

GLASGOW NATURAL HISTORY SOCIETY NEWSLETTER

**Next Newsletter Deadline
22 March 2019**

**GNHS is a Registered
Scottish Charity**

February 2019

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2019 MEETINGS – Meetings will be held at 7pm in Lecture Theatre 5C, Boyd Orr Building, University of Glasgow, unless otherwise stated.

Where there are two lectures listed for an evening, each will last about 30 minutes. At the start of most meetings there will be a short time when members can present recent observations: short talks, interesting specimens, or photos.

February

Tuesday 12th (see below)

7.00pm Photographic Night: members' short digital slide shows, plus results of this year's **PhotoScene** photographic competition

Thursday 14th

7.30pm Gregory (Geology) Building Lecture Theatre (jointly with Geological Society of Glasgow) **The Heath Robinson world of the Triassic** ; Nick Fraser.

March

Thursday 7th

6.00pm Graham Kerr Building Lecture Theatre 1 (jointly with University of Glasgow Exploration Society) **Glasgow University Expeditions 2018 Report**

Tuesday 12th

6.30pm Annual General Meeting, followed by:

7.30pm Lecture: **Freshwater invertebrates in Scotland: their importance and conservation**; Craig Macadam

April

Tuesday 9th

7.00pm Graham Kerr Building Lecture Theatre 1

Lecture 1: **Insights and challenges of expeditionary life – engaging young people in science in extreme environments** ; Lauren Lochrie

Lecture 2: **Biodiversity monitoring on the University of Glasgow campuses**; Stewart White and others

May

Tuesday 14th

7.00pm Graham Kerr Building Lecture Theatre 1 (jointly with Paisley and Hamilton Natural History Societies) Lecture: **John Russell Malloch and Alexander Cuthbertson – two Glasgow naturalists who made a global impact on Dipterology, the study of flies** ; Geoff Hancock.

Members' Photographic Night and PhotoScene Results

David Palmar

On Tuesday 12th February in the Boyd Orr Building we will again have members' own digital presentations. Some offers have already been received, but as we go to press there is still a little space in the programme, so please let me know in advance if you would like to present a slide show, and what the subject is, to enable me to organise the evening more effectively. Even just a few slides and a few words about each can be interesting for members – sophisticated presentations can be nice, but unnecessary – and definitely not longer than 5 or 6 minutes, please!

This will be followed by the results of the annual PhotoScene photographic Competition which is now in its eighth year, and is run jointly by GNHS and the Institute of Biodiversity, Animal Health and Comparative Medicine.

This year there have been 155 entries from 37 people, by far the best level of participation so far, and £800 worth of prizes will be distributed. Anyone who submitted an entry or is interested in natural history photography is encouraged to attend.

2019 Subscriptions

Richard Weddle

Subscriptions fell due on January 1st 2019 (except for those who have joined since the start of the winter session). A subscription renewal form is enclosed for those who haven't yet paid; email recipients have received a separate reminder by email. We would be grateful if you could pay your subscription as soon as possible, to save us having to send further reminders.

British Science Week BioBlitz - Glasgow Botanic Gardens

Richard Weddle

Last September GNHS took part in a bioblitz organised by The Conservation Volunteers (TCV) in the Botanic Gardens. Another such event is being planned for March 16th 2019 as part of British Science Week which runs from 9–17th March 2019. It will again focus on engaging members of Glasgow's BME (Black and Minority Ethnic) community with native wildlife, but will include events of interest to all.

The event runs from 11:00am – 3:30pm and will include guided walks on various topics led by TCV staff and others.

It is described as a family friendly and full-on event; participants are encouraged to find and identify as many species as possible in Glasgow Botanic Gardens to create a snapshot of biodiversity. Join experts and try your hand at a mini-beast hunt, pond-dip, bird walk and much more. Our BioBlitz is in partnership with organisations supporting minority ethnic groups in Glasgow and will welcome new faces through wildlife engagement and celebrate our diverse communities and green spaces. There will be a particular focus on records of invertebrates, aquatic invertebrates, birds, mammals, and plants. See details of this and other British Science Week events at: <https://sciencelive.net/event/651/>

GNHS had an information stall at the RSPB's Youth Conference in Glasgow Science Centre on 11th December. Seven schools, including one very active Primary (Sunnyside) listened to presentations and participated in workshops around the theme 'Let Glasgow Flourish - designing the next 30 years of Glasgow's infrastructure'. All participants were encouraged to think about how to design spaces and buildings that are more sustainable and which provide room for wildlife as well as people. Since resources are often an issue for schools, we donated a copy of 'The Changing Flora of Glasgow' to each school's library, and distributed information on the BLB small grants scheme: it will be interesting to see if any of the schools come up with projects which we could fund.

