Topic Page: Western Isles (Scotland)

Definition: **Hebrides** from *Philip's Encyclopedia*

(Western Isles) Group of more than 500 islands off the W coast of Scotland. They divide into the Inner Hebrides (Skye, Rhum, Eigg, Islay, Mull) and the Outer Hebrides (Lewis, Harris, North Uist, and South Uist). First inhabited in the 4th millennium bc Picts settled on the islands from the 3rd century ad and the Scots arrived later. In the 8th century, the Vikings invaded and the Hebrides became a Norwegian dependency. In the 13th century, Norway ceded the islands to Scotland. Less than 100 of the islands are inhabited. Industries: fishing, farming, woollen clothing.

Image from:
Dissected salt marsh behind Uig...
in *Encyclopedia of the World's Coastal Landforms*

Summary Article: **The Outer Hebrides**
From *Encyclopedia of the World's Coastal Landforms*

The Outer Hebrides (Western Isles) include the linked islands of Lewis and Harris, North Uist, Benbecula and South Uist, Eriksay, Barra and smaller islands south to Berneray (Angus 1997). The islands are dominated by Pre-Cambrian rocks, (Lewisian gneiss), which is often irregularly layered. There are associated granites in the hilly uplands of western Lewis and Harris, some schist and limestone in southern Harris and a low-lying area of red-brown Permo-Triassic sandstones and conglomerates.

The islands were strongly glaciated in Pleistocene times, and glacial drift blankets much of the northwest of Lewis, linking some former islands. Bold cliffs occur locally on exposed N and NW coasts, dissected along joint and fault planes, down which there have been local landslides, but undercutting and the retreat of headlands has been very slow on these hard rock formations, and even on the exposed north coast there are many vegetated slopes.

The west coasts of the islands are exposed to Atlantic swell and storm waves, whereas the east coasts, facing the Minch, are exempt from swell but have occasional local storms. The prevailing winds are south-westerly: Stornoway has gales on an average of 48 days per year. Mean spring tide range is generally between 3.6 and 4.3 m (Stornoway 4.1 m, Bernera Harbour 3.8 m, Leverburgh 4.0 m, Barra 3.6 m, Loch Maddy 4.2 m, East Loch Tarbert 4.3 m).

Beaches of sand and gravel derived from glacial drift occupy many bays, and there has been large scale accretion of calcareous sand, swept in by wave action from the sea floor, especially on the oceanic western coasts of the islands. Many beaches are backed by dunes and the low-lying calcareous sandy areas known as machair, some of which include subdued dunes and plains formed by deposition in shallow lochs (lakes) or lagoons (Ritchie and Mather 1977).

Lewis and Harris

This account begins at Stornoway Harbour, which is partly sheltered by the rocky Airinis peninsula. Stornoway waterfront is largely walled, with breakwaters enclosing the harbour. There is a beach of sand and fine shingle in front of the sea wall and in the bay to the east. Tide gauge records show that mean sea level has been rising at Stornoway at about 2.5 ± 2.4 mm/year.

The coast east of Stornoway consists of a series of small bays and rocky promontories out to Rubha

Thuilm (Holm Point), the cliffs becoming bolder as exposure to The Minch increases. They are cut in reddish-brown sandstones and conglomerates which outcrop in cliffs east from here, extending round the Eye Peninsula and north along the west coast of Broad Bay. The cliffs are up to 10 m high, often slumping, with shore platforms that tend to follow the NW-NNW dip.

Holm Bay, sheltered by the indented Holm Island, has rocky shores and reefs with brown seaweed. There are rounded grassy bluffs, bold, bull-nosed promontories and overhanging cliffs. Chubag Bay is wider, facing south, with cliffs cut in conglomerate (*Fig*. 7.24.8.1), eroded to yield pink and grey pebbles that dominate beaches and tombolos.

Fig. 7.24.8.1 On the western side of Chubag Bay are cliffs and bluffs in Permo-Triassic conglomerate, with derived gravelly beaches and a shore platform. (Courtesy Geostudies.)

