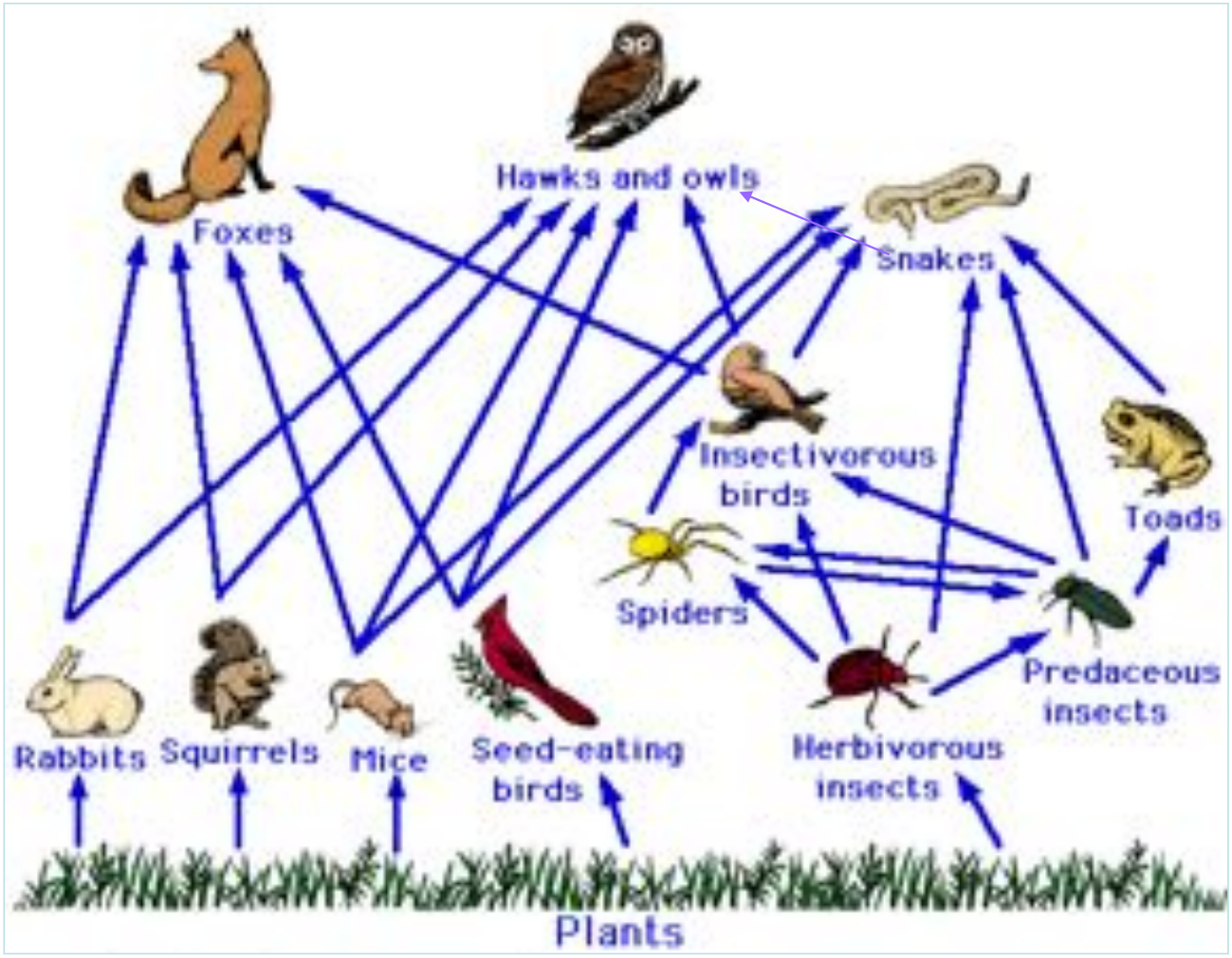
Piecing Together Nature's Puzzle in a Modern World

