

Riparian Forest Buffer Webinar (Part 2)



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PACD Riparian Forest Buffer Webinar 2025

Topics:

Intro and History

How to Establish an RFB

Planning

Break around 10:30

Wildlife & Pollinator Considerations

Outreach

Funding and Partnerships

Q&A around 11:30



Before we get into the science, let's just think about our own experience

Here there be brook trout



Before we get into the science, let's just think about our own experience

And tons of other cool plants and animals



Why discuss wildlife considerations?

- 1) You should really care!
 - We don't get "ecosystem services" (like clean air, clean water, food, carbon storage) without functioning ecosystems
 - They deserve to be here as much as we do (more than we do?)

2) Persuasion



Why do wildlife matter to humans?

“Ecosystem Services” – take your ecological probiotics



Why do wildlife matter to humans?

If you hate pests you should love biodiversity

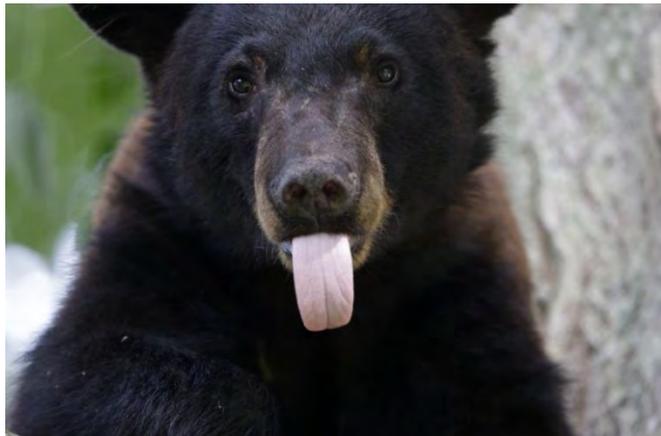


**14 native woody species, > 15 native forbs
= enough habitat to support lots of predators**



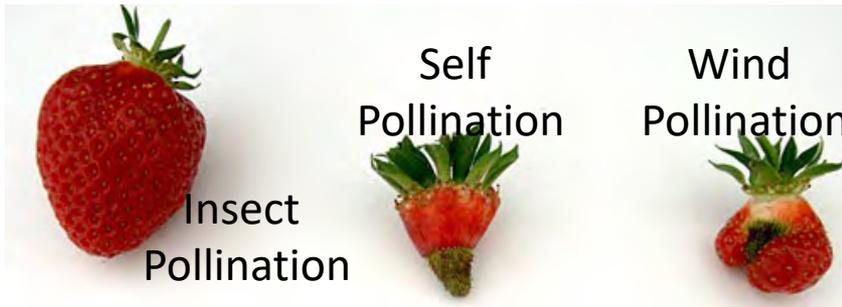
Speaking of predators

- Chickadees need 5,000 insects to raise **1** clutch (3 chicks)
- **96%** of terrestrial birds eat insects as chicks
- Huge variety of animals eat insects



Pollinators

- **80%** of flowering plants use insect pollination
- Pollinators are **critical** for ecosystem health and our agriculture and forestry industries
- Annually add **\$259 million** just to PA ag industry



Persuasion (“Gateway Bugs”)

It’s very unlikely that someone with land doesn’t care at all about nature/wildlife. **But:**

- They may need you to point out that for many species populations are much lower than they used to be
- They may need you to point out what is needed on the landscape to provide for wildlife
- They may need you to remind them that they care

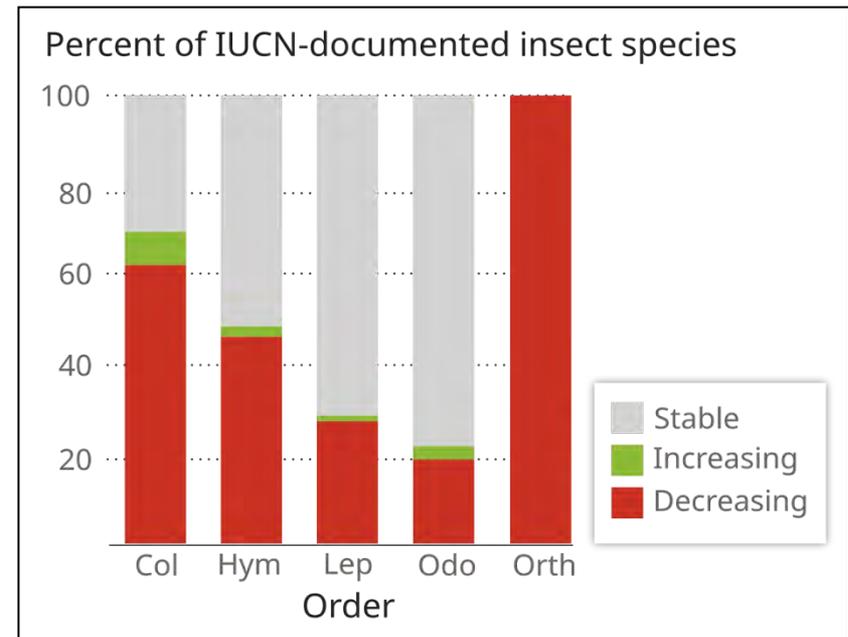
Good News for People Who Like Bad News

Generally speaking, our terrestrial ecosystems are also not doing so hot.

Search “Global Insect Decline” if you really want to ruin your day. Or just listen to me for the next few minutes.

