Potential for indirect introduction of bluetongue to Scotland

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Why?

Outbreaks of bluetongue in NW Europe are becoming increasingly frequent. If bluetongue reaches Scotland there is potential for spread and potentially a large outbreak. There are two principal routes by which it could reach GB:

1. Imports of infected livestock
2. **By infected midges being blown across the English Channel or the North Sea**

Here I consider risks from infected midges. Each summer the Met Office and Pirbright Institute model the daily risk of wind-borne midges arriving in counties of GB from different release points in NW Europe. This is carried out with the NAME (Numerical Atmospheric-dispersion Modelling Environment) model (Figure 1).

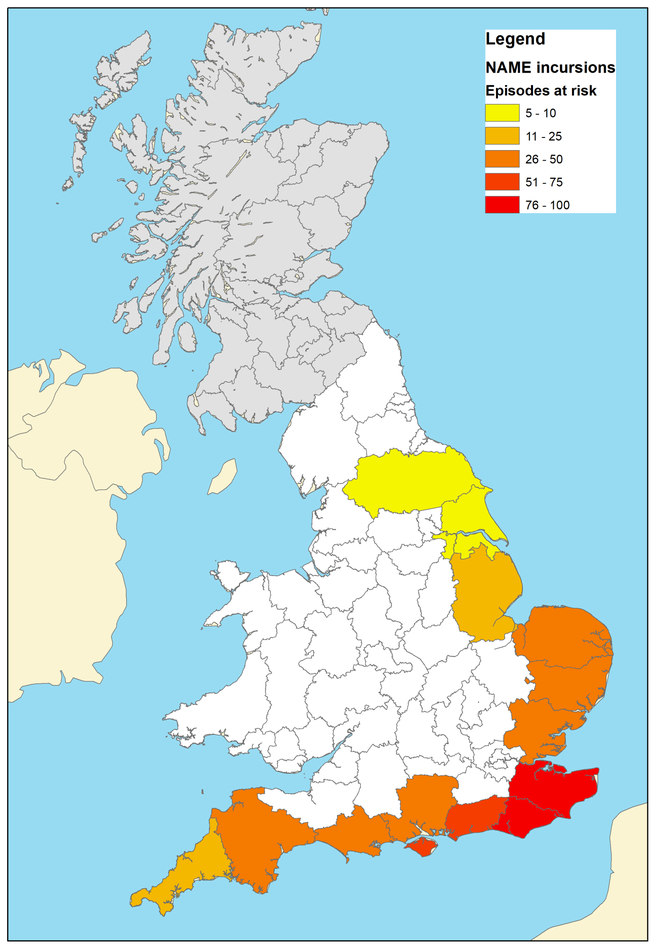

Figure 1. Modelled results of the number of episodes (morning or evening periods of midge activity) of potential wind-borne midge arrival) shown by the arrival county

This analysis

From Figure 1 it is clear that **Scotland is not at risk of wind-borne midge introduction from France, Belgium, or the Netherlands**.

Is there an indirect risk to Scotland. Subclinical infection with Bluetongue-8 is very common, so could be imported from imported animals. **How many animals does Scotland import from these counties?**

Three steps:

1. I took the NAME incursion data from Figure 1.
2. I took animal movement records from AMLS and CTS and spliced out movements through markets (I pretend the market isn't there)
3. I drew a graph

