

North Skye 11: Duntulm



The bay west of Duntulm, Cairidh Ghluimaig, is the type-locality for an instructive sequence of estuarine strata of the Duntulm Formation and preserves trackways of sauropod dinosaurs formed as they walked across a Middle Jurassic lagoon. Intruded into these strata is a spectacular Paleocene layered picrodolerite sill, which locally incorporated and melted pieces of country-rock.

Aspects covered: Middle Jurassic estuarine strata of the Duntulm Formation (Great Estuarine Group); a Paleocene layered picrodolerite sill with melted inclusions of country-rock (buchites).

Route: [Duntulm \(south of Duntulm Castle\)](#) – [Cairidh Ghluimaig](#) – [Ru Meanish](#) – [Port Duntulm](#) (- return [Duntulm \(south of Duntulm Castle\)](#)).

Distance: 2 kilometres (1 mile).

Time: 4 hours.

General comments: This excursion involves coastal exposures and therefore requires a low (preferably Spring) tide. Access is good, especially for the section of Duntulm Formation strata at Cairidh Ghluimaig, where a convincing dinosaur trackway is preserved. From here, there are excellent views west to the Outer Hebrides and the opportunity of a beautiful sunset.

From [Staffin](#), head north on the main (A855) coastal road for 13 km (9 miles), to [Duntulm](#). Parking is available on the west of the main road, [south of Duntulm Castle](#).

Access the beach in the middle of [Cairidh Ghluimaig](#) (Gaelic: fish-weir pool). Care should be exercised as some of the rock surfaces can be very slippery.

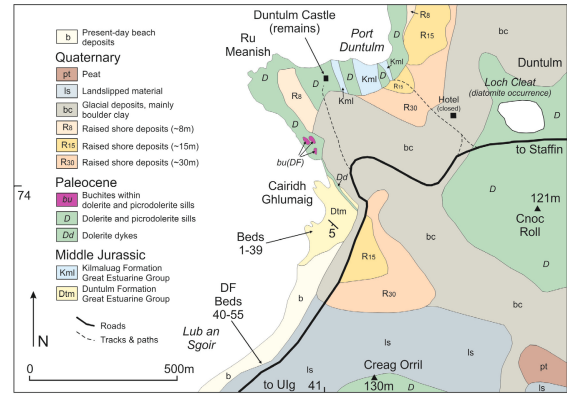


Figure North Skye 11.1: Location map and annotated Google Earth® image for the Duntulm area. DF: Duntulm Formation.

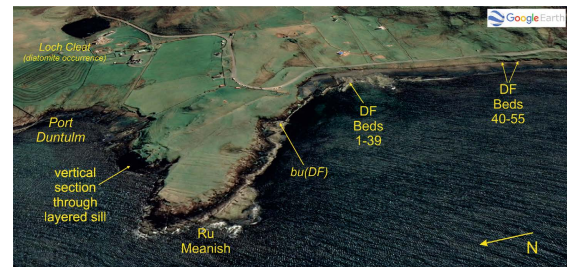


Figure North Skye 11.2: Annotated oblique Google Earth® image for the Duntulm area. DF: Duntulm Formation.

Locality 1 [\[NG 4102 7394\]](#):

The easily accessed strata on the foreshore at [Cairidh Ghluimaig](#) is the type-locality of the estuarine facies Duntulm Formation (Bathonian). These lagoonal-mudflat strata were deposited during a time of minor sea-level fluctuations. A traverse through the section reveals the following features:

- a. The variability of lithologies, including grain-size characteristics, from mudstones to medium-grained sandstones, indicative of fluctuation sediment supply and depositional environment;
- b. Abundant marine bivalves (*Praexogyra*; *Cuspidaria*; *Modiolus*);

c. Brackish-marine oyster shell banks (*Praeexogyra hebridica*);

d. Shallow marine algal limestones;

e. A sauropod trackway within littoral (near-shore) strata and marine oyster shell banks, indicating temporary shallow water or exposure.

