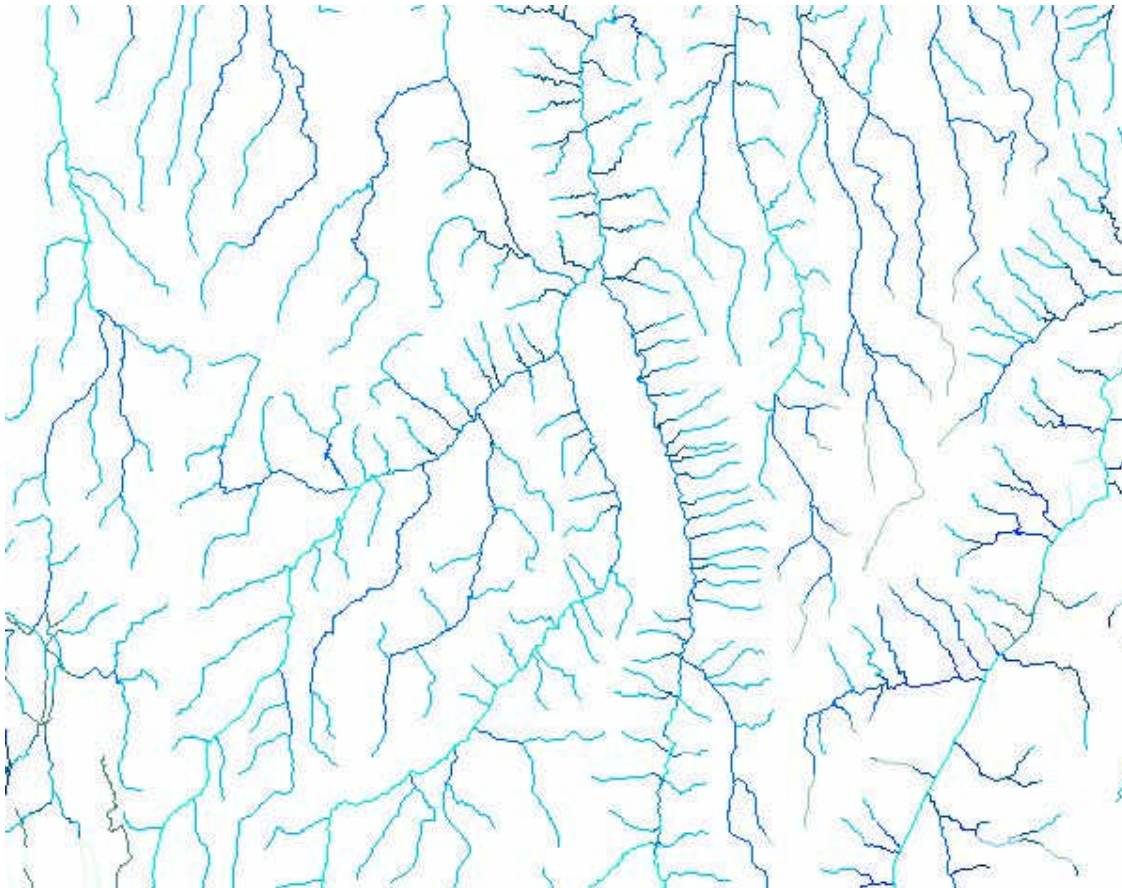


Oregon Natural Heritage Program's Aquatic Classification

As outlined in the Oregon Natural Heritage Act, the Oregon Natural Heritage Program (ORNHP) must identify all of Oregon's natural heritage resources. The objective of this is to assure that examples of each of these resources are included within the protected area network. Since 1998, the Natural Heritage Plan has not included any true aquatic (riverine or lacustrine) ecosystem types, which for use in the Plan are called ecosystem cells. The cells identified in the 1981, 1988 and 1993 Heritage Plans were eliminated because the classification used could not be explained, nor could ORNHP define, map, or prioritize the types. To meet the requirements of the act, ORNHP must adopt and implement a classification for riverine and lacustrine systems. In addition to ORNHP's needs for the 2003 update of the Natural Heritage plan, the Oregon Watershed Enhancement Board, watershed councils, and many other groups in Oregon are in need of an aquatic classification and aquatic coverage for Oregon.

The information on the page is the basis of some grants to apply this strategy to Oregon, and is the best characterization of the TNC/ABI/GAP classification effort.

