

**Biodiversity Enhancement Report Update 2021/22**

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| **Progress Summary** | **Code** | **Progress** |
| **Engage and support participation and understanding to embed biodiversity throughout decision making at all levels** | **1.1** |  |
| **1.2** |  |
| **1.3** |  |
| **1.4** |  |
| **Safeguard species and habitats of principle importance and improve their management** | **2.1** |  |
| **2.2** |  |
| **2.3** |  |
| **2.4** |  |
| **2.5** |  |
| **Increase the resilience of our natural environment by restoring degraded habitats and habitat creation** | **3.1** |  |
| **3.2** |  |
| **3.3** |  |
| **3.4** |  |
| **Tackle key pressures (Climate change/Invasive non-native species/Habitat loss) on species and habitats** | **4.1** |  |
| **4.2** |  |
| **4.3** |  |
| **Improve our evidence, understanding and monitoring** | **5.1** |  |
| **5.2** |  |
| **5.3** |  |
| **5.4** |  |
| **Put in place a framework of governance and support for delivery** | **6.1** |  |
| **6.2** |  |
| **6.3** |  |
| **6.4** |  |

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| **Not yet actioned** |  | **In progress** |  | **Complete** |

**Biodiversity Enhancement Report 2020/22**

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| **Nature Recovery Action Plan Objective 1** | | | | **Engage and support participation and understanding to embed biodiversity throughout decision making at all levels** | | | | | | | | | |
| Code | Aim | | Action | | | Lead | | Key Depts. | | Performance Measure | Progress | | | |
| Not yet Actioned | In Progress | Complete | |
| 1.1 | Ensure biodiversity integration with SAWG | | Biodiversity and sustainability to be considered during the decision-making process. Ensure links with partners Cofnod, NWWT. | | | Estates | | Estates and SAWG | | Legislation and policy included in documentation where applicable (Executive Director panel) |  |  |  | |
| Progress | | **Legislation and policy changes are, where applicable to biodiversity, regularly updated in the Biodiversity, ecosystems and resilience plan which is reviewed by the executive panel.**  **Changes in legislation are passed to the estates department from the Local Environmental Recording Centre (LERC), Cofnod**  **Where applicable legislation and policy affecting biodiversity, issues have been included within documentation.**  **Changes in legislation are passed between the Sustainability and Action Working Group (SAWG) to the estates department**  **Any changes in specific legislation (e.g. section 7 species) are considered within either current working practice or the Biodiversity, ecosystem and resilience plan and are reported to the SAWG committee** | | | | | | | | | | | |
| Future Opportunities | | **Better communication with the Amphibian Reptile Conservation NGO (ARC) will keep us advised of recent legislation regarding newts, toads and grass snakes, Any legislative changes effecting current working practices can then be agreed with SAWG and passed up to the executive committee via the Biodiversity, ecosystem and resilience plan updates.**  **Meeting held with ARC 15th March 2022 and possible funding opportunities are being explored.**  **Surveys were performed on the Northop site to maintain existing pond and create new pond areas for Great Crested Newts and to increase biodiversity through the use of grants.**  **Changes to Legislation in Environment Act 2021 impacting on biodiversity noted and communicated April 2022.**  **Recording event for Northop is planned for August 2022.**    **Pond clearance dates deferred to October 2022 due to lack of resource (Covid-19).**  **Forest project Northop started in March 2022. Wood for hibernacula secured. Ivy cleared from trees where it was proving destructive to the ecosystem of the tree and increasing the overall weight making it prone to falling in high winds.** | | | | | | | | | | | |
| 1.2 | Implement the new biodiversity and ecosystems resilience duty | | Identify departments key responsibilities to creating opportunities and amending actions in the duty plan | | | Estates | | Estates and SAWG | | SAWG to identify key departments role for actions and monitor |  |  |  | |
| Progress | | **Key departments identified to perform specific roles within specific activities. Greater cohesion formed between Estates, Health, Safety and Environment departments, Communications, Marketing, Recruitment & Admissions (CMRA) as the responsibilities and emphasis on biodiversity have taken on a wider form (e.g. across campuses).**  **As a result of greater awareness from the SAWG committee roles have been more clearly defined. Progress was limited in the last reporting period due to the Covid-19 crisis however, reporting and collaboration across departments has started to resume.** | | | | | | | | | | | |
| Future Opportunities | | **Cross campus and county opportunities to monitor biodiversity Northop / St Asaph 2022. Some projects identified showing a need for volunteers** | | | | | | | | | | | |
| 1.3 | Legislative and policy requirements are reflected in reports | | Identify and assess university plans and proposals for biodiversity impact, providing recommendations  Inclusion of the biodiversity and sustainability duties within committee reports | | | Estates and SAWG | | Estates and SAWG | | On- going access by estates to amend report where necessary according to change in legislation or circumstance  Completed report reviewed by Executive Committee |  |  |  | |
