Burren Life Project: Farming for Conservation Conference

An example of "farming for conservation" and the relative impacts of pillar I and pillar II measures

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ABSTRACT

Islay is the southernmost island of the Inner Hebrides. It has a varied geology and topography but equally important for the nature conservation interest is the long history of livestock farming. Because of this a wide range of important open habitats occur today including coastal grasslands, blanket bog, wet and dry heaths, sand dunes and machair. These habitats, both individually and in combination, provide conditions for an unusually rich assemblage of plants, invertebrates, reptiles, mammals and birds.

Farming in Islay has evolved from the subsistence farming and virtually self-sufficient commercial farming (based on cattle rearing) of the 18th and 19th centuries. Despite the farm amalgamation, intensification and specialisation of the 20th century farms are still mostly family enterprises based on extensively reared cattle and sheep.

Kindrochaid Farm in NW Islay, has been managed since 1987 specifically with the objective of maintaining and enhancing the nature conservation interest. It comprises a relatively small area of traditionally managed grasslands and arable land and large areas of open pasture of semi-natural vegetation grazed at low-intensity by Highland cattle and Blackface sheep.

Despite a range of conservation designations (e.g. SSSI, Ramsar, Natura) there is little positive support for “farming for conservation” or for continuing the low-intensity system that is so important for the biological interest of the farm and the wider area. With one notable exception (Less Favoured Areas payments) pillar II payments from the CAP make a relatively minor contribution to gross farm income compared to those from pillar I.

The points covered in the paper are:

1. A brief outline of Islay; the history of farming, its influence on the landscape and its importance for nature conservation.
2. A description of the farming system at Kindrochaid and the biological interest.
3. Comment on the incentives and disincentives for low-intensity farming of this type.

ISLAY

Farming in Islay – past and present

Scotland has a long history of livestock farming. During the 13th, 14th, 15th and 16th centuries cattle were the main form of transportable wealth; the Exchequer Rolls for 1378 show there were 45.000 hides exported that year. In the early 16th century it was reported that "many men possess as many as 10.000 sheep and 1.000 cattle" (Haldane 1997). By the 17th century there was a well organised trade in cattle which involved the movement of large numbers annually along drove roads from the distant pastures (including Islay) to the main markets in central Scotland and from there to England. This trade in cattle persisted into the 19th century. In 1777, 90.000 head were sold in Falkirk and by 1850 this had risen to 150.000 per annum (Dennis 1998). In the 1800's some 2.000 – 3.000 head of cattle from Islay and Jura were shipped from Lagg in Jura and driven to Falkirk (Wright & Tait 1994).

The transhumant and pastoral-based agrarian economy that existed from the 12th century through to the 18th century was gradually being replaced by more sedentary livestock rearing and cultivation and permanently inhabited farmland. In Islay by about 1870 the present agricultural landscape and settlement pattern had largely been established (Storrie 1998) with farms being mostly mixed rearing sheep and cattle, using horses for traction and growing a range of crops of both cereals and roots, including of course by then the potato. This was probably the period of maximum biological diversity (see Tubbs 1997 for explanation).

In the 1930's Islay was one of the few places that still had Highland Cattle bred pure and crossed with whitebred shorthorns, dairy cattle were mostly Ayrshires (although at the time decreasing) and sheep were Blackface, Cheviot and Border Leicester – as they are to the present day.

By the mid 1950's there were no Highland Cattle but Ayrshires were on the rise (in line with national trends) along with Shorthorns, Galloways, Irish Blue-Grey, Aberdeen Angus and the new Scottish breed the Luing and various crosses but from 1978 – 1988 and to the present the Continentals – Charolais, Limousin and Simmental crosses – have predominated.

A review of the agricultural data for Islay, Jura, Colonsay and Gigha for the period 1866-1989 (Clarke 1991) shows a reduction in the number of holdings from 606 to 183. There was a reduction in the "farmed" area of 33 % and only one Parish (Kilchoman on Islay) had shown an increase over the 119 year period - and of only 1 %. There has been a loss of 84 % of cornfields, 90 % of root fields and 13 % of grass fields.

