

## Biological Recording on our Estates



Since time immemorial, people have recorded the wildlife and natural history they see around them. Today more than ever, with the urgent threat of climate change and the alarming rates of species decline and extinction, it is essential that we make well-organised and accurate records of what we observe and contribute the data we gather to local and national records repositories, notably the Biological Record Centres. By tracking species gains and losses, we can implement effective, evidence-based management.

Thus, good baseline data are essential for the ecosystem approach we take. These data combine to form benchmarks against which to measure changes and improvements in biodiversity as a result of our stewardship. Using sound identification and recording skills is essential and these are applied by our staff. It is not just a matter of making lists – date, location, habitat notes, *etc.* are also needed. We also encourage students, keen local residents or other volunteers who want an opportunity to do some biological recording work.

### RECORDING FACILITIES

Records need to be collected in all habitat types and in all seasons – an ongoing and long-term process. Data collected are stored digitally on our central company server. We have several recording types and levels that we employ. The most detailed is the one we have developed in-house, and this is able to handle records of mammals, birds, amphibians, reptiles, fish, molluscs, crustaceans, arachnids, myriapods, insects, annelids, nematodes, flatworms, cnidarians, flowering plants, conifers, club mosses, horsetails, ferns, liverworts, mosses, larger fungi & lichens, and algae/micro-organisms (with stoneworts & diatoms and cyanobacteria). The recording forms for this are in template form (eleven taxonomic divisional sheets and notes) and are gradually being developed into site-specific datasets. Below is a small section of one sheet from one site’s botanical records:

Vascular plants								
PHYLUM: PLANTAE								
Club mosses, horsetails, ferns, conifers, angiosperms								
CLASS	ORDER	Family	Genus	species	subspecies	Author	Nomencl. date if known	Vernacular name
LYCOPODIOPSIDA								
EQUISETOPSIDA								
PTEROPSIDA	POLYPODIALES	Dryopteridaceae	Dryopteris	<i>flix-mas</i>		(Linnaeus) Schott		male fern
PINOPSIDA								
MAGNOLIOPSIDA MAGNOLIIDAE	RANUNCULALES	Ranunculaceae	Ranunculus	<i>repens</i>		Linnaeus	1753	creeping buttercup
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Lathyrus	<i>pratensis</i>		Linnaeus	1753	meadow vetchling
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Lotus	<i>corniculatus</i>		Linnaeus	1753	common bird's-foot trefoil
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Medicago	<i>lupulina</i>		Linnaeus	1753	black medick
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Trifolium	<i>dubium</i>		John Sibthorp		lesser trefoil
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Trifolium	<i>pratense</i>		Linnaeus	1753	red clover
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Trifolium	<i>repens</i>		Linnaeus	1753	white clover
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Vicia	<i>sativa</i>		Linnaeus	1753	common vetch
MAGNOLIOPSIDA MAGNOLIIDAE	FABALES	Fabaceae	Vicia	<i>sepium</i>		Linnaeus	1753	bush vetch
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Crataegus	<i>monogyna</i>		von Jacquin		hawthorn
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Filipendula	<i>ulmaria</i>		(Linnaeus) Maximowicz		meadowsweet
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Geum	<i>urbanum</i>		Linnaeus	1753	wood avens
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Malus	<i>sylvestris</i>		(Linnaeus) Miller		crab apple
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Potentilla	<i>reptans</i>		Linnaeus	1753	creeping cinquefoil
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Prunus	<i>avium</i>		(Linnaeus) Linnaeus	1755	wild cherry
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Prunus	<i>padus</i>		Linnaeus	1753	bird cherry
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Rosa	<i>arvensis</i>		Hudson		field rose
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Rosa	<i>canina</i> agg.		Linnaeus	1753	dog rose
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Rubus	<i>fruticosus</i> agg.		Linnaeus	1753	bramble
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Rosaceae	Sorbus	<i>aucuparia</i>		Linnaeus	1753	rowan
MAGNOLIOPSIDA MAGNOLIIDAE	ROSALES	Urticaceae	Urtica	<i>dioica</i>		Linnaeus	1753	common nettle
MAGNOLIOPSIDA MAGNOLIIDAE	FAGALES	Fagaceae	Fagus	<i>sylvatica</i>	var. <i>atropinica</i>	Linnaeus	1753	copper beech
MAGNOLIOPSIDA MAGNOLIIDAE	FAGALES	Fagaceae	Quercus	<i>petraea</i>		(Mattuschka) Lieblein		sessile oak
MAGNOLIOPSIDA MAGNOLIIDAE	FAGALES	Fagaceae	Quercus	<i>robur</i>		Linnaeus	1753	pedunculata oak
MAGNOLIOPSIDA MAGNOLIIDAE	FAGALES	Betulaceae	Betula	<i>pendula</i>		Roth		silver birch
MAGNOLIOPSIDA MAGNOLIIDAE	FAGALES	Betulaceae	Carpinus	<i>betulus</i>		Linnaeus	1753	hornbeam
MAGNOLIOPSIDA MAGNOLIIDAE	FAGALES	Betulaceae	Corylus	<i>avellana</i>		Linnaeus	1753	hazel
MAGNOLIOPSIDA MAGNOLIIDAE	MALPIGHIALES	Euphorbiaceae	Mercurialis	<i>perennis</i>		Linnaeus	1753	dog's mercury
MAGNOLIOPSIDA MAGNOLIIDAE	MALPIGHIALES	Salicaceae	Salix	<i>cinerea</i> agg.		Linnaeus	1753	grey willow
MAGNOLIOPSIDA MAGNOLIIDAE	MALPIGHIALES	Salicaceae	Salix	<i>fragilis</i>		Linnaeus	1753	crack willow

