Port Meadow and Wolvercote Common

Informal Wildlife Report on Observations 2006-2013

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Summary

This report explains the current known flora and range of fungi visible on Port Meadow and Wolvercote Common which are part of an SSSI and part of Oxford Meadows Special Area of Conservation (SAC). The flora and fungi are related to soil conditions, hydrology and grazing pressure. The importance of plant species on site in the context of national conservation status and local presence on the county Rare Plants Register is discussed. Fungi listed are new site records and presence of certain scarce species indicates certain of the drier areas have a fungal assemblage important at a county level. Conservation concerns for plants and fungi of the meadows are listed.

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Wolvercote Common at buttercup time in spring, 31st May 2013, photo J Webb.

Introduction

This is a discussion of personal recent records that I have compiled as part of my research on floodplain meadows, combined with records generated by my work with the Rare Plants Group (RPG), now the Oxfordshire Flora Group (OFG), of the Ashmolean Natural History Society of Oxfordshire (ANHSO). It should be read in conjunction with the Map, the Photographs and the Tables of records.

I first surveyed these sites in 1978 for the then Nature Conservancy Council (Allen, 1978) and have retained an interest in them ever since. The full detail of the records discussed here has been recently placed in the hands of Thames Valley Environmental Records Centre (TVERC). Whilst I am a member of the ANHSO RPG (now Oxfordshire Flora Group) and have participated in their surveys, which are presented in the tables of species, any views presented here are entirely my own. My focus is on records of plants and fungi, but what invertebrates and birds I can recognise in passing have been included. The information on fungi is completely new data; no official fungal surveys have been conducted on the sites before. The fungal records provide interesting clarification on the botanical communities in the drier areas.

The area covered in the surveying discussed here is part of Port Meadow with Wolvercote Common and Green, a Site of Special Scientific Interest (SSSI) which is part of the larger Oxford Meadows Special Area of Conservation (SAC) forming the largest area of unimproved floodplain pasture in lowland England. Only part of the SSSI is discussed here because I have not studied the remaining section, namely Wolvercote Green.

The ANHSO is currently producing a Rare Plants Register (RPR) for Oxfordshire (see the ANHSO website for details). A plant is on the register if it is found in 10 or fewer sites in the county. A few of the species found in the Port Meadow area are likely to be on the final Register.

The most important rare plant in the area is creeping marshwort *Apium repens,* present on Port Meadow, which is listed under the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) because of its scarcity and decline in Europe. This important species has been monitored by the members of the RPG/OFG here since 1996. Annual reports from this group are regularly supplied to Natural England and brief information about the plant may be found in the annual newsletters of the Rare Plants Group (newsletters from 2007 are available on the ANHSO website).

Many people have written in detail about this unique meadow area. I recommend to all readers the papers presented in the bibliography, which will give the full historical and wildlife context to this brief report, particularly those of Dr Alison McDonald, the local expert on the botany and historical management of the meadows.

Port Meadow and Wolvercote Common make up an ancient grazed floodplain pasture (common land) of great antiquity, which is of national and international importance for the wildlife and for its Bronze Age to Iron Age archaeology, the whole site being a scheduled Ancient Monument (Lambrick and McDonald 1985, McDonald 1992). It is a very important site for birdlife, although birds are not discussed further here. I have known the meadow since 1975 and first botanically surveyed there in 1978 on a temporary contract for the then Nature Conservancy Council (NCC, forerunner of Natural England) see Allen J A, 1978.

The soil of the meadow is dominated by the calcareous nature of the gravel underlying the alluvium (the gravels in the upper Thames, Windrush and Evenlode valleys are creamy in colour owing to the preponderance of limestone pebbles from the Greater Oolite, Powell, 2005). This is very important in controlling the assemblage of plants and fungi, especially in the drier areas, where alkaline soil conditions occur and nutrient levels are suspected to be low. In the wetter areas, the frequency of flooding and the length of time flood water stays on the meadow determine the type of plant community that results. Water from the Thames during flooding events adds nutrients to the soil, resulting in more mesotrophic communities in the more frequently flooded areas. The fact that river flood water today is richer in plant nutrients such as nitrate and phosphate than it was in the 19th century is also important. The hydrology is complex and the meadow communities receive most water not from the Thames, but through the underlying gravel aquifer, giving a complex flooding pattern.

The grazing regime is critical to the plant communities, Port Meadow and Wolvercote Common being grazed by the same stock in a historic intercommoning system involving the Freemen of Oxford and the Wolvercote Commoners (see McDonald 2007, McDonald, Fritillary 5). Cows and horses graze from spring to autumn. All stock were once removed from the meadow over the winter months, but in recent years a smaller number of horses (43 in 2012) remain on the meadow grazing all winter. Flocks of grey-lag geese graze the areas nearest the river at all times.

