



**HAL**  
open science

## Unexpected high records of non-indigenous foraminiferal species in the eastern English Channel

Pavard Jean-Charles, Richirt Julien, Vincent M.P. Bouchet, Holzmann Maria, Mcgann Mary, ERIC ARMYNOT DU CHÂTELET, Jean-Philippe Pezy, Jean-Claude Dauvin, Seuront Laurent

### ► To cite this version:

Pavard Jean-Charles, Richirt Julien, Vincent M.P. Bouchet, Holzmann Maria, Mcgann Mary, et al.. Unexpected high records of non-indigenous foraminiferal species in the eastern English Channel. FORAMS 2023, Jun 2023, Perugia, Italy. hal-04537923

**HAL Id: hal-04537923**

**<https://hal.science/hal-04537923v1>**

Submitted on 8 Apr 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## Unexpected high records of non-indigenous foraminiferal species in the eastern English Channel

PAVARD Jean-Charles<sup>1\*</sup>, RICHIRT Julien<sup>2</sup>, BOUCHET Vincent M.P.<sup>1</sup>, HOLZMANN Maria<sup>3</sup>, MCGANN Mary<sup>4</sup>,  
ARMYNOT DU CHATELET Eric<sup>5</sup>, PEZY Jean-Philippe<sup>6</sup>, DAUVIN Jean-Claude<sup>6</sup>, SEURONT Laurent<sup>1,7,8</sup>

<sup>1</sup> Univ.Lille, CNRS, ULCO, UMR8187, LOG, Laboratoire d'Océanologie et de Géosciences, Station Marine de Wimereux, F-59000 Lille, France; [jcharles.pavard@gmail.com](mailto:jcharles.pavard@gmail.com); [vincent.bouchet@univ-lille.fr](mailto:vincent.bouchet@univ-lille.fr); [laurent.seuront@seuront.com](mailto:laurent.seuront@seuront.com)

<sup>2</sup> Institute for Extra-cutting-edge Science and Technology Avant-garde Research (X-star), Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokosuka, Japan ; [richirt.julien@jamstec.go.jp](mailto:richirt.julien@jamstec.go.jp)

<sup>3</sup> Department of Genetics and Evolution, University of Geneva, 30 Quai Ernest Ansermet, CH-1211 Geneva 4, Switzerland; [maria.holzmann@unige.ch](mailto:maria.holzmann@unige.ch)

<sup>4</sup> U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025, USA; [mcmcann@usgs.gov](mailto:mcmcann@usgs.gov)

<sup>5</sup> Univ.Lille, CNRS, ULCO, UMR8187, LOG, Laboratoire d'Océanologie et de Géosciences, F-59000 Lille, France ; [eric.armynot@univ-lille.fr](mailto:eric.armynot@univ-lille.fr)

<sup>6</sup> Normandie Univ, UNICAEN, UNIROUEN, Laboratoire Morphodynamique Continentale et Côtière, CNRS UMR 6143 M2C, 24 rue des Tilleuls, 14000 Caen, France ; [jean-philippe.pezy@unicaen.fr](mailto:jean-philippe.pezy@unicaen.fr); [jean-claude.dauvin@unicaen.fr](mailto:jean-claude.dauvin@unicaen.fr);

<sup>7</sup> Department of Marine Energy and Resource, Tokyo University of Marine Science and Technology, 4-5-7 Konan, Minato-ku, Tokyo, 108-8477, Japan

<sup>8</sup> Department of Zoology and Entomology, Rhodes University, Grahamstown, 6140, South Africa

\*Corresponding author

The English Channel is known as a hotspot of Non-Indigenous Species (NIS). Besides aquaculture, their other main entry is commercial harbours due to globalised shipping through ballast waters and fouling. Recently, we witnessed the emergence of foraminiferal species originating from Asia yet unrecorded in the English Channel i.e. *Trochammina hadai*, *Virgulinitella fragilis*, *Spirobovina* sp. and to a lesser extent *Ammonia confertitesta*. After presenting some general statements on these newcomers in the eastern English Channel, and potential impacts of these species on their new ecosystems, we will illustrate the arrival of NIS species based on the *Ammonia tepida* morphogroup that includes the three pseudo-cryptic species, *A. aberdoveyensis*, *A. confertitesta* and *A. veneta*. The morphological discrimination of the latter three species has been recently established, but information on their ecology and habitats is still relatively scarce. This study aims to define distribution patterns of these species at eight sites scattered along the French coasts of the English Channel, covering a total of 39 stations. These sites were classified into two contrasted habitats based on the intensity of anthropogenic influence, either harbours (heavily modified habitat) or less impacted (moderately influenced habitat). The use of *IndVal* index (measuring the specificity of a species to a given habitat) clearly indicates that *A. confertitesta* is preferentially recorded in or close to harbours. We then compiled previously reported occurrences of *A. confertitesta* from literature and compared it with harbour locations in Europe, showing that the species almost always occurs in the vicinity of major commercial harbours. In some cases, *A. confertitesta* occurs relatively far away from these harbours, suggesting a secondary spread. Our results confirm that *A. confertitesta* is a NIS in the eastern English Channel, outnumbering its congeneric indigenous species *A. aberdoveyensis* and *A. veneta* and becoming the dominant *Ammonia* species in these heavily modified habitats.