

# An assessment of the wildlife response to Covid-19 lockdown in north-west Wales: a comparison between 2020 and 2021

## Summary document

### 1. Introduction

In spring 2020, a number of popular sites across north Wales were closed to the public following the implementation of a nation-wide lockdown in response to the health crisis of the Coronavirus. Many areas were entirely closed off to the general public, whilst other areas experienced massively reduced visitation due to the nature of lockdown regulations and its limits to travel. This reduction in human traffic within these areas provided a unique opportunity to evaluate how the wildlife, landscape and vegetation responds to such conditions. In a national context, this so-called period of 'anthropause' led to reduced air and noise pollution in urban areas which enabled the sound of birdsong to permeate areas usually filled with the sound of traffic; reports hit the headlines of goats descending from the Great Orme into the town of Llandudno and Harbour Porpoise swimming up the River Severn.

To evaluate how wildlife was responding to this exceptional period in the Snowdonia National Park and across north-west Wales, a series of biodiversity surveys were commissioned by Natural Resources Wales, the National Trust and the Snowdonia National Park Authority in June 2020. These surveys targeted the birdlife, mammal activity, vegetation condition and litter prevalence across a number of key sites in North Wales, and a report was produced in July 2020 that documented the findings. However, to fully examine how the 2020 period of lockdown affected these areas, it was recognised that a repeat of these surveys over subsequent years was necessary, which would enable a comparison to contrasting years when visitor usage of these areas had resumed.

Since the lifting of the nation-wide lockdown on 6th July 2020, the National Park and the other sites included were fully open to the public with government guidelines on social distancing in place. The summer of 2020 was one of the busiest the area had witnessed in many years, particularly due to restrictions on overseas travel, which led to issues such as queues of people for up to 2 hours to take a summit photograph on top of Yr Wyddfa in August 2020. There was a sharp rise in fly-parking, fly-camping, littering and swimming, with many feeling the need to re-connect to nature after such a long period of restriction. From December 2020 until March 2021, Wales entered another period of lockdown, and whilst National Park and National Resources Wales car parks were closed in the area, access was not restricted for local residents. From April 2021 lockdown travel restrictions have been lifted throughout the UK and the area is once again open to the general public, albeit with social distancing guidelines in place.

The return to higher human visitation of all the key sites in spring 2021 meant that a repeat of the 2020 surveys could be used as a way of comparing these two contrasting years. This report documents the results of these comparison surveys and evaluates the main findings from the data acquired.

The full report from the 2020 surveys can be viewed online by following this hyperlink: [https://issuu.com/parccenedlaetholeryri/docs/wildlifeinlockdown\\_001](https://issuu.com/parccenedlaetholeryri/docs/wildlifeinlockdown_001)

## 2. Methods

### 2.1. Study sites and survey methods

The repeat surveys took in a total of seven different sites across Snowdonia and north Wales (figure 1): four of these sites were located in the upland, mountainous areas and comprised of Yr Wyddfa / Snowdon, the Ogwen Valley, the Carneddau and Cader Idris; whilst three sites were in more wooded, lowland sites and comprised Coed-y-Brenin, Coed Llennyrch and Niwbwrch (Newborough Warren). Within each of these large areas, surveys took place along a series of transect routes chosen in 2020, which generally followed main footpaths through these regions. To allow for meaningful comparisons between 2020 and 2021, the exact same routes and survey points were visited in 2021. See the site-by-site results for the exact routes taken within each area.



Figure 1. Map of North Wales showing the locations of the seven sites surveyed in 2020 and 2021.

Broadly, the surveys along these transect routes involved recording breeding birds, vegetation condition along pathways and at popular gathering points (including fixed-point imagery), mammal activity and litter abundance. Any other additional notes or sightings relevant to the study were also recorded, including insects, the presence of people and associated activity such as camping, and notes on grazing levels in some of the upland sites. A handheld GPS was carried to mark any useful waypoints and record the specific location for any rare or noteworthy sightings. Table 1 below lists more detailed methodologies for each of those mentioned above.

The surveys took place on eleven days between 8<sup>th</sup> June and 30<sup>th</sup> June 2021 to cover the seven sites, and to allow for more than one transect in some of the larger upland sites. The surveys were spread

out across this period due to changeable weather conditions and the need for appropriate weather to survey the higher altitude, more mountainous areas.

Table 1. Detailed survey methodologies

Target taxa	General survey method	Detailed methodology
<b>Breeding birds</b>	A walked transect along main footpaths noting any birds and potential breeding activity	Breeding bird surveys followed broadly similar methods to those used in the British Trust for Ornithology’s national ‘Breeding Bird Survey’ initiative. The surveyor walked a set transect route following established footpaths, scanning left and right whilst walking this route and noting down any birds seen or heard within 100 metres either side of the path. Data was recorded on survey sheets and GPS coordinates of any nests found of rarer breeding species (e.g. dotterel, golden plover, ring ouzel) were also noted down. Any breeding activity (e.g. singing male birds on territory or fledged juveniles) were recorded using the British Trust for Ornithology (BTO) breeding codes. Additional data recorded alongside the survey included time of day and weather, whilst a GPS-mapped route recorded the transect route to enable subsequent repeats of the survey.
<b>Mammals</b>	A walked transect noting down any mammals seen and evidence of mammal activity	<p>Whilst walking the same transect route as set out for the breeding bird survey, the surveyor recorded any mammals seen (species, number and location), using a GPS to record the exact location for any scarcer species.</p> <p>Any evidence of mammal activity was also recorded during the walked transects, including disturbance of ground from badgers and foxes. Any fox scats were recorded with a grid reference and were removed from the path so subsequent visits could record any additions since the initial survey.</p>
<b>Vegetation</b>	<p>Footpaths would be assessed during the survey for vegetation height and species diversity.</p> <p>Footpath transects in some areas and summit surveys to assess species presence/absence, diversity and abundance of plants</p> <p>Fixed-point photography as a record to allow future comparisons and assess change visually</p>	<p><b>Footpath transects</b> – for some of the main survey locations (e.g. Yr Wyddfa), an appropriate place along popular footpaths was chosen in 2020 to carry out one of these vegetation surveys. This involved laying out a 5-10m transect line across a footpath and using a 1x1m quadrat at 2m intervals and noting down: plant species diversity, abundance and percentage cover.</p> <p><b>Summit surveys</b> – at popular gathering spots and summits (such as on Yr Wyddfa), a measuring tape was used to lay out a circular survey radius of ~10m, within which the abundance, diversity and percentage cover of any plant species was recorded.</p> <p><b>Fixed-point photography</b> – during the transect, 5-10 locations were chosen in 2020 to take a series of images of the path and surrounding landscape using a wide-angle lens. These ‘fixed point’ images were repeated in 2021 at the exact same locations, aimed at documenting areas such as popular gathering spots, heavily used footpaths and summit areas, but would also serving to document wider habitat conditions for future reference. Images were taken using a Canon DSLR camera and standard wide angle zoom lens, with the GPS coordinate/grid reference noted for each location</p>
<b>Litter and plastic waste</b>	Estimating the approximate quantity of the litter along footpaths	Litter abundance was recorded by keeping a tally of items encountered along each transect route and around popular gathering areas. Both the type of litter item (e.g. plastic bottle) and number as recorded, alongside an exact location for more concentrated areas of litter pollution if encountered.

