

Habitat Makeover:

Adding Wildlife Value to the Landscape

andy stahr, PLA, LEED AP

Principal

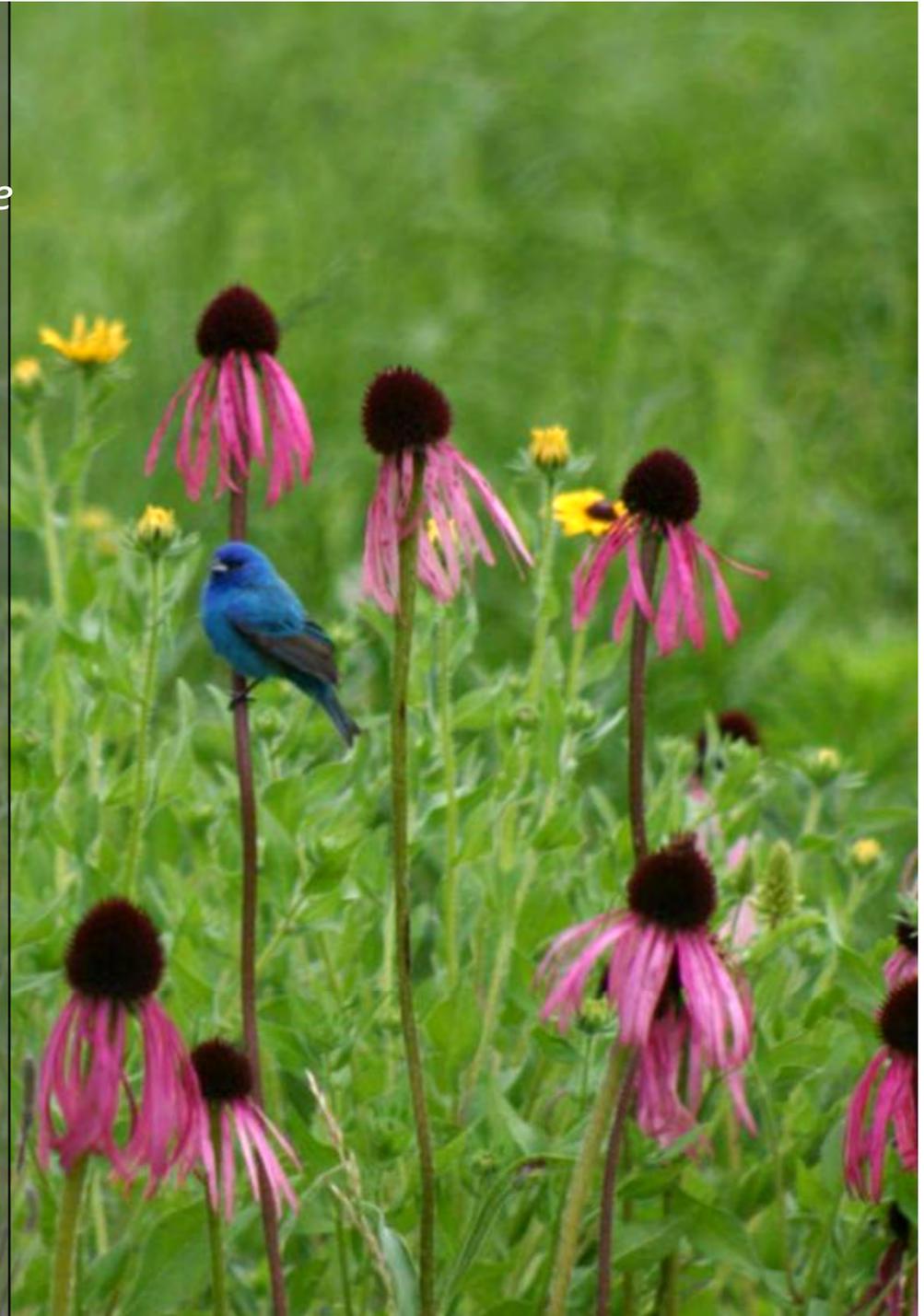
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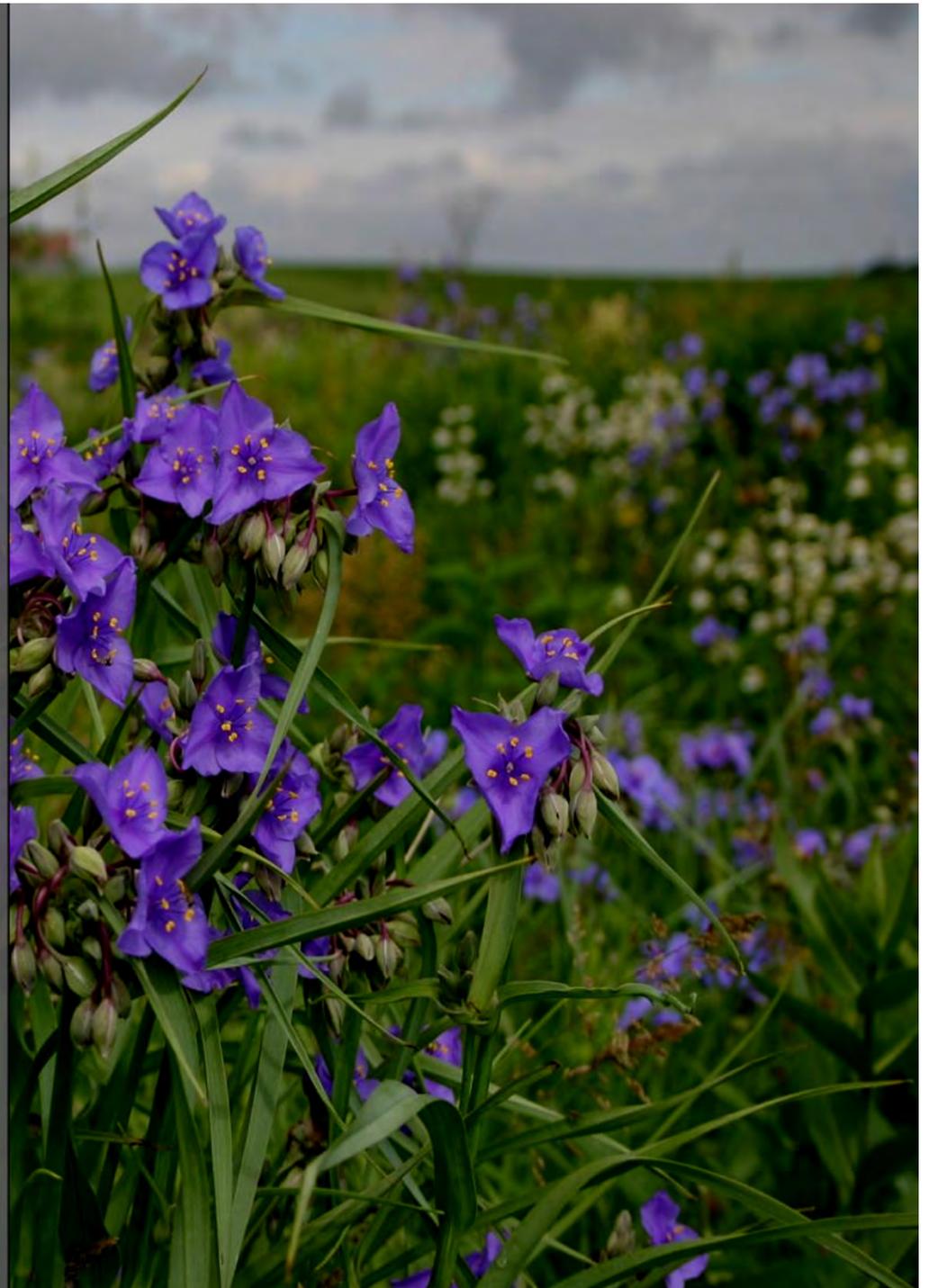


