

Occurrence of currently rare or "exotic" contagious animal diseases 1938 to 2007: differences between Scotland and the rest of Great Britain

Onneile O. Peiso¹, Barend M. de C. Bronsvort², Ian G. Handel², Victoriya V. Volkova¹

¹ Epidemiology Group, Centre for Infectious Diseases, University of Edinburgh, UK

² eera group, The Roslin Institute and Royal (Dick) School of Veterinary Studies, University of Edinburgh, UK

Introduction

The incursions of contagious diseases of livestock into infection-free zones are inevitable for as long as the diseases persist elsewhere in the world. Understanding where, when and how the incursions have occurred is essential to assess future risks and prioritize preventive measures. This report reviews the recorded incidence in 1938-2007 of rare or "exotic" contagious animal diseases of major economic importance in Scotland.

Materials and Methods

The source of data were reports of British governmental veterinary services, the format of which has changed over the years (1). Following World War II, a single edition Report of Proceedings for the years 1938 to 1947 was compiled under the Disease of Animals Acts. Reports on Animal Health Services in Great Britain were produced from 1948 to 1970, and an annual Report of Chief Veterinary Officer: Animal Health from 1971 to 2007. A searchable database of the disease occurrence was built in Microsoft Office Access ©2003. The impact of each disease each year was evaluated as the percentage of Scottish agricultural holdings affected. The numbers of holdings were obtained from the results of the Scottish agricultural census, conducted every June 1938-2007.

Results

Of the former OIE List A, the following diseases either have never occurred or did not occur in Scotland in 1938 to 2007: African Horse Sickness, African Swine Fever, Bluetongue, Contagious Bovine

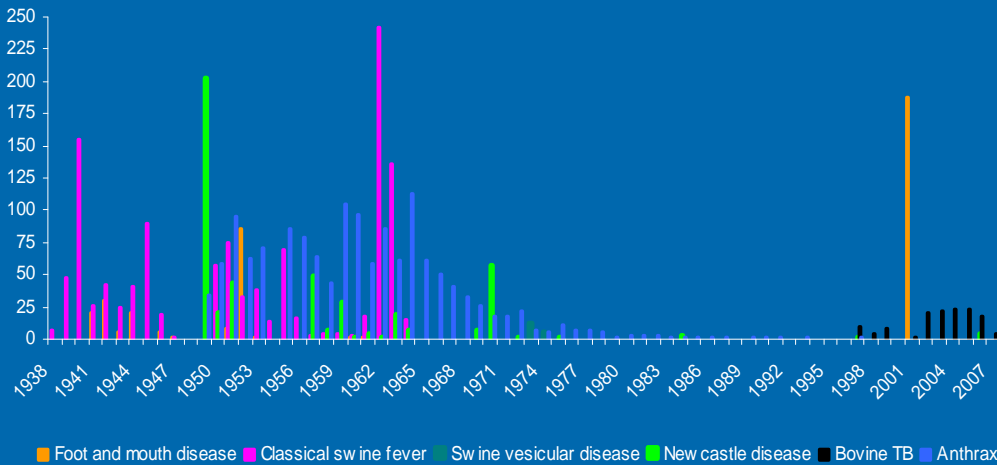
Pleuropneumonia, Goat and Sheep Pox, Lumpy Skin Disease, Peste des Petits Ruminants, Rift Valley Fever, Rinderpest and Vesicular Stomatitis. Three other diseases were graded to be rare or "exotic" and of potentially major economic importance: bovine tuberculosis, Aujeszky's disease and anthrax. Therefore, the occurrence of foot and mouth disease (FMD), classical swine fever (CSF), swine vesicular disease (SVD), bovine tuberculosis (bTB), Aujeszky's disease, anthrax, avian influenza (AI) and Newcastle disease in Scotland in 1938-2007 was reviewed.

The number of agricultural holdings in Scotland decreased, and the number of livestock farmed increased from the 1930s to the 1990s, both at more modest rates than in the rest of Great Britain (GB) (Charts 1-3). The structure of the livestock population remained stable (Chart 3). The number of poultry farmed grew (Chart 4).

