INTEGRATING BIODIVERSITY & BEAUTY

Cultivating Keystone Plants with Community Acceptance

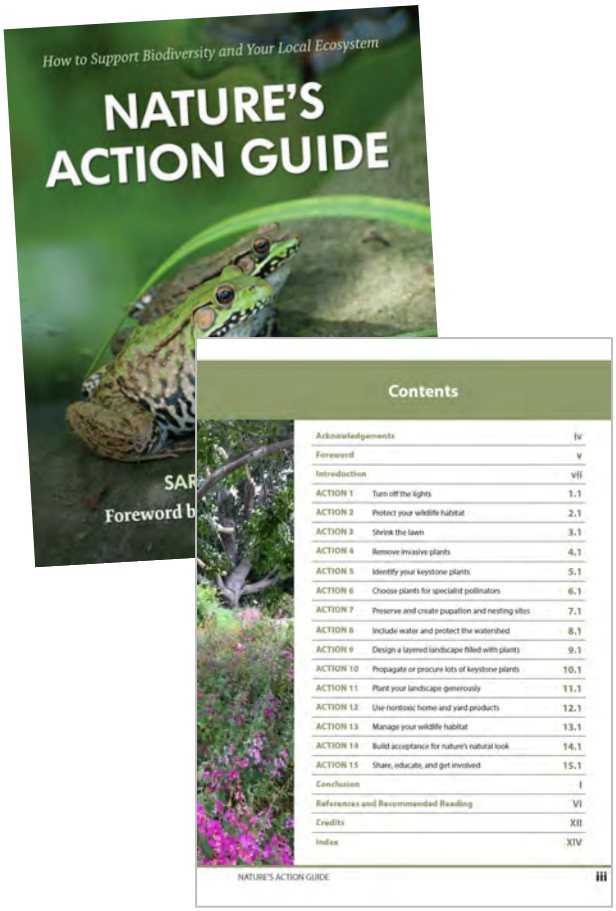
Introduction

Now more than ever our yards and community spaces need to support biodiversity. How can we ensure that our spaces are both ecologically rich and beautiful? We'll look at which plants matter most when it comes to your local biodiversity; how to procure them for generous plantings; and how to place them to increase their visual appeal. We'll consider strategies to ensure that our landscapes gain community acceptance such that they become invitations for others to transform their landscapes. A cost-conscious, DIY approach makes taking action doable. We hope you'll come away inspired and empowered to invite more biodiversity into your spaces.

In this handout:

- Wildlife Habitat Design o' Meter
- 15 actions need to support biodiversity and your local ecosystem
- Printable grid for marking windows to prevent fatal bird collisions
- 20 Most Valuable Woody and Perennial Native Plant Genera
- Resources mentioned in this talk
- Plants mentioned in this talk
- Credits for images used in the slide presentation
- A plug for growing plugs!
- Printable blank Wildlife Habitat Plant List
- Printable blank Native Plant Information Sheet
- Crossword Puzzle: Supporting Biodiversity (just for fun!)