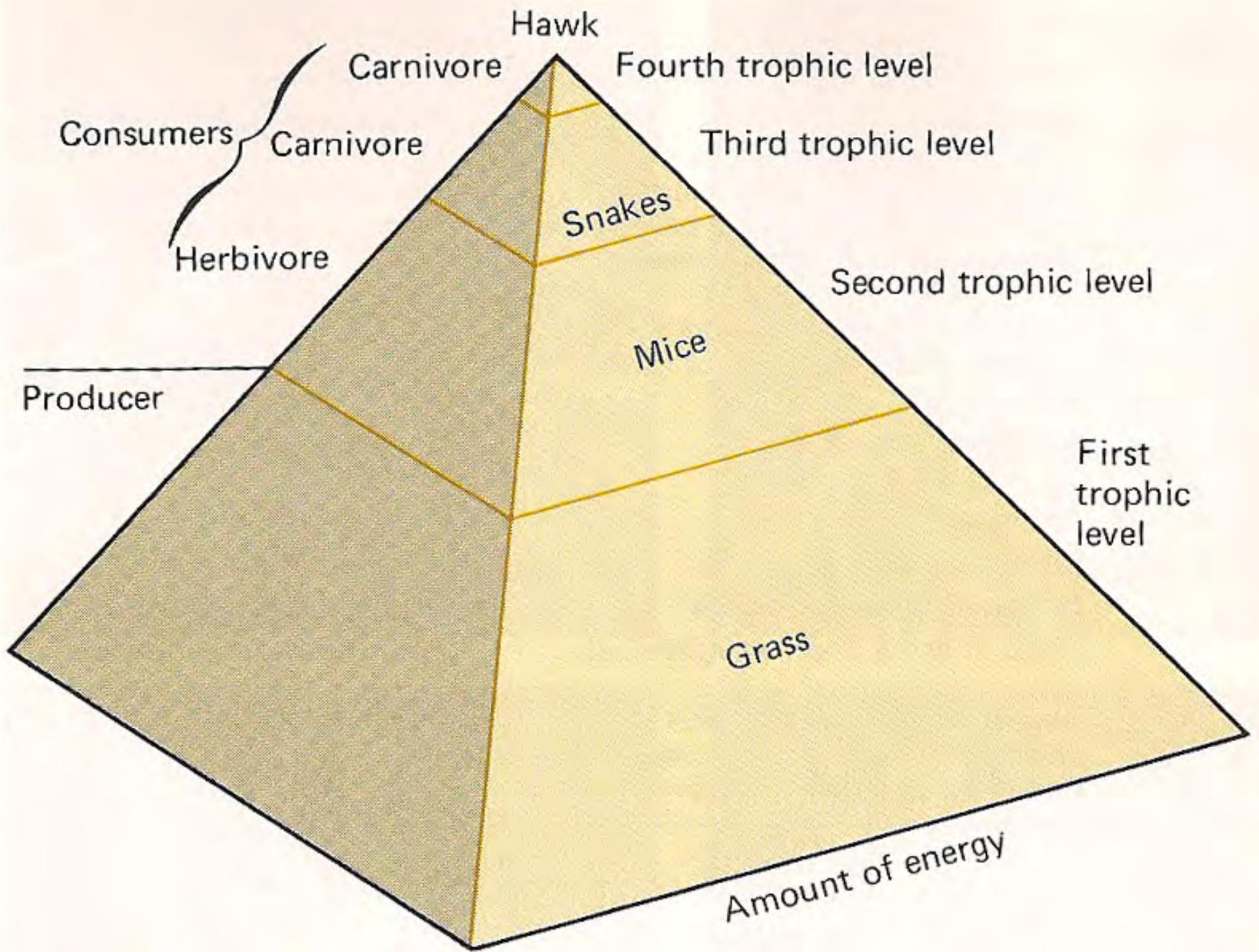
ensuring success in nature

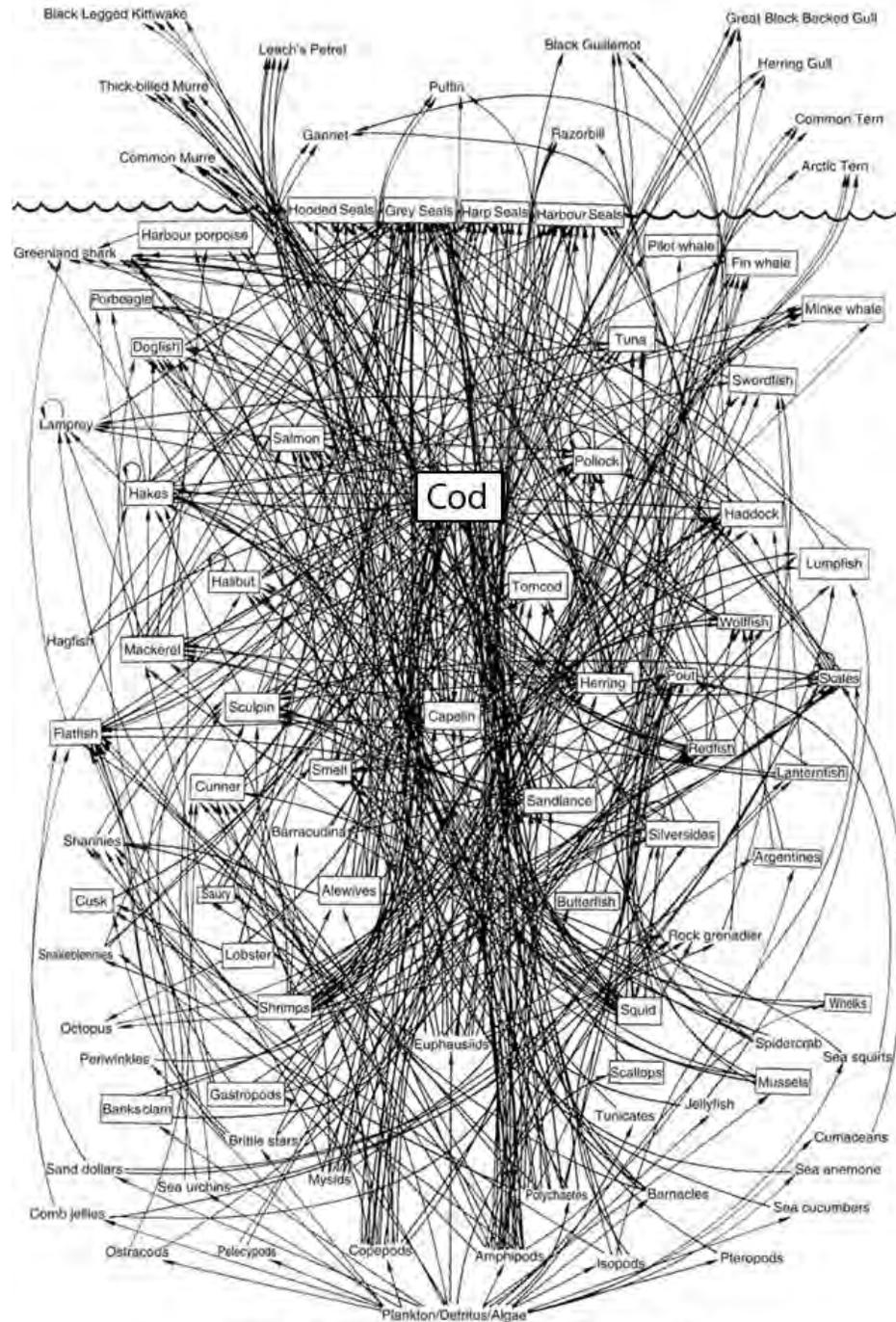
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Why Native Plants?







