Gills and Becks: the ancient woodlands of coastal north-east Yorkshire

Gill: Chiefly N English, a deep ravine, especially a wooded one. - ORIGIN Middle English: from Old Norse gil 'deep glen'.

Beck: N. English a stream. - ORIGIN Middle English: from Old Norse bekkr, of Germanic origin.

(Concise Oxford Dictionary, tenth edition 1999).

Introduction

Established in 1952, the North York Moors National Park is probably best known for containing the largest area of heather moorland in England. Between this and the spectacular Jurassic cliffs of the north-east Yorkshire coastline lies a series of ancient semi-natural woodlands, somewhat hidden away and probably less widely known. Typically these gills stretch inland from the coast like dark emerald fingers, wooded valleys drained by becks that wind their way predominantly east and north down to the sea. The most northerly is the woodland complex centred on Saltburn-by-the-Sea with others occurring southwards from here as far as the Scarborough area some 30 miles (50km) distant. More lie somewhat further inland (Tables 1 & 2). What follows is an attempt to describe something of the probable origin of these woodlands and their rich and diverse wildlife.

Table 1 The major ancient semi-natural woodland complexes of the north-east Yorkshire coast

Woodlands	Coastal area on which drainage converges
Hazel Grove; Saltburn and Skelton Woods; Saltburn Gill	Saltburn-by-the-Sea (NZ6621)
Gerrick, Moorsholm, Kilton and Loftus Woods	Skinningrove (NZ7119)
Easington, Roxby and Oakrigg Woods	Staithes (NZ7818)
Mulgrave Woods	Sandsend (NZ8612)
Ramsdale Beck and Stoup Beck Woods	Robin Hood's Bay (NZ9503 & NZ9504)
Beast Cliff*	near Ravenscar (TA0099)
Hayburn Beck area	Hayburn Wyke (TA0197)

* Beast Cliff differs from other sites in that it occupies a cliff face and ledge on the North Sea coast

Table 2 Some other ancient semi-natural woodlands within 15km of the north-east Yorkshire coast

Woodlands	Location
Newton and Airy Holme Woods	Great Ayton (NZ5610)
Mill Bank and South Woods	Kildale (NZ6010)
Woodlands of the Rivers Esk and Murk Esk in the Glaisdale, Grosmont and Goathland areas	Grosmont (NZ8205)
Woodlands of the May Beck and Little Beck areas	Little Beck (NZ8704)
Hackness and Forge Valley Woods	Hackness (SE9690) to East Ayton (SE9985)

Origins

As would be expected, the flora and fauna of these woodlands is much influenced by geology and climate. During the last glaciation the higher parts of north-east Yorkshire, above about 215m were ice free but snow-clad, a tundra landscape surrounded almost entirely by extensive glaciers to the west, north and east. Following this period the retreating ice left behind vast amounts of material, notably sticky red-brown boulder clays, deposits of which can be up to 100m thick. These overlie Jurassic strata including sandstones, ironstones, shales and marls (Kent & Gaunt 1980, Atherden & Simmons 1996). It is through the boulder clays and softer shales that many of the becks have cut their steep-sided valleys. The soils resulting from this geological mix are variable in pH, resulting in a rich and diverse flora (Lawrence, 1990 & 1994). Sheltered from high winds at any season, notably from winter storms, and shady in summer, the gills are protected from extremes of temperature and have their own microclimate. In spite of occurring in a region of relatively low annual rainfall they are often damp underfoot, still and humid.