Kelvin at the Kibble 2019

14–28th May: Kibble Glasshouse, Glasgow Botanic Gardens

Once again Kelvin Biodiversity Network are co-ordinating an exhibition by organisations involved in the biodiversity of the river and its surroundings. This year the exhibition will highlight the theme "Pollution". This was chosen partly because of the ongoing upgrading of Glasgow's waste water system. Organisations who intend to display include Friends of the River Kelvin, Glasgow Museums and GNHS, Friends of the Earth, TCV, RSPB, SEPA, Friends of the Botanic Gardens and Scottish Water.

Bryophytes Course funded by BRISC (Biological Recording in Scotland) and GNHS BLB Fund

Andrew Painting

Biological recording involves two processes. The first is noticing the life forms with which we share our world, and the second is sharing with other people what we've noticed.



Myself up in the mountains in a fairly 'mossy' place - Andrew Painting

Walking about the pinewoods of Deeside in the days after an introductory course on bryophytes, I was surprised to find myself 'noticing' mosses. Here was

Hylocomium splendens, with some rather nice *Ptilium crista-cristensis* for luck; up there, *Hypnum cupressiforme*. It was a rather pleasant surprise. Before, had I noticed mosses, it was largely to note that it wasn't a flowering plant and should therefore be ignored. Now, I was seeing them in a completely new way.

Introductory courses open up whole new worlds and ways of understanding ecological processes. They break through the seemingly impenetrable barrier of incomprehension which often looms large over those attempting to understand new groups of species. Introductory courses cannot hope to teach you everything about a new group. Instead they give the attendee the leg-up needed to push into new scientific realms. They also teach you how little you know about a subject. Beyond identification, this course opened up a whole way of life - the complex reproductive arrangements of mosses, their curious dealings with water, the intricate differences between mosses and liverworts. Looking closer lends mosses a remarkable beauty; a beauty derived from an aesthetic pleasure in minutely-constructed masterpieces, and which revels in the success of doing a complicated, clever job with a certain level of skill. Being one cell thick, their leaves are ideally suited to microscope work. There is a skill to preparing slides and using keys, but it is a learnable skill. Equally impressive, though learnable, is the skill of 'jizz'; learning to recognise species (or the potential to find certain species) by their habitat, growth form and distinct 'mossiness'.



One of common woodland mosses
- Andrew Painting

So now I am beginning to notice bryophytes, it is time to start telling people about what I've noticed. New bryophyte records will soon be filtering into the books from upper Deeside. In a foray on to scree slopes, flush edges and bog pools around Mar Lodge Estate NNR, fellow course attendee Petra Vergunst has already yielded a chunky haul of species new to me, if not to the area. I'll be writing up bryophyte crib sheets for environmental workers in upper Deeside.

After a bit more practice with a scalpel and microscope, I'll be running some 'moss days', to help other people notice the bryophytes around them. The lister in me is already working out what species I should be searching for, and what rare surprises await around the Cairngorms. I'll soon be rarity finding, wading through the blanket bogs to find hummocks of *Sphagnum austinii* and checking the logs of the Caledonian pinewood for *Buxbaumia viridis*. Most exciting, for an ecologist with a head for heights, will be searching the snow patches for their unique bryophyte assemblages. With a fair wind, this will lead to 'adopting' a few snow patches and monitoring the changes that may come to them with climate change.

Biological recording is all about sharing our knowledge with one another for the benefit of all. I'll certainly be trying to share what I've learned in the coming months, and putting to good use a new 'way of seeing' the bryological world around me.

Since the article in *The Glasgow Naturalist* in 2001 by Hugh Jones on the "Invasion of the New Zealand flatworms" records have shown that it continues to spread and become established especially in the north and west of the British Isles. The number of records received at the James Hutton Institute has recently dropped considerably possibly due to the end of a citizen science initiative by the organisation OPAL (Open Air Laboratory) which ran in 2015-2018 and organised and undertook a national New Zealand flatworm survey.