A simplified food web for the Northwest Atlantic. © IMMA

Understanding the Critical Role of Native Plants



If you count all of the terrestrial **bird species in North America that rely on insects** and other arthropods (typically, the spiders that eat insects) to feed their young, you would find that figure to be **about 96 percent** – in other words, nearly all of them. (Tallamy 2007)

Photo by Glori Berry

Cuckoo Bird

Understanding the Critical Role of Native Plants

Since insects are so important within the food chain, why does plant selection matter...can't insects eat alien plants?

- Up to **90 percent of all plant-eating insects are considered specialists** because they have evolved in concert with no more than a few plant lineages. It takes long evolutionary time spans rather than short ecological periods for insects to adapt to the specific chemical mix that characterizes different plants.
- The evolution of specialized abilities to eat the tissues of one particular plant lineage usually decreases an insect's ability to eat other plants that differ in timing of development, leaf chemistry, or physical defenses.
- Of all of these the most difficult to overcome is leaf chemistry, which make a leaf distasteful and typically toxic to all animals that have not developed the enzymes needed to detoxify them.

Many of the **ornamental alien plants** that have succeeded in North America have been imported specifically because of their **unpalatability** to native insects...species that are **"pest free"** are favored by the ornamental industry.



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INTRODUCED SPECIES

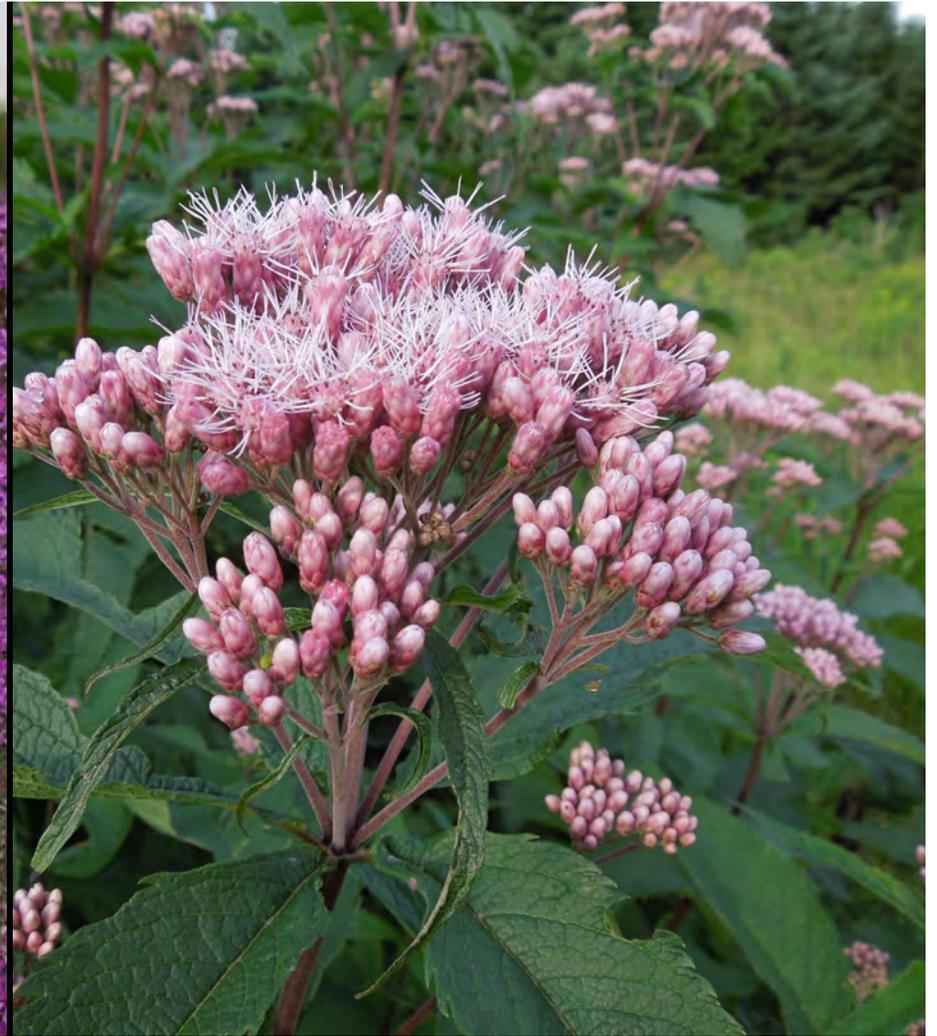
CHICAGO REGION VASCULAR PLANT DIVERSITY

Chicago Region vascular plants	Number	Comment
<u>Vascular plant taxa</u> (species, subspecies, varieties)	approximately 3000	almost 2700 species
<u>Families</u> represented	164	
<u>Genera</u> represented	895	
<u>Native plant taxa</u>	approximately 1650	55% of flora
<u>Species endemic</u> to Chicago Region (grow nowhere else in world)	2	plus 5 Great Lakes endemic taxa
<u>Threatened or endangered taxa</u>	700	23 % of flora, but 42 % of native taxa
<u>Non-native (alien) taxa</u>	approximately 1350	45 % of flora
<u>Invasive taxa</u>	approximately 150	5 % of flora, 11% of all non-native taxa

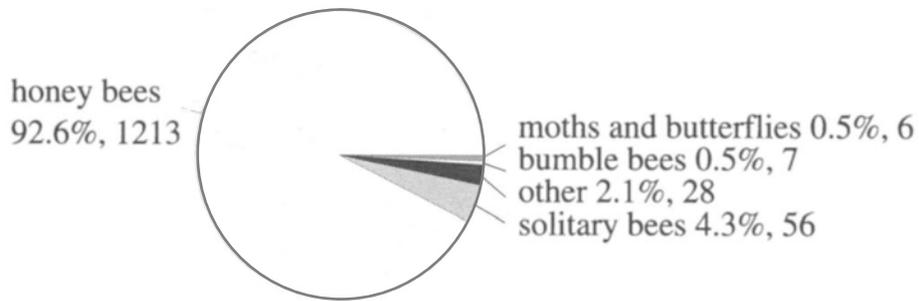
From <http://www.vplants.org>



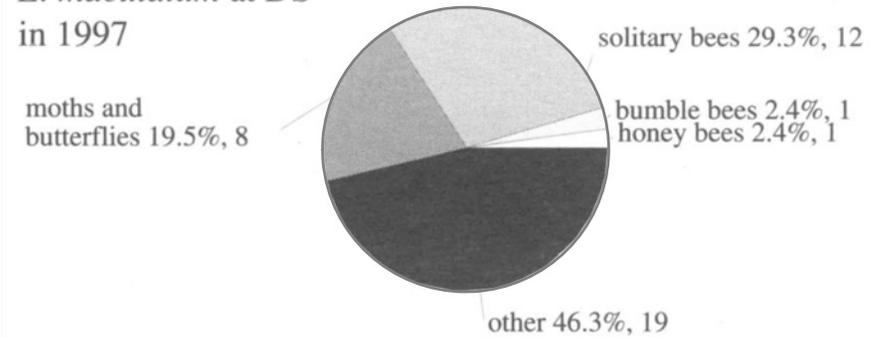
Invasive purple loosestrife (*Lythrum salicaria*) reduced the seed-set in nearby native plants (*Eupatorium maculatum*, *Eupatorium perfoliatum*, *Impatiens capensis*) by pollen contamination or by directly competing for pollinators (Grabas & Lavery 1999)



b) DS in 1997



E. maculatum at DS in 1997





A cultivar is a subspecies classification describing plant varieties which are produced through artificial selection. Cultivar, the word, comes from a combination of *cultivated variety*. Different forms of the same species are considered varieties. When these varieties are then artificially selected by humans for particular traits, they become a cultivar. (Source: *Biology Dictionary*)



Agastache 'Blue Fortune'

Parentage: *A. rugosa** x *A. foeniculum*
*native to Asia



Agastache foeniculum



Ulmus 'Morton' Accolade



Parentage: *U. japonica** x *U. wilsoniana**
*native to Asia



The Importance of Genetic Diversity

Asexual reproduction (Cloning) – All offspring have the same genetic makeup. What does that do to a population's ability to survive in a dynamic system?



