

Outline

- Introduction to lawn conversion
- Meadow benefits and establishment
- Meadows in the human-built environment
- Resources





Phase III Watershed Implementation Plan (WIP)

- Riparian forest buffers (86,000 acres)
- Woods and meadows habitat (10,000 acres)
 - Conservation Landscaping (meadows)
 - Urban Forest Planting (upland forests/woods)
- 1 million acres of lawn in PA's Chesapeake Bay Watershed
 - 2 million acres across the state

Woods and Pollinator Habitat

- 10,000 acres of lawn conversion:
 - 5,000 acres of Conservation Landscaping (meadows)
 - 5,000 acres of Urban Forest Expansion/Planting (woods)
- Represents 1% of total lawn in PA's Chesapeake Bay watershed
- Various names refer to these practices and this outcome:
 - Lawn conversion or turf conversion
 - Turf-to-forest & turf-to-meadow
 - Woods and meadows



Urban Forest Planting

- AKA “Woods”
- The term Urban is a bit misleading
 - Trees and shrubs planted to replace *any* lawn, not only in urban areas.
 - NOT trees planted on ag lands.



Urban Forest Planting: Tree planting projects in urban or suburban areas that are not part of a riparian buffer, structural BMP or Urban Tree Canopy Expansion BMP, with the intent of establishing forest ecosystem processes and function. This requires urban forest

BMP Reference Sheet D-7: Urban Tree Practices

Quick Reference Guide for Best Management Practices

Nonpoint Source BMPs to Reduce Nitrogen, Phosphorus and Sediment Loads to the Chesapeake Bay and its Local Waters



Conservation Landscaping

- AKA Meadows
- NOT in the BMP Quick Reference Guide
- Native species that are intentionally managed



APPROVED BY USWG ON 5/15/2018 AS A BMP CREDIT OPTION
Revised July 2018 by WTWG

Date: Original April 24, 2018, Revised August 10, 2018
From: Tom Schueler and David Wood, CSN
To: Urban Stormwater Work Group
Re: Nutrient Reduction Credit for Conservation Landscaping

1. Background

In March of 2018, the USWG discussed potential ways to credit conservation landscaping for nutrient reduction in the context of the Chesapeake Bay watershed model. A conservation landscaping credit would fill an key gap by enabling homeowners, institutions and municipalities to manage their open space as meadows rather than intensively managed turf grass. Based on subsequent communications with VA DEQ and DOEE staff, we have drafted a proposal to provide credit for conservation landscaping as a homeowner BMP retrofit, as follows:

2. Definition of Conservation Landscaping

Definition: Conservation landscaping areas are areas of managed turf that are converted into perennial meadows using species that are native to the Chesapeake Bay region. The landscaping areas are slightly depressed so they can hold rainfall and, in some cases, treat runoff from adjacent hard surfaces. Conservation landscaping is designed to provide habitat for birds and pollinators, and does not rely on mulch to suppress weeds over the long term.

Conservation landscaping may also be described as urban meadows, Bay-scapes or Bay-wide landscaping practices. More details on conservation landscaping can be found in Lane and Schueler (2013) and references cited therein.

3. Proposed Credit

Two options are offered for credit:

Option 1: Conservation Area (Turf)

The credit is calculated by applying the removal rates provided in Table 1 to the unit loads produced by urban turf grass, adjusted for the surface area of the conservation landscaping (usually a fraction of an acre).



BMP Specs

- Existing land use is maintained lawn (non-ag)
- Meadow: *Perennial native wildflowers and grasses*
 - Maintained to arrest succession
 - Temporally variable but should always be dominated by native, desired species
 - Have comparably more long-term maintenance than woods
- Woods: *Native trees and shrubs to create a new forest*
 - Minimal to no maintenance after establishment
 - Should eventually start to regenerate itself
 - Have comparably more short-term maintenance than meadows

Which of these statements is false?

- A 215 million pounds of nitrogen fertilizer is applied to lawns in the Chesapeake Bay watershed, which is enough to grow 2 million acres of corn.
- B Lawn and garden equipment is the second leading emitter of smog precursors in the summer months in the Bay region, right behind cars and trucks.
- C More than 50,000 people work for lawn care companies in the Chesapeake watershed and we spend nearly a billion dollars a year on grass lawns.
- D Turf grass roots are extensive and reduce soil compaction.

Which of these statements are true?

- A There are more than twice as many acres of **turf cover** than **tidal and non-tidal wetland cover** in the Chesapeake Bay watershed.
- B There are now at least 50-acres of **turf grass** in the Bay watershed for every acre of **sea grass** in the Bay.
- C Turf cover now **exceeds the combined acreage** of pasture, hay, corn, soybeans, and wheat grown in the Chesapeake Bay watershed.
- D Turf cover in the watershed has **tripled in the last four decades**, and is the **fastest growing land cover category** in the entire Bay.

