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TARA GALUSKA

CLAYTON J. ANTIEAU

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Council-Sponsored Research Reports

1. Climate Change and the Future of Biodiversity in Washington

University of Washington researchers prepared this report for the Washington Biodiversity Council. The study concludes that, despite the challenges inherent in addressing climate change in conservation planning, it may not be possible to conserve biodiversity in the coming century unless we do so. (2007)

http://www.biodiversity.wa.gov/council/docs.html#climate

2. Washington Forum for Conservation Incentives: Proceedings

Summaries of presentations and discussions from the Forum for Conservation Incentives, held January 5, 2007. The proceedings highlight the role that voluntary approaches play in conservation as well as key issues and opportunities. The summary document considers perspectives from the field, emerging directions, and breakout group discussions on eight topics, including conservation banking, regulatory flexibility, certification programs, and tax incentives. (2007)

http://www.biodiversity.wa.gov/council/docs.html#forum

3. Washington's Biodiversity: Status and Threats

Brief yet comprehensive, this report provides a summary assessment of the status of and threats to the biodiversity of Washington State. It includes sections on Washington's unique biodiversity, trends and threats that are affecting it, and the status of conservation assessments and information gaps. (2007)

http://www.biodiversity.wa.gov/council/docs.html#workingdocs

4. Toward a Biodiversity Conservation Strategy: Socioeconomic Conditions and Trends in Washington State.

This summary document considers how selected socioeconomic trends in Washington State may affect biodiversity conservation. It covers population growth and demographics, economy and industry, land use patterns and environment, and public attitudes and values. (2006)

http://www.biodiversity.wa.gov/council/docs.html#socio

5. Conservation Incentive Programs in Washington State: Trends, Gaps, and Opportunities

An assessment of conservation incentive programs, with appendices on financial and non-financial programs. (2005)

http://www.biodiversity.wa.gov/council/docs.html#efc

6. The Scope and Range of Conservation Assessments in Washington State

This report analyzes the range of biodiversity conservation assessments and plans conducted at various geographic scales within Washington State. (2005)

http://www.biodiversity.wa.gov/council/docs.html#assess

SHUTTERSTOCK.COM/STEPHEN STRATHDEE

AARON BARNA

JULIE BENNETT

BEN LEGLER

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A. Options for Financing Biodiversity Conservation in Washington

This section presents several possible options for funding biodiversity conservation in Washington State. This summary of options expands on Recommended Action 5.3.2 of the Biodiversity Conservation Strategy, to identify and recommend innovative funding options to generate income from and for conservation. Cascadia Consulting Group assembled the options presented below based on review of existing resources (e.g., memos created by Evergreen Funding Consultants, Biodiversity Partners, and World Wildlife Fund) as well as interviews with selected local stakeholders (e.g., Mark Wolf-Armstrong of Restore America's Estuaries).

The options presented below are grouped under these six headings:

- State Funding;
- Federal Funding;
- Taxes and Fees;
- Trust Funds and Endowments;
- Offsets and Mitigation; and
- Ecosystem Service Payments.

State Funding

Washington's state government currently supports biodiversity conservation directly through programs such as the Washington Wildlife and Recreation Program (WWRP) and the Salmon Recovery Funding Board. It also indirectly supports biodiversity conservation through other agencies and through the activities of the Biodiversity Council. As previously discussed by the Council, and included in its Biodiversity Conservation Strategy, the state could increase the focus on biodiversity within existing programs such as WWRP. These options are not strictly revenue-generating, as they could necessitate cuts in other services. They are included here because, with sufficient political support, these options could bring new funds to biodiversity conservation efforts.

In addition to expanding the biodiversity focus of the WWRP, two options are discussed below.

1. Additional State Appropriations

Additional requests for state funding could be made to the Washington State Legislature to cover the costs of new biodiversity conservation initiatives. In particular, several of the financial incentives under discussion may require supplemental funding to make up the difference in lost revenues. For example, expanding the implementation of current use taxation, as autho-

rized under the Washington Open Space Taxation Act (RCW 84.34), beyond the six counties currently employing it may require commitments of state support.

In any case, making a clear and persuasive case to the Legislature is essential, including consideration of how the request to the Legislature fits into the proposed package of initiatives and other funding sources.

2. State Bonds

Issuing bonds allows a state to raise revenue and pay for significant up-front investments that it could not otherwise afford on a year-by-year or appropriation basis. Using bonds spreads the costs of projects out over a longer time period. Bonds could be used to fund many of the financial incentives studied by the Council, including current use taxation at the local level and conservation banking.

Nationwide, bonds are a common and successful means of financing conservation projects. In particular, the state of California uses several billion dollars annually through voter-approved bonds for a wide variety of conservation projects. In Washington, bonds are indirectly used to finance the Washington Wildlife and Recreation Program via the state's capital construction budget, but clear precedent exists in other states (including numerous other states besides California) for using bonds directly for conservation.