The Importance of Genetic Diversity

New England Aster genetic diversity

OTHER CONCERNS...

Origin?

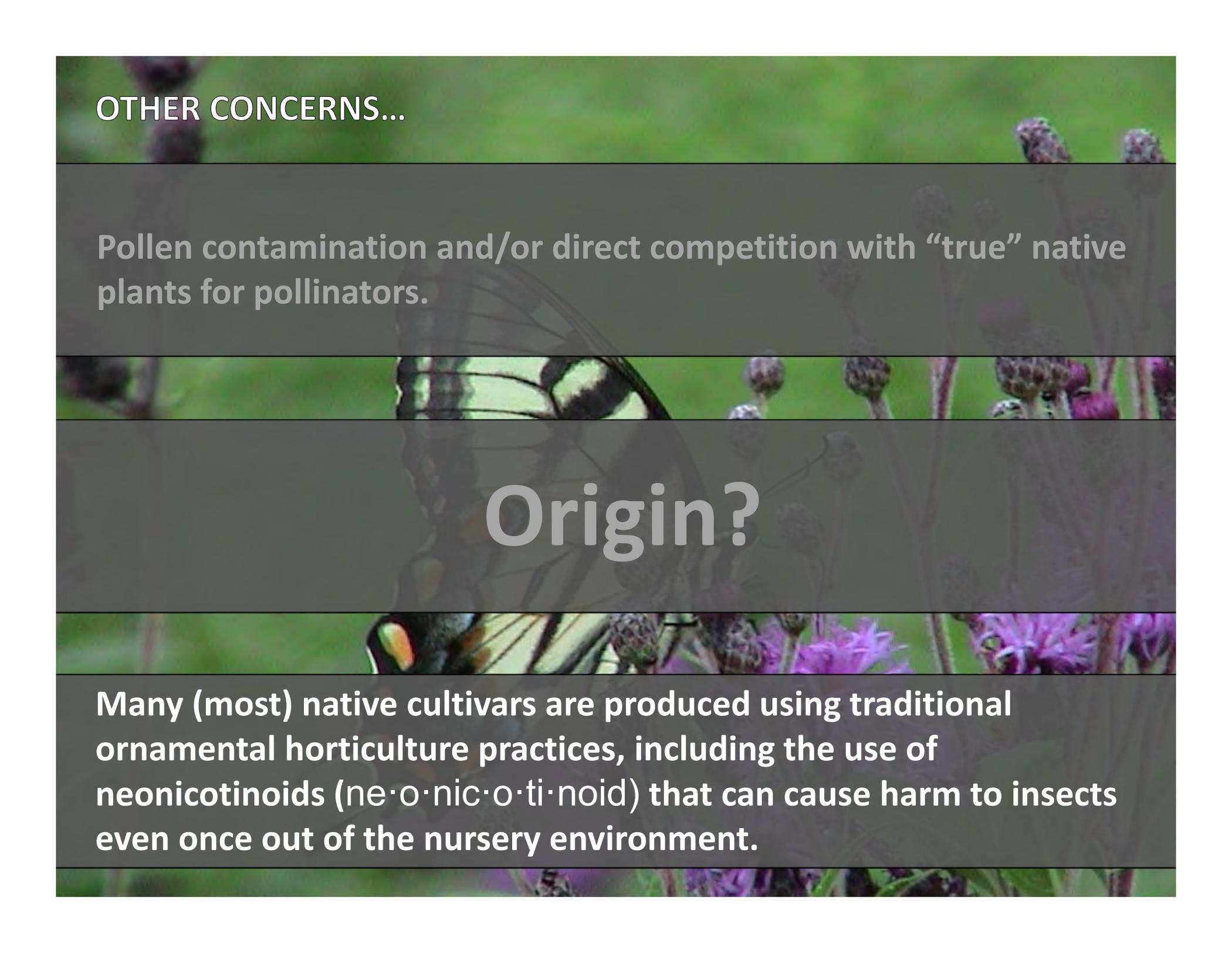


OTHER CONCERNS...

Pollen contamination and/or direct competition with “true” native plants for pollinators.

Origin?



The background of the entire slide is a photograph of a butterfly with black, white, and orange markings on its wings, perched on a purple flower. The image is slightly blurred and has a dark overlay.

OTHER CONCERNS...

Pollen contamination and/or direct competition with “true” native plants for pollinators.

Origin?

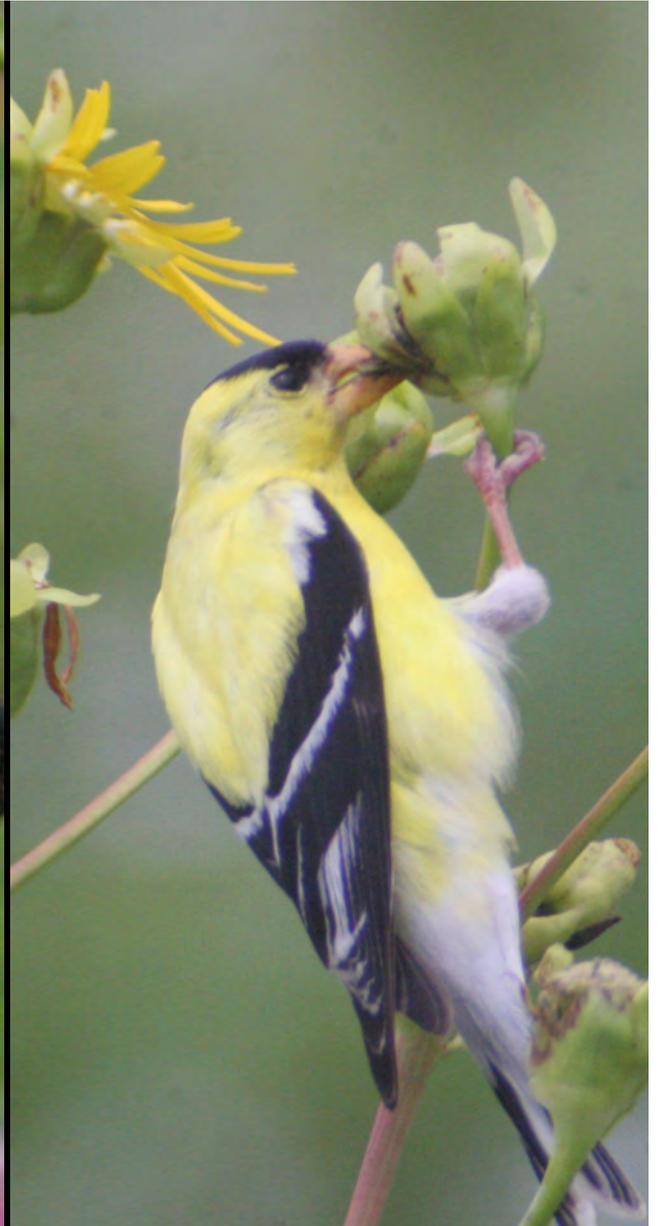
Many (most) native cultivars are produced using traditional ornamental horticulture practices, including the use of neonicotinoids (ne·o·nic·o·ti·noid) that can cause harm to insects even once out of the nursery environment.



