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THE RIVER OTTER IN ARKANSAS. IV. WINTER FOOD HABITS IN EASTERN ARKANSAS

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ABSTRACT

Stomachs and intestines of 89 river otters (*Lutra canadensis*) collected in eastern Arkansas during the trapping seasons (December-January) of 1978-1983 were examined for food remains. Fish (primarily centrarchids, catostomids, and clupeids) dominated the diet (71.2%). The next most abundant prey was crayfish (18.3% of the diet). Other foods included gray squirrel (*Sciurus carolinensis*), wood duck (*Aix sponsa*), snakes (*Thamnophis proximus*), frogs (Ranidae and Hylidae), and beetles (Coleoptera).

INTRODUCTION

Most studies examining food habits of river otters (*Lutra canadensis*) have been conducted in the northern or western regions of the United States (Greer, 1955; Grenfell, 1978; Hamilton, 1961; Knudsen and Hale, 1968; Lagler and Ostenson, 1942; Melquist and Hornocker, 1983; Ryder, 1955; Sheldon and Toll, 1964; Towell, 1974). In the southeastern United States, river otter food habits have been studied in Alabama and Georgia (Lauhachinda and Hill, 1977) and North Carolina (Wilson, 1959). Our study was undertaken to extend this coverage to the lower Mississippi River Region, specifically eastern Arkansas.

METHODS

Stomachs and intestines were removed from the carcasses of 89 river otters collected from furbuyers in eastern Arkansas during the regular December-January trapping seasons of 1978 through 1983. Contents of stomachs and intestines were placed in a small-meshed sieve and washed to locate and clean diagnostic prey remains. Stomachs and intestines were examined separately. Food remains that could not be readily identified were dried and stored for later analysis. Fish remains were usually identified to genus or species using scale characteristics (Sheldon and Toll, 1964). Scale samples from museum specimens were used as reference material.

For each otter, the minimum number of individuals per prey taxon was estimated from conservative interpretation of prey fragments. When a food item occurred in both the stomach and intestine, it was counted only once unless it could be determined that two individuals of the prey taxon indeed were present. Frequency of occurrence (%) was calculated by dividing the total number of individuals of a taxon by the total number of individuals in all prey taxa.

RESULTS AND DISCUSSION

Forty-three of the specimens contained no prey remains, but a total of 104 prey remains were recovered from the remaining 46 otters. Conservative interpretation of prey remains usually allowed only documentation of the presence of food items, but a few taxa were recorded more than once in some otters. The primary food type was fishes, which constituted 71% of the foods recovered, and was represented by nine families and at least 12 genera (Table 1). The dominant families were Centrarchidae, Catostomidae, and Clupeidae. Centrarchids were primarily sunfishes (*Lepomis* sp.). *Lepomis* occurred 13 times in 11 ot-

Table 1. Food items found in 89 river otters from eastern Arkansas, 1978-1983.

Prey	No. of occurrences	Frequency (%)
Fishes	74	71.2
Centrarchidae	17	16.3
<i>Lepomis</i>	13	12.5
<i>Micropterus</i>	2	1.9
<i>Pomoxis</i>	2	1.9
Catostomidae	13	12.5
<i>Moxostoma</i>	13	12.5
Cyprinidae	4	3.8
<i>Cyprinus carpio</i>	3	2.9
<i>Notemigonus chrysoleucus</i>	1	1.0
Amiidae	2	1.9
<i>Amia calva</i>	2	1.9
Clupeidae	10	9.6
<i>Dorosoma cepedianum</i>	10	9.6
Ictaluridae	5	4.8
<i>Ictalurus</i>	5	4.8
Cyprinodontidae	1	1.0
<i>Fundulus</i>	1	1.0
Poeciliidae	14	13.5
<i>Gambusia affinis</i>	14	13.5
Sciænidæ	1	1.0
<i>Aplocheilichthys grunniens</i>	1	1.0
Unidentified fish	7	6.7
Decapoda	19	18.3
Astacidae	19	18.3
Amphibia	3	2.9
Ranidae	2	1.9
<i>Rana</i>	2	1.9
Hylidae	1	1.0
<i>Hyla cinerea</i>	1	1.0
Reptilia	2	1.9
Colubridæ	2	1.9
<i>Thamnophis proximus</i>	2	1.9
Aves	2	1.9
Anatidae	2	1.9
<i>Aix sponsa</i>	2	1.9
Coleoptera	2	1.9
Scarabeidae	1	1.0
Hydrophilidae	1	1.0
Mammalia	1	1.0
Scuridae	1	1.0
<i>Sciurus carolinensis</i>	1	1.0
Mollusca	1	1.0