Bonds used for conservation are usually "general obligation" bonds rather than "revenue" bonds because biodiversity projects do not usually generate revenue that could be used to secure the bond. Therefore the bonds are instead backed by the state and, indirectly, by taxpayers.

Federal Funding

Several of the most substantial sources of federal funding for conservation are embedded in the 2002 and new 2007 Farm Bill. Evergreen Funding Consultants reports that these programs have collectively brought more conservation funding to Washington State than any other source. These programs are summarized briefly below because little opportunity currently exists to expand these funds, other than to encourage local entities to take advantage of them.

In addition, the federal government offers a variety of grant opportunities. Many of them are focused on specific goals and may be applicable to individual biodiversity conservation initiatives. However, the best approach is probably to match grants to specific initiatives, an effort beyond the scope of this brief funding summary.

3. Federal Conservation Payments

The 2002 Farm Bill included seven programs that make payments to farmers in exchange for conservation. The new 2007 Farm Bill (still deadlocked in the Senate) would extend the Conservation Reserve Program and the Conservation Reserve Enhancement program, extend and expand the Wetland Reserve Program, extend and increase funding for the Environmental Quality Incentives Program, continue the Conservation Innovation Grants, continue and

expand the Grasslands Reserve Program, improve the structure of the Conservation Security Program, and extend the Wildlife Habitat Incentive Program. These programs currently contribute several million dollars annually to conservation projects in Washington.

Beyond the Farm Bill-authorized programs, only a few other federal programs apply to biodiversity conservation. One of them is the Landowner Incentive Program, administered by the U.S. Fish and Wildlife Service.

Taxes and Fees

Taxes and fees are a clear means of raising revenue but new statewide taxes and fees can be expected to face highly organized and fierce opposition. Several options are presented below.

4. Real Estate Transfer Tax

A two-year statewide real estate transfer tax for conservation was enacted in Washington in 1987. Since 1990, counties have been authorized, with voter approval, to enact their own real estate excise taxes of up to 1%, but only San Juan County currently uses this mechanism. State-level real estate transfer taxes for conservation are common in other states.

Maryland has a unique real estate tax that applies to agricultural land converted to other uses, and funds from the tax go specifically to fund agricultural easements.

5. Sales Taxes

Several other states used dedicated sales taxes to fund conservation activities. Arkansas and Missouri apply the sales tax broadly, but in Texas the tax is applied specifically to sporting goods, in California and Pennsylvania it is applied to cigarettes, and in Minnesota it is applied to lottery tickets and cigarettes.

6. Tourism Fees

Fees on tourism are a common means of providing for amenities with tourism value. Fees applied on airplane tickets, hotel rooms, and cruise ship berths are in some cases used to fund conservation and acquisition projects. Delaware and Florida both tax hotel rooms, for example.

Fees can also be applied at recreation sites, such as park entrance fees, the Northwest Forest Pass, or special permit fees for hunting, rafting, harvesting, or other commercial or recreational ventures.

7. Other Conservation-Specific Revenue Mechanisms

In addition to taxes and fees, many other states have used specific products to fund conservation. License plates, novelty stamps, and lottery revenues are all common means of funding conservation.

Trust Funds and Endowments

An ***endowment*** is a large investment where the principal remains intact and the investment income is used by the holding institution for its operations. Typical for educational institutions, endowments are also common for large charitable organizations, including the National Wildlife Federation. A ***trust*** is an arrangement where money or property is managed by one organization for the benefit of another. For example, Washington's forest trust is held by the people and managed by the state. If no forest lands were sold, the "principal" would remain intact and this trust could also be considered an endowment.

8. Establish a Biodiversity Trust or Endowment

Clearly, having a large trust or endowment to benefit biodiversity would be an excellent component of a sustainable financing portfolio. However, building up enough principal to enable significant annual income would be a great challenge. Both public and private funding would likely be needed, a situation that would require a unique organizational structure with some independence from state government operations. The fund could perhaps be initiated by surplus state revenues, when available, and grown through corporate, foundation, and individual contributions.

Offsets, Mitigation, and Transfers

Offsets and mitigation are a means for development activities that impair biodiversity to fund conservation efforts in nearby or other locations. While they do not necessarily result in a net growth of biodiversity, offset, mitigation, and conservation "banking" structures may include enough flexibility to encourage or require net biodiversity improvements. Transfer of Development Rights programs allow for landowners to sell development rights from lands that provide conservation value, with the rights being transferred to a nearby urban area.

9. Expand use of Conservation Banking

Under federal and state regulations, environmental impacts of construction on wetlands must be mitigated by contributing to an offsite restoration project. The same concept could be applied more broadly (beyond wetlands) to include other biodiversity values, including specific species habitat. Evergreen Funding Consultants reports that conservation banking is part of the funding plan for Shared Strategy (and presumably the new Puget Sound Partnership) and so new momentum may be underway for expanded conservation banking in Washington.

