

First record of shanny *Lipophrys pholis* (Blenniidae) in Germany

Erstnachweis des Schans *Lipophrys pholis* (Blenniidae) für Deutschland

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Summary: In 2016 and 2017, adult and juvenile specimens of *Lipophrys pholis* (family Blenniidae) were recorded in rocky tidepools of Helgoland as a first record for Germany. The species, which is more common in south-western areas of the North Sea, shows tendencies to spread into the German Bight, which can be interpreted as an indication of a climate-induced range expansion.

Key words: *Lipophrys pholis*, first record, Helgoland (Germany)

Zusammenfassung: Im Felswatt von Helgoland wurden in den Jahren 2016 und 2017 adulte und juvenile Exemplare des Schans (Schleimlärche) *Lipophrys pholis* (Familie Blenniidae) als Erstnachweis für Deutschland in steinigem Gezeitentümpeln nachgewiesen. Die eher in südwestlichen Bereichen der Nordsee verbreitete Art zeigt Ausbreitungstendenzen in die Deutsche Bucht, was als Hinweis auf eine klimabedingte Arealerweiterung gedeutet werden kann.

Schlüsselwörter: *Lipophrys pholis*, Erstnachweis, Helgoland (Germany)

1. Introduction

The shanny *Lipophrys pholis* is the most common of the two blenny species (Blenniidae) found in the North Sea and is considered reasonably common there, mostly in British coastal waters. Diagnostic (in contrast to *Parablennius gattorugine*, the second blenny to be found in the North Sea) is the absence of supra-orbital tentacles (not to be confused with the small tentacles at lower nasal openings occurring in *L. pholis*). The preferred habitat is shallow water of rocky coasts, often in intertidal rock-pools, sometimes between algae (ZANDER 1986). Along the continental coastline of the North Sea the distribution is much more uncommon because of lower winter temperatures and lack of the preferred rocky habitat (CAMPHUYSEN & HENDERSON 2017). Up to now there have been no confirmed records for German coastal waters or the German Exclusive Economic Zone (EEZ). Only FRICKE (1987, p. 116) mentioned the species as “rare in the German North Sea; not in the

Baltic Sea”, but without further details. In the “Red List of Cyclostomes and Marine Fishes of the German Wadden Sea and North Sea Area” *L. pholis* is only listed as “non-endangered stray visitor” (FRICKE et al. 1995). In the current “Red List and Check List of Established Fishes and Lampreys of the Marine Waters of Germany” the species is no longer included (THIEL et al. 2013).

For the last two decades, however, CAMPHUYSEN & HENDERSON (2017) point to increasing occurrences from the Netherlands, initially mostly in the Dutch Delta area near dykes, but also further to the north, reaching the western Wadden Sea between 2008 and 2015. VAN BLEIJSWIJK et al. (2020) detected *L. pholis* by aquatic eDNA sampled in 2015 from the Marsdiep tidal inlet between the Dutch coastal North Sea and the western Wadden Sea south of the island of Texel. *L. pholis* was also detected in small numbers within a long-term monitoring programme (2010–2018) in the same area by means of passive fish traps (POIESZ et al. 2020).

One record of *L. ppholis* is documented in a study about discarded fish species in the Dutch brown shrimp fishery in the period 2009-2012 (STEENBERGEN et al. 2015), but without specifying geographical data. For Danish coastal waters two records of *L. ppholis* are reported from the “key-fishermen” project (2008-2010) referring to western Jutland (“Venø Bugt og Nissum Bredning”) and the Northern Kattegat (STØTTRUP et al. 2012). One more occurrence is documented from the Danish Wadden Sea west of the isle of Mandø (N 55.280643, E 8.606556) by NATURGUCKER.DE/ENJOYNATURE.NET (2013).

