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UNH RESEARCHER IS MAPPING THE FLOW OF COMMUNICATION

DURHAM, N.H. – Troy Hartley could be considered a cartographer of human communication.

Hartley, a UNH research assistant professor in the department of resource economics and development, is studying the patterns of communication within and between various local and regional organizations.

Funded in part by NH Sea Grant, his project was motivated by the U.S. Commission on Ocean Policy report that indicated effective coastal and ocean management is inhibited by a lack of communication, coordination and a sense of partnership. Specifically, Hartley is looking at the communication networks for projects undertaken by the Atlantic Marine Fisheries Commission, the New England Fisheries Management Council, the NH Coastal Program and the Cape Breton Island in Nova Scotia.

Hartley used interviews and surveys to measure communication patterns among individuals within these entities and projects. The frequency and directional flow of information within and between the key individuals, such as project coordinators, scientists and decision-makers, were then "mapped" using the computer program Inflow.

The outcome depicts a spider web effect of points connected by lines in a network. The points represent the individuals and the lines represent information flow on daily, weekly or monthly time scales.

"Communication 'maps' make sense to people," Hartley explains. "They create a visual of something that is conceptually difficult to wrap your arms around."

"Social scientists have studied regional government in other contexts, such as public transportation, water and wastewater management," Hartley adds. "But we will struggle finding the best ways that people can work together, communicate and coordinate effectively on a regional scale. We need to get better at that for regional integrated coastal and ocean management to become a reality."

As his research has progressed, Hartley has noticed some trends emerging that highlight some differences in communication networks and also some of the challenges involved.

The maps depicting the channels of communication among individuals in a watershed planning organization show relatively tight communities among participants who know of each other well and interact frequently. For example, the watershed planners might have planners, ecologists, GIS experts and government managers all interacting on a regular basis. The maps show lots of lines crisscrossing and forming a tight cluster of communication with many individuals talking with each other something called the "density" measure of a network.

On the other hand, Hartley shows a communication network map involving herring management, a large regional fisheries case. There were more than 150 individuals from industry, government, conservation groups, scientists and other stakeholder groups involved weekly at various levels. However, the lines depicting the flow of communication show dense clusters of activity with fewer lines connecting the clusters to one another than was observed in the watershed planning case.

"Participants involved with herring management have very specialized roles and interests," Hartley explains. "A lot of the network weight falls on certain individuals to keep the communication flowing. Some individuals bear the brunt of the burden for ensuring information flows across the diverse groups. The network is vulnerable to their status and availability. For example, are they on vacation? Are they temporarily pulled away by another project? Do they always have the support necessary to serve this role?"

Hartley says the results of the research will encourage strategic thinking about network design and recommend changes in the function of the network and roles of individuals. Upon looking at these maps, some individuals have noticed that their information flows to other participants in unexpected ways, based upon the frequency of communication among others in the network.

In addition, the maps identify the key individuals who are in touch with various stakeholders and groups. These individuals can then be targeted by those needing to broadcast information to the rest of the group.

"Our communication effectiveness and influence are not independent of the other individuals in our own networks," Hartley says. "It is more than 'who you know' that is important, it is 'who do the people you know know.'"

"I enjoy seeing what the maps can do for people to improve communication within and among regional government entities," Hartley adds. "We can work in a coordinated way and the maps give us the guidance to get there."