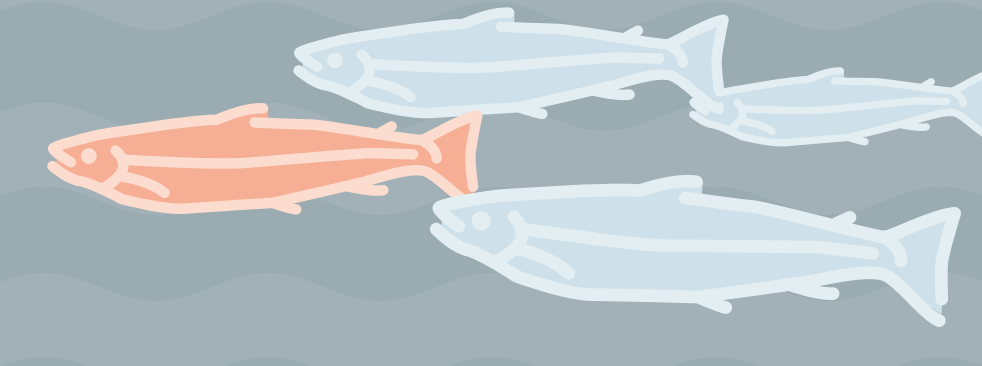


Fish Barriers vs. Funding

A GIS Tool for Accelerating Salmon Habitat Restoration



Clean, cold water. Lush riparian vegetation. Gravels for spawning.

These are some of the elements that create healthy habitat for salmon. Unfortunately, not all of this habitat is within the salmon's reach. Removing barriers such as culverts and dams is a top priority for salmon recovery goals.

With tens of thousands of fish passage barriers statewide and limited funding, how do we decide which barrier removals to fund?

Sea-to-Stream: Tackling Barriers

Evaluating the quantity and quality of habitat access provided by removing a fish passage barrier is tricky business! Most regions rely upon field knowledge and intuition, which is often only available in limited areas.

To better answer the question of "Which barriers do we remove?", Aspect created a GIS-based decision support tool that summarizes the overall quality of ecological conditions surrounding each fish passage barrier within the Wenatchee Basin in North Central Washington. This custom spatial model provides insight into critical questions regarding barrier-removal priority:



COLD

Are stream temperatures cool enough for salmon spawning and rearing?



