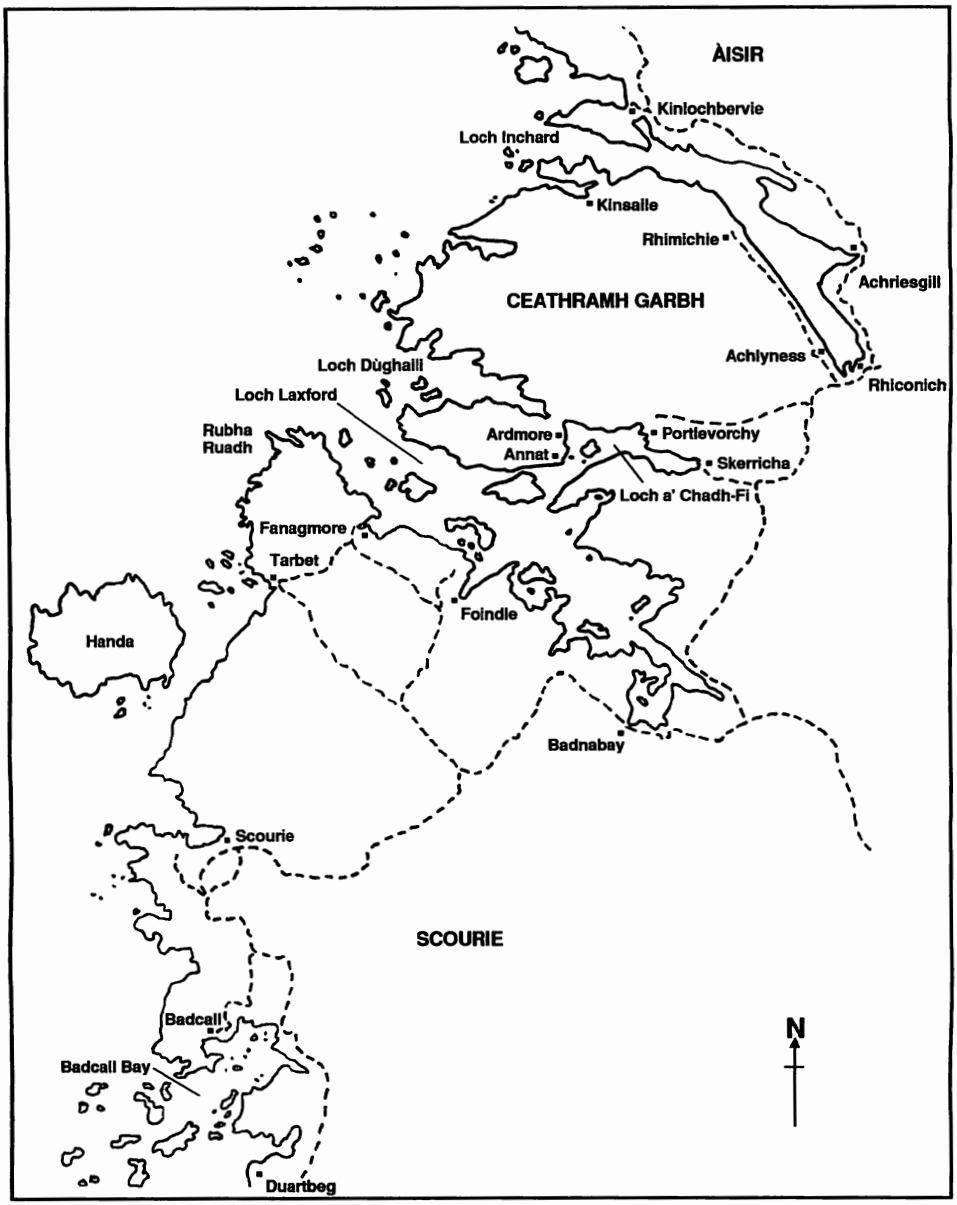

Fig. 6.1 Settlements and coastline around Loch Inchard, Loch Laxford, Scourie and Badcall Bay.

WORKING WITH SEAWEED IN NORTH-WEST SUTHERLAND

John R. Baldwin

Seaweeds have been exploited in many parts of the world and over considerable periods of time. Given that the North Atlantic is well-endowed with such resources, it is hardly surprising that they have long been gathered coastally around the Highlands and Islands, and for many varied purposes, not least:

* as a manure or fertilizer
* as a food, medicine and preservative
* for making kelp.

In recent decades harvesting has continued in a number of places around the northern mainland and the islands, mainly for the alginate industry but occasionally still for enriching the land or supplementing diet. Traditional uses are generally little more than a lingering memory, however, and the economics of the modern alginate industry has meant that traditional techniques for gathering the raw material are now seen as largely uneconomic, particularly when linked to high costs of drying and transport – too expensive when set alongside crops imported from elsewhere, harvested increasingly by machine.

This paper concentrates, therefore, on field evidence for traditional seaweed-gathering in north-west Sutherland, along with a short summary of the crofting and commercial frameworks within which these practices survived. It forms part of a wider historical review of working with seaweed in north-west Sutherland and the Western Isles.

EXPLOITING SEAWEED AROUND LOCH LAXFORD: 1960s-1970s

The *Ceathramh Garbh*

Once fleetingly part of the far-flung 'province' or 'country' of Strathnaver, in 1724 the parish of Edderachillis, like that of Tongue, was carved out of the vast parish of Durness. It was traditionally divided into three districts [Fig. 6.1], each bounded by great sea lochs:

* *Ashare* or *Àisir*: bordering on the parish of Durness, lay mainly to the north of Loch Inchard, Lochbervie and Loch Clash, and included the corn lands of Oldshore Mor and Oldshore Beg
* *Ceathramh Garbh*: the 'rough quarter', and formerly the southern

Fig. 6.2 West across Loch Laxford from Sgeir a'Chadh. Fanagmore (top, far side of loch), Rubh na h-Airde Bige (centre), Eilean an Eireannaich and Loch a'Chadh-Fi (upper right). Traces of former settlement cluster around the bay (foreground). 1973.

Fig. 6.3 Badcall Bay, ca 1886. Seaweed is plentiful around its shores (Erskine Beveridge).

part of the 'Davoch of Ashir', covered that desolate and rocky landscape between Loch Inchard and Loch Laxford where settlement was always scarce and scanty

* *Scourie* or *Sgobhairigh*: barely less rugged, but with a scatter of generally small pockets of more fertile land, stretched south from Loch Laxford to Loch a' Chairn Bhàin and Loch Glendhu on the marches with Assynt.