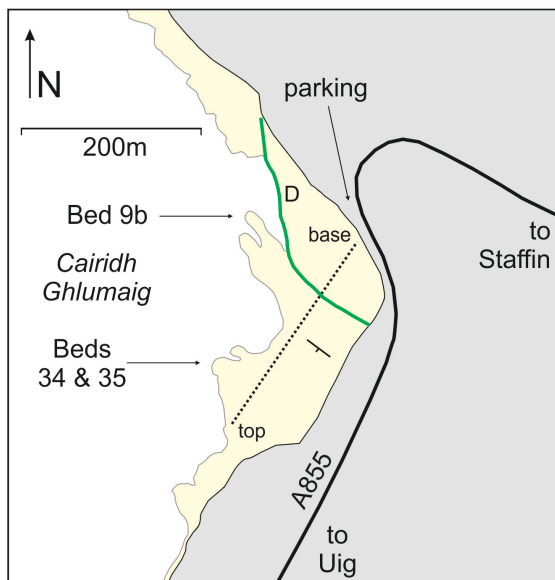
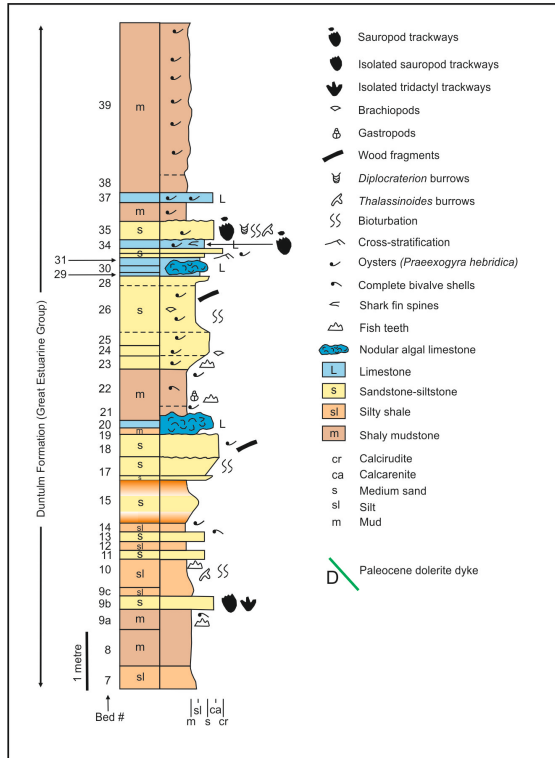


Figure North Skye 11.4: Overview of the Duntulm Formation at Cairidh Ghluimaig, with key beds labelled. View is towards the south.



Figure North Skye 11.5: Overview of the Duntulm Formation at Cairidh Ghluimaig. The upper of the two pale-weathering beds, with two people for scale, is Bed #34, which preserves a sauropod trackway. View is towards the west.



Figure North Skye 11.6: Overview of the Duntulm Formation at Cairidh Ghluimaig. The obvious pale-weathering bedding surface (Bed #34) contains a sauropod trackway. View is towards the NW.

Figure North Skye 11.3: Summary log for the type-locality Duntulm Formation sequence at Cairidh Ghluimaig, Duntulm.



Figure North Skye 11.7: Sauropod trackway on the top surface of Bed #34. Pole c. 1m long.



Figure North Skye 11.8: Sauropod track (footprint) (convex hypo-relief) on the top surface of Bed #34 in Cairidh Ghlumaig. Pole c. 1m long.



Figure North Skye 11.9: Section of a sauropod track in Bed #34 at Cairidh Ghlumaig. Note deformation of the sediment substrate. Pole c. 1m long.



Figure North Skye 11.10: Oyster-rich (*Praeexogyra hebridica*) bed, Cairidh Ghlumaig. Coin c. 24mm across.

Beds 40-55 are exposed in a small crag at the back (above) the foreshore to the south.

Locality 2 [NG 4107 7383]:

Within the crags at the back of the beach, the uppermost preserved part of the Duntulm Formation section is exposed.