ters. Seven otters contained a minimum of 10 clupeids. The large size of scales indicated that the clupeids were all gizzard shad (*Dorosoma cepedianum*). Size of remains also indicated that most of the catostomids and ictalurids were between 200-500 mm total length. Mosquitofish (*Gambusia affinis*) occurred 14 times, but all were in the stomach of one specimen so these small fishes were not considered to be important food items.

Sheldon and Toll (1964) believed that the availability of fishes to otters was affected by the abundance and agility of fish, the habitat of

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the fish species, time of day the otters fed, fish spawning periods, effects of ice in winter, and fishing methods of otters. Ryder (1955) noted that the fishes preyed upon by otters were taken in proportion to their abundance but in inverse proportion to the swimming ability of the fish. The dominance of fishes in the winter diet of eastern Arkansas otters may be partially due to retarded escape capabilities of fishes during cold weather. Centrarchids and catostomids have been identified as important or dominant prey in several other studies (Hamilton, 1961; Lagler and Ostenson, 1942; Lauhachinda and Hill, 1977; Sheldon and Toll, 1964; Wilson, 1959). Centrarchids are presumably preyed upon because they occupy relatively shallow and often muddy waters or weedy areas that may be of logistic advantage to otters (Sheldon and Toll, 1964). The habitats available to otters in the Mississippi Alluvial Plain of eastern Arkansas amply provide such habitat for these forage taxa.

Crayfishes (Astacidae) were important prey items, constituting about 18% of the items recovered. Ten otters contained crayfishes, and a minimum of 19 crayfishes were present in these specimens. Crayfishes were also important food items in Michigan (Lagler and Ostenson, 1942), Oregon (Towell, 1974), and Alabama and Georgia (Lauhachinda and Hill, 1977). Most of the crayfish remains were found in the intestine. Other researchers have noted this in mustelids, and Sealander (1943) suggested that hard indigestible materials are passed quickly from the stomach in mink (*Mustela vison*). An abundance of water in eastern Arkansas during winter and spring make crayfish most available to otters in these seasons. During summer, when backwaters recede and crayfish return to their burrow systems, the occurrence of crayfish in otter diets likely declines.

Five percent of the food items were reptiles and amphibians (Table 1). Lauhachinda and Hill (1977) noted these foods in 5.4% of their sample of digestive tracts of otters from Alabama and Georgia. Because these organisms usually overwinter underground, we suspect that the frequency of occurrence of this class of prey increases during spring and summer. Both of the ribbon snakes (*Thamnophis proximus*) were recovered from one otter collected in Jackson County.

Only two birds, both wood ducks (*Aix sponsa*), were found in otters during our study. Birds are common in otter food habits studies (Greer, 1955; Knudsen and Hale, 1968; Lagler and Ostenson, 1942; Lauhachinda and Hill, 1977; Sheldon and Toll, 1964; Wilson, 1954) but they are not major prey taxa. However, Grenfell's (1978) study in the Suisun Marsh of central California indicated waterfowl were a major food. He suggested that predation on waterfowl was due to their abundance while using the marsh as a wintering ground in the Pacific Flyway. Concentrations of Mississippi Flyway waterfowl in eastern Arkansas may provide a similar opportunity for river otters. Mr. Wayne Bullard of Bullard Fur Company, Newport, Arkansas, told us of an otter he bought from a duck hunter who lost 2-3 mallards (*Anas platyrhynchos*) to otters. The otters swam from a hollow cypress (*Taxodium distichum*) and retrieved each of the ducks the hunter had shot, before the hunter finally shot one of the otters. Otters in the Mississippi Flyway probably use waterfowl in proportion to their local abundance during winter. Hunting activities (e.g., lost kills and cripples) may increase the availability of waterfowl.

