
Figure and tables

(Front cover)

The Dalradian rocks of the South-West Highlands — introduction

(Figure 1) Simplified geological map of the Dalradian rocks in the South-west Highlands of Scotland, showing the axial traces of the major folds according to Roberts and Treagus (1977). Place-names in capitals give the locations of the various field-areas covered by this series of excursion guides. Note that the stratigraphic units correspond to the various sub-groups as given in (Table 1) and (Figure 2).

(Figure 2) Diagrammatic cross-sections through the Dalradian rocks in the South-west Highlands of Scotland, showing the structural relations of the major folds established in (Figure 1). Arrows give the facing of the early folds. These sections have been drawn on the assumption that the upper limb of the Ardrishaig–Aberfoyle Anticline is much less deformed than the lower limb.

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1 The Dalradian rocks of Rosneath and south-east Cowal

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(Figure 2) Geological map (after Roberts 1966) of the southern end of the Rosneath Peninsula showing the various lithologies developed within the Beinn Bheula Schists, the Dunoon Phyllites and the Bullrock Greywacke.

2 The Dalradian rocks of Knapdale and North Kintyre

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(Figure 2) Left: Geological map of the section between Kilmory Bay and the Point of Knap (Excursion 1, localities 1–14). Right: Geological map of the section between Barmore Island and Tarbert (Excursion 2, localities 17–24).

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(Figure 3) Stratigraphic column at Port nan Clach Cruinn. Key 1 Vesicular lava with basal pipe amygdaloids. Load structures cause sediment to be squeezed upwards into lava. Toes of lava project downwards and northwards into the sediment causing minor fold disturbances. 2 Interbedded cream limestone (1–3 cm) and cream calcareous phyllite (0.5–1 cm). 3 Channel filled by limestone containing boulders of grey limestone in a matrix charged with angular fragments of quartz. Whole unit is cross-bedded, indicating derivation from south. 4 Pure grey limestone with beds 1–10 cm thick. 5 Parallel laminated (0.5–1 cm) limestone. 6 Graded limestone with fragments of quartz (1–1.5 cm) and black calcareous slate. Channelled base trending 110°. Intruded from below by a sedimentary dyke of 7. 7 Laminated (0.2–2 cm) limestone with sand-sized quartz fragments. 8 Conglomerate with boulders of dark grey limestone. 9 As 7. 10 Conglomerate of rusty weathering black limestone with largest fragments measuring 100 × 50 cm. 11 As 7. 12 Grey

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4 The Dalradian rocks of Jura

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(Figure 1) Diagrammatic cross-section of the major structures of the Illtay Nappe Complex on which are indicated the approximate structural positions of the localities described in this guide. The stippled regions in this cross-section correspond to the areas illustrated by geological maps (Kilmelford), 4 (Kilchrenan) and 5 (Loch Avich). The localities at Oban and Strone Point are, respectively, localities 11 and 12.

(Figure 2) Distribution of the principal lithologies of the Dalradian rocks in the Northern Loch Awe District (after Borradaile, 1973). N.B. The maximum number of passengers that may be carried in one vehicle on certain roads is as follows:(a) the road along the north shore of Loch Melfort: 15 persons. (b) The road from Loch Melfort to Loch Awe passing Loch Avich: 15 persons.(c) The road along the West shore of Loch Awe, south from Kilchrenan: 21 persons. No restrictions exist for the other roads illustrated.

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7 The Dalradian rocks of the Loch Leven area

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(Figure 6) Geological map (after Treagus, 1974) of the Kinlochleven area (Excursion 6, localities 28–33).

