Everything Flows and Nothing Remains:

Some Challenges in Gathering Indigenous and Local Knowledge of Water, and How to Overcome Them

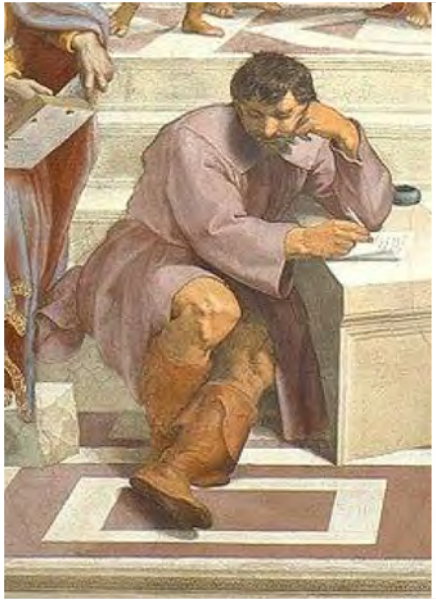
Humans have been pondering water and the meaning of knowledge itself through water, forever.

πάντα χωρεῖ καὶ οὐδὲν μένει
“Everything flows, and nothing remains.”

δὶς ἐς τὸν αὐτὸν ποταμὸν οὐκ ἂν ἐμβαίης.
“You could not step in the same river twice.”

“Water is life!”

Its nature requires us all to approach it with a curious mind and open heart.



Left: Heraclitus. Right: copyright Christi Belcourt

Challenge # 1 - Incorporating Indigenous Knowledges into Science-based Management

Incompatibilities between local, Indigenous, or traditional knowledges and science are often rooted in the inherent differences between qualitative and quantitative research paradigms, not in science vs TK itself.

We have to build a better bridge.

Solution: Bring a Sense of Craft to Your Research

- Look beyond the science-based approaches to water management. Establish a community-based context for what good water is, and how it is made.
- Both **quantitative** stewardship (water levels/turbidity/contaminants, ie. numbers) AND **qualitative** monitoring (taste/smell/history/relationships/stories).
- Use the language that best conveys what water is to you.

Challenge #2 - Representing the Use of Water

Qualitative research methods can help establish a context for water management.

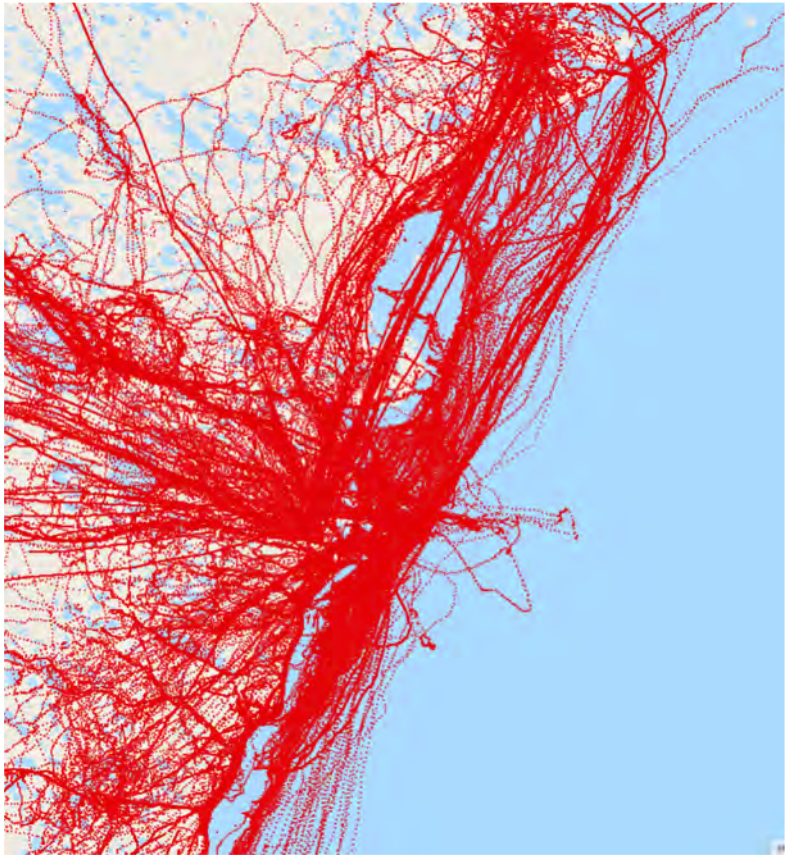
But conventional recall-based methods of land use and occupancy mapping do not serve the nature of water well.

A community's use of water is deep and extensive and multi-faceted.