This account focuses on the more important or noteworthy plant and fungal species or assemblages of conservation concern seen in recent years. Species likely to be on the final county RPR are especially highlighted.

The location of all sites mentioned in this report is shown in Appendix 1, Figure 1.

Surveying Constraints

The heavy continual grazing on the meadow keeps certain perennial plants hidden owing to continual removal of flowers and fruits needed for certain identification. If the plant is found only in a vegetative condition, the leaves and stems may present identification challenges, if distinguishing features are few or variable. This particularly applies to grasses, sedges (*Carex* sp.) spike-rushes (*Eleocharis* sp.) and rushes (*Juncus* sp.). The discovery of an occasional ungrazed flowering head of the rare slender spike rush *Eleocharis uniglumis* probably indicates that there is a much larger population present but grazing prevents its distribution being detected.

Grazing, however, reduces competition and promotes vegetative reproduction in such plants.

The continual spread of the population by increase of tussocks or sideways creeping of rhizomes or stolons can mean long term persistence and slow spread to new areas. However, spread to sites far distant can be limited unless detached fragments of leafy stems can be moved in mud on the feet of stock or spread in flood water.

The exceptionally wet summer of 2012 meant that most plant species on the meadows (unless totally submerged in the Port Meadow temporary lake) were stimulated to grow vastly more than in drier years. There was no shortage of plant food for stock and thus certain meadow areas were subject to less grazing pressure in summer than they had been for many years.

In 2012 flowers and seed heads were seen in areas where they had never been seen in more normal, drier, years. More species could be identified and assessment of abundance was easier. The large numbers of flowering and fruiting marsh arrow-grass, common spike-rush and round-fruited rush were particularly impressive in 2012. This enabled the mapping of these species to new areas. They had been persisting unnoticed before suffering heavier grazing pressure. One flowering head of common sedge *Carex nigra* confirmed the existence of this species in an area where it had been suspected on vegetative material.

WOLVERCOTE COMMON (Unit 2 of the SSSI)

Walking onto Wolvercote Common in early May one is greeted by a golden flood of yellow buttercup flowers. Due to the damp pasture conditions these are mostly creeping and meadow buttercups. Heavy grazing allows them to thrive, as they are avoided by stock. The grazing also favours frequent white clover and ribwort plantain. Musk, woolly and creeping thistles can be frequent, the thistles needing control. Ragwort is currently infrequent because it is controlled.

Historic small gravel-extraction hollows to the north and east of the Wolvercote allotments provide a topographically varied area with wet hollows and drier islands (appear as hummocks). Some of the wet hollows on either side of the raised Black Path causeway carry a large population of nationally red listed (near threatened) round-fruited rush *Juncus compressus.* This may be thriving now because conditions in the hollows have become wetter in recent years. Smaller amounts of the RPR species slender spike-rush *Eleocharis uniglumis* are present in these hollows, mixed with larger amounts of common spike-rush *Eleocharis palustris* and other common wetland plants. An interesting recent discovery was a small quantity of the RPR species bristle club rush *Isolepis setacea* on the edge of one of the hollows.

Drier mounds between the gravel removal hollows can carry small relic populations of a quite calcicolous flora i.e. small populations of quaking grass *Briza media*, hoary plantain *Plantago media,* black knapweed *Centaurea nigra*, crested hair-grass *Koeleria macrantha* (see photo), dwarf thistle *Cirsium acaule*, self-heal *Prunella vulgaris* and bird's foot trefoil *Lotus corniculatus* (see photo). It was thus rather a surprise to find a couple of plants of great burnet *Sanguisorba officinalis* (see photo) on one mound. This is a species adapted more to hay meadow management than continual grazing and, as the plants are very long lived perennials, maybe a relic of once slightly different management. These drier mounds are the most important areas for fungi (see discussion later). Some lower and moister mounds had good showing of the leaves of the uncommon adder's tongue fern, *Ophioglossum vulgatum* (see photo) in spring 2013.

Long Pond

This linear pond (ancient ditch or palaeochannel?) used to dry out completely in summer and was thus a valuable seasonal pool. However, it has retained water all summer since 2007 i.e. for the last 6-7 years. A leakage of water has occurred from both Duke's Cut and the Thames River above Wolvercote, allowing water to run down through Wolvercote Lakes and under Godstow Road to Long Pond, maintaining water all year round in the pond. This has resulted in a change in flora and a fairly constant presence of water fowl such as mallards and mute swans. These leaks are now fixed and restoration of normal hydrology is anticipated. Long Pond dried out completely in the hot and dry summer months of 2013, so it may be that its hydrology is now restored to normal.