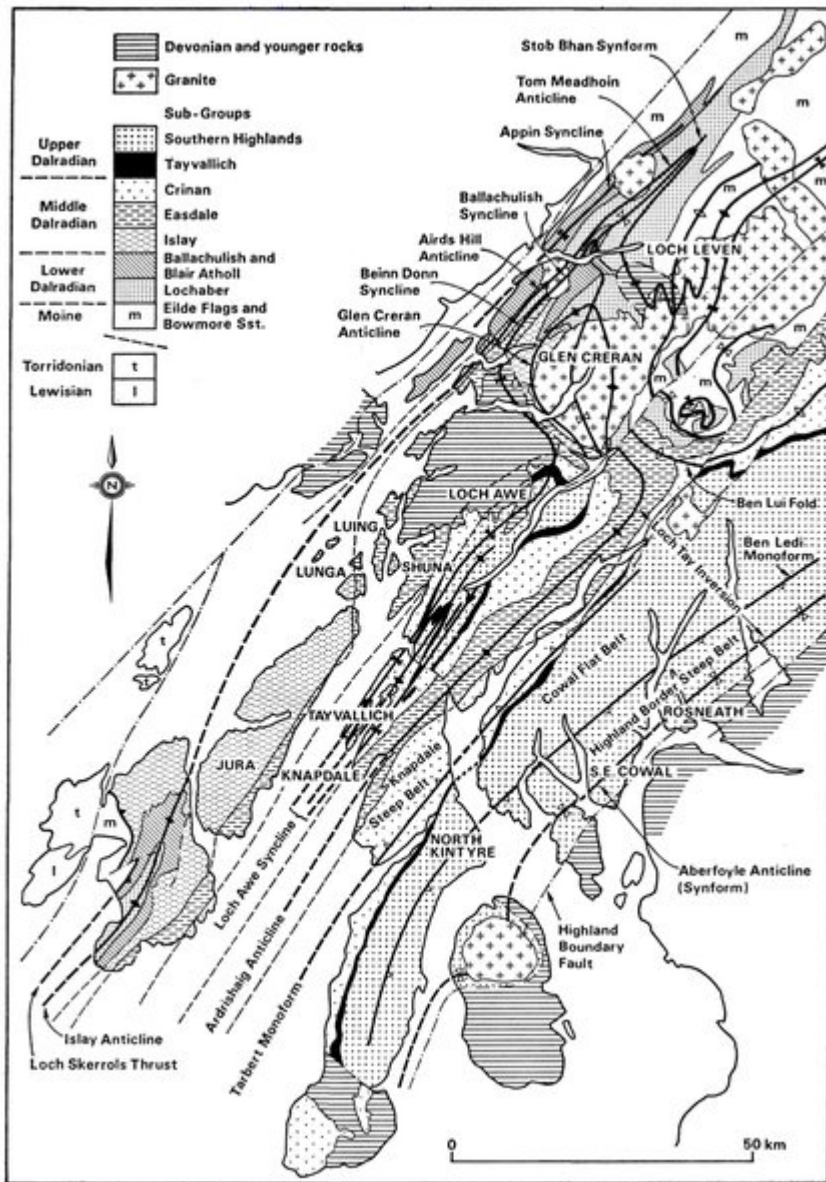
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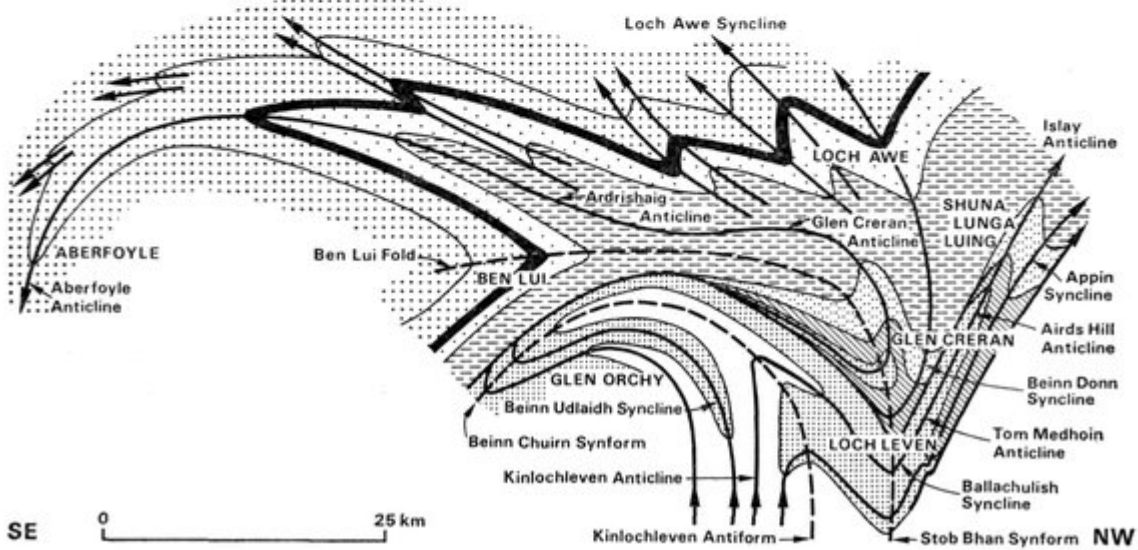
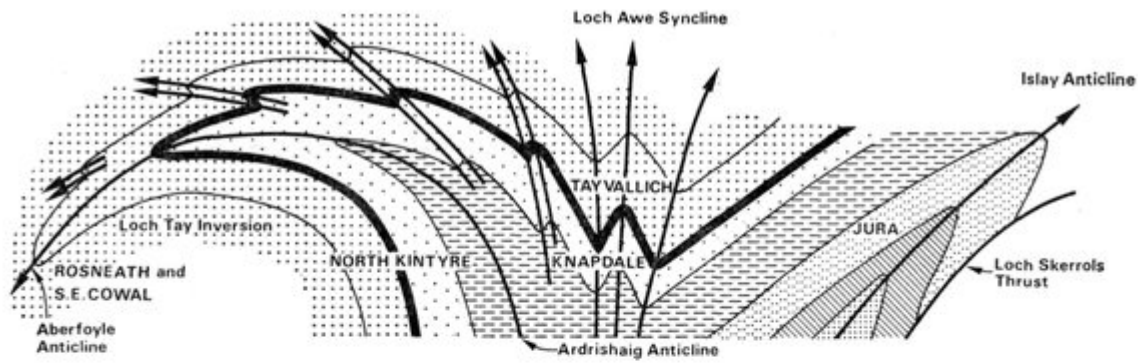
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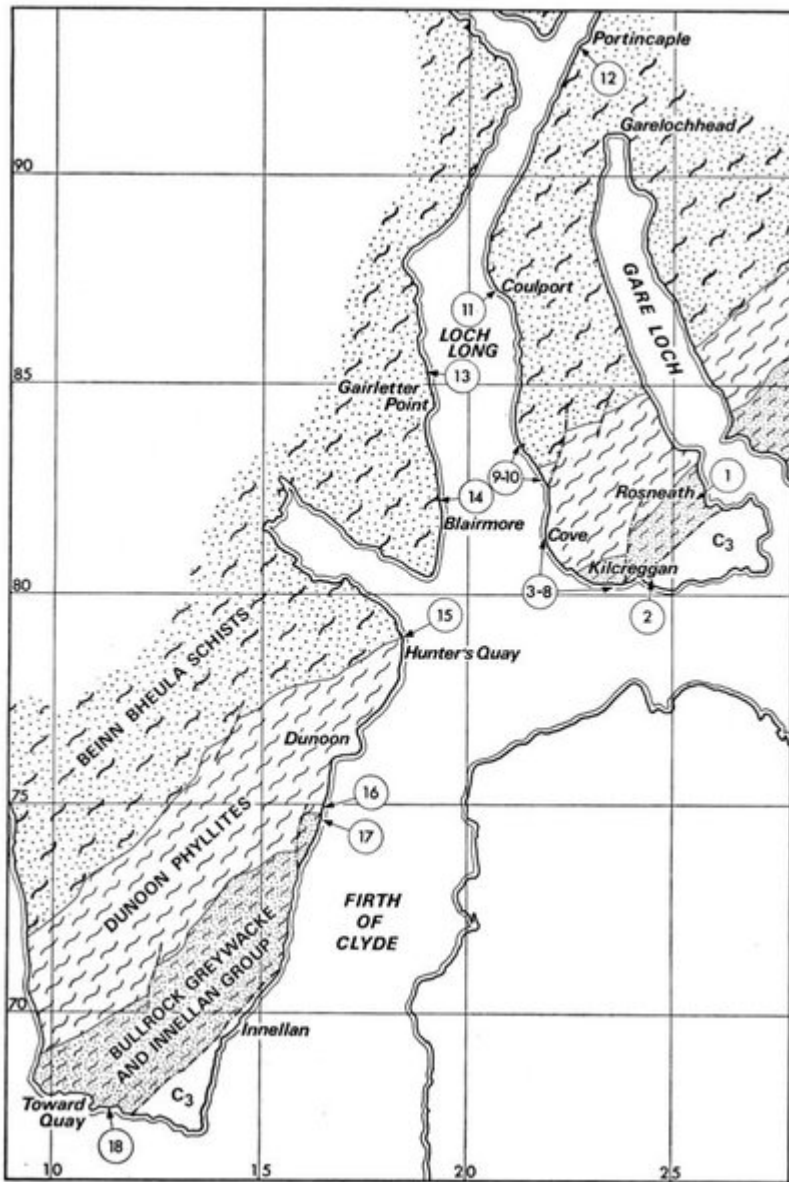
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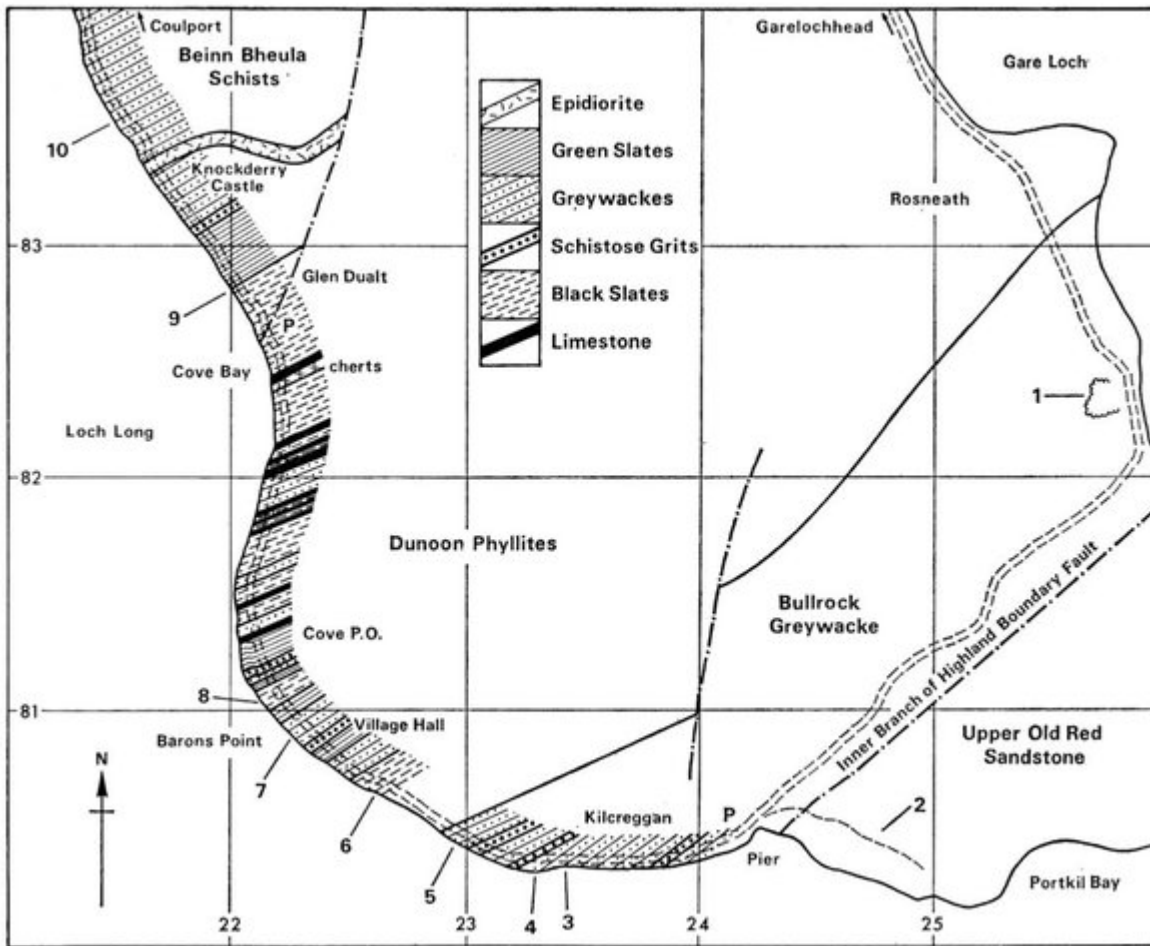
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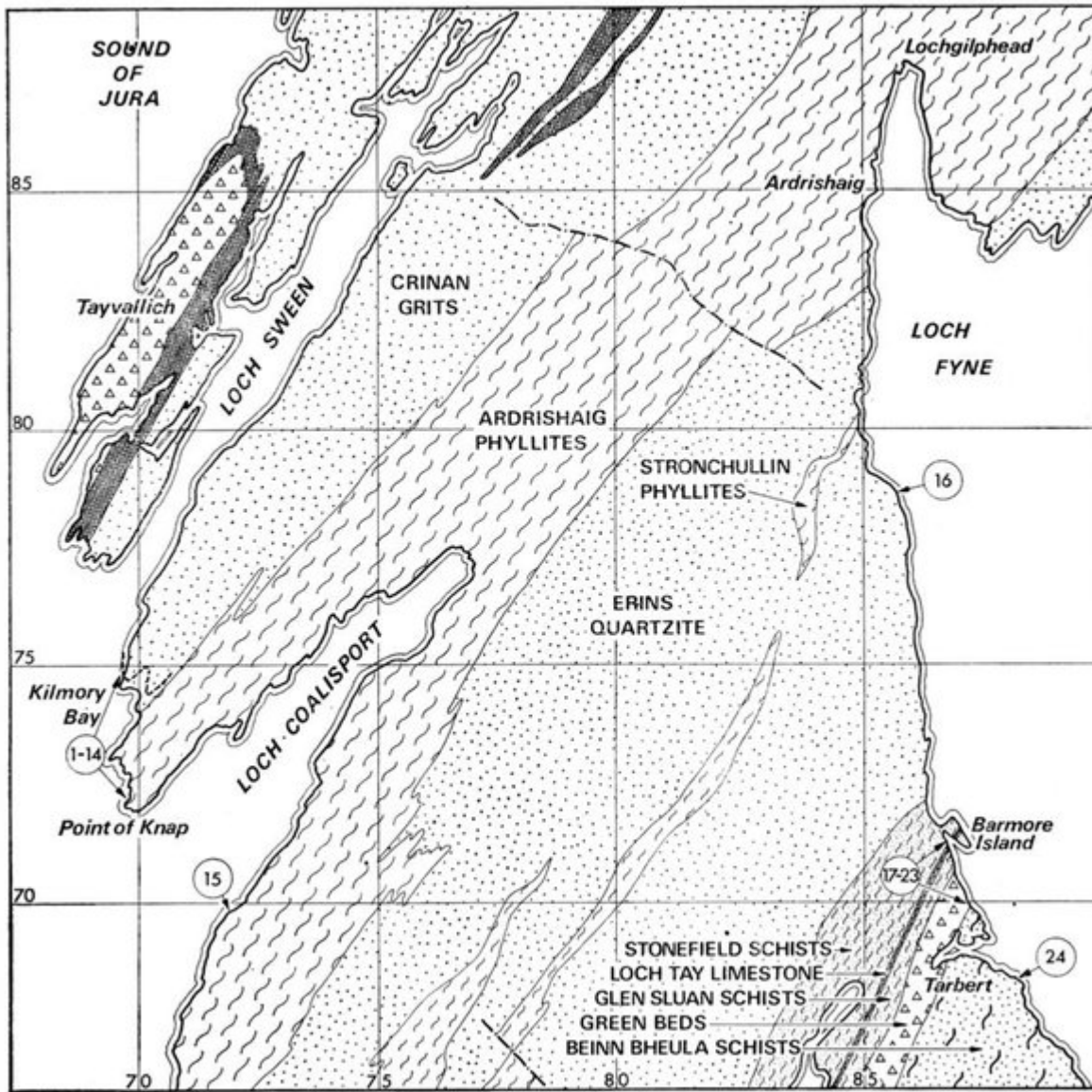
