

Component	Factors	Sub-factors	Name	Source	Data link	Information link	type	raster resolution
Base Data			Sub-basin boundaries	U.S. Department of Agriculture, Natural Resources Conservation Service, National Cartography and Geospatial Center. 2009. <i>Watershed Boundary Dataset, 4th-level Subbasins</i> . Vector digital data. Fort Worth, Texas: U.S. Department of Agriculture.	ftp://ftp.ftw.nrcs.usda.gov/wbd/		vector: polygon	1:24000
Focal Fish Species	Population presence/absence		Locally endemic 4th field polygons	NatureServe. 2010. <i>NatureServe: Digital Distribution Maps of the Freshwater Fishes of the Conterminous United States. Version 3.0</i> . Geodatabase. Arlington, VA: NatureServe.	http://www.natureserve.org/getData/fishMaps.jsp		vector: polygon	
	Population size		Draft Pacific lamprey population data	U.S. Fish and Wildlife Service. 2010a. Pacific Lamprey (Lampetra tridentata) Draft Assessment and Template for Conservation Measures. Portland, OR: U.S. Fish and Wildlife Service, October.; ———. 2010b. Pacific Lamprey Current Population Size. Vector digital data. Portland, OR: U.S. Fish and Wildlife Service, October.	Draft, not yet published	http://www.fws.gov/filedownloads/ftp_lamprevlit/USFWS%20Pacific%20Lamprey%20Draft%20Assessment%20and%20Template%20for%20Conservation%20Measures%2010.29.10.pdf	vector: polygon	
	Stream Habitat Density		Salmon, steelhead and trout linear habitat	StreamNet, Pacific States Marine Fisheries Commission. 2010. StreamNet Generalized Fish Distribution, All Species Combined (July 2010). Vector digital data. Portland, OR: StreamNet, Pacific States Marine Fisheries Commission, July 7. http://www.streamnet.org/mapping_apps.cfm .	http://www.streamnet.org/mapping_apps.cfm	ftp://ftp.streamnet.org/pub/streamnet/gisdata/map_data_biological/FishDist_MSHv3_January2012/FishD_AllSpecies_January2012.xml	vector: line	
			Draft ESU/DPS boundaries	NOAA National Marine Fisheries Service. 2011. Draft National Marine Fisheries Service Evolutionarily Significant Unit Boundaries; Unpublished. Vector digital data. Seattle: NOAA National Marine Fisheries Service Northwest Regional Office Salmon Recovery Division, April 5.	Draft, not yet published		vector: polygon	
	Probability of persistence scores		ESU/DPS population boundaries	National Marine Fisheries Service Northwest Regional Office and the Northwest Fisheries Science Center. 2008. Population Delineation for Salmon and Steelhead. Geodatabase. Seattle, WA: National Oceanic and Atmospheric Association, January.	Not available for download online		vector: polygon	
		Recovery Plan	Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead	Beamesderfer, Ray, Laura Berg, Mark Chilcote, Julie Firman, Erin Gilbert, Kevin Goodson, Dave Jepsen, et al. 2011. <i>Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead</i> . Draft Recovery Plan. Oregon Department of Fish and Wildlife/National Marine Fisheries Service, August 5.	Non-spatial data	http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Willamette-Lower-Columbia/Will/Will-plan.cfm	document	-
			Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon and Steelhead	Beamesderfer, Ray, Laura Berg, Mark Chilcote, Julie Firman, Erin Gilbert, Kevin Goodson, Dave Jepsen, et al. 2010. <i>Lower Columbia River Conservation & Recovery Plan for Oregon Populations of Salmon & Steelhead</i> . Salem, OR: Oregon Department of Fish and Wildlife.	Non-spatial data	http://www.dfw.state.or.us/fish/CRP/lower_columbia_pla_n.asp	document	-
			Salmon and Steelhead Recovery Tracker	Oregon Department of Fish and Wildlife. 2010. ODFW Salmon Recovery Tracker. <i>Oregon Department of Fish and Wildlife</i> . September 10.	Non-spatial data	http://odfwrecoverytracker.org	document	-
