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Secondary use of offshore wind farms -

Settlement of juvenile European lobsters (*Homarus gammarus*)



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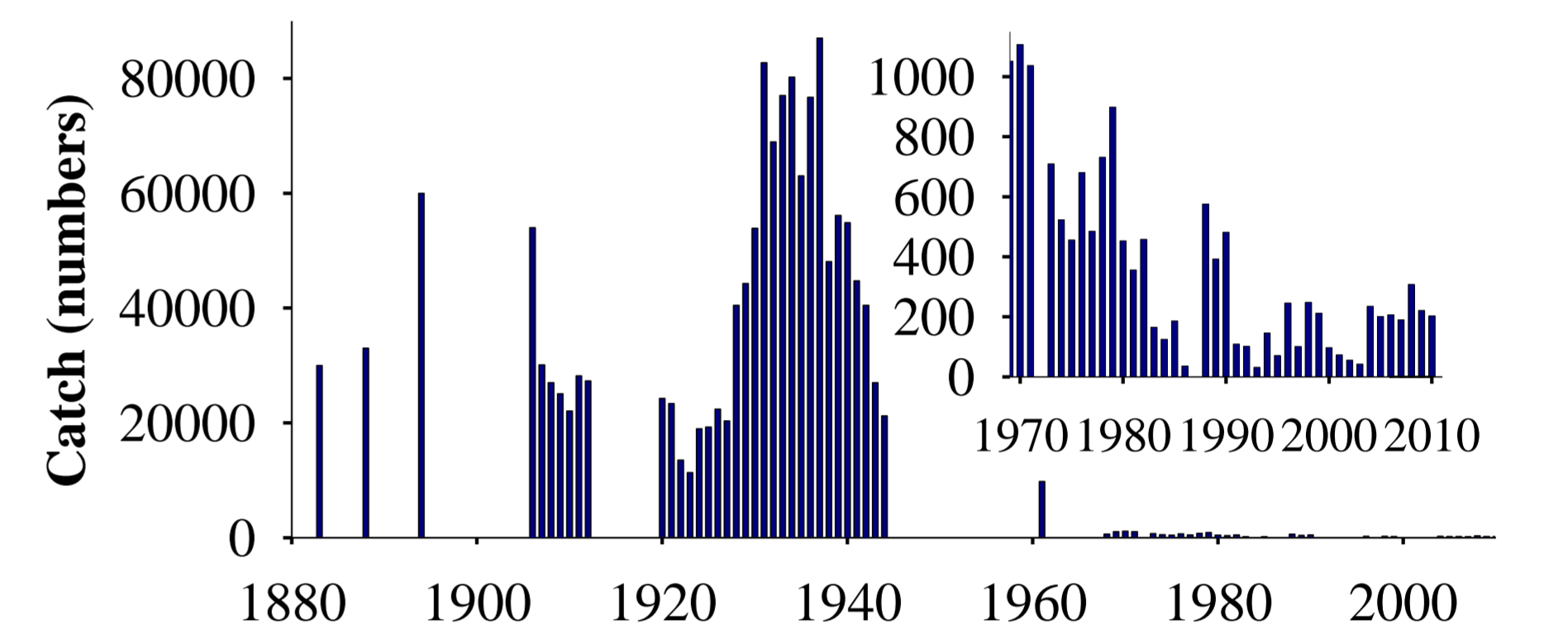
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We plan the co-use of offshore wind farms along the German coast for the settlement of endangered reef species such as the European lobster (*H. gammarus*). Most wind farms will be built in the natural species' range ⁽¹⁾.

Along the German coast, a small lobster population is only present at the rocky subtidal of the island of Helgoland. The local lobster stock has declined dramatically below a critical density since the 1960s ^(2, 3).



Legislative regulations may have prevented an extinction of the population but to date have not resulted in a significant recovery. Climate and environmental changes lead to a concern over the future recruitment potential of the lobster population at Helgoland ⁽⁴⁾.



Commercial lobster landings at Helgoland.

We suggest to transfer the results of the pilot project for restocking European lobster at Helgoland ^(2, 5) to offshore areas. We assume a successful settlement of hatchery-reared juvenile lobsters at wind turbine foundations and their score protections to be feasible and ensure the persistence of this species along the German coast.

