

# Winter distribution of Horned Grebes breeding in Iceland

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## Introduction

An isolated, but mostly migratory, population of Horned Grebes *Podiceps auritus* (Fig. 1) in Iceland has gone through drastic changes in recent decades. To help understand the reasons for these changes, a better understanding of the non-breeding distribution and ecology of the population is essential. Previous information on the winter distribution of Horned Grebes from Iceland was based on only three ringing recoveries in the past. A study was carried out in a Horned Grebe breeding colony at Lake Víkingavatn, NE Iceland, to investigate where those grebe winter. Here we present the first results from this on-going project.

## Aims of this study were to:

- Identify wintering areas of Horned Grebes breeding in Iceland.
- Describe winter philopatry of individual Horned Grebes.

## Methods

Light-based geolocation was used to study the wintering distribution of Horned Grebes. Breeding Horned Grebes at Lake Víkingavatn, NE Iceland, were equipped with geolocators (British Antarctic Survey, Mk18-L), mounted on plastic leg rings in 2009 and 2010. A specially designed trap was used to catch grebes on their nest and a gillnet was used to catch birds in front of their nest. Grebes were retrieved in 2010 and 2011. Grebes that were retrieved with loggers in 2010 were fitted with new loggers. Data from 7 geolocators were processed using BASTrak software package. Kernel densities and 50% kernel contours were estimated for each bird in The Home Ranger 1.5. Mapping was done in ArcMap 9.2.



Figure 1. A Horned Grebe. Breeding birds at Lake Víkingavatn, NE Iceland, were equipped with geolocators (inset), mounted on plastic leg rings.

## Results

Six birds equipped with geolocators were retrieved in 2010 and 2011. Data for two consecutive years were obtained from two birds. From December 2009 through February 2010, four grebes wintered around Scotland and one in the English Channel, as illustrated by 50% kernel contours (Fig. 2). The following winter, one bird wintered by the west coast of Iceland and two in more or less the same areas as they did the previous winter (Fig. 3).

## Discussion

These preliminary findings from winter distribution of six Horned Grebes show that individuals, breeding by the same lake in Iceland, follow quite distinct migration and wintering strategies. Although most of the grebes winter around Scotland, they winter in specific areas during mid-winter (December – February) and none of them seem to share wintering grounds. Actual space use is probably much more confined, as positions derived from geolocation have an average error of approximately 185 km (Philips *et al.* 2004. Marine Ecology Progress Series 266: 265-272). On population level, these findings indicate that the Icelandic Horned Grebe population is considerably spread out during winter and therefore less sensitive to local deteriorating conditions on wintering grounds.

## Conclusions

- Shore areas around Scotland appear to be important wintering areas for Horned Grebes breeding in Iceland.
- The grebes are spread out in individually confined areas during winter.
- The grebes seem to be philopatric to wintering areas.