The lands around Loch Laxford (ON *lax-fjorðr*, salmon fiord) are mainly Lewisian gneiss, either side of a band of granite running inland along the southern flank of the loch. Continual pounding of the waves has created an extremely varied, indented and complex coastline slashed by deep and narrow geos and by glacially-deepened fiords stretching along fault lines some considerable way inland. Numerous small islands and skerries lie scattered across these sea lochs, notably within Loch Laxford and in the mouth of Badcall Bay [Figs. 6.2; 6.3], whilst storm-driven seas have cut deep caves, rock arches, sea stacks and often spectacular sea cliffs. The underlying geology has resulted in numerous low, rounded and bare rocky hillocks and ridges, streaked with cracks and fissures and interspersed with vast numbers of small lochans; and most of the moorland is badly-drained peat – whether blanket bog or peat-filled hollows. The sourness of this landscape is extended by prolonged and heavy rainfall carried on the prevailing south-westerly and westerly winds, particularly in autumn and early winter. Only very occasionally do small and sometimes sandy bays provide more attractive anchorages and patches of land better-suited to localised agriculture than the largely stony and acid soils characteristic of the widespread glacial deposits (Ross et al 1982. 42 et seq).

The Crofting Background

It is hardly surprising that in recent decades crofting has declined to such a degree that most holdings have reverted to grass – greener patches in an apparently chaotic wilderness of rock, water and peat bog. Where traditional communities have not collapsed, and the young moved away, those indigenous families that remain depend primarily upon their livestock (mainly sheep) and a modest tourist industry. They may still put down a few drills of potatoes for personal use, or pasture a few caravans; by and large, however, they no longer toil on the scraps of land that were so precious to their forebears.

By the early 1970s, Fanagmore and Foindle were in long-term decline as traditional crofting townships, and Tarbet appeared little better off. There were some seven inhabited houses in Tarbet, two in Fanagmore and two (out of five) in Foindle – the Ross family having recently moved from Foindle to Tain for the sake of their children's education. (The east coast boarding hostels which removed children from family life and influence were far from

universally welcomed, and the establishment of a secondary school at Kinlochbervie in 1995 came too late to undo the effects of earlier, long-term 'educational emigration'.) In the Ceathramh Garbh, and apart from Achlyness and Rhiconich at the head of Loch Inchard, there were perhaps four people still in Ardmore, one man at Rhimichie, one man at Skerricha, and a shepherd at Portlevorchy (Mrs Mackenzie 1974). This represented the fragmentary remains of a post-clearance settlement pattern which had once included such abandoned townships as Foindle Beg and Weavers' Bay on the south side of Loch Laxford. A grandmother of Alick McAskill (Fanagmore) had been cleared in turn from Kinsaile, Rhimichie, Achlyness and Scourie – clearances initiated by the Reay estates between 1801 and the 1820s. But although the Ceathramh Garbh formed part of these clearances, sheep losses there were subsequently deemed too high, and it was resettled in 1831 (Bangor-Jones 1993. vol 21. 21.)

By way of contrast, just a few years before the land was redivided following the Crofters Commission Report and the Crofters' Holdings

Fig. 6.4 The former school and schoolhouse at Fanagmore stand beside the jetty. Beyond: Rubh na h-Airde Bige and the ridge of Foinaven. 1973.

(Scotland) Act of 1886, one of Mr McAskill's grandfathers had moved to Fanagmore from Tarbet in 1881, to a bigger holding with a better harbour [Fig. 6.4]. And it was this grandfather who was the first to improve Fanagmore with closed drains. It was not an old settlement, however, and there were only ever two crofts – one amounting with rough pasture to 53.5 acres (21.7 ha), including 6.5 acres (2.6 ha) arable land; the other, 22 acres with 3 acres arable (9 ha; 1.2 ha). The name means simply 'big rig, piece of ground' (*feannag mòr*), and local tradition says that people were first put into Fanagmore because of ships wrecked on Ruabha Ruadh (Red Point): with no help to hand, survivors had died on the shore (A. McAskill 1974). This may well explain why the common grazings for Tarbet and Fanagmore run together, but are separate from those of Foindle (D. Mackenzie 1974): Fanagmore was maybe an outset, pendicle or perhaps shieling on the earlier farm of Tarbet? Certainly the *tairbeart*, isthmus, runs directly between the two places, and although it would have been an energetic 'carry', it would certainly have allowed boats to avoid the tempestuous seas around Rubha Ruadh and Sgeir Ruadh.

Donald MacLeod, on the other hand, had come to Foindle at the time of World War I, to where uncles of his father lived. (He had been born at Melness on the eastern shore of the Kyle of Tongue.) Whilst the name may suggest a Gaelic/Norse hybrid (Gaelic *fionn* + ON *dalr*, white/pale/fair

Fig. 6.5 The crofting/fishing settlement at Badnaban, south of Lochinver, Assynt, ca 1886 (Erskine Beveridge).

valley), it was most likely coined by Gaelic speakers at some point after ON *dalr*, valley, had entered Gaelic as a loan word. When it first became a settlement remains unclear: Donald MacLeod simply recalled that the 'old houses' all disappeared around the 1920s – houses with hangin' lums linked to a hole high up in the gable wall leading to a gable chimney. They were thatched either with rushes or bent grass from Handa or from islands within Loch Laxford, or with barley straw; and they were secured with stone-weighted twisted heather ropes [Fig. 6.5]. In Tarbet too, all the houses were thatched in Mrs Mackenzie's childhood there in the 1910s: most of today's 'older' houses [Fig. 6.6] were built in the late 1930s – wood-panelled inside because plaster was not easily available.

Until the coming of the road, transport and communications between the settlements depended upon the boat, the pack-pony and back creels. To go to the cattle sales, therefore, people walked from Tarbet and Fanagmore to Foindle to get a boat to Ardmore; then walked on over the moorland to Rhiconich (Mrs Mackenzie 1974). Provisions would come twice a year from Glasgow, organised by 'Hamilton Murray of 548 Argyll Street'. The boat stopped at both Foindle and Fanagmore with supplies of meal, flour, oatmeal, groceries, furniture and clothes. According to Mr McAskill, a branch from the Scourie-Durness road reached Foindle in 1903-4. It was extended to Fanagmore in 1927, and in 1937-8 a second branch reached Tarbet. Only in 1960, however, was the steep, tortuous link between Tarbet and Fanagmore completed. As for the upper reaches of Loch a'Chadh-Fi, although there was an unmetalled track into Skerricha, only in the mid 1970s did a short branch road (as opposed to a bridle path) reach Portlevorchy, and there is still no road to Ardmore.

Between them, Alick McAskill (Fanagmore), Danny MacKenzie and Donald MacLeod (Foindle), and Mrs MacKenzie (Tarbet/Scourie), all from traditional crofting backgrounds, have helped provide a detailed insight into the seasonal round of crofting activities [Fig. 6.7] – cultivation, harvesting and the processing of oats, barley and potatoes; peat cutting; livestock husbandry, soumings, shielings and grazing rights; fishing and fishing marks; transport, creels and carts; sea-bird fowling and the trapping of land birds; hunting for land mammals and otters; whisky smuggling and language. Sadly, their own north-west Sutherland Gaelic was far more under threat than what they light-heartedly termed the *Gaidhleag nan ceardean* of Lewis. Not surprisingly, the nature and practice of these activities parallels closely that recorded by the writer in Coigach, some 50 or 60 miles (80-95 kms) south along the coast (Baldwin 1994. 290 et seq).

Coastlines around Loch Laxford

In terms of their potential for human exploitation, seaweeds are conveniently divided between those that grow on the shore or are washed up there by winter storms, and those that are permanently submerged. The former

Fig. 6.6 Crofts at Tarbet. Little heaps of seaweed await spreading on the land. 1973.

