Fields: Flora, Fauna, Forage and Fashion

Old New England

New England

New & Improved!

1) ***Why? What's a good field to do?***
   The different motives for maintaining fields, conservation being one of them, and how they interact.

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   From a biodiversity perspective, there are many types of fields.

3) ***Where? Adjusting to the neighborhood.***
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Why maintain a field?

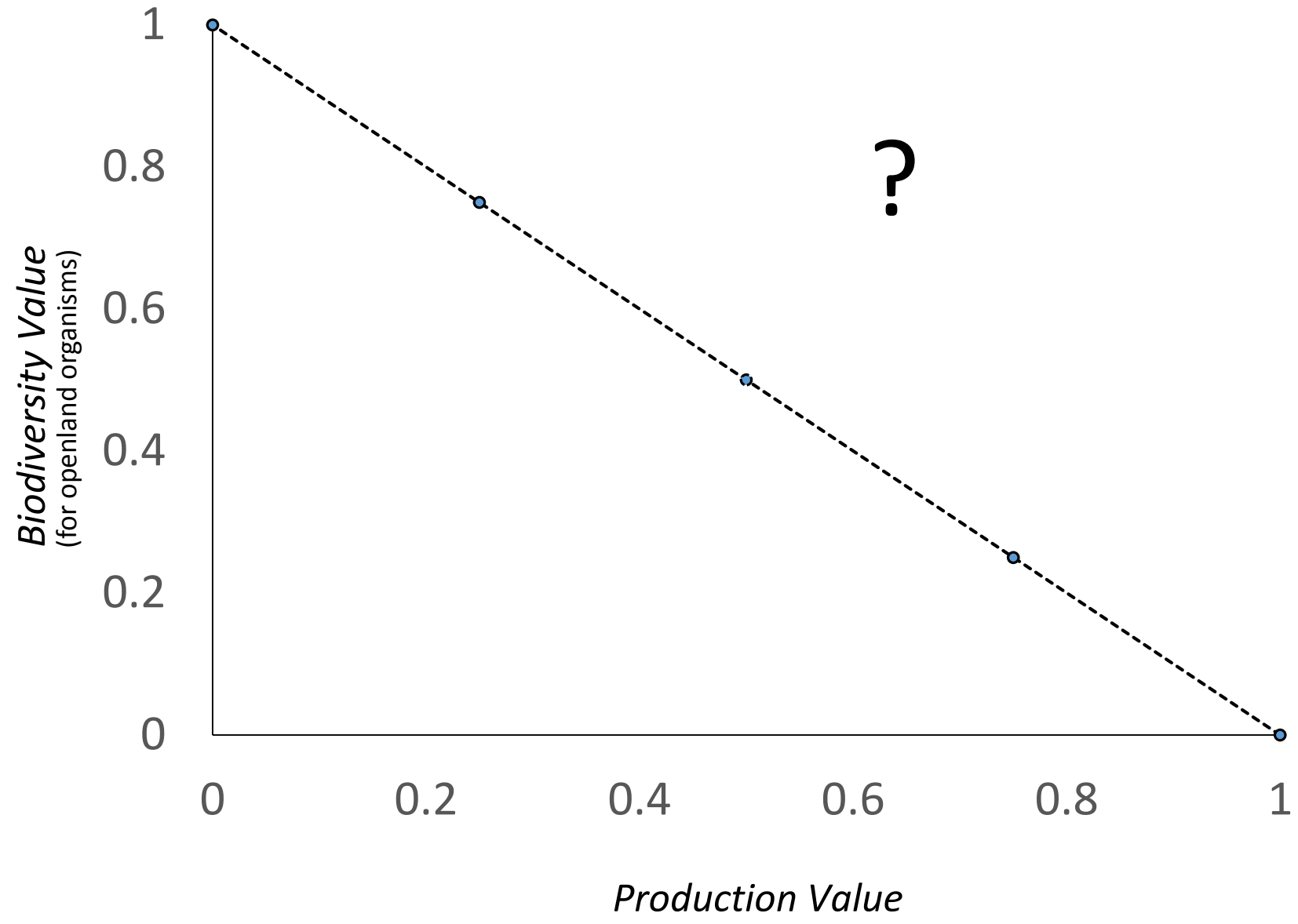
Food Production

Why maintain a field?

Aesthetics

Why maintain a field?

Biodiversity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0.6
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Biodiversity Value
(for openland organisms)
?
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0.2
0.4
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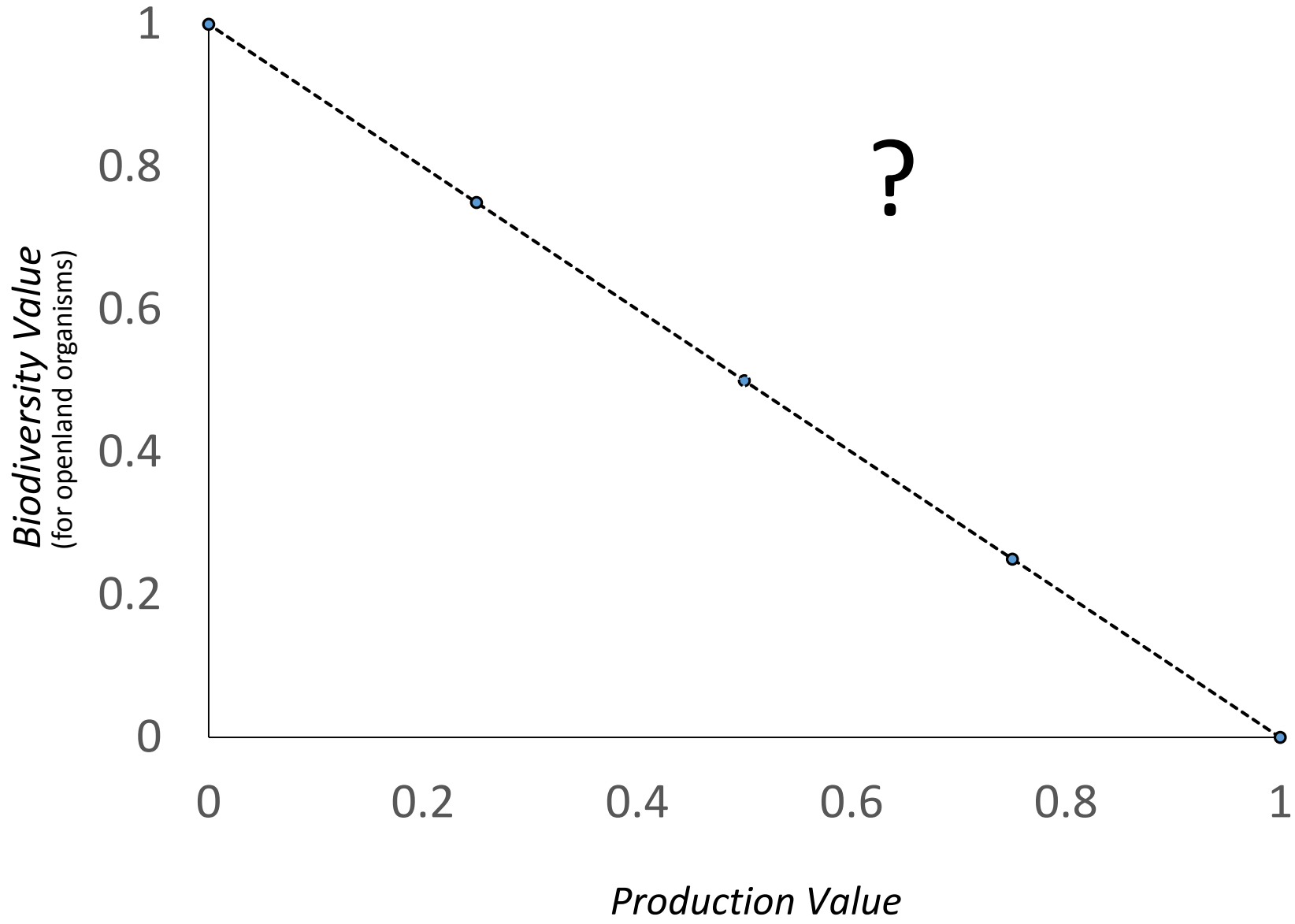
0.8
1
Production Value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Biodiversity Value
(for openland organisms)
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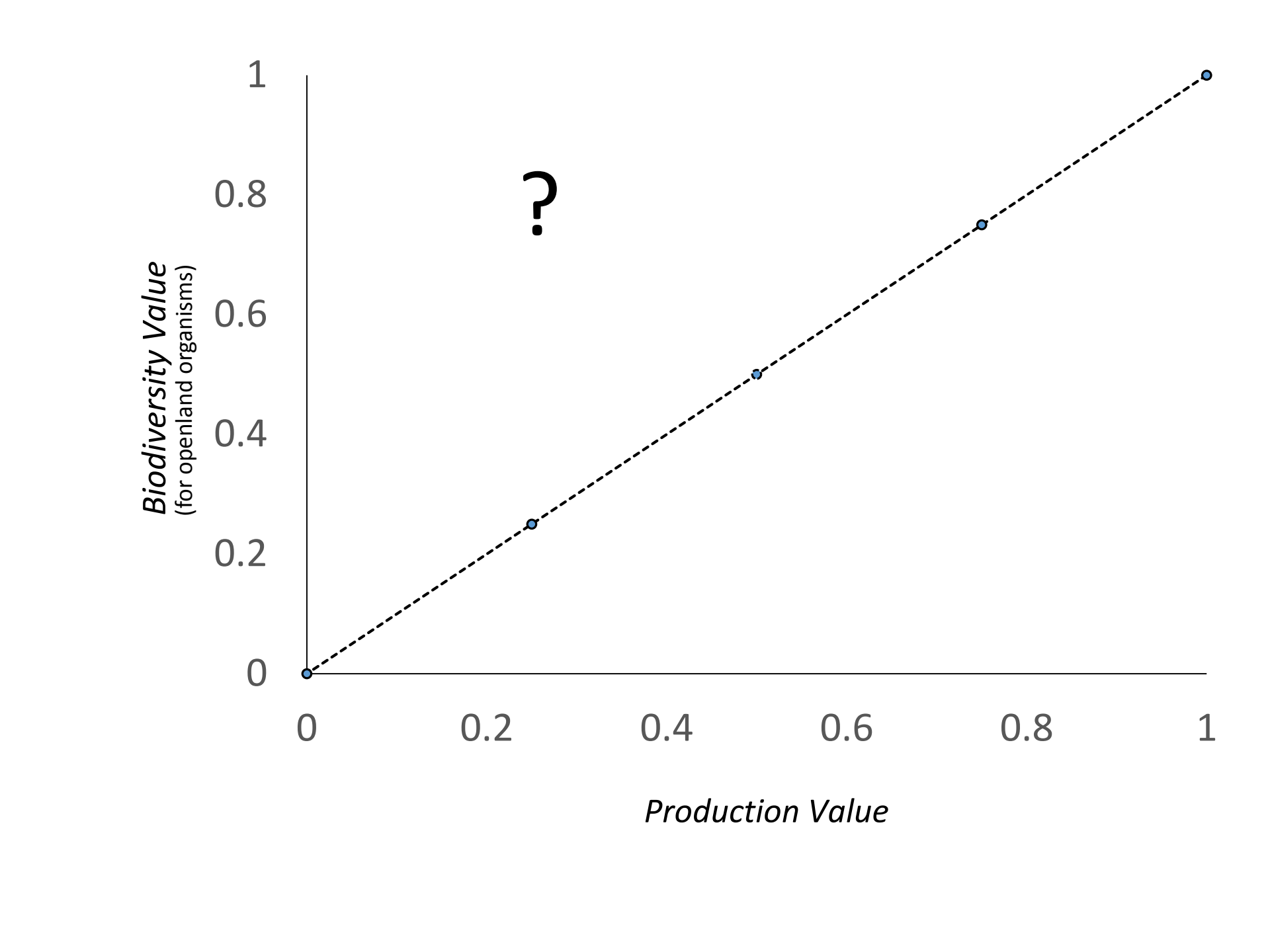
Production Value

