POLICY BRIEF: Characterising the climatic risk levels for bluetongue in Scotland

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1. KEY MESSAGE

The climate of Scotland is not suitable for bluetongue virus (BTv) transmission all year, and the length of the transmission season varies across the country. This should be considered when responding to an importation of PCR positive animals or wind-borne introduction of bluetongue infected midges. We have developed a model that can be used to give an immediate assessment of the likely risk of onward transmission in the event of a future introduction of BTv, without requiring weather data.

2. MAJOR FINDINGS

A model has been developed, which provides a risk reference of BTv transmission at any time and location based on historical climate records. The risk reference of BTv transmission is indicated as the percentage of days with potential for BTv transmission. The figure shows example outcomes from the model which mapped the percentage of days during 1993-2016 that had some potential for BTv transmission (aggregated by the fortnight). It illustrates that the risk of BTv transmission in Scotland increased in warmer seasons.

3. OBJECTIVES

To characterize the general risk of onward transmission of bluetongue in GB at different times of year.

4. POLICY IMPLICATIONS

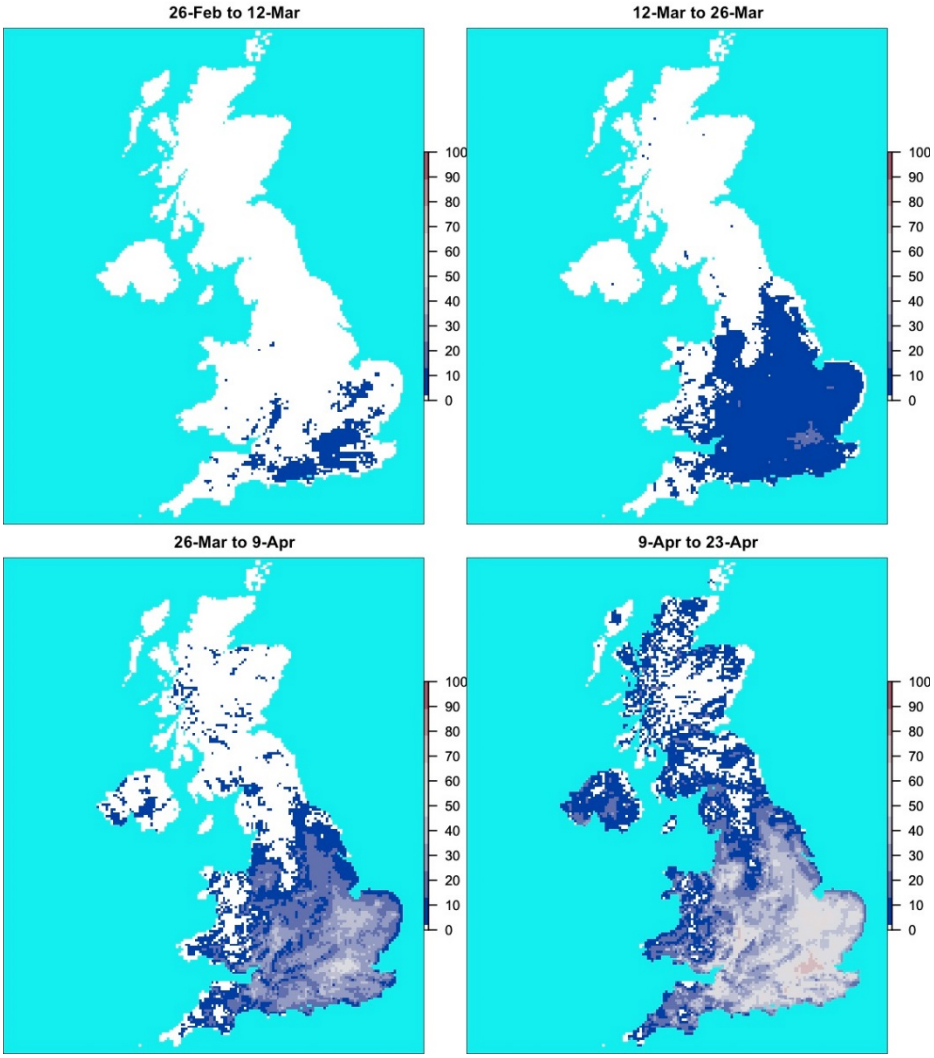
In the event of future introductions of bluetongue to Scotland through wind-borne midges or importation of infected animals these analyses will give an indication of whether there is any risk of onward transmission given the time of year and historical precedent. This will indicate whether further immediate actions are required. However, any conclusions from these models should be followed-up with analysis of observed weather from the time of introduction.

5. IMPORTANT ASSUMPTIONS AND LIMITATIONS

We used a model of the risk of bluetongue transmission that is being prepared for publication and was presented at the ISVEE conference in 2018. The model uses historical weather data from across Europe fitting risk for each day. Here we adapt the data using fine scale UKCIP weather data for the UK for 1993 – 2016 to fit temperatures on an hourly basis to give a higher (and more realistic measure) of risk.

Parameters are not based on Northern European midge species or the BTv-8 serotype that is currently circulating in France because there is no current data for these. Instead the parameters are based on the serotypes and midge species most similar to those in Scotland, but neither is the same in either case. As current evidence suggests that bluetongue is cold-adapted we include parameters to include the most cold-adapted serotypes that were described by a review by Carpenter (2011). The model can be quickly updated with revised parameters as they become available.

6. FIGURE



Example of the outputs from the model showing the percentage of days between 1993 and 2016 that were suitable for transmission. These outputs can be drilled into at greater spatial and temporal resolution as needed.