BOURNEMOUTH NATURAL SCIENCE SOCIETY & MUSEUM

Share our love of science

Newsletter Late Autumn 2020

Fly Agaric Photo credit: Pam Field, more fungi p2

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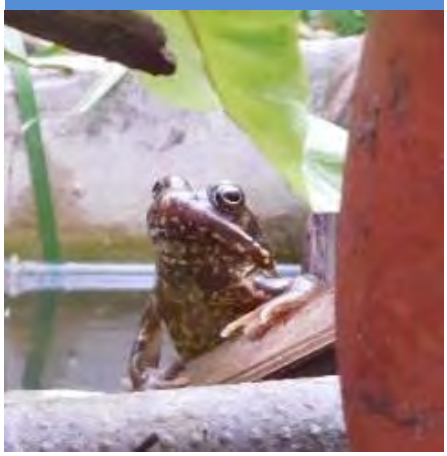
Charity No. 1165951

The President *Mike Skivington*

When I was offered the position of BNSS President for this year, I had no inkling of the forthcoming pandemic. It has been a challenging year for all of us with unexpected restrictions on our lives. The repercussions on charities such as BNSS have been severe. I have watched the trustees trying to keep the Society as available as possible to both members and visitors alike but the periods of lockdown have made this impossible at times. The trustees efforts to achieve these ends behind the scenes deserve our thanks. "Zoom" has enabled us to keep the lecture programme going and attendance has been good. Our thanks also go to the programme committee. On a personal note I was honoured to welcome the Mayor, our MP and our patron Chris Packham to our centenary celebrations just before the first lockdown. I was less fortunate with two of my other stated ambitions, to get to know more of you and to thank visiting lecturers in person. May I wish you all a Very Happy Christmas and let us hope that 2021 will be a better year for all.



Read about 'George' on page 11

Remember BNSS AGM Saturday January 16th 2021

BNSS Fungi on Autumnwatch *Steve Limburn*

Photo credit: Mary Thornton via BBC

Photo credit: Mary Thornton via BBC

The BBC 'Autumnwatch' team contacted Ian Julian to ask if it would be possible to borrow our model mushrooms in their cabinet for display on one of the programmes with Chris Packham. This was agreed but the cabinet was too large to fit in a car. As I have a van, I volunteered to take the collection to Chris Packham in the New Forest with the help of Ian Julian. It was very pleasant to meet Chris and his stepdaughter Megan.

The mushroom collection is actually German and made by a firm called 'Elastolin'. The models were made of sawdust, glue and clay on a wire framework and then hand painted. The collection was bought by a BNSS member in 1929 and later donated to the Society. On the programme, Chris displayed several of the models but pointed out that the firm also produced busts of Hitler, Mussolini and others. These, he said, were very collectable and could be worth a lot of money. Thanks go to Keith Patenotte for the background information.

- a few photos to remind us of the real autumn fungi glories to be seen

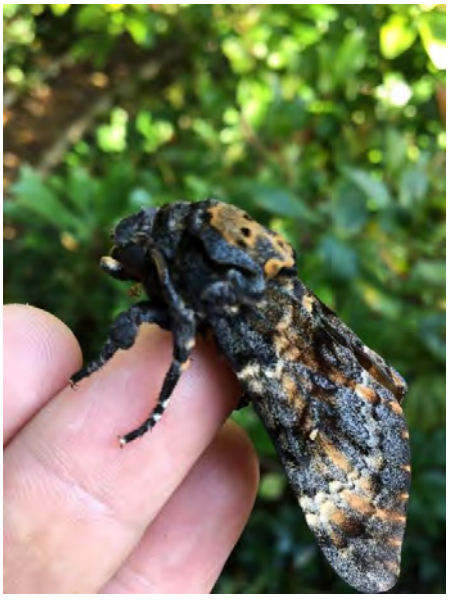
The fruiting body of the Green Elfcup
ID & photo: Pam Field

The rare bearded tooth ID & photo: Pam Field

Entomology News *Mark Spencer*

2020 - a very strange year !? Thanks to the viral lockdown I spent a lot more time and effort in my own garden, as I am lucky to have one of a decent size.

