


Infectious Diseases Affect Marine Fisheries and Aquaculture Economics

Kevin D. Lafferty (/search?value1=Kevin+D.+Lafferty&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, C. Drew Harvell (/search?value1=C.+Drew+Harvell&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, Jon M. Conrad (/search?value1=Jon+M.+Conrad&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, Carolyn S. Friedman (/search?value1=Carolyn+S.+Friedman&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, Michael L. Kent (/search?value1=Michael+L.+Kent&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, Armand M. Kuris (/search?value1=Armand+M.+Kuris&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, Eric N. Powell (/search?value1=Eric+N.+Powell&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹, Daniel Rondeau (/search?value1=Daniel+Rondeau&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹ and Sonja M. Saksida (/search?value1=Sonja+M.+Saksida&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true)¹

 View Affiliations and Author Notes

Vol. 7:471-496 (Volume publication date January 2015)

First published as a Review in Advance on September 12, 2014

© Annual Reviews

 View Citation

Abstract

Seafood is a growing part of the economy, but its economic value is diminished by marine diseases. Infectious diseases are common in the ocean, and here we tabulate 67 examples that can reduce commercial species' growth and survivorship or decrease seafood quality. These impacts seem most problematic in the stressful and crowded conditions of aquaculture, which increasingly dominates seafood production as wild fishery production plateaus. For instance, marine diseases of farmed oysters, shrimp, abalone, and various fishes, particularly Atlantic salmon, cost billions of dollars each year. In comparison, it is often difficult to accurately estimate disease impacts on wild populations, especially those of pelagic and subtidal species. Farmed species often receive infectious diseases from wild species and can, in turn, export infectious agents to wild species. However, the impact of disease export on wild fisheries is controversial because there are few quantitative data demonstrating that wild species near farms suffer more from infectious diseases than those in other areas. The movement of exotic infectious agents to new areas continues to be the greatest concern.

Keyword(s): [abalone \(/search?value1=%22abalone%22&option1=pub_keyword\)](#), [externality \(/search?value1=%22externality%22&option1=pub_keyword\)](#), [fish \(/search?value1=%22fish%22&option1=pub_keyword\)](#), [prawns \(/search?value1=%22prawns%22&option1=pub_keyword\)](#), [salmon \(/search?value1=%22salmon%22&option1=pub_keyword\)](#), [sea lice \(/search?value1=%22sea+lice%22&option1=pub_keyword\)](#).

Most Read This Month

Biological Impacts of Marine Heatwaves (/content/journals/10.1146/annurev-marine-032122-121437)

Kathryn E. Smith, Michael T. Burrows, Alistair J. Hobday, Nathan G. King, Pippa J. Moore, Alex Sen Gupta, Mads S. Thomsen, Thomas Wernberg and Dan A. Smale
pp. 119–145 (27)

Impacts of Climate Change on Marine Foundation Species (/content/journals/10.1146/annurev-marine-042023-093037)

Thomas Wernberg, Mads S. Thomsen, Julia K. Baum, Melanie J. Bishop, John F. Bruno, Melinda A. Coleman, Karen Filbee-Dexter, Karine Gagnon, Qiang He, Daniel Murdiyarto, Kerrylee Rogers, Brian R. Silliman, Dan A. Smale, Samuel Starko and Mathew A. Vanderklift
pp. 247–282 (36)

Hidden Threat: The Influence of Sea-Level Rise on Coastal Groundwater and the Convergence of Impacts on Municipal Infrastructure (/content/journals/10.1146/annurev-marine-020923-120737)

Shellie Habel, Charles H. Fletcher, Matthew M. Barbee and Kyrstin L. Fornace
pp. 81–103 (23)

The Impact of Fine-Scale Currents on Biogeochemical Cycles in a Changing Ocean (/content/journals/10.1146/annurev-marine-020723-020531)

Marina Lévy, Damien Couespel, Clément Haëck, M.G. Keerthi, Inès Mangolte and Channing J. Prend
pp. 191–215 (25)

The Physical Oceanography of Ice-Covered Moons (/content/journals/10.1146/annurev-marine-040323-101355)

Krista M. Soderlund, Marc Rovira-Navarro, Michael Le Bars, Britney E. Schmidt and Theo Gerkema
pp. 25–53 (29)

Ocean Acidification: The Other CO₂ Problem (/content/journals/10.1146/annurev.marine.010908.163834)

Scott C. Doney (/search?value1=Scott+C.+Doney&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Victoria J. Fabry (/search?value1=Victoria+J.+Fabry&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Richard A. Feely (/search?value1=Richard+A.+Feely&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true) and Joan A. Kleypas (/search?value1=Joan+A.+Kleypas&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true).
Vol. 1 (2009), pp. 169–192

Climate Change Impacts on Marine Ecosystems (/content/journals/10.1146/annurev-marine-041911-111611)

