The Feeding Behaviour of Fish from the Upper Lake Baikal Watershed of the Eroo River in Mongolia

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Abstract

The upper Selenge watershed in Mongolia is home to some of the world's unique fish species. In this study we determined the feeding behaviour of selected fish species collected from the main stream of the Eroo River and two of its upstream tributaries, the Sharlan and Bar Chuluut rivers. Using stable isotope (carbon and nitrogen) measurements combined with qualitative and literature information, we determined that taimen (*Hucho taimen*) and pike (*Esox luceus*) were the top predators in the Eroo River. They received a substantial amount of their energy from other fish species as well as terrestrial derived sources. Percent presence of biota in lenok (*Brachymystax lenok*) stomachs demonstrated they eat zoobenthos, invertebrates, fish, and terrestrial rodents. Siberian dace (*Leuciscus baicalensis)*, a small forage fish collected from the Sharlan and Bar Chuluut rivers demonstrate these fish eat periphyton, zoobenthos and terrestrial invertebrates. In the Bar Chuluut tributary, lenok eat a combination of foods including zoobenthos and other fish species, while arctic grayling (*Thymallus arcticus*) fed primarily on zoobenthos. Percent frequency analysis showed the two game fish species collected from the Bar Chuluut tributary fed primarily on zoobenthos (85 % for lenok and 80 % for grayling), with 28 families and 10 orders represented in their stomachs. Interviews with families suggested local people fish for a variety of species and that there has been a decline in the catch of taimen and sturgeon (*Acipenser baeri baicalensis*) over time. Since fishing was poor below highly disturbed areas (e.g. mine sites), local people fished above mine locations or in areas least impacted by these anthropogenic impacts.

Key words: gold mining, Lake Baikal, Mongolia, Selenge River, Taimen

Introduction

The rivers of the Mongolian steppe are home to some of the world's unique biodiversity. The country's largest river system, the Selenge, flows north into the biologically diverse Lake Baikal. The deepest lake in the world, Lake Baikal is home to 20% of the world's unfrozen freshwater resources (Galazy, 1980). The Selenge River contains 22 fish species including natural populations of the world's largest salmonid, taimen (*Hucho taimen*) and other game fish species including lenok (*Brachymystax lenok*) and arctic grayling (*Thymallus arcticus*) (Matveyev *et al*., 1998; Dulmaa, 1999). While a qualitative understanding of fish feeding behaviour exists for fish in the upper Selenge River, little quantitative information is presented in the scientific literature. In the upper Selenge watershed, specifically in the Eroo tributary, most fish collections are made during the summer months due to severe weather during the winter (M. Erdenebat, pers. comm.). The fish however, migrate seasonally and are feeding during all seasons. Since diet may vary based on availability of food resources, season specific data analysis may not accurately reflect the overall feeding behaviour of fish. In order to elucidate trophic relationships and diet selection, ecologists are using a combination of stable isotope measurements and diet analyses to quantify fish feeding behaviour (Vander Zanden, 1997). In this study, we calculate the trophic position of fish species using isotopic nitrogen measurements, and present qualitative dietary habits of dominant fish from the Eroo River. Quantitative dietary estimates of two game fish are made from the Bar Chuluut tributary.