

**A study of nesting Common Scoter *Melanitta nigra* in the Flow Country,
Scotland – sabbatical project, 2015**

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The UK supports a small breeding population of Common Scoter, restricted to the Flow Country of Caithness and Sutherland, and a small number of large lochs in Inverness-shire, Perthshire and Islay. Over the last twenty years this population has suffered a significant decline, falling from 95 pairs in 1995 to 52 pairs in 2007. Monitoring in the Flows suggests that the decline continues, with 20 females in 2013, from 26 in 2007 and 36 in 1995. The species is red listed in Birds of Conservation Concern 4 due to a 63% decline and a very small population size. Causes of decline are not well understood. This project aimed to fill gaps in our understanding of scoter breeding ecology through detailed observations of females during incubation and the use of camera traps.

The project aims were:

- 1) To locate Common Scoters in May and June.
- 2) To find a method of direct observation at a site without causing disturbance to nesting birds.
- 3) To gather data on foraging activity during the incubation period (location, timing, intensity) through direct observations.
- 4) To use camera traps on lochs to record scoter diurnal activity.
- 5) To make assessments of the practical use of camera traps to monitor Common Scoter activity in the breeding season.
- 6) To establish incubation patterns by observing females on incubation recesses.
- 7) To attempt to locate nest sites by watching females back from incubation recesses.
- 8) If nesting sites are found:
 - determine breeding success.
 - use nest cameras or temperature loggers to record incubation patterns and the timing, and if possible, causes of nest failure.
- 9) To trial the above methods and make recommendations for future work

The study was carried out from 30th May – 5th July 2015 at RSPB Forsinard in The Flow Country. Study areas had regular scoter records from the past few years and broods had also been recorded in the recent past, indicating that they were probably breeding lochs. Once females were located, regular timed watches were carried out from suitable vantage points. We watched in blocks, spread across early morning to evening. During watches, the location and activity of any scoter was recorded (mapped) at 5 minute intervals. If scoters were observed leaving or arriving at a loch we recorded the flight lines and directions.

Direct observations provided the following:

- Males were present in the study area until at least the 20th June (males leave breeding grounds once the female is nesting).
- Females were often accompanied by another female(s)
- Scoters were present on lochs for very long periods of time (max 11:15 hours), indicating that breeding was possibly not taking place.

We used camera traps to supplement data collection. Camera traps are only triggered by activity relatively close to the trap, but scoters can be identified at ranges further than this triggering range. We therefore set the traps to record an image every 1 minute (between 04:00 and 22:00), to record the pattern of loch use. We deployed 10 camera traps (Fig. 1). Although traps should have been able to run for about a week, we checked each after 3-4 days. 45 camera trap runs were collected. In total, camera traps took 75,245 images (Fig.2.). Scoters were captured on a minimum of 1,268 occasions (minimum due to uncertainty of duck identity at long distances). The mean capture rate was around 2% of

all images with a maximum of 19%. However, of 45 camera runs, 28 featured errors with the equipment. Errors included periods of time skipped, failure to restart and resetting to factory settings.

Even when cameras were working well, there were some limitations:

- Poor weather could result in bad visibility and rough water on lochs, making identification difficult.
- Ducks were often too far away to confirm their identity.
- Viewshed was limited so entire lochs could not be observed simultaneously without placing several cameras on 1 loch.

In summary, camera trap data provided the following:

- Males were present in the study area until at least the 25th June.
- Groups of scoters formed – 2, 3 or 4. Groups of 3 and 4 were never seen through direct observations.
- Scoters were present on lochs for long periods of time, indicating that breeding may not have been taking place or had failed early.

Although no nests were located we have collated a great deal of information which will be used by RSPB research and Reserve staff in subsequent years. No one has spent such a concentrated time trying to locate Common Scoter nests in the Flows in recent years so our experiences are valuable as a pilot trialling methods for subsequent work.

Project Successes

- Observations of scoters on potential breeding lochs
- Trialling camera traps as a method of recording scoter activity.
- Quantification of the amount of time necessary to observe scoters to try and establish breeding status.
- Information on male and female behaviours and interactions.

Project challenges

- Low numbers of scoters due to declining numbers
- Very poor weather – cold, wet and windy, which may have delayed/stalled scoter activity.
- Suitable vantage points in a flat landscape
- Remoteness of study area – long distances to drive to access lochs and then long walks in, in some cases.
- Accessibility – rough forestry tracks – 4WD essential for most sites.
- Camera trap failures
- Time needed to deploy camera traps distracted from other observations
- Apparent lack of breeding on focal lochs

We are very grateful to Glasgow Natural History Society, the Scottish Ornithologists' Club and RSPB for generous funding towards the project. Grant money was spent on travel to the study area, accommodation for five weeks and use of a 4WD to access remote sites.



Fig. 1. Example camera trap *in situ*

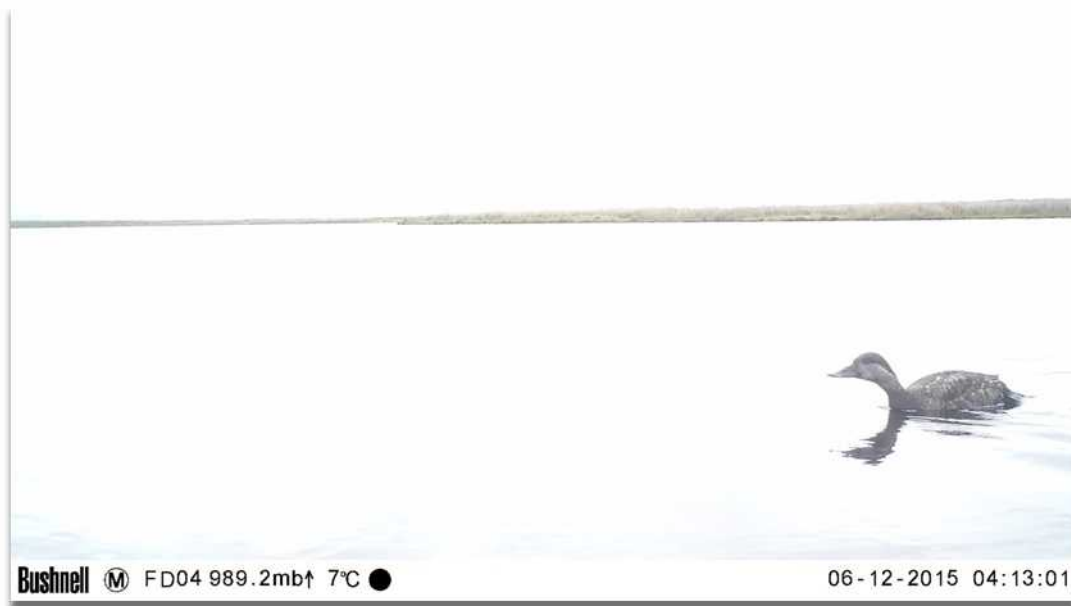


Fig. 2. Common Scoter image from a camera trap