Wildlife Conservation and Sustainability Society Newsletter

November 2020 Issue

Editor's Welcome

Welcome to the Wildlife Conservation and Sustainability Society's first newsletter. Thank you so much for taking the time to care about our planet. We are a team of Lower Sixth students who are passionate about conserving our planet and combating the climate crisis on both an international and local level. Our generation will be key to making or breaking our planet's future, and we hope that you will join us in starting today to make a difference, however small. If we all make one small change, together we can make a global impact on our futures.

The first way to take a step towards a positive change is to educate yourself on the issues, reading our Newsletter is the first especially important step to halting the tide of extinction sweeping across the globe. The belief that extinction in a foreign problem is a widely held belief, although untrue, the State of Nature Report in 2019, which looked at UK species proved this yet again. If you are interested in conserving UK wildlife, please see how you can do more research and take action at the end of this issue, or get in touch with your ideas by email to r.eslick@kingshighwarwick.co.uk

Thanks for reading!

Rachel

Editor

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Image from World Wildlife Day (3 March)

In Focus: Pangolins

Fact File:

Continent:	Africa and Asia
Animal Classification:	Mammal
Habitat:	Woodlands, thick rush and savannah
Life Span:	20 years
Size:	30cm to 1.4m
Diet:	Insects
Number of species:	8
Conservation status:	4 species vulnerable, 2 species endangered, 2 species critically endangered

Jen Guyton, National Geographic.
This Cape pangolin was rescued from poachers in Mozambique and released back into the wild. Conservationists hope new pangolin projections in China and the omission of pangolin scales from the country's list of approved traditional medicines will help slow the decline of all 8 species of these endangered animals

Pangolins are the world's most trafficked nonhuman mammal

Pangolins, from the Malay word for 'roller' (penggulung), are solitary nocturnal animals, commonly recognised by their armour of scales and their famous 'startled' defence pose, rolling completely into a ball. Unfortunately, their meat is considered a delicacy and pangolins scales are often used in traditional medicine and folk remedies to treat a range of aliments from asthma to rheumatism and arthritis.

All eight species are currently protected under national and international laws, however there is still a rapidly growing illegal trade business; based on reported seizures between 2011 and 2013, an estimated 116,990-233,980 pangolins were killed (WWF), which only represents the tip of all trade.

However there have been some improvements to revive this gorgeous animal: China's 2020 list of approved traditional medicines does not include pangolins scales, as it has for decades. Peter Knights, CEO of the environmental nonprofit WildAid says 'This is the single greatest measure that could be taken to save the pangolins. This sends a clear message that there are alternatives in traditional Chinese medicine and so you don't need to use Pangolins'.

NonProfits such as WWF and TRAFFIC are also working in Asia and Africa to protect Pangolins, along with other species from wildlife crime, and are actively trying to reduce damage for illegal wildlife products in countries such as China and Vietnam.

Shivanshi Bhatt & Rachel Eslick

An Insight into Invasive Species

It is estimated that there are nearly two thousand invasive species in the UK and human activities are the biggest spread of invasive species. Sometimes, these introductions are deliberate, for example, to change an environment, a form of pest control, to hunt, or to keep as pets; however, this can often go very wrong. Problems also arise from the accidental introduction of species via boat or plane. In particular, marine species will often wash up on human-made objects, which float much further than natural substance, these species are often invasive which poses problems for the ecosystems that they invade.

But why are invasive species such a problem?

A key factor that makes any species invasive is a lack of natural predators in their new environment. These species had not previously co-evolved with these foreign organisms; hence their prey is unable to develop better defences. Defence mechanisms like venom, size, or speed that have been adapted over thousands of years are suddenly no match for their new predators or environment they have been placed in. Invasive species may also be able to exploit a resource that native species cannot use, which allows them to take hold in the new environment. Furthermore, some species also alter the environment in a manner that makes it more favourable for them, but less favourable for natives, which is called *'Ecological Facilitation'*.

Invasive species can cause chaos in a delicately balanced habitat. They are an even bigger threat to biodiversity than climate change, and they can also have a large economic impact on the areas they take over.