On March 22nd I noticed a Brimstone butterfly happily ovipositing on one of my buckthorn bushes, she laid 11 eggs on one tiny shoot!
Knowing that the local birds would quickly consume any future larvae, I collected some to rear indoors. The first emerged as butterflies on June 3rd, taking 73 days from egg to adult, giving me the pleasure of releasing about 40 back into the wild! Many more failed though, as an outbreak of bacterial disease killed many larvae and pupae, which often happens in captivity, sometimes killing 100 per cent of broods!
Our first day out after lockdown was a visit to St. Aldhelm's Head on May 18th. It was awash with wildflowers and we saw 12 species of butterfly.



During a long local walk around Talbot Heath and the full length of Bourne Bottom on July 5th I found a web of tiny larvae on a nettle tip. After taking them home to rear, they turned out to be first instar Small Tortoiseshell and about 90 of them! The first pupated on July 22nd after only 17 days and in the next few weeks I had many to release back into the wild. I managed to pass on a few chrysalids to Toby and Leo, who used to visit the BNSS, so they could watch them emerge.
I bought 30 Deaths Head Hawk moth ova from ELG (Entomological Livestock Group) on 21st July, so was able to show some fully grown larvae (top right) at an event at Avon Heath on the 18th of August. It felt almost normal and human for a while despite the need for masks, visors and distancing!

I managed a visit to Martin Down on May 29th and saw 15 species of butterflies and 5 of day flying moths. A young student contacted me wanting to do a study on glow worms. After a chat with Jonathon McGowan, we visited his suggested habitat of Badbury Rings, finding 10 glowing females and 5 visiting males on the evening of June 26!

On our second visit to Martin Down on July 21st butterflies were abundant. We saw 21 species and 4 day flying moths, including a Forester and 3 beautiful Scarlet Tigers!

We were allowed back to the BNSS from August 4th to work on collections, cataloguing and pest control, with all precautions, of course, that ended again after November 3rd.

The last event was again at Avon Heath where Steve Limburn and I could show livestock to controlled pre-booked family groups for a Halloween event. 'Rosy' was a key attraction, as a "friendly Tarantula"!

A very sad and peculiar year, as no Open Days, Spring or Autumn "Family days", or Field Meetings at the BNSS and no AES Exhibition at Kempton .
Let us hope that sanity and normality will eventually return, hopefully sometime in 2021 and that most of us will still be here to enjoy it!!?

Zoom Talks News

Could you be Zooming too?

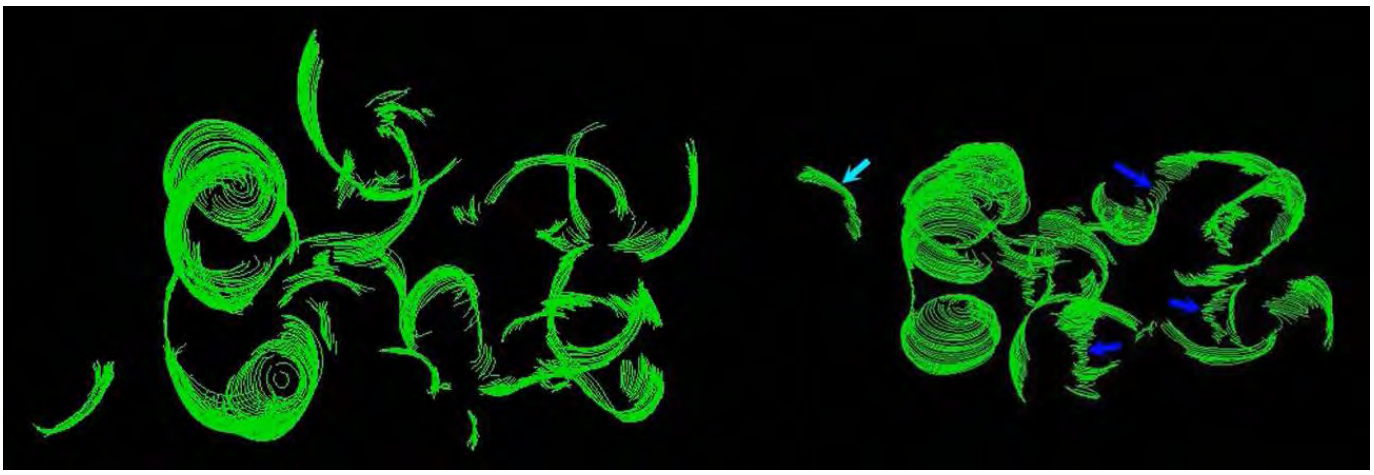
BNSS had 264 members on the 30th September 2020. About 50-60 members have joined BNSS Zoom talks on Tuesday evenings but we would be happy to welcome more of you.