[TOP]

- 55. Shale, grey, rusty-weathering (1.80m);
- 54. Limestone, grey; Nodular Algal Bed (0.60m);
- 53. Shale, abundant *Praeexogyra*; limestone in middle (0.60m);
- 52. Limestone, wavy-laminated; stromatolitic algal bed (0.15m);
- 47–51. Shale and limestone; very abundant and well-preserved *Praeexogyra* in some beds (2.20m);
- 45–46. Calcareous sandstone and sandy limestone; *Praeexogyra* (0.53m);
- 44. Shale, dark; *Corbula*, *Placunopsis*, *Cuspidaria* (0.20m);
- 43. Limestone, grey, pelletal; algal fragments (0.10m);
- 42. Shale, calcareous; *Praeexogyra* (0.13m);
- 40–41. Mudstone, blue-grey; carbonaceous fragments and lignite; laminated carbonaceous shale beneath (2.00m);

[GAP IN EXPOSURE; A FEW METRES AT MOST MISSING]

1-39. On the foreshore to the north



Figure North Skye 11.11: Beds 40-55 of the Duntulm Formation, exposed in a small crag at the back (above) the foreshore at the southern end of Cairidh Ghlumaig. Pole c. 1m long.

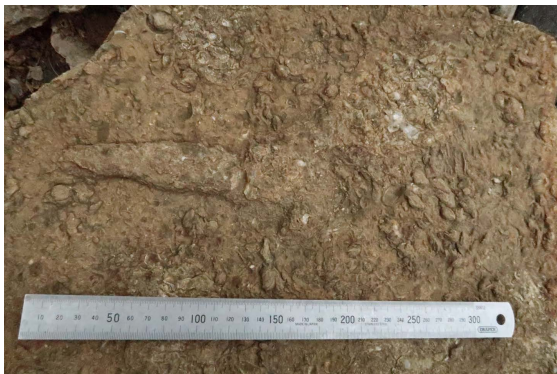


Figure North Skye 11.12: Bioturbation in a silt-rich unit in the upper part of the Duntulm Formation exposed in a small crag at the back (above) the foreshore at the southern end of Cairidh Ghlumaig. Ruler 30cm long.



Figure North Skye 11.13: Oyster-rich shell bank in the upper part of the Duntulm Formation exposed in a small crag at the back (above) the foreshore at the southern end of Cairidh Ghlumaig. Coin c. 24mm across.



Figure North Skye 11.14: Oyster-rich shell bank from the upper part of the Duntulm Formation, exposed in a small crag at the back (above) the foreshore at the southern end of Cairidh Ghlumaig. Ruler 30cm long.



Figure North Skye 11.15: Calcareous sandstone from the upper part of the Duntulm Formation, exposed in a small crag at the back (above) the foreshore at the southern end of Cairidh Ghlumaig. Pole c. 1m long.

Return to the parking area and follow the path towards [Duntulm Castle](#). Before the final gate into the castle grounds, proceed SW to the wave-cut platform of the shore.

Locality 3 [NG 4087 7425]:

The peninsula is composed of a Paleocene layered picrodolerite sill, within which several large rafts of Jurassic sedimentary rock (Great Estuarine Group) are inweathered. The isolated outcrop of thin-bedded shale, immediately NW of where the wave-cut platform narrows considerably, is surrounded by sill rock and is a buchite (6m x 3m), essentially sedimentary rock that has suffered extreme thermal metamorphism and partial fusion. Microscopic crystals of the mineral mullite (a high-temperature aluminium silicate) are present within this rock. Along the contact of the sill with this buchite, extreme vesiculation of the intrusion has taken place. Immediately to the NW, two much larger rafts of flat-lying, pale, calcareous sandstone are caught up in the sill.



Figure North Skye 11.16: Contact zone between orange-weathering picrodolerite sill and thermally altered country-rock (Great Estuarine Group) on the foreshore SE of Ru Meanish. In the foreground (right of centre) is a buchite (inclusion/xenolith) of the country-rock.



