

# Mixed Breeding of Soay sheep on Soay or Hirta Islands

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**Introduction and Approach** – there are frequent forum discussions, as well as seemingly contradictory web site postings about whether, and when, Soay sheep were cross-bred either on Soay Island, or on Hirta. My intent is to examine the readily available information—including key original references when possible—to more accurately assess what we know about this issue. My approach is to extract, in reverse chronological order, the key references, with substantial surrounding text, so that the comments may be taken in context. Some key passages and phrases are highlighted, and some commentary by the author interspersed, but the conclusions are drawn together at the end of the extracted materials.

Conventions used here: Red text is added by G. R. Marrs. Black text is directly quoted from the attributed material. Where they have in turn quoted others, their work is italicized (as well as retaining the original quotes indicating a direct quote). Bold, underline have been added by GRM to emphasize certain key words.

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2004, Clutton-Brock, T., and Pemberton, J. *Soay Sheep – Dynamics and Selection in an Island Population*, Cambridge Univ Press. Pages 24-25:

There are three naturally regulated populations of sheep on St Kilda today. **Soay, (island)** off the north-west corner of Hirta, supports the original population of Soay sheep, which was the source of the animals introduced to Hirta in 1932 (see above). The name of Soay is probably derived from old Norse for 'sheep island' (Campbell 1974) and references to wild sheep on St Kilda can be traced back to the fourteenth century (Harman 1995). In the early **sixteenth century**, Boece mentions sheep populations on Hirta and then goes on to describe a separate population on a nearby island, presumably Soay: *'Another particular but uninhabitable island, lies near this. In it are animals by no means unlike sheep in shape, but wild and they cannot be caught except by surrounding them; they grow hair almost intermediate between sheep and goats, neither as soft as sheep's wool, nor as harsh as that of goats.'* (M. Harman, unpublished data) In **1697**, Martin estimated that there were 500 sheep on the island (**Soay Island - GRM**), but more recent estimates are lower (Campbell 1974). The highest of our counts suggests a total of at least 360 but, as on Hirta, numbers appear to vary considerably. There are historical records of the islanders visiting Soay to hunt sheep as well as to harvest their wool. During the **eighteenth and nineteenth centuries**, some sheep of later-developed breeds **mav** have been introduced from Hirta, for the owner of St Kilda levied an annual tax on the people of Hirta of one lamb in seven, and he or his factor **mav** have stored these lambs on Soay.

The crofters who occupied Hirta in historical times grazed the islands with cattle as well as sheep. Their sheep **probably** belonged to the four-horned Hebridean breed or dun-face, and were later replaced with Scottish black-face and Cheviot stock (Campbell 1974). The 1930 evacuation **included all** domestic stock and a subsequent expedition **shot remaining stragglers so that few, if any, of the islanders' sheep were left on Hirta after 1932**. The 107 Soay sheep (which included twenty-two castrated ram lambs and twenty intact males) introduced to Hirta increased rapidly.

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Clutton-Brock and Pemberton in *Soay Sheep* cite (Campbell 1974) for most of this information. (Campbell 1974) is Chapter 2 of *Island Survivors*-

1974 Jewell et. al, *Island Survivors*, , Chapter 2 Campbell, R.N. *St. Kilda and it's Sheep*, page 28-31:

## The Sheep of Hirta, Soay and Boreray

### Hirta

The Soay sheep (*Ovis aries*) of St Kilda, described by Elwes (1912), Ewart (1913) and Boyd *et al.* (1964), is the most primitive domestic form in Europe, resembling the original wild species and the domesticated neolithic sheep which was first brought to Britain in about 5000 BC and which persisted on the mainland until mediaeval times (Ryder, 1968). They have survived on St Kilda because of the geographical isolation of the island of Soay and the lack of improvement in the breed, resulting from poor communications and the smallness of the population.