OR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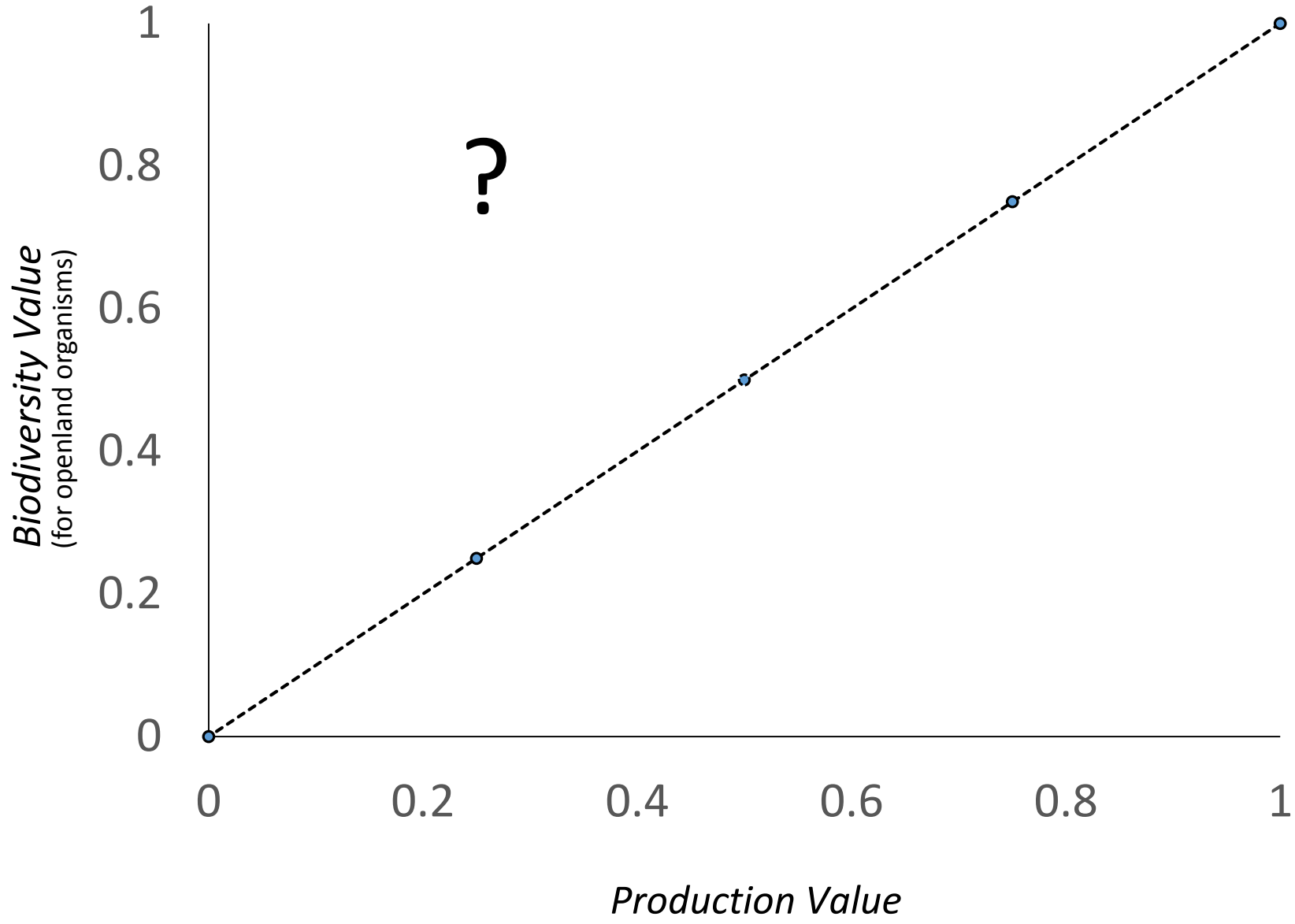
1
Production Value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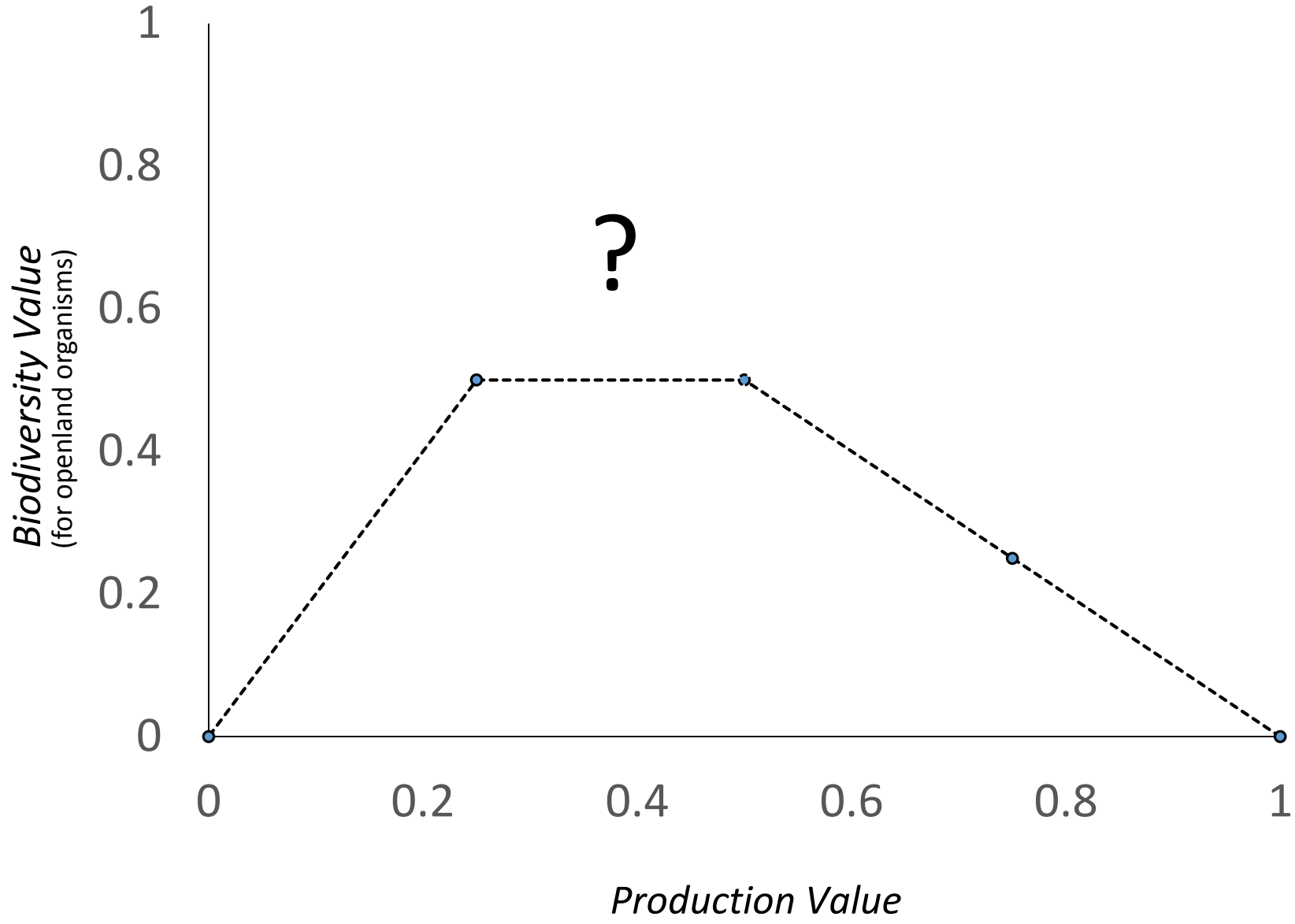
Production Value

OR MAYBE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Biodiversity Value
(for openland organisms)
?
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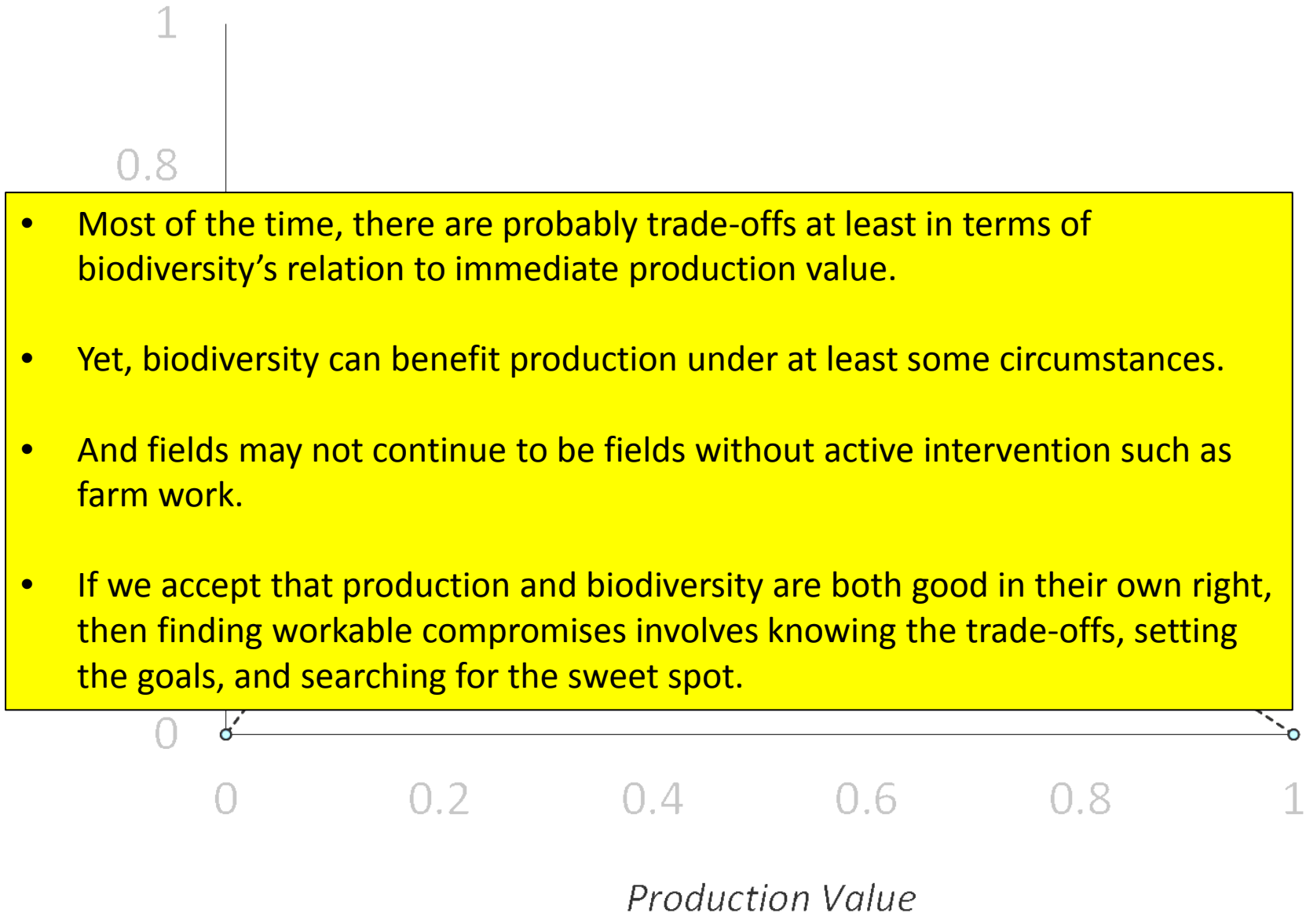
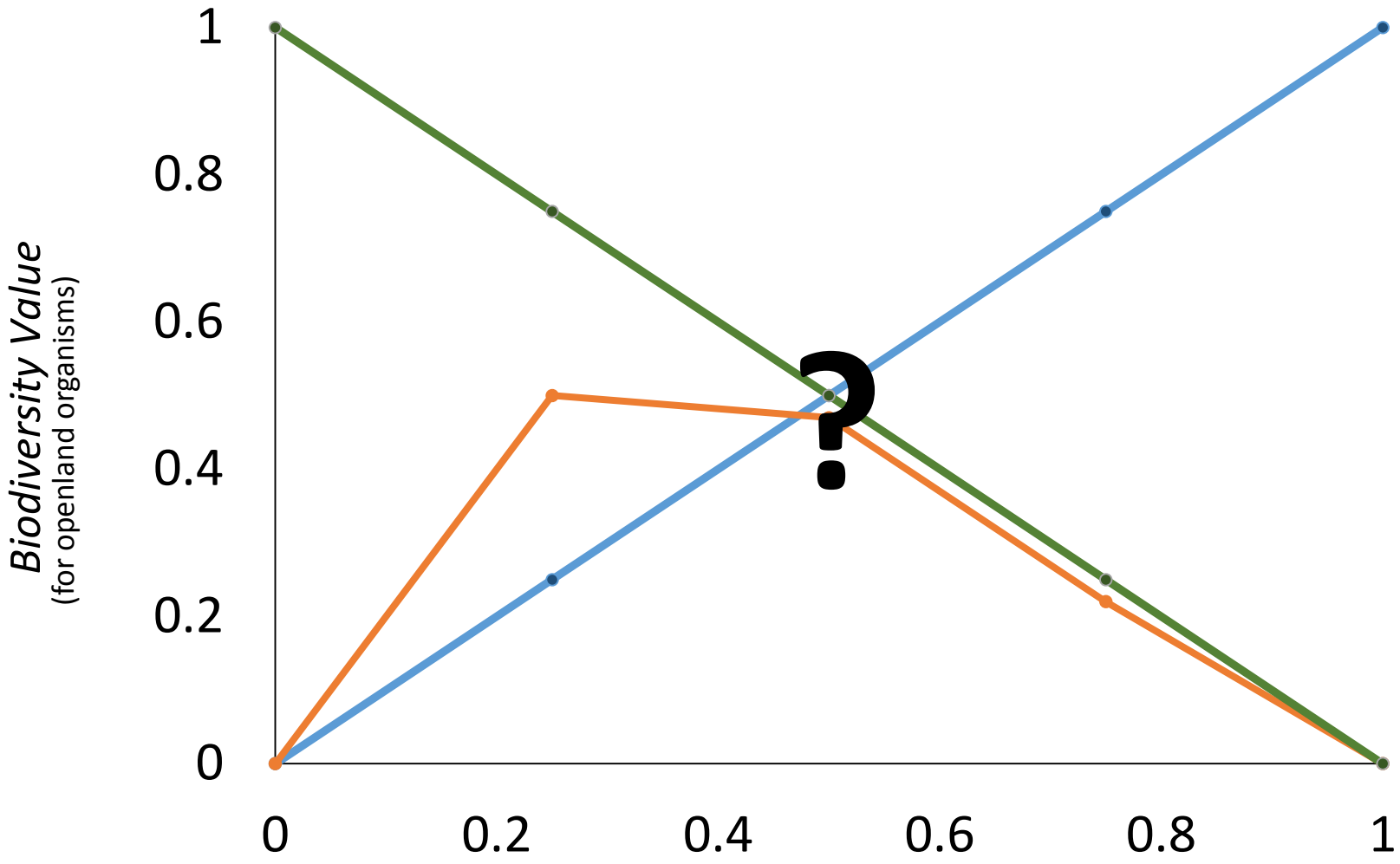
1
Production Value



- Most of the time, there are probably trade-offs at least in terms of biodiversity's relation to immediate production value.
- Yet, biodiversity can benefit production under at least some circumstances.
- And fields may not continue to be fields without active intervention such as farm work.
- If we accept that production and biodiversity are both good in their own right, then finding workable compromises involves knowing the trade-offs, setting the goals, and searching for the sweet spot.