## 2.2. Considerations and limitations

The survey methods were designed to detect potential changes in the wildlife, landscape and habitats in the selected areas as a result of the lockdown period induced by covid-19 in 2020. With a lack of equivalent baseline data on which to base comparisons for the findings from these surveys, the comparisons made between lockdown (2020) and a very busy visitor season (2021) involve only two years of data; they provide a snapshot of potential changes, but require a longer series of repeated surveys on which to base more reliable conclusions. Similarly, whilst the survey work covered some of the larger sites in the Snowdonia National Park, the results (for example, changes in population trends of birdlife between years) may not necessarily be representative of the entire region. Nevertheless, the results below provide informative data on the effects of an exceptional period of time in this iconic national park in Wales.

## 2.3. Carbon emissions of surveys

Consideration of the carbon emissions involved even for the purposes of the surveys commissioned here is increasingly important to take into account, given the critical state of the climate and biodiversity emergency. Transport to and from survey sites in 2021 took place in an electric vehicle (Nissan EV-N200), greatly reducing the carbon emissions involved with travel across North Wales. Two surveys involved travel in a diesel-fuelled car over 216 miles, generating an estimated 0.049 tonnes of CO<sub>2</sub> (using the online carbon calculator from the World Land Trust: <https://www.worldlandtrust.org/carbon-calculator/>). Offsetting of such emissions will involve a contribution to 'Project Seagrass' (<https://www.projectseagrass.org/>), which is restoring seagrass beds across Wales (including locally at Porth Dinllaen) and is a very important habitat for sequestering carbon dioxide (CO<sub>2</sub>) from the atmosphere, whilst enhancing valuable coastal habitats for marine life.

## 3. Summary of key findings

A summary of the key findings from the surveys are presented below, first for the four upland sites and then for the lowland areas. Please see the individual site-by-site reports for the more detailed presentation of results for these surveys.

### 3.1. Uplands

#### Birdlife

##### **Reduced abundance and diversity of birdlife**

Both the abundance and diversity (i.e. number of species) of birdlife was much lower across the upland survey sites in 2021 compared to 2020 (see the two comparison graphs in figure 2 and 3). A total of 65 bird species were recorded across all upland sites in 2020, compared to 50 in 2021; whilst the abundance of birdlife involved 1609 individual birds in 2020, compared to 1491 in 2021. All except for the Carneddau survey site demonstrated reductions in abundance and diversity of between 10-20% (see figures 2 and 3). This noticeable difference is most likely attributed to the highly contrasting weather conditions experienced between the two years; in particular, a very cold spring in 2021 which led to delayed breeding seasons in many species, and the reduced presence of fledged young at the time of the surveys. However, a certain amount of variation from year to year

is natural among populations of such species, and so the data highlights the need for longer term monitoring to assess how noteworthy such changes are over a greater period of time.

#### **Lack of birds nesting along pathways**

It was noted during the 2020 surveys that an abundance of species like Meadow Pipits and Wheatears were present along the main pathways, and many pairs were even nesting right beside these usually busy paths. This was not the case in 2021, with few birds recorded to be nesting close to paths, and generally a much lower abundance of birdlife (as outlined above) was noteworthy. More timid species such as Ring Ouzels were still recorded near busy pathways, such as above Glaslyn (Yr Wyddfa) and below Mynydd Moel (Cader Idris), but were not seen to be nesting in such places as was the case in 2020. The opening of the upland areas for public access before the main breeding season likely allowed species to choose nesting sites away from busier areas, thus reducing any disruptive effects that might have resulted had the opening of areas occurred midway through the breeding season.

#### **Breeding birds around small upland lakes**

Upland lakes in the survey area, such as those of Llyn Llydaw (Yr Wyddfa), Llyn Idwal (Cwm Idwal) and Llyn Cau (Cader Idris), are often popular gathering places for people visiting these areas. In 2020, specific attention was paid to the birdlife around such lakes in the absence of people, as these sites often play host to important breeding birds such as Common Sandpipers, and also less desirable species such as Canada Geese. There were mixed results in relation to this aspect of the survey in 2021: fewer pairs of Common Sandpipers were noted around Llyn Llydaw (four birds in 2021 compared to eight in 2020) and Llyn Idwal (two birds in 2021 compared to six in 2020), and no birds were seen around Llyn Gafr (Cader Idris) in 2021 where a single pair was seen in 2020. On a positive note, one pair was recorded on Llyn Bochlywd (below Tryfan) in 2021 where no birds were seen in 2020. The substantial drop in Common Sandpiper presence in these upland lakes could partly be attributed to higher levels of disturbance, as these birds are timid and sensitive to the presence of people. However, the general reduction in abundance of all bird species across upland areas in 2021 would also hint at other factors at play, such as the weather conditions.

It was superb to record the nesting pair of Great Crested Grebes once again breeding on Llyn Idwal's southern edge, with a bird sat on a nest in the aquatic vegetation at this location on both survey visits (12<sup>th</sup> and 22<sup>nd</sup> June). It is welcoming to see these birds continuing to breed here despite the higher levels of visitors in 2021 compared to 2020.

Canada Geese are a non-native species which can have negative effects on the upland ecosystems around the lakes on which they breed and gather. In 2021, a total of 12 birds (including two young goslings) were seen on Llyn Idwal and two birds on Llyn Gafr (Cader Idris). None were recorded on Llyn Llydaw or Glaslyn during the 2021 surveys, where birds were seen in 2020.





A male Stonechat (*Saxicola torquata*) carries food ready to feed its young nearby.

