NAIRN DISTRICT PHASE 1 HABITAT SURVEY 1993

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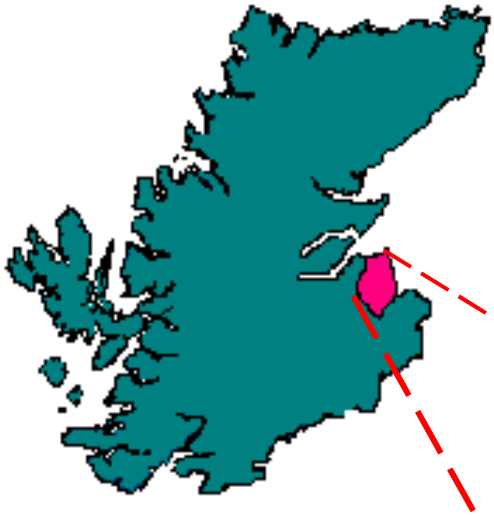
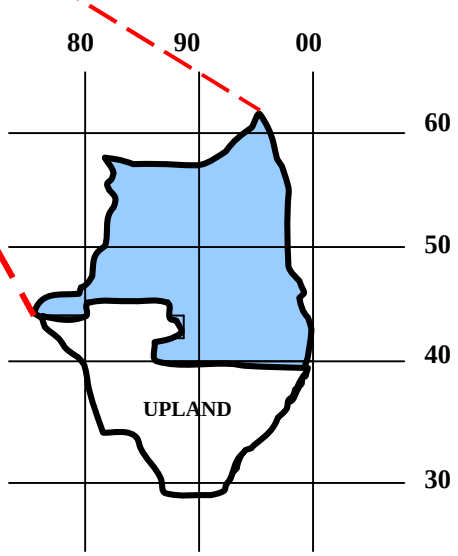
Phase 1 Habitat Survey Coverage
Nairn District
1993





I. WILDLIFE HABITATS

General

The survey covered 23,677.95 hectares (236.8 km^2) excluding heathland and modified bogs. Area estimates showed that of the area covered, 41% was agricultural and 32% was under conifer plantation. The remaining 27% includes all other habitats and land uses from good, semi-natural wildlife habitats to built up areas, quarries and caravan sites. Only about 14% of the area surveyed was of good semi-natural wildlife habitat standard. The details are considered below.

