

Establishing Pollinator Habitat: Making the Most of Out-of-Play

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Why are we talking about Pollinators?

Pollinator Decline

- Pesticide exposure
- Increasingly prevalent pathogens
- Pest outbreaks (*Varroa*)
- Habitat fragmentation
- Insufficient floral resources



A vibrant meadow scene featuring a mix of yellow Black-eyed Susans and purple flowers in the foreground. The background shows a line of green trees under a bright blue sky with scattered white clouds. A semi-transparent white box is overlaid in the center of the image, containing the text "More Habitat = More Pollinators".

More Habitat = More Pollinators

Why Golf Courses?





- A variety of landscape types
- Golf courses are already appreciated for naturalized beauty
- Available groundskeepers and maintenance

Players and Pollinators— Is coexistence possible?



Players and Pollinators— Is coexistence possible?

Do golfers care about the environment they play in?

A Syngenta-commissioned Player Survey revealed:

 **81%**

of golfers favoured a natural-looking course

 **71%**

enjoy seeing birds and wildlife frequently during the round

 **68%**

are ready to support environmental initiatives at their course

 **60%**

want to see biodiversity encouraged at their course

Golfers clearly value a natural, biodiverse playing environment.



Habitat = shelter + forage



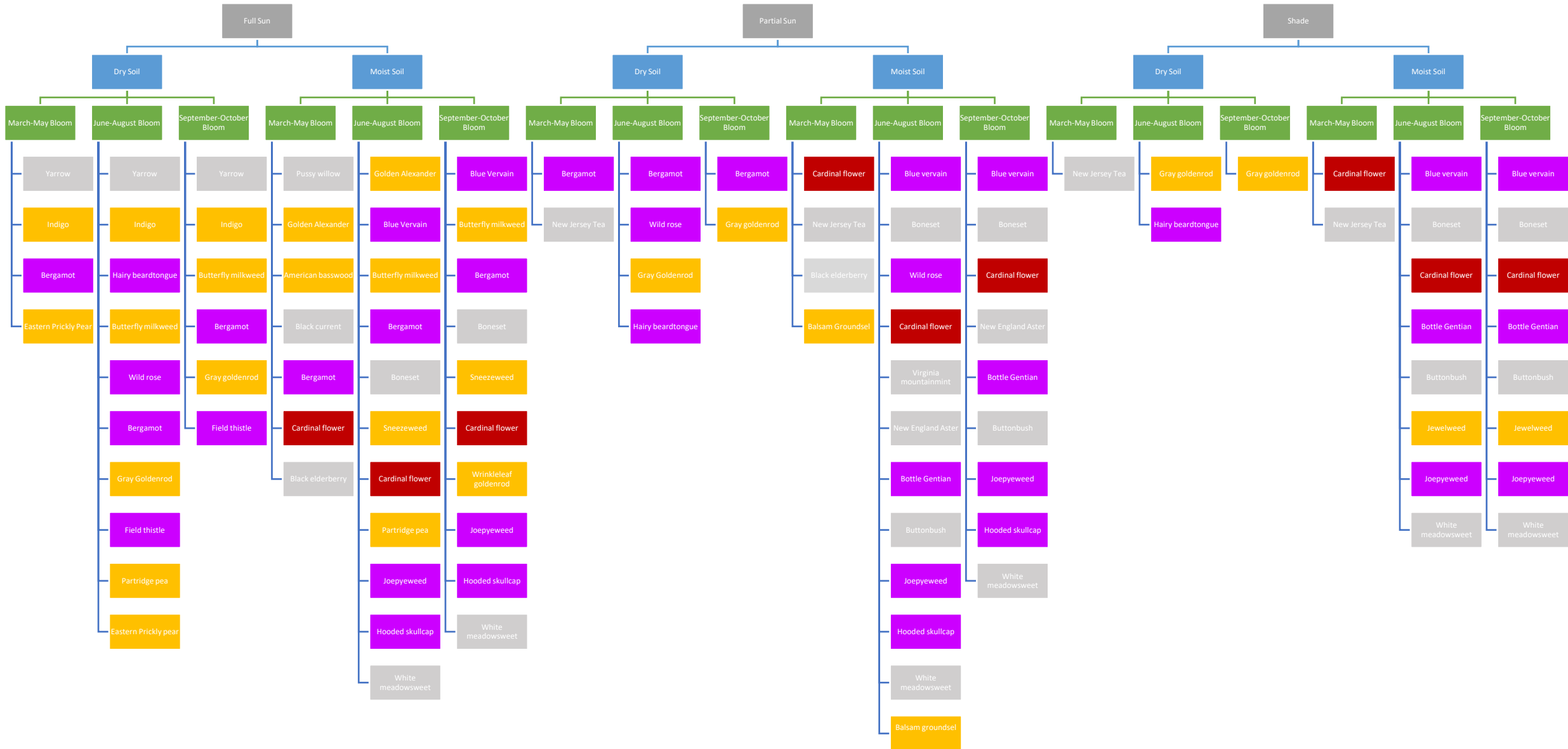
Habitat = shelter + forage





How to Select Pollinator-Friendly Plants

- Incorporate different plant heights, shapes, and colors
- Year-round forage
- Fall planting encourages most success (seed)
- Broadcast seed with cat litter or sand to promote soil-seed contact
- Plant species in clusters of at least 3 plants... not only does it look more natural, but allows for more efficient foraging by the pollinators



