

# Late Holocene Insect Faunas from Mykines, Faroe Islands, with Observations on associated Pollen and early Settlement Records

Seinholosenar skordýrakanningar og endurmeting av flogsáð- og búskrásetingum í Mykinesi

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## Úrtak

Jóhannes Jóhansen hevur fyrr kannað flogsáð í lívrúnnun setløgum í frágingnari jørð í Lamba í Mykinesi. Flogsáðkanningarnar og tann óvanligi veltingarhátturin vórðu brúkt í eini roynd at vísa á, at havri hevur verið veltur í Føroyum fyri norrøna tíð. Her verða lögð fram úrslit av eini nýggjari kanning av steinrunnum klukku-leivdum í setløgum úr Uldalíð eystan fyri Lamba. Úrslitið av hesum kanningum verður lagt fram saman við eini endurmeting av flogsáðskrásetingunum, stratigrafi og kolevni 14-dagfestingum í Lamba og har í nánd. Møguleikin verður viðgjørdur fyri, at tað, sum hevur verið hildið at vera antropokor taxa, veruliga kann hava verið til staðar í gróðrarøkinum fyri landnám, og samstundis verða prógv um stratigrafiskt ólag av tí, at lundar hava grivið holur, eisini viðgjørd. Hetta hevur við sær eina alternativa tulkning av fornumhvørvinum á staðnum, at búseting ikki nýtist at hava verið fyri norrøna tíð.

## Abstract

Organic deposits in an abandoned field system on Lambi, Mykines have previously been the subject of a pollen investigation by the late Jóhannes Jóhansen. The pollen record was used to argue that the atypical field pattern represented pre-Norse cultivation of oats in the Faroes. This paper presents the results of a re-examination of deposits from Uldalíð, east of Lambi, for fossil beetle remains. The results of this are presented together with a re-evaluation of the pollen record, stratigraphy and radiocarbon dates from Lambi and adjacent sites. The possibility that supposedly anthropochorus taxa may actually have been present in pre-landnam habitats is discussed together with evidence for stratigraphic disturbance caused by burrowing puffins. This leads to an alternative interpretation of the palaeoenvironmental sequence from the site that does not require pre-Norse settlement.

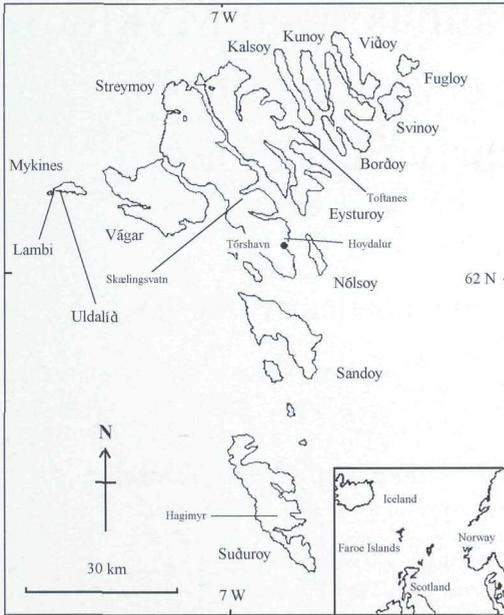


Fig. 1. Sites mentioned in the text

Mynd 1. Støð, sum eru nevnd í tekstinum.

## Introduction

In 1985, as part of a project examining human impact on the North Atlantic Islands (Buckland, 1992a), several sites originally sampled by the late Jóhannes Jóhansen during his studies of the vegetation history of the Faroes (Jóhansen, 1985) were revisited with a view to sampling for their fossil insect faunas. Research in Iceland had already indicated the extent of anthropochorous faunas shortly after Norse landnám (e.g. Buckland *et al.*, 1985; Buckland *et al.*, 1991), and it was hoped that careful sampling, with Jóhansen, of the original localities where pre-Norse settlement had been inferred from the pollen data, would throw additional light on the problems of

