

VULNERABILITY OF OREGON HYDROLOGIC LANDSCAPES AND STREAMFLOW TO CLIMATE CHANGE

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Hydrologic classification systems can provide a basis for broadscale assessments of the hydrologic functions of landscapes and watersheds and their responses to stressors. Such assessments could be particularly useful in determining hydrologic vulnerability from climate change. A Hydrologic Landscape (HL) classification approach developed by EPA for the State of Oregon has been used to assess streamflow vulnerability due to climate change. Statewide results indicate a significant loss of area that currently provides spring or summer snowmelt, switching to area characterized by winter rains and earlier runoff. The study also demonstrates how the climatic and geologic information provided by the HL approach can be applied at three case study basins. In particular, increased winter discharge and reduced summer baseflow could adversely impact winter and summer survival of threatened and non-threatened salmonids. This is especially true for basins such as the Middle Fork John Day, because of high magnitudes of changes in habitat suitability and availability during the summer months. The study serves as a proof-of-concept application that coupling of HL information with climate change projections can inform aquatic resource management.

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