2. Observations and discussion

On the occasion of an extension of the “Fish Atlas of Germany and Austria” to the marine fishes of Germany and the Trilateral Wadden Sea area (BRUNKEN & VATTERROTT 2019, 2021), two records from Helgoland have now become known, which are apparently the first records of *Lipophrys ppholis* for Germany. During student internships at the Bremen University of Applied Sciences and the University of Cologne (G. SCHOOLMANN, pers. communication 2017), several specimens of *L. ppholis* were found in the rocky tidal zone of Helgoland (Fig. 1) on two consecutive years (Tab. 1) and documented by

photos (Fig. 2). The identification was made on site using FIVES (1986), ZANDER (1986), FRICKE (1987), MUUS & NIELSEN (1999) and RYLAND (2010). The identification of the specimens shown in the photos was also confirmed by ZANDER (personal communication 04.03.2021).

The juveniles were caught at low tide in tidal pools located in the south western intertidal zone (a.k.a. “Kringel”, site B in Figure 1) of the Helgoland abrasion terrace. The location in the lower eulittoral is characterized by hard substratum and big boulders of Bunter sandstone and debris. It is open to the sea and therefore exposed to waves and west winds. The biotope is dominated by barnacles (*Semibalanus balanoides*), periwinkles (*Littorina* spp.) and the macro algae *Mastocarpus stellatus*. The adults were found at low tide in rocky grooves in the sublittoral-eulittoral boundary of the northern tidal flat (a.k.a. “Nordwatt” and “Nordost-Watt”, respectively, site C in Figure 1). The Helgoland abrasion terrace there is a flat, gently sloping area. It is much less exposed to wind and waves as it is sheltered by the cliff and the northern mole. The substratum is mostly solid Bunter sandstone with grooves and ridges and scattered smaller boulders. The biotope is dominated by *Littorina* spp. and the macro algae *Fucus serratus* and, at the lower (sublittoral) levels, *Laminaria*

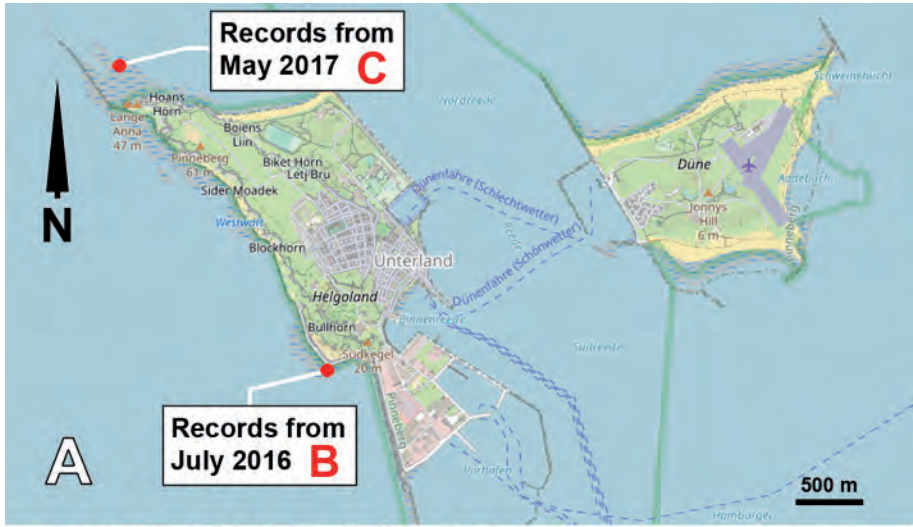
Tab. 1: Occurrence data of shanny *Lipophrys ppholis*.

Tab. 1: Funddaten des Schans *Lipophrys ppholis*.

Data	Coordinates	Remarks
July 2016	54.1771 7.8847	juveniles (n >10); total length ca. 2,5 cm; found at low tide in tidal pools of the south-western Helgoland rocky tidal flats
May 2017	54.1892 7.8695	adults (n = 2); total length ca. 10 cm; northern tidal flat Helgoland (rocky tidal flat)

Fig. 1: Finding places of *Lipophrys ppholis* and typical habitat. **A** Map Island Helgoland. **B** South-west flat (“Kringel”). **C** Northern flat (“Nordost-Watt”). Map adapted from OpenStreetMap.de [09.03.2021]. Habitat photos: René SONNTAG.