| Progress | | **Plans and proposals for the university for biodiversity impact are with the framework of the University’s Environmental Sustainability Strategy and under the six objectives of the Nature Recovery Action Plan for Wales (NRAP).**  **The provision to account for any environmental impacts regarding biodiversity have been made more efficient since the monitoring schemes have been put in place; monitoring efficiency has been limited by the Covid-19 pandemic.**  **Plans have been made to reintroduce recording and monitoring within the Covid-19 restrictions guidance framework that allow us to continue assessing environmental impacts whether positive or negative.**  **\*Greater provision for amending the Biodiversity, ecosystem and resilience report is in progress.**  **Biodiversity and sustainability duties are part of the SAWG committee function.** | | | | | | | | | | | |
| Future Opportunities | | **On-going access to amend the report will allow updates to be published quicker however, there is a requirement for them to be verified at least by the SAWG committee when university policy involvement, or information regarding the change of legislation is involved. The report would still be required to go to the executive committee prior to translation**  **Changes to Legislation in Environment Act 2021 impacting on biodiversity noted**  **Biodiversity Plans are being amended on a more regular basis - publishing mechanisms to be explored to ensure information is readily available and editable.** | | | | | | | | | | | |
| 1.4 | | Increasing awareness of plan | Links with University Comms team, , Cofnod, NGO’s  Awareness and education using effective comms, marketing, events, ensuring that the policies and report is available to students studying biological sciences to become an integral part of the ownership of the plan; events have been effected by Covid-19 restrictions.  Link to Green champion, sustainability and environmental activities via comms, marketing and student societies  Promote volunteering on sites to enhance work and reduce the workload for Estates, to enhance student knowledge and experience and well being | | Estates, SAWG  Academics  Estates, SAWG  Estates, SAWG, Academic | | Estates  Estates, SAWG  Estates, SAWG, Academic | | SAWG to promote and effect communication between departments  SAWG to promote and effect communication between departments  Estates and SAWG meetings  SAWG/ Academic; communication | |  |  |  | |
| Progress | **Several activities have been held since 2019 notably naturefest, Bioblitz and fun day and various walks given during mental health weeks. All activities were held to reflect the efforts of the plan by either increasing public awareness of our activities, monitoring for biodiversity, providing education and promoting well-being by arranging activities that were pertinent and fun.**  **To achieve success within these activities there were strong cohesive links between Comms, academic and estates departments as well as external NGO’s (e.g. British Dragonfly Society, Field Studies Council and RSPB, ARC, Cofnod and North Wales Wildlife Trust). Governmental organisations such as Flintshire County Council, Denbighshire County Council and Wrexham County Borough Council also contributed in the collaboration. As a result of the pandemic many of the NGO’s have been limited in staffing and resource. Collaborations with NGO’s will be re-established once they are fully staffed.**  **SAWG have played a big part in the arrangement and liaison between groups ensuring that the benefits enjoyed by event attendees fall within the boundaries of the plan. Events held have been a success in large part due to the overwhelming supported by volunteers.**  **In the last 2 years progress has been limited by the Covid-19 pandemic. Promoting awareness of the plan has continued throughout the reporting period albeit at a limited level due to resource and Covid-19 restrictions.** | | | | | | | | | | | |
| Future Opportunities | **SAWG have committed within their Environmental Sustainability Strategy 2018-2025 to run a minimum of three staff/ student or community volunteering activities relating to biodiversity enhancement to take place per annum. Future opportunities will be revisited when the University and NGO’s are fully staffed.**  **A monitoring day with Cofnod has been arrange for the 20th of August 2022 we are hoping to offset the results against the bioblitz data of 2019**  **University and NGO staffing are gradually returning to full capacity allowing planning opportunities for 2022. Volunteering opportunities are beginning to return by linking with other events. Revised plan updated and translated.** | | | | | | | | | | | |

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| **Nature Recovery Action Plan Objective 2** | | | | | | **Safeguard species and habitats of principle importance and improve their management** | | | | | | | | | | | |
| Code | Aim | | | | Action | | | | Lead | | Key Depts. | | | Performance Measure | Progress | | | |
| Not yet actioned | In Progress | Complete | |
| 2.1 | Confirmation of environmental legislation within documentation | | | | Include environmental legislation in documentation | | | | Estates | | Estates/ Executive Committee | | | Assessment of documentation by Estates and Executive committee |  |  |  | |
| Progress | | | | The estates department continue to provide advice on changes to biodiversity, licencing, monitoring and protected species to the executive committee within the framework of legislation and Acts of Parliament. Any changes to the plan are agreed changes initially through SAWG and agreed by the executive committee. Newt and conservation licences were attained during the last reporting period however only limited work was executed because of the pandemic.  **New and updated legislation is a standing agenda item at SAWG and relevant changes are discussed at the quarterly meetings.** | | | | | | | | | | | | | |
| Future Opportunities | | | | Due to the reduction in footfall on the campus there is a potential for certain species to re-establish themselves. New management processes may be required for identification of potential new species, (especially schedule 7 list species) and changes in nature and extent of existing habitats. | | | | | | | | | | | | | |