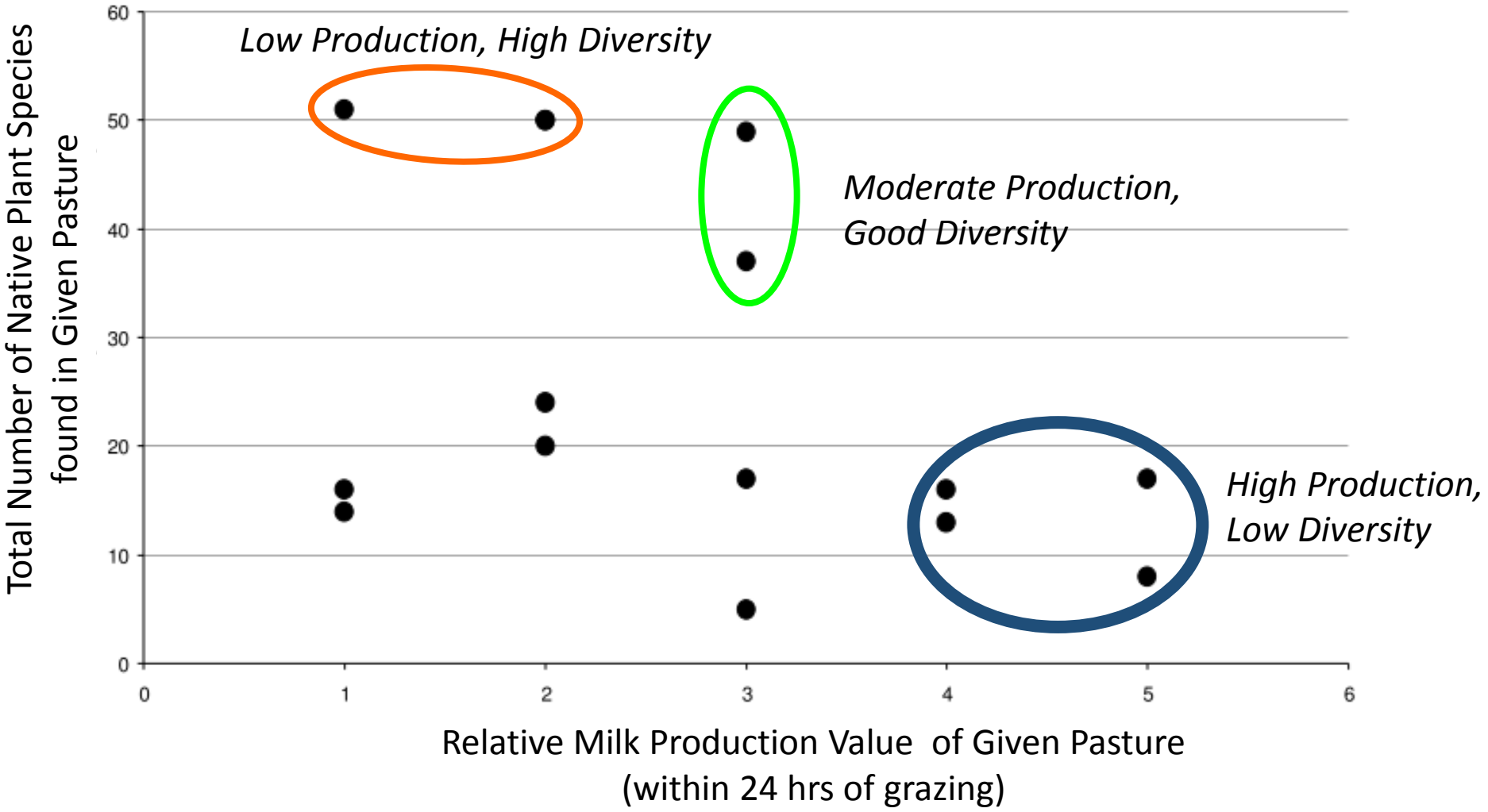
There may not be any single, over-arching answer, but the search for answers that apply to particular circumstances seems key to finding workable compromises.

Some half-baked examples…

A bovine perspective on diversity

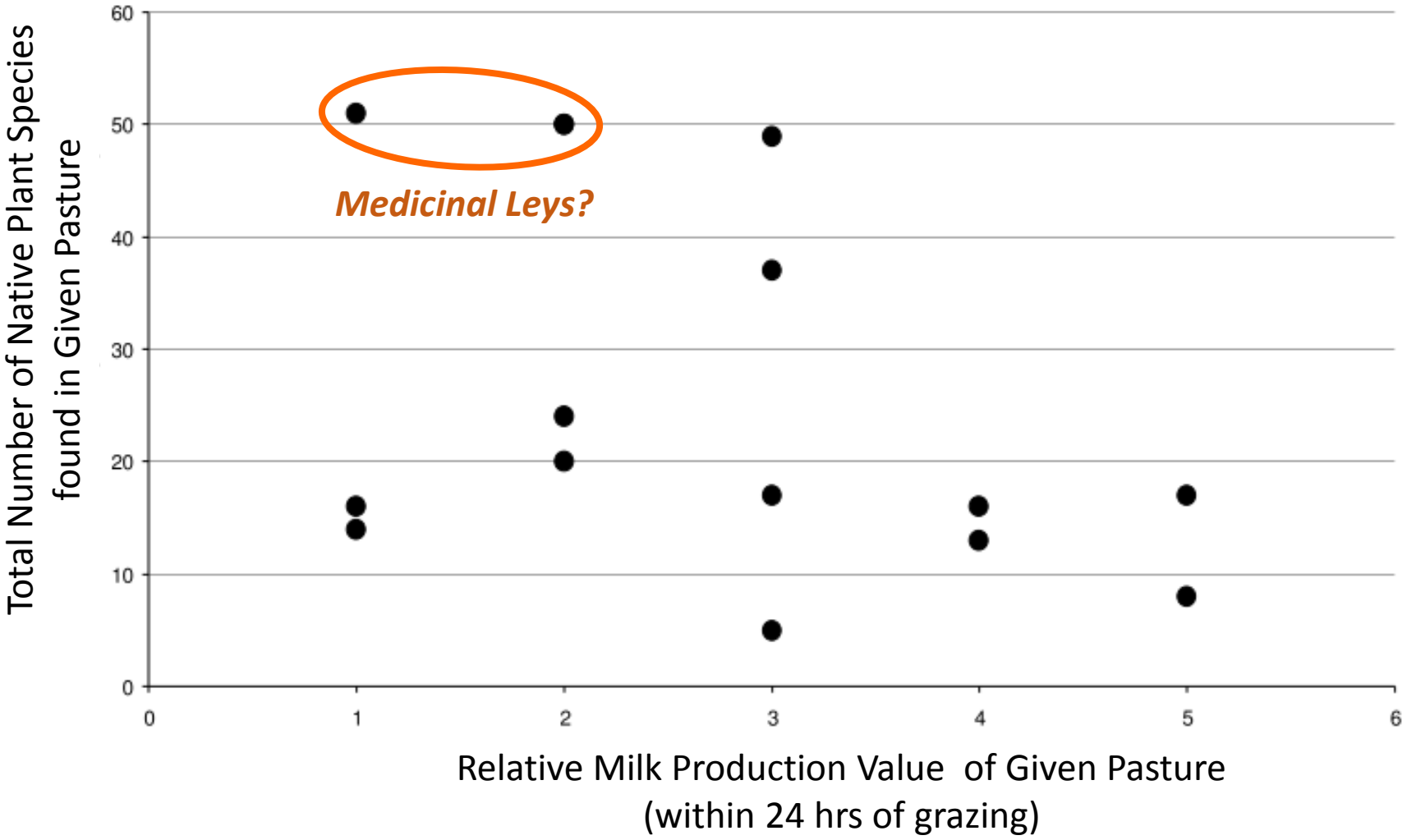
Photo Jim Champion,

MILK PRODUCTION vs. # OF NATIVE PASTURE PLANTS



SOURCE: FEP with help of farm apprentice Laura Weiland

MILK PRODUCTION vs. # OF NATIVE PASTURE PLANTS



SOURCE: FEP with help of farm apprentice Laura Weiland

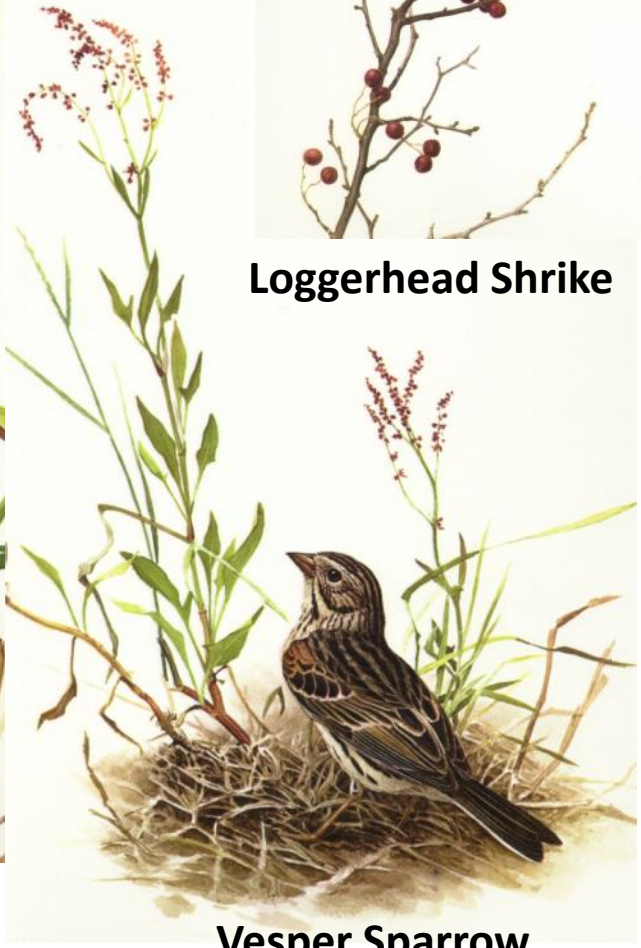
Grassland Birds

Grasshopper Sparrow

Loggerhead Shrike

Bobolink

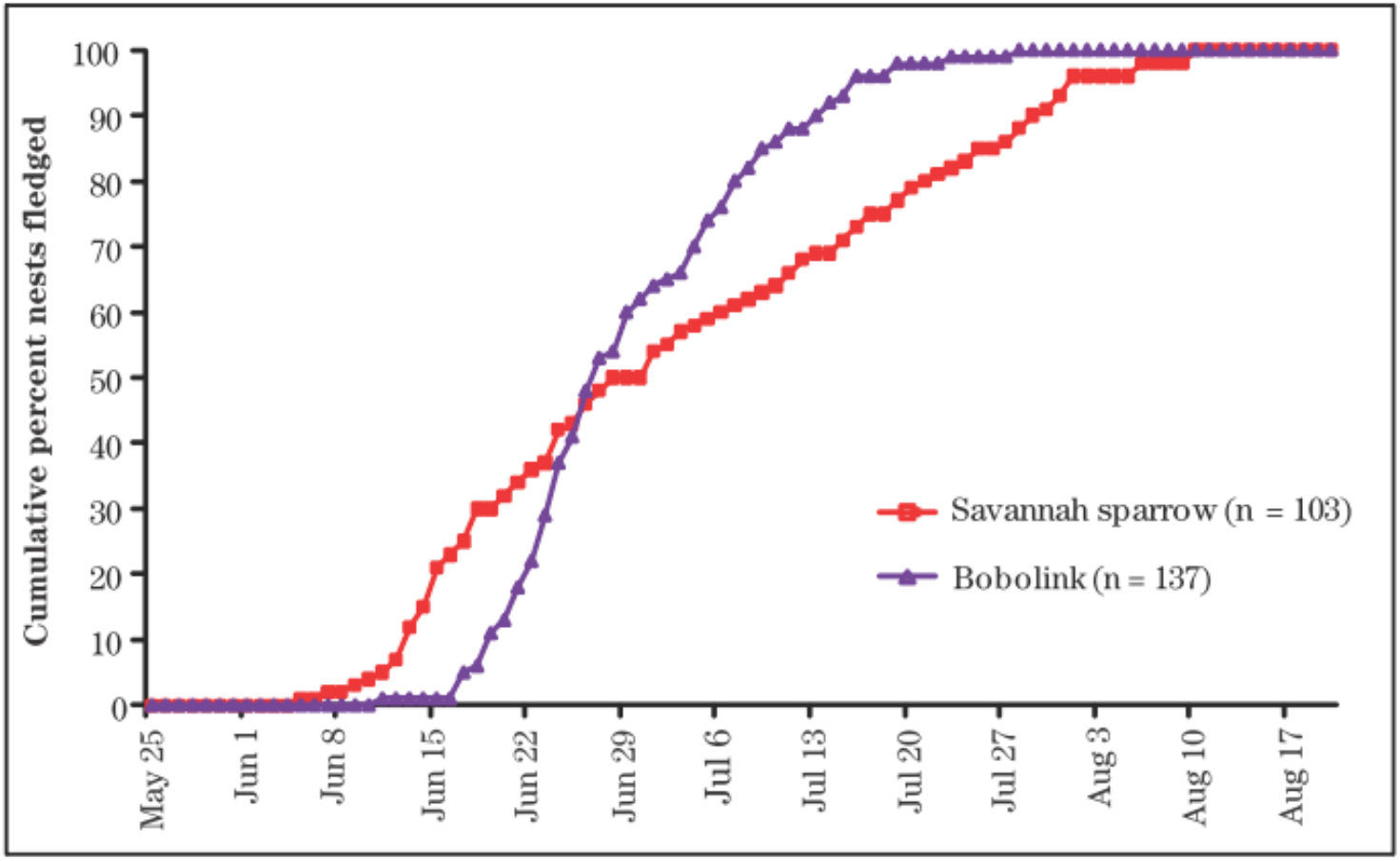
Meadowlark



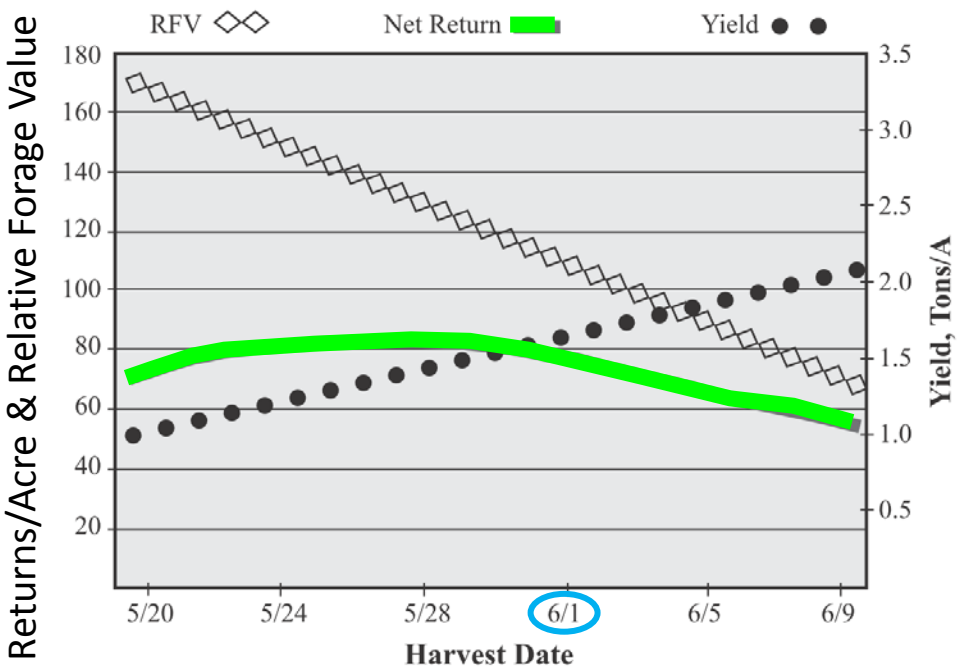
Vesper Sparrow

Paintings by J.F. Lansdowne

Date of Fledging for Two Common Grassland Birds.



From: U.S. Department of Agriculture, Natural Resources Conservation Service. 2010. Management considerations for grassland birds in northeastern haylands and pasturelands. Wildlife Insight. Washington, DC.



