



native woodlands  
discussion group

newsletters 1-12

**NEWSLETTER**

**NUMBER 8**

**SUMMER 1980**

NATIVE WOODLANDS DISCUSSION GROUP

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NATIVE WOODLANDS DISCUSSION GROUP

NEWSLETTER NUMBER 8 - SUMMER 1980

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participants than usual may be asked to share rooms.

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1979 MEETING ON DEESIDE

1980 FIELD MEETING

The 1980 field meeting is to be held in Argyll and will be based on Dunstaffnage Arms Hotel, Connel, Argyll, between October 2 and 4. Full details of the programme have not yet been worked out but it will probably involve visits to the Glasdrum and Glen Nant National Nature Reserves, among other sites.

The Meeting was held on 4th - 6th October and based on Aboyne. As well as the two days devoted to excursions in the woodlands of the Dee Valley the Friday evening was occupied by the traditional mixture of brief presentations on topics of interest and ensuing discussions.

The account of the excursions which follows is mainly derived from the site descriptions made available to participants at the time of the meeting.

It would be helpful to the organisers of the meeting if members wishing to attend the meeting could complete the enclosed form and return it by 18 August to -

Mr A J Kerr  
Nature Conservancy Council  
The Castle  
Loch Lomond Park  
Balloch  
Dumbartonshire

NOTES ON SITES VISITED

FRIDAY, 5 OCTOBER

In the morning the group visited the Muir of Dinnet National Nature Reserve and the birch woodlands of Glen Gairn.

Muir of Dinnet NNR

The Muir of Dinnet has natural features of national importance which are noted in the open water, peatland and upland sections of the Nature Conservation Review.

A detailed programme for the meeting will be sent, by the end of August to those members returning the forms.

Because of the difficulty of obtaining accommodation in the area suitable for the group's needs, a greater proportion of

The Muir of Dinnet is a large reserve of 1,408 hectares which was declared in 1977. The area forms a mosaic of woodland, heath, open water and bog related to the complex topography of glacial deposition. The lowland heaths are of a species-rich heather-bearberry type on brown podzolic soils and, since the cessation of regular muirburn in the 1950s, are reverting to the former forest cover of birch and pine. In the absence of heavy grazing, woodland is developing rapidly and is of great interest as an area in which the relation between the pattern of colonisation and the environment can be demonstrated. The woodland ranges from young, open scrub to older woodland in which the heath has been replaced by a woodland ground flora. Oak, juniper and holly were almost eliminated from the muir in the past and now survive chiefly in places inaccessible to burning and grazing. A portion of hill land within the Reserve is being planted by the owner with Caledonian pine of local provenance.

A detailed account of this complex and fascinating area is available as an NCC publication, 'Muir of Dinnet, Portrait of a National Nature Reserve', price £2.

At Dinnet Muir members of the group met the owner, Mr Marcus Humphrey, and learned how the management of the Reserve was linked with estate management, including management for recreational use.

#### Glen Gairn

This area lies to the west of Ballater on the north bank of the River Dee. The vegetation is dominated by birch, juniper and pine. Because of its position at the interface of distribution between the two birch species, Betula pendula and B pubescens ssp odorata the site has attracted an unusual research interest. Woods to the east of the River Gairn were used for production studies involving nutrient cycling in a stand of B pubescens (Forbes 1973). At the same time Brown and Tuley (1971) examined leaf and fruit characteristics of both parents and

'intermediates' (thought to be hybrids) in the area. They found a continuous variation of characters throughout the population from those with entirely pubescens-like attributes to those with entirely pendula-like attributes. In this same population cytotypes of intermediate chromosome number between parent pubescens (56) and pendula (28) have been demonstrated by Kenworthy Aston and Bucknall (1972), Aston (1975) and in a very extensive survey and detailed examination by Brown and Aldwoody (1977). From this detailed work the cytotypes of intermediate trees having between 37 and 54 chromosomes were mapped for individual trees within the area. This has resulted in an experimental research programme on production in both species and the intermediates. Forbes and Kenworthy (1973) compares the distribution of the birch species on Deeside with that in Scandinavia based upon climatic data. A distribution map of the two species in stands on Deeside showed that below 100 ft B pendula was the dominant species whereas above this altitude B pubescens ssp odorata becomes dominant. They postulated that a similar situation occurs in Scandinavia with B pubescens ssp tortuosa and that the shrubby growth of these two sub species is an adaptation to improve efficiency of solar energy fixation at high altitudes.