Figure North Skye 11.17: Pale buchite (inclusion/xenolith) of Great Estuarine Group (Duntulm Formation?) strata within orange-weathering picrodolerite sill, SE of Ru Meanish. Pole c. 1m long.



Figure North Skye 11.18: Detail of margin of pale buchite (inclusion/xenolith) of (Duntulm Formation strata?) within orange-weathering picrodolerite sill, SE of Ru Meanish. Note vesiculated nature of the picrodolerite at the contact. Ruler 30cm long.



Figure North Skye 11.19: Buchite (inclusion/xenolith) of deformed country-rock strata (Duntulm Formation?) within picrodolerite sill, SE of Ru Meanish. Ruler 30cm long.



Figure North Skye 11.20: Buchite (inclusion/xenolith) of pale country-rock strata (Duntulm Formation?) within dark picrodolerite sill, SE of Ru Meanish. Ruler 30cm long.

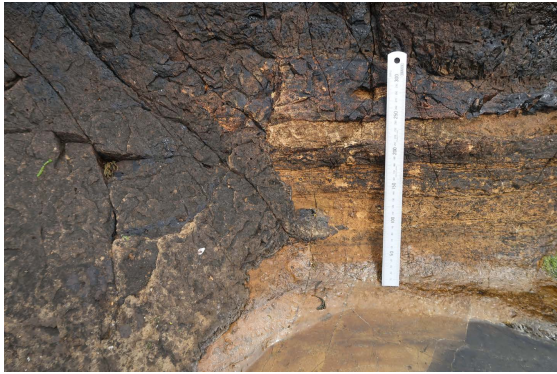


Figure North Skye 11.21: Detail of pale buchite (inclusion/xenolith) of country-rock strata (Duntulm Formation?) within dark picrodolerite sill, SE of Ru Meanish. Note complex irregular nature of contact. Ruler 30cm long.

Note to the south the landslips and rockfalls below the crags of [Creagan Iar](#), at [Carn Mòr](#).



Figure North Skye 11.22: Landslipped material from crags of dolerite sill below Creagan Iar, at Carn Mòr.

Continue to the northernmost part of the peninsula of [Ru Meanish](#), to c. [\[NG 4087 7439\]](#), to view the crags below [Duntulm Castle](#), with [Port Duntulm](#), beyond.

Locality 4 [\[NG 4087 7439\]](#):

From this vantage point, the layered nature of this c. 25m thick sill of picrodolerite is clearly visible. At least fifteen distinct, dark, flat-lying layers, rich in clinopyroxene, can be seen in the cliff face. These bands are typically 20–30cm thick and alternate with lighter/paler layers, 70–80cm thick, which are richer in olivine, with lesser amounts of pyroxene. Plagioclase occurs throughout the layers. If the tidal conditions permit, walk around the foot of the crags where the full extent of the layering is spectacularly developed in the cliff face and can be examined in detail.



Figure North Skye 11.23: Layered picrodolerite sill below Duntulm Castle. Note inclined nature of the layers. View is towards the south.



Figure North Skye 11.24: Layered picrodolerite sill below Duntulm Castle. View is towards the east from Ru Meanish.



Figure North Skye 11.25: Layered picrodolerite sill below Duntulm Castle. View is towards the east from Ru Meanish.



Figure North Skye 11.26: Detail of layered picrodolerite sill below Duntulm Castle. View is towards the east from Ru Meanish.



Figure North Skye 11.27: Detail of the layered picrodolerite sill below Duntulm Castle. In the lower part of image there is a pale olivine-plagioclase layer, above which is a dark pyroxene-plagioclase layer. Note incipient alteration along cooling joints, left of hammer. Hammer c. 30cm long.

Return to the car-park, either directly, or, by continuing east round the base of the cliff to a slipway on the NE side of the peninsula and thence to the parking area *via* a set of steps to the castle.

End of excursion.