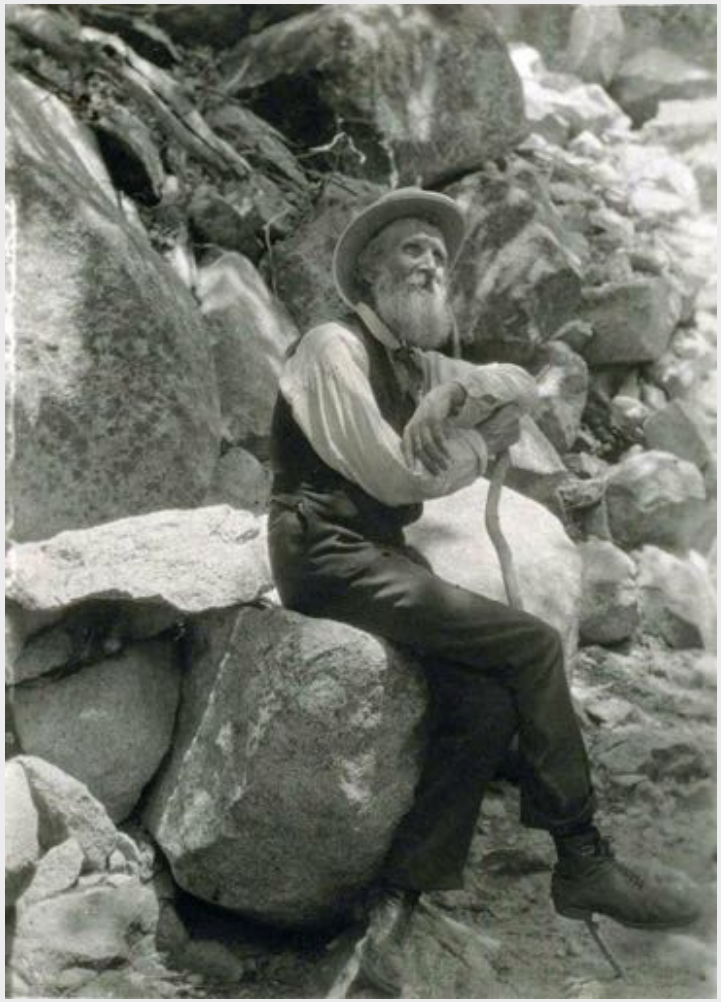
By Alonso Abugattas

Food Chain


SUN
PRODUCER
PRIMARY
CONSUMER
SECONDARY
CONSUMER
DECOMPOSER

Food Web


Hawks and owls
Foxes
Snakes
Insectivorous birds
Toads
Spiders
Predaceous insects
Rabbits
Squirrels
Mice
Seed-eating birds
Herbivorous insects
Plants



By Francis M. Fritz - http://content.cdlib.org/ark:/13030/tf2r29p09b&brand=calisphere, Public Domain, https://commons.wikimedia.org/w/index.php?curid=266893

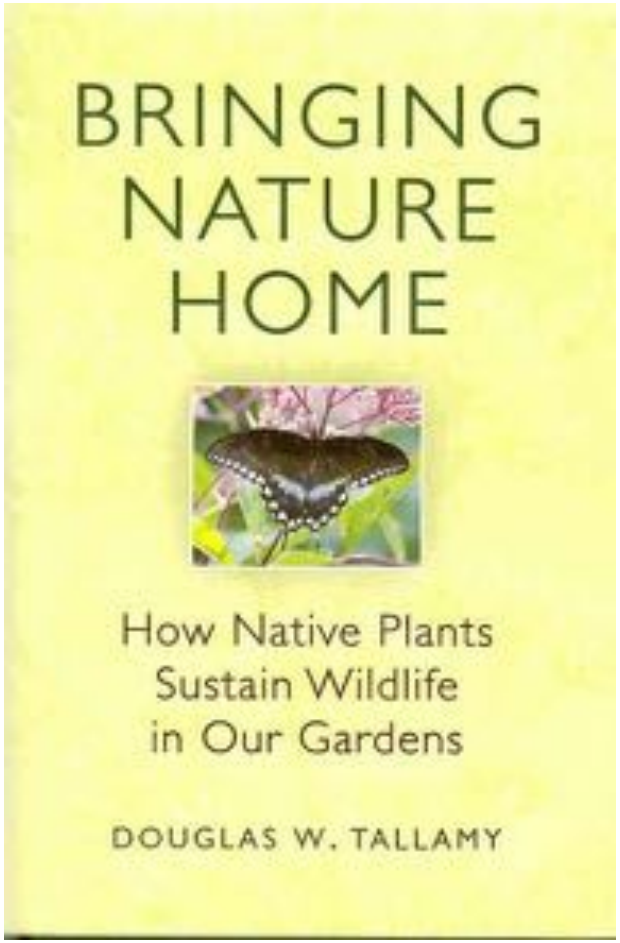
"When we try to pick out anything by itself, we find it hitched to everything else in the universe."