- *Did you know that you can join these Zoom talks with a smart phone, tablet, laptop or other computer?*
- *Did you know you don't need a camera or microphone to participate in the Zoom meetings?*

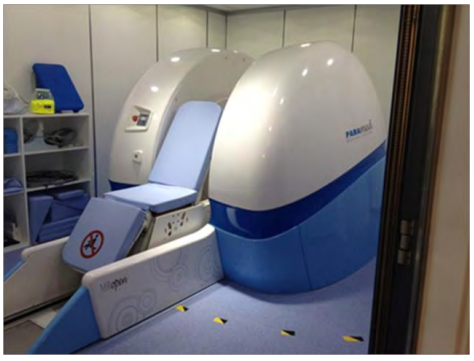
If you are interested but need some help, just email Zoom@bnss.org.uk giving us your name and type of device you would like to use eg. ipad, laptop running windows 10, etc. We will email you back with a Zoom test date/time and the name of a member who will phone you to provide assistance.

Joint Meeting with the Quekett Microscopical Club (QMC) *Grenham Ireland*

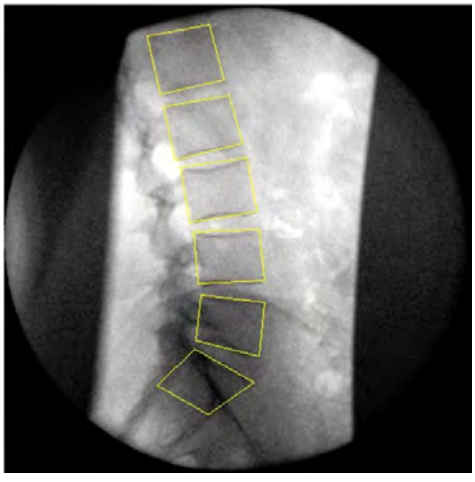
Our meeting with QMC was a virtual one this year with members showing their specimens by sharing screens using Zoom. It was followed by a Zoom talk in the afternoon by **Prof. Pippa Hawes** from the Pirbright Insitute, Surrey. This institute is involved in the study of animal pathogens such as foot and mouth and avian influenza viruses. First, Pippa gave us an insight into working in the new high containment Plowright Building (above) in which the air is double-filtered to ensure no escape of pathogens and workers have to shower in and out of the laboratories. Then she told us about her research on African Swine fever a highly contagious and deadly disease of domestic pigs spread by ticks from wild boars which is caused by a DNA virus. The disease has spread from Georgia with outbreaks in Belgium and Poland. She is using a high pressure freezing technique, transmission electron microscopy and image analysis to understand how the membrane envelope of the virus (shown below) is assembled in infected cells from dumb-bell shapes, sheets and little pieces.