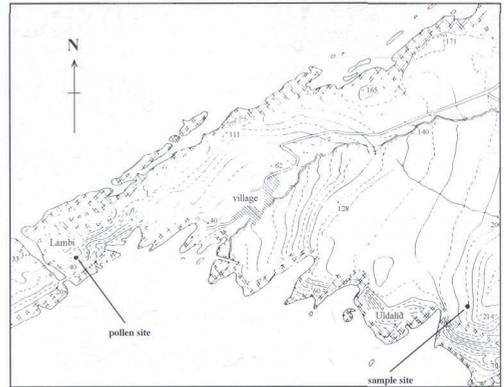


Fig. 2. Sites on Mykines: Lambi (pollen); Uldalíð (beetles and pollen)

Mynd 2. Støð í Mykinesi: Lambi (flogsåð); Uldalíð (klukkur og flogsåð).

the origins of the first settlers. Some of the results have already been discussed (Buckland, 1992b), but the details of the faunas were not included in that article and there were only passing references to the palynological records. This paper remedies these omissions and also seeks to make a contribution to the landnám debate. In 1986, the modern beetle fauna of the Lambi puffinery on Mykines was also collected for comparison with the fossil assemblages.

## Mykines and earlier work

The small island of Mykines is the most remote and westerly of the inhabited islands of the Faroes group, lying at 62° 07' N. and 7° 35' W (Fig. 1). The island reaches a maximum elevation of 560 m, and presents steep cliffs to the open ocean on all sides. Only on the south side is it possible to approach a small, poorly sheltered harbour



Fig. 3 The fields at Lambi, showing the eutrophic pool created at the back of a small landslip occasioned by burrowing puffins. (1985)

Mynd 3. Støðuhylur í Lamba í Mykinesi. Aftanfyri er skriða, har sum lundar hava grivið sær holur (1985).

where a group of farms and a church exist; most houses are now used only as summer residences. Either side of the modern village, beyond the modern hayfields, are the remains of field systems, and since Dahl (1970) pointed out their atypical form for Faroe, the group at Lambi, to the west (Figs 2 and 3), has been considered to provide possible evidence for pre-Norse agricultural activity.

Jóhansen (1979; 1985) had prepared a pollen profile through the deposits in the field terraces at Lambi (Fig. 4) and noted that the pollen of *Avena* occurred before

that of *Hordeum*, and he had suggested that this reflected the replacement of Celtic cultivation of oats by the barley of the Norsemen. The site was extensively disturbed by puffin burrows, however, and he was forced to correlate his results from the site, on the basis of the *Plantago maritima* (sea plantain) curve, with those from an apparently less disturbed 'blanket peat' pollen profile on the other side of the valley at Uldalíð, approximately 1 km to the east (Figs 2, 5 and 6), where the sediments were also sufficiently organic to obtain radiocarbon dates. By interpolation, the earliest evi-