15 actions need to support biodiversity and your local ecosystem



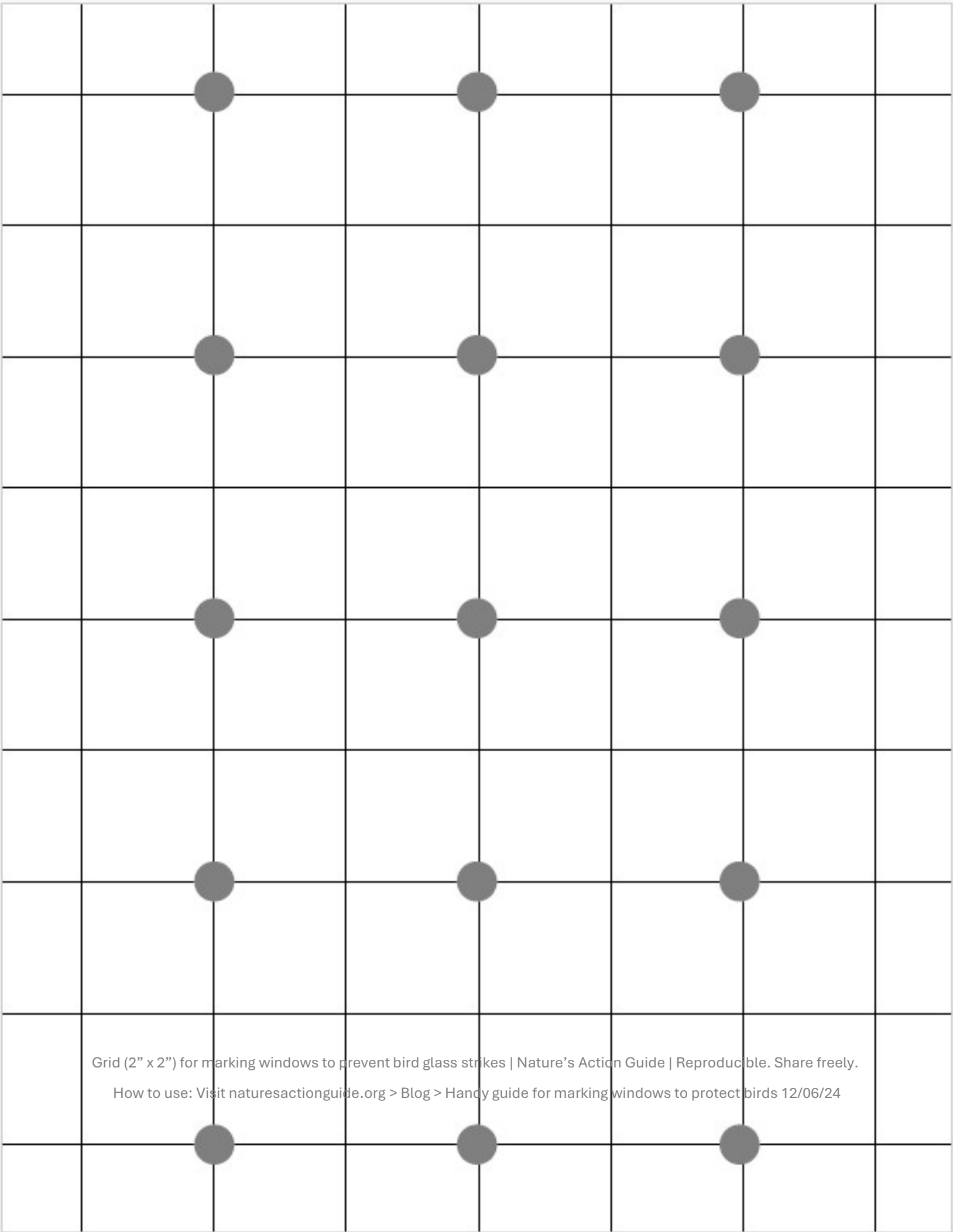
ACTION 1	Turn off the lights
ACTION 2	Protect your wildlife habitat
ACTION 3	Shrink the lawn
ACTION 4	Remove invasive plants
ACTION 5	Identify your keystone plants
ACTION 6	Choose plants for specialist pollinators
ACTION 7	Preserve and create pupation and nesting sites
ACTION 8	Include water and protect the watershed
ACTION 9	Design a layered landscape filled with plants
ACTION 10	Propagate or procure lots of keystone plants
ACTION 11	Plant your landscape generously
ACTION 12	Use nontoxic home and yard products
ACTION 13	Manage your wildlife habitat
ACTION 14	Build acceptance for nature's natural look
ACTION 15	Share, educate, and get involved

Grid for marking windows to prevent bird strikes

Although not discussed in this talk, tragically, new research estimates that the number of birds killed by glass strikes in the U.S. has been moved upward from 1 billion birds annually to 1.28 billion to 3.46 billion and possibly as high as 5.19 billion birds annually in the U.S.! (Klem, Saenger Brogle, 2024). Let's screen or mark all of our home and community windows as soon as possible!

