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Lakeland Naturalist



— *a journal of Cumbrian Natural History*

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Lakeland Naturalist publishes material on all aspects of the natural history of Cumbria. General articles, results of personal research, news items, records and items of relevance to Cumbrian natural history and naturalists are welcomed. Material accepted for publication must not be submitted in a similar form to any other journal or magazine.

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Opinions expressed in *Lakeland Naturalist* are not necessarily shared by the Council of the Carlisle Natural History Society or its Editorial Panel.

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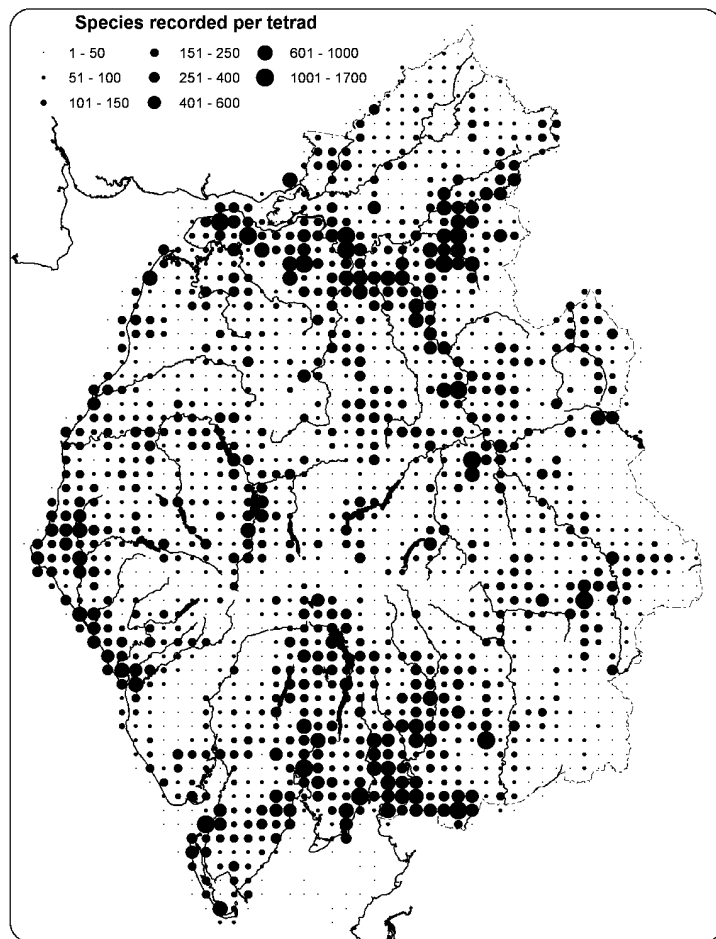
Cover:

Scarlet Elf-cup *Sarcoscypha austriaca*, Penton Bridge, 14 Feb. 2013. © *David Clarke*

Introducing *Lakeland Naturalist*

This issue marks the start of a new era of Carlisle Natural History Society publications. Since 1993 it has published *The Carlisle Naturalist* twice yearly – running to 20 issues in all. The regional role of our journal is now more strongly reflected in the new title *Lakeland Naturalist*, which takes ‘Lakeland’ in the sense long used by many naturalists, encompassing the area which is currently almost exactly equivalent to modern Cumbria. This usage spans over a century, including major titles such as H.A. Macpherson’s ‘*A Vertebrate Fauna of Lakeland*’ (1892) and Derek Ratcliffe’s ‘*Lakeland*’ (2002). The same approach has been adopted in the Society’s occasional *Transactions* volumes over the years. The change of title is accompanied by some significant improvements in style, most notably the full colour cover, with contents now shown on the back. We will continue for the time being with two issues per year, and the A5 format.

We hope the new title will bring our journal to wider audiences and encourage more potential authors to contribute, leading to an even richer documentation of our diverse and still under-recorded area. The accumulation of research and data, and access to these resources, is now greatly aided by the expansion of services at Tullie House Museum in the form of the Cumbria Biodiversity Data Centre (CBDC). This is the logical development of the role of recording by our Society and its home museum that has been continuous since 1893. The map to the right has been produced from 700,000 electronic records now held by CBDC and shows one example of the precision of modern data processing – and indicates too where records are weakest. The future pages of this journal will continue to support this growth of knowledge.



Jeremy Roberts, President

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Wildlife Reports

Members' Reports October 2012–March 2013

Birds

Two **Long-tailed Ducks** at Carr Beds on 26th October (Plate 1; NF) were early winter rarities (other sightings were at Cardew Mires on 9th December (TM), and later dates). On the Solway, a remarkable 4,500 **Teal** were on Wedholme in November. **Whooper Swans** settled on un-harvested corn crop near Blackdyke, Silloth and a count of c. 690 in late December was the highest ever recorded (Plate 2). They were roosting mostly on Moricambe Bay and Wedholme Flow. This and other crops also attracted over 6,000 **Pink-footed Geese** to stay over. The **Red-breasted Goose** with the **Barnacle** flock was photographed at Cardurnock on 30th November – (the numbers of Barnacles feeding on the Moricambe Bay marshes eventually grew to over 6,000). Only two cards were received for **Hen Harrier**, a male on 9th December at Boustead Hill and a ‘ring-tail’ on Burgh Marsh on 21st February (R & SG). **Short-eared Owls** featured regularly, with 3 at Border/Calvo marsh in November, December and January, 1 at Rogersceugh on 1st January and Burgh Marsh on 16th (R & SG). A **Merlin** at Grune Point on 16th November (CH) and again on Border Marsh on 16th December is probably an under-recorded species; **Little Owls** however are quite scarce, and unfortunately one flew into my car near Newton Arlosh on 16th December, but on 30th January one was reported (to MA) as roosting in the church porch at Kirkbride. **Twite** flocks were much less reported this winter but made their usual autumn appearance on Border Marsh in November when around 250 were present.

In later winter, the finding of an emaciated body of a **White-tailed Tropicbird** (*Phaethon lepturus*) on the shore at Mawbray on 6th January (PS; SH) caught national attention as the first record of this species of warm southern oceans in the UK. More about this will appear in the next issue. Return migration of **Pink-feet** began early, with 1,000 at Houghton Hall on 12th (JH) and on 15th **January** c.10000 were present at morning flight- 8500 off Moricambe and 1500 off Wedholme Flow - although peak numbers were not reached until March, when at least 12,000 were present around Moricambe Bay. Geese presented a rare spectacle on the 14th March when at least 8000m Pinks, 1000 Barnacles, and the Canadian vagrant **Todds Canada Goose** (CA), were on Whitrigg Marsh. Whilst watching this flock a light aircraft disturbed at least another 6000 geese to the west. **Little Grebe** is a species not often seen in winter, but 3 were on the Eden at Grinsdale on 27th February (RG). **Bar-tailed Godwits** are regularly counted on Wetland Bird Survey counts at Grune Point but a roost of c. 500 on 2nd March (AA) is the highest number seen for some years. The coastal **Stonechats** seem to

be slowly recovering from two severe winters, and this partial migrant seemed to hold its own, so another pair near Rogersceugh (FM & MP) on 5th February was encouraging; a pair at Wolsty on 28th February adds to several sightings by JC.

Further inland, **Waxwing** were reported regularly in large flocks of 50 to 100 from early November through January with small numbers still to be found in early March at several locations including Carlisle (several locations where berries were abundant and seen by several members): Wetheral, 50 on 30th November (FJR), Dalston 9 on 9th December (DH), Thurstonfield 20 on 20th November (TM). 57 were seen in Penrith on 14th February (BR). **Bramblings** have been much less common this autumn, with a best count of 30 from Talkin Tarn (GH) and 4 at Clifton, Penrith (BR). A wind-blown **Little Auk** was found dead at Shap road cutting on 18th November (TW). A male **Smew** was seen regularly at Talkin Tarn including 8th January (JH); it seemed to commute between here, Castle Carrock Reservoir and Tindale Tarn. A **White Wagtail** was seen with Pied Wagtails at Carr Beds on 24th February (RH), presumed a passage migrant.

Of more resident species, thousands of **Wood Pigeons** were another species attracted to un-harvested crops in the autumn and c. 2000 were at Clifton, Penrith on 10th December (BR). **Barn Owls** seem to be widespread, though not well reported: I have seen them at Rogersceugh, on different parts of Bowness Common and just west of Kirkbampton: one has been seen daily at Watchtree Nature Reserve since January and another at Wedholme Flow car park (MP & CA). A species less easily detected is **Grey Partridge**, but regular sites include Red Hall Farm near Wigton. Coveys have included 7 at Houghton on 2nd February (GB). Small coveys reflect a poor 2012 breeding season. **Jack Snipe** are almost trodden on before they flush: cards received include Watchtree NR on 27th February (2) and Thornhill Meadows NR on 6th March (2) – also seen at Bowness Common, 19th February (R & SG) and Carr Beds, Rockcliffe, 24th February (RH). **Green Woodpecker** may be on the increase, with records of ‘yaffling’ birds from Glencoyne Park, Ullswater on 27th February (SH) and at Craiggy Ford, Sleetbeck on 3rd March – a very north-easterly location (DJ).

Wild bird food crops, grown on farms under agro-environment scheme incentives, attract large numbers of birds, especially **Linnet**s. On such a crop at Red Hall Farm a flock estimated at 300 was counted on 13th December and another flock of 60 was near Watchtree on 15th January. Only two records of wintering **Blackcaps**, both in Carlisle, were received - one on 17th December in garden (RH) and another on 3rd January (JH via RD). Other garden sightings, the reward of winter feeding, have included less common species: **Lesser Redpolls** have taken to garden feeders, especially niger seed, and 11 were on a feeder in Sandsfield Park on 28th February (DHa); GH at Dalston had 3 **Reed Buntings** on

15th February. **Siskins** have been frequent in gardens this winter and GH had 8 on 2nd February and 15 on 9th on sunflower hearts. However, at Heads Nook, RS has ringed 226 'new' birds between 1st January and 4th March and regularly has 40 to 50 on niger seed. Willow Tit is a declining species rarely seen but Bowness Gravel pits and Finglandrigg remain regular sites and a singing male was heard on 28th March (CA).

Two interesting late records were of a **Ring-necked Parakeet** on 6th March at Stoneraise Farm near Wigton (CM), and a wintering **Lesser Whitethroat**, possibly one of the eastern subspecies, under feeders in a Kirkbride garden, reported to and seen by me on 2nd February.