Table: The wildlife habitats of lowland Nairn District

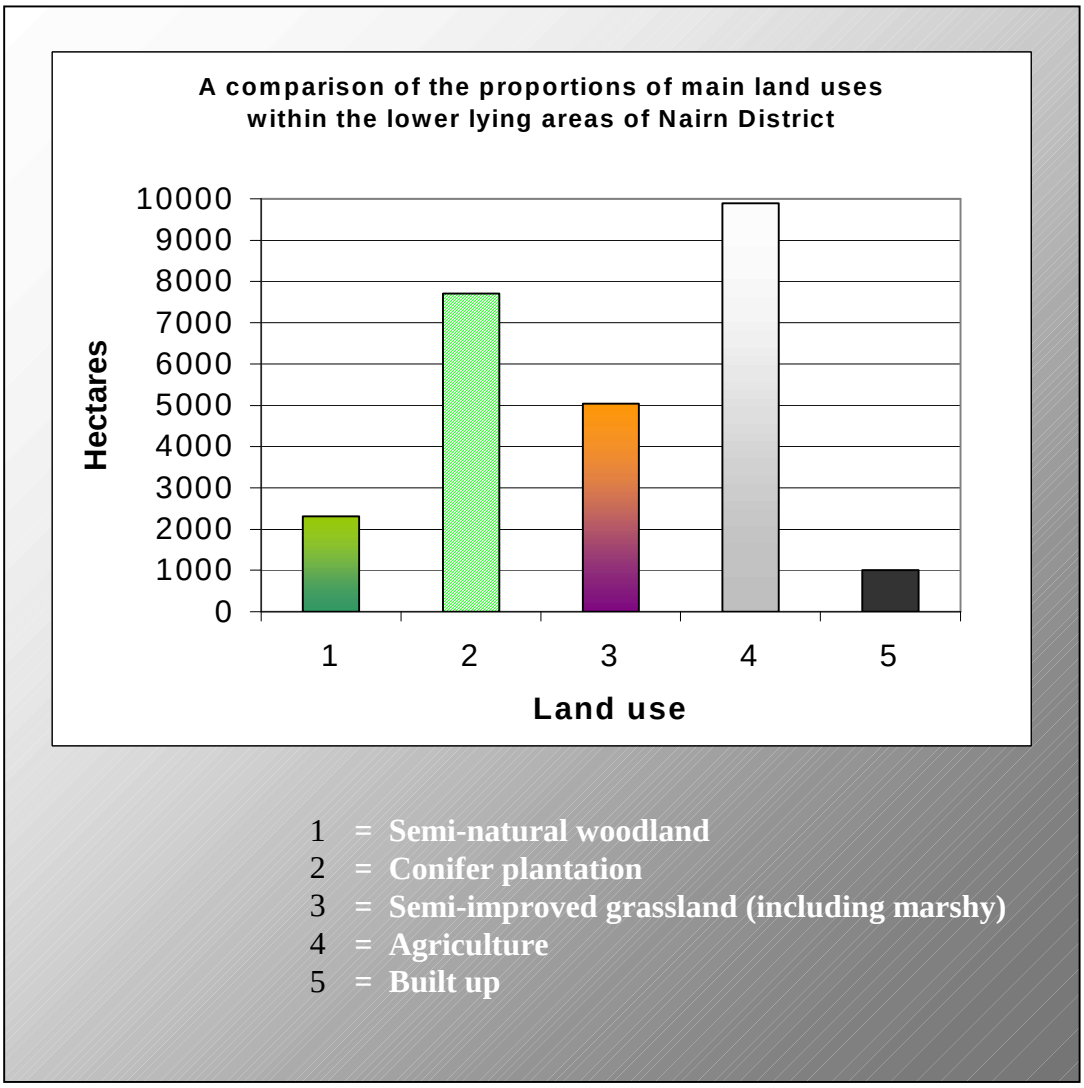
Total area surveyed (A) = 27,531.3 ha. (275.31 km2)

Total minus heath and modified bog (B) = 23,677.95 ha. (236.8 km2)

HABITAT	AREA - HECTARES	% of total)
Woodland		
Semi-natural broadleaved	1977.3	8.35
Semi-natural coniferous	326.6	1.38
Semi-natural mixed	331.85	1.40
Plantation broadleaved	6.65	-
Plantation coniferous	7707.4	32.55
Plantation mixed	0.35	-
Recently felled	167.9	0.71
Scrub - Dense/continuous	611.45	2.58
Grassland		
Acid (unimproved and semi i.)	160.65	0.68
Neutral ,, ,, ,,	43.95	0.19
Improved and poor semi-improved	6003.2	25.35
Marsh/marshy grassland	299.0	1.26
Tall herb and fern		
Continuous bracken	76.45	0.32
Heathland		
All types	3079.15	*
Mire - (only that adjacent to or within survey area)		
Blanket bog	21.8	-
Raised bog	(only very small fragments included within blanket bog)	
Modified bog	774.2	*

Flush (acid+basic)	2.3	-
Valley mires	9.0	-
Swamp, marginal and inundation veg.	16.9	0.07
Open water - Standing	206.45	0.87
Running	217.0	0.92
Coastland		
Intertidal mud/sand	288.7	1.22
Intertidal shingle/cobbles + boulders(with or without Zostera or Algal beds)	92.0	0.39
Dense/continuous saltmarsh	120.85	0.51
All sand dune habitats	63.2	0.27
Rock exposures		
Natural		27.5 -
Artificial and waste types (quarries, etc.)_		5.0 -
Miscellaneous		
Cultivated/disturbed land (arable land and amenity grassland)	3886.7	16.4
Wall (intact, stock proof, stone)	(length) 73,100 metres	
All built up areas (including roads, caravan sites and bare ground)	1007.8	4.26

FULL DEFINITIONS OF THE ABOVE HABITATS ARE GIVEN IN THE PHASE 1 HANDBOOK (NCC 1990). HOWEVER THEY ARE CONSIDERED IN MORE DETAIL BELOW AND HOPEFULLY MOST SHOULD BE SELF-EXPLANATORY.