Muntjac deer

Muntjac deer are one of the oldest known deer species, first appearing 15-35 million years ago. Originating from Asia, they were introduced in the 1900s by John Russell Reeves, and the deer quickly spread across the UK. This is due to their ability to bread all year round, making them unique amongst other UK deer species.

Muntjac deer are notorious browsers, feeding on shoots from shrubs, as well as woodland herbs and brambles. This deer will also "fell" taller plants by trampling over them to be able to graze leaves normally out of their reach. It is these feeding habitats which most frequently bring Muntjac deer into conflict with landowners and make them a conservation concern in the UK. Their preference for the most tender and succulent parts of young plants creates conflict with woodland managers, crop growers and gardeners. Muntjac deer are also very territorial: male deer will make large scrapes on trees and fray on low branches using their tusks.

Wildlife Trusts, Amy Lewis

Muntjac numbers have increased rapidly. They have no natural predators - the largest land predator in the UK being the badger - and annual culls of up to 30% of the population are needed to keep deer numbers stable. Even after intensive culls, Muntjac populations can quickly bounce back, therefore once population levels are under control, continued moderate culls are recommended.

Whilst it is unlikely Muntjac deer will ever be completely eradicated from the UK, ideas such as reintroducing wolves to the UK, harvesting their meat for food and eradicating hunting restrictions on muntjacs have been explored. Although it may appear cruel to support the control of the muntjac population, it is vital we consider this for the preservation of our ecosystems and understanding the roles organisms play in them.

Grey Squirrels

Grey squirrels are a well-known species within the UK. They appear in many different environments but tend to prefer wooded areas with plenty of shelter.

These rodents were brought over to the UK from North America in the 1870s to be introduced to private country estates and collections. It did not take long for this invasive species to take over the woodland habitats that exist all over the country. They are considered 'invasive' as they have outcompeted Britain's smaller, native red squirrels that have existed in Britain for around 10,000 years.

The populations of red squirrels within Britain have experienced an extreme decline in the last century due to a variety of reasons. Grey squirrels breed quickly and are better at collecting nuts and berries, which results in a lack of food sources for red squirrels. Grey squirrels also carry a disease known as 'squirrelpox' or Parapoxvirus; the greys are immune to this disease, but, unfortunately, the reds are not. On top of all this, the red squirrel's natural habitat is slowly being destroyed due to deforestation. Furthermore, it is estimated that around 75% of land habitats have been drastically altered due to human intervention, resulting in far fewer places for the native species to live and thrive.

Waheed Arshad, Mammal.org

On top of removing the red squirrels from their native home, grey squirrels also do damage to the trees they live in, resulting in damaged woodland that cannot be used by other animals. Red squirrels now only have a few areas in which they remain: Scotland, the Isle of Wight, Brownsea Island and the Lake District.

While grey squirrels have exacerbated the decline in reds, the issue is not to be put solely on the greys. Many humans poison the food they feed them or attempt to kill them in other ways. However, the problem of the decline of red squirrels is due to human mismanagement; it cannot be blamed on any individual arboreal creature. There have been recommended activities to help reinstate the red squirrel population in the UK. Some examples include actively planting conifer forests - preferred by the reds; as well as donating to the Wildlife Trusts who are actively participating in wildlife and forest management to help aide in the increase of red squirrels.

Populations of red squirrels need to be carefully managed and protected to prevent them from extinction within the next century.

Conclusion

As a result of climate change as well as human intervention, animals and invasive species have become an issue. However, not all species migration is a bad thing; species can and will adapt and change; it is part of nature. Attempting to tackle the issue yourself could result in more harm due to accidental spreading of the plant or to yourself through lack of knowledge about the species. If you want to help, you should think about joining and supporting your local Wildlife Trust or Conservation Society so that you may have a more coordinated effort that is impactful in the long run.

For further information, check out these helpful sites!

Red Squirrels - Wildlife Trusts

Red Squirrel Survival Trust

Ruby Webster & Madeline Critchlow

The Dangers of Disposable Masks

As we are all aware, due to the Coronavirus pandemic, there has been a huge rise in face masks being used in social spaces, and some of these are disposable face masks. I am sure you are aware of the impacts of the single-use face coverings versus fabric face coverings with people claiming they are "easier to breathe in", "easier to get hold of", "you don't have to wash them" or "they're cheaper". However, the worldwide knock-on impacts of using that one disposable face covering, for one day, can last for 450 years due to the decomposition into microplastics in landfill sites. Of course, the fabric face coverings still have to decompose, yet they can be recycled into rags and then reused. There is a huge difference between that one face mask which lasted you for a month compared to the 30 disposable face masks you would have used.

