

The logo for STRI, consisting of the letters 'STRI' in white, bold, sans-serif font, set against a dark teal square background with faint, light-colored grass-like lines.

Habitat and Species Considerations for Bees and Butterflies

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Rationale

- Over the last 30 years native bees have reduced by 70% in UK
 - Loss of food resources
 - Loss of nesting sites
- Operation pollinator aims to help reverse this trend
- Operation pollinator is an extension of the proven and highly successful Buzz Project

Buzz Project

- Long established, Very successful
- Encouraged farmers to manage areas to encourage bumblebees
- Expanded to Operation Bumblebee
- Scope to expand into golf and to include other pollinators

Operation Pollinator

How?

- By giving recognition to the issues pollinators face
- By creating valuable new habitats in out of play areas of golf courses.
- By provide the knowledge, expertise and experience to assist with the successful management of habitats for pollinating invertebrates, alongside the conventional management of the golf course.
- By providing help and assistance to participating clubs
- By providing practical and cost effective solutions for golf and wildlife

Habitat and species Considerations

Understand requirements



Bees

- Areas for foraging (connectivity)
- Rich nectar source
(protein for developing young)
- Plants through 3 seasons
- Hibernacula



(Don't exclude bramble)

Butterflies/ Moths

- Suitable habitat Connectivity to aid movement and dispersal
- Range of plants for adults and larvae
- Overwintering habitat



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Saproxylic Invertebrates

(dead wood specialists)

Rare and declining!



Eggs to Adult



Understand life cycles



Common Blue



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Ensure plants
are appropriate

Wild flowers - What Species?

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Neutral meadow		Acid grassland	
Grasses	Percentage by weight	Grasses	Percentage by weight
Crested dog's-tail	6	Common bent	7
Common bent	5	Sheep's-fescue	7
Red fescue	5	Wavy hair-grass	2
Sweet vernal-grass	2	Annual meadow-grass	2
Smooth meadow-grass	1	Sweet vernal-grass	0.5
Cock's-foot	0.5	Timothy	0.5
Meadow fescue	0.5	Yorkshire-fog	0.5
Total	20	Cock's-foot	0.5
Wildflowers		Total	20
Common bird's-foot-trefoil	12	Wildflowers	
Common knapweed	12	Sheep's sorrel	40
Meadow vetchling	8	Common bird's-foot-trefoil	8
Yarrow	4	Lesser trefoil	8
Garlic mustard	4	Yarrow	4
Cuckooflower	4	Common mouse-ear	4
Autumn hawkbit	4	Cat's-ear	4
Oxeye daisy	4	Mouse-ear-hawkweed	4
Ribwort plantain	4	Ribwort plantain	4
Meadow buttercup	4	Tormentil	4
Bulbous buttercup	4	Total	80
Yellow rattle	4		
Common sorrel	4		
Red clover	4		
White clover	4		
Total	80		

Legumes – vetches, Birds foot trefoil, and red and white clover



Labiates (Important for pollinators)





White dead nettle

Hedge woundwort



Foxglove



Common scabious

Early to late!



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Knapweed
(Hardheads)





corn sow thistle



Aliens/Weeds?



Grasses



“are important”



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Common Blue



Breeding and
overwintering

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Conclusion

- Consider habitat for the whole life cycle
- Manage for connectivity
- Grasses are important alongside wild flowers
- Unmanaged weeds are important
- Develop overwintering refugia

“Golf can help increase the food resources and nesting sites”

“On golf courses we must balance the above to provide a range of habitat conditions , ensuring compatibility with golf.”



Operation Pollinator

Aim

- To increase awareness towards the plight of our pollinating invertebrates and provide effective management, knowledge and assistance to help in their conservation:

Provide habitat for feeding whilst recognising the need for wider habitat quality.

