

## A PRELIMINARY INVESTIGATION OF THE SOILS OF LUNDY ISLAND

By S. M. DAWES

The accompanying map to this article, is the result of an augering survey of the island conducted in the summer of 1976. Representative profile pits were dug and a full description of each of these is given below, under 'Profile Descriptions'. The descriptions and terminology used are in accordance with soil survey techniques. Colour descriptions were determined from a Munsell Colour Chart. pH readings were recorded from a pH meter.

Laboratory analysis of the soils sampled from these representative profiles enabled them to be classified into:-

BROWN RANKERS.  
BROWN EARTH.  
HUMOSE RANKERS.  
DYKE SOILS.  
PEAT SOILS.  
RAW HUMUS SOILS.

### PROFILE DESCRIPTIONS

#### Profile 1.

Location. North Lundy Island.

Grid. Ref. SS133478. pH 4.5

Elevation. 304 ft. OD.

Slope. 8 degrees.

Aspect. South.

Drainage class. Impeded.

Vegetation. *Erica tetralix*. a.

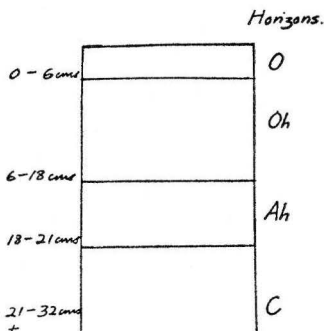
*Calluna vulgaris*. c.

### HORIZONS.

- 0-5 cms. Brownish black (10 YR 2/2) gritty humose loam, fine crumb structure, loose, friable. Abundant fibrous roots and woody roots frequent. Narrow boundary.
- 5-20 cms. Black (7.5 YR 1.7/1) humose loam. Loose fine crumb structure. Abundant fine fibrous roots. Merging boundary.
- 20 cms.+ Light greyish brown, gritty humose loam. Roots absent. Overlying solid granite.

Soil Type. RAW HUMUS SOIL.

### RAW HUMUS SOIL: PROFILE SECTION 1



Profile 2.

Location. Valley draining from Widows Tenement, North-West Lundy Island.

Grid Ref. SS134469. pH 5.5.

Elevation. 280 ft. OD.

Aspect. West.

Drainage class. Very poor.

Vegetation. *Juncus* spp. a.  
*Hydrocotyle vulgaris*. a.  
*Sphagnum* spp.

Horizons.

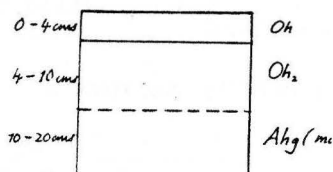
0-4 cms. Brownish black (5 YR 2/1). Amorphous peat with abundant bleached sand grains. Greasy. Abundant fine fibrous roots.

4-10 cms. Brownish black (5 YR 3/1) loamy peat. Many fine and fibrous roots.

10-20 cms+ Dark reddish brown (5 YR 3/2) gravelly peat, containing fine mottles around gravel fragments, Mottle colour (7.5 YR 4/6) reddish brown. Course granular structure. 30% gravel; rounded quartz gravel. Ferruginous coats to gravel fragments giving mottled appearance.

Soil type. ALLUVIAL PEAT.

ALLUVIAL PEAT: PROFILE SECTION 2



Profile 3.

Location. Valley draining Widows Tenement, Lundy Island.

Grid Ref. SS134469.

Elevation. 290 ft. OD.

Aspect. South. pH 5.5.

Drainage class. Very poor.

Vegetation. *Erica tetralix*. a.  
*Erica vagans*. a.  
*Juncus* spp. c.

Horizons.

0-6 cms. Brownish-black (7.5 YR 2/2) amorphous peat with abundant bleached sand grains. Greasy. Abundant woody and fibrous roots.

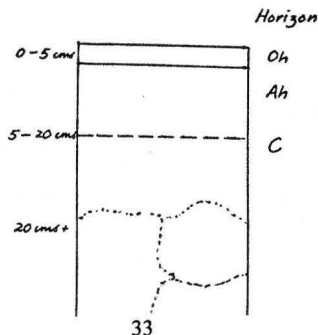
6-18 cms. Brownish black gravelly peat with very fine distinct ferruginous mottles. 20% bright brown (7.5 YR 5/8). Medium granular crumb structure. Woody and fibrous roots common.