But how is it that we now have a landscape in this area consisting of a core of open moorland more or less surrounded by farmland and incised by ravines that are wooded? Extensive pollen analysis has shown that following the end of the last glaciation climatic warming led to almost the whole of north-east Yorkshire being clothed in oak forest. This included virtually all of the area that is now heather moorland except for small patches of heath and bog at the highest levels where the woodland cover thinned out (Atherden 1992). It appears that as early as 7,000 years BP Mesolithic peoples began enlarging these natural areas of heath by cutting and burning the undergrowth, perhaps initially to create open areas favoured by game and later for use as agricultural land. When soil nutrients became exhausted more areas were cleared and from that time onwards a combination of burning and grazing pressure served to prevent woodland regeneration across an ever increasing area. The causes of vegetation change in the past are not simple and, in addition to human activity, climatic fluctuations are thought to have played a part. Pollen

analysis of peat cores indicates that there was a major impact on forest cover in this area during the Iron Age when farming increased in scale and timber was required for smelting locally obtained iron ore (Atherden 1999 and references therein). By medieval times the uplands were used extensively for sheep grazing. This continued up to the modern era when, coupled with the onset of management for grouse shooting, it resulted in a very large expansion of the heather moorland that we see today. Hence the wooded gills that remain appear to contain fragmented descendants of the original forest cover that have survived often in steep-sided valleys too inaccessible either for agricultural use or for timber to be extracted to the point where woodland cover was lost. The conclusion drawn from surveys carried out by the Nature Conservancy Council (currently Natural England) is that these are ancient semi-natural woodlands i.e. they have been in continuous existence since at least 1600AD but probably for much longer (Carter, 1987a & 1987b; Cooke 1987). The surveys in question were, however, always intended to be provisional, the evidence used being chiefly cartographic. Nonetheless they remain valuable documents in providing details about the location, extent and other aspects of the woodlands in question.

These woodlands are significant for a number of reasons. They are of high biodiversity and in a regional context they have a number of widely differing species associated with them. In addition their microclimate, as described earlier, has a significant impact on their species composition.

To be more precise, some of the species occurring in these woods possess one or more of the following features:

a degree of association with ancient semi-natural woodland, at least locally,

they appear to be regionally or nationally scarce,

they are able to survive (or even thrive) here as a result of the moist, sheltered microclimate,

interestingly, at least a few species have an otherwise predominantly westerly or north-westerly distribution in Britain.

To consider each of these points in turn would not be easy because many species of interest fall into more than one of the above categories. Hence what follows is in part an attempt to illustrate these aspects by reference to selected species groups.

Flora

The woodlands under consideration would appear to fall chiefly into the *National Vegetation Classification* **W8** (ancient woodlands, calcareous or less acidic; as opposed to **W10** strongly acidic). It should be borne in mind that this is part of a classification system based largely on woodland *ground* vegetation (my italics) rather than on tree composition (Rackham 2006) and it includes many variants. **W8** is something of a catch-all category (see e.g. Rackham 2003).

The dominant tree in more acid conditions is Oak (*Quercus sp.*) but in woodlands where soils are more intermediate Oak and Ash (*Fraxinus excelsior*) are co-dominant. Although

oaks in this region frequently show features typical of Sessile Oak (*Q. petraea*) notably stalkless acorns and leaves with at least some petiole , it is said that so many trees show signs of a hybrid ancestry between this species and Pedunculate Oak (*Q. robur*) that they are best considered as hybrids i.e. *Quercus* x *rosacea* (Sykes 1993, Lawrence 1994). Other widespread tree species include Sycamore (*Acer pseudoplatanus*), Birch (*Betula pendula*), Beech (*Fagus sylvatica*) and the occasional Small-leaved Lime (*Tilia cordata*), with an understorey of Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*), Wych Elm (*Ulmus glabra*) and Alder (*Alnus glutinosa*). In more alkaline conditions, for example in Mulgrave, Roxby and Saltburn Woods, Spindle (*Euonymus europaeus*) can be found, a shrub not common in this region.

There is possibly no such thing as a species entirely restricted to ancient semi-natural woodland throughout Britain but regionally such associations can exist to a greater or lesser extent. Flora showing some association with the woodlands in question include Greater Woodrush (*Luzula sylvatica*) and Wood-sorrel (*Oxalis acetosella*) in more acid sites; the former occurs extensively in Newton Wood and at Hayburn Wyke (Figure 1).