New Zealand Flatworm (ruler in cm and mm divisions) – David Palmar



New Zealand Flatworm found curled up under a Gro-bag – David Palmar

It received 1895 records many of which in Scotland were positive for the New Zealand flatworm *Arthurdendyus triangulatus*. Evidence of the continuing spread of the flatworm in Scotland has been highlighted by the fact that in 1990 it was first recorded from a Scottish Island, Skye. By 1994 it had spread to Shetland, Lewis and mainland Orkney. A more recent examination of the records in 2017 has shown that the New Zealand flatworm was present in 30 of the 95 inhabited Scottish Islands including seven in the Orkney archipelago (Boag and Neilson, 2019)

Some records showed that large numbers of flatworm could be detected and killed e.g. a householder in Baleshare killed 1445 over an eight-month period and another from Skye killed an estimated 15,000 over a one-year period.

These data highlight the fact that the New Zealand flatworm is still spreading and may have a potentially detrimental impact on both wildlife and agriculture in the west and north of Scotland. It is imperative that its spread is curtailed whenever possible.

To monitor its spread and detect any detrimental impact it may have, new records of the New Zealand flatworm would be welcome. Please send them to Brian Boag, The James Hutton Institute, Invergowrie, Dundee, DD2 5DA, or by email to brian.boag@hutton.ac.uk

Boag B & Neilson R (2019) The potential detrimental impact of the New Zealand flatworm to Scottish Islands. In Veitch CR, Clout AR, Martin AR, Russell JC, West CJ (eds.) *Island Invasives: Scaling up to Meet the Challenge*. pp352-355. Gland, Switzerland: IUCN.

It is not that unusual to occasionally see "medium-sized" female bumblebees, that could be either large workers or small queens, particularly late in the season. Last summer I saw many such, or what I took to be such, of *Bombus lucorum* at many localities in July and August, all of which I had "named" on sight in the field.

Eventually I decided I really ought to catch one, and take it home to check properly, which I did at Tairlaw Picnic Site (South Ayrshire) on 31st August 2018.



Male White-tailed bumblebee *Bombus lucorum* – David Palmar

Much to my surprise it was a male. Now males of *B. lucorum* are supposed to be very different from the females; they are much yellower, and in particular they have a yellow head, the female head being black. So I had a black-headed male.

It is now recognised that what we used to call *B. lucorum* is a complex of 3 species, the others being *B. magnus* and *B. cryptarum*, which appear to be northern and western species of upland habitats, and my sightings of medium-sized bees were indeed all in upland habitats, although not at any great altitude.

Black-headed males suggests *B. cryptarum*, but under the microscope I could see some yellow hairs among the black ones on the head, so perhaps it was *B. magnus*. I returned to Tairlaw Picnic Site three days later, caught two more of these black-headed males, and saw a few others; all were identical to the first one.

Subsequently of course I resolved to check carefully every medium-sized "*B. lucorum*", but I only saw two more, and those ones really were large workers. This year I must check the large spring queens, which is the best way to determine with any confidence which species they really are.

And then the other problem. At Dundough Forest (Dumfries and Galloway) I caught a queen carder bumblebee that was so large and such a bright orange it could only be the distinctly scarce *B. muscorum*. I knew it was, it couldn't be anything else. But when I got it home under the microscope (seems strange you should need a microscope for such large insects as bumblebees, but they can be tricky) I found there were some black hairs at the sides of tergites 3 and 4, and a few



Moss carder bumblebee *Bombus muscorum* – David Palmar



Common carder bumblebee *Bombus pascuorum* – David Palmar

across the middle of tergite 3, so it wasn't *B. muscorum* at all, but just an exceptionally big and bright example of the common *B. pascuorum*.

The same thing happened later, at Tairlaw picnic site again (good place for bumblebees, a big patch of Devil's-bit Scabious in a sheltered sunny spot), I saw several workers, and a queen that escaped, that I was sure were *B. muscorum*. On my return visit I saw many more, and succeeded in capturing a queen. There were very few black hairs on the abdomen, but they included

a narrow complete band on tergite 3, so it was just big bright *B. pascuorum* again.

