Sussex Biodiversity Partnership Student Research List

Introduction

This list outlines potential research projects which could be developed by students to fulfil course requirements and contribute to the work of Sussex Biodiversity Partnership.

The list is intended as a guide, with project ideas forming the basis of undergraduate or postgraduate research studies. Some projects will require fieldwork at particular times of the year whereas others are more desk-based. Others will also require research over subsequent years and may be more suited to part time students.

Student Support

Sussex Biodiversity Partnership is made up of representatives from a number of organisations and is happy to advise on development of projects from this list. Assistance could include advice on background reading and literature review, availability of data, previous work and site history, local experts and potential study sites.

Sussex Biodiversity Partnership cannot secure access to private land although may be able to assist in providing contact details for landowners. Fieldwork on statutorily protected sites will require approval from Natural England - again contact details can be provided.

Work on certain protected species will require a licence. Sussex Biodiversity Partnership cannot secure such licensing but will be able to advise on the procedures involved.

Student Requirements

Research requires self motivation and a number of the studies listed will require students to have particular skills or access to facilities and equipment; for example possession of a driving licence, ecological identification skills, access to personal transport or GIS software.

Research on any habitats included in the Sussex Biodiversity Action Plan (BAP) or any species listed on the UK BAP found in Sussex (a list can be provided) would be particularly welcomed by Sussex Biodiversity Partnership, but all research that furthers ecological understanding is valuable.

Sussex Biodiversity Action Plan

The **BAP habitat** types found in Sussex are listed below. For a definition of a habitat type, contact Sussex Biodiversity Partnership or visit the UK BAP website http://www.ukbap.org.uk/

Coastal	coastal saltmarsh; coastal sand dunes; coastal vegetated shingle; intertidal mudflats; maritime cliff and slope; saline lagoons
Lowland farmland	arable field margins; hedgerows; lowland calcareous grassland; lowland dry acid grassland; lowland heathland; lowland meadows; purple moor grass and rush pasture; traditional orchards
Marine	blue mussel beds on sediment ; intertidal chalk; intertidal underboulder communities; mud habitats in deep water; peat and clay exposures; *Sabellaria spinulosa* reefs; seagrass beds; subtidal chalk; subtidal sands and gravels
Towns, cities and development	open mosaic habitats on previously developed land
Uplands	inland rock outcrop and scree habitats
Wetlands	chalk rivers; coastal and floodplain grazing marsh; eutrophic standing waters; lowland fens; ponds; reedbeds; rivers
Woodland	lowland Beech and Yew woodland; lowland mixed deciduous woodland; wet woodland; wood-pasture and parkland

A list of the **UK BAP species** recorded in Sussex can be obtained from Sussex Biodiversity Partnership, an overview is shown below.

Birds	52 species recorded
Fish	seven species recorded
Fungi	52 species recorded
Herptiles	ten species recorded
Marine species	24 species recorded
Non-vascular plants	33 species recorded
Invertebrates	220 species recorded
Terrestrial mammals	16 species recorded
Vascular plants	94 species recorded

Project List - Anthropogenic-based Studies

Development of wetland education - a project to develop education material and analyse the best methods to communicate issues such as catchment management, climate change and flooding.

Disturbance studies at Rye Harbour - there are a number of species that could be studied to look at the interaction of wildlife and people, including species of birds and plants.

Impacts of visitors at Pagham Harbour - determine the environmental impacts of visitors to different zones within the Local Nature Reserve through the use of counters, surveys, and the monitoring of visitor movement and behaviour.

Impacts of visitors on birds at Pagham Harbour - assess the effects of human activity on wintering shorebirds, with particular reference to the shingle spits and associated islands.

Land use history - collate the full history of land use within Pagham Harbour Local Nature Reserve.

Traffic impacts - estimate the effect of traffic on the Manhood Peninsula resulting from a significant increase in visitors to a new centre at Siddlesham.

Project List - Habitat-based Studies

Habitat monitoring - carry out research to identify suitable species to act as indicators in monitoring effectiveness of landscape-scale restoration schemes, in order to develop and test a condition monitoring scheme.

Coastal

Coastal processes at Pagham Harbour - extend the research on local coastal and inter-tidal processes as recommended by the Southampton Geodata Report 1994 (Southampton University)

Feasibility study - assess the feasibility of establishing a saline lagoon, scrapes and reedbeds on the Siddlesham landfill site.

