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STUDY LED BY INDIGENOUS PEOPLE UNCOVERS GRIZZLY BEAR ‘HIGHWAY’

UNIQUE RESEARCH COLLABORATION GUIDED BY FIRST NATION CUSTOMARY LAW REVEALS MAJOR SALMON-FEEDING GRIZZLY AGGREGATION IN BRITISH COLUMBIA

A novel, First Nations-led research collaboration has revealed a previously undocumented grizzly bear aggregation in coastal British Columbia, one of the most southerly aggregations of salmon-feeding grizzlies in North America. Using non-invasive DNA analysis, the authors describe a grizzly bear “highway,” identifying nearly 60 individual bears, many who travelled hundreds of miles from surrounding areas to feed on autumn-spawning salmon in the Koeye River. The research was guided by the customary law and cultural practices of the Heiltsuk First Nation and [recently published](#) in the journal *Ecology and Society*.

Conducted over three years, the study also provides potential early evidence of a declining bear population in the area and links this to the decreasing availability of salmon. The project demonstrates a model for resource management by indigenous people, in which research is embedded within a socially and culturally appropriate framework.

“What’s really novel here is the set of relationships, and deep cultural histories, that guided applied conservation science,” said Chris Filardi, director of Pacific programs at the American Museum of Natural History’s Center for Biodiversity and Conservation and an author on the paper. “In this collaborative setting, results are directly relevant to tribal leadership impacting conservation in ways that elude most scientific studies.”

The study was centered in the Koeye River Conservancy, one of numerous protected areas designated by the Heiltsuk First Nation in the Great Bear Rainforest of British Columbia in 2009. The Heiltsuk people settled in this area more than 9,000 years ago and are now reasserting their rights as guardians of the Koeye River. To realize this renewal,

they established the Qqs (Eyes) Projects Society, a Heiltsuk-driven nonprofit that builds capacity for research, monitoring, and tribal governance of high-value stewardship areas. In 2006, the Heiltsuk people partnered with the Museum and The Nature Conservancy to implement a grizzly bear survey project with a unique dimension: from the outset, the study was designed to uphold the Heiltsuk Nation's *Gwi'ilas*, or customary law, a set of guiding principles that frame a worldview focused on core values.

"What appealed to us was the opportunity to root science in strong cultural stewardship frameworks," said Qqs' William Housty. "We articulate specific Heiltsuk laws and customs related to respect and reciprocity and match them with scientific tools and knowledge to put those principles in action."

During the survey, grizzly bear hair was collected as the animals walked by scented wire snares set up in the area during salmon-spawning season. As part of the non-invasive aspect of the work, the "baits" did not provide rewards to the bears visiting the snares.

At the same time, the team calculated the accessibility of salmon to bears with an index based on the number of salmon that return to the Koeye each year; water flow; and water visibility. Over the three-year survey, they found a decreasing population of bears in the Koeye, likely tied to declining salmon accessibility.

"This study shows that protected areas are not enough. We knew that bears are wide-ranging, but this study shows how vulnerable they are to a variety of threats," said Richard Jeo, a staff scientist for The Nature Conservancy. "Scientific insight can help guide management but the fate of these bears and the rainforest where they live is still largely in the hands of a few First Nations."

"We want to practice land and resource management with strong information empowering our decision makers," Housty said. "Whether it's regulating activities like forestry and tourism or indigenous-led advocacy to end trophy hunting for bears, ensuring that we ourselves are leading the best available science is a critical part of asserting our sovereignty and stewardship responsibility."

The next step for the group is to expand survey work to include a broader sampling of culturally significant salmon streams, improve linkages to salmon monitoring, and directly involve Heiltsuk families and their histories with places they share with bears.

"What is most important is Heiltsuk-driven science across the range of areas used by

bears and people,” Filardi said. “Knowledge about the interwoven ecologies of bears, salmon, and people can guide actions unavailable in places farther south where bears and salmon have vanished, or across broader society, where we have not yet come to value bears and salmon as integral to our physical and spiritual lives.”

Funding for the collaboration was provided by The Nature Conservancy, Wilburforce Foundation, Disney Worldwide Conservation Foundation, and the American Museum of Natural History.

Ecology and Society paper: <http://www.ecologyandsociety.org/vol19/iss2/art70/>

AMERICAN MUSEUM OF NATURAL HISTORY (AMNH.ORG)

The American Museum of Natural History, founded in 1869, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses 45 permanent exhibition halls, including the Rose Center for Earth and Space and the Hayden Planetarium, as well as galleries for temporary exhibitions. It is home to the Theodore Roosevelt Memorial, New York State's official memorial to its 33rd governor and the nation's 26th president, and a tribute to Roosevelt's enduring legacy of conservation. The Museum's five active research divisions and three cross-disciplinary centers support 200 scientists, whose work draws on a world-class permanent collection of more than 32 million specimens and artifacts, as well as specialized collections for frozen tissue and genomic and astrophysical data, and one of the largest natural history libraries in the world. Through its Richard Gilder Graduate School, it is the only American museum authorized to grant the Ph.D. degree. In 2012, the Museum began offering a pilot Master of Arts in Teaching program with a specialization in Earth science. Approximately 5 million visitors from around the world came to the Museum last year, and its exhibitions and Space Shows can be seen in venues on five continents. The Museum's website and collection of apps for mobile devices extend its collections, exhibitions, and educational programs to millions more beyond its walls. Visit amnh.org for more information.

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