

## BIODIVERSITY PROJECTS OFFICER'S REPORT

### Global Coral Reef Monitoring System

- A global coral reef monitoring system that detects physical changes, on a daily basis and in high resolution, is being developed.
- The system, which is due to be piloted on five test sites, should be ready for its global launch in 2020.
- The satellite system will facilitate the ability to track severe bleaching events, reef dynamiting and coastal development in near-real time and, therefore, aid direct action to mitigate the losses.
- Coral reefs cover less than 1% of the ocean surface but almost one billion people and 25% of all marine life depend upon them. They have suffered due to a combination of rising sea temperatures (which trigger bleaching), coastal development (which damages reefs directly and indirectly), unsustainable fishing practices (including over-exploitation of key species and fish bombing), run-off and sediment from agriculture, aquaculture, deforestation and other forms of land use.

### Native Tree Increases following Rat Removal

- Invasive rats have been eradicated from the Palmyra Atoll, a National Wildlife Refuge and natural research laboratory, in the Pacific.
- The work has resulted in benefits for native trees as well as other species which live in this habitat.
- Rats were probably introduced to the remote island during the Second World War.
- The population peaked at around 30,000 rats with the eradication programme commencing in 2011.
- The rats were eating the eggs and chicks of native seabirds and destroying the seedlings of one of the largest remaining stands of *Pisonia grandis* (a species of flowering tree in the Bougainvillea family also known as the grand devil's claw, the Lettuce tree or the Cabbage tree) in the Pacific.
- Evidence has shown that, prior to the rat eradication, there were no seedlings of the *Pisonia grandis* in the research plots. However, there was an average of eight seedlings per square meter after eradication.
- For five native tree species, including *Pisonia grandis*, less than 150 seedlings were counted in the presence of rats, and more than 7700 seedlings were counted five years after rats were removed.
- Seabirds have also increased as their eggs and chicks are no longer predated by rats and increasing tree cover provides nesting and roosting habitat. A further knock-on effect is that their droppings provide nutrients to the soil which eventually wash in to the ocean and benefit surrounding reefs.
- Additional benefits include the eradication of the Asian tiger mosquito and two land crab species have been seen on the atoll's islets for the first time.

## **Urban Bird Survival**

- Approximately one in five of the world's bird species are found in cities.
- Research has shown that generalists, with an omnivorous diet, are better at adapting to an urban environment when compared to those birds with specialist diets.
- However, there are signs that urban living may not be beneficial to the birds' health.
- Evidence has shown that birds living in an urban environment suffer from higher levels of oxidative stress compared to individuals elsewhere which negatively affects their health.
- Telomeres, the nucleoprotein structures found at the end of chromosomes, promote genetic stability and there is evidence linking telomere length with lifespan and mortality rate.
- Shorter telomeres have been observed in urban blackbirds and great tits which may be the result of the increased stresses associated with urban living.
- However, such health costs need to be balanced against the benefits such as food availability at garden feeding stations.

## **Barn Swallows evolved alongside Buildings**

- Research by the University of Colorado has revealed that the origin of the barn swallow can be traced back to the development of buildings with evidence suggesting that the subspecies did not exist before barns were built.
- The barn swallow in the UK is one of six subspecies that breed in various regions of the northern hemisphere. Five of these migrate south for the winter.
- Tentative studies carried out to date suggest that barn swallows had expanded around the world long before humans started building permanent settlements. However, a more detailed study analysed the genomes of the two most distantly related subspecies to reveal a greater insight in to the species' evolution.
- Evidence of a genetic bottleneck (a sign of a very small population) was discovered about 7700 years ago – about the same time as humans began building structures.
- Relatively few birds from the ancestral population may have first begun nesting on human structures. The stark ecological differences associated with this transition may have caused isolation from the ancestral population, in turn leading to genetic divergence.
- Research is now looking in to whether the various subspecies of swallow are the result of birds following the development of human architecture as it spread around the world. It is possible that being a migratory species may have been significant in helping facilitate its dispersal between continents.

## **Local Nature Reserve (LNRs)**

A range of projects have taken place at the LNRs:

- New Green Flag Award applications, for 2019/20, for the Aquadrome, Chorleywood House Estate and Leavesden Country Park have been submitted.

- The scheme recognises and rewards well managed parks and open spaces, setting the benchmark standard for the management of recreational outdoor spaces across the UK and around the world.
  - Judges will visit the Aquadrome before mid-July to carry out a full assessment whilst Chorleywood House Estate and Leavesden Country Park will be the subject of a mystery shopper visit during 2019.
  - There are eight over-arching categories upon which parks and open spaces are assessed. The site must, for example, be welcoming, safe and secure, clean and well maintained, sustainably managed, have community involvement and be well managed.
  - For more information go to:  
<http://www.greenflagaward.org/>
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- New, five year, Greenspace Action Plans (GAPs) are due to be adopted for The Withey Beds and the Aquadrome, in March, once all of the feedback from the consultation process has been taken in to account.
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- The cattle are due to return to Croxley Common Moor sometime after April. After a dry season last year it is hoped that the cattle will have a good start and help manage the scrub on the site.
  - The installation of the replacement footbridge over the River Gade, by the Rights of Way Team at Hertfordshire County Council, has been delayed whilst the abutments undergo further assessment. It is hoped that the bridge will be installed later this year.
  - The Friends of Croxley Common Moor are continuing their programme of scrub removal as well as a series of guided walks. The Friends meet at 10am on the second Sunday of each month. Everyone is welcome and no previous experience is necessary as full instructions and tools will be provided on the day.
  - For more information about the work of the Friends and the upcoming events at Croxley Common Moor visit:  
[www.croxleycommonmoor.org.uk](http://www.croxleycommonmoor.org.uk)
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- A new Greenspace Action Plan (GAP) has been formally adopted for Chorleywood House Estate.
  - Projects for the coming year include grazing North Hill Field, surveying and mapping the rhododendron, investigating the potential to develop a website for all of the heritage information that has been collated, footpath improvements, tree planting and much more.
  - The Countryside Management Service (CMS) and their volunteers will be undertaking some holly management in Wood Walk as well as tree thinning within the Community Woodland.
  - The Friends of Chorleywood House Estate carry out tasks on the first and third Tuesday of each month at 10am. They have recently been working to maintain the Sunken Garden and clearing scrub around the specimen parkland trees near the A404

boundary. Anyone is welcome to join the group – more information can be found on their website:

<http://www.chorleywoodhouse.org.uk/>

- Work is on-going in Oxhey Woods. Future tasks range from rhododendron control and pond restoration to glade creation and enhancement of the sculpture trail.
- The Oxhey Woods Conservation Volunteers meet on the first and third Sunday of each month at 10am. For more details visit:

<http://www.owcv.btck.co.uk/>

- Various family activities have been organised by the Council's Senior Park Ranger. Activities have included welly walks, bug hunts and bat walks. For information on all of the upcoming events go to:

<https://www.threeriversleisure.co.uk/>