			Washington Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan	Lower Columbia Fish Recovery Board. 2010. <i>Washington Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan</i> . Final Report. Lower Columbia Fish Recovery Board, June 26.	Non-spatial data	http://www.lcfrb.gen.wa.us/Recovery%20Plans/March%202010%20review%20draft%20RP/RP%20Frontpage.htm	document	-
Vulnerability to Climate Change	Vulnerability to Air Temperature Change		Max temp for July, August. Historic, A1B 2010 - 2039; 2030 - 2059; 2080 - 2099	Climate Impacts Group. 2009a. <i>Delta Method Runs of Tmax monthly averages for July, August, using the A1B Scenario</i> . Raster digital data. Seattle, WA: University of Washington.	http://www.hydro.washington.edu/2860/products/primary_data/		raster	6097m
			Base flow index	Wolock, David. 2003. <i>Base-Flow Index Grid for the Conterminous United States</i> . Raster digital data. Lawrence, KS: U.S. Geological Survey.	http://ks.water.usgs.gov/pubs/abstracts/of.03-263.htm		raster	1000m
	Vulnerability to Flow Regime Change		Historic and projected maximum snow-water equivalent	Climate Impacts Group. 2009b. <i>Historic and Modeled Maximum Snow Water Equivalent</i> . Raster digital data. Seattle, WA: University of Washington.	http://www.hydro.washington.edu/2860/products/primary_data/		raster	6097m
			Historic and projected October-March precipitation	Climate Impacts Group. 2009c. Historic and Modeled October-March Precipitation. Raster digital data. Seattle, WA: University of Washington.	http://www.hydro.washington.edu/2860/products/primary_data/		raster	6097m
	Vulnerability to Wildfire		Projected wildfire risk	Haak, Amy L., Jack E Williams, Daniel J. Isaak, Albert H. Todd, C.C. Muhlfeld, J.L. Kershner, Robert E. Gresswell, S.W. Hostetler, and Helen M. Neville. ———. 2010b. Results of LANDFIRE wildfire analysis. Raster digital data. Reston, VA: U.S. Geological Survey.; 2010a. The Potential Influence of Changing Climate on the Persistence of Salmonids of the Inland West. Open-File Report. Reston, VA: U.S. Geological Survey.	Not available for download online	http://pubs.usgs.gov/of/2010/1236/	raster	844m
Watershed Condition	Water quality		Washington 303(d) streams	Washington State Department of Ecology. 2009. <i>2008 Washington Water Quality Assessment, 303(b) Report and 303(d) List</i> . Vector digital data. Olympia, WA: Washington State Department of Ecology, February 23.	http://www.ecy.wa.gov/services/gis/data/data.htm#w	http://www.ecy.wa.gov/services/gis/data/watqual/303d08.htm	vector: polygon	
			Oregon 303(d) streams	Oregon Department of Environmental Quality, Water Quality Division. 2008. <i>Water Quality - 2004/2006 Integrated Report including 303d Streams & Lakes</i> . Vector digital data. Oregon Department of Environmental Quality, Water Quality Division, January 7.	http://www.deq.state.or.us/wq/assessment/rpt0406.htm	http://www.oregon.gov/DAS/EISPD/GEO/docs/metadata/orlakeswaterquality_0406v2.htm	Vector: line and polygon	
			Idaho 303(d) streams	Idaho Department of Environmental Quality. 2004. <i>2008 Final Integrated Report 305B/303D for Idaho</i> . Vector digital data. Boise, ID: Idaho Department of Environmental Quality, April 30.	http://cloud.insideidaho.org/webApps/util/zip.ashx?fn=http://cloud.insideidaho.org/data/ideq/streams305b2008_id_ideq	http://cloud.insideidaho.org/webApps/metadataViewer/default.aspx?path=G%3a%5cdata%5canonymous%5cideq%5cstreams305b2008_id_ideq%5cIDEQ305B_2008_Strms.shp.xml	vector: line	

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Watershed Condition (cont'd)	Water quality (cont'd)		Protected areas	Conservation Biology Institute. 2010. <i>Protected Areas Database US 1.1 (CBI Edition) Data Basin</i> . Vector digital data. Corvallis, OR: Conservation Biology Institute, May 1.	http://databasin.org/protected-center/features/PAD-US-CBI		vector: polygon	
