Nature in Avon

Volume 75

Bristol Naturalists' Society

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Editorial

2015 was Bristol's Green Capital Year and plenty of extra activities and events were launched to celebrate, involving all the naturalist and conservation organisations in the city. BNS played a full part in this with experts on hand to help and encourage the large numbers of people who took part. For full details of the events and projects see the Society Annual Report.

We have two articles focusing on lower plants this time. Jean Oliver gives us a fascinating insight into the fungi she has found at the St George's Flower Bank Reserve since 2011 (over 100) including, believe it or not, St George's mushroom! Interesting bryophytes, fungi and lichens found in the region in various habitats are reported by David Hill and his colleagues including some conservation projects. Continuing the botanical theme, Blagdon Lake and Chew Valley Lake are familiar to most of us, but perhaps not so the plants that grow there. Rupert Higgins explains the effects of nutrient-rich run off from farms on the flora and reports his latest survey there.

Most of us are unaware of the bats that sometimes visit our gardens. Jane Cole and the Avon Bat Group have installed a bat detector in some of their gardens in Bristol, with interesting and sometimes surprising results. This paper nicely complements Roger Symes' Mammal Report which looks at the records collected during the year.

Lucy Rogers leads us through the conservation plans of Avon Wildlife Trust and explains some of their current projects, while I report on an interesting visit to BRERC where I learned about the wider world of wildlife recording. Some interesting invertebrates were recorded this year; Ray Barnett provides a summary, while his fellow entomologist David Hawkins encourages us all to look for the rather unusual Lesne's earwig!

Finally, if you thought last summer was wet you would be correct – Richard Bland provides his weather report for the year and sets his findings in a wider context.

I hope you enjoy this issue. I would like to thank the committee for their helpful ideas and support.

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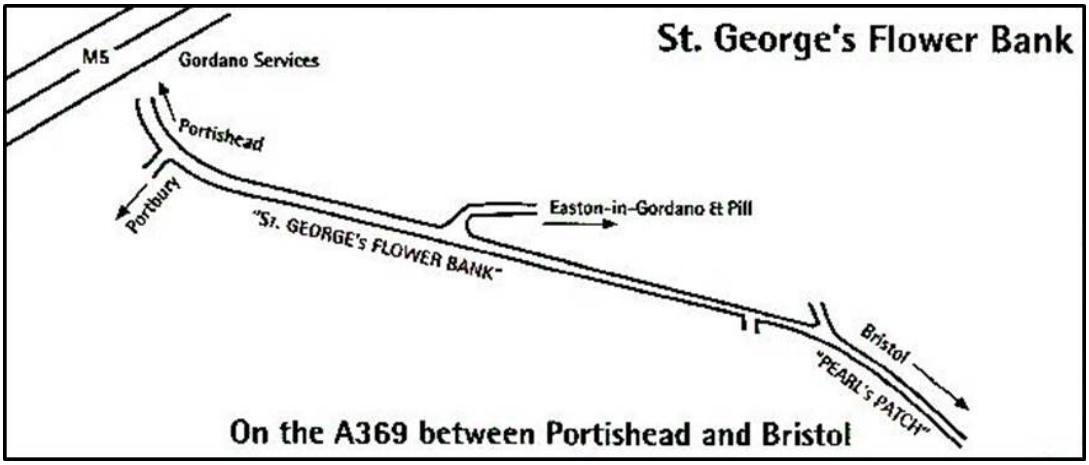
Fungi on the St. George's Flower Bank, Easton-in-Gordano

Jean Oliver

Introduction

The St. George's Flower Bank is comprised of the verges and cycle path along the A369 (Martcombe Road) near Easton-in-Gordano. It is now designated a Local Nature Reserve. The original A369 was diverted at St. George's Hill to accommodate the M5 motorway junction at the Gordano service area [c. 1971]. A half-mile stretch of new road was cut through a field to straighten and widen the old one. This cutting produced areas of nutrient poor grassland.



In 2015 the Flower Bank celebrated its 25th anniversary having originally been brought into being by Bob Buck, a Pill resident. Bob and a band of volunteers have maintained the area to preserve the Primroses, Cowslips and Orchids that appeared on the Bank. Grass areas are mown at the end of the summer and the arisings removed. Encroaching scrub and saplings are also removed.

The Flower Bank comprises three basic areas:

1. The eastern end, Pearl's Patch, is wooded and has mainly native trees including Hazel, Birch, Elder, Gorse, Mountain Ash, Beech, Alder, Apple, Yew, Holly, and Oak and has a Hawthorn hedge at the field boundary.

2. The western end from the Easton-in-Gordano turn-off has on the north side a cycle track bounded by trees including Hazel, regenerating Elms, Ash, Blackthorn, Sycamore, Dogwood, Holly, Field Maple and Hawthorn. There is an area of meadow at the road junction. The south side is a steep grassy/mossy bank with some Hawthorn, Ash, Hazel and Cherry.

Pearl's Patch

Cycle Track

Meadow

Middle section (North verge)

Middle section (South verge)

3. The middle section is mainly managed to maintain it as meadow. The verge on the south side is steeply sloping while the verge to the north side is not so steep. Both sides have rocky outcrops with some Hazel, Ash, Hawthorn and Field Maple.

Plants growing on the Flower Bank include Field Scabious, Restharrow, Carline Thistle, Wild Carrot, Ploughman's Spikenard, Pyramidal Orchid, Common Spotted Orchid, Bee Orchid, Bird's-foot Trefoil, Hogweed, Ox-eye Daisy, Agrimony and Knapweed.

After attending a talk about the Flower Bank I decided to pay monthly visits starting in 2011 to look for fungi that might be growing there.

Species of fungi, lichens and slime moulds 2011-2015

Agaricus bisporus (Cultivated Mushroom)
Agaricus moelleri (Inky Mushroom)
Armillaria mellea (Honey Fungus)
Auricularia auricula-judae (Jelly Ear)
Bjerkandera adusta (Smoky Bracket)
Bolbitius titubans (Yellow Fieldcap)
Byssomerulius corium (Netted Crust)
Calocera cornea (Small Stagshorn)
Calocybe gambosa (St. George's Mushroom)
Cercospora scandens
Chlorophyllum rhacodes (Shaggy Parasol)
Chondrostereum purpureum (Silverleaf Fungus)
Cladosporium orchidis
Clavulinopsis helvola (Yellow Club)
Clitocybe dealbata (Ivory Funnel)
Clitocybe decembris
Clitocybe nebularis (Clouded Funnel)
Clitocybe phyllophila (Frosty Funnel)
Clitocybe rivulosa (Fool's Funnel)
Clitocybe vibecina (Mealy Funnel)
Coleosporium tussilaginis
Collybia dryophila (Russet Toughshank)
Coprinus comatus (Lawyer's Wig)
Coprinus disseminatus (Fairy Inkcap)
Coprinus lagopus (Hare's Foot Inkcap)
Cortinarius hemitrichus (Frosty Webcap)
Cortinarius hinnuleus (Earthy Webcap)
Crepidotus applanatus (Flat Oysterling)
Crepidotus cesatii (Roundspored Oysterling)
Crepidotus mollis (Peeling Oysterling)
Crepidotus variabilis (Variable Oysterling)
Cystolepiota seminuda (Bearded Dapperling)
Daldinia concentrica (Cramp Ball)
Dasyscyphus niveus
Dasyscyphus virgineus
Dermoloma cuneifolium (Crazed Cap)
Diplocarpon mespili
Entoloma conferendum (Star Pinkgill)
Erysiphe cichoracearum
Erysiphe heraclei (Hogweed Mildew)
Erysiphe ranunculi
Exidia nucleata (Crystal Brain)
Flammulina velutipes (Velvet Shank)
Guignardia philoprina
Gymnosporangium confusum
Hebeloma crustuliniforme (Poisonpie)
Hebeloma sacchariolens (Sweet Poisonpie)
Hebeloma velutipes (Birch Poisonpie)
Hygrocybe conica (Blackening Waxcap)
Hygrocybe virginea (Snowy Waxcap)
Hypholoma fasciculare (Sulphur Tuft)
Hypoxylon fuscum (Hazel Woodwart)
Laccaria amethystina (Amethyst Deceiver)
Laccaria laccata (Deceiver)
Lactarius glyciosmus (Coconut Milkcap)
Lactarius pubescens (Bearded Milkcap)
Lactarius pyrogalus (Fiery Milkcap)
Lecanora chlarotera (Lichen)
Lecidella elaeochroma (Lichen)
Lepiota cristata (Stinking Daperling)
Lepista flaccida (Tawny Funnel)
Lepista nuda (Wood Blewit)
Leptosphaeria acuta (Nettle Rash)
Leptosphaeria agnita
Lycoperdon molle (Soft Puffball)
Lycoperdon perlatum (Common Puffball)

Marasmius epiphyllus (Leaf Parachute)
Marasmius ramealis (Twig Parachute)
Marasmius rotula (Collared Parachute)
Melampsora populnea (Dog's Mercury Rust)
Melanoleuca polioleuca (Common Cavalier)
Microsphaera alphitoides (Oak Mildew)
Mollisia cinerea (Common Grey Disco)
Morchella esculenta (Morel)
Mucilago crustacea (A Slime Mould)
Mycena adscendens (Frosty Bonnet)
Mycena arcangeliana (Angel's Bonnet)
Mycena galopus (Milking Bonnet)
Mycena rosea (Rosy Bonnet)
Mycena vitilis (Snapping Bonnet)
Nectria cinnabarina (Coral Spot)
Panaeolus acuminatus (Dewdrop Mottlegill)
Panaeolus fimicola (Turf Mottlegill)
Paneolina foenisecii (Brown Mottlegill)
Paxillus involutus (Brown Rollrim)
Peronospora oerteliana
Phellinus tuberculosus (Cushion Bracket)
Phoma hedericola
Phoma samararum
Phomopsis pterophila
Phragmidium violaceum (Violet Bramble Rust)
Pleurotus ostreatus (Oyster Mushroom)
Podosphaera clandestina
Polyporus brumalis (Winter Polypore)
Polyporus squamosus (Dryad's Saddle)
Psathyrella candolleana (Pale Brittlestem)
Psathyrella conopilea (Conical Brittlestem)
Psathyrella gracilis (Red Edge Brittlestem)
Pseudoperonospora urticea
Puccinia malvacearum (Mallow Rust)
Puccinia pulverulenta
Puccinia punctiformis
Puccinia sessilis
Ramaria stricta (Upright Coral)
Ramularia picridis
Ramularia primulae
Ramularia rhabdospora
Ramularia rubella
Rhytisma acerinum (Tar Spot)
Scleroderma areolatum (Leopard Earthball)
Septoria scabiosicola
Septoria sorbi
Stereum hirsutum (Hairy Curtain Crust)
Stereum rugosum (Bleeding Broadleaf Crust)
Stropharia caerulea (Blue Roundhead)
Tarzetta cupularis (Toothed Cup)
Trametes gibbosa (Lumpy Bracket)
Trametes pubescens
Trametes versicolor (Turkey Tail)
Tremella mesenterica (Yellow Brain)
Trichoglossum hirsutum (Hairy Earth Tongue)
Trochila ilicina (Holly Speckle)
Tubaria dispersa
Tubaria furfuracea (Scurfy Twiglet)
Uromyces dactylidis (Celandine Clustercup Rust)
Volvariella gloiocephala (Stubble Rosegill)
Vuilleminia coryli
Xylaria hypoxylon (Candlesnuff)

73 species were identified in the first year 2011, a further 17 were added in 2012, and the following year produced another 19 new additions. I was encouraged by this gradual increase in species and in 2014 added another 12 and last year another seven.

The additions can sometimes be quite spectacular as with the *Ramaria stricta* (Upright Coral) found in 2015 on the gradually rotting heap of debris at the western end.

The meadow areas have produced several species of fungi characteristic of unimproved grassland: *Hygrocybe conica* (Blackening Waxcap), *Hygrocybe virginea* (Snowy Waxcap), *Dermaloma cuneifolium* (Crazed Cap), *Clavulinopsis helvola* (Yellow Club), and *Trichoglossum hirsutum* (Hairy Earth Tongue).

Hygrocybe virginea

Trichoglossum hirsutum

Some trees have fungi that are associated with them, and in Pearl's Patch *Lactarius glyciosmus* (Coconut Milkcap) was found with Birch, *Lactarius pyrogalus* (Fiery Milkcap) and *Hypoxylon fuscum* (Hazel Woodwart) with Hazel. *Tubaria dispersa* was with Hawthorns at the western end.

Tree stumps on the bank yielded a selection of bracket fungi: *Trametes versicolor* (Turkey Tail), *Trametes gibbosa* (Lumpy Bracket), *Trametes pubescens*, *Bjerkandera adusta* (Smoky Bracket), *Stereum hirsutum* (Hairy Curtain Crust), *Polyporus brumalis* (Winter Bracket) and *Polyporus squamosus* (Dryad's Saddle). The stumps often had tufts of *Xylaria hypoxylon* (Candlesnuff). After five years many of the stumps are now rather decayed, and are no longer so productive of bracket fungi.

Other fungi of note include *Morchella esculenta* (Morel) in soil under Hazel, *Ramaria stricta* (Upright Coral), *Volvariella gloiocephala* (Stubble Rosegill), and *Chlorophyllum rhacodes* (Shaggy Parasol) growing on a large rotting heap of grass cuttings and other debris.

Trametes pubescens

Xylaria hypoxylon

Morchella esculenta

Ramaria stricta

I was pleased to find on one occasion specimens of *Calocybe gambosa* (St. George's Mushroom), the common name fitting well with the name of the Flower Bank.

The effect of various plant pathogens can be seen on the leaves of some plants: the familiar *Rhytisma acerinum* (Tar Spot) on Sycamore leaves, *Septoria scabiosicola* on Field Scabious, and *Puccinia pulverentula,* a rust fungus, on Willowherb.

Calocybe gambosa

Septoria scabiosicola

What at first sight seemed to be a rather inhospitable site has produced over a hundred species of fungi in five years and may still have more to reveal as fungal fruit bodies are often short lived and seasonal so could appear between visits and not be recorded.

The site is still evolving and this may in due course influence the fungal species found on the Flower Bank.

Water Plants at Chew Valley and Blagdon Lakes

Rupert Higgins

Introduction

Blagdon and Chew Valley Lakes will be familiar to most BNS members. Both are artificial reservoirs created by Bristol Water for the supply of drinking water. The oldest is Blagdon, which was flooded between 1899 and 1903 and covers 440 acres; Chew was flooded between 1956 and 1958 and covers 1,200 acres. Both lie on the northern edge of the Mendip Hills and the catchment of both is dominated by permanent pasture over predominantly clay-rich soils with a high pH. Amongst naturalists the lakes are best known for their birds, but many other aspects of their biology, not least their botany, are of considerable interest.

I have been a frequent visitor to Chew Valley Lake and an occasional visitor to Blagdon Lake, for thirty five years recording birds especially, but always keeping an eye open for any plants of interest. Until 2015 I was only able to survey water plants from the banks of the lakes, so my records were limited to vegetation in shallow waters and fragments of plants washed up on the lake shores. In 2015 I was fortunate enough to be employed by Bristol Water plc to survey aquatic vegetation in the two lakes, primarily to check for the presence of invasive non-native species. This article describes the findings of these surveys. Through the article the term "macrophytes" refers to vascular plants and stoneworts (charophytes), but does not include other groups of algae.

Methods

The margins of the lakes were walked twice, in August and October 2015, and a grapple was used to survey stands of submerged vegetation in shallow water. Boat surveys were carried out in October 2015. Transects were made across the lake, aquatic vegetation was sampled with a grapple and a bathyscope was used to map stands. The bathyscope, a new item for me, was especially useful: essentially a bucket with a glass base, it allows variations in vegetation to be mapped accurately and gives an appreciation of stands *in situ*, as opposed to the fragmented samples recovered with a grapple.

It is clear from casual observations that the extent of aquatic vegetation at both lakes varies enormously from year to year and there is no way of knowing whether the results of the 2015 surveys are typical. It is certainly fortunate that the weather through the autumn of 2015 was very settled: if it had been stormy then many areas of vegetation would have been broken up.

Survey Results

I identified seven main types of aquatic vegetation at the lakes, defined by the dominant species, plus a very varied inundation community that colonises the exposed mud as water levels drop in late summer. The main vegetation types are as follows.

Mare's-tail dominated vegetation of very shallow water: The two abundant species are Mare's-tail (*Hippuris vulgaris*) and Amphibious Bistort (*Persicaria amphibia*) with emergent species invading the edges of the stands. These emergents are particularly frequent at Blagdon, where they include Flowering Rush (*Butomus umbellatus*) and Common Club-rush (*Schoenoplectus lacustris*). This vegetation type is best developed at Blagdon Lake, in Home Bay, extending around Home Point and past the Lodge, and along the western side of Butcombe Bay. At Chew there are smaller patches in Villice Bay and at Hollow Brook.

Canadian Pondweed-dominated vegetation: In National Vegetation Classification (NVC) terms it falls within the A11 *Potamogeton pectinatus-Myriophyllum spicatum* community, generally within the *Elodea canadensis* sub-community. This vegetation type is the most widespread at both lakes. At Blagdon it covers large areas at the Top End and in the upper parts of Butcombe Bay, Long Bay and Holt Bay. At Chew it occurs in scattered patches at the northern end of the lake; between Denny Island and the east shore; off Moreton Bank and in Heron's and Villice Bays.

"Narrow-leaved" Pondweed-dominated vegetation: At Blagdon Fennel-leaved Pondweed is the most frequent species but at Chew significant areas are dominated by Small Pondweed. Stands dominated by narrow-leaved species of pondweed are patchily distributed at the western end of Blagdon, but at Chew they are more extensive, forming along the north-western shore and off the dam; off Sutton Wick; off Moreton Point; and in Stratford Bay.

Fan-leaved Water-crowfoot and Rigid Hornwort-dominated vegetation: These two species share dominance of a large area off the Main Reeds in the south-eastern part of Chew.

Spiked Water Milfoil-dominated vegetation: This covers a limited area between the mouth of Villice Bay and Woodford Lodge at Chew.

Perfoliate Pondweed-dominated vegetation: This is dominated by Perfoliate Pondweed (*Potamogeton perfoliatus*) with very small quantities of Shining Pondweed (*Potamogeton lucens*). This vegetation type has only been recorded at Blagdon and there it occupies an extremely limited area around the mouth of Butcombe Bay and towards the dam.

Stonewort-dominated vegetation: Large areas of deeper water, particularly at the western end of Blagdon and between Nunnery Point and Denny Island at Chew, are dominated by the Stonewort (*Nitellopsis obtusa*). Small quantities of other species

are present at Blagdon but at Chew the stands of this plant are virtually monospecific.

Inundation communities: The vegetation that colonises mud exposed as the water drops in late summer was not specifically included in the 2015 surveys, but it is reasonably well known and of considerable interest. The composition of the vegetation varies considerably from year to year depending on the extent and timing of drawdown. Many of the frequent species are familiar from disturbed damp and nutrient-rich soils in farmland. These plants include Scentless Mayweed (*Tripleurospermum inodorum*), Fat-hen (*Chenopodium album*), Red Goosefoot (*Chenopodium rubrum*), Common Orache (*Atriplex patula*), Silver-weed (*Potentilla anserina*), Scarlet Pimpernel (*Anagallis arvensis*) and Corn Mint (*Mentha arvensis*). Other frequent species are associated with wetland habitats: these include Water Mint (*Mentha aquatica*), Marsh Yellow-cress (*Rorippa palustris*), Creeping Yellow-cress (*Rorippa sylvestris*), Water Chickweed (*Myosoton aquaticum*), Marsh Cudweed (*Gnaphalium uliginosum*) and, especially at Blagdon, Trifid Bur-marigold (*Pidens tripartita*). Bryophytes also colonise these areas, more abundantly at Chew than at Blagdon. Particularly frequent species include the liverwort Cavernous Crystalwort (*Riccia cavernosa*) and Spreading Earth-moss (*Aphanorrhgema patens*).

Historical Records

The earliest published survey of the submerged vegetation at the lakes was undertaken by University of Bristol during the 1970s, in response to a request from Bristol Water for advice on dealing with frequent algal blooms at Chew. The studies focused on invertebrates and planktonic algae, but some surveys of vascular plants were undertaken. Only small patches of aquatic vegetation were found at Chew, in the mouth of Villice Bay, off Moreton Point and off Twycross. The scarcity of macrophytes here was a major finding of the surveys and was attributed to high levels of phosphate pollution and the exposure of the lake to wind and wave action, which increases turbidity. By contrast Blagdon, which is more sheltered and had a lower phosphate load, was found to support extensive stands of macrophytes, including broad-leaved pondweeds such as Perfoliate Pondweed.

Since then there have been many records of aquatic plants at the lakes, but few systematic surveys. The Flora of the Bristol Region, which covers the period 1984 to 2000, lists most of the species mentioned above, but with some differences: Rigid Hornwort and Canadian Pondweed were not recorded at Blagdon; Thread-leaved Water-crowfoot, Lesser Pondweed, Fennel-leaved Pondweed were not recorded at Chew; and Fan-leaved Water-crowfoot, Nuttall's Pondweed, Shining Pondweed, Hair-like Pondweed, Horned Pondweed, Greater Duckweed and Ivy-leaved Duckweed were recorded at neither lake.

The most dramatic colonisation of the lakes has been by Fan-leaved Water-Crowfoot, which was first recorded at Chew in 2004. It is now widespread at the lake and when in flower can now be seen colouring parts of the lake white from the top of Dundry Hill, 3km distant. Starry Stonewort was also first recorded in 2004 but it may have been present before then since it grows in deep water and is only accessible to boat-based surveys. There are few other known dates of colonisations but first records of Ivy-leaved Duckweed and Spiked Water Milfoil at Blagdon were made in 2010 and the first records of Small Pondweed, Hair-like Pondweed and Horned Pondweed were made in 2013. The first record of Greater Duckweed at Chew was made in 2012 and the records of Hair-like Pondweed and Horned Pondweed in the 2015 survey were the first here.

Two species seem to have disappeared from the lakes: Curled Pondweed (*Potamogeton crispus*) was recorded at Blagdon in the Flora but has not been seen here recently. The Site of Special Scientific Interest (SSSI) citation for Chew lists Opposite-leaved Pondweed (*Groenlandia densa*) as one of the main constituents of the lake's aquatic vegetation. I saw both it and Curled Pondweed in 1990 but neither has been recorded here since.

The data available also suggest that the extent of Perfoliate Pondweed beds reduced between 1974 and 1987, and to have declined further since then. This is a distinctive community and its loss would be significant.

Discussion

Rare and Uncommon Species

The rarest species recorded is *Nitellopsis obtusa*, which in Britain is known from three areas: the Norfolk Broads, where it has declined significantly; Chew Valley and Blagdon lakes; and at Cosmeston Lakes in South Wales. It is a UK Biodiversity Action Plan priority species and a Red List species. Fortunately it is, for a stonewort, relatively easy to identify due to the presence of white star-shaped starchy bulbils, which have earned it the common name Starry Stonewort.

Otherwise the submerged vegetation at both lakes is diverse and supports a large number of locally uncommon species. The main determinant of vegetation type is water depth. The water levels at the time of the 2015 surveys were approximately two metres below top water at Blagdon and just over one metre below top water at Chew. The Mare's-tail dominated vegetation at both lakes was stranded on wet mud at both lakes; it is restricted to areas with a water depth of less than 50cm below top water. The Canadian Pondweed dominated vegetation was most frequent in areas up to 2m below the water surface at the time of survey; the vegetation dominated by Narrow-leaved Pondweeds and by Fan-leaved Water-crowfoot was most frequent in areas approximately 1.5 to 3m below the water surface at the time of survey; and the stonewort-dominated vegetation in areas between 2 and 4m below the water surface

Slender Mugwort *(Artemisia biennis)*

at the time of survey. The Perfoliate Pondweed-dominated areas were at a similar depth but seem to occur in areas where the bed base compared to other areas has a higher clay content and a lower silt content.

A high number of notable plant species has been found in the inundation communities. These include Shoreweed (*Littorella uniflora*), recorded at Blagdon intermittently since 1922; Round-fruited Rush (*Juncus compressus*), which is frequent at both lakes; Golden Dock (*Rumex maritimus*), first recorded at Chew in 1984 and now frequent here; Mudwort (*Limosella aquatica*), first recorded at Chew in 1995; Northern Yellow-cress (*Rorippa islandica*), first recorded at Chew in 2011; and Orange Foxtail (*Alopecurus aequalis*), first recorded at Chew in 2015. Species restricted to different areas of Britain come together at the lakes: Mudwort and Orange Foxtail are close to the western edge of their range and Shoreweed and Northern Yellow-cress are close to the south-eastern edge of theirs. An oddity is the presence of the only naturalised population in Britain of Slender Mugwort (*Artemisia biennis*), a native of North America, which was first recorded at Chew in 1961. It is now frequent along much of the lake edge and was first recorded at Blagdon in 2015. I have in the past speculated that this might have been introduced on the feet of a vagrant water bird from North America, in much the same way that Grass-poly (*Lythrum hyssopifolium*) is thought to have been spread around Britain on the feet of migrating swans. However, the length of time that it has taken to make the short journey to Blagdon strongly suggests that a more mundane method of introduction was involved.