Those on Soay may well be direct descendants of the first sheep introduced to the islands in prehistoric times although the possibility that they were originally introduced by the Vikings during the period of Norse dominance in the 9th and 10th centuries AD cannot be ruled out. This, however, is thought to be unlikely by Taylor (1968) who states that - *'The island [Soay] is noted for its ancient breed of sheep. The name (ON. Sauoa-ey = 'Island of Sheep') does not provide proof that the Norsemen placed the breed on the island. It is more probable that they named the island from the sheep they found there.'* Island names similarly derived are not uncommon on the west coast of Scotland, i.e. Soay, Isle of Skye, although Johnston (1934) considers that the name could also be derived from 'Soa' meaning 'pig isle' from the Danish and Swedish 'so' - a sow. Of 130 principal Gaelic and/or Norse place names on Hirta and Boreray, two only refer (indirectly) to the presence of sheep while twelve others refer to other animals including the pig (note: Gaelic for a whale is, literally 'sea-pig'). This is surprising as presumably the presence of sheep was of great significance for the human inhabitants. Possibly sheep were commonplace by the time of the island's first colonization by Gaelic or Norse-speaking people or arrived after most topographical features of the islands had been already named.

However, on Boreray 'the rock of the white wool' suggests that features were still being named in Gaelic in comparatively recent times. Only archaeological investigation of the older sites of human habitation on Hirta will throw light on the date of the first settlements and introductions of sheep to St Kilda.

When compared with improved mainland breeds, Soay sheep appear small and narrow-bodied with relatively long legs, short tails and narrow faces (Figs. 2.9 and 2.10). In most respects they resemble wild species, although the coat is composed mainly of wool. In good condition, adult rams and ewes weigh up to 35 and 26 kg respectively. Like many feral or unimproved domestic flocks, the Soay sheep are very variable in colour, ranging from pale buff to black, although the segregation into 'light' and 'dark' types can readily be made. A 'wild type' colour pattern may be expressed in the Soays and many rams have a rough mane as in wild sheep. Half the ewes and all but a few of the rams have horns; a few rams have scurs.

On Boreray and Hirta the present sheep flocks were introduced in historical times. Before the introduction of Blackface rams about the middle of last century (i.e., ~1850's) the crofters' sheep of Hirta were small. These were replaced by improved breeds with short wool, **white in colour but with a few black** amongst them. **A few rams of this type were once introduced to Soay but apparently did not change**

**the basic type although a number of white sheep appeared for a time (Elwes, 1912).**

The St Kildans tenanted the whole of Hirta, Boreray and Dun and at one time these islands supported almost 1300 Blackface sheep of which half were on Hirta (Fraser et al. 1957). These sheep were reported to be similar to sheep found elsewhere in the Hebrides, differing only in the size of horns (Martin, 1698). The old four-horned Hebridean breed **must have** grazed Hirta, and possibly Dun and Boreray, for more than a century before the introduction of Scottish Blackface and Cheviot stock in the middle of last century. Some of these four-horned Hebridean sheep **might** also have been introduced onto Soay but if so, there, as on Hirta and Boreray, **the strain appears to have been bred out**. They (the old Hebridian sheep) are commonly referred to as 'St Kilda sheep', although there is no record of them being derived from St Kilda flocks. No four-horned animals have been seen for over seventy years (Seventy years? Elwes reported in 1912 that Ferguson said there were none "in his time" – 20 years prior to 1912, so ~1892, or about 82 years prior to 1974...). Ewart (1913) regarded the production of four-horned sheep to be the result of crossing strains in prehistoric times. There are apparently no records of four-horned wild races, but since the Bronze Age there have been four-horned sheep in Europe, some with Urial-like and others with mouflon-like characteristics.