Which number of juvenile lobsters are necessary for successful settlement?

How behave lobster inside an operating wind farm?

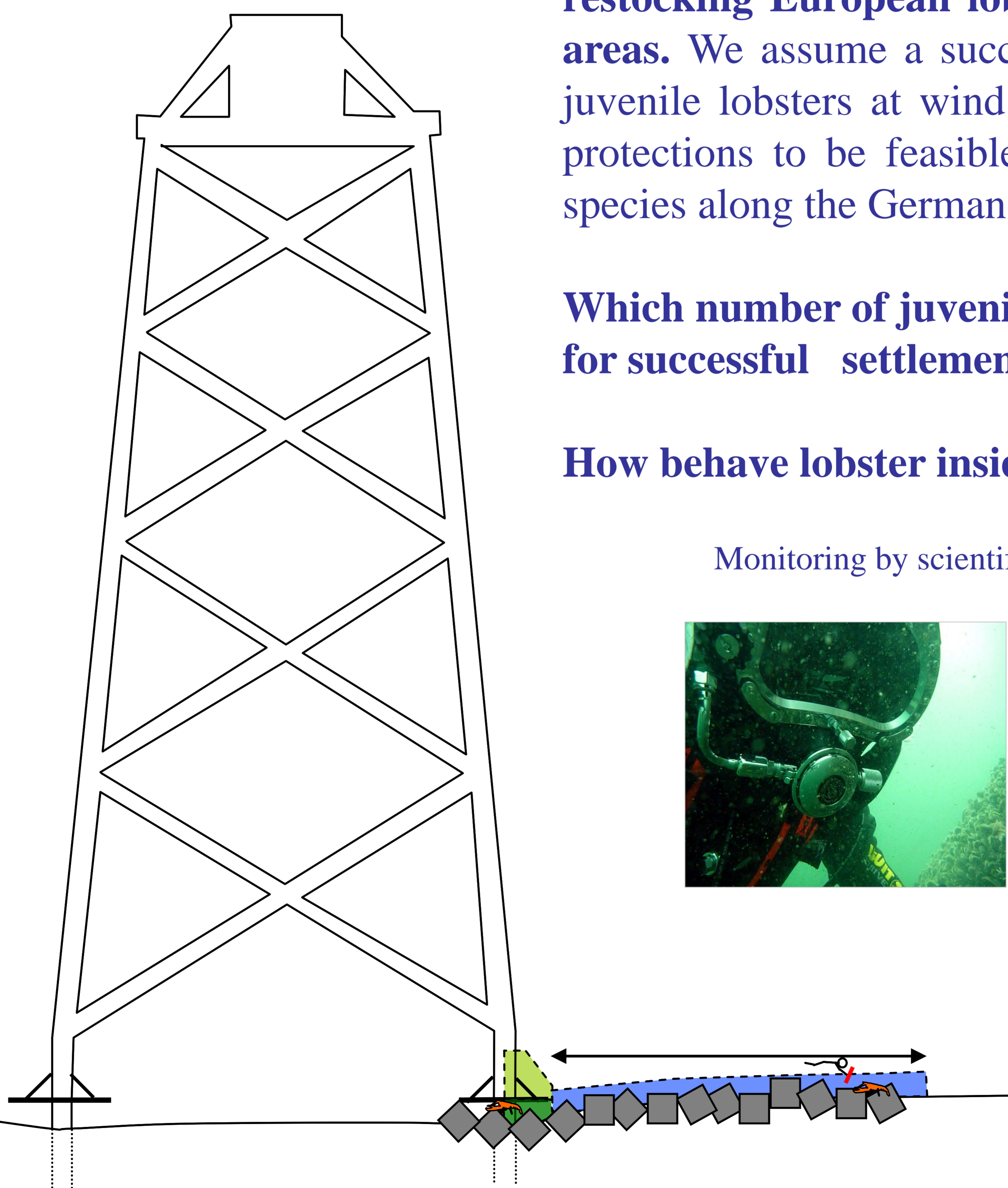
Monitoring by scientific divers and pot fishery.