On the south coast of the Eye Peninsula grassy bluffs become higher and steeper, with a transition to bold rocky cliffs towards Chicken Head. In Phabail Bay there is an emerged shore platform cut in gneiss, much influenced by near-horizontal jointing. The rocky shore swings northward to Tiumpan Head, which has a prominent stack. On the northeast coast grassy slopes descend to a rocky shore with bands of hard dark gneiss and bouldery sections. Near Garrabost the Lewisian gneiss disappears beneath sedimentary rocks with grassy bluffs and fronted shore platforms cut in sandstones and conglomerates that dip westward. The harder conglomerates stand out as scarps running across the shore.

North of Stornoway the coast of Broad Bay is fringed by a shingle beach, fronted by a broad sandy shore exposed at low tide. Laxdale Lagoon has a western salt marsh and enclosing spits. To the north is Coll Bay, where a sandy beach is backed by uncut dunes and fronted by pebble gravel. Cliffs and bluffs are in conglomerate, the upper part much weathered, the lower part forming a gravel-strewn shore platform.

The promontory to Tolsta Head has vegetated bluffs passing east through slope-over-wall profiles to rocky cliffs. Garry Beach (Port Geiraha) is a sandy valley-mouth cove backed by grassy dunes, the southern cliff fringed by several tall stacks cut in gneiss and shaped in relation to vertical and inclined joint planes. To the north of the coast is bold and rugged, with outcrops of pale gneiss. Beyond this the sedimentary rocks come to an end, and a rugged cliffy coast cut in gneiss runs past Cellar Head (*Fig*. 7.24.8.2).

Fig. 7.24.8.2 Steep rocky coast north of Port Geiraha, looking towards Cellar Head. (Courtesy Geostudies.)

To the north rocky headlands alternate with slumping bluffs cut in glacial drift. There are several caves and natural arches. Port Skigestra is a diminutive harbour on the NW side of a broad bay with boulders and a grey shingle beach at its head. The rocky shore ends in a sandy beach at Buile Muigh, near Port of Ness. To the north cliffs in black rock become higher with greater exposure to Atlantic storms.

At the Butt of Lewis the headland consists of hard metasediment that have been dissected along joints and faults to form geos (chasms) and large stacks. The promontory consists of a 30–40 m platform. The more exposed cliffs have wider stripped zones exposing gneiss, with a set-back turf edge.

To the south the natural arch through the headland at Roinn a' Roidh is angled with the dipping structures. South of Europie, slopes with a thin mantle of wind-blown sand descend to rocky shores, then a wide beach of calcareous sand backed by dunes held by marram grass with some blowouts.

At Suainebost is a long embayment with dissected grassy dunes behind a beach of sand and gravel. At Cros there is a cove at the mouth of the deep Dell valley, and a stream flows through well-rounded cobbles and pebbles to a partly sandy beach, Traith Dhail. The cliff on the eastern side is cut across gneiss with landward inclined planes, and has an escarpment style. At Galson cliffs cut in glacial drift over dark gneiss include exposures of an emerged beach 3–8 m above high tide level. To the east the emerged beach is overlain by a shelly midden with charcoal and bone implements.

To the south-west coastal slopes descend to low rocky cliffs, and there are bouldery shores and dunes in embayments. A beach of sand and gravel is capped by dunes along a barrier that encloses Loch Mor Bharabhais (Loch Barvas) (*Fig*7.24.8.3). This is backed by an almost flat machair plain. The beach runs on as a barrier across Loch Eirearaigh.

Fig. 7.24.8.3 Gravel barrier enclosing Loch Barvas on the west coast of the Isle of Lewis, with low cliffs cut in glacial drift. (Courtesy Geostudies.)

Cliffs and coves continue SW to Port Arnol, a wider valley-mouth bay with a sandy beach. Cliffs and bluffs cut in glacial drift and underlying gneisses run past the Labost ridge round to Iuchair, the rocky headland beside the bay north of Shawbost.