10. Expand Use of Transfer of Development Rights

Transfer of development rights (TDR) programs allow individuals to purchase and sell residential development rights from lands that provide a public benefit such as forest, trails, open space, or habitat for threatened or endangered species. Transferred development rights can be used to build additional houses on other parcels in more appropriate areas such as designated urban growth areas. TDR programs have many benefits: landowners who sell development rights receive financial compensation without developing or selling their land, the public receives permanent preservation of the land, and developers can continue to build at higher densities.

A TDR also responds to growth management objectives by focusing growth in urban areas where services such as sewer, water, and transportation exist or can be readily provided. In Washington, Clallam, Thurston, Whatcom, King, and Snohomish counties have TDR programs.

TDR programs require the designation of "sending" sites, or areas from which development rights may be sold, and "receiving" sites, or areas where development credits may be applied.

In Washington, TDR programs have so far had only mixed success, due mostly to insufficient financial incentives and pre-existing zoning in some areas that has precluded the benefits of a TDR program. A study in Snohomish County concluded:

- TDR programs are only viable where they are the least costly method of achieving developers' goals. Rezones, planned residential developments, or density bonuses in existing urban areas can often be cheaper than obtaining rights through TDR programs.
- Similarly, TDR programs must provide the best means of realizing financial return from the landowners' property.

If these conditions can be met, research indicates that TDR programs can be successful means of conserving biodiversity.

Ecosystem Service Payments

An "ecosystem service" is a crucial public service or product provided by an ecosystem, such as clean water, timber, habitat, soil development, or agricultural pollination. While these values are usually "free" to the public, a growing recognition of their importance has begun to develop market-based mechanisms for their support and conservation. Examples are described below.

11. Carbon Sequestration Payments

Given the rapidly growing field of greenhouse gas mitigation, the demand for projects to sequester carbon is likely to continue to grow. In many cases, projects that sequester greenhouse gases also benefit biodiversity. For example, conservation tillage can both sequester carbon and benefit biodiversity. Standard methods to measure the carbon sequestration values of various practices are still in their early stages, but if best practices and conventions can be established, it may be possible for farms or timber operations to sell carbon sequestration values to carbon-offset providers (such as Native Energy or Climate Trust) or on the open market (via Chicago Climate Exchange or other broker), helping to improve the economics of conservation. A recent report by the University of Washington for the Washington Department of Natural Resources estimated that carbon sequestration could add $500 to $700 of net present value to each acre of forest land in the coming years.

12. Broader Ecosystem Services Payments

While carbon sequestration looks at only one variable (carbon), a biodiverse landscape provides many other benefits, including clean water, productive soil, and habitat, all of which have real value to the economy. To attempt to recognize the value of these broad benefits, and to avoid

potential unintended consequences of focusing only on a single metric (i.e., carbon), many researchers are advocating moving to more broad-based payments or credit-trading schemes that include multiple benefits. While these efforts are still in the early stages, the trends toward increased market recognition of ecosystem services may help bring about such a system in the long term.

13. Market Certification Programs

Market certification programs, such as organic food or Forest Stewardship Council lumber, are intended to raise the market price of a commodity in exchange for certifiable improvements in land stewardship practices. Although some controversy remains about the effectiveness of the programs at catalyzing large-scale improvement in land stewardship practices, the certifications (particularly organic food) have been successes in the marketplace and do bring increased revenue to landowners.

THE NATURE CONSERVANCY

BEN LEGLER

CHARLES GURCH

B. Regional Pilot Projects

Eastern Washington Pilot Project

Healthy Lands Initiative

WORKING TO CONSERVE THE DIVERSITY OF LIFE IN WASHINGTON STATE

Background

Executive Order 04-02, which created the Washington Biodiversity Council, directed the Council to demonstrate the applicability of incentive programs in two biodiversity conservation pilot projects, one on the east side of the state and one on the west side.

Each project received $20,000 from the Council and ran from January 2006 through June 2007.

The Council's Pilot Projects Committee chose the projects.

Pilot Projects Committee

Bonnie Bunning, chair
Washington Department of Natural Resources

Brian Collins
Skokomish Nation

Rob Fimbel
Washington State Parks and Recreation Commission

John Marzluff
University of Washington

Jackie Reid
Thurston County Conservation District

Ken Risenhoover
Port Blakely Tree Farms

Steve Tharinger
Clallam County Commission

Josh Weiss
Washington Forest Protection Association

Megan White
Washington State Department of Transportation

WASHINGTON BIODIVERSITY COUNCIL
P.O. BOX 40917
OLYMPIA, WA 98504-0917
INFO@BIODIVERSITY.WA.GOV
360-902-3000
TTY: 360-902-1996
WWW.BIODIVERSITY.WA.GOV

Project Summary The Healthy Lands Initiative brought together the agriculture, land conservation, planning, and economic development communities to learn about the biodiversity in north central Washington and to explore conservation tools and resources, both existing and potential.