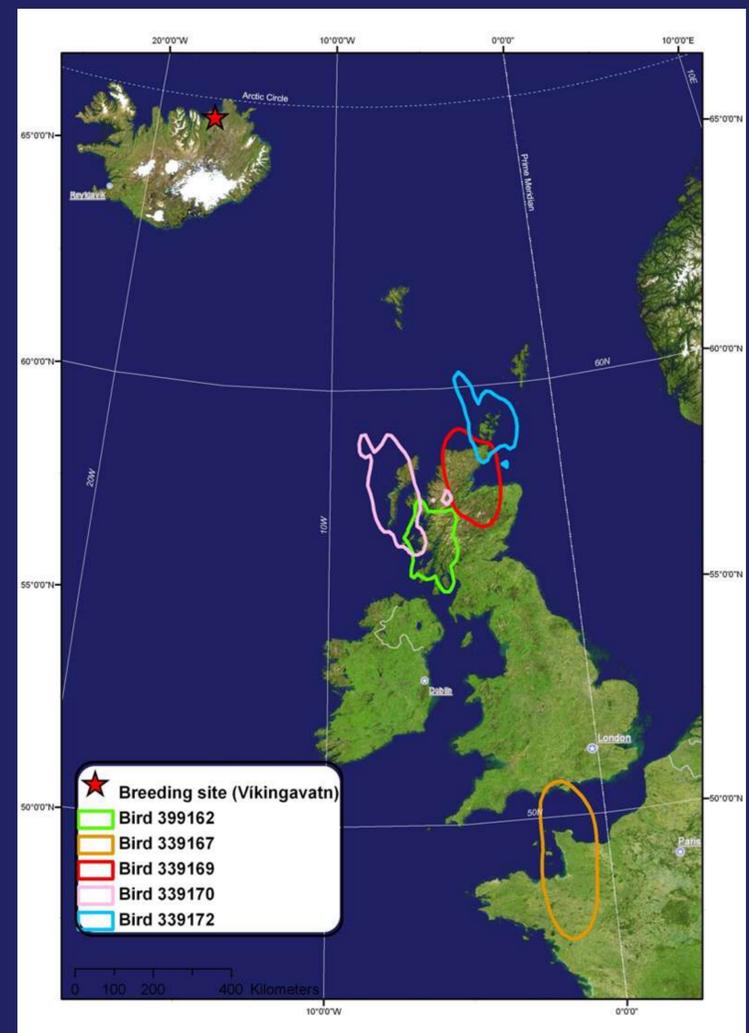


Figure 2. Wintering areas of five Horned Grebes from December 2009 through February 2010. Figure shows 50% kernel contours for each bird.

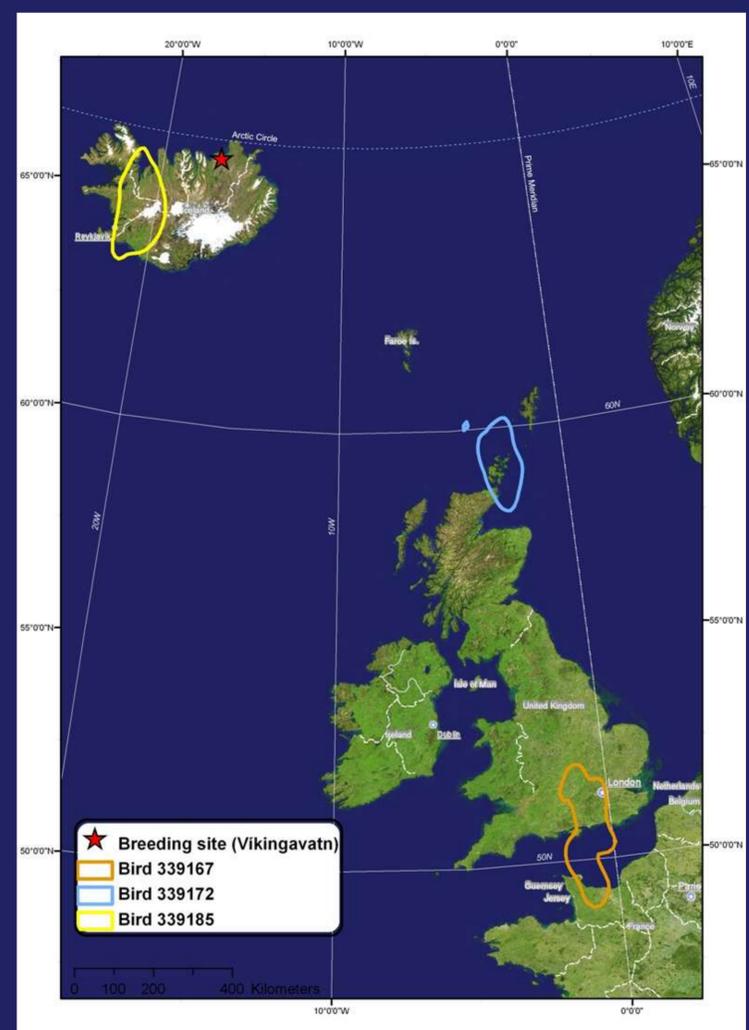


Figure 3. Wintering areas of three Horned Grebes from December 2010 through February 2011. Figure shows 50% kernel contours for each bird. Two birds (339167 & 339172) wintered in more or less the same areas as they did the previous winter.