Orange Foxtail (*Alopecurus aequalis*)

Effects of Turbidity

The difference in water turbidity noted by Wilson *et al* in the 1970s continues to be evident. Measurements were not taken but visibility extends approximately 1.5m deeper in Blagdon than at Chew. This may account for the continued absence of Perfoliate Pondweed from Chew but perhaps the most obvious difference linked to turbidity is the absence of Ivy-leaved Duckweed at Chew. This species is widespread at Blagdon and it grows to a depth of at least 3m below the water surface at the time of survey, tangled in amongst stems of other species.

The Effects of Nutrient Status

The vegetation of both lakes has changed to a greater extent than would be expected, given their age, in recent decades. This has been most evident at Chew, where many areas of the lake that were previously barren now have large and diverse stands of vegetation. The diversity of species at the lake has risen significantly although there have also been some losses. At Blagdon, which historically has been better vegetated, the shifts have mostly involved species composition rather than distribution of vegetated areas. It is noteworthy that Canadian Pondweed was unrecorded here between 1984 and 2000 but now dominates large areas, and Rigid Hornwort has also colonised the lake.

Perhaps the most important factor in determining the composition of aquatic vegetation is the nutrient-status of the water, and in particular the concentration of phosphate. Where phosphate levels are very high large blooms of planktonic algae form and prevent the growth of macrophytes by shading; at lower levels they favour some species of macrophyte over others.

The soils in the area mean that both Chew and Blagdon are nutrient-rich (eutrophic) but artificial inputs have at times resulted in elevated phosphate levels. At Chew these were so high in the 1970s that Wilson *et al* concluded that in 1975 *"Chew has not been able to mature successfully because of the nutrient problems it has experienced"*. Phosphate levels have fallen significantly since then, largely due to the connection of domestic properties to mains sewerage and better management of farmyards and this has contributed to the greater extent and diversity of macrophyte populations here. It is now likely that more phosphates enter the system due to agricultural use across the wider landscape than from point sources such as over-flowing septic tanks. An increase in agricultural phosphate run-off has probably contributed to the increase in Canadian Pondweed and Rigid Hornwort and the decrease in Perfoliate Pondweed at Blagdon. Canadian Pondweed, in particular, now forms large stands at the eastern end of the lake, where most water enters. It is possible that these beds intercept some of the phosphates that enter the lake and allow the Perfoliate Pondweed to survive.

The apparent loss of Curled Pondweed from both lakes is surprising, since this species tolerates a wide range of water conditions, including relatively high nutrient

levels. On the other hand, Opposite-leaved Pondweed, which is listed as Vulnerable in the Vascular Plant Red List for England (Stroh *et al*), is known to be susceptible to nutrient enrichment. Its former abundance at Chew is perhaps surprising, since it typically flourishes in smaller ponds and streams. It requires clear water, so perhaps would have been more at home at Blagdon than at Chew. Its population is in decline throughout northern Europe, so its apparent loss is a matter of some concern.

The Effects of Aquatic Vegetation on Wider Biodiversity

The aquatic vegetation makes a major contribution to the wider biodiversity of the lakes. Two articles on trends in the waterfowl populations at Chew (Higgins 2009 and Higgins 2010) report on the importance of water plants to many of the important bird populations here. There have been dramatic increases in the populations of species such as Mute Swan, Gadwall, Pochard and Coot that feed directly on the plants. Since these articles were written the population of Wigeon, previously in rapid decline, has recovered markedly as the species has started to exploit growths of water plants in the autumn, a marked shift from its previous dependence on grazing grasslands. Other species are probably indirectly affected: a dramatic increase in Tufted Duck, which feeds on invertebrates, is probably due to their prey's use of macrophytes as cover and habitat and fish-feeding species such as Great-crested Grebe have probably benefited similarly. Unfortunately the knowledge of aquatic invertebrates at the lakes is inadequate to identify any changes attributable to increased water plant growth, but both numbers and diversity are likely to have benefited.

The Future

The aquatic plant communities are now receiving more attention than before. Bristol Water plc have recently launched a biodiversity index for their sites, with the aim of quantifying and enhancing biodiversity interest, and are engaged in a catchment management project, which seeks to reduce nutrient inputs to the lakes. It is therefore to be hoped that the coming years will see further improvements in the lakes' macrophyte communities.

Acknowledgements

Acknowledgements are chiefly due to Bristol Water plc, who funded the 2015 surveys. Considerable assistance was given by members of the company's environment and fisheries teams. For reasons of space I have not listed the finders of significant species above. As well as myself they include the late Mr H.J. Gibbons (*Litorella uniflora*), Mr T.W.J.D Dupree (*Limosella aquatica*), Mr J.P. Martin (*Rumex maritimus*), Ms H. Crouch (*Rorippa islandica*) and the late Mr I.I. Jeffries (*Artemisia biennis*).

	Vegetation type, defined by dominant species						
Key: *(C) = Chew Lake* *(B) = Blagdon Lake*	**Mare's-tail**	**Canadian Pondweed**	**Narrow-leaved Pondweed**	**Fan-leaved Water-crowfoot and Rigid Hornwort**	**Spiked Water Milfoil**	**Perfoliate Pondweed**	**Stonewort**
Sea Club-rush *Bolboschoenus maritimus sensu stricto*	Occasional (B), Rare (C)						
Flowering Rush *Butomus umbellatus*	Frequent (B), Rare (C)						
Lesser Pond Sedge *Carex acutiformis*	Occasional						
Rigid Hornwort *Ceratophyllum demerus*		Frequent	Occasional (C)	Abundant (C)			
Stonewort *Chara contraria*		Rare (B)	Rare (C)	Occasional (C)			
Stonewort *Chara globularis*		Rare (B)					
Common Spike-rush *Eleocharis palustris*	Frequent						
Canadian Pondweed *Elodea canadensis*		Dominant	Occasional (C)		Occasional (C)		Rare (B)
Nuttall's Pondweed *Elodea nuttallii*		Occasional					Rare (B)
Greater Water-moss *Fontinalis aquatica*		Frequent (B), Occasional (C)			Rare (C)		
Mare's-tail *Hippuris vulgaris*	Abundant						
Common Duckweed *Lemna minor*	Occasional						
Ivy-leaved Duckweed *Lemna trisulca*		Occasional, (B)					Rare (B)

	Vegetation type, defined by dominant species						
Key: *(C) = Chew Lake* *(B) = Blagdon Lake*	**Mare's-tail**	**Canadian Pondweed**	**Narrow-leaved Pondweed**	**Fan-leaved Water-crowfoot and Rigid Hornwort**	**Spiked Water Milfoil**	**Perfoliate Pondweed**	**Stonewort**
Spiked Water-Milfoil *Myriophyllum spicatum*		Occasional			Abundant (C)		Rare (B)
Stonewort *Nitellopsis obtusa*		Rare					Dominant
Amphibious Bistort *Persicaria amphibia*	Abundant						
Reed Canary-grass *Phalaris arundinacea*	Occasional						
Common Reed *Phragmites australis*	Frequent (C), Rare (B)						
Small Pondweed *Potamogeton berchtoldii*		Occasional	Abundant (C), Frequent (B)		Occasional (C)		
Fennel Pondweed *Potamogeton pectinatus*		Occasional	Abundant (B), Frequent (C)		Rare (C)		
Perfoliate Pondweed *Potamogeton perfoliatus*						Dominant (B)	Rare (B)
Lesser Pondweed *Potamogeton pusillus*			Occasional (C)	Rare (C)			
Hairlike Pondweed *Potamogeton trichoides*		Rare (C)					
Fan-leaved Water-Crowfoot *Ranunculus circinatus*		Frequent (C)	Occasional (C)	Abundant (C)	Rare (C)		

	Vegetation type, defined by dominant species						
Key: *(C) = Chew Lake* *(B) = Blagdon Lake*	**Mare's-tail**	**Canadian Pondweed**	**Narrow-leaved Pondweed**	**Fan-leaved Water-crowfoot and Rigid Hornwort**	**Spiked Water Milfoil**	**Perfoliate Pondweed**	**Stonewort**
Pond Water-crowfoot *Ranunculus peltatus*	Occasional (C), Rare (B)						
Thread-leaved Water-crowfoot *Ranunculus trichophyllus*		Rare (B)					
Common Water-crowfoot *Ranunculus aquatalis*		Occasional					
Common Club-rush *Schoenoplectus lacustris*	Occasional (B), Rare (C)						
Greater Duckweed *Spirodela polyrhiza*	Rare (C)						
Horned Pondweed *Zannichellia palustris*				Rare (C)			
Shining Pondweed *Potamogeton lucens*						Rare (B)	

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The Bristol Regional Environmental Records Centre

Dee Holladay

Following a visit recently to the Bristol Regional Environmental Records Centre (BRERC) in Bristol I have spent some fascinating hours looking at their publicly-available database. What a treasure trove is here - did you know for example that a Killer Whale (*Orcinus orca*) was spotted off Clevedon's shore in 1866? Among the records of grassland plants such as Fairy Flax, Bird's Foot Trefoil and Common Toadflax, in the same Ordinance Survey square there are records of Baltic Tellin, a White Glass Shrimp, a Grey Seaslug, a bat, Curlew, Goosander and a Great Crested Grebe. Butterflies and moths also feature. Fig.2 shows a small extract of the complete list downloaded for ST3971.

All these records are sent in by local recorders and societies, and some have even been discovered by trawling through old locally-produced journals, provided details of dates and locations are available. Records may arrive in paper form, electronically via the website at *www.brerc.org*, or by email. Some 30 volunteers enter the data into the database. All the data is validated by experts and new records are particularly scrutinised. After the information is entered in the database the originals are carefully filed. The volunteers work alongside three permanent staff in a large airy office in St Nicholas Church in Bristol, with a view of Hogarth's fabulous altar triptych which occupies almost the entire east end wall of the church.

Fig.1: The BRERC office

BRERC Record Summary					
Square	**Taxa**	**Species**	**Records**	**Latest**	
ST3971	11	283	499	2014	
Species Recorded					
Square	**Scientific Name**	**Common Name**	**Taxon**	**Records**	**Latest**
ST3971	Lemna minor	Common Duckweed	plant	1	1991
ST3971	Leontodon autumnalis	Autumn Hawkbit	plant	1	1992
ST3971	Leontodon hispidus	Rough Hawkbit	plant	1	1992
ST3971	Leontodon saxatilis	Lesser Hawkbit	plant	1	1992
ST3971	Lepidochitona cinerea	Grey Chiton	mollusc	1	1976
ST3971	Leucanthemum vulgare	Oxeye Daisy	plant	2	2005
ST3971	Ligia oceanica	Sea Slater	crustacean	1	2014
ST3971	Ligustrum ovalifolium	Garden Privet	plant	1	1984
ST3971	Ligustrum vulgare	Wild Privet	plant	4	2006
ST3971	Linaria vulgaris	Common Toadflax	plant	1	2006
ST3971	Linum catharticum	Fairy Flax	plant	1	1992
ST3971	Littorina littorea	Common Periwinkle	mollusc	1	1976
ST3971	Lolium perenne	Perennial Rye-grass	plant	2	1992
ST3971	Lonicera periclymenum	Honeysuckle	plant	2	2005
ST3971	Lonicera xylosteum	Fly Honeysuckle	plant	1	1996
ST3971	Lotus corniculatus	Common Bird's-foot-trefoil	plant	3	2005
ST3971	Lunaria annua	Honesty	plant	3	2007
ST3971	Lunaria rediviva	a honesty	plant	1	2005
ST3971	Lycaena phlaeas	Small Copper	butterfly	1	1971
ST3971	Macoma balthica	Baltic Tellin	mollusc	1	1976
ST3971	Malva neglecta	Dwarf Mallow	plant	1	1992
ST3971	Maniola jurtina	Meadow Brown	butterfly	2	2006
ST3971	Matricaria recutita	Scented Mayweed	plant	1	1992
ST3971	Medicago arabica	Spotted Medick	plant	1	1992
ST3971	Medicago lupulina	Black Medick	plant	2	1992
ST3971	Mercurialis perennis	Dog's Mercury	plant	1	1992
ST3971	Mergus merganser	Goosander	bird	1	2010
ST3971	Microchiroptera sp.	a Microchiroptera species (unidentified)	mammal	1	2011
ST3971	Motacilla alba subsp. yarrellii	Pied Wagtail	bird	3	2007
ST3971	Motacilla cinerea	Grey Wagtail	bird	1	2005
ST3971	Mya arenaria	Sand Gaper	mollusc	1	1972
ST3971	Mytilus edulis	Common Mussel	mollusc	1	1976
ST3971	Narcissus agg.	a garden daffodil	plant	1	2005
ST3971	Narcissus pseudonarcissus subsp. major	Spanish Daffodil	plant	1	2005
ST3971	Numenius arquata	Curlew	bird	1	2006
ST3971	Orcinus orca	Killer Whale	mammal - marine	1	1866
ST3971	Orobanche hederae	Ivy Broomrape	plant	1	1992

Fig. 2: Extract of records for ST3971

The Centre holds several million records, including 1.9 million that have been computerised, which have been compiled since 1974 when the recording service began, one of the first to be established in the UK. Records before the year 2000 are publicly available at full Ordnance Survey resolution (i.e. at the grid reference held for the record), although more recent records are only available at 1 km square resolution.

BRERC is a partnership of local authorities, Avon Wildlife Trust, Natural England and Wessex Water. Direct funding provides about 60% of the Centre's costs, and the remainder is covered by commercial services – detailed searches using their databases and some commissioned local surveys.

Environmental recording has been done for centuries, but the advent of the powerful database means that, potentially, access to this data is made much easier and more comprehensive. However, as with any large scale IT effort, there remain considerable challenges to collecting and validating information from such very diverse sources, and data flows can be problematic. The excitement of being able to access such large bodies of information is also tempered by reservations about identifying the whereabouts of rare and protected species without restriction.

BRERC provides a particularly local resource, covering as it does the old County of Avon borders (which include North Somerset, Bath and North East Somerset, Bristol and South Gloucestershire). However BRERC also forwards data to a national database, the National Biodiversity Network (NBN) Gateway. This network accepts data from a very large number of different sources and in its turn contributes to the Global Biodiversity Information Facility (GBIF), established as a result of the 1992 Rio Summit. Both the national and global databases are available for public searches.

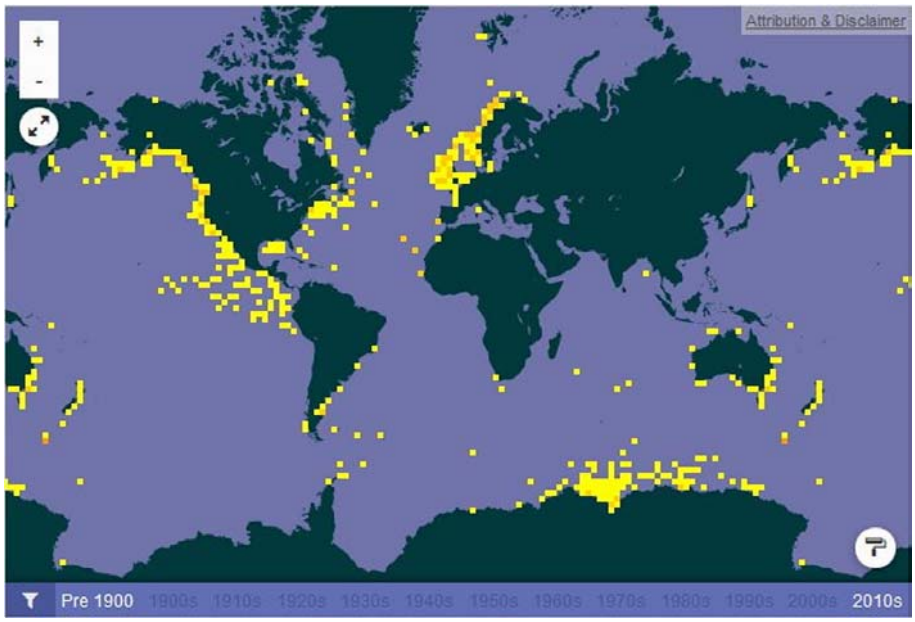


Fig. 3: Results of a search for *Orcinus orca* (Killer Whale) on the Global Biodiversity Network.

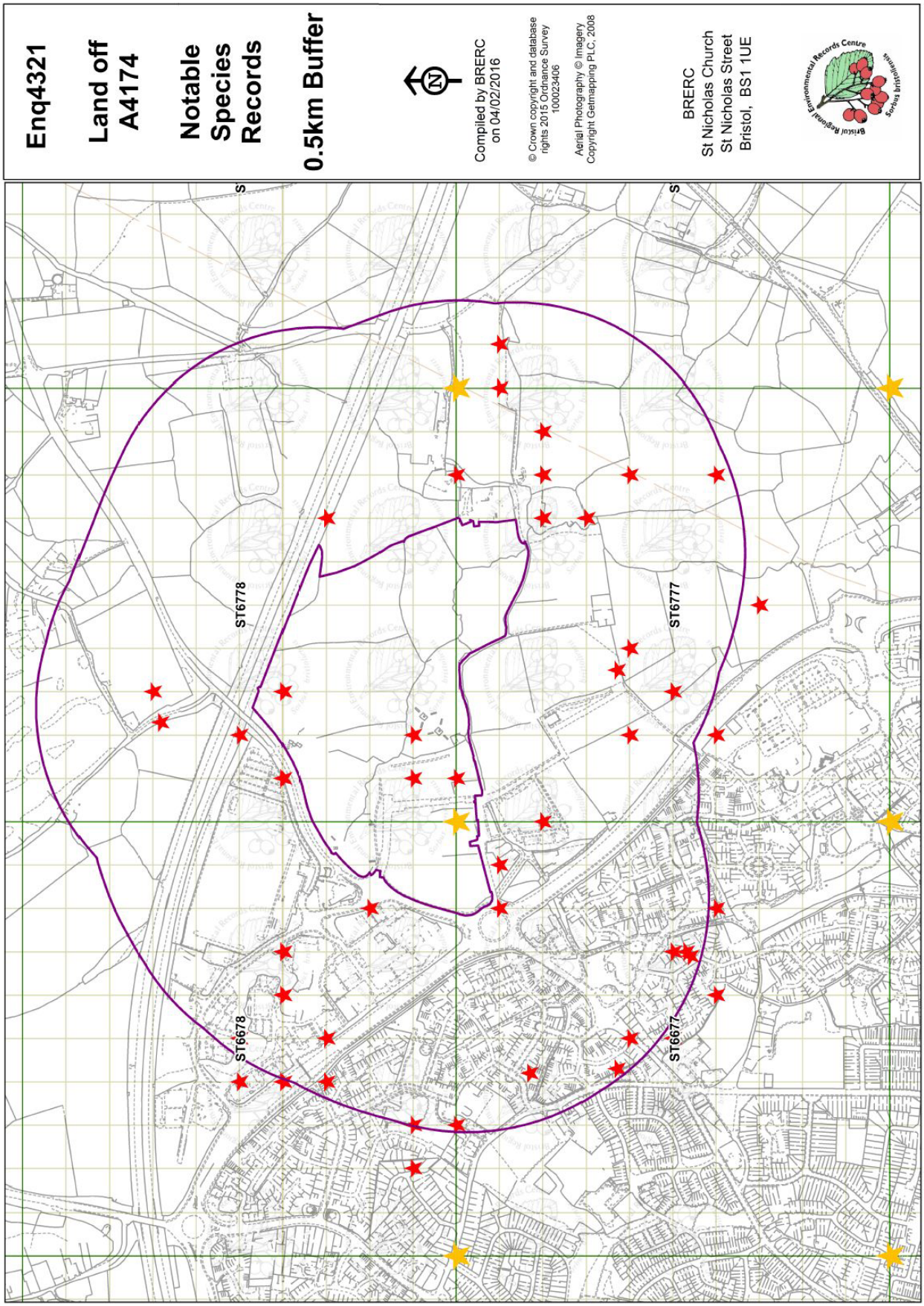


Fig. 4: A page from a typical commercial report provided by BRERC.
Red stars indicate notable species.

Recording sightings of animals and plants in the local area, while it has been done for decades, is increasingly seen as providing a vital resource. Nowadays local authorities and commercial developers have to check environmental information about their sites. An important part of BRERC's work is to provide commercial searches (Fig. 4). These are produced using a Geographical Information System (GIS). This powerful software allows the records to be overlaid on different types of maps and appropriate reports to be compiled. These can include notable and protected species records, non-notable species records, information about bat roosts, invasive alien weeds and strategic nature areas.

Projects and Publications

BRERC takes part in a number of different projects that all make use of the various databases that it holds. It plays a key role in enabling projects that aim to encourage more general participation in conservation efforts. For example in recent years the Bioblitz events have been supported by maps and lists provided by the Centre and all the data gathered at these events has been entered and managed by BRERC.

In 2015, as part of the Bristol Green Capital events, BRERC produced recording packs for its 'How Green is my Alley' initiative. The packs encourage the public to record what they see in alleyways.

Fig. 5: Illustration from the "How green is my alley" pack

Previous projects have included Biodiversity Action Plans, the mapping of parish hedgerows, production of the South West Biodiversity Targets and the South West Nature Map. BRERC also publishes books and guides specifically about local wildlife.

Thanks are due to Tim Corner, Daniel Marshall and Jon Morton for introducing me to the work of BRERC and the world of international recording.

City Centre Bats

Jane Cole

On discovering that bat records for the city of Bristol were sparse and limited to a few well known roosts and occasional scattered field records, Avon Bat Group made a concerted effort to survey group members' gardens during 2014 and 2015.

Bristol City Gardens

An Anabat SD2 bat detector was programmed to activate 30 minutes before sunset until 15 minutes after dawn, and was left outside for 1-4 weeks in each location. Bats can be identified from their echolocation calls, and sonograms recorded by the Anabat were analysed using Analook software to identify bat species present at each location. Examples of sonograms recorded are shown in Figure 1.

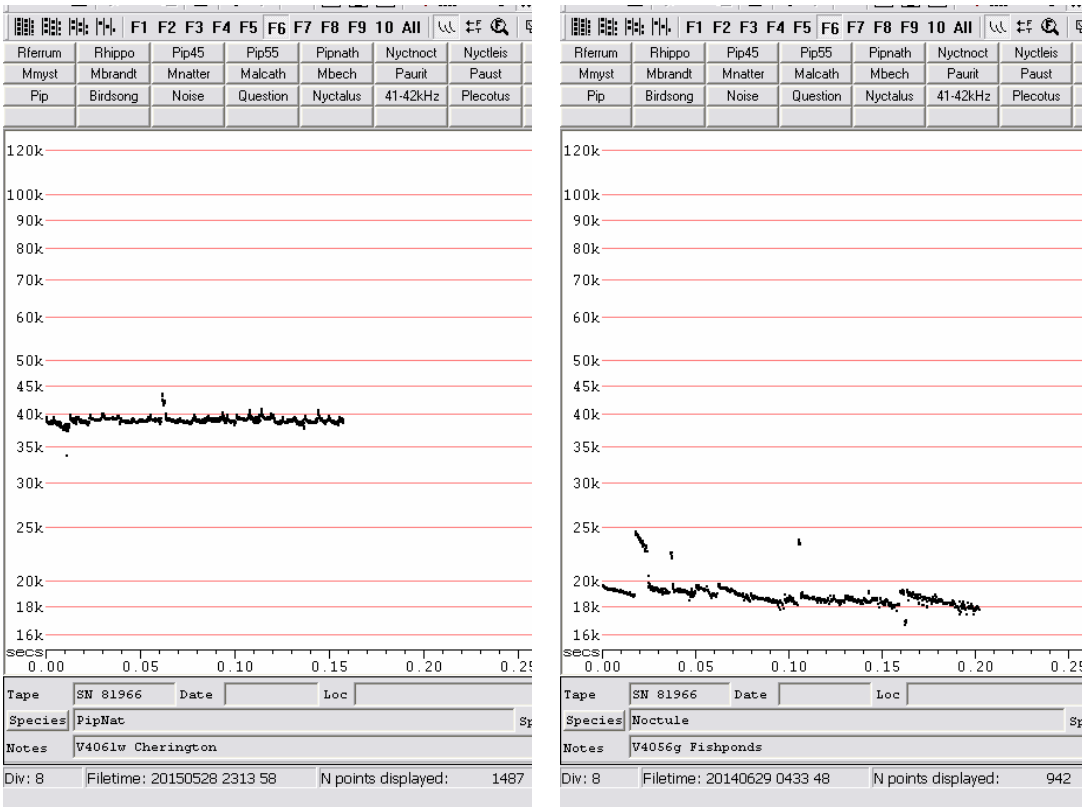


Fig. 1: Sonograms characteristic of Nathusius' Pipistrelle *Pipistrellus nathusii*, (left), and Noctule *Nyctalus noctula*, (right).

For some species there is overlap in the call parameters, therefore they cannot be identified reliably to species level, from echolocation alone. Noctule and Leisler's *Nyctalus leislerii*, exhibit significant overlap in their call parameters, as do the *Myotis* species; however characteristic calls can also be made, see Figure 2 for examples.

