2007

Location and Characteristics of Springs Contributing Water to the Oak Lake Basin, Brookings County, SD

Eric Dominiack
South Dakota State University

N. H. Troelstrup Jr.
South Dakota State University, nels.troelstrup@sdstate.edu

LOCATION AND CHARACTERISTICS OF SPRINGS CONTRIBUTING WATER TO THE OAK LAKE BASIN, BROOKINGS COUNTY, SD

Eric Dominiack and Nels H. Troelstrup, Jr.
Department of Biology & Microbiology
South Dakota State University
Brookings, SD 57007

ABSTRACT

Prairie pothole basins receive water directly from surface and groundwater sources. Spring sources to some of these basins may be significant and present unique habitats. The objectives of this study were to (1) locate surface spring drainages into the Oak Lake basin and (2) characterize physical, chemical and biological characteristics of these spring habitats. Ten spring sources were located using a GIS and sampled weekly from June 7 to August 21, 2006. Discharge was estimated from measurements of channel width, depth and velocity. Water temperature, conductance, pH and dissolved oxygen were measured from mid-channel using a multi-parameter probe. Macroinvertebrates were collected from each spring with a petite net (500 um mesh) on June 7. Cumulative discharge from the ten springs ranged from 3045 cm^3/sec to 5604 cm3/sec. Nine of the ten springs were flowing at the beginning of the sampling period but only four were still flowing by August 21. Discharge from flowing springs contributed more water to the basin than was discharged from the lake outlet. Discharge, water temperature and chemistries varied significantly among the ten spring sites. Invertebrate collections were comprised of Coleoptera, Diptera, Trichoptera, Crustacea, Mollusca and Oligochaeta. Total invertebrate abundance ranged from 114 to 308 individuals per sample. Diptera were numerically most abundant from all spring sites followed by Oligochaeta. Gathering-collectors were the most abundant feeding guild. Data from this effort demonstrate significant surface water contributions and unique biological communities within these poorly studied habitats.