Although livestock numbers in Islay have fluctuated over this period (from 1866 to 1989) the absolute numbers have not changed dramatically – cattle from 7.700 to 11.802 and sheep from 72.000 to 70.500. On Jura cattle numbers fell from 928 to 682, but sheep from 18.535 to 3.584.

In Islay cattle numbers oscillated around 9.000 from 1860 to 1940 (the low point of 6.500), peaked in the mid 1970's at 18.000 and have fallen to around 12.000 today. Sheep numbers started the period at around 75.000, peaked at almost 90.000 in 1890 and fell to a low point of

50.000 in 1945. Post-war they peaked at 70.000 in the early 1960's and again in the early 1990's. From there they have fallen again and continue to do so.

Interestingly at the livestock Mart in Islay on the 19th February 2008 virtually the last breeding sheep from the hills of Jura (there were 11.000 in 1960's) were sold (for £11 per head) – In fact numbers there are now only about 400 low-ground sheep.

Despite these changes to the mosaic of cropped and cultivated ground and natural pasture, and the fluctuations in the numbers and breeds of livestock, there has been a continuity of natural pastures grazed by cattle and sheep and it is this aspect of farming that is of primary importance for the wildlife that we value today. But despite the "evolutionary" links between current commercial management systems and those of the past, many (probably most?) of the physical features of the landscape are the direct result of previous periods of farm management, not the present day management systems.

Today virtually all farms have cattle and sheep and the breeding stock is used to produce lambs and calves that are mostly sold on the Island through the local Livestock Mart. The traditional breeds of cattle that were common in the past (Highland, Galloway, Shorthorn, Hereford etc.) have mostly been replaced with the larger Continental breeds (and crosses) that the market demands – Limousin and Charollais are the most popular. More and more farms are finishing lambs and calves whereas in the past virtually all production was of "stores" for fattening on the mainland. There is hardly any hay grown and most of the conserved grass is in the form of silage grown in reseeded pastures which are relatively heavily fertilised (100kg/acre). Some cereals are grown (there is an increasing demand on the Island for good quality barley from the Whisky distilleries) but most supplementary hard feed for livestock is in the form of bought-in concentrates.

The number of farm enterprises has fallen markedly over the past 50 years and many former farms are now managed as single businesses. Despite this intensification and specialisation of farming, many farms are in agri-environment schemes. However, there is little or nothing in these schemes that influences the basic farming *system* which, as mentioned above, strongly reflects the wider market demands and trends in agriculture.

So although at the landscape scale farmland is less diverse than in the past, Islay is today still a similar mix of grassland and cropped land, moorland and heath, marsh (bogs and fens) and upland and coastal grassland, as well as scrub and woodland. However, the proportions have changed markedly especially for the cultivated land. Today over 30 % of the island is bog vegetation and 33 % is dominated by undulating rocky moorland and rough grazings. Only 8 % is under cultivation, rotational grassland or older in-bye pastures.

Not surprisingly a study of land use, bird habitats and nature conservation on Islay (Bignal et al. 1988) concluded that the vegetation and land types of Islay strongly reflect the over-riding influence of extensive livestock rearing on pastures consisting of semi-natural vegetation. This is the aspect of farming important for nature that has endured throughout the historical period.

The land types and their component habitats interlink in various combinations to provide suitable conditions for a wide variety of plants and animals. The interplay between the 'in-bye'

land (close to the farm) where crops of hay, silage, cereals and roots are grown and the extensive pastures grazed by cattle and sheep throughout the year has been of paramount importance.

The long established practice of grazing cattle and sheep together to optimise plant biomass production and utilisation is central to the livestock farming systems (the Scottish Hill Farming Research Institute used to suggest an optimum ratio of 100 sheep:12 cattle:4 horses). For instance, without the pressure of grazing cattle, the ecological and agronomic value of the *Molinia caerulea* grasslands, acid grasslands and heathlands would be reduced, mainly because seasonal growth would no longer be removed, dead material would accumulate and grasses (particularly the *Molinia*) would become impalatable to sheep. By affecting the vegetation composition and structure in this way, grazing by cattle performs a fundamental role in creating the conditions needed by many plants, reptiles and invertebrates.

