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Abstract

Response of bull trout (*Salvelinus confluentus*) to habitat reconnection through replacement of hanging culverts with bridges

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We examined the effectiveness of road culvert replacement on providing access to fish habitat in two tributary streams of the Torpy River, in central British Columbia. For both study streams, culverts had been "hanging" at the downstream end, which created waterfalls to the streambed below. To facilitate fish passage upstream, culverts were replaced with steel bridges. In one of the streams, fish movement extended above the culvert. Benthic invertebrate and fish communities, and stream channel physical characteristics were assessed before and after replacing the culverts. Physical characteristics and the benthic invertebrate communities were similar for the two study streams. The primary species found in both streams was bull trout (*Salvelinus confluentus*), with rainbow trout (*Oncorhynchus mykiss*) comprising less than 3% of the total fish captured. Before culvert removal, fish were absent above the road in one of the streams. The presence of young-of-the-year fish 2 years after bridge construction, however, indicated that bull trout had colonized and spawned in the reconnected habitat within 1 year. The relative abundance of bull trout in the stream where access was not restricted by the culvert did not differ over the 4 years of the study. Conversely, abundance and year-class structure of bull trout improved in the stream where habitat above the road was reconnected. Our findings indicate that removal of hanging culverts to allow fish passage is an effective management approach to increase available fish habitat.

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