

Fieldwork Notebook 2024-2025

2/10/2024

Butterfly Walk

Weather:

15°C

High wind (14 mph north-east)

No precipitation

Overcast (93% cloud cover)

Methodology:

Carry out a five minute point count of butterflies on the IQ University campus.

Record results + note observations.

Site Description:

Brownfield site (gravel foundations on reclaimed land), relatively barren of wildlife

Sparse distribution of grass (bare ground)

Water (present all year round – willow tree saplings, bulrush)

Nearby university buildings (surrounded by concrete infrastructure)

Next to the sea

Tidal lock chamber

Observations:

No butterflies spotted, likely due to the time of year (butterflies in hibernation (Meikl, 2022)), and short survey time.

Unidentified dragonfly species spotted

Semi permanent body of water, bulrush and willow sapling present

Poor drainage

Birds Species Identified:

- skylarks, territorial behaviour observed (Donald, 2010).
- crows
- seagulls
- magpies

9/10/2024

River Tawe Tree Walk

Weather:



Methodology:

Identify tree species along river Tawe. Analyse and compare abundance, make conclusions from observations (qualitative study).

Observations:

We observed multiple willow trees along the route. This was likely due to the abundance of water in the area (Brown, 2023).

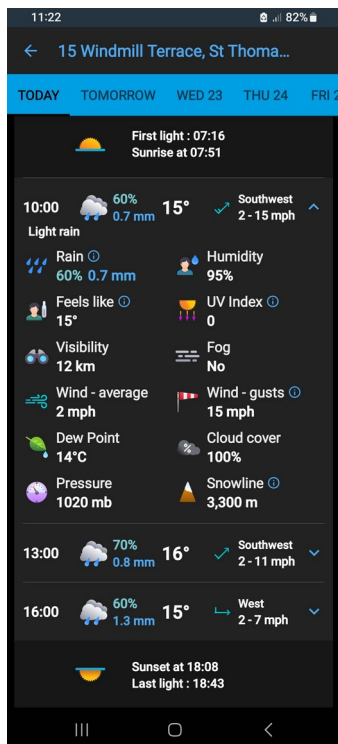
We also observed ladybird larva on many Scots pine trees in the campus area. This could indicate an infestation (Roy et al, 2016).



21/10/2024

BBNP Peatland Analysis

Weather:



Methodology:

Conduct various types of analysis on peatland roughly 1.5km East of Herbert's Quarry including:

- Assessment of peat depth using depth transects at two different locations
- Conduct three 10x10 meter quadrat surveys – observations made on the abundance various types of flora (vegetation mapping)
- Fixed point photography
- Mapping the landscape using GIS, terrestrial laser scanning and drones

This information was used to deduce the carbon content of the peatland as well as the general trend of degradation and other related observations to biodiversity.

The Brecon Beacons National Park is estimated to contain up to 15,922 hectares of peatland.

Observations:

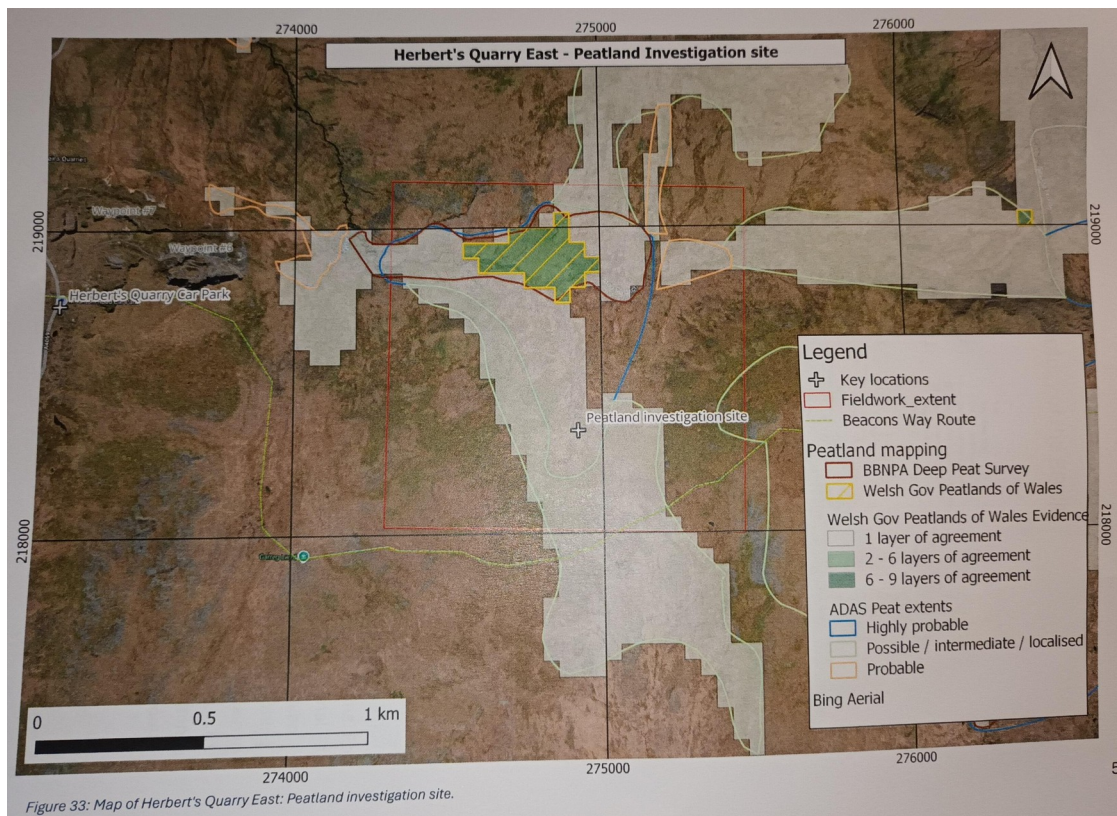
Cotton grass accounted for 20% coverage of quadrat 1 and 8% of quadrat 2, this type of vegetation is associated with abundant water. As such, the relatively low coverage may be indicative of a lowered water table, which is a sign of unhealthy peatland (Bain et al, 2011). The low quantity of sphagnum moss also supports this.

Transect one was measured to a depth of 115cm whilst transects two and three were measured at 50cm and 30cm respectively. This shows that the peat was degrading outwards from the centre of the valley.

Images:

- Figure 1 – Peatland erosion (Author, 2024)
- Figure 2 – Peatland investigation site 1 (Author, 2024)
- Figure 3 – Peatland investigation site 2 (Author, 2024)
- Figure 4 – Peatland investigation site 3 (Author, 2024)
- Figure 5 – Map of Herbert's Quarry (Cunningham, 2024)





22/10/2024

BBNP Landscape Analysis Techniques

Weather:

13°C

80% rain

96% humidity

Cloudy

Wind speed: 3.7mph

Methodology:

Analyse landscape and assess with various monitoring techniques such as Schmidt hammers (measuring rock hardness), carbon content of trees with clinometer and tape measure, camera trapping and water quality testing using field testing kits.

Images:

- Figure 1 – Craig-y-nos Country Park facing North East
- Figure 2 – Craig-y-nos Country Park duck pond (water quality testing sample area)



Figure 1

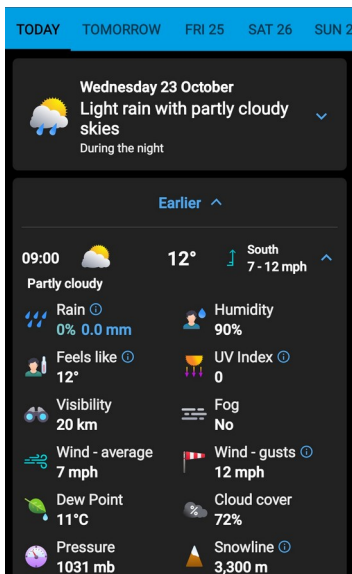


Figure 2

23/10/2024

Gower Organic Farming

Weather:



Methodology:

Site assessment – testing water quality (nitrogen, ammonia, pH).

Assess features around the farm such as water sources, which contribute to / against productivity, and indicate the efficiency of the farm.

Compare observed vs expected features in capacity, productivity etc.