Heavy grazing and poaching of this pond can make plant identification difficult but the commonest emergents are reed sweet-grass *Glyceria maxima* and branched bur-reed *Sparganium erectum*. A population of alien swamp stonecrop *Crassula helmsii* exists on the north bank of the pond (first detected in 1998). There have been efforts to remove this by herbicide treatments and physical digging. Further efforts to remove it are planned by the Oxfordshire Flora Group. There is a good population of the RPR species flowering rush *Butomus umbellatus* at the south-eastern end near the fence with the railway land. Common wetland species found here are water forget-me-not, brooklime and pink water speedwell.

The aquatic flora in the pond is dominated by lesser duckweed *Lemna minor* and the alien Nuttall's pondweed *Elodea nutallii* along with water starwort *Callitriche sp.* There are lesser amounts of the RPR species greater duckweed *Spirodela polyrhiza* .

A wet vegetation-filled ditch slightly to the north of, and communicating with, Long Pond has a good population of two RPR species - tubular water-dropwort *Oenanthe fistulosa* (nationally red listed as Vulnerable) and small amounts of marsh speedwell *Veronica scutellata*.

Wren's pond

Until some years ago this pond used to dry out in the summer, like Long Pond. It is connected to Long Pond by a ditch, so in recent years it, too, has held water all summer. This pond is always heavily grazed and stock-trampled and much used by water fowl. There are indications that the water is nutrient-rich, as shown by large amounts of lesser duckweed *Lemna minor* and a lot of hornwort *Ceratophyllum demersum* but it is also dominated by the alien Nuttall's pondweed *Elodea nutallii.* The rarer great duckweed *Spirodela polyrhiza* is present in small amount. There are numerous common snails such as greater ramshorn *Planorbarius corneus.* The RPR species opposite-leaved pondweed *Groenlandia densa* (one plant) has recently been found in the ditch between Long Pond and Wren's Pond.

Causeway Dry Bank to Godstow Road

This south-facing bank of dry sandy and gravelly soil is colonised by hawthorn scrub at one end and eroded to bare sandy cliffs by stock sheltering under the hawthorn from sun. An eroded sandy cliff has population of earth mining bees and wasps enjoying this warm situation. Plant species of dry sandy soils predominate, the most notable being a good population of the RPR species common cudweed *Filago vulgaris* and rat's tail fescue *Vulpia myuros*.

Shiplake Ditch (Sheep lake ditch ='slow stream of the sheep') This divides Wolvercote Common from Port Meadow.

This ditch is always heavily grazed and trampled. The marginal vegetation is dominated by water cress *Nasturtium officinale* and sweet grasses – mostly floating sweet grass *Glyceria fluitans*, smaller quantities of plicate sweet grass *Glyceria notata* and fool's water cress *Apium nodiflorum*. When it is full of water, a large population of water starwort *Callitriche* sp. is present. It dries out in most summers, so aquatics have an unpredictable future. However, when water is present into summer, the south-eastern end of the ditch where it joins the Burgess Field marginal ditch has variable populations of the RPR species horned pondweed *Zannichellia palustris.* Water flow direction in this ditch is variable; sometimes it flows to the north-west, sometimes to the south-east.

Creeping marshwort *Apium repens* was historically recorded on Wolvercote Common but no populations have been found there during the time the RPG/OFG has been actively surveying. There is always the possibility it could recur from buried seed, and regular searches for it continue.

PORT MEADOW

Common pasture species are found widely, such as white clover, creeping and meadow buttercups, ribwort plantain and the thistles previously mentioned. Ragwort is controlled by pulling, as on Wolvercote Common. Horses and cows range all over the meadow but geese seem to preferentially graze and roost in flocks on the west side of the meadow, nearest the river. They can then retreat to the safety of the river water, if disturbed by walkers or dogs.

The most southern portion of the site is a raised area with a steep bank down to the lowest part of Port Meadow. This raised area has drier grassland of low species diversity (re-seeded 1968) on made ground of an ex-tipped landfill. It provides an important dry ground refuge for stock when the main part of the meadow floods in winter. Fairly recently a large population of the RPR species fiddle dock *Rumex pulcher* and a small population of wild clary *Salvia verbenaca* have been recorded there. To the south of this raised area the muddy banks of Castle Mill Stream carry (in some years) a good population of the tiny RPR species mudwort *Limosella aquatica.*

The discussion of the other areas of Port Meadow that follows is organised in sections according to the plant communities and groundwater levels, seen travelling from north to south (from higher to lower ground) thus: **Dry pasture**, **Moist pasture**, **Marsh Pasture** (as described by McDonald, 2007 and same author in Fritillary 5, ANHSO publication online). Of course, the communities grade gradually into one another, there are no sharp changes.