Hay Quality, Quantity and Value vs. Cut Date

From:

How Cutting Date Affects Yield, Quality and Profitability of a Hay Crop

by Bill Lazarus, University of Minnesota and Dan Undersander, University of Wisconsin

http://www.midwestforage.org/pdf/203.pdf.pdf

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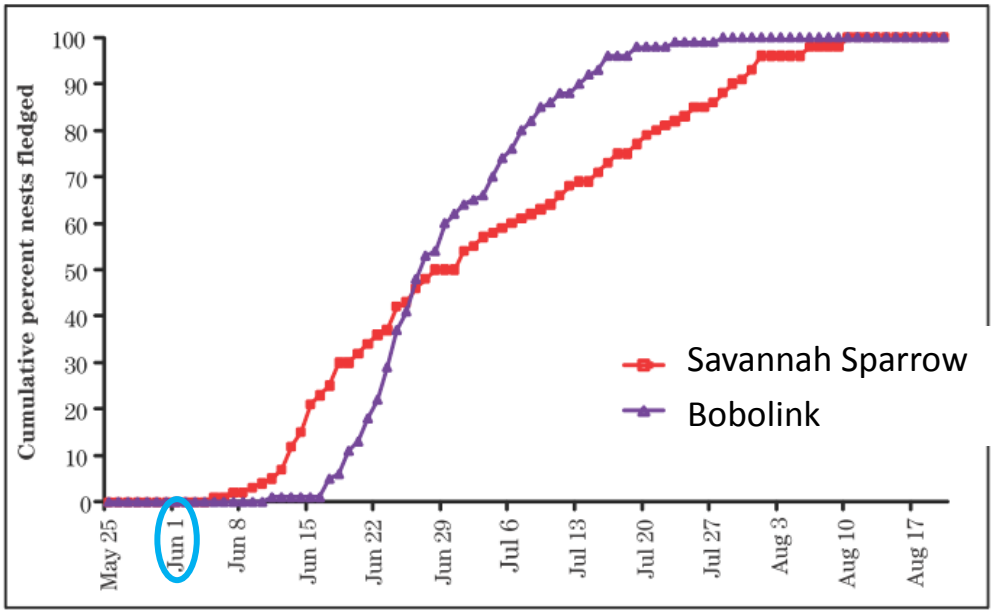

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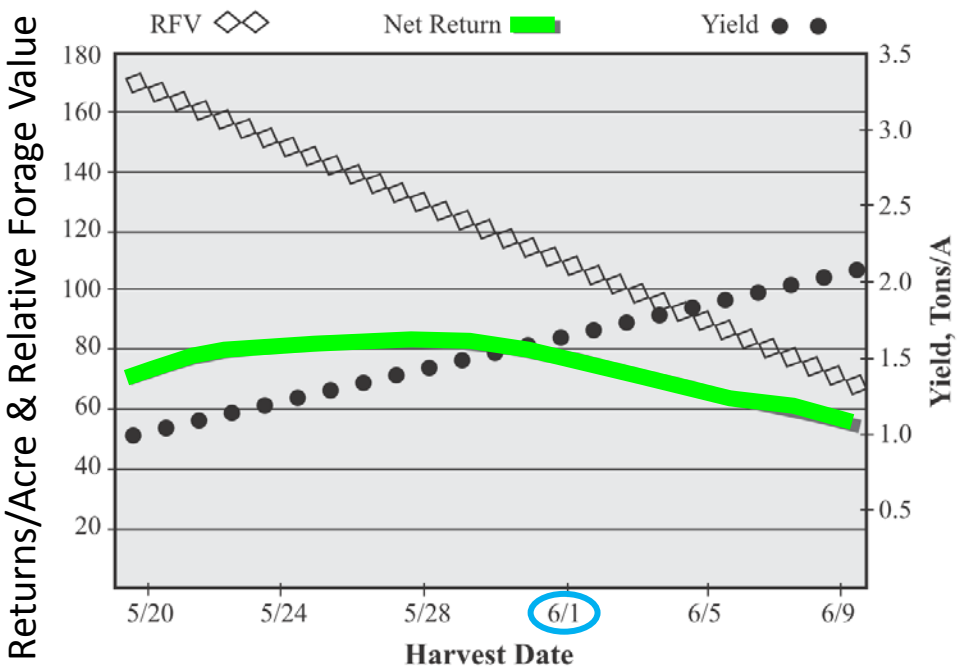

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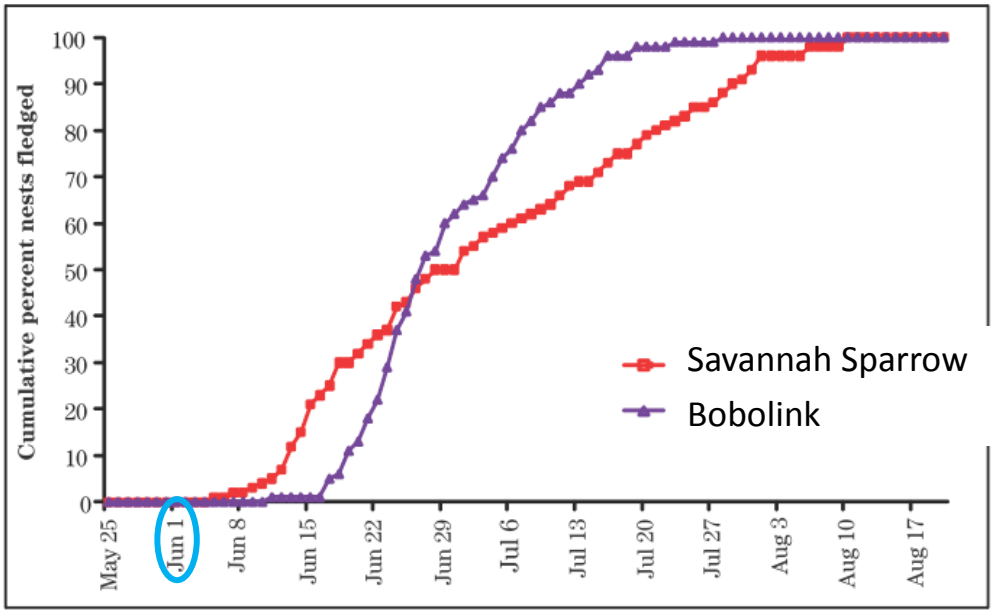
Is it all or nothing?

Date of Fledging for Two Common Grassland Birds.

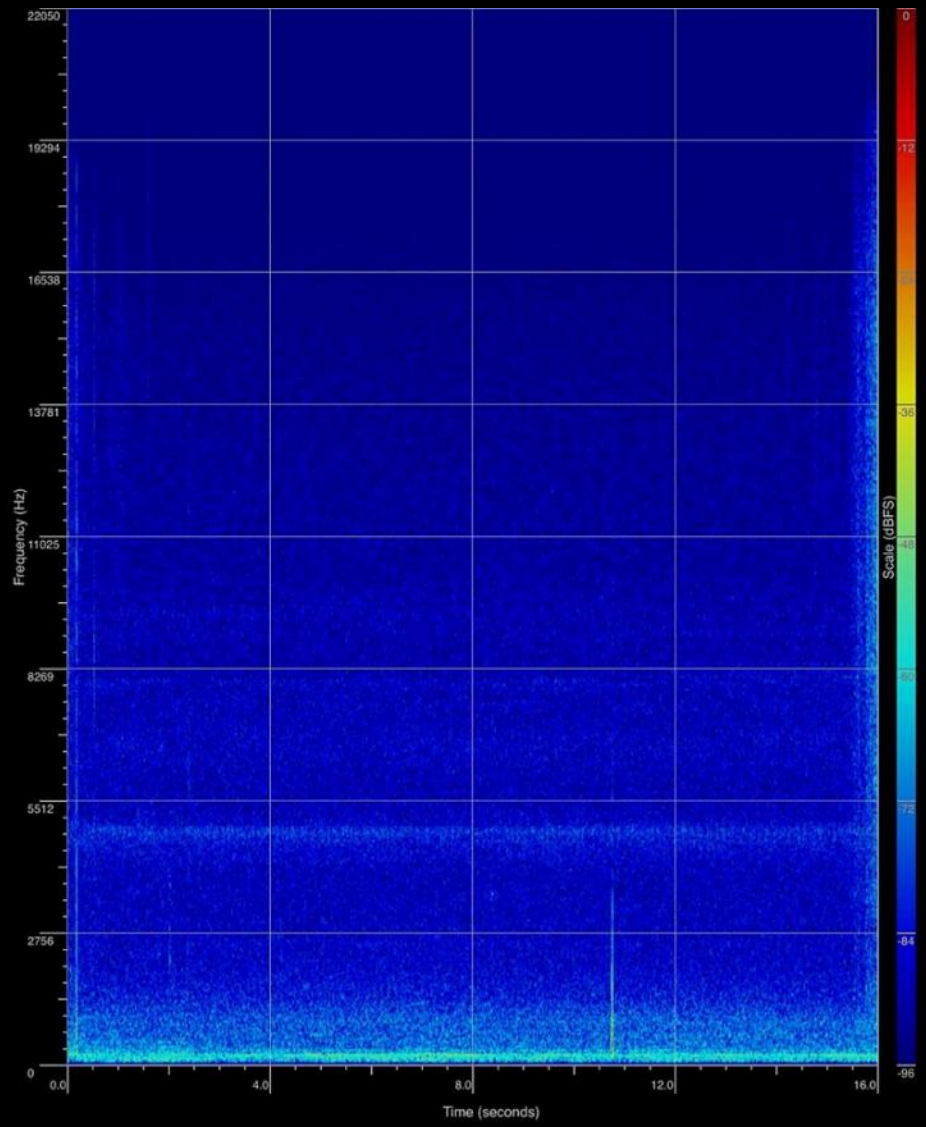


From: U.S. Department of Agriculture, Natural Resources Conservation Service. 2010. Management considerations for grassland birds in northeastern hay-lands and pasturelands. Wildlife Insight. Washington, DC.

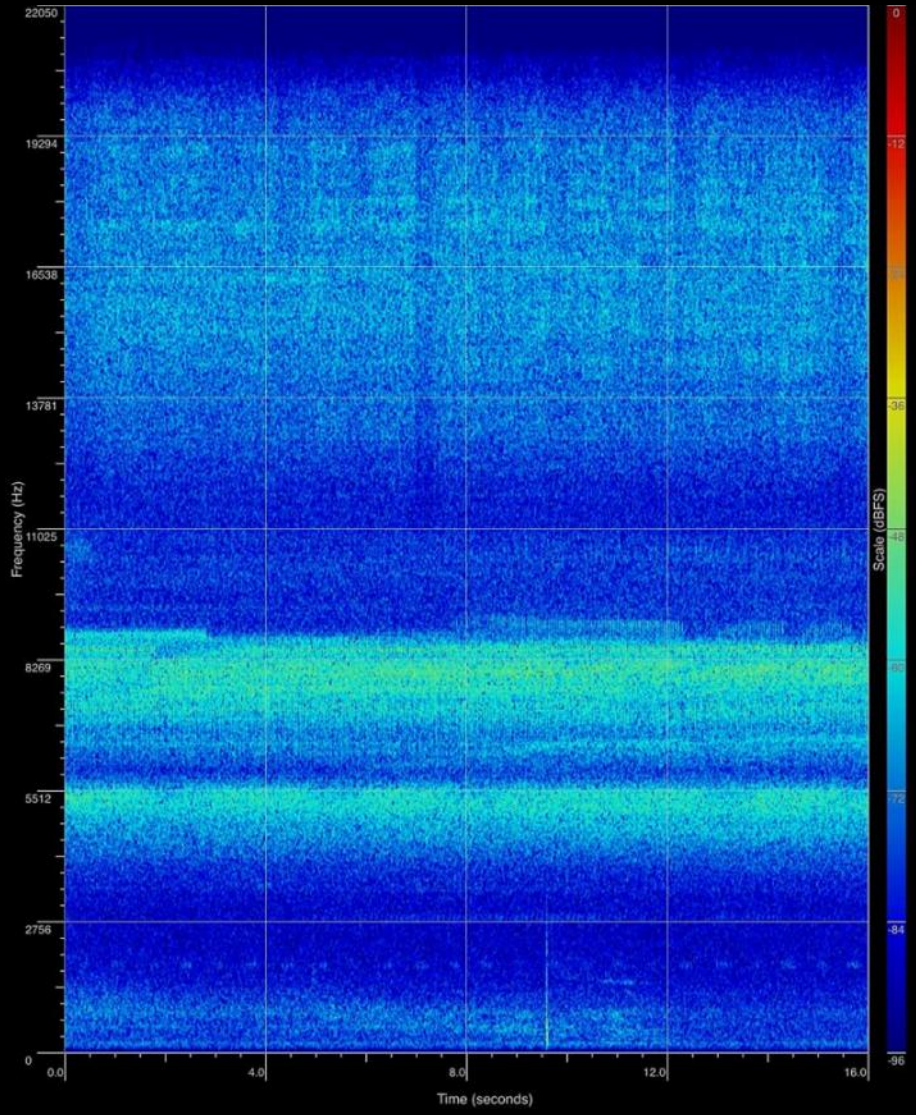
An ‘Apple – Grass Savannah’
(aka apple orchard)

(Cricket photo by Lang Elliot and Wil Hershberger,
songsofinsects.com; used with permission)