Other vertebrates

Otter has been the most commonly reported mammal with sightings from Becksid Farm, Ivegill on 5th January (G & VS), a road casualty at Rose Bridge, Raughton (AA). Two were seen on the R. Petteril just north of Warwick Road in Carlisle on 9th January (RD). At Dalston, recent spraints were seen downstream of Nestlé on 14th February (AA). Another casualty was on the A689 near Brampton on 27th February (AAr). Large amounts of spraint on 3rd March, with lots of frog remains, indicated an Otter predating frogs coming to spawn in the lake at Watchtree: it was captured on the 'spycam' on 8th March. Spraints were also noted at Thornhill Meadows around this time. Two unusual **Hedgehog** records were noted: a road casualty on the A6 near Plumpton, 8th January (M& BC), and one dead in a field at Watchtree on 15th January. Both were of these were during a relatively mild spell at this time. A **Polecat** was another road casualty, at Lazonby on 28th February (MC). The **Fox** remains a relatively elusive but quite common mammal, seen mostly around dawn: I had brief sighting at dawn on 13th March on Lawrenceholme lonning. **Stoats** are equally elusive but one crossed the track at Rogersceugh on 15th March (SM). **Red Squirrel** sightings are becoming fewer as numbers of Greys numbers rise; one was noted on the February survey in Finglandrigg Wood (FM). A spell of dry and sunny but cold and frosty weather held back the **Frogs** a few days, but activity began in earnest on about 3rd March, although early sightings were in mid-February. Many sites had spawn by the 8th March and activity was still ongoing on 16th.

A few days of warm sunshine after morning frosts in early February seems to have stirred the odd **Small Tortoiseshell** out of hibernation in a Denton Holme garden on 28th February (RH). March turned, and remained, very wintry, becoming the coldest since 1962 and joint fourth coldest since records began, with frosts, blizzards and snow lying to relatively low levels. Whilst the arctic weather

blocked migrants such as **Chiffchaff**, **Wheatear** and **Sand Martins**, it has not deterred resident **Long-tailed Tits** from nest-building on time.

Contributors: AA Anne Abbs; AAr Alan Armsby; MA Mike Abbs; CA Colin Auld. GB Glen Bryson; M&BC Mike and Betty Clementson; JC John Callion; MC Mike Clementson; RD Richard Dixon; NF Nick Franklin; RG Russell Gomm; R&SG Russell & Sara Gomm; CH Chris Hind; GH Geoff Horne; DH David Hickson; DHa David Hamilton; JH John Hamer; RH Robin Hodgson; SH Stephen Hewitt; DJ David Johnston; CM Charlie Miles; SM Shelagh Mawby; TM Trevor Merrington; MP Mike Porter; PS Peter Scott; BR Brian Redhead; G&VS G&V Schofield; RS Rob Shaw; TW Tony Williams. Un-credited records are largely my own.

Frank Mawby, CNHS Recorder

Field Meetings and Workshops

27th October 2012: Latrigg Fungus Foray

Leader Paul Nichol

It was a cold frosty morning as 12 members and 2 accompanying children met with our leader, fungi expert Paul Nichol in the car park above Ormathwaite to explore the grasslands nearby for fungi. Introducing us to the subject, Paul explained that there are four main groups of grassland fungi – the often colourful waxcaps; the pinkgills; the earth-tongues; and the club and coral fungi. As we set off we were unsure what we would find after the overnight frost which could have resulted in identification problems by altering the texture and sometimes the colour of the fungi.

The first to be encountered was the Star Pinkgill *Entoloma conferendum*. Nearby were a few yellow waxcaps that had both a slimy, viscid cap and stalk. Not surprisingly this species is called the Glutinous Waxcap *Hygrocybe glutinipes*. A little further uphill we found a larger waxcap with a tawny brown/buff-coloured cap. The cap and stalk were dry and the gills extended down the top of the stalk (decurrent gills) – the Meadow Waxcap *H. pratensis*. Small, white, Snowy Waxcaps *H. virginea* were certainly the most common of the waxcaps encountered this day. Growing usually in small groups, they were seen to have widely spaced, decurrent gills and mostly were pure white, though some of the older ones had slightly browning caps. They had no odour. Later we found a very similar-looking waxcap, but this one, the Cedarwood Waxcap *H. russocoriacea* had a definite odour that we all agreed was like pencil shavings.

Perhaps the most intriguing fungus we saw was the Scarlet Caterpillar Club

Cordyceps militaris. On the surface this appears as a vertical bright orange-red club about 2-4cm tall, but follow the stalk down and it tapers to a paler stalk that leads to the remains of an insect buried in the soil. This extraordinary fungus parasitizes and kills insects – usually moth pupae. The mycelium in the soil finds the buried insect, grows around it, killing it and obtaining nutrients from it. A fruiting body, the ‘club’, then emerges above ground at this point.

We saw several groups of Golden Spindles *Clavulinopsis fusiformis*, belonging to the ‘coral’ group of fungi. These attractive flattened, bright yellow clubs grow in tight clumps.

Further types of waxcap found on Latrigg included the Honey Waxcap *Hygrocybe reidii* with its delicate honey-like odour; the orange-green Parrot Waxcap *H. psittacina*; the Crimson Waxcap *H. punicea*; the Scarlet Waxcap *H. coccinea*; the small delicate Heath Waxcap *H. laeta* and the red-capped Blackening Waxcap *H. conica* which blackens when bruised or ageing.

One small patch of black earth-tongues was found amongst the grass. These flattened club-shaped fungi are very indicative of unimproved grassland. They were found to belong to the genera *Geoglossum* and *Trichoglossum*. The separate species can only be differentiated by microscopic examination of the ascospores. Paul Nichol was able to tell us later that the ones we found at Latrigg were *G. umbratile* and *T. hirsutum*.

Two types of puffball were seen: *Bovista nigrescens*, a golf ball-sized puffball that had already expelled its spores and took the form of a papery husk, and the Dusky Puffball *Lycoperdon nigrescens*, which had tiny spikes on the surface, tipped with fine hooks.

As we made our way back to the cars for a late lunch, Steve Hewitt pointed out a caterpillar of the Ruby Tiger Moth *Phragmatobia fuliginosa* crossing the path. In all a total 15 species of *Hygrocybe* waxcaps were found during the meeting. Unsurprisingly, Latrigg ranks as being of National Importance for these fungi.

Marie Saag

3rd November 2012: Workshop – Fungi of unimproved grasslands

Leader Paul Nichol

Following the usual format, the first half of the day was spent at Tullie House for an indoor session of tuition and practical work which was followed by a field trip in the afternoon. Fourteen members attended the workshop, which began with an introduction into the general characteristics of fungi before we homed into the topic for the day – the fungi to be found on unimproved grassland. Known as

‘Waxcap Grassland’ this is a declining habitat nationally and is characterised by being low in plant nutrients, with the sward kept short usually by being sheep grazed, and with a significant bryophyte component. The existence of mosses within the sward seems to be important as some of the grassland fungi could possibly be moss- and/or grass-symbionts but research needs to be done in this area. This type of grassland can be found in grazed uplands, sand dune areas, churchyards, and old lawns – places that have not received artificial fertilizer for many years and have been kept short by grazing or regular mowing. Removal of the grass either by grazing or by use of a grass box seems to be important in maintaining the low nutrient status.

Paul then gave an illustrated talk describing the four groups of fungi typically associated with unimproved grasslands:

- ~ the waxcap mushrooms, *Hygrocybe* species, which are often brightly coloured and can be slimy. We were advised when identifying these in the field that it is important to note if the cap and/or stalk (stipe) are viscid and to undertake the ‘kiss test’. Other important features were the colour of the cap and stalk, the type of gill attachment, the odour (if any), the shape of the cap (conical or flat) and the surface (smooth or fibrous) of the stipe and the cap. We were given an identification key and some specimens to practice our identification skills.
- ~ certain pinkgill fungi of the genus *Entoloma*. These have pink spores and hence pinkish gills. When viewed under the microscope the spores are polyhedral.
- ~ earth-tongues of the genera *Geoglossum*, *Trichoglossum* and *Microglossum*. The *Geoglossum* species appear as black clubs usually occurring in ‘swarms’ which may consist of one or more species. To separate these it is necessary to examine spores under the microscope. Paul demonstrated how to do this. Looking at the squashes under the microscope we could see that each ascus contained banana-shaped ascospores. Measurement of the length and width, and counting the number of septa in each of these ascospores, enables the species to be identified. The *Trichoglossum* species usually have a definite stalk, giving them a spoon-like shape when mature and they have a hairy surface. *Microglossum* species are olive-brown (all the others being black).
- ~ club-fungi and coral fungi of the genera *Clavulinopsis*, *Clavulina* and *Clavaria*: these are often brightly coloured and grow clumps. Some have coral-like branching, hence their name.

In the afternoon we travelled out to Caldbeck Common grasslands, some of which are on limestone while other areas are acidic. There was a very cold wind and occasional blasts of hail! We soon spread out on our hunt and the first and most

frequent fungus to be found was the Earthy Powdercap *Cystoderma amianthinum*. This light brown mushroom with a definite ring around the stalk has a granular look both on the stalk below the ring and on the cap. Next we found the Dung Roundhead *Stropharia semiglobata*, a small fungus with a cap diameter of about 1-4cm. The cap was slimy and the gills broadly spaced and adnate. The gills darken as the black spores mature. Also growing on dung, we found *Panaeolus acuminatus*, with its conical cap. The gills were black and mottled in appearance due to the uneven ripening of the spores. Some small delicate-looking mushrooms nearby were the bonnet cap mushrooms, *Mycena* species. With the exception of *Mycena pura*, which was tinged with purple and had a definite odour of radish, it was not possible to identify these to species in the field.

We found four species of waxcap, the commonest being *Hygrocybe punicea*, the Crimson Waxcap, which was quite large and had a red viscid cap, though some specimens were old and losing their colour, becoming yellowy-brown in the centre. The others seen were the small white Snowy Waxcap *H. virginea*, the Scarlet Waxcap *H. coccinea*, and the Meadow Waxcap *H. pratensis*. A group of three clubs of black earth-tongues, *Geoglossum* species, was found on a grassy bank.

Two members of the coral-fungi were seen, both in clumps. Meadow Coral *Clavulinopsis corniculata* took the form of a short brown 'coral' which started to branch about half-way up the stem. The Golden Spindles *C. fusiformis* was larger and bright yellow. The strap-like vertical clubs, each about 6cm, were flattened and pointed at the tips. The tips tend to darken as the fungus ages. Another type of club was found: the Scarlet Caterpillar Club *Cordyceps militaris*. This parasitic fungus was growing from an insect underground (also found the previous week at the Latrigg field meeting).

Other fungi noted were the Dusky Puffball *Lycoperdon nigrescens*, and the Wood Blewit *Lepista nuda*. The latter is usually associated with woodlands, but here interestingly growing on the thin turf over limestone.

Marie Saag

17th February 2013: Galloway and Loch Ken

Leader John Hamer

Thirteen members left Carlisle on a fine morning on the annual field meeting to Loch Ken. The weather remained cold but sunny throughout the day, giving excellent conditions. The first stop was the Solway shore at Newbie, where with the tide out, a variety of waders was seen, including Grey Plover. From there, we went to Powfoot where there were at least two Black-tailed Godwits and a number of Pintail.

The route along the shore via Caerlaverock to the Nith at Glencaple produced relatively little, but there were some Barnacle Geese in the fields near Caerlaverock. A leucistic Redshank was present at Glencaple, together with Goldeneye on the river. At the usual lunch stop at Auchenreoch, there were Goosanders and Whooper Swans on the lake.