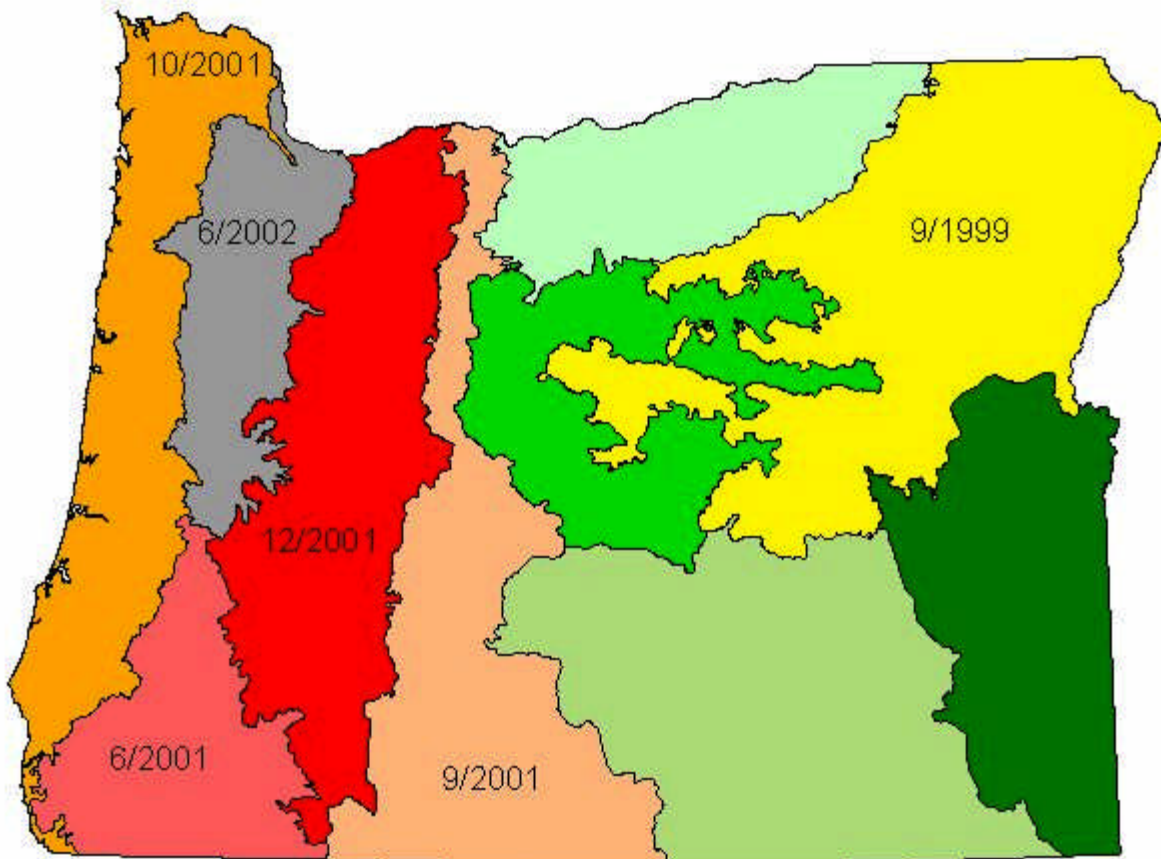
Below is an image showing the classification as applied to the Blue Mountains, which is the only ecoregion we have completed so far. The north-south river in the middle is the Imnaha River.



The different colors show the different macrohabitat types.

Status of Project at Oregon Natural Heritage Program

The initial aquatic classification is being developed by ecoregions. The Blue Mountain/Middle Rockies ecoregion was completed in fall of 1999. The Klamath Mountains ecoregion is in progress, with the initial classification to be completed before the end of the year (2000) and the final classification by June 2001. The Washington Field Office of the Nature Conservancy is just starting the classification of the other western Oregon ecoregions (the Willamette Valley, the Coast Range, and the Cascades) with funds obtained from private foundation. Their timetable is to finish these ecoregions within two years. ORNHP is working with the Conservation Biology Institute to classify and map the East Cascades-Modoc Plateau ecoregion, hopefully by September 2001. ORNHP is developing a plan to complete the last ecoregion, the Columbia Plateau Ecoregion. A map showing these timetables is included below. The Columbia Plateau is composed of four, green sections.



