{rokbox title=| Occurrence of amphipod NIS associated with the bryozoan B. neritina in marinas of the southern Iberian Peninsula in 2011 and 2019 :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-local-secondary-spread-martinez-2026-thumb-et-al.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-local-secondary-spread-martinez-2026-et-al.jpg{/rokbox}

Sofía Ruiz-Velasco, Pablo Saenz-Arias, José Manuel Guerra-García, María Pastor-Montero, Carlos Navarro-Barranco, **Gemma Martínez-Laiz**, Macarena Ros,2026. **Local secondary spread as an indicator for invasion risk: Tracking non-indigenous amphipods in recreational marinas of the southern Iberian Peninsula over time.**
Regional Studies in Marine Science.July 2026.105145.Volume 100.
10.1016/j.rsma.2026.105145

Abstract:Recreational boating plays a significant role in the introduction and spread of non-indigenous species (NIS), facilitating a progression in their invasion process. Periodic monitoring in recreational marinas has been widely recommended as a key management strategy for the early detection of NIS and preventing introductions. However, its utility for providing information on temporal trends at a regional scale and preventing or decelerating secondary spread remains poorly explored, especially for small organisms such as amphipods. Here, we examine spatio-temporal changes in amphipod assemblages from recreational marinas by comparing data from 2011 and 2019 in the southern Iberian Peninsula, a region characterized by a high recreational boating pressure. To this end, we sampled 13 marinas across the study area, using the bryozoan Bugula neritina (Linnaeus, 1758) as a biomonitoring tool in both years. We detected six NIS that were present in both 2011 and 2019. Comparisons between years revealed that most species were found in a significantly higher number of marinas in 2019, indicating their ongoing spread. This spread was highly context-dependent, with the intrinsic characteristics of the marinas significantly influencing the number of NIS, their abundance and their assemblage structure. Our spatio-temporal analysis highlights the progression in the invasion process of amphipod NIS in the southern Iberian Peninsula. This underscores the need to incorporate local secondary spread as indicator into preventing management strategies to effectively stop or slow the further spread of already established NIS.

Keywords:Invasion dynamics,Recreational boating,Mobile epibionts,Temporal trends,Secondary dispersal,Amphipoda.