Screening or marking the outside of windows is one of the easiest and most impactful actions we can take to protect wildlife. (See *Nature's Action Guide*, pages 2.2 and 2.6.)
Painting dots on windows in a 2-inch grid is perhaps the quickest method for accomplishing this. Nothing fancy is needed, simply a small paint brush and some light-colored acrylic paint left over from a home project. Print and tape this handy grid (shown at right) to the INSIDE of a windowpane, and paint dots on the OUTSIDE. Move the grid to the next pane.

A printable grid follows; it prints as an 8.5 x 11-inch template. Making multiple copies requires fewer trips inside to move the grid. For larger windows tape multiple sheets together.



Grid (2” x 2”) for marking windows to prevent bird glass strikes | Nature’s Action Guide | Reproducible. Share freely.

How to use: Visit naturesactionguide.org > Blog > Handy guide for marking windows to protect birds 12/06/24

20 most valuable woody and perennial native plant genera

for supporting biodiversity in the mid-Atlantic region

WOODY PLANTS

	Plant Genus	Common Name	Lepidoptera species
☐	*Quercus*	oak	**534**
☐	*Prunus*	black cherry	**456**
☐	*Salix*	willow	**455**
☐	*Betula*	birch	**413**
☐	*Populus*	poplar	**368**
☐	*Malus*	crabapple	**311**
☐	*Vaccinium*	blueberry	**288**
☐	*Acer*	maple	**285**
☐	*Ulmus*	elm	**213**
☐	*Pinus*	pine	**203**
☐	*Carya*	hickory	**200**
☐	*Crataegus*	hawthorn	**159**
☐	*Picea*	spruce	**156**
☐	*Alnus*	alder	**156**
☐	*Tilia*	basswood	**150**
☐	*Fraxinus*	ash	**150**
☐	*Rosa*	rose	**139**
☐	*Corylus*	filbert	**131**
☐	*Juglans*	walnut	**130**
☐	*Fagus*	beech	**126**
☐	*Castanea*	chestnut	**125**

PERENNIAL PLANTS

	Plant Genus	Common Name	Lepidoptera species
☐	*Solidago*	goldenrod	**115**
☐	*Aster*	asters	**112**
☐	*Helianthus*	sunflower	**73**
☐	*Eupatorium*	joe pye, boneset	**42**
☐	*Ipomoea*	morning glory	**39**
☐	*Carex*	sedges	**36**
☐	*Lonicera*	honeysuckle	**36**
☐	*Lupinus*	lupine	**33**
☐	*Viola*	violets	**29**
☐	*Geranium*	geraniums	**23**
☐	*Rudbeckia*	black-eyed susan	**17**
☐	*Iris*	iris	**17**
☐	*Oenothera*	evening primrose	**16**
☐	*Asclepias*	milkweed	**12**
☐	*Verbena*	verbena	**11**
☐	*Penstemon*	beardtongue	**8**
☐	*Phlox*	phlox	**8**
☐	*Monarda*	bee balm	**7**
☐	*Veronica*	veronica	**6**
☐	*Schizachyrium*	little bluestem	**6**
☐	*Lobelia*	cardinal flower	**4**

SOURCE: Doug Tallamy, 2018, Used with Permission

Resources mentioned in the talk:

BONAP — Biota of North America Project. Visit: bonap.org. Kartesz, J.T., 2015. North American Plant Atlas (http://bonap.net/napa). Chapel Hill, N.C. See Nature's Action Guide, pages. 5.4, 5.12-5.17, 6.8, 11.11.

Bringing Nature Home: How You Can Sustain Wildlife with Native Plants, Douglas W. Tallamy, Timber Press, 2009.

Conservation Corridor: Visit conservationcorridor.org

Cues to Care and Orderly Frames: Nassauer, J. I. (1995). Messy ecosystems, orderly frames [Article]. Landscape Journal, 14(2), 161–170. http://www.jstor.org/stable/43324192. See *Nature's Action Guide*, page 5.10.

