Social media used to collect information on marine wilderness

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(Phys.org) -- Researchers from Murdoch University's Cetacean Research Unit are working with colleagues from Duke University in the US and Marine Ventures Foundation on an innovative project that will use social media to collect information on one of the world's last great marine wildernesses. Ashley Yeager from Duke University explains.

Just offshore from the rust-colored cliffs of northwestern Australia lie what could be the world's richest petroleum and natural gas fields. The site is also "the last great marine wilderness left on Earth," said Duke University marine biologist Dave Johnston.

To study the remaining wilderness, Johnston has teamed with a Duke

alumnus and Australian colleagues at Murdoch University to create a citizen science experiment that will collect observations of the one of the last great marine wildernesses on earth by local residents, traditional owners and tourists through social media tools.

"Our greatest concern is that the traditional environmental assessment process is overwhelmed," said team member Associate Professor Lars Bejder, a marine biologist in Murdoch's Cetacean Research Unit. "The current approval process does not allow sufficient time to document baseline information on the ecosystems of Northwestern Australia through standard scientific means and still keep pace with the rate of development. We hope our approach can help fill some of these gaps," he said.

During several expeditions to Western Australia, the team will document the state of the coastal ecosystems, with a particular focus on the snubfin and humpback dolphins. They also hope to build a network of citizen scientists who will share their experiences in the region through Twitter, Flickr, Facebook and YouTube updates. The updates will automatically feed, in real-time, onto an open-access map.

The team hosted their first public lecture on the project at 5:30 WST local time on May 23 at Murdoch University in Perth. This is the first, large-scale experiment in Australia to draw on citizen scientists and social media for data, and the team is not sure what the outcome will be.

"We've seen how these democratizing technologies have incredible power to affect lives. Now, they could do the same for the environment," said team member Thomas McMurray, who earned his doctoral degree in engineering at Duke and serves on the board of visitors for its Nicholas School of the Environment. McMurray is also president of the Marine Ventures Foundation, which, with support from BlueCloud Spatial, will provide the technical support to make the scientists' and

citizens' data publicly available.

The main site of research will be in the Kimberley, home to 40,000 Aboriginal Australians. Endangered sea turtles lay eggs on the region's shores, and just offshore an estimated 28,000 humpback whales breed in the winter. The nearshore coastal waters are also home to the little-known Australian snubfin and humpback dolphins.

Bejder and Johnston are particularly concerned about the dolphins because of the lack of information on the abundance, habitat needs and behaviors of the two species. The government has designated certain areas as marine sanctuaries to protect the breeding grounds of humpbacks and other fragile marine ecosystems. But many of those protected regions border on, or overlap with, sites rich in natural resources and the sanctuaries have not been completely set apart from development.

"There's billions of dollars of natural gas out there that could make the country rich," McMurray said. "With the shaky state of the world economy and close proximity to China, the oil and gas available in the region and at other sites could turn Australia into an energy superpower that could rival Venezuela and Saudi Arabia." He said that the Australian government may be faced with difficult choices when balancing the development of wealth-building resources with the conservation of biological and cultural ones.

In 2010, oil and gas industries achieved record growth in Western Australia, exporting nearly $103 billion USD. Another $253 billion USD of projects are scheduled or already under construction. "The region is clearly open for business. But what’s not clear is how the development of oil and gas resources will affect many species or the habitats they rely on," Johnston said.

To support the growing industry, the government has approved great expansions to the region's industrial ports. The construction includes digging hundreds of millions of gallons of sand from beneath port waterways to make them navigable to larger ships. Moving all of that sand and sediment is causing unprecedented, large-scale changes to coastal habitats, which "are likely to affect species such as coastal dolphins that are dependent on the same nearshore environment," Bejder said.

As the different types of data accumulate, the team will be able to apply new analytical tools to figure out how and where human activities and marine resources overlap and potentially conflict. The data and the map may "help provide transparency on what oil and gas companies are doing," McMurray said.

Provided by Murdoch University

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