



CARDIFF NATURALISTS' SOCIETY

Founded 1867

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Charity No. 1092496

LIST OF OFFICERS 2023 President Position vacant

Secretary

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Membership Secretary Elizabeth Morgan membership@cardiffnaturalists.org.uk

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Field Meetings Coordinator Position vacant

Newsletter Editor Stephen Nottingham stephen@cardiffnaturalists.org.uk

Also on Council Mary Salter, Gill Barter, Stephen Howe, Patrizia Donovan



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Cover photo: Little Egret at Forest Farm. Photo by Phill Blanning

Bioscience Prize 2023

We congratulate **Angus Menzies** on winning the 2023 Cardiff Naturalists' Society Bioscience Prize. The prize, awarded in memory of past CNS members Prof Ursula Henriques and Dr Mary Gillham, is for the most outstanding 2nd year field course project in the School of Biosciences, Cardiff University. Angus writes about his project, on the effects of light on Himalayan Balsam, on pages 18-26 of this newsletter.



Angus Menzies receives the Bioscience Prize award from CNS Secretary Mike Dean, at the AGM meeting on 10 May 2023 at Ararat Community Centre in Whitchurch. Photo by Andy Kendall.

Indoor Meetings

Cardiff Naturalists' Society have a new venue for their indoor meetings: Ararat Community Centre next to the Ararat Baptist Church. The address: Plas Treoda, Cardiff CF14 1PT



Meetings started at this venue on Wednesday 10 May 2023, with the AGM and a talk by the CNS Bioscience Prize winner Angus Menzies.

We plan to hold a series of indoor meetings at this venue starting in September 2023.

Look out for all the latest information and additions to the indoor and outdoor meeting programmes in the next newsletter, in member emails, via social media or on our website/blog:

http://cardiffnaturalists.blogspot.co.uk/p/ programme.html

Outdoor Meetings

Lanlay Meadows, Peterston-super-Ely Sunday 25 June 2023 at 10.00 am

This secluded pocket of countryside is owned by the National Trust. Among the habitats to explore are species-rich grassland, marshy vegetation, hedgerows and small streams. There is also a community orchard with apple, pear and plum trees. Part of the land borders the River Ely and we may have time to walk further along the river, on a public footpath beyond the National Trust land. There are no slopes but the ground is uneven in places.

Meet at a roadside parking area at ST 081761, at the southwestern edge of Peterston-super-Ely, near a footbridge over the river. From here it is a short walk to the entrance to the fields. (There is also limited space to park at the entrance, opposite Wyndham Park, but it may be occupied.)

This will be a morning visit with the possibility of an afternoon extension to Hensol Forest and Pysgodlyn Mawr. There are benches near the parking area where we can eat a packed lunch. Coffee and cold drinks (but not food) can be bought at the nearby pub which will be open from 12.00.

Please wear strong footwear and come prepared for any weather conditions (waterproofs and suncream!). There is no need to book but look at the Cardiff Naturalists' website for any additional information nearer the time. Send any enquiries to: *membership@cardiffnaturalists.org.uk*

Magor Marsh Date and time tbc.

A guided tour with Andy Karran (Gwent Wildlife Trust) of Magor Marsh, one of the last remaining pieces of natural fenlands in the Gwent Levels. Meet in the car park by the Derek Upton Centre, Whitewall Road, Magor: ST 428 866.

<u>The Morrey Salmon photographic collection –</u> <u>Project Update May 2023</u>

Andy Kendall

As many of you are aware, from previous presentations that I have given, Cardiff Naturalists' Society are the "owners" of the important photographic archive (mainly of birds) created by Colonel H. Morrey Salmon, CBE, MC, DL, DSc, (1890-1985), our 72nd President. Morrey was not just a photographer, but an incredibly important conservationist, especially of Red Kites, and a war hero especially in World War 2.

Much has been written about him and I won't repeat all of that here, but you can read some on our 150th anniversary history pages at *https://cardiffnaturalists.org.uk/htmfiles/150th-05.htm* and more at *https://riverbankscribe.wordpress.com/2017/05/27/morrey -salmon-the-father-of-british-bird-photography/*

With some generous financial support from the Salmon family to cover costs, the Society has arranged for the glass negatives and associated equipment to be transferred to the ownership of the National Museum of Wales. A project has been set up to clean, conserve, scan and make available online Morrey Salmon's early bird photographs.