Fig. 6.7 Farming landscape at Scourie, ca 1886 (Erskine Beveridge).

include the greenish-brown wracks (generally Fucoids), some red weeds and storm-driven tangles (mainly Laminaria). The latter are primarily the golden brown/reddish tangles and oarweeds, with certain red weeds growing in amongst them.

As far as the coasts of north-west Sutherland are concerned, the thick-stemmed tangles have certainly been gathered and used historically, even though densities are of no great contemporary economic significance. Littoral seaweeds, however, are another matter. These intertidal species require sheltered conditions if they are to grow luxuriantly, and when the Scottish Seaweed Research Association surveyed some 158 miles (254 kms) of Sutherland coast in the 1940s, they recorded substantial densities in virtually all the main sea lochs, principally Ascophyllum nodosum or knotted wrack. They concluded that the shores around Loch Laxford and Loch Inchard, as also around Lochinver, would yield up to 38 ton(ne)s per acre of seaweeds growing between the high and low water marks (Jackson 1948. 138-9) [Fig. 6.8].

SEAWEED DENSITIES IN NORTH-WEST SUTHERLAND

Location	**Tons per Acre (range)**
Kyle of Tongue	27/28
Loch Eriboll	26/29
Loch Clash/Loch Bervie /Loch Inchard	28/38
Loch Laxford /Loch a'Chadh-Fi	37/38
Badcaul Bay /Calva	28/34
Loch Glendhu	35
Lochinver	38

Fig. 6.8 Distribution of littoral seaweeds in north-west Sutherland taken from surveys by the Scottish Seaweed Research Association, 1945-6 (Jackson 1948).

After parts of the Uists, this north-west corner of the mainland, particularly around the Ceathramh Garbh and Assynt, has more potential for modern commercial exploitation than almost any other significant concentration of intertidal seaweeds around Scotland's northern and western shores. The figures help reinforce, therefore, the significant role that seaweeds must have played in north-west Sutherland in earlier times, whether commercially (kelp) or at a domestic, subsistence level (food, medicine, fertilizer).

That seaweeds grow so well in the area is due in no small way to the configuration of the coastline and seabed, in particular to the sinuous and

sheltered nature of the sea lochs and to their many promontories, islands, skerries and other relatively shallow rocky outcrops. Many of these features also figure prominently as fishing marks or medes for some eleven inshore fishing grounds (and two great-lines grounds):

* promontories such as Rubha Ruadh, Rubha na Mhinistear
* channels such as Caolis na Glasneich
* rocks and skerries such as Sgeir Ruadh, Sgeir Dubh, Bogha na Cudaigean, Bogha Mór (Handa)
* islands such as Eilean Ard, Eilean a'Mhadaidh, Eilean Port a'Choit, Eilean an t-Sithein, Eilean Saille, Eilean Loch an Roin, Glas Eilean, Eilean Buigach.

And it is yet another such small island that features in local tradition. A smuggler bringing whisky from Ireland was seen and chased up Loch Laxford by a revenue cutter; he turned into Loch a'Chadh-Fi, past what is now called Eilean an Eireannaich (Paddy's [the Irishman's] Island), and then doubled back behind the island. By the time the revenue cutter realised that it was not a backwater, but a narrow channel, the smuggler was off and away.

The islands were also divided between the townships both sides of the loch for grazing:

Fanagmore	: Eilean Ard and the small one next to it
	Eilean an t-Sithein
	Eilean Dubh na Fionndalach Bige
	Eilean Port a'Choit
Foindle	: Sgeir Iosal
	Eilean a'Mhadaidh
Ardmore	: Eilean an Eireannaich
	Eileanan Dubha
	islands in Loch a'Chadh-Fi
Skerricha	: Eilean Meall a'Chaorainn

Tarbet, by contrast, had islands in the Sound of Handa; Scourie Beg had Calva Beg and Calva Mór – with a turf/feal dyke dividing their onshore, mainland grazings (A. McAskill 1974).

Using Seaweed in Recent Times

When it comes to seaweed, no great detail survives of agreements that formerly obtained between crofters regarding collection rights, though when the Fanagmore lands were redivided in the 1880s, a newly-erected iron fence divided both the two crofts and their foreshores; and not surprisingly, the school and schoolhouse had no shore rights. Meantime, Kinlochbervie men used to come across and take drift ware from Loch Laxford, which was shared out once all the other seaweed had been allocated (A. McAskill 1974).

Three kinds of seaweed were gathered for the land – *feamainn dubh*, a 'black' seaweed, mainly Ascophyllum nodosum or knotted wrack; and

Fig. 6.9 Seaweed carried from the shore and heaped up for use as manure. Tarbet, 1973.

Fig. 6.10 J.G. Ross's potato patch at Badcall was manured with seaweed. 1973.

liadhag and *stamh*, respectively the fronds and stems of tangles, probably mainly L. digitata. For use as a fertilizer, rock weed was cut at low tide with a *corran*, a sickle or hook; sometimes with a toothed or serrated edge, but commonly smooth-bladed and kept sharp with a whetstone. About five tons a day could be cut, put in creels and carried clear of the high water mark at Foindle (D. MacLeod 1974). Alternatively it could be loaded into a boat and brought round to the harbour (at Fanagmore), where it was also left above the high tide mark. Alick McAskill used some 40 ton(ne)s a year, brought back by boat three ton(ne)s at a time. By the 1970s, far more modest amounts were simply brought up in old polythene fertilizer bags. Formerly, a willow creel or *cliabh* carried on a person's back would take about one hundredweight (51 kg) of peat, potatoes or seaweed; and it could be heightened by adding extra ribs (always hazel) to the completed creel, thereby adding perhaps half a hundredweight (25 kg) to the overall load (A. McAskill 1974).

Once clear of the sea, Donald MacLeod left the seaweed for about three weeks to rot. It was then brought up from the shore in cart loads or in creels, and put in piles about 6ft (1.8 m) apart on the rigs to heat up, before being spread over the ground and dug in [Fig. 6.9]. Bringing the seaweed up from the shore was 'very heavy work', and 'the old folks used to shake it on the ground' (C. MacLeod 1999). Donald MacLeod used bladderwrack for oats, and 'seaweeds from the lowest part of the tide' (ie tangles) for potatoes – though potatoes fertilized by seaweed were generally soft [Fig. 6.10]. For Alick McAskill, red weed (tangle) was used only for turnips and had to be ploughed in; black weed (bladderwrack, which he still used on his blackcurrants) was also ploughed in, or simply spread on land left in grass. One man would plough (he had a pair of horses; the other Fanagmore croft had none), and three people would 'sow' the seaweed. In other words, the seaweed was not ploughed in direct for it would have caught around the coulter and soc; rather was it placed in a freshly-turned furrow and then covered by the next furrow turned. For potatoes (fomerly *tat dubh*, black potatoes; later Champion, Kerr's Pink and British Queen), seaweed was never placed directly above or below the tubers, but always to one side, in adjacent furrows. For barley (last grown in the 1920s) and oats (formerly black oats, with just a few ordinary oats still grown in the early 1970s), it was simply laid in every furrow and left for about a month to rot and to allow the land to dry out before the seed was sown. It then gave 'extraordinary crops'!