— John Muir

Why Use Natives?

- They provide more food/shelter for other animals with whom they evolved.
- They are preferred by native wildlife (with whom they evolved).
- They are adapted to our environmental and soil conditions (Right Plant Right Place).
- There are so many to choose from for just about every growing condition (over 1700 species in NoVA).
- The same plants can have multiple uses.
- They are attractive!
- Given the possibility for insects to lay large number of eggs, supplying what they need can make a big difference locally. Half of all insects eat plants, and up to 90% of these are specialists.

Some studies have shown that native flowers are 4 or more times more attractive to native bees (and other native pollinators) than non-natives.


BRINGING
NATURE
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How Native Plants
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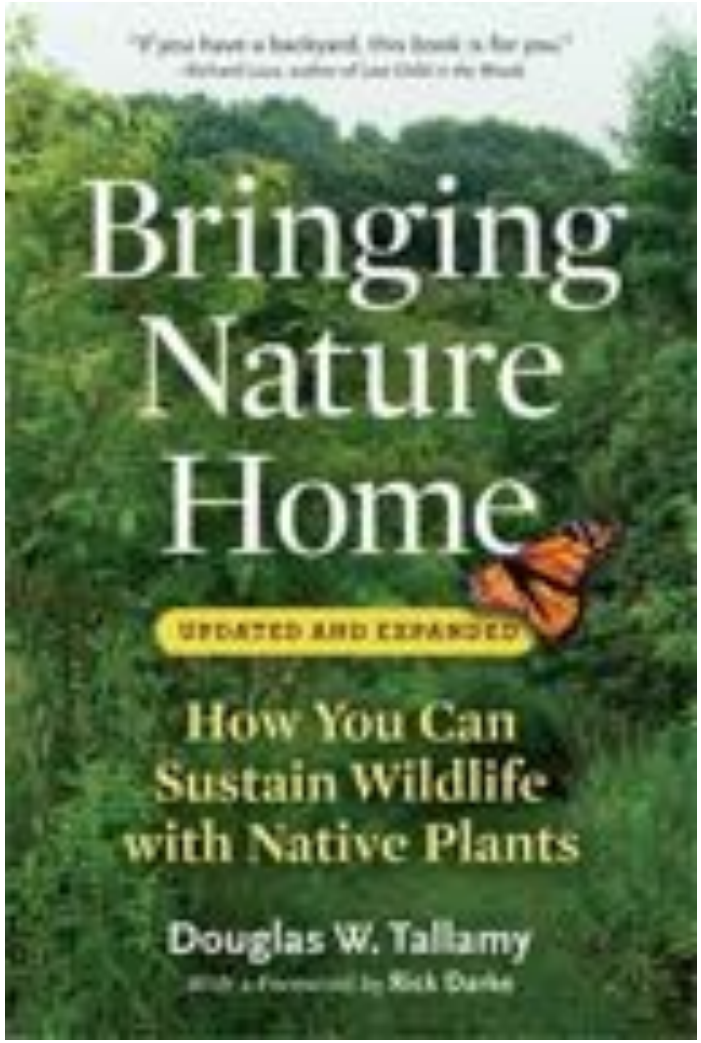
in Our Gardens
DOUGLAS W. TALLAMY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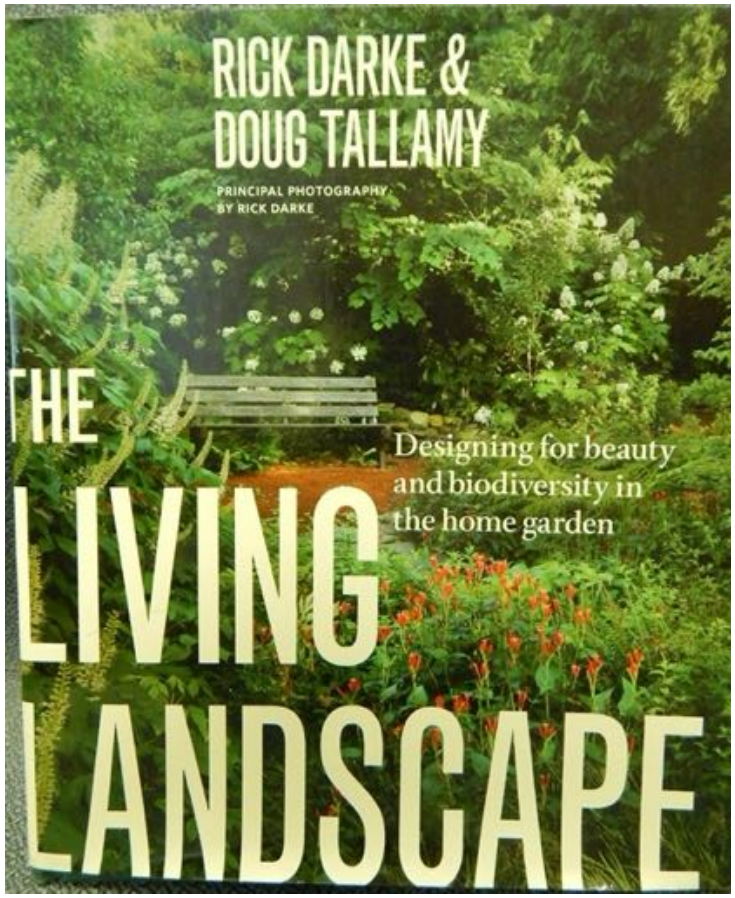
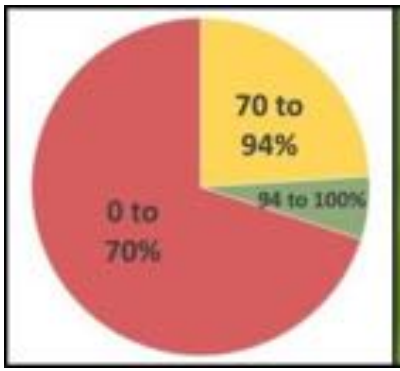