Key Accomplishments

- **Created slide show and DVD, *Nature of North Central Washington*,** with input and feedback from residents and ecologists.
- **Analyzed available conservation incentives and developed slide show,** *Conservation and Agriculture: Moving beyond the traditional into the sustainable.*
- **Reached 300 people in community dialogue process** through focus groups and discussions.
- **Organized a culminating forum with more than 60 attendees.** This led to the formation of the Healthy Lands Coalition and a strategic plan.
- **Convened a habitat farming work group**, which created a conceptual program that would pay farmers for growing riparian habitat.
- **Facilitated grassbanking work groups** and identified strategies for and barriers to grassbanks in north central Washington.

Lessons Learned

- **Local production is valuable.** Producing *Nature of North Central Washington* as a collective effort took a long time, but it allowed the slide show to reflect the contributions of many people. Even long-time residents learned something new and expressed an invigorated pride of place.
- **Gaps exist in incentive programs.** Analysis revealed that available incentive programs do not address invasive species, altered fire regimes, or climate change as their primary focus.
- **Institutional challenges remain.** The habitat farming program remains a case study of how slowly these things can move, even with willing participants, available funds, scoping, and a restoration plan.
- **Balancing land uses is critical.** Grassbank work groups clarified that the key to future efforts is making the case that livestock grazing can be compatible with wildlife needs.

Relationship with the Washington Biodiversity Council's Strategy

Several learnings from the project inform the recommendations put forth in the *Washington Biodiversity Conservation Strategy: Sustaining our Natural Heritage for Future Generations.*

- **Growing conservation markets is slow, but the effort is a valuable learning process that will benefit future efforts.**
  (Incentives and Markets Strategy 2.3)
  - Work to develop a habitat farming program in Chelan County—one that addresses economic, community, and ecological needs—requires that diverse partners share in the responsibilities associated with this complex project.
  - A desire for broadening partnerships led to a joint proposal to the Ruckelshaus Center for Policy Consensus. This project is one of ten asked to submit a full proposal.

- **Dialogue among landowners and incentives providers offers unexpected benefits.**
  (Incentives and Markets Strategy 2.1; Education Strategy 5.4)
  - Grassbank work group participants agreed that learning about grassbanks was valuable even though they decided not to pursue grassbanking at this time. Meeting with others to discuss landowner/producer needs, species needs, limitations, and opportunities was especially worthwhile.
  - Small focus groups are an effective tool for scoping out issues and identifying leaders.
  - The newly-formed Healthy Lands Coalition, a result of the community dialogue process, has several capacity-building charges. It plans to develop education and outreach program to showcase and build upon local conservation successes.

- **Raising awareness of biodiversity issues feeds opportunities for networking and education.**
  (Education Strategy 5.1, Education Strategy 5.4)
  - *Nature of North Central Washington* serves as a platform for complementary programs about, for example, individual counties or habitat types.
  - The slide show/DVD invites continuing input from the community: information, images, stories.

- **Local needs give rise to citizen science initiatives.**
  (Education Strategy 5.2, Education Strategy 5.3; Science and Information Strategy 4.2)
  - The grassbank work groups clarified the need for a common language and protocol for monitoring and for sharing results of management actions in shrub-steppe habitats. This stimulated the creation of new partnerships to conduct rangeland monitoring workshops.
  - Student Achievement from the Ground Up, a program that brings landowners, teachers, and students together to monitor landscape change, has been launched with a coalition of partners in north central Washington.

Project Partners include:

Institute for Rural Innovation and Stewardship, North Central Washington Resource Conservation and Development Council, Okanogan Conservation District, Foster Creek Conservation District, The Nature Conservancy, Icicle Fund, and the Community Foundation of North Central Washington.

Key Participants:

Jay Kehne
North Central Washington Resource Conservation and Development Council

Nancy Warner
The Nature Conservancy

Kathleen Deason
Foster Creek Conservation District

Kent Mullinix
Formerly with the Institute for Rural Innovation and Stewardship

Western Washington Pilot Project

Pierce County Biodiversity Alliance

WORKING TO CONSERVE THE DIVERSITY OF LIFE IN WASHINGTON STATE

Background

Executive Order 04-02, which created the Washington Biodiversity Council, directed the Council to demonstrate the applicability of incentive programs in two biodiversity conservation pilot projects, one on the east side of the state and one on the west side.

Each project received $20,000 from the Council and ran from January 2006 through June 2007.

The Council's Pilot Projects Committee chose the projects.

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Josh Weiss
Washington Forest Protection Association

Megan White
Washington State Department of Transportation

WASHINGTON BIODIVERSITY COUNCIL
P.O. BOX 40917
OLYMPIA, WA 98504-0917
INFO@BIODIVERSITY.WA.GOV
360-902-3000
TTY: 360-902-1996
WWW.BIODIVERSITY.WA.GOV

Project Summary The Pierce County Biodiversity Alliance organized a BioBlitz, or rapid biological inventory, in the lower White River Biodiversity Management Area (BMA) between Buckley and Sumner. The BioBlitz ground-truthed species diversity, engaged citizen scientists, and served as a kick-off for community stewardship planning.