We also have simpler recording sheets for use in quick surveys or for volunteers and keen observers who are non-specialists. The primary one is a general sheet in the format used by the Biological

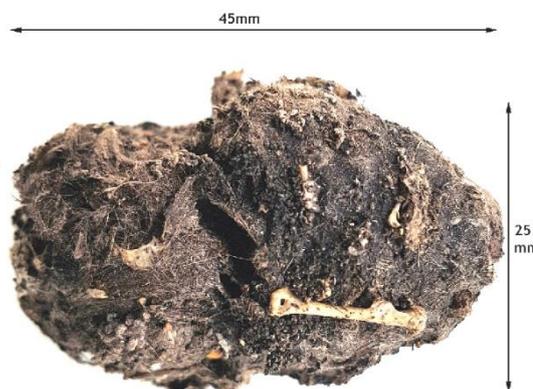
Record Centres. This records: common name, scientific name if known, site name, Ordnance Survey grid reference, recorder's name, date, number of individuals seen, recording method, photo/sound recording, and comments (for example gender, behaviour, habitat, substratum). However, simple lists of observations with dates and photos are sometimes all that can be done and in any case are always welcome.

### RECORDING PROCEDURES

Although it is sometimes unavoidable for certain invertebrates and plants, as a general rule collecting of live specimens is proscribed (and often illegal), so we mainly rely on accurate observations and photographs with careful descriptions plus certain non-invasive live trapping that does not harm the target species, such as for moths, small mammals and aquatic invertebrates.

All records we gather, or which we can accept, should at least include: the name of the site, the recorder's full name, the location (ideally at least a six digit grid reference with the two-letter OS area code), the date of the observation, an indication of the abundance of the species (actual number or at least DAFOR), a brief description of habitat and substratum, one or more photographs, and if possible sound recordings of bats, birds and *ORTHOPTERA*. Photos of tracks, burrows, dens, & setts, faecal deposits, feeding remains and other indicators and signs are also usefully recorded.

Photographs are digital at high resolution. The latest smartphones we have are excellent for this and additional lenses can easily be attached for most macro work *in situ* on site. Where specimens are essential and permitted, these are collected according to the scientific and ethical procedures for the taxon concerned as approved by Betts management (*e.g.* in a vasculum or similar for plants or fungi, in an entomological pot/preserving fluid for invertebrates), and curated appropriately within our collections or sent to repositories such as the Natural History Museum. Dead or detached material such as shells, feathers, hair pellets, or skeletal remains are similarly treated according to approved scientific methods; similarly spore prints of fungi, cones, seeds, soil samples/geology and fossils as long as negative impact to the local ecosystem is avoided. Anyone finding specimens of interest on one of our estates should contact one of our grounds staff or ecologists on site or inform us *via* our help desk, please.



Barn owl pellet collected by Dr C Betts. Careful dissection of pellets reveals what this raptor has been successfully hunting

### NOTE ON CLASSIFICATION AND TAXONOMY

Classification and taxonomy are in a state of change. As genomes are sequenced and the phylogeny of genes studied for homology across species, changes result, and in turn the arrangement of their evolutionary lineage. We aim to keep up with the current status of these subjects and use the latest nomenclature in our records.

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*Professional service*  
*Sustainable land management*  
*Better planning results*  
*Enhanced biodiversity*

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