KINDROCHAID FARM

The 710 hectares (660 for IACS/ SFP purposes, because a proportion of the coastal cliff grazing is excluded) that we farm centred on Kindrochaid is partly owned (80 ha at Kindrochaid and Gleann Mor), partly rented on a long-term lease (470 ha) and partly composed of short-term annual leases (160 ha).

The system of management is based on the mixed systems that have dominated farming in Islay for the past 50 years at least, integrating rotational arable cropping with livestock production. It is currently extensively managed (the average stocking density is 0.2 LU/ha) with suckler cows (Highland Cattle bred pure) and sheep (Blackface, Swaledale crosses, Icelandic and Hebridean). Rams for crossing are Swaledale, Blue-faced Leicester and Lleyn, (some Blackface and all the Icelandic and Hebridean are bred pure)

The core area (made up of the farms of Kindrochaid, Braigo and Sanaigmhor) is a mosaic of cliff communities, coastal heath, calcareous grassland, Molinia grassland, wet and dry heaths, and a suite of mires, plus still and running water. Parts are acidic and peat covered but there are localised outcrops of calcareous rocks, as well as sand dunes and grassland over blown shell-sand (machair) (Harris 2002).

Rodwell (2005) pointed out that the physical features of the contemporary European agricultural landscape is made up of layer upon layer of earlier management systems – a palimpsest. And in north-west Islay much of the current nature conservation value relates to physical and biological features created under former systems of management dating back to the Mesolithic (Mithen 1999). The landscape includes Bronze-Age field systems with prominent earth banks, post-medieval rig and furrow, 17th century seasonal (summer) pastures (shielings) and field clearance cairns (RCAHMS 1984). There are post-2nd World War large single furrow drainage ditches across much of the moorland and heath, fire-plagioclimax *Calluna* vegetation dating to the management of the 1950s and 60s and grasslands and grass fields reflecting pre-CAP Agriculture Department grants for pasture drainage and re-seeding and applying basic slag and lime.

Many of these features are now integral to the biology of the area (e.g. for invertebrates, reptiles and plant communities) but they owe much to former management systems. This does not detract from the importance of current management, but it should be recognised.

Some of the current vegetation communities relate to the cessation of former management systems, for example bracken *Pteridium aquilinum* is now more common partly because, even in the recent past, it was harvested for livestock bedding and other uses. There is Calluna growing on old ridge and furrow cultivation, and in general marsh, moorland and heath vegetation has expanded at the expense of grassland. There is one extensive area of *Phragmites* fen next to the river Leoig that the former tenant remembers as being a turnip field.

The farm management system –cropping, cattle and sheep

The mixed system is composed of three main components – the rotational **arable cropping**, the **sheep** and the **cattle**.

Cropping

There are 660 ha of natural pasture, 48 ha of grassland and 2 ha of crops (oats). The grasslands are mostly old pastures (permanent grassland) cut once either for hay (in small bales), haylage or silage (in big bales) depending on weather conditions. The aim is always to make as much hay and haylage as possible but in some years it is all silage. There is one meadow of 2 ha. which is always cut for hay and has not been fertilised for at least 20 years (and prior to that it was pasture) which is now floristically rich and thought to be unique in Islay. It has become botanically more diverse and richer over time but in parallel the hay production has fallen from 10 tons to 2 tons

The agricultural function of the grasslands is threefold – to provide fodder for feeding cattle and sheep during winter, for forage in the Spring and for aftermath grazing in Autumn.

The oat crop is harvested with the reaper-binder and the sheaves are dried in stooks and then stored in stacks built on raised stone circles in an enclosed stack-yard. During winter the sheaves are fed whole to the breeding cows.