Understanding back pain *Grenham Ireland*



Alan Breen, Professor of Musculoskeletal research at BU and AECC University College gave a talk on "New approaches to understanding back pain". He introduced us to a new type of MR scanner (shown right) which eliminates claustrophobia and the technique of quantitative fluoroscopy (the picture lower right shows one image of the lower back from a series measuring the stability of its segments) which together allows the movement of vertebrae to be followed dynamically and modelled and the loading of discs between vertebrae to be quantified. This has led to the conclusion that low back pain is often the result of a change to multilevel dynamics of movement rather that a focal problem.



Astronauts returning after being weightless in space often develop back problems. In a collaboration with Kings College London funded by the European Space Agency, a skinsuit has been developed to apply a force, of a quarter of the earth's gravity, to the wearer which promises to counteract the swelling of the intervertebral discs normally experienced in space.

Georgian architecture in Dorset *Colin Lord*

Timed to correspond with Dorset Architectural Heritage Week on 15th September, **John Hubbard** gave another of his local history themed lectures "Reflections on Georgian architecture in Dorset". As with his previous lectures John gave an incredibly well researched presentation demonstrating an amazing eye for detail. He covered the period of the reign of Georges I-IV between 1714 and 1830 in broadly chronological order concentrating on classical Georgian architectural style and how it evolved over time. He explained how the style was born out of Greek Classicism as expressed in the Renaissance in Italy, but heavily influenced by Colen Cambell's book on architecture Vitruvius Britannicus as well as out of necessity following several Acts of Parliament in the aftermath of the Fire of London. Using numerous examples from all over the county spanning Bridport in the west, Sherborne in the north to Poole and Blandford in the east, John compared and contrasted the overall symmetry of design, decreasing window size from the ground floor up, detailing around and above windows, pediments, parapets etc. He explained it was only towards the end of the period did the Georgian town house appear as a result of speculative development as opposed to the previous individual designed houses.

Gary Barnett and Measuring Air Quality

Mary Thornton

Gary Barnett is one of those rare people who admit to being a geeky coder, while also having a fondness for messing about with a soldering iron. In addition, he and a couple of others are focused on one of the problems of our age, a polluted air environment. Their company AirSensa was set up about 30 years ago to measure polluting gases in the air. Gary is also interested in the Internet of Things, and how technology can be better used to understand humans in the environment.

Poor air quality has a huge impact on the health of humans, especially as more populations migrate to urban life. Sensors have been developed to measure the gases nitrogen dioxide, ozone and sulphur dioxide. Microparticles less than 10 microns are dangerous to health, but those of less than 2.5 microns can pass through the lining of the lung, move into the blood stream and become lodged in different organs around the body, leading to asthma or chronic heart disease. Currently they have sensors placed on lampposts, interchange lights, buildings & anywhere that needs constant monitoring. In Manchester, they have rolled out 35 units around the city that give real time data through 24/7. Bournemouth has two. Not surprisingly Bournemouth has higher than average concentration of ozone because of its proximity to the sea. But those levels are not dangerous.

In addition to large units costing between £50k and £200k to capture statutory data citywide, the company are also working towards the development of devices at an affordable price of no more than £100 to monitor the levels of particular gases in homes, offices, and care homes. They are developing a Covid-19 Post Recovery App. and recently won an award for the Tech Company of the Year for Wellbeing.

Luke Elmer and a volunteer checking the oysters for disease and ensuring healthy growth

The Blue Marine Foundation and Solent Oyster Restoration *Mary Thornton*

Oyster beds filter the water column, removing nitrogen, sequestering carbon and providing habitats for hundreds of other species. Tragically they have disappeared around the UK coastline and these critical services have been lost.

In order to increase the number of breeding oysters within the Solent, BLUE's team has placed mature "brood stock" oysters at high densities in cages hung in the water beneath pontoons, facilitating the release of millions of larvae into the Solent as **Luke Elmer** told us. The cages have been shown to provide a refuge for other marine life, with 97 different species having been found living within the cages so far, including critically endangered European eels, juvenile spiny seahorse and sea bass.