Woodland and Scrub

Semi-natural broadleaved

Mainly birch (*Betula* sp.) woodland with alder (*Alnus glutinosa*) in wetter areas such as by rivers and lochs. Also planted but well established beech (*Fagus sylvatica*) woodland. Oak (*Quercus* sp.) is relatively scarce though in a natural state much of the dryer, low-lying areas would be dominated by the species. Tree regeneration is rare in Nairn District due to grazing. Thus the future of much of the remaining semi-natural woodland is uncertain unless active management to encourage regeneration is undertaken soon. (1977.3 hectares)

Semi-natural coniferous
Under-represented in the area. Most of that recorded is actually of plantation origin but sufficiently well developed to deserve semi-natural status. Native pinewood is relatively scarce in the district and mostly confined to small stands of mature trees within other woodland. (326.6 hectares)

Semi-natural mixed
The smaller stands are mostly birch (*Betula* sp.) with some Scots pine (*Pinus sylvestris*), often within conifer plantations. These are the only areas which approximate to locally native semi-natural woodland in Nairn District. (Most of the birch woodland under natural conditions would include a large proportion of oak (*Quercus* sp.) with other species such as hazel (*Corylus avellana*). Selective removal of oak for timber over the years has led to the woodlands being currently dominated by birch.) However, the largest single area recorded under this category is Cawdor Wood (see target note NH845485). This is a diverse, managed woodland most of which has been planted. While it has clearly developed semi-natural characteristics this bears little resemblance to any truly natural woodland plant community which would be found this far north. The origins of this woodland may well have been an oakwood, but stands of beech, larch and some large mature exotic conifers dominate in many parts. The woodland has definite wildlife value but is quite unlike any locally native mixed woodland (which is very rare in Nairn District). The northern part of the woodland is a Site of Special Scientific Interest (SSSI). (331.85 hectares)

Plantation broadleaved
Confined to small areas very recently planted. Some areas too small to map or hidden from view may not be represented here and could possibly boost the area by over one hectare. While still a relatively small category such planting is clearly on the increase. Indeed, as most semi-natural broadleaved woodland in Nairn District is over-grazed by livestock or deer, showing little or no signs of regeneration, the future of such woodland may rely heavily upon planting schemes. (6.65 hectares)

Plantation coniferous
A large area but, much of this is Scots pine (*Pinus sylvestris*), though probably not of local or even Scottish seed origin (much imported from Germany). The ground flora in mature areas is normally well developed. These are immensely valuable as amenity woodland as they can accommodate large numbers of visitors and still retain a sense of tranquillity. (7707.4 hectares)

Recently felled
Still part of the plantation system for practical purposes but future uncertain as no signs of management after felling. Some such areas show signs of reverting to a more natural state as they develop scrub, bramble, grasses and herbs. Such areas are often important for invertebrates, birds and small mammals. However, as plans for future management are uncertain, and often involve re-planting with conifers, these sites are recorded simply as recently felled. (167.9 hectares)

Scrub - Dense/continuous
Mainly gorse (*Ulex europaeus*) with some broom (*Sarothamnus* [*Cytisus*] *scoparius*), but occasionally juniper (*Juniperus communis*). Every effort is made to include dominant species codes on the maps. Where none is given the species can be taken to be gorse and/or broom.

As juniper is less common in Nairn District and as it is closely related to locally native woodlands it is recorded wherever found and sometimes target noted. Blackthorn (*Prunus spinosa*) is an under represented scrub species in Nairn District. The largest dense, continuous area of this found was at Dun Even fort (NH828477) west of Cawdor around the triangulation point and fort. (611.45 hectares)

Grassland

Semi-natural acid
Mainly small areas on the upland fringe where grazing has reduced heather cover, but not to the extent where plant species richness is seriously reduced. The relatively high abundance of mat grass (*Nardus stricta*) is the main indicator of such areas in Nairn District. (160.65 hectares)

Semi-natural neutral
Relatively small areas in lower lying parts where grazing levels are near optimum for floral richness. Indicated by greater number of plant species. (43.95 hectares)

Marsh/marshy grassland
A category which covers a range of conditions from the wetter parts of improved fields still dominated by soft rush (*Juncus effusus*) to relatively species rich areas which represent a transition from marsh to dryer conditions through attempts at drainage. Most of that found in Nairn District is of limited wildlife interest but of little use for grazing. Thus any areas showing greater species richness represent a relatively scarce plant community. (299.0 hectares)