At Glen Gairn the group members received a very interesting presentation on the above, and other allied work, by several members of the University of Aberdeen including Hugh Brown and Bernard Kenworthy.

#### Crathie Wood

This important site, which features in the Nature Conservation Review, is a mixed wood of pine and birch with a very dense juniper understorey in places. The canopy is of uneven age and the wood closely approaches the hypothetical structure of natural woodland. Other canopy species include aspen, rowan, hazel, gean, sallows and occasional well grown larch.

Limestone bands occur in the rock outcrops of the truncated spur of Creag a' Chlamhain, and these give rise to a locally species-rich ground flora with plants such as Gentianella campestris, Helianthamum chamaecistus, Polygonum viviparum and Neottia nidus-avis.

On the Friday afternoon a visit was made to -

MORRONE            BIRKWOOD            NATURE  
RESERVE

Morrone Birkwood was established as a National Nature Reserve in 1972 by agreement with Mar Estate. The Reserve contains one of the few sub-alpine wood on base-rich soils remaining in Britain and consists of downy birch (Betula pubescens ssp. odorata) with a dense understorey of juniper.

The wood occupies the north-facing slope of Morrone, between 350 and 530 m. Calcareous schist and limestone outcrop above the wood and the soils below are brown podsolics and brown earths, derived from base-rich glacial drift. The woodland canopy averages about 6 m in height and is mostly birch with scattered aspen, with a few rowan and grey willow confined to the rock outcrops. The canopy is discontinuous, being broken by marshy hollows and flushes, and by open juniper scrub and Callunetum. The juniper is mainly a dwarf rounded form, with an average height of 1 m, but with taller, fastigate bushes in places. Where the cover is dense, the field layer vegetation is dominated by mosses including an abundance of Ptilium crista-castrensis, and the juniper growth gives protection from grazing to a number of tall herbs and ferns e.g., Thelypteris dryopteris, Mercurialis perennis and Geranium sylvaticum. Where the juniper growth is more open, Vaccinium myrtillus and V. vitis-idaea form a shrub layer, and in some places the juniper scrub has been replaced altogether by grassland, due to grazing by red deer. An unusual feature of Morrone is the presence within the woodland of montane herbs such as

Potentilla crantzii, Polygonum viviparum, Rubus saxatilis and Galium boreale. On the less rich soils, northern species such as Linnaea borealis, Orthilia secunda, Pyrola media, Trientalis europaea and Listera cordata are locally frequent.

A further distinctive feature of the wood is the occurrence of open calcareous flushes and soligenous mires of an upland type with species such as Juncus triglumis, J. alpinus, Torfieldia pusilla, Saxafraga aizoides, Eriophorum latifolium and Carex capillaris, together with a variable cover of "brown mosses". The mires grade from richer types dominated by sedges to poorer types with Sphagna and acidic peat. Altogether 150 species of vascular plants are recorded from the woodland area.

The calcareous outcrops contain small areas of limestone grassland, acree and scrub, and provide refugia for species such as Polystichum lonchitis, Asplenium viride and Thalictrum alpinum. Above the crags, the vegetation is Rubus chamaemorus-rich blanket bog and Callunetum on acid quartzose schists, changing near the summit at 859 m into prostrate Calluna showing wave erosion, and snow-bed Vaccinetum.

Pollen analysis of peat profiles from the wood suggest that it existed in a substantially similar form in the immediate post-glacial, and that it may be a genuine relict. The whole complex of habitats also shows a close resemblance of physiognomy and floristic composition to some of the sub-alpine woods in the Dovre district of Norway. It appears to be the only wood of its kind in Britain, and has been given Grade 1 (nationally important) status in the recent Nature Conservation Review.