	March – May Bloom	June – August Bloom	September – October Bloom
Full Sun – Dry Soil	<p>Bergamot (b)</p> <p>Eastern Prickly Pear (y)</p> <p>Wild Indigo* (y)</p> <p>Yarrow (w)</p>	<p>Bergamot (b)</p> <p>Butterfly Milkweed (y)</p> <p>Eastern Prickly Pear (y)</p> <p>Field Thistle (b)</p> <p>Gray Goldenrod (y)</p> <p>Hairy Beardtongue (y)</p> <p>Partridge Pea (y)</p> <p>Wild Indigo* (y)</p> <p>Wild Rose (r)</p> <p>Yarrow (w)</p>	<p>Bergamot (b)</p> <p>Butterfly Milkweed (y)</p> <p>Field Thistle (b)</p> <p>Gray Goldenrod (y)</p> <p>Wild Indigo* (y)</p> <p>Yarrow (w)</p>
Full Sun – Moist Soil	<p>American Basswood (w)</p> <p>Bergamot (b)</p> <p>Black Current (y)</p> <p>Black Elderberry (w)</p> <p>Cardinal Flower (r)</p> <p>Golden Alexander (y)</p> <p>Pussy Willow (w)</p>	<p>Bergamot (b)</p> <p>Blue Vervain (b)</p> <p>Boneset (w)</p> <p>Cardinal Flower (r)</p> <p>Golden Alexander (y)</p> <p>Hooded Skullcap (b)</p> <p>Joe-Pye Weed (r)</p> <p>Partridge Pea (y)</p> <p>Sneezeweed (y)</p> <p>Swamp Milkweed (r)</p> <p>White Meadowsweet (w)</p>	<p>Bergamot (b)</p> <p>Blue Vervain (b)</p> <p>Boneset (w)</p> <p>Cardinal Flower (r)</p> <p>Hooded Skullcap (b)</p> <p>Joe-Pye Weed (r)</p> <p>Sneezeweed (y)</p> <p>Swamp Milkweed (r)</p> <p>Wrinkleleaf Goldenrod (y)</p> <p>White Meadowsweet (w)</p>

Examples of Ideal Mixes

Full Sun – Dry Soil

Bergamot
Wild Indigo
Yarrow
Partridge Pea
Butterfly Milkweed
Field Thistle
Gray Goldenrod
Little Bluestem

Part Sun – Moist Soil

Balsam Groundsel
Cardinal Flower
Blue Vervain
Boneset
New England Aster
White Meadowsweet
Bottle Gentian
Little Bluestem

Shade – Moist Soil

New Jersey Tea
Cardinal Flower
Blue Vervain
Boneset
Jewelweed
Joe-Pye Weed
White Meadowsweet
Purple Lovegrass



Special Considerations

- Dense ground cover makes it difficult to locate stray golf balls!
- Consider applying a buffer strip to separate areas exposed to pesticide residues and areas of blooming pollinator plants

Maintenance



Year 1:
Sleeps

Year 2:
Creeps

Year 3:
Leaps!

Emphasis
on weed
control--
Do not
mow!

Year 1: Sleeps

Year 2:
Creeps

Year 3:
Leaps!

Mow 1 – 2
times, at
height of
no closer
than 8
inches

Year 1:
Sleeps

Year 2:
Creeps

Year 3:
Leaps!