Figure 1: Greater Woodrush, Hayburn Wyke, 11.09.2012

On more basic soils major components of the herb layer can include Pendulous Sedge (*Carex pendula*), as at Mulgrave Woods where the flower spikes can reach 2m in length, and Woodruff (*Galium odoratum*). Wood anemone (*Anemone nemorosa*) is another widespread species of these woodlands, sometimes carpeting very large areas for example throughout much of Oakrigg Wood (Figure 2).

Figure 2: Wood Anemome, Oakrigg Wood 26.03.2012

Spencer (1990) described it as possibly the best indicator of ancient status in Britain. In this region it seems to have a strong association with ancient semi-natural woodland although it can sometimes be found in open sites, perhaps where it has been able to survive the removal of trees. Other herbaceous plants showing an association to some extent include Yellow Pimpernel (*Lysimachia nemorum*) Wood Speedwell (*Veronica montana*), Toothwort (*Lathraea squamaria*) and Broad-leaved Helleborine (*Epipactis helleborine*). Greater Butterfly Orchid (*Platanthera chlorantha*) and Birds-nest Orchid (*Neottia nidus-aves*) are present but of rare occurrence. Other species present but not necessarily associated with ancient semi-natural woods include Wild Garlic (*Allium ursinum*), Bluebell (*Hyacinthoides non-scripta*), Dog's Mercury (*Mercurialis perennis*) and in wet sites, notably the gill bottoms, Opposite-leaved Golden Saxifrage (*Chrysosplenum oppositifolium*). Its relative Alternate-leaved Golden Saxifrage (*C.*

alternatifolium) occurs in similar situations, and sometimes with it, but is much less common. Giant Bellflower (*Campanula latifolia*) can be found occasionally in less heavily shaded situations for example besides the public footpath running through Rosecroft Wood (NZ7117) near Loftus.

In her comprehensive survey of the plants of the North York Moors National Park, Sykes (1993) described a number of grass species as having an association with ancient semi-natural woodland in this region. These include Wood Fescue (*Festuca altissima*) 'a rare grass countrywide, it survives in moist ancient woodland ... at Beck Hole, Kirkdale, Holey Gill, Eskdaleside and in some of the steep rocky gills of the upper Rye'. Also Wood Barley (*Hordelymus europaeus*) 'confined to ancient woods on alkaline soils at Sinnington, Gerrick, Kirkdale, Riccaldale, Hackness, Grosmont, Rievaulx, Gowerdale and Ouldray.

The damp shady conditions which prevail in these woods provide a habitat in which ferns are able to thrive. Hart's Tongue (*Asplenium scolopendrium*) can be both luxuriant and abundant as at Hazel Grove near Saltburn where the fronds can be up to 0.6m long (Figure 3). Soft Shield Fern (*Polystichum setiferum*) is widespread and can also grow to a considerable size in base rich habitats. Hard Shield Fern (*P. aculeatum*) is more local in occurrence and Narrow Buckler Fern (*Dryopteris carthusiana*) can be encountered occasionally, for example in Mulgrave Woods.

Figure 3: Hart's Tongue Fern, Hazel Grove 24.09.2013

Patterns and Diversity

The Killarney Fern (*Trichomanes speciosum*) illustrates another point of interest and significance about these woodlands. The sporophyte generation grows in acidic, rocky situations, often in deep shade (Figure 4). It requires shelter from low temperatures and needs constant high humidity. Merryweather & Hill (1992) described it as occurring at just one location in England but subsequently it has been recorded from a number of additional sites during surveys carried out by the Botanical Society of the British Isles, including no less than twelve 10km squares in north-east Yorkshire, predominantly towards the coast. Most of these records are however for the gametophyte which is unusual in being filamentous, mat-forming and perennial to the point of seemingly living in almost suspended animation. It inhabits the dimmest recesses of crevices beneath overhanging rocks at light intensities beyond the limits of bryophyte growth (Rumsey *et al.* 1991). Elsewhere this fern is predominantly western in its distribution in the British Isles (www.bsbimaps.org.uk/atlas/map_page.php?spid=2075.0).