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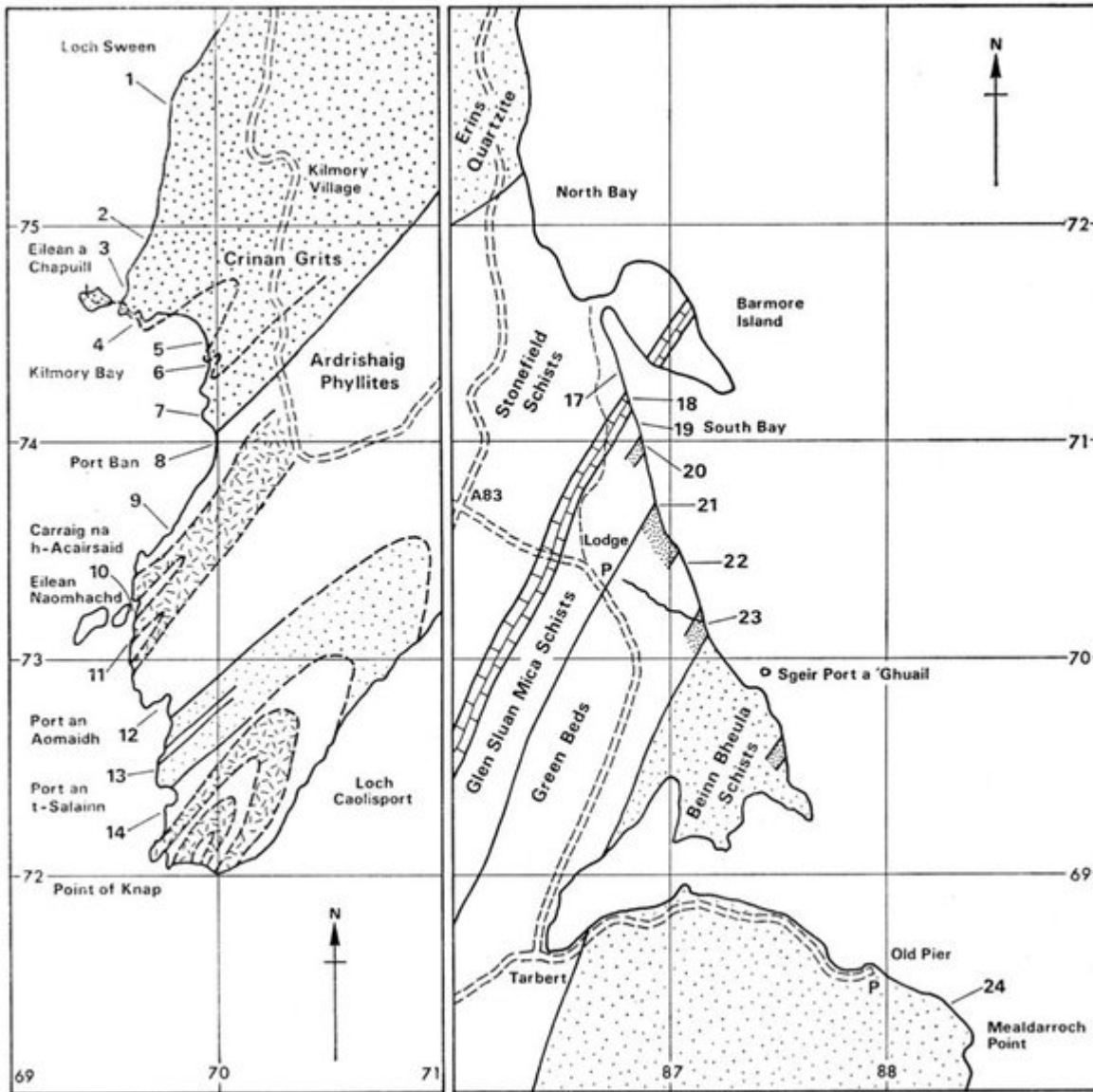
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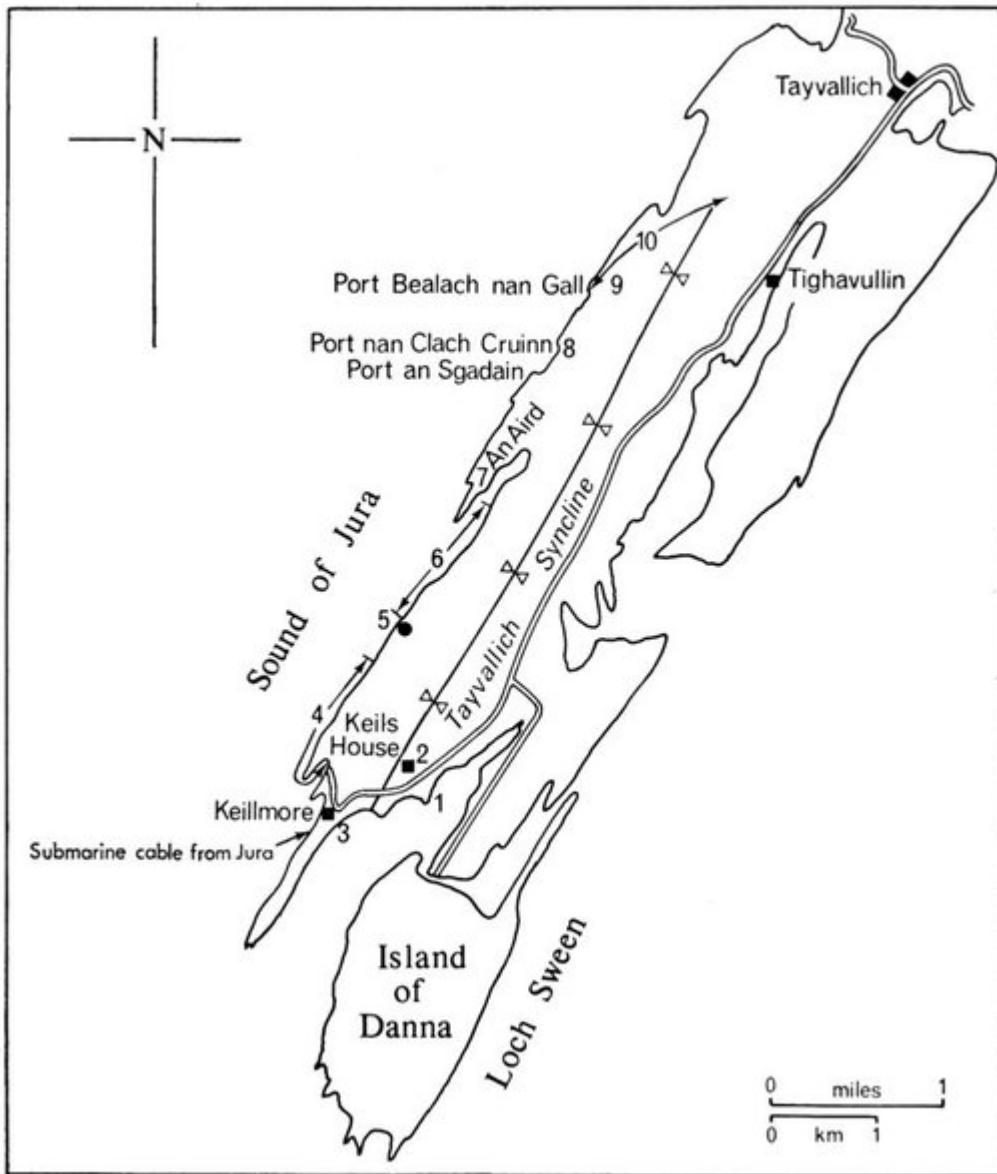
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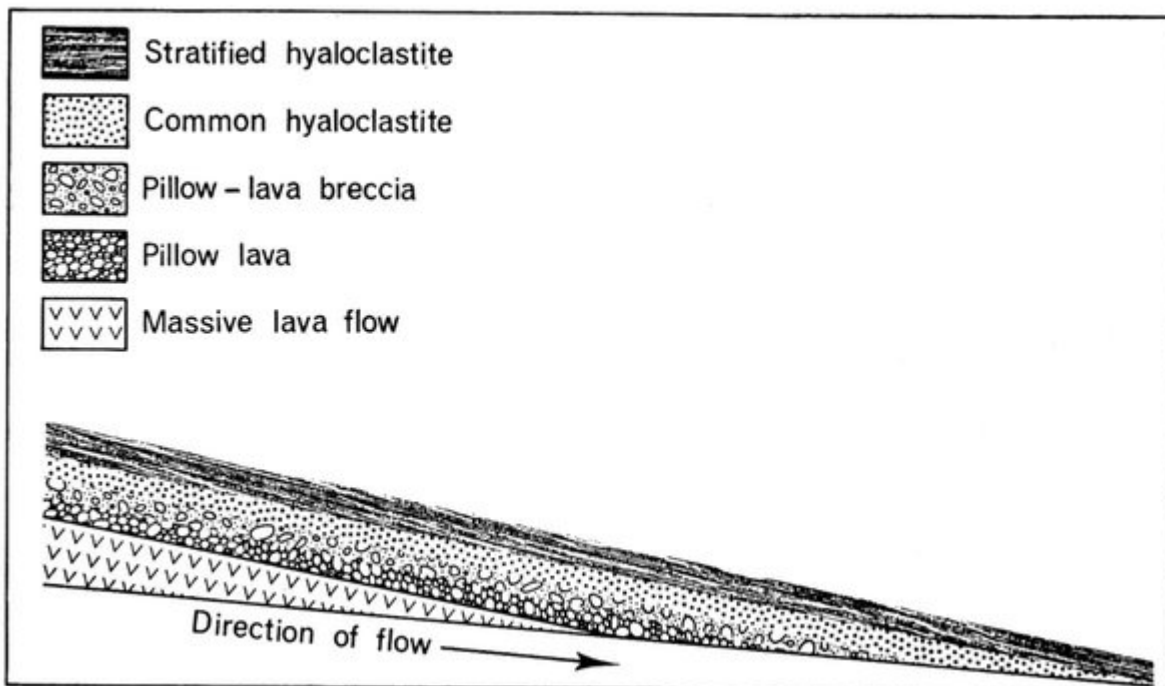
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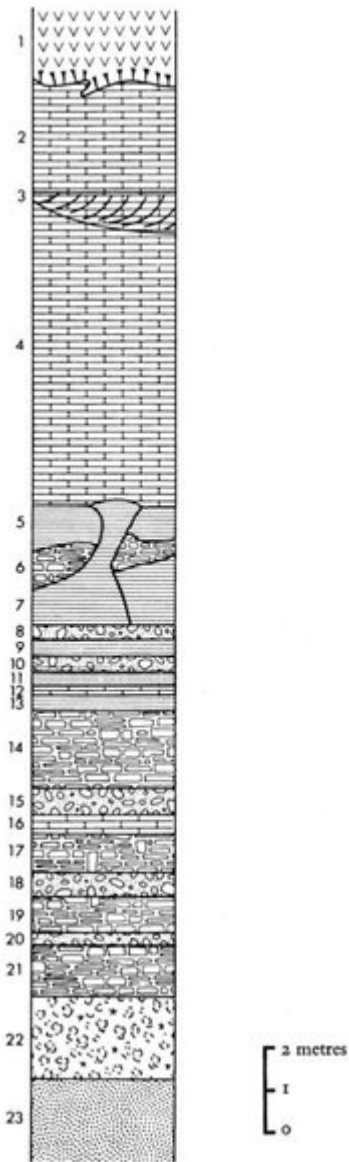
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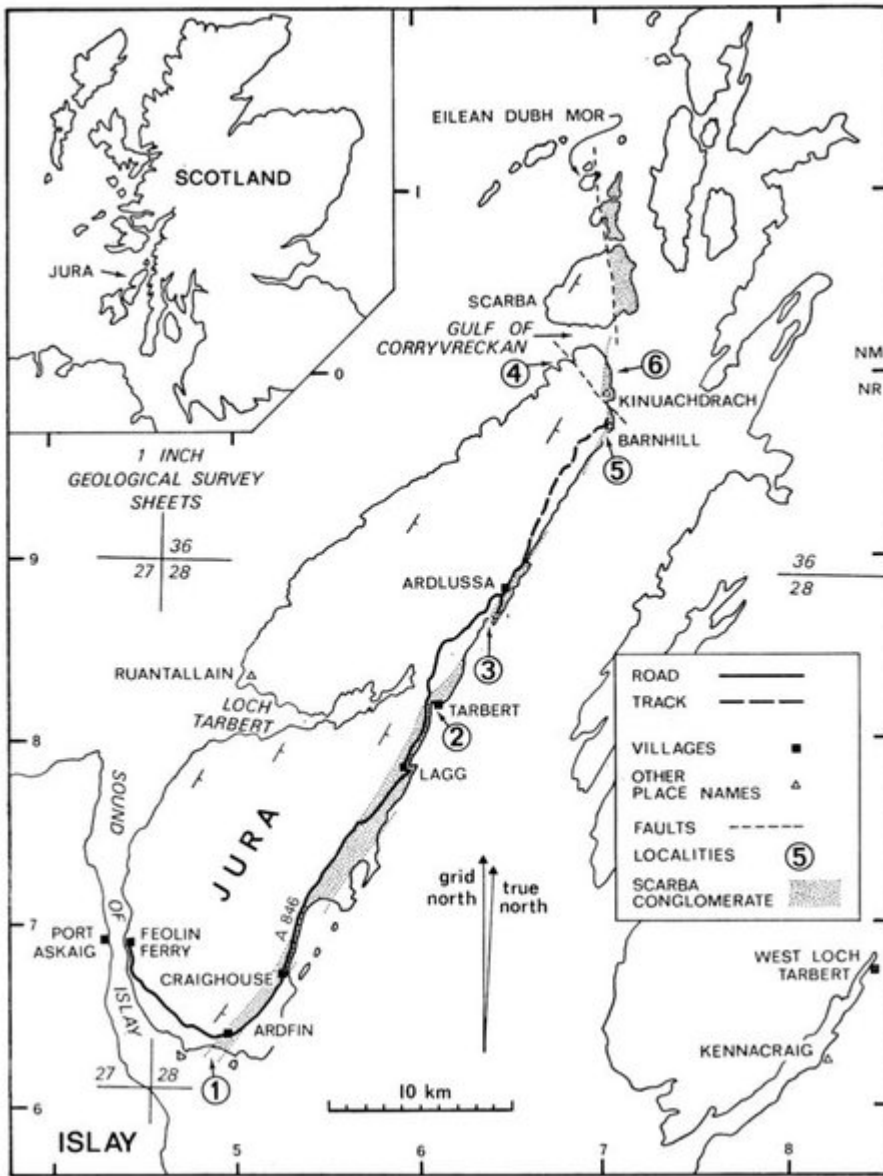
(Figure 1) Guide to the localities described in the text.