Edible Landscaping Plants with Value to Pollinators (some are native species), Xerces Society —Search online for xerces habitat assessment guides. Download the *Habitat Assessment Guide for Pollinators in Yards, Gardens, and Parks*. The table of edible plants is at the bottom of the last page. See *Nature's Action Guide,* pages 14.2.

Generalism in Nature: Loxdale, H.D., Balog, A., & Harvey, J.A. (2019). Generalism in nature . . . the great misnomer: aphids and wasp parasitoids as examples [Article]. Insects. 10, 314.

Host plants for native pollen specialist bees: Visit JarrodFowler.com/host_plants.html OR search online for "host plants specialist bees eastern us". See *Nature's Action Guide,* page 6.9.

Most Valuable Woody and Perennial Native Plant Genera, Doug Tallamy, 2018. See *Nature's Action Guide*, page 5.10.

National Audubon Society Native Plant Database: Visit: https://www.audubon.org/native-plants.

National Wildlife Federation Native Plant Finder: Visit: https://nativeplantfinder.nwf.org/ or search online for "NWF find native plants". See *Nature's Action Guide,* pages 5.5, 5.8-5.9.

Native Plant Information Sheet—Blank template: Included in this handout. See *Nature's Action Guide,* page 9.5.

Nature's Action Guide: How to Support Biodiversity and Your Local Ecosystem, Sarah F. Jayne, Old Garden, 2024, naturesactionguide.org

Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard, Douglas W. Tallamy, Timber Press, 2020.

Pollinator Partnership—Ecoregional Planting Guide and **Garden Cards**: Visit: pollinator.org; click Resources; click Planting Guides; enter your ZIP Code®. See *Nature's Action Guide,* pages 1.12,6.12, 15.9.

Pollinator Pathway: pollinator-pathway.org. See *Nature's Action Guide,* pages 6.12, 15.5.

Seed Starting Calendar A Way to Garden: Visit: awaytogarden.com and search for "when to start seed".

Top plant genera supporting native pollen specialist bees in the Eastern US: Jarrod Fowler and Sam Droege, 2020; https://jarrodfowler.com/specialist_bees.html. See *Nature's Action Guide,* page 6.7.

Wildlife Habitat Native Plant List—Blank template: Included in this handout. See *Nature's Action Guide,* page 5.6.

Mid-Atlantic Region: Plant List
https://docs.google.com/spreadsheets/d/1yJvzMZihuUmkWonbYChYGjHsEuar4Zd50tPTg60Mvso/edit?usp=sharing

Native plants for native pollen specialist bees: TOP: Eastern beebalm (Monarda bradburiana), Eastern redbud (*Cercis canadensis*). BOTTOM: Eastern waterleaf (*Hydrophyllum virginianum);* foxglove beardtongue (*Penstemon digitalis*)

Plants mentioned in this talk:

Scientific Genus/Name	Common Name
Ampelopsis brevipedunculata	porcelain berry
Apocynum cannabinum	dogbane
Asclepias	milkweed
Carex	sedge
Cercis canadensis	eastern redbud
Chrysopsis	golden asters
Cyperus esculentus	yellow nutsedge (native)
Cyperus rotundas	purple nutsedge (invasive)
Echinacea purpurea	purple coneflower
Eutrochium	Joe-Pye weed
Helianthus	sunflower
Heuchera	coral bells
Hydrophyllum virginianum	eastern waterleaf
Liriodendron tulipifera	tulip poplar

Scientific Genus/Name	Common Name
Lonicera sempervirens	trumpet honeysuckle
Monarda bradburiana	eastern beebalm
Monarda punctata	Spotted beebalm
Parthenocissus quinquefolia	Virginia creeper
Penstemon digitalis	foxglove beardtongue
Prunus	cherry & plum
Quercus	oak
Rudbeckia	black-eyed Susan
Salix	willow
Schizachyrium scoparium	little bluestem
Solidago	goldenrod
Symphoricarpos albus	snowberry
Symphyotrichum	aster
Vitis	wild grapes

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Willow: Salix discolor: Silk666, CC BY-SA 3.0 via WC

How to make your own do-it-yourself propagation supplies

Propagation supplies need not be fancy. In fact, most of the necessary supplies can be found around the house or from a recycle bin. Seeds and fertilizer-free potting soil are the only expenses needed for a basic setup other than the one-time purchase of lighting (if you choose to propagate indoors and don't have bright light from a window). Here are some budget-friendly, do-it-yourself supplies for propagation:

Seed-starting cells: Recycled plastic containers of all shapes are useful. Egg cartons provide handy cells that make potting up easy. Punch holes in the bottom of each cell, fill with potting soil, and sow seeds.

