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Habitat Data Gaps

Oregon's habitats provide many values for people, fish and wildlife. In the last few decades, great progress has been made in understanding how Oregon's habitats function. In addition, landowners, land managers, and restoration experts have learned "on-the-ground" lessons through experimentation and sharing information. However, there are still data gaps that need to be addressed in order to effectively restore and manage fish and wildlife habitats in Oregon. Here, some broad themes for data gaps identified for Strategy Habitats are presented. This list is not meant to be comprehensive, but represents some high priority information needs.

Habitat data gaps, research and monitoring needs have been previously identified for several Strategy Habitats:

- The Northwest Forest Plan and associated programs addressed needs for late successional conifer forests in the West Cascades, Coast Range, and Klamath Mountains ecoregions. The adaptive management component of the Northwest Forest Plan could address some research and monitoring needs in forested habitats of western Oregon, but it has not yet been fully implemented.
- The Oregon Plan for Salmon and Watersheds and associated programs addressed needs for salmonid habitats
- Bonneville Power Administration identified research needs for the Lower Columbia River and Estuary

For all habitat types:

- Determine disturbance factors (e.g., fire, flooding, winter storms) and regimes that historically maintained Strategy Habitats.
- Determine historic range of successional stages and landscape pattern at multiple scales. In other words, how has habitat varied over time? Compare current conditions to historic, or "baseline" conditions, to determine change from historic conditions.
- Increase understanding of how to manage habitats at multiple scales. For example, improve methods for managing wetland and riparian habitats across landscape and watershed scales.
- Continue to refine GIS-based habitat maps. Improve ability to map linear and small-scale habitats such as riparian areas, aspen clones, and vernal pools.
- Update historic vegetation maps as additional information is developed regarding temporal and spatial ecosystem dynamics.
- Determine priorities and restoration techniques for Strategy Habitats:
 - Which habitats and sites are most suitable for restoration?
 - Which plant species are most appropriate for planting based on site-evaluations?
 - Where should they be planted?
 - What type of maintenance is required to become established?
 - What other actions are needed?
- Develop innovative management techniques and markets with potential to support job creation and support local economies while restoring habitats (e.g., markets for small-diameter trees removed during forest restoration).
- Establish propagation methods for native plants for restoration. Collaborate with partners to develop sustainable markets for native plant producers in order to assist producers and provide a reliable supply of restoration materials (e.g., Native Seed Network's programs).
- Determine most effective methods to restore natural hydrological conditions to streams, rivers and wetlands, including seasonal wetlands (e.g., vernal pools, wet prairies, and playas)
- Determine and evaluate methods to:
 - Control priority invasive plant species, particularly those species that degrade habitats and alter ecological processes, and monitor effects of control on target and non-target species.

- Restore native plants in habitats dominated by non-native plants (e.g. understory plants in oak woodlands).
- Restore habitats dominated by invasives that alter ecological processes (e.g., cheatgrass, medusahead, European beachgrass).
- Treat ballast water in a manner that is both safe and effective.
- Determine distribution and spread rates of priority invasive species.
- Develop measurable indicators of high quality habitat, including aquatic systems. Coordinate with the Oregon Watershed Enhancement Board's work on aquatic indicators and the Oregon Board of Forestry's efforts to identify indicators for forestlands. For example, develop framework for using species and habitat indicators to assess habitat status and trends. Another example: develop measurable indicators of forest health that reflect a variety of goals, including wildlife habitat values and natural fire regimes, in addition to insect and disease levels and fire risk.

Terrestrial habitats:

- For oak woodlands and savanna, develop and evaluate methods:
 - To enhance cavity development in oak trees (e.g., fungal inoculations, limbing).
 - Determine effectiveness of snag creation from competing conifers to provide cavity-nesting habitat for oak-associated birds such as western bluebird, acorn woodpecker, and slender-billed (white-breasted) nuthatch.
 - To encourage large, open-structure Oregon white oak tree growth.
- For oak woodlands and savanna, evaluate effects of management practices on natural oak regeneration.
- For aspen:
 - Determine the effects of altered subsoil water levels on aspen.
 - Genetic relatedness of aspen clones and genetic considerations for restoration.
- For ponderosa pine:
 - Determine desired patch size and connectivity across landscapes.
 - Determine gap dynamics (how forest openings are created, maintained, change over the landscape, and are used by or affect wildlife).
 - For high elevation ponderosa pine habitats that have converted to mixed-conifer habitats, determine if restoration is possible and desirable. If so, investigate restoration methods.