Dry Pasture, Northern Section (in Unit 1 of the SSSI)

Drier portions exist to the north and west of the site on the highest ground, rarely winter-flooded. Gravel extraction hollows and many archaeological features such as circular ring ditches make it a micro-topographically variable area. On the higher mound areas, dry calcareous grassland species still persist (even though this whole area is within the 1 in 100 year flood zone, in effect these areas are not inundated in most years). Common grasses are crested dog's tail *Cynosurus cristatus*, cock'sfoot *Dactylis glomerata*, red fescue *Festuca rubra*, perennial rye *Lolium perenne* and smaller cat's tail *Phleum bertolonii*. Also common are ribwort plantain *Plantago lanceolata* and yarrow *Achillea millefolium*. Bird's foot trefoil *Lotus corniculatus*, self-heal *Prunella vulgaris* and sorrel *Rumex*

acetosa are found throughout, with occasional knapweed *Centaurea nigra* in the rayed meadow variant. The uncommon spring sedge *Carex caryophyllea* is difficult to detect vegetatively, but the very large number of flower-heads seen in spring 2013 is indicative of a substantial and extensive population.

It is heartening to see good amounts of typical chalk and limestone grassland species present on early lists from botanists such as Druce, Bowen and McDonald e.g. crested hair-grass *Koeleria macrantha*, quaking grass *Briza media* and hoary plantain *Plantago media*, with smaller amounts of oxeye daisy *Leucanthemum vulgare*, bulbous buttercup *Ranunculus bulbosus*, dwarf thistle *Cirsium acaule*, rough hawkbit *Leontodon hispidus*, mouse-ear hawkweed *Pilosella officinarum*, cat's ear *Hypochoeris radicata*, lady's bedstraw *Galium verum* and even one plant of salad burnet *Poterium sanguisorba*. Small amounts of golden feather-moss *Campyliadelphus chrysophyllus* were found, a species typical of chalk or limestone grassland. These all point to a more calcicolous community than the National Vegetation Classification (NVC) MG5 variant that has been suggested. Presence of many caps of the toasted waxcap toadstool (see discussion on fungi) is additional evidence, as this is an uncommon species mostly found in dry chalk or limestone grassland. The fungal evidence thus confirms the suggestion of McDonald, 2007, that the plants in this area '*also reflect the limestone gravel and suggest an affinity with both chalk and limestone pasture rather than with floodplain meadows'*. My opinion is that a small portion of Lowland Calcareous Grassland related to one of the NVC CG communities is here present (see Rodwell, 1992).

Given the above community it was again (as on Wolvercote Common) a surprise to find a few patches of great burnet *Sanguisorba officinalis*. As previously mentioned, this is a species adapted more to hay meadow management than continual grazing and, as the plants are very long lived perennials, maybe they have survived vegetatively for a long time and are a relic of slightly different historic management with less grazing pressure.

Whilst there are substantial dry pasture areas, the northern section also has some moist hollows, either due to archaeological structures or more recent gravel digging, suited to more moisture-loving plants such as sorrel and the attractive strawberry clover *Trifolium fragiferum* with its 'pink bobble' seeding heads (a RPR species, see photos).

Middle Section, Moist Pasture (some of unit 1 and unit 4 of SSSI)

This area has a high water table and is often flooded in winter, being summer-grazed. The large area of moist pasture can be dominated by creeping bent *Agrostis stolonifera* and tufted hair grass *Deschampsia cespitosa* with other grasses. Common species are water mint *Mentha aquatica*, silverweed *Potentilla anserina*, lesser stitchwort *Stellaria graminea*, cuckoo flower *Cardamine pratensis* and strawberry clover. The wettest area to the east side of unit 1 of the SSSI (west of Burgess Field) has an abundance of the RPR species marsh arrowgrass *Triglochin palustre* and some round-fruited rush *Juncus compressus*, with occasional tubular water dropwort *Oenanthe fistulosa*. However the most notable plant is the small population of creeping marshwort *Apium repens*, close to the raised concrete track to Burgess field.

The ditch adjacent to Burgess Field is dominated by reed sweet grass *Glyceria maxima* with some branched bur reed *Sparganium erectum*, water forget-me-not *Myosotis scorpioides,* water mint *Mentha aquatica* and fool's water cress *Apium nodiflorum*. Under water there are large populations of a water starwort *Callitriche* sp. The diversity of emergent and aquatic plants appears reduced by shading from willows growing on the Burgess Field bankside.

