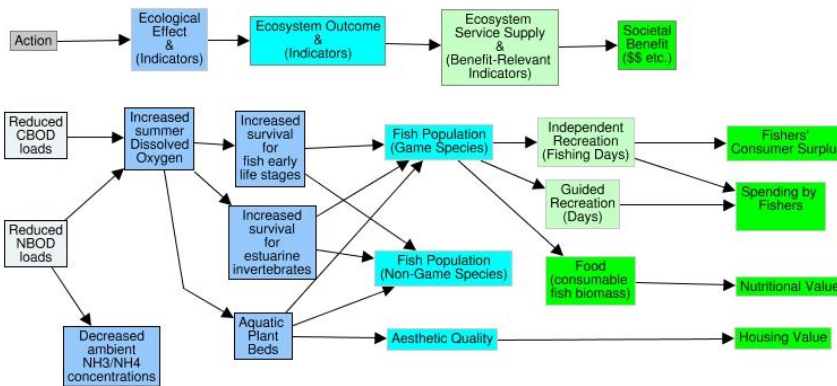




Short Description: "Ecosystem services are the effects on human well-being of the flow of benefits from an ecosystem endpoint to a human endpoint at a given extent of space and time"¹. Ecosystem Service Valuation (ESV) is rapidly becoming the "coin of the realm" for evaluating the costs and benefits of policy action (and inaction), of development activity, of investments in infrastructure, of energy development, and of conservation measures and environmental improvement. In this course, students will learn how to trace the "causal chains" from such actions/inactions to various ecosystem, social, and economic outcomes and to measure and value those outcomes both qualitatively and quantitatively (see diagram below).

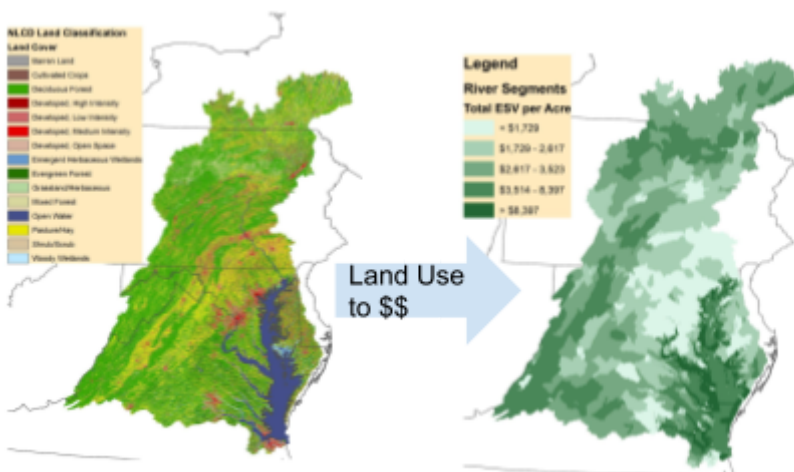
Sample Concept Map for the Ecosystem Service Benefits of Improved Water Quality in the Delaware Estuary



Methods and techniques introduced will include GIS mapping (because ecosystem and human endpoints exist at particular places on the landscape — see map below), benefit value and function transfer, meta-analysis, and others. We will do plenty of math (or rather we'll get various types of software to do it for us), but there are no prerequisites for the course.

Readings will include textbook excerpts, journal articles, examples of ESV studies, and, of course, software help files! Course assignments will be built around a semester-long project, two quizzes to check-in on concepts, and two or three homework assignments (connected to the project) to build some of those technical skills. Two asynchronous discussions will round out the grading.

Sample Map showing land cover and total ESV per Acre in the Chesapeake Bay Watershed



The instructor is an [assistant professor of Global Studies, Environments & Sustainability](#), and founder of [Key-Log Economics](#), (Charlottesville and [Hanoi](#)), where he has conducted ecosystem services assessments and developed estimation methods for diverse landscapes and policy situations, and for clients from conservation, development, government, and other organizations.

¹ Johnson, G. W. (2010, March). *ARIES: Artificial Intelligence for Ecosystem Services*. Gund Institute AIRES Workshop, University of Vermont, Burlington, Vermont.