To promote natural recruitment and re-establish wild oyster beds, BLUE's Solent team is also re-seeding protected seabed sites with juvenile oysters. These sanctuary sites will be created on a large scale in areas closed to commercial fishing and will be allowed to flourish and develop.

Christchurch Harbour and Hengistbury Head *Jill Abbot*

A talk from **Dr Chris Chapleo**, the Chair of Christchurch Harbour Ornithological Group focused mainly on two aspects of the local wildlife, odonata and lepidoptera. Presenting the species alphabetically, Chris showed the wide variety found in the habitats of heath and meadow, woodland and reedbeds despite the presence of humans to disturb them and birds to devour them. The importance of biodiversity was clearly shown.

Brian Heppenstall and **Molly Taylor** gave us A Year in the Life of a Hengistbury Head Ranger. Their year had started well with optimistic plans for the management of what is an Ancient Monument, a Local Nature Reserve, a Site of Special Scientific Interest and multiple other designations as well as a major attraction for both locals and tourists. When they gave their talk in August they were recovering from the mass invasion that the end of the first lockdown had brought with illicit camping, barbecues, and literally tons of litter.

White-legged damselfly Credit: British Dragonfly Society

Bringing back raptor royalty *Jill Abbot*

Photo credit hpb.co.uk

Photo credit: bbc.co.uk

It was interesting to compare the progress of two major projects within easy flying distance of our society. Osprey (left) are a migrant species which have not bred here since the last nesting pair were shot as trophies in the 19th Century. On August 18th **Bettany Maxted** gave us an insight into the Birds of Poole Harbour project begun in 2017 which is aiming to re-establish a breeding colony of osprey on the South Coast. Translocated as chicks from the Scottish population, they are hand reared in pens until fledged. They then spend a month exploring and learning the local area before flying off to overwinter in Africa. The males at least are expected to return for breeding when they are fully mature.

On 27th October **Dr Stephen Egerton-Read** told us about the project which aims to reintroduce the White-tailed Eagle (lower left) to the South Coast. They too were once common in England as old place names indicate, but were also persecuted to extinction. The Isle of Wight location saw the first chicks translocated in 2019 and successfully reared. As young adults they have ranged far and wide, with one venturing as far as the Firth of Forth before returning to the island. The day after we heard this talk, the project also featured on Autumnwatch presented by our Patron, Chris Packham.

100 Years of Astronomy *James Fradgley*

This talk was given by the chairman, **James Fradgley**, and looked back over the last 100 years since the BNSS moved to its present premises. There were many discoveries in the late nineteenth century, and it was widely believed that more or less everything had been discovered by the early twentieth century! In 1920 it was not clear whether the Milky Way was the whole universe or not. Edwin Hubble proved it wasn't in 1925. In the same year Cecilia Payne showed that the stars were mostly hydrogen and helium. In 1929 – 31 Hubble discovered the expansion of the universe. Pluto was discovered in 1930, and Dark Matter postulated by Fritz Zwicky in 1933. The 200" telescope saw first light in 1949, and was the largest telescope in the world until the twin Keck instruments were built in 1993.

Radio astronomy started around 1933. Since then it has been responsible for our finding Quasars, the Cosmic Microwave Background radiation (CMB), and Pulsars, amongst many other things. The nuclear processes in stars were fairly well understood by mid century, with many of the processes being explained in the so-called B^2FH paper in 1957. Modern instruments include ALMA (Atacama Large Millimetre/submillimetre Array), with 66 dishes (see below) used as an interferometer, which has been fully operational since 2013. The LIGO instrument (Laser Interferometer Gravitational-Wave Observatory) first detected gravitational waves in 2016.