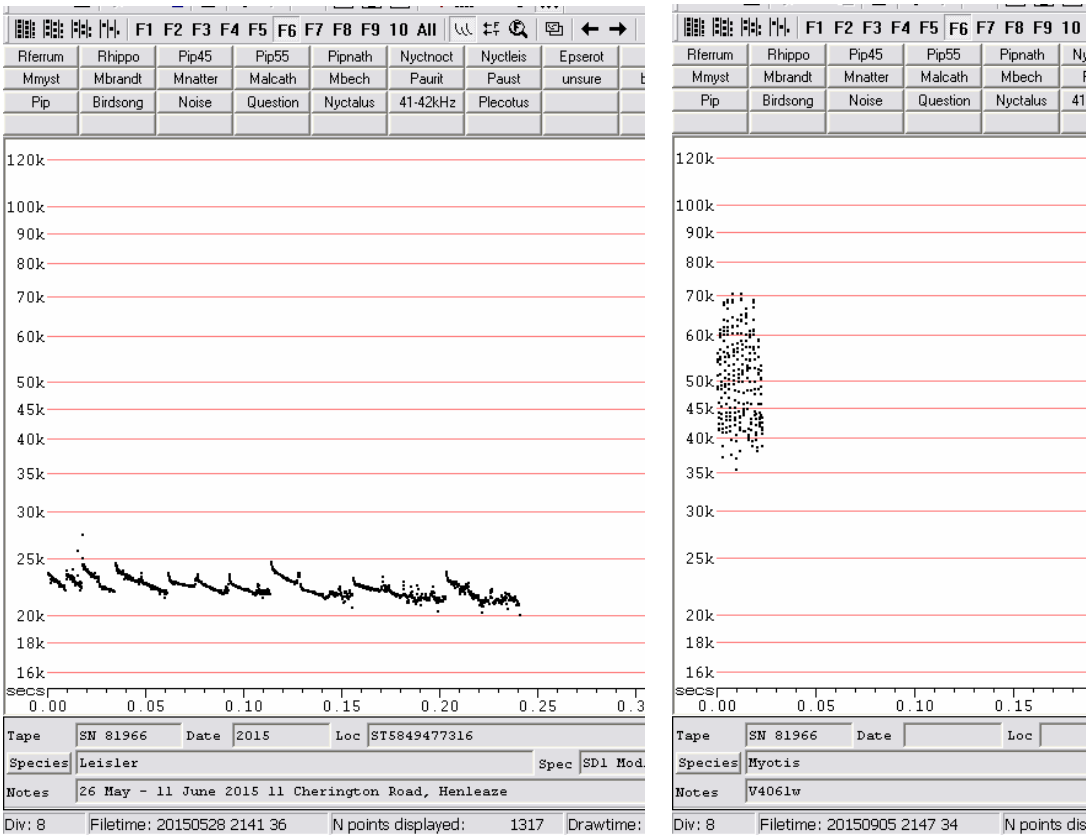
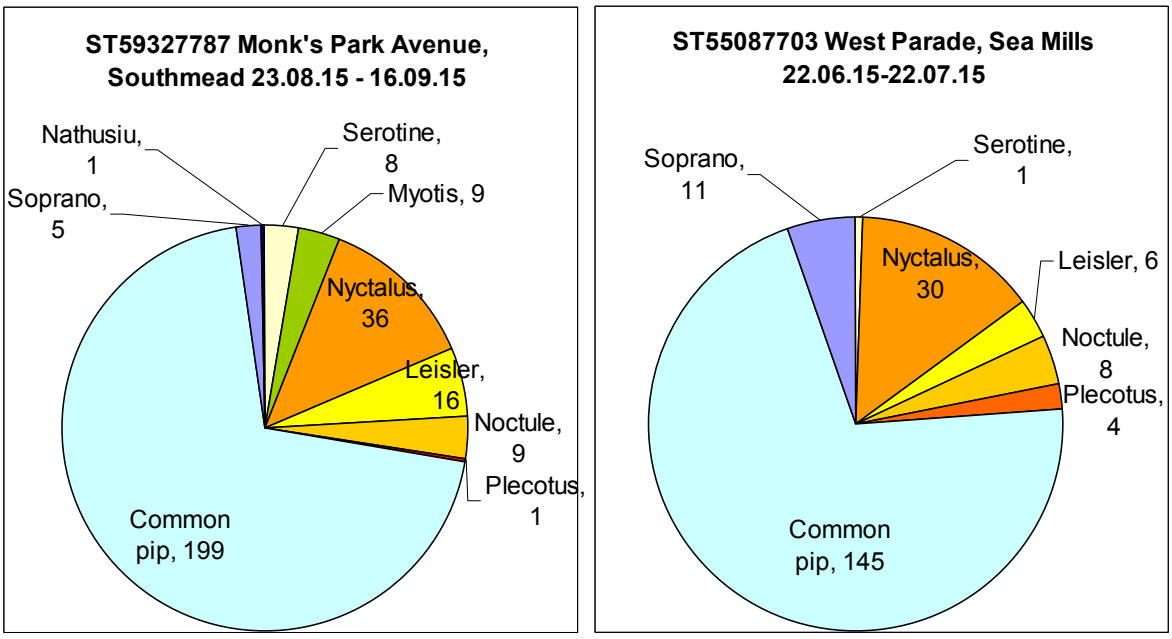


Fig. 2: Sonograms characteristic of Leisler's *Nyctalus leislerii* (left) and *Myotis* species (right).

A cautious approach was taken to species identification. Where sonograms displayed calls with parameters within the overlap, identification was made to genus level only, however where calls were characteristic of a species, they were recorded to species level.

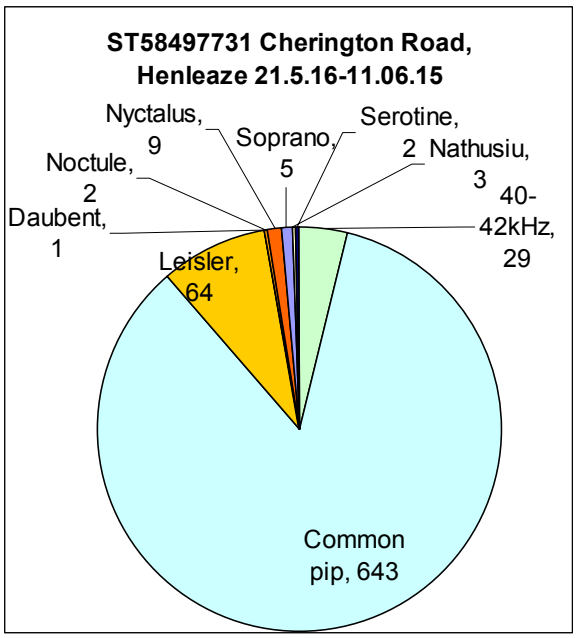


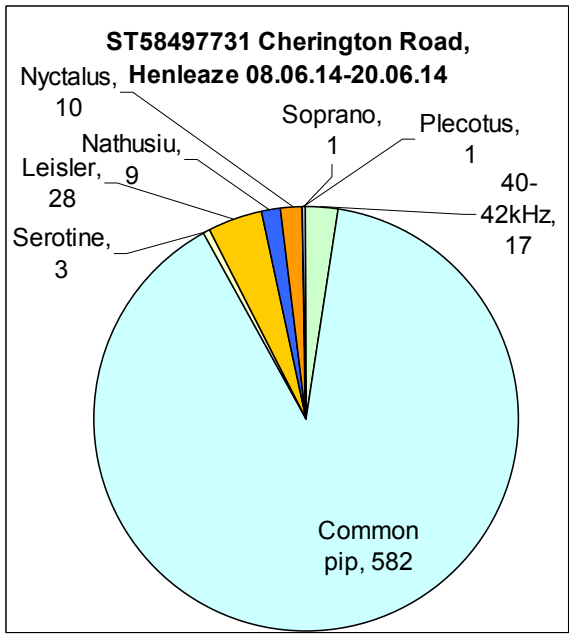
A simple count of the number of bat sonograms recorded, by species is shown in the pie charts.

The data is skewed by species behaviour, in that it is common for a single Pipistrelle to forage in a confined space, such as a garden, for some time generating large numbers of sound files. In contrast, high flying species such as Noctule and Leisler's may forage over the top of several gardens, and therefore will pass the detector less often. The results therefore represent species presence only, and the numbers given represent a level of activity rather than numbers of bats.

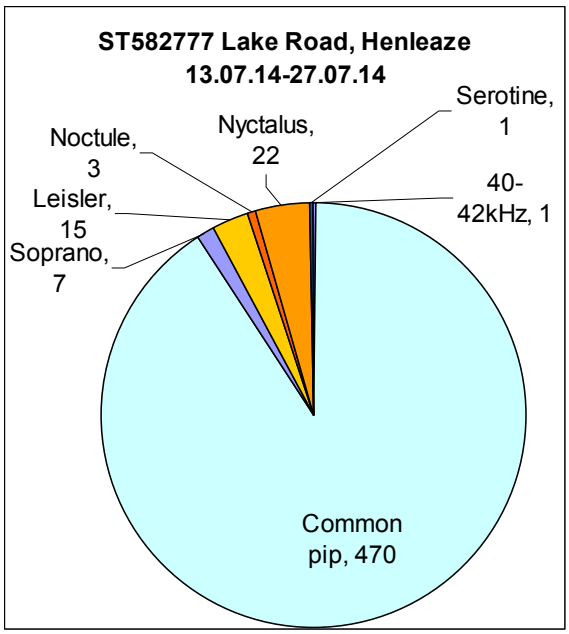
One of the most interesting findings was how widespread Leisler's bat activity is; the species is present at all sites monitored so far. They are rare in England however there is a known maternity colony present at a house in Clifton, and they are found within bat boxes at the Golden Valley Reserve in Wick.

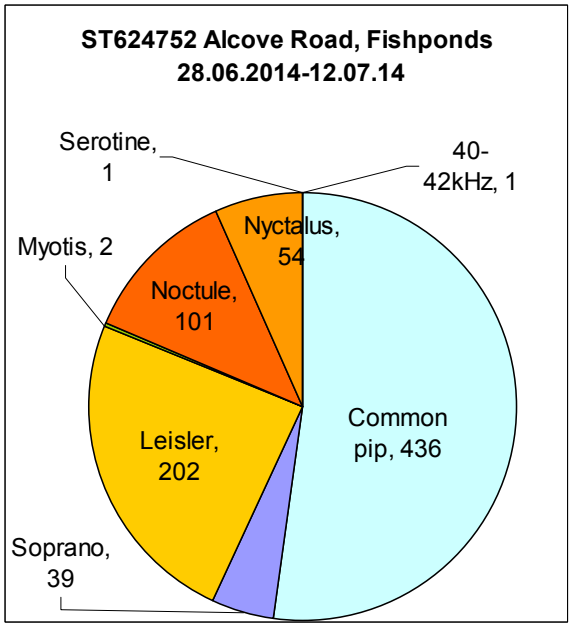
Nathusius' Pipistrelle was recorded at Cherington Road, south of Southmead Hospital. There were also 11 nights with calls at 40-42 kHz which is within the overlap between Nathusius' and Common Pipistrelle. One Nathusius' Pipistrelle was also picked up at Monks Park Avenue, north of Southmead Hospital on 10th September. This species is regarded as rare in England although it may be under-recorded. A male Nathusius' Pipistrelle, ringed in 2010 at Blagdon Lake, was found by bat workers in Holland in 2013. This was the first recorded proof of a bat crossing the sea from Britain to mainland Europe (BCT, 2014).

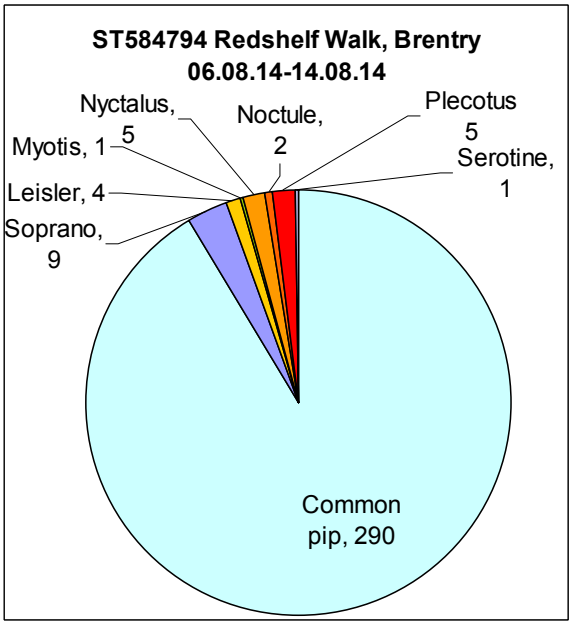


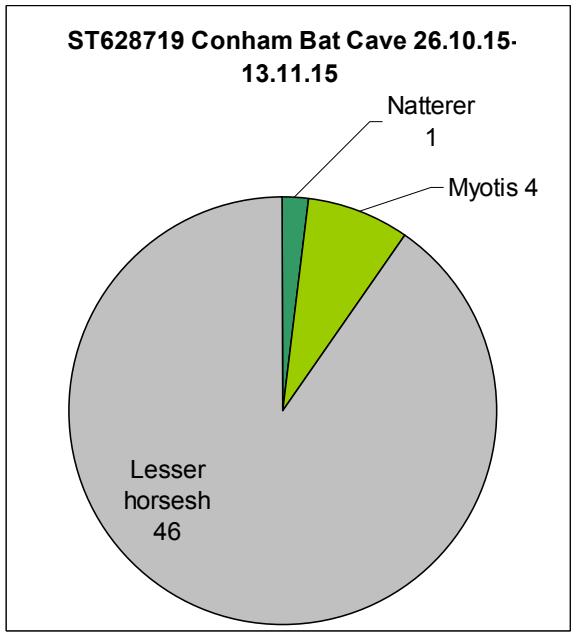


The data from Alcove Road shows a higher level of activity of Noctule and Leisler's bats. The garden surveyed was adjacent to a strip of woodland and is also a few metres from the Bristol to Bath cycle track which could be a factor in the higher level of activity of these species.









Conham Bat Cave

The Conham Bat Cave is a tunnel cut into a hill, within the Avon Valley Woodland Local Nature Reserve (LNR). This LNR is a pocket of woodland within east Bristol, adjacent to the River Avon. The tunnel has been retained for use by bats and the entrance grilled to minimise disturbance. The Anabat was deployed in the tunnel on 20th October 2015. Although individual Brown Long-eared *Plecotus auritus*, Lesser Horseshoe *Rhinolophus hipposideros*, and Natterer's *Myotis nattererii*, bats had been seen hibernating in the past, what came as a total surprise was that there was bat activity almost every night, we hadn't realised how often the cave was being used.

Figure 3: The entrance to the Conham Bat Cave

Following this initial sampling, a detector was deployed for much of the remainder of the winter and the high level of activity continued, and included *Myotis* species, Brown Long-eared, Natterer's, and Lesser Horseshoe almost every night, and a single record of Greater Horseshoe *Rhinolophus ferrumequinum*. A Lesser Horseshoe sonogram from the bat cave is shown on the left in Figure 4, the 'staple' shape at 110kHz is highly characteristic. As for the sonogram on the right, this illustrates the unusual sonograms that we sometimes come across. This is possibly a social call of a *Myotis* species, most likely a Natterer's bat as two individuals were seen hibernating in the cave when the detector was collected on 22nd November 2015.

A simple framework for valuing habitats for bats is given by Wray *et al*. (2010). Relative values are assigned, based on rarity of species and numbers of bats present, to give a total score, which is assigned a geographic frame of reference. As a roost with small numbers of hibernating bats of common (Brown Long-eared) and rarer (Lesser Horseshoe and Natterer's) species, and a feeding perch / night roost of rarest species (Greater Horseshoe), the Conham Bat Cave is assessed as being of county value for bats.

Woodland habitat is rare in the urban environment and as such is likely to be of intrinsic value to local wildlife. Considering the proximity of the River Avon, and the intermittent presence of Greater Horseshoe, it is also possible that the Avon

Valley Woodland LNR is a foraging point for bats from further afield, that are using the dark river corridor as a means of commuting through the urban environment. The valuation of the LNR as a habitat for bats is shown in Table 1.

The data collected allows the LNR to be assessed using a standard method and provides evidence that the reserve is of regional value for bats.

Thanks to Ken Anstey for data from the Conham Bat Cave.

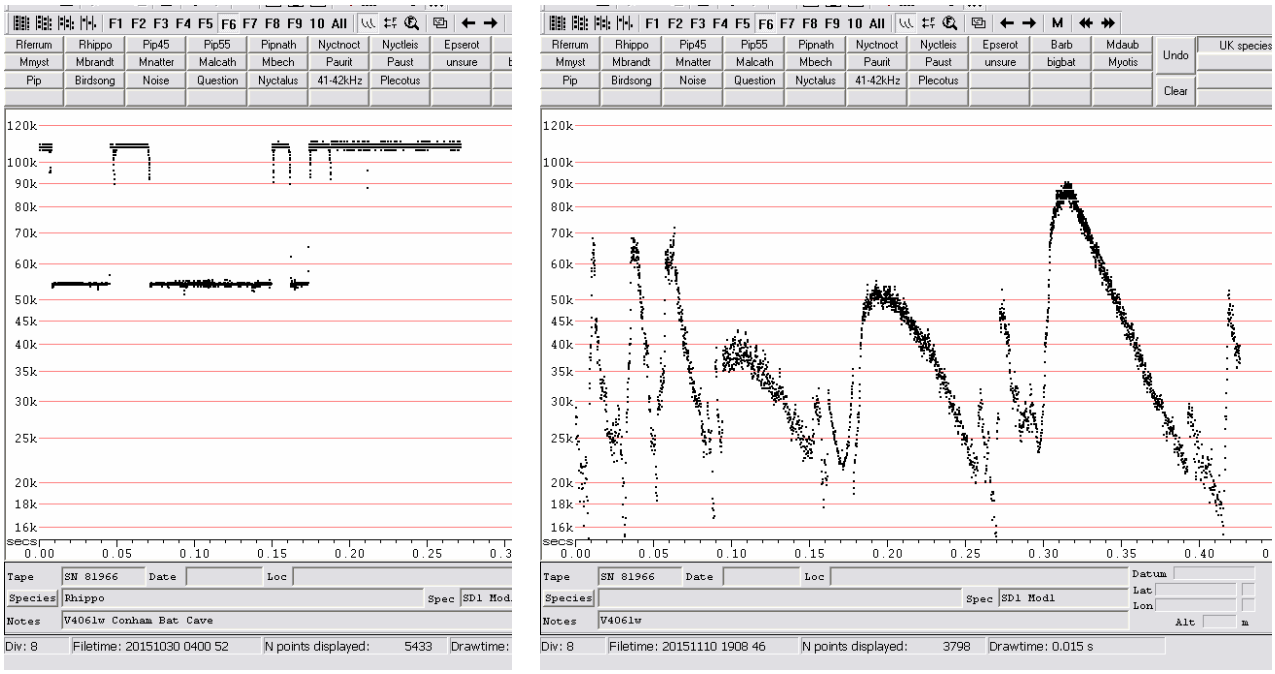


Figure 4: Sonograms of Lesser Horseshoe, (left), and social calls (right).

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics	Total score
Rarer (5) Includes lesser horseshoe and Natterer's bat	Small number (10)	Either: Small number (3) Or Moderate number / not known (4)	Either: Suburban areas (2) Or Isolated woodland patches, less intensive arable and / or small towns and villages (3)	20 – 22 (county value)
Rarest (20) Includes greater horseshoe	Individual bats (5)			30 – 32 (regional value)

Table 1: Valuation of Avon Valley Woodland LNR according to Wray *et al*. (2010).

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Bat Conservation Trust (BCT) Website. *BCT News 20th January, 2014*. Available at *www.bats.org.uk/news*

Wray, S., Wells, D., Long, E., and Mitchell-Jones, A. (2010) *Valuing Bats in Ecological Impact Assessment.* In Practice **70**, pp.23-25.

Avon Wildlife Trust: The 5 year Plan

Lucy Rogers

In 2015 AWT launched a new 5 year vision[1] outlining their plans to protect nature and inspire people across the West of England. One year on, AWT's Director of Delivery Programmes, Dr Lucy Rogers, outlines the plan, the key challenges for wildlife and what progress has been made in a future that urgently demands that we widen our focus and ambition.

Reversing the decline in biodiversity is a huge challenge given the scale and pace of loss of nature and wild spaces. The Trust is working towards a vision of a future where nature is enabled to recover on a grand scale. This is an exciting opportunity for Avon Wildlife Trust to make a real step change in our conservation impact, working at a landscape scale to create an interconnecting network of 'Living Landscapes' across and throughout the West of England and beyond. It's a huge challenge for us, given the continued pressures on our wild spaces, and the scale and pace of species loss.

It is vital that we redouble our efforts, faced as we are by the continued dramatic decline in biodiversity. The recent State of Nature Report[2], a stocktake of how UK biodiversity is faring, found that 60% of all wildlife species are in decline. Even more so for our region, which has one of the fastest growing human populations in the UK and a planned 85,000 new homes over the next 20 years. This is why the Wildlife Trusts, like other conservation organisations, are now working at a landscape scale, widening our focus and ambition from protecting single sites and species to whole landscapes.

Securing a future rich in wildlife is Avon Wildlife Trust's priority, but a future rich in wildlife brings huge benefits to society, and so central to our plan for achieving that vision is engaging people in our work and encouraging communities to take responsibility for their own green spaces. With over 85% of the UK population living in urban areas, persuading city dwellers of the relevance of our work and of nature's value to their everyday lives is essential.

As Sir David Attenborough has observed: "*No one will protect what they don't care about; and no one will care about what they have never experienced*."

We agree. And that's why we are working with communities and interest groups across the region and people throughout society: farmers; landowners; schools, school children; community and local groups; gardeners; allotment holders; local authorities; businesses and their employees - to communicate the value of nature and our work to everyone.

Despite the size of the challenge there are opportunities for us to make a significant increase in the impact of our work, particularly by working closely with our partners

to join up our efforts and ambition. We are working to halt and turn around the decline in wildlife by looking after and improving our existing wildlife sites; increasing space for nature by securing new sites; work with land owners across the countryside to build biodiversity into their businesses and by identifying where we can thread wildlife corridors through our cities and towns.

Our long-term goals are to:

1. Create ecological networks through landscape-scale habitat management and enhancement
2. Inspire people and communities
3. Champion the value of nature

We are delivering our goals at two levels.

- First, we are focusing most of our effort within five landscape-scale areas prioritised for their conservation need and their potential for community engagement. Each area also offers valuable 'ecosystem services', such as: the provision of clean drinking water; flood alleviation; absorption of greenhouse gases; pollination services and improvement to health and wellbeing.
- Second, we are working to create connecting corridors for wildlife across the region.

Both are supported by generic work at an Avon-wide scale, such as reserve management and education.

How we are creating a resilient and connected landscape

An independent review of England's wildlife sites and ecological networks was chaired by Professor Sir John Lawton in 2009. The review's report, *Making Space for Nature*[3], concluded that England's wildlife areas do not form a resilient ecological network capable of coping with the challenge of climate change and other pressures. Lawton summarised what needed to be done as: ***'More, bigger, better and joined'***.

"*The idea of joining together existing sites by creating totally new linear corridors across an inhospitable landscape has intuitive appeal.*" The Trust has been working to deliver such landscape-scale conservation since 2008, but recognises the need to redouble our efforts. During the five years and beyond we are working to create coherent and resilient ecological networks at a landscape scale for people and wildlife.

We will continue to

- Maintain and improve our current wildlife habitats and sites
- Increase their size where possible
- Restore and create new areas for wildlife
- Join them up - through continuous corridors or via green 'stepping stones'
- Increase the wildlife value of the wider landscape.

We have prioritised five landscape-scale areas evaluated for their conservation need and their potential for community engagement. Each area also offers valuable 'Ecosystem Services', such as the provision of clean drinking water, flood alleviation, absorption of greenhouse gases and pollination services.

1. Gordano Valley and ridges
2. Avon Gorge and downs
3. North Somerset Levels and Moors
4. Cotswolds
5. Chew Valley

2015 was one of the busiest years the Trust has ever had, being our 35th anniversary year and Bristol Green Capital year as well as the first year of our 5 year plan. One year on we have projects running in all five landscape scale areas, plus two connectivity projects: B-Lines and My Wild City creating corridors for wildlife across the region. Some of our ongoing projects are outlined below:

1. B-Lines

Reported in detail by partners Buglife in a previous edition of Nature in Avon[4], an ambitious new plan for helping our bees, butterflies, hoverflies and other pollinating insects was launched by the Trust and Buglife at the West of England Nature Partnership conference in March 2015. The West of England B-Lines project is creating rivers of wildflowers across the countryside, connecting the region's best wildlife sites from the Cotswolds to the Mendips, from the coast to the hills, and from our towns and cities to the countryside. B-Lines are a series of 'insect pathways' along which the project is restoring and creating a series of wildflower-rich habitat stepping stones. They link existing wildlife areas together, creating a network, like a railway, that will weave across the British landscape. This will provide large areas of brand new habitat benefiting not just bees and butterflies – but also a host of other wildlife.

A B-Lines map has been drawn up, showing the proposed routes. The map illustrates our vision for wildflower-rich grassland across the West of England and shows the huge opportunity we have to make a difference for pollinators. Bees and other pollinators are disappearing from our countryside because of a lack of wildflower-rich habitats. Three million hectares, 97%, of the UK's wildflower-rich grasslands have been lost since the 1930s. By creating B-Lines we can help wildlife move across our countryside, saving threatened species and making sure that there are plenty of pollinators out there to help us grow crops. The B-Lines project works with partners, landowners, and communities, providing advice and training and creating and restoring meadows and wildflower-rich grasslands along the B-Lines routes. A current focus for restoration is in the Cotswolds and Chew Valley.