This Natural History Conservation project was due to start in March 2020, but we all know what happened then. It has taken quite a lot of work from Mike Dean and others to get things restarted with the museum in March 2023. A small team of up to about 12 of us has spent a few sessions working at the Museum's National Collections Centre in Nantgarw, where the items relating to this collection are all being bought together. There are diaries, documents and other items, as well as the negatives, prints and glass lantern slides which he used for giving talks in the early days. The collection shows some important events, such in 1934 when he arranged for the 8th International Ornithological Congress to visits Skokholm Island with the help of the Royal Navy Destroyers HMS Windsor and HMS Wolfhound. It also shows key partnerships that Morrey Salmon had such as his lifelong partnership with Geoffrey C.S. Ingram (1883-1971), our 53rd President, and Ronald Lockley who is famous for his pioneering work on Skokholm: *https://en.wikipedia.org/wiki/Ronald_Lockley*

As of 4th May 2023, we had cleaned and put in new envelopes (as the old ones were not suitable for long-term storage) 450 glass negatives and lantern slides and we had scanned and transcribed nearly 1200 records from his card index system, which will be used to generate the digital information that will go alongside the pictures when they go live on the museum system.

The timing of the project is incredibly important as since we started discussing it with the Museum, one of his son's (Norman) has sadly passed away and we are reliant on his remaining son Hugh for some of the identifications of people and places we are finding in the pictures and documents. It is also important that we get some of the negatives into better storage conditions because whilst many are in excellent condition, some such as the sparrow on the bird box (see p. 10) have sadly deteriorated and others being glass have been damaged over the years.

The process we have come up with is to clean the negatives and then take CNS images which can be turned into positives to make it easier to check the identification of birds etc. and then the Museum will take all of the digital information that we come up with and add that to formal copies that they will put online.

There are going to be a lot more sessions on Fridays this year, so if you are interested in helping, please contact Mike Dean via the CNS secretary email address: secretary@cardiffnaturalists.org.uk

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An unusual lantern slide box (top), and a typical label from the lid of a more typical slide box.



Cardiff Naturalists' volunteers learning the Museum's conservation methods, and getting down to work on the photographic collection.



Sparrow on nest box and gull on rocks, examples of early bird photographs by Morrey Salmon.



Morrey Salmon slides cropped for publication.



Tawny owl and owlet. Photos by Phill Blanning.



Robin displaying at Forest Farm (top). Red squirrel, photographed in Scotland. Photos by Phill Blanning.

International Dawn Chorus Day

Mike Dean

International Dawn Chorus Day was Sunday, May 7th 2023 and CNS was invited to take part in an early morning Field Trip in conjunction with the Cardiff Branch of the Wildlife Trust and the Nant Fawr Community Woodlands Branch of the Woodlands' Trust. The walk started at the bridge on Wild Gardens' Road, just north of Roath Park Lake at 5:15 am with the intention of walking through the wood in Roath Park Wild Gardens and then on through Nant Fawr Wood and along the Nant Fawr Trail to Llanishen Reservoir and back.

When I rose at 4:30 am, there was a full moon plus a clear sky and the Dawn Chorus was already in full swing in my garden. I met about 20 people including Elizabeth and Julian from CNS at the meeting point. While waiting for everyone to arrive, the water birds on the lake, being eternally optimistic thought a potential breakfast had arrived early and got very excited only to be disappointed. A fox then strolled by weighing up two male Mallard Ducks on the grass as potential breakfast but then decided better of it and wandered off into the Wild Gardens. A sudden cacophony of noise erupted from a tree nearby from some Carrion Crows and Magpies. On investigation, one of the local cats had climbed up the tree where possibly there was a nest but then decided better of it given the commotion.

We walked up through the woods of Roath Park Wild Gardens to a chorus of bird song and then on up though Nant Fawr Wood and the Nant Fawr Trail. At times identification was difficult, if not impossible because each bird seemed to be trying to "out sing" it's neighbour! However, with the help of two or three people from the Wildlife Trust and the "Merlin Bird App", a list of birds was compiled (see page 16).



The Nant Fawr Trail

There were two particular highlights as far as I was concerned. One was seeing a Tree Creeper in Roath Park Wild Gardens. I have seen them in the past in that area but not for some considerable time. Secondly there was a Song Thrush on the Nant Fawr Trail, sitting on a branch just above our heads and apparently oblivious to our presence singing it's heart out!



The moon at 4:30 am.

It takes a bit of effort to get out of bed so early in the morning, especially at this time of the year, but it can be recommended as it is the best time of the day before the hustle and bustle of daily life begins.

List of common names of the birds identified:

Blackbird Chiff Chaff Dunnock Great Tit Jackdaw Moorhen Song Thrush Woodpigeon Blackcap Coal Tit Feral Pigeon Green Woodpecker Jay Mute Swan Swallow Wren

Carrion Crow Coot Goldcrest Greylag Goose Mallard Robin Tree Creeper

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From our social media: First frog spawn

Mary Salter reported the first frog spawn in her garden this year on (appropriately) 14 February (photo below).



