

PERM Newsletter



The Partnership for Ecosystem Research and Management (PERM) was established to enhance the ability of Michigan State University and DNR to work with other stakeholders toward identifying significant ecosystem problems and conducting research and outreach toward their solution.

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Understanding the Importance of Stakeholder Engagement

Today, the term “stakeholder engagement” is emerging as a means of describing a broader, more inclusive public participation process. When executed effectively, stakeholder (SH) engagement can be used to improve communications, obtain wider support, gather useful data and ideas, enhance agency reputation, and provide for more sustainable decision-making. As we look to the future, many natural resource management projects will need to engage with a wide range of SH groups, each with their own concerns, needs, conflicts of interest and levels of influence.

So-- Are you ready to embark on the SH engagement process? If so, fasten your seat belt because now you must 1) frame the issue/need/problem; 2) define the purpose of engagement (e.g., share information, consult, engage); 3) define outputs (i.e., tangible products) and expected outcomes; 4) determine engagement tools (e.g., survey, focus group, open house, advisory team); and 5) select the appropriate SHs to engage. Selecting the appropriate groups to involve in your engagement process can be daunting because you need to understand who are the SH groups, what are their issues and interests, and what motivates them. To address these pieces of the SH puzzle, **Jordan Pusateri Burroughs**, PERM Wildlife Outreach Specialist, MSU Department of Fisheries and Wildlife, and **Kelly Siciliano Carter**, Public Outreach and Engagement Unit Manager, DNR Wildlife Division, developed a SH selection criteria matrix.

The matrix provides a snapshot of the various SH groups that may be impacted or interested in the specific natural resources issue. The matrix enables you to make systematic, qualitative judgements about SH groups based on an assortment of variables including expertise (i.e., scientific knowledge), values (i.e., consumptive, non-consumptive, human safety, ecological), economic impacts (i.e., positive, negative), conflicts, and overall purpose. Once completed, the matrix is used to identify gaps in participation to ensure fair representation of diverse interests (see example matrix). The SH selection matrix has been used on several engagement efforts within the Wildlife Division with much success.

	EXPERTISE	VALUES	ECONOMIC	CONFLICT	ISSUE	PURPOSE
A	✓	✓	✓	✓	✓	✓
B		✓	✓		✓	
C			✓	✓	✓	✓
D	✓		✓	✓	✓	✓

After selecting appropriate SH groups and implementing the engagement effort, now it's time to evaluate the engagement process, associated outcomes and overall success. Jordan and Kelly are working to evaluate several SH engagement efforts initiated by the Wildlife Division. Consistently, they find that effective SH engagement helps resolve conflicts among and between SH groups and the DNR. Participants view their participation as fair, legitimate and worthwhile, and often leave the engagement process with a new-found understanding of wildlife management, policy, and decision-making, while also gaining a greater appreciation for the complexity – social, biological, economic, and political – surrounding wildlife management decisions.

Stakeholder engagement is not without its difficulties, which includes high cost, large amounts of staff time, and conflicts with individuals outside the process. Regardless of these challenges, time and again the SH engagement process has proven beneficial in producing useful, supported management plans, and in helping to build solid, long-standing partnerships.



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Sound the ALARM!

Sea Lampreys Can Smell Death

Over a hundred years ago sea lampreys invaded the Great Lakes through man-made canals, decimating the Great Lakes sport fishery. Scientists and managers have battled sea lampreys for decades. For the past 30 years biologists have worked to develop chemical attractants (pheromones) to lure sea lampreys to their deaths. Recently, **Dr. Michael Wagner**, PERM Assistant Professor in Fisheries and Wildlife at MSU, discovered a new odor – an alarm substance that's emitted by putrefied lamprey flesh. This “deathly odor” may be the key to controlling this costly invasive species.

Alarm substances are commonly used by fishes to detect predators. If a fish is attacked, the substance is released from the injured skin and alerts others in the area. According to Dr. Wagner, this putrefied alarm substance does not just alert lampreys to the presence of a predator. Lampreys migrate and spawn at the end of their lives, much like salmon. But, much like us, lampreys choose which stream to deposit their future offspring based on public information about the quality of the “neighborhood.” This public information is broadcast in the form of chemicals released by other lamprey. If the “kids” of the previous generation are doing well, they emit a pheromone that alerts the migrants to their success. If they are dying, they emit the alarm substance to warn migrants that the neighborhood has gone bad. The risk of reproducing in the wrong stream can be substantial because lampreys only have one chance to spawn. The scent of dead sea lampreys could also indicate the presence of predators that are killing migrants, or that spawning has ceased in the stream, making it difficult to find a mate.

Modern-day vampire slayer - Dr. Michael Wagner - seeks to unveil the mystery of environmental management's Holy Grail: “Can you make a program more effective without greater cost?”

Repellents based on the alarm substance may prove useful for managing lamprey because of the geography of their migration. Lampreys move from open, large lakes into watersheds that are shallow and narrow, and as they move upstream they constantly hit splits in the stream, like twigs of a branch. By adding the alarm substance to one branch of the river, managers may be able to put up a chemical stop-sign and divert all migrating lamprey away from a repellent-treated tributary and into an adjacent fork made attractive by synthetic pheromones. By guiding

lampreys into a small area, we may be able reduce the amount of pesticide needed to control lampreys; a “unite and conquer” strategy.

Dr. Wagner is taking his alarm substance lab experiment into the field. During 2012, he will attempt to shut down a small stream by releasing the alarm substance in order to determine its potential viability in nature. It works in the lab, but will it work in nature?

Dr. Wagner and his colleagues are working on the holy grail of environmental management – how to make a program more effective without greater cost. Limited resources and manpower prevent managers from treating all lamprey larval areas with pesticides in a given year. Using an alarm substance, managers may be able to choose where lampreys reproduce, steer lamprey away from streams of high conservation concern, or direct lamprey to streams where pesticides can be easily applied with respect to ecosystem features. By combining new (repellents and attractants) and old (pesticides) sea lamprey control techniques, managers can fully implement ecosystem management.

In the future, Dr. Wagner will continue to map out the nature of the alarm response, experiment with manipulation of those responses, and assess whether features of the natural environment mediate the lampreys' response. Funding for this research is being provided by the Great Lakes Fishery Commission and the MSU Center for Water Sciences Venture Grant program.



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