The fauna of the wood includes a large herd of red deer present for most of the year, and large numbers of mountain hares. The insect fauna is particularly interesting, including numerous nests of the northern wood ant, Formica lugubris, and the rare ant-dependent moth, Myrmecozela ochraceella, as well as a number of other upland rarities.

The main aim of management for the Reserve is to maintain the woodland in as natural a condition as possible. Heavy grazing by deer is preventing natural regeneration and three areas totalling 21 acres has therefore been fenced to keep these animals out. Considerable regeneration of birch, aspen and juniper can be seen within the enclosure, together with a much higher proportion of flowering herbs. It is hoped to increase the enclosed area to 60 acres.

#### Saturday, 6 October

The whole of Saturday was devoted to visiting the Glen Tanar Estate and National Nature Reserve. Here the group was guided by the Head Forester, Mr Irvine Ross, Mr Jimmy Oswald the Head Keeper, and members of NCC staff, including the warden for the National Nature Reserve, Mr David Carstairs.

The forest of Glen Tanar, the most easterly of the surviving Scottish pinewoods, is the largest native pinewood outside Speyside. It is specially valuable because within it, there are the largest and finest areas of natural regeneration of pine of any of the native Scottish forests. This is because red deer, which prevent the regeneration of young trees have been excluded from much of the forest since 1938. None of the other native pinewoods have had such a long period of control of excessive grazing by deer and, as a result, Glen Tanar has a better balance of size and age class distribution of trees than elsewhere.

The survival of the Glen Tanar forest in its present state is largely due to the conservation policies of the late Lord Glentanar. His daughter, the Hon Mrs Jean Bruce, has concluded an agreement with the NCC establishing a National Nature Reserve over 4,185 hectares of the native forest and the adjoining moorland. Management of the Reserve is designed to achieve a compromise between strict nature conservation objectives, with a minimum

of disturbance to plants and animals, and continued commercial use of the timber and game resources. To this end, the Reserve is divided into a strict reserve zone, an extraction zone where timber can be removed, and a moorland zone where game management and grazing by domestic stock will continue.

The following notes on the Glen Tanar Estate and its forest management were provided by Mr Irvine Ross.

Glen Tanar Estate covers some 11,815 hectares (29,200 acres) along the south bank of the River Dee between Aboyne and Ballater. Elevation ranges from 125 M (410 ft) to 939 M (e,080 ft) at the summit of Mount Keen with the forest generally restricted to below the 400 M (1,300 ft) contour. The underlying base rock is predominantly granite and much of the land is high and exposed and therefore of poor quality as can be seen from the following land use analysis.

Arable ground	4%
Rough grazing	19%
Forest	25%
Moorland	52%

#### Farms

Five farms and a croft are tenanted ranging in size from 573 ha (1,417 acres) to 3.6 ha (9 acres). The Home Farm is in hand. All are upland livestock rearing units breeding hill cattle and, in some instances, hill sheep. The Home Farm carries around 220 outwintered commercial cows which are Hereford-Shorthorn crosses. There is a small herd of pedigree Hereford cattle and a study of Norwegian Fjordhest ponies. The Unit is basically self sufficient producing hay, silage, barley and oats for winter keep.

#### Game and Fishings

With four beats on the River Dee, two with both banks, the average catch for the past five years has been around 800 salmon. The grouse moor occupies almost half of

the estate with 5 driving beats. The rather low grouse density yields an average bag of 1,000 brace. A ring fence protects the lower part of the Estate from Red Deer although break ins occur in the winter. Currently some 35 Stags and 70 Hinds are shot annually. Roe Deer are common throughout the forest and some 60 bucks and 50 does are shot each year. The culling of hinds and does and the control of rabbits is carried out by the gamekeeping staff of six men, five of whom also act as fishing ghillies from February to June.

### Forestry

Total Forest area - 2,850 ha -  
(7,042 acres)

Total dedicated area - 2,165 ha -  
(5,350 acres)  
(to be increased to  
2,450 ha 6,276  
acres)

### Elevation:

Ranges from 130 M to around 400 M  
above sea level.