Key Accomplishments

- **Conducted 24-hour BioBlitz** in June, 2006, involving 100 professional and citizen scientist volunteers.
- **Recorded nearly 600 observations of animals and plants.** Observed 123 of 158 predicted species of birds, mammals, reptiles and amphibians (78%).
- **Contacted over 90 landowners** on both King and Pierce County sides of White River about the BioBlitz and the biodiversity management area tax incentive.
- **Aided formation of two community stewardship groups**, Crescent Valley Alliance (Washington Department of Wildlife's 2006 Conservation Organization of the Year) and Friends of the Lower White River.
- **Facilitated joint proclamation** by County Executives Ron Sims and John Ladenburg that endorses community efforts to protect biodiversity of the lower White River.

Lessons Learned

- **Unexpected landowner category—difficult to engage**. Limited Liability Corporations (LLCs) hold significant parcels along the lower White River for investments or future development. These "non-working" lands have no local contacts; they are not addressed in existing incentive programs.
- **River corridor lacks sociological cohesiveness.** The lower White River stretches between several jurisdictions; the people living there identify more with their town than with the river itself. As a result, PCBA is working initially with county and city personnel to develop a stewardship plan.
- **Tax incentives are highly utilized.** More than 70% of eligible landowners already enrolled in Current Use Taxation programs.

Relationship with Council Strategy

Several learnings from the project inform the recommendations put forth in the *Washington Biodiversity Conservation Strategy: Sustaining our Natural Heritage for Future Generations* (August 31, 2007)

- **Citizen Science works well to engage people in biodiversity conservation**.
  (Education Strategy 5.3)
  - Over 25 citizen volunteers participated in 2006 BioBlitz, including high school and college students.
  - Twenty residents and eight teachers trained in data collection technique (NatureMapping).

- **Citizen Science helps fill gaps in knowledge; Biodiversity Inventory need not be expensive.**
  (Education Strategy 5.3, Science and Information Strategy 4.2)
  - BioBlitz ground-truthed predicted species and made preliminary determination of threats and stressors. Data are being used in lower White River biodiversity stewardship plan.
  - Occurrence records are useful for Washington Natural Heritage Program landscape mapping project.
  - Species lists are informing Cascade Land Conservancy's option to buy Puget Sound Energy parcels along the lower White River.

- **Local government staffs are critically important** for providing expertise and technical assistance for community biodiversity conservation efforts.
  (Land Use and Development Strategy 3.1, Land Use and Development Strategy 3.5)
  - Planning, conservation, wildlife, and data management expertise are all represented in the Pierce County Biodiversity Alliance and all are vital to its success.
  - Staff members from several jurisdictions are key to biodiversity stewardship planning in the lower White River corridor.
  - Gaps and challenges increase as agency staff are reduced or detailed away from biodiversity planning.

- **Small investments yield successes in community stewardship programs**.
  (Education Strategy 5.4)
  - With assistance from Pierce County Biodiversity Alliance, Crescent Valley Alliance completed a stewardship plan, received grant funding to post informative signs at its watershed boundaries, and undertook the National Wildlife Federation's Community and Backyard Wildlife Habitat program.

- **Landowners on the rural-urban interface need innovative incentives**.
  (Incentives and Markets Strategy 2.2)
  - Tax incentives are already well-utilized by landowners along the lower White River.
  - Certain sectors (warehouses, corporate landowners, "non-working" lands) are not the focus of existing incentive programs.

Project partners include: Pierce County Planning and Land Services Department, Washington Department of Fish and Wildlife, University of Washington, Cooperative Fish & Wildlife Unit, Metro Parks Tacoma, National Wildlife Federation, Puyallup River Watershed Council, Pierce County Conservation District, Crescent Valley Alliance (CVA), Friends of the Lower White River (FLWR).

Key Participants:

Katherine Brooks Pierce County Planning & Land Services	Michelle Tirhi Washington Department of Fish & Wildlife	Karen Dvornich UW NatureMapping	John Garner Michele Cardinaux Metro Parks Tacoma	Linda Burgess Puyallup River Watershed Council
Gretchen Muller National Wildlife Federation	Dave Seabrook Pierce Conservation District	John Stern Tracy Engels PCBA coordinators	Lucinda Wingard Crescent Valley Alliance	Jeanne Fancher Friends of Lower White River

C. Indicators, Goals

PRELIMINARY DRAFT:
Goals, Benchmarks and Indicators for potential use in a Biodiversity Scorecard

NOTE: This is a preliminary set of indicators and is not intended to be complete or comprehensive. The Council recognizes that additional work is needed to develop a robust set of indicators and information sources that are widely supported. *This draft was approved by the Council in April 2007.*

Goal: The state has made significant progress in securing and restoring viable populations of native species and functioning and intact ecosystems which represent our biodiversity heritage.