## LAMBI, MYKINES, FAROE ISLANDS

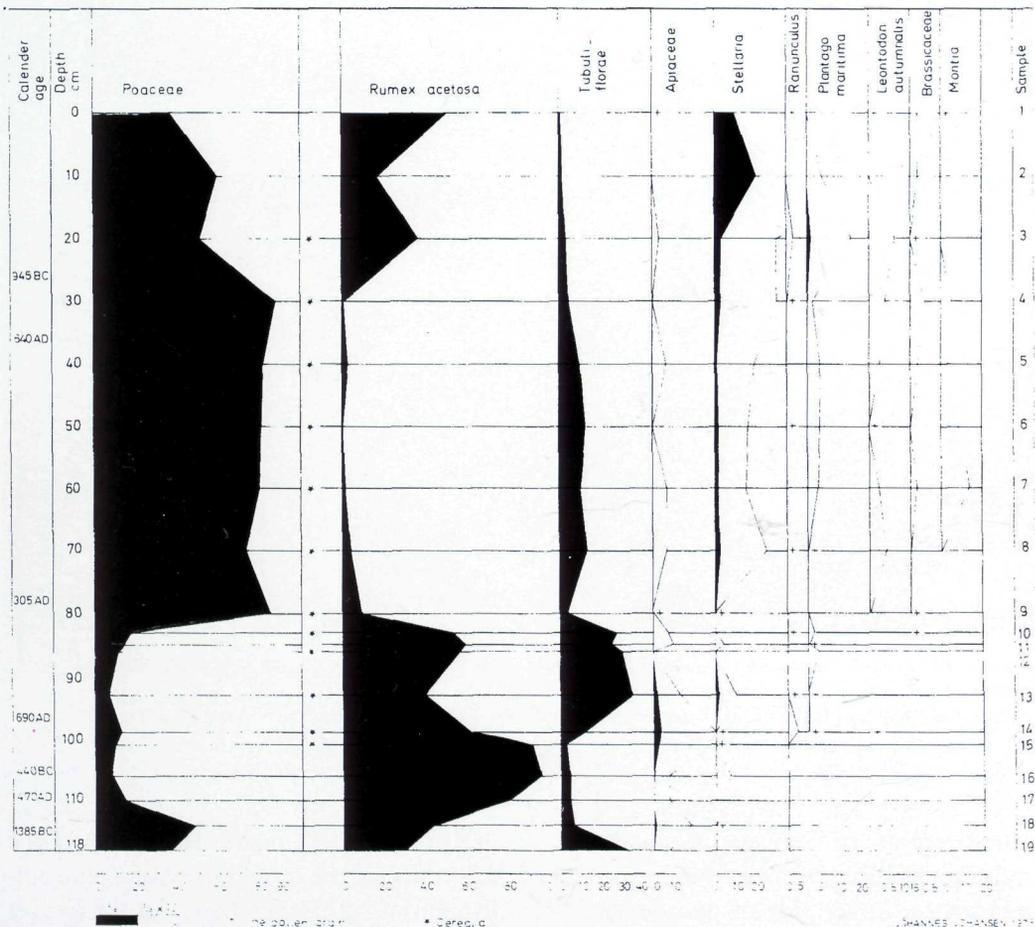


Fig. 4. Selected pollen data from Lambi (after Jóhansen, 1979)

Mynd 4. Úrvaldar upplýsingar um flogsóð úr Lamba (eftir Jóhansen, 1979).

dence for cereal cultivation was dated variously to *ca.* AD 600 (Jóhansen, 1979: 101) and AD 600-650 (Jóhansen, 1985: 46).

#### *New field and laboratory work*

Jóhansen's samples came from an exposed erosion scar east of the small promontary at

Uldalíð on the south coast of the island at 190 m above sea level, and it was possible to take samples for insect study from the same locality, cutting the face back to avoid contamination, although the thickness of the basal sediments was reduced to 0.15 m by this process. Despite Jóhansen's dia-



Fig. 5. The sample site at Uldalíð, Mykines, Faroe Islands (1985).

Mynd 5. Staðið, har royndirnar eru tiknar, í Uldalíð í Mykinesi (1985).

gram description of the section as 'peat' (Jóhansen, 1979: his Fig. 6), the deposits contain significant amounts of mineral

matter (his more comprehensive log mentions gravel only in a 10 cm stratum at 90-100 cm depth [Jóhansen, 1985: 44-45]), and the upper part (0-80 cm) would be better described as an oxidised peaty slope wash with irregular bedding, which included several stringers of angular basalt gravel (Table 1 and Fig. 5). The new section also showed a very clear break between this upper, more disturbed deposit and the lower part of the succession. The preservation of macrofossils was also very poor in the upper layers, and re-sampling was therefore limited to the lowest part of the succession, across the horizon which Jóhansen was

Depth	Description
0.14m	Short grazed turf over peaty topsoil
1.12m	Oxidised peaty slope wash, with many small angular chips of basalt and many discontinuous bedding planes.
0.15m	Dark brown silty peat with scattered angular basalt chips, some rotted. (Sampled in three 0.05m slices.