If every person in the UK wore a disposable face mask each day for a year, it would create 66,000 tonnes (that's 4,583 double-decker buses, just filled full of masks) of contaminated waste, not accounting for plastic needed to package the masks for purchase. This is not even beginning to consider how much energy you need to make the masks in factories, often in bad conditions where the workers' welfare is not monitored. Overall, this contributes to global warming and the burning of fossil fuels due to the amount of electricity needed on a large scale to make disposable face masks. These same conditions could be the case with reusable face masks; however, making sure you purchase them from a store that explains its' workers' rights can make a huge difference. Even better, making your face masks out of old shirts and washing them in your everyday washing, again reduces your carbon footprint and reduces your contribution to worldwide climate change.

Furthermore, with regards to the face masks being dumped in the oceans in some countries, the fish and birds can mistake the plastic for food and feed it to their young fish/ birds which may cause them to choke and die. Subsequently, this enters the food chain, and any meat or fish that you eat could contain consumed plastics.

Gary Stokes from OceansAsia said, "*On a beach about 100 metres long, we found about 70 (masks), and one week later 30 more masks, and that's on an uninhabited island in the middle of nowhere*". Just the Mediterranean alone sees 570,000 tonnes of plastic flow into the ocean each year, not including the rise due to disposable face masks, and WWF described this as 'equal to dumping 33,800 plastic bottles every minute into the sea'.

Similarly, if the masks are dumped in landfill sites, the increase in the amount of plastic decomposing is indescribable. The knock-on effect increases the amount of methane released as plastics decompose, taking 450+ years to biodegrade; methane is a major greenhouse gas, contributing to global warming.

If everyone were to make this small change to their everyday life, it would make a huge difference globally to the amount of plastic being dumped into landfill and oceans, helping to combat climate change and conserve nature and our wildlife. I encourage you to research and think about this, and highly recommend the recent David Attenborough documentaries' *A Life on Our Planet*' and '*Extinction*'. Please take the time to think about your carbon footprint and how you can change small things in your everyday life. If you are using disposable face masks, please consider purchasing fabric face masks instead. If you are unable to get hold of these, I would be more than happy to make some, as I have been doing for many people in the past couple of months.

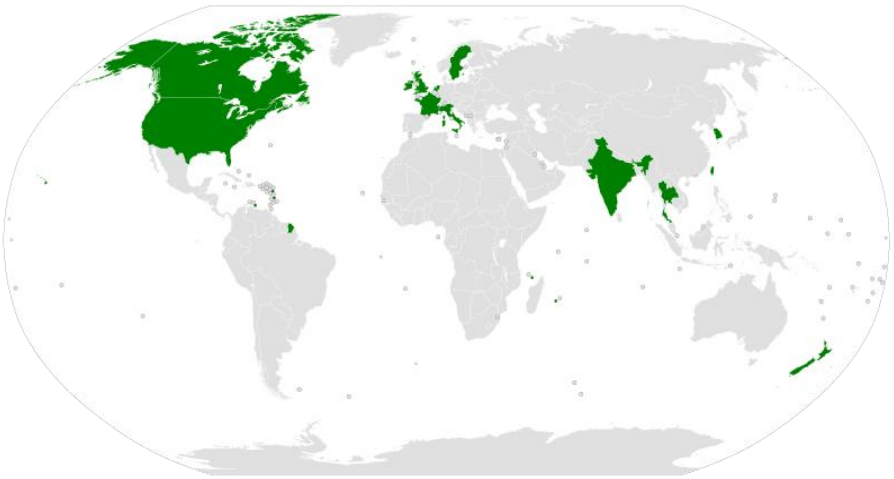
If you have any further comments or questions, please get in touch.