A photograph of a well-maintained lawn. In the foreground, there are several clumps of tall, blade-like grasses, some with small yellow flowers. Behind them is a vibrant green lawn. In the background, there's a wooden fence and a small wooden bench or table under a large tree.

PA Lawn Conversion Program

Program Framework

- Making it possible for more Pennsylvanians to reduce their lawn footprint and plant forests and meadows instead.
- Build enthusiasm across the board: partners, residents, funders, contractors, and decision-makers.
- Challenge the landscape paradigm.



Key Strategies

MARKETING

Innovate the messages we use and ways we communicate to reach audiences who are eager to transition their lawns to forests and meadows.

EDUCATION

Ensure Pennsylvanians understand their land's role in water quality, climate change, and supporting ecosystems.

CAPACITY-BUILDING

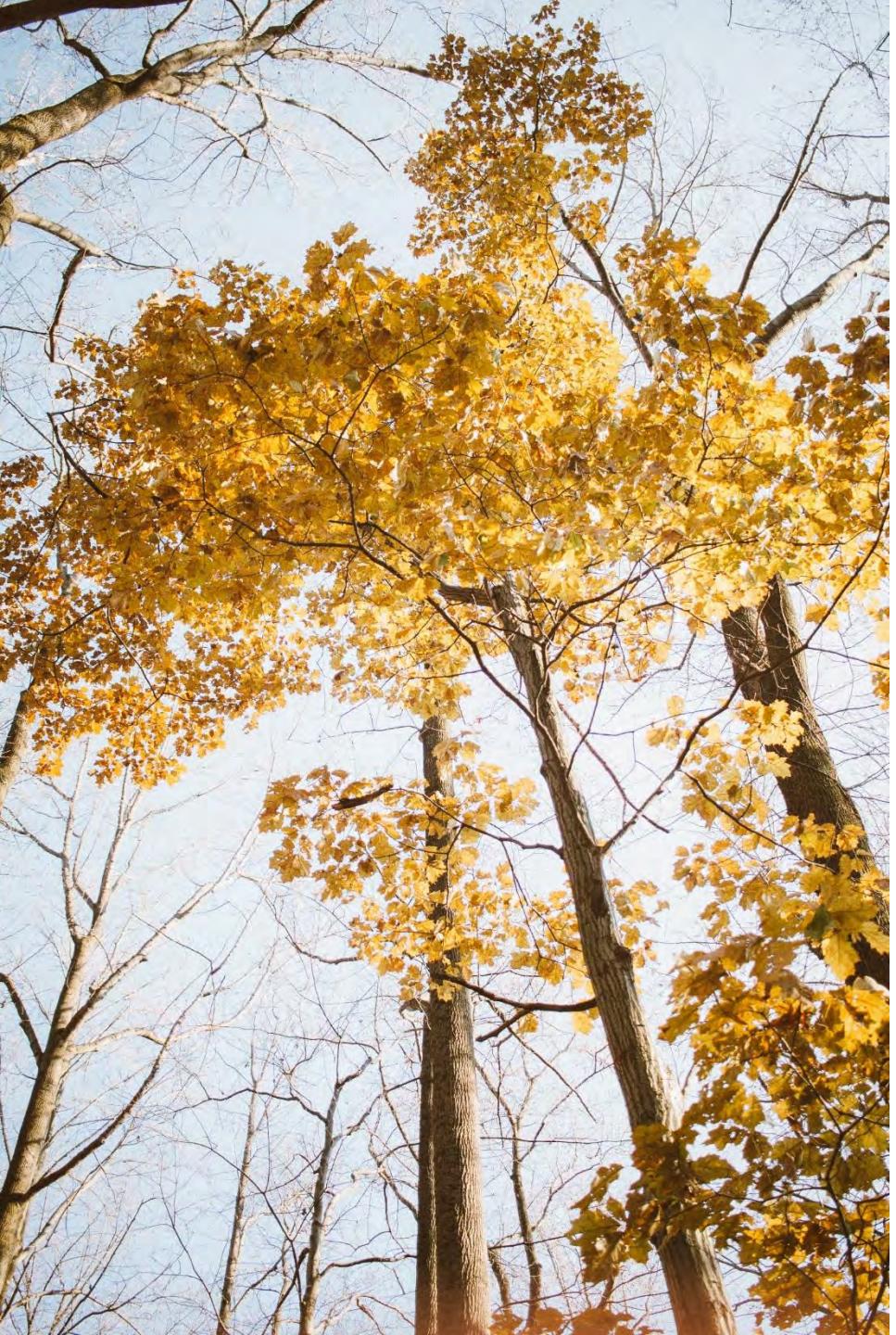
Support DCNR, partners, and contractors in their professional growth as it relates to lawn conversion.