Abb. 1: Fundorte von *Lipophrys ppholis* und typisches Habitat. **A** Karte von Helgoland. **B** Südwest-Watt (sog. „Kringel“). **C** „Nordost-Watt“. Kartengrundlage OpenStreetMap.de [09.03.2021]. Habitatfotos: René SONNTAG.



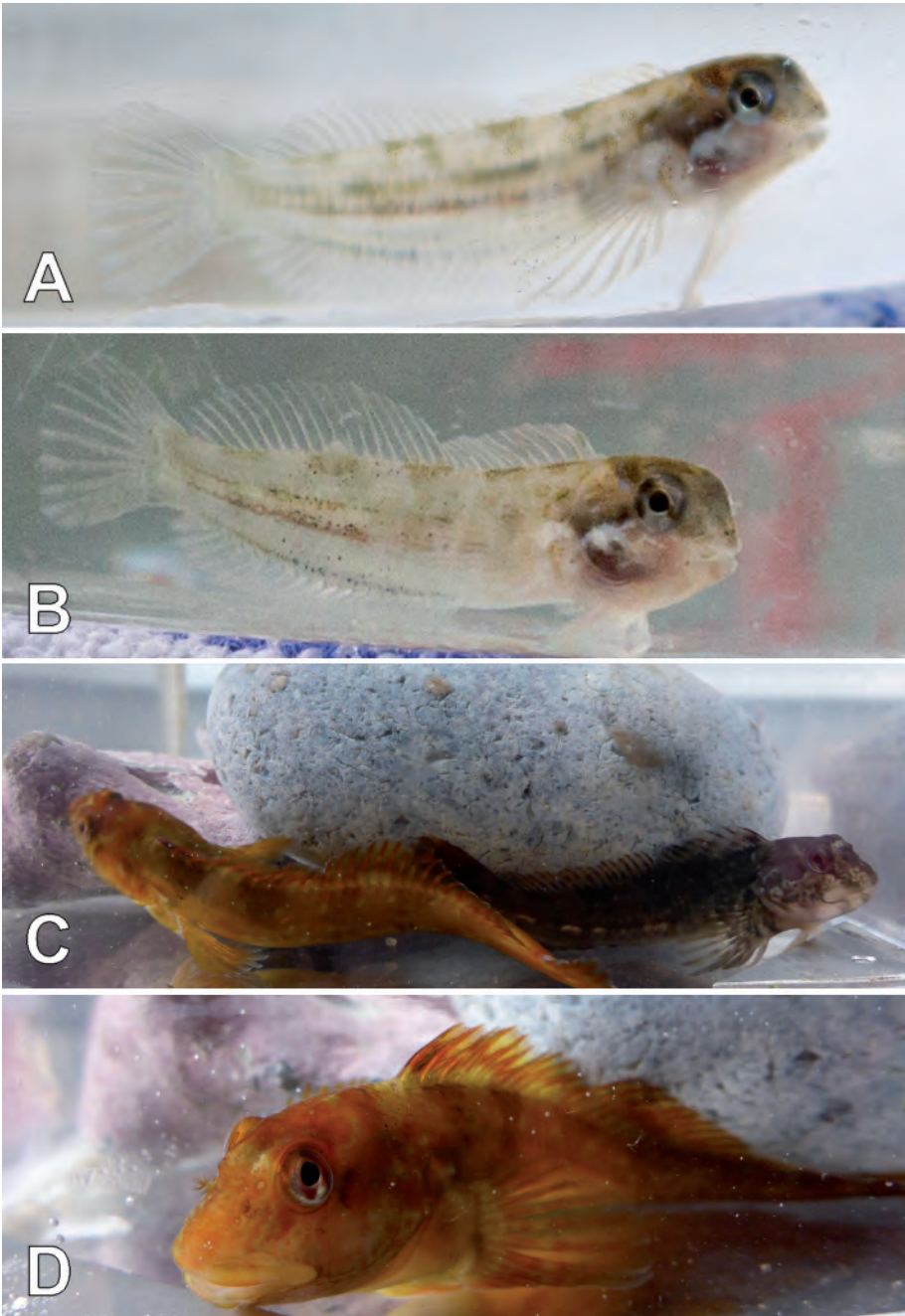


Fig. 2: First records of *Lipophrys pholis* from Helgoland. Juveniles from July 2016 (**A, B**) and adults from May 2017 (**C, D**). Photos: René SONNTAG (A), David WEBER (B), Gerhard SCHOOLMANN (C, D).

Abb. 2: Erste Nachweise von *Lipophrys pholis* für Deutschland (Helgoland). Jungfische vom Juli 2016 (**A, B**) und Adulte vom Mai 2017 (**C, D**). Fotos: René SONNTAG (A), David WEBER (B), Gerhard SCHOOLMANN (C, D).

spp., also encrusting red algae are frequent. In the tidal pools, under rocks and in fissures and grooves a lot of diverse decapods and small (juvenile) fishes can also be found. More detailed descriptions of both habitats and biotopes can be found for example in BARTSCH & TITTLE (2004), REICHERT & BUCHHOLZ (2006) and SCROSATI et al. (2011).

The question of whether or not *L. pholis* has always been an integral part of the German fauna, at least for the Helgoland area, cannot be clarified on the basis of the current findings. However, the species is explicitly not mentioned in older literature on the fish fauna of Helgoland. Neither in HEINCKE (1894, p. 107: "Earlier statements about the occurrence of a *Blennius* species at Helgoland always refer to *Carelopinus ascanii* [Note: Synonym of *Chirolophus ascanii*"]"), nor in the checklist of HARMS (1993). ZANDER reports intensive and frequent searches using landing nets in the rocky intertidal and dives in Helgoland's outer harbour, but without being able to detect the species (personal communication, 05.03.21).