18-21 cms. Brownish black (7.5 YR 3/2) humose loam with fine bleached sand grains. Few fibrous roots.

21-32+ cms. Dull brown gritty loam. Weak crumb structure.

Soil type. ALLUVIAL PEAT OVERLYING HUMOSE RANKER.

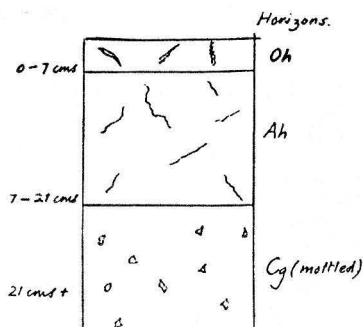
ALLUVIAL PEAT, OVERLYING HUMOSE RANKER: PROFILE SECTION 3.



Profile 4.  
 Location. Pondsbury, Lundy Island.  
 Grid. Ref. SS134454.  
 Elevation. 400 ft. OD.  
 Slope. 8 degrees.  
 Aspect. North.  
 Drainage class. Impeded.  
 Vegetation. *Pteridium aquilinum*. c.  
               *Potentilla erecta*. c.  
               *Erica tetralix*. f.

Horizons.  
 0-7 cms. Brownish black (7.5 YR 3/2) fibrous humose loam, friable granular crumb structure. Many small fibrous and woody roots. Earthworms. Merging boundary.  
 7-12 cms. Brownish black (7.5 YR 3/1). Many small fibrous roots. Narrow boundary.  
 21 cms.+ Greyish brown (7.5 YR 5/6) gritty sandyclay loam with angular quartz and feldspar grains. Compacted. No roots, Mottling, distinct, small, 20%, bright brown (7.5 YR 5/6).  
 Soil Type. HUMOSE RANKER.

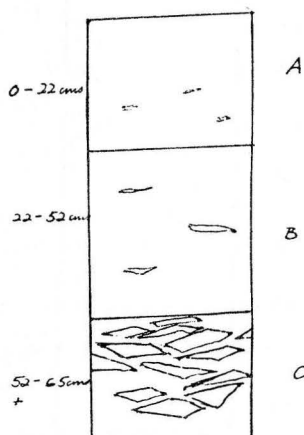
#### HUMOSE RANKER: PROFILE SECTION 4



Profile 5.  
 Location. S.E. Lundy Island.  
 Grid Ref. SS139437.  
 Elevation. 300 ft. OD.  
 Slope. 10 degrees.  
 Aspect. South-west.  
 Drainage class. Free. pH 6.  
 Vegetation. Short cropped grassland.  
               *Armenia maritima*. c.  
               *Carduus tenniflous*. c.

Horizons.  
 0-22 cms. Dull yellowish brown (10 YR 4/3) weak medium sub-angular blocky. Mull humus. Many fibrous roots, 25% stones, medium, size 2-6 cms.  
 22-52 cms. Brown (10 YR 4/4) loose, fine, subangular, blocky. Moderately stoney. Medium platy stones. Mull humus. Numerous fine fibrous roots.  
 52-65 cms.+ Predominantly stoney, shaley. Brown (7.5 YR 4/6). No roots.  
 Soil Type. BROWN EARTH.

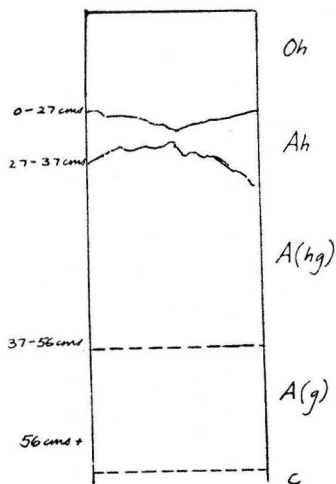
## BROWN EARTH: PROFILE SECTION 5



- Profile 6.  
 Location. South of Tibbets, Lundy Island.  
 Elevation. 375 ft. OD.  
 Slope. 4 degrees.  
 Aspect. East.  
 Drainage. Poor.  
 Vegetation. Short cropped grassland.  
 Horizons.  
 1-20 cms. Brownish black (7.5 YR 2/3) loose humose loam. Few large stones. Fine fibrous roots numerous.  
 20-27 cms. Brownish black (7.5 YR 2/2) loose humose loam containing fine bleached sand grains. Numerous fine fibrous roots.  
 27-37 cms. Brownish black (5 YR 2/2) friable humose loam. No roots. Narrow boundary.  
 37-56 cms. Orange (7.5 YR 4/6) friable humose loam. No roots.  
 56-81 cms. Brown (7.5 YR 4/6) friable loam with dull orange (7.5 YR 7/3) mottles, small and distinct.  
 Soil Type. PEATY STAGNOGLEY RANKER.