In 1930, **almost all** the improved stock, some 500 to 600 Blackface, **was taken from Hirta** by the departing St Kildans but the flocks of Blackfaces on Boreray and of Soays on Soay were left behind. In 1932, the extremely difficult task of **removing a balanced flock of 107 Soays** - 20 tups, 44 ewes and 43 lambs (of which 22 were rams and 21 were ewes) - from Soay to Hirta was accomplished **after the stragglers of the domestic stock on the main island had been shot**. The difficulty of carrying out this operation is emphasized when it is considered that Soay sheep cannot be herded by men and dogs, but must be run down and captured individually.

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1912 Elwes *NOTES ON THE PRIMITIVE BREEDS OF SHEEP IN SCOTLAND*, The Scottish Naturalist, No. 2, Feb. 1912.

*Elwes gives written questions to Mr. Clarke, who visits 'St Kilda' (presumably Hirta), and gives them (or reads them to) Neil Ferguson, who "understands English well", to read to his father, Donald Ferguson, who has been 'ground officer' for the period about 1890 to 1910. He answers in Gaelic which is translated and (presumably) written down by Clarke and this is then later interpreted and reported by Elwes as follows:*

The original breed of St. Kilda sheep may or may not have been the same as those now on Soay, but whether any of them were four-horned or not, **there have been no four-horned sheep on the islands (note plural-islands) in Ferguson's time (That would be ~1892 to 1912).**

Four Black-faced rams were introduced into St. Kilda by Sir John Macleod, who built the houses now inhabited by the islanders (when? Campbell 1974 says mid-1800's), and many others of this breed were sent afterwards at various times. Whether this was the first introduction of fresh blood or not is not stated. (Elwes *must be using the term St. Kilda to refer specifically to the island of Hirta.*)

At the time of this introduction the St. Kilda sheep were smaller, and had shorter wool and were white in colour, with a few black ones among them.

*"The Soay sheep are the old breed of St. Kilda. In the old days (when were the 'old days' to Donald Ferguson, in 1912?) the Laird claimed every seventh ewe lamb and*

every second ram, and these were placed on Soay, which was the Laird's preserve, as it is to this day. **A few rams of the race which preceded the introduction of the Black-faced rams were once introduced into Soay, but they did no good.**" (Presumably the quoted material is the translated, transcribed comments of Donald Ferguson - GRM) This is the only introduction of new blood to Soay that Ferguson knows of.

The Soay sheep are now not so large as they once were, and are gradually becoming smaller. This, Ferguson thinks, is due to the fact that there are so many rams which cannot be kept down because of their wildness. **As the result of the introduction of the rams alluded to, a number of white sheep appeared for a time, but their descendants soon reverted to the original colour.** Half the Soay sheep are now black (I presume this means dark brown) (GRM note- this previous parenthetical comment, and the one following, are by Elwes in the original article, commenting on the transcription of Ferguson's translated comments), but are the same size and shape as the others, which are brown (? pale brown). *"Some of the brown sheep have patches of black, and some of the black sheep have white marks, especially on the face. Some of the brown sheep have also white marks on their faces, but these are not common. A number of the Soay ewes have horns, probably about one-third. The horned ewes are not paler in colour. The horns of the rams never form a complete circle."*

Note that the first direct quote of Donald Ferguson says the Laird's ewes and ram lambs were placed on Soay Island in 'the old days'. That he then makes special mention of '4 rams of the race which preceded Black-faced were once introduced'. This would suggest to me that these 4 rams were NOT the same 'race' as the Laird's 'every 7<sup>th</sup> ewe and 2<sup>nd</sup> ram lambs'—or why would he make special note of these 4 rams? One interpretation would be that there was an 'original' Soay 'race' that was tended on Hirta in the 1700's (or earlier). The Laird's lambs were sent over to Soay island. When 'improved' Hebridian type sheep (some with 4 horns) were brought to Hirta (they were there by 1698 according to Campbell's citation of Martin) they may or may not have been cross-bred with Soays, and they may or may not have had the Laird's lambs hauled over to Soay Island. This apparently had stopped by the time of introduction of Black-faced Scottish in the mid-1800's. Nobody mentions Black-faced being placed on Soay Island.

