	1 (2)	0	0	0
Hare	0	0	1 (3)	0
Unidentified mammal	0	0	0	1 (6)
Unidentified fish ^d	1 (2)	0	0	0
Masticated grass	4 (10)	2 (11)	8 (21)	6 (38)
Number examined	42	19	38	16

^aWinter: taken in December and January.

^bOther: killed to control livestock predation.

^cAll occurrences in cougars taken to control livestock predation.

^dNot a food item; hair ingested during grooming.

^eAssumed to be trap bait.

more open types may be used at other times of the year.

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