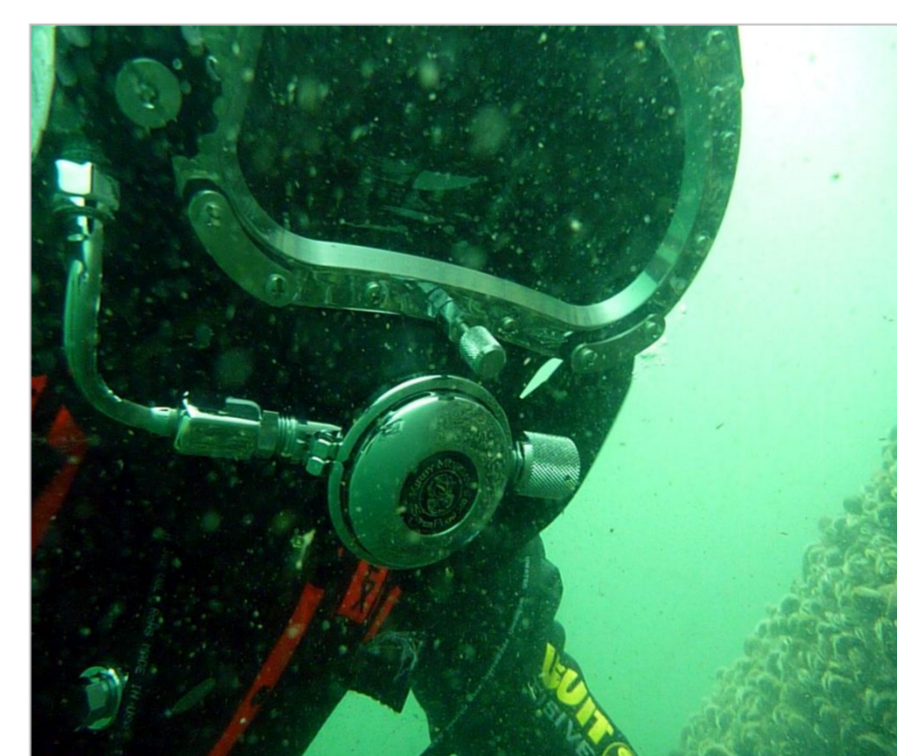
Hatchery-reared lobsters at the Marine Station Helgoland.



Public lobster release at Helgoland.