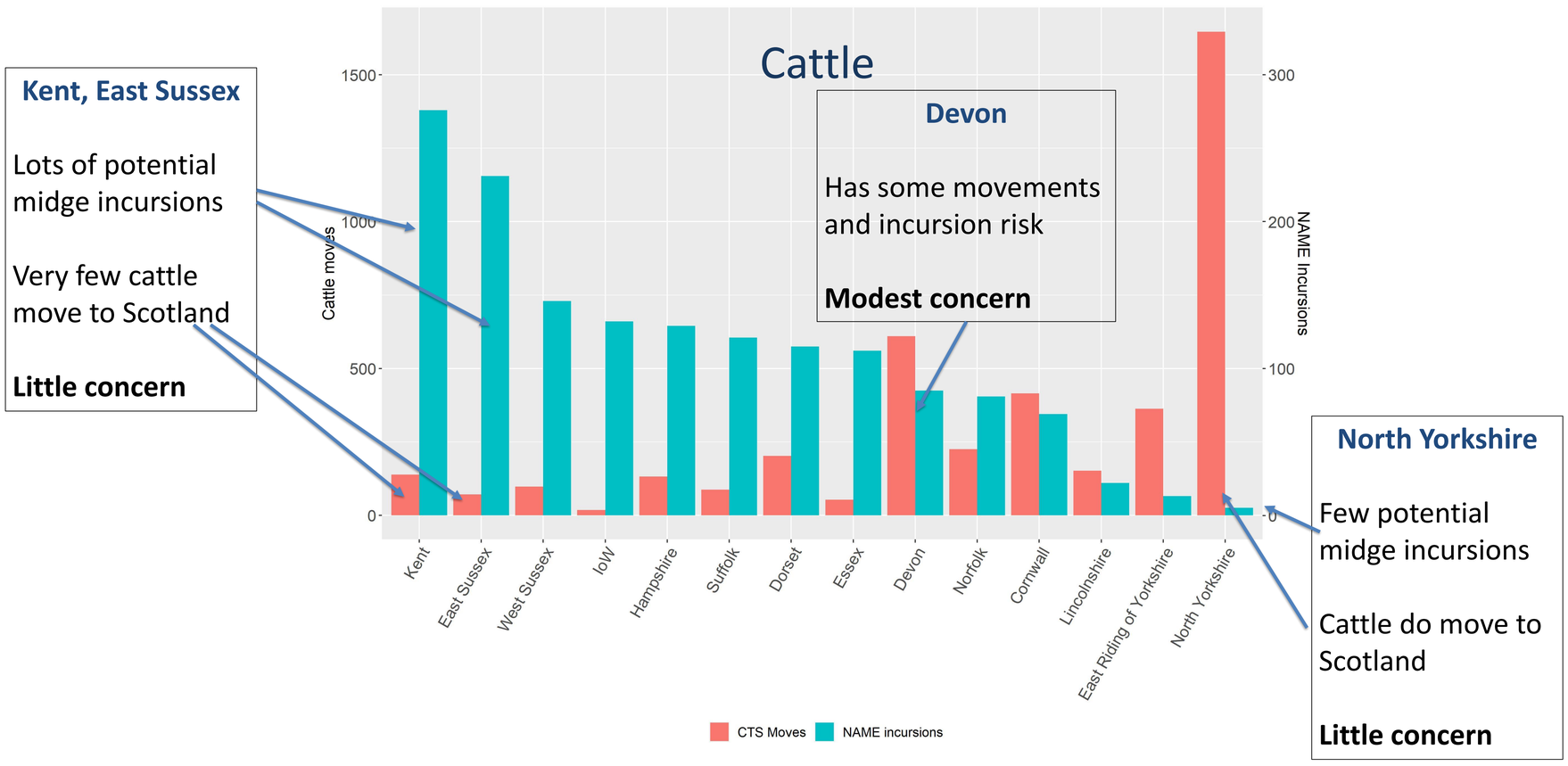

Figure 2. Plotted results of the number of episodes with midge incursions to counties against the number of **cattle** that move to Scotland.

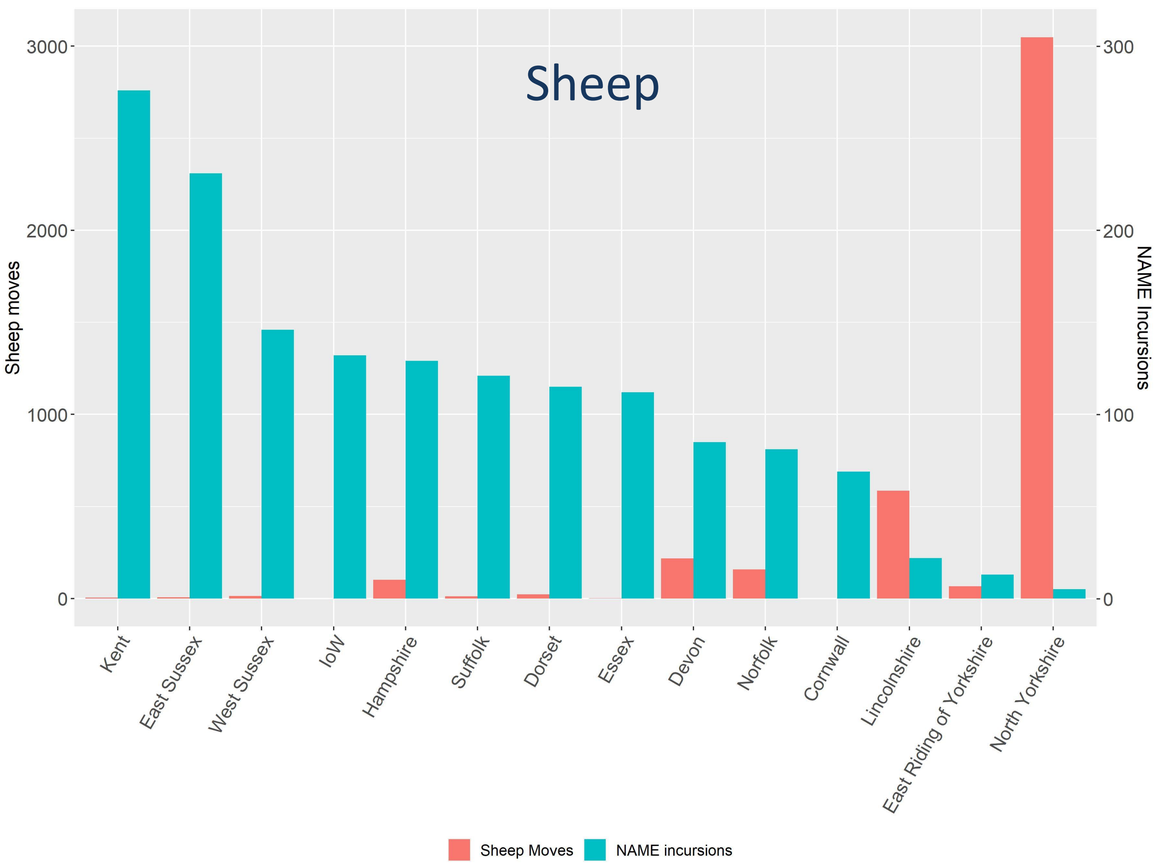

Figure 3. Plotted results of the number of episodes with midge incursions to counties against the number of **sheep** that move to Scotland.

So what…

Each midge season there are frequent episodes when infected midges could be introduced from Europe.

Potentially this could result in animals becoming infected and moved to Scotland before detection. However, this requires those sites of introduction to be the counties that export animals to Scotland. The high exporting counties are not those that see regular midge exposures. For cattle (Figure 2) Devon is a greater risk than others. For sheep there is little cross-over.

It must be noted that here we have not been able here to evaluate the risks posed by animals moving to an intermediate county for a short period before moving to Scotland.

Whilst this is **not a formal quantitative risk analysis**, we can conclude that this is a **very low risk pathway for bluetongue introduction.**

Acknowledgement

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