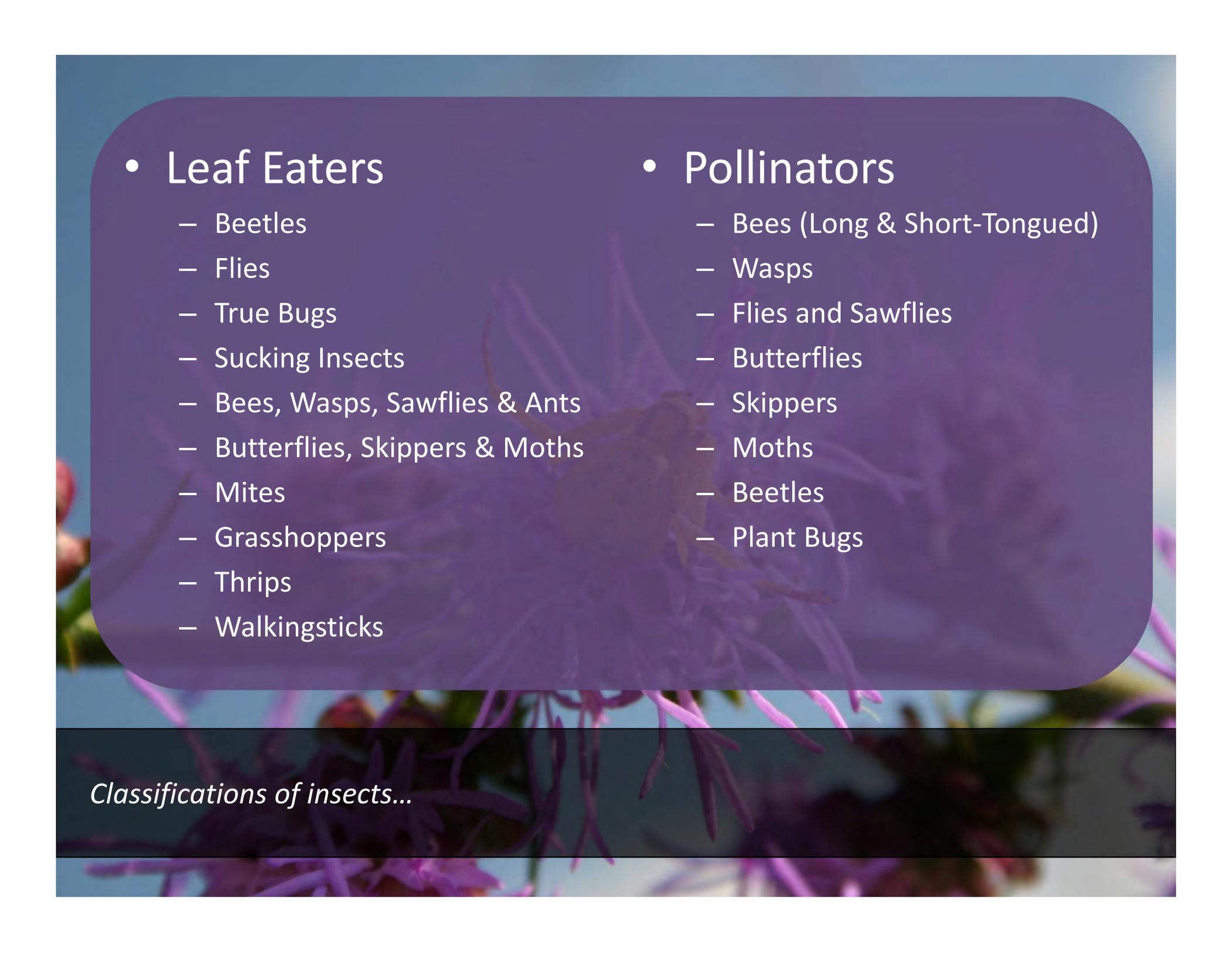
Leaf Eaters



Pollinators



Fruit Eaters



- Leaf Eaters

- Beetles
- Flies
- True Bugs
- Sucking Insects
- Bees, Wasps, Sawflies & Ants
- Butterflies, Skippers & Moths
- Mites
- Grasshoppers
- Thrips
- Walkingsticks

- Pollinators

- Bees (Long & Short-Tongued)
- Wasps
- Flies and Sawflies
- Butterflies
- Skippers
- Moths
- Beetles
- Plant Bugs

Classifications of insects...

- Total # of Insects Supported: Total Leaf Eaters (# of Caterpillars)/Total Pollinators (# of Butterflies & Skippers)/Total Birds/Total Mammals [Non-Native Insects Documented]
- Example- 100:70(10)/20(5)/5/5 [2]

Insect Use Code...

A photograph of a butterfly with dark wings and orange spots, perched on a purple flower. The background is a soft-focus green field. The text is overlaid on a dark green rounded rectangle.

bi·o·di·ver·si·ty

ˌbīōdiˈvɜrsədə, ˌbīōˈdīˈvɜrsədə/
Noun;

the variety of life in the world or in
a particular habitat or ecosystem.



Wildlife Value of Lawn...



Kentucky Bluegrass (*Poa pratensis*)-

133:122(38)/1(0)/4/6 [8]

TOTAL WILDLIFE POTENTIAL-

133:122(38)/1(0)/4/6 [8]

Wildlife Value of Lawn...

Kentucky Bluegrass (*Poa pratensis*)-
Perennial Rye Grass (*Lolium perenne*)-
Red Fescue Grass (*Festuca rubra*)-
Sheep Fescue Grass (*Festuca trachyphylla*)-

133:122(38)/1(0)/4/6 [8]

21:21(6)/0(0)/0/0 [3]

28:27(6)/0(0)/1/0 [8]

23:22(3)/0(0)/1/0 [7]

TOTAL WILDLIFE POTENTIAL-

205:192(53)/1(0)/6/6 [26]

Wildlife Value of Lawn...

Kentucky Bluegrass (*Poa pratensis*)-

133:122(38)/1(0)/4/6 [8]

Perennial Rye Grass (*Lolium perenne*)-

21:21(6)/0(0)/0/0 [3]

Red Fescue Grass (*Festuca rubra*)-

28:27(6)/0(0)/1/0 [8]

Sheep Fescue Grass (*Festuca trachyphylla*)-

23:22(3)/0(0)/1/0 [7]

TOTAL WILDLIFE POTENTIAL-

205:192(53)/1(0)/6/6 [26]

ADJUSTED WILDLIFE VALUE-

145:133(41)/1(0)/5/6 [15]

Wildlife Value of Lawn...



Wildlife Value of Lawn...

Kentucky Bluegrass (<i>Poa pratensis</i>)-	133:122(38)/1(0)/4/6 [8]
Perennial Rye Grass (<i>Lolium perenne</i>)-	21:21(6)/0(0)/0/0 [3]
Red Fescue Grass (<i>Festuca rubra</i>)-	28:27(6)/0(0)/1/0 [8]
Sheep Fescue Grass (<i>Festuca trachyphylla</i>)-	23:22(3)/0(0)/1/0 [7]
Field Thistle (<i>Cirsium arvense</i>)-	192:57(20)/127(11)/5/3 [6]
Common Crabgrass (<i>Digitaria sanguinalis</i>)-	56:30(13)/0(0)/21/5 [1]
Ground Ivy (<i>Glechoma hederacea</i>)-	26:4(2)/21(5)/1/0 [0]
Dandelion (<i>Taraxacum officinale</i>)	140:66(27)/58(16)/8/8 [3]
White Clover (<i>Trifolium repens</i>)-	211:104(47)/89(24)/10/8 [9]
<hr/>	
TOTAL WILDLIFE POTENTIAL-	830:453(162)/269(56)/51/30 [45]
ADJUSTED WILDLIFE VALUE-	616:335(125)/234(38)/31/16 [28]

Wildlife Value of Lawn...