At Shawbost the steep coast descends to rocky cliffs and blocky shores in gneiss and a range of igneous and sedimentary rocks. Shingle beaches are derived from glacial drift gravels and the disintegration of shore outcrops. Loch Siabost is wide between parallel shores along which rocky headlands pass landward to cliffs and bluffs in bouldery glacial drift. On the western shore cliffs run out to the headland at Rubha Neidalt, bordered by a rocky cove between headlands stripped of glacial drift, the backing slopes on drift with disintegrating turf terracettes.

To the south-west is Loch na Muilne, a large cauldron linked by a tunnel to deep geos, with waves swashing in to a shingle beach piled with driftwood. On Rubha na Beirghe is a large natural arch through a stack.

The cliffs and coves continue SW to Dalbeg (Dhailbeag) Bay, with a group of stacks and a beach of calcareous sand receiving Atlantic swell. In general, valley-mouth bays on the NW coast of Lewis have received inwashed calcareous sand whereas rocky and bouldery coves have not, proabably because they reflect strong wave action and generate seaward sweeping of such sediment.

To the west of Balbeg Bay is a broad, high rocky ridge, with ice-moulded and scoured knolls and boggy hollows, some with lochans. The ridge is truncated at the coast by high rugged cliffs, with a natural arch out on the western headland. Cliffs run out SW to Aird Laimisiadair and the entrance to Loch Rog an Ear, a deep inlet formed by partial marine submergence of a glaciated valley. To the south is Loch Shiadan, a gorge partly blocked by a boulder ridge. An irregular shore platform follows sloping structures in the gneiss.

At Breascleit a cobble beach fronts a cliff cut in glacial drift. Spring tide range here is about 3 m. To the west Great Bernera has an indented coastline, with inlets and peninsulas that follow a NNE-SSW trend. At the northern end Bosta has a sandy beach in a valley-mouth bay bordered by slopes with a mantle of

wind-blown sand. Erosion during a 1996 storm exposed an Iron Age village.

West of Great Bernera is Loch Rog, a wide branching marine inlet which penetrates several kilometres into a landscape of ice-scraped, ice-moulded rocky hills. The Valtos Peninsula has rocky southern and eastern shores and calcareous sand on parts of the northern coast, notably in the long gently curving beach Traigh na Beirigh. Wave action is impeded by offshore islands, but swell moving in through a strait (Caolas na Sgeire Leithe) is refracted into a curved pattern that shapes the beach. On the western side of the Tobha Mor promontory Cliobh Beach is wide and sandy,and the cliffed coast runs on NW to Gallan Head.

Cliffs south from Gallan Head, exposed to Atlantic storms, have wide stripped edges exposing bare rock. The broad bay of Camas Uig is backed by the wide sands of Uig Bay, Traith Uig. The sand has come partly from erosion of a nearby esker and is partly calcareous, swept in from the sea floor. Some of the inner parts of Uig Bay have patches of grassy salt marsh with winding creeks (*Fig*. 7.24.8.4).

Fig. 7.24.8.4 Dissected salt marsh behind Uig Sands, NW Isle of Lewis. (Courtesy Geostudies.)

West of Camas Uig Bay the cliffs show little evidence of recession apart from local rock falls, and there are irregular rocky shores rather than shore platforms. To the south is Mangerstra, which has high cliffs behind a deep cove with boulders. At the cliff crest turf strips are breaking and collapsing along fractures parallel to the coastline, and the pasture above the cliff top is sandy machair.

Out to sea is St. Kilda (Hansom 2003), the largest of a group of outlying Hebridean islets and stacks, and is what remains of a large Tertiary ring volcano, its steep cliffs rising directly from a 40 m deep submarine platform which itself is fronted by steep submarine cliffs that rise from an even deeper submarine platform at 120 m. Caves have been cut into both the submerged and the modern cliffs but modern equivalents of the submerged platforms are absent. Hirta is the largest island (630 ha), with Dun, Soay and Boreray comprising the 853 ha land area of this World Heritage Site. The islands were subject to mountain glaciation during the last glacial maximum but parts of Hirta were ice free and are mantled with periglacial material. Spectacular, often vertical and overhanging, cliffs surround all the islands of the group, Conachair (430 m) on Hirta being the highest sea cliff in Britain. Many of the cliffs pass upwards into steep vegetated coastal slopes (*Fig*. 7.24.8.5). Stacks are common and close to Boreray, Stac an Armin and Stac Lee tower 191 and 166 m above sea level, the former being the

highest stack in the British Isles. Rockall, 300 km to the west, is an isolated stack of bare granitic rock 21 m high, standing on a submerged basalt bank. In February 2000, the highest individual wave ever recorded (29.1 m) was experienced near Rockall.

