

The Impact of Diseases on Crab and Lobster Fisheries

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Abstract:

Diseases are an integral part of crustacean fisheries. As with most fisheries, the question arises as to why one should be concerned about diseases when nothing can be done to limit their effects on the fished population. First, natural mortality is often assumed to be 0.2 in pre-recruits in many fishery models. Unfortunately, background levels can be much higher, especially during outbreaks of pathogens such as *Hematodinium perezii* or *Paramoeba pernicioso* where mortalities to the pre-recruit populations can approach 100% in endemic locations. Stock assessments and fishery models must incorporate losses to diseases if they are to be used in managing the resource. Second, several parasitic diseases cause marketability issues through stunting of the host or by causing unsightly lesions in the meat. Poor marketability negatively influences public opinion about quality of product. Third, certain fishing practices such as holding animals in receivers or impoundments and transporting animals between watersheds may help to spread diseases. By understanding transmission and pathogenicity of a disease, one can curtail or minimize such practices. Fourth, with the advent of live shipping of crabs and lobsters, there is an increased potential for the inadvertent introduction of pathogenic agents to new regions. This is not a trivial issue as introduced diseases have damaged the shrimp industry worldwide and have marginalized the aquaculture of abalone in California.

Diseases of the crabs and lobsters affect fecundity, recruitment, and mortality; yet, there are few practical responses to control or mitigate impacts of diseases in crustacean fisheries. Simple measures such as “culling” infected individuals on station or within a watershed, culling or removing dead animals to onshore fertilizer processing plants, limiting transportation of live animals, and changing “baiting practices” may limit the spread of pathogens to new locations. Changes in fishing policies may also be warranted. Regulations on minimum size may enhance populations of parasites that stunt their hosts, and the accumulation of stunted crabs may further impact the fishery. By using outreach or other education programs, fishermen could practice destroying stunted and parasitically castrated crabs, but many fishermen are loathe to keep or kill small crabs for fear of penalties or infractions from enforcement agencies. Further, many state or regional agencies have monitoring programs for stock assessments. Rhizocephalan barnacles, which cause alterations and appear similar to egg masses, could easily be included in such monitoring protocols. The wealth of information from such programs would enhance our

understanding of disease prevalence and association with host and environmental variables and help to document impacts on the individual hosts and the fished populations.