Total semi-improved and marshy grassland = 503.6 hectares

Land improved for Agriculture and Amenity

Improved and poor semi-improved grassland
Grassland for animal feed, of limited wildlife value in itself. However, such areas adjacent to other habitats, woodland in particular, may form an important part of the home range of a number of animals including badger. Thus developments such as building for example, on grassland adjacent to woodlands can have serious consequences for wildlife even though the trees themselves are not touched. The provision of buffer zones in these cases can help prevent such problems. (6003.2 hectares)

All Cultivated/disturbed land
(arable land and amenity grassland)
Arable land is of little value as a habitat in itself in that few species of plant or animal live there. However, in the same way as improved grassland, it often forms part of a larger system. Arable land is frequently utilised for food by a number of bird species for example, and may thus be an important component of a larger ecological system. Amenity grassland is that developed for recreational purposes. This includes the well tended grassland of graveyards but excludes lawns in private gardens. In terms of wildlife interest this is probably less useful than

arable land. However, the importance to both locals and visitors can be high. (3886.7 hectares)

The wildlife value of the agricultural land of Nairn District should not be underestimated. However it is seriously reduced by the lack of hedgerows. Hedgerows do not only provide valuable habitats in themselves but represent corridors along which wildlife can disperse to the wider area. Isolated sites are generally more vulnerable and poorer in species. Hedgerows can provide corridors for re-colonisation following disturbance and thus improve the wildlife interest of the area as a whole. They also greatly reduce topsoil erosion, a problem in Nairn District which affects not only agriculture but also air quality and visibility for motorists at certain times of year. Methods of improving agricultural areas for wildlife are widely documented and cannot be dealt with in detail here.

Total agricultural and amenity land = 9889.9 hectares

Continuous Bracken

Bracken (*Pteridium aquilinum*) is an invasive species and a known carcinogen that is hard to eradicate. In dense bracken the wildlife value is limited to the cover which it provides. In this it may be more useful than agricultural land or dense plantations of exotic conifers. However, it is of little agricultural value and in general its presence represents an area which could be usefully managed one way or another. Again the importance of such areas depends heavily on what lies adjacent. (76.45 hectares)

Heathland

Both wet and dry heath. dominated by heather (*Calluna vulgaris*) but separated by species due to better drainage resulting from different topography. Generally, steeper slopes support dry heath, gentle slopes support wet heath and relatively flat areas turn to bog (mire), (see below). In this survey, the recording of heathland is limited to that adjacent to or surrounded by lowlands. The wildlife interest of such areas varies considerably but, being relatively poor in nutrients, quite large areas are needed to support the full potential range of wildlife. Most dry heath would support areas of woodland in a natural state. Overgrazing (mainly by deer) is preventing tree regeneration throughout the heathland of Nairn District. (3079.15 hectares)

Mire

Blanket bog and raised bog

Fairly un-modified, intact mires supporting a relatively high number of plant species. The definition of blanket and raised bog, and distinctions between the two, can often lead to confusion. Although altitude can also play a part, this is primarily because the distinction is based on topography and hydrology rather than the species which the habitats support. Furthermore, the Phase 1 method, developed as it was in England, does not fully consider the conditions found in the north of Scotland. It is important to attempt to clarify this as these

habitats are amongst the most important in Europe. This subject is covered in some detail in the Easter-Ross report and a detailed consideration is therefore not repeated here.

This plant community (or range of communities) is scarce not only in Nairn District but also world-wide. The most valuable area found is at NH951468 by Loch Belivat. The loch has shrunk through natural succession to form marginal vegetation and a *Sphagnum* rich bog. Other small areas occur at NH892467, NH959472 and NH960484. (See target notes.
(21.8 hectares)

Modified bog
Blanket bog, usually over extensive gently sloping ground, altered by drainage, grazing and/or burning so that species richness is reduced. Though only very small areas occur along the upland margins these plant communities dominate very large areas of the uplands proper (unenclosed). (774.2 hectares)

Flush
Discreet areas where nutrients are washed in from relatively nutrient poor upland areas. Only those found within or adjacent to enclosed lowlands were recorded. (2.3 hectares)

Fen (valley mires)
Limited to small areas. Although the term is often associated with more alkaline conditions, in this context it largely relates to neutral or slightly acid areas. Distinguished from other "bog" communities by the clear influence of running water (ie. incorporating well-defined channels). (9.0 hectares)