Figure 4: Killarney Fern

Interestingly this distribution pattern whereby a chiefly western or north-western species occurs in the woodlands of coastal north-east Yorkshire can be seen in a number of other plant and animal groups. The nationally rare liverwort *Tortula freibergii* is known from a number of sites, all coastal, where it is said to occur on the vertical faces of sandstone rocks (Blockeel & Blackburn 1998). Blackburn (2007) described north-east Yorkshire as a stronghold for this species. The sites in question are undoubtedly rich in species of

moss and liverwort, see e.g. Blackburn (2000 & 2007), Blackburn & Blockeel (2000), Blockeel & Blackburn (2007). Others with a predominantly western or north-western national distribution that also occur in ancient semi-natural woods in north-east Yorkshire, although not confined to those near the coast, include the liverworts *Nowellia curvifoila, Riccardia palmata* and *Bazzania trilobata*, and the moss *Seligeria recurvata*. Some of these also occur in more open upland habitats as well as in woodland.

Among fungi, over 200 species have been recorded from the Saltburn Gill area alone, including the Willow Shield (*Pluteus salicinus*). In spite of its name it is said to occur more frequently on Ash and Beech (Buczacki 2012). In all, some ten members of this genus have been recorded in these coastal woodlands, a group thought to be associated with old woodland (Marren 2012). The widespread but fairly uncommon Scarlet/Ruby Elfcup complex (*Sarcoscypha* spp.) is known to occur in at least seven woodlands in the area (Figure 5).

Figure 5: Scarlet Elf Cup, Saltburn Gill 04.03.2020

Continuing with the theme of species requiring damp, sheltered conditions, the terrestrial molluscan fauna of these woodlands is particularly rich compared with both old woodland sites elsewhere in Britain and with some local secondary woodlands. Well over 40 species have been recorded at some sites, which represents about a third of the British fauna (Wardhaugh 1996, 1997, 2005, 2016, 2017). The snails *Leiostyla anglica, Spermodea lamellata* and *Zenobiella subrufescens* are largely western in distribution in the British Isles but all have strongholds in the woodlands of north-east Yorkshire (Kerney 1999, Wardhaugh 2011). All three species are in decline nationally, with most of their global population occurring in the British Isles. All are at least to some extent associated with ancient semi-natural woodland in Britain, most notably *Spermodea lamellata* (Kerney & Stubbs 1980, Wardhaugh 2000) (Figure 6). The slug *Limax cinereoniger* shows a similar but less marked distribution pattern (Wardhaugh 2014a). These species are very largely absent from a number of local secondary woodlands (Wardhaugh 2016).

Figure 6: *Spermodea lamellata,* Clarkson's Wood, Kildale 25.08.2008. Shell diameter of adults is about 2mm

Several myriapod species of interest have been recorded in these woodlands. The centipede *Lithobius curtipes* occurs for example in Mill Bank Wood, Kildale. A scarce species, it is known to be associated with ancient woodland (Barber & Keay 1988). *Strigamia acuminata*, known from three of the coastal sites and from a number of other old woods further inland in this region, is a geophilid centipede associated with woodland and wetland and at the northern limit of its range in this region (Figure 7).

Figure 7: *Strigamia acuminata*, Hayburn Wyke 11.09.2014
Length about 30mm

The nationally uncommon millipede *Craspedosoma rawlinsii* is known from several sites. *Chordeuma proximum* (Figure 8) which has a southerly and westerly distribution in Britain and a strong association with woodland has been found at five sites, the first in 2013, well outside its previously known distribution (Wardhaugh 2014b). *Allajulus nitidus*, a nationally uncommon species was also found at two sites in 2013. Interestingly, in Britain it seems to be somewhat synanthropic but elsewhere in Europe it is known to be associated with deciduous woodland (Blower 1985, Lee 2006 and references therein).