Conventional Orchard



Organic Orchard

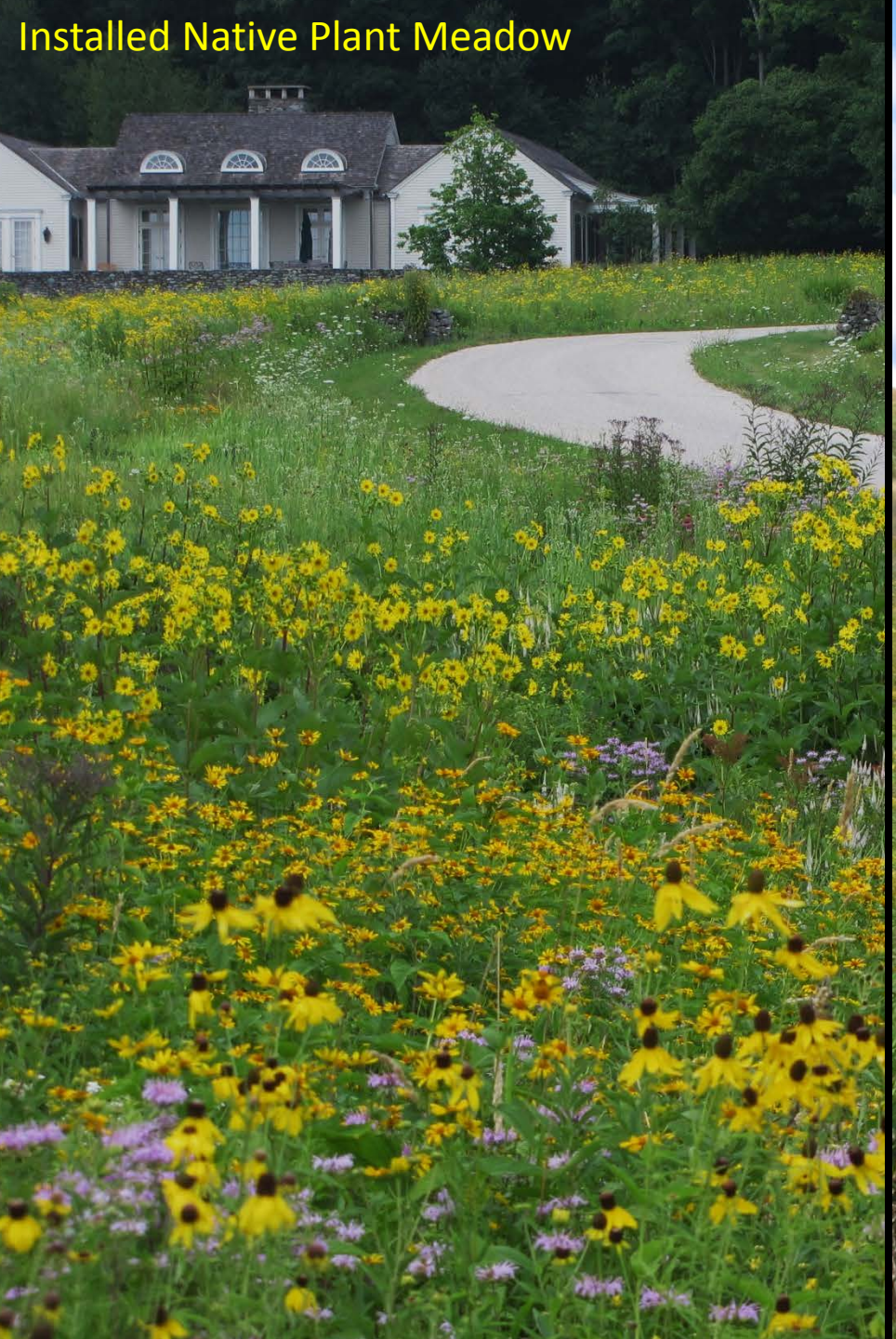


Sonograms: more light fuzz = more insect calls = more life

Conventional Orchard

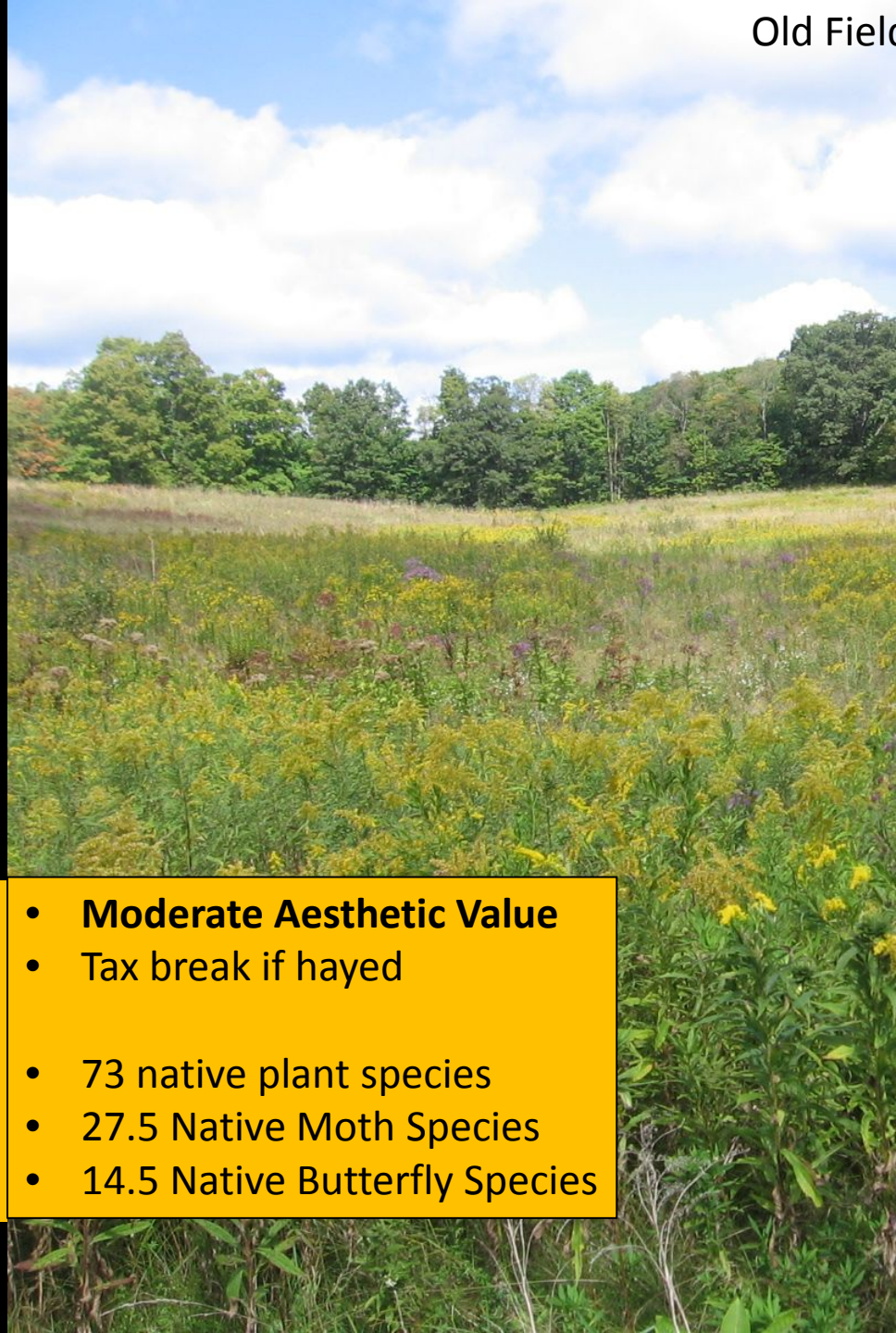
Organic Orchard

Can appreciation for ecological beauty compensate in part for reduced physical beauty?


Installed Native Plant Meadow


Old Field

- **High Aesthetic Value**
- $2,000-10,000/acre to install, more to maintain
- 83 native plant species
- 23.5 Native Moth Species
- 17 Native Butterfly Species



- **Moderate Aesthetic Value**
- Tax break if hayed
- 73 native plant species
- 27.5 Native Moth Species
- 14.5 Native Butterfly Species

What's the biggest bang for the buck – when are a few really 'good' fields better than many almost as good fields?

Milk production and/or Plant diversity?

Hay quality and/or Grassland birds?

Apple saleability and/or Singing insects?

Aesthetic value (& biodiversity) vs. Relatively low-cost biodiversity conservation?

Perhaps not questions that can be explicitly and eternally answered, but ones that may help highlight information we should gather for particular situations.

1) ***Why? What's a good field to do?***
   The different motives for maintaining fields, conservation being one of them, and how they interact.

2) ***What? A field is not a field is not a field.***
   From a biodiversity perspective, there are many types of fields.

3) ***Where? Adjusting to the neighborhood.***
   The biodiversity role of a field depends not only on its intrinsic qualities but also its context.

Just as humans create fields for a variety of aesthetic and production purposes; so too does considering their conservation role require recognizing a diverse repertoire of fields.












Where are our native grasslands?

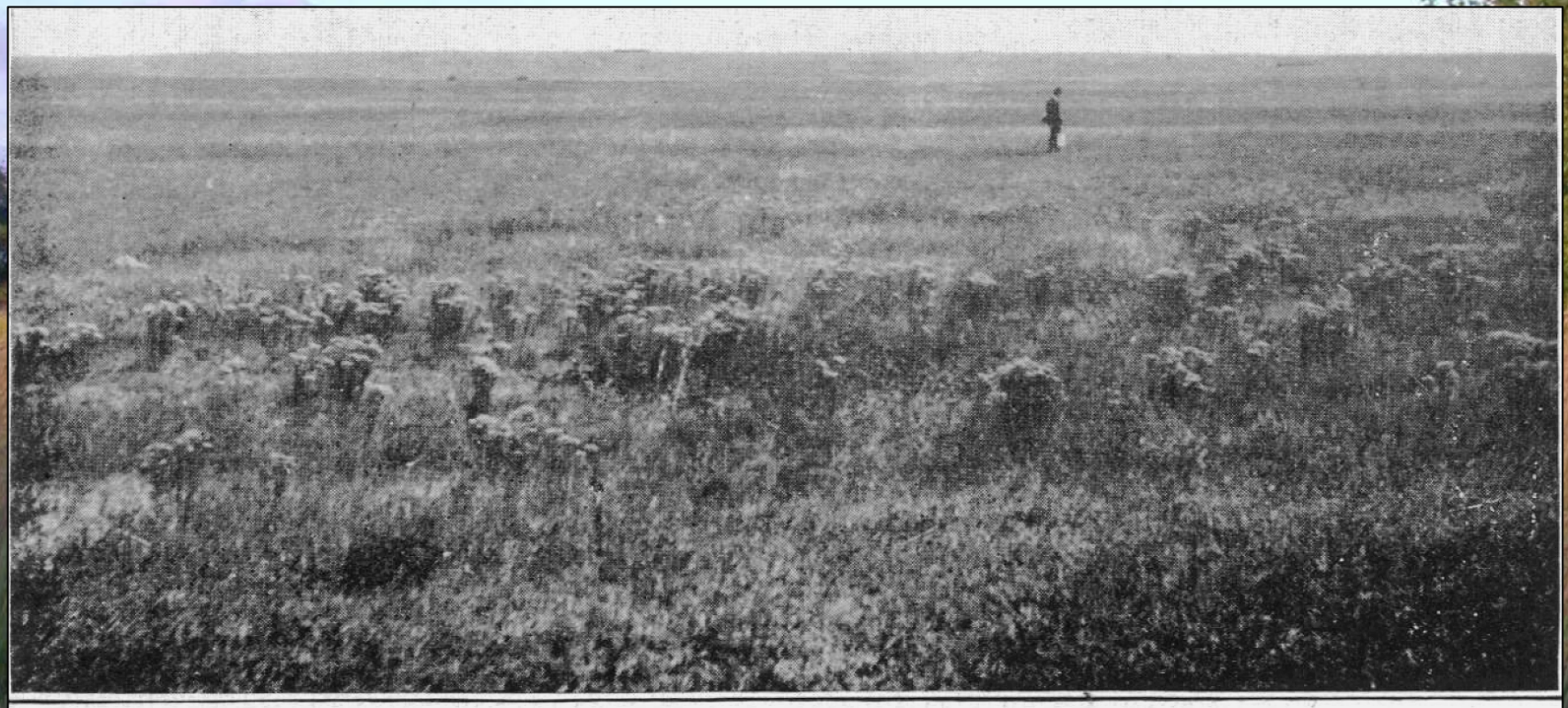


FIG. 1—Looking east across dry valley at Hempstead Brook, east of Garden City, showing treeless horizon about ½ mile away. No traces of cultivation in this view. Sept. 29, 1909.


Scoured Lands


Beaver Meadow


Pine Barrens


Dry, Rocky
Hilltops


Where do native organisms from these natural grasslands find habitats in our modern landscape, and what role does agriculture have in creating those habitats?

For whom does this habitat analogy work?

Rocky Hilltop

Thin-soiled Pasture

As meadows degrade, they become richer in native species

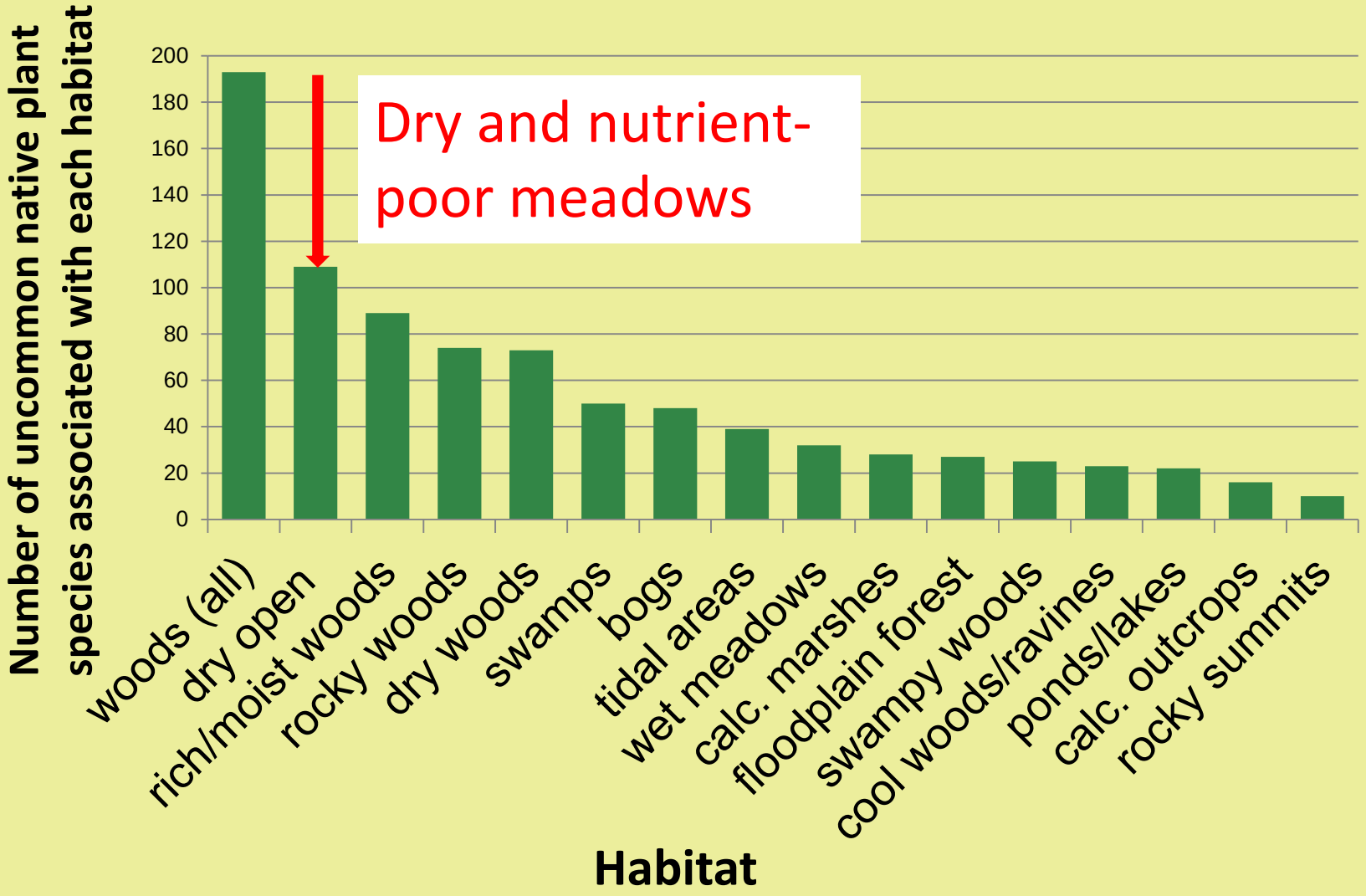
Increasing of Soil Impoverishment

Associations	Warm to cool relatively dry regions	Cool moist regions	Cold moist regions
1	Kentucky bluegrass Canadian bluegrass White clover	Kentucky bluegrass Canadian bluegrass White clover	Kentucky bluegrass Canadian bluegrass White clover
2	Bluegrasses Red top White clover	Bluegrasses R. I. bent White clover	Bluegrasses R. I. bent White clover
3		R. I. bent White clover	R. I. bent White clover
4		R. I. bent Sweet vernal White clover	R. I. bent
5		Sweet vernal	
6	Poverty	Poverty	Poverty
7	Poverty Goldenrod Broom sedge Cinquefoil Trees	Poverty Goldenrod Broom sedge Cinquefoil Moss Ferns Trees	Poverty Cinquefoil Moss Ferns Trees

Native Species

A table from the 1929 work of Cooper and colleagues showing the plants associated with progressively degrading pastures under three climatic conditions. Soil impoverishment increases in associations 1-7. Introduced grasses and clovers dominate the nutrient rich pastures, but progressively give way to native species as pastures degrade.