| 2.2 | Provide evidence to ensure that species and habitats are safeguarded by following the plan. | | | Ensure relationships with government and NGO continue levels of communication with COFNOD (LERC) | | | | Estates | | Estates | | | Accessibility to reports and partners | |  |  |  | |
| Progress | | | **The university have worked closely with Cofnod to ensure that species and habitats are identified and safeguarded through continued land management practices that benefit the site or species. Cofnod have kept the university informed of Schedule 7 species that needed safeguarding. Current land management practices in place at the University meet the requirements of the Schedule 7 species identified on campus (e.g. Dunnock (*Prunella modularis*) provision is made for hedgerow and vegetative cover). None of the Schedule 7 species have been adversely affected during the last reporting period. Vegetative cover has increased due to a reduction in maintenance through the pandemic. In 2020 and 2021 hedgehog surveys have been conducted at Wrexham and Northop campuses and action has been taken to encourage hedgehog at Wrexham campus as part of the Hedgehog Friendly Campus campaign.**  **Environmental legislation has been included within the Biodiversity Action Plan. Re: Environment Act 2021**  **Any changes to Schedule 7 Wildlife and Countryside Act will not impact upon the University unless a species is recorded that is listed within that schedule. Cofnod (LERC) keep informed the University of any species within the schedule to enable special provision to be made for them.**  **The Dunnock (Prunella modularis) is thriving at the Northop campus as a result of good hedgerow management and ensuring reasonable ground cover is maintained.**  **The University achieved Silver hedgehog Friendly Campus award with activities involving staff and students to raise awareness about hedgehogs and making the campus more accessible to hedgehogs.**  **In Northop, there has been a focus on increasing the awareness of the value of particular ecosystems and habitats to new staff. Ground cover has been increased with the coppicing of the Italian Alder on the North side of the pond; to produce more light promoting photosynthesis of biotic organisms within the pond and shelter for newts, toads and frogs** | | | | | | | | | | | | | | |
| Future Opportunities | | | **Further investigation of changes in habitats that have been undisturbed are being organised, these may require minor changes in management strategy. It is hoped to produce a greater awareness of specific ecosystems and protection of habitats, amongst staff and volunteers promoting more incentive for projects to move forward (e.g. the use and management of hedgerow for wildlife corridors). At Northop, plans are in place to build hibernacula to encourage grass snakes and to use of the pond environments for teaching.** | | | | | | | | | | | | | | |
| 2.3 | Assess resilience of ecosystems against environmental changes (e.g. effects of climate change – seasonality differences between different species relationships within a given ecosystem | | | Monitoring of records and assessments of trends. | | | | Estates | | Estates | | | Results of trends will show major changes in species presence although not abundance | |  |  |  | |
| Progress | | | **Results of monitoring species for biodiversity across 2019 -2022 have been limited due to the Covid-19 pandemic however, as above, certain ecosystems will have changed. Specialist recorders were unavailable during this reporting period to measure trends or assess climate change and seasonality differences. New recording day August 2022 is planned.**  **Although it is encouraging that the recording trend is increasing every year, records generated for this exercise only show presence and not abundance.** | | | | | | | | | | | | | | |
| Future Opportunities | | | **The lack of recording and monitoring of species for reporting periods plus the lack of disturbance throughout the period may serve to provide more definitive data highlighting less biodiversity because of changes in climate, seasonality and other environmental factors. Only through recording can we monitor these changes and react to them accordingly.**  **A recording day has been organised with Cofnod and other NGO’s on 20th August.**  **NB: Increases in species numbers and not abundance of existing species is not always a positive. To lose just one species could damage the links in already fragile ecosystems which may go unnoticed for several years. For example, the loss of habitat for newts due to reduction in open water because of silt, pondweed and proliferation of certain plants could lead to the loss of 3 species of newt but gain several new plants and invertebrates species. Longer term and without management the area may become dominated by a limited number of plants meaning the habitat loses its biodiversity value.** | | | | | | | | | | | | | | |
| 2.4 | 2.4.1 Create management strategies to cope with environmental change | Adapt management within Biodiversity and Ecosystem Resilience plan according to nature recovery action plan. Assess for costs | | | | | Estates/ SAWG | | | Estates/ SAWG | | Re-assessment of species, ecosystem or habitat and monitoring to ensure resilience. | | |  |  |  | |
| Progress | **Part of the way that biodiversity and ecosystem resilience is monitored and managed is to continually look for any environmental changes (e.g. If there is a long hot summer, action can be taken to ensure that there are enough areas where water is provided). Areas that are coppiced are also chosen specifically to provide shade and shelter to animals and plants; newts and helleborine.**  **When there was mild winters with late heavy snowfall action was taken to increase the amount of food in bird feeders and to ensure water was provided.**  **In the past reporting period because of increased monitoring, the resilience of ecosystems and data recording, the trend, as stated in 2.3, of species levels went up not down (as per the national trend) potentially showing trends that were skewed. In the last 2 years it has been difficult to assess if the trends have changed when the monitoring and collection of data has been limited by the pandemic.** | | | | | | | | | | | | | | | | |
