Abstract

Lakebed geologic characteristics, including substrate composition and distribution, are an important factor affecting spawning success for kokanee salmon (Oncorhynchus nerka). This study describes the distribution of substrate in Lake Pend Oreille using a combination of multibeam echosounder (MBES) and video data to provide a comprehensive view of the lakebed. The MBES and video data were integrated to create a map of substrate characteristics, and distances from spawning areas were calculated to determine the effectiveness of specific substrate types for kokanee salmon. The study identified areas with suitable spawning substrate and evaluated the potential for kokanee salmon to use these areas. The results will be used to inform management decisions for the conservation and recovery of kokanee salmon in Lake Pend Oreille.

Introduction

Lake Pend Oreille, located in north Idaho, is a large, deep lake with a maximum depth of 572 feet (174 m). The lake is an important spawning ground for kokanee salmon (Oncorhynchus nerka), with kokanee salmon populations in the lake ranging from 50,000 to 100,000 fish per year. The study was designed to provide a detailed view of the lakebed geologic characteristics, including substrate composition and distribution, to better understand the factors affecting kokanee salmon spawning success.

Methods

The study used a combination of multibeam echosounder (MBES) and video data to create a map of substrate characteristics in Lake Pend Oreille. The MBES data were collected using a Kongsberg M60 Multibeam Echosounder, and the video data were collected using an underwater color video camera suspended vertically in the water column. The MBES data were processed using a combination of software tools, including Fugro BIOMAP, to create a map of substrate characteristics. The video data were analyzed using a combination of software tools, including Microsoft Excel, to identify the substrate characteristics.

Results

The study identified areas with suitable spawning substrate in Lake Pend Oreille. The substrate characteristics included sand, silt, and clay, medium gravel, gravel, and cobbles. The study also identified areas with embedded substrate, including gravel and cobbles embedded with silt and sand. The study evaluated the potential for kokanee salmon to use these areas for spawning.

Discussion

The study provides a comprehensive view of the lakebed geologic characteristics in Lake Pend Oreille, including substrate composition and distribution. The results will be used to inform management decisions for the conservation and recovery of kokanee salmon in Lake Pend Oreille.

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References