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*Not* cited by T. Clutton-Brock et. al. in 2002 in *Soay Sheep* is Ryder 1983 *Sheep and Man.*, yet he seems to have the knowledge and experience to contribute to this question.

Ryder, M.L. (1983) *Sheep and Man*, Duckworth, pages 510-511:

Ryder (1968a) detailed the history of individual Scottish breeds, only a summary of which can be given here. The Bronze Age Soay sheep that survives on St Kilda has already been described in ch. 2 (frontispiece and Fig. 2.1), 'Soay' is in fact a Norse word meaning 'sheep island', but whether this indicates that the Vikings found sheep on the island of Soay in St Kilda or that they put sheep on the island is not known. **It is clear, however, from a reference to 'wild beasts' on Soay by Boece in 1527 that the sheep were then already feral.** Martin writing in 1698 distinguished between the 500 feral animals on Soay which he said had two or three lambs at a birth and were hunted by the St Kildans, and the 2000 sheep on the main island which included white animals.

Macaulay, who visited St Kilda in 1758, said that the **500 sheep on Soay belonged to the owner of the islands and were difficult to catch.** The 1000 sheep on the main island were very fruitful, and **frequently had four horns.** (Hence the comments by Campbell that the old Hebridian breed must have grazed

Hirta for over a century before Black-faced were introduced in mid1800's). Elwes wrote in 1912 that there had been no four-horned sheep on St Kilda for many years. The owner then claimed every second ram and seventh ewe to put on Soay, (the interpretation of Elwes that the owner of the islands claimed lambs to put on Soay Island in 1912 ('then') is incorrect, if one reads the Elwes article) and the yearly hunt for their wool still persisted. Such introductions apparently had little if any effect on the Soays, and the sheep may well not have interbred given the tendency for assortative mating to take place, and the known dominance behaviour of Soay rams (Boyd, Milner & Jewell 1974).

The sheep that replaced the Soay on Hirta, the main island of St Kilda, were presumably of Old Scottish Shortwool type, and these in turn were replaced by the Scottish Blackface about 1870. Some of these remain today on the St Kildan island of Boreray (see below). According to Macdonald (1978) the Blackface had reached Lewis by about 1800.

The women of St Kilda used to hand-spin their wool, and during the winter the men wove it into a grey tweed similar to that of Harris (Fig. 9.27). Fibre measurements from surviving tweed were given by Ryder (1968a, 1974e).

A declining population eventually made it impossible for the St Kildans to gain a living from their harsh environment, and the remaining 36 islanders were evacuated in 1930. All the improved sheep were either removed or shot, and a year later 100 Soay sheep were introduced to Hirta from Soay. These multiplied and the numbers now fluctuate in cycles between 500 and 1500 animals. St Kilda is a National Nature Reserve, and the sheep have been studied by a team of research workers coordinated by the Nature Conservancy; I spent two weeks on the island in 1964.

So Ryder 1983 adds that feral Soay were on Soay Island by 1527. He says *presumably* Scottish shortwool type replace the Soay sheep on Hirta – whether these are similar to or merely alternatives to the proposed 'Hebridian' type before the Scottish Black-faced in mid-1800's (or 1870 Ryder states) is unclear. Then in 1758 Macauley reports that the Hirta sheep are different from the Soay island sheep—notably 4-horned. He also notes that the Soay island sheep belong to the owner of the islands (the Laird?), so this may well be 'the old days' that Ferguson refers to. Note that Ryder says 'all' improved sheep were removed or shot on Hirta in 1930-31. This is consistent with Campbells 'most were removed', and the 'stragglers were shot' and 'few if any' remained on Hirta in 1932. Nobody can be sure one way or the other.

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Shortly after *Sheep and Man*, in 1984 Ryder wrote Chapter 9 *Sheep* in Mason, I. L., (1984) *Evolution of domesticated animals*, Longman, page 83.