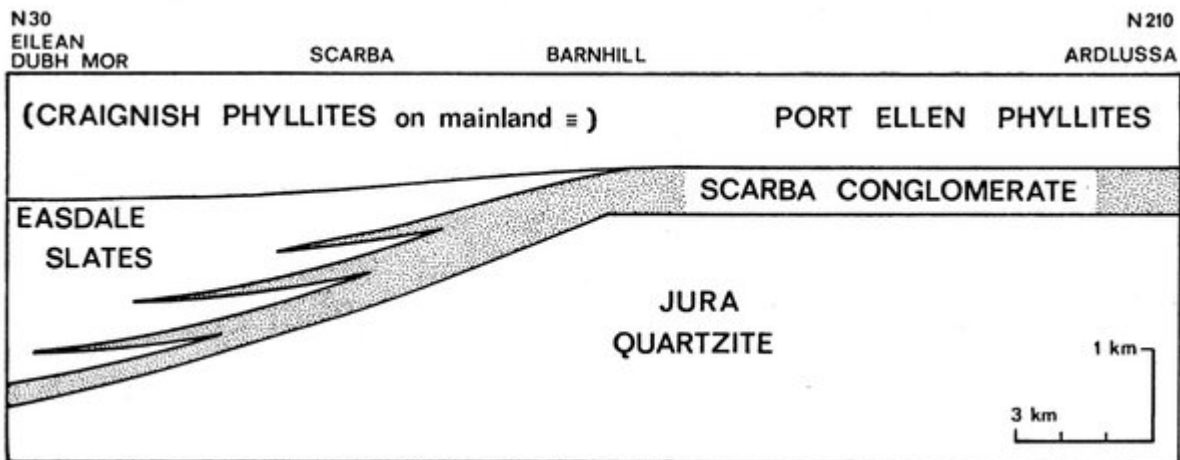
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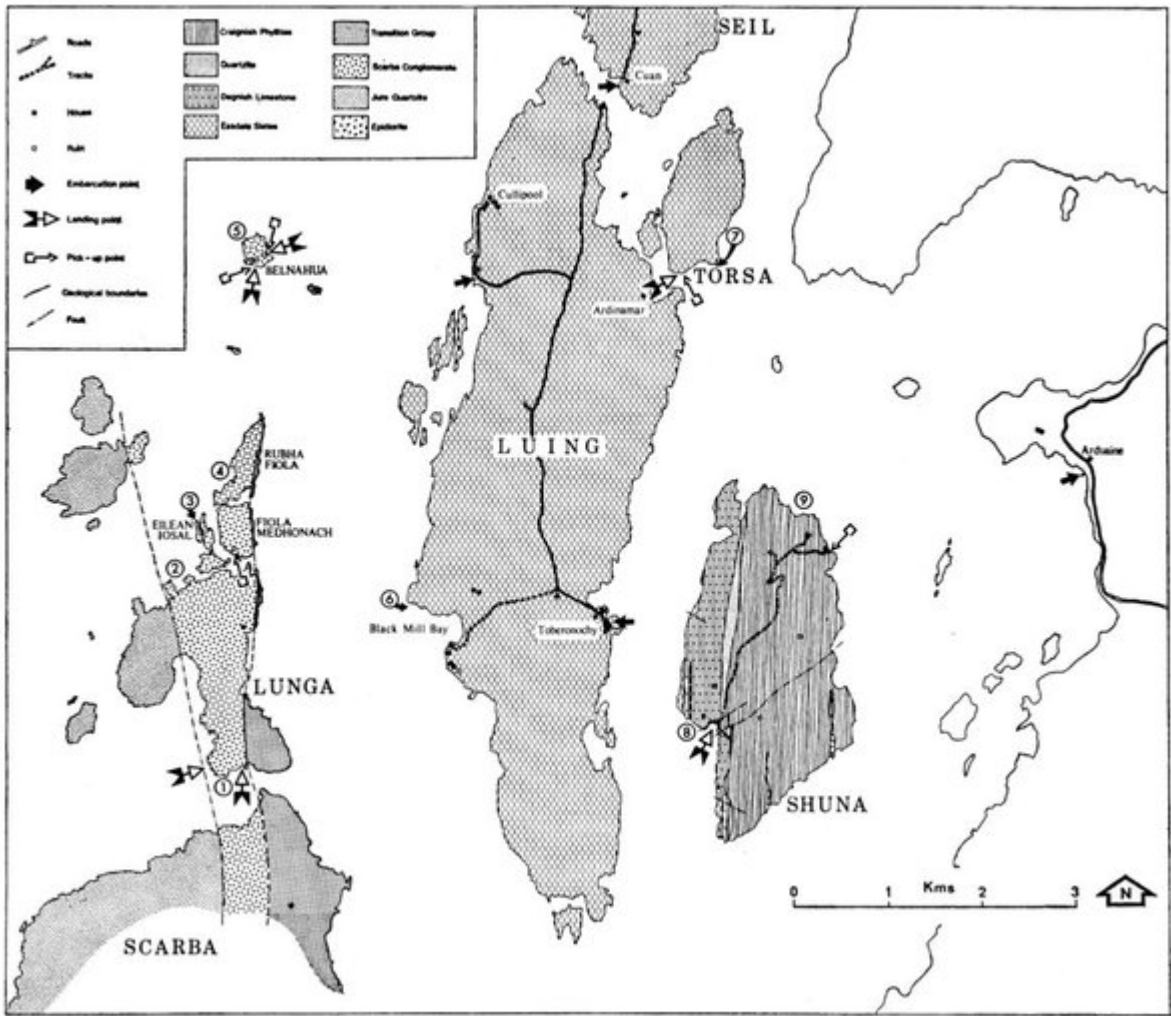
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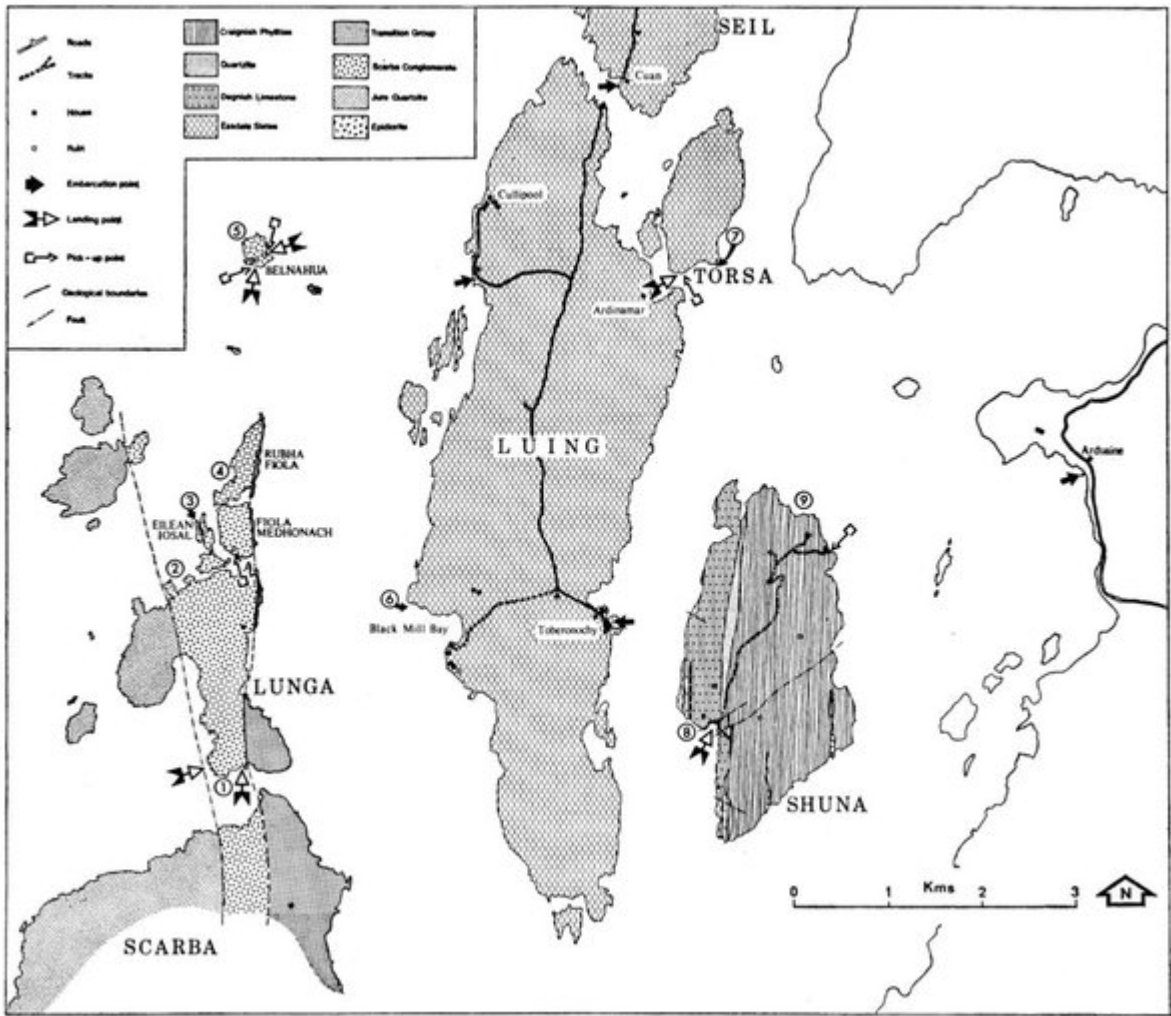
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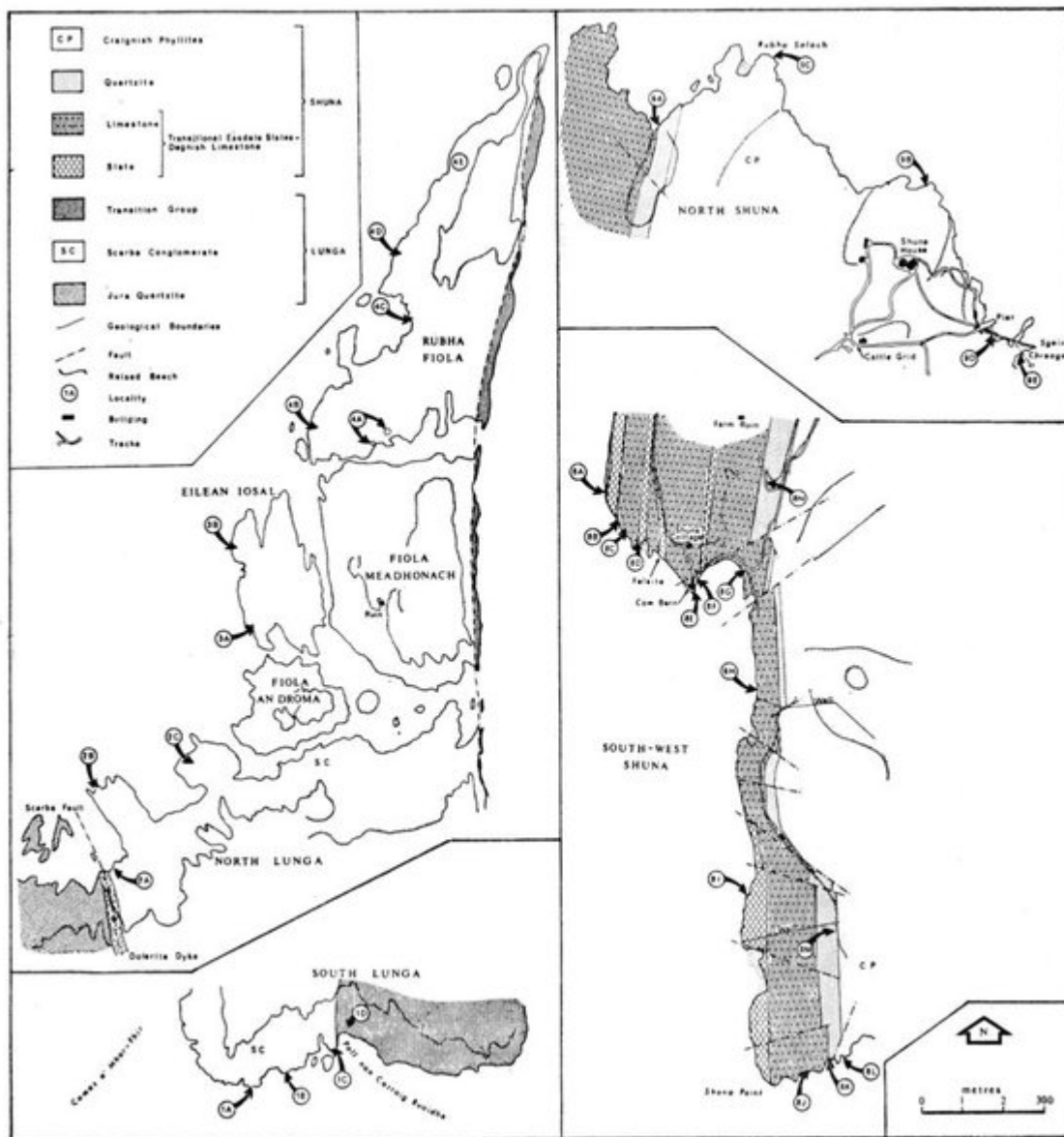
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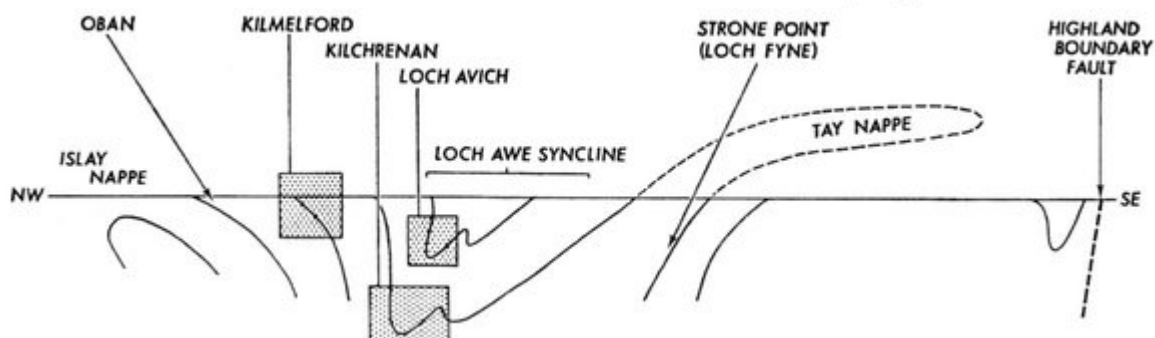
(Figure 3) General map of the area described in localities 4,5 & 6. From: Baldwin, C.T. and Johnson, H.D. 1977. 5: The Dalradian rocks of Lunga, Luing and Shuna. *Scottish Journal of Geology* v 13. p143–154.