Many considered 'natural manure' to be better than seaweed, however, since although seaweed proved fine for a few years, it then left the soil exhausted (J.G. Ross 1974). That said, different fertilizers were not uncommonly applied to different crops, largely depending on their availability. Cow dung alone might be given to oats, potatoes and hay ground; otherwise seaweed alone, or a mixture of seaweed and dung: and in 1916 slag was first imported as a dressing, normally for hay ground.

Quite apart from its use as a fertilizer, seaweed continued to be exploited as a foodstuff, albeit incidentally. Fragmentary evidence confirmed that sheep grazing on such seaweeds as dulse were always in very good

condition, and that the curly crispy channelled wrack, *feamainn chìreadh* (Chrondrus crispus), found high up on the shore, was also gathered for cattle (see Baldwin 1994. 317-20, 324). For human consumption, meantime, *an cairgean*, carrageen, was found only on a very low tide (and there was said to be a lot on Skye!), whilst short reddish-brown *duileasg*, dulse, was picked and chewed raw (A. McAskill 1974).

Commercial Cutting of Seaweed

These traditional uses of seaweed have now largely died out in the north-west mainland and the Western Isles. Over the past half century or so, however, there have been moves to develop a more commercially-sustainable seaweed industry, based in part on traditional techniques and practices. For one man in Foindle (and for a handful of others along the north-west coast) the harvesting of seaweed became a regular part-time occupation and the account that follows is based on observation, discussions and the crofter's own description of the practices he adopted. The data was gathered some 25 years ago, and applies to circumstances at that time.

Assigned Areas and Rotations

According to Danny MacKenzie, it was an activity begun in the islands (Hebrides) some 20-30 years previously, but much more recently in north-west Sutherland. It was coordinated by Alginate Industries whose Inverness office assigned or allocated areas to be cut, and other teams worked for instance at Kylesku and at Stoer. He began cutting in 1971; two men worked together until 1973; from 1974 he was on his own, covering the coastline from Badcall south of Scourie and north to Loch Laxford and Loch Inchard. The cut weed would be collected by boat from Lewis, and partly dried at Keose on the east coast of Lewis. At the factory, it was first spread on the ground to dry in the sun, although some was dried by electricity. Factory-drying would take about four hours: thereafter it was crushed, bagged and sent south to what he termed the ICI plant at Ayr, where it was graded. He understood that good quality weed was subsequently used for medicines; poorer quality for manures.

Mr MacKenzie's 'cutting year' had to be carefully managed, for it depended primarily on the tides and the weather. For about 12 days each month – every second week – it was not possible to work because the tides were not low enough. Thus, in March 1974, there was a new moon on the 23rd, with cutting possible either side of the critical date. Cutting started on the 20th at about 7.30 am, on the 21st at about 8.15 am and so on – about three-quarters of an hour later each day until 26th March. In winter he worked six days per cycle; in summer, seven days, with lighter evenings allowing cutting up until 10 or 11pm. To maximise 'dead' time and make best use of daylight, Mr. MacKenzie would start at Foindle and cut Loch Laxford

during the winter months; he then moved further afield and cut Loch Inchard and Badcall Bay in the summer, when he would leave his boat in the far-off sea lochs and drive home each night. However, he did not visit these more distant shores every year, alternating Badcall Bay and Loch Inchard (he had not yet considered cutting Loch Dùghaill, just north of Loch Laxford). His timetable, therefore, was:

Loch Laxford	1971-2	(May, through winter, to May)
Badcall Bay	1972	(May to November)
Loch Laxford	1972-3	(November to May)
Loch Inchard	1973	(May to November)
Loch Laxford	1973-4	(November to May/June)
Badcall Bay	1974	(May/June to November)

In 1971, his first year, he started cutting Loch Laxford in May rather than November; in 1974, his first year cutting without a partner, he was unsure in March whether he would have finished his winter cut of Loch Laxford in time to start in Badcall Bay in May.

Within this broadly-based geographical and tidal timetable, he had also to integrate rotational cutting of the shore. The stumps of the weed left on the rocks stay black for about a month after cutting; after four to six weeks they begin to grow brown again, and it takes about four years for them to re-grow to cuttable length. This varies, however, depending on location, for he confirmed that seaweeds grow faster where the tide is stronger – to about 4ft (1.2 m) long.

Cutting and Roping the Weed

Danny MacKenzie would cut any weed that floated – any of the bladderwracks, in other words: mainly knotted wrack (A. nodosum), but likely mixed with the 'true' bladderwrack (F. vesiculosus).

Starting about halfway down the shore on an ebbing tide, and following it out, he would normally use a *corran* – a small and light hook, preferably serrated, though sharpness was more important than teeth [Fig. 6.11]. At the lowest part of the tide, however, and in his waders, he would use a scythe in up to roughly 2 ft (60 cm) of water – but only over small stones: otherwise still the sickle [Figs. 6.12; 6.13]. Scythe blades (bought in Dornoch) had to be small and short-bladed, about 18ins (46 cm) long, so as to be easily manageable and not to catch on the rocks. The weed would be floating upright, and the scythe blade did not go very low. This was no significant disadvantage, however, for it ensured that the seed was left – an important factor in ensuring a sustainable industry, and an environmental implication of which he was not only aware but also respectful.

Before cutting began, up to 14 ropes, each 10 fathoms long by one inch in circumference (18.3 m x 25 mm) were knotted together and laid around the area to be cut – in all perhaps 840 ft of rope (256 m). As cutting

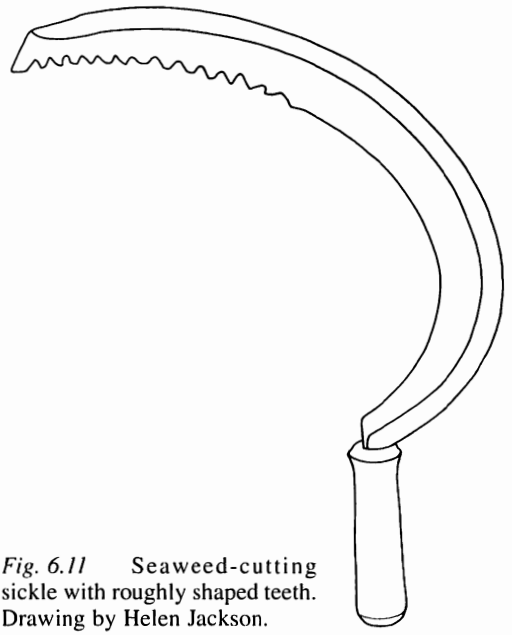

Fig. 6.11 Seaweed-cutting sickle with roughly shaped teeth. Drawing by Helen Jackson.

progressed, seaweed from about three-quarters of the area would be wound around the rope, the rest being left loose [Fig. 6.14]. As rope and weed later floated on the incoming tide, however, there were dangers that the cut weed might float off. Particularly with a strong wind, the weed tended to ride over the rope (the reason why so much was wound around it) and pile up at the top of the beach, making it difficult to gather. As the rope was tightened, therefore, the weed was repeatedly pushed hard against the rope with a semi-circular piece of hard plastic foam attached to the end of a long wooden pole. The head-piece, perhaps 18 ins wide x 6 ins (46 cms x 15 cms), was fixed at right-angles to the shaft and secured further with two wire stays. The pole itself, according to Mr. Mackenzie, should ideally have been 1-2 ft (30-60 cm) longer than his 10 ft (3 m) shaft – which had broken in two that very day [Fig. 6.15]!