Formulate a plan in which different methods / techniques are suggested, which aim to improve the function of the farm, such as a drainage system or raised planting beds.

Site Description:

Rural farm on Gower roughly 100m²

Situated on a slope

Receives high level of rainfall



**Figure 1 - Cae Tan Farm Site
(Google Maps, 2025)**

Observations:

High clay content in the soil around the farm – linked to poor drainage.

Nearby sources of water (river, two ponds).

No use of inorganic fertilisers in the poly tunnels.

All poly tunnels tested relatively low for pH (slight alkalinity). The first poly tunnel tested slightly high for nitrogen (compared to other tunnels). Low levels of ammonia in all tunnels. Soil was overall depleted of nutrients although with no presence of disease.

25/10/2024

Mumbles Sea Wall

Weather:



Methodology:

Record flora and fauna data from three sites along the Mumbles sea wall. Measures species abundance at sites. Collect water and sand samples at each site. Map sample areas using GIS, compare sites and make general observations on biodiversity in the area.

Observations:

The Bristol Channel has the second highest tidal range in the world. This results in unique conditions which in turn bring unique social, economic and environmental challenges. The Mumbles area in particular has been designated a zone of ecological significance.

Site 1 mainly consisted of rock pools with small, isolated patches of bare sand. Both sites 2 and 3 had far sparser distribution of rocks.

Seaweed Abundance –

	Site 1 (51.279, -3.999)	Site 2 (51.577, -3.991)	Site 3 (51.575, -3.995)
Bladder Wrack	(O)	(F)	(F)
Serrated Wrack	(O)	(O)	(R)
Sea Lettuce	—	(R)	(O)
Longweed	(D)	—	—
Sea Moss	(F)	(F)	(R)
Sea Lichen	—	(R)	—

Key:

D – >30%

A – 5-30%

F – <5%

O – Scattered Patches

R – One Patch

Various different types of seaweed were observed. The two most abundant species (by far) were bladder wrack and serrated wrack. Sites varied in seaweed coverage (mainly proportional to the presence of rocks). Other seaweed species identified

included sea lettuce and thongweed. In addition to seaweed, sea moss and sea lichen were also present.

Other observations included –

- Presence of sea urchin
- Dead male shore crab identified
- Oyster catchers
- Mussels
- Seagulls (mainly common gulls)
- Crows feeding on shellfish
- Worm casts, particularly abundant in sites 2 and 3

The construction of the new sea wall as part of the Mumbles Coastal Protection Scheme (figure 5) has been designed with a sea-hive (hexagonal) texture. This is predicted to boost biodiversity by providing a coastal habitat for flora and fauna (Swansea University, 2025).

Images:

- Figure 1 – Completed section of sea hive wall (Author, 2024).
- Figure 2 – Metal frame for concrete mould (Author, 2024).
- Figure 3 – Sea lichen on protruding rock (Author, 2024).
- Figure 4 – Common gull social behaviour (Author, 2024).
- Figure 5 – Coastal protection scheme information board (Author, 2024).
- Figure 6 – Mumbles coastal cliffs (Author, 2024).



F1



F3



11/11/2024



F5



F6

Kilvey Hill Woodland Analysis

Weather:

13°C feels like 10

42% rain

90% humidity

Mostly clear

Wind: 7.4mph

Methodology:

Assess the site with particular focus on ecological diversity. Measure carbon content of a sample of trees using a tape measure and clinometer to provide rough estimate.

Observations:

Water contained high levels of pollutants including various heavy metals.

Widespread stunted tree growth (presumably a result of pollution).

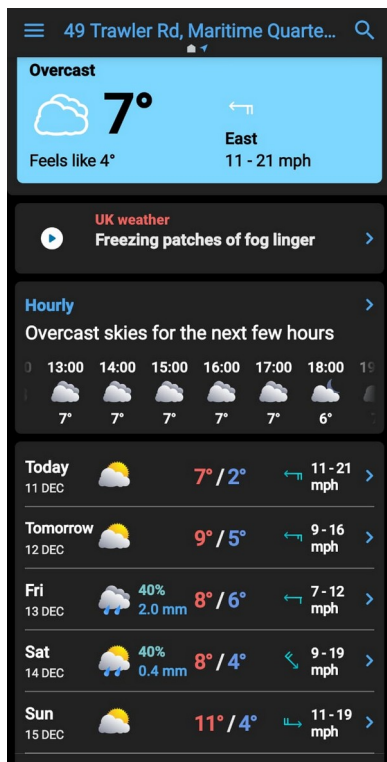
Tree species were predominantly coniferous (mainly Scots pine).