Cautionary note – identification of the bumblebees in the photos is thought to be correct, but might be regarded in the light of this article as provisional! - Editor

Previous Newsletters on GNHS Website

David Palmar

Members are reminded that most articles from previous Newsletters from 2004 to 2017 are now archived on the GNHS website, thanks to a lot of hard work by Chris McInerny. The website newsletter contents will be updated, so that they are a few months behind and only Members receive the most up-to date newsletters.

Next Newsletter - copy to David Palmar by 22nd March 2019 please.

Thank you very much to all the contributors who have made the newsletters so interesting and worthwhile publishing. Please send contributions by email, preferably as .rtf, .doc or .docx (Word 2007) format. If you have time, please italicise taxonomic names, and use Verdana font, size 12 points.

If sending photos, please submit only a few as separate jpg files (not as part of a Word document), and make them under 100Kb each for emailing).

The Inner Hebridean island of Coll has held a bird festival for the past few years.

Coll is a beautiful island which has a range of habitats from massive sand dunes and sweeping sandy beaches, to farmland and rocky and peaty moorland. It has a rich and fascinating birdlife. The Coll Bird Festival will introduce you to some of the key species of breeding and passage birds with guided walks from Friday to Sunday. Guided boat trips to Gunna (between Coll and Tiree) and to Lunga (Treshnish Isles) with its seabird city of thousands of auks e.g. puffins offer an opportunity to spot a variety of wildlife.

There is a programme of talks on the Friday evening including by the Hebridean Whale and Dolphin Trust and a range of shorter and longer walks on Saturday including a dawn watch, a photography walk (bring your camera!) and hopefully a hen harrier watch (TBC). The programme also includes a ceilidh on Saturday and a beach clean and barbecue on Sunday.

Travel to Coll is easy – 3 hours by CalMac ferry from Oban.

There is accommodation in the Coll Bunkhouse, (a superb modern facility), the Coll Hotel, and in bed and breakfasts, and the festival is centred on An Cridhe (the Heart in Gaelic), the fairly new community centre in Arinagour, and the Totronald RSPB Reserve.

Details of all the activities can be found easily by searching for Coll Bird Festival. The full programme can be seen here soon, and there is also a link to information on accommodation: <http://collbunkhouse.com/coll-bird-festival-2019/>

Free Movement of Bugs from the EU!

Gill Smart

You may remember an article about bugs in a car bumper in a 2017 issue of this newsletter. Well, Gill Smart's towbar fitting friend has done it again. In December



2018, he found the Southern Green Shield Bug *Nezara viridula* inside a rear light unit built in Romania in August 2018, according to the label, and fitted to a brand new car. It is likely the car was assembled in Romania and imported to the UK around that time. The location is Irvine NS318375, next to the Scottish Wildlife Trust's office, so a fair bit north of the species' range. The identification was verified by True Bug expert Tristan Bantock who said "This bug is being imported into Britain all the time but is only able to survive in a limited climatic envelope."

The Southern Green Stink Bug or Green Vegetable Bug, as it is also known, is widespread across the planet. It can do damage to a large range of plants and is considered a pest in some countries. Climate change could see it bothering our tomatoes. Its discovery in Scotland is fascinating and makes you wonder how many hitch-hiking bugs are assumed to have reached their destinations under their own steam.

During a weekend in late October 2018, I headed to the Kindrogan Field Studies Centre, on the edge of the Cairngorms to attend a 'Bryophytes for Beginners' Course, with thanks to a BRISC Bursary that I received earlier in the year.



Previous to starting the course I knew nothing about Bryophytes, or for that matter what the word even meant, I had to Google it to be completely honest. But I decided to take this course as I wanted to know more about this subject that I had scarcely come across in the past.

The weekend was generally focused around a mixture of fieldwork and laboratory work, outside for collecting our specimens and seeing them in their natural environment, while the inside work was to allow for us to identify the species with guides and microscopes while also receiving important lessons on Bryophytes and how to go about identifying them.

Both fieldwork sessions were generally spent in nearby woodland scoping out the various Mosses (including Sphagnum) and Liverworts which could be found

in the area, day one had to be quite an intense day personally as we managed to rack up around 60 species of Bryophyte within a few short hours, at the time it certainly felt like a bit of information overload. Though all this knowledge would be put to good use on day two, where most of these species showed up again and I even felt confident to attempt to try and identify some of them.