	Objective	Potential Indicators for Measuring Progress	Potential Information Sources
A	Significant progress toward **improving the status and function of ecological systems and plant associations currently at risk.**	1. Decrease in number of threatened or endangered ecological systems. 2. S-ranks (state lists of at-risk species) do not change for the worse. 3. Health of currently at-risk ecological systems are improving.	1. Number of at-risk *ecological systems* and *plant associations* defined as threatened, endangered, or S1 or S2
B	Significant progress toward maintaining the status and function of **ecological systems and plant associations currently NOT at risk.**	1. Disturbance regimes (fire, flood, insects) are within natural range of variability.	1. Number of acres currently being managed to restore fire regimes.
C	Significant progress toward **improving the status of species currently at risk** (at risk defined as threatened, endangered or S1 or S2 on the Washington Natural Heritage Program Scale)	1. Decrease in number of threatened or endangered species. 2. S-ranks (state lists of at-risk species) do not change for the worse. 3. Populations of at-risk species are improving. 4. Recovery plans are in place and are being implemented. 5. Increased knowledge of species at risk and their needs.	1. Number of at-risk *species*, defined as threatened, endangered, or S1 or S2 2. Number of recovery plans in place.
D	Significant progress toward **maintaining the status of species currently NOT at risk.**	1. Number of new state threatened or endangered listings. 2. Species populations are fluctuating within normal range of variability (for example, bird count data). 3. Identification of all species in state and their habitat requirements	1. Numbers and a list of *species* that are "sensitive", "watch" or "of concern" —not yet threatened or endangered
E	Significant progress toward **ensuring that species and ecosystems present at statehood are restored in the wild in the state.**	1. Number of species reintroduced and surviving in the wild.	1. Lists of species present at statehood that are now thought to be extirpated (not extinct).

Goal: The state has made significant progress in ensuring that healthy ecosystems sustain and support a high quality of life for people.			
		Objective	**Indicators for Measuring Progress**
A	**Cultural Value and Aesthetics**	Significant progress toward maintaining or improving access to natural landscapes for cultural and spiritual enrichment.	1. Access to natural areas stable or improving. 2. Resident satisfaction with natural features of cities and towns improving or stable. 3. Increase in value of real estate adjacent to protected lands. 4. Counties commit to certain level of greenspace. 5. Preservation/easement of culturally significant sites.
B	**Recreation**	Significant progress toward maintaining or improving access to natural landscapes for recreational use.	1. Number of park visitors steady or increasing. 2. Ecotourism steady or increasing.
C	**Air and Climate**	Significant progress toward maintaining or improving provision of clean air and carbon storage capacity of ecosystems.	1. Carbon storage of Washington forests and other lands. 2. Carbon storage of plankton. 3. Carbon storage of shellfish shells. 4. Carbon storage of urban green space. 5. Net gain in carbon storage (restoration, etc.). 6. Percentage of businesses with carbon offset programs. 7. Increase in purchase of hybrid vehicles.
D	**Clean Water**	Significant progress toward maintaining or improving the capacity of ecosystems to purify and retain water (flood control services).	1. Area of active floodplain increases. 2. Incidence of flooding. 3. Number of municipalities that rely on watersheds for clean water. 4. Ecologically functional wetlands increase in number and area. 5. Number of watershed plans with clean water components. 6. Floodplain restoration plans.
E	**Soil**	Significant progress toward maintaining or improving soil stability and productivity (including microbial richness).	1. Decrease in mean statewide erosion/acre. 2. Decrease in mean applications of fertilizer/acre. 3. Decrease erosion through forest management. 4. Percentage of farmers practicing low-input farming.
F	**Food and Fiber**	Significant progress toward maintaining or improving the aspects of healthy ecosystems that contribute to the productivity of forest resources, agriculture, livestock grazing and fishery resources. [Includes pollination, natural pest control, nutrient cycling]	1. Native pollinator communities intact. 2. Natural pest control stable or increasing. 3. Socially and economically important species maintained/restored at levels compatible with levels of extraction. 4. Soil quality on producing lands maintained or improved. 5. Allowable catch limits steady or increasing. 6. Hunting and fishing limits steady or increasing. 7. Production of commodities/acre stable or increasing.

Goal: The state has an institutional framework that fully supports and is accountable for progress toward protecting biodiversity.			
		Objective	**Indicators for Measuring Progress**
A	**Governance**	Biodiversity conservation is an integral component of the mission, goals, strategic planning, and budgets of agencies and other policy making bodies with a role in managing of the state's natural resources.	1. Agency mission and goals include biodiversity conservation. 2. Biodiversity conservation programs and projects are supported by agency managers. 3. Agencies participate in reporting on indicators for the Biodiversity Score Card. 4. Biodiversity conservation priorities are included and addressed in agency strategic plans, grants, and decision making processes. 5. Government programs and local service delivery are coordinated and effective at on the ground conservation activities.
B	**Voluntary Conservation on Private Land**	Incentives, market mechanisms, and other voluntary measures are effective, efficient, and widely used mechanisms to conserve biodiversity resources on private lands.	1. The state tracks overall investment and results from conservation incentives. 2. Availability of market-based programs is growing; conservation results are positive. 3. Landowners' experience in applying for incentive programs is improving. 4. Participation of private landowners in incentive programs is increasing. 5. Incentive providers coordinate on program implementation. 6. Adequate and stable funding sources for incentive programs exist. 7. Progress toward removing disincentives.
C	**Land Use and Development**	Biodiversity conservation is being incorporated into comprehensive planning, implementing programs, and specific development projects.	1. Landowners, planners, and land managers have adequate resources and assistance to identify high priority biodiversity resources. 2. Incentives exist to support landowners in maintaining working lands. 3. Incentives exist to focus development in existing urban areas.
D	**Education**	The education system provides students with a comprehensive understanding of the science and value of biodiversity.	1. Number of schools that have experiential nature programs. 2. Number of schools participating in citizen science projects. 3. Number of schools that include curriculum specifically addressing biodiversity.
E	**Public Engagement**	Citizens understand the value of biodiversity, how their actions matter, and the importance of efforts in local communities and ecoregions.	1. Percentage of the public who participate in stewardship activities. 2. Percentage of the public who support biodiversity conservation programs and policies. 3. Number of active citizen science programs in the state.
F	**Science and Information**	Needed information about the states' biodiversity is readily accessible and user friendly. There is a strong science foundation for policy setting.	1. Biodiversity Science Team established. 2. Biodiversity Data Partnership and Monitoring Plan developed and implemented. 3. Critical gaps in information are being addressed.