Soil depth was unusually shallow

11/12/24

Swansea Bay Dune Analysis

Weather:



Methodology:

Assess degradation / accretion as well as overall site health by performing a transect and making general observations about land use / factors affecting the area.

Observations:

Species noted -

- Sea spurge
- Sycamore tree
- Sea holly
- Dewberry
- Marram grass
- Various species of moss (indicates consistently damp environment).
- Fescue species

Invasive species noted -

- Yucca
- Japanese rose
- Various conifer tree species

The original formation was natural, caused by longshore drift, dunes are now reinforced with marram grass, with no embryo dunes present. There is evidence of a level of high exposure to humans / human interaction (burnt material, litter, dog faeces, many paths through the dune system). Some evidence of recent storm activity – large chunks of driftwood deposited near the dune. Dune formation ends at harbour wall (where it is artificially cut off). Herring gulls were also present.

The number of invasive species spotted suggest an unhealthy / unnatural environment, likely due to human interference. (Walle, 2022).

Quadrats -

Beginning of transect: 51.613744, -3.931133

End of transect: 51.613969, -3.931133

- No.1 (located at the front of the dune): 97% marram coverage, 3% exposed sand.
- No.2: 88% exposed sand, 55% marram grass, 19% wild carrot, 17% daisies, 4% lesser hawkbit.
- No.3: 50% marram, 23% wild carrot, 22% dewberry, 10% sea rocket, 1% creeping buttercup.
- No.4 (rear end of dune): 100% pastureland grass, 46% dewberry

Images -

Figure 1 – Information board for Swansea Bay.

29/01/25

Swansea Bay Bird Survey

Weather:



Methodology:

Record bird species count along a transect (figure 4), observe setting.

Observations:

Species Noted -

- Crows (six sighted)
- Herring Gulls (sixteen sighted)
- Lesser Black Backed Gulls (five sighted)
- Black Capped Gulls (four sighted)
- Sparrows (five sighted)
- Pied Wagtails (two sighted)
- Green Sandpiper (eleven sighted)
- Little Ringed Plover (one sighted)
- Juvenile Gulls, Unidentified Species (three spotted)

Other species observed in the near vicinity (outside of the transect) included cormorants and rock pigeons.

Area studied had heavy anthropogenic influence:

- Urban / industrial setting – concrete pier
- Dog walking
- Fishing
- Inorganic waste

The nearby dune formation was heavily damaged and contained large quantities of rubble from previous construction project (footfall has prevented reformation).

The main behaviour noted was feeding, mainly from carrion crows (BTO, 2010).

Images –



Figure 1a + 1b – Opened shell dropped by crow (Author, 2025).



Figure 2 – Burnt plastic waste spotted (Author, 2025).



Figure 3 – Crow feeding behaviour (Author, 2025).



Figure 4 – Transect (Google Maps, 2019).

29/01/25

White Rock Heritage Park Tree Survey

Weather:



Methodology:

Gathered data for estimating carbon content in a random sample of trees, in addition to carrying out a point centred quarter technique to measure tree density (Field Studies Council, n.d.).

Observations:

The site neighboured a public footpath and was roughly an acre in size. Typically damp environment due to drain off received from Kilvey Hill. Anthropogenic disturbance – level of footfall, litter, plantation furrows (reclaimed land). Damaged larch cones indicating feeding activities from small mammals. Robin foraging behaviour noted. Abundant deadwood in the area. Signs of woodpecker activity in deadwood.

Despite the site being reclaimed (brownfield), it is difficult to assess whether biodiversity has been affected positively or negatively over the long term (Hunter, 2014).