Freshwater flows at Pagham Harbour - determine the influence of freshwater flows over the saltings at mid/low tide in terms of invertebrate/flora composition and the distribution and behaviour of waterfowl.

Impact of rabbits on habitats at Rye Harbour - there are some Rabbit-proof areas on the nature reserve that demonstrate the impact this species can have on some of our plants, which can form the basis of a study.

Long-term habitat studies at Rye Harbour - the dynamics of several newly created habitats, including saltmarsh, shingle ridge, saline lagoon and reedbed, could be studied by a series of students.

Non-native species at Pagham Harbour - investigate the impacts (positive and negative) of non-native species on the native flora and fauna of vegetated shingle. Establish management regimes to promote biodiversity plus protect species/communities of local and national importance.

Pagham Lagoon - establish source/s of over-enrichment/eutrophication resulting in the loss of specialist interest and identify remedial measures.

Recolonisation of shingle - investigation of the best methods to encourage recolonisation of damaged areas of coastal vegetated shingle.

Saline lagoons at Pagham Harbour - work on all saline lagoons, particularly the future remedial options for Ferry Pool regarding its salinity, water quality and topography.

Saltmarsh at Pagham Harbour - measure the rate of saltmarsh development (with particular reference to *Spartina anglica*) and its impact on intertidal invertebrate fauna/flora and subsequent distribution/concentration of waterfowl.

Spits at Pagham Harbour - assess the extent and nature of impact due to any natural realignment of Church Norton Spit and any mitigation measures for loss of special interest

features (habitats and species) such as translocation as opposed to natural re-colonisation/regeneration.

Lowland Farmland

Assessing hedgerow condition - compare and evaluate the procedure for identifying hedgerows in favourable condition in the Hedgerow Survey Handbook with the Hedgerow Evaluation and Grading System for identifying hedgerows of high conservation value.

Farmland biodiversity study - assess the suitability of arable plant species as indicators for wider farmland biodiversity.

Hedgerows of high conservation value - using advice published by Sussex Hedgerow Inventory Project to identify particular areas in Sussex where hedgerows might be seen as of high conservation value.

Wet heathland habitat verification - a study to help map and verify sites with wet heathland habitat.

Marine

Marine habitats at Pagham Harbour - assess the biodiversity within off-shore waters for the notification or otherwise of a Voluntary Marine Reserve as outlined in the management plan consultation.

Nutrient and sediment at Pagham Harbour - add to the research work highlighted by the University of Brighton's initial three year study on nutrient and sediment transport processes.

Wetlands

Ponds and livestock - undertake an assessment of the impact of livestock on small ponds, to establish what effect activities such as trampling and wallowing in ponds has on different flora and fauna.

Pond management - undertake an assessment of the long-term impacts of pond management on different flora and fauna.

Pond surveys - undertake an audit of the pond flora and fauna of Chichester Harbour.

Reedbeds in Pagham Harbour - assess the relative performance of Common Reed in response to differing water levels/control management regimes within Mill Pond Marsh, Siddlesham.

Wetland habitat network mapping - GIS-based project to develop a map of priority wetlands and investigate how these can be buffered and connected in the wider landscape.

Wetland habitat potential mapping - GIS-based project to analyse potential for different wetland habitat types.

Woodland

Woodland regeneration - study the lack of natural regeneration, particularly oak, and ground flora diversity within the Norton Priory Woodland.

Project List - Species-based Studies

Rare species studies at Rye Harbour - many of the 150 nationally rare and endangered species would make good subjects for study that would increase our understanding and so help with conservation management. Studies could include work on distribution, habitat requirements or phenology. There is an extensive wildlife database and summarised information could be provided to form a basis of a study.

Birds

Behaviour studies at Rye Harbour - many different bird species could be studied to find out more about habitats such as feeding of seabird chicks in relation to tide and weather, and interaction of species such as Mediterranean Gull and terns.

Effect of wildfowl grazing - use remote sensing to quantify the effect of grazing by Dark-bellied Brent Geese *Branta bernicla bernicla* on agricultural crops around Chichester Harbour.

Feeding waders and wildfowl - investigate the effect of smothering green algal mats on intertidal feeding waders and wildfowl in Chichester Harbour.

Fish

Bass in Pagham Harbour - study of bass populations (through tagging) and assessment of the significance of Pagham Harbour as a nursery site.

Juvenile fish - a study of the fate of juvenile fish of selected species in Chichester Harbour, utilising data collected by the collaboration between Sussex Seas Fisheries Committee, the Environment Agency and Chichester Harbour Conservancy.