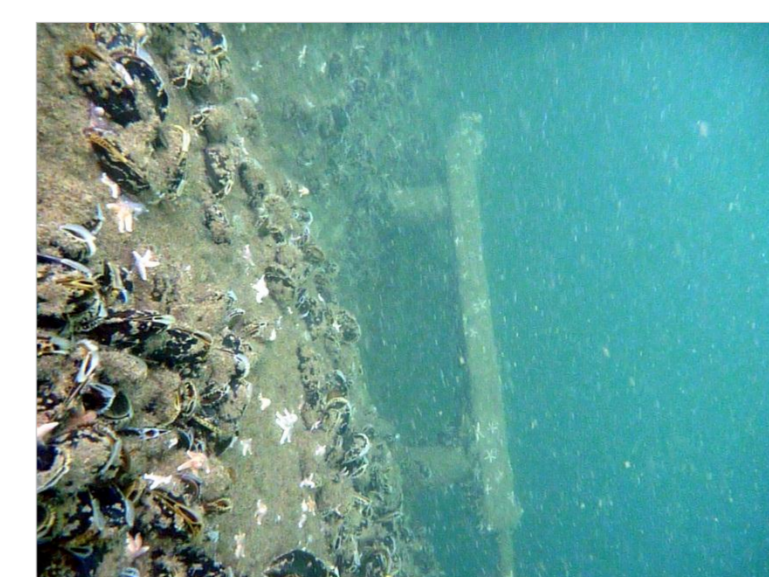
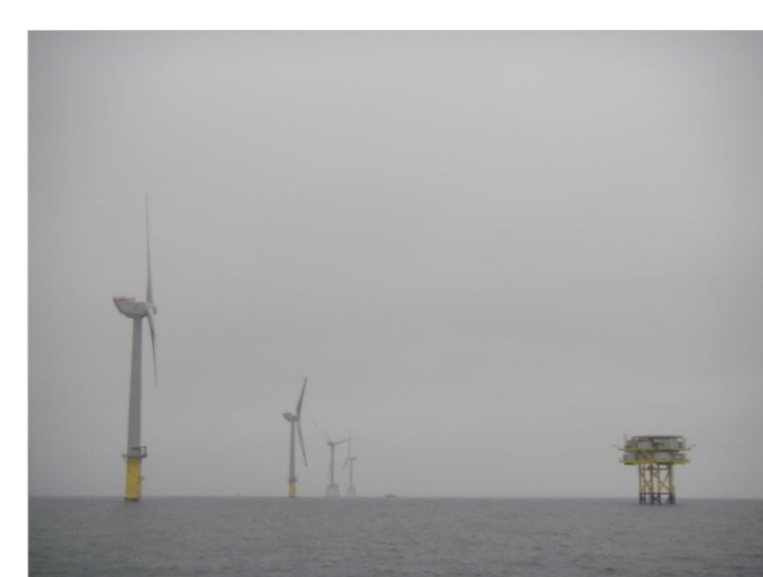
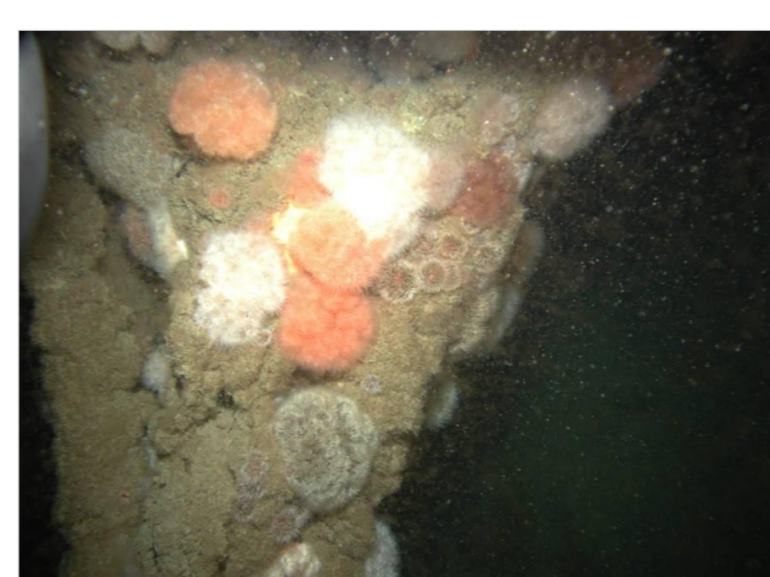
Potential prey and habitat for lobsters at wind farm foundations.



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References: (1) Krone, R., Schröder, A. (2010). Wrecks as artificial lobster habitats in the German Bight. Helgoland Marine Research, 65, 11-16. (2) Schmalenbach, I., Mehrtens, F., Janke, M., Buchholz, F. (2011). A mark-recapture study of hatchery-reared juvenile European lobsters, *Homarus gammarus*, released at the rocky island of Helgoland (German Bight, North Sea) from 2000 to 2009. Fisheries Research 108, 22-30. (3) Schmalenbach, I. (2011). Landings of European lobster (*Homarus gammarus*) and edible crab (*Cancer pagurus*) in 2010, Helgoland, North Sea. Alfred Wegener Institute for Polar and Marine Research - Biological Institute Helgoland, doi:10.1594/PANGAEA.755534. (4) Schmalenbach, I., Franke, H.-D. (2010). Impact of climate warming on the recruitment of an economically and ecologically important species, the European lobster (*Homarus gammarus*) at Helgoland, North Sea. Marine Biology 175, 1127-1135. (5) Schmalenbach, I., Buchholz, F., Franke, H.-D., Saborowski, R. (2009). Improvement of rearing conditions for juvenile lobsters (*Homarus gammarus*) by co-culturing with juvenile isopods (*Idotea emarginata*). Aquaculture 289, 297-303.