Wildlife Value of Lawn...

Let's see the difference Biodiversity makes...

Kentucky Bluegrass-

133:122(38)/1(0)/4/6 [8]

Turf Grass Mix-

145:133(41)/1(0)/5/6 [15]

+12	+11	+3	+1	+7
+9%	+9%	+8%	+25%	+88%

**using Adjusted Wildlife Value*

Let's see the difference Biodiversity makes...

Kentucky Bluegrass-

133:122(38)/1(0)/4/6 [8]

Turf Grass Mix-

145:133(41)/1(0)/5/6 [15]

Weedy Lawn (Unmown)-

616:335(125)/234(38)/31/16 [28]

+471	+202	+84	+233	+33	+26	+10	+13
+325%	+152%	+205%	+23,300%	+3800%	+520%	+167%	+87%

**using Adjusted Wildlife Value*

Traditional Landscape Plants



Ginkgo



Crabapple



Chinese Juniper



Japanese Barberry



Burning Bush



English Ivy



Fountain Grass



Plume Grass



Catnip



Raspberry Wine Beebalm



Russian Sage



Stella De Oro Daylily

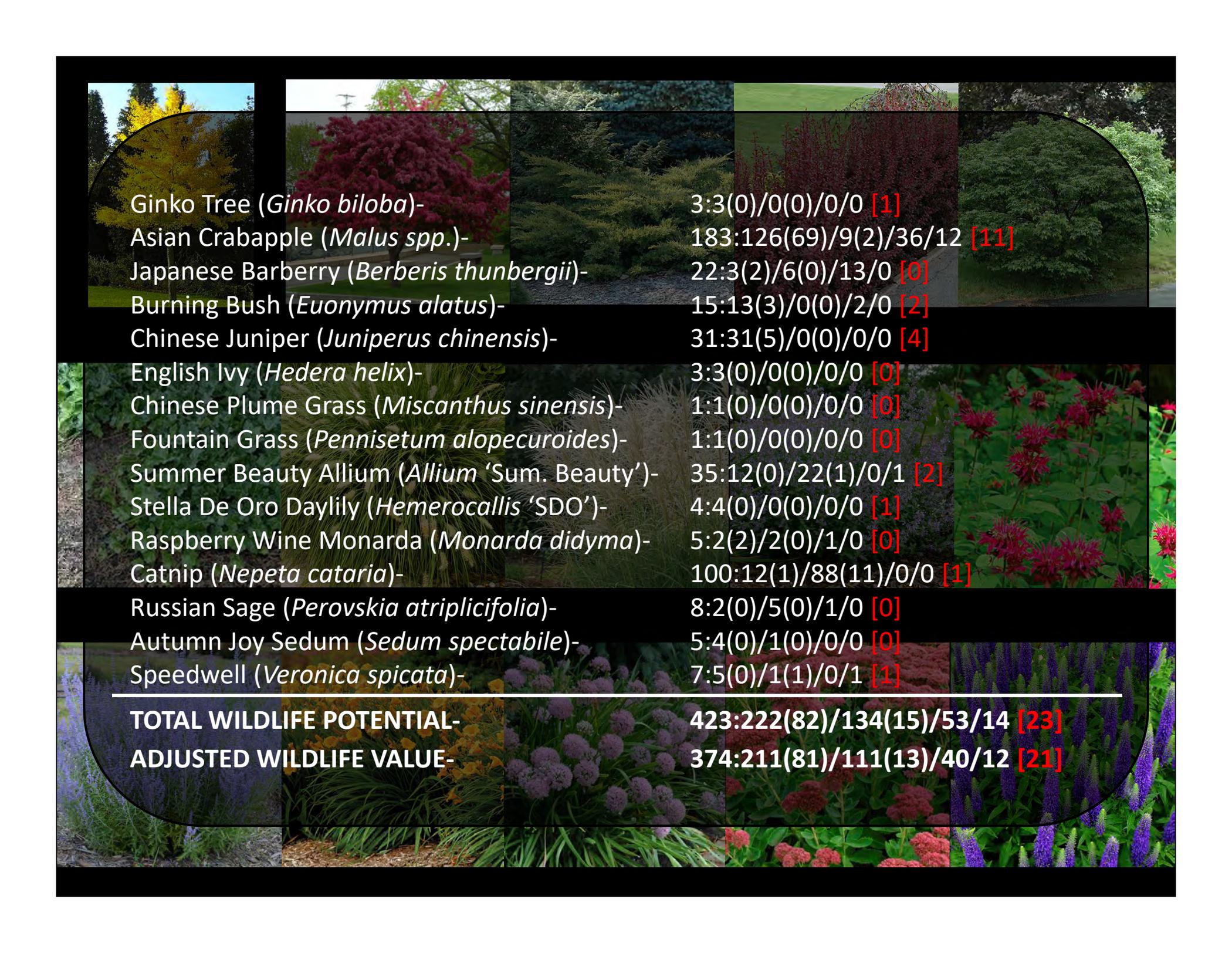


Summer Beauty Onion



Speedwell

Autumn Joy Sedum



Ginko Tree (*Ginkgo biloba*)-

3:3(0)/0(0)/0/0 [1]

Asian Crabapple (*Malus spp.*)-

183:126(69)/9(2)/36/12 [11]

Japanese Barberry (*Berberis thunbergii*)-

22:3(2)/6(0)/13/0 [0]

Burning Bush (*Euonymus alatus*)-

15:13(3)/0(0)/2/0 [2]

Chinese Juniper (*Juniperus chinensis*)-

31:31(5)/0(0)/0/0 [4]

English Ivy (*Hedera helix*)-

3:3(0)/0(0)/0/0 [0]

Chinese Plume Grass (*Miscanthus sinensis*)-

1:1(0)/0(0)/0/0 [0]

Fountain Grass (*Pennisetum alopecuroides*)-

1:1(0)/0(0)/0/0 [0]

Summer Beauty Allium (*Allium* 'Sum. Beauty')-

35:12(0)/22(1)/0/1 [2]

Stella De Oro Daylily (*Hemerocallis* 'SDO')-

4:4(0)/0(0)/0/0 [1]

Raspberry Wine Monarda (*Monarda didyma*)-

5:2(2)/2(0)/1/0 [0]

Catnip (*Nepeta cataria*)-

100:12(1)/88(11)/0/0 [1]

Russian Sage (*Perovskia atriplicifolia*)-

8:2(0)/5(0)/1/0 [0]

Autumn Joy Sedum (*Sedum spectabile*)-

5:4(0)/1(0)/0/0 [0]

Speedwell (*Veronica spicata*)-

7:5(0)/1(1)/0/1 [1]

TOTAL WILDLIFE POTENTIAL-

423:222(82)/134(15)/53/14 [23]

ADJUSTED WILDLIFE VALUE-

374:211(81)/111(13)/40/12 [21]