Swamp (marginal vegetation)
Reed or sedge beds at margins of lochs or burns. Dominant species codes are given wherever possible. Bottle sedge (*Carex rostrata*) is the most common species and such areas often provide valuable nesting sites for waterfowl. (16.9 hectares)

Open water

Standing
Lochs, reservoirs and ponds. The survey of standing water has been limited here to marginal vegetation and the occasional brief examination. A more detailed study of standing water in Nairn District would be useful, particularly in terms of identifying locations valuable for fauna such as amphibians and a range of invertebrates. However, this would be time consuming and is beyond the scope of this survey. A number of lochs and lochans were found have fringing "marginal vegetation" of sedge beds and were important for waterfowl. Rare species such as Slavonian grebe and osprey are among those which benefit from such habitats. (206.45 hectares)

Running
Only the wider rivers and burns which contribute significantly to the total area of a map are included in area estimates. The length of running water recorded is limited to those rivers and burns coloured indigo blue on the maps. Smaller ditches and upland burns not coloured have not been confirmed by survey and thus remain unrecorded. The wildlife value of running water is influenced not only by channel flow but also by adjacent habitat. Most bodies of

running water in Nairn District represent important wildlife corridors. (217.0 hectares)

Coastland

Intertidal mud/sand
(with or without Zostera or Algal beds)
Most of this substrate within Nairn District appeared to be bare but was not studied closely. Such areas represent important feeding grounds for wading birds, part of a larger system incorporating the Dornoch, Cromarty, Beauly and Moray Firths and of international importance. (288.7 hectares)

Intertidal shingle/cobbles + boulders
(with or without Zostera or Algal beds)
Most of this substrate within Nairn District appeared to be bare and lying close to shore. (92.0 hectares)

Dense/continuous saltmarsh
The most important areas of this habitat lie east of Nairn by the Culbin Sands. (See NH909579 for example.) Much of this is an RSPB reserve and combined with adjacent habitats represents an are of very high wildlife importance. The second large area at Carse of Delnies (NH823571) is smaller and probably more heavily grazed. However, this site was visited quite early in the year and the full botanical interest was probably not evident.
(120.85 hectares)

All sand dune habitats
For statistical purposes here all habitats associated with sand dunes are combined as they frequently form a mosaic which is hard to separate. These range from bare sand and marram grass (*Ammophila arenaria*) to better established areas with dune heath or dune grassland, but not mature coastal grassland and heath. All have some wildlife value, and even the most species poor has the potential to undergo succession if disturbance is limited. Sand dunes in general form a closely-knit system. Erosion in one small area can soon spread, and damage to the less stable fore-dunes in particular can lead to erosion of more species rich areas inland. The dunes to the east of Nairn are particularly vulnerable as access is easy. At the time of survey, despite some attempts to fence areas off, a motorcycle was seen riding up and down the dunes causing considerable damage to vegetation. (63.2 hectares)

Rock exposures

Natural
This includes all natural cliffs and exposed bedrock including rocky ravines. The area recorded for this underestimates actual surface area due to abundance of vertical surfaces. In these areas rocky ledges in particular can be rich in species. However, difficulties of access often make close inspection impossible. Notable examples of this habitat include the gorge of Riereach Burn in Cawdor Wood (NH847491) and The River Findhorn at Dulsie Bridge (NH932414). (27.5 hectares)

All artificial and waste types
(quarries etc.)
Currently of limited wildlife value in most cases such sites may sometimes have inevitably destroyed other wildlife habitats. However, once operations cease interesting habitats often develop. The disused quarries recorded in Nairn District with some wildlife value include ponds at NH869569 and NH899574 and Kingsteps quarry at NH898572. The remainder appear to be active and of limited wildlife value. (5.0 hectares)

Miscellaneous

Wall

Stone walls functioning as stock proof barriers. These provide some habitat for smaller animals, cover for wild animals and livestock and may represent an important landscape feature in some areas. They can also support a range of lower plants including mosses, ferns and lichens and may substantially increase the botanical interest of an area. Walls in a poor state of repair no longer functioning as a barrier were excluded although some may have wildlife value and scope for restoration.
(73,100 metres)