Figure 8: *Chordeuma proximum,* Cliff Ridge Wood, Great Ayton 16.05.2013.
Length about 11mm

The ancient woodlands of north-east Yorkshire have long been known as hot spots for Coleoptera; sites such as Forge Valley and Mulgrave Woods have been of much interest in the past but there seems to have been little recent intensive recording (B Marsh pers. comm.). Over 200 species are known form Mulgrave Woods and over 400 from Forge Valley but many of these records are not recent, most dating from the second quarter of the 20th century. Beetle species of interest recorded in more recent times from the woodland area as a whole include the Net-winged Beetle (*Pyropterus nigroruber*) (Kennington & Denton 2007), also the Rhinoceros Beetle (*Sinodendron cylindricum*) and the Boat-shaped Fungus Beetle (*Scaphidium quadrimaculatum*) (Figure 9).

Figure 9: Boat-shaped Fungus Beetle (*Scaphidium quadrimaculatum*)
Length 5mm

Marren (1990) provided a list of Lepidoptera thought to be associated with ancient semi-natural woodland in the south of England. Unfortunately very few of these occur in the north, making assessment of the relative importance of the woodlands in question less easy. Blomer's Rivulet (*Discoloxia blomeri*) is a moth species associated with old woodland that has a westerly distribution in England but a local stronghold in north-east Yorkshire, being known for example from Saltburn Gill (Peter Waterton pers. comm.), Newton Wood and the Staithes area woods (Frost 2013). The Scarce Prominent (*Odontosia carmelita*) is another woodland species known from this area. It has a somewhat disjunct distribution, being common in the south and present in Scotland. The predominantly southern and locally scarce Pinion-streaked Snout (*Shrankia costraestrigalis*), Red Underwing (*Catocala nupta*) and Yellow-barred Brindle (*Acasis viretata*) have all been recorded in these woodlands in the recent past (Paul Forester pers. comm.).

Concerning bird life. Joynt, Parker & Fairbrother (2008) make the following statement with regard to woodlands in the Cleveland (i.e. northern) part of the area under consideration. “These East Cleveland becks hold vitally important breeding populations of woodland and riparian species, such as green woodpecker, kingfisher, dipper, grey wagtail, tree pipit, nuthatch and spotted flycatcher and raptors, including goshawk, sparrowhawk and kestrel.” Some classic species of western oak woods have bred in this region, such as the Wood Warbler (*Phylloscopus sibilatrix*), Redstart (*Phoenicurus phoenicurus*) and Pied Flycatcher (*Ficedula hypoleuca*) but in line with national trends all three appear to have declined significantly since the third quarter of the 20th century (this in spite of some recent national recovery in numbers of the Redstart). This is not easy to explain given the fact that the habitat seems unchanged.

Why are there a few species of widely differing taxa that have strongholds in the north-east Yorkshire coastal woodlands (or at least which occur here) but otherwise have a westerly or north-westerly distribution in Britain? The reason may well be climatic, their presence being dependent upon a sufficiently moist and humid habitat, conditions more prevalent in the west but also provided by these north-east Yorkshire woodlands. Another contributing factor might be lack of disturbance, this being provided by woodlands which appear to have a history of long continuous tree and/or ground cover; continuity being the key feature. Thus absence from ancient woodlands in the south and east could be climatic or it could perhaps be a consequence of past traditional management involving periodic clearance and drying out of the ground layer. In some instances ancient semi-natural woodlands in the south appear to have been established on former farmland for example Madingley Wood in Cambridge overlies an Iron Age field system but now has the appearance of a fully developed ancient wood and what may be a planned field system extends under the Blean Woods of Canterbury (Rackham, 2006). Moisture loving species with very poor powers of dispersal may never have been able to colonise such sites in spite of their antiquity.

Management and conservation

Having survived to the present day apparently almost by default, these ancient woodlands generally show few signs of past management regarded as traditional elsewhere, notably in the south of England, such as the presence of a boundary ditch and bank, boundary pollards or evidence of systematic coppicing, as described by Rackham (2006). With respect to coppicing, Cooke (1987) states “Reports of coppice stools being present are not infrequent but in many cases these seem to be the result of irregular cutting rather than traditional woodland management.” Thus, for example, a Tees Valley Wildlife Trust leaflet of about 2000 describing Saltburn Gill states that “little coppicing has been carried out over the last few hundred years therefore allowing the woodland to develop naturally.” There are some formerly coppiced limes in Clarkson’s Wood NZ7018) which are estimated to be over 500 years old (Allen 2007) and a few of very considerable size at Hayburn Wyke (Figure 10).