Sheep

On the “hill” (the coastal cliffs and moorlands) there are 360 Blackface ewes in four hefts (some bred pure and some crossed with Swaledale rams). The only supplementary feed that these sheep get is access to mineral buckets, although two of the hefts generally ignore the buckets in preference for seaweed on the beaches. The ewes are put to the ram at the end of November and they lamb in April. Lambing percentage is in the region of 80%. A proportion of the pure ewe lambs are kept for replacements on the hill and swale-cross ewe lambs for replacements on Kindrochaid. The flock is therefore a “closed flock” which has biosecurity

advantages since no additional breeding stock needs to be bought-in. The one heft on Kindrochaid is composed of Blackface cross Swaledale ewes which are put to the Bluefaced Leicester ram to produce mule ewe lambs for sale for breeding (they are put to terminal sires such as Texel and Suffolk to produce fat lambs) and wedder lambs sold store to finishers (for meat). The Kindrochaid sheep are supplementary fed with silage and mineral buckets during winter and 18 % protein sheep rolls for 6 weeks prior to lambing. Lambing percentage is about 120 %.

Cattle

Free-ranging Highland cows graze the 450 ha of open moorland and coastal cliffs. They are bred pure to produce heifers for sale as breeding stock and bullocks for meat.

In the first months of the winter the breeding cows each get one sheaf of oats a day. After the turn of the year until the end of April the 32 cows get two big bales of silage each day and a bag of suckler cow rolls. Feeding out-wintered cattle without damaging the ground is a considerable challenge. Ideally we would feed oats in the sheaf throughout the entire winter since this can be done using a quad bike and trailer without any detrimental effects on the ground or the vegetation. As soon as silage feeding starts some localised damage occurs (in fact very small in relation to the whole area). This could be rectified feeding hay in small bales using the bike and trailer. However this will necessitate building a hay shed and buying-in 30 to 40 tons of hay (currently at £160 /ton). We are currently comparing this option against the cost of making silage.

The cows calve from February through to August. Calves are weaned in January. A small number of heifers are kept for replacements. Occasional an exceptionally good bull calf is kept. During summer the cows have a cyclic grazing pattern across the area. We do not understand fully what determines this grazing behaviour during the summer but one imagines that it mimics the way wild herbivores would behave.

Highland beef from the bullocks (slaughtered as close to 30 months as possible) was marketed direct to the public when Islay had an abattoir (up to 2003). Since then they have been sold in cohorts at either around 12 months of age or 18 months through United Auctions.

Heifers are sold at two years old or three years old (in groups) and this means that other grazing areas are needed for them away from the bull for the period between weaning and sale. A heifer (Sidonia 3rd of Kindrochaid) sold in a consignment in 2003 to a conservation grazing project in the Isle of Wight, is the dam of the champion bull at the February 2008 Highland Cattle Society show and sale in Oban.

The ecology of the farm

The current biological value of the area is dependant on maintaining a low-intensity pastoral system and the open habitats associated with this. Management simply aims to perpetuate a system that uses the long-established practice of grazing cattle with sheep (and horses) to optimise plant biomass production. Burning is never used because of the biological impoverishment associated with it. The aim has been to maintain the botanical status quo on the pastures where the vegetation is a typical mosaic of the Atlantic west coast with grasslands dominated by *Molinia caerulaea* but also including more species-rich grasslands and sand dunes, acid grasslands (*Festuca, Agrostis, Nardus*), dry heath (*Calluna vulgaris, Erica cinerea*) and areas of dry heather moor (*C. vulgaris*). There are also areas dominated by bracken (*Pteridium aquilinum*).

Many species of orchids occur – heath spotted, common spotted and northern marsh orchid are abundant and widespread and early marsh and lesser butterfly are frequent in grassland, including the hay field. Some grasslands have Meadow thistle (*Cirsium dissectum*) other have adders tongue fern. Devils bit scabious (*Succisa pratensis*) occurs throughout many grasslands and heaths.

The bog and marsh communities reflect the hyper-oceanic conditions and have some rare species of bog mosses (*Sphagnum* spp.); black beaked sedge (*Schoenus nigricans*) replaces *Eriophorum* species on the Glac na Criche ombrogenous mire making this botanically more like the bogs of Mayo and Sligo than others in Scotland (McVean & Ratcliffe 1962); there are several insectivorous plants – butterworts (*Pinguicula lusitanica* and *vulgaris*), sundews (all three *Drosera* species) and bladderworts (*Utricularia* spp.).