70-98% decline in insect biomass since the 70s, documented globally

Over 2.5% annual loss in biomass



Dirzo et al. 2014, *Defaunation in the Anthropocene*

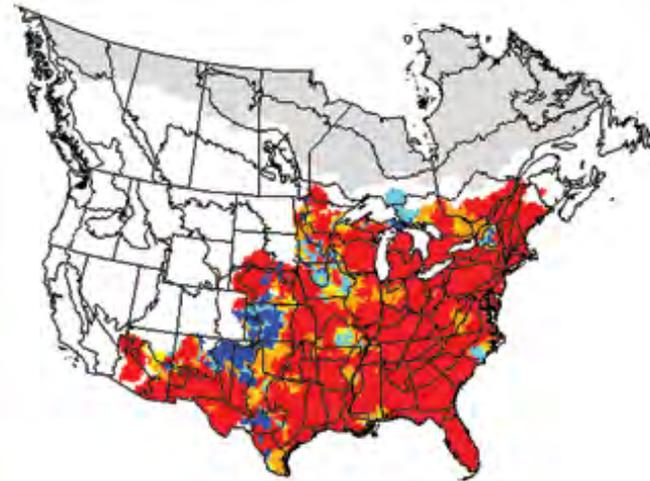
Good News for People Who Like Bad News

It's quiet out there now. Have you noticed?
- The "Windshield Test"

Insects are ~90% of animal species

Many birds and amphibians are declining too

Population Trend Map 1966-2010
Eastern Meadowlark



Percent Change Per Year

■ Less than -1.5 ■ -1.5 to -0.25 ■ >-0.25 to 0.25 ■ >0.25 to +1.5 ■ Greater than +1.5

What's going on? Our Modern Landscape

**Where did all the bugs go?
Where did all the bees go?
Where did all the quail go?**



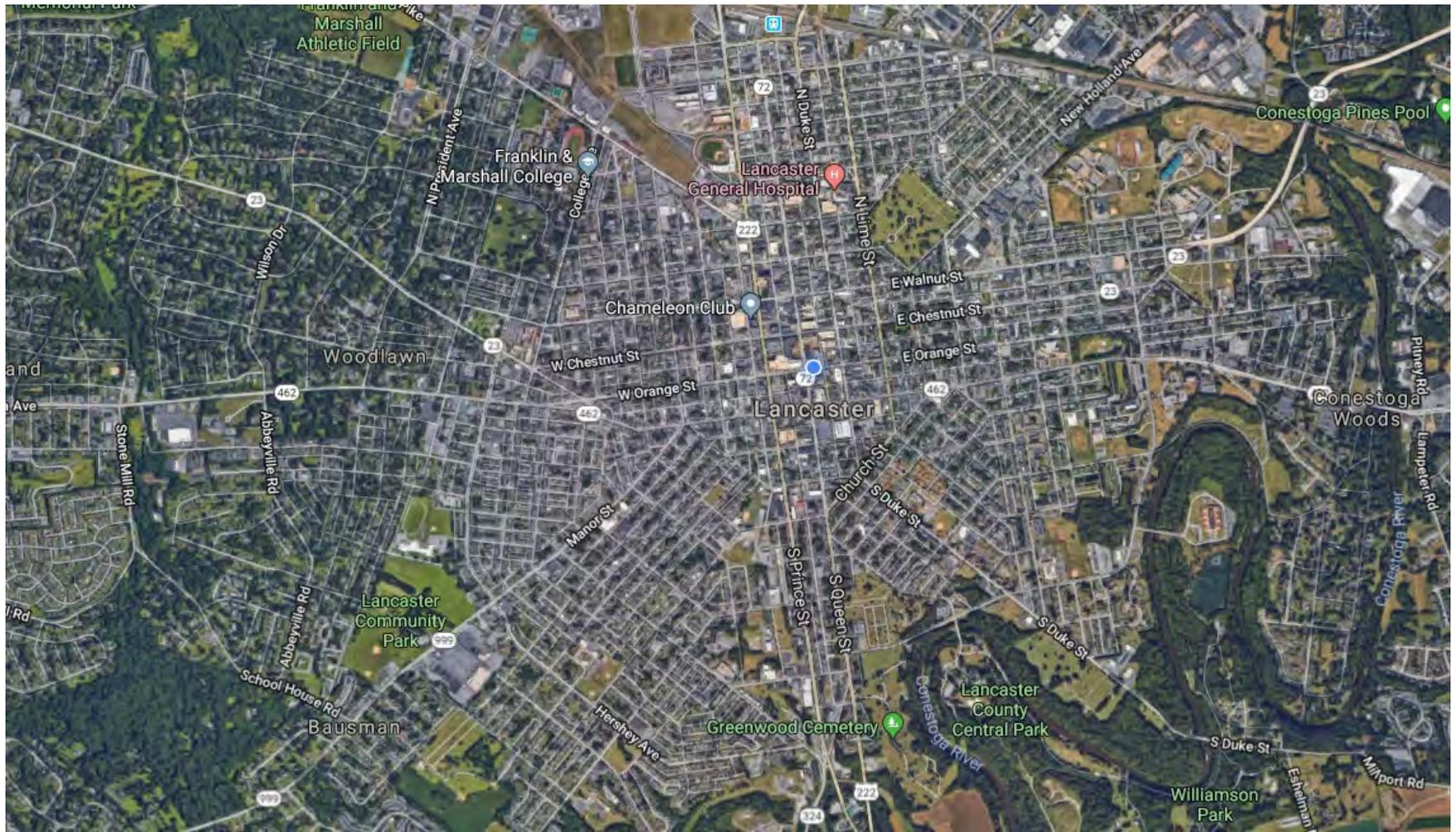
What's going on? Our Modern Landscape

Do you see any habitat or food for miles and miles?



