

Impacts of Irrigation Diversions on River Systems

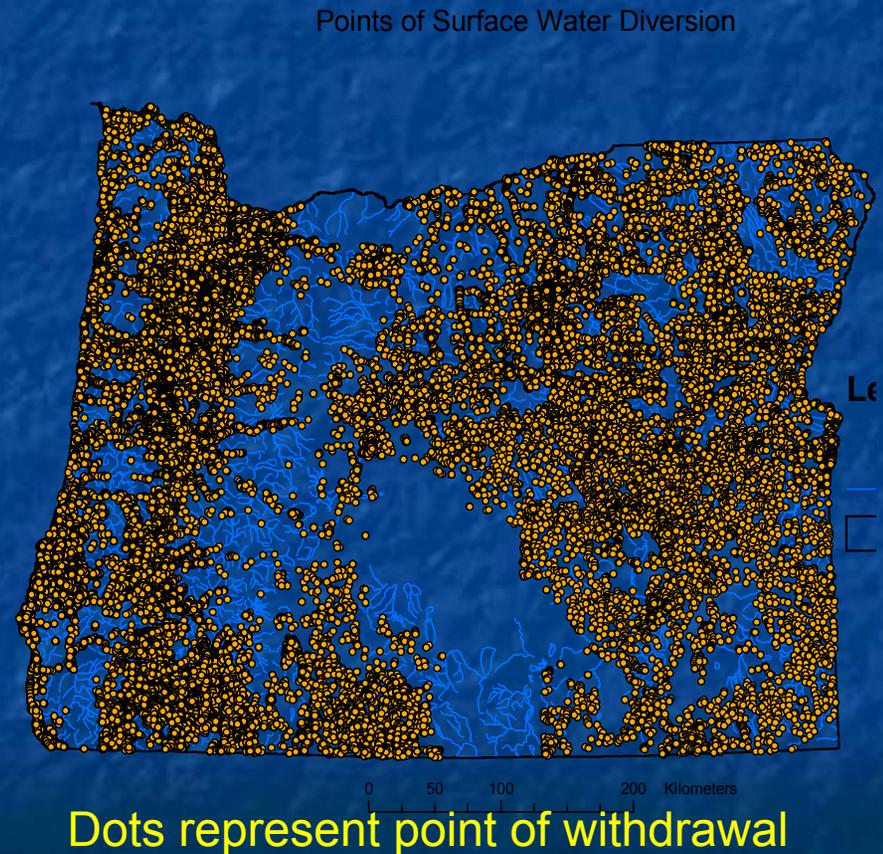
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Umatilla Indian Reservation

Demands on Water Resources

- Oregon: 60,000 points of water withdrawal
- Oregon: 81% of 9 million acre feet used for agriculture



Past Research Efforts

Photo courtesy of U.S. BOR



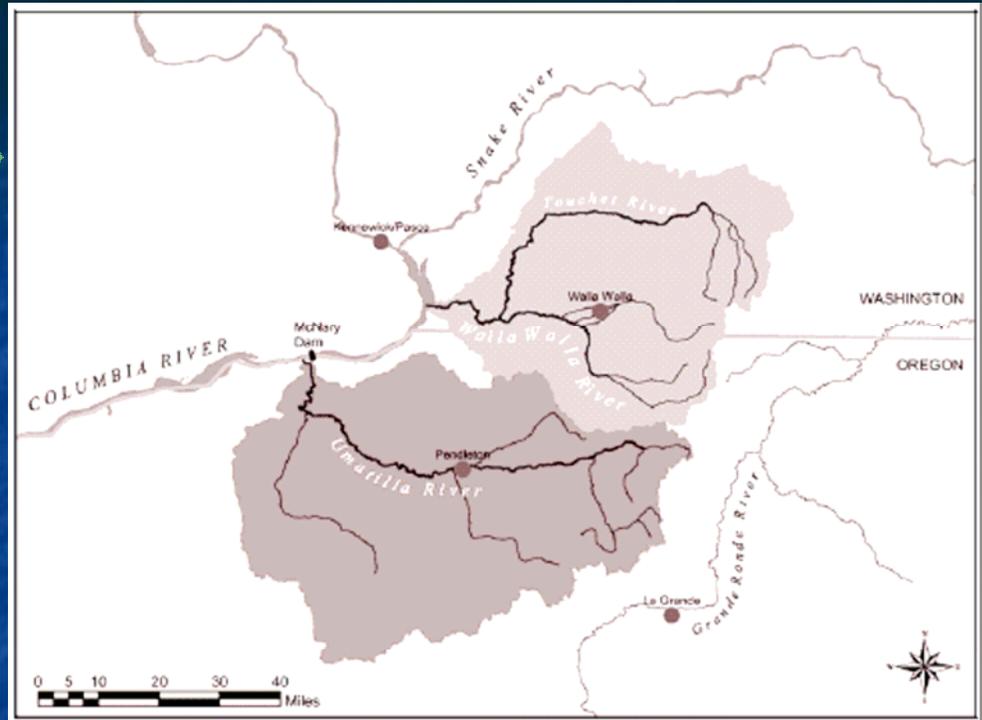
VS.