We then followed the route along the west shore of Koch Ken. A large flock of Pink-footed Geese with a few Greylag Geese was found and then further along we had good views of about 50 Greenland White-fronted Geese. We also started to see Red Kites, and when we got to the feeding station near Laurieston, there were about 70 birds wheeling around with a couple of Buzzards and Ravens also in attendance.

On the return journey, aware that the tide would now be in, we stopped again at Newbie and also Browhouses. The water was almost flat calm, allowing views of Red-breasted Mergansers, Great Crested Grebe and a tight flock of 30 Kittiwakes, which drifted up with the tide, before flying off eastwards upriver: evidently a cross-country migration.

With dusk approaching, we headed for Gretna and the Starling roost. This was eventually located in a copse between Gretna and Rigg and spectacular views were had of the birds' aerobatics against the red western sky. As always, it was difficult to be sure of numbers, but some estimates gave about 50,000 birds. A Peregrine and a Buzzard were also present; the Peregrine made several unsuccessful attempts to catch stragglers. From there, we all headed for home after a successful day.

John Hamer

In view of our forthcoming field meeting to Teesdale (16th June 2013), the following publications may be of interest [Ed.]:

Illustrated leaflet on twenty of the Teesdale assemblage of rare flowers. Available from Dr M.E. Bradshaw, Hill Top, Eggleston, Barnard Castle DL12 0AU. [Send 9 × 5inch/A5 SAE + unused 2nd class stamp].

Four centuries of plant hunting in Upper Teesdale by Dr M.E. Bradshaw. An 18pp paper from the Teesdale Record Society Journal (3rd series, volume 20).

The Earliest Botanists in Teesdale by F. Horsman. An 11pp paper from volume 19 of the above journal.

Both the papers available from Dr W.F. Hayes, High Dyke House, Middleton-in-Teesdale, Barnard Castle DL12 0RR. @ £6.50 inc. p&p. Singly, or £10 for both. Cheques payable to 'The Teesdale Record Society'.

Notes and Records

Notes on Treecreeper and Blue Tit roosts

On 24th January this year in Carlisle Cemetery I found several roost pockets made by the Treecreeper in the bark of a Wellingtonia tree. This tree has soft spongy bark which the Treecreeper digs out using its beak and claws to produce a hollow used by the bird as a cosy roost site. The roost pockets were on the north-east facing side of the tree (out of the way of prevailing winds, as is usually the case) and numbered around ten, some of which had droppings present indicating recent usage. I returned to the tree as dusk approached at 5 p.m. to find one of the roost pockets occupied by a Treecreeper, which seemed unconcerned by my near approach.

Use of these redwood trees as Treecreeper roosts was first recorded around the 1920s, which shows the bird's adaptability, as these trees were not planted in this country until the late 1800s and may take thirty years to reach a size that allows their use by Treecreepers. Most roost-pockets are at least two metres from the ground – as is the case with those in the cemetery.

On a similar topic, I have had a Blue Tit roosting in a nest box on the side of our house since November 2012. As the nest box has a camera fitted, I have been able to record its use. I have noticed that Blue Tits go to roost very early when using bat boxes as roosts, so I monitored the use of the bird box on 21st December 2012, which was the 'shortest day'. The bird left the roost at 8.04 a.m. (exactly 30 minutes before sunrise) and returned to roost at 3.17 p.m. (29 minutes before sunset) – an active day of just over 7 hours, followed by 17 hours of sleep! I am hoping the bird continues to use the roost so I can monitor its use as the days lengthen.

Robin Hodgson

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Sex ratio of Mallards wintering in Cumbria

Mallards are common and widely distributed in Cumbria both in the breeding season and in the winter months. Generally speaking it is a species that does not gather into large flocks outside the breeding season in the way that other dabbling ducks such as Eurasian Wigeons do, but aggregations of up to 50 birds are not uncommon, particularly at places where they are regularly fed by members of the public. What is much less well known is that males usually outnumber females in these flocks. Some typical figures for Cumbria collected in late January and early February 2009, and between November 2010 and February 2011 inclusive, are shown in the accompanying table (overleaf).

The percentage of males varied from 50% to 83%, with an overall mean of 62%, that is, there were roughly three males for every two females on average. There was a tendency for the counts at sites where birds were regularly fed by members of the public to have a slightly higher percentage of males than those where no feeding took place (63% vs. 58%) but the difference was small and not statistically significant ($\chi^2 = 1.43$, $df = 1$, $P > 0.05$).

These results are typical of those found elsewhere in the Mallard's range (*e.g.* Eygenraam, 1957; Johnson & Sargent, 1971; Brown, 1982; Meissner & Michno, 2011). As concerns Cumbria an excess of males could arise because more locally-breeding females move out of the county than males, or because more males than females move into Britain from abroad. In fact there is no evidence that the sexes behave differently to any significant extent as regards their movement patterns and British birds are, by and large, fairly sedentary (Wernham *et al.*, 2002). Shooting is an alternative explanation, but evidence from North America (Johnson & Sargent 1971) is that disproportionately more males than females by around 2 : 1 are taken by American hunters (the Mallard is an important quarry species in both North America and the U.K.) and it seems unlikely that Britain differs to any significant extent. Rather it appears that this uneven sex ratio is a consequence of differences in the survival rates of the two sexes. Such differential mortality is usually ascribed to the fact that females are more at risk than males during the breeding season because it is only they that incubate the eggs, for despite their cryptic plumage and the well hidden nature of their nests, females do sometimes fall prey to Red Foxes and other predators. It may also be that the long periods the females spend incubating puts a considerable stress on them and leaves them more open to disease or predation post breeding.

There is one other possible explanation, and it concerns the mating behaviour of Mallards. This usually takes place on the water and involves the somewhat larger male squatting on top of the female, and effectively forcing her underwater. In the period immediately before egg-laying, when the females are in season, it is not unusual for several males to attempt to mate with a particular female at the same time. So vigorous and persistent are the males that it is by no means unknown for the females to be drowned. This point was forcibly brought home to me by Mr Ben Smith, who looks after the wildfowl collection at the Memorial Gardens in Grange-over-Sands and who related to me an incident there some years ago when twenty or so females were drowned in this way. I have since learned from Dave Shackleton of a similar incident at Fairhaven Lake, Lancashire, the common factor being that the birds were at artificial ponds or lakes with vertical concrete edges and where it would be difficult if not impossible for females to escape the attentions of the males once mating had started.

Table 1. Sex ratio of Mallards wintering in Cumbria
(Listed in order of increasing percentage of males)

Location (map ref)	Date	female	male	%males
R. Bela, Milnthorpe (SD4981)	27 Jan 09	10	10	50
Ponsonby Tarn (NY0404)	3 Feb 11	2	2	50
Brothers Water (NY4012)	25 Nov 10	5	5	50
Blackstone Pt., Bassenthwaite L. (NY2727)	25 Nov 10	11	12	52
Irt Estuary (SD0696)	5 Dec 10	9	10	53
Yew Tree Tarn (NY3200)	2 Feb 09	7	9	56
Pond, Tebay North MSA (NY6006) *	10 Feb 09	23	29	56
Lakeside, Windermere (SD3787) *	27 Jan 09	5	7	58
Longlands Lake, Egremont NY0112) *	26 Nov 10	10	14	58
R. Derwent, Workington (NX9929)	28 Jan 09	10	15	60
R. Kent, Abbot Hall, Kendal (SD5192) *	23 Nov 10	10	15	60
Hammond's Pond, Carlisle (NY4053) *	20 Jan 11	8	12	60
Ambleside, Windermere (NY3703) *	20 Jan 09	21	33	61
Keswick, Derwent Water (NY2622) *	2 Feb 09	53	83	61
Glenridding, Ullswater (NY3917)	25 Nov 10	3	5	62
Grange-over-Sands (SD4178) *	26 Jan 09	8	14	64
Coniston (SD3097) *	20 Jan 09	9	17	65
R. Ehen, Sellafield (NY0203)	29 Jan 09	10	19	66
R. Eamont, Pooley Bridge (NY4724) *	25 Nov 10	15	30	67
R. Derwent, Cockermouth (NY1130) *	28 Jan 09	10	20	67
R. Ehen, Watch Hill (NY0103)	31 Jan 11	4	9	69
R. Calder, Sellafield (NY0202)	9 Nov 10	3	7	70
R. Kent, Natland Rd, Kendal (SD5191) *	27 Jan 09	9	21	70
Ormsgill Reservoir, Barrow (SD1970) *	26 Jan 09	5	12	71
Bowness-on-Windermere (SD4096) *	23 Jan 09	4	20	83
All combined:		264	430	62%

* Sites at which birds regularly fed by members of the public.

Acknowledgements

I am indebted to Ben Smith and Dave Shackleton for drawing the incidents involving drowning to my attention, and to the latter for kindly commenting on an earlier draft of this note.

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***Sphaeridium marginatum* Fabricius (Coleoptera: Hydrophilidae) new to Cumbria**

For some time, two species of beetle described by Fabricius – *Sphaeridium bipustulatum* in 1781 and *S. marginatum* in 1787 – were regarded as being varieties of a single species and listed as *S. bipustulatum* F. (Pope, 1977). When van Berge Henegouwen (1989) showed that there are in reality two good species, the status of *S. marginatum* was revised and it was subsequently added to the British list (Foster, 2008).

There appears to have been no records of *S. marginatum* in Cumbria since then. This summer, whilst collecting dung beetles in the southern part of the county, I came across two specimens of *Sphaeridium* that keyed out as *marginatum*. I sent one to Garth Foster for confirmation and he not only confirmed my identification but also informed me that he had taken a specimen earlier in the year in the northern part of the county, so this species can be added to the lists for vice-counties 69 and 70.

The three confirmed records for *S. marginatum* are:

22.iv.2012, Cumwhitton Moss NY511.519 – one in wet debris by a woodland pool (G. Foster);

12.vii.2012, Clawthorpe Fell SD552.789 – one in sheep dung, upland limestone pasture (J. Thomas);

9.ix.2012, Levens Park SD498.854 – one in sheep dung, deer park pasture (J. Thomas).

There are four species of *Sphaeridium* on the most recent British list (Foster, 2012): *S. bipustulatum*, *S. lunatum*, *S. marginatum*, and *S. scarabaeoides*. All four are now known to occur in Cumbria, usually in cow dung, where the larvae feed on fly larvae. Beetles of this genus are the largest of the Hydrophilidae or scavenger water-beetles to be found in herbivore dung and easily recognisable since their black elytra have contrasting pale apices and usually red elytral spots (Skidmore 1991). Duff 2012 provides a very clear key to the four species; he regards *marginatum* as ‘very local in England and Wales; rare, but probably overlooked’.