Weathered top of basalt bedrock

**Table 1:** Stratigraphy at Uldalíð, Mykines, Faroe Islands (6/8/85)

**Talva 1:** Stratigrافی í Uldalíð í Mykinesi (6/8/85).

Taxon	1.26	1.31	1.36
	—	—	—
	1.31	1.36	1.41
Carabidae			
<i>Trechus obtusus</i> Er.	1	1	1
<i>Patrobus septentrionis</i> (Dej.)		4	2
<i>Patrobus</i> sp.	1		
<i>Calathus</i> sp.			1
Hydrophilidae			
<i>Cercyon</i> cf. <i>haemorrhoidalis</i> (F.)	5	34	19
<i>Megasternum boletophagum</i> (Marsh.)		7	4
<i>Anacaena globulus</i> (Payk.)	1		
Ptiliidae			
<i>Acrotrichis</i> sp.	2		3
Staphylinidae			
<i>Olophrum fuscum</i> (Grav.)	2	3	4
<i>Eucnecosum brachypterum</i> (Grav.)		1	
<i>Lesteva</i> sp.			1
Omalinae indet.			1
<i>Stenus</i> spp.			4
<i>Lathrobium brunripes</i> (F.)			5
<i>Othius punctulatus</i> (Goez.)	4	3	2
<i>O. angustus</i> Steph.	1		
<i>Othius</i> sp.			1
<i>Quedius umbrinus</i> Er.	1		
<i>Quedius</i> sp.	1		
<i>Quedius</i> / <i>Philonthus</i> spp.			3
<i>Tachinus</i> sp.	1		
Curculionidae			
<i>Apion haematodes</i> (Kirby)	1		
<i>Otiorhynchus nodosus</i> (Müll.)	1		
<i>Tropiphorus obtusus</i> (Bons.)		4	1

**Table 2:** Fossil insect remains from Uldalíð, Mykines, Faroe Islands. (Depths are from modern ground surface).

**Talva 2.** Steinrenningar av skordýraleivdum úr Uldalíð í Mykinesi. (Dýpdin er frá jarðaryvirflatanum í dag).

able to relocate and identify in the field as providing the comparable position (a dark band of peat where *Plantago maritima* first appears) with the supposed pre-Norse land-nám layer at Lambi. Three 3 kg samples were taken as 5 cm slices and returned to Britain for processing for fossil insect remains.

Samples were disaggregated in hot water

and washed out over a 300 µm sieve. The material retained on the sieve was then subjected to paraffin (kerosene) flotation (Coope and Osborne 1968), cleaned, and sorted in alcohol under a binocular microscope. The resultant concentrated insect remains were identified using a comprehensive reference collection of Faroese and North European Coleoptera. Preservation of insects was very variable and the same sample frequently contained heavily eroded fragments, difficult to identify, and well preserved heads, pronota and elytra. Table 2 lists the taxa identified from the site; taxonomy follows Lucht (1987).

#### *Results and comments on the insect, pollen and dating evidence*

The paucity of phytophages in the Faroese beetle fauna limits correlation between insect and pollen evidence, but the weevil *Apion haematodes* Kirby (= *frumentarium* (Payk.)) is supposedly restricted to *Rumex acetosella* (sheep's sorrel) breeding in the rootstock (e.g. Morris, 1990; Koch 1992). This may present an enigma in that *R. acetosella* was not reported from any of Jóhansen's pollen diagrams. However, we have found it at Hoydalar (46 km from the site), Skælingsvatn, Toftanes and Hagamýra (Fig. 1), and the plant, while not reported in Jóhansen (1985) is recorded by Hansen (1966). Whether *R. acetosella* pollen is misidentified under the *R. acetosa* curve for Uldalíð (where it reaches about 5%) or Lambi (where it attains a massive >95%) is unknown, although Jóhansen (1975) identifies them as separate pollen taxa in his Shetland site at Murraster.