Reuse cell packs, pots, and flats from purchased plants. To disinfect, soak containers for 30 minutes in a 1 : 1 vinegar to water solution. Rinse well.

Plant labels: Plastic containers and their lids (which often are not recyclable) can be cut into strips for plant labels. Print the name of the plant with a permanent marker. Lids can also be left whole and used to mark soil mixes.

Pots for transplanting seedlings into: Plastic containers such as 1-quart yogurt containers make nifty, adjustable pots. Mark and cut the container in half with sturdy scissors or clippers. Cut as shown below. Wrap the cut half into a cylinder and secure with a rubber band. I call these **R-pots** (R = repurposed). R-pots make deep and narrow plugs—a pot size that's not readily available for purchase.

bottom

R-pots are easy to mass produce.

NOTE: *Product containers vary in their suitability. Some plastics are brittle or difficult to cut, especially across the bottom. Experiment with containers from the recycle bin to find ones that cut relatively easily without splitting.*

Larger R-pots: The same system works well to make wider cylindrical pots ideal for shrub and tree seedlings. Mark as shown (*right*) and cut down only one side of the container. Cut one bottom circle. Secure with a rubber band.

Supports for R-pots: R-pots need to be placed in a container with drainage holes because the R-pot bottoms need support. Four small R-pots fit in a 1-quart yogurt container with 5 drainage holes cut in the bottom. Eight fit in the tubs that baby lettuce comes in; any similar container will work. To hold drainage water and keep things tidy, cut drainage holes in one tub and place it inside another tub. Save the lids of recycled tubs because the tubs can be inverted and set up as miniature greenhouses for seed starting.

10 Propagate

10.10 Action 10—Propagate or procure lots of keystone plants NATURE'S ACTION GUIDE

No need to purchase potting supplies

Although garden supply catalogs offer of an array useful propagation supplies, there is little need to buy them since modern life supplies us with plastic containers of every size and shape. This page from *Nature's Action Guide* shows a few ways to repurpose excessive plastic and save a little money for the native plant budget!

Grow your own plugs!

Growing your own plugs is worth learning how to do. It's as easy as baking a cake or painting a room—it simply requires a little bit of how-to guidance from books or online sources, supplies (most of which you likely already have), and seeds. Try it out!

Have	Source	Location	SCIENTIFIC NAME	Common Name	Deer	Germ Code	Shade	Part	Sun	Wet	Moist	Dry	Notes	Group

Scientific Name_____ Family_____ Keystone ☐

Common Names_____ Habitat_____

Related Plants (i.e., genus, cultivars)_____

TREE SHRUB VINE FORB GRASS FERN LAYER: canopy understory shrub herbaceous ground layer

Description:

Growth habit (i.e. clumping, upright, etc.)_____

Evergreen | Semi | Deciduous | Ephemeral Perennial | Biennial | Annual

PHOTO or

BOOKS _____

_____

Book_____

Page _____

Native to_____ Conservation status_____

DEER: | never | rarely | sometimes | often | EAT!