As operations progressed, the rope around the cut weed was regularly tightened to compress the weed into a ball, better able to withstand wind, weather and tides. Up to 11 individual ten-fathom ropes (660 ft; 201 m) were untied in turn as the circle was increasingly tightened and closed, leaving the equivalent of perhaps two to two and a half ropes' length (120 ft/150 ft; 36.5 m/45.7 m) to secure the day's work – fairly dense growth cut from a 30 ft (9.2 m) band between high and low water marks, along some 90 - 100 ft (27-30 m) of shore. This would represent an average of five ton(ne)s of wet weed – around four ton(ne)s in the smallest circles, six ton(ne)s in the largest.

Fig. 6.12 Cutting seaweed with a sickle. Loch a'Chadh-Fi, 1973.

Fig. 6.13 Danny Mackenzie cutting seaweed in shallow water with a scythe. Loch a'Chadh-Fi, 1973.

Fig. 6.14 Twisting cut weed over the encircling rope to help discourage it from overriding in strong winds. Loch a'Chadh-Fi, 1973.

Fig. 6.15 Consolidating weed against the rope to help prevent it scattering. Loch a'Chadh-Fi, 1973.

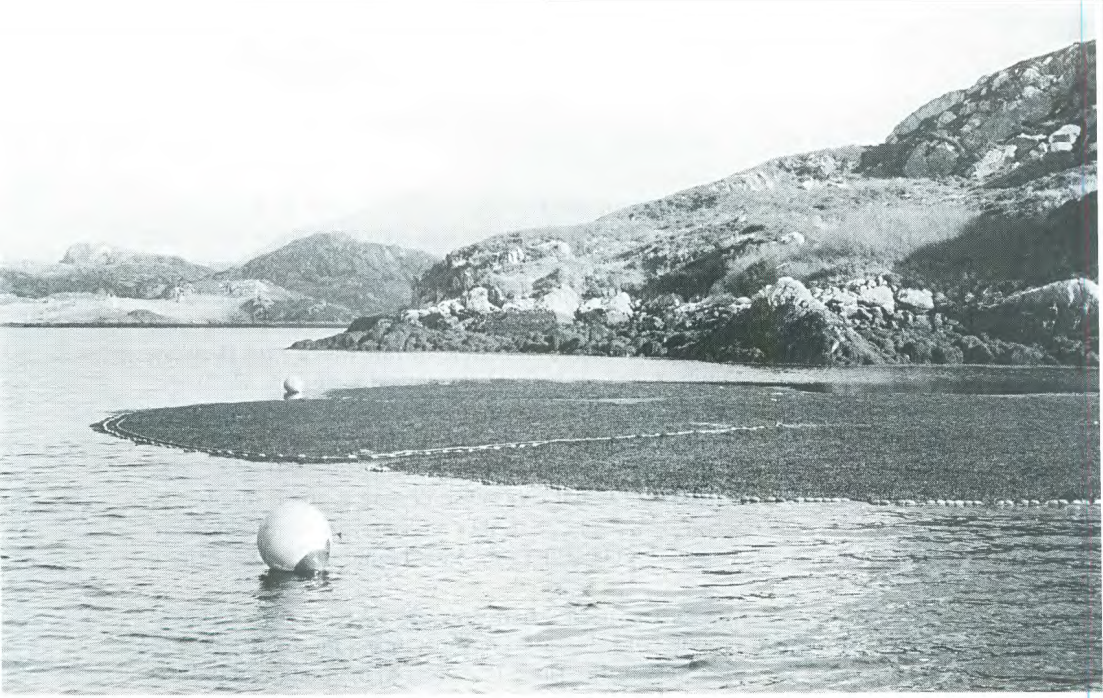

Fig. 6.16 A cluster of some five rafts of cut seaweed anchored in Loch a'Chadh-Fi awaiting shipment to Keose, Lewis. 1973.

Fig. 6.17 Checking buoyancy and ropes around the rafts of seaweed. Loch a'Chadh-Fi, 1973.

Anchoring and Storing the Weed

Once fully-tightened and secured, the floating circles would be towed to a sheltered spot and anchored. Though no name was given, *claighe* has been recorded a little to the south, around Kylesku (NMAS RHS 1985). It signifies something round – *claigean*, *claigionn*, variously a skull, the headstall of a bridle, the round wooden head of a fishing buoy and the bowl of a pipe (Dwelly; McDonald 1958). Elsewhere, this circle or raft was a *ràth* (Lewis), a *maois(-feamann)* (Argyll, Uist) or *ball* (Uist), towed with a *fasda* (rope: Uist and Eriskay, where at one time it was made from twisted heather). Unsurprisingly, *fasda* could refer also to the raft itself and *ball* to the rope, whilst *maois* – cognate with Shetland/Orkney *maise*, *maishie* and descended from Old Norse *meiss,* basket – might otherwise denote a given number of fish, commonly 500 herring, or the large basket or container that held them. (Dwelly; Macdonald 1934; MacDonald 1958; Macdonald 1978. 90; Fenton 1968. 76).

For towing, Mr. MacKenzie used a two-year old 17 ft (5.2 m) Orkney-built boat fitted with an outboard. In such circumstances, the rudder was of no practical use, however; it was the 'float' that steered the boat, and pulling the tow rope to one side or the other determined a change in direction. The first day's float was anchored off-shore; then a line put to the shore and secured. For the second and subsequent days, further circles were attached to the buoyed anchor rope and tied also to the shore-rope [Figs. 6.16; 6.17].

Seaweed cut over no more than six consecutive days could be kept in this way without further attention. If not collected by the Lewis boat within this time, however, it became necessary to put nets around the ropes to keep all of the weed intact: indeed, there were some operators who only ever used nets, never ropes. Nets were specially made of 0.5 in (12.7 mm) nylon mesh, so small that the weed would not tangle with it. Each was about 25 ft long by some 3 ft deep (7.6 m x 90 cm), with floats placed 8 ins (20 cm) apart along the top edge, and lead weights some 3 ft (90 cm) apart at the bottom. These were packed more tightly on the windward side of the circle, where there was a greater danger of the weed being taken away; and the longer the period before the weed was collected, the more necessary the nets. For after a month or more in seawater, normally about six weeks, the weed would become saturated and sink just below the surface. This would be hastened if fresh water seeped into the bubbles or bladders, thereby making the weed that bit heavier so that it would not float.