All built up areas

These include roads, caravan sites and bare ground. Private gardens also fall into this category, but grounds of larger properties such as castles are sometimes recorded under other categories. The wildlife value of such areas varies considerably. However this can be quite high in some places (where areas of garden are sufficiently large or numerous for example). The surprising richness of urban wildlife in some places is well documented. In Nairn District, with such a high proportion of valuable wildlife habitats, the potential is particularly high.
(1007.8 hectares)

II. GEOGRAPHICAL AREAS

As habitats have so far been considered as discreet categories it is now useful to consider discreet geographical areas within Nairn District in terms of the habitats which they support. Division of the district in this way can pose a number of problems as meaningful boundaries are difficult to identify. However, general topography has been used, as this tends to have considerable influence on both plant communities and land-use and thus wildlife habitats. The most important single point however is that neither habitats nor geographical areas can be considered in isolation as Nairn District forms an almost continuous, complex system in terms of wildlife movement. Manipulation of any one site may have an influence on a much larger system.

The Coast

The coast of Nairn District extends for approximately 14.6 kilometres from Carse of Delnies in the west to the Culbin Sands and Forest in the east, with the more developed area by the town of Nairn lying between.

Of these three areas the Culbin Sands and Culbin Forest (extending along approximately 8.5 kilometres of coast) are the most natural and diverse for wildlife. Habitats include sand dunes, saltmarsh, mud flats, brackish pools fringed by "reed" beds, semi-natural conifer and broadleaved woodland (including wet carr of alder and willow), conifer plantation, fresh water lochans with marginal "reed" beds, coastal grasslands and scrub all with relatively high species richness. Of these the coastal habitats of sand dune and salt-marsh along with the mud flats are probably the most fragile. They are important for birds (some being an RSPB reserve) in an international context.

The Culbin Bar, a broad shingle ridge runs parallel to the coast in this area. Except for a relatively small stretch to the east, it is separated from the mainland and saltmarsh by a tidal channel. (At high tide it becomes an island.) The seaward (northern) side is dominated by shingle in a series of parallel ridges, raised several metres above sea level. Although apparently a “fossil” feature, it appears possible that these could be reworked in heavy storm conditions. Although a sandy beach runs along the coast below the shingle in places, there is evidence that the eastern end is eroding. The inland (southern) side is vegetated with a mosaic of scrub, tall herbs and coastal grassland and is relatively species rich in places. Signs of fox, rabbit and roe deer have been noted here and it seems likely that other animals frequent the area. Wood ant nests also occur, suggesting a long history of low levels of disturbance. An area of silty sand separates the main body of the bar from the channel to the south. The ecological and geopmorphological interest of this area cannot be over-stated.

The Carse of Delnies (extending along 3 kilometres of coast) is the second area of wildlife importance. However, intensive grazing along this stretch of coast has seriously reduced species and habitat diversity. On brief inspection the saltmarsh does not appear to be as species rich as that at Culbin, but a more detailed survey at a more appropriate time of year would be required to be certain. However, the bar extending to Whiteness head (a Site of Special Scientific Interest), and a small area of wet coastal heath, marshy grassland and trees at NH830567 appear to have particular potential for wildlife.

The remaining 3.1 kilometres represents the more developed stretch of coast by the town of Nairn, west of the river. This includes "The Links" an important amenity/recreation area and the golf course. (The coast by the caravan site to the east of the river is included with the Culbin Sands as it blends imperceptibly into the latter.) Although not of high wildlife value, this area is of considerable importance in terms of open green space for public enjoyment. However, even here the wildlife interest can be maintained and enhanced by sympathetic management of shrubbery and trees.

The town of Nairn

Surrounded by a wide range of important wildlife habitats, the town of Nairn has much to offer for both local residents and visitors alike. The lack of more obvious tourist attractions (such as large fun-fairs and amusement arcades) makes the town all the more appealing for the more discerning visitor. The Culbin Sands and Forest described above are not only of high scenic value but also offer excellent opportunities for bird watching and enjoying wildlife in general. The River Nairn is probably at its best as it approaches the town from north of Cawdor to the heart of the town centre. Otters, kingfishers, dippers and herons can all be seen within Nairn itself largely because the river banks remain relatively undeveloped. Tradespark wood, a short distance along the A96 to the west, bears many characteristics of a native pinewood and supports creeping lady's tresses (*Goodyera repens*) considered quite uncommon throughout most of Great Britain. Indeed the high wildlife value of Nairn District as a whole makes the town of Nairn an attractive location either to live or to visit. In the absence of heavy industry (another attractive feature) the natural environment is Nairn's greatest asset and one which should be enhanced and protected carefully.