GROWTH: slow 1 2 3 4 5 fast AGGRESSIVE

height _____ width _____ spacing _____

ZONES _____ TEMPERATURE ____°F to ____°F

WATER: wet | > | moist | > | dry DROUGHT TOLERANT

LIGHT: deep | > | part | > | full

SOIL: _____ WELL-DRAINED pH:____

PROPAGATION *Best:* _____

SEEDING: Germination code _____ easy | hard

Days to germinate: _____ Require: DARK or LIGHT

Transplant out:

Cuttings | Division | Layering

PRUNING:

DATES (bloom/fruit dates, collect seed, propagation):

JAN	FEB	MAR
APR	MAY	JUN
JUL	AUG	SEP
OCT	NOV	DEC

☐ Lepidoptera	☐ Pollinators	☐ Birds	☐ Other Wildlife	☐ People	☐ Pests/Diseases
						edible	yummy	
		Landscape Services		Plant with:	*have

My experience growing it: easy | > | med | > | hard Observations:

Source	Propagation	Planting Date	Notes	Location	Map on back:
_____	_____	_____	_____	_____	Y | N
_____	_____	_____	_____	_____	Y | N
_____	_____	_____	_____	_____	Y | N

CROSSWORD: **Supporting Biodiversity** by Sarah F. Jayne

1		2	3		4		5				6		7	8	9	
10										11			12			
					13	14		15				16				
	17									18	19					
20								21							22	
23				24	25		26					27	28	29		
			30					32		33						34
35	36														37	
38					39		40		41		42		43			
44				45					46				47			
		48					49						50		51	
52					53				54							

ACROSS (Nature's Action Guide page numbers in parentheses are hints)

2 Largest monoculture in the US covering more land than the other eight top irrigated crops combined! (3.3)
5 ___ down shoots to layer plants. (10.18)
6 Give definition and are an invitation to enter a landscape (14.6)
10 Buy plants in a ___ to save $$. (10.7)
12 To soak flax or hemp to soften its fibers
13 Animal droppings
16 The ___ plant is a nonnative aster that gets its name from a popular Indian spice.
17 Most important type of native plant to plant (5.3)
18 FDA term for "Generally Regarded As (Safe &) Effective"
21 Change light bulbs to ___. (1.8)
22 US state with greatest biodiversity (abbr.)
23 First half of the name of a large city with "green bin rule" to reduce methane from food waste in landfills
24 Popular emitters of greenhouse gases
27 Gas-powered lawn mowers ___ 4 – 5% of the total greenhouse gases released in US.
30 Woodpecker nest construction (7.15)
33 Troublesome plants (adj.) (5.12)
35 Just say ___ to neonicotinoids (10.23)
37 Registered nurse (abbr.)
38 Bluestem grass genus (11.19
43 Sweetspire genus
44 ___mar; ocean (French)
45 Happy indoor cat sound
46 Bear (Spanish)
48 Type of ALAN (1st syllable) (1.10)
49 Stiff bristle on barley or rye seed head
50 Fence part
52 Requires proper disposal (2.10)
53 The fire___ needs your leaf litter! (1.9)
54 Genetic profile adapted to location (10.21)

DOWN (Nature's Action Guide page numbers in parentheses are hints)

1 Turn ___ the lights to protect nocturnal life. (1.4)
2 Keep track of plants with these. (11.2)
3 Initials of scientific name for a monarch favorite
4 Bird's home (7.15)
5 Helpful guide to your landscape (9.8)
7 T/F: Propagating plants is easy! (10.9)
8 Opposite of "him"
9 Element contributing to legibility of a landscape (14.7)
11 Native source of fiber but deadly to dogs, horses, etc.; a milkweed look-alike
14 Vegetation filled area that connects habitats (15.5)
15 New Jersey ___ was an important beverage substitute during the American Revolution
16 A lovely lawn-like alternative (11.10)
19 ___ -fuse, -duce, -use, -purpose, -cycle (10.10)
20 Asexual propagation (9.8)
24 Upper layer of the landscape (9.4)
25 Audio/visual (abbr.)
26 Common name of Hypericum (1st word; abbr.)
28 Survival strategy of the admiral butterfly
29 Moth of venomous stinging caterpillar
32 Bantu language that over 1 million people speak
34 Important decomposer, pollinator, composter, soil former, human food, and beauty product ingredient producer.
36 Number of people it takes to make a difference
39 Smell of improperly made compost (slang)
40 Reusable water (American English) (
41 Best type of pesticide
42 Peat replacement (10.13)
48 Important late season keystone genus (1st two letters) (7.13)
49 ___ yay yay
51 For example (abbr.)