Infectious diseases of *Mazzaella laminarioides* (Rhodophyta): Changes in infection prevalence and disease expression associated with season, locality, and within-site location

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Abstract

This study addresses the issues of infection prevalence and disease expression in two wild populations of the red algal host *Mazzaella laminarioides* and their variability associated with locality, season, and spatial location of the host in the intertidal zone. Our results demonstrated that *Endophyton ramosum* is the most frequent infective pathogen affecting *M. laminarioides* in Matanzas and Pucatrihue. This situation prevailed through the year and across the high-to-low intertidal gradient. Although there was a general trend for lower levels of infection in late winter and early spring, only in a few, cases was well-defined seasonality detected. Furthermore, clear seasonal patterns, as displayed by deformative disease in the high intertidal zone of Pucatrihue, were attenuated in the middle and lower intertidal zones. Differences in levels of infection in *M. laminarioides*between the high intertidal zones of Matanzas and Pucatrihue diminished toward the low intertidal zone. Thus, effects of seasonality and locality on infection prevalence may be influenced, at least in part, by the position of the hosts an the intertidal zone.

Spatial distribution of the diseased individuals also varied along the beach. This pattern was consistent between the two sites and seemed related to wave exposure and the specific pathogen. Comparisons of the size distribution of noninfected fronds with their infected counterparts showed that infections by *Endophyton ramosum* and *Pleurocapsa*sp. more frequently affected medium-and large-sized fronds. This pattern was consistent temporally and similar in the two localities. Finally, a clear association between maturity and prevalence of infection was detected. This association resulted in most fronds of the noninfected segment of the host population being immature, whereas most mature fronds were infected. In conclusion, infectious diseases affecting the red alga *Mazzaella laminarioides* are a persistent phenomenon in wild populations of the host, although only a small segment of the infected populations displays the full expression of the disease. In spite of the suggested role of factors such as season, latitude, and spatial location of the host on disease prevalence and expression, additional studies are needed to understand fully the dynamics of infectious diseases in wild populations of algal hosts.