



## ESWG project register

Questionnaire completed by:	
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<b>Project title</b>	Breeding ecology of common scoters in Scotland, 2009-2011
<b>Project coordinator(s)</b>	Mark Hancock / RSPB
<b>Project partners and funders</b>	Andy Douse / SNH (Inverness) Geoff Hilton / WWT (Slimbridge) John Macfarlane / TCV (Stirling)
<b>Main individual / organisation to contact for information about project</b>	Mark Hancock RSPB Etive House Beechwood Park Inverness IV2 3BW  01463 715000 mark.hancock@rspb.org.uk
<b>Project website</b>	<a href="http://www.rspb.org.uk/ourwork/science/research/projects/363847-the-ecology-of-breeding-common-scoters-and-potential-conservation-approaches">http://www.rspb.org.uk/ourwork/science/research/projects/363847-the-ecology-of-breeding-common-scoters-and-potential-conservation-approaches</a>

<b>Target species and population</b> [enter X against all that apply] <i>Population boundaries can be viewed on the <a href="#">CSN too!</a></i>			
Greater Scaup (W Europe)		King Eider (N Europe/W Siberia)	
Greater Scaup (Black Sea/Caspian Sea)		Steller's Eider (NW Europe)	
Common Eider <i>S. m. mollissima</i> (Britain/Ireland)		Harlequin Duck (Iceland)	
Common Eider <i>S. m. mollissima</i> (Baltic/Wadden Sea)		Long-tailed Duck (Iceland/Greenland)	
Common Eider <i>S. m. mollissima</i> (Norway/NW Russia)		Long-tailed Duck (W Siberia/N Europe)	
Common Eider <i>S. m. mollissima</i> (White Sea)		Common Scoter (European)	<b>X</b>
Common Eider <i>S. m. mollissima</i> (Black Sea)		Velvet Scoter (W European)	
Common Eider <i>S. m. faeroeensis</i> (Faeroe Islands)		Velvet Scoter (Black Sea)	
Common Eider <i>S. m. faeroeensis</i> (Shetland Islands)		Red-breasted Merganser (NW & C Europe)	
Common Eider <i>S. m. borealis</i> (Svalbard/Franz Joseph Land)		Red-breasted Merganser (Mediterranean/Black Sea)	
Common Eider <i>S. m. borealis</i> (Iceland)		Red-breasted Merganser (Greenland)	
Common Eider <i>S. m. borealis</i> (NE Greenland)			

<b>Project type</b> [enter X against all that apply and/or specify other]	
Abundance/distribution	
Life history (breeding success/survival/recruitment)	
Population delineation / migration	
Ecological research (e.g. habitat use, diet)	<b>X</b>
Methodological / techniques	
Anthropomorphic (e.g. contaminants, aquaculture)	
Physiology/energetic/genetics/disease	
Other (please specify below)	
Specify other here	