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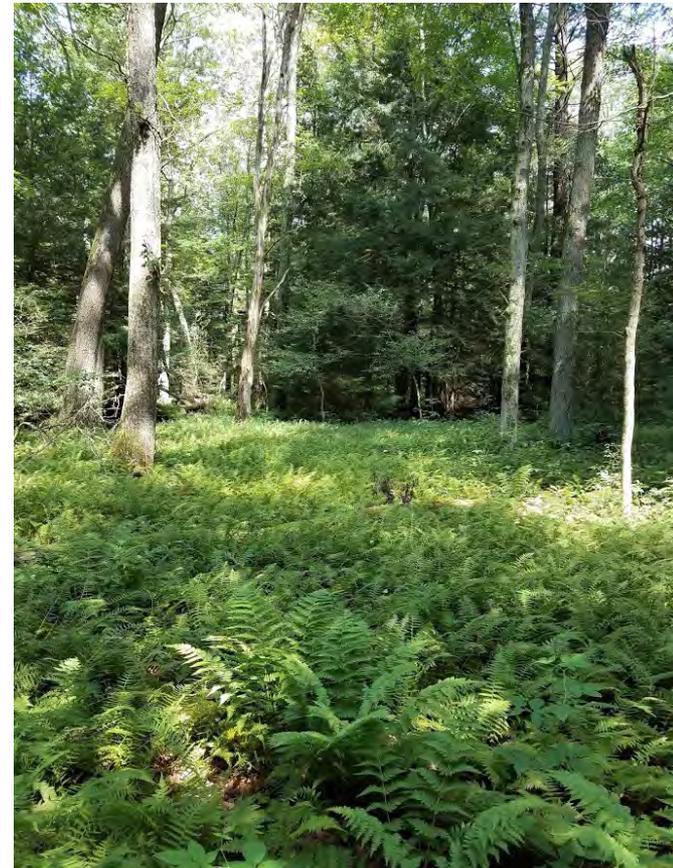
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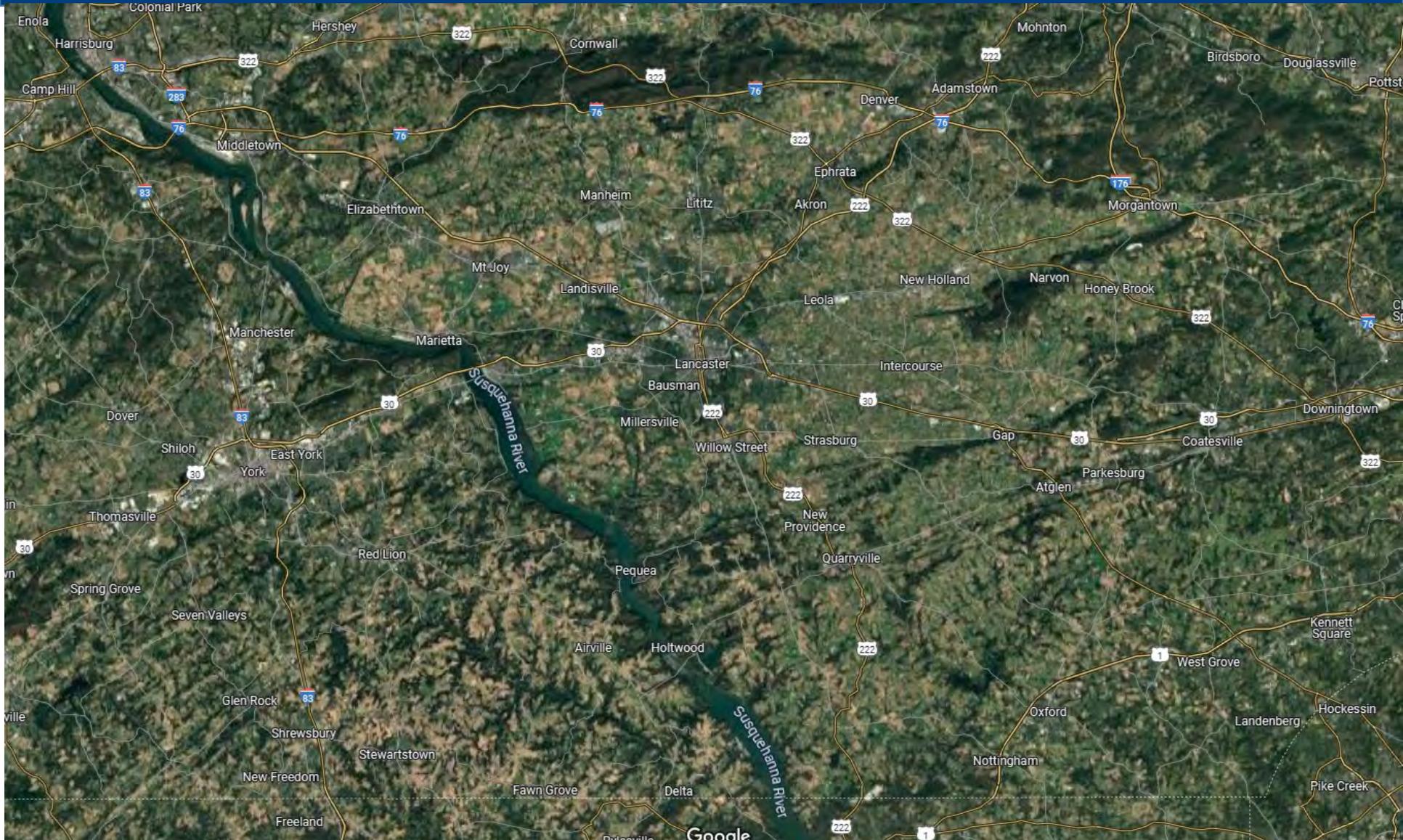