Bumble Bee on woolly thistle at B-lines restoration site

B-Lines has been funded by a number of funders and partners including Cory Environmental Trust in Britain (CETB), Ibstock Cory Environmental Trust (ICET), Biffa Award, SITA, Natural England, South Gloucestershire Council, Wessex Water, D'Oyly Carte Foundation and the February Foundation. For further information on the West of England B-Lines Initiative, including an interactive B-Lines map where you can view the routes and add your contribution to the B-Lines network, please visit *www.buglife.org.uk/B-Lines*.

2. My Wild City

My Wild City is the Trust's campaign for Bristol European Green Capital 2015 which aims to make Bristol a nature-rich city by enabling people in Bristol and across the former county of Avon to take action for wildlife in their own communities and gardens, whilst seeing how they are contributing to changing a wider landscape.

In partnership with the University of Bristol and Bristol City Council, and funded by Bristol City Council and Bristol Green Capital, The Trust's vision is to work with communities across the city, inspiring everyone to 'do something amazing for wildlife' in their local area.

During the year we worked with four key communities to create demonstration sites across the Bristol, showcasing activities to inspire people to take action for wildlife:

- Ashley, Easton and Lawrence Hill
- Henbury and Southmead
- Bishopsworth, Hartcliffe and Whitchurch Park
- Greater Bedminster

Recent work includes a number of projects under the My Wild brand including **My Wild Cathedral**, **My Wild Street**, **My Wild Bedminster**, **My Wild Neighbourhood** and **My Wild Hospital**.

My Wild Street September 2015

The project was planned around exciting new maps which identify the areas in each neighbourhood where there are opportunities to improve woodland and grassland habitat for wildlife, and also other opportunities like making bird boxes, ponds and fresh water containers or planters. The maps allow people to zoom right down to their own street and garden level. They show the best places to connect habitats by linking gardens, passageways and other green spaces – helping to create wildlife corridors or 'green highways' so that wildlife can move easily around the city.

Download one of the maps to see what action to take or see how progress is recorded on an interactive map at *avonwildlifetrust.org.uk/mywildcity*.

My Wild City map of Bristol

Planting wild flowers in the newly created meadow during the opening of Bennett's Patch and White's Paddock April 2015

3. Avon Gorge – Bennett's Patch and White's Paddock

This was created as "a people's nature reserve", engaging local volunteers in creating a demonstration site for species-rich grassland habitat creation by transforming a challenging brownfield site in the Avon Gorge into a new nature reserve, Bennett's Patch and White's Paddock. The site, which was used as a dumping ground for spoil from the World War II blitz, was two years in the making, and has involved over a thousand people from across Bristol, of all ages and mixed abilities, all enjoying the opportunity to get closer to nature in the heart of the city during Green Capital year. In March 2015 the reserve was officially launched by the Trust's President, Simon King, along with Kevin McCloud and George Ferguson. Joined by more than 100 supporters they planted trees, plug plants and seeds to further transform the former derelict sports ground into a rich mosaic of habitats.

4. The North Somerset Levels & Moors and Gordano Valley

Funding through Wessex Water's Partners Programme enabled the Trust to set up a new partnership in 2015 to restore coastal flood plain and grazing marsh in two of our priority areas. Over the next five years, we are working to integrate flood management and sustainable farming practices, with best practise management for biodiversity to achieve more with the resources available.

Coastal and Flood Plain grazing marsh

5. Natural Estates

In 2016 the Trust, in partnership with Gloucestershire Wildlife Trust began an ambitious new five year project funded by Big Lottery to engage young people living in social housing to act as a catalyst for significant change in the way their local green spaces are managed. Working in partnership with six housing associations including United Communities, Alliance Homes and Bristol City Council, thousands of young people will have the opportunity to develop skills that protect the environment and could lead to future employment The sites targeted support-deprived communities with high unemployment, in both inner-city and rural environments. Activities will teach participants the importance of nature, and how to make new homes for wildlife – for example creating insect hotels, bird boxes and raised beds. Those most involved will become Garden Mentors, helping their community's most in need residents to care for their gardens and improve the local green infrastructure. Participants will also be signposted to further education, volunteering and employment opportunities in conservation and related fields.

By shaping and improving green spaces, young residents will be seen to be making a positive change for the whole community, whilst increasing the amount of measurable local wildlife habitat.

Improving the environment in Bristol

My Wild Child

The project, which began in 2016, engages children and families in the importance of spending time outdoors in natural spaces, building upon our already established learning and community engagement projects and linking with existing projects, especially My Wild City. Thanks to the support of players of People's Postcode Lottery, Avon Wildlife Trust has been given funding to provide these regular wild-play sessions for free, to six communities across Bristol. In addition there will be wild nature days for the whole family in the school holidays.

Children running

Conclusions

During the first year of our new 5 year strategy we have made good progress in setting up a number of projects to safeguard wildlife and reach communities across the West of England. We know that our vision will take longer than five years to achieve, but we are starting by focusing on the goals until 2020 and this will direct our work into the future.

For more information see *www.avonwildlifetrust.org.uk*

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Lower Plants

David Hill *et al*.

These are often overlooked by many naturalists but like invertebrates they represent the unseen teeming thousands of species in Britain with a diversity to blow the mind. They are also an essential part of the ecosystem and very much part of what is politically called 'ecosystem services' to allocate them some economic importance. Economically important or not they are great fun to explore and the Bristol area has lower plants in abundance. We report here some recent (in the last few years) discoveries, news and other points of interest in the world of bryophytes (mosses and liverworts), fungi and lichens (which are really a group of fungi in disguise).

Bryophytes

Sharon Pilkington, Richard Lansdown and Peter Martin

Until the early 1990s when Peter Martin started recording in the region, there had been something of a lull in generation of records. Subsequently there has been a dramatic increase both in the number of records generated and in the new discoveries made. Recorders in both counties are generating large numbers of records toward publication of county floras.

Recent highlights in Somerset include the discovery of the tiny hyperoceanic liverwort *Drepanolejeunea hamatifolia* on *Salix cinerea* on Black Down in the Mendip Hills, a long way east of any of its other populations. Staying with highly western species, Marion Rayner recently spotted the thalloid liverwort *Riccardia palmata* on a decorticated log in Leigh Woods, also new to North Somerset. An attractive little species, it sticks masses of little branches straight up in the air, like stubby fingers.

Colura calyptrifolia, another strongly oceanic liverwort, persists at East Harptree Woods on the Mendip plateau, where it was discovered new to Somerset by Pete Martin in 1986. Recent surveys have shown that it has been expanding its range and is now well-established among conifers in Stockhill Plantation (Priddy) and at Blackmoor and GB Gruffy reserves near Charterhouse. More will be found, surely. Other Mendip highlights include the discovery of new populations of the delightful and rare *Entosthodon pulchellus* in various places. In Burrington Combe, it grows with another rare moss, *Bryum canariense* on rocks within 100m of the public toilets.

The enigmatically-named Rabbit-moss (*Cheilothela chloropus*) is known from only a few coastal sites in Somerset and Devon. A small population has long been known at the Avon Wildlife Trust's reserve at Walton Common but it was thought to have been lost. A recent search by the Species Recovery Trust relocated the population

and careful habitat management will shortly be carried out to safeguard its future there.

In Gloucestershire we are beginning to develop a good picture of the bryophyte flora, with a total of over 32,500 records of which 24,000 have been generated since 1990. These include 24 new county records, publication of a county Red Data Book and publication of an annotated checklist of the bryophyte flora of Cleeve Hill, one of the most important sites in the county for bryophytes.

In addition, we have undertaken conservation projects for a range of species, including restoration of a mud-capped wall toward re-establishing self-sustaining populations of the little-known *Ceratodon conicus* (Figs. 1 and 2) and habitat management to restore populations of *Atrichum angustatum* (Fig. 3), both on Cleeve Hill, a detailed survey of another little-known species *Weissia sterilis* which showed that it remains fairly abundant throughout much of the Cotswold escarpment and a monitoring study looking at the recovery of *Sphagnum* populations following clear-felling of conifers in the Forest of Dean.

A fairly active bryophyte recording group is now established in Gloucestershire with attendance of up to ten people, including some reaching levels of competence where they are beginning to contribute records to the county database.

Fig. 1: Colonisation of the mud-capped wall by bryophytes and other plants, in (left) July 2015 and (right) January 2016

Fig. 2: *Ceratodon conicus* developing into extensive wards on the mud-capped wall

Fig. 3: Recording establishment of *Atrichum angustatum* plants in holes dug into acid stands on Cleeve Hill. The fence is to stop sheep entering the hole and destroying the banks.

Fungi

Alan Feest and Alan Rayner

The distribution and diversity of larger fungi (i.e. basidiomycetes and ascomycetes with readily visible fruit bodies) is strongly dependent on vegetation type and hence soil type and climate. Nitrogen enrichment of soils as a result of industrial and agricultural activity tends to have a suppressive effect overall, as does alkalinity associated with calcareous underlying rock and growth of trees like ash, sycamore and elm. Cool summers and dry autumns (such as occurred in 2015) also inhibit fruiting, especially of those gill-fungi in genera such as *Amanita*, *Cortinarius*, *Lactarius*, *Russula* and *Tricholoma* that form mycorrhizal partnerships with trees in the Betulaceae, Fagaceae, Salicaceae and Pinaceae.

For these reasons, many of the woodlands and grasslands of the Bristol and Bath area do not provide such easy pickings for the ardent mycological collector as some other parts of the UK. There is, nonetheless, much to excite the more persistent and subtle seeker, including a rich variety of wood and leaf-litter inhabiting fungi. Notable 'hot spots' occur in Weston Big Wood (where two rare species of *Limacella*, grow, including the gloriously coloured *L. vinosopurpurea*), Leigh Woods, Lower Wetmoor Wood and Dolebury Warren (for the CHEG group of species for which Tyntesfield is a famously good example site), and in Inwood and Friary Wood, near Bath. The acronym "CHEG" stands for the main groups of

Fig. 4: Alder Bolete (*Gyrodon lividus*)
(Photograph by Marion Rayner).

Fig. 5: *Octospora coccinea* (Photograph by Marion Rayner).

Fig. 6: Veined Mossear (*Rimbachia bryophila*)
(Photograph by Marion Rayner).

relevant fungi: C - the clavarioid species; H - *Hygrocybe* species; E - *Entoloma* species; and G - the Geoglossaceae (earthtongues) (Rald 1995). Alan Feest and Justin Smith have visited most of the above sites and carried out systematic sampling of the macrofungi and set Biodiversity Quality Indices for the sites (Feest and Smith 2015, Feest 2009). These sites can therefore be revisited in the future and resampled to understand if there has been any change in the macrofungal biodiversity quality and if so whether it is statistically significant.

Of particular interest are the wet woodlands around the margins of Chew Valley Lake, where the seldom recorded Alder Bolete (*Gyrodon lividus*) (Fig. 4) has been discovered fruiting quite abundantly during 2014 and 2015 in several different localities, along with a variety of other unusual fungi, such as *Hypholoma ericaeiodes*. This habitat may be worth more intensive exploration in future. Another interesting, and much overlooked habitat is within growths of bryophytes. During intensive surveying of bryophyte diversity within and around Bath, Marion and Alan Rayner came across two seldom-recorded bryophilous species in 2015. Early in the year, a patch of Capillary Thread-moss (*Bryum capillare*) on a gravestone at Smallcombe Cemetery was found, which bore the tiny orange cup fungus, *Octospora coccinea* (Fig. 5), which proved to be only the second confirmed record in England, and has now been deposited in the collection at Kew! Then in December, while recording along Swainswick Lane, small white brackets of Veined Mossear (*Rimbachia bryophila*) (Fig. 6) were found on Rough-stalked Feather-moss (*Brachythecium rutabulum*) growing next to a bridge over the A46. How wonderful to be generating rare fungus records whilst recording bryophytes!

Lichens

David Hill

North Somerset has been very well explored by generations of lichenologists. *Lecanora agardhiana* (conservation status: DD NS) (Fig. 7) was not mentioned in Walter Watson's *Lichens of Somerset* (Watson 1930) but was known in North Somerset by the time Walter Watson's *Census Catalogue of British Lichens* (Watson 1953) was published 24 years later. Tiny, and so overlooked that I did not know it and would not have even noticed it until Bryan Edwards showed me a specimen in the Natural History Museum. It took me all of 10 minutes to find it at Sand Point on the limestone. Well, you know how it is: see it once, and you spot it everywhere. This one only occurs on coastal limestone but it is certainly overlooked. Sandpoint has been visited by Walter Watson and many other lichenologists and I have been there numerous times surveying what Natural England calls the Middle Hope SSSI. And in 2011 I came across a lichen growing on another lichen (*Aspicilia calcarea* (LC)) which foxed me and I had to have Alan Orange identify it and. it turned out to be *Heteroplacidium fusculum* (NE) (Fig. 8). I was stunned when it proved to be not only a new species but also a new genus for

Britain and Ireland (with lichens we still put these together as a geographical unit). This species was previously known from a Greek Island in the south Aegean and an island off Finland in the Baltic. There is a sizeable population so it does not seem to be a transient adventitious alien. It has very recently also been recorded from Isle of Portland, Dorset.

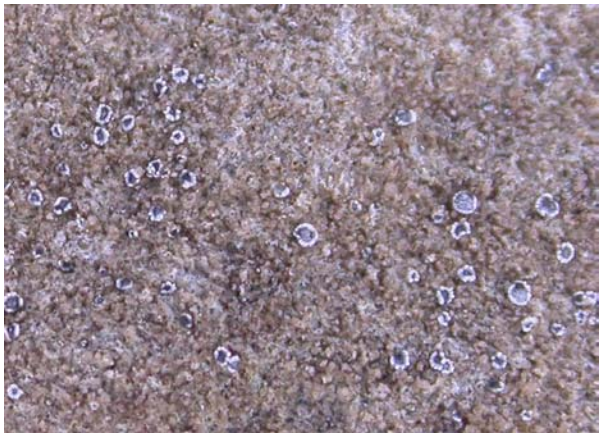

Fig. 7: *Lecanora agardhiana* at Sandpoint.

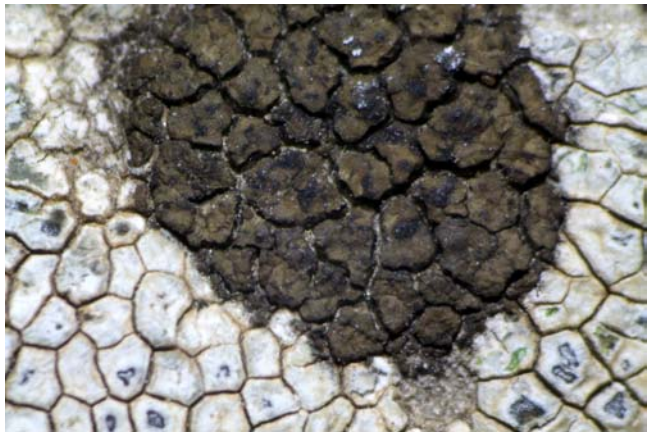

Fig. 8: *Heterplacidium fusculum* on *Aspicilia calcarea*, Sandpoint.

In December last year, I was walking up one of those small streams up from Burrington Combe towards Blackdown and spotted some lichens growing on stones underwater in the stream. Aquatic lichens are pretty good indicators of clean water and it was nice to see them. When I got back, checked identification under the microscope and looked up the distribution using the National Biodiversity Network Gateway, I found they were the aquatic crustose lichens *Verrucaria margacea* (LC), *Verrucaria praetermissa* (LC) and *Verrucaria aquatilis* (LC) which had not previously been recorded from North Somerset – well we don't have very many acidic water streams.

New records for North Somerset and West Gloucestershire (being the two Vice-Counties contiguous with Bristol) seem to turn up regularly but always unexpectedly. Juliet Bailey runs the well-established Gloucestershire Lichen Recording Group (GLRG) under the auspices of Gloucester Naturalists' Society and a few years ago I set up a similar Somerset Lichen Group (SLG) and both meet separately once a month. In 2015 there must have been about 10 new records for the Bristol area. In 2014 there were even more.

In North Somerset, *Strigula calcarea* (NE - first British record on natural outcrop also found in France, Spain and Italy) turned up in Ebbor Gorge (SLG May 2014). On Steepholm (BNS trip June 2014) *Endocarpon pallidulum* (CR E NR) (Fig. 9) was recorded as well as *Strigula calcarea*. *S. calcarea* and *Petractis nodispora* had previously been found and described as new to Britain and new to science (Orange 2009) respectively by Alan Orange in South Wales on limestone walls of a

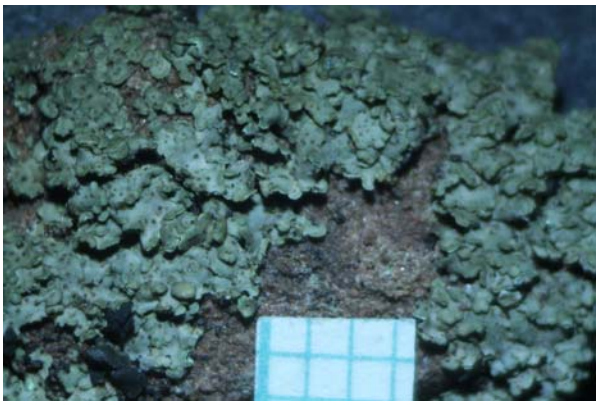

Fig. 9: *Endocarpon pallidulum* on Steepholm.

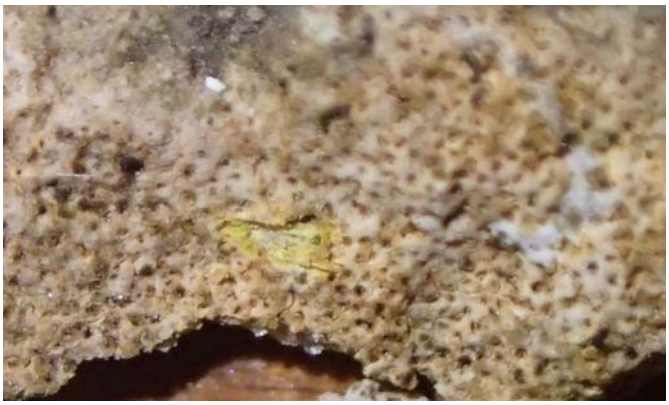

Fig. 10: *Petractis nodispora* at Hinton Charterhouse.

castle ruin. A population of *P. nodispora* (DD NS) (SLG April 2014) (Fig. 10) recorded on the top of a churchyard wall at Hinton Charterhouse may be the best in Britain. Normally seen in a pycnidiate state (sterile as in photo – note yellow colour on scratching caused by *Trentepohlia* alga inside and pale coloured dots (pycnidia)), this little crust was fertile (i.e. with apothecia) at this locality and covered a total area measurable in square meters. Why it has not been recorded elsewhere remains a mystery. Usually, these new finds are small perhaps overlooked crusts. In January 2014 on a cold winter's day at Stockhill near Priddy on the Mendips, at the end of a visit just when the light was beginning to fade and it was time to go home, I turned round and there on a mossy oak branch was a leafy lichen which a member of the Somerset Lichen Group from Devon confirmed as *Heterodermia obscurata* (NT NS) (the name is rather misleading!) and new to North Somerset. It is not obscure at all and it is well known further south and west. New records for lichens on trees also turn up such as *Arthonia ombrophila* (Fig. 11) in 2015 on an oak tree in Mells Churchyard.

In Gloucestershire the GLRG made many new records. In the Bristol area, visiting Willsbridge Mill in October 2015 last year we came across *Opegrapha lithogyra*

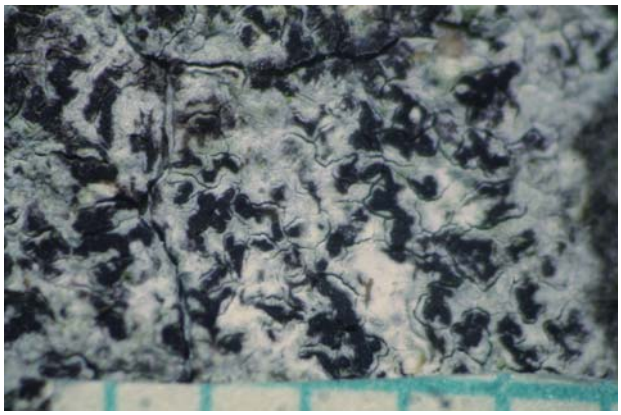

Fig. 11: *Arthonia ombrophila* on oak tree at Mells Churchyard. New to North Somerset.

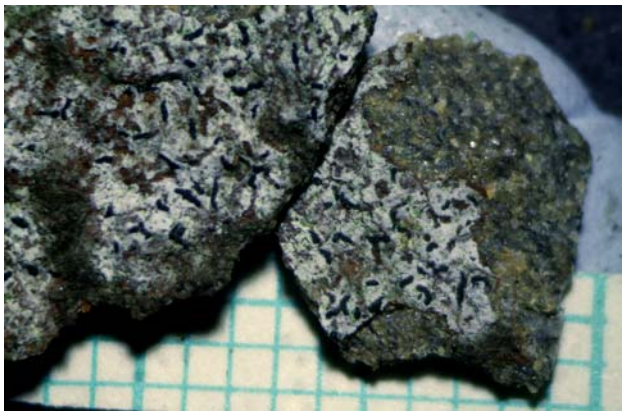

Fig. 12: *Opegrapha lithogyra* at Willsbridge Mill.

(LC NS) (Fig. 12) on shaded sandstone face of an old quarry which seems to be its usual habitat but not recorded for West Gloucestershire before. In a recent (September 2015) British Lichens Society meeting in the Forest of Dean, Mark Powell from Bedfordshire – a wizard at finding little species overlooked by others – showed us a little scruffy looking crust *Halolecania viridescens* (LC) (new to West Gloucestershire). This turned up at Willsbridge Mill too and only because we had been shown it by Mark; we would never have noticed it otherwise or been able to identify it from books! As in Somerset, it is not only crusts which turnout to be new records but on a GLRG meeting in April 2014 we found the macrolichens *Usnea flammea* (LC) on one ash tree, and *Physcia stellaris* (LC) on another, on Spaniorum Hill at Easter Compton; both new to West Gloucestershire. With *Usnea* species being so sensitive to pollution, this was a surprise.

It is important not to focus just on new records. Recording common and less common and known rarities is just as important. Visits (May 2015, August 2013) to Brean down have re-found and recorded the national rarity *Fulgensia fulgens* (EN NR P Eng Wa) (Fig. 13) growing on soil and mosses on the ground. This species, like so many ground dwelling crustose lichens is very vulnerable, especially to trampling by people and animals, as well as pollution such as nitrogen which encourages the growth of more aggressive higher plants with which it cannot compete.

Fig. 13: *Fulgensia fulgens,* Brean Down.

Graveyards and churchyards still give us plenty of records, and there lichens seem to give a pleasing aspect to an otherwise somewhat dour place. In the Smallcombe Cemetery in Bath (February 2015) it was nice to see the common *Rhizocarpon petraeum* (LC) (Fig. 14) with the typical concentric rings of fruits and the lovely pattern of lobes of *Xanthoparmelia mougeotii* (LC) (Fig. 15). Common but great to find and muse over. How they make these patterns is quite a puzzling matter.

Fig. 14: *Rhizocarpon petraeum* on Gravestone, Smallcombe Cemetery, Bath.

Fig. 15: *Xanthoparmelia mougiotii* on Gravestone, Smallcombe Cemetery, Bath.

With so many new Vice-County records we have to ask ourselves whether the lichens are changing or whether we are getting better at spotting them. With Walter Walton finding and recording *Lecanora agardhiana* there is no doubt that previous generations were good at spotting even the most cryptic of them. And when we look for such lichens as *Usnea florida* (NT ? P Eng Sc Wa) we find it absent over much if not all of our region when Watson (1954) had it recorded over much of southern England where no living lichenologist would expect to find it today. This species may well be ultra-sensitive to nitrogen pollution. So yes, the lichens flora is undoubtedly changing and we need all the records we can get so that there is enough data to analyse and find out exactly what is happening.

Conservation Status Abbreviations for Lichens

CR = Critically Endangered; DD = Data Deficient; EN = Endangered; LC = Least Concern; NE = Not Evaluated (yet?); NR = Nationally Rare; NS = Nationally Scarce; NT = Nationally Threatened; P = National Priority BAP Species

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Lesne's Earwig in our region

David Hawkins

It was the eminent Glamorgan naturalist Greg Jones that first drew my attention to Lesne's earwig (*Forficula lesnei*). He described returning home from his allotment at Margam a few years ago and something falling onto the floor of his hallway when he removed his hat. The insect stowaway turned out to be a Lesne's – a species considered to be scarce and of patchy distribution in the area. Greg rushed back to the allotment with his net and proceeded to find more in the hedge surrounding the site. He has subsequently recorded it in several other locations in South Wales. Following his encouragement, I kept my eye out for the species when making casual amateur invertebrate surveys around the Bristol region last year.

Therefore it was a surprise and delight when last August, as I was examining an umbellifer (that turned out to be Fool's Parsley, *Aethusa cynapium*) amongst some bushes and a stand of Lesser Burdock near the playing fields in the Malago Vale (ST584706 – between Bedminster Road and Marksbury Road) I caught sight of a somehow-slightly-different-looking earwig climbing over the drying umbels. On closer examination it was clear that this individual was both wingless and that its cerci (pincers) were flattened and straight up to around half their length – the cerci of male common earwigs (*Forficula auricularia*) curve out much sooner and have a little tooth just after the curving begins. So the one I was peering at had to be a male Lesne's earwig!