PARTNERSHIP

Develop strategic and trusting relationships with diverse partners and stakeholders who also share our vision.

FUNDING

Establish secure and diverse funding streams to ensure continued implementation is possible.



Primary Program Elements

- Lawn Conversion Advisory Committee (LCAC)
- Funding
- Planting woods & meadows
- Technical assistance & training



Reconsidering the American Lawn

Wild and human spaces, integrated



The Benefits of Conversion

Turf Landscape

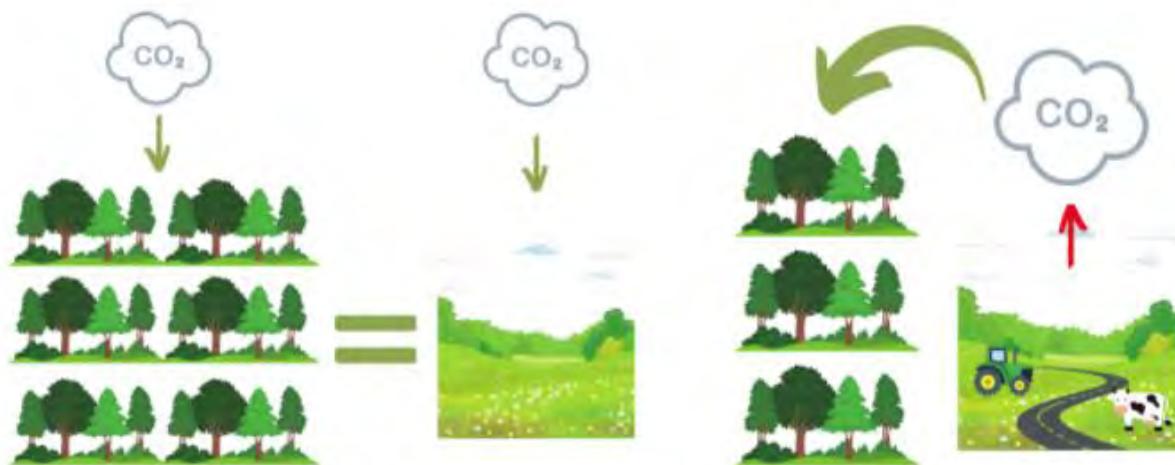
- Compacted soils and shallow root systems
- Contributes to downstream flooding
- Pesticide and fertilizer applications
- Ongoing maintenance costs
- Carbon emissions from maintenance
- Short, non-native grass monocrop
- Ecological dead zones

Native Plant Landscape

- Deep root systems improve soil health
- Increased water infiltration & reduced flooding
- Nutrient and pollutant processing
- Lower long-term maintenance
- Reduced carbon emissions & carbon storage
- Diverse textures and colors all year long
- Wildlife and pollinator habitat

The TRPA reported that while pristine meadows act as carbon sinks, absorbing a net of +30,000 mtCO₂e/year, degraded meadows actually emit carbon at a net magnitude of -20,000 mtCO₂e/year. According to another 2020 study, one acre of healthy Sierra meadow can sequester as much carbon as six acres of surrounding forest. On the other hand, three acres of forest are required to offset the amount of carbon lost by one acre of degraded meadow. The bad news is that across the Sierra Nevada, 50% of meadows are expected or known to be degraded. These findings should have massive implications for our climate mitigation and land management priorities here in the Sierra and across our planet.

"One acre of healthy meadow can sequester as much carbon as six acres of forest. On the other hand, three acres of forest are required to offset the amount of carbon lost by one acre of degraded meadow"