Laura Wiley

The Hazard of Microplastic Pollution

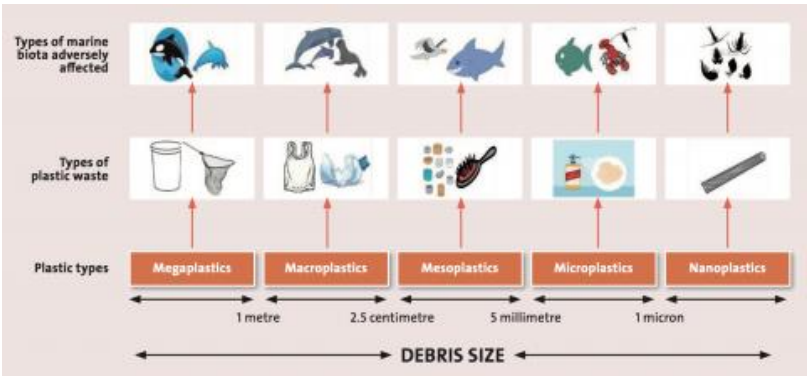
In the modern world, plastic is the main pollutant found in the marine world. These plastics can come in many shapes and sizes such as plastics bags, labels and packages. However, the unseen type that often goes unnoticed is microplastics. These are classified as plastic debris less than 5 millimetres in length and pose a great threat to marine life.

There are a variety of sources of Microplastics; one example is microbeads. These are very tiny pieces of manufactured polyethylene that are added as exfoliants to health and beauty products such as toothpaste and cleansers. These do not get filtered out in water filtration systems due to their small size and end up in the ocean and lakes and cause damage to aquatic life. Thankfully, many countries have now passed laws to ban the sale of any wash of products that include microbeads (right); however, there is still a large number of different microplastics that pollute the oceans. (Please visit www.beatthemircobead.org for more information)



Green – countries with a full ban on the selling of wash of products with mircoplastics

The Maldives archipelago in the Indian Ocean, renowned for its rich marine biodiversity, is shockingly also the home of the world's highest level of microplastics on its beaches and in the waters near shore. Across 22 sites on Naifaru, the most populous island, a research team from the Flinders University counted high concentrations of microplastics in beach sand, and shallow coral reef waters and most of the particles found were the same size as prey consumed by various marine life. This is partly due to the packaging used in shipping consumer goods, but also the landfill site in which 500 tons of waste are dumped every day.



Primary Microplastics, such as microbeads are intentionally manufactured small; however, secondary microplastics are the consequence of the durability of plastic products. These are discarded products which are broken down in the oceans by sunlight and wave action and over time become smaller and smaller, surviving for centuries. In humans, these are harmless, but for fish and other marine wildlife, they disrupt reproductive systems, stunt growth, cause tissue inflammation, clock digestive tracts, and can cause liver damage. In addition to the mechanical effects, microplastics have chemical impacts as free-floating pollutants that wash off the land and into our seas (such as polycyclic aromatic hydrocarbons and heavy metals) tend to adhere to their surfaces.

Another source of microplastics is from our washing machines. Every time we wash out clothes, millions of microfibres are shed, and an estimated that one load of clothes in a washing machine release about 700,00 fibres per wash.

Direct Effects on marine life

The small sizes of microplastics make them available to a wide range of marine organisms, particularly for suspension feeders such as zooplankton, polychaetes, crustaceans, and bivalves. A recent study showed that the ingestion of microplastics by lugworms led to decreased feeding activity in sediments that contain 7.4% polystyrene. However,

they also impact plant life; research found that algae exposed to nano-sized microplastics beads were hindered in their ability to perform algal photosynthesis and appeared to induce oxidative stress.
Many marine organisms can remove unwanted materials from their body without causing harm. However, once injected, there is the potential for microplastics to be absorbed into the body upon passage through the digestive system via translocation and cause particle toxicity with associated inflammation and fibrosis. A few studies of marine organisms have clearly shown such particle toxicity effects of microplastics translocated from the gut to bodily fluids into organs, cells and even organelles. In one such study, mussels were exposed to primary HDPE plastic powder, which was absorbed by digestive glands vacuoles. Accumulation of plastic inside of the lysosomes coincides with the breakdown of the lysosomal membrane and the release of degrading enzymes into the cytoplasm causing cell death.

