

## Short communication

Thinlip grey mullet *Liza ramada* (Mugilidae) caught in a small Norwegian stream

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Two individuals of thinlip grey mullet *Liza ramada* were collected in a southern Norwegian brook (58° 22' N, 8° 37' E) on 12th September 2007. The fish were 8.7 and 9.0 cm in total length, 6 and 7 g in total mass, and most probably in their first year of life. The nearest known spawning area of the species is south of the English Channel, meaning that they had probably moved at least 900 km across the North Sea during their first growth season. To our knowledge, this is the first published observation of the catadromous thinlip grey mullet from a Scandinavian freshwater course.

Keywords: *Liza ramada*, catadromous, freshwater, young-of-the year, Norway

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The thinlip grey mullet *Liza ramada* Risso, 1826 (Mugilidae) is a migratory species classified as rare in the North Sea where it is sometimes caught along the Atlantic coast (Whitehead et al. 1986, Pethon 2005). Here we report thinlip grey mullet from a small brook in southern Norway.

During an electrofishing survey in coastal streams along the Skagerrak coast, two thinlip grey mullets (*Liza ramada*) were collected on 12th September 2007 at 15.30 hrs in the Sævelibekken (58° 22' N, 8° 37' E), a small brook near Grimstad town, southern Norway. The fish were anaesthetized with clove oil. They were 8.7 and 9.0 cm in total length with total wet masses of 6 and 7 g, respectively. Judged from their sizes, the fish were in their first year of life. They were photographed and after recovering from the anaesthetization, carefully returned to the brook and placed at the same location where they were caught.

The two individuals co-occurred in shallow water (ca. 10 cm) over gravel substratum ca. 100 m above the stream outlet. Water temperature at the time of sampling was 12 °C. The

Sævelibekken is a small brook with estimated mean annual water flow at 0.05 m<sup>3</sup>s<sup>-1</sup> (Jonsson et al. 2001). The brook water is fresh with specific conductivity of 11.5. Concentration of total phosphorus was 16.6 µg/l, total calcium was 5.22 mg/l, total organic carbon was 8.8 mg/l, pH 6.94, and the turbidity was 3.7 Formazin Turbidity Units (FTU). Sævelibekken also supports anadromous brown trout *Salmo trutta* Linnaeus, 1758 and threespine stickleback *Gasterosteus aculeatus* (Linnaeus, 1758), and catadromous European eel *Anguilla anguilla* (Linnaeus, 1758), flounder *Platichthys flesus* (Linnaeus, 1758) and gobiids *Pomatoschistus* sp.

The grey mullets are easily recognized by the two widely separated small dorsal fins, the anterior dorsal fin has 4 slender spines, the posterior dorsal fin is soft-rayed. The lateral line is absent. The thinlip grey mullet has silvery grey sides, a white belly and a dark grey back. It has a dark spot at the upper end of the base of the pectoral fins, and the upper lip, which has no papillae, is on its thickest narrower than the pupil of the eye (Figure 1), distinguishing it from thicklip grey mullet *Chelon labrosus* (Risso, 1826). Furthermore, it has no yellow spot on

the gill cover like the golden grey mullet (*Liza aurata* Risso, 1810) (Whitehead et al. 1986, Kottelat and Freyhof 2007). Thinlip grey mullet is distributed in the east Atlantic from Morocco to south Norway including the Mediterranean and Black Seas (20 – 60 °N, 18 °E – 42 °W) ([www.fishbase.org/](http://www.fishbase.org/)) and Baltic Sea ([www.eurocoml.org/](http://www.eurocoml.org/)), and spawns in sea water near the coast northwards to south England (Pethon 2005). The spawning season is between September and February, and they spawn in pelagic waters (Koutrakis et al. 1994).

Thinlip grey mullet has pelagic eggs and larvae. In southern Europe, the young-of-the-year seek to the coast for feeding from February-March onwards (Bartulovic et al. 2007). They live usually inshore, entering lagoons and estuaries and are found in shallow brackish waters. Furthermore, this species is euryhaline and can exploit fresh water habitats for months as the cost of ionic regulation in fresh water is small, and they tolerate abrupt changes in water salinity (Thomson 1990, Cardona 2006). Thinlip grey mullet is classified as catadromous as it enters rivers and lakes for feeding at temperatures between 8 and 24 °C (Bartulovic et al. 2007). The young are fast growing and reach 10-12 cm in length during the first year (Almeida et al. 1995). If the observed individuals were spawned south of the English Channel, they must have moved about 900 km to reach south Norway during their first growth season.

Our observation shows that young-of-the-year thinlip grey mullets enter fresh water. Oliveira and Ferreira (1997) found only fish 2 years and older when they studied the species in

an Iberian river. They suggested that small fish may be less resistant to fresh water than adults. However, we have found no further support for their contention. The ecology of young thinlip grey mullet is not well known, but according to Salgado et al. (2004) the juveniles may often feed in intertidal creeks and small brooks in river deltas. The small Sævelibekken brook may be a similar habitat as that described by Salgado et al. (2004). It empties into a shallow bay with brackish water also exploited by young brown trout *Salmo trutta* longer than ca. 6 cm (Jonsson et al. 2001).

The occurrence of thinlip grey mullet in northern Europe is not well known. Whitehead et al. (1986) presented a geographic distribution of the species in the sea northwards to southernmost Norway, and Pethon (2005) reported Trøndelag (~ 63 °N) as the northern species limit. We have found no mentioning about any North European observation of thinlip grey mullets from fresh water. Obviously, there is a need of a biodiversity-oriented monitoring that covers coastal water courses integrating both marine and freshwater habitats, at a wide range and at regular intervals. Such a research program would also generate important implications related to climate-change.

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Figure 1. Thinlip grey mullet *Liza ramada* caught in the small brook Sævelibekken, southern Norway.

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