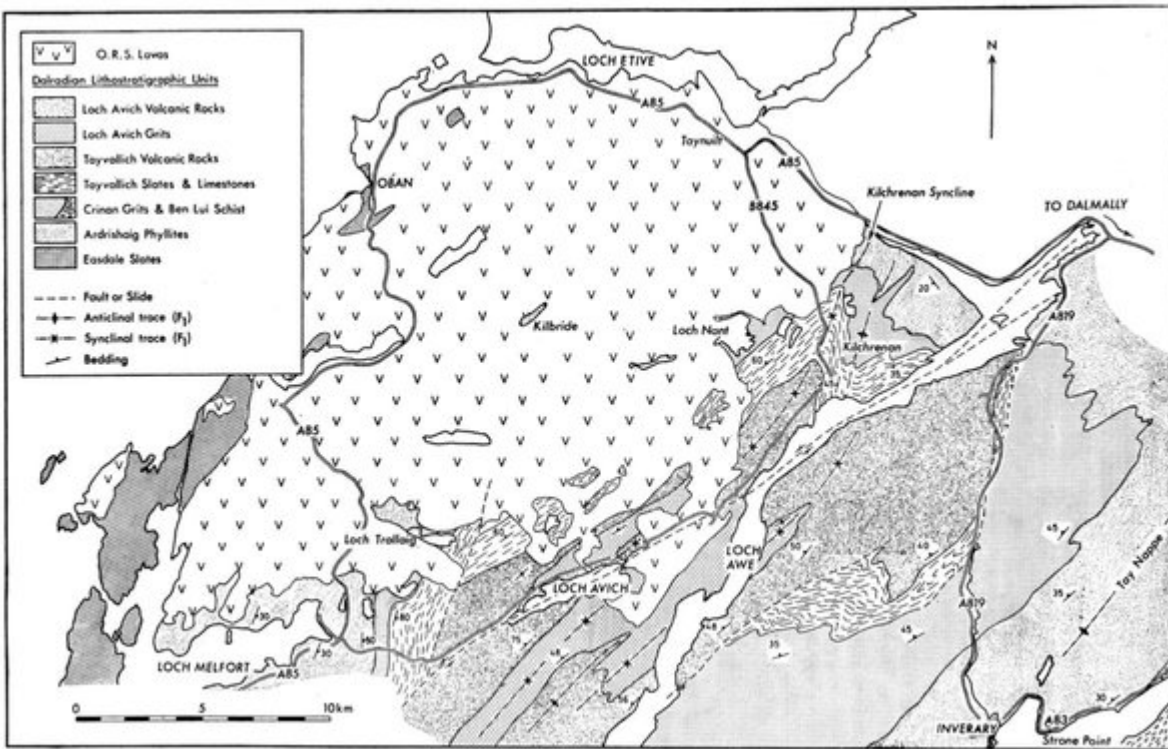
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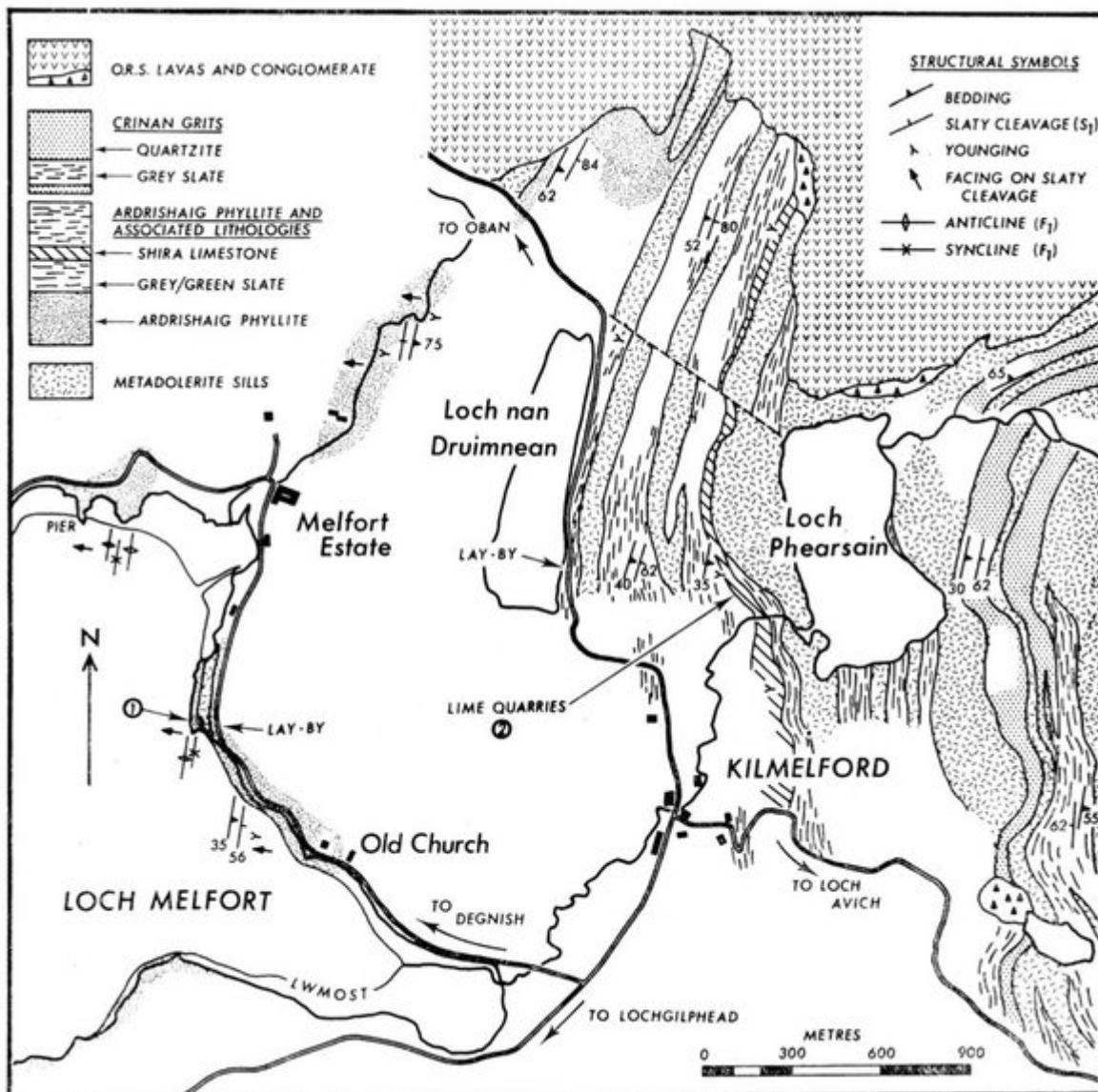
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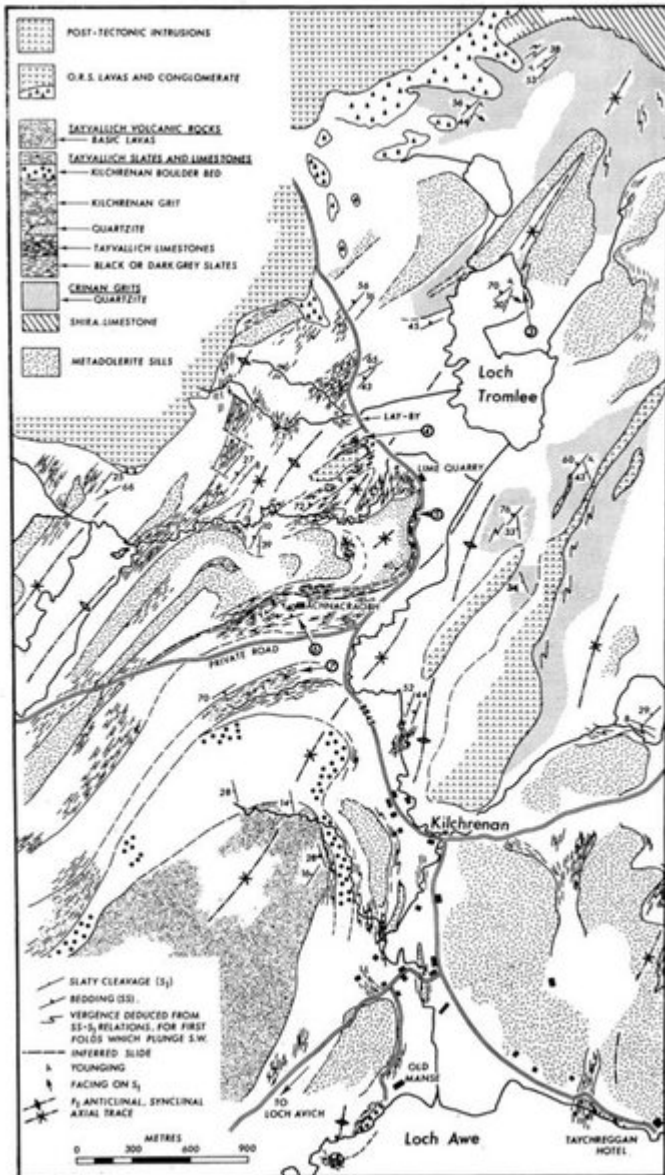
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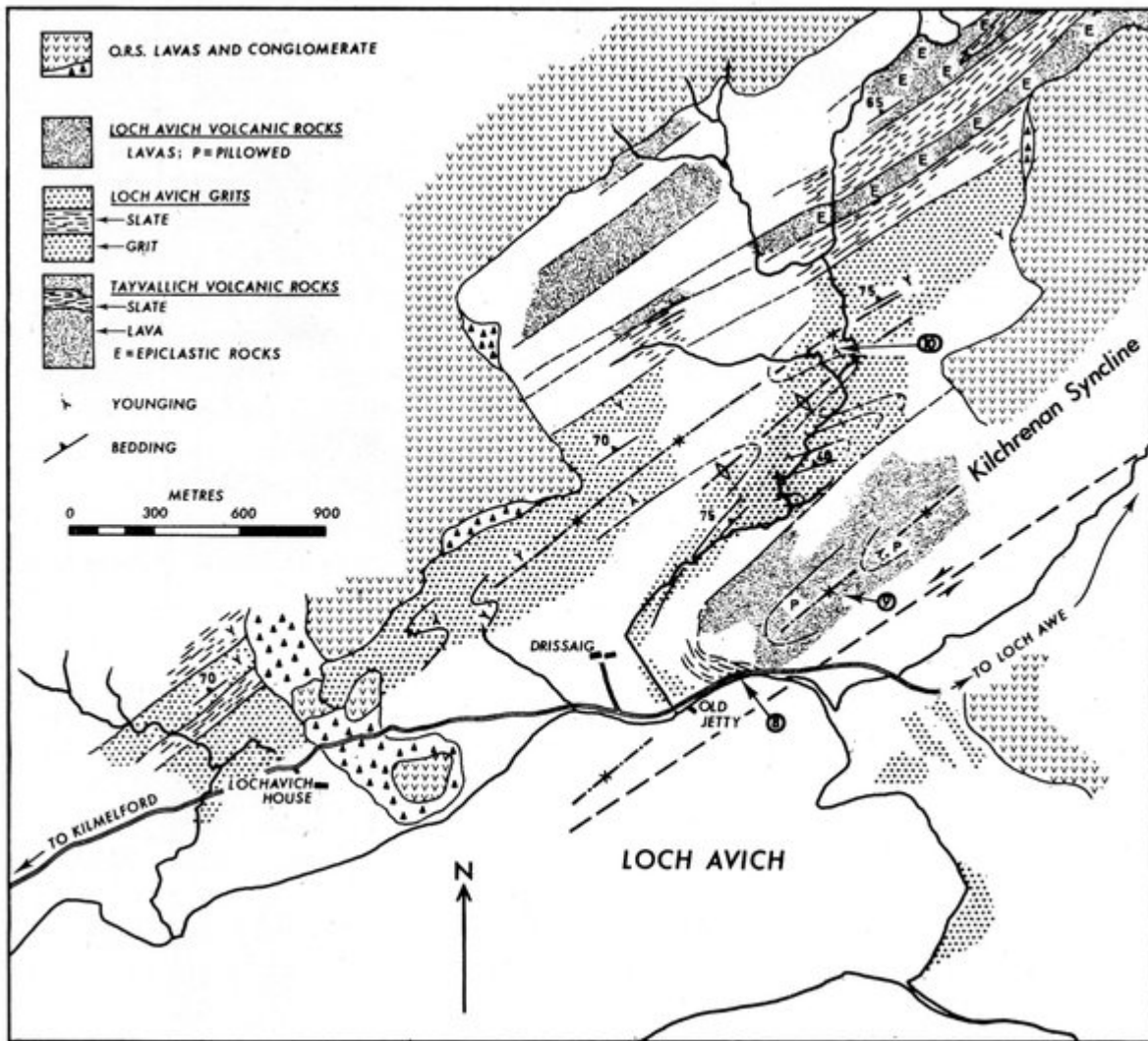
(Figure 2) Distribution of the principal lithologies of the Dalradian rocks in the Northern Loch Awe District (after Borradaile, 1973).