It was certainly an eye-opening course, and one which I'll make good use of in the future, hopefully back home in Shetland I will get the chance to explore more of the isles and discover their Bryophytes, ideally filling in the blanks where records are sparse and allowing for a better understanding of Bryophyte coverage in Shetland.

Another way I'd like to make use of my knowledge gained from this course and the coming years would be to pass on what I've learned to others. Eventually by doing this it could help for a local group of people becoming knowledgeable in Bryophytes and allowing for Shetland to be better covered by recorders.

It will be a while before I can start my project back in Shetland, so in the

meantime I am hoping to meet with other Bryophyters in North-east Scotland while I'm studying in Aberdeen. Locally a few of us who share an interest have got together and are aiming to meet regularly and attempt to identify the Bryophytes of Aberdeenshire and beyond. Currently our first informal meeting is at the Muir of Dinnet NNR in late January 2019, this I would hope would be the start of a long-term set of meetings, maybe in the future it could develop into something bigger and more formal, but only time will tell what will happen, so stay tuned.

Ruchill Park, 5th July, 2018

Bob Gray

Seven of us took advantage of the continuing fine summer weather to enjoy this evening visit to Ruchill Park. At 271' (83 m) this is the highest of Glasgow's drumlin swarm. It has been made even higher by the addition of a mound of rubble excavated from the northwest end of the park to provide a suitable place for construction on the now demolished Ruchill Hospital site.

So the view from the summit

is one of the finest of the whole of Glasgow. Its 53

acres were purchased in 1892 by the City and provided the only park serving the northwest area of the city. It was named after the country mansion to which it



1 – Wild cherry *Prunus avium* (leaning tree)



2 - Cockspur thorn *Crataegus crus-galli*

once belonged. The soil parent material is Devensian (late glacial) till. The upper reaches of the area are less fertile than the lower ones owing to the leaching of nutrients. The famous James Whitton, Superintendent of Glasgow Parks at the time, was responsible for the original planting. He was no doubt aware of the infertile nature of the soils in the upper reaches which probably explains the substantial number of mature silver birch (*Betula pendula*) and wild cherry or gean (*Prunus avium*)¹ which are the

dominant feature of the woodlands located in the higher areas of the park. They must be over 100 years old and are certainly craggy to behold.

We began our anti-clockwise tour of the park at the central Bilsland Drive gate and



3 – Silver birch *Betula pendula*

soon encountered a couple of *Prunus* 'Spire', distinctive forms of the wild cherry, followed by three weeping willow-leaved pears (*Salix salicifolia*) growing beside some crab apples (*Malus pumila*). Not far away grows a rare cockspur thorn (*Crataegus crus-galli*), bristling with long 8 cm thorns, which we saw in full bloom².

A very fine silver birch specimen³ was seen growing in an open space, which was bounded on one side by a

number of Western Himalayan birches (*Betula jacquemontii*). Nearby we saw a couple of scarlet thorns (*Crataegus mollis*)⁴ which are extremely rare in Glasgow. The common rhododendron which almost encloses them should be cut back in order to encourage the growth of these unusual hawthorns.



4 - Scarlet thorn *Crataegus mollis*

The park provides a good opportunity to distinguish amongst different species of *Sorbus*. For example, we came across a row of trees whose leaves possessed 2/3 pairs of pinnae, probably *Sorbus hybrida* (a cross between Swedish whitebeam and rowan), to be distinguished from *Sorbus pinnatifida* (a cross between common whitebeam and rowan), which possesses 1/2 pairs of

pinnae.....and soon we encountered a single specimen of the Service Tree of Fontainebleau (*Sorbus latifolia*) [cf. the wild service but with grey felt underneath the leaves], also rare in Glasgow.....and then we found even more of these trees (*S. latifolia*) forming part of a row of trees! These were rare finds indeed.



5 – Serbian spruce *Picea omorika*

On our way towards the flagpole viewpoint we came across a double stemmed Serbian spruce (*Picea omorika*)⁵, one of the small number of flat-needed spruces found scattered through different continents,



6 – The view from the summit, to Park and the Whitelee wind farm

and then a couple of tulip trees (*Liriodendron tulipifera*) from Eastern North America which, like the flat-needed spruces, also exhibit a discontinuous distribution, the other species in this case being the Chinese tulip tree (*Liriodendron chinense*). The opinion is that such trees possess a common ancestor. The view from the summit⁶ was indeed quite spectacular and improved by a close-up view of a few trees such as golden Leylandii (x *Cuprocyparis leylandii* aff. 'Castlewellan gold'), yellow Lawson cypress

(*Chamaecyparis lawsoniana* aff. 'Lutea'), Weymouth pine (*Pinus strobus*) and Japanese larch (*Larix kaempferi*).