### **Feral populations**

In St Kilda the island of Soay (which is Norse for 'sheep island') gave its name to the Bronze Age sheep which have probably survived there since prehistoric times. In 1931, after the islanders had left, 100 sheep were transferred from Soay to the main island Hirta, and these have provided a feral study population (of about a thousand animals), as well as a source of animals for more detailed study on the mainland.

The Iron Age sheep with a range of colours is represented by the native Orkney breed which survives in Orkney only on North Ronaldsay. Although not truly feral, since (c. 2000) sheep (*sic*) have owners, they receive little attention living almost entirely on seaweed, being confined to the seashore by a wall encircling the island. Animals have been removed for study, and a reserve population has been established on Linga Holm, another island in Orkney.

Returning to St Kilda, a second feral population remains on the almost inaccessible island of Boreray. These 400 sheep are descendants of Hebridean Blackface sheep kept by the islanders, but which could not be removed when they were evacuated in 1930. They represent the Hebridean Blackface of 1870-1930 and must contain 'blood' from the now extinct Hebridean variety of the Old Scottish Shortwool, which was probably similar to the Orkney (above). The Blackface sheep on Boreray in fact 'fossilize' the 19<sup>th</sup>-century Scottish Blackface which was the result of a cross between the Old Scottish Shortwool, and the Blackface sheep which came from England in the 18th century.

Here he more explicitly states that he considers that there was a now-extinct 'Hebridian variety of Old Scottish Shortwool' that occupied Hirta from at least 1698 to 1870. These would be what Campbell says others called 'St. Kilda sheep'. This seems to reconcile the description of 'mostly white sheep' on Hirta as the race in the 1700 to 1850's - before the Scottish Black-faced displaced them (or cross-bred with the 'Hebridian variety of Old Scottish Shortwool' to make the 'Hebridian Blackface' Ryder refers to above).

## Purity of Soay Sheep on Soay Island and Hirta Island - A Synthesis of Available Information

- 1527 - Boece reports 'wild beasts' on Soay Island that Ryder is sure are feral sheep – and by definition *are* Soay sheep.
- 1698 – Martin reports that the sheep on Hirta are different from those on Soay island. The Hirta sheep includes white animals. Ryder considers these to be the 'now-extinct Hebridian variety of Old Scottish Shortwool'. This *could* be considered a mixed of imported Old Scottish shortwool with the previous Soay-type on Hirta.
- 1758 – Macaulay reports that the ~1,000 Hirta sheep are different from the ~500 Soay Island sheep in frequently having 4 horns. He says the sheep on Soay Island 'belong to the owner of the islands'. This does not necessarily mean they had to have been placed there, from Hirta, in recent times, only that they were owned by the island owners, not the tenants of the islands (the Hirta islanders).
- 1912 – Elwes has Clarke carry written questions to Neil Ferguson to ask his father Don Ferguson, for 20 years the 'ground officer' on Hirta. The significant reported responses are:
  - The original breed of St. Kilda sheep may or may not have been the same as those now on Soay, but whether any of them were four-horned or not, **there have been no four-horned sheep on the islands (note plural-islands) in Ferguson's time** (That would be ~1892 to 1912).
  - Four Black-faced rams were introduced into St. Kilda by Sir John Macleod, who built the houses now inhabited by the islanders (**when? Campbell 1974 says mid-1800's, Ryder 1983 says 1870**), and many others of this breed were sent afterwards at various times. Whether this was the first introduction of fresh blood or not is not stated. (**Elwes seems to be using the term St. Kilda to refer specifically to the island of Hirta.**)
  - At the time of this introduction the St. Kilda sheep were smaller, and had shorter wool **and were white in colour, with a few black ones among them.** (**Even in 1698 Martin reported white animals in Hirta flocks.**)
  - **"The Soay sheep are the old breed of St. Kilda. In the old days (when were the 'old days' to Donald Ferguson, in 1912?) the Laird claimed every seventh ewe lamb and every second ram, and these were placed on Soay, which was the Laird's preserve, as it is to this day. A few rams of the race which preceded the introduction of the Black-faced rams were once introduced into Soay, but they did no good."** (Presumably the quoted material is the translated, transcribed comments of Donald Ferguson - GRM) This is the only introduction of new blood to Soay that Ferguson knows of.
- The race that preceded the Black-faced rams would have been Ryder's 'now-extinct Hebridian variety of Old Scottish Shortwool' of at least 1698 to 1870. They would have had many white animals, and frequently 4 horns.
  - Ryder 1983, *Sheep and Man*, page 509, describes the Old Scottish Shortwool as being developed in the thirteenth and fourteenth centuries in Scotland, and that many were white and many had 'more than one pair of horns'. Presumably sometime between ~1200 and 1698 these were introduced onto Hirta and either through crossing with

