

US EPA ARCHIVE DOCUMENT

Western Ecology Division

Willamette Ecosystem Services Project

Ecosystem services are resources and processes supplied by ecosystems, which benefit humans or could potentially do so in the future.

Ecosystem services occur at local and regional scales (for example, clean water supply, flood protection, and fiber production) and global scales (carbon sequestration). But the lack of a standard method to identify and evaluate ecosystem services has prevented full recognition of their contribution to human well-being, and has rendered their protection more difficult.

The Willamette Ecosystems Services Project (WESP) emphasizes the development of a robust decision support framework and set of tools for assessing bundles of ecosystem services under current and potential future conditions consistent with identified client and stakeholder needs in the Willamette River Basin (WRB).



Properly functioning ecosystems provide valuable services by sequestering and neutralizing pollutants entering the air and water.

Ecosystems: the Sum of Many Parts

Many factors make up the complex web of ecosystem processes that provide beneficial services to humans.

Example: Restoration of riparian systems to provide fish habitat would also enhance other ecosystem services such as nitrogen control, carbon sequestration, flood protection, and habitat provisioning. Sequestering carbon not only removes greenhouse gas from the atmosphere, but it also reduces nutrient loss and improves erosion control. Think of these *multiple, linked* ecosystem services as “**bundled services**”.

Research Approach

Oregon's WRB was selected as one of the five sites to conduct a study of ecosystems services, as a component of the larger EPA Ecosystems Services Research Program.



WESP is an intensive, interdisciplinary project which focuses on characterizing multiple ecosystem services through quantitative models and incorporating these models into a decision support framework relevant to identified clients and stakeholders in the WRB.

Above: Rivers and riparian wetlands are some of the target areas being studied

WESP will build on existing ecosystem services research for assessing conditions and trends and developing datasets necessary for models. It will apply and refine existing models, and develop new models that target specific services (e.g. water quality and quantity), working with clients and stakeholders to articulate alternative scenarios, and incorporating these into the WESP decision platform.

WESP focuses on five key services of interest to EPA in the WRB: biological greenhouse gas regulation, water quality and quantity regulation, wildlife populations and habitat, fish populations and habitat, and air quality regulation. The WESP decision support system and models will focus on two factors that have the greatest potential to significantly alter ecosystem services within the WRB: *climate change and land use/land cover management and modification*.

Results

The results will help EPA and others evaluate the implications of regulatory actions with regard to ecosystem services over large spatial areas. The decision support framework will be flexible and adaptable to other parts of the country facing similar questions regarding ecosystem services.

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