Hatchery-reared lobsters (*Homarus gammarus*) released around the rocky island of Helgoland (German Bight, North Sea)

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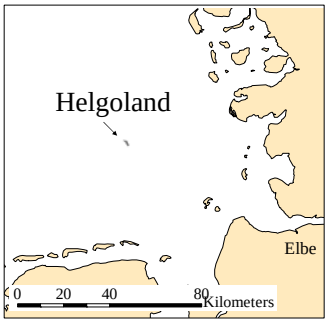
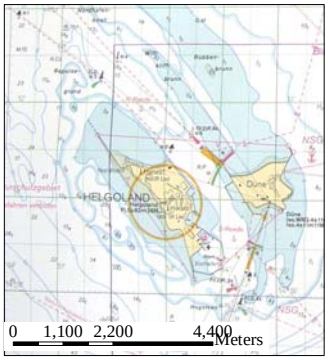
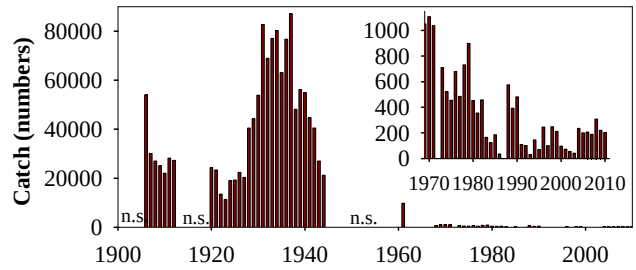
At Helgoland waters, the local population size of the ecologically and economically important lobster has decreased dramatically since the 1960s. Currently, the commercial landings range at only a few hundred animals per year (2010: 0.02 lobsters per pot lift) [1,2].





Legislative regulations[3] in 1981 and 1999 may have prevented a complete depletion of the local stock.

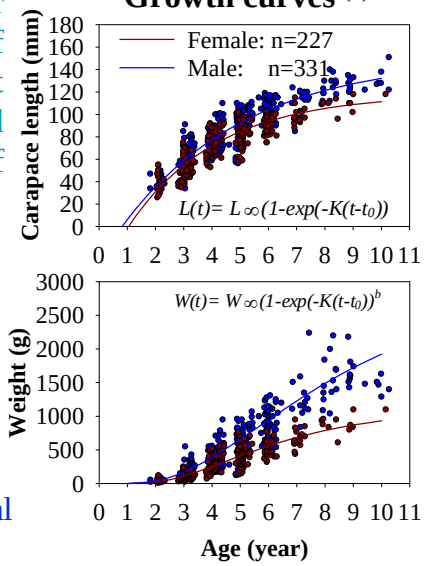
Commercial lobster landings



However, stock size is far below the critical recruitment threshold, and the main reason for the population's failure in recovery to dimensions as in the 1930s.

From 1999 to 2009, a pilot project [1] was carried out for restocking and to decide if a successful settlement of cultured juvenile lobsters at Helgoland is feasible. About 5,400 hatchery-reared lobsters[4] (15 mm CL) were tagged and released in the years 2000-2005 around the island of Helgoland.

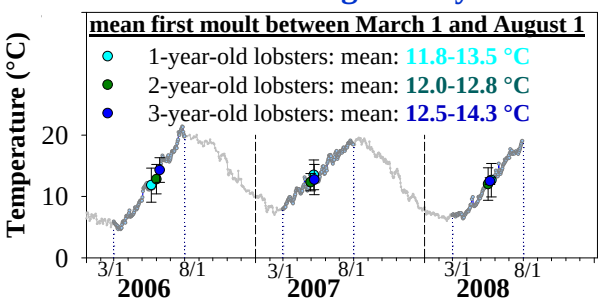
Growth curves [1]



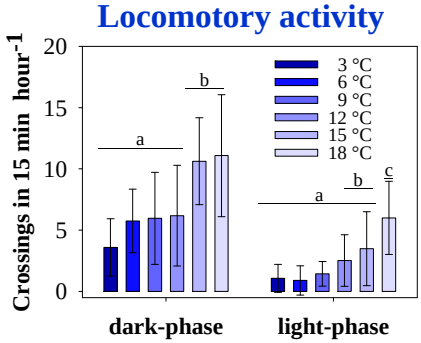
The recaptured lobsters were healthy, showed no evidence of visible diseases and about 95% had developed a crusher claw. Until 2009, up to 19% of single year-class cultured lobsters were recaptured and the smallest berried females caught were 83 mm CL and 4 years old. The minimum legal landing size (85 mm CL) of cultured lobsters was reached after 4-7 years. Cultured lobsters showed strong fidelity to their release sites, and thus remained near the rocky island.

Mobility and moulting were strongly temperature-dependent with a sharp seasonal threshold temperature close to 12°C.

Moulting activity



Locomotory activity



Laboratory studies on the moulting and locomotory activity help to assess the ability of lobsters to quickly select hiding places for survival and growth. Releases above the 12°C - threshold are recommendable, accordingly.

A basis has been laid to enhance this endangered lobster population by means of a large scale restocking programme and to establish further fishery and management regulations

References: (1) 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, see doi:10.1594/PANGAEA.727206 for supplementary data.
(2) 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.
(3) Ministerium für Landwirtschaft, Umwelt und ländliche Räume (1981, 1999). Landesverordnung über die Ausübung der Fischerei in den Küstengewässeren (Schleswig-Holsteinische Küstenverordnung – Küfo), Germany.
(4) 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.
Pictures: Schmalenbach, I., Wanke, C. Acknowledgments: The study was supported by the Ministry of Fisheries and Agriculture of the State of Schleswig-Holstein, Germany.