### Topography:

The forest stands on the valley sides of the river Dee, the Water of Tanar and its tributaries, which have moderate to steep slopes. Hills are generally rounded with only occasional rocky outcrops but deep hummock and hollow microtopography is found in some sections of the native pinewood.

### Exposure:

Moderately sheltered at lower elevations to exposed upper limits.

### Drainage:

Natural drainage is good except for a few areas of deep peat.

### Drainage:

Natural drainage is good except for a few areas of deep peat.

### Climate:

Mean Annual rainfall

Mean annual temperature 7°C

Snowfall is often heavy, late spring frosts are prevalent and drought can be severe.

### Commercial Working Cycle

### Area:

1,227 ha (3,032 acres) of which 1,060 ha (2,619) acres have been planted since 1946.

### Species:

Scots Pine	10%	Yield Class	8
Sitka Spruce	15%	"	" 14
Norway Spruce	10%	"	" 12
Japanese and Hybrid Larch	15%	"	" 10
Douglas Fir	20%	"	" 16

### Planting:

With a current programme of around 15 ha (37 acres) per annum, planting is carried out entirely by the Estate forestry squad of 8 which numbered around 15 men in the peak years of the late 50's - early 60's. All plants are supplied by the Estate nursery.

### Thinning:

Current programme is approximately 80 ha (200 acres) per annum. i.e. approximately 2,200 M<sup>2</sup>/annum or 28M<sup>2</sup>/ha (300 H.ft/acre). The area being thinned will double in 2 years time (market conditions permitting) and increase every 5 years until the whole area planted is being thinned on a 5 year cycle.



### Native Caledonian Forest

Now a National Nature Reserve, this native forest remnant is believed to have stood on this site for some 9,000 years since the end of the last ice age. Exploitation of the forest began more than two centuries ago and there are records of a water powered sawmill being erected in the Haughs of Allachy in 1932. Considerable quantities of timber were floated down the River Dee in the early nineteenth century to Aberdeen for use in the ship-building industry. The people of Glen Esk purchased timber in Glen Tanar and dragged it home over the shoulder of Mount Keen which rises to 600 metres (2,000 ft) on a very rough track.

Evidence of forest fires can be seen as carbon layers in the soil profile. Records include mention of fires in 1688, 1719, 1726, 1748, 1820 and 1826. In more recent years 551 ha (1,360 acres) were destroyed in a fire in 1920 which burned for 10 days and 99 ha (245 acres) were lost in 1956.

During the 18th century, goats, cattle and up to 7,000 sheep grazed in Glen Tanar and the ruins of summer shielings are found in the forest area. In the late nineteenth century Red Deer were fenced into the Estate for sporting purposes. This situation continued until 1938 when tick borne disease caused a severe decline in Red Grouse numbers. In an effort to control the tick a shield fence was erected to excluded Red Deer from the forest and from the major part of the grouse moor. As a result of the control of the deer and the reduction in numbers of grazing livestock the process of natural regeneration has been found to be very encouraging in certain parts of the forest, mainly along the fringes and open areas caused by fire and windblow. In other equally open areas however there are no seedlings to be found. This mixed history of the forest has led to the present patchwork distribution of stands and age classes as outlined below.

367 ha (906 acres)	Natural Regeneration 1 - 40 years old good to sparse.
303 ha (748 acres)	Natural Regeneration 1 - 40 years old brought to full stocking by beating up.
951 ha (2,350 acres)	Natural forest 130 - 250 years old.

The following notes describe particular areas of the forest:-

#### The Bush

One of the more fertile sites on the reserve, the underlying rock contains Mica Schist in addition to the more typical Granite. The lower slopes of the hill were devastated by windblow in the 1953 gale. These were restocked partially by planting, using Hybrid larch and Scots Pine of Glen Tanar origin. The remainder of this area regenerated naturally though some planting was done to fill in some small gaps.

In the immediate post war years the ground above the forest fence was harrowed and reseeded for stock grazing. This was quite effective in the lower lying fertile areas but on the hard dry ridges Scots Pine proved more successful than grass and fairly extensive areas of regeneration date from this period. Further up the Tanar Valley regeneration is currently extending onto areas of short heather which were burned for grouse management and cattle grazing.

