Project Title: Strategic conservation planning for management applications in Cascadia.

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Partners: Tony Hamilton (Ministry of Environment, tony.hamilton@gov.bc.ca), Washington Wildlife Habitat Connectivity Working Group - Transboundary and Climate Subgroups (www.waconnected.org).

Project Summary (3 sentence target): The Cascadia Partner Forum requests funding to complete conservation design for four Great Northern Landscape Conservation Cooperative conservation targets with significance to the transboundary Cascadia landscape to inform sound, data-driven management planning and action. This project aims to complete conservation design at the Cascadia-wide scale for grizzly bear, salmon, aquatic, and terrestrial connectivity to contribute to the Great Northern LCC Science Plan, while providing input and integration to the courser scale GNLCC-wide Science Plan’s established objectives, threats, metrics, and conservation actions for each target. Additionally we propose to conduct analyses on a common Great Northern LCC landscape stressor – roads - within Cascadia that land and species managers have identified science needs for to apply with stakeholders in planning efforts aimed at addressing and mitigating their impact.

Category for Proposal: Partner Forums

Need: The Cascade Mountains contains a tremendous range of aquatic and terrestrial biodiversity with dramatic ecological changes on either side of the mountain crest. Impacts of climatic changes have already been observed by practitioners throughout the landscape, underscoring the need for a cross-boundary interdisciplinary approach to increase the resiliency of species and habitats within this ecosystem. The Cascadia Partner Forum\(^1\) was established in 2012 in response to a clear need identified by natural resource practitioners in British Columbia and Washington State to foster a network of natural resource practitioners in the greater transboundary Cascadia ecosystem. Working with the Great Northern and North Pacific Landscape Conservation Cooperatives, the Forum’s primary aim is to build the adaptive capacity of the landscape and species living within it. This proposal aims to address two specific needs: (1) the Great Northern LCC’s need for contribution from our landscape to development of the Science Plan and (2) the need to bring scientific information and analyses to ongoing land and species management dialogues within Cascadia.

The selection of initial conservation targets and geographies within this proposal were evaluated according to their relevance to a high priority landscape stressor identified by our partner forum – roads. Roads of all kinds–from highways to gravel single lane routes–provide valuable access to the landscape of Cascadia, while simultaneously leaving a tremendous footprint on the landscape (Appendix A). Access is

\(^1\) Cascadia Partner Forum website, www.cascadiapartnerforum.org
needed for land and species management, recreation, and public enjoyment. Roads can also pose natural resource risks at various ecological scales to the landscape from reducing watershed health and security habitats for wildlife to providing vectors that facilitate the spread of invasive plants and fragmenting habitats. Risks both to natural resources and the infrastructure only increase with projected changes to climate in Cascadia.\(^2\) Identifying a balanced, sustainable road system that offers needed access to our landscape while ensuring healthy watersheds and habitats is therefore a high priority of the partner forum.

The Great Northern LCC Strategic Plan identifies 30 conservation targets, 29 of which are present in Cascadia. We propose to conduct conservation design planning on four conservation targets in Cascadia that meet the following criteria: relevant across the full spatial scale of Cascadia, strong transboundary expertise, timely priority for management decisions in the next 18-months, and scientifically linked to the effects of our identified landscape stressor. These four conservation targets are grizzly bear, salmon, terrestrial and aquatic connectivity:

- **Grizzly bears** once had the widest distribution of any bears in the world, including throughout Cascadia, but due to a suite of interacting landscape stressors impacting both the populations and their habitats grizzly range has significantly decreased. British Columbia has an estimated half of Canada’s grizzlies, but they are in sharp decline. In the Southern Interior Ecoprovince within the transboundary North Cascades Grizzly Bear Ecosystem the grizzly is “considered to be on the edge of disappearance”.\(^3\) Recovery planning efforts on both sides of the border depend upon one another, requiring transboundary coordination in planning and implementation. Grizzlies are displaced from high traffic roads, but more importantly, highways can create population fractures and bear mortalities across the species distribution in North America are close to roads.

- **Salmon** are an icon of the Pacific Northwest, and rivers within Cascadia are home to runs of all Pacific salmon species: chinook (king), coho, chum, pink and sockeye. The complexity of the life cycle of salmon and the significant physiological changes that occur between each stage of the salmon’s life make them particularly susceptible to a changing environment. The pattern of waterways throughout Cascadia demand coordination across land management and political borders to protect this species. Roads can pose barriers to access of aquatic habitats, as well as risks to habitat quality through increased sedimentation and disturbance of riparian areas.

- Washington has a rich recent history in scientific collaboration on terrestrial connectivity through the Washington Wildlife Habitat Connectivity Working Group\(^4\) (WHCWG). Formed in 2007, the group’s purpose is to produce scientific analyses and tools necessary to maintain and restore a connected network of habitats in Washington and surrounding habitats. Two years ago the working group re-vamped their Transboundary Subgroup with a particular focus on the landscape close to the internal border between Washington and British Columbia, dividing it into three subregions for further collaboration: Cascades-Coastal, Okanagan-Kettle, and Columbia Mountains-Selkirk. Resistance values are associated with roads due to their impact on reducing the permeability of a landscape for a range of species.