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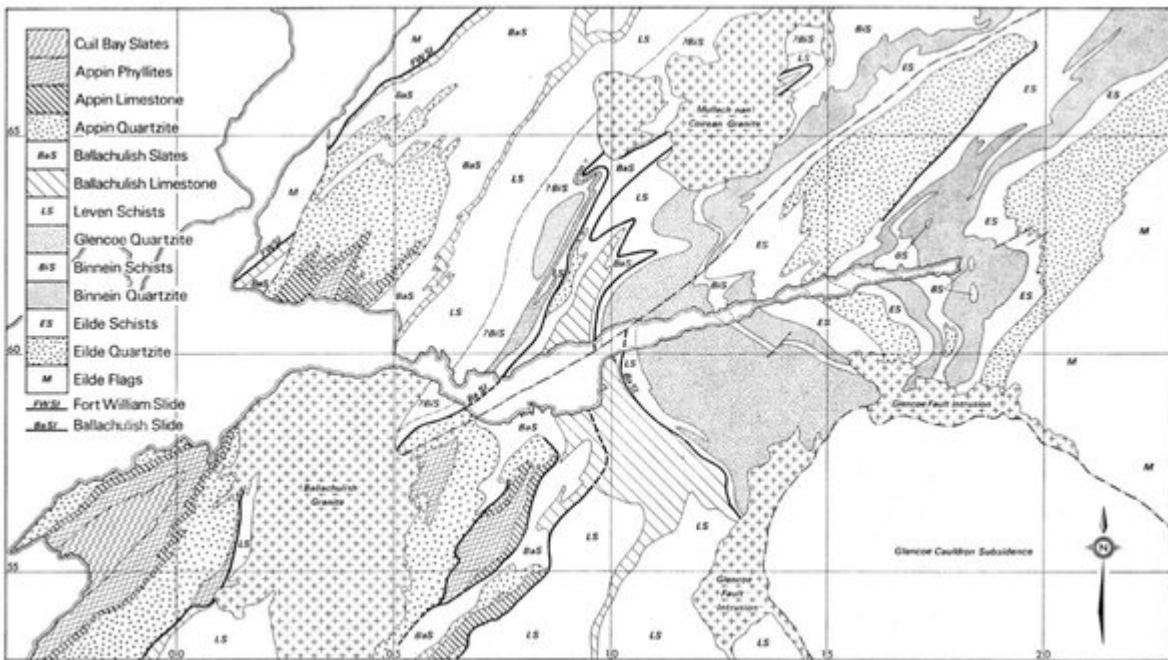


