

To Dam or Not to Dam, That is the Environmental Question?

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ENSC 183_H, Professor Glover, Winter 2022

Stakeholder: “A person with an interest or concern in something, especially a business. *Denoting a type of organization or system in which all the members or participants are seen as having an interest in its success.” –Oxford Language Dictionary

Dexter Dam Stakeholders

Recreational Sites



Many people go to park sites for a variety of reasons and are invested in a variety of ways.

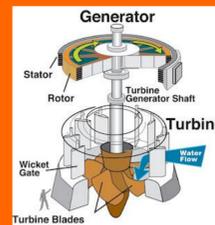
City Water



Water is pulled from Dexter Reservoir for the City of Lowell water. Treatment, storage, distribution, and testing.

Hydroelectric Power

Stakeholders include employees of the hydropower company to everyone purchasing the electricity.



Oregon State Parks

Government, Parks and Rec departments, fish hatcheries when lakes are stocked

Residential Areas

All nearby residents and travelers benefit from one of the dam's main purposes of flood control. Residents with city water invest in the purchase of the water.

Park Visitors

Boating, water sports, kayaking, water events, fishing, social gatherings, swimming and more.

Commercial Areas

Businesses also purchase city water, making it possible for the business to function and benefiting the city at the same time.

US Army Corps of Engineers

Power Recipients

Environmental Stakeholders

Apex Predators



These predators help control populations and need the rivers for the food source of fish and the natural necessary resource of fresh water.

Salmon



A keystone species also indicating healthy water quality levels. They are extremely important to the river's ecosystem at each stage of their life cycle.

Riparian Plants

A partnership in a sense as the plants provide more structure and help slow the process of erosion along the river bank while the plants receive the water they need to survive. The plants and trees nearby also create interception with rain and snow fall for example which helps manage the amount of water entering the river at once balancing discharge rates while protecting against flooding and bank erosion.

Macroinvertebrates



Convert carbon into a food source by consuming organic matter and they are then a food source to fish. You can tell the water quality by viewing the type of macroinvertebrates present. The intolerant type thrive in clean freshwaters that have a higher oxygen level and lower carbon dioxide level, while the tolerant type thrive in poor water qualities that contain higher levels of carbon dioxide & lower oxygen.

Microorganisms

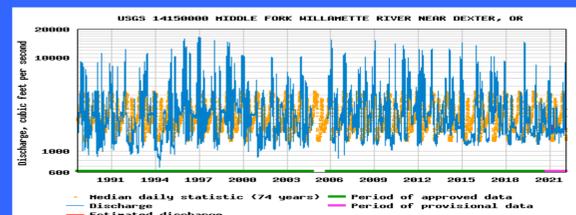
Another source that helps clean the water. Some bacteria will eat some pollutants as an example. They are also a food source for some macroinvertebrates.



Aquatic Plants

Help clean the water and add oxygen to the water while providing a food source for some fish. Fish are also protected by hiding in the shadows of aquatic plants.

Discharge Rates



The amount of water let out at a dam and held back at the dam impacts the discharge rate of a river. Too much water at once or too little can both negatively impact the river's ecosystem.



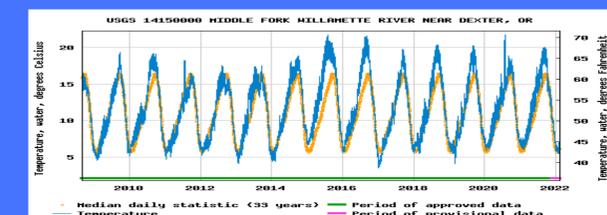
A Dam's Impact on River Systems



Dams Block Salmon

Anthropogenic dams disrupt the natural balance within a river's natural ecosystem. Salmon are anadromous returning to where they were born to spawn after living in the ocean for years. If they cannot return to their point of origination because of a dam the forced point of return ends up being near the base of the dam. A high release of water can create a higher than usual level of adsorption of oxygen into the water which can be dangerous to the survival of salmon and a discharge rate that is too low can leave the salmon with not enough water to survive. Salmon are extremely important to the ecosystem of a river, providing a food source for various life forms throughout each stage of their life as well as bringing important nutrients back with them from the ocean that benefit the river's ecosystem at the end of the salmon's life upon the spawning stage. The water temperatures are also a major impact in the life of salmon. There is an ongoing possibility of pollutants transferring from the reservoir to the river from the boats in the lake and litter from humans. There is also the potential of high levels of nutrients from the reservoir entering the river disrupting the river's natural balance. For example increased levels of algae transferring from the reservoir to the river can lower oxygen levels.

Water Temperatures



Depending on the dam type, when releasing water from the bottom the water could potentially be too cold for the river's ecosystem, when releasing from the top or through hydroelectric stations the water can be too warm at times. Maintaining a specific temp range is detrimental to the river's ecosystem.