Dry and nutrient-poor meadows provide habitat for a large number of uncommon native plants in Columbia County



Dry and nutrient-poor meadows often support the native prairie grass **Little Bluestem** (*Schizachyrium scoparium*), which is host plant for the caterpillars of rare butterflies. These Little Bluestem meadows taste like prairie to the caterpillars…

Indian Skipper

Cobweb Skipper

Leonard Skipper

Smooth Aster (*Symphyotricum laevis*)

Sweet Fern (*Comptonia peregrina)*

Heath Aster (*Symphyotricum ericoides*)

Gray Goldenrod (*Solidago nemoralis)*

Silverrod (*Solidago bicolor)*

Bluecurls (*Trichostoma dichotoma*)
Photo: missouriplants.com

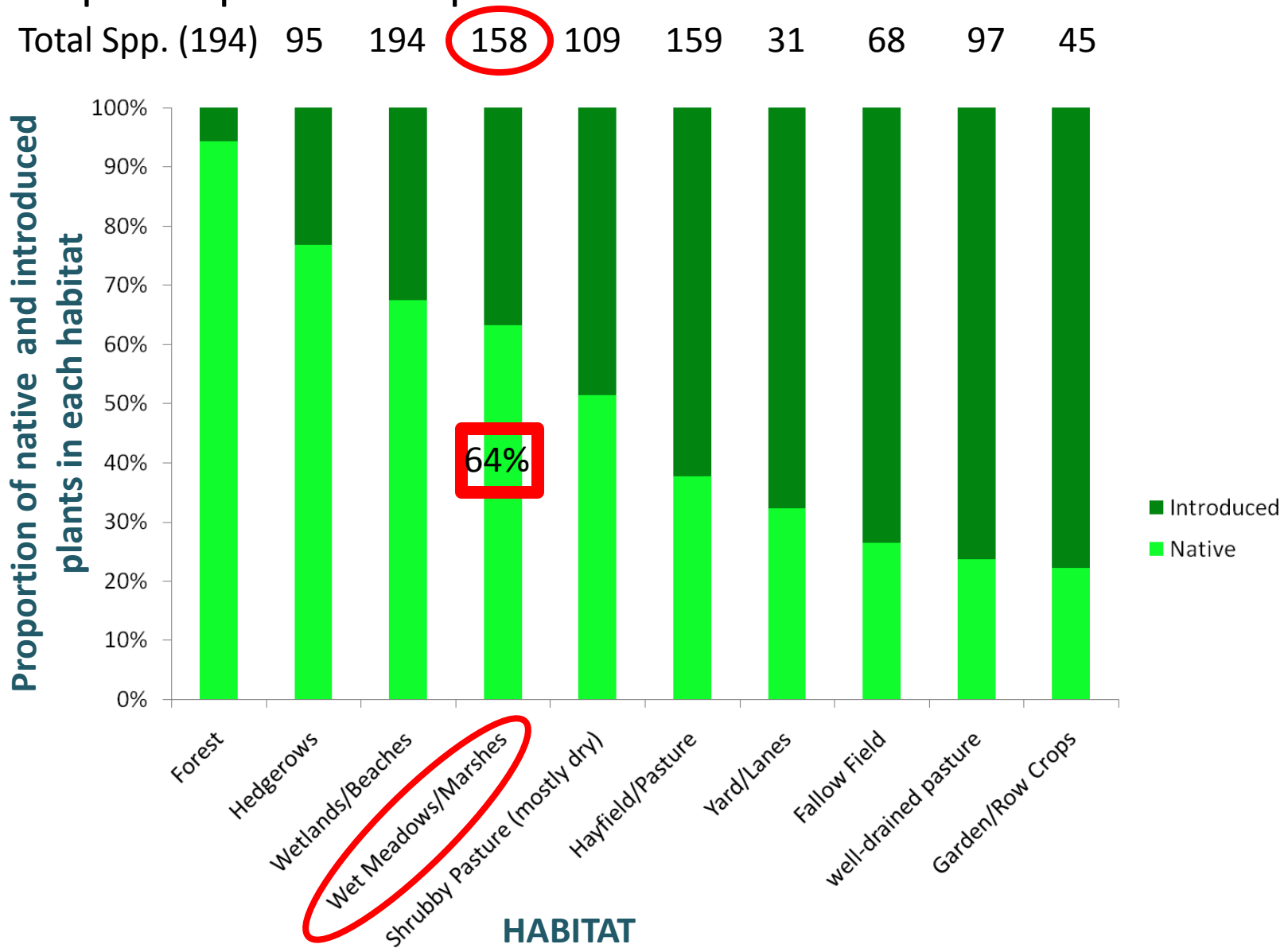
Blue waxweed (*Cuphea viscosissima*)
Photo: missouriplants.com

Lady's Tresses (*Spiranthes lacera*)


Beaver Pond/Meadow


Lightly Used Cattle Pond

Wet Meadows have a high number and high proportion of native plant species compared to other on-farm habitats



Examples of uncommon native plants from **wet meadows**

Nodding Lady's Tresses *(Spiranthes cernua)*

Swamp Candle *(Lysimachia terrestris)*

Cardinal Flower *(Lobelia cardinalis)*

Yellow Stargrass *(Hypoxis hirsuta)*

Ragged-Fringed Orchid *(Platanthera lacera)*

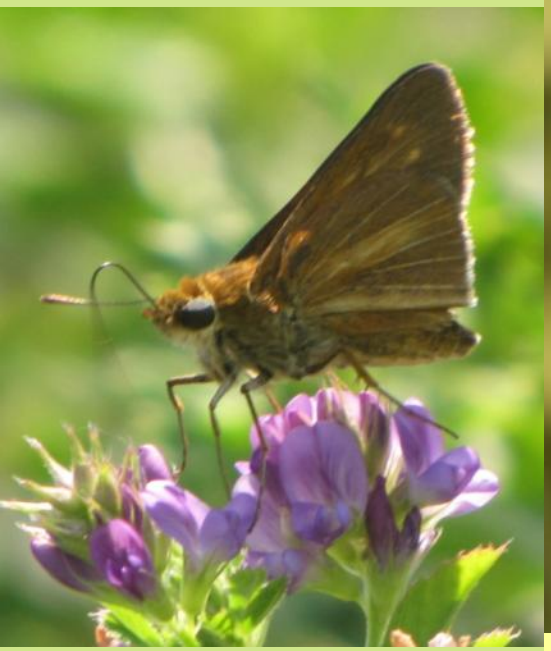
Allegheny Monkeyflower *(Mimulus ringens)*

Butterfly host plants of **Wet Meadows**:
e.g. **Sedges** (*Carex* sp.)

Mulberrywing

Hop Sedge *(Carex lupulina*)

Black Dash



Dion Skipper

Appalachian Brown

Butterfly host plants of **Wet Meadows**:
e.g. **Docks** (*Rumex* sp.)

Bronze Copper caterpillars feed on docks

Water Dock (*Rumex britannica [=orbiculatus]*)

Butterfly host plants of **Wet Meadows**:
e.g. **Turtlehead** *(Chelone glabra)*

Turtlehead (*Chelone glabra)*

Baltimore Checkerspot
caterpillars feed on Turtlehead

Wet Meadows: Amphibians and reptiles of conservation interest

Ribbon snake

Leopard frog

Spotted turtle

Mature Hayfields

Upland Hayfield in Columbia County

Tall Grass Prairie in Illinois

(photo from http://virtual.parkland.edu/lstelle1/len/biface_guide/chert/documents/glacial_till.html)

Population Trends of Grassland-breeding Birds

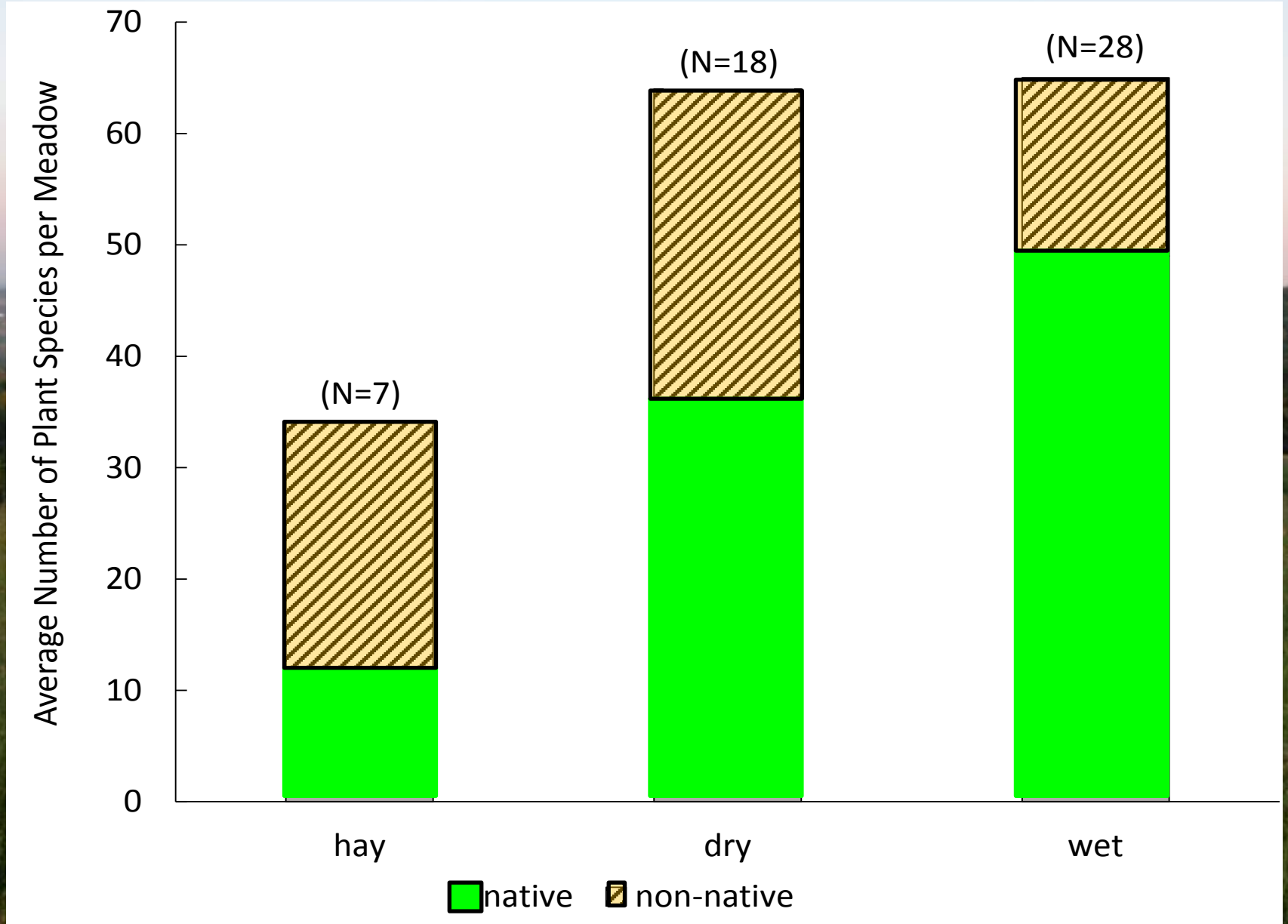
Population Trend
in **New York State**

from 1980-85 to 2000-05

Henslow's Sparrow	- 80%
Upland Sandpiper	- 65%
Vesper Sparrow	- 50%
Grasshopper Sparrow	- 42%
Horned Lark	- 37%
Eastern Meadowlark	- 25%
Field Sparrow	- 16%
Bobolink	- 8%
Killdeer	- 4%
Red-winged Blackbird	- 2%
Northern Harrier	- 1%
Song Sparrow	- 1%
Savannah Sparrow	+ 2%

(The Second Atlas of Breeding Birds in New York State 2005)