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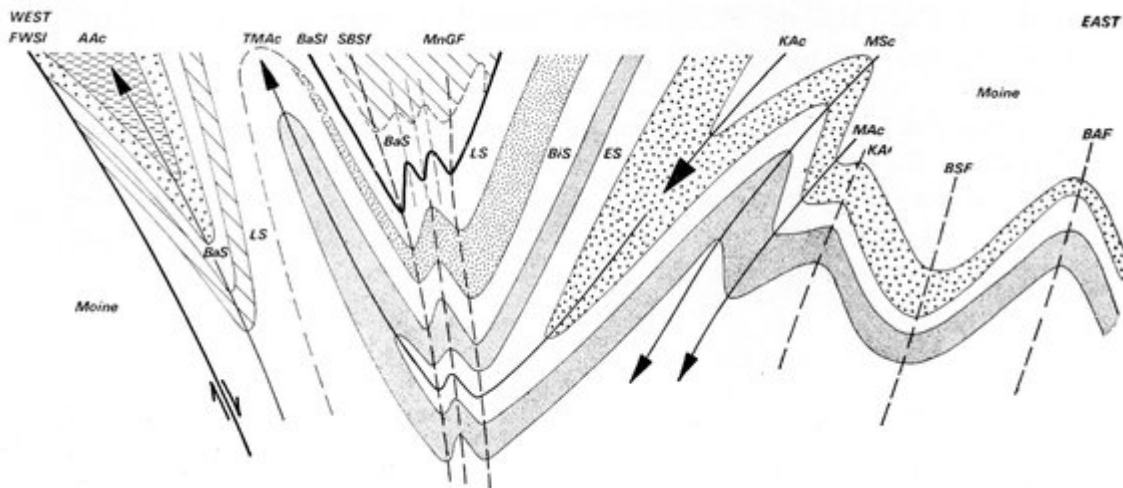
TABLE I. Stratigraphy of the Loch Leven area

