Monitoring of alien species at nuclear power plants in Sweden

Fagerholm Björn, Jan Andersson and Ann-Britt Florin

Institute of Coastal Research, Department of Aquatic Resources
Swedish University of Agricultural Sciences, Skolgatan 6, SE-742 42 Öregrund, Sweden
E-mail: bjorn.fagerholm@slu.se

Using huge quantities of seawater for cooling, coastal nuclear power plants may present suitable habitats for growing and a core for dispersal of non-indigenous species. Cooling water installations have proven to constitute favourable environments for sessile filter feeding organisms providing, substrate, constant food supply and elevated temperatures increasing growth (c.f. Rajagopal *et al.*, 2012). In addition, the outlet area of the cooling water will be artificially heated providing suitable habitat for non-indigenous warm water species that would otherwise not survive in the region. Despite this, monitoring at Swedish nuclear power plants so far have primarily focussed on effects of the heated cooling water on native fish and benthic macro fauna with no attention towards invasive species. Sessile organisms within the different paths for cooling water inside the power plants have also long been overseen. After a government initiative a program specifically focusing on alien and invasive species started in 2011 at the Ringhals power plant on the Swedish west coast. This program, still considered to be in a pilot phase, focus on scuba diving inventories in a gradient for area affected by cooling water. Monitoring waterways inside the power plant started in 2013. So far three species not indigenous for Sweden were observed taking advantage of the habitat affected by the heated cooling water: the brown algae *Sargassum muticum*, the red algae *Bonnemaisonia hamifera* and the Japanese oyster *Crassostrea gigas*. These were all found in the coastal areas close to the point where cooling water is emitted. Data from inside the power plant is still waiting for analyses. Development of monitoring of alien species at coastal nuclear power plants could constitute an effective early-warning system for aquatic invasive species

References

Rajagopal S, Jenner H.A,, Venugopalan V.P. (eds). 2012. Operational and environmental consequences of large industrial cooling water systems. Springer.