Lesne's earwig, male (top right) and female (left)
(photo by Gary Farmer)

As well as being apterous and the differences in the cerci of the males, Lesne's differ from common earwigs in that they are a paler chestnut brown, have a slightly 'barrel-shaped' abdomen (consequently making them appear more slender in their front half) and are smaller: 7 or 8mm long, compared to 10–15mm for common earwigs. The easiest things to spot for a beginner in the field are the winglessness and the differences in the cerci. But after seeing the species a few times, especially alongside its commoner cousin (which will often be the case), it becomes relatively straightforward to separate. Winglessness, size and body shape are the clues to differentiating females. See also *www.wbrc.org.uk/worcrecd/33/* and click on item 22 (Lesne's Earwig) for useful images comparing common and Lesne's earwig features. Wiglets (nymphs) of the two species are more tricky to tell apart.

Shortly after the encounter in Bedminster, I swept a pair of Lesne's from umbellifers near a hedge on Weston Moor in the Gordano Valley. I also decided to look in more urban places and found them on numerous occasions in Victoria Park on Windmill Hill. Here they were swept from hawthorn and oak trees. From the former I once had four in one net (along with six common earwigs) so it seems reasonably safe to assume that there is a good population dwelling in the park.

It is generally considered to be the case that Lesne's earwig favours shrubs that feature trailing wild clematis or honeysuckle. This may constitute a preferred habitat, but judging by the fact that whenever I have come across them it has not been in close proximity to those two creepers these earwigs are clearly more expansive in their habits and habitats.

The picture that seems to be emerging, not just in our area but more widely over southern England and Wales, is that Lesne's earwig is not really a scarce species at all, just very under recorded. This tallies with the findings of Robert S. Cropper, who in his 2011 publication *The Orthoptera and Allied Insects of Somerset* explains that Lesne's earwig is "widespread, although local, but often in quantity where it does occur". It was not recorded in the county until 1992 but thereafter he began to encounter it in many places. How local really is the species? Is it expanding its range? It would be excellent if others who find this of interest could help continue Mr Cropper's work on Lesne's earwig. There is surely much to learn about its ecology, and much awareness to be raised; I am quite sure that Lesne's must frequently be mistaken for common earwig.

As well as discovering more Lesne's, my target this year is to find a Lesser Earwig (*Labia minor*), a diminutive and dark-coloured resident of dung piles and compost heaps! This creature is surely also under recorded.

Bristol & District Invertebrate Report 2015

Ray Barnett

Introduction

Two main impressions of 2015 remain in the memory, firstly a very poor and often wet summer followed by an extremely mild autumn leading into an exceptionally mild December with little hint of winter. The summer was a particular disappointment and it was concerning to see populations of species such as Small Tortoiseshell do so badly when just two years ago they seemed to be back on an upward track.

The most remarkable aspect of 2015 without doubt though, was the exceptionally mild autumn into winter. The number of moth recorders across the country is now very large, bigger than it has ever been, and this resource was able to monitor the impact of the weather on moth populations – presumably also reflecting to some degree what was happening to other invertebrate populations which have fewer followers. Migration into the country had been first noticed significantly in May and June with considerable numbers of the Small Mottled Willow and a sprinkling of the day flying Humming-bird Hawk-moth. However this was put into the shade by the immigration in the autumn of species such as the Bordered Straw but especially notable for the spectacular Clifden Nonpareil, with one reported from our own region. This immigration was then itself eclipsed by the mild weather in December resulting in the appearance of native species well out of season e.g. a Polar Hawk-moth in Wiltshire on 18 December (normally on the wing from May to July). Elsewhere in southern England, species normally not seen until February at the earliest were reported including Dotted Border, Early Moth, Engrailed, Common Quaker, Hebrew Character and Clouded Drab.

2015 may not have had a memorable summer but entomologists in our region demonstrated that by targeting particular habitats, particular specialist species and using particular recording techniques it is more than possible to discover new species to the region, rediscover those not recorded for very many years or decades and to contribute to our knowledge of our local environment in a very positive way. Graham Smith used the commercially available pheromone lures at a number of sites in our region to attract clearwing moths – a group poorly recorded and often overlooked. As a result he recorded Orange-tailed Clearwing at Purdown, Cleeve Hill and Weston (Bath), Red-belted Clearwing in Weston (Bath), Currant Clearwing in Bath and Yellow-legged Clearwing at Cleeve Hill and Penn Hill. Bob Fleetwood, meanwhile, has focussed on recording beetles on the National Trust's Tyntesfield Estate (largely woodland and open grassland species) and also on searching for beetles which specialise in the saltmarsh and other wetland habitats close to Clevedon. As a consequence the report below lists many species new to the region or not seen for a long time. There is scope for anyone to make such an impact

through these targeted approaches and the recently published book on how to identify bees offers just such an opportunity.

The national decline in the number and variety of bees has been of major concern, focussing perhaps on the role that chemical pesticides such as neonicotinoids may be playing in resulting deaths of non-pestiferous insects such as bees but also many other insect orders. Research based at the University of Bristol (as part of a national project) looking at pollination systems has resulted in great emphasis being placed locally upon the importance of insect pollinators and how to encourage them through growing suitable plants. It has also revealed just how significant our own gardens and allotments are now for many insects as the countryside itself has become more barren. The single biggest issue for our invertebrate populations has to be the decline in available suitable habitat, and the more each of us can do to try and redress that the better.

Scientific nomenclature follows that used by the National Biodiversity Network website (*www.nbn.org.uk*).

My thanks to all who have submitted records directly to the Society, particularly to Jon Mortin, Andy Pym, John Martin, John Aldridge, Bob Fleetwood, Jean Oliver, Dave Nevitt, Chris Iles, Darrel Watts, Tony Smith, Tony Cotterell, John Burton, Marcus Rhodes, Paul Bowyer, Richard Pooley, Martin Evans, Des Bowring, Rich Andrews, Mike Bailey, Grant Burleigh, Lois Pryce, Graham Smith, the Bristol Regional Environmental Records Centre (BRERC), members of the Clevedon Moth Group, Bristol & District Moth Group and the Bristol Wildlife E-group. The importance of receiving, not just the records picked out here, but those of perhaps less noteworthy species cannot be understated in terms of monitoring the ever changing status of the invertebrate fauna.

Species of note in 2014, corrigendum and addendum

INSECTA (Insects)

Lepidoptera (macro-moths)

Sesia bembeciformis (Hb.) **Lunar Hornet Moth** Easton, Bristol ST60 74 (vice county 34), 8 July 2014, Bob Fleetwood. Although the record is correct, the moth was not attracted to a pheromone lure, as incorrectly reported by myself in last year's report.

Lepidoptera (micro-moths)

Diplopseustis perieresalis (Walk.) Bath, Bath & NE Somerset (vice county 6) ST7 6, 05 October 2014, Ian Redding. Second record on UK mainland of this rare migrant species.

Species of note in 2015

INSECTA (Insects)

Archaeognatha (bristletails)

Dilta hibernica (Carp.) **Southern Bristletail** Smallcombe Vale Cemetery, Bathwick, Bath & NE Somerset (vice county 6) ST762 641, 16 June 2015, Jon Mortin, one adult. A group of insects rarely recorded by entomologists.

Odonata (damselflies and dragonflies)

Libellula fulva (Mull.) **Scarce Chaser** Hoar Gout, Avonmouth, Bristol (vice county 34) ST531 801, 19 June 2015, Tony Scott, one adult male. Orchard Pools, Severn Beach, South Gloucestershire (vice county 34) ST5432 8390, 22 June 2015, Tony Scott, one adult female. A species which has increased in our region in recent years.

Brachytron pratense (Mull.) **Hairy Dragonfly** Portbury Wharf Avon Wildlife Trust Reserve, North Somerset (vice county 6) ST48 76, 15 June 2015, Alan Barrett, one adult male on the rhyne. A speciality of the Somerset Levels, including those in North Somerset.

Orthoptera (grasshoppers and crickets)

Metrioptera roeselii (Hagenbach) **Roesel's Bush-cricket** Bristol Mail Centre, Filton, South Gloucestershire (vice county 34) ST60 80, 22 July 2015 and 06 August 2015, Andy Pym, single females on each occasion, the former being the macropterous f. *diluta*. Trooper's Hill, Bristol (vice county 34) ST628 731, 16 July 2015, Rupert Higgins. Slowly colonising our region having invaded from the south.

Hemiptera (true bugs)

Gonocerus acuteangulatus (Goeze) **Box Bug** Smallcombe Vale Cemetery, Bathwick, Bath & NE Somerset (vice county 6) ST762 641, 16 June 2015, Jon Mortin, one on box plant. Once a rarity, this species is now at low level population levels across our region.

Scolopostethus puberulus (Horv.) Weston Moor, North Somerset (vice county 6) ST44 73, 18 March 2015, Bob Fleetwood, sifting leaf litter through vacuum sampling. Thinly scattered across southern England and Wales, largely around the coast (det. confirmed by Jim Flanagan.)

Derephysia foliacea (Fall.) Sand Point, North Somerset (vice county 6) ST32 65, 13 August 2015, Paul Bowyer. A first record for our region, a species which occurs on ivy and is probably thinly spread across the region if searched for.

Saldula orthochila (Fieb.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 18 August 2015, Bob Fleetwood, vacuum sampling of cracks/veg in dry concrete lake. The saldid (or shore bugs) are poorly recorded in our region and hence I have included all of Bob Fleetwood's records for 2015 here.

Saldula saltatoria (L.) Weston Moor, North Somerset (vice county 6) ST44 73, 10 January 2015 and 18 March 2015, Bob Fleetwood, under bark in January and through vacuum sampling in March. Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 03 December 2015, Bob Fleetwood, hand searching vegetation around tree stumps.

Saldula pilosella (Thoms.) Channel View, Clevedon, North Somerset (vice county 6) ST37 68, 27 May 2015, Bob Fleetwood, sweeping.

Saldula palustris (Dougl.) Wharf Farm, Kingston Seymour, North Somerset (vice county 6) ST37 67, 21 April 2015, Bob Fleetwood, vacuum sampling of the seawall bank.

Chartoscirta cocksii (Curt.) Weston Moor, North Somerset (vice county 6) ST44 73, 15 April 2015, Bob Fleetwood, vacuum sampling on bank of stream.

Ledra aurita (L.) Weston Moor, North Somerset (vice county 6) ST44 73. 20 May 2015, Bob Fleetwood, nymph beaten from oak. The largest leafhopper this species is thinly distributed.

Lepidoptera (butterflies)

Boloria selene (D. & S.) **Small Pearl-bordered Fritillary** Dolebury Warren, North Somerset (vice county 6) ST455 589, 27 May 2015 until 09 July 2015, Joe McSorley. The one site where this species still occurs locally.

Argynnis paphia (L.) var. *valesina* **Silver Washed Fritillary** Lord's Wood, Pensford (vice county 6) ST63 63, 15 August 2015, Des Bowring. The dark form of this butterfly is rarely recorded locally.

Lasiommata megera (L.) **Wall** Dolebury Warren, North Somerset (vice county 6) ST455 589, 22 July 2015 and again on 12 August 2015, Joe McSorley, two on 22 July and 6 on 12 August. A butterfly which has declined substantially across the country and therefore well worthy of note.

Lepidoptera (micro-moths)

Ectoedemia argyropeza (Zell.) Near Paulton, Bath & NE Somerset (vice county 6) ST65 56. larval mines collected in autumn 2014 and adults emerged in May 2015, Chris Iles. Only previously recorded from Wetmoor in South Gloucestershire within our region, and the mines in 2015 were found on planted aspen suggesting it may be found if searched for in many other locations.

Ectoedemia decentella (Herr.-Sch.) Bishopston, Bristol (vice county 34) ST589 754, 30 June 2015, Rupert Higgins. Very few records from our region.

Nemophora metallica (Poda) Manor Road, Community Woodland, Keynsham, Bath & NE Somerset (vice county 6) ST66 67, 19 July 2015, John Aldridge. A new site for this thinly scattered resident moth.

Diplodoma laichartingella (Goeze) Stoke Leigh Cap, Leigh Woods, North Somerset (vice county 6) ST556 731, 27 June 2015, Ray Barnett, one male, in flight. The first record for our region of this 'bagworm' moth which is unusual in that both sexes are winged, for most species the female is apterous.

Caloptilia azaleella (Brants) Stoke Bishop, Bristol (vice county 34) ST55 76, 06 December 2015, Martin Evans. Thought to have been introduced to the UK on azalea and rhododendron plants, it is now well established across southern England, Wales and the Midlands. With two or three broods in a year it can be seen from May to October but a record in December is exceptional and related to the very mild end to the year experienced.

Yponomeuta sedella (Treits.) Weston-super-Mare, North Somerset (vice county 6) ST32 61, 01 August 2015, David Agassiz, one at light. The first record for our region, a moth whose larvae feed on cultivated *Sedum* in gardens.

Metalampra italica (Bald.) High Bannerdown, Batheaston, Bath & NE Somerset (vice county 6) ST78 67, 04 September 2015, Elisabeth Allen, det. Richard Pooley and confirmed by gen. det. (Paul Wilkins), one at light. This moth, thought to be native to Italy, was first recorded in the UK in 2003 in Devon and has been expanding its range since. This is the first record in our region. Larvae feed on dead wood.

Cosmopterix lienigiella (Lienig & Zeller) Portishead, North Somerset (vice county 6) ST46 77, 20 June 2015, David Hawkins. Primarily found in East Anglia and south east England's reed beds, this is first record for our region and indeed for the whole of Somerset. It is assumed to be breeding in the nearby Portbury Wharf reserve.

Gelechia sororculella (Hb.) Stratford Bay, Chew Valley Lake, Bath & NE Somerset (vice county 6) ST564 584, 14 July 2015, Rupert Higgins. Surprisingly there were no recent records known when the *Moths of the Bristol Region* was published in 2008, although it was suspected to be present. This record confirms that suspicion of this willow feeding species.

Coleophora paripennella (Zell.) Bishopston, Bristol (vice county 34) ST589 754, 30 June 2015, Rupert Higgins. First record for our region.

Cochylis molliculana (Zell.) Keynsham, Bath & NE Somerset (vice county 6) ST65 67, 04 September 2015, Alan Bone, gen. det. Mike Bailey. Elm Farm,

Burnet, Bath & NE Somerset (vice county 6) ST66 65, 05 June 2015, Philippa Paget, gen det. Paul Wilkins. Since arriving in the UK in 1993 this species continues to spread and become more common.

Epinotia signatana (Doug.) Weston-super-Mare, North Somerset (vice county 6) ST3 6, 03 July 2015, Paul Bowyer, one at light. We have very few records of this admittedly rather drab species, good to confirm it is still present.

Crocidosema plebejana (Zell.) Keynsham, Bath & NE Somerset (vice county 6) ST65 67, 22 August 2015, Alan Bone. Sand Point, N Somerset (vice county 6) ST32 65, 06 November 2015, Paul Bowyer. A recent colonist first seen in our region in the mid-1990s which may becoming established on tree-mallow.

Grapholita molesta (Busck) **Oriental Fruit Moth** Bedminster, Bristol (vice county 6) ST45 76, October 2015, David Hawkins. Larvae or pupae are occasionally imported on fruit to our shops which is presumably the source of this example found in the recorder's house.

Grapholita lobarzewskii (Now.) Bishopston, Bristol (vice county 34) ST589 754, 6 July 2015, Rupert Higgins. First recorded in our region in 2006, the larvae feed on the fruit of plum and cherry.

Lepidoptera (macro-moths)

Sesia bembeciformis (Hb.) **Lunar Hornet Moth** Chew Valley Lake, (Constant Effort Site – mist nets), Bath & NE Somerset (vice county 6) ST56 58, 23 June 2015, Paul House. One seen on the bird ringing nets. A localise species across the region.

Agrius convolvuli (L.) **Convolvulus Hawk Moth** Sand Point, North Somerset (vice county 6) ST32 65, 13 August 2015, Paul Bowyer. Weston-super-Mare, North Somerset (vice county 6) August 2015, Jim Barnett, one dead in surf. Clevedon, North Somerset (vice county 6) ST3 6, 01 September 2015 and 16 September 2015, Bob Fleetwood, at light. A good year for this spectacular immigrant moth across the UK.

Macroglossum stellatarum (L.) **Humming-bird Hawk Moth** Horfield, Bristol (vice county 34) ST60 77, 31 October 2015, Mandy Leivers, one nectaring and in flight. Not that many records this year for this day flying migrant hawk moth but such a late date reflects the very mild autumn of 2015.

Gymnoscelis rufifasciata (Haw.) **Double-striped Pug** Blagdon, Bath & NE Somerset (vice county 6) ST50 58, 24 December 2015, Nigel Milbourne, one entered house, a very early date reflecting the very mild conditions in December.

Parascotia fuliginaria (L**.) Waved Black** Chew Valley Lake (picnic site 2), Bath & NE Somerset (vice county 6) ST580 605, June, Ian Stapp. Only the second ever record in our region for this attractive moth, presumably a wandering individual.

Cybosia mesomella (L.) **Four-dotted Footman** Weston-super-Mare, North Somerset (vice county 6) ST35 61, 24 July 2015, Oliver Smart, one at light. We have very few records of this species but it is noted for wandering from its breeding grounds, an excellent record.

Catocala fraxini (L.) **Clifden Nonpareil** Lower Woods, Wetmoor, South Gloucestershire (vice county 34) ST74 88, 23 September 2015, Martin Evans and Roger Edmondson, one at mv light. One of the most attractive and sought after moths given its large size and unusual blue underwings. 2015 saw a rise in records across southern England of this migrant which is now probably established in places. This particular individual was reportedly even larger than the norm.

Paradrina clavipalpis (Scop.) **Pale Mottled** Willow Montpelier, Bristol (vice county 34) ST59 74, 16 December 2015, Des Bowring, a very late date reflecting the mild autumn.

Trichoplusia ni (Hb.) **Ni Moth** Bishopston, Bristol (vice county 34) ST589 754, 19 June 2015, Rupert Higgins. Weston-super-Mare, N Somerset (vice county 6) ST3 6, 31 October 2015, Paul Bowyer, one at light. Not a great year for numbers of the familiar migrant the Silver Y, so interesting that a couple of examples of the similar looking, but less frequent migrant, the Ni Moth did turn up.

Agrochola helvola (L.) **Flounced Chestnut** Brown's Folly, Bath & NE Somerset (vice county 6) ST79 66, 09 October 2015, Richard Pooley. We have no previous records from this eastern area of our region for this moth which is quite local around Bristol and Bath anyway.

Meganola albula (D. & S.) **Kent Black Arches** Bishopston, Bristol (vice county 34) ST589 754, 30 June 2015, Rupert Higgins. Henbury, Bristol (vice county 34) ST56 78, 17 July 2015, Peter Mansfield. Moth recorders across southern England reported the arrival of this usually restricted species in their moth traps in many counties in 2015, our own region was not exempt with these two known records.

Coleoptera (beetles)

Bembidion doris (Panz.) Dowlais, Clevedon, North Somerset (vice county 6) ST38 69, 02 April 2015, Bob Fleetwood, vacuum sampling, seawall nettles and docks. Very local and rare in the west country.

Agonum nigrum (Dej.) Dowlais, Clevedon, North Somerset (vice county 6) ST38 69, 17 March 2015, Bob Fleetwood, under logs on seawall berm. A very local coastal specialist. Nationally Scarce.

Silpha laevigata (Fabr.) Narroways Junction, Bristol (vice county 34) ST60 75, 10 July 2015, Des Bowring. More regularly seen along the Somerset coastal fringe this species may be increasing.

Gauropterus fulgidus (Fabr.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 22 September 2015, Bob Fleetwood, hand searching a woodchip pile. A rare or over looked species associated with garden compost etc.

Heterothops niger (Kraatz) Weston Moor, North Somerset (vice county 6) ST44 73, 11 February 2015, Bob Fleetwood, hand searching a heap of cut grass (male gen. det.). A local species often found under decaying seaweed at the coast or inland under vegetation.

Autalia longicornis (Scheerp.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 18 November 2015, Bob Fleetwood, taken in pitfall trap, genitalia det. A rare species known from Great Breach Wood in the south of Somerset but no other records in our region.

Typhaeus typhoeus (L.) **Minotaur Beetle** Priors Wood, North Somerset (vice county 6) ST491 744, 02 May 2015, Jane Cole, one photographed. The unmistakeable Minotaur Beetle, thanks to its horned appearance, is a rare beast in the whole of Somerset and has never been recorded this close to Bristol before. Preferring light sandy soil, it will be interesting to see if more can be found at this site.

Minotaur Beetle (*Typhaeus typhoeus*)

Amphimallon solstitialis (L.) **Summer Chafer** Bristol Mail Centre, Filton, South Gloucestershire (vice county 34) ST60 80, June 2015, Andy Pym, one seen in flight. New Road, Filton, South Gloucestershire (vice county 34) ST61 79, 28 June 2015, Andy Pym, one on pavement. A local species in the region.

Microrhagus pygmaeus (Fabr.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 10 July 2015 and 11 August 2015, Bob Fleetwood, sweeping around stumps on Lime Avenue in July and in vane trap in August. Probably increasing at present and less dependent on old woodland. Nationally Rare.

Platycis minutus (Fabr.) Lord's Wood, Pensford, Bath & NE Somerset (vice county 6) ST63 63, summer 2015, Michelle Fowler, one seen. A very local species on decaying timber, an excellent record for this striking red species. Nationally Scarce.

Ctesias serra (Fabr.) **Cobweb Beetle** Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 10 July 2015, Bob Fleetwood, in flight interception trap near log pile. Very few records locally. Nationally Scarce.

Tillus elongatus (L.) Weston Moor, North Somerset (vice county 6) ST44 73, 20 May 2015 (female) and 21 June 2015 (male), Bob Fleetwood. Long associated with good dead wood habitat (where its larvae feed on the larvae of woodworm etc) this species appears to be increasing at present and becoming less dependent on ancient woodland.

Soronia punctatissima (Ill.) Weston Moor, North Somerset (vice county 6) ST44 73, 22 April 2015, Bob Fleetwood, pitfall trap with acetic acid bait. Thinly scattered records across the UK, usually under the bark of old oaks.

Enicmus brevicornis (Mann.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 11 August 2015 and 04 September 2015, Bob Fleetwood, flight interception trap. Only one other record from the region, a beetle associated with sycamore infected by fungus. Nationally Scarce.

Meloe proscarabaeus (L.) **Black Oil-beetle** Field off Bridewell Lane, Banwell, North Somerset (vice county 6) ST380 585, 05 April 2015, Daniel Marshall, one adult. All oil beetles are relatively scarce and under threat, so all records are important.

Stricticollis tobias (Mars.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 22 September 2015, Bob Fleetwood, hand searching of woodchip pile. Associated with rubbish dumps, few records from our region.

Agapanthia villosoviridescens (DeG.) Lawrence Weston Moor, Bristol (vice county 34) ST547 791, 19 June 2015, Elisabeth Shaw, one. Further evidence of the gradual colonisation of our region by this longhorn beetle.

Oomorphus concolor (Sturm) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 22 May 2015, Bob Fleetwood, beaten. Local in woods, predominantly coastal in the UK.

Chrysolina americana (L.) **Rosemary Beetle** Bishopston, Bristol (vice county 34) ST589 754, 23 May 2015, Rupert Higgins. A pest species very well established in south east England and colonising our region.

Psylliodes chalcomera (Ill.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 11 August 2015, Bob Fleetwood, sweeping grasses. Found on musk thistle, a rare beetle or overlooked species. Nationally Scarce.

Platyrhinus resinosus (Scop.) Smallcombe Vale Cemetery, Bathwick, Bath & NE Somerset (vice county 6) ST763 641, 16 June 2015, Jon Mortin, one present. There are good populations around Bristol and Bath of this black and white weevil.

Anthribus fasciatus (Forst.) Weston-super-Mare, North Somerset (vice county 6) ST3 6, February 2015, Paul Bowyer, one hibernating in lichen. A first record for the region for this black and pink fungus weevil.

Graptus triguttatus (Fabr.) Tyntesfield Estate, North Somerset (vice county 6) ST50 71, 23 June 2015, Bob Fleetwood, sweeping mixed herbage. A local species of grassland.

Pachyrhinus lethierryi (Desb.) Weston-super-Mare, N Somerset (vice county 6) ST3 6, 31 May 2015, Paul Bowyer. Perhaps easily dismissed as a *Phyllobius* or *Polydrusus* weevil, this green beetle is a specialist on trees such as Leyland Cypress and has only been a British species since 2003. A new record for our region.

Polydrusus pulchellus (Steph.) **Sea-wormwood Weevil** Yeo Estuary, N Somerset (vice county 6) ST36 66, 21 April 2015 and 27 May 2015, Bob Fleetwood, vacuum sampling of sea beet and vegetation on seawall. Restricted by its foodplant to the coasts of the UK there are very few records from Somerset. Nationally Scarce.

Curculio villosus (Fabr.) Weston Big Wood, North Somerset (vice county 6) ST45 75, 30 May 2015, Ray Barnett, swept. A first record for North Somerset and a rare species in the county as a whole. Nationally Scarce.

Dorytomus ictor (Herbst) Weston Moor, North Somerset (vice county 6) ST44 73, 25 April 2015 and 21 June 2015, Bob Fleetwood, sweeping garlic mustard in April and under poplar in June. A species mainly of south east England and the Midlands, a first for Somerset region. Nationally Scarce.