Initial trials were installed at 4 sites which allowed development of mechanical management and realisation of the part chemicals can play. This gave impetus for further trials and development of current programme being rolled out across uk

STRI Trials April 2008

Existing Grasses PRG/YF/bent/fescue/cockfoot/AMG

Existing wild flowers

Clover/sorrel/plantain/buttercup/common dock

Soil characteristics

- pH – 5.4
- Total N – 0.26
- P – 9 mg/l
- K – 46 mg/l
- Mg – 73 mg/l
- Ca – 675 mg/l

Treatments 2008

Treatments	Mowing	Scarification	Wild flowers
Untreated	-	-	-
Scarified	50mm	40-60% bare	No
Scarified + wild flowers	50mm	40-60% bare	Yes
Rescue late summer	-	40-60% bare	Yes
Primo Maxx	50mm	-	Yes
Rescue/ Primo Maxx	50mm	40-60% bare	Yes

Note: in agriculture establishment is often from bare soil or soil inversion
What can greenkeepers do?

Wild flower seeds mix

Knapweed

Wild carrot

Field scabious

Birdsfoot trefoil

Selfheal

Wild red clover

Ladys bedstraw

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Trial Photos



2009 Untreated

Trial Photos 2009



Scarified only – grass remained dominant, height reduced cf. above

Trial Photos 2009



Scarified + wild flowers Note few wild flowers in existing rough

Trial Photos 2009



Rescue + wild flowers flowers starting to come through

Trial Photos 2009



Primo Maxx + wild flowers reduced sward height and reduced competition

Trial Photos 2009



Rescue + Primo Maxx + wild flowers Increased flowers; reduced competition

Treatments 2009 (No Scarification)

Treatments	Mowing	Scarification	Wild flowers Sown end 2009
Untreated	-	-	-
Scarified	50mm	-	No
Scarified + wild flowers	50mm	-	Yes
Rescue	-	-	Yes
Primo Maxx	50mm	-	Yes
Rescue/ Primo Maxx	-	-	Yes

Trial Photos 2010



Untreated

Trial Photos 2010



Scarified only slight increase in flower count but high competition

Trial Photos 2010



Scarified + wild flowers

Few Flowers but high competition

Trial Photos 2010



Rescue + wild flowers

High flower count

Trial Photos 2010



Primo Maxx + wild flowers Reduction in sward height but grasses very competitive

Trial Photos 2010



Rescue + Primo Maxx + wild flowers

Summary

- One Scarification treatment would not hold back grass growth
 - Within one season full grass growth was suppressing wild flowers
- Rescue removed coarse grass species
 - Allowed bent/fescue and sweet vernal grass to dominate
 - Allowed wild flowers to become established
- Primo Maxx reduced height of grass
 - Reduced competition
 - Allowed wild flowers to develop
- Improved playability
- Greater biodiversity – flora and fauna
- Greater interest from golfers

Continuation.....

- All plots cut back to 50mm in October 2010 with no further treatments
- Continuing to monitor at STRI to determine potential ingress of coarse grasses

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Trial Photos 2011



untreated

Trial Photos 2011

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Primo Maxx



Rescue and wild flowers

Trial Photos 2011



Rescue and wild flowers



Taking Operation Pollinator into the field

Management Considerations

Promote habitat connectivity

(Buffer zones around ponds, along ditches)

Recognise where and how to manage (not all areas need same management)

Marginal rough/ecology rough

Wood piles/shelter habitat)

Physical management (alongside the careful and timely treatments of Chemicals and only if required)

Implementing the project

- Set up half an hectare or more and implement trials using both physical and chemical options
- See what works best in your situation
- Look at what you have
- Apply correct management to secure improvement



Rank sward

COMPARTMENT NO.						
	2011		2012		2013	
	Spring	Autumn	Spring	Autumn	Spring	Autumn
Cut/Scarify/Collect					Provisional	provisional
Rescue				provisional		
Cut and Collect						
Overseed				provisional		
Cut to 50 -75mm				provisional		
Topdress						
Other						