Transferring the Weed

Normally, however, the weed would be collected before that happened. Loading was a delicate operation in its own right if the seaweed were not to disperse before it could be lifted, so only one float or circle was dealt with at a time.

Since each circle had several ropes around its circumference, at first one knot only was undone and the end of the rope fastened to the ship, the other

end being kept tight in alongside. Then a second knot was undone at the 'loose' end and a single length of rope pulled through, thereby releasing the weed wound around it. It was critical to release at one time only as much weed as could speedily be taken up and lifted by the ship's grab – a requirement that had determined the 10 fathom (18.3 m) lengths of rope in the first place. It was also critical for the remaining ropes to be kept tight in order to keep the remaining weed hard up against the side of the ship. They were subsequently unknotted in turn, one at a time.

Once aboard, the seaweed was no longer the crofter's concern. It was now in the hands of a fully-industrialised modern business, and the crofter was simply paid for what he had collected. Up to the point of transfer, however, the scale and techniques of cutting and collection were those of the age-old traditions of a localised subsistence activity – a remarkable juxtaposition of the old and the new, and one that has so far proved particularly difficult to change.

Cutting for the Alginate Industry: The Wider Context

The alginate industry gradually emerged out of E.C.C. Stanford's discovery of alginic acid in 1884, and his development of a process to extract it from seaweed (Major 1977. 80). Alginates have come to be used in a wide range of industrial applications, not least in the manufacture of foods, pharmaceuticals, toiletries, cosmetics, drugs, textiles, plastics, paints, detergents, inks, agricultural products and in engineering. By the early 1950s, the food industry took roughly 50% of the output, drugs and cosmetics 40%, other industrial applications 10%. Further development of the industry in Scotland is not limited so much by any shortage of weed or difficulty in extracting alginates, rather by the economics of harvesting, drying and transportation, and by the still relatively limited number of known uses for seaweed derivatives (Moncrieff 1953. 74; Jertson 1953. 70).

In Scotland, the industry began in a small way in Kintyre in the 1930s. An English company Cefoil Ltd was established in 1934, and prior to 1939 its work was essentially experimental. During World War II it produced a crude alginate used in making camouflage material for the Ministry of Supply (and explosives?: A. Miller 1999), and it was for this purpose that the Ministry established factories at Balcardine (Benderloch) and Girvan (Ayrshire). Towards the end of the war, the company had taken on a more overtly commercial complexion; the South Boisdale and Orasay (South Uist) plants opened in 1944; in 1945, Cefoil Ltd became Alginate Industries Ltd (AIL); and from the early 1950s, home sales and export networks were developed along with the more extensive collection of unprocessed seaweeds, mainly from the old Hebridean kelping shores. Further small factories were opened at eg Sponish in North Uist (1955), as well as seaweed collecting stations at eg Loch Torridon, Loch Carron, Loch Eil and Tiree (and three locations in Orkney). By 1964, AIL was continuing to expand its

operations, particularly in Lewis and Ireland (with additional trial collections of tangle 'rods' in Shetland); and in 1965 it opened a further drying facility at Keose on the east coast of Lochs in Lewis, which had a modest throughput of around 100 ton(ne)s a week in its first year (ISR 1954. 11 Fig 1; *Weekly Scotsman* 30 September 1965; *Scotsman* 21 October 1965; NMAS RHS 1977). In its final Report, the Institute for Seaweed Research was positive, recalling that whilst the Scottish alginate industry had been but very small in the 1950s, by 1968 it was producing some 15,000 tons a year (15,240 tonnes) and anticipated continued expansion (ISR 1954. 11 Fig 1; 1964. 7, 10; 1965. 10; 1967. 10; 1968. 8).

During these years everything had gone reasonably well. In the early 1960s, year-round cutting was available for 'Asco' collectors in the islands (those cutting bladderwrack, Ascophyllum nodosum, to supply the North and South Uist factories) – although 'tangle' collectors could only be employed seasonally, October to March, when the tangles were cast up on the shores. Even then, however, the Orasay and South Boisdale factories were only kept operational all-year-round by ferrying in supplies from elsewhere – notably from Tiree and Orkney. Indeed, according to R Cambell-Preston, Managing Director of AIL, some two-thirds of the tangle stipes processed at Orasay had to be brought in (*Glasgow Herald* 22 August 1962; 25 September 1962; *Scotsman* 16 July 1962).

The site for the new drying facility at Keose (1965) was chosen for easy access by puffers – the coastal cargo boats that could be beached following high tide to allow for loading and unloading as the tide receded. After drying, milling and bagging, some 120 wet ton(ne)s per week reduced to 30 bagged ton(ne)s, and the puffer could carry 200 ton(ne) loads south to Girvan on the Aryshire coast. In the early days, around 12 crofters were gathering seaweed (mainly bladderwracks) around the shores of East Loch Roag and Bernera (west Lewis), Husinish and Scarp (north-west Harris), Loch Erisort (east Lewis) and Loch Seaforth (east Lewis/Harris). Where there was good access, the cut weed was loaded onto a lorry and taken direct by road to Keose; otherwise, it was towed in rafts behind a motor-boat. And as the industry developed, mainland crofters such as Danny MacKenzie at Foindle were brought into the scheme.

In 1973, just a few years after cutting and collection had begun on north-west mainland coasts, Alginate Industries Ltd went public, and a new plant was opened at Balcardine in 1976. In 1979, however, AIL (which had dominated the British seaweed and alginates market) was taken over by Merck, the US pharmaceuticals giant that already owned other major alginate businesses worldwide. Gathering seaweed by hand continued to be a problem, restricting the amount of weed available for processing and (unless it were particularly plentiful) adding to the cost of collection. Moreover, in the words of John Sanderson, manager in Girvan for Kelco International (part of the multinational Merck Corporation): 'All the coal had to be shipped out there, and it would take something like half a tonne of coal to dry a tonne of seaweed' (*Scotsman* 11 November 1991).

In other words, a sound beginning did not progess sufficiently strongly; in 1980 Merck pulled out of the Western Isles (*Scotsman* 6 January 1982); and Brian Wilson, subsequently a minister in the U.K. Labour government, wrote in the *Glasgow Herald* (15 December 1983):

> For Alginate Industries, the economics of the Keose factory had always been problematic. There was a supply problem in getting enough weed from Lewis to keep the plant going at full volume. The further afield they went with boats and lorries to collect it, the more costs rose. ... Alginate Industries were buying weed from places like Chile and Iceland, yet the Keose weed was costing them £30 per ton more than from anywhere else.

Since the primary problem was cost, the idea of a workers' cooperative at Keose was mooted; and because a monopolies ruling in America meant that Merck was not allowed to sell the factory before the end of 1984, the company agreed to the facilities being used by such a cooperative to supply it with weed at a competitive price. This move reflects the 'needs must' tendency on the part of local communities in the north and west, as developers (often in receipt of substantial subsidies) first move into remote areas, and then move out again after discovering that profits (in large part not reinvested locally) are not as substantial as anticipated. Out of a workforce of 13, the six longest-serving employees formed the cooperative in 1981, 'following a trend which is becoming a feature of island life' (MacSween [1982] 1987. 408). It expanded into mussel cultivation, salmon farming and a car repair service; and was unique at the time amongst other multifunctional community cooperatives in the Western Isles, in that it was established in response to a specific threat of closure.

