

The common whelk (*Buccinum undatum*) in Breiðafjörður: One or more populations?

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Introduction

The common whelk (*Buccinum undatum* L.) is one of the most abundant subtidal invertebrate predators in the North-Atlantic (Jalbert *et al.* 1989). The species is caught for bait and consumption in Europe and Canada. In Iceland it has been harvested in Breiðafjörður for over 10 years. *B. undatum* does not have a planktonic larval stage and the adult animals are relatively sedentary with low fecundity (Hancock 1963, Martel *et al.* 1986). Gendron (1991) suggested that the species can form local populations with reduced gene flow. The goal of this study is to investigate the population structure of the common whelk in Breiðafjörður based on morphological and genetic differences. The results will be used in support of sustainable fisheries of the whelk.

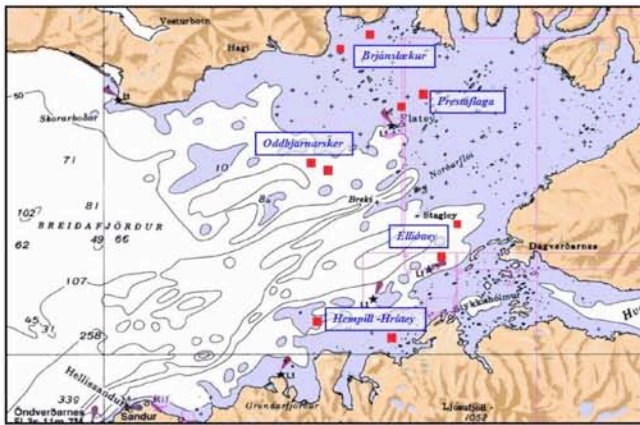


Figure 1. The ten sample sites in Breiðafjörður: Brjánslækur 1 and 2; Prestaflaga 1 and 2; Oddbjarnarsker 1 and 2; Elliðaey 1 and 2; Hempill and Hrútey. In all areas except Elliðaey, station nr. 1 is the northernmost station. Stations are indicated by a red box.

Motivation and methods

Morphological traits of whelks from the ten sample sites (Fig.1) were compared using one-way ANOVA and the *post hoc* test Tukey's HSD.

The initial focus in the genetic studies is on individuals from Hempill and Oddbjarnarsker 1, which showed the most pronounced morphological differences. Microsatellites will be used for discerning different genetic populations. Polymorphisms of the 5 characterised microsatellites will be analysed by PCR and gel electrophoresis.

Results

- The color and texture of the whelks' shells were variable between stations (Fig. 2).
- Ratios of shell morphology were significantly different between stations.
- The height of whelks at sexual maturity was significantly different between stations.
- Methodology for DNA extraction has been successfully adapted and molecular characterisation is under way.

Discussion

Morphological traits of the common whelk in Breiðafjörður revealed the presence of several morphs. Environmental factors, e.g. waves, bottom substrate and predation pressure are known to influence the morphology of the shell of gastropods (Thomas and Himmelman 1988). It remains to be seen whether phenotypic differences are associated with distinct genetic populations in the fjord.

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Figure 2. The morphology of whelks in Breiðafjörður. Pictures of whelks from Elliðaey, Hempill, Oddbjarnarsker, Prestaflaga and Brjánslækur (from top to bottom).

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