Acknowledgements

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Members of the Biodiversity Council Science Committee: Sarah Brace, John Floberg, John Gamon, Elizabeth Gray, Molly Ingraham, John Pierce, Elizabeth Rodrick, Paul Wagner.

Cascadia Consulting Staff: Laura Blackmore, Jessica Branom-Zwick, Marc Daudon, Laila Parker, Christy Shelton.

Additional Consultant Support: Dennis Canty, Julie Colehour, Chris Davis, Dee Frankfourth, John Gamon, Brad Kahn, Josh Lawler, Joe LaTourette, Molly Mathias, Lainie Turner, Jay Thompson.

Strategy Guidance: Bobby Cochran, Carole Richmond, Don Stuart, Sara Vickerman.
John Gamon, principal author of **Washington's Biodiversity; Status and Threats Report.**

Pilot Project Leads: Katherine Brooks, Kathleen Deason, Karen Dvornich, John Garner, Jay Kehne, Michelle Tirhi, Nancy Warner.

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Consultations With Technical Experts, Stakeholders And Others

The Council also thanks the many who offered comments and suggestions throughout the development of the strategy—in letters, emails, and in-person meetings. A list of these individuals follows. Please note that while the Council has endeavored to be thorough and complete in this list, we apologize in advance for any unintended omissions.

Initial Interviews with State Leaders

Brian Boyle, Northwest Environmental Forum; Jim Cahill, Natural Resources Budget Advisor to Governor Gregoire; Alan Durning & Eric De Place, Sightline; Helen Engle, National Audubon Society; Luke Esser, Senator, Washington State Senate; Kathy Fletcher, People For Puget Sound; Debora Hyde and Katherine Brooks, Pierce County Planning Department; Ron Judd, Office of the Governor; Bruce Mackey, Department of Natural Resources; Keith Phillips, Office of the Governor; Joan Thomas, Parks Commissioner; Cliff Traisman, Washington Conservation Voters & Washington Environmental Council; Roger Hoesterey, Regional Director, Trust for Public Lands; Jeff Koenings, Washington Department of Fish and Wildlife; Megan White, Washington State Department of Transportation; Bill Wilkerson, Washington Forest Protection Association.

Education and Public Outreach

Dan Belting, Northwest Trek; Helen Buttemer, Katherine Glew, Biology Programs for Teachers, University of Washington; Karen Dvornich, Dan Hannafious, NatureMapping Program; Lynne Ferguson, Margaret Tudor, Pacific Education Institute; John Garner, Michele Cardinaux Tacoma Nature Center; Jean MacGregor, Curriculum for the Bioregion; Kent Mullinix, Institute for Rural Innovation and Stewardship; Nicole Ricketts, Washington Department of Fish and Wildlife; Abby Ruskey, Environmental Education Association of Washington; Bob Simmons, Chair, and Members of the Governor's Council for Environmental Education; Saul Weisberg, Lee Whitford, North Cascades Institute; Gilda Wheeler, Office of the Superintendent of Public Instruction.

Science and Information

Jim Agee, University of Washington; John Floberg, Cascade Land Conservancy; Jerry Franklin, University of Washington; David Giblin, Burke Museum, University of Washington; Josh Lawler, University of Washington; Merrill Peterson, Western Washington University; Erik Neatherlin, Washington Department of Fish and Wildlife; Gordon Orians, University of Washington; David Peterson, University of Washington; Steve West, University of Washington; George Wilhere, Washington

Department of Fish and Wildlife; staff of the Natural Heritage Program, Washington Department of Natural Resources: Joe Arnett, Rex Crawford, John Fleckenstein, Lisa Hallock, Janice Miller, Jack McMillan.