Tournotaris bimaculatus (Fabr.) Wharf Farm, Kingston Seymour, North Somerset (vice county 6) ST37 67, 21 April 2015, Bob Fleetwood, vacuum sampling of the seawall bank. A local species of tall waterside vegetation. Nationally Scarce.

Pelenomus comari (Herbst) Dowlais, Clevedon, North Somerset (vice county 6) ST38 69, 02 April 2015, Bob Fleetwood, vacuum sampling of seawall nettles and docks. A species usually of the Levels. Nationally Scarce.

Anthonomus bituberculatus (Thoms.) Weston Moor, N Somerset (vice county 6) ST44 73, 20 May 2015 and again on 21 June 2015, Bob Fleetwood, beaten from hawthorn in May, swept in June. A first record for Somerset, presumably over looked previously for this species which can be found on hawthorn over wintering as well as on the plant in summer.

Mecinus collaris (Germ.) Dowlais, Clevedon, North Somerset (vice county 6) ST38 69, 19 March 2015, 02 April 2015 and 18 August 2015, Bob Fleetwood, vacuum sampling of grasses and sedges on seawall berm and salt marsh. Yeo

Estuary, North Somerset (vice county 6) ST36 66, 27 May 2015, Bob Fleetwood, vacuum sampling vegetation on seawall. A very local and coastal species of the English southern coasts. Nationally Scarce.

Phloiophilus edwardsii (Steph.) Tyntesfield Estate, N Somerset (vice county 6) ST50 71, 12 November 2015, Bob Fleetwood, flight interception trap. A very local species of fungi on dead wood. Nationally Scarce.

Xyleborus monographus (Fabr.) Oldbury Court, Bristol (vice county 34) ST63 77, 16 May 2015, Ray Barnett, swept. This small ambrosia beetle has only been recorded previously in the UK from Buckinghamshire, Surrey and Essex, having been first recorded in the UK in 2003. (Determination confirmed by Mark Telfer who found it new to the UK originally.)

Hymenoptera (bees, wasps and ants)

Rhyssa persuasoria (L.) Dundry, Bristol (vice county 6) ST557 670, 30 June 2015, Dave Nevitt, one female in garden. This very impressive large parasitic wasp is associated with coniferous stands and we have a sprinkling of records only.

Bombus humilis (Ill.) **Brown-banded Carder Bee** Oldbury Court, Bristol (vice county 34) ST633 767, 16 May 2015, Richard Comont. Close examination is necessary of the Carder Bumble bees to differentiate this species from the commoner *Bombus pascuorum*.

Diptera (true flies)

Acrocera orbiculus (Fabr.) Weston Moor, N Somerset (vice county 6) ST44 73, 05 July 2015, Paul Bowyer, two on the wing. Hunchback flies (parasites on spiders) are seldom recorded.

Villa cingulata (Meig.) Cattery opposite Black Rock Villas, Portishead, N Somerset (vice county 6) ST45 74, 03 July 2015, Bill Dixon, det. Ray Barnett, at least three individuals. This beefly, once considered to be extinct continues to spread and colonise new areas in our region.

Bombylius discolor (Mik.) **Dotted Bee-fly** Perrett's Park, Bristol (vice county 6) ST6004 7124, 11 April 2015, David Hawkins, Three adults and a further three at ST6004 7117. A beefly associated with the eastern side of Bristol and around Bath, which may be extending its range.

Cistogaster globosa (Fabr.) Narroways Nature Reserve, Bristol (vice county 34) ST60 75, 12 August 2015, Des Bowring, two seen, only second site in Bristol. A distinctive tachinid fly parasitic on true bugs family and a rarity across England. Nationally Rare.

Nationally Scarce – Occurring in 16-100 hectads in Great Britain.
Nationally Rare – Occurring in 15 or less hectads in Great Britain

Mammals of the Bristol District 2015

Roger Symes

This report, on mammals recorded in the Bristol district during 2015, aims to summarise and build upon information of sightings, traces, road casualties, research projects and field meetings, which have been received by the author, as BNS Mammal Recorder. Observations from organisations which specialise in particular species or groups, or are concerned with welfare of wildlife or with conservation issues, have been sought. All received have been treated with equal weight in this report. Once again a significant number of records have been received from the British Trust for Ornithology (BTO) Breeding Birds Survey (BBS) (*www.bto.org/volunteer-surveys/bbs*), which is a systematic study co-ordinated in the Bristol District by David Stoddard. It is carried out annually, and sightings or other evidence of mammals are also recorded during walks.

The ultimate aim is to encourage those who are interested in mammals, or even just interested in recording wildlife, to see that by conscientiously keeping records of mammal species seen during the year and then submitting them to a recording centre, their information can be pulled together with that of other recorders to do more than just report on what has been noted at a particular location. Could, for example, anything of interest possibly be gained by writing down the numbers of grey squirrels seen on a weekly walk across the same location? The information assembled is inevitably a 'snapshot'. That 'snapshot' could of course turn out to be an image reflecting just distribution of observers. As more information is gathered so the value of the data increases, and becomes more sophisticated.

Handling Records

The names used in this paper are as listed in 2012 by the Mammal Society on their website *www.mammal.org.uk*. The smallest unit of recording used here is a one kilometre square of the National Grid. The Mammal Society has promoted the use of the word "hectad" to represent a 10km square and that term is used in this report. In the reports on species which follow the initial information shown is of the numbers of individual records for that species, and the number of observers who noted them. Then further information from the records may give details of some observations, followed by a note of the number of hectads from which records were received, together with the total number of 1km squares in each hectad in which observations were recorded. The numbers of 1km square records in each hectad might reflect population densities. The names of those who have contributed records for 2015 are listed at the end of the report.

Species Reports

Insectivores (Insectivora)

Common Shrew (*Sorex araneus*):- 4 records by 3 observers. Two records were BBS survey information, the other two were from the same garden a month apart. One of these was rescued from a neighbour's cat and released, and the other was found dead on the path, a victim of cat predation. 4 records from 3 × 1km squares from 3 hectads: ST47-1, ST55-1, ST58-1.

Pygmy Shrew (*Sorex minutus*):- No record during 2015.

Water Shrew (*Neomys fodiens*):- No records during 2015.

European Mole (*Talpa europaea*):- 85 records by 31 observers. 57 records were from BBS surveyors, all the rest were from one observer, Jeff Rawlinson. Jeff sent in many counts of molehills, numbers of molehills ranging from a few to 200+. He saw a heavy concentration of 50 at one site, and 25 along a roadside verge. Information on progressive development of molehills included at one site 20+ on 30th August, 40+ on 19th October, 60+ (very fresh) on 26th November and 200+ on 14th December! Nobody sent in any records of live or dead moles, or evidence of breeding. Records from 73 × 1km squares in 18 hectads: ST35-1, ST45-3, ST46-2, ST47-6, ST55-3, ST56-2, ST57-8, ST58-4, ST65-5, ST66-2, ST67-10, ST68-13, ST69-5, ST75-1, ST76-2, ST77-3, ST78-2, ST79-1.

Eurasian Hedgehog (*Erinaceus europaeus*):- 27 records, by 5 observers, of whom one was a BBS surveyor, and another was responsible for 16 of the reports. 22 records were of animals killed on roads, of which one was recorded definitely as an adult, 3 definitely as juveniles. Two reports were of field signs, one of these near a known nest site. One animal was found in hibernation in a leaf pile in January. There were just 2 records of active animals. Both were sighted in August, one on a garden path at 22.05 hours, the other, a juvenile, was found in the open at 10.00 hrs but was barely 100g in weight and hardly 12cm long and was taken to a rescue centre. The 4 juveniles above were recorded in June (1), August (2) and November (1). Records from 15 × 1km squares in 6 hectads: ST47-4, ST55-1, ST57-3, ST58-5, ST65-1, ST68-1. Hedgehogs are going through a difficult time and information on the situation and references to some relevant reports is available at *www.britishhedgehogs.org.uk/pdf/SoBH_2015.pdf*.

Rodents (Rodentia)

Harvest Mouse (*Micromys minutus*):- 1 record of a nest from Somerset in November, no details.

House Mouse (*Mus musculus*):- 1 animal seen alive and photographed. Record from one 1km square from one hectad: ST57-1.

Wood Mouse (*Apodemus sylvaticus*):- 8 records by 3 observers. 4 records were of sightings of live animals: in one bird nest box there were 5, in another three; one was seen under a bird table. 2 animals were found dead on roads and 2 drowned – one in a watering can, another in a bucket. Records from 5 × 1km squares in 2 hectads: ST55-1, ST56-4.

Yellow-necked Mouse (*Apodemus flavicollis*):- 3 records for 2015 of nests in dormouse boxes.

Bank Vole (*Myodes glareolus*):- 2 records by 2 observers, one live sighting and one of an adult found dead in a garden. Record from 2 × 1km squares from 2 hectads: ST55-1, ST56-1.

Field Vole (*Microtus agrestis*):- 2 reports by 2 observers. One was of a field vole regularly visiting the area under a bird table, the other of one found dead – the result of cat predation. 2 records from 2 × 1km squares from 2 hectads: ST56-1, ST58-1.

Water Vole (*Arvicola terrestris*):- 1 record by 1 observer. This was a 'local knowledge' record reported during a BBS survey visit. Record from one 1km square in one hectad: ST45-1.

Hazel Dormouse (*Muscardinus avellanarius*):- 1 individual record, and reports from 3 other observers on on-going studies on dormice at 4 locations. The individual animal was found alive in August. In one study there were 5 records from 3 nest boxes on one day 25 th July. Two adult males weighed 18.5g. and 14.5g., and 2 adult females weighed 14.5g. and 17.5g. The fifth animal was found dead in a box on its own and was not weighed or sexed. In another study, at one site the total of monthly captures was 13 individuals, including recaptures, during April to October. In the years 2011 to 2014 such totals were 25, 39, 16, and 26. At the second site no individuals or nests were found in 2015, compared with years 2011–2014 which recorded 3, 4, 2 and 6. No evidence of dormice was found in the third study site either. The conclusion of one dormouse specialist was "*Judging by conversations with other dormouse monitors in the area 2015 has been a very bad year for dormice, probably due to the mild winter and cold spring.*" Records from 3 × 1km squares from 3 hectads: ST46-1, ST47-1, ST56-1.

Brown Rat (*Rattus norvegicus*):- 20 records by 13 observers, 8 were BBS reports. 7 were road casualties or found dead. A large adult was seen at a feeder and another was reported to have killed 11 chickens during the year. Records from 19 × 1km squares from 12 hectads: ST45-1, ST46-1, ST47-2, ST55-2, ST57-2, ST58-2, ST59-1, ST65-1, ST67-3, ST68-2, ST77-1, ST78-1.

Grey Squirrel (*Sciurus carolinensis*):- 163 records from 65 observers, 111 by BBS surveyors. Most sightings were of 1 to 3 animals. In Clevedon, in January, 3 or 4 regularly fed under a Yew tree. They were joined for a few days by another 3 or 4. It seemed that they had to be feeding on Yew seeds (nothing else was obvious),

although literature describes Yew seeds as poisonous to mammals? A crow chased a juvenile squirrel at one location. 5 squirrels were spotted in Eastville Park in February, and one on Denny Island at Chew Valley Lake. A very thin animal (?juvenile) was recorded in January, a definite juvenile in May. Records from 106 × 1km squares from 18 hectads: ST36-2, ST37-1, ST45-2, ST46-5, ST47-16, ST55-6, ST56-5, ST57-14, ST58-5, ST65-7, ST66-9, ST67-9, ST68-7, ST69-2 ST75-3, ST76-8, ST77-4, ST78-1. Reporting that there were records from 12 × 1km squares in ST47 hides the number of actual records from that hectad, which was 48.

Richard Bland supplied very useful information on grey squirrel numbers from 1km square ST5673 (Clifton Down), which he walks every week of the year when he can. He has noticed significant changes. Richard reports that since 2001 the average number of squirrels seen per walk has been around 1.5, sometimes with a peak in the autumn. The overall average fell from 3.0 in 2005 to 1.0 in 2013, then went up a bit in 2014. Richard completed 46 weekly walks in 2015 and observed unprecedented large numbers in the first month (15, 7, 12 and 9) and then between June 7th and August 2nd counts of 20, 21, 16, 15, 14, 25 and 13, with 25 being an exceptional maximum! The increase in numbers perhaps reflects those reported above in Clevedon in January and it would be interesting for others to count local populations regularly during the current year.

Rabbits and Hares (Lagomorpha)

Rabbit (*Oryctolagus cuniculus*):- 116 records from 51 observers, 99 were BBS records. Most records were of sightings of live animals and of field signs. The highest number of rabbits seen together was 14, in April, followed by single sightings of 13 and 10 in June. 84 records were of 1-3 animals together. Young rabbits were specifically noted in May (2 + 1) and September (1). Jeff Rawlinson reported a remarkable observation – of no rabbits seen in his garden at Pilning – for the first time ever! Only 2 road casualties were reported and nobody recorded evidence of any disease (myxomatosis or rabbit haemorrhagic disease (RHD)). RHD is causing concern and information on the situation in Scotland is available at *snh.org.uk/publications/on-line/advisorynotes/31/31.htm*. Records from 84 × 1km squares, from 19 hectads: ST35-3, ST36-4, ST44-1, ST45-6, ST46-1, ST47-4, ST54-1, ST55-10, ST56-4, ST57-9, ST58-9, ST65-7, ST66-2, ST67-2, ST68-5, ST75-5, ST76-2, ST77-6, ST78-3.

Brown Hare (*Lepus europaeus*):- 32 records by 25 observers. All records were of live animals, and all but one were made during BBS survey visits. 17 reports were of single animals, 12 of 2, and 3 of 3 hares together. Most sightings were in May (12), 10 in June, 8 in April, and one in July but of course most were made on BBS survey visits which were at particular dates. Records from 28 × 1km squares from 12 hectads: ST35–2, ST36-4, ST45-1, ST46-2, ST55-1, ST56-1, ST65-1, ST66-4, ST68-1, ST75-3, ST77-7, ST78-1.

Carnivores (Carnivora)

Fox (*Vulpes vulpes*):- 86 records by 29 observers and of these records 35 came from Jean Oliver. 30 of the records were from BBS surveyors. 10 records of animals dead on roads, 42 records were of live animals sighted. A pair was seen copulating on 28th January, in daylight. Only one juvenile was reported, on 12th July dead at the roadside. There were no records of earths. Records from 70 × 1km squares in 15 hectads: ST44-1, ST45-2, ST46-1, ST47-6, ST55-2, ST56-6, ST57-32, ST58-5, ST65-2, ST66-2, ST67-3, ST68-3, ST75-3, ST77-1, ST78-1.

Badger (*Meles meles*):- 89 records by 31 observers, of which 30 were BBS surveyors. 41 records were of dead badgers, with one observer submitting 22 of those records. 10 of the road casualties were specifically identified as adults, 10 specifically identified as juveniles. 7 road casualties were recorded along the A362 road at Buckland Down in ST74 and 75. Only one record identified a sett location (in an urban situation in Clevedon). Badgers were fed daily in a Pilning garden and badgers visited continuously through the year. Earliest arrival was generally around 21.45hrs, but in October noted at 18.40. Regular viewing at Pilning ceased in August. No evidence of cubs seen there during 2015. There were, from all records, 13 reports of cubs, 7 noted in October, and 2 in each of the months of July, August and September. David Warden reported that field evidence has been seen of badgers on Denny Island, Chew Valley Lake, since 1999. Records received from 70 × 1km squares, from 17 hectads: ST35-1, ST45-3, ST46-1, ST47-12, ST55-3, ST56-5, ST57-11, ST58-4, ST65-1, ST66-4, ST67-5, ST68-7, ST74-1, ST75-7, ST76-2, ST77-2, ST78-1.

Otter (*Lutra lutra*):- 209 records by 20 observers (including individually members of Bristol Otter Group), and by members of Yatton and Congresbury Wildlife Action Group (YACWAG), who have not been listed separately. A significant proportion of the otter records received lacked full details, albeit map references were included. All of those had been vetted by the otter group and so were acceptable for the report. Where such information was supplied then spraint and/or anal jelly was reported in 41 records, padding in 2, sightings in 18 reports. 2 otters were found dead on roads, one of which had clearly been killed very recently by a car. One remarkable sighting occurred whilst the observer was stuck in traffic and could watch an otter eating an eel!

The number of records reflects the important change in the otter population in recent years, together with the dedication to surveying of the otter group members in particular and their meticulous record keeping. The Mammal Reports which I and others wrote in the 1960's and 1970's rarely mentioned an otter, and even more rarely reported more than one. However, an otter specialist has observed that "*The recovery of the otter population, although welcome, has not come without its problems. Otter predation on fisheries can have serious financial implications, and fencing is costly. There is a limited pot of money available, in the form of grants*

from The Angling Trust, but nowhere near enough. Most anglers and fishery owners take a responsible attitude towards otters, but a small, vocal, minority consider them to be "vermin" and are calling for a cull. Sadly, some have been known to take matters into their own hands and for this reason a certain amount of discretion is required when discussing otter records. There is much work to be done in this area." This reinforces the importance of reliable information gathering. Records for 2015 received from 57 × 1km squares in 11 hectads, including 2 hectads just in Wiltshire: ST36-1, ST45-1, ST46-22, ST55-1, ST56-5, ST57-4, ST67-12, ST68-7, ST76-1, ST87-1, ST87-2.

American Mink (*Neovison vison*):- 4 records by 4 observers. 3 animals were seen alive, and the fourth record was a road casualty. This was a black adult animal, dead on the road. Records received from 4 × 1km squares from 3 hectads: ST55-1, ST56-1, ST67-2.

Stoat (*Mustela erminea*):- 2 records by 2 observers, both of sightings of live animals, one described as adult. One reported to have "stood up and watched us". Records from 2 × 1km squares in 2 hectads, amazingly one day apart in January: ST56-1 and ST77-1.

Weasel (*Mustela nivalis*):- 1 record from 1 observer. One animal found dead on road in May. Record from one 1km square in one hectad: ST47-1.

Polecat/Polecat Ferret (*Mustela putorius?*):- 1 record from 1 observer. A road casualty animal which was badly damaged and decaying was found on the A369 Hartcombe Road in July. It was not possible to determine with any certainty whether it was an escaped ferret or a genuine Polecat.

Polecats are spreading in distribution so any possible sighting should be supported by photographs where possible, especially of the neck area. See Vincent Wildlife Trust leaflet at *vwt.org.uk/wp-content/uploads/2015/04/polecat-ferret-leaflet-.pdf*. Record from one 1km square from one hectad: ST57-1.

Bats (Chiroptera)

Unidentified Bats:- 5 records from 3 observers of unidentified bats seen during June to September in adjacent 1km squares in Bristol (ST57). Mary Hill wrote that "*they come for a while in summer each year, but this year there seem to be rather more than usual* (*25+ flying in fine evenings*). *I would think there are 2 species* (*larger and smaller*) *but I may be wrong*." Harvey Rose reported that bats (2 sizes) which fly around his house every year first became apparent on 14th April.

It is helpful to receive sightings of bats which cannot be identified specifically by the observer, especially if there are regular occurrences. It may be possible for some of these to be followed up.

Lesser Horseshoe Bat (*Rhinolophus hipposideros*):- 4 records, by 3 observers. Two records were from Chew Valley Lake of bats in hides in October, one record from Frampton Cotterell (BBS) in June, 5 recorded by a professional during survey work at Leigh Woods area in January. Records from 4 × 1km squares from 3 hectads: ST56-2, ST68-1, ST57-1.

Noctule Bat (*Nyctalus noctula*):- 1 record from the Cheddar area (BBS). Record from one 1km square from one hectad: ST45-1.

Pipistrelle sp. Bat (*Pipistrellus sp.*):- 5 records from 2 observers. First sighting of the year on 8th April at Pilning where subsequently seen from 20th May to 15th September. Sightings at Knowle between May and July. One sighting in a park on 18th July. Records from 5 × 1km squares in 3 hectads: ST57-1, ST58-3, ST67-1.

Even-toed Ungulates (Artiodactyla)

Reeves' Muntjac (*Muntiacus reevesi*):- 3 sightings from 3 BBS observers. Records from 3 × 1km squares in 3 hectads: ST56-1, ST57-1, ST78-1.

Roe Deer (*Capreolus capreolus*):- 109 records from 52 observers. 82 records were by BBS surveyors. Most records were of single animals or 2 together. 18 records were of from 3 to 8 animals together. 1 to 5 animals were watched regularly around Chew Valley Lake. David Warden reported that Roe Deer have been seen on Denny Island regularly since he first made a visit with Chris Klee in 1999. Once or twice fawns have been seen on the Island. In April 2015 David saw a buck and a doe on Denny Island. A new born fawn was seen on 19th May, with 3 does at Villice Parkland. Live bucks were identified in 3 records. One live animal was seen in bushes outside of Police Headquarters in Portishead, another was chased by a badger in Sheep Wood, Westbury-on-Trym. Only 4 road casualties were reported (compare that with Badger and Hedgehog records!). Records from 79 × 1km squares in 17 hectads: ST35-3, ST45-3, ST46-1, ST47-9, ST55-5, ST56-7, ST57-8, ST58-2, ST65-6, ST66-9, ST67-4, ST68-4, ST69-1, ST75-4, ST76-2, ST77-5, ST78-6.

Fallow Deer (*Dama dama*):- 3 records from 3 BBS observers, involving 3 × 1km squares in 2 hectads:- ST68-2, ST75-1.

Seals (Pinnipedia)

No records received for 2015.

Whales, Dolphins and Porpoises (Cetacea)

No records received for 2015.

Recorders

Very grateful thanks go to the 120 known observers (including BBS surveyors, Bristol Bat Group, Abbots Leigh Wildlife Group, Greater Bristol Otter Group and YACWAG Otter Group) who contributed records for 2015. If your name is not on the list below then my apologies if you sent in records, it should hopefully be only the name which has been missed from this list, the information should have been included:- Abbots Leigh Wildlife Group, Adrian Wilkins, Alex Crossman, Alice Nissen, Angela Griffiths, Ann Wookey, Becky Belfin, Bob Buck, Brian Steadman, Bristol Bat Group, BTO, Carol O'Leary, Cassie Hopton, Cher Czugalinski, Chris Billinghurst, Chris Ross, Clare Diprose, Dave French, Dave Nevitt, Dave Stoddard, David Chalk, David Essam, David Harley, David Hawkins, David Hughes, David Teague, David Warden, Des Bowring, Dominic Burger, Ed Drewitt, Gavin Stoddart, Geoff Davis, Geoff Harris, Geoff Suter, Giles Morris, Gill Brown, Gordon Youdale, Graham Sims, Greater Bristol Otter Group, Hannah Broughton, Hannah Watts, Harold Johnstone, Harriet Alvis, Harvey Rose, Helen Cooper, Jane Cumming, Jean Oliver, Jeff Holmes, Jeff Rawlinson, John and Sue Prince, John Alcock, John Aldridge, John Barnett, John F. Burton, John Martin, John Percival, Jonathan Mortin, Judith Hutchins, Judy Copeland, Julian Garrigan, Julie Ottley, Justin Rhodes, Karin Rhodes, Kay Snowdon, Keith Williams, Ken Carruthers, Ken Hall, Kerry Sutton-Spence, Kim Howard, Lois Pryce, Luke Dosanjh, Margaret Bulmer, Margaret Webster, Mark Hannan, Martin Burgess, Martin Dewhurst, Martin Greene, Martin Hunt, Mary Hill, Mary Wood, Matt Collis, Megan Dickens, Michael Baker, Mike Tanner, Neville Hawkins, Nick Hawkridge, Nigel Crocker, Nigel Hanks, Nigel Milbourne, Oliver Smart, Paul Croom, Paul Parmenter, Paul Reay, Paul Vokes, Paul White, Penny Ladd, Peter Watson, Phyl Dykes, Richard and Rosemary Brown, Richard Bland, Richard Hudson, Richard Mielcarek, Richard Scantlebury, Rob Williams, Robin Prytherch, Rod Stephens, Roger Steer, Roger Symes, Rosie Hall, Rosemary Atkins, Sian Parry, Simon Cawley, Simon Reece, Stephanie Lockhart, Steven Ayres, Stewart Rowden, Sue Black, Sue Sayers, Susan Blackmore, Susan Kempson, Tom Hughes, Tom McLellan, Tony Scott, Trevor Riddle, Vince Smith, William Earp, YACWAG Otter Group.

2015 Achievements

Interest in mammals in the Bristol District and in recording information about them clearly grew during 2015, no doubt stimulated by the inspiration and drive shown by the President of the BNS Mammal Section, Gill Brown. More than 120 observers contributed over 1000 records for 2015, either directly or through one of the groups listed and many also kindly contributed records from previous years. If any 2015 records have been omitted from this report then that is my fault and I apologise. The highest number of records of a species was 209 for Otters. The most observers (65) reported Grey Squirrels. The most hectads in which a species was recorded was 19 for Rabbits, and the highest number of 1km squares in which a species was recorded

was 106 for Grey Squirrels. Other species did push close to these figures, some almost remarkably so compared with previous years. For example Roe Deer were noted in 17 hectads and 79 × 1km squares, some of these urban. What is happening which is driving, or allowing, this change? It is not possible at present to indicate if any of these were new records for hectads, that sort of refinement must be something for the future. Some useful information is being collated on aspects such as breeding dates but there is plenty more which can be added to our mammal recording efforts. This is not just about distribution but trying to document the pressures on our local wild mammals and the successes achieved by some species. This report does not disclose any information considered sensitive but it is helpful to know what mammal enthusiasts are doing in the Bristol District. That information is probably not drawn together anywhere else?