Only one mammal, a gray squirrel (*Sciurus carolinensis*), was found in the sample. The entire squirrel was packed into the stomach of one otter. Similarly, mammals are not important food items of otters in other studies. Mammals identified previously as otter food include snowshoe hare, *Lepus americanus*, (Lagler and Ostenson, 1942) and muskrats, *Ondatra zibethicus*, (Lauhachinda and Hill, 1977; Wilson, 1954).

A few beetles were identified but apparently are not important foods due to infrequent occurrence and small size. Lagler and Ostenson (1942) and Lauhachinda and Hill (1977) believed arthropods were ingested accidentally, but Greer (1955), Hamilton (1961), and Knudsen and Hale (1968) believed insects were taken intentionally.

One mussel was identified from shell fragments in our study. Morejohn (1969) matched otter dentitions with holes in mussel shells and suggested that otters fed on mussels. Molluscs have been reported (Lauhachinda and Hill, 1977; Sheldon and Toll, 1964; Towell, 1974;

Wilson, 1954) but most of these were snails (Gastropoda). Because few hard remains would be present if an otter opened a mussel and ate the soft organism within, actual mussel consumption may be under-represented in our study. Mr. Wayne Bullard, of Bullard Fur Company of Newport, noted that otters pulled mussels out of a Jackson County creek to feed on them. The broken shells were reportedly left on the bank.

CONCLUSIONS

The winter diet of river otters in eastern Arkansas consists mostly of fish and is similar to the diet reported for other areas of the southeastern United States. Our sample is limited to the winter season and we have no quantitative assessment of the frequency of prey taxa in the otter's habitat. Still, our data support the view purported by others that river otters are opportunistic foragers, feeding on prey in direct proportion to their availability. Accurate assessment of foods eaten is difficult due to differing detectability of remains (e.g., mussels) and a lack of remains in several gastrointestinal tracts.

LITERATURE CITED

- GREER, K. R. 1955. Yearly food habits of the river otter in the Thompson Lakes Region, northwestern Montana, as indicated by scat analyses. *Amer. Midl. Nat.* 54:299-313.
- GRENFELL, W. E., JR. 1978. Food habits of the river otter in Suisun Marsh, central California. *Cal-Neva Wildl.* 1978:65-73.
- HAMILTON, W. J., JR. 1961. Late fall, winter and early spring foods of 141 otters from New York. *N.Y. Fish Game J.* 8:106-109.
- KNUDSEN, G. J., and J. B. HALE. 1968. Food habits of otters in the Great Lakes Region. *J. Wildl. Manage.* 32:89-93.
- LAGLER, K. F., and B. T. OSTENSON. 1942. Early spring food of the otter in Michigan. *J. Wildl. Manage.* 6:244-254.
- LAUHACHINDA, V., and E. P. HILL. 1977. Winter food habits of river otter from Alabama and Georgia. *Proc. Southeast. Assoc. Fish Wildl. Agencies* 31:246-253.
- MELQUIST, W. E., and M. G. HORNOCKER. 1983. Ecology of river otters in west central Idaho. *Wildl. Monog.* 83:1-60.
- MOREJOHN, G. V. 1969. Evidence of otter feeding on freshwater mussels and range extension. *California Fish Game* 55:83-85.
- RYDER, R. A. 1955. Fish predation by the otter in Michigan. *J. Wildl. Manage.* 19:497-498.
- SEALANDER, J. A. 1943. Winter food habits of mink in southern Michigan. *J. Wildl. Manage.* 7:411-417.
- SHELDON, W. G., and W. G. TOLL. 1964. Feeding habits of the river otter in a reservoir in central Massachusetts. *J. Mammal.* 45:449-455.
- TOWELL, D. E. 1974. Winter food habits of river otters in western Oregon. *J. Wildl. Manage.* 38:107-111.
- WILSON, K. A. 1954. The role of mink and otter as muskrat predators in northeastern North Carolina. *J. Wildl. Manage.* 18:199-207.
- WILSON, K. A. 1959. The otter in North Carolina. *Proc. Southeast. Assoc. Game Fish Comm.* 13:267-277.