The summit of the hill is lapped with a stand of mature pine c. 140 years old. This is the site of several experiments by two PhD students from the Forestry Department of Aberdeen University into the seed production and subsequent survival of Scots Pine seedlings. The stand was thinned to around 100 stems per ha in 1976-77 to encourage regeneration

existing canopy. As a further trial, 6 plots of 0.4 ha were clear felled to increase the light reaching the forest floor. The average volume per tree is  $1.45\text{m}^3$  and the total standing volume of mature trees is around  $10,000\text{m}^3$ .

#### Frederick's Walk

Lower:- The younger part of this stand, c.140 years old is a registered seed stand and contains a number of selected "Plus" trees. The adjacent stand, c.240 years old was heavily thinned in 1975. The raw humus and moss layer was around 15 cm. deep and acted as a barrier to seedling generation and survival. In autumn 1977 the humus layer was screefed off using a "Drott" with a loading socket. The intention was to expose the uppermost mineral horizon but in effect the best take has been obtained on a shallow humus layer or on humus/mineral mix. 1978 was a good seed year and a density of around 4 seedlings per square metre has been obtained. 0.1 Kg of birch seed was broadcast over part of the site which has resulted in a number of 2 year old seedlings surviving to date.

Upper:- A second area which was flattened in 1953. This was passed as fully restocked for planting grant in 1968.

Above is another registered seed stand around 140 years old. This has been thinned progressively to remove dying trees and promote crown development to ensure a satisfactory seed supply when the seeding fellings are carried out.

Further up the hill is an area of deep peat which was ploughed and planted with Sitka Spruce in 1974. The Sitka will be grown to a full commercial rotation and then replaced with Scots Pine. A small section of mineral ...sould?... which was ploughed at the same time shows remarkably little regeneration.

#### The Allachy

A stand of over mature Scots Pine around

250 years old, at the southern end the old trees are rather sparse and were underplanted in 1968 and 1971 with Scots Pine and various native broadleaf species such as Birch, Rowan, Alder, Whitebeam, Aspen and Bird Cherry. The planting along the valley bottom suffered badly from browsing and the broadleaf element was replanted in small enclosures in 1977-78. The intention is to produce a small nucleus of broadleaf species to act as a seed source for future years.

The more densely stocked northern part has been progressively thinned and a number of 0.4 ha groups were clear felled in 1977. The ground was again mechanically screefed in October of the same year. The take of seedlings is lower than in Frederick's Walk and averages 1 - 2 seedlings per square metre. The ground conditions are particularly difficult with rank heather, a deep raw humus layer and hummock and hollow micro topography.

#### The Strone

This entire hill was burned in the intense fire of 1921 which lasted for ten days and completely destroyed the humus layers of the soil. The south western slope has slowly regenerated and after some beating up was passed for planting grant in 1971. The opposite side of the ridge carries only a very few scattered young pine. The north western end was planted in 1946 with Scots Pine of Speyside origin but growth rates are remarkably slow.

#### The Drum

This stand is again about 250 years old and is very variable in stocking. Some of the more open parts have a dense understorey of Juniper and are growing on a deep peat in contrast to the remainder of the forest which stands on podsollic soils. In spite of the open nature of the stand almost no regeneration is to be found except on roadside spill.

REPORT ON THE BEETLES FOUND AT FOUR WOODLAND SITES  
IN SUTHERLAND AND EAST ROSS IN OCTOBER 1978

BY

F A HUNTER

The beetle names used follow Kloet and Hincks (4) through, but authors' names have been given only on the first occasion when each species found is mentioned.

As the 4 sites visited are so dissimilar, no summary is possible and each has been dealt with separately.

DRUMMONDREACH OAKWOOD, BLACK ISLE, EAST ROOS, SWT RESERVE (visited 7 October 1978).

