

**Settlement, spread, seasonality, and succession of the invasive violet sea-squirt *Botrylloides violaceus* Oka, 1927 and the native star tunicate *Botryllus schlosseri* (Pallas, 1766) in The Netherlands**

Gittenberger, Adriaan<sup>1,2,3</sup>; Moons, Simeon<sup>2</sup>; Boer, Jonathan den<sup>4</sup>. <sup>1</sup>*GiMaRIS Marine Research, Inventory, & Strategy solutions, Niels Bohrweg 11-13, 2333 CA Leiden, The Netherlands;* <sup>2</sup>*Institute of Biology, Leiden University, P.O. Box 9516, NL-2300 RA Leiden, The Netherlands;* <sup>3</sup>*National Museum of Natural History "Naturalis", P.O. Box 9517, NL-2300 RA Leiden, The Netherlands;* <sup>4</sup>*BioInformatics, Leiden University of Applied Sciences, P.O. Box 382, NL-2300 AJ Leiden, The Netherlands*

To study fouling communities along the Dutch coast about 160 grey, 14 x 14 cm, PVC plates have been deployed at a depth of 1 meter, checked for species and replaced by new plates every three months since 2006. This is done within the scope of the so-called SETL-project. Beneath a fine layer of seawater every plate is digitally photographed in overview, and every species on a plate is photographed in detail. On a computer the plates on the overview photos were digitally subdivided in 25 equal grids, and every species per grid was scored on a monitoring form after which this data was stored in a database. The SETL database has grown exponentially, containing about 7,936,000 present/absence records for fouling species over the period 2006 to 2009 alone: 16 localities x 10 plates/locality x 4 seasons/year x 4 years x 124 species x 25 grids. The present study is the first in which a newly developed computer program was used that was custom made for the SETL-database to automatically calculate [1] whether a selected species or set of species has a preference for certain grids on a plate (e.g. the grids along the edges or the ones in the middle), and to calculate [2] whether a specimen or colony of a species is influencing (inhibiting or promoting) the settlement of other individuals of the same species and/or other species on the same SETL plate. In addition the Primer 6.1.10 (Primer-E) program was used [1] to calculate the relative dominance of species on plates, and [2] to plot the species accumulation curves as a test of whether the chosen sample size (no. plates) has been adequate to get a reliable indication of the total diversity of fouling species present. We here focus on our results regarding the settlement, spread, seasonality, and succession of the invasive violet sea-squirt *Botrylloides violaceus* and the native star tunicate *Botryllus schlosseri* in 16 different habitats from 2006 to 2009 along the coast of The Netherlands. These results are compared with data in literature from localities outside of the Netherlands, where these two species occur sympatrically and are both considered to be non-native.