Non-Natives



Fescue
Turf



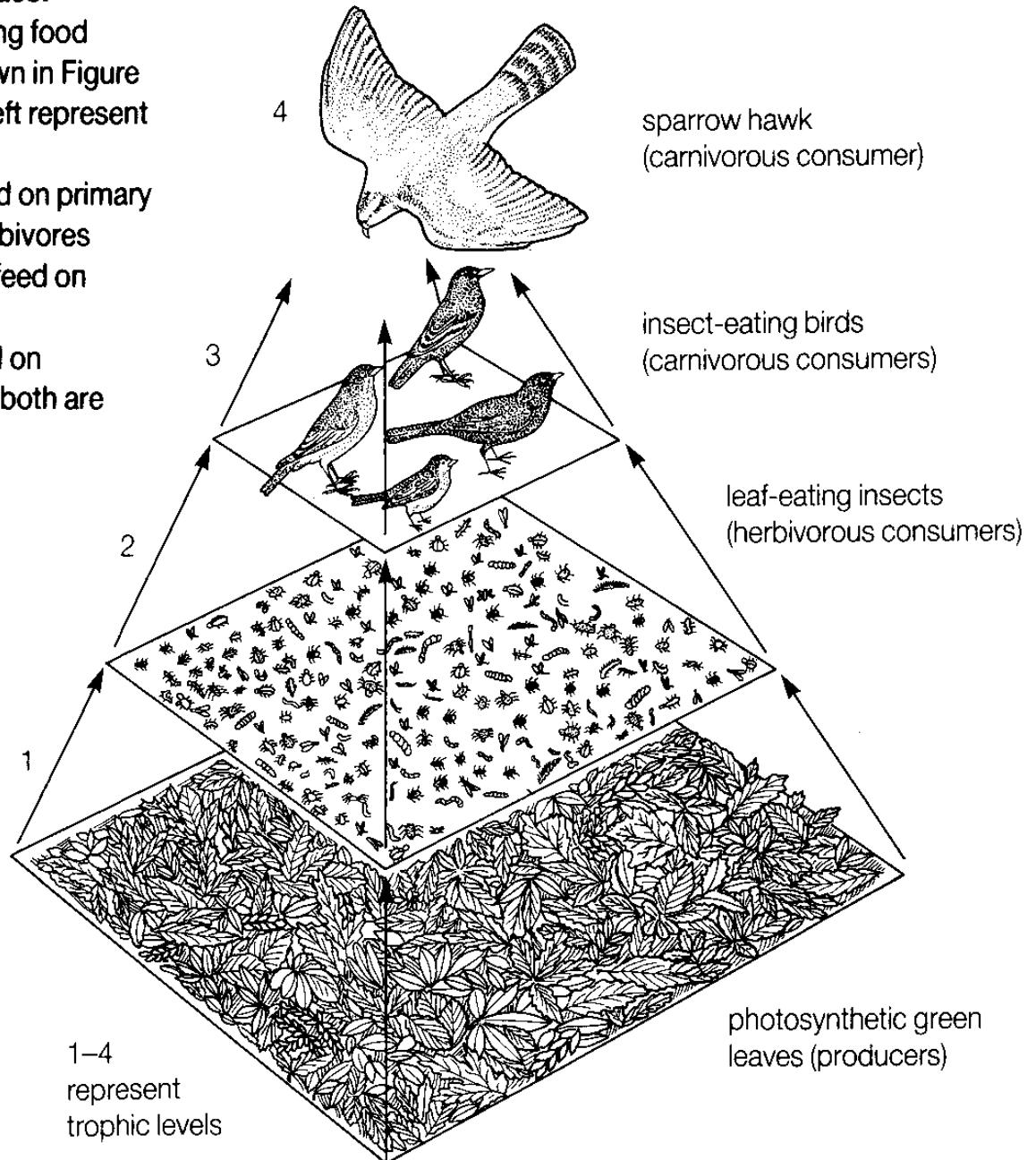
Natives



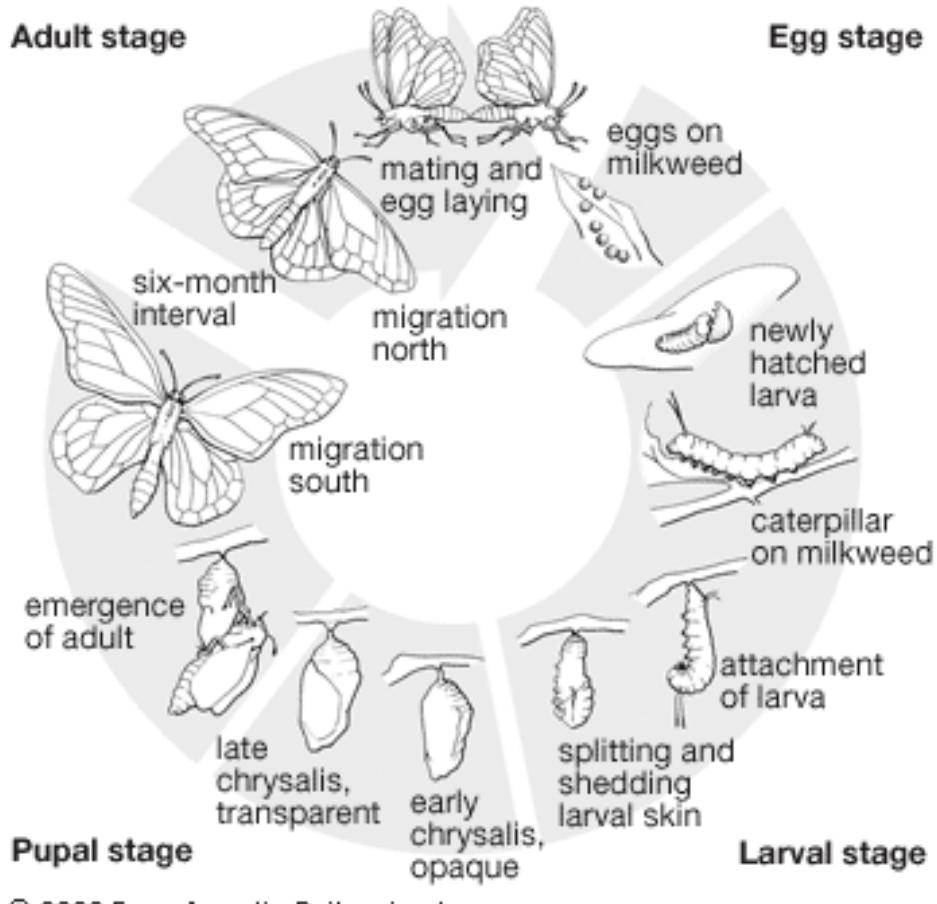
The pyramid of biomass:

another way of representing food chains such as those shown in Figure 3.4. The numbers on the left represent trophic levels. Note that:

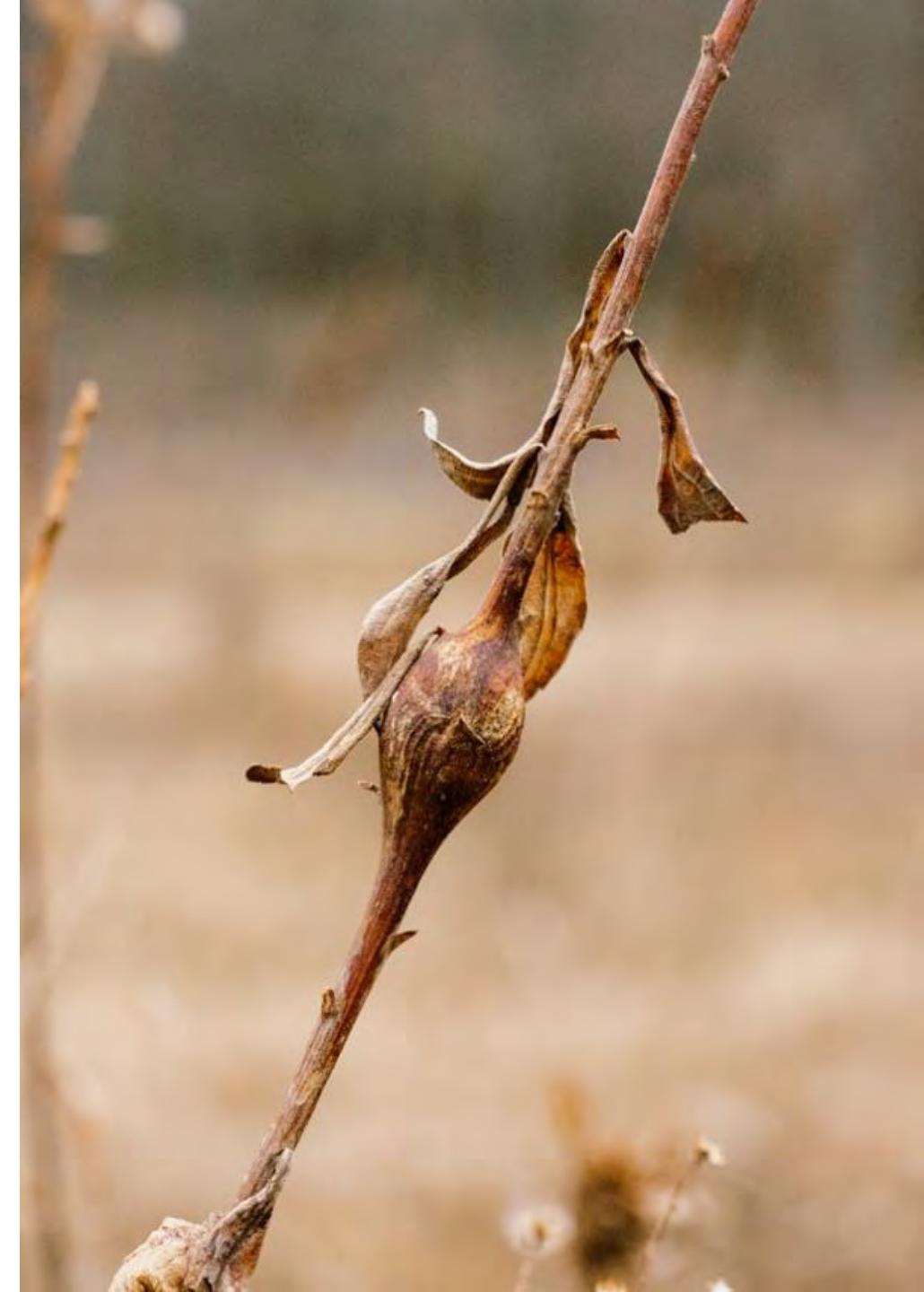
- primary consumers feed on primary producers; they are herbivores
- secondary consumers feed on primary consumers
- tertiary consumers feed on secondary consumers; both are carnivores



