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TITLE: The challenges and opportunities in cumulative effects assessment

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ABSTRACT:

The cumulative effects of increasing human use of the ocean and coastal zone have contributed to a rapid decline in ocean and coastal resources. As a result, scientists are investigating how multiple, overlapping stressors accumulate in the environment and impact ecosystems. These investigations are the foundation for the development of new tools that account for and predict cumulative effects in order to more adequately prevent or mitigate negative effects. Despite scientific advances, legal requirements, and management guidance, those who conduct assessments—including resource managers, agency staff, and consultants—continue to struggle to thoroughly evaluate cumulative effects, particularly as part of the environmental assessment process. Even though 45 years have passed since the United States National Environmental Policy Act was enacted, which set a precedent for environmental assessment around the world, defining impacts, baseline, scale, and significance are still major challenges associated with assessing cumulative effects. In addition, we know little about how practitioners tackle these challenges or how assessment aligns with current scientific recommendations. To shed more light on these challenges and gaps, we undertook a comparative study on how cumulative effects assessment (CEA) is conducted by practitioners operating under some of the most well-developed environmental laws around the globe: California, USA; British Columbia, Canada; Queensland, Australia; and New Zealand. We found that practitioners used a broad and varied definition of impact for CEA, which led to differences in how baseline, scale, and significance were determined. We also found that practice and science are not closely aligned and, as such, we highlight opportunities for managers, policy makers, practitioners, and scientists to improve environmental assessment.

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