What's going on? Our Modern Landscape

When we do have forest cover, how healthy is it?
Do you have an understory? A midstory?



What's going on? Our Modern Landscape

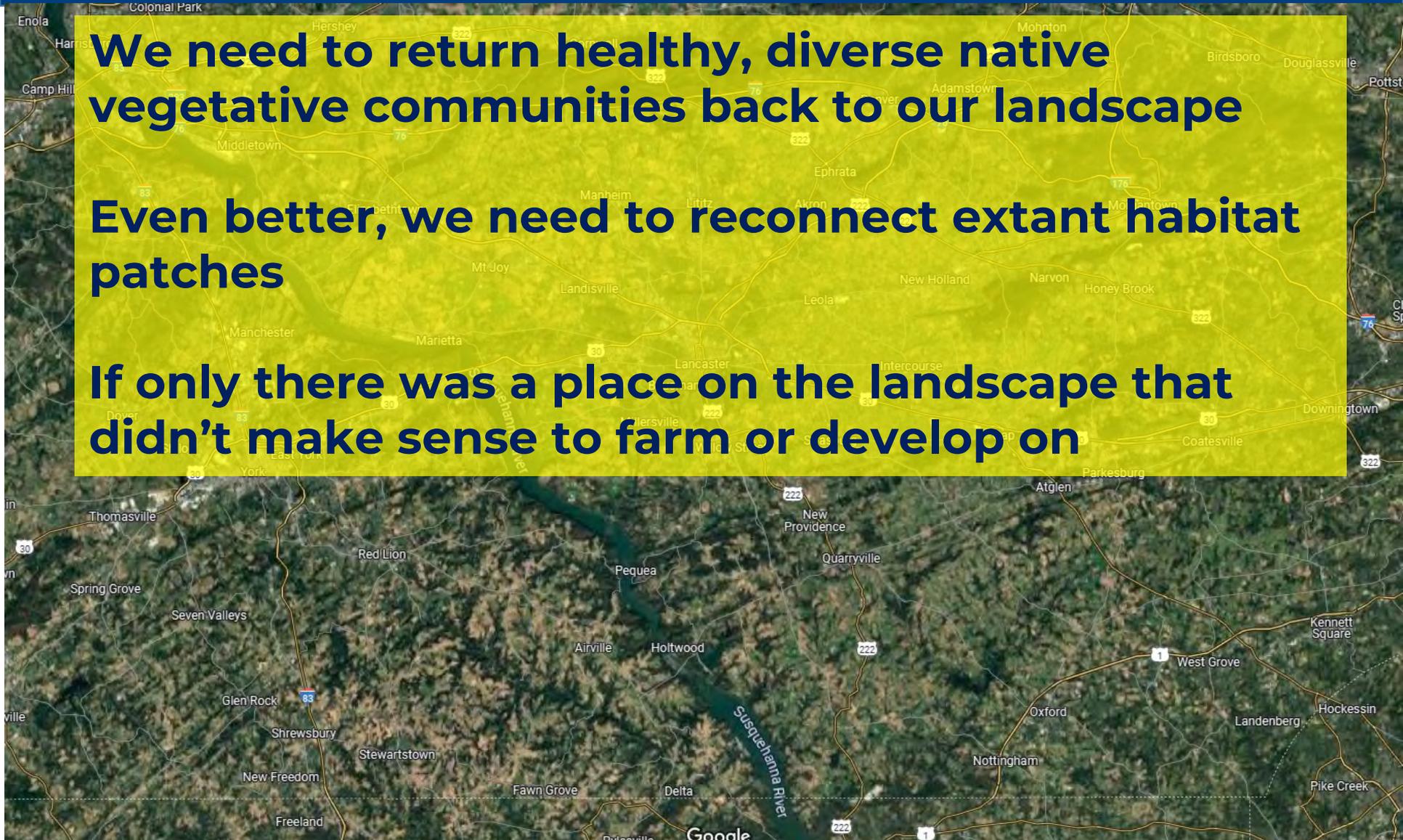


What Do We Do About It?

We need to return healthy, diverse native vegetative communities back to our landscape

Even better, we need to reconnect extant habitat patches

If only there was a place on the landscape that didn't make sense to farm or develop on



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What Do We Do About It?



Does riparian reforestation matter if you are **here** and not **here**?