Regardless of the specific impacts microplastics pose a serious threat to marine life but also the predators which feed on fish, such as white-throated dippers. They can also affect the structure and chemistry of soil; additives, such as phthalates, have been linked to soil contamination. Crops grown in soil containing plastic debris have lower yields, height and root weight. According to many of the different studies taken, there are four things we can conclude:

1) Microplastics are ingested by a wide variety of marine organisms including invertebrates, fish and birds.
2) The movement, storage and elimination of microplastics by marine organisms will depend on the size of the particle. Particles at the smaller end have been shown to cross membranes into cells.
3) When microplastics cross cell membranes, some tissues of shown to exhibit a response (i.e. inflammation & cell damage)
4) The associated effects following exposure will depend on: i) the number of particles, ii) the size distribution, shape, surface properties, polymer composition and density of the particles, iii) the duration of exposure, iv) the kinetics of absorption and v) the biology of the organism.

This is a problem which will take a long time to fix. However, we can all do our part to help. Please get in touch if you wish to talk more about this issue, and thank you for reading.

Article Recommendations

Report of sources, fate and effects of microplastics in the marine environment
Scientific American Article 'From Fish to Humans: A microplastic invasion may be talking a toll.'
Field Actions Science Report on Microplastics

Shivanshi Bhatt

TAKE ACTION!

What can you do as individuals to help combat this climate crisis currently facing our planet?

1) Sign up and listen to Emma's talk (watch out for the Festival of Ideas leaflet coming out soon!)
2) Make or buy a reusable mask instead of using a disposable one
3) Listen to or watch a conservation programme and follow their suggestions
    - David Attenborough: A Life on Our Planet (Netflix)
    - Extinction: the facts
    - What Planet are we on? – Liz Bonin, BBC Sounds
4) Join a local wildlife group
5) Enter our photo competition (see upcoming events section)
6) Find out more and improve your knowledge by reading new reports:
    - State of Nature - 2019 Report by RSPB
    - Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems
7) Be responsible with your littering
8) Consider the importance of plastic in our lives and avoid single-use items
9) Buy second hand or organic clothing / donating clothes to charity shops
10) Avoid buying wash off products with plastics
11) Join a beach clean

Upcoming Events & Information

Emma Doyle – Social Media and interactions with Wildlife

We are very excited to announce our first speaker of the academic year on November 17th at 13:10. Emma Doyle will be joining us live from Australia, to talk about her innovative study which investigated the interaction with wildlife at various key tourist sites in the Caribbean to inform any changes they should make for the welfare of the animals.

The research is particularly interesting as it used social media posts to analyse visitor interaction with wildlife in MPAs (Marine Protected Areas). Emma will be talking about the importance of this study, and we hope many of you will attend as we are sure that you will find this of interest. This talk will count towards your baccalaureate and is very topical at the moment.

We look forward to seeing you there.

Emma Doyle is a coastal zone management specialist who focuses on the Wider Caribbean region. She has worked in international environmental cooperation in Latin America and the Caribbean for more than 15 years. Emma is the coordinator of 'MPAConnect', a network of 30 marine national parks in 11 Caribbean countries and territories in partnership with the Gulf and Caribbean Fisheries Institute and with the US National Oceanic and Atmospheric Administration's Coral Reef Conservation Program. Emma coordinates MPAConnect's training and networking activities for park managers, working with government agencies, NGOs, fishers, universities and the tourism sector. She also works in sea turtle conservation as an advisor to the Wider Caribbean Sea Turtle Conservation Network (WIDECAST) and as a board member for the sea turtle monitoring group Ocean Spirits in Grenada. Emma speaks English, Spanish and Dutch, and she studied at Sydney University and Wageningen University in The Netherlands.

Please do go and follow Emma on Instagram @MPAConnect_Caribbean, her page is fascinating, and an excellent way to keep up to date with issues in the world of conservation and MPAs.

Photography Competition

We are pleased to announce that we will be running a wildlife and landscape photography competition to be featured in our next newsletter in January.

Please take photos of either wildlife or natural landscapes over the holidays and email them to r.eslick@kingshighwarwick.co.uk by Monday, January 11th. Winners of both the wildlife and landscape competitions for KS3 and KS4/5 will be published in the next newsletter in January. Good luck!