Southern Section, Moist Pasture to Marsh Pasture (in Unit 4 of the SSSI)

Migrant waders over flooded south end of Port Meadow, 1989, photo: Alison McDonald

This area is frequently winter-flooded and always summer-grazed. This is mesotrophic grassland with higher nutrient status and it is typical of such situations that no fungal fruiting bodies (caps) are found. On the east side, next to the raised causeway adjacent to Burgess Field, there is a large population of marsh arrow-grass *Triglochin palustre* and occasional round-fruited rush *Juncus compressus* and slender spike-rush *Eleocharis uniglumis* amongst a big population of common spike rush *Eleocharis palustris*, with silverweed *Potentilla anserina* and water forget-me-not *Myosotis scorpioides*, plus occasional creeping jenny *Lysimachia nummularia.*

Not far from the bronze age 'Round Hill' are small populations of the rare creeping marshwort at the site edge near the raised causeway adjacent to Burgess Field.

The majority of the area is wetter Marsh or 'Mesotrophic Inundation Grassland'. This is the area that is normally flooded during the winter months and can be dominated by common spike-rush *Eleocharis palustris*, which is much favoured by grazing stock.

There is a sharp bank between the higher, drier, botanically impoverished sward on the re-seeded landfill area and the low-lying species-rich sward. Apart from winter flooding this lower area experiences a high level of stock trampling and thus poaching disturbance of the soft mud here.

In recent years summer flooding has become more common and all perennial plants have died off under such floods due to 'summer fouling' anoxia. Most plants found on bare mud when a flood retreats are numerous common ruderals with long-lived seed, which have come up from the seed bank.

In a dry summer the whole area can turn pink with the abundant flowers of redshank *Persicaria maculosa,* which will be mixed with less colourful species such as common toad rush *Juncus bufonius*, greater plantain *Plantago major*, red goosefoot *Chenopodium rubrum*, trifid bur marigold *Bidens tripartita,* pink water speedwell *Veronica catenata* , marsh speedwell *Veronica scutellata* and marsh yellow cress *Rorippa palustris*.

Very occasional plants of the tiny RPR species mudwort *Limosella aquatica* are found here but the most important species here is in the lowest-lying area - the main large population of the rare creeping marshwort *Apium repens*.

In recent years the frequent flooding has led to the increase of flowering rush *Butomus umbellatus*, a species of more permanent wetland areas.

Creeping Marshwort

Since 1995 the Rare Plants Group (Oxfordshire Flora Group) of the ANHSO has monitored in detail the occurrence of *Apium repens* in a 12m x 30m permanent quadrat in the centre of the population in the south end of Port Meadow and has carried out experimental work on the plant's needs. Much of this detailed information is presented in Lambrick and McDonald, 2006, and brief information is available on the ANHSO website.

For three years (2007, 2008, 2012) the quadrat monitoring could not be carried out on the meadow because the area was under a summer flood. Flooding at this time leads to 'summer fouling' (anoxia – lack of oxygen for respiration) and the death of all plants under water. Seeds of creeping marshwort are able to survive such events in the soil and germinate once a flood has retreated, the plants possibly benefitting from the lack of competition in the newly-exposed bare mud. Mature plants subject to summer flooding are sometimes able to detach from soil when inundated and move in the flood water to new positions. The last records in the quadrat study area were in 2011 when, because of flooding the previous summer, the area had only very young creeping marshwort plants amongst other young ruderal annual plants of wet conditions. This is of some concern because the extent of the seed bank is unknown.

This bare-mud, ruderal-dominated, community has been described as an open vegetation association (possibly NVC community OV13). The young creeping marshwort plants and all other species that germinated in summer 2012 will have died in the subsequent 2012 continuous floods - water remained on the area throughout the year.

Whilst the permanent quadrat could not be recorded in 2012 because it was under flood water, the Rare Plants Group mapped the distribution of mature creeping marshwort plants around the summer-flooded area. These positions were adjacent to bare mud and may have arisen from mature plants that floated there during a previous summer flood phase. So in 2012 the visible creeping marshwort populations were in areas around the margin of the previous 'temporary lake'. This may not be the entire population because:

1) Not all populations will have been located.

2) The plant is well able to move around the site, so these may not be permanent positions and there is a much greater area of suitable habitat that could potentially be occupied in the future.

3) The plant may exist as a viable seed bank in the mud under some of the area flooded at the time of the survey (temporary 'Port Meadow Lake'). This seed bank could generate a new population in the future.