Marine travel routes reported via semi-directed interviews

Solution: Choose the Right Research Strategy

- Choose a research strategy that will enable you to gather the richest, thickest description possible.
- Do not exclude younger, active water users or knowledge-holders from your research.



Right: Marine travel routes gathered by harvesters using GPS-enabled mobile app (right).

Community-based Monitoring

Community-based Monitoring:

Recognizes that local residents have a central stake in environmental monitoring, and undertakes to apply their local knowledge, skills and practices to the process.

A unique forum to generate interdisciplinary information, or a “multiple evidence base” that can include TK and Western Science.

Monitoring Types I

Cultural Systems Based Monitoring: Hunting, fishing, and harvesting communities are sensitive monitoring networks already. Local people document their food getting practices and observations based out of their knowledge and experience.

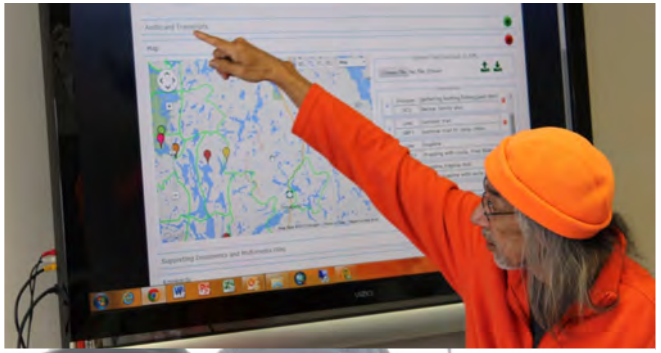
Specialized Sentinel / Guardian: Certain community members to “keep watch” and record place-based observations or gather data/information. Monitors are typically hired for the position and receive specialized training. Varying degrees of outside involvement with governments or researchers.

Photo courtesy:"Coastal Guardian Watchmen Confront armed trophy hunters to save grizzlies" National Observer, Febuary 2015

Monitoring Types II

Community Participatory / Surveying: Information is gathered by surveying local residents' perceptions of the status and changes of environment, past and present. Surveys designed with varying input from community, and analyzed using social science methods.

Citizen Science: Conventional science research projects that enlist local residents as paid or volunteer data gatherers. Activities are usually led by university or government scientists, and observers use scientific instruments to record data -- but not their perceptions.



New Approaches

Remote sensing with cultural systems monitoring

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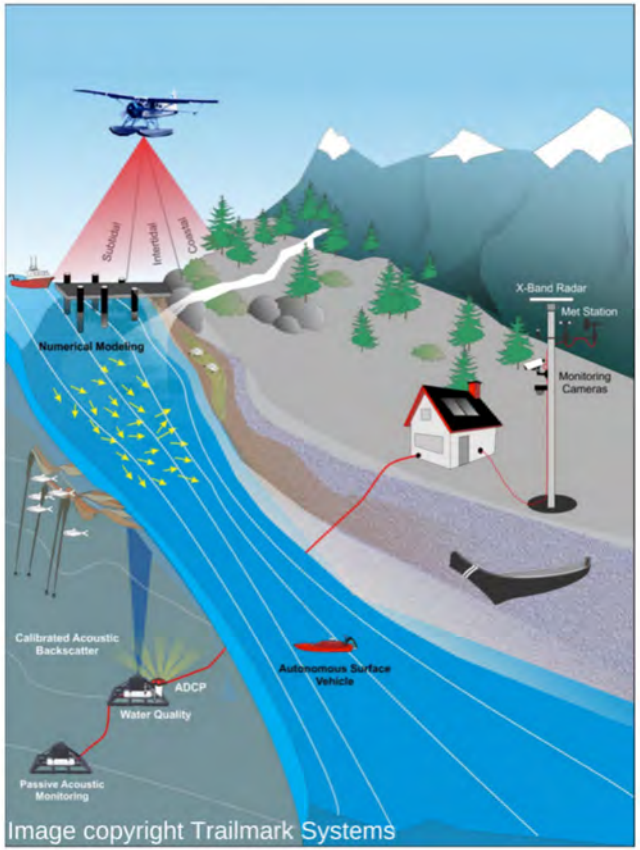
Novel insights into environmental phenomena



Warning: Don’t Become a “Handmaiden of Science.”

- It’s great that so much water quality data is now being gathered by Indigenous people, often guardians or stewardship staff.
- But there should be much more to Indigenous participation in science than mere data collection.
- Consider following a working-together approach to knowledge co-production, or to create “situated knowledge.”
- Every aspect of the research program and management should be co-created: hypothesis development, data collection, analysis + contextualization, and application.

THANK YOU!

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