

THE SOAY SHEEP OF LUNDY

By

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The Soay sheep (*Ovis aries*) of St. Kilda are the most primitive domestic sheep in Europe, resembling the original wild species and the domesticated Neolithic sheep which were first brought to Britain in about 5000 BC and which persisted on the mainland until medieval times (Ryder 1968). They have survived until the present day on Soay, one of the islands of the St. Kilda archipelago, due to its remoteness and the inaccessible nature of its cliffs. It is not clear whether the sheep on Soay are direct descendants of sheep brought to the British Isles during the Bronze Age or whether they were introduced by the Vikings during the period of Norse dominance in the 9th and 10th centuries AD.

In 1932, the then Marquess of Bute transferred a flock of 107 Soays (20 rams, 44 ewes and 43 lambs) from Soay to the main island of the St. Kilda archipelago, Hirta. This difficult move (Soays do not flock like domestic sheep) was performed with the help of the old St. Kildan inhabitants, who had been evacuated to the mainland the year previously, as they could no longer support themselves on Hirta. The flock is now well established on Hirta, where it has inspired a number of ecological and behavioural studies (Jewell *et al.* 1974). This Hirta population shows regular fluctuations, population 'crashes' occurring every three or four years in which up to two thirds of the animals die (Clutton-Brock *et al.* 1991). However, despite the isolation of the flock and the population bottle-necks gone through after 'crashes', genetic studies using protein electrophoresis by Dr. Josephine Pemberton at the University of Cambridge, have shown the Soays to possess a relatively high degree of genetic diversity. The reasons for this diversity are unclear, as the Soays survive on St. Kilda in the absence of competing herbivores, predators or management by man. Theoretical studies suggest that coevolution of hosts and their parasites can maintain genetic diversity in both species, as a result of an evolutionary 'arms race' (Behnke & Barnard 1990). As parasites (especially the abomasal nematode *Ostertagia circumcincta*) are an important cause of mortality during the population crashes on St Kilda (Gulland 1992), it is possible that they also are important in the maintenance of the Soay genetic diversity on Hirta.

The Soay flock on Lundy was established from animals transferred to Woburn from Hirta in 1944. Seven ewes and a ram were put on Lundy, and flourished to produce the present flock of about 100 animals (Plate 4, at rear).

In December 1992, when the Lundy flock consisted of about 120 animals, 15 young rams were culled as part of the present flock management scheme. As this was being done, culled animals were examined to determine their condition and parasite burden and samples were collected for genetic studies.

The animals examined were all in excellent condition - there was abundant kidney and omental fat. A 1992 ram lamb weighed an average of 16 kg.; a 1991 ram (1 pair of adult incisors) 22 kg.

A range of gastrointestinal nematodes were collected. Species included: *Ostertagia circumcincta*, *Trichostrongylus spp.*, *Nematodirus battus* and *Chabertia ovina*. No tapeworms were seen. All these parasites were present in extremely low numbers and would not clinically affect the sheep. The two-year old rams had fibrotic changes in the liver consistent with chronic damage from liver fluke *Fasciola hepatica*. However, no live flukes were detected. Transmission of this parasite is dependent upon an intermediate snail host found in boggy conditions, such as occur in the central part of Lundy but not down the sides. Interestingly, there is no liver fluke on St. Kilda.

The general appearance of the rest of the flock on Lundy was good, especially for the

time of year. Outside the St. Kilda archipelago, this is the largest flock of Soay sheep in existence. Founded only twelve years after the flock on Hirta, they are living in conditions similar to those on the islands upon which they have survived for nearly 2000 years. As such, the flock should be considered a pride to Lundy, and valued as one of the important species on the island having a role in the maintenance of vegetation type on the sides. To quote Frank Fraser Darling, 'The Soay Sheep is a precious possession from the past'.

REFERENCES

Behnke, J.M. & Barnard, C.J. 1990. Co-evolution of parasites and their hosts: host-parasite arms races and their consequences. In J.M. Behnke (ed), *Parasites: Immunity and Pathology*. 1-23. Taylor & Francis, London.

Clutton-Brock, T.H., Price, O.F., Albion, S.D. and Jewell, P.A. 1991. Persistent instability and population regulation in soay sheep. *Journal of Animal Ecology*, 60, 573-608.

Gulland, F.M.D. 1992. The role of parasites in a population crash of Soay sheep (*Ovis aries*) on St. Kilda. *Parasitology*, 105, 493-503.

Jewell, P.A., Milner, C. & Boyd, J.M. 1974. (eds.) *Island survivors: The ecology of the Soay Sheep of St. Kilda*. Athlone Press, London.

Ryder, M.L., 1968. The evolution of Scottish breeds of sheep. *Scottish Studies*, 3, 127-167.