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## Foraging preferences of the great yellow bumblebee *Bombus distinguendus* on Orkney

Lorna Wilkie

22B Bog Road, Penicuik, Midlothian, EH26 9BT  
E-mail: [lolk@wpo.nerc.ac.uk](mailto:lolk@wpo.nerc.ac.uk)

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The great yellow bumblebee *Bombus distinguendus* has become scarcer and more limited in its distribution in the last century, and in the UK is found only in the Western Isles, Coll, Tiree, Orkney and on the north coast of mainland Scotland (International Bee Research Association, 1980). In summer 2006 a study was undertaken on RSPB reserves in Orkney to explore the foraging preferences of this species.

Two great yellow bumblebee nests were found at Marwick Head RSPB reserve. To identify where the bees were foraging a full list of flowering plants within 250m radius of the first nest was compiled, and bees were marked with a water-based paint. Pollen samples were taken from bees returning to the nest, and further samples were taken from bees at Brodgar RSPB reserve. Analysis of the pollen showed that bees from the two sites foraged on *Trifolium* sp. and *Phacelia tanacetifolia*. Samples from the Marwick Head bees comprised mainly of clover pollen, however no clover patches were found within 250m of the nest, and no marked bees were observed in adjacent patches. This suggests that great yellow bumblebees may not establish their nests in areas where food is immediately available, and that they travel more than 250m from the nest to forage.

Between 12<sup>th</sup> July and 9<sup>th</sup> August 2006 vegetation and bee surveys were carried out at ten RSPB nature reserves. Stepwise regression of the data suggested that the presence of clover or *Phacelia* plants at a site did not increase the likelihood of great yellow bumblebee presence. Historical records from throughout Orkney suggest great yellow bumblebees use a wide range of plant species, with preference depending on geographic location.

The survey data were compared to historical bee records and to studies carried out in the Western Isles. There were differences between the suite of forage plants used in the Western Isles and on Orkney. On Orkney great yellow bumblebees form colonies relatively late, in June or July, and forage species used in the Western Isles, such as *Lotus corniculatus*, may flower too early on Orkney for great yellow bumblebees to use. Plants such as *Stachys* sp. and *Centaurea nigra* are needed so bees can forage until late-September.

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