RICK DARKE &
DOUG TALLAMY
PRINCIPAL PHOTOGRAPHY
BY RICK DARKE
THE
LIVING
LANDSCAPE
Designing for beauty
and biodiversity in
the home garden

Woody Plants				Perennials		
Plant Genus	**Common Name**	**# of Lepidoptera species supported**		**Plant Genus**	**Common Name**	**# of Lepidoptera species supported**
Quercus	oak	534		*Aster*	asters	112
Salix	willow	455		*Solidago*	goldenrod	115
Prunus	black cherry	456		*Eupatorium*	joe pye, boneset	42
Acer	maple	285		*Carex*	sedges	36
Betula	birch	413		*Ipomoea*	morning glory	39
Populus	poplar	368		*Lupinus*	lupine	33
Vaccinium	blueberry	288		*Lonicera*	honeysuckle	36
Malus	crabapple	311		*Viola*	violets	29
Ulmus	elm	213		*Geranium*	geraniums	23
Alnus	alder	165		*Rudbeckia*	black-eyed susan	17
Carya	hickory	200		*Oenothera*	evening primrose	16
Tilia	basswood	150		*Iris*	iris	17
Pinus	pine	203		*Asclepias*	milkweed	12
Crataegus	hawthorn	159		*Penstemon*	beardtongue	8
Fraxinus	ash	150		*Verbena*	verbena	11
Picea	spruce	156		*Phlox*	phlox	8
Rosa	rose	139		*Monarda*	bee balm	7
Fagus	beech	126		*Veronica*	veronica	6
Juglans	walnut	130		*Schizachyrium*	little bluestem	6
Castanea	chestnut	125		*Lobelia*	cardinal flower	4
Corylus	filbert	131		*Helianthus*	sunflowers	73
				Carex	sedges	36

96% of terrestrial birds feed their young caterpillars (and sawflies) as their major food source, particularly while nesting. All 18 of our native bats feed on insects, with many preferring moths.

About 9,000 to raise one brood.