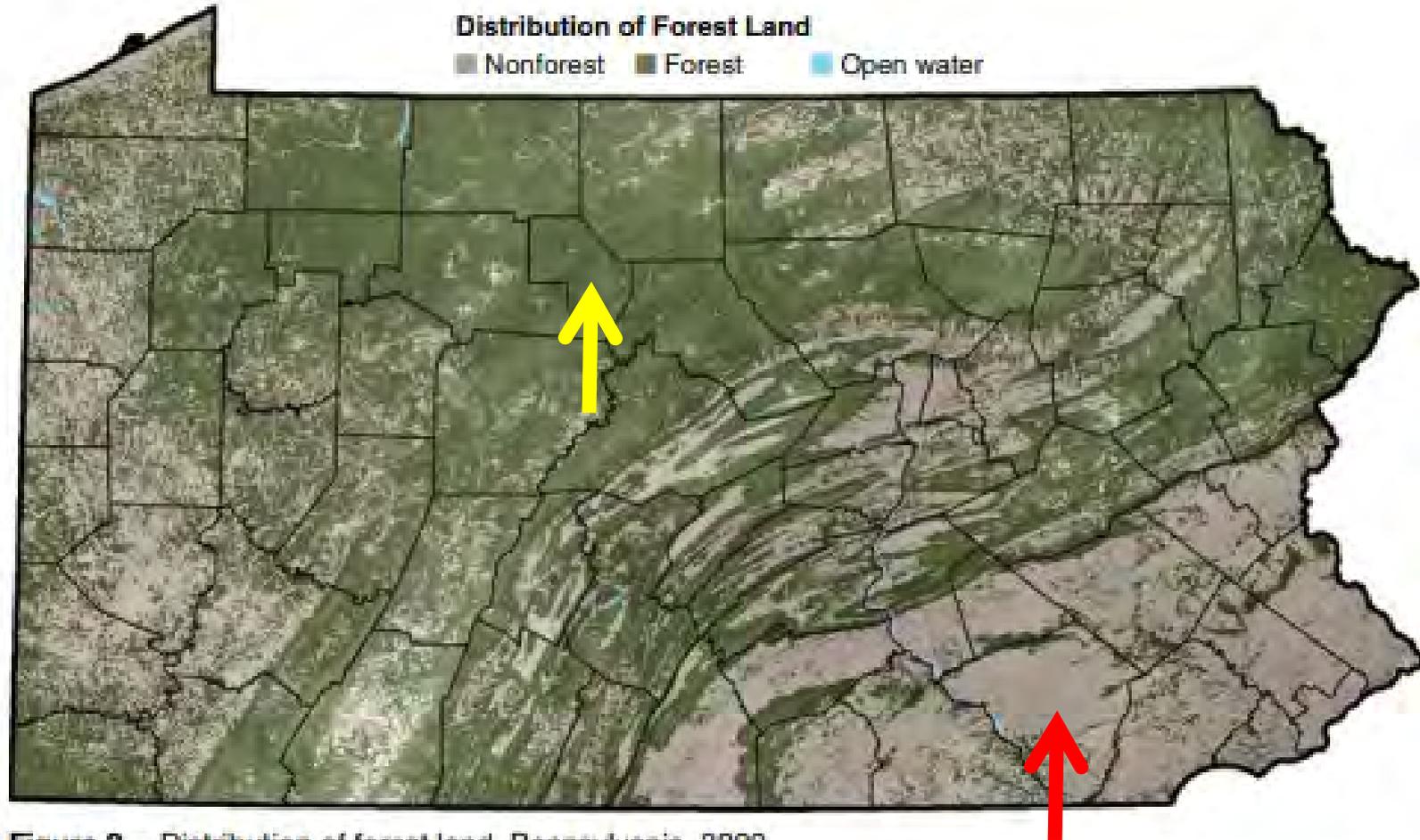


Figure 2. – Distribution of forest land, Pennsylvania, 2009.

In a heavily forested landscape, riparian corridor still unique and important

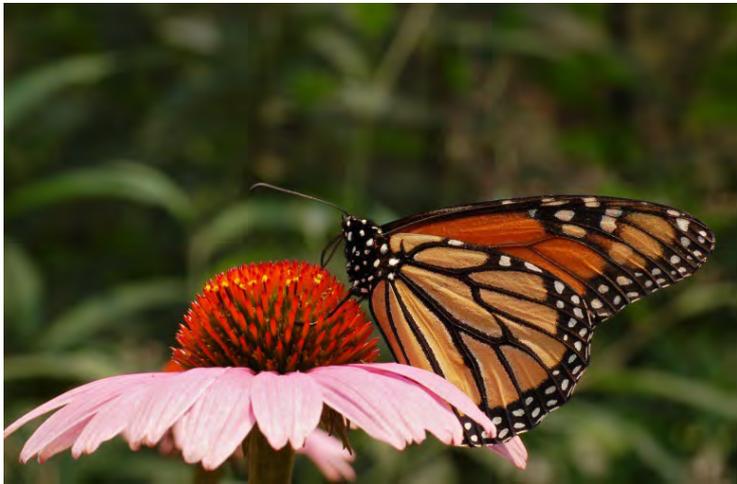
- Unique vegetative community
- Receives periodic disturbance – critical for many species
 - And more susceptible to invasions!
- Corridor for movement



Plant more RFBs to boost wildlife populations

3 fundamental principles of ecology:

- More plant species = more animal species
- More plant structural diversity = more animal diversity
- More habitat connectivity = stronger populations



Integrating habitat into RFBs is simple

- Only mow what's required for good establishment
- Plant **diverse** species with consideration for pollinators and wildlife
- If invasives are controlled, often have great habitat; abundant forbs