The Freshwater Habitats Trust organises an annual survey of the first frog and toad spawn of the year. You can register your sightings on their website (*http://freshwaterhabitats.org.uk/ projects/pondnet/pondnet.org.uk/pndnet_spawn_survey 2023*).

The first frog spawn records for mainland Britain in 2023 were from North Devon, on 5 and 7 January!

From our social media: white-banded crab spider

Linda Morris posted photos of a White-banded Crab Spider (*Misumenoides formosipes*:): "This spider was on Chives in the garden, I understand they are sit-and-wait predators that capture pollinators, having strong front legs which it uses to seize prey."



You can join the Cardiff Naturalists' Society conversation on Facebook at: www.facebook.com/groups/CardiffNaturalists

Bioscience Prize 2023 fieldwork report:

The effects of sunlight on Himalayan Balsam

Angus Menzies

Having read and realized that the previous winner of the prize also reported on Himalayan Balsam (photo below), I appreciate there may be some overlap from last year's article. However, I will try my best to present something new and make it as interesting as possible.

The urban ecology field course began towards the end of June 2022, with informative talks on possible projects to do and a long walk showcasing Cardiff's nature hotspots. Initially, I had absolutely no idea what to pick: I never was fully committed or interested in the possible projects being suggested to me. That was until I noticed simply how much Himalayan Balsam patches were being pointed out by members of staff. I decided then, that since I had no better ideas, and that data would be easy to collect in its abundance, to commit to the balsam.

The main aims of my study were to explore the differences in Himalayan Balsam growth in patches with varying exposure to sunlight. I explored a variety of growth factors, including leaves, stem length, and how much plants were investing in their reproductive organs.



Background

Impatiens glandulifera, commonly known as Himalayan Balsam (HB), is an invasive species introduced to Europe from the Himalayan regions in Pakistan and India during the midnineteenth century (Beerling and Perrins, 1993; Greenwood *et al.*, 2018). Since its introduction, HB has rapidly spread across the British Isles, both naturally and through human mediation. Its prolific growth and the fact that it is the tallest growing annual UK plant species means that it can form large monospecific stands which can crowd out and block out sunlight to smaller native plants. HB also often outcompetes other plants by attracting pollinators due to its high sugar nectar production (Hulme and Bremner, 2005; Chittka and Schürkens, 2001).

Furthermore, HB's high seed production, being up to 2,500 seeds per plant each year, explosive seed dispersal and the buoyant nature of the seeds means it can rapidly spread along the riverbanks of waterways (Kurose *et al.*, 2020). HB is commonly found in more shaded areas of woodland and is common on the banks of rivers and streams. HB also often co-occurs with *Impatiens parviflora* and *Impatiens noli-tangere*, in forest path habitats which, under most conditions, are competitively inferior to HB (Helsen *et al.*, 2021). Alongside the ecological problems of HB, it is also expensive to deal with and as such was selected as the target of a classical biological control programme in the UK in 2006 (Tanner *et al.*, 2014).

Multiple factors influence how HB plants prioritise their resources including light, water availability, soil nutrients, temperature, and competition. Variation in HB patches are quite noticeable but have not received as much attention as the damaging effects it has on the ecosystem. Exploring how HB priorities its resources in varying levels of light may be useful in attempts to limit the damage it causes to native ecosystems: HBs ability to proliferate and therefore impact ecosystems will vary on light levels, especially since only the tallest plants flower. In this report, I describe the relationship between light and plant growth. In doing so I came to two hypotheses. Firstly, in the shadiest areas, HB has the largest leaf surface area to maximise capturing available light and has the highest leaf relative water content (RWC) since they would experience less transpiration. Secondly, in the sunniest areas I expected to find the tallest plants since these plants could grow the fastest with more abundant energy supply and that more plants would be flowering since only the largest plants flower. It was also unclear how light would affect patch density, so this was also explored.

Materials and Methods

In total, 118 HB individuals were pulled from the ground and were counted and 27 leaves from three patches were collected. The variable used to quantify the amount of sunlight that patches of HB were receiving was estimated percentage sky cover. 3 patches were chosen with sky coverage of 45%, 70% and 95%, giving a good variety of light conditions.

Specific leaf area (SLA) and relative water content (RWC) were measured from collected leaf samples. At each patch, two 0.5m quadrats were randomly placed in the patch and all those individuals in the quadrat were removed from the ground to be measured.

Additionally, the stem height, and the flowering status of each of the 118 individuals, was measured. The density of each quadrat was also calculated.

Finally, Shapiro-Wilks tests were performed on the numerical data to test for normality of variance (Shapiro and Wilk, 1965). Next, Pearson's correlation coefficient was used to test the significance of the correlation between sky cover and the dependent variables. To test the correlation of flowering with sky cover, the percentage of plants flowering in each patch was used as a measure against sky cover.