In the 70 years reviewed, CSF was reported on the largest number of holdings in Scotland in a given year with 242 outbreaks (0.40% of holdings) in 1962. It was followed by Newcastle disease with 203 outbreaks (0.27% of holdings) in 1949, and FMD with 187 outbreaks (0.38% of holdings) in 2001 (Chart 5). (However, the number of holdings affected by Newcastle disease in 1948 was not available, n=267 total in GB, as well as the numbers of bTB breakdowns for some of the years prior to 1997.) Notably, the next in annual incidence was Anthrax, reported on 113 (0.19%) holdings in 1964.

Chart 5. Number of Scottish holdings reported to be affected by diseases reviewed each year 1938-2007^a

^a For bTB only the data for 1997-2007 are included. The incidence of AI was negligible.



Results (continued)

The annual holding-level incidence of individual diseases in Scotland differed from that for GB as a whole. The only reviewed disease occurring in Scotland in 2002-2007 was bTB. The percentage of agricultural holdings with new bTB breakdowns per year in Scotland was vastly different from the overall percentage for GB (maximum 0.045% for Scotland versus maximum 0.74% for GB).

Individual diseases occurred in Scotland and the rest of GB with different frequencies. For example, FMD was reported in GB in 32 of the 70 years, the disease reached Scotland in only 12 of the 32 years. CSF was reported in GB in 33 of the 70 years, but in contrast to FMD, the affected areas included Scotland in 25 of the 33 years. SVD was reported in Scotland in 2 of the 10 years that it affected GB. The livestock or poultry species recorded as being affected in Scotland mostly mirrored those elsewhere in GB.

It remains a question whether the apparent differences in the frequency and incidence of diseases reviewed in Scotland and the rest of GB were due to: differences in the risks of disease incursions, different probabilities of detecting and reporting an affected holding, or perhaps a combination of the two.

Chart 1. Number of agricultural holdings in Scotland each year 1938-2007

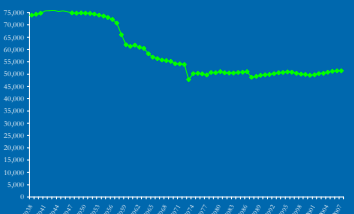


Chart 2. Numbers of livestock farmed in Scotland each year 1938-2007

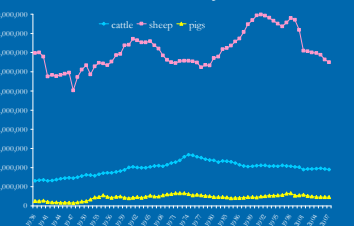


Chart 4. Number of poultry farmed in Scotland each year 1938-2007

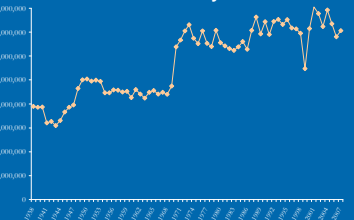
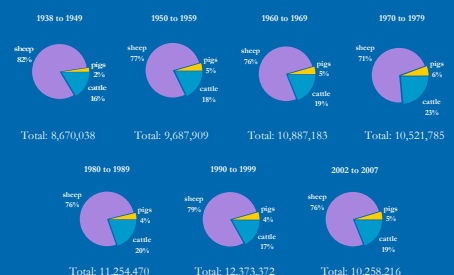


Chart 3. Composition and total of livestock farmed in Scotland in a given year by decade



Acknowledgements This work was funded by Centre of Excellence in Epidemiology EPIC supported by Scottish Government. We thank Dr. Mike Lamont, Scottish Government Rural Directorate, for helpful advice.

References 1) Ministry of Agriculture Fisheries and Food, Department of Agriculture and Fisheries for Scotland, and Welsh Office Agriculture Department. 1938-2007. Report of the Chief Veterinary Officer: Animal Health, and predecessors. London: Majesty's Stationery Office.