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Oceanic rafting by a coastal community

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Abstract

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Oceanic rafting is thought to play a fundamental role in assembling the biological communities of isolated coastal ecosystems. Direct observations of this key ecological and evolutionary process are, however, critically lacking. The importance of macroalgal rafting as a dispersal mechanism has remained uncertain, largely owing to lack of knowledge about the capacity of fauna to survive long voyages at sea and successfully make landfall and establish. Here, we directly document the rafting of a diverse assemblage of intertidal organisms across several hundred kilometres of open ocean, from the subantarctic to mainland New Zealand. Multispecies analyses using phylogeographic and ecological data indicate that 10 epifaunal invertebrate species rafted on six large bull kelp specimens for several weeks from the subantarctic Auckland and/or Snares Islands to the Otago coast of New Zealand, a minimum distance of some 400-600 km. These genetic data are the first to demonstrate that passive rafting can enable simultaneous trans-oceanic transport and landfall of numerous coastal taxa.

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