Results and Discussion

Specific leaf area (SLA)

The SLA between leaves within each patch was variable. The mean SLA for each patch was 83.91 cm²/g, 151.89 cm²/g and 264.84cm²/g, respectively. There was a positive correlation between SLA and sky cover although this was not significant (Fig. 1a; r = 0.988, P > 0.05).

Relative water content (RWC)

Patch 3 had the highest RWC with all leaves picked from this patch having a RWC > 90.45. Furthermore, the averages of each patch showed a clear correlation to sky cover, although, again, this correlation was insignificant (Fig.1b; r = 0.989, P > 0.05).

Stem height

Stem height in all patches was greatly variable, the tallest plant measured was 177cm and the smallest was 26cm. HB on average grew the tallest in patch 2 and the shortest in patch 3, which was surprising as I expected the tallest plants to grow in the most light.

There was a clear threshold where plants had grown their stems tall enough to begin allocating resources into flowering. This threshold can be seen in Figure 2. In patch 1 the threshold was around 100cm, in patch 2 this was around 140cm and in patch 3 only the 2 tallest plants were flowering. There was a slight but insignificant negative correlation between average plant height and light levels (r = -0.269, P > 0.05).



Figure 1. The x-axis represents percentage sky cover. a) How mean specific leaf area (SLA) in the 3 patches of HB, varies depending on levels of light. SLA units are cm²/g. b) How mean relative water content (RWC) in the 3 patches of HB is impacted by varying levels of light.



Figure 2. The stem heights of both flowering plants and non-flowering plants in varying levels of light. Each dot represents one of the 118 individuals pulled from the ground. Orange dots represent those plants which were flowering, and black dots represent those not flowering. Stem height is measured in cm. You can clearly see a threshold of when the plants flower.

Flowering or not

32% of plants in patch 1 had evidence of resources allocated to reproductive tissue growth the most across the 3 patches. In the more shaded patches, there was a lower percentage of HB growing flowers, with 24% in patch 2 and only 11% in patch 3. There was a clear, but insignificant correlation between the percentage of HB growing flowers and light levels (Fig. 3; r = -0.999, P > 0.05).

The highest proportion of HB showing signs of flowering was in patch 1, suggesting that in lighter areas HB is able to focus resources on reproduction. In the more shaded of patches 2 and 3 HB likely requires more resource investment into photosynthetic organs then into reproductive organs. This data was acquired at the very beginning of the flowering season of HB and so it is no surprise therefore that the shady patches were behind patch 1.

Patch Density

Patch 1 Had the greatest population density of 280 plant/m² with 70 HB individuals being pulled from the ground in the 2 quadrats. Patch 2 had the lowest population density, being 84 plants/m².



Percentage of Plants Flowering in Varying L

Figure 3. Percentage of flowering plants as a function of percentage sky cover (x-axis).

Conclusions

Although I got some good data, scientifically there were quite a lot of problems with the study. The measure of light used in this experiment, estimated percentage sky cover, was a practical and time effective measure of how much light HB receives; however, it is importantly an estimate and therefore is not objective. Moreover, the major problem is I only looked at 3 patches. This is why all of the correlations are statistically insignificant. This was a big shame because the correlations between my measured variables and light levels looked pretty strong. If I had more time, I would collect data on additionally patches to try and statistically support my findings. Additionally, I would also be interested in looking at how other factors like water availability, soil nutrients, temperature, and competition impact how Himalayan Balsam allocates its resources. Undoubtedly though, light has a major influence on how HB allocates its resources.

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Previous student Bioscience Prize Winners

2022. Cerys Vick. Himalayan balsam and biodiversity along Cardiff's waterways.

2021. Lottie Moreland. Climate and the reproductive success of passerine birds.

2020. Francesca Rowlands. Parrot fish foraging on coral reefs in Tobago.

2019. Oonah Lessware. Coral reef fish assemblages and possible shifts in specialism in response to coral damage.

2018. Zoe Watts. The secret cleaners of the reef.

2017. Eve Treadaway. Factors affecting the 'soundtrack' of a lowland tropical rainforest in Malaysia.

2016. Poppy Mynard. The diversity of wood decay fungi in Sabah, Malaysia.

2015. Zoe Melvin. The effects of environment on mosquito diversity and abundance.

2014. Alex J. Mullins. The impact of tree diversity on the remaining woodland community.

2013. Imogen Fox. Social grooming in long tailed macaque societies (Sabah, Borneo).

2012. Zigmunds Orlovskis. Effects of different types of primary production on invertebrate feeding guilds in a river ecosystem.

2011. Zalina Bashir Ali. The effects of cleaning stations on dark damselfish territorial behaviour.

Deadline for submissions to the next newsletter: Monday 28 August 2023



Snowdrops, Slade Garden, Southerndown, 19 February 2023. Photo: Stephen Nottingham.

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