Cuil Bay Slate	Black slates or phyllites
Appin Phyllite	Grey semi-pelitic phyllites with psammitic ribs
Appin Limestone	Mostly creamy, dolomitic and sandy
Appin Quartzite	Upper part massive, white, gritty; lower part (Transition Series) striped quartzite and black slate
Ballachulish Slate	Black slate
Ballachulish Limestone	Grey, banded; lower part creamy
Leven Schist	Green-grey phyllite or schist
Glen Coe Quartzite	Grey, feldspathic
Binnein Schist	Dark grey schists with psammitic ribs
Binnein Quartzite	Pure white, often with rusty spots
Eilde Schist	Dark grey schists with psammitic ribs
Eilde Quartzite	Grey to white, feldspathic

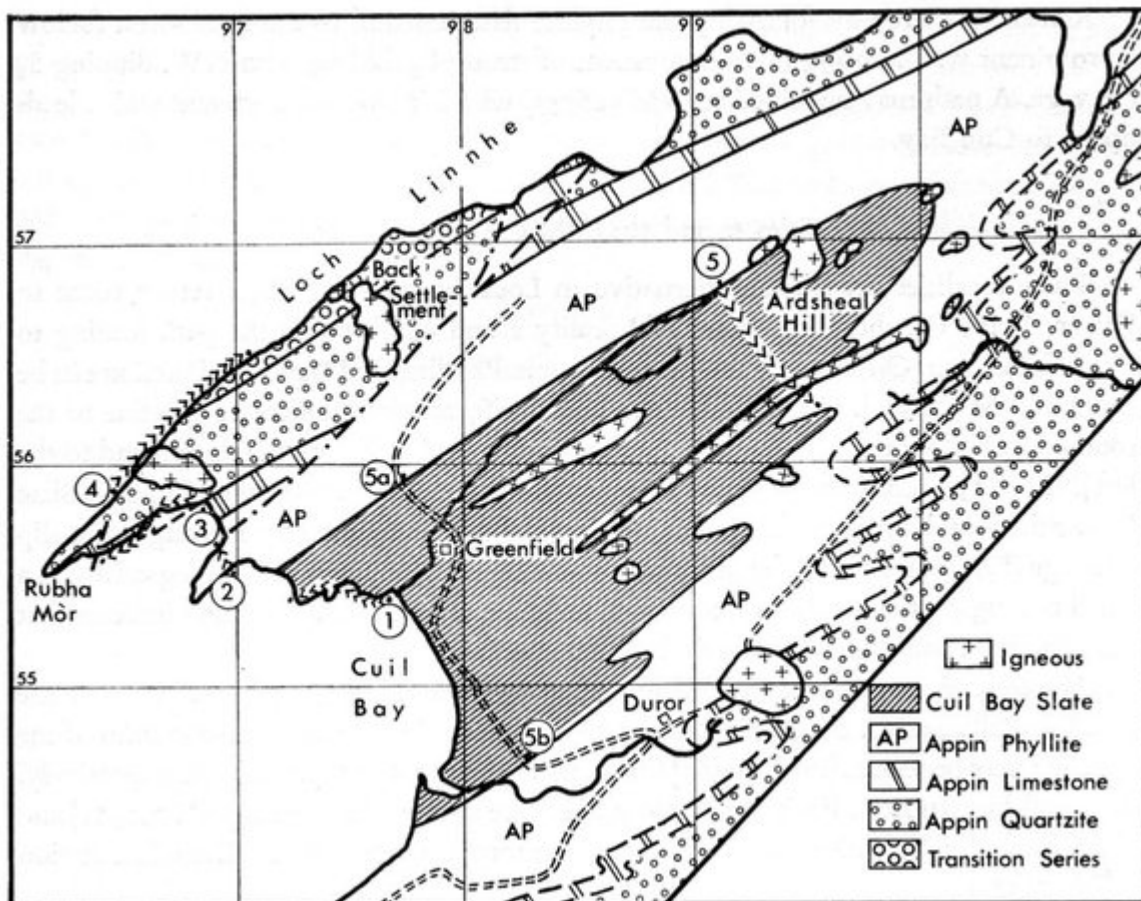
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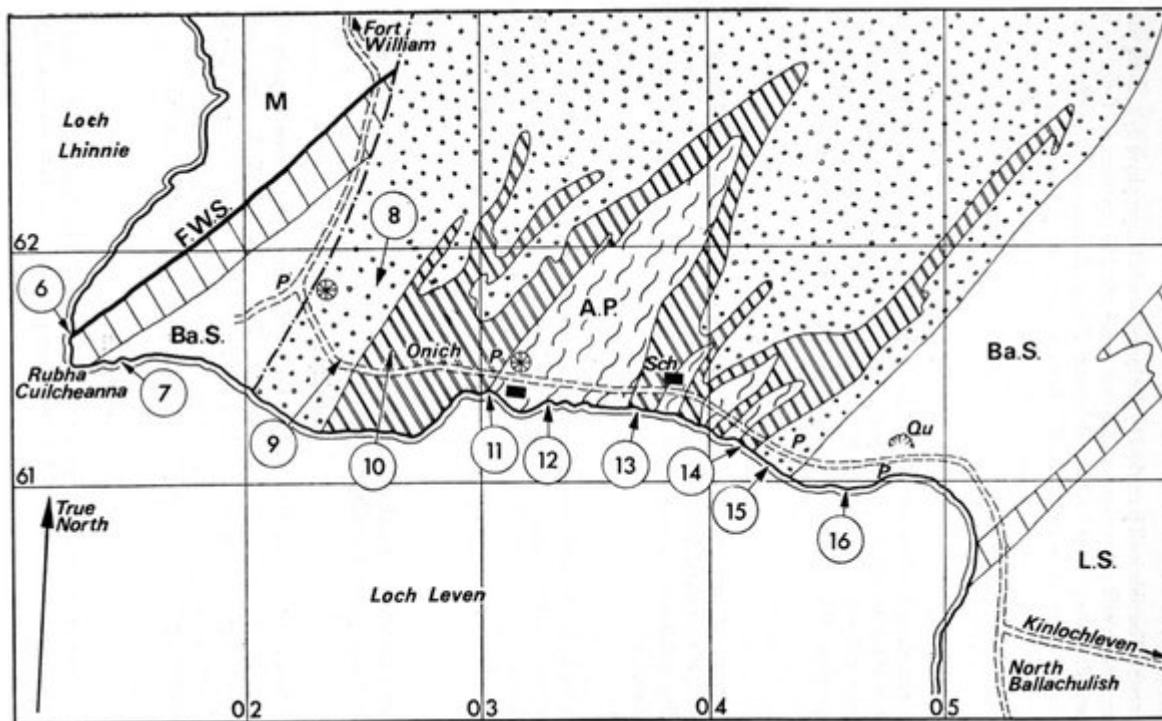
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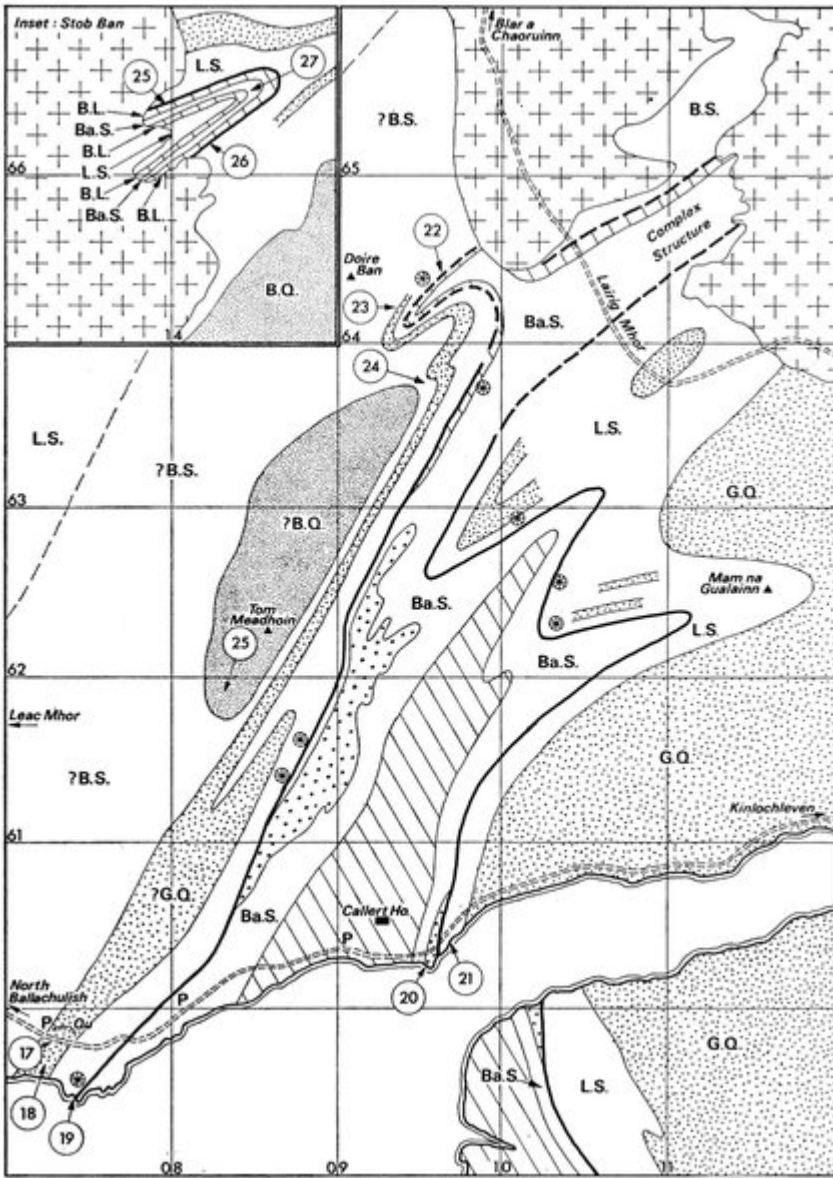
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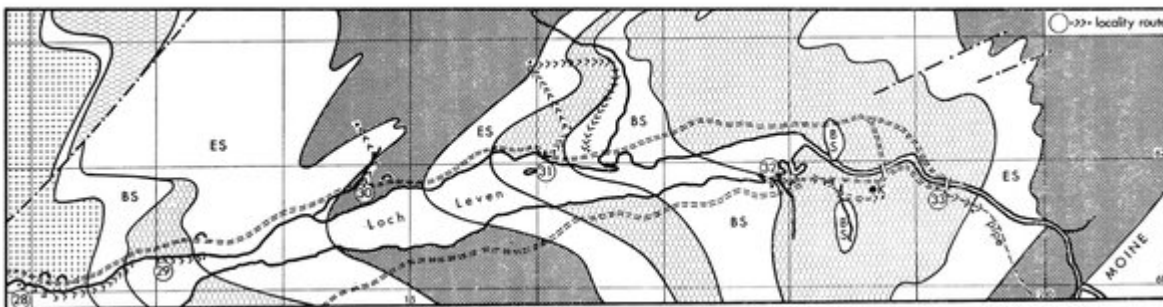
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	Islay & Tayvallich	Balachulish & Loch Awe	Glen Creran	Knapdale & Cowal	Central Perthshire
Southern Highland (Upper Dalradian)	Kells Grit Tayvallich Volcanics	Loch Avich Lavas Loch Avich Grit Tayvallich Volcanics		Inverlan Group with Loch Faid Conglomerate Bullrock Greywacke Dunoon Phyllite Benn Eheula Schist Green Beds Glen Sluan Schist	Highland Border Series Upper Lery Grit Lery Limestone and Shale Lower Lery Grit ?Aberfoyle Slate Correlation uncertain Ben Led's Grit with Green Beds Pitlochry Schist
Argyll (Middle Dalradian)	Tayvallich Tayvallich Limestone	Kilchrean Conglomerate Tayvallich Slate and Limestone (thin ash bands)		Loch Tay Limestone	Loch Tay Limestone
	Crinan Crinan Grit Ardmore Grit	Crinan Grit		Stonfield Schist Garnetiferous Mica Schist Erns Quartzite (Upper part)	Ben Lui Schist
	Easdale Conglomerate Limestone and Laphroaig Quartzite Pars Eiben Phyllite Scarba Conglomerate Jura Slate	Shira Limestone and Slate Ardrihaig Phyllite Degnish Limestone Easdale Slate	Ardrihaig Phyllite (Bonawe Succession) Pebble Quartzite Group	Stronachullin Phyllite Erns Quartzite (Lower part) Ardrihaig Phyllite Easdale Slate	Farragon Beds Ben Lawers Schist Ben Eagich Schist Cann Maing Quartzite
	Islay Bonahaven Dolomite Porr Askajig Tiltite	Islay Quartzite Dolomitic Beds Tilite	Creagan Creran Bridge Quartzite Creran Flags	Perthshire Quartzite Series	Killicrankie Schist Schichallion Quartzite Dolomitic Beds & Boulder Bed Schichallion Boulder Bed
Appin (Lower Dalradian)	Blair Atholl Islay Lst. (no correlation implied) Mullach Dubh Phyllite Ballygrant Limestone Baharatal Phyllites	Lismore Limestone Cull Bay Slate	Lismore Limestone	Pale Group Dark Group	Pale Limestone Banded Group Dark Limestone Dark Schist
	Balachulish Cnoc Donn Quartzite (Transition Group) Cnoc Donn Slate Kendra Limestone Kendra Phyllite Maol an Fhithich Quartzite	Appin Phyllite and Lst. Appin Quartzite (Transition Group) Balachulish Slate Balachulish Limestone Levin Schist Glencoe Quartzite Binnon Schist Binnon Quartzite Eide Schist Eide Quartzite Eide Flags (Moine?)	Appin Phyllite and Lst. Appin Quartzite (Transition Group) Balachulish Slate Balachulish Limestone Levin Schist Glencoe Quartzite	Relationship Uncertain	Kinlochlaggan Limestone Local Boulder Bed Kinlochlaggan Quartzite
	Lochaber (Transition) Bowmore Sandstone				Managhath Schist Eide Quartzite Struan Flags (Moine)

(Table 1) Lithostratigraphy compiled for the Dalradian rocks in the South-west Highlands of Scotland after Harris and Pitcher (1976).

	Lithostratigraphic units	Principal lithologies	Observed thicknesses (km)
UPPER DALRADIAN (Southern Highland Group)	Loch Avich Volcanic Rocks	Basic pillow lavas.	0.3-0.5
	Loch Avich Grits	Graded felspathic grits with green and black slates.	0.65-1.1
	Tayvallich Volcanic Rocks	Basic lavas, some pillowed. Epiclastic volcanic material.	2.0
	+Tayvallich Slates and Limestones	Black slates and black limestones (slumped and graded in places).	1.0-1.2
MIDDLE DALRADIAN (Argyll Group)	Crinan Grits	Quartzites, graded in places.	0.1-3.0
	Ardrihaig Phyllites and associated lithologies	Black sandy Shira Limestone and grey slates at top. 'Phyllites' are well bedded sandy limestones and fine-grained quartzites interbedded with green-grey pelite. Degnish Limestone at base.	4.0-4.5
	++Easdale Slates	Black slates with black limestones and silty horizons.	

(Table 1) Stratigraphic sequence for the northern Loch Awe District after Borradaile (1973). + = Lower Cambrian, ++ = Late Precambrian, from the micropalaeontological evidence of Downie et al. (1971).