| Future Opportunities | **Changes to ecosystems or species levels could be more pronounced upon analysis for the next reporting year because of habitats being left unmanaged. Dates for recording day has been arranged for August 20th 2022 whereby impacts of environmental and climate change can be assessed.**  **There is an opportunity to raise awareness of the importance of ecosystems across multiple habitats at Northop to volunteers. There is scope to increase the number of volunteers to bring forward projects such as lashing poles for bat and bird boxes to existing vegetation to add species to hedgerow to increase biodiversity and increase awareness of need for biodiversity.** | | | | | | | | | | | | | | | | |
| 2.5 | Ensure links to outlying habitats or species populations are connected via wildlife corridors; hedgerow etc., using the plan | | Record and assess species geographic position | | | | Estates | | | Estates | | Examination of data to assess trends and movement of species or habitat degradation | | |  |  |  | |
| Progress | | **It has been shown through recording that there has been a migration of certain species from one geographical area to another. We have used this to good effect as in the case of the alder leaf beetle (*Agelastica alni*) where the coppicing process has been refined.**  **Throughout the years we have been mindful of the links to our outlying ecosystems and species populations. Examples of this are: laying down corrugated mats between ponds to provide shelter for toads, slow worms and grass snakes as well as ground cover for invertebrates in the summer. Habitat piles have been placed in strategic points; not only to provide a specific ecosystem but also a link between two or more similar ecosystems separated geographically.**  **A large Leylandii was cleared to open-up woodland allowing more light. The habitat piles of logs and woodchip have encouraged vegetation and increased the Wren (*Troglodytes troglodytes*) population. The cleared area has also created a pleasant outdoor seating area for students (Well-being).**  **Field margins are deliberately left wide to encourage thistle, nettle and bramble to provide ground cover for various mammals and birds but using this method acts as a buffer zone for invertebrates, particularly butterflies when the fields are cut**.  **2022 – The impacts of leaving the cutting of the meadow and increasing the field margins are yet to be assessed**.  **The outdoor seating area was minimally used and maintained during the pandemic, but are staff and students are starting to return to campus**. **The coppicing of hazel has started with a view to integrating Hazel with Hawthorn to provide greater cover, protection and increase of biodiversity** | | | | | | | | | | | | | | | |
| Future Opportunities | | **Monitoring of Alder leaf beetle and clean- up operation around the pond with coppicing and forest areas tidied to promote biodiversity; bat and bird boxes for 2022 – in progress see plan. Several Alder have been felled. Italian Alder cleared on North side of pond area. See above (2.2) for potential impact.** | | | | | | | | | | | | | | | |

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| **Nature Recovery Action Plan Objective 3** | | | **Increase the resilience of our natural environment by restoring degraded habitats and habitat creation** | | | | | | | |
| Code | Aim | Action | | Lead | Key Depts. | Performance Measure | Progress | | | | |
| Not yet actioned | In Progress | | Complete | |
| 3.1 | Increase the diversity of habitats for pollinators | Arrange for varying lengths of grassland to be cut at intermittent periods allowing margins for recovery | | Estates | Estates | Increase in diversity proven through higher record presence and abundance |  |  | |  | |
| Progress | **Field margins are left deliberately wide to encourage thistle, nettle and bramble to provide ground cover for various mammals and birds; using this method acts as a buffer zone for invertebrates, particularly butterflies when the fields are cut. The grassland is cut once a year in the spirit of Tir goval (a whole farm agri-environment scheme) usually between the end of July and the first week in August depending on the weather and whether all section 7 plants have finished seeding. The increase in diversity in field margins has continued to grow on a yearly basis.**  **The continued presence of Yellow Rattle (*Rhinanthus minor*), a semi parasitic plant to various grasses, has also continued to play a part in increasing biodiversity resilience; minimising grasses allows wildflowers to germinate as opposed to being chocked by mats of grass root. The wildflower meadows are checked for the presence of this plant annually.**  **There has been a good presence of Yellow Rattle (*Rhinanthus minor*) to June 2022 but it came later than normal.**  **At Wrexham Campus, wildflower areas in Mold Road car park and the Communal Garden are managed to provide cover for invertebrates and small mammals. The wildflowers are cut at the end of the season and cleared.** | | | | | | | | | |
| Future Opportunities | **At Northop, there is potential to assess the impact on biodiversity and resilience by cutting the grass in a designated area to three different lengths on a regular basis.**  **The University has been awarded the silver award by the Hedgehog friendly campus project. Arrangements have been made for hedgehog hibernacula to be built for three sites.**  **Volunteers have been identified to conduct do toad surveys at Northop.**  **The monitoring day organised on the 20th August will allow assessment of the impact on biodiversity as a result of leaving the area uncut for 1 year.** | | | | | | | | | |