NORTH OF ULDALÍÐ MYKINES, FAROE ISLANDS

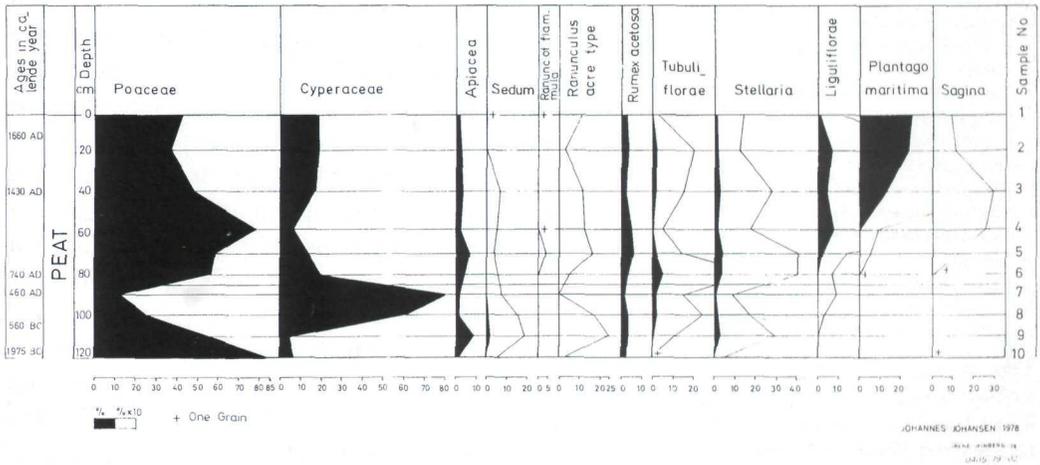


Fig. 6. Selected pollen data from Uldalíð (after Jóhansen, 1979)

Mynd 6. Úrvaldar upplýsingar um flogsáð úr Uldalíð (eftir Jóhansen, 1979).

It is probably significant that *Stellaria*, has virtually continuous traces in the pollen diagrams from Lambi and Uldalíð. Common chickweed, *Stellaria media*, is a frequently anthropochorous plant and is also abundant on grassy bird cliffs at Lambi. It should be noted, however, that *Cerastium* pollen is included in the same pollen taxonomic group (Jóhansen, 1985: 25; Bennett, 1994) and the common mouse-ear, *C. fontanum ssp. holosteoides* (Jóhansen, 1985: 19; Stace, 1997: 165), is a frequent component of Faroese grasslands and moorlands. The eutrophic nature of the deposits is supported by other elements. The large numbers of hydrophilids, *Cercyon* cf. *haemorrhoidalis* (F.) and *Megasternum boltophagum* (Marsh.), are indicative of rotting vegetation, indeed both are frequent members of the herbivore dung community

(Skidmore, 1991), but in this context are more likely to be associated with the fouled plant matter accumulating around bird nesting sites, particularly within and around the deep burrows excavated by puffins (cf. Fig. 3). A similar context would suit the species of *Othius* and *Quedius umbrinus* (Er.), although these are less specific to this habitat.

The pollen evidence from Mykines presented by Jóhansen is not presented as a selected taxa sub-set of larger fossil populations. Only 11 taxa are displayed in the Lambi pollen diagram and 12 in that from Uldalíð. In the text relating to Lambi, Jóhansen (1979: 95) says that after pretreatment 'only pollen grains were left - in large quantities, but very poorly preserved. The amount of corroded pollen grains varied between 40 and 100%.' It is surprising

Taxon	
Carabidae	
<i>Nebria rufescens</i> (Strom.)	2
<i>N salina</i> Fair. & Lab.	1
<i>Trechus obtusus</i> Er.	3
<i>Olisthopus rotundatus</i> (Payk.)	1
Hydrophilidae	
<i>Megasternum boletophagum</i> (Marsh.)	3
Staphylinidae	
<i>Olophrum fuscum</i> (Grav.)	1
<i>Quedius curtippennis</i> Bernh.	1
Aleocharinae gen. indet.	1
Curculionidae	
<i>Otiorhynchus arcticus</i> (F.)	1

**Table 3:** Modern Coleoptera collected in the Lambi puffineries August, 1986, Mykines, Faroes.

**Talva 3.** Nútíðar Coleoptera savnað í lundalandinum í Lamba í Mykinesi august 1986.

that no resistant spores were found (or reported), and equally surprising that the ubiquitous pollen of Cyperaceae (sedges) would also seem to be absent; neither were spores displayed in the Uldalíð diagram, though Cyperaceae reached 80% at one level. It may be the case that Jóhansen decided not to present all of the data. The use of *Plantago maritima* as a 'zone' fossil seems fairly reasonable given the proximity of the sites, the small size of the island and the fact that Jóhansen counted thousands of pollen grains, at Lambi at least and below sample 14, and did not find further grains of sea plantain.

