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Phyllopod Shrimp Populations of the Big Alkali Lake Drainage, Nebraska and Their Relationship to Young Pike (*Esox lucius*)¹

Random sampling with a fine-mesh dip net in the drainage pools south of Big Alkali Lake, Cherry County, Nebraska, indicated a spring abundance of anostracan and notostracan phyllopods, commonly called fairy shrimps and tadpole shrimps. Collections were made during the months of April and May of 1957 and 1958, and specimens were submitted to Dr. Ralph W. Dexter, Professor of Biology, Kent State University, Ohio, for identification. The 1957 collections were fairy shrimps of the species *Chirocephalopsis bundyi* while those of 1958 were tadpole shrimps, *Lepidurus couesi*. The presence of *L. couesi* establishes a new state record for this phyllopod.

Since the occurrence of these shrimps appeared widespread throughout the Big Alkali drainage, we were interested in the utilization of this type of forage by northern pike fingerlings.

The prairie pools from which the shrimps were collected fill with water each spring and are normally dry by late summer. However, several of the larger pools, five to eight acres in size, retain some water during normal years of rainfall. Periodic pool fluctuations result from cyclic occurrence of excessive or deficient precipitation in association with poor drainage. The vegetation consists primarily of sedges and hydrophytic grasses, with halophytes present in saline areas.

Approximately 60 percent of the drainage pools sampled contained fairy shrimps or tadpole shrimps with both types of phyllopods common in pools connected by flowing water. Undoubtedly, many shrimps are washed downstream into Big Alkali Lake proper where they furnish available forage for the lake's fish population. Dip net sampling of the lake shoreline, some distance from the drainage ditch entrance, failed to reveal presence of a resident lake shrimp population.

Adult spawning pike enter the inlet drainage ditch around the third week in March. Spawning activity takes place throughout the entire three square miles of drainage and often in pools associated with shrimp populations. Spot rotenone sampling in late April and early May revealed the co-habitation of 2.5 - 3.5 inch pike fingerlings with shrimps in many of the pools. Stomach contents from 16 young pike showed a 100 percent occurrence of shrimps. The average length of these fingerlings (3.1 inches), compared to specimens collected in habitat where phyllopod shrimp did not occur, was about 1.0 inches larger. Such meagre evidence to date does point to an accelerated growth of pike fingerlings found in phyllopod shrimp pools. The sporadic and ephemeral nature of the occurrence of these shrimps tends to preclude any forecast of specific pool abundance until field checks are conducted each spring. The movement of young pike into shrimp pools for feeding is not conclusive but this possibility does exist.

In the field of fisheries management, the ecological relationship between the seasonal abundance of phyllopod shrimps and growth of fingerling pike should be of value in the classification of pike habitat.—D. BRUCE MCCARRAHER, District Fisheries Supervisor, Bassett, Nebraska.

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