What is going to happen to our records?

Unless an observer specifies otherwise all records received by this Mammal Recorder for the period 2013 to 2015 will be copied to the National Mammal Atlas Project (NMAP) – the Mammal Society's Distribution Recording Scheme and also to Bristol Environmental Records Centre (BRERC) which is the repository for all records on information on all wildlife and geology in the area of the former county of Avon, and which provides information to the unitary local authorities, and to consultants and others. Since the 1960's it has been a general practice of BNS Mammal Recorders to send information to national schemes and to record offices but unfortunately hundreds of important records and maps of the early Mammal Section (1965 – 1980), which was pre-BRERC, have largely been lost following the death of the member who had stored many of them. This reinforces the importance of information being deposited in a recognised central system.

Future Mammal Recording

The Mammals of the Bristol District 2015 is indeed a 'snapshot', as suggested above, but this one seems like a photograph with a piece torn out of it because so much information has been made available to me that I have not been able to process it all in the time window allowed before papers had to be submitted for publication. I was given an extension, but it seemed that my brain does not work so fast these days! When I saw that another society, which produces many great reports on fauna and flora, has 4 mammal recorders handling a similar number of records, then I understood the strain I have felt. Assembling the total information for 2015, which consisted of over 1000 records, each involving 10 - 20 fields of information, analysing, verifying and summarising them in the time allowed before the specified deadline, has been very challenging, especially since records arrived in all sorts of formats, on any day between 1st January and a week before completion of the report! It is hugely satisfying to have completed a report for 2015 and it is hoped

that this will encourage all who have recorded the mammals that they have (and very usefully in some cases that they have not) seen. It is also hoped that it will encourage others who see, but do not record, to consider keeping a record and submitting it for inclusion. This is the last Mammal Report that I will be involved with as I am standing down as Mammal Recorder.

The enthusiasm demonstrated by so many people who have contributed information, shows that there is an important job to be done in building mammal recording further towards the advanced stages of other schemes. However it really does need a multi-organisational approach to consider how this should be addressed, and clearly more than one recorder needs to be involved to cope with reporting deadlines. Until the future is resolved, please keep recording distribution and other information on our local mammals and send it to BRERC (*www.brerc.org.uk*) or to the National Biodiversity Network (NBN - *nbn.org.uk*), or to specialist survey groups. That is what I shall be doing with all my records.

Weather Report for 2015

Richard Bland

The BNS began publishing weather data in 1872 with G. F. Burder's paper on rainfall in Clifton since 1853, and this led me to search for temperature data back to that date. From 1920 until its closure in 2002 the Long Ashton Research Station published data that the BNS used, and since then I have used the temperature data from *www.afour.demon.co.uk* which is based in Totterdown. It has also traced records from some other sources back to 1853, and I have used these to fill in historical gaps. I discovered this year that the official Met Office Bristol temperature is now taken at Lulsgate, and this is on average two degrees colder than the Totterdown site. That suggests that the figures after 2002 cannot be compared directly with earlier ones. Since 2002 I have used my own rain gauge, as G. F. Burder measured rainfall in Clifton. Rainfall figures notoriously vary with location. A long series is crucial to any understanding of the continuous processes of climate change, which is normally defined as the average of the data for the previous thirty years. I use the term 'long-term average' to mean the average back to 1853. Most meteorologists use the mean daily temperature as the basis, but many sources only quote daily maxima and so I have used these figures throughout.

Summary for 2015

The year was the fourth warmest since 1853. April was the third hot April in the past decade, and warmer than May. The temperature of November 2015 was only just below the record set in 2011. December, however, was the warmest since 1853 and, unusually, was as warm as November. March, April and October were dry, and October was the driest since 1978. November and December had less than half normal sunshine.

Year	**2006**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**	**2015**
Av. Max. ºC	14.7	14.5	13.7	14.6	14.2	15.5	14.7	14.8	16.1	15.4
Ten year av. ºC	14.4	14.4	14.3	14.3	14.3	14.4	14.5	14.5	14.7	14.8
Rainfall *mm*	952	1107	1150	986	747	847	1420	799	1143	870
Ten year av. *mm*	974	997	1005	993	943	945	981	983	975	992

Table 1: Average mean maximum temperature and rainfall. The second and fourth rows give the average for the ten years up to and including the year referred to.

Seasons

Winter (December 2014 to February 2015)

Average maximum temperature was 8.8ºC, a degree above the long-term average. Rainfall averaged 80mm per month, the same as the long term average. December was drier than normal, January had 50% more rain and February was average. There were 28 frost nights (October to April), the last on April 26th. The average for the past decade is 29 per winter. No snow fell, but there were 14 days when ponds were frozen.

Spring (March to May)

Average temperature was 15.0ºC, two degrees above the long-term average. The thirty year average is now as high as it was in the 1950s. April was four degrees above the long term average, but May began cool, and finished as the coolest May since 2005. Both March and April were very dry and overall there was about half the normal spring rainfall.

Summer (June to August)

Average temperature at 20.7ºC, much cooler than the previous two years, and very close to normal. June was dry, August wet, though nothing like as wet as 2014, so the final figure for the three months was close to normal.

Autumn (September to November)

Average temperature at 15.8°C was two degrees above the long term average, helped by an exceptionally warm November. October was notably dry, but rainfall overall was average at 68mm a month. November had half its normal sunshine.

Seasonal Comparisons

To put the 2015 seasonal average temperatures into perspective, Table 2 shows the seasonal temperature extremes, with their year, the average since 1853, and the difference between 2015 and the long term average.

	2015	Minimum.	Maximum.	Av. since 1853	Diff.
Winter	8.8°	1917 - 2.5°	1920 - 10.6°	7.5°	1.3°
Spring	15.0°	1887 - 10.4°	1893 - 16.6°	13.0°	2.0°
Summer	20.7°	1883 - 18.0º	1976 - 23.9º	20.3°	0.4º
Autumn	15.8º	1915 - 10.6º	1959 - 16.8º	14.0°	1.8º
Annual	15.4º	1892 - 12.1º	2014 – 16.1º	13.7°	1.7º

Table 2: 2015 seasonal average temperature (°C) compared with minimum and maximum, and the difference between 2015 and the average since 1853.

Table 3 gives the same detailed information for rainfall. Winter rainfall was heavily influenced by December 2014, as both January and February were dry months.

	2015	Min.	Max.	Av. since 1853	Diff.
Winter	80mm	1964 – 21mm	1995 – 154mm	79mm	1mm
Spring	35mm	1893 – 17mm	1981 – 107mm	60mm	-25mm
Summer	84mm	1995 – 11mm	2012 – 149mm	74mm	10mm
Autumn	68mm	1978 – 26mm	1935 – 173mm	87mm	-19mm
Annual	73mm	1864 – 49mm	2012 – 118mm	75mm	-2 mm

Table 3: Average monthly rainfall in mm for each season in 2015 showing the maximum, minimum and average since 1853, and the difference between 2015 and the average since 1853.

Monthly percentage deviation in 2015 from the average since 1853

	Temp.	Rain
January	25	44
February	9	-8
March	18	-48
April	34	-74
May	0	5
June	5	-27

	Temp.	Rain
July	0	26
August	1	-7
September	4	-23
October	10	-60
November	33	20
December	71	36

Table 4: Monthly percentage deviations in 2015 from the norm.

Summary

April, November and December were unusually warm, April and October unusually dry.

Monthly Summary 2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Av.
Temp. °C	8.9	8.2	11.6	17.2	16.2	20.4	21.0	20.7	18.7	15.5	13.2	13.3	15.4
Rain *mm*	121	57	32	15	65	45	92	81	61	38	106	122	114

Table 5: 2015 monthly average temperatures and total rainfall with average for the year in the last column.

January

The first fortnight was dominated by westerly winds around Icelandic depressions, three of them stormy, and temperatures around 11°C. There were six frost nights starting on 15th, and ice on ponds on four mornings, as the wind turned northerly and maximum temperatures fell to around 7°C. The last week was dominated unusually by a low pressure system in the Baltic, with NW winds and a falling temperature.

February

The first ten days were cold, dominated by high pressure with NE winds, frost at night and ice on ponds. The wind switched to the south on the 13th, and temperatures reached 12°C on 18th. The last ten days the winds were westerly and the 27th saw eight hours of sunshine.

March

High pressure - mostly over the Baltic - dominated, with light northerly or easterly winds and 22 dry days and just half normal rainfall. Sunshine was average, though there were nine hours on the 18th and temperatures were close to average. The last four days were stormy.

April

Unusually the month was dominated by high pressure through-out, with mostly light easterly winds and 28 days with sunshine and 22 without rain. Temperatures peaked at 17°C on 8th, 16th and 21st, but started and finished at around 12°C.

May

A month dominated by low pressure systems and SW winds, but little rain. The first week was cool and overcast, and half the month's rain fell. Temperatures picked up a bit in the second week but then fell to 13ºC on 18th and 19th at the peak of the breeding season. It was also the gloomiest May for more than 15 years. From 20th a high pressure system in the Atlantic raised temperatures to a maximum of 22ºC on 23rd but the last few days were cooler.

June

The first week was dominated by warm SW winds, blue skies and a maximum of 23°C on the 4th. After that high pressure and N winds dominated with overcast skies but a maximum of 26ºC on 11th. The second half of the month saw light S or SW winds round high pressure systems, but the weather remained dry and occasionally sunny, ending in a brief heatwave with a temperature of 31ºC on the 30th.

July

Began with the hottest day of the year, 32ºC, on 1st, but by the 8th it was only 19ºC. The second week and third weeks were warmer, but overcast and still dry. In the fourth week a substantial slow moving depression saw over 50mm fall in three days, and temperatures fell to 16ºC on 24th.

August

The first half was warm and dry with occasional fine sunny days. From 17th temperatures built up with moderate SW winds controlled by high pressure over the Baltic. On 22nd the temperature reached 28ºC but 23mm of rain fell, and the temperature collapse to 15ºC on 24th and a further 45mm of rain fell in four days.

September

Began with northerly winds round high pressure in the central Atlantic, which saw some fine days and dry light winds. Low pressure took over from 11th but winds remained light, and autumn colour developed exceptionally well. From 23rd to the end of the month high pressure brought very light easterly winds, and a series of very fine days.

October

High pressure and light winds dominated the first three weeks, with maximum temperatures falling from 18ºC to around 13ºC, and generally overcast skies, but little rain. In the last ten days low pressure systems and stronger winds began to remove the leaves from the trees but temperatures that had fallen to 12ºC on 17th were back at 19ºC by the end of the month.

November

The first few days continued the October pattern but on 5th strong westerly winds took control, and a series of storms, including the first named one, Abigail, swept across Scotland. There was more wind than rain and temperatures remained around 16ºC, above normal, to the 17th. A northerly wind saw temperature fall to 7ºC on 21st, bringing the first frost of the winter. However westerly winds then raised temperatures back to 13ºC, and the month finished as the second warmest November since 1853. It had the least sunshine, at just 1.0 hrs a day, of any month since December 2006.

December

Was the warmest December since 1853, with an average of 13.3ºC, 5.5ºC above the long term average. The warmest day, the 20th, reached 16ºC, the coldest was 10ºC on 11th. A series of storms with high winds swept across the country, though Bristol was spared the rainfall that led to floods in Scotland and the North. The wind was always from the SW, often originating close to the tropics. Rainfall was above

average at 122mm, half of it in the final week of the month, including the second wettest day of the year, 28mm, on the 30th.

Weather Extremes

The table below gives figures for the extreme annual events over the past decade, enabling the events of 2015 to be put in perspective. It is often claimed that extreme weather events are becoming more common, but without a clear definition of an extreme event this is very hard to demonstrate. Flooding is often caused by human factors, such as building houses on former flood meadows, or draining of upland moors for sheep, and deaths in storms are often more an indication of population density and poverty rather than the scale of the storm. None of the figures below show any significant trend over 15 years. I have added a column for the most extreme and another for the average extreme since 2000, in order to put 2015 into perspective. The only measure in which it is at all unusual is the number of days with a wind speed of over 30mph. This figure is derived from the Times daily forecast, and the wind experienced in Bristol may have been very different.

	2006	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**Max**	**av**
Hottest day *ºC*	35	27	28	28	26	29	30	32	31	32	35	30
Coldest day *ºC*	0	2	2	-1	-5	1	1	0	4	5	-5	1
Wettest day *mm*	39	40	35	36	36	40	72	33	42	28	72	44
Sunniest day *hr*	14.7	14.1	14.9	14.7	15.6	14.7	15	15	13	13.7	15.6	15
Longest dry *days*	22	24	16	20	24	23	17	20	17	14	24	19
Longest wet *days*	11	8	8	8	7	5	15	9	7	6	15	8
Frost, nights *days*	33	25	44	42	76	22	41	67	15	12	49	36
Snow *days*	2	2	1	19	33	0	1	8	0	0	33	5
Storms (30mph+) *days*	27	22	16	17	9	24	22	25	28	62	62	25
Hotter than 25ºC *days*	27	1	7	5	3	14	19	32	27	5	32	14
Colder than 5ºC *days*	39	18	14	37	60	13	16	29	2	5	60	23
>10hr sun *days*	36	45	29	49	46	44	38	44	39	25	49	38
No sun *days*	107	99	95	95	106	104	93	95	82	84	107	87
No Rain *days*	234	238	228	265	269	253	205	238	203	227	265	239

Table 6: Summary of weather extremes for the past decade

A note on climate

Climate is defined as the normal weather measurements over a period of time, usually thirty years. Because it is an average it changes only slightly in each particular year. The pattern of the climate in Bristol since 1853 is that average

maximum annual temperature fell to c 1900 when it was 13.2ºC. It rose to 1960, when it was 14.0ºC, fell to 1992 at 13.6ºC, and has risen to 14.2ºC today.

Weather varies much more widely from year to year than climate does in centuries, and birds, like all other wildlife, respond to the changing conditions they experience on a daily basis. Data gathered over the last decade on the Downs in Bristol suggests that as a general rule a change of one degree Celsius in average temperature will lead to a week's change in the average timing of events for both plants and birds, although individual species may respond more than this. The climate changes that have occurred since the peak of the last ice age 18,000 years ago have led to continual change in the wildlife that can thrive here, and this process continues. Seasonal change, especially cold winters and cold or wet breeding seasons, can have a dramatic effect on bird populations.

The table below shows the climate figures for each season for the past decade. They make it clear that over this period spring has warmed more rapidly than other seasons and that summer has become wetter, but that the other seasons have remained fairly stable. The rainfall figures are given as the average in each month.

	2006	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**2015**	**Diff**
Winter ºC	7.77	7.81	7.88	7.86	7.87	7.82	7.86	7.9	7.97	7.99	0.22
Spring ºC	12.96	13.03	13.05	13.12	13.22	13.31	13.38	13.32	13.42	13.5	0.54
Summer ºC	20.34	20.19	20.2	20.28	20.35	20.38	20.39	20.47	20.45	20.41	0.07
Autumn ºC	14.40	14.43	14.41	14.4	14.38	14.48	14.48	14.51	14.59	14.63	0.23
Annual ºC	13.87	13.87	13.88	13.91	13.94	14.00	14.04	14.05	14.11	14.15	0.28
Winter, *mm*	87	89	88	88	86	87	87	87	89	89	2
Spring, *mm*	67	68	69	68	67	64	65	63	64	63	-4
Summer, *mm*	67	68	69	70	70	72	74	74	76	75	8
Autumn, *mm*	91	91	93	95	95	93	94	94	93	94	3
Annual, *mm*	78	79	79	80	80	80	80	80	81	81	3

Table 7: Annual average temperature and rainfall calculated over the preceding thirty years

Obituary

Dr A Brian Hawkins
1934-2016

Dr A Brian Hawkins, who had been a member of the Bristol Naturalists' Society since 1961, died suddenly on 22nd January 2016. He was a distinguished Engineering Geologist with an international reputation.

When he first joined the BNS Brian, who was working as a teacher in Bristol, soon became involved with the Geology Section of the Society. He was a member of the Geology Section Committee from 1966 to 1985, was the Section Hon. Sec. from 1969 to 1974 and President from 1982 to 1983 serving on Council during the times when he was Hon. Sec. or President. He contributed a number of papers to the Proceedings, led Field Meetings and gave talks to the section.

He was a man of great drive and ambition and was awarded a PhD by the University of Bristol for his thesis on the Quaternary Geology of the Severn Estuary. Up to the 1960s it was generally held that glaciation had played no part in the development of the Quaternary Geology of the Bristol Region. Brian was able to demonstrate that it had and authored a number of papers on the subject.

He was appointed to the staff of the University's Department of Further Education, organizing and tutoring classes in Geology and related subjects in the Bristol Region and beyond. It was through these that many people were drawn into the study of Geology. During this period he built on his knowledge of Quaternary Geology to develop expertise in the field of Engineering Geology, particularly in relation to the stability of slopes and rock faces, often acting as a consultant where engineers and public bodies required geological advice.

Professor David Dineley recognized his work in this field and recruited him to join the staff of the University of Bristol Geology Department. He was appointed Reader in Engineering Geology in 1979 and was able to combine lecturing and research with practical involvement in the geological aspects of civil engineering work. This achieved recognition when he was made a Fellow of the Institution of Civil Engineers. The University of Bristol also recognized his considerable amount of published research by the award of a Doctor of Science Degree. He continued working as an engineering consultant and lecturing right up to his death at the age of 81 and, had he lived until the start of the new academic year in September/October, he would have been lecturing at the University for 50 years - a milestone he desperately wanted to make.

He was inordinately pleased to be awarded the inaugural Marcel Arnould Medal by the International Association for Engineering Geology (IAEG) and the Environment in 2014. The citation was for his "significant contribution to the engineering geology profession in his field and outstanding services to the Association". He will remain the sole recipient of this distinguished honour until the next award is bestowed in 2018.

Dr Brian Hawkins receives the Marcel Arnould Medal
from IAEG President, Professor Carlos Delgado.
(*Photographs by courtesy of Bristol University*)

His extremely busy professional life precluded active involvement in the affairs of Bristol Naturalists' Society in recent years but he always maintained his membership because, in the words of his partner Marian, "He thought that the BNS was important to Bristol and that what we were doing as a Society was important."

Richard Ashley

Society Annual Report 2015

1. Organisation

The AGM was held on Saturday, 7th March 2015 during the *Celebration of Nature: Discover Your Natural World* event. The President (David Hill) was in the second of his three-year term of office with the following re-elected as his fellow officers. Secretary: Lesley Cox, Treasurer: Stephen Fay, Membership Secretary: Margaret Fay, Bulletin Editor: David Davies, Librarian: Jim Webster, Archivist: Clive Lovatt, Circulation Secretary: Brian Frost, and Webmaster: Mark Pajak. The Publicity Secretary's position remained vacant. Richard Bland (*Proceedings* Editor) stood down from his position of ten years but a suitable replacement had yet to be found and the post therefore remained to be filled. Clive Lovatt, Mark Pajak Richard Ashley and Giles Morris were chosen to represent the Sections whilst Roger Steer, Ray Barnett, Tim Corner, Robert Muston, Mandy Leivers, Tony Smith and Richard Bland were chosen as ordinary members of Council.

The Society had an exceptionally busy year with its regular field meetings, winter lecture programme and surveys being augmented by a number of major undertakings throughout the year, the early part of which was dominated by the final preparation and delivery of the *Celebration of Nature: Discover Your Natural World* event.

2. The Celebration of Nature: Discover Your Natural World

This was a highly successful, major event held on 7th March at the Bradbury Hall, Henleaze, which brought together local groups and national organisations to engage, encourage and enthuse both the public and each other to work together for the benefit of the Natural World. Organisations such as the RSPB, National Trust, Bumblebee Conservation Trust, Avon Wildlife Trust, Friends of the Downs, St George's Flower Bank, The Phoenix Hedge Group and local wildlife groups too many to mention here with whom we regularly work, came together and truly celebrated the importance and wonder of the natural world against a superb backdrop of photographic imagery put together by Robert Muston and Steve Nicholls, whilst in a separate, connected Hall, a series of mini-talks on diverse aspects of natural history and geology galvanised experts and the public alike.

3. Co-operative Ventures

The *Celebration of Nature* represented the Society's main contribution to Bristol's Green Capital Year and one example of co-operative action springing from it was the *Swift Initiative* in which the RSPB, in association with the BNS, devised a plan to support the declining Swift population. It was launched with a Swift Conference,

held at the Zoo, which targeted planners, architects, developers and local authorities, etc., to build in Swift bricks or boxes to all plans for new buildings, renovations or refurbishments as standard practice. This initiative led to the creation of the Bristol Swift Conservation Group in which members of the BNS will continue to play an important role during 2016.

Our associations with the Bristol Natural History Consortium, whose main BioBlitz event in 2015 was held at Oldbury Court, continued and this year the Society has also arranged diverse training events for the Bristol Nature Network in the hope of encouraging their correspondents to increase their participation and knowledge of the natural world. In addition, Sections continue to forge links with neighbouring counties through, for example, joint botanical and geological meetings. Regular survey work, for the BTO and BSBI for example, remains as strong as ever.

4. BNS Bursary Fund

At the very start of the year, in January, the joint venture with the University of Bristol previously reported on in 2014, was brought to fruition. Due to the generous bequest of Barry Harper, £50,000 was given to the University to fund and administer the delivery of a five-year programme of Bursary awards enabling students within the School of Biological Sciences to apply for a grant of up to £500 per student to attend recognised courses, such as those run by the Field Studies Council to develop general identification skills and to become more familiar with the taxonomy of particular groups of organisms through specialist field work experience. Despite the late start within the Academic year, eleven students took the opportunity to attend five different courses on Cetacean Identification; Moths of Limestone Grassland; Ferns; Coastal Plants and Mountain Flowers.

Council has received a report from the University on a very successful first year of operation and now looks forward to even greater achievements borne of the scheme in future years.

5. Grants

The Society gave out £51,288-58 in grants during 2015 comprising: -

- £220 to the Saltford Environment Group to support an excellent Website and information provision service;
- £50,000 to the University of Bristol to provide Bursary grants to the School of Biological Sciences;
- £568.58 to Alex Morss to fund equipment, such as hand lenses, for the Victoria Park BioBlitz and Wildlife Education Day and
- £500 to the Northern Slopes Initiative as part funding for a Badger Survey.

6. Library

The Society is extremely fortunate to have this remarkable asset. Its value is inherent and intrinsic rather than pecuniary and it is worth pointing out that many similar Societies are without the benefit that we enjoy through it. The Librarian reports as follows:-

Jim Webster, Hon Librarian thankfully acknowledges the active support from all members of the Library committee: Rosemary Atkins, Richard Ashley, Cathy Barron, Richard Bland, Pam Gooding, Clive Lovatt and Roger Symes.

Great and visible improvements have occurred in all areas, but particularly in the layout and organisation of the lending library books and of the many modern journals. These improvements have also resulted in the library being used as a good meeting place for various BNS committees.

The conserved Sander's Coalfield maps have now been professionally copied at the Bristol Records Office by David Emeney and are available on CD from the BNS Library.

7. Archives

Digitisation of the *Proceedings* of the Society (*Nature in Avon*) and *The Avon Bird Report* continues, whilst the valuable heritage embodied by the William Sanders *Coalfield Maps of Bristol* and the Col. Jones 'Fern Prints' have been preserved.

8. Annual Section Reports

i. Botany Section: Annual Report 2015

Six indoor meetings (2014, seven) and 14 field meetings (2014, 15) were held in the year under the auspices of the Botanical Section.

Most of the field meetings were within ten miles of Bristol and included a range of habitats – urban, woodlands, meadows, and several sites selected for the presence of acid soil. As planned for the year in which Bristol was designated the Green Capital of Europe, we visited several of Bristol's green spaces such as Arnos Vale and Narroways, Victoria Square, Clifton, the Bristol Downs, Dundry Slopes, Eastwood Farm and Shirehampton Park. Attendance was typically around a dozen (but in two cases, three), including (for the six meetings on the Somerset side) members of the Somerset Rare Plants Group, who jointly advertised several of the meetings.

For indoor meetings we mostly drew on our own resources and the talks covered rare plants (the new England Red List), Arnos Vale Cemetery, Bristol Trees, plant identification and interesting finds, the coastal plants of Somerset, digitising the Taunton Herbarium and some Cyprus plants.

Notices and accounts of all of the meetings can be found in the BNS monthly Bulletin, *Bristol Naturalist News* together with various botanical notes and photographs. Three botanical subjects made the cover after it began to be printed in colour – Herb Paris, the Whitebeam/Rowan hybrid from Leigh Woods and the new Observatory Whitebeam recently described by Libby Houston.

Botanical highlights included the first record of the Narrow Buckler-fern in Leigh Woods since about 1930, and the remarkable crop of aliens and other weeds appearing on soil dumped to make roadside banks by the Lawrence Hill Roundabout. About 100 of them were displayed at the indoor identification workshop in October – a new departure we intend to carry on with. The Somerset Rare Plants Group and the Gloucestershire Naturalists' Society's Botanical Group now publish the most important plant records their respective sides of the Bristol Avon.

Margaret Webster and Sheila Quin retired from the Botany Committee and we extend our grateful thanks for their many years of support. Margaret Silcocks, a cheerful committee member from the 70's and 80's, died at the beginning of the year and is noticed too briefly in the February 2015 Bulletin.

We are particularly grateful to the speakers, particularly Richard Bland who filled a vacancy at short notice, and to the leaders of the field meetings for taking us to such interesting places. The Secretary also thanks the Committee for their organisational support throughout the year.

