Community knowledge can be as valuable as ecological knowledge in environmental decision-making

June 12 2019

An understanding of community issues can be as valuable as knowing the ecology of an area when making environmental decisions, according to new research from the University of Exeter Business School.

Billions of dollars are spent on environmental management each year across the globe but the approach has largely been to focus on a single ecosystem or species. This narrow viewpoint has produced mixed results because it does not always consider the value of other information in the bigger picture.

The research looked at what information would give real value to help decision making in order to achieve the best possible outcome. They examined four socio-ecological systems which represented a range of real-life environmental issues, two from fisheries and two from sustainable agriculture. Study one looked at how to maximise fish populations in an area with existing territorial fishing rights; study 2 was a project to re-stock salmon in a recreational fishery. The third study looked at pest control work within an agricultural production system and the last concerned the clearing of forest areas for agricultural use.

The researchers specifically focused on the relative value of gathering ecological versus social information; for example, understanding how fish populations grow over time versus the level of influence or engagement within local fishing communities.

They discovered that in the cases where managers needed community engagement (case studies focusing on increasing the size of fish populations or decreasing forest clearance), understanding what influenced this engagement was more important for success than the ecological aspects. However, the opposite was true when considering the two other ecological programmes on re-stocking salmon stocks and pest control work, where the need for widespread community engagement was less important.

The study concluded that overall information about social and ecological factors can be equally important depending on the characteristics of management actions.

"Our research shows that environment managers should always focus on improving their understanding of the community or environment that is directly impacted by their management actions," said Dr. Katrina Davis of the Land, Environment, Economics and Policy Institute (LEEP) at the University and lead author of the report.

"It would help managers to try to understand what the value is of each piece of knowledge, then bring those pieces together to create a holistic plan. For example, the dynamics of a local community will play a huge role in the success of an environmental protection programme when managers are directly engaging with that community, but if managers are targeting agricultural pests, then understanding the drivers of community engagement will be less important."

The research was also carried out by Dr. Jonathan Rhodes, University of Queensland, Dr. Iadine Chades from the Commonwealth Scientific and Industrial Research Organisation and Dr. Michael Bode from the Queensland University of Technology.

The research also showed that understanding how and why a community

would engage with environmental management will be more important than understanding how one community will influence another to engage, or not.

"We believe that considering a wide range of factors, as well as understanding the value that information brings, can improve outcomes for our environment as a whole," added Dr. Davis.

The study, General rules for environmental management to prioritise social-ecological systems research based on a value of information approach is published in the *Journal of Applied Ecology*.

More information: Katrina J. Davis et al, General rules for environmental management to prioritise social ecological systems research based on a value of information approach, *Journal of Applied Ecology* (2019). DOI: 10.1111/1365-2664.13425

Provided by University of Exeter