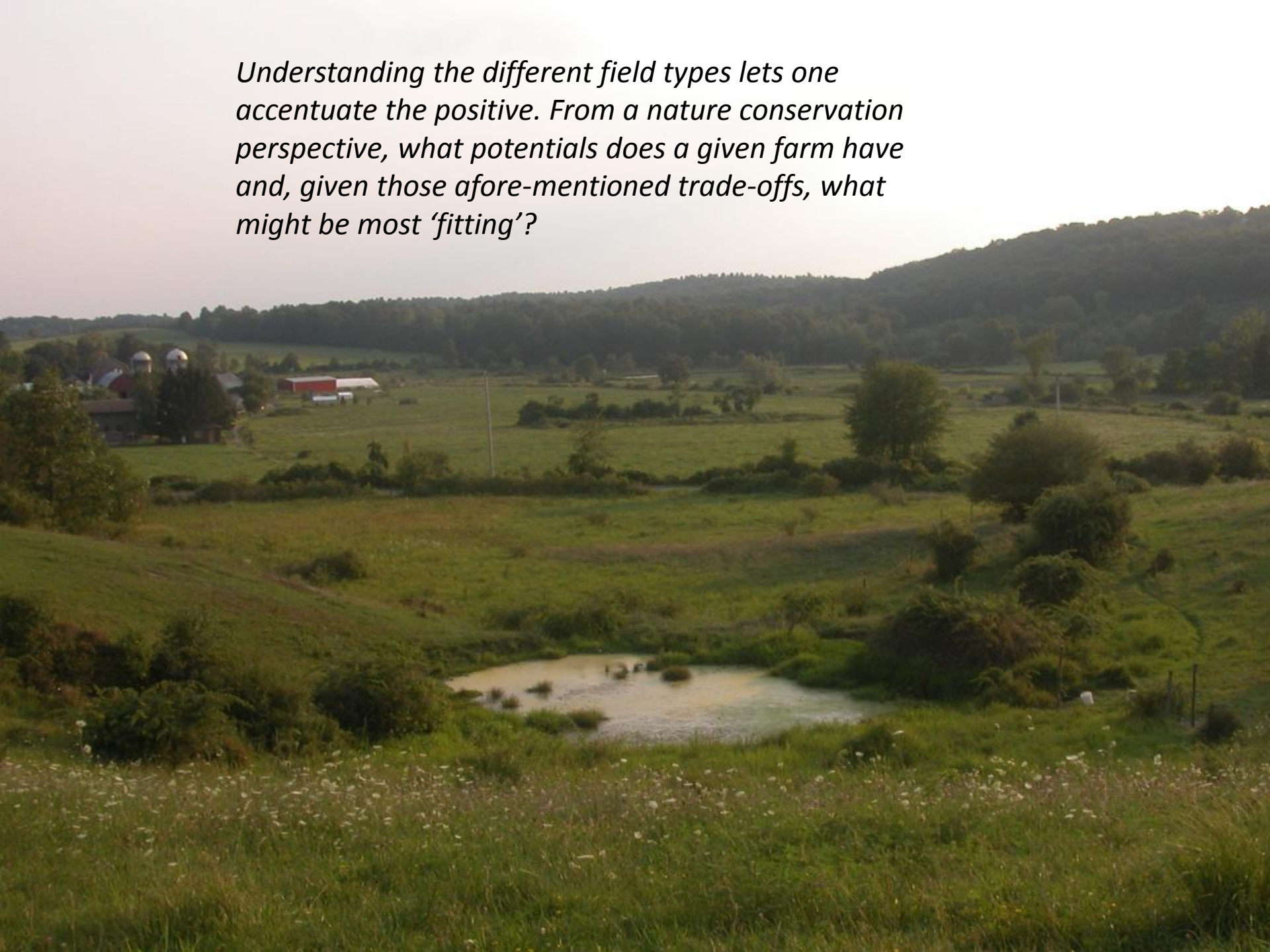
Mature Hayfields



Mature Hayfields

Can be important for grassland birds, less so for native plants and, partially as a consequence, invertebrates.

Understanding the different field types lets one accentuate the positive. From a nature conservation perspective, what potentials does a given farm have and, given those afore-mentioned trade-offs, what might be most 'fitting'?



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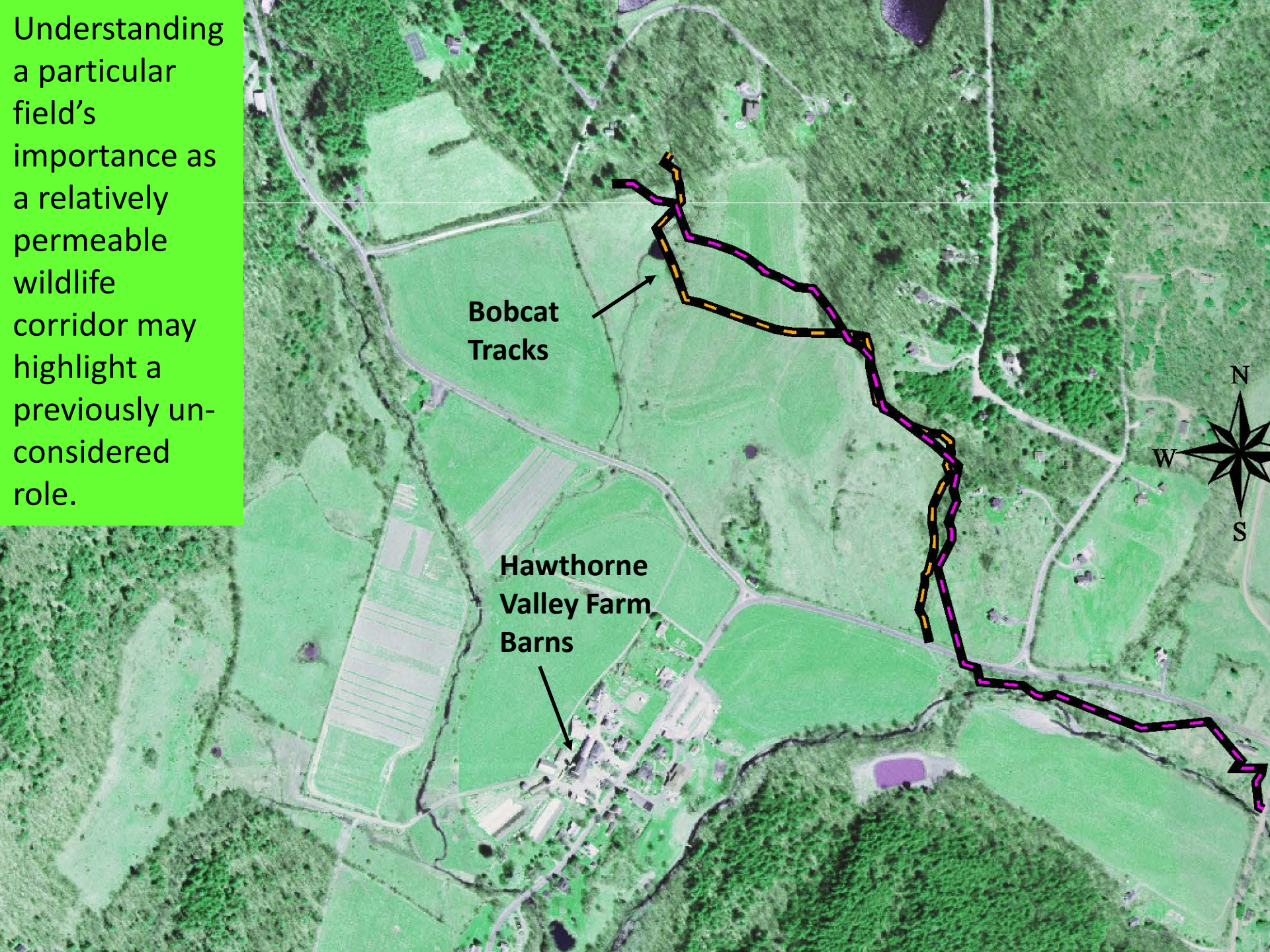
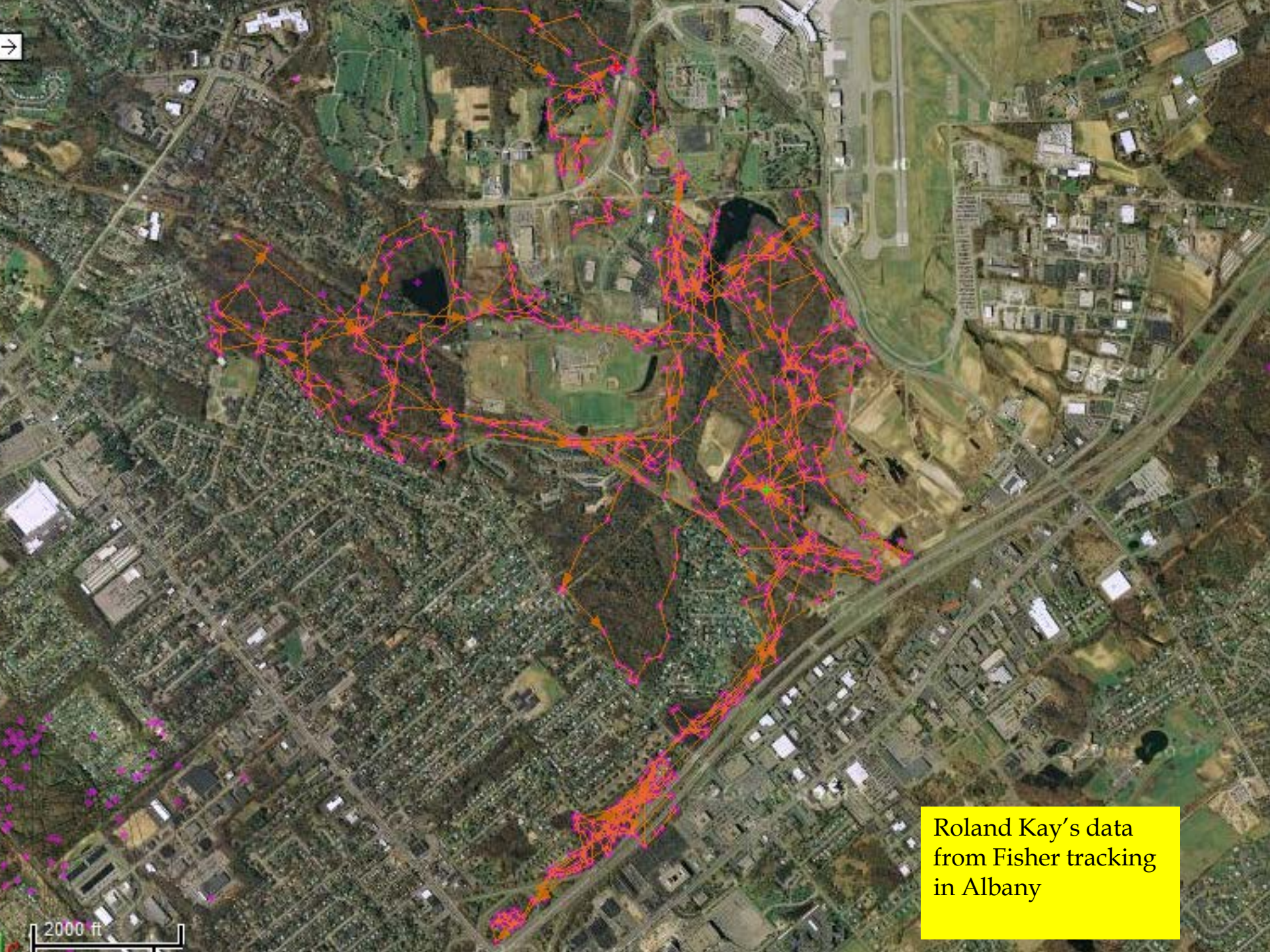
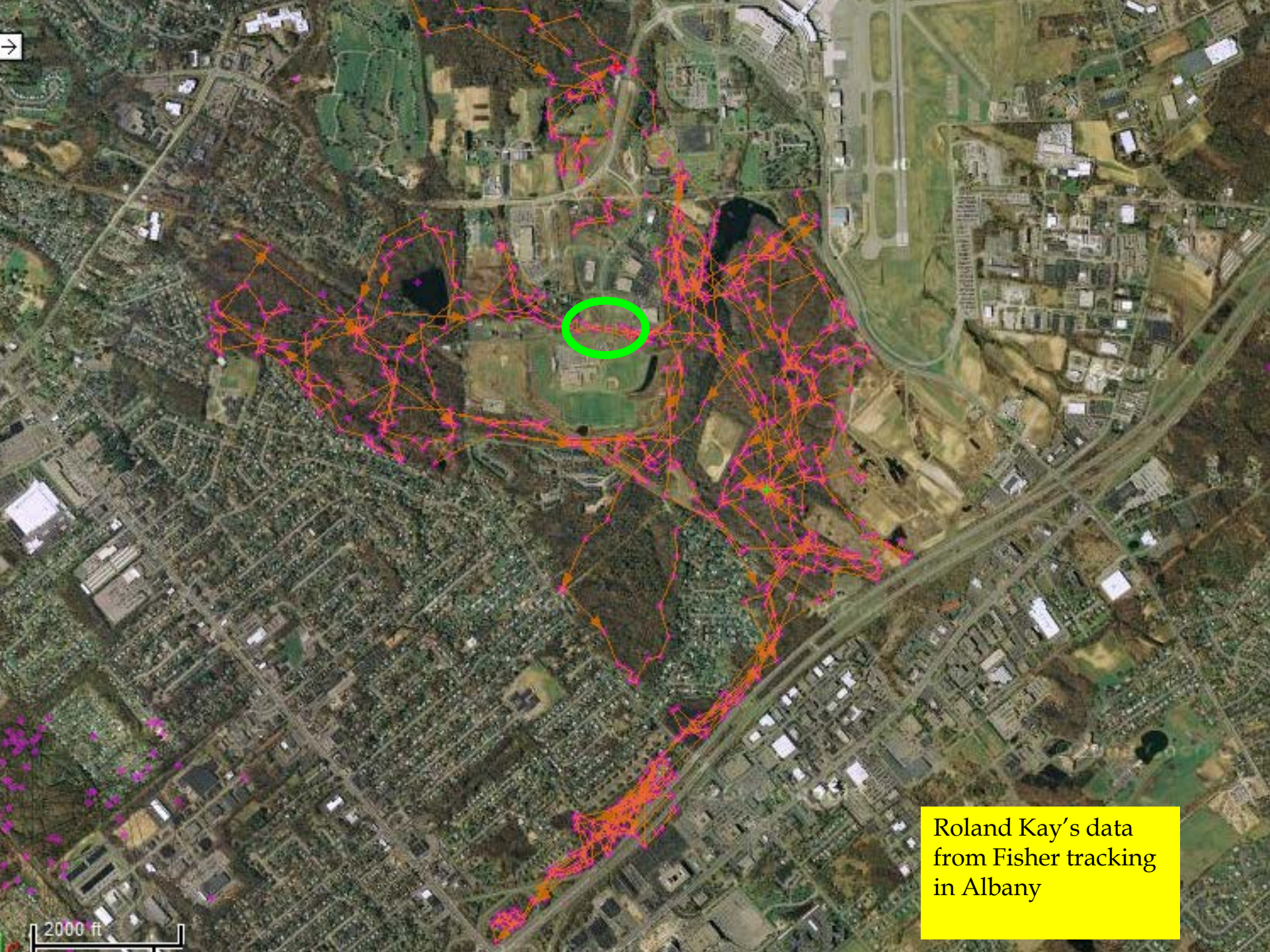
Fields don’t exist in isolation. For example….