Planting considerations for wildlife

- Mast-producing trees/shrubs
- **Dense shrub cover**



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Planting considerations for wildlife

Canopy trees with high habitat value

- Boxelder
 - Blackgum
 - Sycamore
 - White Oak
 - Shagbark Hickory
- Cavity machines
- Aerial habitat in bark

Small trees with high habitat value

- Staghorn sumac
 - American plum
 - Quaking aspen
 - Serviceberry
 - Redbud
- Aggressive root systems with some cool aboveground bits
- Low cover + food

Planting considerations for wildlife

Shrubs with high habitat value

- Sandbar Willow
 - Speckled/Smooth Alder
- } Taller thickets
- Red-osier/Silky Dogwood
 - Elderberry
 - Arrowwood Viburnum
 - Hawthorn (*Crataegus sp.*)
 - Winterberry Holly
- } Habitat workhorses
- Blackhaw Viburnum
 - Spicebush
- } Shade tolerant

Planting considerations for wildlife

- **Diversity!!!**
- ~20% shrubs for cover
- Consider fast-growers that add more benefits
- Add in some slower growers for long-term benefits



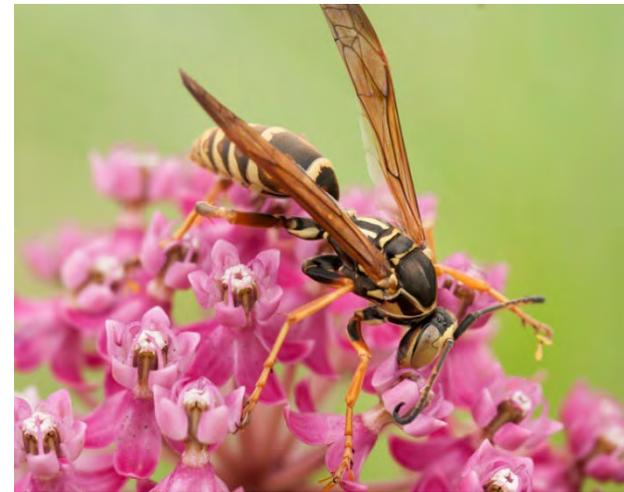
What about pollinators specifically?



(Quick aside on honey bees)

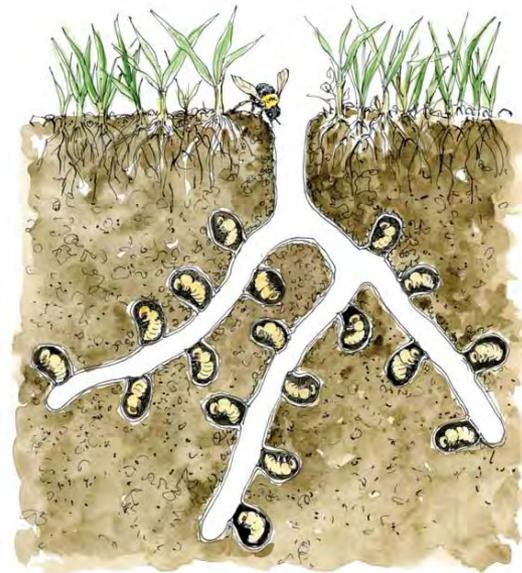
First, what *are* native pollinators?

- Bumble Bees
- Sweat Bees
- Flies
- Butterflies/Moths
- Wasps (**not** yellow jackets/hornets)
- Beetles



First, what *are* native pollinators?

- 95% solitary (do not swarm, only sting in self-defense, many males have no stinger)
- 70% nest underground, rest in woody debris
- Eat nectar and/or pollen from flowering plants



Pollinator Habitat Needs

- Water
- Minimal pesticide application
- Nesting Sites
 - Undisturbed soil, retained plant debris (woody and herbaceous)
- Overwintering habitat – retained debris, leaf litter
- Diverse, abundant flowering plants
 - Overlapping blooming periods March-Oct so that there is never a gap

Buffers can easily meet these conditions!!

A word on Lepidopterans

- Many have specific requirements for larval food
- Caterpillars are key components of food chain
- **Best Practice: Diversity of native plants**

Native Woody Plant Genera		
Common Name	Plant Genus	Butterfly/moth species supported
Oak	<u><i>Quercus</i></u>	534
Black cherry	<u><i>Prunus</i></u>	456
Willow	<u><i>Salix</i></u>	455
Birch	<u><i>Betula</i></u>	413
Poplar	<u><i>Populus</i></u>	368
Crabapple	<u><i>Malus</i></u>	311
Blueberry	<u><i>Vaccinium</i></u>	288
Maple	<u><i>Acer</i></u>	285
Elm	<u><i>Ulmus</i></u>	213
Pine	<u><i>Pinus</i></u>	203
Hickory	<u><i>Carya</i></u>	200
Hawthorn	<u><i>Crataegus</i></u>	159
Spruce	<u><i>Picea</i></u>	156
Alder	<u><i>Alnus</i></u>	156
Basswood	<u><i>Tilia</i></u>	150
Filbert	<u><i>Corylus</i></u>	131
Walnut	<u><i>Juglans</i></u>	130
Beech	<u><i>Fagus</i></u>	126