- Clarify the role of playas for wildlife.
- Determine and evaluate methods to:
 - Reintroduce natural fire regimes into forested habitats and reduce wildfire risk while maintaining late successional habitats
 - Reintroduce fire into fire-dependent landscapes such as native grasslands, shrub-steppe, oak savannas, and ponderosa pine habitats. Develop fire prescriptions to address the constraints of surrounding land uses, smoke management, safety and other considerations.
 - Control encroaching native vegetation (e.g., conifers in oak woodlands, western juniper in sagebrush) and effects on native plant composition and ecological function (e.g., transpiration impacts on surface water flows caused by western juniper).
 - Maintain fire-dependent habitats in the absence of natural fire regimes, especially where prescribed fire is not practical.
 - Utilize prescribed fire techniques that can be applied in aspen habitats to control junipers while stimulating aspen shoots.
 - Improve bitterbrush and mountain mahogany regeneration.

Aquatic habitats:

- For streams:
 - Determine specific requirements for large woody debris levels in streams
 - Identify factors that impact channel stability and channel conditions
 - Understand and assess effects of changes in channel geometry
- Assess historic temperature and water quality regimes on a watershed basis, particularly the Northern Basin and Range ecoregion where this is poorly understood.
- Determine impacts of roads on streams (e.g., do they impede channelization or increase sedimentation?) in Conservation Opportunity Areas and other priority areas
- Continue efforts to inventory and map eelgrass beds (e.g., Tillamook Bay National Estuary Project and South Slough National Estuarine Research Reserve research)
- To ensure effective management of non-point source pollutants, such as fertilizers and pesticides:
 - Understand the chemical breakdown of pollutants in wetlands and other temporary aquatic habitats
 - Investigate potential impacts of pesticides or herbicides on ecological communities, considering trophic dynamics.

- Compile management suggestions for reducing the impact of non-point source pollution .
- Develop non-toxic alternatives to pesticides and fertilizers, where feasible.

Multiple-objective resource lands:

- Use adaptive management to evaluate the effects of forest management practices that reduce the risk of uncharacteristic fire on wildlife and other ecological values.
- Develop decision-making tools to help land owners and land managers assess and compare the short-term risks to wildlife and habitat of forest management practices to reduce the risk of uncharacteristic fire against the long-term risks to wildlife and habitat posed by uncharacteristic fire.
- Determine the potential impacts of intensive vegetation management of recent harvest units (through herbicides and fertilizers) on native wildlife and ecological communities.
- Increase efforts to understand and evaluate the functioning of managed farm and rangeland (for example, soil and ecological processes; ability to adapt to change).
- Investigate grazing regimes that are compatible with a variety of grassland conservation goals, including grazing as a restoration tool.
- Investigate impacts of range management regimes on big sage habitats, understanding what habitat components are important to wildlife and how grazing or other activities affect these habitats.
- Evaluate management actions on range and other land to determine best practices.
- Evaluate efficiency with which runoff and irrigation water is used, and evaluate the degree to which farm and rangeland resist erosion and runoff.
- Determine relationships between groundwater withdrawals and surface water volume.
- Develop quantitative measures of environmental condition and performance for managed landscapes, including managed forests, agricultural lands, rangelands, and urban areas.
- Increase understanding about the ecological effects of urbanization, and ways to minimize negative consequences for species and habitats within and beyond the urbanized footprint.

Several large-scale, cooperative research and monitoring programs are currently working on various habitat research questions in Oregon. These include: Cooperative Forest Ecosystem Research Program, Watersheds Research Cooperative, Coastal Landscape and Modeling Study, H.J. Andrews Experimental Forest (Long Term Ecological Research site), Oregon Watershed Enhancement Board monitoring, Oregon Board of Forestry's work to implement the Forestry Program for Oregon, and other programs. In addition, the Urban Ecological Research Consortium is a unique, informal effort to promote the collection and use of information in the Portland/Vancouver metropolitan area for conservation purposes. Also, monitoring restoration efforts and other conservation actions taken through the Conservation Strategy will provide additional management guidance.



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