Native Landscape Plants



Burr Oak



Serviceberry



American Hazelnut



Kalm's St. John's Wort



Black Chokeberry



Burr Oak



Prairie Dropseed



Switchgrass



Foxglove Beardtongue



Marsh Blazingstar



Butterfly Milkweed



Black-Eyed Susan



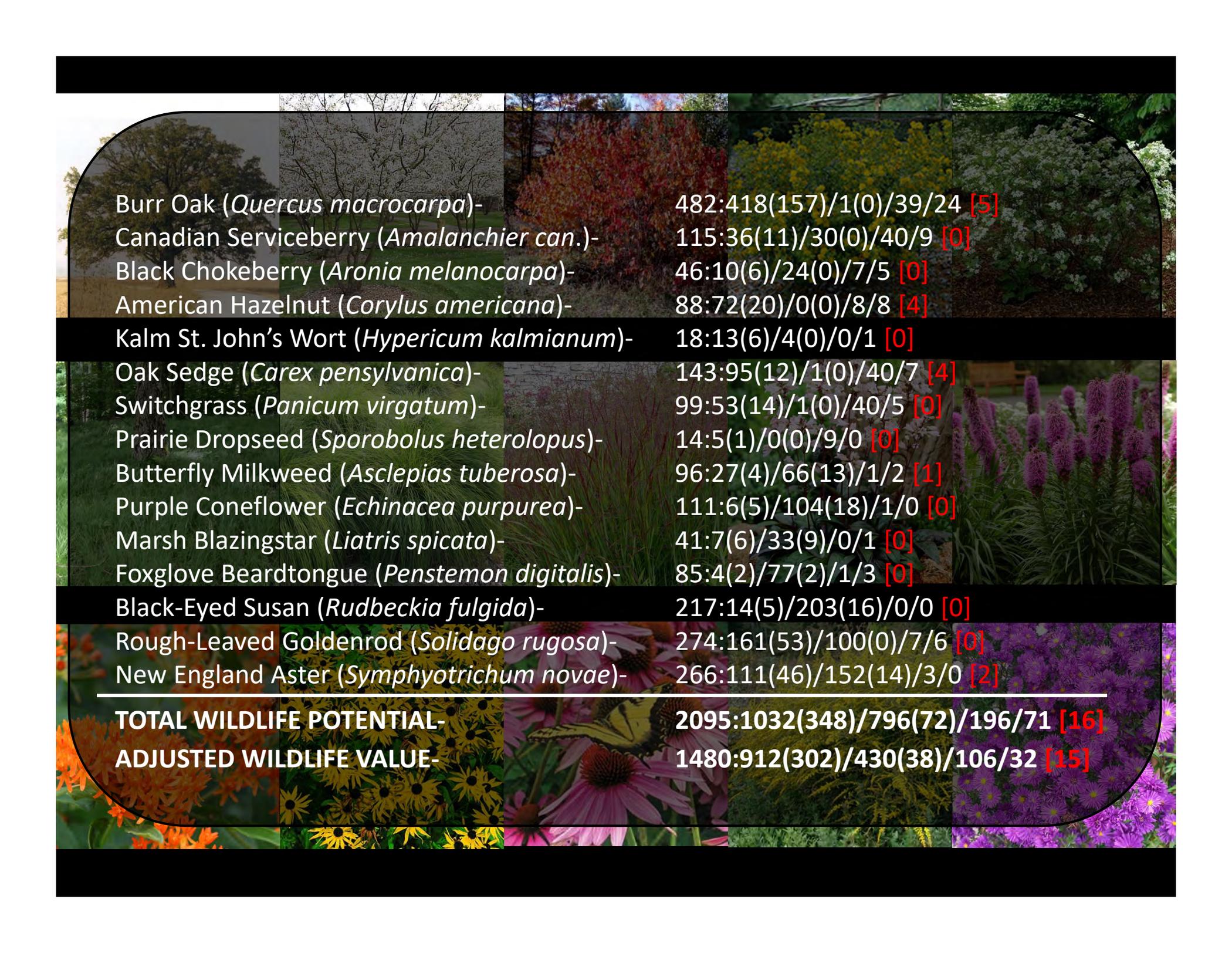
Purple Coneflower



Rough Goldenrod



New England Aster



Burr Oak (*Quercus macrocarpa*)- 482:418(157)/1(0)/39/24 [5]

Canadian Serviceberry (*Amalanchier can.*)- 115:36(11)/30(0)/40/9 [0]

Black Chokeberry (*Aronia melanocarpa*)- 46:10(6)/24(0)/7/5 [0]

American Hazelnut (*Corylus americana*)- 88:72(20)/0(0)/8/8 [4]

Kalm St. John's Wort (*Hypericum kalmianum*)- 18:13(6)/4(0)/0/1 [0]

Oak Sedge (*Carex pensylvanica*)- 143:95(12)/1(0)/40/7 [4]

Switchgrass (*Panicum virgatum*)- 99:53(14)/1(0)/40/5 [0]

Prairie Dropseed (*Sporobolus heterolopus*)- 14:5(1)/0(0)/9/0 [0]

Butterfly Milkweed (*Asclepias tuberosa*)- 96:27(4)/66(13)/1/2 [1]

Purple Coneflower (*Echinacea purpurea*)- 111:6(5)/104(18)/1/0 [0]

Marsh Blazingstar (*Liatris spicata*)- 41:7(6)/33(9)/0/1 [0]

Foxglove Beardtongue (*Penstemon digitalis*)- 85:4(2)/77(2)/1/3 [0]

Black-Eyed Susan (*Rudbeckia fulgida*)- 217:14(5)/203(16)/0/0 [0]

Rough-Leaved Goldenrod (*Solidago rugosa*)- 274:161(53)/100(0)/7/6 [0]

New England Aster (*Symphotrichum novae*)- 266:111(46)/152(14)/3/0 [2]

TOTAL WILDLIFE POTENTIAL- 2095:1032(348)/796(72)/196/71 [16]

ADJUSTED WILDLIFE VALUE- 1480:912(302)/430(38)/106/32 [15]

Let's see the difference Native Species make...

Traditional Landscape-

374:211(81)/111(13)/40/12 [21]

Native Landscape-

1480:912(302)/430(38)/106/32 [15]

+1106	+701	+221	+319	+25	+66	+20	(-6)
+296%	+332%	+273%	+287%	+192%	+165%	+167%	(-29%)

**using Adjusted Wildlife Value*

The whole picture...

Kentucky Bluegrass-

133:122(38)/1(0)/4/6 [8]

Turf Grass Mix-

145:133(41)/1(0)/5/6 [15]

Weedy Lawn (Unmown)-

616:335(125)/234(38)/31/16 [28]