The agricultural areas (including forestry)

The habitat maps (or views from the air) clearly show that the areas of Nairn District dominated by agriculture are quite impoverished in terms of copses and hedgerows. What scrub exists is mostly gorse (*Ulex europaeus*) or broom (*Sarothamnus* [*Cytisus*] *scoparius*) of only limited wildlife value. This lack means that the clumps of scrub or trees which remain are often isolated in terms of species dispersal.

If it were not for the fact that many of the more mature conifer plantations here are of Scots pine (*Pinus sylvestris*) with a relatively rich ground flora, much of the wildlife interest of these agricultural areas would be limited to the often narrow, river corridors. However, the long-term future of the wildlife within the extensive conifer plantations of Nairn District is uncertain. As commercial crops, the trees will inevitably be harvested at some time and, without considerable care, over 32% of Nairn District could undergo serious changes to landscape and wildlife in the not too distant future.

The open nature of much of the agricultural landscape can also lead to serious topsoil loss in dry weather due to the lack of windbreaks. However, despite this generally reduced wildlife value, (probably less marked in Nairn District than in many other parts of Britain), arable land and improved grassland can be an integral part of the larger system. It provides a buffer zone between built up areas and wildlife habitats and may be part of the home range ("territory") of wildlife inhabiting those areas. With a head start on many parts of Britain, enhancement of the

wildlife value of the agricultural areas of Nairn District, including the planting of native trees and hedgerows, would not be difficult.

The River Findhorn Corridor

Of the three main river corridor systems of Nairn District (The Nairn, Muckle Burn and Findhorn), the River Findhorn is the most diverse, having the widest range of habitats in close proximity. At 34.8 kilometres in length (within the district) it is also the longest and supports by far the greatest area of semi-natural habitats of the three watercourses. The importance to wildlife does not only lie in the habitats individually but as a virtually unbroken corridor along which species can disperse between the extensive uplands to the south-west to Findhorn Bay in the north-east. Approximately half of the length in Nairn District flows through relatively open upland habitats of heath with pockets of birch (*Betula* sp.) woodland adjacent. None of these woodlands appear to be regenerating due to overgrazing (although they were not all examined closely for this). Around the point where the Leonach Burn joins the Findhorn (NH921405) the river enters the more wooded, enclosed lowlands. From here species and habitat diversity and thus the wildlife value are high. This is best understood by consulting the appropriate habitat maps and target notes. The main potential threats in this area would be the removal of broadleaved woodland for development and lack of regeneration due to overgrazing. (Water pollution from agricultural runoff or sedimentation from forestry activities is another possibility although no single potential source was identified.) The effects of land-use changes upstream, outwith Nairn District, is always a possibility. Likewise any changes to the river corridor in Nairn District could have effects on important wildlife habitats in Moray District.

The area around Carn nan Tri-tighearnan to the west is a Site of Special Scientific Interest (SSSI), as are the Findhorn Terraces to the south. A third SSSI occurs just beyond the district boundary in Moray District (Lower Findhorn Woods).

The Muckle Burn Corridor

The Muckle Burn has its origins at the watershed between Carn a Chrasgie (NH864431) and Carn Sgumain (NH877408) as the Allt na Leacainn and the Caochan Dir na Lair. Of the three main river corridors of Nairn District the Muckle Burn is the only one originating in that district. The main body of the Muckle Burn in Nairn District extends for 22.3 kilometres from the point where the two above mentioned burns meet, to the border of Moray District. From there it runs roughly parallel to the River Findhorn and finally enters Findhorn Bay.

Although narrower and carrying less water volume than the River Nairn, the Muckle Burn in Nairn District is approximately 2 kilometres longer. Though possibly less diverse and certainly less extensive than the River Findhorn, the habitats through which the Muckle Burn flow are more varied than those of the River Nairn and the corridor less broken. The large areas of conifer plantation through which the burn flows are mainly of Scots pine (*Pinus sylvestris*) and being mature and with a good ground flora, many of them represent good habitats in their own right. However, as commercial timber crops, these plantations will inevitably be harvested in the future. Having the highest percentage of adjacent conifer plantation, and the lowest water volume of the three river corridors, the Muckle Burn will

inevitably be the most affected in terms of increased runoff and increased sediment load when felling takes place. The overall effects of felling are thus likely to be adverse.