The case for (native) plants



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A close-up photograph of a person's hand holding a large, healthy green leaf. A bright green caterpillar with yellow spots and blue dots is resting on the leaf. The background is blurred green foliage.

But the bugs
are eating
my plants!





Planting a Meadow

Basic Planting Tactics

We do this:

- Start with a “sterile” lawn site
- Plan and plant with intention
- Remove turf grass
- Let the plants fill in the gaps
- Spread seed
- Right plants, right place
- Nudge the planting along

Not this:

- Start with a failed conversion
- Let things grow wild
- Overseed into turf grass
- Mulch
- Plant plugs
- Add nutrients, amend soils, and water
- Over-manage the planting

Timeline (Fall 2022 seeding)

1. Connect with an eligible grant recipient
2. Plan your project (Spring/Summer 2022)
3. Site preparation (Spring/Summer through Fall 2022)
4. Planting (November-ish 2022)
5. Establishment (2023 and possibly 2024)
6. Maintenance (2024 and beyond)

Step 1: Connect with an eligible grant recipient

AKA an implementation partner to help manage the project

- Typically a non-profit or landscape professional
- Landowners not eligible to receive funding directly

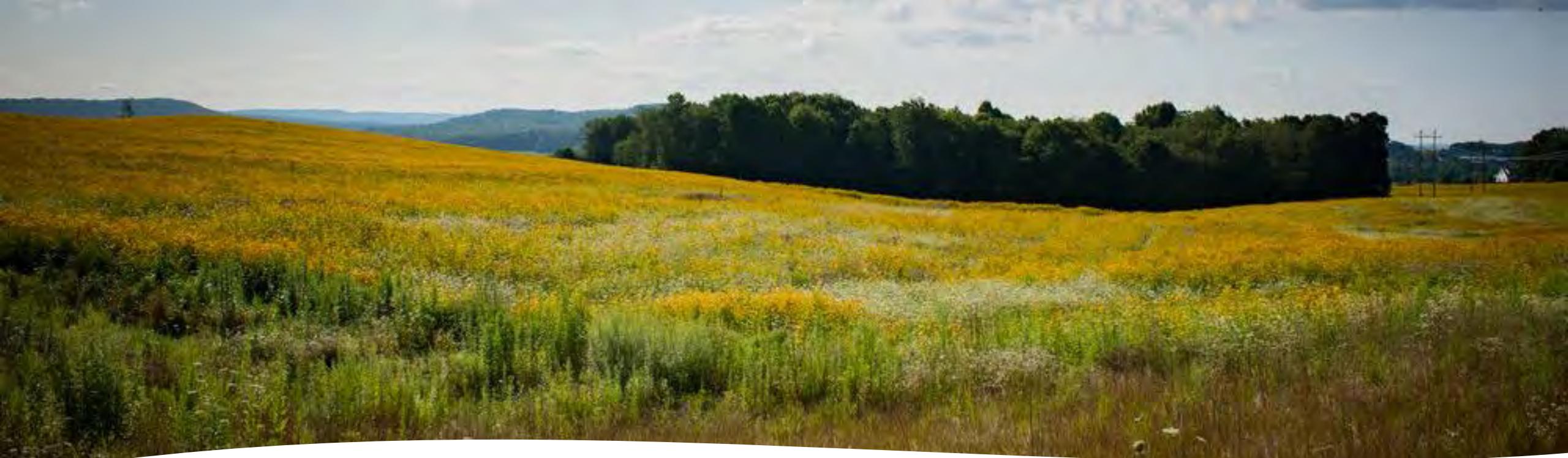
Step 2: Plan your project

*Considerations for a successful
planting*

- Planting extent – consider sight lines and current conditions
- Paths and cues to care
- Final seed mix
- Methods: broadcast vs. drill
- Timeline for implementation
- Who's responsible for what
- Other fun things: signage and bluebird boxes