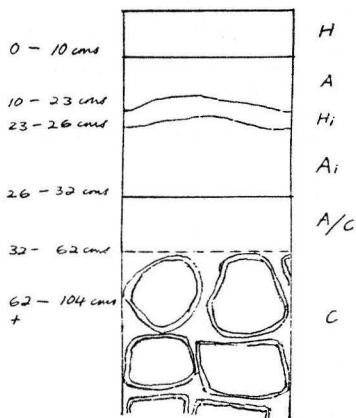
## PEATY STAGNOGLEY RANKER: PROFILE SECTION 6.

- Profile 7.  
 Location. Exposure in a rift, S.W. of Old Light, Lundy Island.  
 Grid. Ref. SS131441.  
 Elevation. 400 ft. O.D.  
 Slope. 1 degree. ph. 5.  
 Aspect. South.  
 Drainage Class. Free.  
 Vegetation. Short cropped grassland.  
 Alopecurus pratensis. c.  
 Erica tetralix. f.  
 Armenia maritima. f.  
 Horizons.  
 0-10 cms. Dark brown (10 YR 3/4) loose humose loam. Many fine fibrous roots. New small gravel sized stones.



- 10-23 cms. Yellowish brown (10 YR 5/6) sandy loam.  
 23-26 cms. Greyish brown (7.5 YR 4/2) humose loam.  
 26-32 cms. Yellowish brown (10 YR 5/6) sandy loam.  
 32-62 cms. Bright brown (7.5 YR 5/8) friable sandy loam.  
 62-104 cms. Bright brown (7.5 YR 4/6) sandy loam containing rounded boulders exhibiting conchoidal weathering. Weathered basalt parent material.  
 Soil Type. Humose Ranker.

#### PROFILE 7. HUMOSE RANKER



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## GRASS GROWTH ON TWO AREAS OF LUNDY IN JUNE 1978

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### INTRODUCTION

I visited Lundy for the first time on the Lundy Field Society Excursion to the island in June 1978. During this short visit I was able to make some brief notes on the growth of the grass in two areas. These were firstly the area on the west coast by St. James's Stone and secondly in Middle Park, between Halfway Wall and Threequarter Wall.

#### (a) Western Slopes by St. James's Stone

##### i. *Past growth*

The dominant grass species in this area is Yorkshire Fog (*Holcus lanatus*). In the past this grass typically grew here in luxuriant tussocks (H. C. Dawkins, personal communication). In a study of the vegetation of the coastal slopes of Lundy, Gabbutt (1952) noted that Yorkshire Fog was more frequently present on these western slopes than on the Eastern slopes. He suggested that it was able to tolerate the shallower soil, more frequent gales and greater salting which occur here. The ability to tolerate salt spray was also noted by Gillham (1955) & Rozema (1975) found that Yorkshire Fog seeds can germinate in up to 50% sea water. Yorkshire Fog can respond to nitrogen up to levels of 180 kg/ha/yr (Haggard, 1976). Thus, it would be expected to make rapid growth in response to droppings from seabirds or rabbits. It has also been suggested that the ability of Yorkshire Fog to spread horizontally by runners may make it more tolerant of moderate grazing by rabbits than many other grasses (Gillham, 1955).

##### ii *Present growth*

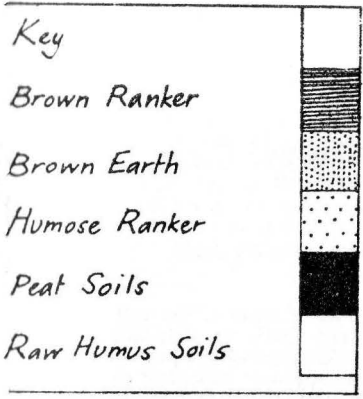
The luxuriant growth of Yorkshire Fog was no longer present in June 1978. The plants were stunted with a white mat of dead leaves underneath them.