Muckle Burn has two Sites of Special Scientific Interest - Clunas and Boghole.

The River Nairn Corridor

With a length of just over 20 kilometres in Nairn District alone, this stretch of the river is part of a much larger system extending from the Monadhlaith Mountains south of Loch Ruthven in the south-west to the Moray Firth at the town of Nairn itself. The most effective stretch in terms of functioning as a wildlife corridor is that from just north of Cawdor to the town of Nairn. This area supports a wide range of flora and fauna species all within easy reach of the urban centre of Nairn. The western section has much more fragmented habitats and, in many places, no more than a single row of trees along the bank. The river corridor is at its most impoverished at the Inverness District/Nairn District border, but then improves once more south-west of Clava Lodge (NH760446) in Inverness District. This border stretch is thus a weak link in the corridor that would benefit from active conservation management.

Being essentially a lowland river in this area, the main habitats are associated with riverine features such as banks and islands, and the stretches of mostly broadleaved woodland adjacent.

The lowland/upland transition zone

The uplands here are defined as areas above the current limit of intensive land-use/cultivation. The lowlands are thus those areas, usually enclosed by stock-proof barriers of some form, which are being managed for agriculture and forestry in a more intensive manner. However, between the agricultural lowlands and the extensive, unenclosed upland lies a transition zone where distinctions are not always easy to make. In Nairn District much of the transition zone coincides with the River Findhorn Corridor or lies on the higher ground to the north-west and south-east. Where the River Findhorn flows through the uplands proper (the western half of the river in Nairn District) the transition zone veers to the north and west, following the line of conifer plantations.

The transition zone is particularly diverse in habitats. It is also possibly the most threatened area of Nairn District, from planting of conifers and attempts to drain and "improve" wetter parts. Areas of upland habitats currently surrounded by forestry plantations and/or land improved for agriculture, will be seen as having limited agricultural value at present. However, if such areas are eventually taken into more intensive management Nairn District will lose some important wildlife habitats. While loss of habitat in the lowlands is usually confined to relatively small developments (such as a new house), loss in the uplands can cover several square kilometres in a single season (through ploughing, planting of conifers or drainage). These areas can be located from the habitat maps as those coloured with yellow ochre and/or purple and occasionally magenta.

Some of the dryer parts of the open (un-wooded) habitats would benefit from efforts to encourage natural regeneration of native trees. The wetter areas however are usually richer in

plant species and careful inspection is advised before drainage is considered. (Scottish Natural Heritage and the Scottish Wildlife Trust can advise on such matters.)

Of the woodlands that remain in the transition zone, (mainly birch (*Betula* sp.) but also smaller areas of other broadleaved species and Scots pine (*Pinus sylvestris*)), most are overgrazed and thus show little signs of natural regeneration. As the woodlands are often confined by agriculture or forestry, the natural tendency to shift by regeneration outwith the denser woodland, is suppressed. This alone could lead to loss of woodland unless measures are taken to encourage regeneration by reducing grazing. (This could possibly be in the form of a cycle to allow new growth to mature to the point where livestock will not kill it.)

The transition zone is also the area most difficult to map and that where important species or habitats can be overlooked. To map this area in detail and search it thoroughly for smaller habitats and individual species would take a number of years. A good example of this can be found in the corners of maps NH94NW, NH94NE, NH95SW and NH95SE where they meet in an area of wet heath that was currently undergoing drainage and planting of conifers. Not only was the area a complex mosaic of heathlands, stands of birch and stands of Scots pine, but the planted conifers were sometimes difficult to distinguish from natural regeneration. The planting was so new that the area still retained many characteristics of a wet heath. Boundaries were thus very approximate and NH94NE does not agree with NH95SE at this point. Aerial photographs were not helpful in this case. Regrettably a survey at the Phase 1 level cannot go into greater detail and it is at the transition zone, the area potentially most threatened, where important points can be overlooked. Thus care is essential in any proposed developments in this area.

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