Validating civic perspective, grassroots resources for environmental science

By Joe Balintfy

Research by members of the public can meet the rigors of science and help advance environmental health efforts, according to Sara Wylie, Ph.D., *(http://www.northeastern.edu/socant/faculty-and-staff/sara-wylie-2)* assistant professor of anthropology at Northeastern University. Wylie visited NIEHS Dec. 9 and presented a seminar titled "Toward a Civic Science: Putting Tools for Rigorous Research into Public Hands."

Wylie pointed out how her research projects connect to NIEHS strategic goals 5-8. (Photo courtesy of Steve McCaw)

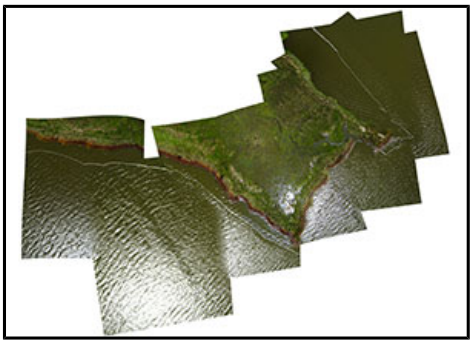
"[I'm] really trying to show how changing the tools that we use for science, how building online databases for gathering community experiences, and then how expert analysis of data could produce a responsive network for community-based environmental monitoring," Wylie said."

Wylie outlined what she called a civic approach to environmental health research, with people on the front lines becoming directly involved in doing rigorous science. Using such devices as balloons, modified consumer cameras, and free-source software, the end results of a grassroots approach can include better images of oil spills, more epidemiological data on endocrine-disrupting chemicals, and more thorough monitoring of well water.

Listen as Wylie describes her concept of civic science and the ways today's tools can be modified to encourage popular, grassroots research (01:45)

Listen Now (1MB)

Transcipt (72KB)



A balloon map of the Gulf oil spill in Wilkinson Bay, La., shows broken booms better than satellite images can. This kind of mapping can also be integrated with satellite images and Google maps. (Photo courtesy of Public Lab)

Tools in the hands of those closest to the sources

What started as development of an inexpensive way to make satellite-like maps, using helium balloons and digital cameras, evolved into a resource platform called Public Lab, *(http://www.publiclab.org/)* which communities used during the Gulf oil spill to create, archive, and improve documentation of the disaster's environmental impact.

Symma Finn, Ph.D., of the NIEHS Population Health Branch, hosted the presentation. As she explained, balloon mapping validated local concerns that things were not as cleaned up as seen in satellite images. "People on the ground understand their communities and their ecosystem a whole lot better than scientists give them credit for," Finn said, adding that scientists grounded in the grassroots can achieve what Native Americans term local ecological knowledge.

Balloon mapping, which uses free-source mapping software such as MapKnitter, *(http://mapknitter.org/)* has since been used to help detect inflows at the Gowanus Canal, a Superfund cleanup site in New York. Wylie said there are many more resources Public Lab offers. "One of the tools that Public Lab has developed is for doing low-cost thermal inspections of your home."

Wylie emphasized that these tools, along with others in development, can help both communities and government agencies. She pointed to a collaboration that involved Federal Emergency Management Agency (FEMA) use of a Public Lab tool shortly after Hurricane Sandy. "[It] enabled 6,000 people to get online and participate." People searched images of the New Jersey coast to identify the ones with the most damage, to help FEMA target its response.

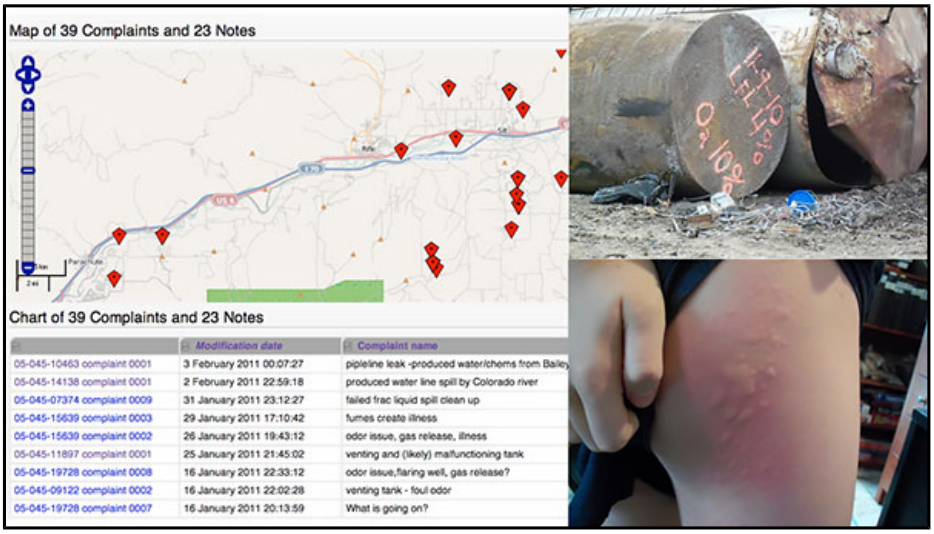
Community-based data collection and analysis

Wylie also described civic science data resources, and pointed to The Endocrine Disruption Exchange,

(http://endocrinedisruption.org/)
which has compiled a database of chemicals and several metals used in natural gas development. Finn echoed Wylie's argument about the potential for data collected by communities to guide research. "It may bring up questions or hypotheses that we would not have thought of [otherwise]," she said.

Another example Wylie shared is extrAct,
(http://www.pbs.org/idealab/2010/11/mit-unveils-civic-tools-for-communities-affected-by-natural-gas327/)
a suite of publicly accessible databases and maps that help aggregate grassroots efforts. She said the goal of extrAct is to promote communication. "For instance, [extrAct can help] communities dealing with oil and gas extraction find each other and build a community of concern around that industry - particularly for land owners, who tend to experience issues in real isolation - trying to create an infrastructure for people to share their problems and to start attracting researchers to look at their cases."

(Joe Balintfy is a public affairs specialist in the NIEHS Office of Communications and Public Liaison.)



The WellWatch website is an extrAct tool that maps complaints and tracks issues, including health outcomes, near oil and gas wells. Wylie said it is a platform for rigorous grassroots mapping and epidemiology that creates support networks across communities. (Photo courtesy of MIT Comparative Media Studies)

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