			Point-source pollution	National Fish Habitat Board. 2011. <i>National Fish Habitat Action Plan (NFHAP) catchment spatial data for Idaho, Oregon and Washington</i> . Vector digital data. Michigan: National Biological Information Infrastructure, March 2.	http://ecosystems.usgs.gov/fishhabitat/		vector: polygon	
	Development		Roads	U.S. Department of Commerce, U.S. Census Bureau, Geography Division. 2010. TIGER/Line Shapefile All Roads County-based Shapefiles for Idaho, Oregon and Washington. Vector digital data. Washington, DC: U.S. Department of Commerce, U.S. Census Bureau, Geography Division.	http://www.census.gov/geo/www/tiger/tgrshp2010/tgrshp2010.html		vector: line	
			Streams	U.S. Environmental Protection Agency, and U.S. Geological Survey. 2005. <i>National Hydrography Dataset Plus - NHDPlus. Regions 16, 17, 18</i> . Spatial digital data. Washington, DC: U.S. Environmental Protection Agency and U.S. Geological Survey.	http://www.horizon-systems.com/nhdplus/data.php		vector: polygon	
			Impervious Surfaces	Fry, J., G. Xian, S. Jin, J. Dewitz, C. Homer, L. Yang, C. Barnes, N. Herold, and J. Wickham. 2011. <i>National Land Cover Database 2006 Percent Developed Imperviousness</i> . Raster digital data. MRLC.gov.	http://www.mrlc.gov/nlcd06_data.php		raster	30m
	Agriculture		Crops and pasture	U.S. Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), Research and Development Division (RDD), Geospatial Information Branch (GIB), Spatial Analysis Research Section (SARS). 2011. USDA National Agricultural Statistics Service 2010 Cropland Data Layer. Raster digital data. Washington, DC: USDA, NASS Marketing and Information Services Office.	http://nassgeodata.gmu.edu/CropScape/	http://www.nass.usda.gov/research/Cropland/SARS1a.htm	raster	30m
Vulnerability to Invasion	Evidence of Current Invasion		Non-native species occurrences	U.S. Geological Survey. 2011. Nonindigenous Aquatic Species Database. <i>USGS</i> .	Must request data	http://nas.er.usgs.gov	vector: point	
	Distance to Sources of Introduction: Pathways	Roads	Roads	U.S. Department of Commerce, U.S. Census Bureau, Geography Division. 2010. TIGER/Line Shapefile All Roads County-based Shapefiles for Idaho, Oregon and Washington. Vector digital data. Washington, DC: U.S. Department of Commerce, U.S. Census Bureau, Geography Division.	http://www.census.gov/geo/www/tiger/tgrshp2010/tgrshp2010.html		vector: line	
		Waterbodies	Waterbodies	U.S. Environmental Protection Agency, and U.S. Geological Survey. 2005. <i>National Hydrography Dataset Plus - NHDPlus. Regions 16, 17, 18</i> . Spatial digital data. Washington, DC: U.S. Environmental Protection Agency and U.S. Geological Survey.	http://www.horizon-systems.com/nhdplus/data.php		vector: polygon	
	Distance to Sources of Introduction: Sources	Reservoirs and Impoundments	Waterbodies	Lehner, Bernhard, and Petra Doell. 2004a. Global Lakes and Wetlands Database - Level 1 (large lakes and reservoirs). Vector digital data. Global Lakes and Wetlands Database. Germany: World Wildlife Fund, July.	http://app.databasin.org/app/pages/datasetPage.jsp?id=d618891c26494d40aa3068aba153dd63		vector: polygon	
				———. 2004b. Global Lakes and Wetlands Database - Level 2 (small lakes and reservoirs, rivers). Vector digital data. Global Lakes and Wetlands Database. Germany: World Wildlife Fund, July.	http://app.databasin.org/app/pages/datasetPage.jsp?id=03cc8ad8d6df453aa641f1730e2bcffc			
			Dams	U.S. Army Corps of Engineers. 2006. <i>National Inventory of Dams</i> . Vector digital data. Alexandria, VA: U.S. Army Corps of Engineers.	Not available for download online	http://geo.usace.army.mil/pgis/f?p=397:12:	vector: point	
			Waterbodies	ESRI. 2006. <i>U.S. National Atlas Water Feature Areas</i> . Vector digital data. Redlands, CA: ESRI, October 1.	Proprietary data		vector: polygon	
			Dams	State of the Salmon. 2006. <i>Assessment of Dams and Reservoirs, unpublished</i> . Vector digital data. Portland, OR: Wild Salmon Center.	Unpublished		vector: point	