| 3.2 | Restore waterways and Ponds | Organise volunteer work party for pond clearance to increase resilience | | Estates | Estates | Monitoring. Increased diversity of flora and fauna in worked areas as proven by last pond clearance 2018 and records taken from the Bio blitz in 2019 |  |  | |  |
| Progress | **Although volunteer work was undertaken in pond clearance and pond management in 2018 and 2019 as the main pond was being chocked by bogbean (*Menyanthes trifoliata*), yellow iris (*Iris pseudacorus*), duckweed and leaves from various species of willow and Italian alder (*Alnus cordata*). As a volunteer activity, although hard work, the feedback provided was that it was incredibly satisfying to see the pond being restored and have more open water. Some of the pond during this period has become overgrown due to lack of resource.**  **When we held the Bioblitz in June 2019 the increase in biodiversity were impressive. Two new ichneumons, (a type of parasitic wasp) one new to Flintshire, 1 new to North Wales were identified. Three new species of Dragonfly and a substantial increase in abundance to existing species, especially the Southern hawker dragonfly (*Aeshna cyanea*), numerous beetle larvae and a large increase to the Great Crested Newt population was recorded. Surprisingly there was an increase in the number of records of bats in that area; presumably attracted to the higher populations of invertebrates. There was also an increase in the numbers of ducks (Mallards).**  **Assessments and pond clearance were not undertaken during the last reporting period due to lack of resource during the pandemic. Pond clearance is planned for October 2022 when the Great Crested Newts have left the pond** | | | | | | | | | |
| Future Opportunities | **Further pond clearance and phased coppicing of Italian Alder to increase light around the pond, reduce the number of leaves in the pond, provide a low-level canopy for newts, toads and perches for dragonflies. If future opportunities show more pronounced results, there is a potential to react and manage habitats accordingly.**  **As above some of the Italian Alder have been felled already letting in light, further ground clearance TBA**  **Meetings with ARC (Amphibian, Reptile Conservation) resulted in the clean-up of the pond area perimeter by WGU staff and ARC** | | | | | | | | | |
| 3.3 | Thinning of woodland or coppicing of site promotes growth and promotes biodiversity | Tree surveys on key sites to assess what we have. Coppicing and clearance; see plan | | Estates | Estates | Monitoring of growth and impact on cleared areas |  |  |  | |
| Progress | **The coppicing of Italian Alder over the three years has proven to increase light around the pond, reduce the number of leaves in the pond, provide a low-level canopy for newts, toads and perches for dragonflies; this activity ran through the past reporting period and is due to be executed across the following year.**  **The felling of the Leylandii, as stated in the previous report, producing habitat piles of logs and wood chips has become even more overgrown producing a further increase in the afore mentioned Wren abundancy as well as attracting more Dunnock.**  **New vegetation is coming through however because of the acidity of the soil it may take some time for ‘normal’ (key plant indicators associated with mixed woodland) to come through.**  **As above, specific hazel trees have been selected for coppicing with a view to using the off-cuts to mix with existing Hawthorn hedges to increase biodiversity and extend the type of wildlife that can use them as corridors.** | | | | | | | | | |
| Future Opportunities | **Further coppicing as a part of an ongoing process between December 2019 to the end of February 2020 allowing for newts and plants dormancy. This was only partially completed due to the pandemic so therefore remains a future requirement and opportunity and will be picked up in the next reporting period.**  **Possible trial on existing hawthorn hedge in advance of border hedging by adding coppiced Hazel to increase biodiversity and attract the Eurasian Dormouse (*Muscadinus avellanarius*).Tree surveys have been organised as part of the August monitoring day, however tree surveys to damaged trees because of storms have been ongoing by the Estates Department** | | | | | | | | | |
| 3.4 | Schedule 8 plants - protected | Area containing schedule 8 plants to be sectioned off to allow for proper seeding | | Estates | Estates | Perpetuation and recovery levels recorded to ensure management strategy is working |  |  | |  |
| Progress | **Every year preceding the annual hay baling, schedule 8 plants are sectioned off to ensure they are not disturbed. Broad-leaved Helleborines (*Epipactis helleborine*) grow in at least three places on the site, two of which are affected by the cut.**  **The fields are also checked for Bee Orchids (*Ophrys apifera*) and Common Spotted-Orchids (*Dactylorhiza fuchsii*) to ensure that they have seeded.** | | | | | | | | | |
| Future Opportunities | **Any further additions to schedule 8 plants will be managed according to their specific requirements** | | | | | | | | | |

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| **Nature Recovery Action Plan Objective 4** | | | **Tackle key pressures (Climate change/Invasive non-native species/Habitat loss) on species and habitats** | | | | | | |
| Code | Aim | Action | | Lead | Key Depts | Performance Measure | Progress | | | |
| Not yet actioned | In Progress | Complete | |