Invasive Non-native Species

Lagoon non-native invertebrates in Widewater Lagoon - a study of the Orange-striped Anemone *Haliplanella lineate*, a non-native species from Asia, and in particular whether this species impacts any native lagoon species and should be considered invasive.

Marine non-native species in East Sussex - a project to establish the current extent of Wireweed *Sargassum muticum* in East Sussex and to investigate the potential impacts on the native flora and fauna of rocky shores.

Marine

Eel Grass in Chichester Harbour - a study of the factors affecting the distribution and/or performance of Eel Grass *Zostera* Spp.

Eel Grass in Pagham Harbour - map species present plus viability/desirability of re-introduction. Establish factors affecting distribution, abundance and vigour.

Harbour Seal - further analysis of photo-identification data of the Solent Harbour Seal *Phoca vitulina* population.

Marine mollusc populations - An investigation into the ecology of selected marine mollusc species in Chichester Harbour. This could include exploring the impacts of the introduced Slipper Limpet *Crepidula fornicata* on native species, or looking at the factors affecting the distribution and abundance of a chosen species, for example Native Oyster *Ostrea edulis*, which has been the subject of a recent re-establishment project.

Saline lagoon invertebrates in Chichester Harbour - an investigation of saline lagoon invertebrate fauna based on the sites surveyed by Bamber (1998) and Thorp (1999), with particular regard to Starlet Sea Anemone *Nematostella vectensis,* Lagoon Sand Shrimp *Gammarus insensibillis* and Tentacled Lagoon Worm *Alkmaria romijni.*

Saline lagoon invertebrates in Widewater Lagoon - a study of saline lagoon invertebrate fauna in Widewater Lagoon. Potential species include Lagoon Sand Shrimp *Gammarus insensibillis* and Ivell's Sea Anemone *Edwardsia ivelli* (it is possible this species is extinct but there have been no searches in recent years).

Saline lagoon invertebrates in Widewater Lagoon - a study of *Thieliana navis* (a rare hydroid) and whether its populations are being impacted by stickleback predation.

Terrestrial Invertebrates

Large Gold Case-bearer Moth - Develop a simple monitoring system for the Large Gold Case-bearer moth *Coleophora vibecella* to guide management work at Chichester Harbour, potentially through the extent of its larval food-plant Dyers Greenweed *Genista tinctoria.*

Striped Lychnis Moth Shargacucullia lychnitis *in West Sussex* - A study updating and assessing this moth's current spread through the County, and investigating the factors that have lead to its spread. The study could also include research into habitat preference, presence and enhancement.

Terrestrial Mammals

Bat community - an assessment of the bat fauna of Chichester Harbour.

Habitat mapping for riparian mammals - GIS-based projects to digitise and analyse wetland habitat layers in order to establish 'paths of least resistance' for European Otter and Water Vole habitat restoration.

Rabbit grazing at Pagham Harbour - determine the effects of rabbit grazing within various habitats on the reserve - particularly grassland, woodland/scrub and coastal vegetated shingle.

Water Vole project - survey of current know Water Vole population and analysis of what habitat restoration work could be undertaken to link isolated populations through the landscape to create a viable network of sites across the county.

Vascular Plants

Declining weald grassland plant species in West Sussex - Investigate the current and historic distribution, habitat requirements and land management of uncommon declining plant species, notably Meadow Thistle *Cirsium dissectum* and Saw-wort *Silybum tinctoria*, providing recommendations for restoration and enhancement of existing populations.

Important arable plant study - Investigate habitat requirements of rare arable flora notably Shepherd's-needle *Scandix pecten-veneris* and Spreading Hedge-parsley *Torillis arvensis* and potential for expanding existing populations.

Undertaking a project

If you would like to undertake a project on this list, in the first instance please contact the Biodiversity Coordinator for further details and any relevant contact information:

Email biodiversityofficer@sussexwt.org.uk

Telephone 01273 497551

Address Sussex Wildlife Trust, Woods Mill, Henfield, West Sussex, BN5 9SD.

Website www.biodiversitysussex.org

Should work be undertaken on any of the topics listed, we request that the results or a summary of these be made available to Sussex Biodiversity Partnership to further inform our conservation work. We always welcome species records which further contribute to our knowledge of the county and species distribution - these should be supplied to the Sussex Biodiversity Record Centre http://sxbrc.org.uk/.

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