2 dishes of ALMA, Photo Credit: Iztok Bončina/ESO

Space probes have been very productive as well, e.g. the Hubble space telescope, which has been fully operational since 1994, and the Kepler telescope launched in 2009 which found many exo-planets. Others include the Mars rovers and the Cassini probe to Saturn. We are still making astounding discoveries on an almost regular basis. So much for knowing everything 100 years ago!

The Cape York Meteorite *James Fradgley*

Bob Mizon gave a talk about this Greenland meteorite. At 31 tons, it is the biggest meteorite in any museum in the world (New York) - but behind its presence there lies a dark story.... It was called the 'Tent' by indigenous Inuit people. It is one of eight pieces of a huge iron object that fell in Greenland about 9000 years ago. In 1818 James Ross had brought back iron spear tips from the area and reported that the Inuit had a source of iron which he hadn't been able to see because of bad weather.

When Robert Peary brought three large pieces to America from Greenland in the late 19th century, he robbed the local Inuit of their only source of iron, with dire results. He also brought back some of the indigenous people - much to their ill fortune. Most of them died of TB, one made his way back to Greenland, and the survivor, a child called Minik, was adopted by the museum's curator William Wallace.

Meteorite fragment 'Ahnighito' Photo credit: American Museum of Natural History

In 1907, aged 17, Minik discovered that his father's funeral had been faked. He had watched stones and a stuffed 'body' wrapped in a sheet being buried. The body had in fact been dissected and the skeleton later exhibited. The Museum refused to return his father's remains, and Minik went back to Greenland in 1909. In 1916, he returned to the USA, only to die in 1918 of the Spanish 'flu. Finally, in 1993, all the Inuit remains were taken to Greenland, and on the grave marker, laid by the Queen of Denmark, is written, in the indigenous language, 'Nunamingnut uteqihut' – 'They have come home'.

The Cutty Wren – nest record and notes *James Dovey Summer 2020*

'. . . tiny, restless and pugnacious,' – pioneer of British birding – Ian Wallace
If it's true that every form has to have a function perhaps it's time we took a closer look at our most successful, numerous, yet over-looked bird . . . a bird that's fit to survive . . . the wren.

We're in a garden, next to woods, in Stapehill. 2 habitats. We're in the 'margins' – an area which is a key factor in nest success. There must be many nests in this quiet cul-de-sac. She sweeps in and is 'frozen' at a right angle to one of the black, iron gates, vertical stems. 90°, feet close together, body completely straight. How on earth does she do that? Eat your heart out Olga Korbut. Some wrens adopt the treecreepers m.o for feeding. Scampering around and up the tree and then descending to the next. Strong feet. Strong toes. Long curved claws.

On the 17th of June I'm 'cold searching' and I have some success. The cosiest of nests is at the top of a climbing hydrangea which is pinned to the garage wall. A small 'free nest' will be a domed structure. This nest, much of green moss, is squeezed into the right angle between the brick wall and wooden eaves supported by the hydrangea's main stem. In the shade, cast by the eaves and leaves, it's invisible. The entrance hole, at the top, is 2 inches wide by 1 ½ inches deep. I need to return with a compact mirror and torch.

She's in, off the ground, at the bottom of the plant. . . vanishes into thin air. I watch the 'leaf tremors' as she ascends to the top, 7 feet off the ground.

On the 19th of June there was one egg, cold to the touch. The ground colour is white, a touch of cream. Markings are gently speckled gingery – brown, forming a zone at the broad end. The lower 75% of the shell has no markings. On the 22nd there were 4, and on the 1st of July still 4 . . . the final clutch size. They lay an egg on consecutive days and incubate from the penultimate. Incubation, therefore, started on the 21st . . . probably.

The Cutty Wren – continued *James Dovey*

Watercolour Robert Gillmor

Only the cock builds the nest, and usually many more. Only the hen lines a nest, home furnishings at its best. This work can continue as the clutch develops. Usually a thin layer of small feathers. This hen's gone into overdrive, though. They're almost spilling out of the entrance.