| 4.1 | Climate Change | Assess co-dependency within ecosystems to account for seasonality. E.g. flowers appearing late so that pollinators have no food source.  Be aware of potential periods of drought or prolonged rain – counter with alternate food supplies  Carbon emission reduction Enhancement of biodiversity /renewable energy | | SAWG  SAWG  Estates / SAWG  SAWG | SAWG  SAWG  Estates  SAWG | Monitor balance of abundance to assess the needs of the deprived species and report to SAWG  Monitor populations record and report |  |  |  | |
| Progress | **Co-dependency: As previously cited, yellow rattle (*Rhinanthus minor*), a semi parasitic plant to various grasses has continued to play a part in increasing biodiversity resilience within our wildflower meadow; by thinning out grass, wildflowers can germinate and flower as opposed to being chocked by mats of grass root. The wildflower meadows are checked for the presence of this plant annually. The presence of *Rhinanthus minor* is checked annually to ensure that it is stopping too much grass coming through and creating a monoculture, creating a loss of biodiversity.**  **Seasonality: with relatively temperate winters and protracted summers there have been some concerns that ecosystems will have been affected by seasonality especially when snow appeared late in early spring. Across the period 2019-2020 certain species that were suffering because of poor seed, berry and flower production were monitored although they were not monitored to the same degree as previous years due to lack of resources (Covid-19). It was previously reported (2016-2019) that species needed additional help (see next section) whereas other groups of species appeared to thrive; solitary bees seemed to increase in abundance slightly later and for longer particularly the tawny mining bee (*Andrena fulva*) and Ashy mining bee (*Andrena cineraria*); this went unmonitored again due to lack of resource but will be addressed by the next reporting period.**  **Provision made for seasonality: At the Northop site there are a range of ecosystems providing different vegetation, flowers and berries at different times of the year some of which are in areas that shaded from natural events such as snow allowing generalist pollinators to extend their range. It appeared, through monitoring, that some of the specialist feeders were slow to appear but eventually made a recovery.**  **The previous provision made for Bullfinches made in the last year did not apply during this reporting period as the winter was not so hard. Provision will be made for the following period if required for the birds if the winter is extreme or inclement. The additional habitat piles in sheltered areas and additional water are still active however they have not been checked for increases of invertebrate species, either presence of abundance, but are still provided cover for birds and mammals throughout the summer.**  **Bat and bird boxes have been donated; Italian Alders felled to increase light around the pond however this has made the vegetation grow to chocking proportions around the north side of the pond**  **Carbon Management: Glyndwr University has a Carbon Management Plan**  **For further information please follow the link to our** [**Carbon Management Page**](https://glyndwr.ac.uk/sustainability/carbon-management/)  **Graph displaying reduction in carbon emissions year on year since 2009/10. The University have a target to reduce carbon emissions by 3% every year from a 2009/10 baseline. In 2021/22 emissions had reduced by 48% against the baseline exceeding the 31% overall target** | | | | | | | | |
| Future Opportunities | **Continuous assessment. More bat, bird and bee boxes. Bird food.** | | | | | | | | |
| 4.2 | Eradication of Invasive Species | Monitor for invasive species American Skunk Cabbage around pond and check for occurrences of Himalayan Balsam on banks of river.  Assessment of Harlequin Beetles over wintering in the residential areas | | Estates and INNS officer | Estates | Monitor and record for zero presence |  |  |  | |
| Progress | **American Skunk Cabbage was found around the main pond in Northop in 2017 and six were stem injected 2018 by INNS officer. There were two in 2019 however they did not produce a spike (the seed-bearing part of the plant) and were smaller in stature than in previous years; both specimens were out competed by Yellow Iris (*Iris pseudacorus*).There was currently only one specimen found over the last reporting period, again outcompeted by Yellow Iris (*Iris pseudacorus*).**  **There is one American Skunk Cabbage remaining which was de-seed this prior to dispersal.**  **Despite stem injections and de-seeding the American Skunk cabbage will re-grow until it is eventually crowded out by Bogbean and Yellow Iris**  **Checks along the river system to ensure that there is no occurrence of Himalayan Balsam will resume over the next reporting period** | | | | | | | | |
| Future Opportunities | **As the population of Harlequin ladybird beetles (*Harmonia axyridis*) in the residential area are self-contained so there is an opportunity to eradicate this species from this are before it finds a way to impact upon the local ladybird population.**  **The erection of bat and bird boxes should increase populations which will require monitoring. The limited improvement work near to the pond will be beneficial to the amphibians in the area whilst still taking into account the rare Alder Leaf Beetle (*Agelastica alni),* which is thriving and may need increased management*.* Hibernacula in other areas of the site need to be cleared which should take place in September / October** | | | | | | | | |
| 4.3 | Assess and reduce stress on habitats and priority species | Ensure habitats for priority species (section 7) are maintained according to the plan | | Estates | Estates | Monitoring for presence and abundance to check declines |  |  |  | |
| Progress | **All section seven species were considered within current working practice. On-going woodland, hedgerow and pond management. Licences required are covered by academics and volunteer staff. Working practice was sustained throughout the reporting period.** | | | | | | | | |