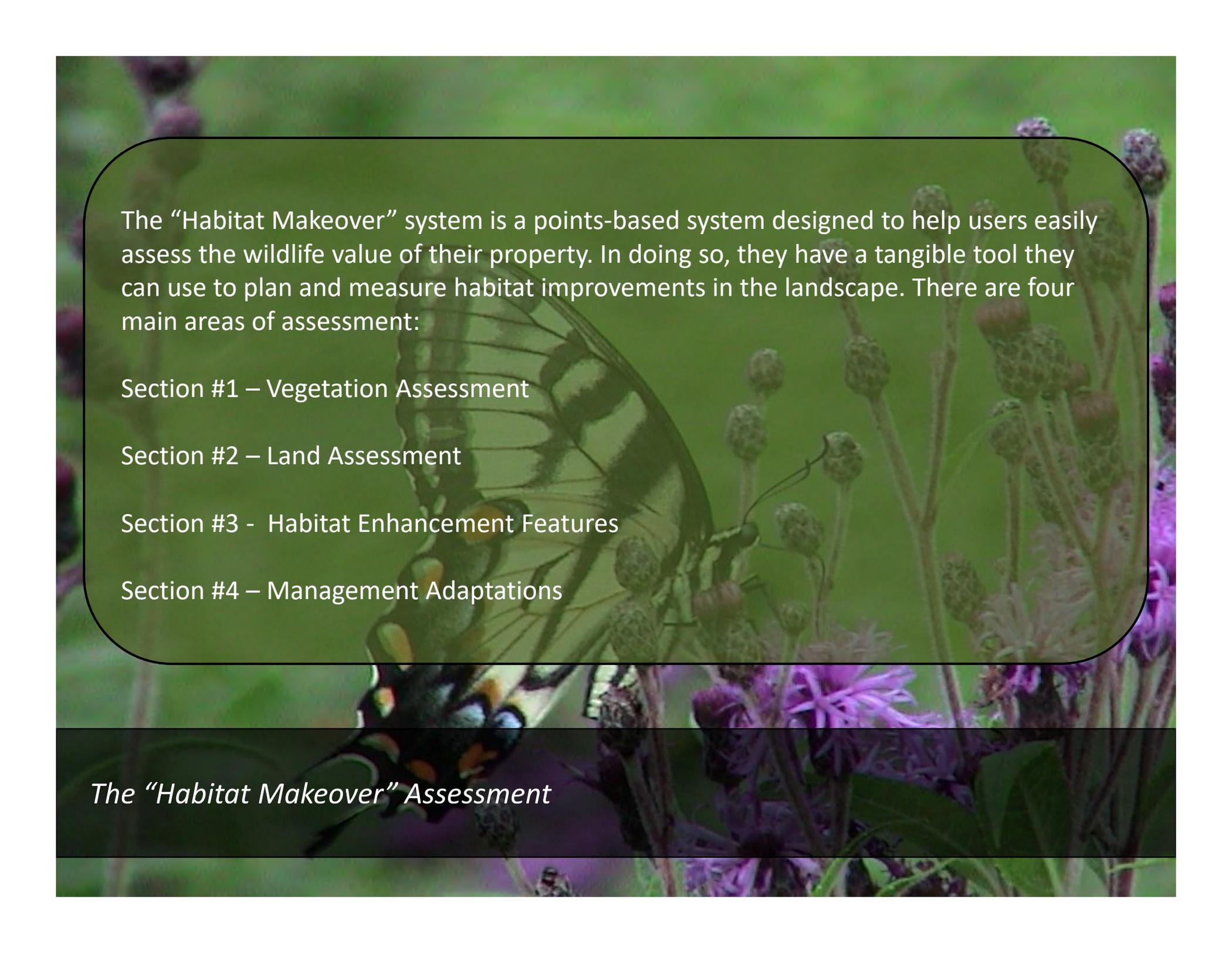
Traditional Landscape-

374:211(81)/111(13)/40/12 [21]

Native Landscape-

1480:912(302)/430(38)/106/32 [15]

**using Adjusted Wildlife Value*

A close-up photograph of a butterfly with black, white, and orange wings perched on a purple flower. The background is a soft-focus green field of similar flowers.

The “Habitat Makeover” system is a points-based system designed to help users easily assess the wildlife value of their property. In doing so, they have a tangible tool they can use to plan and measure habitat improvements in the landscape. There are four main areas of assessment:

Section #1 – Vegetation Assessment

Section #2 – Land Assessment

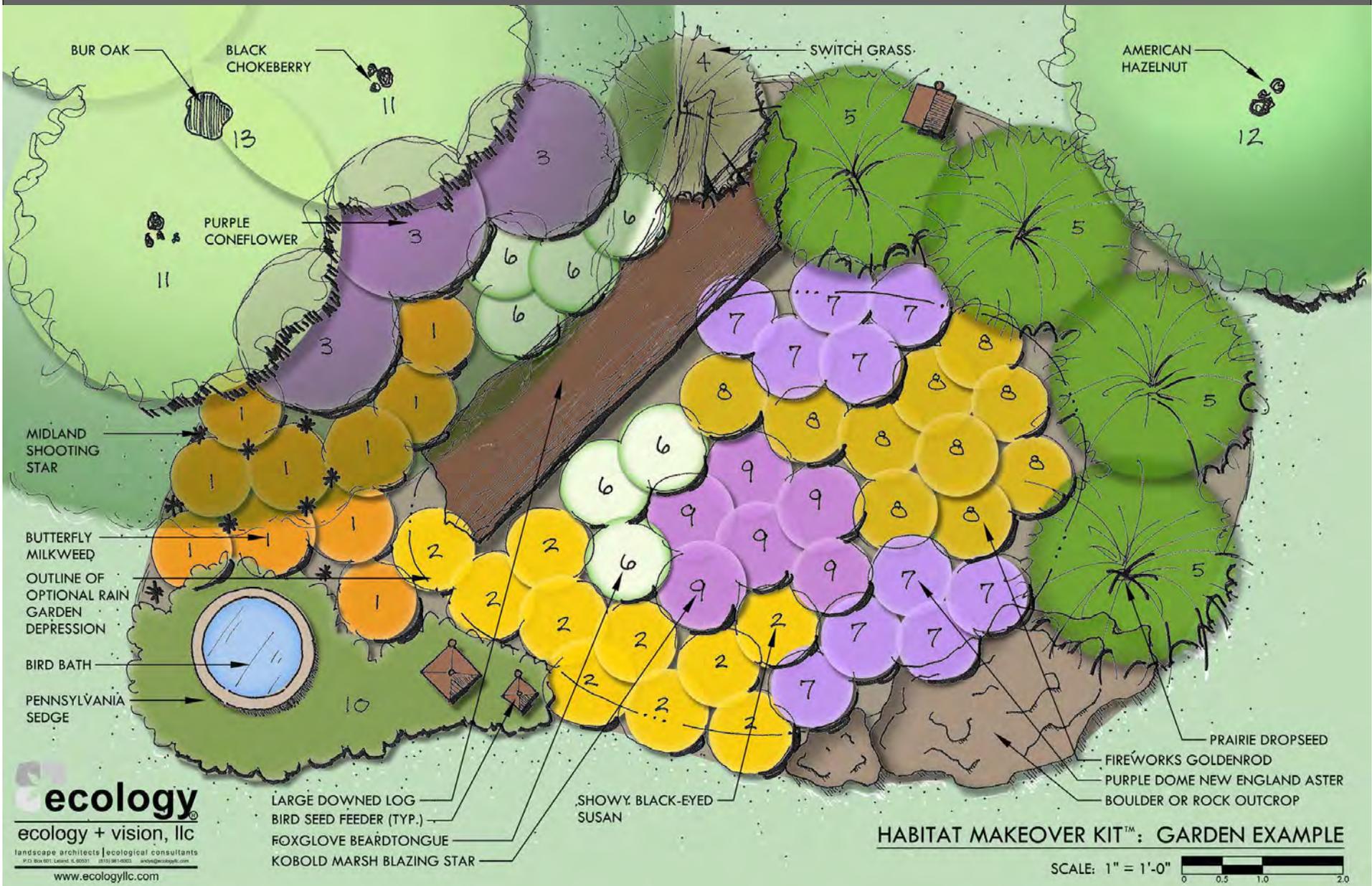
Section #3 - Habitat Enhancement Features

Section #4 – Management Adaptations

The “Habitat Makeover” Assessment



Photo Credit: Xerces Society: Milkweeds – A Conservation Practitioner's Guide



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LARGE DOWNED LOG
 BIRD SEED FEEDER (TYP.)
 FOXGLOVE BEARDTONGUE
 KOBOLD MARSH BLAZING STAR

SHOWY BLACK-EYED
 SUSAN

HABITAT MAKEOVER KIT™: GARDEN EXAMPLE

SCALE: 1" = 1'-0"

THANK YOU!

andy stahr, PLA, LEED AP®

Principal

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SERVICES:

- Greenline®
- LEED Landscape Design
- Natural Areas Masterplanning
- Natural Areas Assessment
- Wetland Delineation
- Permitting
- Vegetation Monitoring & Reporting
- Natural Areas Training



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To Download the Habitat Makeover Kit
SEARCH: "Pizzo Group Habitat Makeover"
<https://pizzogroup.com/habitat-makeover-thank-you/>

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