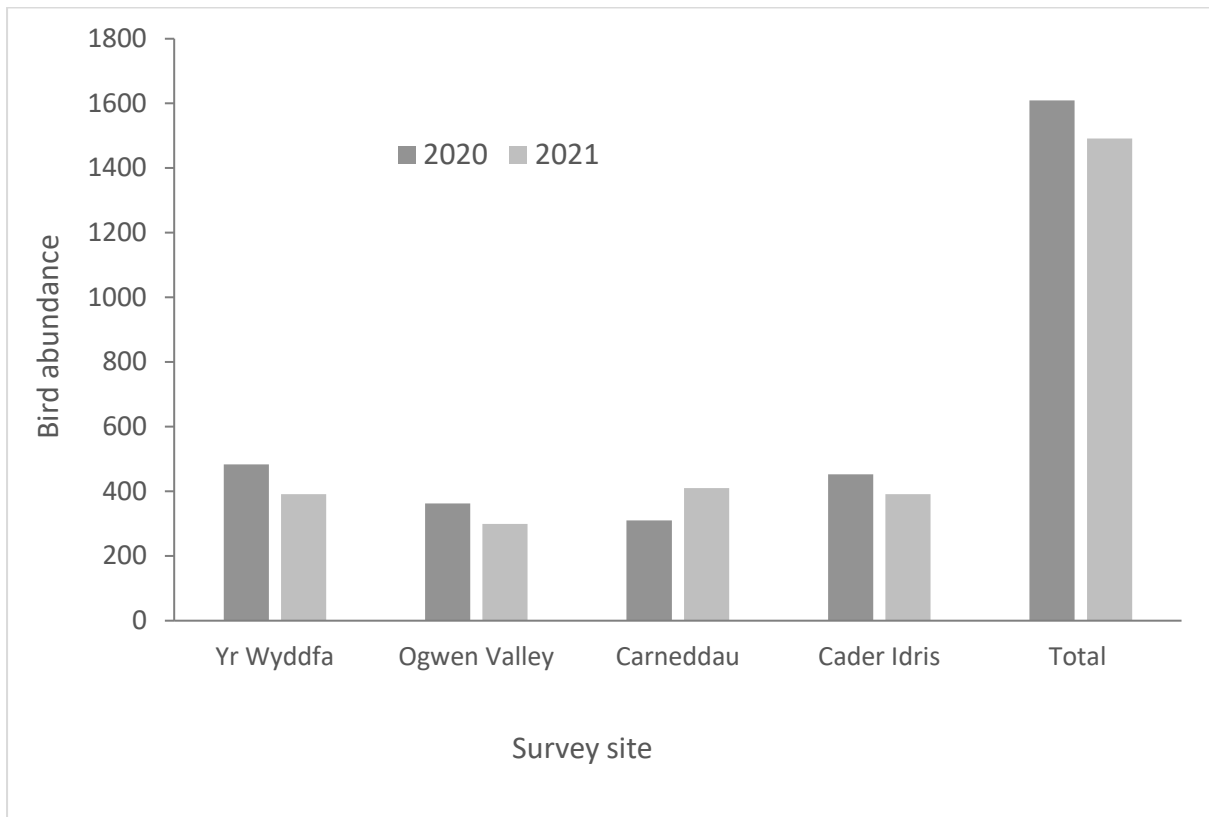


Figure 2. Comparisons of bird abundance (i.e. number of individual birds recorded) between the 2020 and 2021 surveys in upland sites.

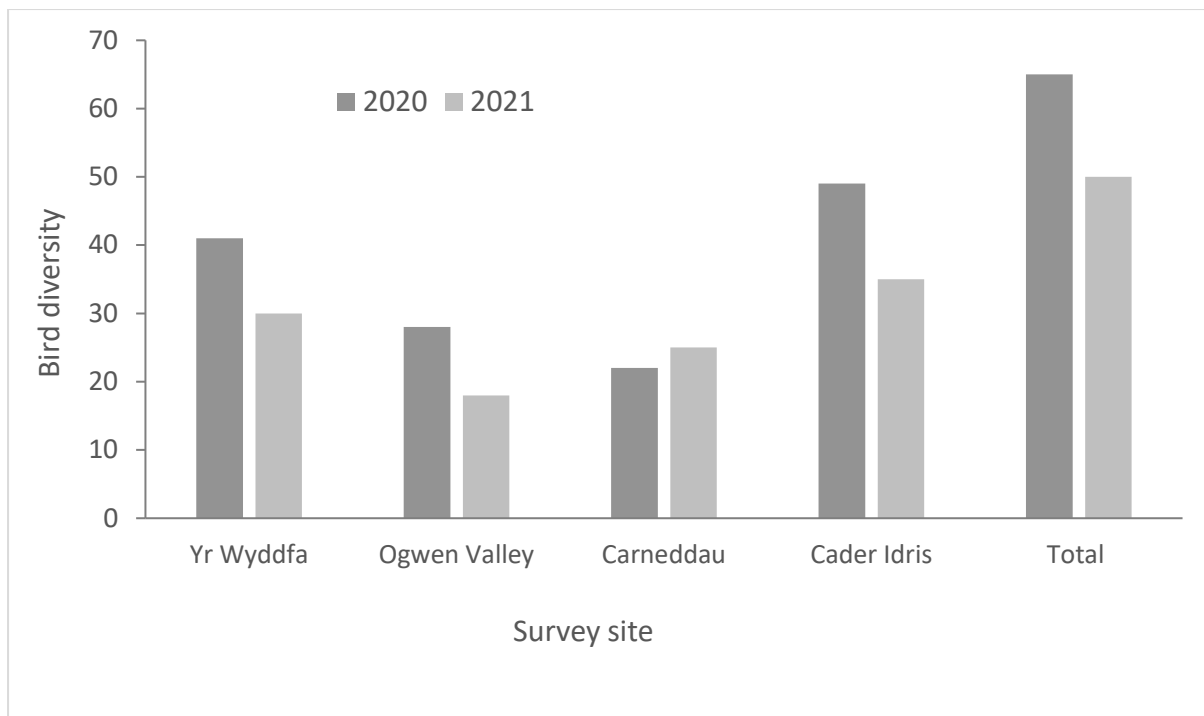


Figure 3. Comparisons of bird diversity (i.e. number of different bird species) between the 2020 and 2021 surveys in upland sites.

## Vegetation

The vegetation along transect routes was evidently less luscious and verdant than in 2020, with a cold spring setting growth back several weeks. The diversity of flowering plants noted along pathways in 2020 was certainly less noteworthy in 2021, but fixed-point imagery from a selection of locations revealed only marginal differences in vegetation condition between the two years. In some of the more popular areas, there was evidence of new footpaths and widening pathways encroaching into the land off main tracks (see the images below for examples). This effect was particularly pronounced close to the waterfalls below Cwm Llan, where large numbers of visitors are increasingly placing pressure on the river-side vegetation and leading to many new access paths being created to access different pools and waterfalls. The paths leading up Y Garn from Cwm Idwal are also of concern, with the potential to increasingly widen and affect the delicate Dwarf Willow communities which grow along this mountain's southern and western slopes below the summit.

It must be noted that, overall, the main factor influencing the upland vegetation communities is that of grazing by sheep and livestock in these areas. Three sheep were noted in the Llyn Idwal National Nature Reserve (NNR), where attempts continue to exclude as many as possible to allow the habitats here to recover from historic grazing.



A new footpath leading off the main Watkin Path, cutting across a field towards the waterfalls of the Afon Cwm Llan.





The footpaths leading up Y Garn above Cwm Idwal have the potential to increasingly splay outwards and affect the delicate Dwarf Willow (*Salix herbacea*) plant communities along these slopes, which take many years to establish and grow.

## Litter

One of the stark contrasts between 2020 and 2021 was the amount of litter and waste recorded across upland areas. A total of 418 pieces of litter were recorded across the four sites during the survey visits, compared to 93 in 2020. The graph in figure 4 provides a site-by-site comparison for these figures, and reveals how the worst places for this inexcusable visitor impact are that of Yr Wyddfa (299 pieces) and the Ogwen Valley (88 pieces). The other two sites were relatively free of litter and waste, with just three pieces recorded on the Carneddau, and 28 on Cader Idris (most of which was associated with a number of tents pitched along the edge of Llyn Cau).

The summit of Yr Wyddfa was, somewhat predictably, the worst individual location for litter, with 195 items removed from around the summit area and near the café. More surprising was the finding of some 47 litter items on the summit of Tryfan; a place usually receiving much less visitor numbers than sites like Yr Wyddfa and Cwm Idwal, but clearly still afflicted with the same issue.

