scrapie by histopathology. A further test, using immunohistochemistry, was made on any inconclusive or positive results (Begara-McGorum and others 2000). A positive animal was defined as one that tested either inconclusive or positive for scrapie by histopathology and positive by immunohistochemistry; all animals that tested positive by histopathology also tested positive by immunohistochemistry. A negative animal was defined as one that tested negative by histopathology or one that tested inconclusive by histopathology and negative by immunohistochemistry.

Of the 4371 culled sheep submitted, there were 37 positives, 4283 negatives and 51 animals with brains that were not in a suitable state for examination (Table 1), giving a prevalence of 0.9 per cent among culled animals for which there was a diagnosis. Of the 158 found-dead sheep there were seven positives, 110 negatives and 41 in an unsuitable state, giving a scrapie prevalence of 6 per cent among found-dead animals for which there was a diagnosis (Table 2).

The prevalence of scrapie among culled animals (Table 1) was significantly higher (P<10⁻⁷, two-tailed Fisher’s exact test) than that reported in other parts of Great Britain (Simmons and others 2000). This may be an artefact of the denominator population and the way in which it was selected, but it is more likely to reflect the historically high levels of scrapie that have been observed passively on Shetland (Clark and Moar 1992). As this is the most comprehensive study of scrapie on Shetland to date, the results suggest that an estimated 9·9 per cent of the denominator population entering the food chain between 1998 and 2001 was scrapie positive.

The prevalence of scrapie among found-dead animals for which there was a diagnosis was higher than that in culled animals (relative risk estimate of 6·99, with approximate 95 per cent confidence limits of 3·18 to 15·3 [Thrusfield 1995]). This implies that a found-dead animal is more likely to be diagnosed with scrapie than one that is submitted for slaughter. A Fisher’s exact test suggested that there is an association between scrapie and premature death in the flocks in this study (P<0·005).

On the basis of these study results alone, there was no statistically significant decrease in the prevalence of scrapie over the three-year study period, probably, in part, because of the low number of positives. However, the results from the found-dead animals were compared with data from found-dead animals collected between 1985 and 1994 (Clark and others 1994); 133 positives and 273 negatives were diagnosed during this period by histopathology alone from SFHA flocks, giving a prevalence of 32·8 per cent with 95 per cent confidence limits of 28·2 per cent to 37·6 per cent. To allow a comparison of data from the current study with the earlier data, the results by histopathology alone were used (that is, without using the immunohistochemistry results). This definition is less sensitive than that shown in Tables 1 and 2 because animals that tested inconclusive by histopathology (and frequently positive by immunohistochemistry) are not included. On this basis, between 1998 and 2001 there were three positives and 91 negatives from found-dead animals from SFHA flocks, giving a statistically significant decrease (P<10⁻⁴) in prevalence compared with the earlier data when analysed by a two-tailed Fisher’s exact test. Since these found-dead sheep were a subset of all found-dead animals, and found-dead animals are a subset of the whole population, it is not possible to be certain that the prevalence of scrapie generally in Shetland has decreased between the two studies.

As these data come from a survey, it is possible that the decrease in prevalence in this subset of the population was caused by an unknown environmental factor that was synchronous with the eradication plan or by unknown changes in diagnostic sensitivity and specificity. However, given the known association between genotype and susceptibility (Dawson and others 1998), the decrease in the prevalence of scrapie was most likely to be related to the introduction of the SFHA scrapie eradication plan.

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### References


### Correction

Quantitative estimates of the risk of new outbreaks of foot- and-mouth disease as a result of burning pyres by R. Jones, L. Kelly, N. French, T. England, C. Livesey, M. Woolridge (VR, February 7, pp 161-165). The authors regret an error in the specific probabilities of the numbers of sheep and cattle becoming infected from pyre 1 and pyre 5. The correct values are 0·002 for pyre 1 and 0·0001 for pyre 5, with 95 per cent certainty.
Quantitative estimates of the risk of new outbreaks of foot-and-mouth disease as a result of burning pyres

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