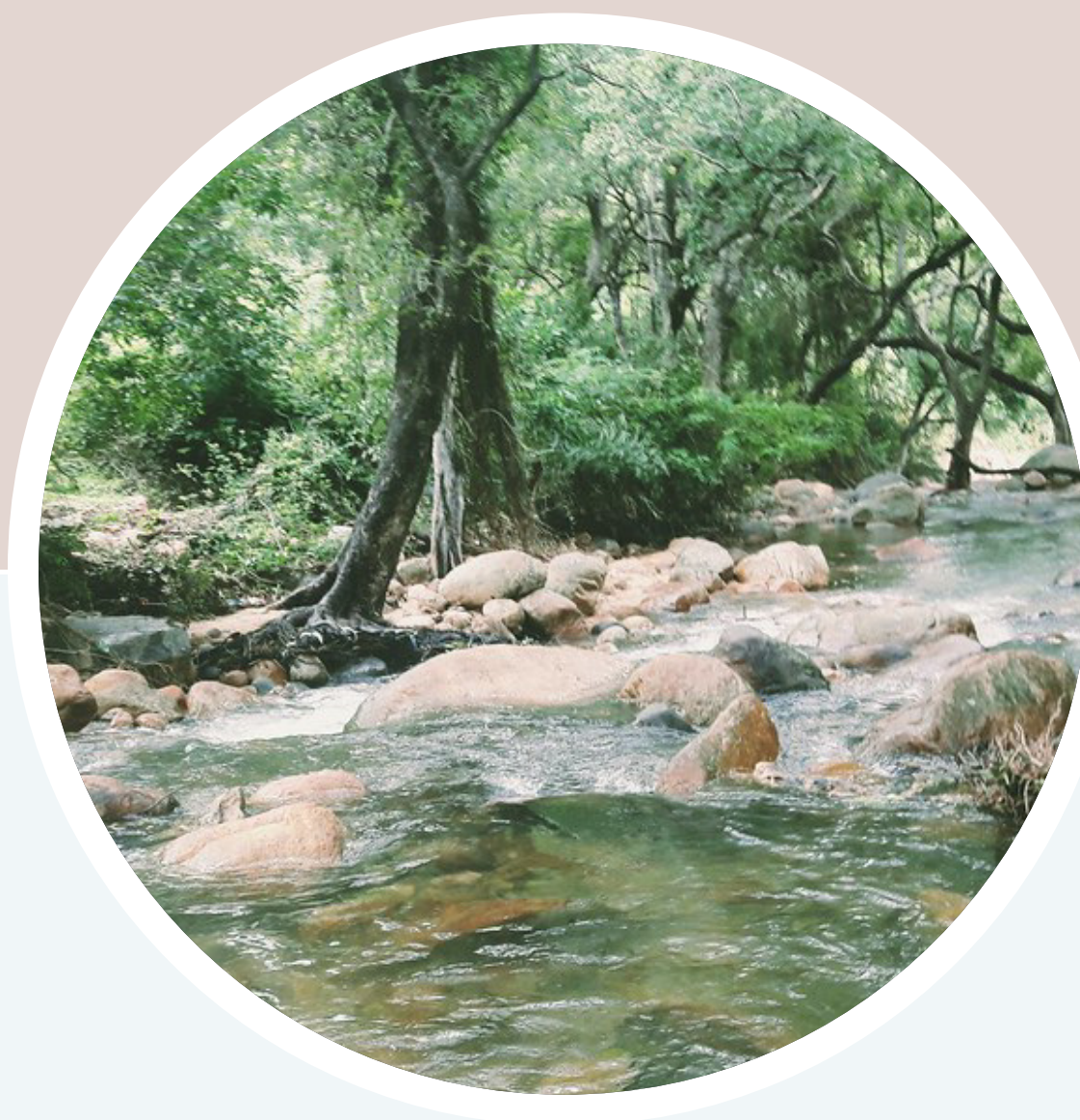
CONNECTED

Are there barriers downstream blocking fish access?



COMPLEX

Is there sufficient riparian vegetation to provide a variety of habitat conditions?



