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# Host specificity in the species complex of the brown alga *Pylaiella littoralis*.

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## Abstract

Ecological speciation is an evolutionary process by which a change of habitat (or resources) leads to the formation of two new species exploiting different ecological niches. This phenomenon generally leads to a divergent selection leading to the formation of two lineages. *Pylaiella littoralis* is a filamentous brown algae that usually develops as an epiphyte on different host species of brown algae. Our study, combining barcoding and population genetics methods, revealed the existence of at least two new cryptic species (or semi-species) developing on specific hosts depending on the season. The first species occurs mainly in summer on *Fucus vesiculosus*, the second in spring and summer on *Ascophyllum nodosum* and the third in autumn on *Fucus serratus*. However, genetic analysis using microsatellite markers suggests that reproductive isolation is not complete and that these different groups are able to hybridize when individuals are found together in the field. Limited spore dispersal and close reproductive system ( $F_{is} > 0$ ) may favor the specificity of the host. Although the interactions between *Pylaiella spp* and the hosts remain to be elucidated, we can think that the ecological specialization could play a role of accelerator in the diversification of these groups.

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