		Recreational Areas and Boat Access	Protected areas	Conservation Biology Institute. 2010. <i>Protected Areas Database US 1.1 (CBI Edition) Data Basin</i> . Vector digital data. Corvallis, OR: Conservation Biology Institute, May 1.	http://databasin.org/protected-center/features/PAD-US-CBI		vector: polygon	
			Boating facilities in Idaho	Idaho Department of Parks and Recreation. 2006. <i>Boating Facilities of Idaho</i> . Vector digital data. Boise, ID: Idaho Department of Parks and Recreation, March 15.	http://cloud.insideidaho.org/webApps/metadataViewer/default.aspx?path=G%3a\data\anonymous\idpr\boatFac_id_idpr.shp.xml		vector: point	
			Boating facilities in Oregon	Oregon Department of Parks and Recreation. 1989. <i>Inventory of Oregon Coastal Beach Access Sites</i> . Vector digital data. Salem, OR: Oregon Department of Parks and Recreation.	http://www.oregon.gov/DAS/EISPD/GEO/alphalist.shtm#B		vector: point	
			Boating facilities in Washington	Washington State Interagency Committee for Outdoor Recreation. 2004. <i>Motorized Boat Launches and Moorage Facilities of Washington State</i> . Vector digital data. Olympia, WA: Washington State Interagency Committee For Outdoor Recreation.	Must request data	http://www.rco.wa.gov/maps/boat.shtml	vector: point	
			Deepwater ports	Anon. 2012. List of deep-water ports. <i>Wikipedia, The Free Encyclopedia</i> . February 23.	http://en.wikipedia.org/wiki/List_of_deep-water_ports		text	-
			Marinas in Idaho	Manta Media Inc. 2011. Marinas in Idaho. <i>www.manta.com</i> .	http://www.manta.com/mb_44_B51ED_13/marinas/idaho		text	-
			Marinas in Oregon	Oregon Interactive Corporation. 2011a. Marinas in Oregon. <i>Oregon.com</i> .	http://www.oregon.com/recreation/marinas		text	-
			Marinas in Washington	RANG Ltd. 2012. Marinas in Washington (WA) USA. <i>PortFocus: Ports Harbours Marinas Worldwide</i> .	http://portfocus.com/united_states_america/zz_marinas_in_wa/		text	-
			Marinas in Washington	Washington Ports Association. 2006. Marinas. <i>www.washingtonports.org</i> .	http://www.washingtonports.org/issues_areas/marina.asp		text	-
			Marinas in Washington	Marinas.com. 2011. Washington Marinas - WA Marinas boat slips yacht slips Washington United States. <i>marinas.com</i> .	http://marinas.com/browse/marina/US/WA/		text	-

Component	Factors	Sub-factors	Name	Source	Data link	Information link	type	raster resolution
Vulnerability to Invasion (cont'd)	Distance to Sources of Introduction: Sources (cont'd)	Recreational Areas and Boat Access (cont'd)	Port of Allyn	MarineFuel.com. 2012. Port of Allyn Dock Marina in BELFAIR. <i>marinefuel.com</i> .	http://marinefuel.com/e-marina/washington/belfair/port-of-allyn-dock/		text	-
			Port of Port Angeles	Port of Port Angeles. 2004. Port of Port Angeles, Washington State. <i>www.portofpa.com</i> .	http://www.portofpa.com/		text	-
			Port of Seattle	Port of Seattle. 2011. Port of Seattle Maritime Industrial Center. <i>www.portseattle100.org</i> .	http://www.portseattle100.org/properties/maritime-industrial-center		text	-
			Ports in Oregon	Oregon Interactive Corporation. 2011b. Ports of Oregon. <i>Oregon.com</i> .	http://www.oregon.com/recreation/ports		text	-
		Hatcheries and fish propagation facilities	Hatcheries	StreamNet Project, Pacific States Marine Fisheries Commission. 2009. <i>Hatchery Facilities (StreamNet, August 2009)</i> . Vector digital data. Portland, OR: StreamNet.	http://www.streamnet.org/mapping_apps.cfm	ftp://ftp.streamnet.org/pub/streamnet/gisdata/map_data_physical/HatchFacilities_200908.htm	vector: point	
			Hatcheries in Idaho	Idaho State Department of Agriculture. 2006. <i>Commercial Fish Facilities Mailing List</i> . Text location data. Boise, ID: Idaho State Department of Agriculture.	http://www.agri.idaho.gov/Categories/Animals/fishFarms/fishmailing.php		text	-