The cereal-type pollen grains from Lambi are rightfully accorded extended examination. In view of their crumpled and corroded state, Jóhansen is only able to measure annulus diameters of 50 grains from 9 sample levels. He noted that many grains were, however, in the requisite cereal-size

range of 38-50  $\mu\text{m}$  diameter (Andersen, 1979). From such data he concludes that basal assemblages with wild grasses gave way to those with first oat and then barley pollen. Unfortunately, the annulus diameter size ranges for cultivated species of *Avena* and *Hordeum* overlap, though Jóhansen was able to support his diagnoses with some observations of surface sculpturing. It is a pity that corrosion prevented a wider application of this check. The existence of cereal-type pollen clumps is an important observation. Cereals are cleistogamous with large pollen grains which travel short distances. It would not be unexpected to find their pollen grains falling as unseparated clumps from the anthers of standing crops.

A re-calibration (Calib v.3.0.3, Stuiver and Reimer, 1993) of the radiocarbon date for the relevant horizon (83 cm at Uldalíð) for the start of the *Plantago maritima* curve at Uldalíð would produce an interpolated and estimated date of AD 660. This, of course, is a 'central' date to which an error term applies. On the basis of the dates which provided the estimate (AD 410-660 and AD 660-980, at the 2 sigma level and rounded to the nearest ten years), the range for the AD 660 estimate might be expected to cover the period *ca.* AD 510-810. Given that the dates from Lambi are demonstrably unreliable, and that the profile from Uldalíð would appear to have been subject to both puffin burrowing and mass movement, then the dates from this site also must be regarded as suspect.

## Discussion

The suggestion that the deposits at Uldalíð has been extensively disturbed by burrowing puffins and the slope instability evident within the stratigraphy as seen in 1985 (Fig. 3), throws some doubt on the validity of the pollen diagram as a continuous record of change, despite the conformable and seemingly reasonable sequence of radiocarbon dates from the base to the top of the section. The extent of disturbance caused by puffins is only too evident on the Lambi site, where not only are the sediments deeply burrowed into by the birds, but the size of colonies has in the recent past led to land-slips. In addition, the marine diet of the birds may also have resulted in a diluted old carbon effect in any dates on associated plant debris. It is unfortunate, but the evidence from Mykines would seem too unreliable to be used to support a model of pre-Norse, Irish settlement in the Faroe Islands.

The faunas are also interesting in the extent to which they overlap with Bengtson's (1981) infield assemblages, and it is probable that several elements in this essentially anthropogenic fauna were able to move over from the eutrophic habitats of bird cliffs and puffinries to the man-made habitats of manured infields. Collecting at Lambi, where the entire field system is burrowed into by puffins (Fig. 3), produced a short list of modern beetles (Table 3). This shows some overlap with the Uldalíð fossil assemblages, although comparison between hand collected material and fossil assemblages is always difficult. It is possible that *Megasternum boletophagum* relates to the highly eutrophic pools, which appear at

the back of small landslips occasioned by the birds' activities (Fig. 3). The dating of the Uldalíð assemblages remains doubtful, and some elements in the fauna may well have moved in from man-made accumulations of rotting plant debris and other detritus, similar to those of bird cliffs, having been initially accidentally introduced by the first settlers.

In spite of some questioning of the assignation of the cereal-type pollen to the *Avena* or *Hordeum* categories, it seems likely that the pollen from Lambi does derive from the Cerealia. Given the probable nature of the mixed assemblages, as indicated by the radiocarbon dates, it does not seem sensible to aver too strongly that oats should have temporal primacy over barley, irrespective of their true taxonomic identity. In any case, if the first settlers on Mykines did come from Ireland, they would have had barley as well as oats at their disposal. Furthermore, any Norse settlers could have come directly or indirectly from Ireland, or elsewhere, bringing oats with them. The inferred cultural link between the palynological evidence and a pre-Norse, Irish presence should probably be regarded as highly tenuous.

## Acknowledgements

Sampling was carried out in the company of the late Jóhannes Jóhansen, and despite our differing conclusions about the site, he continued a fruitful and friendly dialogue right up to his final illness. Funding from the Leverhulme Trust for the project, 'Viking Settlement, Climate and Environmental Change around the North Atlantic' and the University of Birmingham made the fieldwork possible, and the Faroese Natural History Museum (Føroya Náttúrugripasavn) provided funds for a helicopter, when rough seas stranded the group on

Mykines. Sampling was ably assisted by Joan, Philip and Robert Buckland.

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