Summary of Oxon Rare Plants Register (RPR) and Nationally Rare species currently on the whole site (16 species):

- *Apium repens* creeping marshwort. *Draft Oxon RPR*, *National Red Data List*: Vulnerable, *UKBAP* (NERC Act 2006, Section 41) species. Listed in Annex 2 and 4 of EC Habitats Directive. On Appendix I of the *Bern Convention*. Schedule 5 of The Conservation of Habitats and Species Regulations 2010. On Schedule 8 of the *Wildlife and Countryside Act 1981*. Endangered in Europe. *Only two UK current sites*, of which this is one.
- *Butomus umbellatus*, flowering rush
- *Eleocharis uniglumis*, slender spike-rush
- *Filago vulgaris*, common cudweed (just off the RPR, slightly too many sites)
- *Groenlandia densa*, opposite leaved pondweed
- *Juncus compressus*, round-fruited rush (also National Red List 'Near Threatened')
- *Limosella aquatica*, mudwort. Also National Red List 'Scarce'. Only current site in County.
- *Oenanthe fistulosa*, tubular water dropwort. Also National Red List 'Vulnerable' and UK BAP priority species
- *Rumex pulcher,* fiddle dock (last seen 2009)
- *Spirodela polyrhiza*, greater duckweed
- *Torilis nodosa,* knotted hedge parsley (just off the RPR, slightly too many sites)
- *Trifolium fragiferum*, strawberry clover (just off the RPR, slightly too many sites)
- *Triglochin palustre*, marsh arrow-grass (just off the RPR, slightly too many sites)
- *Veronica scutellata*, marsh speedwell
- *Vulpia myuros*, rat's tail fescue (just off the RPR, slightly too many sites)
- *Zannichellia palustris*, horned pondweed

RPR species historically recorded and not found in recent years:

- *Cardamine amara*, large bitter-cress or 'buttercress'
- *Hippuris vulgaris*, mare's-tail
- *Lathyrus sylvestris*, narrow-leaved everlasting pea
- *Mentha pulegium*, pennyroyal
- *Persicaria mitis* (*Polygonum mite*), tasteless water pepper
- *Salvia verbenaca*, wild clary (raised area at south end)
- *Stellaria palustris*, marsh stitchwort

FUNGI

Grassland with apparently low botanical diversity can occasionally produce assemblages of rare and interesting fungi, if the soil is low in nutrients (specifically low nitrogen and especially low phosphorus). There are many instances of churchyards where this is seen. This seems to be true for the drier parts of the Port Meadow grassland in the north western area, which have only common plant species. The classification that has been suggested is approximately NVC community MG 5, although rosette plants such as hoary plantain, mouse ear hawkweed and dwarf thistle give these drier areas affinity, in parts, with a type of lowland calcareous grassland (see Rodwell, 1992). The fungi found recently confirm this idea.

Two years of my surveys resulted in 30 species of fungi found on Port Meadow, mostly in the drier areas, and 15 species of fungi were found on Wolvercote Common. For the two sites taken together the total is 34 species, although some are named only to genus due to identification difficulty. 2012 produced many more species and caps than 2011, no doubt because of the wet summer.

Anecdotal accounts of the fungi on Port Meadow prior to my surveys indicate that large numbers of common edible species such as horse and field mushrooms are to be found in some years. These are tolerant of higher nitrogen and phosphorus levels and, indeed, I found them in the more mesotrophic, occasionally flooded, middle sections of Port Meadow. I also found good numbers of common edible field blewits in the more northern and western area of Port Meadow and on higher hummocks on Wolvercote Common. The locals know where these edible species are and regularly go out and collect them (pers com. A. McDonald). As one might expect from the numbers of cows and horses on the meadow, there are a number of dung fungi, all of which are fairly common.

As regards the more uncommon fungi, in 2012 Port Meadow (north-west higher and drier end) surveys detected five different sorts of waxcaps including large quantities of the common snowy waxcap *Hygrocybe virginea* but also significant quantities of the very uncommon toasted waxcap *Hygrocybe colemanniana*, which has warm-chestnut-brown-centred caps. Whilst not nationally rare, this is very uncommon in Oxfordshire and always found in highly calcareous warm, dry, sites. Previously in the county I have found it only on good quality chalk grassland in sites such as Hartslock, Watlington Hill and Aston Rowant.

In 2012 the abundance of toasted waxcap in the drier north-west part of Port Meadow was greater than anything recorded previously on any Oxon site, indicating that Port Meadow is a very important site for this species. Also remarkable were numerous caps of the uncommon oily waxcap *Hygrocybe quieta*, which is bright yellow with attractive orange gills and stipe. The beautifully scented cedarwood waxcap *Hygrocybe russocoriacea* was present, as well as the commoner bright green and amazingly slimy parrot waxcap *Hygrocybe psittacina*. A couple of pink-gill species (*Entolomas*) and a couple of fairy clubs (e.g. yellow club *Clavulinopsis helvola,* white club *Clavaria acuta*) add to the interest of the assemblage. Also present were large numbers of the common poisonous ivory funnel (*Clitocybe dealbata)* as well as large rings of both field blewit (*Lepista saeva*) and another two blewit types (*Lepista sordida, L. panaeolus)*.

