

***Eastern and Central Oregon Resources: Their Effects on Recovery of Native Fishes and Watershed Functions***

Adopted by the IMST on June 28, 2007 for posting on the IMST's web site.

Note: This information and outline are preliminary. IMST may change the title, science questions, structure, or the outline of the report at any time if the Team feels that this will improve presentation of the most relevant scientific evidence.

IMST currently is developing a draft report on how all land uses in eastern Oregon (e.g. forestry, agriculture, rangeland management, mining) .Urban and rural residential which will be addressed in a separate IMST report. may affect the recovery of wild anadromous and resident salmonids, non-salmonid native fish species, as well as maintaining or improving critical watershed functions. The geographic region covered by this report is the land area within the state boundary of Oregon that falls east of the Cascade crest, hereafter referred to as central and eastern Oregon. The aim of this report is to present the scientific evidence that management of these arid and semi-arid lands can be compatible with accomplishing the mission of the Oregon Plan for Salmon and Watersheds.

IMST is releasing the current outline of the report to inform interested parties of the report's scope and direction. Before this report is sent to Oregon's Governor, Legislature, and state agencies, it will be:

- I. Drafted by IMST members
- II. Discussed at public IMST meetings
- III. Reviewed for technical accuracy by external reviewers
- IV. Revised following technical review
- V. Formally adopted by IMST at a public meeting

If you wish to hear more about this report as it is developed, please check the meetings and minutes link on the IMST website (<http://www.fsl.orst.edu/imst/>).

**Draft Report Outline:**

- I. Executive Summary
- II. IMST Perspective and Approach
- III. Introduction

This section summarizes historical trends and current status of major land uses and the condition of the landscape in eastern and central Oregon. The primary focus of this section is to summarize the major Oregon Plan-related issues for this region and to identify the factors, including legacy issues, strongly associated with the current status of watersheds and aquatic ecosystems.

- a) scope of the report

- b) general descriptions of ecoregions, regional climate, hydrology, geology, topography, and vegetation types,
- c) land uses prior to and after Euro-American settlement
- d) general historical state of aquatic and riparian ecosystems, key native fish and wildlife species (e.g. American beavers, *Castor canadensis*)

#### IV. Science Questions

Question 1: *What is the current status of salmonids and other native fishes in central and eastern Oregon? What are the factors of decline for salmonids and other native fishes and what are the present physical barriers to accessing additional habitat as the populations recover?*

The distribution and productivity of many eastern and central Oregon native fish species has changed over the past 150 years. To answer this question we describe the current status of native fishes in the region including resident and anadromous salmonids, resident species at risk, and the factors (including legacy effects) related to declines in their populations. Discussions related to declines of key species will cover changes to:

- a) water quality
- b) water quantity
- c) physical habitat structure
- d) fish passage
- e) biotic community composition
- f) commercial harvest rates of anadromous salmonids

Question 2: *How do vegetation type and cover affect water quantity and quality, and riparian area functions in central and eastern Oregon?*

Land cover can affect watershed functions by changing precipitation infiltration<sup>1</sup>, percolation<sup>2</sup>, and runoff rates. In this question the IMST will discuss how vegetation type and cover can affect watershed hydrology thereby affecting water quality and quantity, as well as riparian area condition. Research examples from forestry, agriculture, rangeland management, and invasive species management will be used to illustrate how changes in vegetation have been shown to affect (positively and/or negatively) these components.

Question 3: *How have natural disturbance frequencies and magnitudes changed since Euro-American settlement? What are the implications for watershed functions and aquatic habitat? What is the scientific evidence that changes in resource management can address these changes?*

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<sup>1</sup> The movement of water from the land surface into the soil.

<sup>2</sup> The downward movement of water through the soil profile.

Over the past 150 years changing land management schemes have affected natural disturbance cycles (fire, floods, insect/disease outbreaks, drought, etc) in central and eastern Oregon. In this question, IMST will describe how natural disturbance regimes have been altered over time. Examples from research in forestry, agriculture, rangeland management, and invasive species management will be used to demonstrate how management actions or policies (e.g. fire suppression) may have contributed to these changes and to explore how management tools could be used to affect disturbance regimes in ways beneficial to aquatic and riparian ecosystems and watershed functions.

Question 4: *How do water impoundments, irrigation diversions, and other water withdrawals affect water quality and quantity, riparian and aquatic communities, and the recovery of native fishes? What is the scientific evidence that changes in resource management can address these impacts?*

Water is widely impounded, diverted, or removed to support flood control measures, irrigation, direct consumption, and other activities in central and eastern Oregon. In answer to this question, IMST will discuss how management of water can affect water quantity and quality, riparian and aquatic communities, and the recovery of native fishes. IMST will also present scientific evidence on ways that management of natural resources could be modified to change or mitigate those impacts.

Question 5: *What ramifications may climate change have on native vegetation, aquatic resources, and long-term native fish recovery efforts in central and eastern Oregon?*

While the causes and local manifestations of current climate changes are still uncertain, it is recognized that shifts in seasonal temperatures and precipitation patterns will affect native vegetation, fish, and wildlife communities. Here IMST will present information on reported possible scenarios for the region, how native ecosystems may respond to these changes, and how restoration goals and management of natural resources may need to be modified to address regional effects of a changing climate.

Question 6: *What is the scientific evidence that changes to resource management practices could facilitate recovery of native fishes, riparian areas, and watershed functions in central and eastern Oregon?*

Applied research on how natural resource management affects native ecosystems in the western US has been occurring for the past 40 to 50 years. More recently, research has focused on how management activities can be used as restoration or rehabilitation tools. The answer to this question will take a holistic view of landscape level management and recovery. IMST will synthesize information from the first 5 Science Questions, briefly identify key legacy issues related to historical natural resource management actions in the region and current issues affecting aquatic ecosystems, riparian areas, and watershed functions. IMST will also discuss studies that have demonstrated how land use practices have aided in the recovery of native fishes, and the condition of riparian areas and watersheds.

*Question 7: What additional technical or scientific information is needed to facilitate recovery of salmonid and other native fish populations and improve watershed functions in eastern and central Oregon?*

In this section IMST identifies the substantive gaps in knowledge concerning the recovery of native fish populations and the restoration of watershed functions in arid and semi-arid regions of Oregon. Two major components will be addressed:

- a) research
- b) inventory and monitoring

## V. Recommendations

Here IMST makes specific recommendations to the State of Oregon about native fish recovery or status maintenance and restoration of watershed functions in central and eastern Oregon. State agencies or entities (e.g. Oregon Plan Core Team) are required (Oregon Revised Statute 541.409) to respond to formal recommendations made by IMST.

## VI. Implications for Policy

This section is at the interface between science and policy. The purpose of the discussion is to help those professionals addressing policy to be able to do so in ways that are consistent with the available scientific information.

## VII. References

## VIII. Appendices