**Project description**

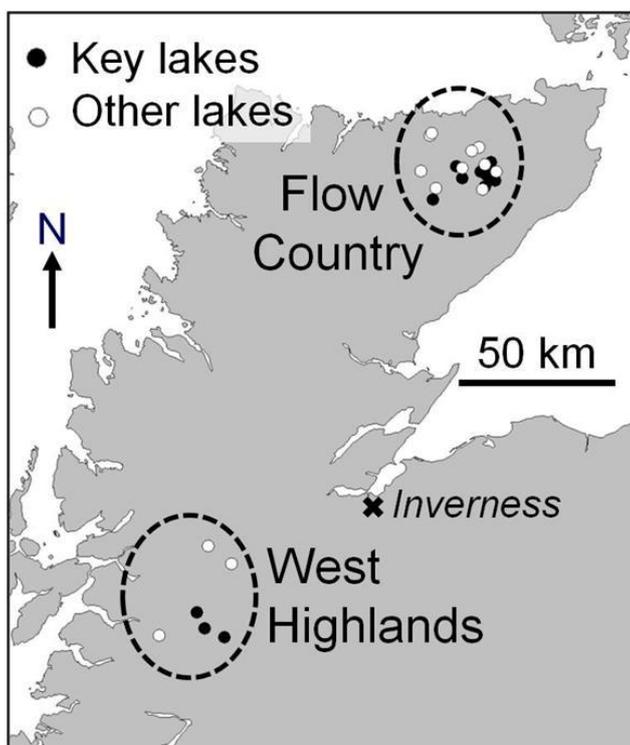
**Project duration**

Start date	April 2009
End data/expected end date	Fieldwork completed September 2011, invertebrate lab work & project report March 2012. Completion of peer-reviewed papers in progress at the time of writing (one paper in review, another in preparation).
Will the project be repeated?	No, but follow up research is being progressed.
If yes, please provided estimated start year and end year	

<b>Bird season</b> [enter X against all that apply]	
Breeding	X
Non-breeding	
Moulting	
Migration	

**Geographical location**

UK (Scotland). See below for a map of the study sites.



## Main aims and objectives

1. To identify habitat features associated with lake selection by breeding common scoters in Scotland, in order to proposed conservation measures.
2. To measure within-lake habitat selection and time budgets of breeding scoters.

## Methods

At 26 lakes, covering a range of scoter use, measures were made of food abundance, potential foraging habitat, and predators. We also surveyed Brown Trout *Salmo trutta*, which may compete with scoters for invertebrate food. Multi-model inference was used to estimate the association between habitat variables and scoter lake use.

At 13 lakes with regular use by scoters, time budgets were quantified, focussing on the pre-laying and brood periods. The positions of foraging scoters were recorded. Analyses will investigate how time-activity budgets differ between birds of different age and sex, and at different times during the season. The habitats and food availability of preferred foraging locations will be compared with other locations within the same lake.

## Datasets

At each of the 26 study lakes, at 4-6 sampling points per lake, our datasets cover invertebrate abundance, foraging habitats and predator abundance, for three sampling visits per lake per year, over the three years of the study.

Invertebrate data are based on two netting methods, sediment grabs, colonisation traps and water traps. All invertebrates were identified to class, 93% to order, 75% to family, 56% to genus, and 40% to species. These data were converted to biomass using published length weight regressions.

Foraging habitats were quantified by measuring the abundance of different sediment types in broad categories, and water depth, in the shoreline zone (where scoters were found to mainly forage). Water temperatures and Secchi disc distances (water clarity) were also measured.

Predator data are based on footprint recording at clay plates in monitoring tunnels (mammals) and visual records during lake visits (birds).

In addition, trout were surveyed using angling surveys, and sticklebacks using traps, to give a catch per unit effort measure for each lake.

Scoter use was recorded at each lake on a minimum of three visits per year. Many lakes received multiple additional visits in order to carry out time-activity watches (see below) and for other scoter monitoring purposes.

We completed 260 time-activity watches of scoters averaging close to the standard target duration of one hour. For these we used a scanning approach, i.e. the activity of each bird being watched was recorded in a range of behaviour categories, every minute on the minute. At each minute, the position within the lake, and distance from shore was recorded.

## Project outputs

<b>Reports and papers</b>	
<p>A report was prepared in March 2012 for SNH (the government agency that part funded the work). A copy is available on request.</p> <p>A paper for the scientific literature is under review at present and second paper is in preparation.</p>	
<b>Other outputs</b>	
<b>Data ownership and access</b>	
Are data collated during the project available to external users?	<b>Yes, for suitable projects.</b>
<p>Please contact <b>Mark Hancock</b> in the first instance to discuss any potential uses of the data collected by this study.</p>	
<b>Person/organisation that owns the data</b>	
Contact name	<b>Mark Hancock</b>
Organisation	<b>RSPB</b>
Contact email	<b>mark.hancock@rspb.org.uk</b>
<b>Person/organisation responsible for maintaining the dataset</b>	
Contact name	<b>Mark Hancock</b>
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