Choosing the Native Plant Palette

- Soils: texture and moisture
- Light level: full sun to part shade
- Climate: seasonal cycles and minimum temperatures
- Other considerations:
 - Vertical structure
 - Bloom period
 - Color
 - Drifts

Mesic to Dry Native Pollinator Mix

Mix Composition



- 29.1% *Schizachyrium scoparium*, 'Prairie View'-IN Ecotype (Little Bluestem 'Prairie View'-IN Ecotype)
- 20.0% *Sorghastrum nutans*, WI Ecotype (Indiangrass, WI Ecotype)
- 15.0% *Elymus virginicus*, 'Madison' (Virginia Wildrye, 'Madison')
- 8.0% *Echinacea purpurea* (Purple Coneflower)
- 5.0% *Panicum clandestinum*, Tioga (Deertongue, Tioga)
- 3.0% *Chamaecrista fasciculata*, PA Ecotype (Partridge Pea, PA Ecotype)
- 3.0% *Coreopsis lanceolata* (Lanceleaf Coreopsis)
- 3.0% *Rudbeckia hirta* (Blackeyed Susan)
- 3.0% *Verbena hastata*, PA Ecotype (Blue Vervain, PA Ecotype)
- 2.0% *Heliopsis helianthoides*, PA Ecotype (Oxeye Sunflower, PA Ecotype)
- 1.5% *Asclepias incarnata*, PA Ecotype (Swamp Milkweed, PA Ecotype)
- 1.0% *Aster novae-angliae*, PA Ecotype (New England Aster, PA Ecotype)
- 1.0% *Pycnanthemum tenuifolium* (Narrowleaf Mountainmint)
- 1.0% *Senna hebecarpa*, VA & WV Ecotype (Wild Senna, VA & WV Ecotype)
- 0.8% *Tradescantia ohiensis*, PA Ecotype (Ohio Spiderwort, PA Ecotype)
- 0.6% *Eupatorium perfoliatum*, PA Ecotype (Boneset, PA Ecotype)
- 0.6% *Zizia aurea* (Golden Alexanders)
- 0.5% *Baptisia australis*, Southern WV Ecotype (Blue False Indigo, Southern WV Ecotype)
- 0.5% *Monarda fistulosa*, Fort Indiantown Gap-PA Ecotype (Wild Bergamot, Fort Indiantown Gap-PA Ecotype)
- 0.5% *Solidago nemoralis*, PA Ecotype (Gray Goldenrod, PA Ecotype)
- 0.3% *Asclepias syriaca* (Common Milkweed)
- 0.3% *Penstemon digitalis* (Tall White Beardtongue)
- 0.2% *Solidago rugosa*, PA Ecotype (Wrinkleleaf Goldenrod, PA Ecotype)
- 0.1% *Aster umbellatus*, PA Ecotype (Flat Topped White Aster, PA Ecotype)





Step 3: Site preparation

Goal: remove existing turf cover & expose the soil

- Remove turf cover:
 - Herbicide applications to kill existing turf and persistent weeds
 - Solarization and sheet mulching
- Expose the soil:
 - If doing broadcast, the turf residue needs removed
 - If seed drill, can plant into the turf residue





Step 4: Planting

The fun step – sowing seeds!

- Prepare the seed mix
- Spread the seed
- Work the seed in
- Spread weed-free straw