On the 15th of July I watch the comings and goings for 45 minutes before I approach the nest. Mirror and torch reveal 4 chicks. Pursed lips and a poor attempt at chirping, but one of the nestlings reaches up and opens wide – a pale yellow flange . . . deep, rich, yellow 'lemon curd' mouth. Short, grey down on head and back. Eyes just open. I estimate 7 days of age.

I now sit closer, within 2 yards. The chances of desertion rapidly decrease as the breeding cycle progresses. More and more investment. Increasingly, too much to lose. She's irritated by me. The chittering alarm is constant but they're now flying in with food from all directions. . . even the cock bird. I think I'll be able to get a good shot. Birds usually have predictable routes in. These two are keeping me guessing. Into the garden from the woods, under the iron gate . . . did she briefly run along the ground ? . . . and in off the floor. Next time . . . zipping through the bars of the gate and in, halfway up, the hydrangea. Then she comes in from the opposite direction. Nearly missed that one. Every 2 -3 minutes - and on, and on. However, I comfort myself. The departure route is usually the same . . . out the top of the climber and on to the garage roof and into the trees. I'll focus in on that. A peripheral blur, a whirligig . . . missed again! For a split second the wren pauses on the roof apex. Head up, chest out, tail cocked and staring right at me. Mighty Mouse has nothing on this little warrior.

Feeding continues. The insects it depends on are available all year. Every nook and cranny, which larger birds can't contend with, is explored. Its slightly downcurved, slender bill is perfect for this foraging. On the menu, for the nestlings, are moth larvae and craneflies. When they fledge the cock bird will, invariably, help with the workload.

On the 22nd of July I keep my distance from the nest, but note the moving gapes at the entrance. All is well, but I'm careful. 'Explosions' near D-Day can easily happen. I visit on the 25th and the nest is empty and undisturbed. They've gone. A successful outcome. They fledged on day 15 or 16 . . . a day or two early. It adds up, I suppose. A small clutch of 4 (usually 5 or 6), a great location (a nearby wood with a ditch/stream running through it), balmy weather and the cock bird joining in with feeding at an earlier stage than usual.

The wren is constantly on the move. It seemingly never stops. It's the ultimate snacker, unlike other birds that rest to feed. Usually operating at very low levels in the undergrowth. Its short (10cm), compact body, rounded wings and powerful legs make it very manoeuvrable. Put all the above points together and it's not an easy target for predators. It scores well on this important point. Wild, native predators, like jays and stoats, take a tiny percentage of wrens. The biggest wren killer, by far, is the non-native domestic cat.

The Eurasian wren can live and nest in almost all habitats. It's very adaptable. This adaptability also stretches to its sex life and family size – depending on the climate and conditions in the area. However, these 4 chicks have been brought up in suburbia and have just left home. This is their most vulnerable time. If they make it through this weaning period they will probably live for about, or up to, 2 years - the same as most small birds.

Two seasons to breed, probably 4 broods. Constant foraging for food. The prospect of harsh winters and predators. The unforgiving clock. (*Main sources – Stephen Moss. Chris Packham. BTO)*

My 'Covid' Nature Experience

Rosemary Southworth, Nov. 2020

Through this very 'different' year, I'm spending most of my time in Oxford volunteering two days a week at the Foodbank. Difficult times for many, but, there have been positives, such as enjoying nature! I've been particularly lucky as I live near the river in Oxford and have nature reserves on my doorstep for incredible walks, soaking up the wonders of nature and seasons.

I've found it especially wonderful being able to spend so much more time in my garden. A novel chance to enjoy nature, nurture seedlings, and learn to grow a few vegetables! Enjoying the birds and birdsong has been a real treat. I've been thrilled to have goldcrests in my garden, and plenty of the usual garden birds visiting my bird feeders. However, my biggest surprise was an unexpected regular visitor .... a reed bunting! (top left) Being in Oxford, I have the joy of red kites regularly hovering overhead, and there were swifts screeching up and down the street, nesting in the eaves of houses.