A new problem, of course, was that AIL/Merck was its sole customer for the dried weed, and although the cooperative was able to cut costs by reducing staff and other overheads, it was far from secure, even though its finances were sound. For where the reason for low or reduced profit is cheaper supplies elsewhere, what proves uneconomic for large multinational companies tends eventually to prove uneconomic for local cooperatives, however much the latter may be prepared to accept lower wages and profit margins. This is particularly so where the cooperative depends on that very same monopolistic multinational for the sale of its product.

By 1991, Kelco's operation in the Western Isles was becoming increasingly marginal, and according to Sanderson, it was partly only tradition that encouraged the company to continue taking island weed: 'We are happy to accept material from such a place, where it has been cut for generations' (*Scotsman* 11 November 1991). Seven years later, however, in 1998, and with the Keose drying factory closed, Nutrasweet-Kelco (now a subsidiary of the global bio-technology conglomerate, Monsanto) stopped taking weed from the Western Isles, with the loss of some 40 jobs (and almost 100 more at Girvan). Richard Searle, the current manager, explained (*Eòrpa*, 17 December 1998):

> One of the problems was the variable quality. The quality of the weed arriving wet at this factory, and the price of carrying a lot of water to this factory, made it no longer viable as a source to match the new requirements of this factory. ... The facilities around the world are not subsidised to any significant extent. We have to buy our raw material where it's competitive, and that is a fact of economic life. We have to look to the survival of this factory [Girvan]. Without the survival of this factory, then we're not going to be talking about seaweed from the Uists or anywhere else.

International competition and international recession meant that it was cheaper for Girvan to bring in weed from Iceland than from the Hebrides. The company might be willing, it said, to buy good quality dry weed from the Uists at a future date, but this would not be for some time. Given the market downturn, it reckoned it would be buying less in 1999 in any case – perhaps 50% less from Iceland (where it owned two-thirds of the factory) and from Ireland (where it owned nearly half). Furthermore, good quality dried weed would require investment in new drying facilities in Uist. Kelco had pulled out of Keose in 1980 and was not inclined to reinvest, so the matter was referred to such public agencies as Highlands and Islands Enterprise, the Local Enterprise Companies, the Western Isles Council and the emerging new Scottish Parliament, as well as to the UK Government. Unless new uses and buyers were to be found for Hebridean seaweed, however, Kelco could ultimately be accepting public subsidies whilst setting competing communities in all three countries off against each other – in two of which, but not Scotland, it part-owned the facilities.

The difficulties lie in more than drying facilities and outlets, however. Searle continued:

> Traditionally, and today, I think hand cutting can compete. I think it's going to be more difficult over the years, and that the move towards mechanical harvesting will certainly have to be investigated.

It is ironic that in Iceland's Breiðafjörður, not only is the company Thorverk able to make use of highly economical geothermal power to dry the seaweed in just two hours, but it uses a harvesting machine (originally designed to remove seaweed from the Great Lakes in North America) that was tried out in Scotland some 20 years ago. This machine, capable of cutting 30 ton(ne)s per low tide, was not successful in Scotland, however, since – unlike most suitable locations in Iceland – the seabed was too rough and rocky.

As things stand, therefore, Kelco's decision would seem to have put an effective end both to environmentally-friendly harvesting methods in the Uists and elsewhere, and to the major market for Scottish-sourced bladderwracks. It has also removed a critical part-time employment for what in the early 1990s amounted to some 60-70 'Asco' crofters on the sheltered, mainly eastern coasts of the Western Isles (and for those once working similarly sheltered coasts on the west mainland); and it has ended a shore-based tangle-gathering and drying operation which employed up to 30 and

150 people, mainly in the Outer Isles/Tiree and Orkney respectively. A ton(ne) of stipes fetching around £150 was a not insubstantial supplement to a family's income (Briand 1991. 259 et seq; Munford & Donnan 1994. 233-4) – even if the price for wrack, largely unchanged for many years on account of strong international competition (the company's view), was considerably lower and causing discontent: 'At £14 per tonne, some islanders are hanging up their scythes, picking up their buckets and turning to the despised winkles. At £40 a hundredweight [50.8 kg], it sounds a better deal' (*Scotsman* 11 November 1991).

CONCLUSION

For most of the 18th to mid/late 20th centuries, as no doubt earlier, seaweed continued to be recognised coastally in Sutherland as a valuable and locally-available resource. And where seaweed maintained this direct local value, there was long-term stability of techniques and terminology.

Much yet remains unclear, however, whether for Sutherland or more widely across Gaelic Scotland – particularly the directions and nature of cultural diffusion, and more specifically localised terminologies, practices and experiences of working with seaweed. That a not insignificant number of Gaelic names for seaweeds are Norse in origin would point to a surviving substratum of Norse cultural influence, particularly in certain of the western isles. Meantime, structural features of 18th and 19th century Highland kelp kilns suggest links with both lowland Scotland and Ireland. Whilst much of the evidence comes from the Outer Isles and Skye, there is no reason to suppose that the importance of seaweed and associated practices and traditions were hugely different on suitably-endowed coasts elsewhere in the west.

What has survived in documentary sources and orally would seem, even so, to represent the last strains of 'an auld sang'; and Kelco's decision to switch exclusively to foreign supplies for its Girvan alginates factory puts under greater threat not only the continuing viability of a number of peripheral communities, but also the survival of environmentally-friendly methods of gathering seaweed and a centuries-old cultural tradition. Traditional collection of uprooted, storm-driven tangles, just as the carefully-rotated cutting of rock weeds, has had no obviously deleterious effect on the marine environment. Mechanised harvesting, however, if introduced without careful controls and monitoring, could put underwater seaweed forests and food sources for fish and other marine life at significant ecological risk. It could also increase significantly the dangers of erosion, especially for fragile western machairs, most particularly in the Uists. For dense offshore tangle forests soak up considerable amounts of wave energy, protecting vulnerable shorelines from the full force of the Atlantic (Munford & Donnan 1994. 233-4).

As for present-day communities, patterns of crofting are maybe evolving in such a way as to provide a partial living for a much-reduced population,

but reasonably secure part-time employment – the key to maintaining a local working population in remote townships – remains scanty. People such as Danny MacKenzie on the shores of Loch Laxford, typical of those who sought to make their way in a harsh environment, within their own cultural tradition, are the ones who have most to lose by the disappearance of industries and activities that are small-scale at local level, can be followed on a supplementary part-time basis, and are founded on renewable natural resources. Indigenous communities, languages and cultures are as diverse and valuable as indigenous landscapes and wildlife, and in just as much need of nurturing. The likes of fish-farming, forestry, estate work, information technology, conservation and tourism can help in their own modest ways, particularly when associated with a more direct, long-term stake in the land and its resources. And at Breasclete, Loch Roag, Lewis, the pharmaceutical development of specialised seaweed dressings contributes to such diversification. Vigorously pursuing new uses and outlets for seaweeds, rediscovering their value locally and extending sustainable practices, would be an attractive way of helping secure the survival of coastal communities, cultures and environments.