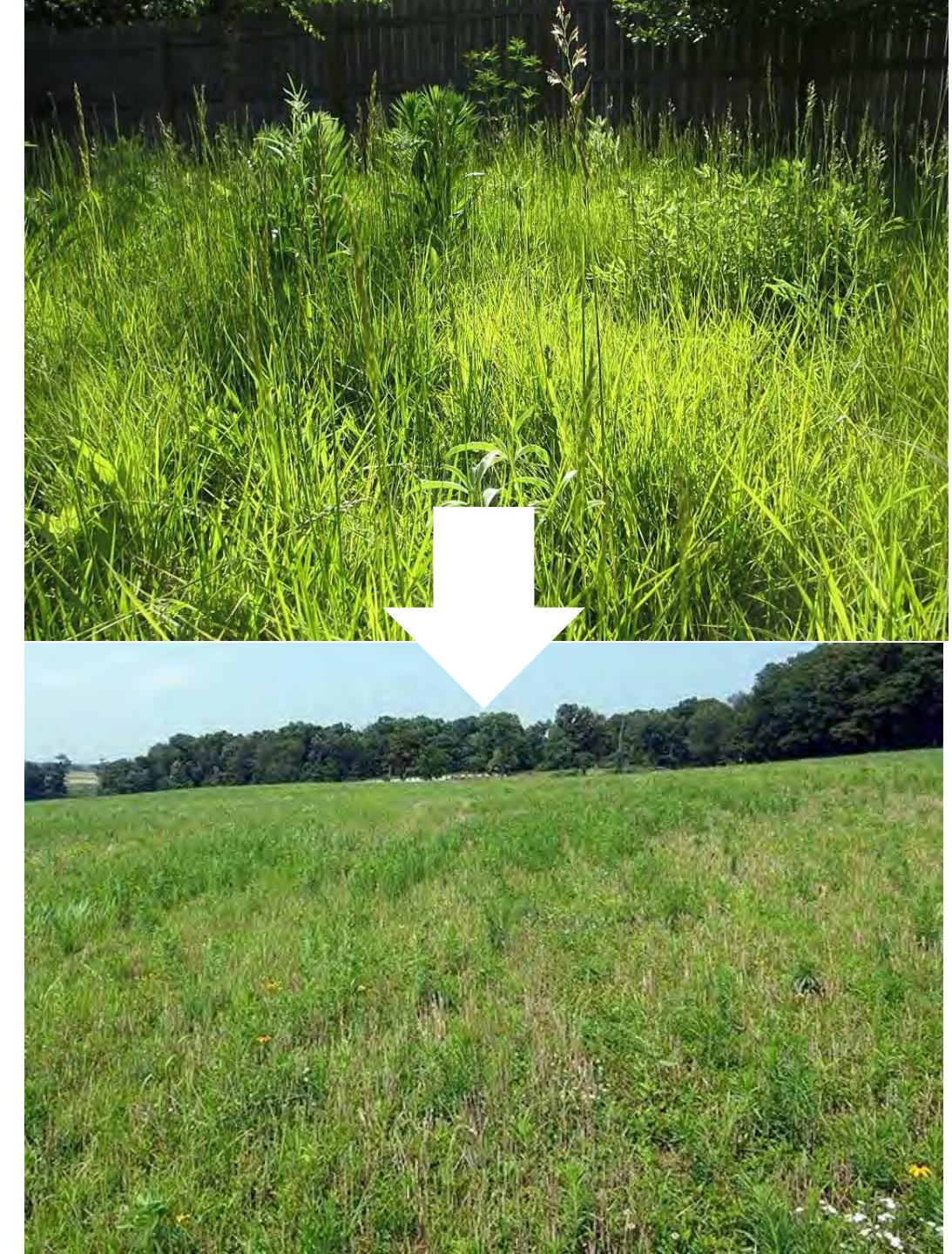




Step 5: Establishment

Be patient in year 1 and 2

- Infrequent establishment clipping to about 8-10" when plants are 15"+ high
Prevent most undesirable annual plants from going to seed (stops their life cycle)
- May need spot herbicide applications
- Don't pull plants!



Step 6: Maintenance

Encourage native plants to flourish

- Stop mowing the entire site annually
- Spot or rotational mowing (*3-5 year rotations*)
Goal: control any annual weeds, invite diversity where a single plant begins to dominate, prevent woody establishment
- Spot herbicide applications
Goal: control noxious/invasive non-native plants that, if not controlled, will take over the planting







Funding, Resources, Pipeline

Implementation Funding- Grants

- DCNR C2P2 Partnerships grant – Municipalities and 501(c)3 orgs can apply- EACs?
- DEP WIP Funding to Counties Creating CAPs
- NFWF- Various Programs
- DEP Growing Greener, 319 Program
- USFS Grants for tree planting/lawn to woods





Implementation Funding: DCNR/WPC Flex/\$5K+

- Applicable statewide as funding available
- Requires a 5-year landowner agreement
- Starting state: maintained lawn
- Min. size: 0.5-ac
- Eligible funding recipients: contractor, non-profit, local government, or another NGO
- For shovel-ready projects
- Flat funding rate:
 - \$5,000/ac (meadow)
- WAITLIST

*If you have a project, call/email to inquire about funds
(response time may be slow, but we will get to you.)*

Implementation Funding: Other Ideas

- Get Creative!
- Encourage municipalities to budget for conversions in public spaces?
- Tax incentive program for landowners?
- Other local options?





Resources

- Technical assistance- DCNR and partner organizations
- Partner network/advisory committee
- Contractor list (lean- hoping to grow)
- Certification programs – planting certifications (MWS Watershed Friendly Property) vs. landscape professional certifications (CBLP)
- Homeowner stormwater management programs
- Yard certification programs

In the Pipeline

- Weed ordinance guidance
- Sediment reduction research with PSU – MS4 incentive
- Outreach resources, signage
- DIY Meadow Kit
- Demonstration sites
- Ecological Restoration ITQ (effort is to train more landscapers, public works, etc. - workforce development)



Photo: Will Parson/Chesapeake Bay Program

Thank you!



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