

Assessing the risks of aquatic species invasions via European inland waterways: From concepts to environmental indicators

Panov, V.E., Alexandrov, B., Arbaciauskas, K., Binimelis, R., Copp, G.H., Grabowski, M., Lucy, F., Leuven, R.S.E.W., Nehring, S., Paunović, M., Semenchenko, V. & Son, M.O.

[Panov, V.E., Alexandrov, B., Arbaciauskas, K., Binimelis, R., Copp, G.H., Grabowski, M., Lucy, F., Leuven, R.S.E.W., Nehring, S., Paunović, M., Semenchenko, V. & Son, M.O. (2009): Assessing the risks of aquatic species invasions via European inland waterways: From concepts to environmental indicators. – Integrated Environmental Assessment and Management 5: 110-126.]

Abstract

Over the past century, the potential for aquatic species to expand their ranges in Europe has been enhanced both as a result of the construction of new canals and because of increased international trade. A complex network of inland waterways now connects some previously isolated catchments in southern (Caspian, Azov, Black, Mediterranean seas) and northern (Baltic, North, Wadden, White seas) Europe, and these waterways act as corridors for nonnative species invasions. We have developed a conceptual risk assessment model for invasive alien species introductions via European inland waterways, with specific protocols that focus on the development of environmental indicators within the socioeconomic context of the driving forces–pressures–state–impact–response framework. The risk assessment protocols and water quality indicators on alien species were tested for selected ecosystems within 3 main European invasion corridors, and these can be recommended for application as part of the Common Implementation Strategy of the European Commission Water Framework Directive, which aims to provide a holistic risk-based management of European river basins. The conceptual structure of the online Risk Assessment Toolkit for aquatic invasive alien species is provided and includes 3 main interlinked components: online risk assessment protocols, an early warning system, and an information transmitter for risk communication to end users.