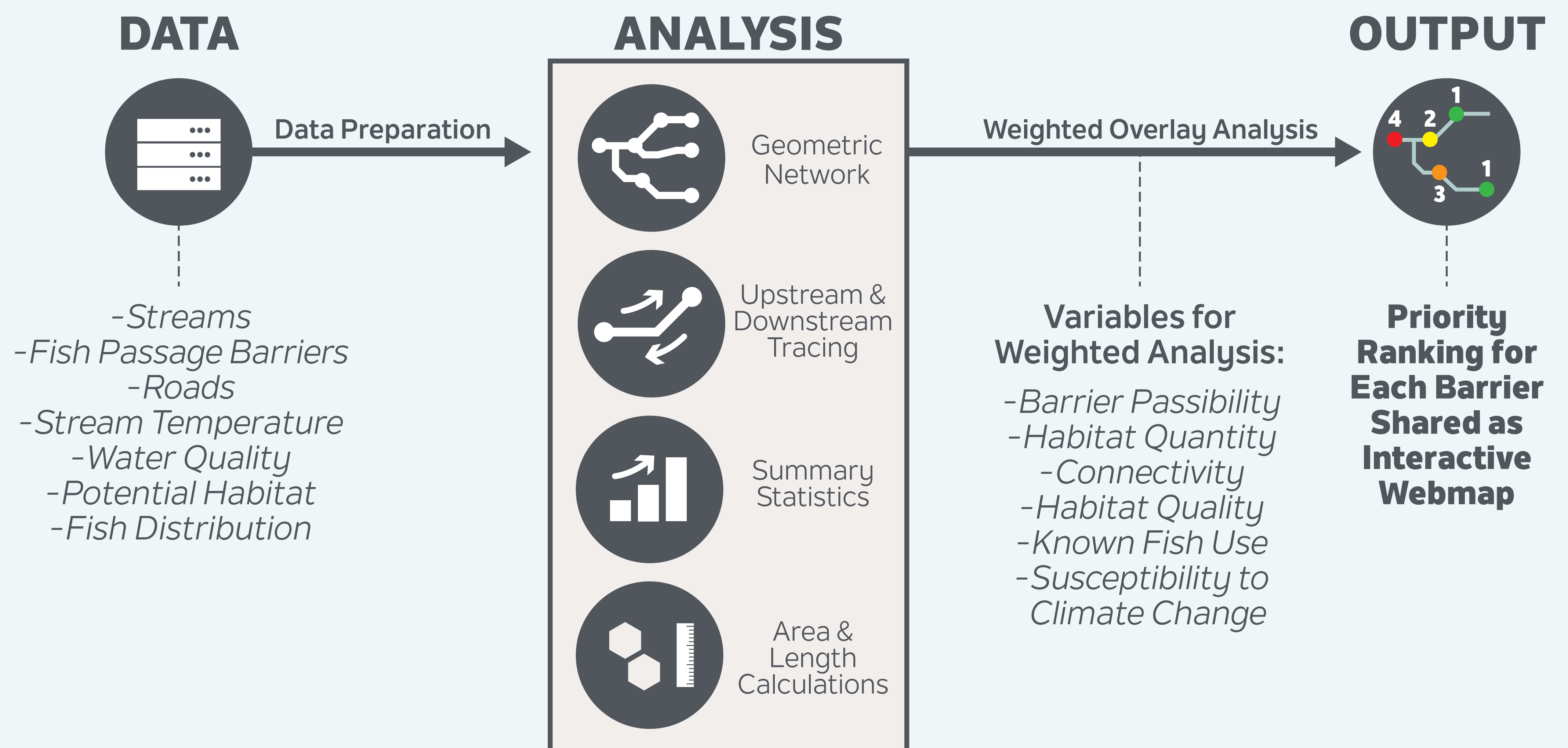
CLEAR

Are sediment levels and contaminants low?



