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The effects of global warming and dams for Native Dolly Varden in Japan

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Dolly Varden (*S. malma*)

In Kanayama River, a total of 28 dams are present in less than a 5 km stretch. Widened streams and riparian deforestation resulted in warming the stream temperatures.

Content:

We investigated population abundance of native Dolly Varden *Salvelinus malma* in mountain streams of northern Japan in relation to several physical habitat characteristics including water temperatures and small dams. Hokkaido Island is the world's southern most distribution margin of native Dolly Varden, and it has been projected that many populations would suffer from severe summer stream temperature warming due to habitat alterations such as construction of erosion- and flood-control dams and potential impacts of global climatic warming. However, there has been little effort in obtaining basic information on the species' population abundance and thermal habitat over successive years. Therefore, in an attempt to initiate long-term research, we began collecting fish data by electrofishing and temperature data by installation of temperature loggers in 37 streams in 2000. We found that several Dolly Varden populations showed signs of recruitment failures among years and less abundance in streams where summer maximum stream temperatures far exceeded the species' thermal tolerance of around 16˚C. In this paper, we will primarily focus on our findings during 1999-2001 and 2006-2013 field surveys.

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