Scott C. Doney (/search?value1=Scott+C.+Doney&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Mary Ruckelshaus (/search?value1=Mary+Ruckelshaus&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), J. Emmett Duffy (/search?value1=J.+Emmett+Duffy&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), James P. Barry (/search?value1=James+P.+Barry&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Francis Chan (/search?value1=Francis+Chan&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Chad A. English (/search?value1=Chad+A.+English&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Heather M. Galindo (/search?value1=Heather+M.+Galindo&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Jacqueline M. Grebmeier (/search?value1=Jacqueline+M.+Grebmeier&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Anne B. Hollowed (/search?value1=Anne+B.+Hollowed&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Nancy Knowlton (/search?value1=Nancy+Knowlton&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Jeffrey Polovina (/search?value1=Jeffrey+Polovina&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Nancy N. Rabalais (/search?value1=Nancy+N.+Rabalais&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), William J. Sydeman (/search?value1=William+J.+Sydeman&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true) and Lynne D. Talley (/search?value1=Lynne+D.+Talley&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true).
Vol. 4 (2012), pp. 11–37

Larval Dispersal and Marine Population Connectivity (/content/journals/10.1146/annurev.marine.010908.163757)

Robert K. Cowen (/search?value1=Robert+K.+Cowen&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true) and Su Sponaugle (/search?value1=Su+Sponaugle&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true).
Vol. 1 (2009), pp. 443–466

Carbon Cycling and Storage in Mangrove Forests (/content/journals/10.1146/annurev-marine-010213-135020)

Daniel M. Alongi (/search?value1=Daniel+M.+Alongi&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true).
Vol. 6 (2014), pp. 195–219

Ocean Deoxygenation in a Warming World (/content/journals/10.1146/annurev.marine.010908.163855)

Ralph F. Keeling (/search?value1=Ralph+F.+Keeling&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true), Arne Körtzinger (/search?value1=Arne+K%C3%B6rtzinger&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true) and Nicolas Gruber (/search?value1=Nicolas+Gruber&option1=author&noRedirect=true&sortField=prism_publicationDate&sortDescending=true).
Vol. 2 (2010), pp. 199–229

+ More

About Annual Reviews:

- [What We Do \(/about/what-we-do\)](/about/what-we-do)
- [Press and News \(/about/press-center\)](/about/press-center)
- [Careers \(/page/about/careers-at-annual-reviews\)](/page/about/careers-at-annual-reviews)
- [Contact Us \(/page/about/contact-us\)](/page/about/contact-us)
- [FAQ \(/page/about/faq\)](/page/about/faq)
- [Help \(/help/main\)](/help/main)

Discover Content:

- [Journals A-Z \(/content/publications\)](/content/publications)
- [Impact Factor Rankings \(/about/impact-factors\)](/about/impact-factors)
- [Publication Dates \(/journal/pubdates\)](/journal/pubdates)
- [Online Events \(/page/events\)](/page/events)
- [Article Collections \(/page/collectionarchive\)](/page/collectionarchive)
- [Knowable Magazine \(https://knowablemagazine.org/\)](https://knowablemagazine.org/)
- [Katina Magazine \(https://katinamagazine.org/\)](https://katinamagazine.org/)
- [Against the Grain \(https://www.charleston-hub.com/about/about-against-the-grain/\)](https://www.charleston-hub.com/about/about-against-the-grain/)


Libraries and Institutions:

- [Subscribe to Open \(S20\) \(/S20\)](/S20)
- [Librarian Resource Center \(/page/librarians/librarian-resource-page\)](/page/librarians/librarian-resource-page)
- [Institutional Account Administration \(https://www.annualreviews.org/registration/signin-or-register.action?signInTarget=%2Fadmin\)](https://www.annualreviews.org/registration/signin-or-register.action?signInTarget=%2Fadmin)
- [Institutional Pricing \(/page/subscriptions/instchoice\)](/page/subscriptions/instchoice)
- [Usage Statistics \(/action/showInstitutionUsageReport\)](/action/showInstitutionUsageReport)
- [Charleston Hub \(https://www.charleston-hub.com/\)](https://www.charleston-hub.com/)
- [Katina | Librarianship Elevated \(https://katinamagazine.org/\)](https://katinamagazine.org/)
- [Charleston Advisor \(Archive\) \(https://annurev.publisher.ingentaconnect.com/content/annurev/tca/\)](https://annurev.publisher.ingentaconnect.com/content/annurev/tca/)
- [Against the Grain \(https://www.charleston-hub.com/about/about-against-the-grain/\)](https://www.charleston-hub.com/about/about-against-the-grain/)

Author Resources:

- [Article Preparation and Submission \(/page/authors/general-information\)](/page/authors/general-information)
- [Editorial Principles and Policies \(/page/authors/editorial-policies\)](/page/authors/editorial-policies)
- [Contact Us \(/page/authors/contact-us\)](/page/authors/contact-us)
- [Copyright and Permissions \(/page/about/copyright-and-permissions\)](/page/about/copyright-and-permissions)
- [Article Proposals \(/page/authors/author-](/page/authors/author-)

in

 (https://www.linkedin.com/company/annual-
(https://psycapiv.com/annual-reviews/))