Walking around the base of the flagpole slopes showed how varied is the planting here: there are examples of the Morinda spruce (*Picea smithiana*) [the longest needed spruce], dawn redwood (*Metasequoia glyptostroboides*), Chinese dogwood (*Cornus kousa* var. *chinensis*) [flowers just dying back] and a pedunculate oak sapling (*Quercus robur*). A green alder (*Alnus viridis*) near here was exhibiting considerable root sucker growth. Then we encountered a curved row of an unidentified apple species which had purplish, woolly, young growth. Many Himalayan tree cotoneasters (*Cotoneaster frigidus*) near here had just completed flowering and the number of these is quite a feature of the park.



7 – Hornbeam seedlings *Carpinus betulus*

Making our way into the woodland covering the park's upper reaches, we were able more closely to identify the curved bar scales of the cones of a Japanese larch, whose branches almost touched the ground, and then we enjoyed the remarkable peace to be enjoyed in the centre of this small wood. Much natural regeneration was in evidence – common alder (*Alnus glutinosa*), Japanese larch, hawthorn (*Crataegus monogyna*), wild cherry but especially large numbers of ash saplings (*Fraxinus excelsior*).

Soon we came to what was arguably the highlight of the evening – a number of big, mature hornbeam trees (*Carpinus betulus*) with a plethora of naturally produced seedlings⁷ growing below, ranging in size from quite small to some 2 metres tall. The natural regeneration of such an abundance of hornbeam is an unusual sight in Glasgow. Heading back towards our starting point we found a Turkey oak (*Quercus cerris*) with a very long, clear bole, taller than anything encountered at Pollok and just a solitary specimen. Finally we diverted to look at a huge common laburnum (*Laburnum anagyroides*) that had been pollarded at about 1 metre above ground level.

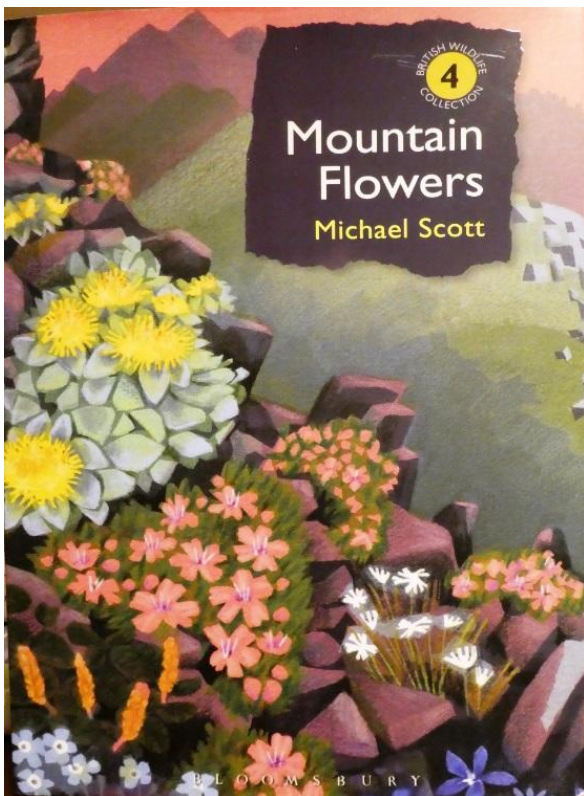
The large number of hawthorns, silver birches and wild cherries are the dominant features of Ruchill Park but it is remarkable for the presence of some rare specimens, such as the Morinda spruce, Service Tree of Fontainebleau and scarlet thorn and the presence of some rare natural regeneration, such as hornbeam.