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Common Nonnative Woody Plants

Genus	Common Name	# Caterpillars Species Supported
Ailanthus	Tree-of-Heaven	6 (2 nonnative)
Bambusa	Bamboo	1
Buddlejia	Butterfly Bush	1
Buxus	Boxwood	1
Forsythia	Forsythia	1
Laburnum	Golden Raintree	1
Lagerstroemia	Crape Myrtle	3
Nandina	Heavenly Bamboo	0
Zelkova	Zelkova	0

Common Nonnative Perennials

Genus	Common Name	# Caterpillar Species Supported
Callestephus	Chinese Aster	2
Hemerocallis	Daylilies	0
Hosta	Hosta	0
Hyacinthus	Hyacinth	1
Liriope	Lilyturf	0
Muscari	Grape Hyacinth	0
Narcissus	Daffodils	1
Ornithogalum	Star of Bethlehem	0
Petunia	Petunias	3
Tagetes	Marigolds	4 (1 nonnative)
Tulipa	Tulips	0
Zoysia	Korean Lawn Grass	1

The Mighty Oak - over 600 species rely solely on it

40+ Mammal species

60+ Birds species

61 Wood Boring Beetle species

21 Leafhopper species

805 Cynipid Gall Wasp species

542 caterpillar species

37 Treehopper species

About 75% of the world's flowering plants rely upon animal pollinators to move pollen (Zoophily).

Pollinators learn… to the benefit of plant and pollinator.

Some "Butterfly" (Pollinator) Gardening Basics

- Avoid using pesticides and/or herbicides.
- Plant for continuous blooms throughout the seasons (so you have continuous food them).
- Use mass plantings (they're easier to spot when flying by).
- Include "host" plants (for caterpillars and bees).
- Provide basking sites.
- Consider puddling areas for butterflies, mud plots for bees and wasps.
- Try to locate your garden in the sunniest location you have.
- Consider flower color and shape.
- Avoid double-flowered or other cultivars.
- Go Native!

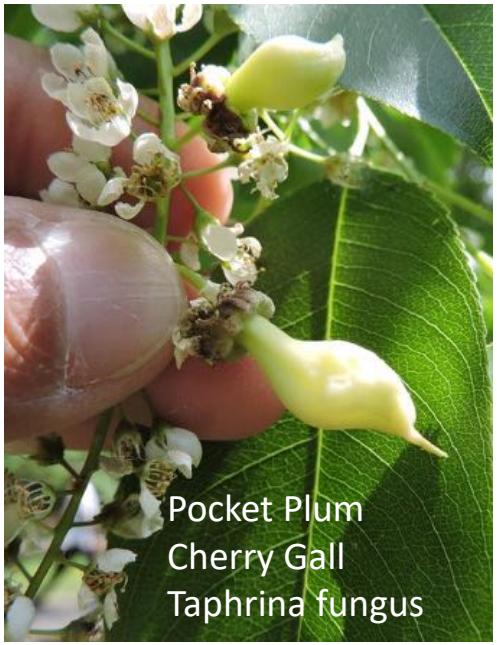
About 30% of our 450 or so bees are specialists, depending on a limited range of plants (usually a genus or family) to collect pollen (though they can often nectar at many more). They are **oligolectic**. If they collect pollen from a single species they are **monolectic**. If they use various plants they are **polylectic**.

Some particular pollen producing plants for specialist bees:

- Blueberries-Deerberries (Vacciniums) - at least 11 specialists
- Native Loosestrifes (Lysimachia) - at least 3 oil collecting bees
- Hollies (Ilex) - 3
- Ironweeds (Vernonias) – at least 2 bee specialists
- Willows (Salix) – at least 14 specialists
- Sunflowers (Helianthus) – at least 9 bee specialists
- Dogwoods (Cornus) - 4
- Native Thistles (Cirsium) - 3
- Ground Cherries (Physalis) – at least 3 specialists
- Curcurbita (Squash, Gourds, Pumpkins) - 3
- Pickerelweed (Pondeteria) - 3
- Goldenrods (Solidago) – at least 12 specialists
- Evening Primrose/Sundrops (Oenothera) - 4
- Asters (Symphyotrichum) - 9 specialists
- Aster Family – 131 specialist bee associations (specially most Melissodes bees)
- Rose Family – 102 specialist bee associations

Galls

- A growth in a very specific manner caused or influenced by another organism. Often host specific (oaks have over 550 specific to them, usually Cynapid wasps).
- An edible home.
- Gall makers include wasps, flies, mites, fungi, bacteria and virus.