I have recorded *Sphaeridium* species on several occasions whilst searching for other dung beetles. They seem to be most frequently found in comparatively fresh cow dung and the adults immediately burrow into that material when disturbed, disappearing far more quickly than beetles of the genera *Aphodius* and *Onthophagus*. One technique that I use to collect these last two genera is to submerge a collection of sheep dung in a bucket of water when the beetles quickly rise to the surface. I have noted that species of *Sphaeridium*, on the other hand, seem to relish such liquid surroundings and that any which do surface almost immediately dive out of sight and can be very difficult to find.

Thanks are due to David Atty for comments on the occurrence of the genus within the county and to Garth Foster for confirming my identification and providing details of his record.

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A new site for Northern Hawk's-beard *Crepis mollis* (Jacq.) Asch. in Cumberland, v.c. 70

In September 2011, RN came across a single example of an unfamiliar composite plant on a roadside verge on the western flank of Greystoke Forest, northwest of Penrith and close to the eastern flanks of the Carrock Fells. She collected a sample for later identification. At the April 2012 meeting of the Cumbria Wildlife Trust Flora Recording Group there was agreement that the specimen was Northern Hawk's-beard *Crepis mollis*, a very local and declining species, which – most surprisingly – had never previously been recorded in that area. RN relocated the plant on 4th July 2012 and took precise details of its location.

Crepis mollis has very much the aura of a relict species. Typically it grows in rather rank vegetation or coarse grassland on stream-banks, valley-sides, and less often in clearings in open woodland. Sometimes it occurs in suitable habitats on roadside verges – perhaps persisting as the last remnants of pre-existing populations 'over the wall' in adjacent meadows, where now long-lost through 'improvement'.

It seemed to JR profoundly unlikely that a single plant of *Crepis mollis* would crop up in such a site through the long-distance dispersal of a seed. This led to the thought that there might in fact be an existing population. A lengthy search around the area detailed by RN eventually revealed ten plants along 30 metres of the roadside bank. Some plants were about at their best, with several open flowers, whilst some were going to seed; other plants were still budding (and amazingly inconspicuous in that state!).

The verge is several metres wide at this point, with a patchy growth of a variety of shrubs and trees, and in less shaded parts dense and tall patches of Meadowsweet *Filipendula ulmaria*, in the edges of which several of the plants were growing (a habitat often utilised by this species). Others were under moderate shade of the bushes. It seemed likely that other plants remained undiscovered – easily missed in this diverse and dense vegetation, whilst non-flowering rosettes at ground-level would be very inconspicuous.

The nearest currently-known sites for this species appear to be in Crosby Gill (32 km southeast); near Alston (36 km north-northeast); and in South Stainmore (52 km east-southeast). *A Flora of Cumbria* (Halliday, 1997) quotes an earlier record

from Wilson's *Flora of Westmorland* between Shap Abbey and Keld which would be rather closer, at 25 km southeast.

The road verges in this area (especially to the northwest of Greystoke Forest north of Millfield Lodge, and the cross-roads at Thanet Well west of Lamonby, the latter being SSSI-designated) are well-known for their botanical interest – and were coincidentally visited by CNHS earlier in the season (see Saag, 2012). The verges at the new *C. mollis* site were ranker and certainly less diverse than these, and perhaps not so obviously appealing to passing naturalists.

Marsh Hawk's-beard *Crepis paludosa* is strikingly abundant along this particular stretch, and this has perhaps masked the presence of *Crepis mollis* here. The latter is easily overlooked as a slender version of the former, with similar 'dandelion' flowers (plate 3a), but once the flowers begin to go over, the pappus colour is at once the best feature to separate them, being silvery-white in *Crepis mollis* and a rather dull fawn colour in *Crepis paludosa*. The stem-leaves of *C. mollis* are very much narrower – narrowly tongue-shaped (plate 3b), often slightly 'pinched-in', and lack both the broad basal lobes and obvious teeth of *C. paludosa*.

The verges on each side of this interesting new site were searched, for several hundred yards on each side, but no more *C. mollis* could be found. It may, however, be that searches in July in the general area, and with this species in mind, might be successful at extending its local range.

Appropriate management of this wide verge would be a late cut after seed-fall – *i.e.* in August or later – and the removal of cut litter. None of the plants found were closer to the road-edge than about a metre, and this may reflect perturbation and damage to the damp soil from vehicles and from more frequent cutting regimes.

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Spring Hazel-cup *Encoelia furfuracea* (Roth) P. Karst.: a newcomer to Cumbria?

This species of cup-fungus ranges widely in the UK (including northern and western Scotland), but is evidently rare except in parts of southern England. Despite two centuries or so of natural history recording in the county, it appears not to have been found here until 2008, when it was noted near Cunsey Beck foot, Windermere, by Martyn Ainsworth of RBG, Kew*. The question of whether it has long been present here as a rarity seems unanswerable.

I was therefore pleased to find it at two locations during the winter of 2012-13. The first of these was at Naddle Forest, Mardale (NY51C) – a single cluster on a minor branch of a large, ageing, Hazel on 12th December. Clusters were subsequently found on three scattered Hazels at Cumbria Wildlife Trust's Argill Reserve (NY81G), with at least 10 groups on the most prolific tree – which was neither large nor ancient. Both sites have good numbers of old, unmanaged, host trees in various states of decay. It appears however that *Encoelia* does not co-exist with *Stereum rugosum*, which commonly attacks older Hazels (Weightman, 2000). When first found, the cups at both sites had erupted but were closed (plate 4a). At this stage, though distinctive, these small scurfy brown growths were inconspicuous. They were unchanged at Argill on 28th February 2013 and were finally seen there on 20th March with some cups partially open (in near zero temperatures), in typical rather 'crumpled' fashion. The chocolate-coloured spore-bearing surface is seen in plate 4b. I was unable to find any other infected trees at Mardale on 26th February, but the species is known for being highly variable in its frequency at some sites, despite the number of apparently suitable host trees.

Spring Hazel-cup is not included in most popular field guides. Peter Wilberforce kindly confirmed my identification and material from the Mardale site has been deposited at Tullie House Museum.

* <http://www.fieldmycology.net/FRDBI>; accessed February 2013

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Rookeries in West Cumbria 2005-2012

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Rooks are one of the most characteristic and widespread birds found in lowland Britain. National censuses in 1975 and 1980 and other assessments have shown that numbers generally have been declining (*e.g.* Sage & Vernon, 1978; Sage & Whittingham, 1985; Brenchley, 1986), though there are one or two areas where numbers are increasing, Caithness in the north of Scotland being a good example (Sellers *et al.*, 2008). Recent declines have been reported in Dumfriesshire (Griffin *et al.*, 2008) and are suspected in northern Cumbria (M. Carrier, pers. comm.), but the position more generally in Cumbria remains unclear. The last complete census of Cumbrian Rookeries was undertaken in 1996 (McAlone *et al.*, 1997) and with a further census planned for 2013 it seemed timely to report the results of an annual census of rookeries I have undertaken in West Cumbria over the eight breeding seasons between 2005 and 2012.

Survey methodology

The study area comprised the coastal plain of West Cumbria between Whitehaven and Millom together with a small part of the western fells. The northern limit of the area was defined by a line running east from Parton (NX970200) to Arlecdon (NY050200), the eastern limit a line running due south from Arlecdon (NY050200) to Meadley Reservoir (NY050150), from there south-east to Kepple Crag (NY000200), then due south to Foxfield (SD200860), with the southern and western limits defined by the coast, in total an area of about 500 km². Censuses were undertaken in the second and third weeks of April, that is, after the majority of birds had made their nests, but before significant numbers had failed and before it became impossible to see nests clearly as the leaf buds opened. Locating rookeries is fairly straightforward, but smaller ones, especially those in conifers, are easy to overlook. To ensure as complete coverage as possible all stands of broad-leaved trees in the study area were checked in the first two seasons of the study. Thereafter only sites known to have held rookeries in previous years were checked, unless the rookery had disappeared since the previous year, in which case all woodland within 3 km (and sometimes up to 5 km) of the missing rookery was checked again. For the purposes of this study a rookery has been taken to be any group of Rooks' nests separated by more than 500 m from the next nearest

group. This was the definition used in the Caithness study referred to above (and on which the present study was modelled) but differs from the 1975 national survey which used a separation criterion of 100 m. The change reflects more recent work on Rook ecology and a better understanding of how Rooks use their nesting colonies (see also Sellers *et al.*, 2008).

Rook nests can usually be counted with a fair degree of accuracy, but it proved difficult to obtain reliable counts at four rookeries, in two cases because access to the rookery was not possible and in two others because they were in conifers. It was assumed that all nests located were occupied (few nests survive winter storms so this is a reasonable assumption) and the results are reported here as ‘apparently occupied nests’ – henceforth *aon*. The totals of the 1975 National Rookery Survey were considered by Sage & Vernon (1978) to be underestimates by perhaps 10%, and this is probably true of the present study. In view of the difficulties associated with obtaining accurate counts at certain rookeries and that a number were overlooked in the first year of the survey, the population is shown as an index with that for 2005 being taken as 100. Changes between consecutive years were calculated from the combined counts for all those rookeries for which accurate counts were available in year n and year $n+1$. A population index for 1996 was calculated based on the individual rookery counts in that year held on file by the Cumbria Bird Club, and a rough estimate for 1975 based on Figure 2 in McAlone *et al.* (1997).

Survey results

Rookeries were found more or less throughout the lowland part of West Cumbria with very few on the higher ground on the eastern side of the study area. The only ones above the 100 m contour were those at Corney (115 m), Rheda (140 m) and Arlecdon Hill (180 m). Partly this reflects the general absence of broad-leaved trees on higher ground in Cumbria but also the lack of suitable feeding areas in such places. In addition there were few rookeries in the well wooded valleys of the eastern central part of the study area – none in the valley of the R. Calder northeast of Calder Bridge, Upper Blengdale, Wasdale or Miterdale, and just two small rookeries in Eskdale – and none associated with any of the conifer plantations along the edge of the fells. Locations close to the seashore were also avoided, with only three rookeries, Whitehaven (Bransty), Ravenglass and Haverigg being within 1 km of the sea, partly no doubt to avoid undue exposure to the wind but also because nesting by the shore reduces the area immediately at hand for foraging.

Most rookeries were in hedgerow trees, shelter belts, copses and small woods.

Over half were in trees associated with the larger country residences, such as Brockwood Hall, Muncaster Castle and Rothersyke House, places that were formerly country houses such as Ennerdale Country House Hotel at Cleator, and Fleetham House Hotel at St. Bees, farms such as Cragg Farm and Po House, or churches as at St. Bees Abbey and St. George's Church in Millom. All were within 100 m of human habitation, the only exception being that at Field End near Holmrook, which was *ca.* 500 m from nearest dwelling. Rooks will make their nests in a variety of trees, but, based on observations made in 2007, those most frequently used in the study area were Sycamore *Acer pseudoplatanus* (52% of nests), Beech *Fagus sylvatica* (18%), Pedunculate Oak *Quercus robur* (10%), and Scots Pine *Pinus sylvestris* (10%).

Overall 55 rookeries were identified during the eight years of the study with the total number used in any one season varying between 45 and 51. Five rookeries were abandoned during the study period and a further 10 were newly established. In two instances the rookeries appear simply to have moved a short distance (a few kilometres), and several of the other newly formed rookeries were within a few kilometres of long established ones at which there has recently been a marked reduction in numbers.