Incentives and Land Use

Rick Anderson, HDR Consulting; Katherine Brooks, Pierce County Planning Department; Jan Cassin, Parametrix Inc; Bill Clarke, representing Washington Realtors; Bobby Cochran, Clean Water Services; Michelle Connor, Cascade Agenda; Steven Davenport, Paul Jensen, Spokane County Planning Department; Britt Dudek, Foster Creek Conservation District; Chuck Jones, Alliance Consulting (Douglas County Planning/Colville Tribe); Cherie Kearney, Columbia Land Trust; Larry Nussbaum, Stewardship Partners; Monty Mahan, Pierce County Conservation District; Ken Miller, Washington Farm Forestry Association; Doug Peters, Tim Gates, Bill Mandeville, Sam Wentz, Department of Community, Trade and Economic Development; Denise Pranger, Kirk Hansen, Northwest Natural Resource Group; Marja Preston and staff from Bainbridge Island Department of Planning; Joanne Schuett-Hames Washington Department of Fish and Wildlife; Mike Shelby, Western Washington Agriculture Association; Don Stuart, American Farmland Trust; Ted Sullivan, King County Department of Natural Resources and Parks; Paula Swedeen, Earth Economics; Kerry ten Kate, Business and Biodiversity Offset Program; Tim Trohimovich, FutureWise; Sara Vickerman, Defenders of Wildlife; Ray Victurine, Bainbridge Island Forestry Advisory Council; Bettina von Hagen, Ecotrust.

Stakeholder Meetings on Draft Recommendations

Jim Cahill, Jim Skalski, Deborah Feinstein, Office of Financial Management; Nina Carter, Washington Audubon; Mark Clark, Stu Trefry, Washington State Conservation Commission; Joan Crooks, Washington Environmental Council; David Crowell, Todd Woosley, Seattle-King County Association of Realtors; Kathleen Drew, John Mankowski, Keith Phillips, Governor's Policy Office. Mark Doumit, Washington Forest Protection Association; Rick Dunning, Ken Miller, and others Washington Farm Forestry Association; Peter Dykstra, Kitty Rasmussen, Trust for Public Lands; Stan Finkelstein, Washington Association of Cities; Mitch Friedman, David Woods, Conservation Northwest; Terry Hunt, Scott Dahlman, Dan Hammock, Washington State Grange; Billy Frank, Fran Wilshusen and members of the Northwest Indian Fisheries Commission; Eric Johnson, Washington State Association of Counties; John Larson, Washington Association of Conservation Districts; Grant Nelson, Chris McCabe, Association of Washington Business; Jeff Pavey, Charlie Raines, Cascade Land Conservancy; Bill Robinson, The Nature Conservancy; Don Stuart, American Farmland Trust; John Stuhmiller, Washington Farm Bureau.

Commenters on the Strategy Public Review Draft of August 31, 2007

Lynn Bahrych, Washington State Conservation Commission; Frederick Bentler; George Boggs, Whatcom Conservation District; Brian Boyle, Northwest Environmental Forum; Bill Boyum, Washington State Conservation Commission; Wendy Brown, DNR Aquatics–Invasive Species Council; Sarah Close, Stewardship Partners; Alex Conley, Yakima Basin Fish & Wildlife Recovery Board; Rod Crawford, Burke Museum, University of Washington; Scott Dahlman, Washington State Grange; Perry Falcone, Snoqualmie Watershed Forum, King County; Robert Fuerstenberg, King County Water and Land Resources Division; Joe Holtrop, Clallam County Conservation District; Michael Jensen; Jeff Koenings (with others) Washington Department of Fish and Wildlife; Chuck Lennox, Cascade Interpretive Consulting; Jean MacGregor, The Evergreen State College/Curriculum for the Bioregion; Mike Marsh, Washington Native Plant Society; Robert Meier, Rayonier; Ken Miller, Washington Farm Forestry Association; Scott Moore, King County Noxious Weed Control Board; Bobbie Morgan, Natural Landscapes Project; Merrill Peterson, Western Washington University/Natural Heritage Council; Doug Pineo; Ragina Smith, Cascade Land Conservancy; Dale Swedberg, Washington Department of Fish and Wildlife; Paula Swedeen, Earth Economics; Margaret Tudor, Pacific Education Institute; Jennifer Vanderhoof, King County Water and Land Resources Division; Sara Vickerman, Defenders of Wildlife; Carol Yoon, New York Times.

Presentations at Council Meetings

Clay Antieau, Cedar River Municipal Watershed; Tom Banse, Northwest Regional Correspondent, National Public Radio; Alicia Bishop, University of Washington; Linda Burgess, Puyallup River Watershed Council; Jeanette Dorner, Nisqually Tribe; Jim Fox, Recreation and Conservation Office; Mark Goering, The Nature Conservancy; Norm Johnson, Oregon State University; Jennifer Korfiatis, North Central Washington Economic Development District; Dr. Ed Miles, Climate Impacts Group, University of Washington; Erik Neatherlin, Washington Department of Fish and Wildlife; Paul Nelson, Kitsap County Planning Department; Jim Warjone, Port Blakely Companies; members of the Entiat Watershed Planning Unit and staff of Chelan Conservation District.