The area supports some notable breeding species of birds including golden eagle, chough, peregrine, corncrake; as well as good populations of “common” birds such as twite, skylark, stonechat, whinchat, meadow pipit. Like other farms in Islay the grass fields in winter are used by Barnacle and Greenland White-fronted geese. There are 45.000 Barnacle geese and 4.500 Greenland White-fronted geese wintering on Islay this year.

Butterflies include dark green fritillary, large heath, green hairstreak and marsh fritillary – a speciality of Islay. In Gleann Mor the forester moth was discovered in 2007 (for the first time in Islay) and good populations of six spot burnet moths and the marsh fritillary butterfly occur there together – all species associated with lightly grazed herb-rich pastures.

The Marsh fritillary butterfly (*Euphydryas aurinia*) is a species of the Molinia grasslands and coastal heaths and depends on a vegetation mosaic that includes short swards (aprox. 2-20 cm) and the presence of the larval food plant (Devils bit Scabious, *Succisa pratensis*). Islay is one of the few remaining strongholds of this annex II species in Europe and this is largely due to the long history of pastoral management. Because of the large areas of suitable vegetation (available here on a landscape scale) a viable meta-population of the butterfly has survived.

The butterfly is on the wing for a short period in May and June. Large batches of eggs are laid on the underside of *Succisa* leaves. In July and August when the larvae are still tiny they

construct a tent from leaves and silk and live within this structure. Hibernation starts early and the half-grown larvae spend the winter together in a silken web deep in the vegetation. After hibernation they are still gregarious and bask in sunshine on plants. They become fully grown in May and pupate for 3 to 4 weeks.

Islay is the only site in Scotland listed in the publication “Prime Butterfly Areas in Europe” (Van Swaay et al. 2003) where they state that in Islay “The chief threat is the habitat change that results from the difficulty of maintaining traditional low-intensity grazing regimes in this island community”.

INCENTIVES, DIS-INCENTIVES AND THE FUTURE

The support mechanisms

The farm makes a small profit but not enough to provide a salary. Currently market sales represent about 20 % of income, Single Farm Payment (SFP) 40 %, LFA 27 %, local goose and corncrake schemes (the latter now ended) 6 % and agri-environment 6 %.

So 20 % comes from the market, 40 % from Pillar I and 40 % from Pillar II, virtually all the latter through the LFA scheme. But none of this support is specifically targeted at low-intensity farming. Indeed, the SFP would be higher if we had stocked higher in the reference year and the LFA payment would also be higher (it is based on stock held in 2001 related to land held in 2003) as payments are higher for better land – the latter defined by stocking density.

Essentially the choice to farm in a low-intensity way is ours and it is not a response to policy incentives.

The prognosis for the next few years is not optimistic. If the CAP health check proceeds as expected there will be pressure to reduce the SFP at the expense of more Pillar II payments. But it is hard to see how such payments could provide 40 % of income; moreover the future of the LFA scheme is far from certain and this represents a further 40 %.

The market

The main products from the farm are the Highland heifers and bullocks, the Blackface lambs, Mule lambs, Hebridean and Icelandic wedders and wool. There is a myth that there is a burgeoning niche market for the products of low-intensity farms. In fact these products are discriminated against by the conventional market and niche marketing from a Hebridean island is not easy. Several local farmers have tried this and have now abandoned it. Blackface lamb prices are considerably less than equivalent continental crosses and the same applies to Highland bullocks because the killing-out ratio is less and because there are only 2 or 3 abattoirs in Scotland that accept horned cattle. Because of the dramatic fall in the size of the breeding ewe flock in Scotland the prices of the mule ewe lambs (for breeding) has fallen. In 2007 the prices per were the same as in 1993 and 1994 (see appendix).

This depressing picture may improve when the planned new abattoir in Islay opens but even then considerable work will be needed to re-establish the direct market for the beef and lamb. The idea that the market will automatically produce benefits for nature is ill conceived.

The future

Whilst preparing this paper I telephoned an official dealing with the new Scottish RDP to see if there is likely to be anything specifically aimed at "high nature value farming areas". Below summarises the outcome:

Q: Are there likely to be any incentives for low-intensity farming systems?