Fig. 7.24.8.5 Looking east along the south coast of Hirta, the main island of the St Kilda group. (Courtesy J. Hansom.)

Further south is Mangerstra Inlet, a wide valley-mouth bay with upper sand flats bordered by grassy dunes formed by deflation down to the water table (*Fig*. 7.24.8.6). The sand flats are occasionally invaded by the sea when high spring tides are augmented by onshore winds and incoming waves.

Fig. 7.24.8.6 Sanded inlet at Mangerstra, NW Isle of Lewis. (Courtesy Geostudies.)

The west-facing coast south of Mangerstra is backed by a wide gently sloping terrace, steepening to rocky mountains. The cliffs are irregular, some gnarled, others with vertical or steep joint planes, some dissected into stacks. Offshore is the island of Eilean Mhealasta, with a beach on its eastern coast, and the higher island of Scarp beyond.

The mountainous west coast continues southward, broken by sea lochs. At Huishinish Bay a south-facing beach of shelly sand fronts stable machair. The coast then runs ESE into West Loch Tarbert, which narrows to the isthmus on which the little town of Tarbert stands.

The southern peninsula of Harris is also mountainous, the NW coast partly sheltered from ocean waves by the high island of Taransay, which has a cuspate spit (Corran Ra) on its inner shore, facing the Sound of Taransay.

A wide estuary at Luskentyre contains inwashed sand, which is exposed as a broad plain at low tide. The upper estuary has brown silty sand, passing downstream to yellow inwashed calcareous sand, and the southern shore has rocky coves with small sandy beaches. The broad Corran Seilebost sandspit is dune-capped, the dunes cliffed on both its inner and outer shores.

Southwest from Luskentyre there are several sandy beaches on islands separated by steep rocky sectors that have been stripped of turf by storm waves and ramps following low-angle joints. Sandflats run back on the eastern side of the Magillivray Ridge to a shallow lagoon and a much-dissected sandy salt marsh.

On the SW side of Scarasta Sands is a hilly isthmus south of the high Toe Head mountain, on the slopes of which a pale pegmatite dyke slopes gently eastward. There is a natural arch out on the headland and sandy coves on the southern side of the mountain, then a broad sandy beach (Traigh na Cleabhaig) to the SW, backed by eroded and dissected grassy dunes, with a gently declining machair to salt marsh.

At Leverburgh the SW coast of Harris shore has rocky shores with a prominent black algal horizon. Killegray and Ensay are steep-sided high islands in the Sound of Harris, and to the west is the conical island of Pabbay. To the SE is Renish Point, the southernmost point of Harris.

The southeast coast of Harris is rocky and indented, with many inlets between irregular low promontories and few beaches. Aird Mhighe is a tidal pond (*Fig*. 7.24.8.7), with water streaming out as the tide falls and returning as it rises.

Fig. 7.24.8.7 Tidal pond at Aird Shleibhe, Harris, showing the outflow through a rocky channel as the tide falls. (Courtesy Geostudies.)

The rugged indented coastline of the east coast of Lewis, bordering the Minch, is dissected by several large sea lochs, notably Loch Seaforth, a straight fiord with steep slopes cut across the Hebrides Thrust near its entrance. Steep, rounded slopes descend to rocky shores along The Minch northward to Stornoway.

North Uist

On the southern side of the Sound of Harris is the island of Berneray, its eastern half high and hilly, while to the west is a machair lowland fringed by dunes and sandy beaches. The vast mass of deposited sand on the west coast of the Uists comes partly from sandy moraines on the Uists, extending below sea level, but the calcareous fraction is commonly at least 40%.