This is an aesthetically attractive wood with a number of broad leaved tree species other than oak, including some very large beeches and many birches. Fruiting bodies of a wide variety of fungi associated with trees were observed, but these did not include Polyporous sulphureus or Pistulina hepatica, the two wood-rotting fungi often associated with oak and with which a number of the characteristic oak wood beetles are associated. Phlebia merismoides was seen on dead oak branches but the two beetles associated with it, associated with it, Tetratoma ancora and Phloiophilus edwardsi were not discovered after a careful search of the fungus and bark. Armillaria mellea, Ganoderma applanatum and Polystictus versicolor were also found but yielded no fungus beetles.

I have seen no published records of beetles from northern Scottish Oak woods such as this one, Ledmore oak wood or Letterewe oak wood on the eastern side of Loch Maree, however, many of the beetles characteristic of British oak woods have climatic requirements which lead to a southern distribution, even within England, and in addition to the Scottish climate, the southern uplands undoubtedly act as a barrier making the spread of southern species into Scotland more difficult. Records of beetles from Scottish oak

woods were summarised in 1962 by Crowson (1) who had earlier (2) reviewed records of the fungus beetles of the family Mycetophagidae in Scotland. Only one of the species included in Crowson's review (1) was recorded at Drummondreach on this visit. No doubt repeated visits would produce a longer list (I have found oak wood species in Glen Affric; at the Black Wood of Rannoch; Darnaway Forest, Forres, Moray; in woodland around the shore of Loch Achilty, East Ross; and in the Dee Valley, Aberdeenshire; but even if these records were all aggregated, the list would remain a brief one compared with records from the central lowlands of Scotland.

If one accepts that the potential number of oakwood species likely to occur at Drummondreach is small relative to the fauna of the central Scottish lowlands - and on the scanty evidence so far available this seems likely - this potential is likely to have been reduced further by the long history of coppicing at Drummondreach which would have reduced the habitat available to beetle species dependent on large over-mature oak tree trunks infected by fungi. It is hardly surprising that the very brief list of beetles found at Drummondreach on this visit should contain only one species discussed by Crowson (1), Leiopus nebulosus (L) a Cerambycid whose larva feeds sub-cortically in oak branches and twigs, and that the beetle fauna found is much more characteristic of birch woodland growing within the conifer belt.

Notes on the species found follows:-

Geotrupes stercorarius (L). Several adults of this large dung beetle were found crawling on the ground.

Leistus rufescens (F). Adults of this predatory ground beetle were found in groups under the bark of rotten fallen logs.

Schizotus pectinicornis (L). A single larva of this cardinal beetle was found under the bark of a small diameter rotten oak branch lying on the ground. This species is rare - claims have even been made that it is extinct in Scotland! - however, it is characteristically found under the bark of dead birch branches lying on the ground in the pinewood areas of Scotland. I have found it especially in Glen Affric and Glen Cannich.

Rhagium mordax (Deg.). Larvae and overwintering adults of this longhorn beetle were found under birch bark and old borings under oak bark. The species has a wide range of host trees, mainly being found in broad-leaved species but occasionally in conifers. In England it is one of the commonest species under oak bark but in Scotland it is equally likely to be found under birch bark where it is one of the commonest species.

Rhagium bifasciatum (F). This common species is possibly one of the most widely distributed longhorn beetle species in Britain. Its larvae attack the sapwood and sometimes the heartwood of both coniferous and broadleaved trees of almost any species. Larvae and overwintering adults were found in birch and beech.

Leiopus nebulosus. Larval borings and exit holes only - for comments see above.

Tetratoma fungorum (F). Adults of this Tetratomid fungus feeding species were found on sporophores of the bracken fungus Piptoporus betulinus. Although it does attach other fungi, P betulinus on birch is undoubtedly its usual larval habitat.

Bolitophagus reticulatus (L). A small larva of this Tenebrionid was found in a sporophore of Fomes fomentarius growing on a dead birch. Although the species is regarded as rare, I have found it widely in this fungus - and in no other - on birch

trees in many of the pinewood areas of Scotland.

Cis nitidus (F). Adults of this small fungus beetle were found in several sporophores of Fomes fomentarius on dead birches. This is its characteristic habitat.