- Collaboration to maintain and restore aquatic connectivity throughout Cascadia has occurred by a variety of methods, including individual land ownerships, basin and watershed collaborations,

\(^4\) Washington Wildlife Habitat Connectivity Working Group, [www.waconnected.org](http://www.waconnected.org)
and aquatic species recovery plans. Each recognizes the importance of connectivity of a waterway with its floodplain horizontally and throughout its flow pathway. The density, location, design, and maintenance of roads throughout the landscape impact this connectivity from creating vertical incision of stream banks to re-channeling water. These impacts not only effect watershed health today, but increase risk to infrastructure and the rate at which water is lost on the landscape as we consider impacts from a changing climate.

Land and species planning efforts are underway today in Cascadia that will influence how our resources are managed for decades to come. We strongly believe that both high impact dialogue with partners and stakeholders and meaningful final decisions can only be achieved if the best available information is available to display the current condition as well as modeling the risks and benefits of potential future scenarios. Three landscapes of varying spatial scale are undergoing robust collaboration in the coming 24 months (Appendix B). All face multiple landscape stressors, but share at least one common land use change vital to address in any long-term plan towards a more resilient landscape – roads. These collaborative efforts include:

- Established in 1995, the North Cascades Grizzly Bear Population Unit (NCGBP) is the linchpin in a regional bear recovery strategy as it links the wilder North Cascades in Washington to more intact habitats in British Columbia where bears exist today in greater numbers. The Province recognizes that through ongoing land use planning and resource management initiatives such as the Integrated Decision Making (IDM) initiative, in conjunction with a regional species recovery planning, there is an opportunity to halt and reverse habitat loss trends to provide a more optimistic outlook to this species’ future. Examining current and potential future scenarios of grizzly bear security habitat and linkages within the NCGBP with a special focus on the impact of roads will inform management options for the highways and habitat in this vital area.

- Last fall the Washington State Department of Natural Resources (DNR) and the Department of Fish and Wildlife (WDFW) announced the purchase of 50,272 acres in the headwaters of the Yakima Basin watershed, an area that has been designated as the Teanaway Community Forest. The forest will be managed through a partnership between DNR and WDFW, with input from the local community and interested stakeholders. Acquisition of the property is a key step in implementing the Yakima Basin Integrated Plan, an initiative developed by a coalition of public and private organizations to safeguard the basin’s water supply, restore fisheries, conserve habitat, preserve working lands, and enhance recreational opportunities. The land currently has an existing road network (Appendix C). As the agencies and stakeholders develop a management plan that will balance restoring ecological function and resiliency to this watershed within Cascadia, an analysis and interpretation of the road network will be necessary.

- In 2012, the Transboundary Subgroup of the WHCWG prioritized the Okanagan-Kettle subregion stretching from the Cascade crest eastward through the Kettle River Range for habitat connectivity analyses both in current condition and with impacts from climate change. Highway 97 and Route 3 act as large fractures to movement on the landscape for wildlife, while individual linkages that are the most permeable through these fracture zones are being identified to inform linkage scale conservation planning. Providing scenario planning within a linkage that considers

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5 Teanaway Community Forest Trust, [http://www.dnr.wa.gov/BusinessPermits/Topics/OtherLandTransactions/Pages/amp_teanaway.aspx](http://www.dnr.wa.gov/BusinessPermits/Topics/OtherLandTransactions/Pages/amp_teanaway.aspx)
multiple restoration options for the network of roads on the landscape will inform options for restoring permeability, and define the scale at which conservation will have an impact. Major landowners and stakeholders on this landscape include BC Parks, Ministry of Forests, Lands, and Natural Resources, Colville and Okanogan-Wenatchee National Forests, Okanagan Nation Alliance First Member Nations, and Colville Confederated Tribes. Each has decision and planning efforts that will be informed by this work, ranging from forest plan revisions to site level investments.

Objectives:

**Objective 1. Contribute to GNLCC Science Plan through development of conservation design for four conservation targets.**

*Task 1.1.* Establish two leads for each conservation target (one from each side of the border) to be matched with a Cascadia Partner Forum intern or fellow.

*Task 1.2.* Identify GNLCC-wide concepts within the Science Plan for each conservation target, and overlap of conservation target with other GNLCC Ecotypic Areas.

*Task 1.3.* Identify existing Cascadia planning bodies and experts for each target to assist in development and review of plan.

*Task 1.4.* Develop draft report for each conservation target including current status in Cascadia and in relation to greater GNLCC target objectives, conceptual model, priority stressors, conservation threats/actions/limiting factors, quantifiable objectives and metrics, conservation value analysis, and future revision process and schedule recommendation.

*Task 1.5.* Present draft concepts to Cascadia network through workshop, webinars, and meetings encompassed in an open review period including potential draft revisions and review.