Brief Outline of the National Project

The following information was extracted from a TNC/ABI proposal to EPA, 5/2000

National Aquatic Classification Project Summary

The Nature Conservancy (TNC), the Association for Biodiversity Information (ABI) and the National Gap Analysis Project (along with other government partners) are developing and applying an aquatic community classification framework for the purpose of identifying freshwater environments of highest priority for biodiversity conservation within the United States. This rapid ecological assessment tool is designed to evaluate, without extensive biological inventory, the types and distributions of aquatic ecosystems and their component communities and to identify the “best examples” of each within hydrologic systems. This proposal outlines a research plan for evaluating the effectiveness of this classification framework in characterizing the quality of aquatic ecosystems and their components. The proposed research addresses two issues of broad concern: development of a national, hierarchical aquatic classification system that can identify biotic patterns and variability at multiple scales useful for ecological assessment; and the utility of different levels of stratification in establishing reference conditions for the quality of freshwater ecosystems.

To assess the ability of the classification framework to explain biological patterns, identify reference conditions, and develop indicators of biological condition, we propose to: 1) apply the TNC/ABI/GAP aquatic community classification framework at three levels of stratification for rivers and streams in Oregon). We hope to obtain research funds to test the classification within a subset of ecosystem types, which will involve assessing available biological data and collecting additional biological data to fill critical gaps.

This project will advance the conceptual development of an aquatic community classification framework that shows great promise as a nationally standardized tool for environmental protection and biodiversity conservation. The project will benefit users of classification products within the study areas and also will provide models for applying these classification protocols elsewhere. Also, this project will support development of biocriteria by states and strengthen the linkage to state Natural Heritage Programs, which serve as the nation’s largest source of standardized biological inventory data.

In Oregon, the goals of the project are to:

1. Classify the aquatic ecosystems using the TNC/ABI/GAP physical framework at all 3 levels.

And, obtain funds to:

2. Develop the sampling design that is needed to
 - test the ability of the hierarchy to explain biological patterns.
 - identify reference conditions
 - define biocriteria
3. Evaluate existing biological data (taxonomic composition, assemblage/presence absence, and spatial coverage), and identify data gaps in the sampling strategy.
4. Identify subset of ecosystem types that we will work on within each of the research areas.
5. Develop standard approach for identifying reference conditions for each ecosystem type
 - Landscape analysis
 - Biological data
 - Discussions with experts
6. Identify reference sites on the subset of ecosystem types that will be evaluated intensely
7. Collect additional data to fill data gaps on reference sites for the subset of ecosystem types
8. Test the ability of the hierarchy to explain the biological patterns
 - Identify appropriate scale for the development of reference conditions and biocriteria.
9. Document the biological reference conditions for the subset of ecosystem types

10. Establish biocriteria for the subset of ecosystem types
 - When “reference conditions” cannot be readily identified, biocriteria will be developed from a large sample data set to establish “best condition criteria”.
11. Evaluate the biological response to same/different perturbations in same/different classification units.

Expected Results or Benefits

This project will result in the establishment of a nationally consistent ecological classification framework. This will be accomplished through the testing and refinement of the aquatic classification framework that has been developed and applied by TNC/ABI and/or GAP to identify and prioritize aquatic conservation sites. This national classification framework will allow for the consistent delineation of water body types as stratified across ecoregional and biophysical domains. This project will support the implementation of this classification scheme for large rivers and streams in Oregon. All water body type within these pilot areas will be attributed with biological descriptions from which reference conditions and biological criteria will be developed.

Existing biological data will be quality controlled. Data gaps will be filled with new data. These data will be aggregated and used to attribute the classification units, classify the biological communities and to inform the development and application of aquatic ecological classification framework. The raw data and analytical results will be made available for researchers and resource managers.

The combination of land information, data on hydrological alteration (physical and chemical), and the biological data will support the documentation of variability for each aquatic habitat type, and the correlation of the variation to the environmental, land use and hydrological alteration factors. The summary of this information will be used to develop reference conditions and indicators for biological conditions for each of the habitat classification units. Information on these habitat units, their reference conditions and indicators of biological conditions will be provided in project reports.

Existing technologies will be refined and applied to automate numerous delineation and attribution steps in the development of the aquatic habitat units. These tools will be available for other research to complete similar work elsewhere. Databases will be developed and populated to manage all of this information and will serve as the information resource for others.