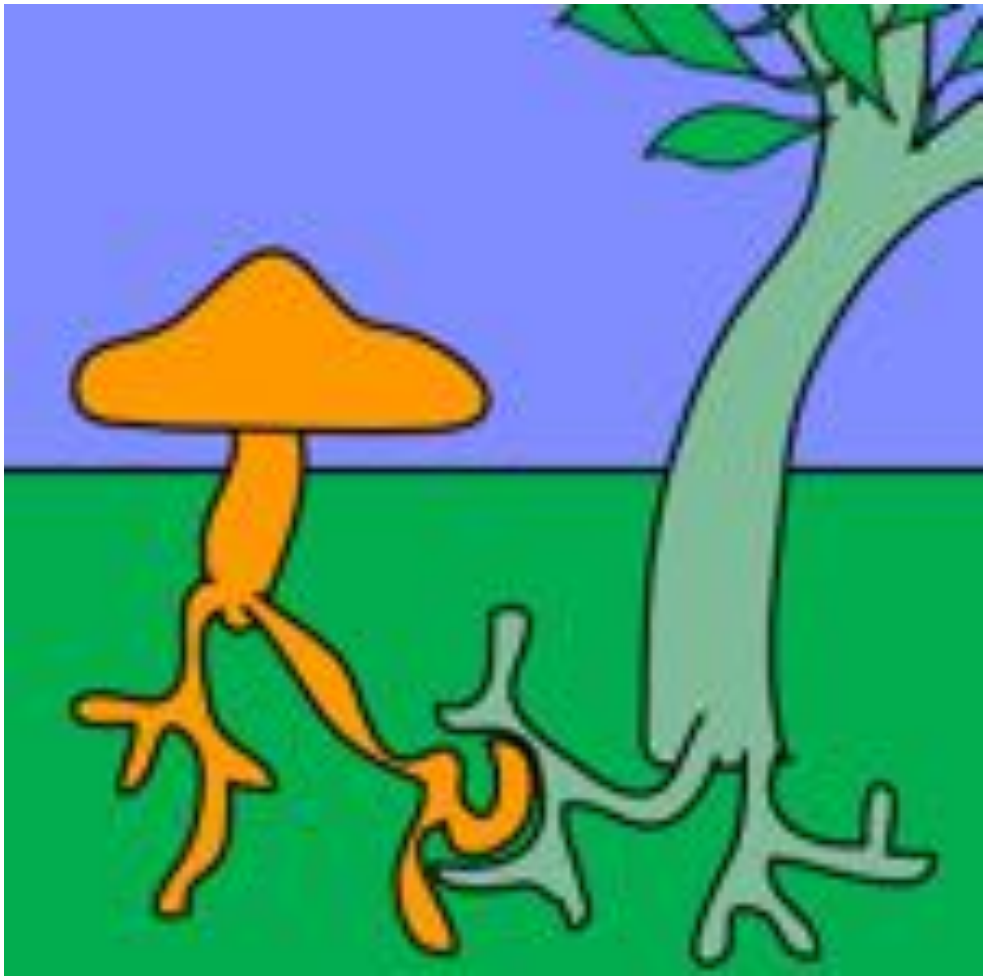
Myrmecochorous plants

(over 11,000 world-wide, 90+ around DC)

30% of our spring blooming plant species: Wild Ginger, Toothworts, Bloodroot, most Violets, Spring Beauties, Dutchman's Breeches, some Iris, Squirrel Corn, Trilliums, Hepaticas, Wild Bleeding Heart, Speedwells, several Sedges (*Carex spp)*, Woodrushes, Twinleaf, Rue Anemone, Troutlilies, Corydalis, Trailing Arbutus, Virginia Bluebells, some Spurges, Daffodils, Grape Hyacinth, Star-of-Bethlehem, Ground Ivy, Henbit, Deadnettle, and others.

90% of the world's plants have some kind of positive association with fungi, 80% cannot survive without it.

Mycorrhizae



Yellow Pond Lilly

When an algae takes a LICHEN to a fungus…

Pinesap Photo by Iwona Erskine-Kellie, Wiki Commons

Indian Pipes

Squawroot

Beechdrops

Myco-heterotrophs

Mycorrhizal Cheaters

Capital Naturalist

I am in the process of writing a natural history book on being a naturalist in the Washington, DC area. As part of that effort I have put together some social media under the title of “Capital Naturalist.”

I invite you to check them out as I make regular local natural history observations using my own photography. Please checkout:

- My Blog: **http://capitalnaturalist.blogspot.com/**
- Search “Capital Naturalist Group” on Facebook
- Follow me on Twitter: @CapNaturalist
- Check out the Capital Naturalist YouTube Channel

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