*Task 1.6.* Incorporate feedback from review, and finalize into final report.

*Task 1.7.* Submit to GNLCC for integration in Science Plan and share final product for each conservation target with relevant land and species managers and partnerships to ensure integration (i.e. Mid and Upper Columbia Salmon Recovery Boards, North Cascades Interagency Grizzly Bear Subcommittee, US Fish and Wildlife Service, Ministry of Forests, Lands, and Natural Resource Operations).

**Objective 2. Evaluate existing information and develop new analyses on the impact of roads to one or more habitat values tied to the conservation targets selected above to inform three land management planning efforts.**

*Task 2.1.* Define specific science question regarding risks associated with roads and natural resources with managers and stakeholders in each geography, including current condition and potential future scenarios.

*Task 2.2.* Synthesize existing scientific information relevant to topic, landscape, and data layers available for analyses in a study plan for each landscape.

*Task 2.3.* Conduct analyses including current condition and potential future management and ecological scenarios (including projected impacts of climate change).

*Task 2.4.* Produce report, GIS decision support tool, and associated materials to share with management agencies and stakeholders.

**Deliverables:**

In fulfilling Objective 1, we will generate a final report outlining for each of the four conservation targets the following: Summary of current status in Cascadia and in relation to greater GNLCC target objectives, conceptual model, priority stressors (climate, invasives and land use change), conservation
threats/actions/limiting factors, quantifiable objectives and metrics, conservation value analysis, and plan providing regular updates and revisions to this plan. Fulfillment of Objective 2 will result in deliverables clearly defined with the management agencies and stakeholders engaged on each landscape that will include a study plan, final report (including purpose statement, landscape overview, methodology, results, and discussion), GIS decision support tool to evaluate scenarios for road management and restoration, maps, and data layer package.

**Statement of Compliance:** The Project Coordinator and Principal Investigators for this funding request have read Great Northern Landscape Conservation Cooperative Information Management, Delivery, and Sharing Standards and agree to comply with those standards if the proposal is selected. We cannot release to the Public Domain data for Species deemed Sensitive by government agencies, tribes, and First Nations that may be used to inform our analyses.

**Schedule:**

<table>
<thead>
<tr>
<th>Objective 1</th>
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<tbody>
<tr>
<td><strong>Task 1.1.</strong> Establish two leads for each conservation target (one from each side of the border) to be matched with a forum intern or fellow.</td>
<td>July – August 2014</td>
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<tr>
<td><strong>Task 1.2</strong> Identify GNLCC-wide concepts within the Science Plan for each conservation target, and overlap of conservation target with other GNLCC Ecotypic Areas.</td>
<td>August 2014</td>
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<td><strong>Task 1.3</strong> Identify existing Cascadia planning bodies and experts for each target to assist in development and review of plan.</td>
<td>August – November 2014</td>
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<td><strong>Task 1.4</strong> Develop draft</td>
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<td><strong>Task 1.5</strong> Present draft concepts to Cascadia network through workshop, webinars, and meetings encompassed in an open review period including potential draft revisions and review.</td>
<td>November – March 2015</td>
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<td><strong>Task 1.6</strong> Incorporate feedback from review, and finalize into final report.</td>
<td>March – June 2015</td>
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<td><strong>Task 1.7</strong> Submit to GNLCC for integration in Science Plan and share final product for each conservation target with relevant land and species managers and partnerships to ensure integration</td>
<td>June – July 2015, with continued opportunities beyond this period expected</td>
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<th>Objective 2</th>
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<td><strong>Task 2.1</strong> Define specific science question regarding risks associated with roads and natural resources with managers and stakeholders in each geography including current condition and potential future scenarios to examine.</td>
<td>July – October 2014</td>
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<td><strong>Task 2.2</strong> Synthesize existing scientific information relevant to both topic and landscape and data layers available for analyses in a study plan for each landscape.</td>
<td>October – January 2015</td>
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<td><strong>Task 2.3</strong> Conduct analyses including current condition and potential future scenarios (generated with partners)</td>
<td>February – May 2015</td>
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<td><strong>Task 2.4</strong> Produce final report, GIS decision support tool, and associated materials to share with management agencies and stakeholders</td>
<td>June – July 2015</td>
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<td><strong>Task 2.5</strong> Present and facilitate discussions with each management agency and stakeholder group on the three landscapes to initiate integration into decisions.</td>
<td>Scheduled by July 2015, but dependent on schedules</td>
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**Appendices**

**Appendix A** – Map product “Road Network of Cascadia 2013” generated for an access management workshop of the Cascadia Partner Forum at *WildLinks 2013* in Manning Park Resort, BC.

**Appendix B** - Spatial Priorities for Applied Science within Cascadia

**Appendix C** - Road and stream network within the greater Teanaway Community Forest Trust landscape
Appendix A

Road Network of Cascadia
2013
Appendix C

Road and stream network within the greater Teanaway Community Forest Trust landscape
2013

Data source: WDFW