There were many bare patches in between Yorkshire Fog plants and those of the other main species, thrift (*Armeria maritima*). The Yorkshire Fog plants were only about 50 mm tall and it seemed unlikely that they would flower in 1978 (undefoliated plants were already flowering on the mainland). However, thrift plants were flowering freely. They are not grazed by rabbits (Gillham, 1955) and young thrift plants had begun to colonize the bare patches from seed. If Yorkshire Fog is not able to flower it will only be able to spread into the bare patches from the edges by runners and so thrift is likely to become dominant.

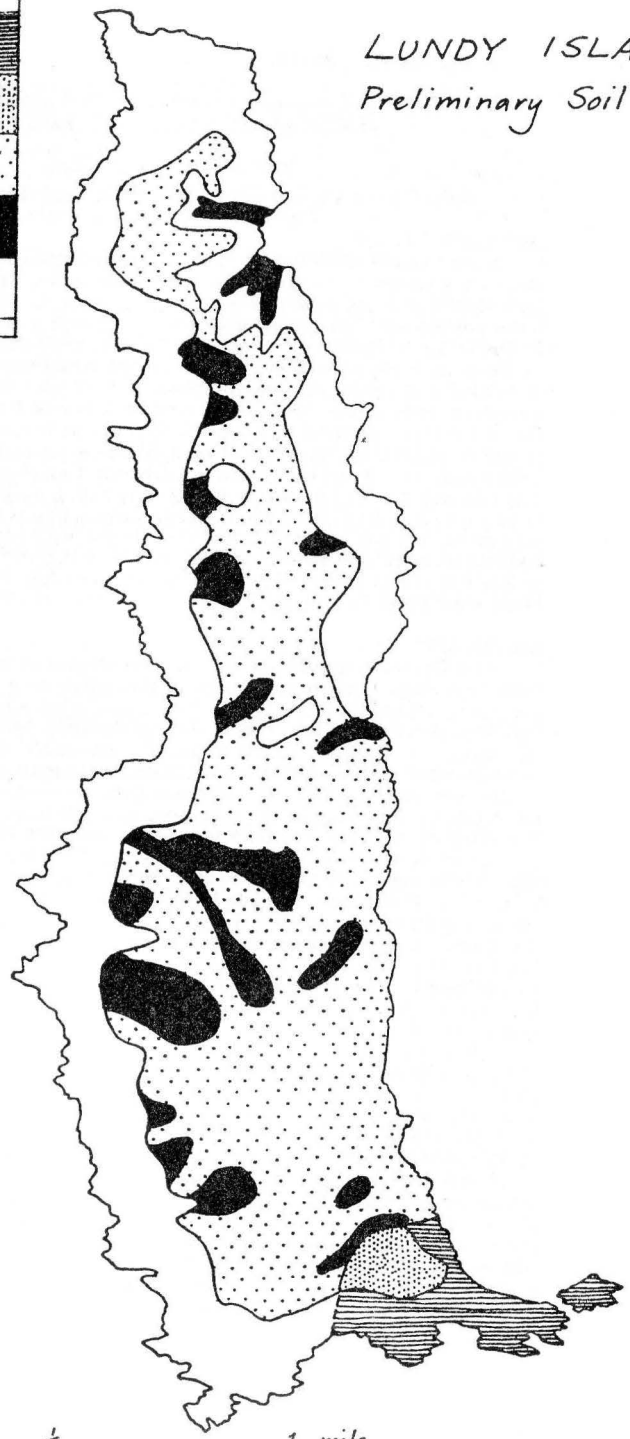
##### iii *Possible reasons for change*

The dry summers of 1975 and 1976 imposed moisture stress on all plants. They probably also forced animals larger than rabbits to graze these slopes because grass was scarce elsewhere. Yorkshire Fog is susceptible to such treading damage. The work of Edmond, reviewed by Brown and Evans (1973) showed it to be the least tolerant of treading among the large number of grasses tested.

Plants of Yorkshire Fog which have been infrequently grazed in the past will not be well adapted to very frequent close deboliation. Intensive sheep grazing of Yorkshire Fog (derived from seed from herbage seed crops in which it was a weed) on hill land had led to poor root growth and a decline in the cover of the



LUNDY ISLAND  
Preliminary Soil Map



Scale

