



**Game & Wildlife Conservation Trust**

**MSc Project Proposals for 2023**

**[www.gwct.org.uk](http://www.gwct.org.uk)**

## **MSc PROJECT PROPOSAL 2023**

### **The impact of novel conservation habitats in arable farmland on invertebrates**

During the recent EU Interreg-funded PARTRIDGE project, GWCT worked with a demonstration farm in southern Scotland to develop novel conservation crops that would perform multiple functions. As part of the legacy of this project, we want to continue researching their impact on farmland wildlife – in this case, invertebrates.

Previous work suggests these habitats can support higher abundance and diversity of some invertebrate groups and that these may enhance pest management ecosystem services. However, further work is needed to refine this and consider groups previously omitted, most notably moths. By sampling invertebrates, using both pitfall traps and sweep nets for diurnal invertebrates and light traps for nocturnal ones, in the novel habitats and in comparable conventional habitats across the farm and perhaps on neighbouring farms, we hope to better understand the role the conservation habitats have in supporting farmland invertebrates. Full training will be given.

This work can be done between May and August, with a minimum of six weeks for fieldwork. The successful candidate will gain valuable experience of survey techniques and fieldwork, and learn about database management and interrogation too. They will work as part of a small team and there will be opportunities to take part in other research activities occasionally if they wish. The candidate must have their own transport to get to the field site at Balgonie Estate, South Parks, Glenrothes, KY7 6HH (a contribution towards travel expenses will be available for the successful candidate).

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## **MSc PROJECT PROPOSAL 2023**

### **The impact of novel conservation habitats in arable farmland on declining farmland birds**

During the recent EU Interreg-funded PARTRIDGE project, GWCT worked with a demonstration farm in southern Scotland to develop novel conservation crops that would perform multiple functions. As part of the legacy of this project, we want to continue researching their impact on farmland wildlife. This project would run alongside another focusing on invertebrates.

Previous work found a greater number of territories alongside these novel conservation habitats and suggested that, for some key species at least, breeding success may have been higher too. We would like to build on and expand this work, comparing a variety of habitats across the farm and perhaps comparing with neighbouring farms. This would involve survey work relatively early in the morning to first identify territories and then monitor them to record breeding outcomes. Full training in techniques will be given.

This work must start no later than May and would require a minimum of six weeks for fieldwork. The successful candidate will gain valuable experience of survey techniques and fieldwork, and learn about database management and interrogation too. They will work as part of a small team and there will be opportunities to take part in other research activities occasionally if they wish. The candidate must have their own transport to get to the field site at Balgonie Estate, South Parks, Glenrothes, KY7 6HH (a contribution towards travel expenses will be available for the successful candidate). Bird ID skills would be helpful but not essential.

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## **MSc PROJECT PROPOSAL 2023**

### **Title: Manipulating non-crop habitats within fields to enhance biological pest management**

The future use of certain crop sprays to control pests is in doubt, leading to a need to identify more benign methods of managing crop pest populations. Working with a farm in Fife, Scotland, we have begun investigating the use of cover crops within conventional crops as a means of manipulating invertebrate populations, to see if this might enhance the control of pests by predatory arthropods.

By using a combination of pitfall traps and sweep nets, this project would monitor invertebrate abundance in the cover crops and conventional crops, to determine invertebrate distribution and abundance throughout. Full training in techniques will be given.

This project would take place between approximately July and September and would require a minimum of six weeks for fieldwork. The successful candidate will gain valuable experience of survey techniques and fieldwork and learn about database management and interrogation too. They will work as part of a small team and there will be opportunities to take part in other research activities occasionally if they wish. The candidate must have their own transport to get to the field site at Balgonie Estate, South Parks, Glenrothes, KY7 6HH (a contribution towards travel expenses will be available for the successful candidate).

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## **MSc PROJECT PROPOSAL 2023**

### **Comparing methods of assessing badger activity at farmland sites**

Badgers are hard to survey for practical reasons and there is currently no clear idea of the population status in Scotland, though it is generally agreed that it is increasing. In the absence of robust population data, accurately assessing the degree of badger activity at a variety of sites can be important.

This project would investigate direct and indirect methods of assessing badger activity to compare their efficacy and practicality. These will include the use of trail cameras, hair traps (hairs to be genetically analysed by an external organisation), and bait marking (using coloured bait pellets). Fieldwork should start end of February for 2-3 months and could take place at the Game and Wildlife Scottish Demonstration Farm (GWSDF) [Auchnerran](#), in Aberdeenshire or at a field site in Midlothian, southern Scotland. Training in methodology will be given.

The successful candidate will gain valuable experience of survey techniques and fieldwork. They will work as part of a small team and there will be opportunities to take part in other research activities, if they wish. The candidate must have their own transport to get to the field site (a contribution towards travel expenses will be available for the successful candidate).

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## **MSc PROJECT PROPOSAL 2023**

### **Habitat use by bumblebees and honeybees on a grass-dominated marginal farm**

Traditional grass farms often included floristically rich areas resulting from low-intensity management, such as hay fields or simply hard-to-manage corners. Today much of this has been lost. The Game and Wildlife Scottish Demonstration Farm (GWSDF) [Auchnerran](#), in Aberdeenshire is a grass-dominated sheep farm at the hill-edge with Dinnet Moor. We have been monitoring the bumblebee population on the farm over the past 7 years and this year we will be introducing honeybees to the farm and we will be planting pollinator mixes in designated areas.

The project will involve surveying of wild bees (notably bumblebees) and kept honeybees across the farm to investigate their habitat use and identify which nectar sources are important to them. We want to investigate whether our pollinator mixes are effective in providing additional food source for bees and investigate whether there is competition between the wild and kept bees. This project could be carried out anytime between May and August.

The successful candidate will require skills in database management and data analyses. They will gain valuable experience of various survey techniques, ID skills, and of fieldwork in general. They will work as part of a small team based at Auchnerran and there will be opportunities to take part in other field work activities, if they so wish. The candidate must have their own transport to get to the field site near Logie Coldstone, AB24 5PT (a contribution towards travel expenses will be available for the successful candidate). Training will be given on site.

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## **MSc PROJECT PROPOSAL 2023**

### **How to identify decision points in animal travel routes?**

Studies of animal spatial cognition have shown that many primate species navigate by a network of habitual routes, a finding consistent with navigation via a topological map. Within these route networks, intersections among routes are presumed to represent locations of decision-making. A so-called 'change point test' was developed to identify locations of directional change where animals decide where to go next.

In this project you will be analysing existing ranging data of chacma baboon in Soutpansbergen, South Africa. The utility of the change-point test is extended by a novel application of CrimeStat, a software program for the analysis of crime incident locations, to provide a detailed quantitative analysis of the spatial distribution of change-points by identifying clusters of change-points where animals repeatedly change direction on multiple travel days through hotspot analysis. This method is to be compared to other clustering methodologies.

The successful candidate will obtain skills in database management, ArcGIS Pro and cluster data analyses. They will gain valuable experience in data analyses and have the opportunity to co-author a scientific publication based on their project work. This project is co-supervised by Professor Russell Hill at Durham University. This project is desk-based and could be done from their home (university), but if desired, a workspace could be made available at Durham University.

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