Figure 10: Very large old coppiced limes, Hayburn Wyke 11.09.2014

It should be pointed out that some old woodlands in north-east Yorkshire clearly have been managed as coppices in the past, for example Ashberry Wood (SE5784) near Helmsley, which is extensively Ash standards and formerly coppiced Hazel. Here the ground flora includes much Wood Anemone and also Woodruff, Toothwort and Wood Speedwell. Molluscs include *Spermodea lamellata* and *Pomatias elegans*, the latter at one of its two most northerly known sites in Britain (the other being Forge Valley, near Scarborough which is at the same latitude). Another example of formerly coppiced woodland in this area is Birch Wood (SE5691 & SE5791) in Bilsdale which makes an interesting contrast (Wardhaugh 2019). Here trees include Oak, Birch and a little Ash and Sycamore. There are some very large old Hollies and old coppiced Hazel. The ground flora includes Yellow Pimpernel and Greater Woodrush. Wood-sorrel is abundant and Wood Speedwell is present. During recent visits Wood Anemone, Woodruff and Pendulous Sedge were not seen; possibly the soil is too acidic for the latter two but it is hard to suggest why Wood Anemone seems to be completely absent. Molluscs present that are associated with ancient semi-natural woodland include *Vertigo substriata* and *Spermodea lamellata*. Also *Zonitoides excavatus*, the only British mollusc which is a calcifuge occurs here.

To return to the coastal woodlands and their management, within the region there are seven areas of ancient semi-natural woodland which are designated as Sites of Special Scientific Interest (SSSI) and for which the citations and views about management (VAM) are currently available on the Natural England website. The citations are site specific but the VAM are generic. One version of the latter is used for sites lying at a slightly lower range of altitudes (very approximately (10 to 130m). The other covers four sites of range approximately 60 to 190m. The first version states “Felling, thinning or coppicing may be used to create or maintain variations in the structure of the wood” with the preceding caveat, “Not all of the management principles will be appropriate to all parts of the SSSI.” Somewhat in contrast, the other VAM document implies that coppicing may be inappropriate for the four woods in question: “In some woods it may be appropriate to re-introduce coppicing, for example if a wood has very good butterfly populations that would benefit from an increase in more open, light conditions. However, re-introducing coppicing will certainly not be suitable for all woodlands. In most cases the retention of high forest, with its more complex structure and rich moss and lichen communities, will be the best form of management.” Marren (1990) provides the reasoning behind the latter point: "The loss of protective woodland canopy, either by clear-felling or by coppicing, exposes the bryophytes to the scorching of the sun with the result, even in the humid west, that many of the mosses and nearly all the liverworts immediately curl up and die."

Two sites owned by the Woodland Trust have management policies of minimum intervention (Cow Close Wood NZ7014 and Hagg Wood NZ6815) as is the case for Saltburn Gill, owned by the Tees Valley Wildlife Trust. These have management limited very largely to the control of Sycamore, either by ring barking to provide dead standing timber or by removal on a piecemeal basis, rather than widespread felling which would result in loss of shelter below the canopy. Even this requires care because Sycamore can hold significant populations of aphids, a valuable food source for many birds, notably the *Phylloscopus* warblers. In coastal north-east Yorkshire, the snail *Balea sarsii* is scarce and in Avens Wood (NZ7013) there is a population seemingly confined to one very large old Sycamore.

In contrast, the management plan for five woodlands making up part of the Loftus and Kilton complex (Table 1), owned by Redcar and Cleveland Council, favours some coppicing and creation of open areas (Spencer 2008).

Conclusion

The woodlands of this area are undoubtedly species rich, although data on many taxa appear to be sparse or at best scattered and not easy to access. They are the remnants, albeit much altered, of what should be the natural ecosystem of this region and as such it would be gratifying to see a greater general awareness of their significance and a more co-ordinated approach to promoting a wider appreciation of their value for wildlife.

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A A Wardhaugh, May 2020.

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