Species Noted:

- Holly
- Larch
- Sycamore
- Alder
- Silver Birch
- Holm Oak (invasive)
- Beach
- Japanese Knotweed (invasive)
- Hart's Tongue Fern
- Bracket Fungi (various other species unidentified)

14/03/25

Singleton Park Kick Sampling

Weather:



Methodology:

Identify species diversity (macro invertebrates) using the BMWP index (Biological Monitoring Working Party). Select a random section of a river and use a kick sampling method (disturbing river bed) timed for one minute per sample.

Certain species of Mayfly Cadisfly and Stonefly indicate low sustained pollution due to their sensitivity to pollutants (Xu et al, 2014).

Observations:

- Nuthatch bird spotted
- Blackbird spotted
- Land use observed (figure 1), littering
- Urban surroundings
- Next to a public footpath

Sample 1 -

- Swimming mayfly nymphs
- Freshwater leeches
- Freshwater shrimp
- Beetle larva
- Hoglouse

BMWP Score: 5/10

Sample 2 -

- Flatworms

- Swimming mayfly nymph
- Freshwater leeches
- Freshwater shrimp
- Non biting midge larva

BMWP Score: 4/10

Sample 3 -

- Swimming mayfly nymph
- Freshwater shrimp
- Biting midge larva
- Hoglouse

BMWP Score: 4/10

Overall Score: 4.3/10 (below average species diversity – indicating a level of sustained pollution).

Images -



Figure 1 – Kick Sampling Location



Figure 2 – River Bed



Figure 3 – Location Within Singleton Park (next to public footpath)

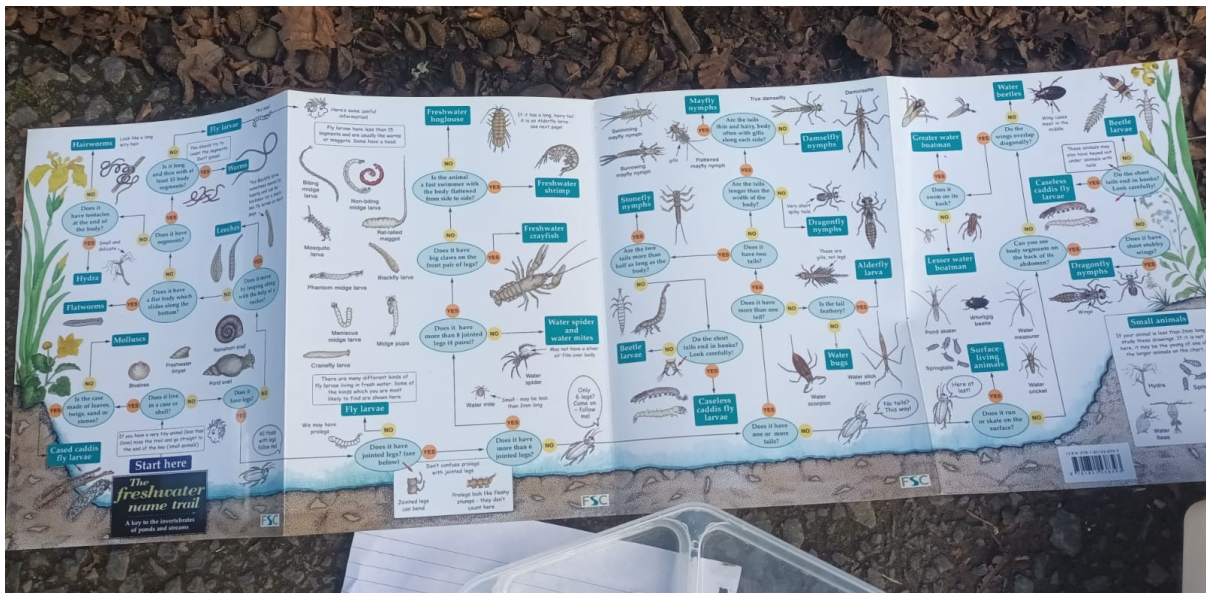


Figure 4 – Identification Guide



Figure 5 – Freshwater Invertebrates in Sample 1 (pt. 1)



Figure 6 – Freshwater Invertebrates in Sample 1 (pt. 2)

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