

MORPHOMETRIC DISCRIMINATION OF *C. OBSOLETUS* AND *C. SCOTICUS*

Poster

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Following the introduction of bluetongue into northern Europe in 2006, members of the *Obsoletus* Group of *Culicoides* biting midges have been implicated as vectors of the disease. Identification of two (*C. obsoletus* and *C. scoticus*) of the four members of this group is considered difficult, if not impossible, when undertaken morphologically and many believe it requires molecular analysis. In many cases female specimens are grouped as an entity in entomological surveys, but species specific identification may be necessary to determine competent vectors of the virus, understand their life history characteristics and assess their relative abundances. A number of studies have been undertaken to determine how to distinguish between the two species, focussing on abdominal, head and wing measurements and ratios, as well as the shape of maxillary palps and numbers of hairs on areas of the body. Such studies were undertaken on small populations of *Culicoides* from within one region, therefore these techniques may not be able to be extrapolated to *Culicoides* collected in different countries or indeed during different seasons.

Here we collected *Obsoletus* Group females from the UK, France and Spain, with two differing geographical locations sampled per country. A total of 759 *C. obsoletus* and *C. scoticus* individuals were identified using the cytochrome oxidase I gene, before 15 morphometric measurements were taken from the head, wings and abdomen of slide-mounted specimens. Multivariate analyses were performed on the morphometric measurements to identify and validate whether a combination of variables could lead to accurate species identification. Measurements were also compared between the start, middle and end of the vector season on *Culicoides* collected in France to determine whether seasonal variation exists in any of the measurements. Our results suggest that female *C. obsoletus* and *C. scoticus* individuals can be separated under a stereomicroscope based on abdominal measurements. Seasonal variation in the size of these species, and therefore their morphometric measurements was observed for both head and wing measurements, but not for the abdomen. Geographical variation in the size of individual *Culicoides* was also observed and is likely to be related to temperature at the trapping sites, with smaller *Culicoides* trapped further south. Although we show that the length and width of the spermathecae can be used to differentiate between the species, this can be a time-consuming process and we therefore only recommend undertaking this on a sub-sample of individuals.

Keywords: *Culicoides*, Discrimination, Identification, Morphology, Morphometric, *Obsoletus*, *Scoticus*