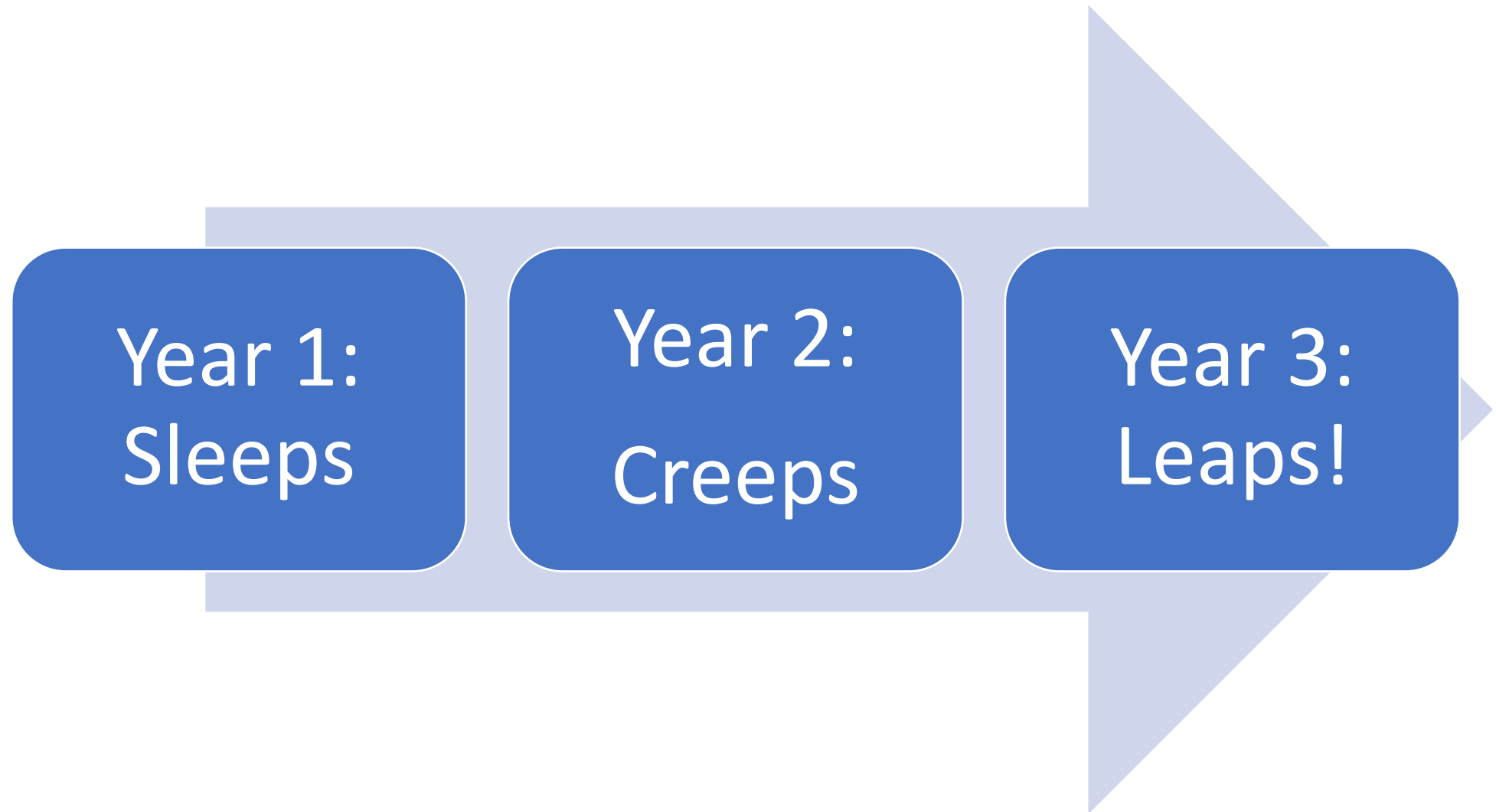
Minimal
maintenance
required –
continue
weed control

Year 1:
Sleeps

Year 2:
Creeps

Year 3: Leaps!

Years 4+: Rehabilitation of certain areas may be required (particularly with grasses)



A wide-angle photograph of a golf course. In the foreground, there is a green fairway with a yellow and white tee marker. A small pond with reeds is on the right. In the middle ground, a clubhouse is visible among trees, with a golf cart path and several golf carts nearby. The background is a dense forest of green trees under a cloudy sky.

Where might pollinator habitat “fit”?



Around clubhouses



At the edge of wooded spaces



Around ponds



Where to Source Pollinator Plants

- Blue Moon Farm Perennials: bluemoonfarmperennials.com/
- New England Wildflower Society: www.newfs.org/
- Rhody Native: rinhs.org/who-we-are-what-we-do/programs-projects/rhody-native-home/

Resources for More Information

EDUCATION CONNECTION



Forging Natural Links with Golf Courses for Pollinator-Related Conservation, Outreach, Teaching, and Research

EMILY K. DOBBS AND DANIEL A. POTTER

E-mail to the authors, 8 April 2015: I am a beekeeper who has a good relationship with area golf courses. Recently the golf pros approached me about the idea of naturalizing the roughs with a low maintenance drought tolerant grass/wildflower mixture. They would also like me to put honey bee hives on their courses to encourage pollination. It would be a great opportunity to diversify the flora as well as educate the public on the importance of floral variety for pollinators. Is there any chance the UK Entomology department would like to extend their Operation Pollinator Project to our county?

sites for extension events, class field trips, or as study sites.

Why Golf Courses?

Golf course development is burgeoning in many parts of the world (Colding and Folke 2009). As of 2015, there were some 40,000 golf courses and 80 million golfers worldwide; those numbers will likely escalate after golf becomes an Olympic sport in 2016. There are about 15,500 golf facilities in the United States, about 75% of which are fee-based public access. Those facilities occupy more than 1.1 million ha of land, support 2 million jobs, and serve

native plants, and woodland separating the tees, fairways, and putting greens as backgrounds and boundaries. Golf courses are therefore suited for field research on invertebrate metapopulations, including studies of foraging behavior, local level island biogeography, and habitat fragmentation effects on biodiversity (e.g., Blair and Launer 1997, Gange et al. 2003, Tanner and Gange 2005, Bates et al. 2011). Their edges offer easy access for viewing and collecting insects. Most courses have ample out-of-play areas, and are uncrowded on weekdays and closed to play one day per week, often a Monday. Many pub-



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