Native Herbaceous Plant Genera		
Common Name	Plant Genus	Butterfly/moth species supported
Goldenrod	<u><i>Solidago</i></u>	115
Asters	<u><i>Aster</i></u>	112
Sunflower	<u><i>Helianthus</i></u>	73
Joe pye, Boneset	<u><i>Eupatorium</i></u>	42
Sedges	<u><i>Carex</i></u>	36
Lupine	<u><i>Lupinus</i></u>	33
Violets	<u><i>Viola</i></u>	29
Geraniums	<u><i>Geranium</i></u>	23
Black-eyed susan	<u><i>Rudbeckia</i></u>	17
Evening primrose	<u><i>Oenothera</i></u>	16
Milkweed	<u><i>Asclepias</i></u>	12
Verbena	<u><i>Verbena</i></u>	11
Beardtongue	<u><i>Penstemon</i></u>	8
Phlox	<u><i>Phlox</i></u>	8
Bee balm	<u><i>Monarda</i></u>	7
Little bluestem	<u><i>Schizachyrium</i></u>	6
Cardinal flower	<u><i>Lobelia</i></u>	4

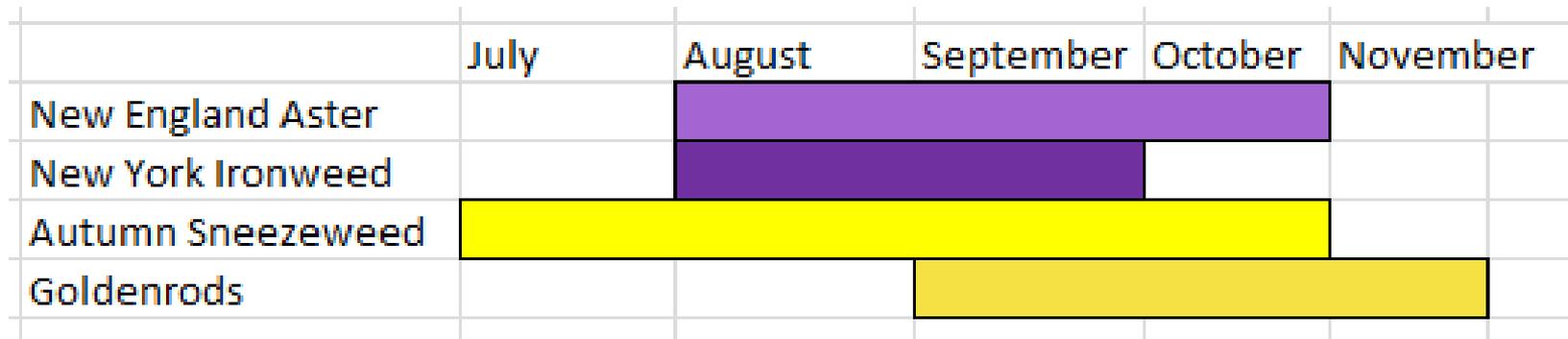


Plant species with continuous blooming periods to provide habitat as canopy closes

			Blooming Period							
			February	March	April	May	June	July	August	
Canopy Trees	Black Cherry	<i>Prunus serotina</i>			Moist					
	Black Locust	<i>Robinia pseudoacacia</i>			Moist					
	Honey Locust	<i>Gleditsia triacanthos</i>				Moist				
	Tulip-poplar	<i>Liriodendron tulipifera</i>			Moist					
	Basswood	<i>Tilia americana</i>					Moist			
	Red Maple	<i>Acer rubrum</i>		Moist						
	Persimmon	<i>Diospyros virginiana</i>			Moist					
	Blackgum	<i>Nyssa sylvatica</i>			Moist					
Small Trees	Washington Hawthorn	<i>Crataegus phaenopyrum</i>					Moist			Wet
	Downy Hawthorn	<i>Crataegus mollis</i>				Moist				Moist to Wet
	Serviceberry	<i>Amelanchier arborea</i>			Moist					Moist
	Eastern Redbud	<i>Cercis canadensis</i>		Moist						Dry to Moist
	Wild Plum	<i>Prunus americana</i>			Moist					Dry
	Staghorn Sumac	<i>Rhus typhina</i>					Dry			
	Chokecherry	<i>Aronia melanocarpa</i>				Moist				
	Black Willow	<i>Salix nigra</i>			Wet					
	Pussy Willow	<i>Salix discolor</i>	Wet							
	Boxelder	<i>Acer negundo</i>		Moist to Wet						
Shrubs	Highbush Blueberry	<i>Vaccinium corymbosum</i>				Moist to Wet				
	Nannyberry Viburnum	<i>Viburnum lentago</i>				Moist				
	Downy Arrowwood	<i>Viburnum rafinesquianum</i>				Dry				
	Red Osier Dogwood	<i>Cornus sericea</i>			Wet					
	Gray Dogwood	<i>Cornus racemosa</i>			Wet					
	Silky Dogwood	<i>Cornus amomum</i>				Wet				
	Buttonbush	<i>Cephalanthus occidentalis</i>				Wet				
	Ninebark	<i>Physocarpus opulifolius</i>			Wet					
	Winterberry	<i>Ilex verticillata</i>				Wet				
	Elderberry	<i>Sambucus canadensis</i>				Moist to Wet				
	Spicebush	<i>Lindera benzoin</i>			Moist					

What about Aug-Oct?