Soays, or simply by selection by St. Kildans, or natural selection, they became what Ryder calls the 'Hebridian variety of Old Scottish Shortwool'.

- Ryder 1984 considers that the 'Hebridian Blackface' is likely to be the result of Black-faced Scottish, introduced into Hirta in 1970, mixed with some of the existing 'Hebridian variety of Old Scottish Shortwool', which then 'naturally evolved' in a feral population after the 1932 placement on the island of Boreray.
- Whether the sheep on the island of Soay, when 107 were removed in 1932 to re-populate Hirta, had any 'blood' from the 'now-extinct Hebridian variety of Old Scottish Shortwool' from either depositing the Laird's every 7<sup>th</sup> ewe and 2<sup>nd</sup> ram lamb during the period from 1700 to 1870, or from 'A few rams of the race which preceded the introduction of the Black-faced rams, **but they did no good**' can likely never be known with certainty. Given that both the Old Scottish Shortwool and Blackface had white, and that white is a dominant genetic coat color, and that no dominant white Soays are found today, nor have been reported ever on Hirta suggests to me that Ryder's 1983 speculation that '**Such introductions apparently had little if any effect on the Soays, and the sheep may well not have interbred given the tendency for assortative mating to take place, and the known dominance behaviour of Soay rams**' has merit. That is, there is for all practical purposes no surviving evidence of any cross-breeding.
- The sheep removed from the island of Soay in 1932 probably represented the breed composition at that time, and thus they are the only representation we have of what 'pure' Soay sheep are. Any other speculation about what they *might* have been like prior to any possible mixing is just that – pure speculation.
- Whether the Soay sheep introduced to Hirta in 1932 *might* have been interbred with some remaining stragglers from the 'Hebridian Blackface' breed likewise *can never be known with certainty*. The several citations stating that 'all stragglers were shot', combined with the 2 years between evacuation and re-population of Hirta, and the clear intention of eradicating the Blackfaced, as well as absence of any phenotypic evidence of the breed in the years since 1932 leads me to believe that the Soay sheep on Hirta are as pure of a representation of the Soay on Soay Island in 1932 as we can ever have, and furthermore that the Soay on Soay Island in 1932 are by definition the Soay breed. Anyone claiming that they *know with certainty* that the Soay sheep on Soay or Hirta island are mixed breeds is mis-representing the available information.

### Conclusions:

The population of sheep existing on Soay island in 1932 is *by definition* the Soay sheep breed. There is no evidence that the phenotype that existed for hundreds, if not thousands of years on Soay island has been altered noticeably in recent times. There is no evidence that there was cross-breeding on Hirta after the 1932 introduction of a representative population of Soay sheep, and almost certainly no cross-breeding since that time, hence any Soay with a traceable pedigree to sheep from Hirta since 1932 are also *by definition* the Soay sheep breed—that is, as pure of Soay sheep as we can *ever* have.