These values are truly disheartening figures, especially given that the survey visits represent just brief snapshots in time across the spring and summer period, with volunteers tirelessly working in the Caru Eryri scheme to clean up as much of this discarded litter as possible.

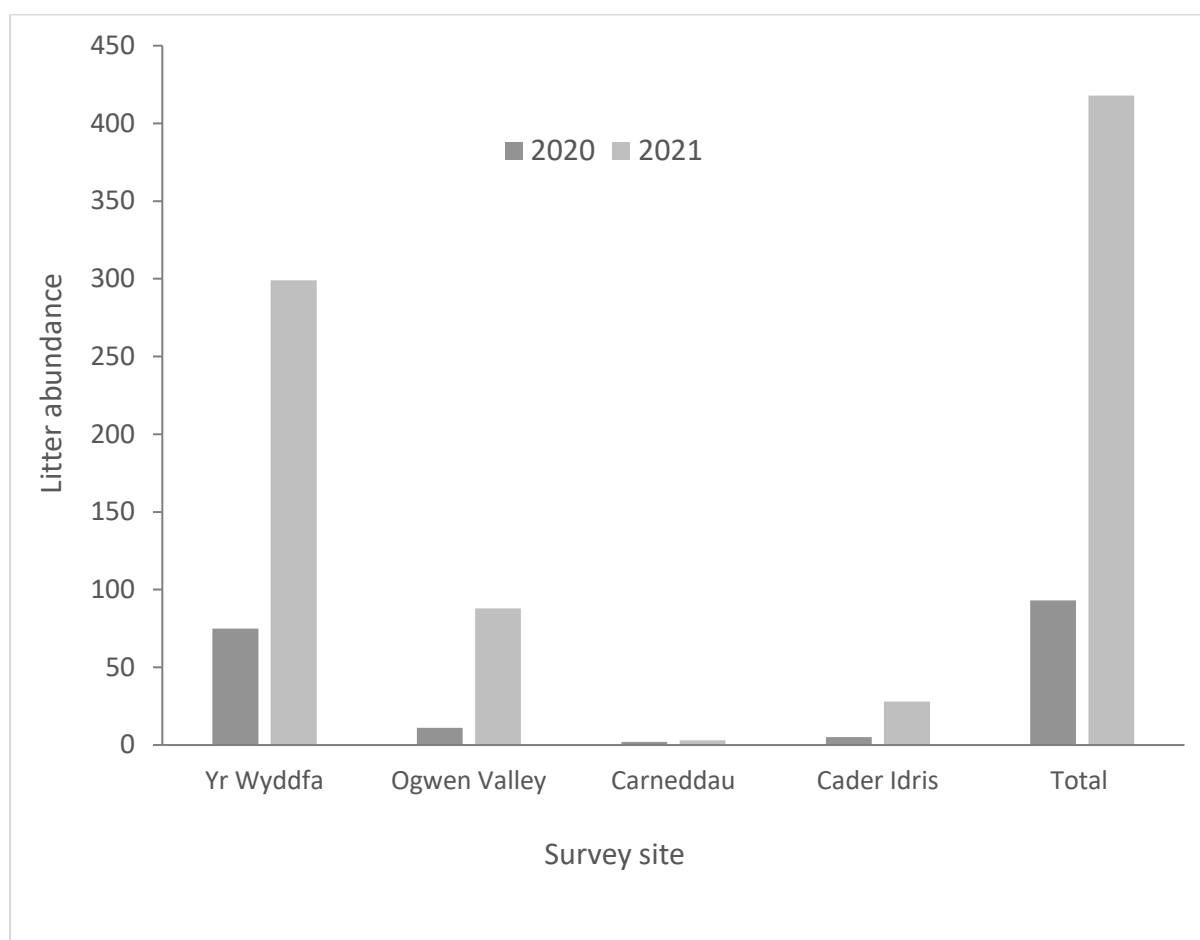


Figure 4. Figures for litter abundance across the four upland survey sites in 2020 (dark grey) and 2021 (lighter grey).

In terms of the litter types, the pie chart in figure 5 below gives an overview of some of the most abundant pieces recorded during these surveys. Discarded cigarettes and cigarette butts were one of the most numerous litter types recorded (127 in total), plastic packets and sweet wrappers (108), plastic bottles (42), orange and banana peel (36), tin drinks cans (18) and plastic bags (15). The 'other' category includes a range of items, from face masks and dog poo bags to wet wipes and clothing items.

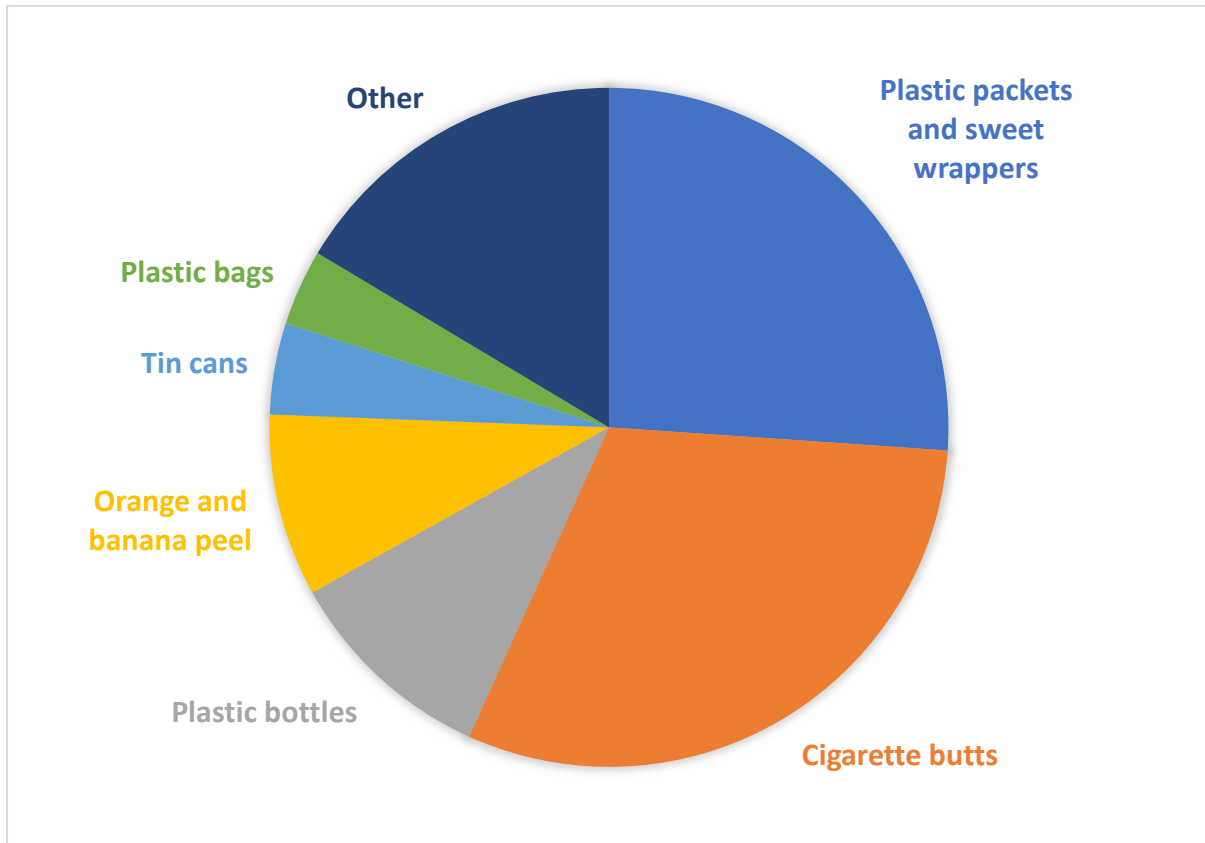


Figure 5. An overview of the most numerous litter types recorded across the upland survey sites during the 2021 surveys.