- Lean on a healthy herbaceous layer
- Our most common “weeds” bloom late
- Seeding herbaceous native plants is possible
- Often in seed bank, but can get outcompeted by invasive exotics (reed canary)
- CREP, other programs allow herbaceous buffer



Back to persuasion

Focusing on interest in wildlife/pollinators can be a very strong persuasive tool



Back to persuasion

Note: there are a lot of landowners who want *less* deer, mink, and songbirds



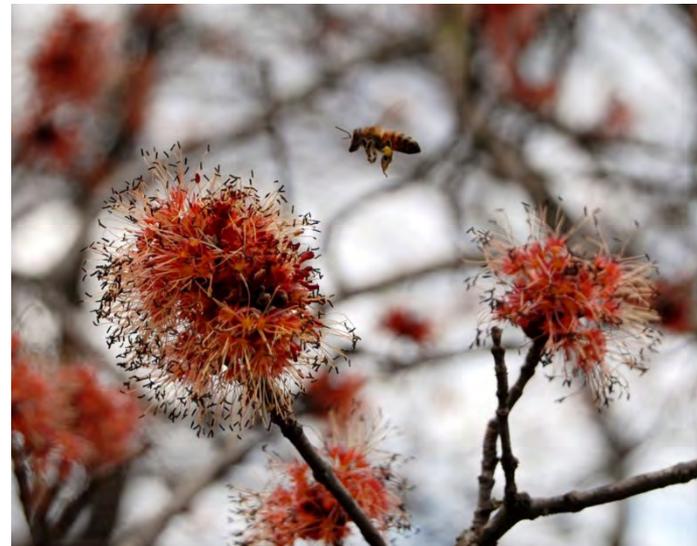
Back to persuasion

But the landowner who doesn't want more pollinators is very rare



Back to persuasion

- In my 11 years of experience, water quality is not a strong enough motivator
- **Landowners' internal calculus is different if the land they are "losing" is being changed to enhance the land and not just someone else's water**



BUFFERS ARE NOT JUST ABOUT CLEAN WATER

- They are a “nature-based solution” because all we are doing is returning a robust native veg community to our depauperate landscape
- **This work can be brutal, unforgiving, and thankless. But it’s absolutely worth it.**



How to Incentivize RFBs

1. **Financial incentives**
2. **Lower barriers to implementation**
3. **Increase their inherent appeal**



Financial Incentives

- **CREP can be good, but payments aren't that much relative to risk and how much work producer needs to do**
- **“Buffer Bonus”**
 - \$X/acre of buffer planted, for other conservation practices (including offsetting c/s from other programs)
 - CBF currently has a buffer bonus program
 - The Alliance has one currently for Lancaster, York, Adams, Franklin, Cumberland Counties but hopefully soon in central PA too
- **Access to Other Assistance**
 - Huge bump in EQIP ranking for years, has incentivized a lot of buffers
 - Alliance Agriculture Program provides comprehensive cost-share but requires RFB adoption to qualify

Lower barriers to implementation

- **What are those barriers?**
 - Red tape, cumbersome program
 - Maintenance burden
 - Technical assistance
- **Many ag practice programs are built to require landowner work and/or cost-share because the practices improve the farm operation and are desired by producer – not necessarily the case with RFBs**
- **All streams critically need buffers, not just ones on farms- programs need to work for *all* landowners**



Non-ag sites are also usually cheaper and easier ;)



Lower barriers to implementation

- **For many landowners, an easy, flexible, common-sense program is much more appealing than \$\$\$**
 - Simple sign-up process
 - Maintenance support
 - Technical support through establishment
- **There's now a lot of funding out there, but not all orgs are set up to pursue/manage grants**
 - **Partner with an organization who has resources ready to go!**

For most of our landowners, maintenance was selling point



Inherent Appeal

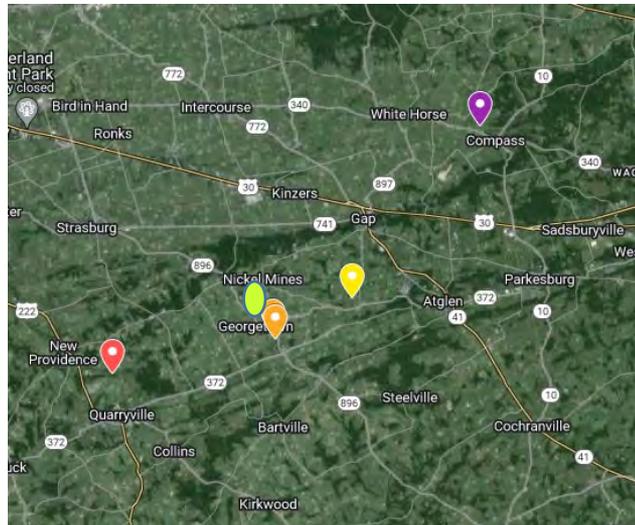
- **There's still a lot of “low hanging fruit” – landowners who want a forested stream!**
 - It's our job to communicate the benefits of a *forest*, not just a buffer
- **Ag production incentives (herd health, rotational grazing, efficient ag operation)**
- **Feedback loop of successful projects**

1st rfb: 3.45 ac

2nd rfb: nephew. 6.71 ac

3rd rfb: nephew again. 2.25 ac

4th rfb: friend of nephew. 11.1 ac



5th rfb? father-in law

6th rfb: cousin of nephew

Pro Tip: Team Up to Get More Done!

- We started with a shoestring budget and ¼ of a staff member (me), but got here because we have always been rich in partners!



If there are gaps in your region for expertise and/or funding, we (Alliance, Stroud, Chesapeake Conservancy, DCNR, others) can help!!!

Break #2!



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