ISVEE 14
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Presentation Abstract

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Presentation:	P105 - Morphometric discrimination of two sympatric sibling species, Culicoides obsoletus and C. scoticus (Diptera: Ceratopogonidae), vectors of bluetongue and Schmallenberg
Location:	Uxmal 3
Pres. Time:	Wednesday, Nov 04, 2015, 3:30 PM - 4:30 PM
Category:	+A9. Vector-borne and parasitic diseases
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Abstract:	Purpose: Certain Palaearctic biting midges have been implicated as vectors of bluetongue virus in northern Europe. Separation of two species (*Culicoides obsoletus* and *C. scoticus*) is considered difficult morphologically, with females often grouped together in entomological studies. Species specific identification is desirable to assess their roles in disease transmission or measure abundance during arboviral outbreaks. Our aim is to investigate whether morphometric identification techniques can be applied to female *C. obsoletus* and *C. scoticus* individuals trapped in different geographical regions and time periods during the year. Methods: Using light-suction traps, female *C. obsoletus* and *C. scoticus* were sampled from two locations in the UK, France and Spain. A total of 759 individuals were identified with a molecular assay using the cytochrome oxidase I gene. Fifteen morphometric measurements were then taken from the head, wings and abdomen of slide-mounted specimens. Multivariate analyses investigated whether a combination of these could lead to accurate species identification. Results: Principal component analyses revealed that the length and width of the smaller and larger spermathecae, and the length of, and width between, the chitinous plates can differentiate the species. These are all abdominal characteristics. Seasonal and geographic variation was observed for head and wing measurements, but not for those from the abdomen. Conclusions: Our results suggest that female *C. obsoletus* and *C. scoticus* individuals can be separated under a stereomicroscope using abdominal measurements. Although we show that morphometrics can be used to differentiate the species, this can be time-consuming and we recommend undertaking this using standardized subsampling of large catches. Relevance: This work highlights a new morphometric method of discriminating two of the main vector species of bluetongue virus. Such separations generally rely on molecular techniques, which can be expensive. Morphometric identifications may prove useful in outbreak situations when they can be quickly undertaken on a subsample of individuals to determine the proportions of each species present.