A plastic bag floats in the waters of Llyn Llydaw.



## Other noteworthy records

The issue of 'fly camping' has been a significant factor since the opening of the National Park in July 2020, with large numbers of people camping around popular sites such as Cwm Idwal in the Ogwen Valley, and often leaving large amounts of litter, waste and toiletries in the immediate area.

During the 2021 surveys, camping was recorded on an 'ad hoc' basis but was not a target of the main surveys. A total of 15 tents were recorded on the edge of Llyn Idwal on 12<sup>th</sup> June 2021, along with several inflatable watercraft that could cause disturbance to species like the Great Crested Grebes and Common Sandpipers mentioned earlier in the report. Two tents, and a bag full of discarded litter, were recorded on the edge of Llyn Cau (Cader Idris) on 27<sup>th</sup> June 2021; and three tents were recorded around the lakes north of Yr Elen (Carneddau) on 13<sup>th</sup> June 2021.



Camping activity around the edge of Llyn Idwal on 12<sup>th</sup> June 2021.

## 3.2. Lowlands

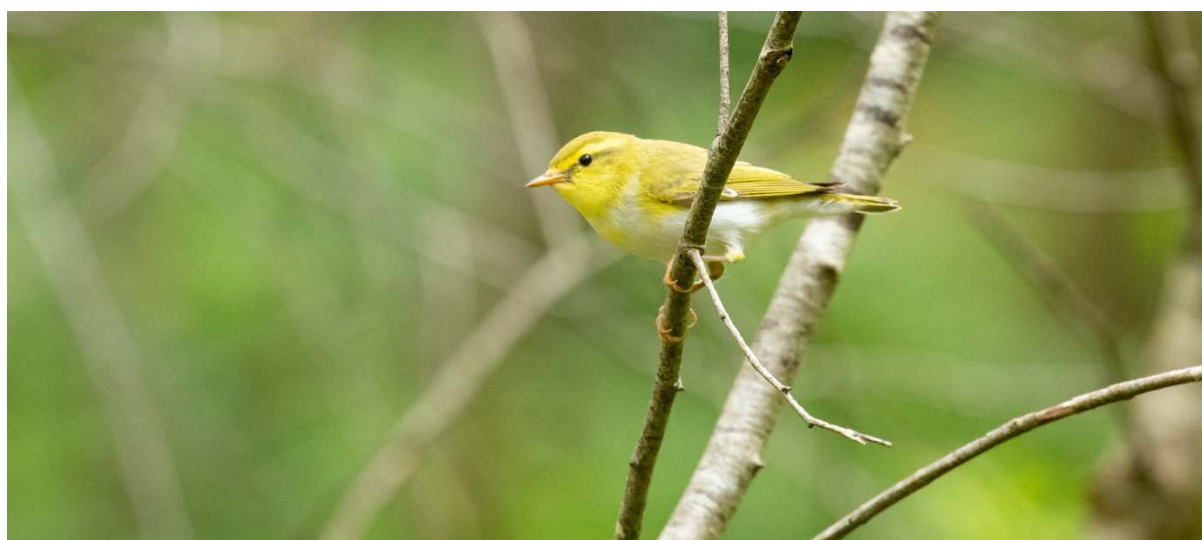
### Birdlife

#### General trends between 2020 and 2021

Overall, there was little difference in the abundance and diversity of birdlife across the lowland areas between the 2020 and 2021 surveys. The diversity was in fact higher than recorded in 2020, with 61 bird species noted in 2021, compared to 54 in 2020 (see figure 7). In terms of the abundance of birdlife, a total of 997 individual birds were recorded during the 2020 surveys, compared to 975 in 2021 (see figure 6) – a very slight difference compared to the large reduction observed in upland areas. The contrast in the findings of upland and lowland sites during the 2021 surveys may partly be due to the disproportionate effect of the cold spring weather on upland areas and the breeding seasons of birdlife here. However, the factors affecting these broad differences observed are difficult to ascertain, and the presence of ongoing monitoring at these sites will help to inform the reasons behind such year-to-year differences.

#### Disturbance to birdlife across lowland sites

It was noted during the 2020 surveys that various bird species were nesting in areas they might not otherwise have done under 'normal' circumstances (i.e. when there are much greater numbers of visitors). For instance, a pair of Ringed Plovers nesting close to the tip of Ynys Llanddwyn below Twr Mawr (normally a very busy place), and a selection of woodland birds nesting very close to pathways in Coed y Brenin, including Wood Warblers, Robins, Blackcaps and a Willow Warbler pair. There were mixed results with this element of visitor disturbance in 2021: woodland areas seemed to show little change between the two years, with Wood Warblers, Blackcaps and Willow Warblers recorded nesting very close to fairly busy pathways around Coed y Brenin, for example. However, the situation was different on the coast around Ynys Llanddwyn: there were no Ringed Plovers recorded around the small beach at the tip of Ynys Llanddwyn, where a nesting pair were present in 2020, and just a single pair of Oystercatchers were seen on the island, where seven pairs were recorded around its coast in 2020. A pair of Choughs observed near the tip of Ynys Llanddwyn on the day of the survey (29<sup>th</sup> June 2021) showed remarkably tolerant behaviour to visitors walking close by, preening and feeding with people less than 10 metres away. However, for the breeding wading birds around this coastal site, the presence of large numbers of people may be having some effect on disrupting their breeding seasons.



A breeding Wood Warbler (*Phylloscopus sibilatrix*) in Ceunant Llennyrch.