Fescue sward

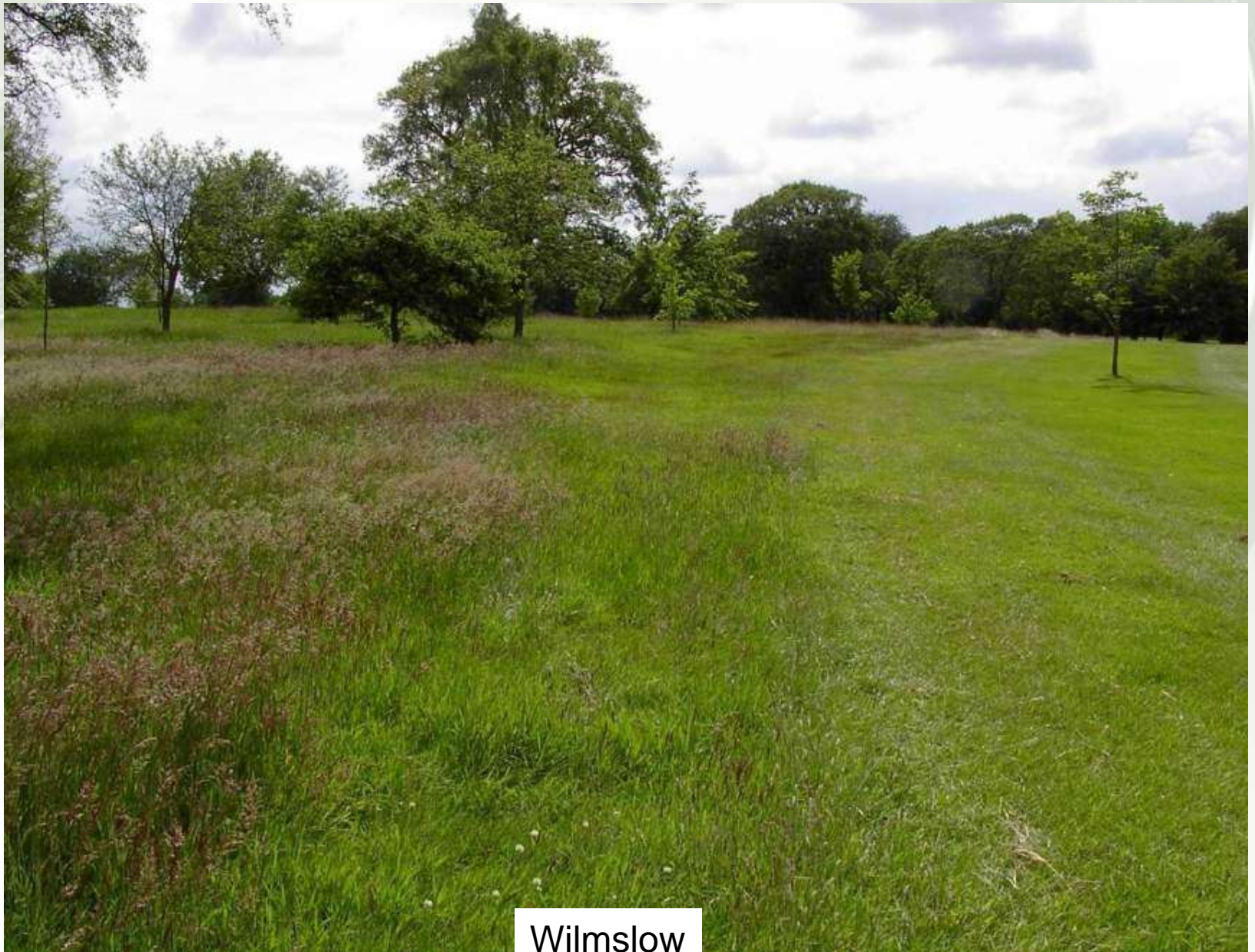
COMPARTMENT NO.						
	2011		2012		2013	
	Spring	Autumn	Spring	Autumn	Spring	Autumn
Cut/Scarify/Collect				provisional		provisional
Rescue						
Cut and Collect						
Overseed						
Fill hollows						
Topdress						
Other						

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Little Aston

STRI



Wilmslow

STRI



Muirfield

Summary

- Recognise problems need and how to overcome them
- Consider all management approaches
- Prioritise
- Set up initial trials
- Monitor
- Review
- Expand taking members with you