A special 'covid' project has been trying to make my small 'natural' garden more wildlife friendly. So, first I installed one, then two more, washing-up bowls to make mini 'ponds'. I still have at least 3 frogs in residence, and at one stage in the summer, there were 6 or more! My friend 'George' is a bit of a poser! (see photo right).
Also, on the wildlife friendly theme, we have a 'hedgehog highway', with gaps under our fences in my terraced street. Slightly worryingly, I'm not sure how many hedgehogs there have been, but the holes are big enough for foxes and badgers to be regular visitors. Now I'm looking forward to winter with more opportunities to cherish our 'lockdown' nature.

The BNSS Garden *Jill Abbot*

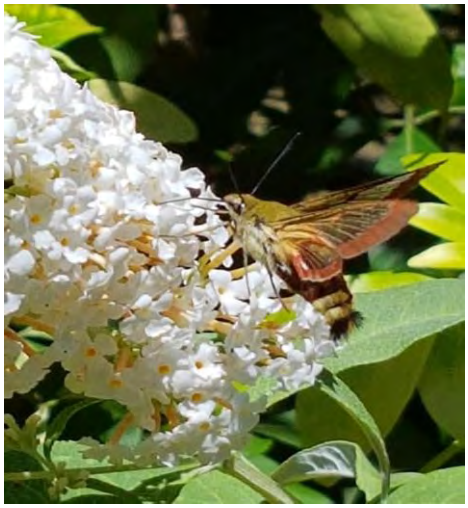
You will be pleased to know that the BNSS garden has not become a jungle this year. When we gardeners were sent packing at the end of March we were concerned. We didn't start again until August but found that our caretaker Stephen Moult had stepped in. In fact when the lockdown was first lifted he'd had to see off picnickers and would-be campers, and reduce the shady hiding places. When the scaffolding came down and the CCTV went up he had to do more serious pruning as branches waving in the wind were setting off the cameras. He kept the lawn looking neat too and tidied some shrubs at the rear.
We have still found plenty to do on Tuesday mornings when rain and wind have allowed. Those working on the collections inside have been glad of the fresh air and sunshine for their mask break and snack. Now we are excluded again but just managed to plant a new paulownia, donated by Mary Tiller in October and some perennials too. When we get back it won't be long before we see the first camellia flowers. Meanwhile the birds will enjoy feasting on the holly and cotoneaster berries, but avoid poisonous red berries of the spotted laurel (shown right).

Key to our World *Kate White & Bryan Popple*

A group we created on Facebook to share knowledge, experiences & much more of our Natural Sciences, History & Archaeology & inspire everyone to get involved

With the lockdown that started in March we thought it might be a good idea to give Society members & our followers from the local area & further afield a chance to keep in touch.
'The Key' allows them to ask questions, post pictures of discoveries, maybe get identification from our experts & others, share ideas to keep the families amused in these strange times & generally keep the BNSS as a valuable resource in everyone's minds.

Launched on 4th May this year it has built up a large following from all walks of life & people around the world in Australia, USA, Canada & Europe. Experts from all our disciplines have been generous with their knowledge from within & without the BNSS. A few examples of the many posts, with some of the comments from followers:



From Joanne Marsh , Broad Bordered Bee Hawk Moth, 29 June 2020, Favourites in France

Has anyone any ideas what these are? Teeth?
9 June 2020, from Jacque Bainbridge
Chris Copson - Pretty sure they are otoliths, possibly from a large fish.
Jacque - probably Pacific Cod

From Kevin Barber, Slades Farm Oak Bush Cricket , 4 August 2020

Please take a look and join us to share your thoughts and images
https://www.facebook.com/groups/551226525530010/

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