| Future Opportunities | **Applications for independent licences for estates department. Newt and Conservation Licences were attained throughout the reporting period. All licences were renewed to cover 2022** | | | | | | | | |

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| **Nature Recovery Action Plan Objective 5** | | | **Improve our evidence, understanding and monitoring** | | | | | | |
| Code | Aim | Action | | Lead | Key Depts. | Performance Measure | Progress | | | |
| Not yet actioned | In Progress | Complete | |
| 5.1 | Budgeted time to provide more evidence for decision making | Better use of evidence to manage the sites | | Estates / Cofnod (Lerc) / | Estates | Better reporting and able to provide a measured response to the biodiversity and resilience issues with the sites and ecosystems |  |  |  | |
| Progress | **Unless there is an understanding of what is on the University land it is not possible to know the conservation and sustainability measures needed. More time has been allocated to monitoring and recording which has highlighted the presence of section 7 species; much of this is volunteer based and not budgeted. Activity-based events that encompass recording and monitoring such as the Naturefest, Bioblitz, and Fun days have been key to providing data; again, much of the resource needed to run these events were driven by volunteers. Cofnod produced certain reports for the university and we are working with them to help provide a measured response to biodiversity, ecosystem and resilience issues.**  **Little monitoring was done across the last reporting period due to the pandemic, any changes in species presence or abundance should be more significant, the accentuation if present will serve to make it easier to spot any differences.**  **Greater resources sought so that projects can moved forward.** | | | | | | | | |
| Future Opportunities | **More budgeted time to be allocated**  **As above** | | | | | | | | |
| 5.2 | Better reporting of evidence to support plan and make fluid adjustments to the plan through analysis of data and reflection of impact | More time set aside to create and analyse evidence to benefit the management of flora and faunae | | Estates |  | Quicker response to ecological issues |  |  |  | |
| Progress | **Glyndwr University is alerted by Cofnod when we record a priority species and provision is made for them; our current working practices have covered their needs.**  **SAWG is informed of their presence on the sites.**  **Comparative data between years is skewed because of the increase in monitoring and recording across the years; species lists grow disproportionately as more effort is taken.** | | | | | | | | |
| Future Opportunities | **Time has been set aside for analysis of comparative data between 2019 and 2022.** | | | | | | | | |

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| 5.3 | More studies using the data from monitoring and recording using the data provided by Cofnod (Lerc)  to assess environmental and biological impact.  Stability of ecosystems | | | Create analysis format for impact assessment | | Cofnod /Estates  Executive committee | |  | | Thriving and balanced ecosystems. Equal or increased biodiversity figures | |  |  |  |
| Progress | | | **The regularity of surveys of Great Crested Newts, Toads, Dragonflies, Pond and woodland areas conducted to assess ecosystem impacts were reduced because of Covid. Since the pandemic University staff have attained required licences and will be able to pursue surveys internally rather than relying on outside resources or volunteer goodwill.** | | | | | | | | | | |
| Future Opportunities | | | **More monitoring is planned in 2022/23. Volunteers for Toad Surveys in place, awaiting results. Newt numbers were assessed throughout May / June 2022** | | | | | | | | | | |
| 5.4 | | Increased understanding of existing ecosystems | Encourage more students to record Flora and fauna  More public events. Bioblitz or fun days to raise awareness of the need to record and monitor | | Estates/ academic  Estates/ SAWG/Executive committee/ P.R and marketing | |  | | Increase in abundance figures and dates to monitor seasonality  Greater awareness, Higher recording and monitoring figures, abundancy figures rather than just presence | |  | |  |  |
| Progress | **The level of students recording flora and fauna was reduced because of the pandemic and number of classes on-line**  **Classes arranged for Amphibian and reptile study with ARC for 2023.**  **Potential studies on mammalian populations are in progress linked with the planned increase in biodiversity of our hedgerow 2023. Increase of biodiversity experiment within wildlife corridor (hedgerow) using coppiced hazel within hawthorn; date revised to 2023**  **Mental health and well-being weeks have been used effectively to exhibit the natural countryside available to students giving the opportunity to make them aware of future projects** | | | | | | | | | | | |
| Future Opportunities | **The pandemic will also affect the number of student volunteers in the next recording period, however several of the recording experts that took part in the Bioblitz (2019) are keen to return allowing monitoring and recording to be maintained. The benefits of this will be an increase in the quality of the record, however the quantity and records of levels of abundance of the more common recognisable species will be impacted.**  **Numbers of volunteers and resources have risen slightly and new staff strengths within the biodiversity arena have been explored.** | | | | | | | | | | | |

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| **Nature Recovery Action Plan Objective 6** | | | | | | | **Put in place a framework of governance and support for delivery** | | | | | | | | | | | | | | |
