SEASONAL TRENDS IN THE UTILIZATION OF MAJOR FOOD GROUPS BY THE RED FOX (*VULPES FULVA*) IN UNION COUNTY, ILLINOIS

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ABSTRACT.—Red fox foods exhibited variation in volume and occurrence with season. Animal foods were eaten in greater amounts during spring than other seasons. Marked differences in quantities of plant foods were noted between summer and fall and between winter and spring; higher amounts of plants were consumed in fall and winter than in the remaining seasons. Seasonal patterns in utilization of certain foods seem to be manifestations of seasonal availability of these items.

The only definitive analysis of food habits of the red fox (*Vulpes fulva*) in Illinois was presented by the author (Knable, 1970). The current paper is a supplement to the original work and is based on seasonal fluctuations in the foods of the red fox. For a discussion of the methods and materials used in the study, reference is made to Knable (1970). A total of 183 red fox stomachs were examined of which 13 were empty or unproductive of data. Number of samples available according to season was as follows: summer, June-August (18); fall, September-November (32); winter, December-February (82); and spring, March-May (51). The summer months are least represented and contents of these samples may not be indicative of actual food habits.

Results and Discussion

Red fox foods exhibited variations in volume and occurrence with season (Table 1). Scott (1943), Scott and Klimstra (1955), and Korschgen (1957) also report seasonality of foods in the diet of the red fox. In general, seasonal patterns in utilization of major food groups were made apparent by volumetric comparisons; but for some food catagories (birds and arthropods) frequency of occurrence might be more indicative of seasonal use (Table 1).

Animal Foods

Animal materials, although the prominent source of food of the red fox in all seasons, showed significant seasonal differences in per cent by volume. Greater amounts of animal foods were recorded in spring than in any other season (Table 1). Mammalian foods were most heavily consumed in spring when most other foods were less available; but, in summer this food source was less important than in any other season. In fall and winter the proportions of mammalian foods in the diet were approximately equal. Scott and Klimstra (1955) report use of mammalian foods by the red fox highest in winter and lowest in summer.

Seasonal differences of avian foods showed the greatest variation in occurrence from spring to summer (Table 1). The sharp increase in occurrence of birds between spring and summer was probably a reflection of increased vulnerability of birds to predation in summer due to nesting and associated activities. Korschgen (1957) also reported the occurrence of avian food to be highest during summer. Volumetrically, summer represented the period of greatest use of avian foods.

Based on frequency of occurrence, consumption of arthropods tended to be more subject to changing seasons than other food groups. Arthropods, almost exclusively insects, were found in largest proportions in summer and fall and declined in winter and spring (Table 1); Scott (1943) and Korschgen (1957) found similar seasonal trends.

Plant Foods

Plants, excluding such items as grass and leaf, stem, and bark fragments, were utilized in greatest proportions in the fall diet of the red fox. Significant quantitative differences in the use of plant items were noted

Table 1.—Seasonal trends in utilization of major food groups by the red fox, Union County, Illinois, 1956-1967.[1]

Season	Mammals		Birds		Arthropods		Plants	
	Per cent volume	Per cent occurrence	Per cent volume	Per cent occurrence	Per cent volume	Per cent occurrence	Per cent volume	Per cent occurrence
Spring	92.2	100.0	2.4	14.9	0.2	27.7	4.6	97.8
Summer	37.1	86.7	43.2	33.3	11.6	93.3	6.3	93.3
Fall	61.7	96.9	0.2	21.9	4.2	68.8	31.1	100.0
Winter	65.0	92.1	8.6	31.6	T	6.6	26.1	96.1

[1]Items less than 0.1 per cent by volume designated as trace items (T).

between summer and fall and between winter and spring (Table 1). Scott (1943) also reported similar seasonal transitions in the proportions of plant food in red foxes. Greater amounts of plant foods were recorded in winter than in spring which was probably a reflection of the availability of frozen or dried fruits in winter.

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