Individual rookeries varied in size from 1 *aon* to 126 *aon*, with a median of 28 *aon*. Annual population indices are summarised in Table 1. There was some variation between years but over the eight years of the study the population showed no trend with time (Kendall rank correlation coefficient, $\tau = 0.286$, $P = 0.161$, not significant). The average of the figures for the present survey was 95, a mean reduction in the population since 1996 of 35%. Trends at individual rookeries were much more variable, as summarised in Table 2. It should also be noted that the present data show that the change in population index between year n and the next year (year $n + 1$) was negatively correlated with the population index in year n ($r = -0.779$, $P = 0.039$).

Discussion

The chief finding of the present study is that the Rook population of West Cumbria was stable between 2005 and 2012 inclusive. Comparison with the results of the 1996 survey suggests that there was a decrease of about 35% in the population in the preceding nine years, whilst between 1975 and 1996 there appears to have been an increase of about the same size. Although there has been some variation, it appears that there has been no significant net change in the Rook population of West Cumbria over the past 37 years. This belies much greater changes at the level of the individual rookery with substantial reductions or even

the elimination of some rookeries on the one hand, whilst there has been rapid growth or the establishment of new ones on the other hand. The specific factors responsible for these changes are unknown, but the pattern of changes is strongly suggestive of disturbance at the hands of man. One instance of such disturbance came to light during the course of this study (a case of vandalism to part of the rookery at Holmrook) and it is worth noting that the pattern of rookeries in the Gosforth area is almost certainly the result of shooting around Ellerslie House on the east side of Gosforth, during the breeding season of 2000. Persecution at the hands of man, it seems, continues to be a feature of the lives of Rooks in West Cumbria; similar concerns have been noted elsewhere (*e.g.* Sellers *et al.*, 2008). This, however, is by no means the whole story. Some of the variation is due to natural factors such as the weather and to the food supply. That a negative correlation was found between population change between years and the population index is an indication that the population is under a form of density-dependent control (that is, when the population is high it tends to go down, and when it is low it tends to go up), usually a sign of a healthy population at or near its carrying capacity.

The changes in the Rook population of West Cumbria between 1975 and 1996 mirror closely those in the county as a whole (see McAlone *et al.*, 1997). Whether this is true of the subsequently changes described here must await the completion of the projected 2013 all Cumbria survey.

Acknowledgements

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Table 1. Population estimates for Rooks breeding in West Cumbria in 1975, 1996 and 2005-2012

<i>Year</i>	<i>Population Index</i>	<i>No. Rookeries</i>
1975	ca. 103	—
1996	146	48
2005	100	45
2006	100	46
2007	96	46
2008	101	49
2009	81	50
2010	94	51
2011	93	51
2012	98	50

Table 2. Changes in the size of individual rookeries in West Cumbria 2005-2012

<i>Change</i>	<i>No. rookeries</i>	
deserted	4	(7%)
> 30% decrease	6	(11%)
≤ 30% change	30	(55%)
> 30% increase	5	(9%)
established	9	(16%)
established then deserted	1	(2%)
Total	55	

The Ruby and Scarlet Elf-cups *Sarcoscypha coccinea* (Jacq.) Sacc. and *S. austriaca* (O. Beck ex Sacc.) Boud. in Cumbria

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The two elf-cups are ascomycete fungi that grow on mossy twigs or small branches (almost always deciduous), that have either fallen naturally, or been cut and left to decay. They typically produce their distinctive fruiting bodies from December through to about March/April, maturing mainly in the second half of this period, with cup interiors a bright orange-red, and a pinkish white exterior (see cover illus.). They constitute a species-pair, distinguishable from each other only by microscopic examination (Butterfill & Spooner, 1995 – henceforth ‘B&S’). The features used for identification are spore characteristics and the shape of the hairs on the exciple (outer surface) of the cup; also, *S. austriaca* shows as a frequent feature the basal cells of the paraphyses being inflated (plate 7a). The sizes of the spores overlap to a considerable degree but in general they are shorter and broader in *S. austriaca* and frequently indented at the poles: they also bud small, subglobose, conidia at maturity (Spooner, pers. comm.) The English names, not universally used, were only adopted in recent years.

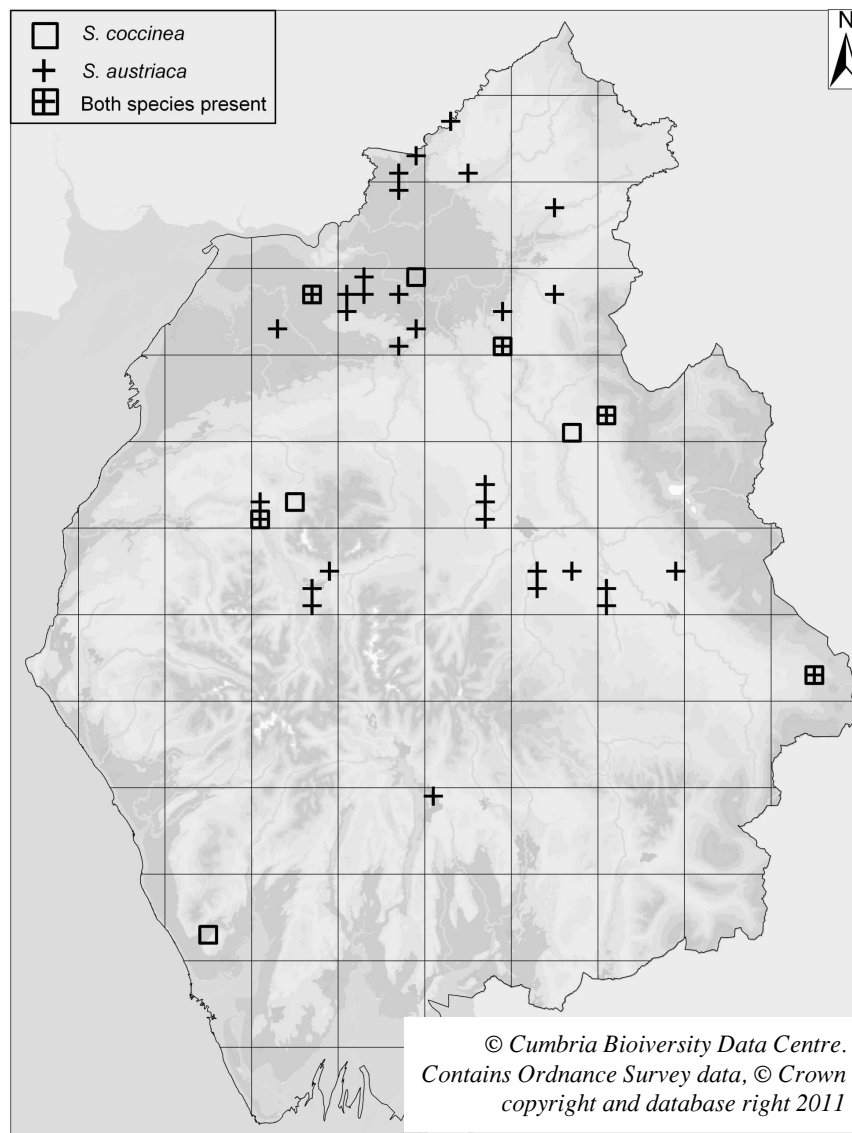
‘B&S’ suggest that *S. coccinea* had become scarcer by the late 20th century – they noted that it had had only ‘five collections in the past twenty years’ amongst the 76 specimens they checked. This compared to an evident increase of *S. austriaca* in the same period. This is recognised in some books and field guides (*e.g.* Phillips, 2006; Buczacki, 2012), but others (*e.g.* Sterry & Hughes, 2009) do not mention both species, giving *S. austriaca* as the representative of the genus. Material identified before ‘B&S’ will have been attributed to *S. coccinea* [*sensu lato*]. However, it is wise to assume that some collections made post-1995 may not be informed by that paper, and in the absence of herbarium material may be un-resolvable. Nationally, *S. austriaca* had 1068 records (2 from Cumbria) and *S. coccinea* 269 (1 from Cumbria) listed in the British Mycological Society’s online *Fungal Records Database of the British Isles* when checked at time of printing.

To try and assess the current situation, I and others made collections from December 2012 to mid-April 2013, locating over 50 sites, mainly in the north of the county, which included as many as possible of the sites of records held in the Cumbria Biodiversity Data Centre (CBDC) at Tullie House Museum. Promotion of the survey on the CBDC ‘Facebook’ page* brought in a few finds from more distant parts of the county. Specimens brought to Tullie House Museum were identified by Paul Nichol, and most of those collected by the writer were identified

by Peter Wilberforce (a former CNHS member now living near Oban). It was also hoped that this might bring out some pointers to differing ecology of these species; a secondary aim was to ‘field-test’ the variability/reliability of the morphological differences used to distinguish between them.

Map 1 shows the spread of our records by 2×2 km tetrad, from which it is apparent that both species are present over a wide area. *S. coccinea* was present at 9 locations, whereas *austriaca* was found at 43. Since we had virtually no prior knowledge of what to expect, this ‘sample’ is effectively random with respect to these two species. The overall pattern of records is heavily biased to the distribution of collectors. However, it shows that there is a complete overlap in geographical occurrence – and both are found in a wide range of local climates. In reality, the two species can sometimes be found not far apart. At one location, Dubwath (NY23A), they occur within 50m of each other – effectively on the same ground. Site altitudes have not exceeded 200 metres. Host tree species, where known, appear to range widely, and so far the data give no indication of differing preferences. Host species, where known, have been fairly basic-barked trees: Elm, Hazel, Ash, Poplar and Sycamore. The range of host species used (in Europe) is evidently narrower in *S. austriaca* than in *S. coccinea* (see online ref), so is unlikely to be the main limiting factor in the occurrence of the latter. Further work on host and habitat preferences of the two species might make an interesting study. *S. austriaca* is clearly common and widespread, with some ‘populations’ being extensive: an old tree-grown sandstone quarry near Liddel Strength (NY37W) had frequent large clusters of cups, numbering into the hundreds; *S. coccinea* (plate 8) by contrast has never been encountered in such abundance, and is usually either single or in scattered groups of just a few cups only. Pleasingly, the survey revealed eight previously unknown locations.