			Hatcheries in Idaho	Idaho Fish and Game. 2011. <i>Fish Hatcheries</i> . Text location data. Boise, ID: Idaho Fish and Game.	http://fishandgame.idaho.gov/cms/fish/hatcheries/		text	-
			Hatcheries in Oregon	Oregon Department of Fish and Wildlife. 2011a. <i>Private Hatchery Locations in Oregon</i> . Unpublished Excel spreadsheet. Salem, Oregon: Oregon Department of Fish and Wildlife.			spreadsheet	
			Hatcheries in Oregon	Oregon Department of Fish and Wildlife. 2006a. <i>ODFW Visitors Guide Wildlife Areas and Hatcheries</i> . Text location data. Salem, OR: Oregon Department of Fish and Wildlife.	http://www.dfw.state.or.us/resources/visitors/wildlife_areas_hatcheries.asp		text	-
			Hatcheries in Oregon	Oregon Department of Fish and Wildlife. 2006b. <i>Hatchery Facilities of Oregon</i> . Vector digital data. Salem, OR: Oregon Department of Fish and Wildlife, May 3.	http://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=hatchdata		vector: point	
			Hatcheries in Washington	Washington Department of Fish and Wildlife. 2011. <i>Hatchery Facilities Washington Department of Fish & Wildlife</i> . Text location data. Olympia, WA: Idaho Fish and Game.	http://wdfw.wa.gov/hatcheries/facilities.php		text	-
			Population density	Hanser, Steve. 2000. <i>Population Density in the Western United States (Individuals / ha)</i> . Raster digital data. Boise, ID: U.S. Geological Survey. <i>sagemap.wr.usgs.gov/ftp/regional/usgs/popdens_hf.zip</i>	http://sagemap.wr.usgs.gov/ftp/regional/usgs/popdens_hf.zip		raster	90m
	Focal invaders and potential invasion		Predicted bighead carp habitat	Herborg, Leif-Matthias, Nicholas E. Mandrak, Becky C. Cudmore, and Hugh J. MacIsaac. 2007a. "Comparative distribution and invasion risk of snakehead (Cannidae) and Asian carp (Cyprinidae) species in North America." Canadian Journal of Fisheries and Aquatic Sciences 64: 1723 - 1735.; — — —. 2007b. Predicted bighead carp habitat. Spatial ASCII data.	Not available for download online		ascii	10,000m
			Predicted silver carp habitat	Herborg, Leif-Matthias, Nicholas E. Mandrak, Becky C. Cudmore, and Hugh J. MacIsaac. 2007a. "Comparative distribution and invasion risk of snakehead (Cannidae) and Asian carp (Cyprinidae) species in North America." Canadian Journal of Fisheries and Aquatic Sciences 64: 1723 - 1735.; — — —. 2007c. Predicted silver carp habitat. Spatial ASCII data.	Not available for download online		ascii	10,000m
			Zebra and quagga risk of establishment and introduction	Wells, Steve. unpublished. Risk of Dreissena establishment and introduction. Text location data. Portland, OR: Portland State University Center for Lakes and Reservoirs.; Wells, Steve, Timothy Counihan, Amy Puls, Mark Sytsma, and Brian Adair. 2010. Prioritizing Zebra and Quagga Mussel Monitoring in the Columbia River Basin. Portland, OR: Portland State University Center for Lakes and Reservoirs, April.	Not available for download online		text (point)	
			Ecoregional <i>Dreissena</i> invasion risk classes	Whittier, Thomas R, Paul L Ringold, Alan T Herlihy, and Suzanne M Pierson. 2008. "A calcium-based invasion risk assessment for zebra and quagga mussels (<i>Dreissena</i> spp)." <i>Frontiers in Ecology and the Environment</i> 6 (4) (May): 180-184. doi:10.1890/070073.	Non-spatial data		vector: polygon	
			Potential range of zebra mussels	Drake, John M., and Jonathan M. Bossenbroek. 2004c. "The Potential Distribution of Zebra Mussels in the United States." <i>BioScience</i> 54 (10) (October): 931-941.; 2004a. Potential range of zebra mussels, model I. Spatial ASCII data.	Not available for download online		raster	
			Potential range of zebra mussels	Drake, John M., and Jonathan M. Bossenbroek. 2004c. "The Potential Distribution of Zebra Mussels in the United States." <i>BioScience</i> 54 (10) (October): 931-941.; — — —. 2004a. Potential range of zebra mussels, model III. Spatial ASCII data.	Not available for download online		raster	