The assemblage of waxcaps, pink-gills and fairy clubs clearly indicates that these drier portions of both Port Meadow and Wolvercote Common may be described as 'waxcap grassland' (Evans, 2003) and the numbers of species involved put both of the drier areas of these two meadows on the lower end of the fungal scale used for assessing importance of grasslands for fungal conservation purposes (total score is 5 Hygrocybes, 3 fairy clubs, 3 Entolomas = 11, i.e. the lowest end of the CHEG scale,

see Rotheroe, 1997). This is most likely because the drier parts are on calcareous limestone gravel, despite being in the floodplain and relatively rarely inundated with nutrient-rich water.

These fungi would not be found in any area subject to much N and P input. The sites with the lowest-nutrient level and of highest conservation importance for grassland fungi might be expected to have in excess of 20 *Hygrocybe* species over a number of years survey (greater than 18 Hygrocybes recorded over 20 years in a grassland site has been taken as SSSI standard for site designation for fungi alone).

Fungal species found in these meadows were all unknown until this current survey. Due to unpredictable fruiting, a full list of fungi will only be possible with several more years' study. Undoubtedly further important fungal species await discovery and the assemblage so far found indicates the site is at least of county importance for grassland fungi.

To put these observations in some context, conversations with experienced members of nearby Cotswold Fungus Group (covering mostly Gloucestershire and some Wiltshire) and Thames Valley Fungus Group (Berkshire, some Oxon) indicate that the abundance of toasted waxcap is the most important record. This species is nowhere frequent. In Gloucestershire, results from many years' surveying indicate it has occurred in a total of 10 sites, but of these only 2 sites produced caps in 2012, when Port Meadow produced numerous caps.

Summary of importance of fungi found

From my perspective as Recorder for the Fungus Survey of Oxfordshire, the Port Meadow north-western drier portions are at least of local county importance for calcareous grassland fungi. Drier portions of Wolvercote Common are less important for these fungi, but this situation may change with further years' recording, owing to the unpredictability of fungal fruiting. It will take a good few more years to generate a comprehensive fungal species list.

Summary of Concerns for wildlife of the area of Port Meadow and Wolvercote Common

There has been considerable change on Port Meadow and Wolvercote Common over the last 15 years. The most significant of these changes has been the start of all-winter grazing by horses and the increase in floods remaining on the meadows beyond the winter period. The following are considered important points:

- Whilst summer grazing is beneficial, winter grazing (by horses alone) means the sward is very short all year round and this is reducing the ability of some plants to flower and set seed. Some species on old lists may have been eliminated by overgrazing. Bare soil areas from over-grazing provide good seeding sites for undesirable species such as ragwort and creeping thistle.

- Prolonged spring and summer flooding and consequent fouling effect (anoxia) is reducing the population of creeping marshwort on Port Meadow. The seed bank may be being used up without an adequate replenishment, as there has been little successful seeding for some years. The Oxfordshire Flora Group has made suggestions for drainage of the temporary lake on the south of Port Meadow for the summer months, whilst maintaining the flooding during the winter, which benefits the creeping marshwort and birds. Possibly, clearance of the railway-line ditch may improve the situation by allowing water to run off the meadow more quickly when river levels drop.

- Proximity of certain creeping marshwort populations to the Burgess Field concrete raised track – any Network Rail activities near here due to line upgrading need to avoid these possibly vulnerable populations.

- Potential movement of alien swamp stonecrop on the feet of grazing stock from Long Pond on Wolvercote common down to the area of creeping marshwort populations further south on Port meadow. The Oxfordshire Flora Group has proposals for the removal of this species from Long Pond to eliminate this risk.

- Prolonged inundation by Thames river water (higher in nutrients than 100 years ago) would have a negative impact on the scarce fungi identified here in the higher areas of both meadows, as these fungi are dependent on low nitrate and phosphate levels in the soil.

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Creeping Marshwort *Apium repens* information on the ANHSO website http://freespace.virgin.net/frances.watkins/rpg/apiumrepens.html

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Member of Floodplain Meadows Study Group of Ashmolean Natural History Society of Oxfordshire

Species Recorder for the Fungus Survey of Oxfordshire (FSO) Group

Voluntary species recorder, Aston Rowant and Cothill Fen NNRs (for Natural England)

Voluntary species recorder, TVERC

Appendix 1:

Location of Sites

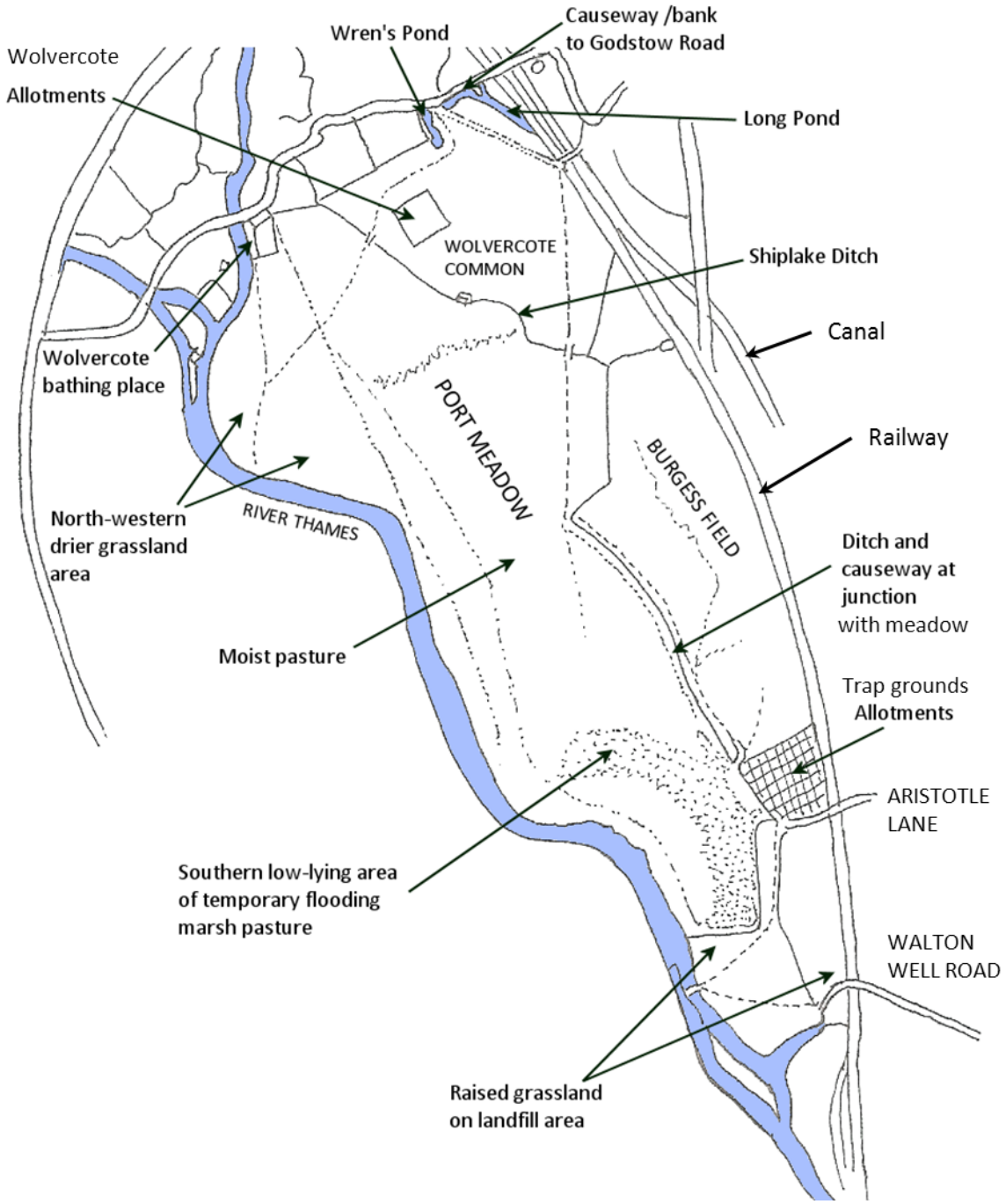

Figure 1

Appendix 2

Status definitions and criteria for rarity

Local	Restricted distribution, usually confined to specific habitats
UKBAP	UK Biodiversity Action Plan Priority Species, also now known as 'Section 41 species'
RDB	Red Data Book listed
RDB1	**Endangered** (at risk of extinction)
RDB2	**Vulnerable** (species declining or in vulnerable habitats, or with low populations, likely to move to Endangered due to factors such as habitat destruction)
RDB3	**Rare/Lower Risk (Near Threatened)** (small populations, at risk, species estimated to exist in only 15 or fewer modern 10km squares nationally)
NT	Near Threatened (as above)
N or NS	**Notable/Nationally Scarce** - **Lower Risk** species estimated to occur within the range of only 16-100 modern 10km squares nationally (**'a**' category more uncommon than '**b'** category)
Draft RPR	Draft Rare Plants Register for Oxfordshire, being produced by the Ashmolean Natural History Society of Oxfordshire. A species is included in the final register, if it occurs in 10 or fewer sites in the county (scarce) and three or fewer sites (rare). Also included are all species on the UKBAP priority list, irrespective of how common they are in Oxfordshire, and species on the national red list.