The data, for this limited geographical coverage at least, demonstrate that *S. coccinea* is still present, though clearly relatively uncommon, and certainly confirm that in the absence of critical examination it is unwise to ascribe ‘identifications’ to either species, merely noting them as *Sarcoscypha* sp. Nor, as noted above, can it be assumed that all material from one ‘site’ is the same species. A very tentative working hypothesis, based purely on the sites visited, is that *S. coccinea* may be dependent upon sites with some long continuity of woodland cover or at least minimal interventions by forestry operations, and that by contrast *S. austriaca* is more ‘ruderal’ in character, able to capitalise on recently disturbed or created situations, and therefore to occupy a much wider range of sites. One feature noticed in *S. austriaca* is a tendency (though not invariable) to occur on recumbent mossy branches and twigs at points not or only indirectly in contact with the leaf litter layer: its cups have been found at as much



Map 1. Records of Sarcosypha coccinea and S. austriaca December 2012 – April 2013

as 30cm above the woodland floor. This may simply reflect the wetness of conditions. However, so far at least, *S. coccinea* has invariably been at ground level. (A survey I conducted of over fifty *coccinea* cups in February 2013 at Fishgarth Wood (NY45V) revealed that with the exception of one diminutive cup, the point of eruption of the stipe from the substrate was where the wood and ground were in contact. The location is a steep slope below an old quarry: it corresponds exactly with an area where death of Wych Elms (*Ulmus glabra*) has provided abundant fallen, mossy, timber. The identifications were assumed, but this is a part of the site at which *S. austriaca* has not been found.) It is clear that both species seem to need locations that retain ground moisture, during the winter especially, hence their association with heavy clay (or sometimes peaty) soils and

places such as damp valley bottoms which are subject to occasional flooding and/or receive seepage water from adjacent slopes.

In most instances our identifiers had no difficulty determining the species, but both did encounter at least one example which had some degree of ambiguity, especially in relation to straightness or otherwise of the excipular hairs. Perhaps some future genetic studies will reveal more about inter-specific differences and the evolutionary relationship of these species. Peter Wilberforce's examinations and photography confirmed the 'budding' of *S. austriaca* spores while still attached to the hymenium (plate 7b). Possibly this contributes to the robustness of this species, aiding exploitation of new habitats.

Full records have been kept, including high resolution grid references. A number of specimens have been retained by Peter Wilberforce and his herbarium references form part of the data retained. With thanks to those who augmented my own collecting – Anne & Mike Abbs, Nigel Gilligan, Sara & Russell Gomm, David Johnston, Ciaran Kelly, Ben Knipe, Frank Mawby, Paul Nichol, Brian Redhead, Steve Routledge, Richard Speirs. I am also grateful to Gary Hedges at CBDC for help with this project, including its promotion via 'Facebook'. Paul Nichol and Peter Wilberforce provided the all-important identifications, and between them examined about hundred cups. I thank them profusely. Dr Brian Spooner kindly gave useful comment and advice on the draft.

* <https://www.facebook.com/CumbriaBDC>

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Predation by Otters *Lutra lutra* (L.) of spawning Whitefish *Coregonus lavaretus* (L.) and other rare lacustrine fish in Cumbria

Stephen Hewitt, Tullie House Museum, Castle Street, Carlisle CA3 8TP

*Ian J. Winfield, Lake Ecosystems Group, Centre for Ecology & Hydrology,
Lancaster Environment Centre, Bailrigg, Lancaster LA1 4AP*

The initial discovery of Otter predation on spawning Whitefish *Coregonus lavaretus*, locally known as Schelly, was reported by Hewitt (2010). Signs of intense Otter activity were initially noted at Skelly Neb, Ullswater on 1st February 2010. These signs included trampling of the lake shore, large numbers of spraints and abundant prey remains in the form of patches of fish scales and fins. Schelly spawn in January and February, when spawning shoals move into shallow water at night. Eggs are laid on gravelly lakebeds in water up to 4 metres deep (Winfield *et al.*, 1994). It was suggested that the prey remains represented fish that had come into the lake shallows at night to spawn and had thus become vulnerable to predation by Otters. Since Schelly normally inhabit deep waters and so are out of reach of Otters, which generally hunt at depths of 2 to 4m. (Chanin, 1985), it was predicted that this level of predation would be restricted to the Schelly spawning period. Furthermore, the distribution of prey remains was very restricted on the shoreline of the lake and it was hypothesised that the distribution of prey remains along the shore would mirror the extent of the spawning grounds at the lake edge, based on the assumption that Otters landing fish caught on the spawning grounds would take them to the nearest point of land for consumption.

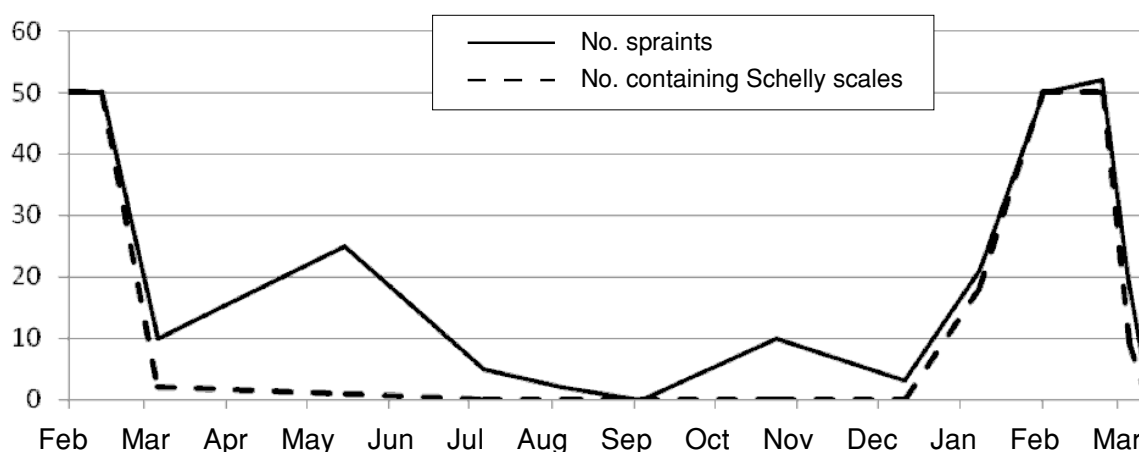
The protected and conservation status of both Otter and Schelly make this phenomenon of considerable interest, for whilst the Otter is presently enjoying something of a comeback over much of its British range, the status of Whitefish populations in the UK is considered 'inadequate and deteriorating' (JNCC, 2007). The Cumbrian populations of Schelly form the stronghold of the species in the UK. Aside from Llyn Tegid in Wales and Lochs Lomond and Eck in Scotland, the fish is only found in Ullswater, Haweswater, Brotherswater and Red Tarn in Cumbria. In addition, refuge populations of Haweswater Schelly have recently been established at Small Water and Blea Water (Winfield *et al.*, 2002). The netting of Schelly on Ullswater and Haweswater as part of a commercial fishery was first documented in the 17th century (Macpherson, 1892). Thousands of fish could be caught in one night. The catch sizes fell during the 19th century and commercial exploitation of Schelly ceased at the beginning of the 20th century (Ellison, 1966).

Whitefish scales are relatively large, from which the Cumbrian name for the fish of Schelly (or Skelly) derives (Macpherson, 1892). These large scales (plate 6a) – up to 10mm diameter – were readily identifiable in the field, enabling rapid assessment of the presence of Schelly scales in spraints and identification of predated remains of Schelly on the shore. Hewitt and Winfield (in press) report on further studies to identify Schelly spawning grounds on Ullswater and Haweswater, using data gathered to March 2011. This account incorporates those data with additional results gathered subsequently.

Seasonality of predation of Schelly by Otters

From February 2010 to March 2011, Otter spraints at Skelly Neb were counted, examined for Schelly scales and removed on a roughly monthly basis. Figure 1 shows the total number of spraints and the number containing Schelly scales found over the 12 month period.

Figure 1. Seasonal Otter activity at Skelly Nab, indicated by number of new spraints recorded on visits over a 12-month period, February 2010 – March 2011



Large numbers of spraints, almost all of which contained Schelly scales, were deposited in February 2010 and thereafter their number fell dramatically. Schelly scales were not recorded in the spraints from March to December. From mid-January 2011, Schelly scales reappeared in Otter spraints and the number of spraints increased very dramatically and stayed at high levels throughout February. Spraint numbers fell again dramatically in early March and Schelly scales were absent from them by mid-March.

These results support the theory that predation of Schelly by Otters is restricted to the spawning period, when the fish come into the shallows to spawn in dense shoals and thus provide an accessible and abundant food source for Otters. Some

caution is required in using the number of spraints as an indication of Otter activity, as studies elsewhere have shown that seasonal changes in spraint numbers observed may not correlate to Otter activity. In particular, it has been shown that a drop in the number of spraints observed in summer months may not reflect a similar drop in Otter activity (Kruuk, 2006). However, the results at Skelly Neb, supported by the occurrence of prey remains, are so strongly correlated with the Schelly spawning period there can be no doubt that Otters are drawn to these sites at these times and must disperse more widely in the catchment for the rest of the year. Although not studied methodically, the occurrence of Otter signs and prey remains on the shores of Haweswater show a comparable seasonality.

Having established that Otters are only significantly predating Schelly during their spawning period, there is potential to use Otter spraints and feeding signs to monitor the timing of the Schelly spawning season from year to year. For example, in 2011, predated Schelly were first noted on Ullswater on 8th January. Scales and eggs of a predated Schelly on the shoreline exposed by a falling flood could be accurately dated to the night of 7th February 2011, demonstrating that the fish were still in spawning condition on this date. Fresh patches of Schelly scales were still being noted up to late February. In 2013, fresh remains of predated Schelly were first recorded on 6th January and last recorded on 23rd February. On 3rd March Otters were still sprainting at Skelly Neb but by now their spraints contained amphibian bones rather than Schelly scales.

The highly localised and intense levels of activity by Otters during the Schelly spawning period gave an ideal opportunity to gather further observations of Otter behaviour. Since the Schelly only come into the shallows to spawn at night, Otter activity is almost entirely nocturnal. Camera traps provided an effective method of recording this activity over a series of nights during the spawning period. A number of traps have been operated over the spawning period in 2011, 2012 and 2013, taking both still and video images. A large number of instances of Otter activity have been captured, with individuals and family groups (plate 5) recorded feeding on Schelly, sprainting, grooming and playing. Of particular interest is the number of different individuals tolerating each other at close quarters to share in this temporary food bonanza. On one occasion, on 21st February 2011, six different Otters were caught in a single photograph at Skelly Neb. The assumption is that this number represents at least two family groups of bitches with their cubs. Such close company is unusual for these normally solitary creatures and is assumed to be a reflection of the localised abundance of food. Other species have also been caught on camera, scavenging scraps left by the Otters. These include Foxes, Badgers, Herons, Buzzards, Carrion Crows and Magpies. Foxes attempting to steal Otter prey were always seen to be driven off by the Otters.

Location of Schelly spawning grounds indicated by distribution of Otter prey remains

Much of the shoreline of Ullswater and the entire shoreline of Haweswater were walked during the Schelly spawning period from January to March 2011. Additional stretches of the Ullswater shoreline were surveyed in the subsequent spawning season of 2012, including visiting the three islands in the lake by kayak. The location and numbers of spraints and prey remains were recorded using GPS. The presence or absence of Schelly scales within the spraints was also noted.