Umatilla Subbasin

Oregon



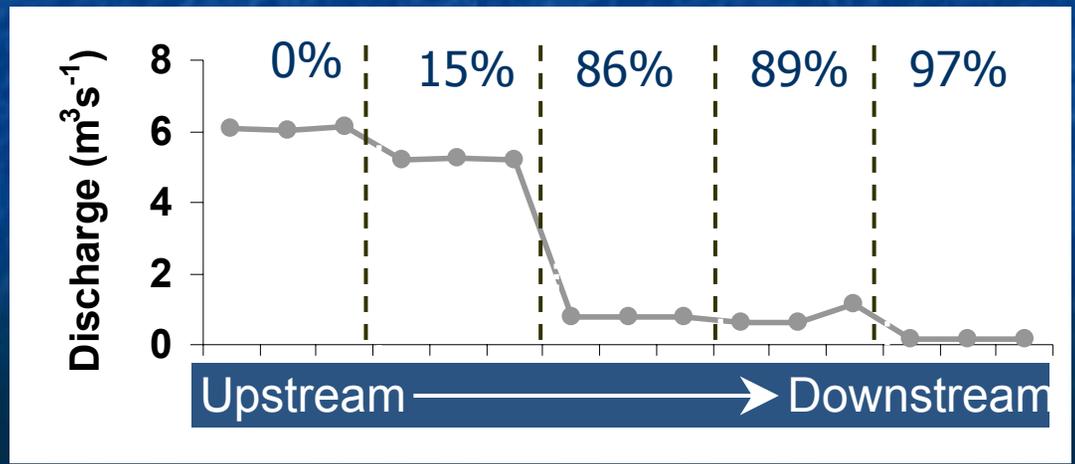
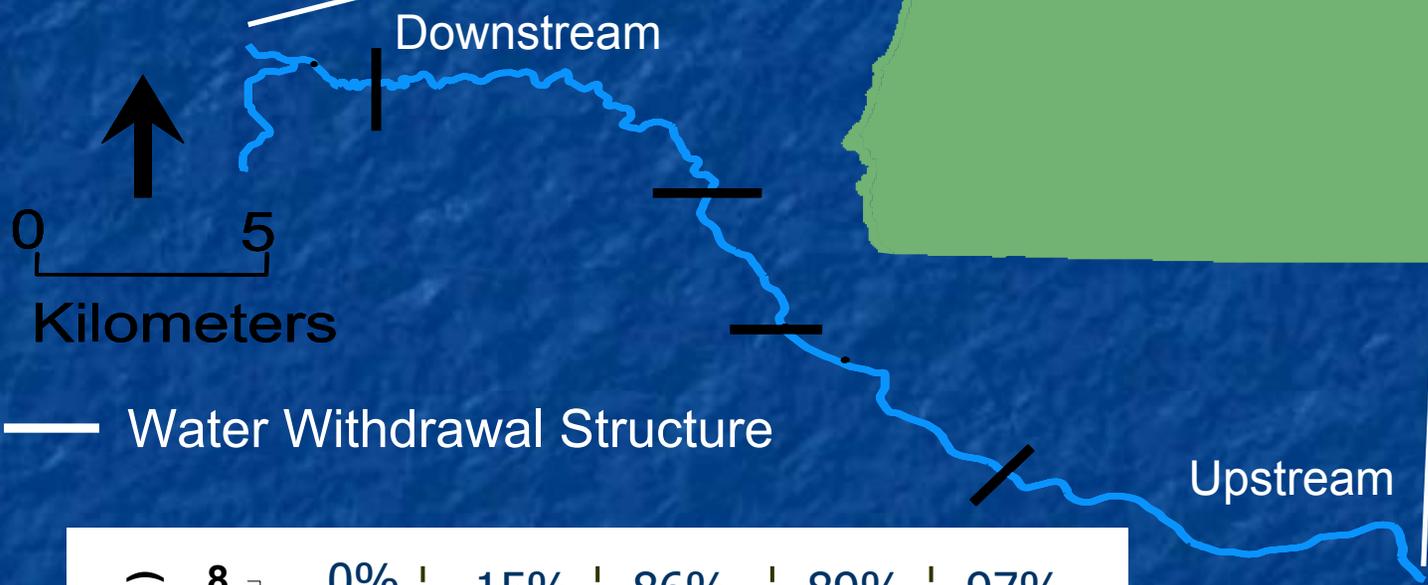
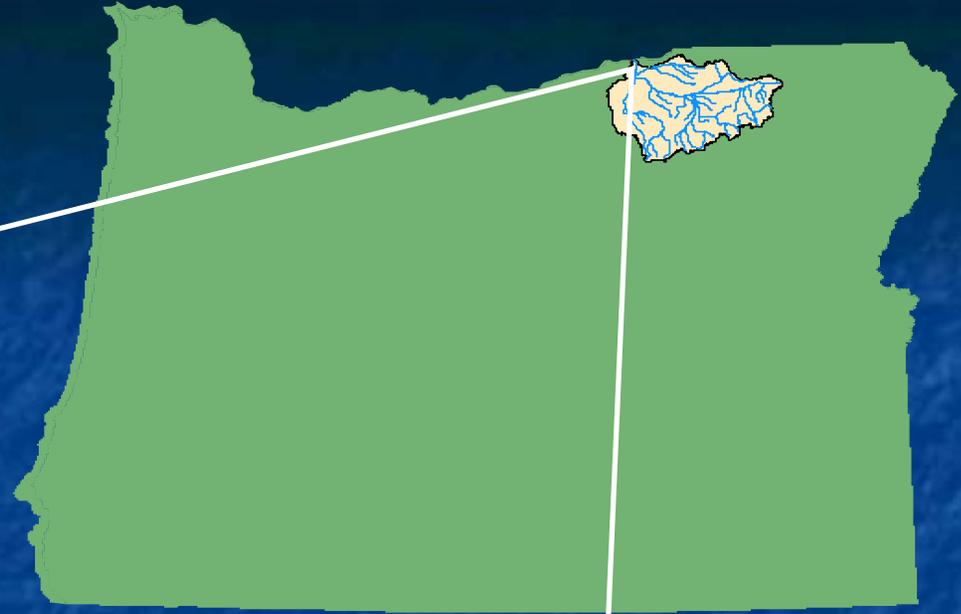
Area: Umatilla – 9620 km²
Walla Walla -- 4553 km²