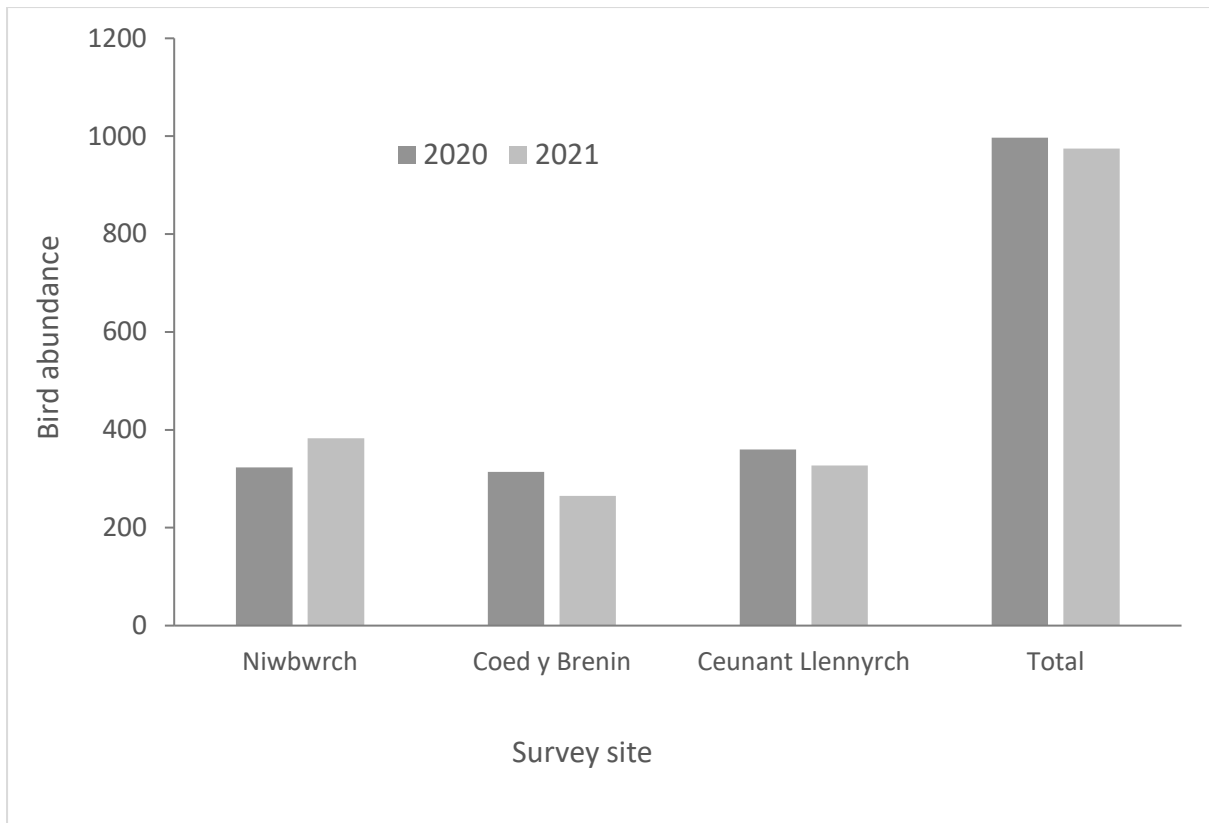


Figure 6. Comparisons of bird abundance (i.e. number of individual birds recorded) between the 2020 and 2021 surveys in lowland sites.

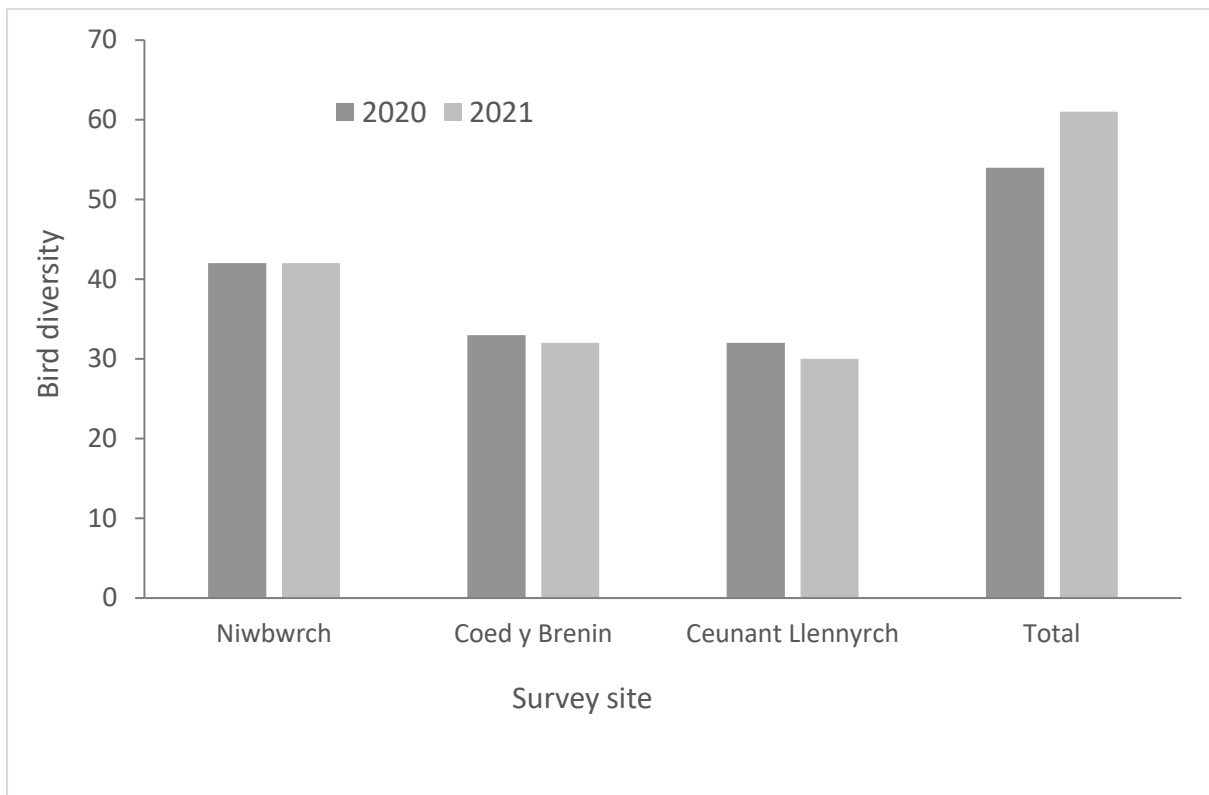


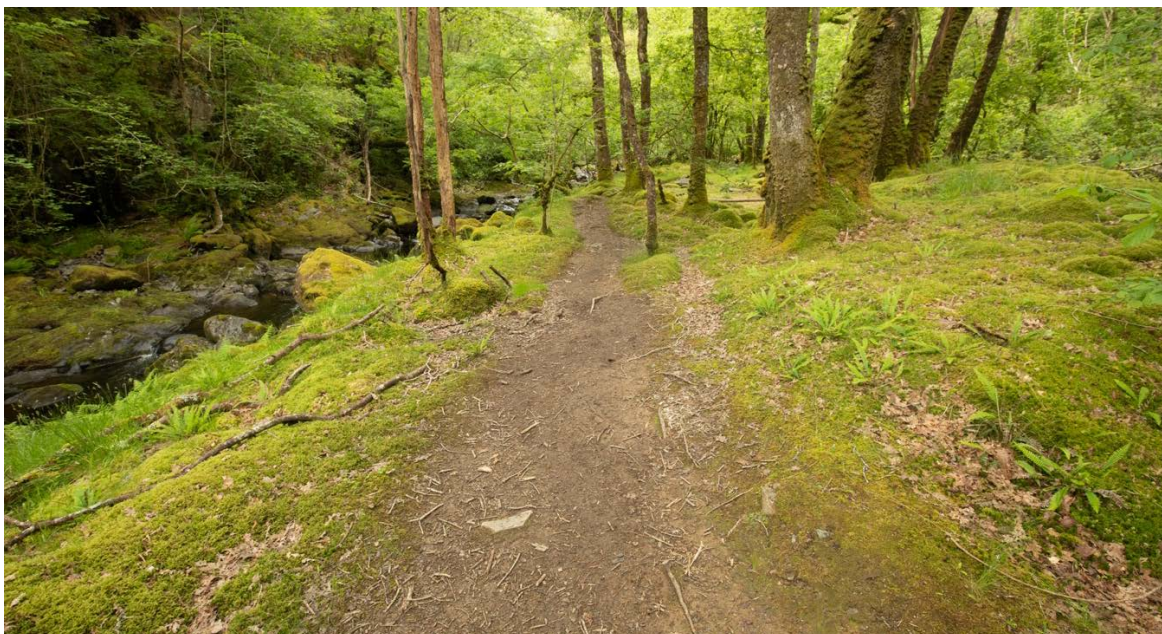
Figure 7. Comparisons of bird diversity (i.e. number of different bird species) between the 2020 and 2021 surveys in lowland sites.