Figure 2. Otter activity on Haweswater during Schelly spawning period 2011

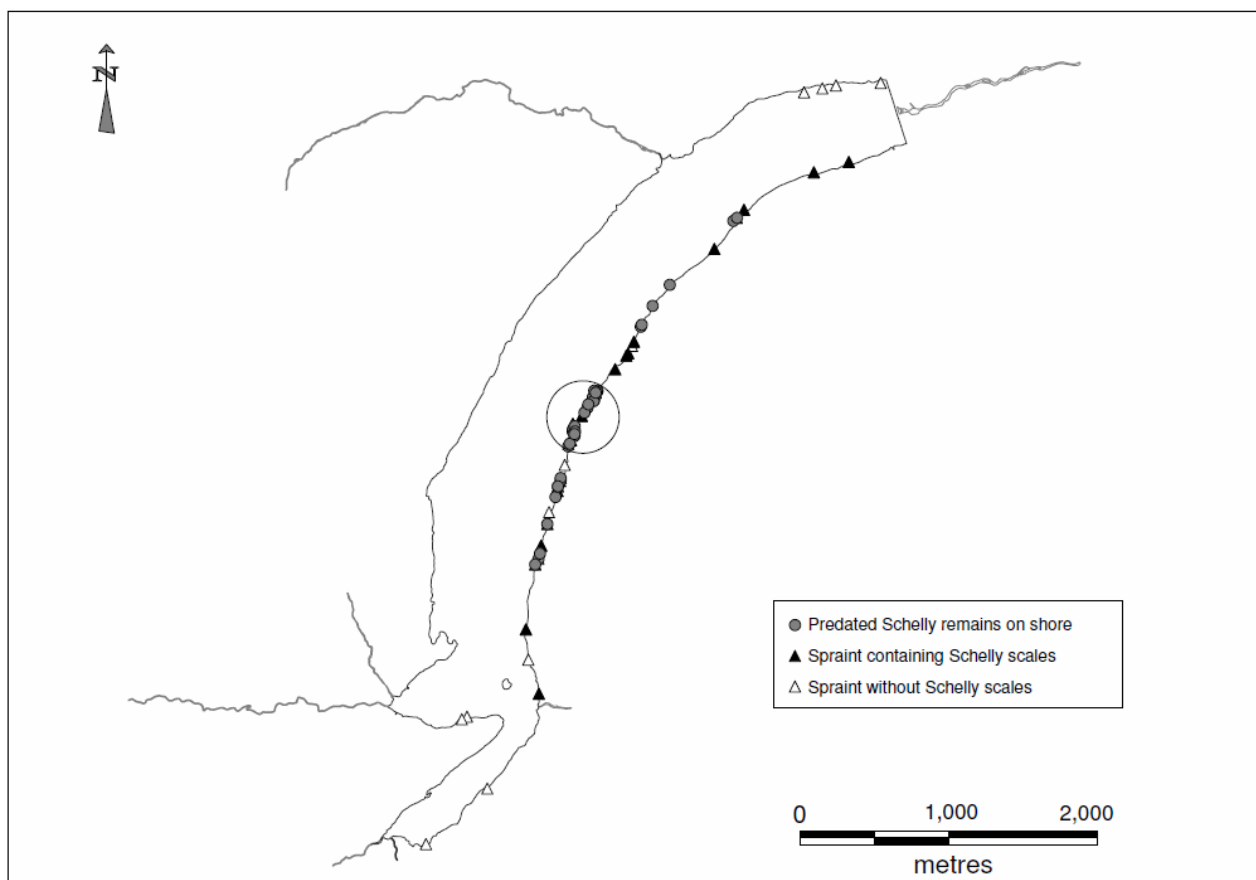
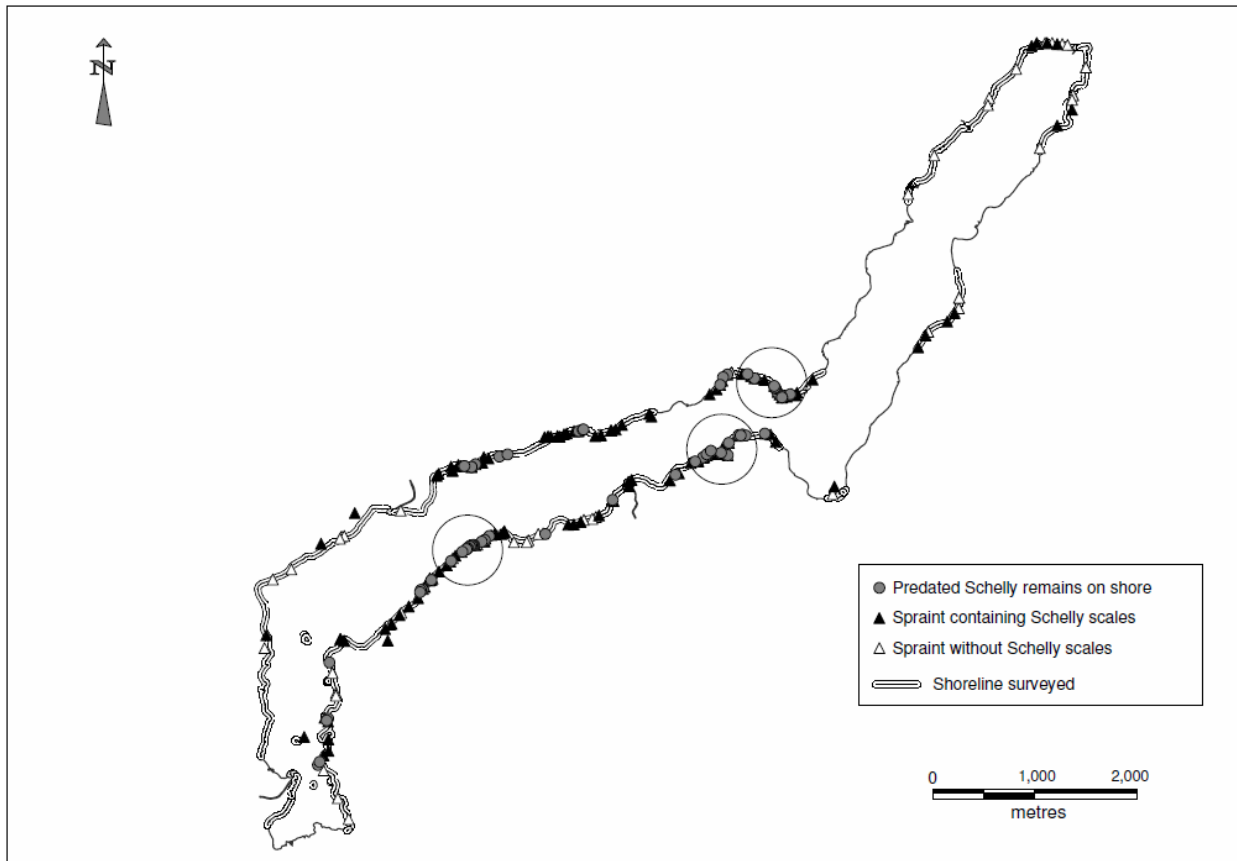


Figure 2 shows the distribution of Otter spraints and Schelly remains on the shoreline of Haweswater. It is apparent that there was little Otter activity on the western shore of the reservoir at this time and those few spraints did not contain Schelly scales. By contrast, the eastern shore of the lake shows areas of high numbers of spraints with many containing Schelly scales. The remains of Schelly landed and consumed by Otters are restricted to the eastern shore and concentrated within a limited area, indicated by the large circle. The distribution of predated Schelly remains is predicted to indicate the extent of the spawning grounds within the shallows at the edge of the lake. This predicted distribution includes the

previously recognised spawning area within the lake (Winfield *et al.*, 1996 & 1998) but also extends it in both directions along the shore.

Figure 3 shows the area of Ullswater shoreline that has been surveyed to date and indicates the distribution of spraints and prey remains on the shoreline, identifying spraints with and without Schelly scales in their contents.

Figure 3. Otter activity on Ullswater during Schelly spawning period 2011 & 2012



Ullswater is 11.8km long with an area of 894ha, a maximum depth of 62.5m (Ramsbottom, 1976) and a shoreline some 37.5km long. It is formed of two basins divided by a narrow neck between Skelly Neb and Hallin Fell. The south-western, upstream, basin is the deeper, and set in a mountainous landscape. The shallower north-eastern basin is largely surrounded by enclosed farmland with a gentler topography. Whilst Otter spraints were widely distributed around the lake, including spraints containing Schelly scales, they were concentrated in higher numbers on the shores of the south-western basin. Remains of predated Schelly were found only on the shores of the south-western basin. The concentrated distribution of prey remains indicated by large circles on the map in figure 3 suggest the presence of two major Schelly spawning areas in addition to the previously recognised spawning site at Skelly Neb. In addition, there are further

areas of shallows that appear to be used less intensively by spawning Schelly, based on the signs of Otter predation.

Schelly populations are also known to survive in Brotherswater and Red Tarn (Winfield *et al.*, 2011). Surveys of the shoreline of Brotherswater over three seasons have failed to find any remains of Schelly brought ashore by Otters or any other predator. Indeed, despite Otter spraints being widely deposited around the lake, only one has been found containing Schelly scales thus far. Although this single spraint may be evidence of Otters predating Schelly in Brotherswater, it is also possible that the Otter had fed on Schelly in Ullswater before travelling to Brotherswater and defecating the spraint with its contents of Schelly scales there. It may be that the population of Schelly in Brotherswater is of insufficient size to generate the dense spawning shoals that would attract the specific attention of Otters.

Red Tarn has been visited several times during the Schelly spawning period from 2010 to 2013. On some visits the tarn was frozen and inaccessible to Otters, but on other occasions conditions appeared perfectly conducive for foraging Otters. On none of these visits were any signs of Otters or Schelly found. It appears that there is not sufficient attraction to Otters to encourage them to travel to this high altitude tarn in mid-winter. Whether this is due to the Schelly population being too small, or due to the isolation of the tarn and/or lack of other requirements is not clear.

Only a single visit has been made to the introduced Schelly populations in Small Water and Blea Water and that was at the end of the spawning season in 2011. Although there were two or three spraints around Small Water, none of these contained Schelly scales and no signs of predated Schelly were noted. Further investigation is required.

Experience outside Cumbria

Llyn Tegid in North Wales was visited on 9th-10th February 2013 and much of the shoreline of that lake was walked. Otter spraints were well distributed around the lake but were nowhere in particular concentrations. None of these contained Whitefish scales and no remains of fish brought ashore and eaten were seen. This should have been the height of the spawning period and the lack of signs of Otters preying on the Whitefish is puzzling. Four possibilities present themselves:

- 1: The spawning period in Llyn Tegid is rather earlier than in Cumbria and had finished by 9th February and all signs of earlier predation by Otters had been washed away by recent wet weather.
- 2: The topography of the lake bed on the Whitefish spawning grounds of Llyn Tegid is such that it prevents Otters being able to catch the Whitefish.

- 3: The population of Whitefish in Llyn Tegid is too low to attract the attentions of Otters (as in Brotherswater?).
- 4: Welsh Otters have not learned to utilise the spawning shoals of Whitefish as a seasonal food resource.