Acknowledgement

This paper is based largely on fieldwork carried out in the spring of 1974. I am much endebted to Alick MacAskill (Fanagmore), Donald MacLeod (Foindle), John George Ross (Badcall) and Mrs MacKenzie (Scourie, formerly Tarbet) for their willingness to discuss life in and around Badcall Bay, Scourie, Tarbet and Loch Laxford in the earlier part of this century; and in particular to Danny MacKenzie (Foindle) for introducing me to the practice of cutting and gathering seaweed in Loch Laxford. At Easter 1999, it fell to Chrissie MacLeod (Foindle, late Tarbet) to confirm the deaths of earlier contacts as well as of the industry itself; and Sandy Miller (Coigach) began to reminisce about life in the Balcardine alginate factory during the World War 2. For comparative material from the Uists, I am equally grateful to John MacDonald (Malaclete, North Uist, 1970), and to Norman MacCormick (Lochboisdale), Allan McIntyre (Loch Eynort), Mrs MacMillan (Iochdar) and Donald Walker (Daliburgh) (all South Uist, 1971).

Sincere thanks go also to William P.L. Thomson (Burray, Orkney) for invaluable comments and suggestions on the paper as a whole; to Professor Donald Meek (Aberdeen) and Jonathan MacDonald (Duntulm, Skye) for helping clarify Gaelic terms for seaweeds; and to BBC Alba for material from their current affairs programme, *Eòrpa,* and from Thorverk HF, Iceland.

Figures 6.3, 6.5 and 6.7 are Crown copyright, courtesy of the Royal Commission on the Ancient and Historical Monuments of Scotland; Figure 6.1 was computer-generated by David Baldwin; all other illustrations form part of the writer's fieldwork collection and are reproduced courtesy of the Scottish Life Archive (SLA), National Museums of Scotland.

References

Baldwin, J.R. 'At the Back of the Great Rock: Crofting and Settlement in Coigach, Loch Broom', in J.R. Baldwin (ed) *Peoples and Settlement in North-West Ross.* Edinburgh. 1994.

Bangor-Jones, M. 'The Establishment of Crofting in North-West Sutherland', in *Am Bratach*: 20-21. Strathnaver. June-July 1993.

Baxter, J.M. & Usher, M.B. *The Islands of Scotland: A Living Marine Heritage.* Edinburgh. 1994.

Briand, X. 'Seaweed harvesting in Europe', in N.D. Guiry & G. Blunden (eds) *Seaweed Resources in Europe.* Chichester. 1991.

Cameron, J. *Gaelic Names of Plants.* Edinburgh/London. 1883.

Chapman, V.J. & D.J. *Seaweeds and their Uses.* London/New York. 1980.

Conway, E. 'Clyde Seaweeds and their Economic Uses', in *Proc. Royal Philosophical Society of Glasgow.* LXVII, pt v. Glasgow. 1942.

Darling, F.F. (ed). *West Highland Survey: An Essay in Human Ecology*. Oxford. 1955.
Dickinson, C.I. *British Seaweeds*. London. 1963.
Dwelly, E. 1971. *The Illustrated Gaelic-English Dictionary* [1901-11]. 7th ed. Glasgow. 1971.
Eòrpa: BBC Alba, BBC 2 Television. 17 December 1998. Glasgow.
Fenton, A. 'Seaweed Manure', in *The Shape of the Past 2: Essays in Scottish Ethnology*. Edinburgh. 1986.
(The) Glasgow Herald: 22 August 1962; 25 September 1962; 15 December 1983. Glasgow.
Grant, I.F. *Highland Folk Ways*. London. 1961.
ISR: Institute of Seaweed Research (Inveresk): *Annual Reports* 1957, 1964, 1965, 1967, 1968.
Jackson, P. 'Scottish Seaweed Resources', in *Scottish Geographical Magasine*. vol 64. no 3. Edinburgh. 1945.
Jertson, E.C. 'The Potential Utilisation of Seaweed Extractives in the United States', in *Proc. First International Seaweed Symposium*. [1952]. Edinburgh. 1953.
Macdonald, A. 'Some Rare Gaelic Words and Phrases', in *Trans. Gael. Soc. Inv.* XXIX. [1915]. Inverness. 1922.
McDonald, A. *Gaelic Words and Expressions from South Uist and Eriskay* [1886-99 +]. Dublin. 1958.
MacDonald, D. 'Some Rare Words and Phrases', in *Trans. Gael. Soc. Inv.* XXXVII. Inverness. 1934.
MacFarlane, A. 'Gaelic Names of Plants: Study of their Uses and Lore', in *Trans. Gael. Soc. Inv.* XXXII [1924]. Inverness. 1929.
Mackenzie, G.S. *A General Survey of the Counties of Ross and Sutherland.* London. 1810.
MacKenzie, J. *An English-Gaelic Dictionary*. Glasgow. 1936.
MacSween, N. 'Parish of Lochs', in *Third Stat. Acc.* vol XIII [1982]. Edinburgh. 1987.
Major, J. *The Book of Seaweed*. London. 1977.
Moncrieff, R.W. 'The Uses of Alginates', in *Proc. First International Seaweed Symposium*. [1952]. Edinburgh. 1953.
Munford, J.G. & Donnan, D.W. 'The Sustainable Use of the Renewable Marine Resources of the Scottish Islands', in J.M. Baxter & M.B. Usher (eds). 1994. qv.
NMAS RHS. 1977: National Museum of Antiquities of Scotland, Royal Highland Show label. Scottish Life Archive. National Museums of Scotland, Edinburgh.
New Statistical Account [*NSA*]: Vol XIV. Inverness, Ross and Cromarty. Edinburgh/London. 1845; Vol XV. Sutherland, Caithness, Orkney, Shetland. Edinburgh/London. 1845.
Newton, L. *Seaweed Utilisation*. 1951.
Old Statistical Account [*OSA*] (1790s): Vol XVII. Inverness-shire, Ross and Cromarty. Wakefield. 1981; Vol XVIII. Caithness and Sutherland. Wakefield. 1979.
Omand, D. *The Sutherland Book*. Golspie. 1982.
O'Neill, T.P. 'Some Irish Techniques of Collecting Seaweed', in *Folk Life* 8. 1970.
Ross, S. et al. 'The Landscape', in D. Omand (ed) *The Sutherland Book*. Golspie. 1982.
(The) Scotsman: 16 July 1962; 13 July 1964; 21 September 1965; 6 January 1982; 11 November 1991. Edinburgh.
SND: *Scottish National Dictionary*. Edinburgh. 1927-76.
Stephenson, W.A. *Seaweed in Agriculture and Horticulture*. London. 1968.
Thomson, W.P.L. *Kelp-Making in Orkney*. Kirkwall. 1983.
Walker, F.T. 'Summary of Seaweed Resources in Great Britain', in *Proc. First International Seaweed Symposium*. [1952]. Edinburgh. 1953.
(The) Weekly Scotsman: 30 September 1965. Edinburgh.

Durness, ca 1886.