## Vegetation

There were few noticeable differences in vegetation assemblages between 2020 and 2021 across the lowland sites, especially in the more wooded areas where pathways are naturally contained by the bordering woodland cover. A diverse assemblage of plants were again recorded around Ynys Llanddwyn, despite the numbers of visitors using this site, which included species like Maiden Pink (*Dianthus deltoides*) and Ivy Broomrape (*Orobanche hederæ*). One of the more pronounced differences was the reduced abundance of wildflowers and plantlife around the main 'beach car park' in Niwbwrch (Newborough Warren). The sandy banks dividing parking areas here were covered in wildflowers and spires of Viper's Bugloss (*Echium vulgare*) in 2020, whereas the intensive use of this site in 2021 meant a greater degree of trampling and usage of these areas had reduced the presence of some species.



At Ceunant Llennyrch, there was evidence that higher usage of pathways and areas besides the river were impacting the moss communities and woodland flora in certain areas (see image below as an example). An extensive survey of the entire gorge at this site was not carried out, but might be of merit to inform how great an impact activities such as gorge explorations are having upon the delicate fern and moss communities which are of such importance to this species site.



Erosion of woodland floor along a riverside footpath near the Afon Prysor in Ceunant Llennyrch.

## Litter

Whilst not as severe as the upland areas, littering was once again a particularly obvious issue in some of the lowland sites surveyed in 2021. Compared to 2020, there was a seven-fold increase in the quantity of litter items recorded across these sites in 2021 (see figure 8 below). This increase was most noticeable for Niwbwrch (Newborough Warren), where a total of 78 items and 15 different litter types were found during the survey, overwhelmingly concentrated around the 'beach car park' area (despite the presence of good waste disposal facilities and toilets). There were just ten litter items of six types found around Coed y Brenin, and one item found at Ceunant Llennyrch.

Looking at the breakdown of litter types (see figure 10 below), the most common items found were plastic packets and sweet wrappers (20 items), followed by plastic bottles (11), dog poo bags (10) and tissues (10). Among the items recorded in the 'other' category were cigarette butts (nine), face masks (six) and tin drinks cans (four).

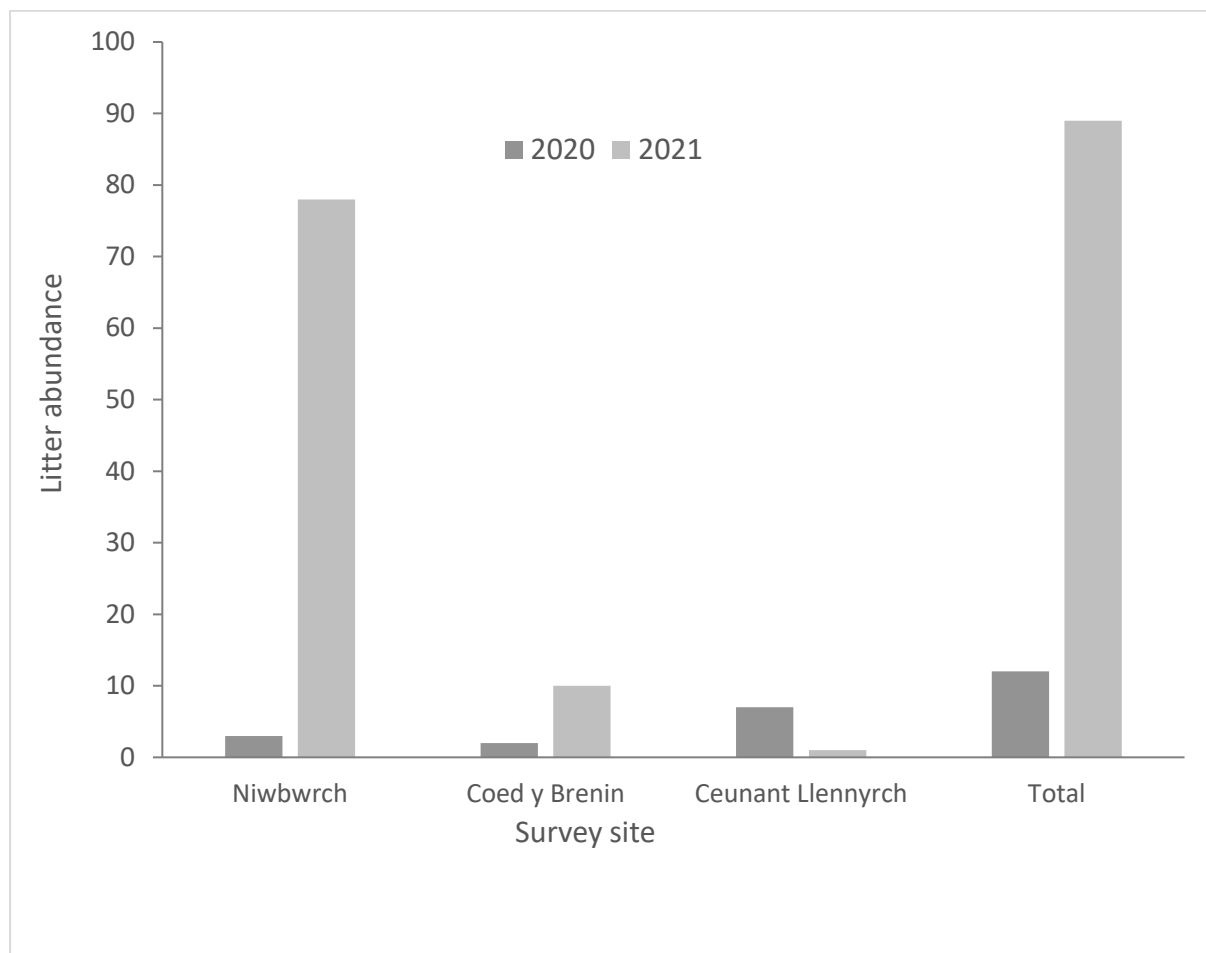


Figure 8. Totals for litter abundance across the three lowland survey sites in 2020 (dark grey) and 2021 (lighter grey).