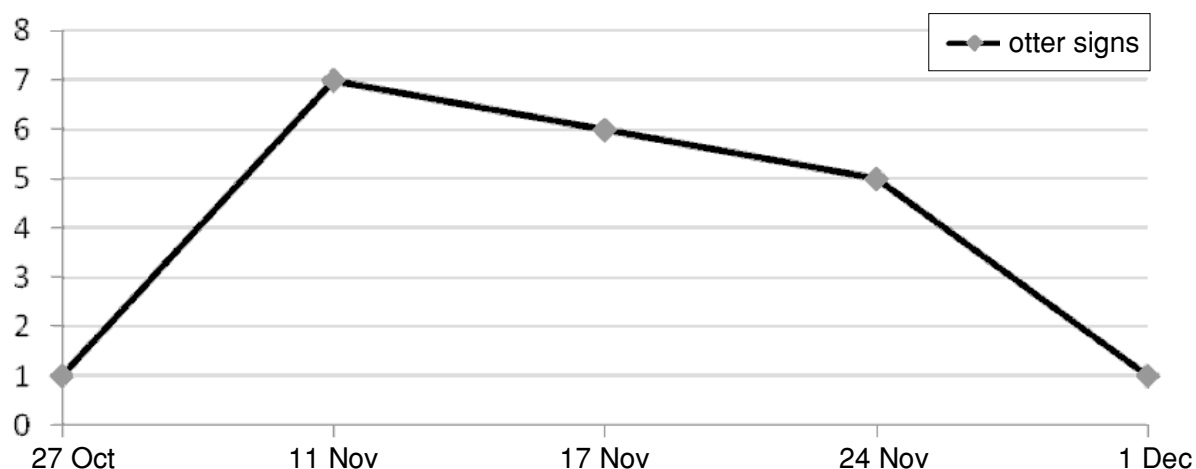
Of these possibilities, the second and fourth seem least likely. Certainly with regard to lake bed topography, IJW is aware of a number of very nice ‘spawning gravel beaches’ where large numbers of Whitefish can be netted and these places appear perfectly good Otter feeding areas.

Signs of Otter predation of spawning populations of other species of lake fish

The Vendace *Coregonus albula* is closely related to the Schelly. It is a smaller fish, with similar though smaller scales (plate 6b). This is Britain’s rarest fish, with Derwent Water housing the last natural population in the UK. Refuge populations have been introduced to Sprinkling Tarn in Cumbria and Loch Skeen in the Moffat Hills (Winfield *et al.*, 2012). Surveys of stretches of shoreline around Derwent Water, whilst recording plenty of Otter spraints, have yet to reveal any evidence of Otters predating Vendace. Vendace scales, being smaller, will be less immediately obvious in spraints, but prey remains should be obvious if present. The lack of results to date may be due to insufficient recording effort – only 50% or so of the shoreline has been surveyed and none of the islands have been visited in the December spawning season, although the surveyed area does include some of the spawning grounds identified by Winfield *et al.* (2008). It may be that being a smaller fish than the Schelly, Otters do not need to bring them ashore to eat, and so are not leaving prey remains. However, at around 150mm in length, Vendace are larger than the 100mm threshold at which Otters generally land prey items for consumption (Ruiz-Olmo *et al.*, 1998). Also the weather in some recent spawning seasons has been problematic, with the lake frozen over completely in December 2010 and suffering significant flooding in December 2011.

The Arctic Charr *Salvelinus alpinus* is the other rare fish of the Cumbrian lakes. Closely related to Salmon and Trout, its scales (plate 6c) are indistinguishable from those of these other salmonids, making it difficult to differentiate the species in Otter spraints. However, survey of the stretch of the River Liza entering Ennerdale Water known as Charr Dub during the Charr spawning period in November 2013 shows an increase in Otter activity at this time (figure 4, overleaf). This is based on the number of spraints and prey-remains recorded, and is despite frequent flooding of the river over this period, probably washing away evidence before it could be recorded. The spraints collected did contain salmonid

Figure 4. Otter signs at Charr Dub, Ennerdale, October–December 2012



scales, and also fish roe in some instances. Remains of predated Charr were also found on the bank, which were assumed to have been taken by Otters. Although the level of Otter activity centred on the Charr-spawning in Ennerdale Water is much lower than that observed on Schelly spawning sites on Ullswater and Haweswater (presumably reflecting lower numbers of fish and relatively more dispersed nature of spawning activity), there is nevertheless apparent potential for further investigation of Charr spawning areas on other lakes through survey of Otter activity and prey remains during the fish spawning seasons.

Acknowledgements

We are very grateful to Dr El Moustafa Eweda of Cumbria Biodiversity Data Centre for producing the distribution maps. Our thanks too to the various land owners who gave access to stretches of lake shore in the course of this study.

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'Noticeboard'

BioBlitzes

The Society is supporting 'BioBlitzes' (events where the aim is to record as many species as possible and the public are invited to learn about recording wildlife) at Finglandrigg NNR on 14th/15th June and Geltsdale RSPB Reserve on 6th/7th July. Members are also invited to the Arnside Bioblitz on 29th May. More information at <http://www.bnhc.org.uk/home/bioblitz/national-bioblitz/thenorth.html>.

Miltonrigg Recording Project

In memory of Geoff Naylor, the Society is planning a survey of his home stamping ground at Miltonrigg Wood, Brampton. As well as the planned fieldtrip in May we hope that Society members will visit the site over the course of the year to record as wide a diversity of wildlife there as possible. We will compile a report at the end of the year and publish it on our website. Contact Stephen Hewitt for details of how to contribute.

Jennifer Newton

We are sad to report the death of Dr Jennifer Newton earlier this year. Jennifer lived near Lancaster and did an immense amount of natural history study in north Lancashire and Cumbria. She had been a member of this Society for a number of years, contributing notes to the *Carlisle Naturalist*. A fine all-round naturalist, Jennifer was particularly expert in the study of spiders and acted as county recorder for that group. We hope to include an appreciation of Jennifer in the next issue.

General Recording

Record cards now go to the new CNHS recorder, Frank Mawby, Carlisle Natural History Society, c/o Tullie House Museum, Castle Street, Carlisle CA3 8TP. Mammal records will be particularly welcomed as these are under-recorded. CBDC now has a Biological Recording Officer, Gary Hedges, who can assist members with managing and sharing their data, including via CBDC's online recording facility, <http://cbdc.rodic.co.uk>. Gary's contact details are 01228 618717, recordingofficer@cbdc.org.uk and the usual museum address. CBDC has obtained two microscopes members can borrow for up to three months, contact Gary for more details.

Cumbrian Wildlife Recorders' Conference and Solway Wetlands Exhibition

Speakers and posters are invited for the third Recorders' Conference at Tullie House on 19th October. The Conference has a wetland theme, to tie in with the exhibition on the wildlife of the Solway wetlands at Tullie House from 6th July to 10th November 2013.

CNHS Facebook Group

This is a friendly group for Carlisle Natural History Society members to share photos and discuss natural history topics with fellow members. To join the group go to <http://www.facebook.com/groups/carlislenats> or search Facebook for 'Carlisle Nats'. Then click 'join group' in the top righthand corner.



1. (p. 2) Long-tailed Ducks. 26 October, R. Eden, Carr Beds.

© Nick Franklin



2. (p. 2) Whooper Swans (with 1500 Pink-footed Geese) part of a flock of some 289 swans. 27 Dec 2012, Blackdyke, Silloth,

© Frank Mawby



3. (p. 16) Northern Hawk's-beard *Crepis mollis*, Greystoke, July 2012.
 a) the 'dandelion-like' flowers; b) a stem leaf. © Jeremy Rob-



4. (p. 17) Spring Hazel-cup *Encoelia furfuracea*: a) unopened cups, 18 Dec 2012; b) partially open cluster, 20 March 2013, Argill NR (CWT).



5. (p. 29) Otters (4), captured on infra-red camera-trap: 3 March 2012, 1900 hrs GMT, Ullswater. © Stephen Hewitt



6. (pp. 28 & 33) Scales of **a)** Schelly, **b)** Vendace; **c)** Trout. *all c. x10.5*
© Stephen Hewitt



7. (pp. 23 & 36) *Sarcoscypha austriaca* photomicrographs: **a)** inflated basal paraphyses; **b)** spore showing 'budding' process. © Peter Wilberforce



8. (p. 24) *Sarcoscypha coccinea*. Argill NR (CVT), 30 January 2013.
© David Clarke

Carlisle Natural History Society – Programme 2013

check website www.carlisenats.org.uk for updates

19th April (Friday evening): River Caldew, general wildlife walk

Leader Anne Abbs. Meet White Bridge, Dalston (NY3703.4977) at 6.00 pm.

26th April (Friday evening): Solway, Natterjack Toads

Leader Sam Griffin. Meet Anthorn Farm, NY19278 58070 at 7.30pm.

18th May (Saturday): Miltonrigg Wood, Geoff Naylor Site Recording Scheme day

General wildlife recording day in memory of Geoff Naylor. Contact Stephen Hewitt (01768 890737). Meet Miltonrigg Wood Car Park (NY5640.6182) at 10.30 am.

16th June (Sunday): Teesdale, flora

Leader Jeremy Roberts (01228 560164). Meet layby, start of Eitersgill road (NY8933.2844), at 10.30 am.

21st June (Friday evening): Bowness-on-Solway, Swallowringing

Leader Frank Mawby (016973 51301). Meet 'Wayside', Kirkbride (NY2298.5596) 7.00 pm. (may be cancelled if wet – phone to check).

29th June (Saturday): Honister Pass, Mountain Ringlets etc

Leader Stephen Hewitt (01768 890737) Meet, Honister Pass kyby (NY230.136 at 10.30 am. (parking is limited).

14th July (Sunday): Grey Mare's Tail and Loch Skeen

Leader Richard Clarkson (NTS) (contact Steve Hewitt 01768 890737). Meet Grey Mare's Tail car park (NT1861.1450) at 10.30 am. NB: This is an arduous mountain excursion.

27th July (Saturday): Burgh-by-Sands, local nature areas

Leader Russell Gomm (01228 576800). Meet Burgh-by-Sands Village Green car park (NY3252.5909) at 10.00 am.

2nd August (Friday evening): Orton Moss, moth evening

Leaders Liz Still & Mike Clementson. (Contact Liz Still 016973 51194 or 07743479581) Meet kyby N side of road, 0.7 miles E of Gt. Orton (NY3390.5401) at 9.30 pm.

4th August (Sunday): Nestlé land by R. Caldew at Dalston

Leader: David Hickson (01228 710499). Meet Ommersdale (NY3951.5282) at 10.30 am.

23rd August (Friday evening): Bat walk at High Stand

Leader Robin Hodgson (01228 590804) Meet High Stand Car Park (NY4978.4850) at 7 pm.

24th August: Dubmill Scar, Mawbray: tickline wildlife

Leader Steve Garner (contact Russell Gomm 01228 576800). Meet 8.15am at car park at NY079.447.

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