Overview of Interdisciplinary Research

- It may be useful to define interdisciplinary research by contrasting it with disciplinary research.
- Disciplines have their own language, their own norms, their own journals, etc.
- Those working within a discipline are generally knowledgeable about the theories, techniques, literature, and language of their disciplines.
Overview of Interdisciplinary Research

Actually, disciplines are so complex that usually people only really understand a subdiscipline

- Example: Instead of being expert in biology, you focus on microbiology, and that’s too broad so it’s microbes that remediate contaminated soil but that’s too broad so it’s microbes that break down petroleum products, etc.
- This isn’t bad – it’s the way science works in our complex world. It’s the way focused knowledge moves forward.

Overview of Interdisciplinary Research

But, who has the big picture view?

Who translates environmental science into environmental management?

What is the role of scientists in setting policy or making management decisions?

Views vary
Overview of Interdisciplinary Research

One view is that scientists do science
- Pure
- Objective

Managers and regulators do policy and management and decision making

Questions:
- How well do managers understand and use science in their decision making?
- If not well, who’s fault is it?

Overview of Interdisciplinary Research

Increasingly, people trained in interdisciplinary thinking and interdisciplinary teams are working on environmental issues.

It takes a broad view and knowledge from different disciplines to bring together information from different sciences together with social and economic considerations to make good policy and management decisions.
Overview of Interdisciplinary Research

Example:

- The project is a degraded stream running through an area that includes National Forest, private agricultural land and a small city.
- The question is: “How can this stream be brought back to a healthier condition?”
- The chemist wants to do a study on water chemistry, the biologist wants to study the biota of the stream ecosystem, the economist wants to look at economic impact on the various stakeholder groups, the political scientist sees it as a problem of political power, etc.

Overview of Interdisciplinary Research

Example

- Farmers fear that restoration has economic implications for their marginally profitable farming operations.
- Public land managers feel that the problems are downstream of their zones of influence so there’s nothing they can or should do.
- City leaders fear that future development will be impacted by “wacko environmentalists”
- Etc.
Overview of Interdisciplinary Research

Example:

- All of these views (and more) are important.
- None is likely to achieve change on their own.
- The physical system, the biological system, the social system, the economic system, the political system must all be considered.
- To make change happen, many stakeholders with different views must see that their concerns are addressed.

Example

- The highest probability of success is that a group of people who bring different viewpoints and different areas of expertise work together with the regional stakeholders (farmers, public land managers, city leaders) to develop a plan for restoration that balances environmental, social and economic considerations.
- This is interdisciplinary research and management.
Overview of Interdisciplinary Research

One criticism of interdisciplinary scientists is that they are “an inch deep and a mile wide” meaning that you know a little about a lot of things but not a lot about anything. It’s a valid concern.

Ideally, we’d all have multiple degrees that span the physical, biological, and social sciences. It’s not reasonable to expect.

Overview of Interdisciplinary Research

More realistic is training scientists to have a background that crosses scientific disciplines AND that takes social and economic issues into account. OR encouraging people to work in interdisciplinary teams that bring different perspectives to the table.
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Both of these are valuable and necessary.

Often, after working a few years with an agency like the Department of Environmental Quality, students report that, while their scientific knowledge is important, the real problems involve knowing how to work with people, how to communicate, how to gain trust, etc.

We want Environmental Science students to see themselves as interdisciplinary thinkers.

Understand the value in having knowledge that cuts across the spectrum of the physical, biological and social sciences.

Be able to work in teams with people from very different backgrounds and with the public.
Overview of Interdisciplinary Research

We would like to see EnvS research projects as examples of interdisciplinary work.

Your advisor was probably trained in a specific discipline.

Your committee is interdisciplinary.

It’s up to YOU to use your coursework and your committee to help you do interdisciplinary research.

For example, at each step in the research process, ask yourself if you are addressing the physical, biological and most importantly social science aspects of the problem.

Ask yourself, what implications does my research have for environmental management? For people? For communities?

Consider a section/chapter of your thesis that addresses these issues. Write it so that a decision maker/manager can understand it and put it to use in their work.
Overview of Interdisciplinary Research

Discuss this with your advisor and committee each time you meet.

Get advice from your committee about how to make your work more interdisciplinary.

You may have to be the driving force but your committee is, by design, interdisciplinary and will help you!