Land Use: Irrigated Agriculture and Dryland Wheat Production

Precipitation: 23cm – 100cm

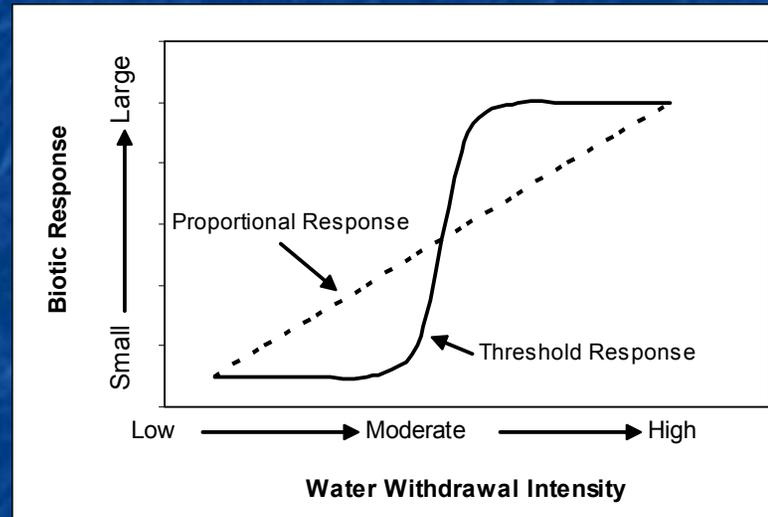
Each River has multiple points of surface water loss

Umatilla River



Objectives:

1. How do river systems respond to irrigation withdrawals?
2. What pattern of response do components of the river show to this gradient?



3. Can we use this gradient to help guide management of river systems?

Response Variables: Structural



Aquatic Invertebrate Community Structure



Fish Community Structure



Terrestrial Arthropod Predators



Riparian Vegetation

Response Variables: Functional

Fish diets

Fish Morphology – relationship to diet

Reciprocal Exchange of Organic Matter – Riparian River Linkage