Finally, it can be assumed that the current findings of *L. pholis* show a climate-induced range expansion. The effects of the gradual warming of the North Sea on the fish fauna have been sufficiently analysed and discussed by several authors (e.g. by DULVY et al. 200; SIMPSON et al. 2011; MONTERO-SERRA et al. 2015). Recent warming in the north-east Atlantic has caused distributional shifts in some fish species along latitudinal and depth gradient. Abundance of some small Lusitanian flatfish species has increased in the North Sea since 1970, indicating both a northward expansion and an increase in local density (VAN HAL et al. 2010). Abundance of warm water species such as the snake pipefish, red mullet and gurnards has been increasing in the Northeast Atlantic in response to climate change (TER HOFSTEDÉ et al. 2010). It can therefore be assumed that *L. pholis* could become a permanent part of the German marine fauna in the future. Occurrences can also be expected in other hard substrate-rich tidal habitats. The occurrence of this species should be given increased attention in fish fauna surveys.

Acknowledgements

We thank Gerhard SCHOOLMANN (University of Cologne), who contributed the record and photos of the adult specimens, and Claus Dieter ZANDER (University of Hamburg), for securing the species identification and valuable contributions to the discussion, and Jeremy HOOKWAY for the correction of the English-language manuscript, and David WEBER for additional photos, and last but not least the former student group of the International Degree Programme in Biomimetics at the City University of Applied Sciences Bremen (Niklas LEHMENSECK, Anne-Kristin LENZ, Katharina MEYER, Sebastian MULO, Nelly VON PUTTKAMER, Simon REICHEL, Myriam UHRHAN, Franziska WAHL and Timo WUNSCH) for spotting the juveniles.

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Received: 19.3.2021

Accepted: 10.04.2021

Published: 30.04.2021