Book reviews

Anthony Payne

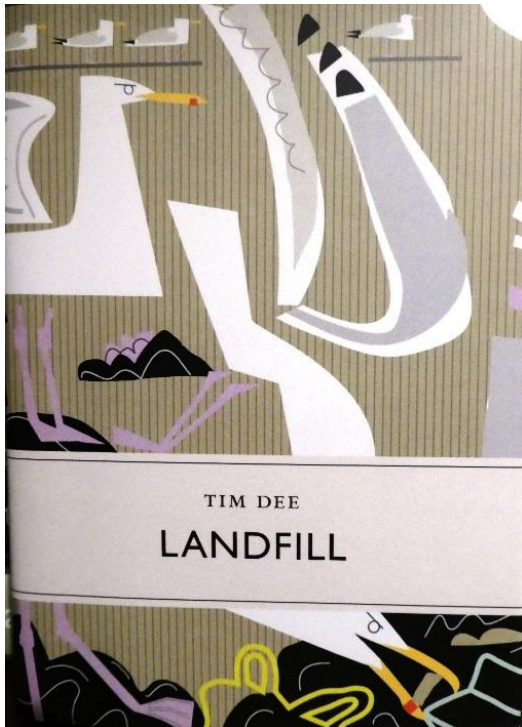
The following books have been received for review:

***Mountain Flowers* by Michael Scott (2016)
Bloomsbury Publishing. HB. 416 pages. £35.00**



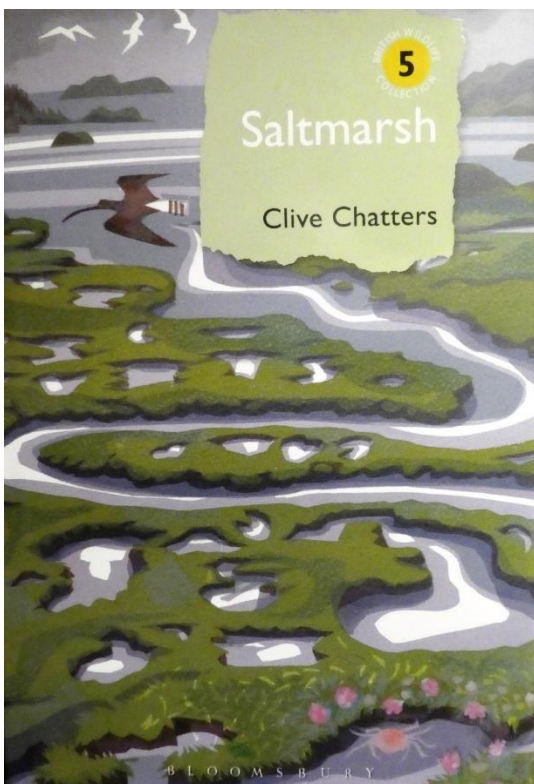
This is the fourth book in the Bloomsbury *British Wildlife Collection* series and is a very substantial, profusely-illustrated volume. It opens with general chapters which define and list our mountain flora and discuss their zonation and origins in the UK. The bulk of the book is laid out along regional lines, with walks, locations and local specialities. As might be expected, the majority of this section (some 180 pages) concerns Scotland – from the Southern Uplands to the “near-Arctic” Orkneys and Shetlands. The book ends with chapters on particular conundrums, requirements for recording and predictions for the future direction of this specialised community.

Landfill by Tim Dee (2018)
Little Toller Books. HB. 239 pages. £16



A distinctive and unusual book which sets out to describe how our landfill waste disposal systems have altered gull behaviour. The author is an unashamed larophile who can nonetheless speak of his subjects as “trash birds, the subnatural inhabitants of drosscapes”. Paradoxically, by turning to recycling and energy production from waste, we are now depriving gulls of their livelihood. The book is a heady blend of autobiography, philosophy, history, literature and travel. It is a compelling read and virtually unclassifiable.

Saltmarsh by Clive Chatters (2017)
Bloomsbury Publishing. HB. 384 pages. £35



This is the fifth book in Bloomsbury’s expanding British Wildlife Collection and, like its predecessors, is a profusely-illustrated cornucopia which is part gazetteer and part topic-oriented. The gazetteer forms the long central part (about 150 pages) and is a regional account of saltmarshes around the UK, highlighting important species at each. Since the UK is surrounded by tidal salt water, the presence of marshes is not unexpected; what may be novel for the reader is the number of inland sites associated with salt-bearing rocks – and even human activities such as road-gritting and re-turfing. There are chapters on the history of marsh conservation, modern-day practical methods, “modest proposals” for rejuvenation, regulation measures and international initiatives.