MOUND ALDERWOODS  
NNR, SUTHERLAND. (Visited 6 October  
1978)

During this visit I left the main party in order to concentrate on the alders themselves, as these and not the pines contain the main interest of the area for a coleopterist. I worked an area of perhaps 10 hectares at the end of the wood remotest from the sea in the belief that alder woodland had been continuous there for the longest time. Collecting was difficult because of flooding, following heavy rain, which meant that for much of the time I was wading knee-deep in water. Alder was the dominant tree in the area searched, with a few willows including some large individual trees. Many of the alders were partly dead and infected by fungus Polyporus radiatus which supports several characteristic beetle species even when alders grow in small numbers alongside streams and rivers in Scottish pinewood areas. I hoped that such a large concentration of alders would have supported other species, perhaps even the Melandryid Abdera affinis (Payk.) whose biology in Scotland is unknown, however, perhaps because October is not the best time of the year for searching for these beetles, perhaps because of the flooding, I found nothing that could not have been anticipated. A quantity of P radiatus sporophores was collected in the hope that additional species may be reared from these. (If they are, I will write a supplementary note)<sup>x</sup>.

Notes on the species found follow:-

Ptilinus pectinicornis (L). The characteristic borings of this Anobiid, usually associated with beech and perhaps a recent incomer to Scotland, according to

Crowson (1), were found in the sapwood of a dead standing willow.

Rhagium mordax. Larvae and an adult of this longhorn were found under the bark of dead fallen alder trunks.

Harminius undulatus (Deg.). A single larva of this rare click-beetle was found in a rotten alder log. The species is normally found as a larva (the adults being very short-lived) in pine or birch, within areas of native pinewood in Scotland but I have one previous record from alder - at Loch Achilty, East Ross.

Tetratoma fungorum. Adults and larvae of this fungus feeder were recovered in numbers from sporophores of Polyporus radiatus on alder.

Mycetophagus multipunctatus F. Many adults but no larvae of this fungus feeder were found on sporophores of P radiatus on alder. The species occurs widely in Scottish pinewood areas on this fungus and others.

Orchesia micans PANZ. Adults emerged in large numbers from this fungus during late June 1979.

#### TORBOLL WOODS AREA

Whilst in this mixed woodland, I concentrated on searching the aspens and willows for the large poplar longhorn, Saperda carcharias (L) whose larva feeds in living stems and branches of these trees. Whilst I did find two exit holes that could have been made by S carcharias I cannot be certain of this as no insects were found and there were many exit holes present in goat willows (Salix caprea) in the area of the clearwing moth (Sesia apiformis). This species is uncommon and this is an interesting record.

AMAT PINWOOD, SUTHERLAND (visited 6 October 1978)

This pinewood was potentially of special interest to me at it has the most

continental climate of those pinewoods listed in Stevens and Carlisle (3) that I had not previously visited; I am unaware of any published records of soleoptera from Amat. In the event, I found nothing surprising but the area is large enough to support a diverse fauna and is remote from the well-recorded pinewood areas and it would be very interesting to make another visit in early summer when beetles are easier to find.

In order to spend as much time collecting as possible, I did not walk with the main party who covered a large area, but concentrated on about 30 hectares of mixed pine and birch immediately next to the road, in the woodland next to the east end of the spruce plantation. Some of the pines in this area were very large. Some trees had been fairly recently felled and the stumps and branches remaining were still in the right condition for beetles associated with freshly dead pine trees, which are often difficult to find in an undisturbed native pinewood.

In the list which follows, the pine species are dealt with first and the birch species separately afterwards.

Pine species.

SCOLYTIDAE Three species of bark beetles were identified.

Tomicus piniperda (L). A species that can on occasion have considerable economic importance, this was fairly common both as adults and larvae in the cambial layer of relatively freshly dead stumps and branches.

Hylurgops palliatus (Gyll.) Was commoner in the same habitat.

Ips acuminatus (Gyll.). Occurred less commonly and was more or less confined to the narrower branches where the pine bark was thinner. Borings in narrow twigs were probably caused by a species of Pityogenes.