Clive Lovatt
Hon Sec Botany Section

ii. Geology Section: Annual Report 2015

The Geology Section AGM was held on 28 January 2015 when the following Officers were elected: - President - Roger Steer, Secretary - Richard Ashley, Field Secretary – Richard Ashley, and Committee members - Gordon Hobbs and David Moore. The AGM was followed by members' talks.

The following Lecture meetings took place during the year:

25 February – *Geology, Soils and Agriculture in Nepal* by Stephen Hemming

25 March – *Early Echinoderms* by Dr Imran Rahman

25 November – *Dolomitisation* by Dr Tatyana Gabellone.

Field meetings arranged by BNS Geology Section were:

10 May- Coastal Section between Ogmore, Southerndown and Dunraven led by Stephen Howe

15 August – Coastal Section at Portishead, self guided Section Walk.

Members also took part in Field Meetings run by WEGA and Bath Geological Society.

In addition on 20 November members of the Geology Section lead by Simon Carpenter were involved in a project to clear a new section of the White Lias on the Saltford Railway Path.

The Section would like to record its thanks and appreciation to Bristol University's Department of Earth Sciences for allowing the use of the S H Reynolds Lecture Theatre for its winter meetings and other support.

Richard Ashley

iii. Invertebrate Section: Annual Report for 2015

The Section provided no lectures this season but field meetings, initiated by ourselves, Bristol Natural History Consortium, Avon Wildlife Trust and others numbered about twenty. The AGM was held in the Schools Room of the City Museum on Sunday, 15th February and Mark Pajak was elected President and Tony Smith Hon. Sec.

At the Society's Celebration Day on 7th March at Bradbury Hall, Henleaze, a poster made from photographs of the Hoverflies of the Avon Gorge from Tony Cottrell with a commentary by Mark Pajak got a lot of interest, as did a game involving different colour and banding morphs of the Banded Snails *Cepaea nemoralis* and *C. hortensis*. Simple and hardly needing any words of introduction. These exhibits were also of value on the BNS stand at the Festival of Nature in early June.

In a commemoration of the sesquicentenary of the first BNS field meeting, 26th April on the same site, Ray Barnett led a well-attended meeting in bright sunshine in Leigh Woods and Stoke Camp. At the major BNHC Bioblitz in Oldbury Court on 16th April, members made useful faunal and educational contributions, covering both terrestrial and aquatic invertebrates. On Bank Holiday Monday, 25th May, members led a Butterfly and Bugs walk at Badock's Wood, with one Common Blue butterfly somehow being made flexible enough to create interest in a large crowd of visitors over an extended period by Nikky Davies. We also spent the afternoon of Sunday, 20th September at Badock's Wood leading Bug Walks and kick-sampling the River Trym for aquatic invertebrates with Harriet Alvis of Bristol Avon Rivers Trust. Our expertise was used by the Friends of Trendlewood, Nailsea during one sufficiently dry interval in a very rainy day to demonstrate the ecology of ants tending aphids, and aphids forming galls on willow leaves. Members also took part in the Windmill Hill Bioblitz on Saturday, 4th July.

On Sunday, 5th July, members played a major role in the *Know the Yeo* River Yeo event run by Yatton and Congresbury wildlife Action Group and BART, finding and demonstrating large numbers of aquatic invertebrates to young people. On 25th July members worked with BNHC and the Friends of Callington Road Nature

Reserve for their local Bioblitz. The event included identification of dragonflies and flies at the pond. It was heartening to find a responsive group of parents wanting to have things identified and then being willing to learn how to pronounce, without stumbling, the scientific name of a charismatic, wing-waving, lily-leaf walking, dance fly, *Poecilobothrus nobilitatus* as they, the flies(!) waved their white-flashed wings.

The 'Feed Bristol' AWT site at Begbrook was surveyed on their open day, Saturday, 1st August by Tony Smith. On Sunday, 2nd August just two members had time to survey an insect-rich field by Ladies-wood, Wickwar for its butterflies and other things. Ray Barnett led a well-attended invertebrate survey for the Friends of Sneyd Park on Sunday, 16th August.

The Invertebrate Section assisted BNHC at the mini Bioblitz at the Ardagh on Horfield Common on Saturday, 12th September, and the following day, Sunday, 13th September with the Portway being closed to road traffic Mandy Lievers and Ray Barnett with others organised for a special group of young people to see the various invertebrates down the Gully and onto the Portway. On Saturday, 19th September we assisted the AWT Community Outreach Programme at Dame Emily Park, helping many young people find many invertebrates in an apparently unloved corner of Bedminster.

The Ashton Vale group held a community event in tandem with BNHC and BNS on Saturday, 3rd October and in spite of the late season a good list was obtained. Tony Smith also worked with Bristol Nature Network giving workshops, one on the Downs, introducing people to Hemiptera and another on Aquatic invertebrates in the River Frome near Oldbury Court.

Tony Smith

iv. Mammal Section: Annual Report

It is less than a year since the last Annual General Meeting of the Mammal Section, which was held in May 2015. To bring us into line with the other sections this and future AGM's will be held in January.

Since May there have been four field meetings, some more successful than others. Towerhouse Wood, Wraxall, which we visited on a beautiful Friday evening in June, never disappoints. We investigated a badger sett, hazel coppice complete with dormouse boxes and a rhyne with traces of otter spraint, before returning to our cars at dusk and being treated to a virtuoso flying display from the Pipistrelle and Serotine bats feeding over Jacklands Fishing Lakes.

On a very hot, sunny, day in August, three members met at Lawrence Weston City Farm in the hope of finding otter and water vole signs. Overgrown vegetation made the search almost impossible, but two of us were rewarded by a good view of a Roe Deer at Lawrence Weston Moor, and we did find rabbit pellets at Long Cross Tip!

No one turned up to the advertised dormouse nut hunt at Priors Wood in September but, as a preliminary visit was promising, I intend to organise another, better publicised, event this autumn. A bat walk in the Avon Valley Woodlands was cancelled due to lack of interest, but I will rearrange this for April when Beese's Tea Garden is open.

The last field meeting of the year was a harvest mouse survey on the Strawberry Line in Yatton. Richard Croucher from YACWAG, who manage the reserve for North Somerset Council, led the survey. I was pleased that members of BNS were joined by members of YACWAG and the Bristol Nature Network for this visit. It was a very enjoyable morning and I hope to arrange other activities with these groups in the year to come.

The Mammal Section Google group has had very limited use over the past year, with only one or two people posting. This prompted the decision to replace it with a Facebook group. Facebook was chosen as it is a widely used platform and lends itself to discussion and sharing information. The group has grown steadily and, at the time of writing, has 31 correspondents. It is an 'open' group, but everyone who joins is encouraged to join the BNS and there is a prominent link to the website.

Gill Brown
Mammal Section President

v. Ornithology Section: Annual Report to the 92nd Annual General Meeting

2015 proved to be exceptionally busy, even by the standards of the Ornithology Section. The AGM was held on 14th January when Mike Johnson stepped down from the Presidency after four years service and Giles Morris was elected as the new incumbent. Lesley Cox was re-elected Secretary whilst the venerable Richard Bland, Giles Morris and Mary Hill were returned to the Committee. However, both John Sparks and Mike Day stepped down. Peter Hilton was elected as a new Committee member.

Apart from our usual activities, the early months of the year were dominated by the organisation and delivery of The Society's (as our main contribution to Bristol's Green Capital Year) in which Section members played an instrumental role.

In May, we also made a significant contribution to the BioBlitz at Oldbury Court organised by the Bristol Natural History Consortium and in June, we played our part in *The Festival of Nature*. We have also contributed to a variety of other events run by volunteer groups across the region and, in addition, specialised field meetings have been organised with the purpose of training members of the amorphous Bristol Nature Network.

Despite this additional work, our usual programme was not diminished in any way. The Section held 14 field meetings throughout the year across our own and neighbouring Counties with a full winter programme of 6 talks (a summary of

events is included at the end of this report) and we engaged in a number of different surveys involving Rooks, Breeding Birds, Swifts, Winter Garden Birds, House Martins and Wetland Birds.

For example, there was another successful Winter Garden Bird Count in which 30 gardens accommodated 26,600 birds recorded. Comparisons with the previous winter showed falls in feral pigeons, Herring and Lesser BB Gulls, Chaffinches, Collared Doves and Long-tailed Tits, whilst there were increases in Coal Tit, House Sparrow, Wren and Blackcap. Blue Tits, Great Tits and Long-tailed Tits were badly hit by the cold December in 2010 and then the disastrous breeding season of 2012 and have yet to recover fully. Local results of the Breeding Bird Survey, where these losses are likely to be reflected, have yet to be released. On the positive side, experienced ornithologists like Mike Johnson and others report increased sightings of the handsome Bullfinch as a highlight of the year. It is hoped that the objective evidence will support the subjective experience reported that numbers of this wary Finch are on the rise.

Rookeries were counted throughout the region in the ninth successive quinquennial count and results should be available shortly whilst the Swift Survey proved difficult as a cold May created an exceptionally late start. However, the Bristol Swift Project is now under way following a successful Conference held at the Zoo to launch it. We are working in association with the RSPB and Bristol Swifts to further this initiative, which is striving to have Swift boxes and bricks included on all new, renovated and redesigned properties in the Bristol area. Boxes will also be erected on as many domestic properties as possible in a bid to encourage and support this enigmatic bird whose numbers have reduced by 40% and possibly more. As usual, data from all the surveys undertaken will be published in the relevant forum.

Apart from these undoubted successes on the grand scale, there have been many notable highlights that, although on a smaller scale, reach an equal pinnacle of success and satisfaction. The delight that Richard Bland experienced on finding that he had managed to attract an amber status Mallard duck and a red status Grey Wagtail to his new two metre square garden pond and Mike Johnson's joy at seeing the Great White Egret spread into Chew Valley and Blagdon Lakes having worked so hard on the Wetland initiative to encourage them to breed in Somerset are just a couple of examples of the work that Section members do, unseen and un-trumpeted, which should be an inspiration to each and every one of us to do something more for our birds.

Highlights in terms of sightings include: Glossy Ibis, Great Northern Diver, Water Rail, Little Egret, Marsh Harrier, Scaup, the bubbling trill of a female Cuckoo, Curlew, Whimbrel, Hobby, Lesser Scaup and large flocks of Corn Buntings at Marshfield. The excitement generated by seeing a Kestrel is indicative of its decline.

In bringing this report to a close, I would like to thank all the members of the Section for their help and support in whatever capacity, whether leading field events or putting out chairs and for their presence at all our events. An especially appreciative vote of thanks goes out to the stalwarts who came forward unprompted to help with the essential tea arrangements! May I take the opportunity to wish everyone a Happy, Healthy New Year as we look forward to another stimulating year of events and experiences.

Activities In 2015

Field Meetings (14)

January	Sunday, 18th – Somerset Levels and Starlings, Leader: Giles Morris.
February	Sunday, 15th – Blagdon Lake, Leader: Mike Johnson.
March	Saturday, 28th – Brean Down, Leaders: Sue and John Prince.
April	Saturday, 11th – Blaise Woods, Leader: Richard Bland.
	Wednesday 29th – (Evening Walk) Leigh Woods, Leader: Richard Bland.
May	Sunday, 10th - (All Day) Quantock Hills, Leader: Mike Johnson.
	Thursday 21st - (Evening Walk) Eastwood Farm, Leader: Richard Bland.
June	Thursday, 4th - (Evening Walk) Portbury Wharf, Leader: Giles Morris.
	Saturday 20th – The Somerset Levels, Leader: Mike Johnson.
July	Tuesday, 14th – (Evening Walk) Marshfield, Leader: Paul Farmer.
September	Saturday, 12th – Sand Point and Middle Hope, Leader Giles Morris.
October	Sunday, 18th – Migration Watch, Leader: Richard Bland.
November	Saturday, 14th – Chew Valley Lake, Leader: Mike Johnson.
December	Saturday 12th – Ham Wall NNR, Leader: Mike Johnson/ Giles Morris.

Winter Lecture Programme: (6 Talks)

January 14th – Birdwatching in The Scilly Isles: Terry Bond.

February 11th – Severn Wildlife Carvers: Roger Francis.

March 11th – Millennium Raptors: Rod Leslie.

October 14th - The Management of Ham Wall NNR: Steve Hughes.

November 11th – Penguins, From Emperor to Fairy: Charles Kinsey.

December 9th – Farmland Birds: Eve Tigwell.

Fieldwork/Surveys, etc.

Rook Count.

Swift Survey.

The Swift Conference (held at the Zoo) and Swift Initiative (in Association with the RSPB).

Winter Garden Bird Survey (42nd Year)

BTO and BNS: Breeding Bird Survey.

House Martin Survey.

Other Engagements

1. Various contributions made to Bristol's Green Capital Year including,
2. BNS *Celebration of Nature: Discover Your Natural World*.
3. BioBlitz Events: The main event was held at Oldbury Court where members made significant contributions and other smaller events, all in association with the BNHC.
4. Training events organised specifically for the BNN.
5. Regular radio broadcasts.
6. Members have also led field events and manned stands at a variety of external events, such as, Victoria Park BioBlitz and the *Know the Yeo* event.
7. The Swift Conference.
8. Collaboration with local groups and national organisations.

Lesley Cox
Hon. Sec. Ornithology Section

9. Other Society Activities

i. Walking Group: Society Mid-week Walks, Annual Report for year 2015

Walks are a way of sharing pleasure in the environment, seeing what is happening, seeing what there is in the way of natural history interest, being shown species and seeing behaviour of species.

Twelve walks were made, ten in the hills; (Bathampton Down, Compton Martin, Marshfield, Ham and Berkeley, Brent Knoll, Litton Woods, Priddy Mineries, Regil Quarry, Abbot's Pool and Abbot's Leigh and Hinton Blewitt), two walks were more or less on level ground; (Blagdon Lake, Oldbury-on-Severn). Most walks were in bright sunshine. Rain caused the rapid return to the venue only at Litton Woods and we were granted a miraculously abrupt cessation of rain at 10am. at Oldbury-on-Severn and at Hinton Blewitt and in those cases, having had our spirits raised by our communion with nature, we didn't mind bad weather as we took refreshment afterwards in the respective hostelries.

Walk distances ranged from one mile to five. Each trip is walked over beforehand to ensure that no navigation hazards, broken stiles or impassable mud spoil the event for members. Each walk is ideally characterised in the BNS Bulletin beforehand and matters of wildlife interest of members are always willingly shared. This year four

walks were arranged to be led by Carole Venner, due to my indisposition. A friend in need is a friend indeed! At Ham and at Abbot's Leigh it was not possible to contact members, for which, I apologise, so brave souls organised their own walks.

Tony Smith

ii. Reading Group: Annual Report for 2015

The world of books is very healthy in spite of the curmudgeon's frequently heard opinion that, "no one reads books any more". Our reading is covered by the term, Popular Science, a seemingly pejorative term but that is a label applied from the outside; (cover, book, content, judge)!

We are very democratic but with so many books to choose from we cannot, as a group, read more than a tiny fraction, so no more than six or eight titles per year. Miraculously, one frequently finds that a single word or phrase, or even the whole title of a work recommended by the chosen author encourages one to read concurrently something else, even more than one other. People ask if one is confused by having several titles on the go but one is not confused in talking to different friends with their varied opinions. One keeps their personalities and ideas separate yet together and the same thing is true of one's reading.

Popular Science is a way into mysteries that might otherwise be impenetrable but ignorance of these mysteries is not our fault: there is too much going on. One title, *Life Ascending* by Nick Lane was hailed by Matt Ridley, "If Charles Darwin sprang from his grave, I would give him this fine book to bring him up to speed". This book details the ten great inventions of Evolution, the origin of life, DNA, photosynthesis, the complex cell, sex, movement, sight, hot blood, consciousness and death; all in less than 300 pages. Popular Science is moreover the action of the guardian of the mystery wanting to tell us what they have discovered. Sometimes it is the skills of a journalist or a biographer that reveal astonishing new worlds to the general readership.

As a group, we have read books in different ways. Sometimes we end with just as a general discussion, seeing what theme weighed most significantly in people's minds. An equally successful alternative way was to get members to give a presentation of one chapter subject that appealed to them. In the case of *Life Ascending* I suggested we consider only the chapter on Consciousness since the book covered so much and some of its topics relied upon BIOCHEMISTRY! One of our dedicated members was reading the final chapter while residing in hospital with a broken hip but didn't say whether the medical staff commented on the irony of the situation.

Our other titles this year included an anthology *Nature Tales* of many authors, *Single Helix*, being collected articles from Daily Telegraph etc. by Steve Jones, two classics, *The Dancing Bees* by Karl von Frisch and *Sand County Almanac* by Aldo

Leopold (astonishing!), *Coming Down the Seine* by Robert Gibbings, the very popular *H is for Hawk*, *Metamorphosis* by Frank Ryan, being the stories about unravelling the mysteries of the development of the adult butterfly from the caterpillar and the crab from its zoea larva. In *Endless Forms Most Beautiful* (title taken from the last sentence in Darwin's *Origin of Species*) by Sean Carroll we were shown the genetic identity of the head, eyes, jaws, legs, wings and so on of vertebrates and insects. It is truly wonderful to be able to share these ideas and so much more.

Tony Smith

iii. Society Talks: Annual Report 2015.

A full compliment of five talks was enjoyed within the Society Winter Lecture Programme with a broad spread of attractions. The sixth and final date of the programme was replaced with the Celebration of Nature in which eight mini-lectures were presented. Details of the talks given during 2015 are listed below.

January 8th – Pictures and Patterns of Change: Eve Tigwell, a trustee of Somerset Wildlife Trust and BTO representative for the County, demonstrated through comparative maps, the fascinating story emerging from the trends identified in the New BTO Atlas for the County. This data was hot off the press. Changes in numbers, species and locations were identified, clearly showing for example, 'winners and losers' amongst breeding and wintering birds and surprising facts which what we have known for many years; birds don't read bird books and frequently behave in a manner that is contrary to expert information. We were all completely foxed as to why one particular square remained doggedly white, i.e. devoid of birds on every single map produced.

February 5th – Indigenous People and the Amazon Forest: The Society did not arrange a speaker for this date in order to benefit from this Lecture, arranged by the Friends of Bristol Museum. It related to themes within Bristol's Green Capital Year. William Milliken from Kew Gardens focused on the interface between biodiversity, livelihoods and the environment as an evolving relationship.

7th March – Celebration of Nature: Mini talks offered as part of the programme of celebration were:

1. *Glories of the Flower Bank* by Bob Buck (creator of a unique LNR).
2. *Plants Rule The World or Do They?* Speaker: Dr. David Hill. (Bristol University)
3. *Swifts* by Richard Bland in association with the RSPB.
4. *My Wild City* by Dr. Bevis Watts, CEO of the Avon Wildlife Trust.
5. *Plant Illustration* by Annie Morris (Plant Illustrator)
6. *Bristol Bug Hunters* by Mark Pajak (Entomologist and Spider Expert.)
7. *The Rocks Remain* by Simon Carpenter (Geologist)
8. Film of the Wildlife of the Bristol Downs. Presented by Mandy Leivers.

15th October – It's Not All Black and White: Mike Collins a long standing student of the Badger looked at the origins of one of oldest native species (*Meles meles*) and its territorial spread and change of habit from arboreal to fossorial, its biology and long standing relationship with Man.

19th November – Forest Vision: Rod Leslie, the retired Head of Policy at the Forestry Commission spoke with great passion and humility about his journey to change the way in which the Forestry Commission thought and acted in order to benefit trees, forests, woodland and the species dependent upon them, including ourselves. The popularity of his talk could easily be measured by the way in which the audience, in large numbers, snapped up his book of the same name, Forest Vision, which gave further information, detail and insight into his work.

3rd December – Butterfly Conservation: Hilary Raeburn explained the work of Butterfly Conservation and its importance. She treated us to a cornucopia of beautiful butterflies from Britain and various other locations around the world, outlining, for example the habitats in which they could be found, their food plants, threats to their survival and techniques by which we could observe these important invertebrates. Her book, *Butterfly Walks in Somerset and Bristol*, was produced with the help of the Bristol Naturalists' Society and her talk lifted spirits during the dark winter night of December.

Many thanks to all our speakers who educated, entertained and enlightened us in 2015.

Lesley Cox
Hon. Sec.

10. Links With Other Organisations

Our links with other organisations are too many to mention but the new initiatives of 2015 were the Swift Conservation Project, which has brought together the Ornithology Section, The RSPB, The Avon Wildlife Trust, Bristol Swifts, Bristol City Council and Bristol Zoo to form The Bristol Swift Conservation Group and The Biodiversity Tours being offered by Bristol University as a parallel extension to their Historic Garden Tours within which the BNS has an integral role.

11. Membership

At the close of 2015, Membership stood at 441. Sadly, more old friends of the Society to add to those acknowledged on 7th March 2015, viz. Peter Brown and Brian Hawkins were lost to us. Peter joined the Society in1988. Brian joined in 1961 and remained a great believer in the value and worth of the BNS. Our condolences go out to both Peter and Brian's family and friends.

12. Thanks

The Society is grateful for the help and support it receives from the Earth Sciences Department, University of Bristol and our grateful thanks also go to Ms. Laura Pye, Director of Museums, Galleries and Archives, Bristol City Council for the Museum's continued support of the Society Library, located within the City Museum and Art Gallery. It is also grateful to all those members of The Society who give so willing of their time and energy in the course of the year to support the aims and aspirations of The Society.

Lesley Cox
Honorary Secretary, Bristol Naturalists' Society

Treasurer's Report – Accounts for 2015

Statement of Financial Activities for the Year ended 31 December 2015

	2015	2014
INCOME (Incoming resources)		
Membership Subscriptions	7199.50	7283.50
Gift Aid	1454.21	1493.30
Donations	440.70	506.50
Trading	130.62	142.30
Interest Received	324.08	348.45
Miscellaneous	60.00	
Total	**9,609.11**	**9,774.05**
EXPENDITURE		
(A) Direct Charitable		
Meetings (Room Hire & Speaker Costs)	1,145.57	1,183.70
Books & Periodicals (Library)	2,100.71	846.12
Nature in Avon (Proceedings)	1,124.99	2,235.00
Avon Bird Report	1,100.00	1,400.00
Bulletin Production	1,629.88	1,384.18
Publications Distribution Costs	2,151.15	2,053.50
Subscriptions to other Organisations	83.00	83.00
Publicity	292.22	1,111.93
Celebration Event	2,034.48	
Quartet Grant Expenditure	427.85	
Total	**12,089.85**	**10,297.43**

	2015	2014
EXPENDITURE (ctd.)		
(B). Administration		
Print & Stationery	19.19	110.72
Postage & telephone	61.61	68.30
Council Meetings (Room Hire)	360.00	270.00
Insurance	85.32	102.38
Miscellaneous		77.37
Total	**526.12**	**628.77**
Operating Surplus (Deficit)	**-3,006.86**	**-1,152.15**
Grants Awarded	51,288.58	2,490.35
Grants Received		6,000.00
Funds movement	**-54,295.44**	**2,357.50**

Balance Sheet as at 31 December 2015

	Notes	2015	2014
ASSETS			
Current Assets			
Prepayments	**1**	309.72	664.66
Bank (Lloyds)	**4**	5,372.87	75,699.15
CAF Gold	**2**	3,571.38	3,563.70
CAF Platinum	**3**	79,297.24	78,980.84
Skipton Building Society		16,000.00	
		104,551.21	**158,908.35**
LIABILITIES			
Creditors			
Subscriptions Received in Advance		515.00	248.50
Accruals			328.20
		515.00	**576.70**
Total Assets less Total Liabilities		**104,036.21**	**158,331.65**
CAPITAL			
General Fund 31/12/2014		158,331.65	158,331.65
Net income 2014		-54,295.44	2,357.50
Quartet Community Fund (RESTRICTED)		5,572.15	6,000.00
Barry Harper Memorial Fund (UNRESTRICTED)		75,000.00	125,000.00
General Fund 31/12/2015	**5**	23,464.06	27,331.65
		104,036.21	**158,331.65**

Notes

1 Prepayments

Insurance	59.72	
Periodicals	250.00	
		309.72

2 CAF Gold

Opening Balance	3,563.70	
Interest Received	7.68	
Closing Balance		**3,571.38**

3 CAF Platinum

Opening Balance	78,980.84	
Interest Received	316.40	
Closing Balance		**79,297.24**

4 Lloyds Bank

Statement as at 31 Dec 2015	5,805.22	
Cheques Not Yet Presented	432.35	
		5,372.87

5 General Fund

Bank (Lloyds)	5,372.87	
CAF Gold	3,571.38	
CAF Platinum	79,297.24	
Skipton Building Society	16,000.00	
Barry Harper Memorial Fund	-75,000.00	
Quartet Community Fund	-5,572.15	
Prepayments	309.72	
Creditors	-515.00	
		23,464.06

Instructions for authors

The editor welcomes original papers or short notes on the natural history of the greater Bristol region for consideration for publication in *Nature in Avon*.

Text should be submitted by email in Word. The data for graphs should be sent in Excel, separately from the graph, as graphs may have to be recreated to fit the page size of the journal.Illustrations should be submitted separately in .jpg format by email.

Deadline dates for submitting copy will be published in the BNS Bulletin.

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Rerum cognoscere causas – Virgil

Cover: 'Improving the environment in Bristol'
(see Avon Wildlife Trust article by Dr Lucy Rogers)

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