| Code | Aim | | | | | Action | | Lead | | | | | Key Depts | | | Performance Measure | | Progress | | | | |
| Not yet actioned | In Progress | Complete | | |
| 6.1 | Compliance to the environmental laws and policies | | | | | Assess time/and priorities of existing staff | | Estates / Executive Committee | | | | | Estates / Executive Committee | | | Staff and resource availability | |  |  |  | | |
| Progress | | | | | **Any changes to environmental laws and policies that affect biodiversity or ecosystems have generally been highlighted via Cofnod. General legal advice, to allow the university to comply with legislation, has come from the SAWG and the Executive committees. They are actioned by the estates departments or by team members within the SAWG committee.**  **By monitoring the species by abundance over a given period and presence of species showing the biodiversity of habitat within ecosystems per habitat and comparing data it give a greater indication of what is happening to flora and fauna. The abundance method can quantify what is present within a given habitat and the presence method can show any potential gaps or flaws in the ecosystem within those habitats.** | | | | | | | | | | | | | | | | |
| Future Opportunities | | | | | **There is a potential need for more staff and resource availability depending on the potential changes on environmental laws (post Brexit). Licencing and surveying to be under the control of estates.**  **Figures from abundance can be used to show levels of species in the first year and compared to subsequent years for research in areas such as seasonality possibly caused by climate change. Presence or absence figures against individual species or groups of species within a chosen habitat can be used immediately against the data accumulated in 2019.**  **By integrating a combination of species within hedgerows, biodiversity of these often overlooked wildlife corridors is strengthened. The continued work on the pond areas will help increase biodiversity – see above.** | | | | | | | | | | | | | | | | |
| 6.2 | | Increased revenue to support biodiversity (Plan) | | | Look at grants for biodiversity projects | | | | Estates / SAWG/Executive Committee/ Cofnod (Lerc) | | | | Estates / SAWG/Executive Committee/ Cofnod (Lerc) | |  | |  | | **Moved from NOT YET ACTIONED TO IN PROGESS** |  | | |
| Progress | | | **No grant schemes were used to support the biodiversity plan throughout the years 2019-2020**  **Grant schemes were not looked at in2021 due to lack of resource during the pandemic. However, the search for grants has been recently renewed with the possibility of funding for new hedgerow allowing greater stability of our wildlife corridors.**  **Grant schemes are now being explored to increase hedgerow and pond management**  **In 2022, grant schemes are being explored within the area of pond management – awaiting completion of survey results prior to submission.** | | | | | | | | | | | | | | | | | |
| Future Opportunities | | | **Look for grant schemes from Welsh government, single revenue grants, and sustainability budgets. Hedges as above. On-going. Grants from ARC (NGO)** | | | | | | | | | | | | | | | | | |
| **6.3** | Use of the plan as a Framework of support | | Publish and ensure that people are aware of the plan, integrate groups and ownership | | | | | | | Estates / P.R/Marketing/ SAWG/Executive Committee/ Cofnod (Lerc) | | | Estates / P.R/Marketing/ SAWG/Executive Committee/ Cofnod (Lerc) | | Greater communication between departments and organisations | |  | |  |  | | |
| Progress | | **The plan has gradually evolved across the years 2016-2022 to its current form, considering changes in legislation and management working practices, focusing on the protection of ecosystems and priority species. SAWG have placed greater emphasis on biodiversity and have driven changes to the plan. The Executive committee have approved the plan. Partners, Local Environmental Recording Centre Cofnod and Amphibian, Reptile Conservation have also played their part in shaping this document. For events, comms and marketing have contributed in helping to raise awareness. There has currently been good communication between the departments and organisations. Links have been sent to the relevant departments relating to biodiversity, ecosystem and resilience changes to keep them informed.** | | | | | | | | | | | | | | | | | | | |
| Future Opportunities | | **SAWG to continue to drive key issues relating to any impacts on biodiversity, ecosystems and resilience. Estates to maintain and promote partnerships with governmental and NGO partners. Greater distribution of certain elements of the plan may encourage additional volunteers** | | | | | | | | | | | | | | | | | | | |
| 6.4 | Incorporation of governance and support within the framework of the SAWG committee | | | Link to SAWG policies | | | | | | | Estates / SAWG | Estates / SAWG | |  | | |  | |  | |  | |
| Progress | | | **The’ biodiversity, ecosystem and resilience plan’ is included within the framework of the Environmental Sustainability Strategy 2018-2025 that is governed by the SAWG committee.** | | | | | | | | | | | | | | | | | | |
| Future Opportunities | | | **Better links to SAWG policies from the plan**  **SAWG has increased activities and promoted higher levels of awareness through promotion of events. Activities include Hedgehog friendly campus project, Go Green week in March / April, Well-being week in Feb / March using visualisation to create the concept of a ‘nice place to be for the students and wildlife’. Due to the weather the use of the woodland for Mental health week was postponed until May to good effect to those that attended. As a result of the positive feedback from these activities more opportunities should be created to enhance natures ability to help mental health.** | | | | | | | | | | | | | | | | | | |