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Unraveling the blue paradox: Incomplete analysis yields incorrect conclusions about Phoenix Islands Protected Area closure

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Unraveling the blue paradox: Incomplete analysis yields incorrect conclusions about Phoenix Islands Protected Area closure

Abstract
In PNAS, McDermott et al. (1) analyze a 2014-2016 central Pacific fishing surge, focusing on the Phoenix Islands Protected Area (PIPA) inside the Kiribati exclusive economic zone (EEZ). The authors incorrectly attribute the surge to the anticipated industrial fishing closure of PIPA and describe the phenomenon as a blue paradox (i.e., an unintended negative consequence of a conservation policy). However, a broader analysis demonstrates that this surge was unrelated to the closure of PIPA and was due to a strong El Ni~no event that created a fishing surge across multiple EEZs and high seas, not just PIPA (2).

Keywords
unraveling, blue, paradox:, incomplete, analysis, yields, incorrect, area, conclusions, closure, about, phoenix, islands, protected

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In PNAS, McDermott et al. (1) analyze a 2014–2016 central Pacific fishing surge, focusing on the Phoenix Islands Protected Area (PIPA) inside the Kiribati exclusive economic zone (EEZ). The authors incorrectly attribute the surge to the anticipated industrial fishing closure of PIPA and describe the phenomenon as a blue paradox (i.e., an unintended negative consequence of a conservation policy). However, a broader analysis demonstrates that this surge was unrelated to the closure of PIPA and was due to a strong El Niño event that created a fishing surge across multiple EEZs and high seas, not just PIPA (2).

McDermott et al. (1) do not consider regional data that reveal confounding factors. Long-term catch data demonstrate that central Pacific fishing surges occur at irregular intervals, consistent with El Niño Southern Oscillation patterns (3). Data held by the Pacific Community (4) indicate that fishing surges also occurred in the central Pacific in 1994, 1997, 2002, and 2009, when El Niño conditions were prevalent (5). In 2014, 19.8% of purse seine effort occurred in the central Pacific, but then it increased to 31.4% in 2015, after PIPA was closed. This compares with an average of 9.3% for 1980–2017, providing further evidence that surges were caused by El Niño events and were unrelated to the PIPA closure.

Furthermore, the study used two distant archipelagos as control sites, without considering regional reports and data that demonstrate that these control sites host significantly different fisheries, with highly variable ratios of fishing between PIPA and these control sites (6). A more appropriate control would be to examine fishing in the Phoenix Islands EEZ inside and outside of PIPA, where oceanographic and fisheries characteristics are more similar.

McDermott et al. (1) appear to have missed these confounding factors because they limited their study to a recently developed database of vessel location data derived from the Automatic Identification System, which was not made compulsory for fishing vessels until after the period of the study (7). Consequently, vessel coverage is unknown, and significant limitations in the vessel data and satellite coverage during this time undermine its application without corroboration with other data sources (8).

Lastly, the study relies on behavioral assumptions that do not apply in a migratory fishery operated by foreign vessels in EEZs where the coastal state owns all fishing rights and catch history (9). While Kiribati is required to provide access to surplus catch, this is entirely at its discretion, and there is no obligation to provide rights or compensation to foreign vessels (10). Vessel operators, therefore, have no incentive to switch from more productive grounds in anticipation of a closure, as this will reduce profitability and there is little, or no, prospect of their obtaining benefits in the longer term. In our experience, vessels will fish as hard as they can in whichever area is most productive and accessible through licensing arrangements.

We welcome studies of concepts such as the blue paradox but recommend that future studies consider all relevant databases and apply a multidisciplinary approach to best inform marine conservation policy.

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Conflict of interest statement: Q.H. is a technical advisor to the PIPA Trust, and R.R. is a PIPA co-chief scientist.

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