Summary- Management Options

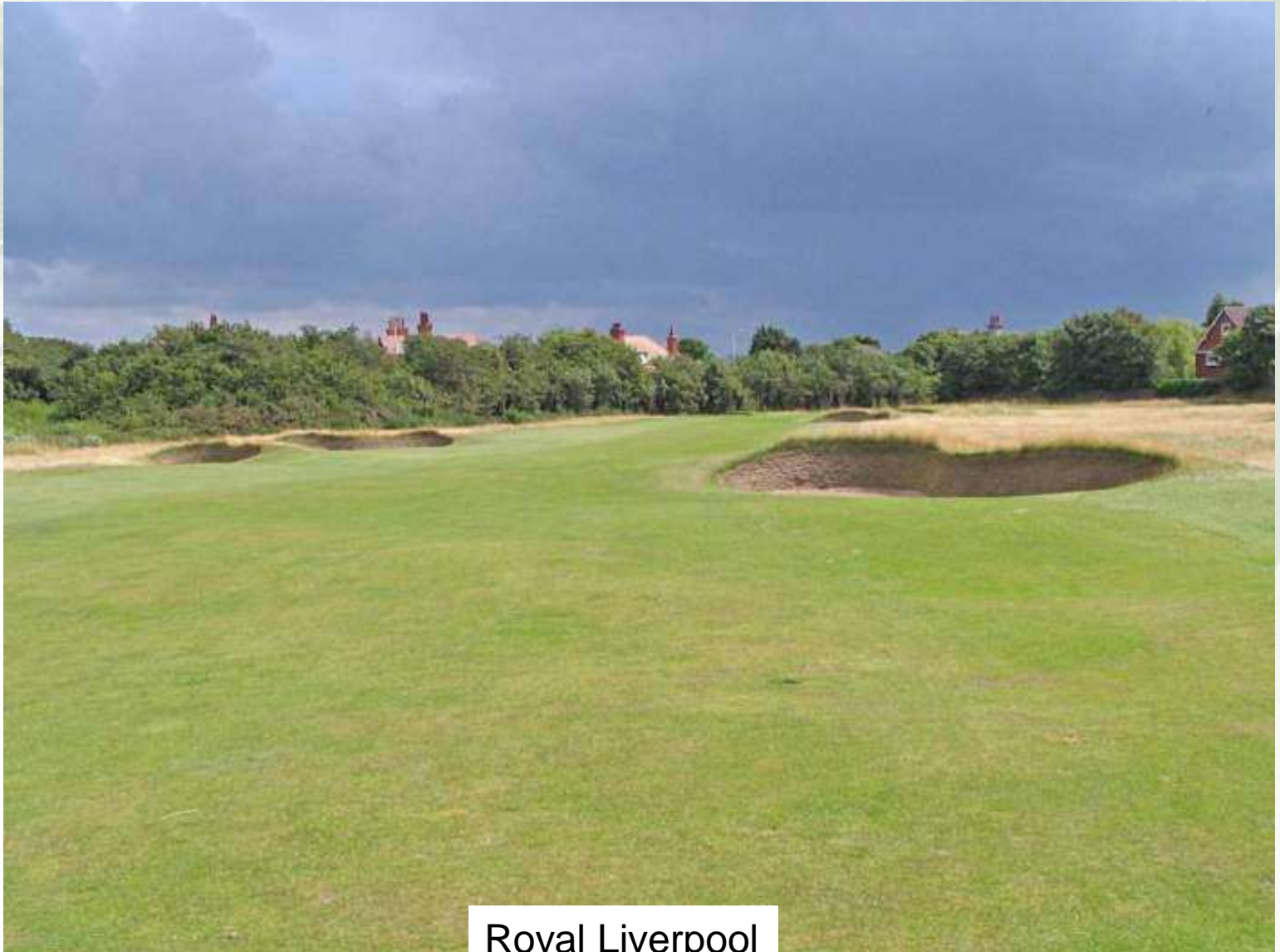
- **Cut (<100mm) late season - bale? blow? leave?**
- **Cut (<100mm) early season**
- **Leave alone?**

- **Scarify early season – Very aggressive**
- **Scarify late season – Less aggressive**

- **Frequency? Site dependant.**
- **Burn – often not practical**
- **Overseed (which species?)**
- **Graminicides ?PGRs?**



Recognise Opportunities!



Royal Liverpool

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Renaissance

Consider Strategic benefits



Retain areas of unmanaged rough





The logo for STRI, featuring the letters 'STRI' in white, bold, sans-serif font on a dark green square background. The square is positioned in the top left corner of the slide. The background of the entire slide is a blurred green field of grass.

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Any Questions?

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www.stri.co.uk

The logo for STRI, featuring the letters 'STRI' in white on a dark green square background with stylized grass blades.

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