GIS Tool: Reel-ing in Data

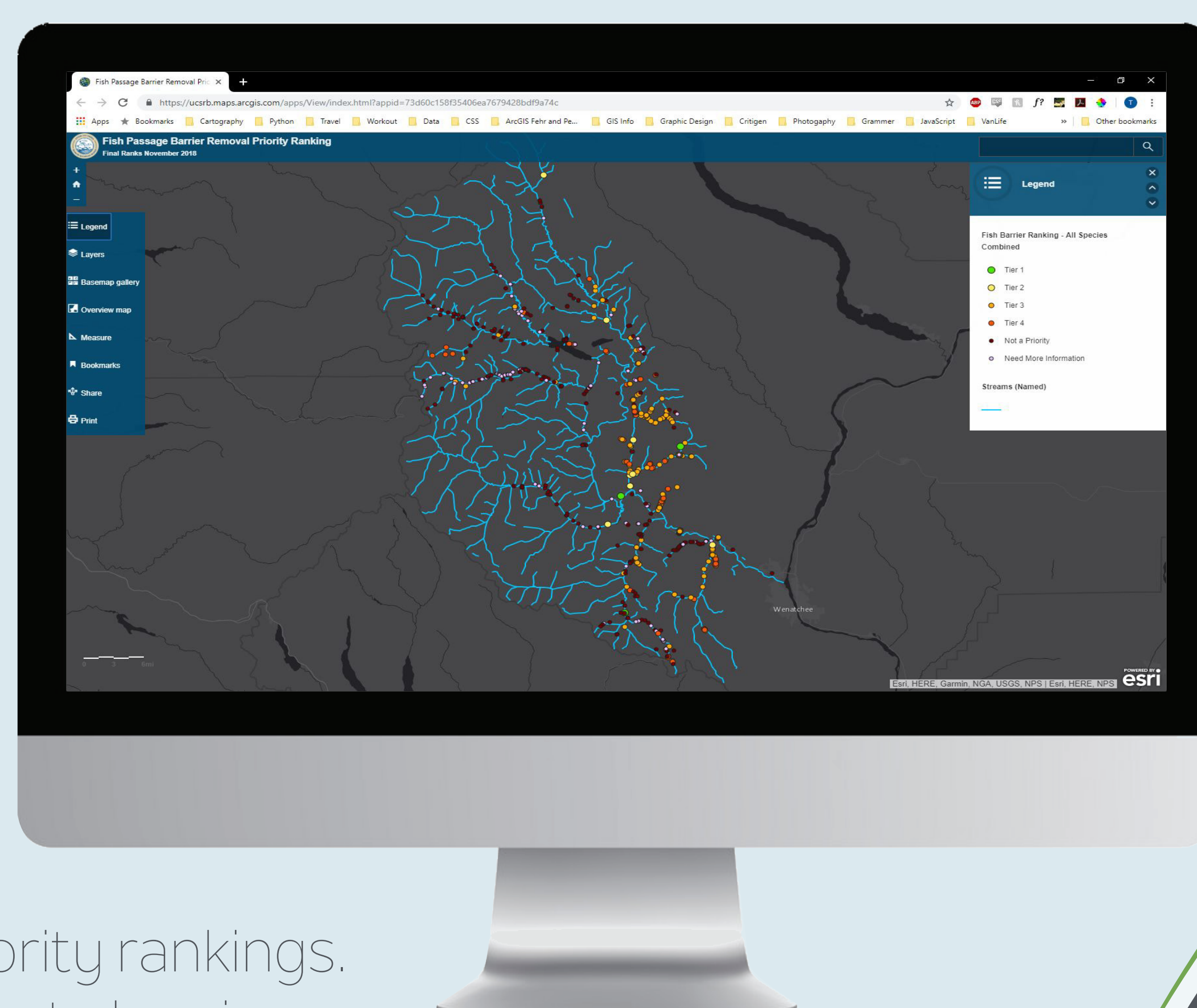
Ideal salmon habitat requires the "Four Cs": Cold, Clear, Connected, Complex. Utilizing a geometric stream flow network and region-wide habitat data, Aspect's GIS model establishes a value for the Four Cs surrounding each fish passage barrier. This provides decision-makers with an apples-to-apples comparison between barriers. The higher the habitat quantity and quality provided by a barrier's removal, the higher priority ranking it receives. Funders can evaluate projects using this priority ranking to ensure they are getting the most biological benefit for the entire basin.



Heading Upstream: The Future of Funding

The State of Washington legislature has renewed the urgency of tackling salmon population recovery with a 2018 legislative ruling (RCW 90.94), which provides \$300 million for streamflow restoration over the next 15 years. This recent legislation—coupled with current fish recovery acts (RCW 77.85 and 77.95)—helps fund a comprehensive approach of prioritizing barrier removal, restoring habitat, working to change land use practices, and education and outreach.

Aspect's GIS tool creates a webmap highlighting barrier priority rankings. This gives stakeholders a common language to quickly evaluate barrier removal projects and appropriately distribute the funding to unlock healthier fish habitat. First used in the Wenatchee Basin, this GIS model is now being applied throughout the Upper Columbia and other basins in Western Washington.



GIS model produced in partnership with the Cascade Columbia Fisheries Enhancement Group, the Upper Columbia Salmon Recovery Board, the Upper Columbia Regional Technical Team (RTT), and a technical steering committee. For more information scan the QR code or visit:



<https://www.aspectconsulting.com/blog/2019/4/29/ew-gis-tool-helps-remove-barriers-to-salmon-habitat-connectivity>