

Does Global Warming Put Alaska's Aquatic and Coastal Ecosystems at Greater Risk of Invasion?

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With glaciers and permafrost thawing, villages threatened by eroding coastlines, and vegetation shifts already evident, Alaska is a visible 'epicenter' of climate-driven change. This change may pose new risks to Alaska ecosystems by facilitating the establishment of invasive species -- both by directly enhancing species' ability to survive and thrive in Alaska, and indirectly by altering or enhancing the strength of specific vectors of species transfer. For example, Chinese mitten crab, a potential predator of the eggs and alevins of Alaska's wild native salmon were recently estimated to be a low risk for successful invasion of Alaska's coastal waters. However, it was also estimated that a minor increase in near shore sea surface temperature could put many Alaska waters at risk of invasion. European green crabs, a potential predator and competitor of Alaska's important commercial crab species, is already estimated to be able to establish in a limited number of locations in Alaska, but a warming sea would expand the number of at risk locations. A reduction in sea ice could increase traffic along or even create entire new shipping lanes, and thus increase risks from ballast water transfer and hull fouling. More open water may also enable new offshore oil and gas drilling opportunities and this would require the movement of drilling rigs into Alaska waters (along with their associated biofouling communities?) from locations outside Alaska. These risks, some initial supporting evidence, additional information needs, and some management options for how to prepare for or avoid such risks will be illustrated.