

Risks of introducing non-indigenous species by shellfish transfer

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The Oosterschelde (South–West part of The Netherlands) is for more than a century an important area for shellfish aquaculture (*Mytilus edulis* and *Crassostrea gigas*). For aquaculture purposes, shellfish have been imported for a long time from various countries like France, Germany, UK, Ireland and North America. Besides an aquaculture area, the Oosterschelde is also an important marine protected area and inhibits a large diversity, not only of indigenous species, but also non-indigenous species (NIS), which makes the Oosterschelde the hotspot for marine NIS in The Netherlands. Many of those NIS were related to aquaculture as primary vector for introduction (Wolff, 2005). The most famous introduction is that of the Pacific oyster (*Crassostrea gigas*), that has been introduced in 1963 for aquaculture purposes and has expanded in the wild. At present the species covers large areas in the intertidal mudflats and competes with aquaculture species for food. Legislation is directed to prevent new introductions and further spreading of NIS into new areas with shellfish transfer.

Mussels are imported into The Netherlands to complement the local production and to provide mussel seed for the bottom culture. With the import of mussels, there is a risk of introducing new NIS into the Oosterschelde. Legislation requires intensive monitoring and shellfish associated species inventories (SASI) with the shellfish import. Risk analysis helps to quantify the risks associated with the different species. In this paper risks of introducing NIS associated to shellfish transfers will be discussed. Risk assessment has been applied to assess the risk of introducing NIS with the shellfish imports. The risk assessment is subdivided into a quantification of the chance of a successful introduction and the quantification of the effect. The assessments are made based on literature review and expert judgement.

References

Wolff, W. J. 2005. Non-indigenous marine and estuarine species in The Netherlands. Zoologische mededelingen 79: 1–116.