CERAMBYCIDAE Four species of Longhorn beetles were recorded:-

Asemum striatum (L). The characteristic and unmistakable exit-holes of this species were found on the flat tops of the stumps of several relatively freshly felled pines. This species is important in accelerating the decay of pine stumps and roots.

Rhagium bifasciatum Larvae of this species were common in the sapwood of dead pines, both standing and fallen, and stumps. This species feeds in wood that is in a more advanced state of decay than that attacked by A striatum and often completes the destruction of the wood begun by that species.

The two species occurring under the bark of relatively freshly dead pines Rhagium inquisitor (L) and Acanthocinus aedilis (L) were both recorded although the presence of the latter was demonstrated only by exit-holes in the bark - these being so large that they cannot be confused with those of any other species. Overwintering adults and larvae of R inquisitor were found under pine bark in their characteristic pupal cells each constructed of a ring of long wood fibres. In one case, instead of the longhorn beetle, the cocoon of a Hymenopterous parasite was found. (This was collected and if an identifiable adult emerges, I will write a separate note on this).

#### MALANDRYIDAE

Xylita laevigata (Hell) borings and exit holes were frequent in the outer sapwood of old dead pine trunks as were borings and exist holes of the weevil Eremotes ater (L) both species are characteristic of Scottish native pinewoods.

Hallomenus binotatus (Quensel). Many larvae of this species were found in a sporophore of Tyromyces lacteus (Fr). Mun. growing from a large fallen long-dead pine. (I am grateful to Ian Alexander for the identification of the fungus which is a species I had not encountered before).

#### ELATERIDAE

Malanotus erythropus (Gmel.). Larvae of this common click beetle, which is a facultative predator of other xylophagous insects, were found in well-rotted pine trunks and logs.

#### Birch species

Under bark, larvae of the longhorn beetles Saperda scalaris (L) and Rhagium mordax were found. The former, a supposedly rare species is, in reality, widespread in Scotland and easily found under the bark of freshly dead birch branches, at least as a larva.

Borings of the weevil Magdalis carbbmaria (L) were also found under the bark of narrower birch branches where these had been exposed to sunlight and were apparently unusually dry.

In the wood of dead birches, the characteristic borings of the ambrosia beetles, Hytectoetus dermestoides (L) and Xyloterus domesticum (L) were common.

Three species were found in sporophores of Fomes fomentarius on birch:- an adult and several larvae of the Tenebrionid Bolitophagus reticulatus, several adults of the small Cisid Cis nitidus and a single adult Phizophagus dispar (Payk).

MONADH MOR, BLACK ISLE, EAST TOSS  
(Visited 7 October 1978)

Although I concentrated on looking for beetles in the dead pines, some wetland insects such as the "lead-beetle" Plateurmaris discolor (Penz.) found, as usual, on Sphagnum moss - and the dragonfly Sympetrum scoticum which was common in flight, were encountered.

There are few very large trees in the area so that many of the beetle species associated with other-mature or fungus-infected trees (these are the species that are the best indicators of continuity in a

woodland) have a very limited quantity of habitat here, if any. In the event, only two such indicator species - both rather poor indicators as they have been found on several occasions outside native pinewood areas - were found (R inquisitor and X. laevigata). The short list that follows is equally consistent with either a pine plantation site near to a native pine area or a natural pinewood with an unusually high proportion of small or very small trees.

The beetles found were as follows:-

Chanasimus rufipes (Brahm). A larva of this predatory Clerid was found under pine bark with larvae of the Scolytids on which it feeds.

Xylita laevigata. An adult was found in the sapwood of a dead standing pine.

Asemum striatum. Larval borings of this species were widespread in dead pine boles and roots.

Rhagium bifasciatum. Larvae and overwintering adults of this species were common in dead pine logs and trunks.

Rhagium inquisitor. Small larvae of this species were found under the bark of freshly dead pine.

Pissodes sp. Many cocoons and larvae were found on the underside of freshly dead fallen pine trunks.

Tomicus piniperda and Hylurgops palliatus. Adults of these two species of bark beetles were common and widespread in dead pine trees.

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