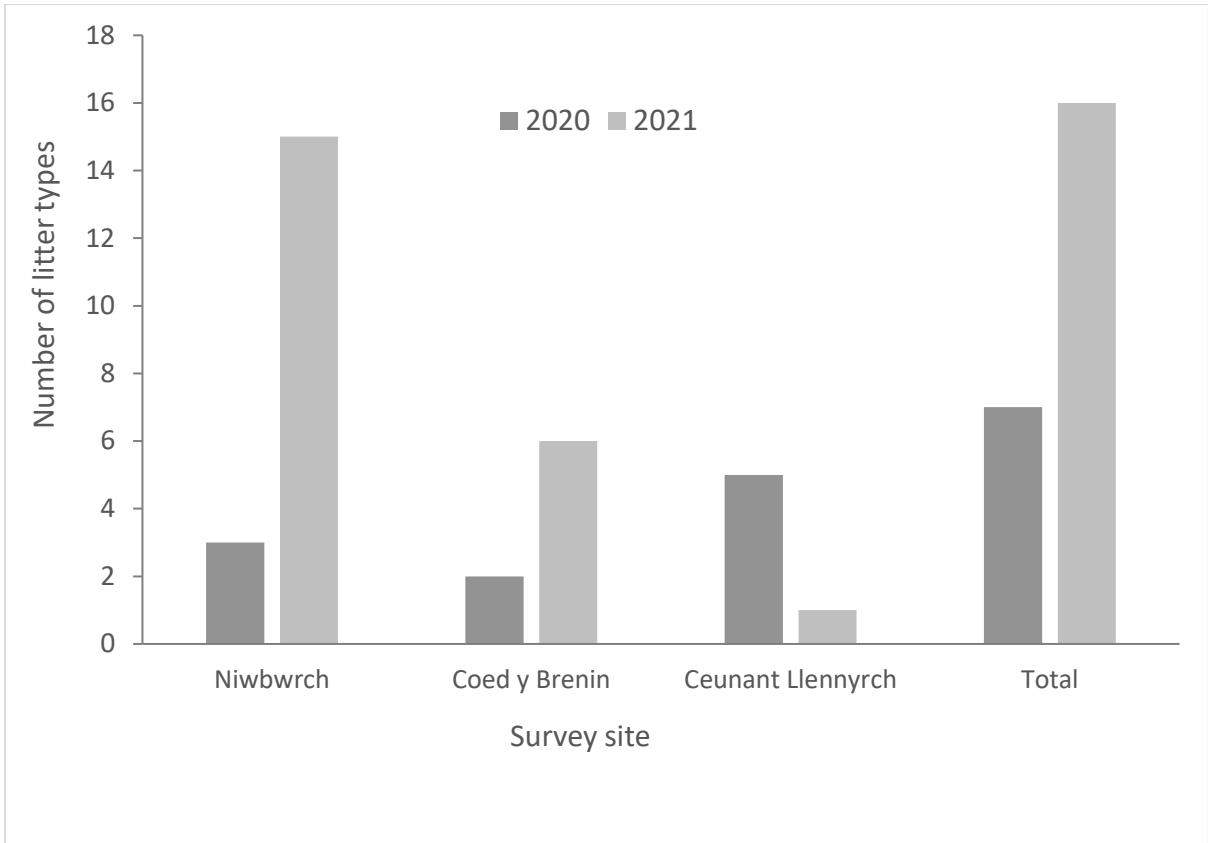


Figure 9. Totals for the number of litter types recorded across the three lowland survey sites in 2020 (dark grey) and 2021 (lighter grey).

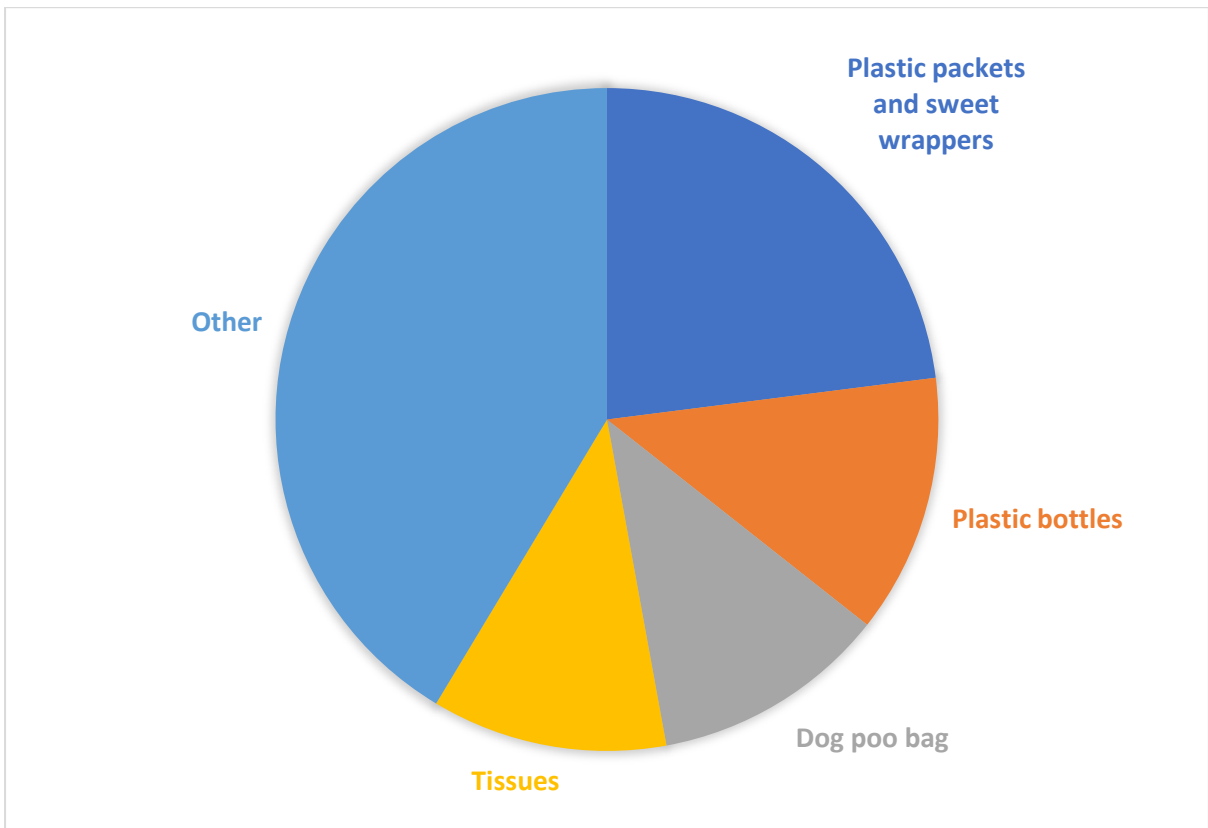


Figure 10. An overview of the most numerous litter types recorded across the lowland survey sites during the 2021 surveys.



## Other noteworthy records

There were no 'fly camping' activities noted across the survey sites covered in the 2021 surveys, although two people camping out in hammocks near the Rhaeadr Du waterfall in Ceunant Llennyrch were recorded on the survey visit (14<sup>th</sup> June 2021). Thankfully there was no associated littering on this occasion.



The tranquil waters of the Afon Prysor in Ceunant Llennyrch.

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We would like to thank the various land owners across the survey areas who agreed for access to these sites to allow for the work to take place.