A: Only if there are viable markets that support that type of system.

Q: Agri-environment does not place a higher monetary value on things of higher biological value – so we get more per hectare for a silage field than for an herb-rich marshland. The grazed open moorland pastures are "valued" at £1 per hectare. What of the future?

A: "Payment rates are all based on profit foregone to change to a low-intensity system – but the scheme can't pay for nature".

Some other general comments were:

"The biological case for keeping cattle has not been made."

"HNV is not sufficient justification in its own right – the concept is too woolly – we will have to link to regions and to nature. We must link activities to outcomes"

"Only two years ago I never thought we would need a Grazing Animals Project (GAP) in Scotland – but now it is VERY relevant."

"The huge reduction in stock number will take the pressure off the hill and will allow farmers to concentrate on managing the in-bye land better. "

So there seems to be an acceptance that nothing can stop the reduction in livestock numbers that is happening in the most marginal areas for farming. Also that in these areas farming will in future be concentrated on the best land. Although there might be hypothetical short-term biological gains in the upland areas it is unlikely that land will be left unmanaged. There are ambitious targets for forestry planting in the new RDP. Nature conservation will (ironically in view of the comments made at the very beginning of this paper in relation to attitudes in the 1980's) tend to be focused on nature reserves and Natura sites. Here grazing will be maintained by seasonal graziers, taking the management of the land outside of the farming systems they developed in.

Conclusion

There is little to encourage low-intensity farming to anyone not already committed to it. For those that are, the benefits are mostly non-economic, but this is not so different to the crofting agriculture of the past that was once widespread through the west highlands and islands of Scotland. But some attractive incentives are needed to make it happen at the scale needed for there to be benefits for nature conservation. For us, an incentive is that we can see real benefits for nature through the farm management and we live and work in a rather unique place. We have sons who are farmers and grand-children growing up on a farm with aspirations to be farmers. Having said this tourism and second homes has pushed the price of houses beyond the means of local people and it is hard to see where the openings for aspiring young farmers will come from.

There are other farmers and farming families, including many of the more commercial farmers, that farm because of these cultural links to the place rather than purely for economic reasons – in fact there are few farming families that obtain their entire income from farming.

Unfortunately policy makers seems to believe that "nature" can be managed in future by flying flocks and herds of sheep and cattle, that the perturbation caused by the predicted demise of livestock farming will be rectified at some point in the future by a new generation of lifestyle farmers and that in the short term tourism will be the saviour of the economics of these rural areas.

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APPENDIX

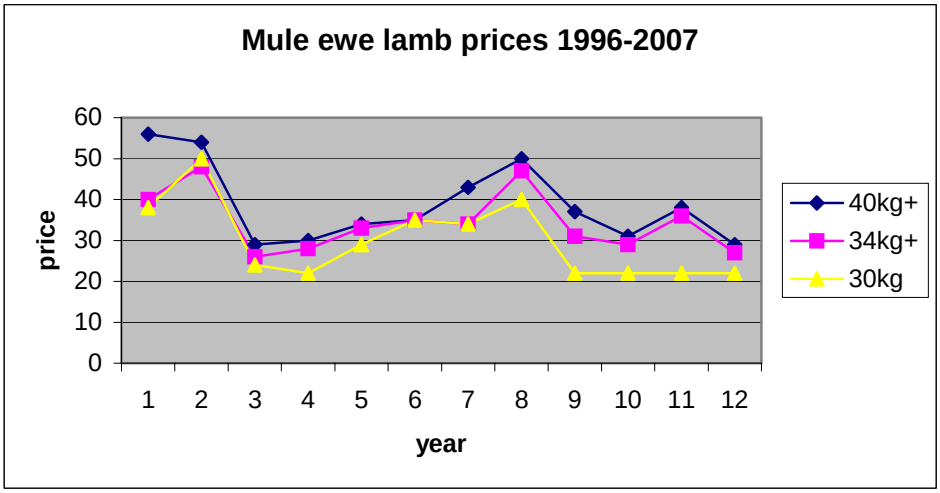

Fig. 1: Mule ewe lambs 1996-2007; price in pounds.