There are salt marshes at Port nan Long, and to the south of the hill at Sudanais a wide machair with dunes and a sandy beach, Traith Lingeigh, on the seaward fringe. There are areas of dissected salt marsh and eroded peat along the southern shores. A tombolo, Machair Leathann, links a hilly peninsula with extensive dunes. Traigh Iar and Traigh Bhalaigh are long curving sandy beaches shaped by ocean swell.

The NW coast of North Uist is rocky with small bays and rocky promontories. A beach backed by dunes curves out to a cuspate point, Rubha Mor, in the lee of small rocky islands, and Lagan Arnal, to the south, marks the beginning of the long sandy west coast of North Uist.

Kirkibost Island and Baleshare have the form of barrier islands fronting a wide lagoon at high tide, backed by an irregular inner shoreline. At low tide wide sandy and muddy flats are exposed, with tidal channels that converge to gaps between the islands. Kirkibost Island is a dune-capped sandy barrier island between tidal entrances to the broad lagoon, its inner part low-lying machair.

The west coast dunes on Baleshare Island are backed by machair, then a low area of glacial drift and rocky outcrops. The island is attached to the mainland by a causeway with sand accreting on the northern side.

The east coast of North Uist, facing The Minch, is rugged, rising to rocky ridges that are penetrated by several sea lochs, notably Loch Euphoirt, which almost divides the island. In contrast with the oceanic west coast there are very few beaches. To the north is Loch Maddy with many seaweed-fringed islets.

Benbecula

Causeways link North Uist to the island of Benbecula at Gramsdale. On the western side is An Tom, a dune fringed machair peninsula. This low-lying terrain has been used for Ballyvanich airport. Dunes back the broad beaches on the SW coast. The east coast of Benbecula is, like that of North Uist, rocky and indented, with many small islands and few beaches.

South Uist

Much of the western half of South Uist is low-lying machair bordered seaward by a dune fringe. The ocean coastline is receding, and some settlements have been lost. Breaching of the dune fringe has exposed parts of the machair to erosion (*Fig*. 7.24.8.8). There are successive promontories and sandy bays with lobate protrusions in the lee of rocky reefs.

Fig. 7.24.8.8 Cliff cut into machair on the west coast of South Uist near Verran. (Courtesy Geostudies.)

The coast swings eastward at Pollachar, and faces south across the Sound of Barra. The high island of Eriksay is linked by a causeway built in 1998, and has a west coast bay with a sandy beach known as Prince Charles Beach. The island is almost divided by a rock-edged inlet, Acairseid Mhor.

The east coast of South Uist, facing the Little Minch, has generally steep slopes descending to rocky shores which run in around Loch Boisdale, with its many islands, Loch Eynort and Loch Skipport. Again there is a contrast with the oceanic western coast in that sandy beaches and dunes are absent.

Barra

Much of the island of Barra is bare and mountainous, consisting mainly of Lewisian gneiss scoured by glaciation. The coast is sloping and rocky, indented by many small bays, but in the north the sandy isthmus of Eoligarry links a hilly northern area. On the western side of this isthmus is Traigh Eais, a sandy beach that is wide at low tide, with some pebbly areas, backed by high cliffed grassy dunes, then a broad low undulating machair plain. On the eastern side is Traigh Mhor, a broad sandflat exposed at low

tide which is a notable cockle resource. Splays of shelly sand are moved across the sandflat by wave action at high tide, and are harvested for shell grit. Aircraft land on the Traigh Mhor sandflat at low tide (*Fig*. 7.24.8.9). Shelly sand is still moving in from the north through the Sound of Orosay.

Fig. 7.24.8.9 An aircraft landing on the beach at Traigh Mhor, Barra. (Courtesy Geostudies.)

To the south of Barra is the high island of Vatersay, linked by a causeway. It has a central isthmus consisting of beach-fringed parabolic dunes and machair between Bagh Siar and Vasteray Bay. As on Barra, the existence of an east coast sandy beach is probably the result of overwashing from the western side before the dune-covered isthmus developed. Other glaciated mountainous islands southward are Sandray, Parbay, Mingulay and Berneray, each with steep coastal slopes descending to cliffs and rocky shores, but only very small beaches.

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