Understanding a particular field's importance as a relatively permeable wildlife corridor may highlight a previously un-considered role.





Roland Kay's data from Fisher tracking in Albany



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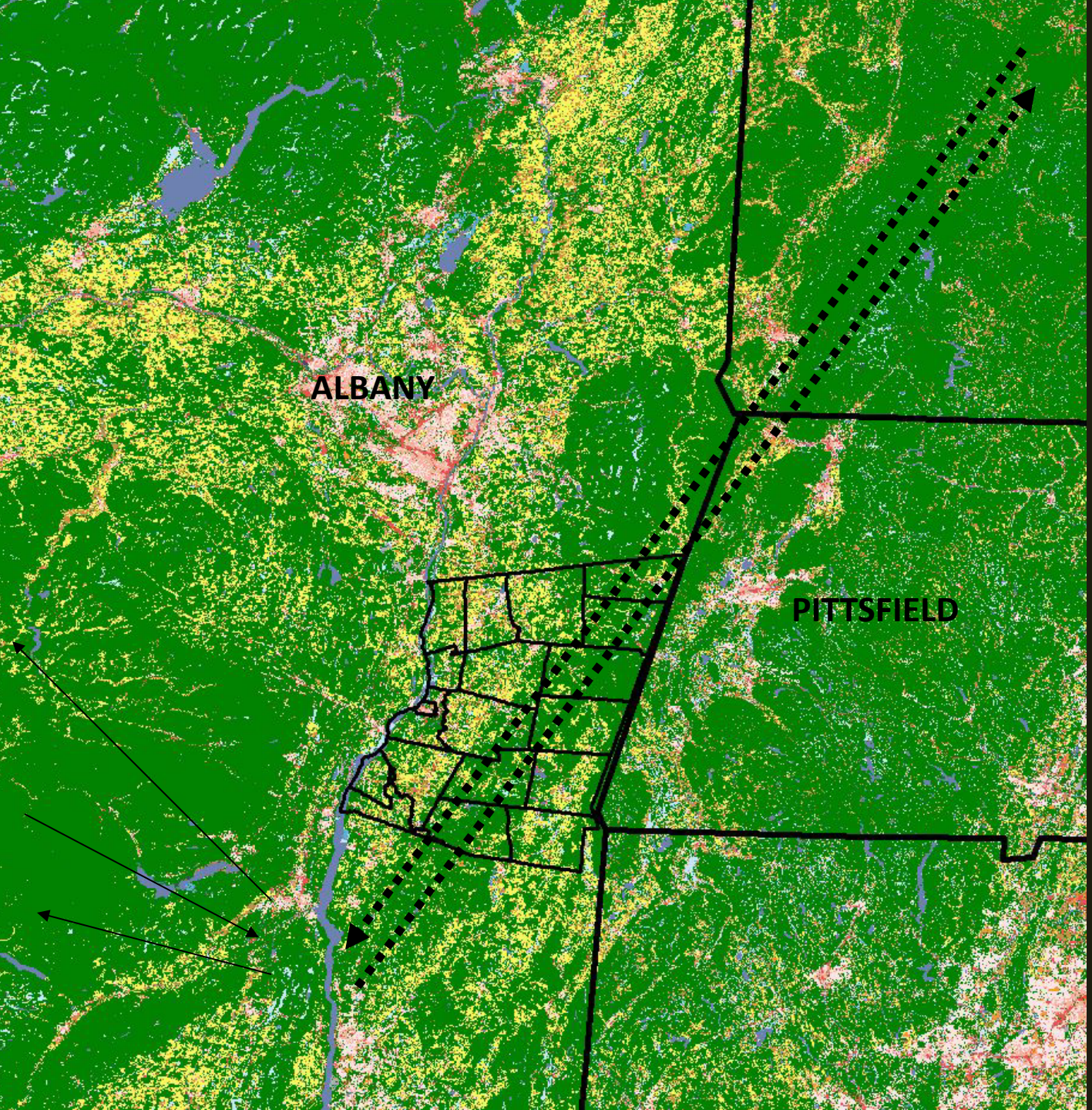
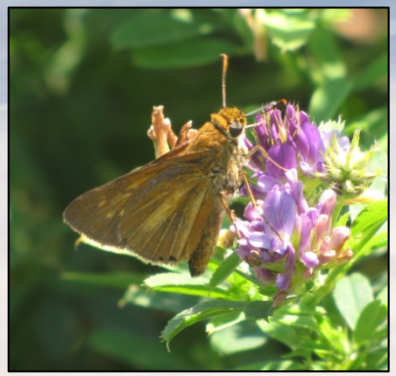
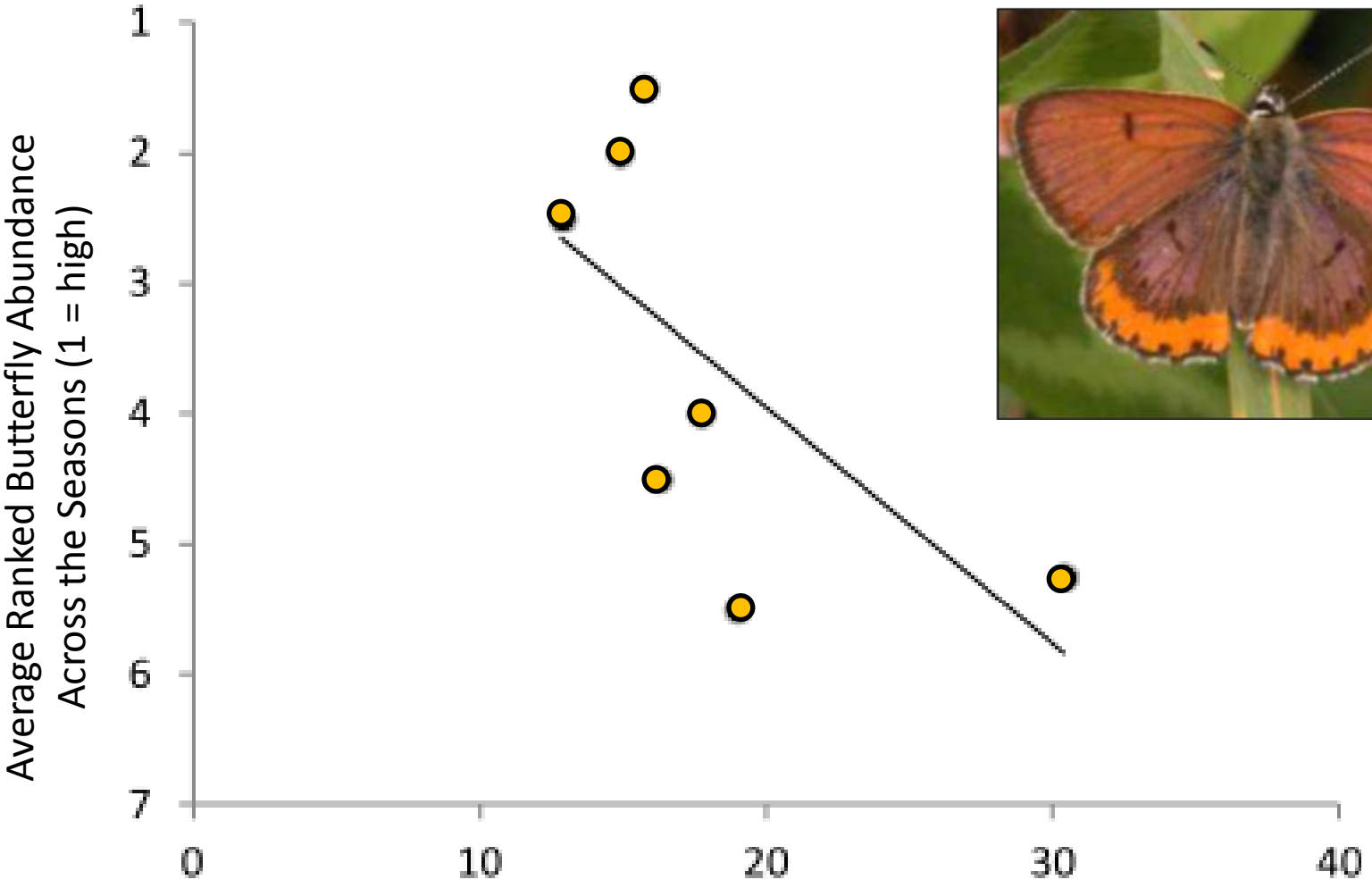


Context can happen at all scales.

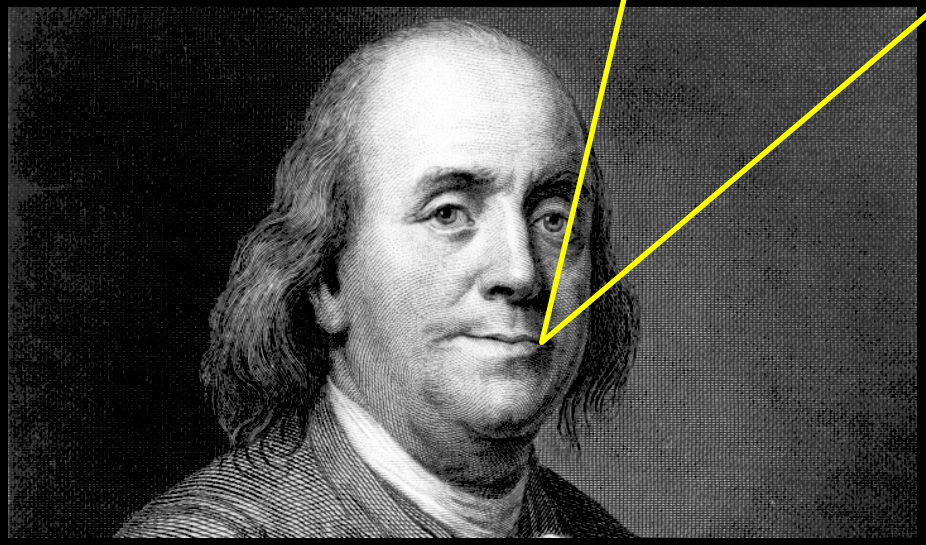
Resource juxtaposition can affect the relative conservation value of a field.


Kinderhook Creek
Mesick Rd
Mesick Rd
White Mills Rd
White Mills Rd
White Mills Rd
Stony Kill
Merwin Rd
Merwin Rd
Google




Average Ranked Butterfly Abundance
Across the Seasons (1 = high)
1
2
3
4
5
6
7
0
10
20
30
40
kms of road within 1,500m of focal orchard

Historical context matters



INTRODUCING

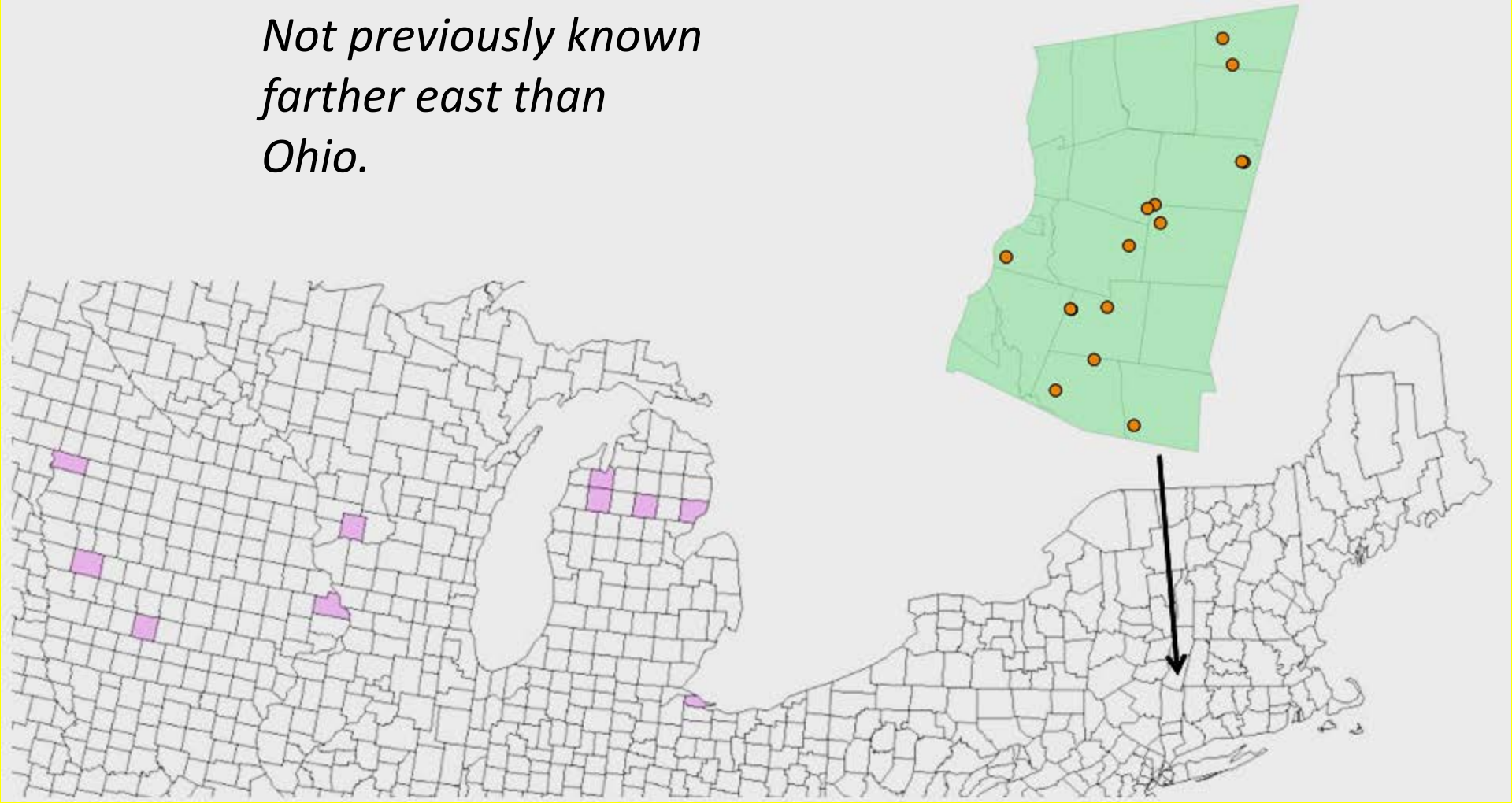
OUR NOMINATION FOR

THE COLUMBIA COUNTY ANT

Formica prociliata

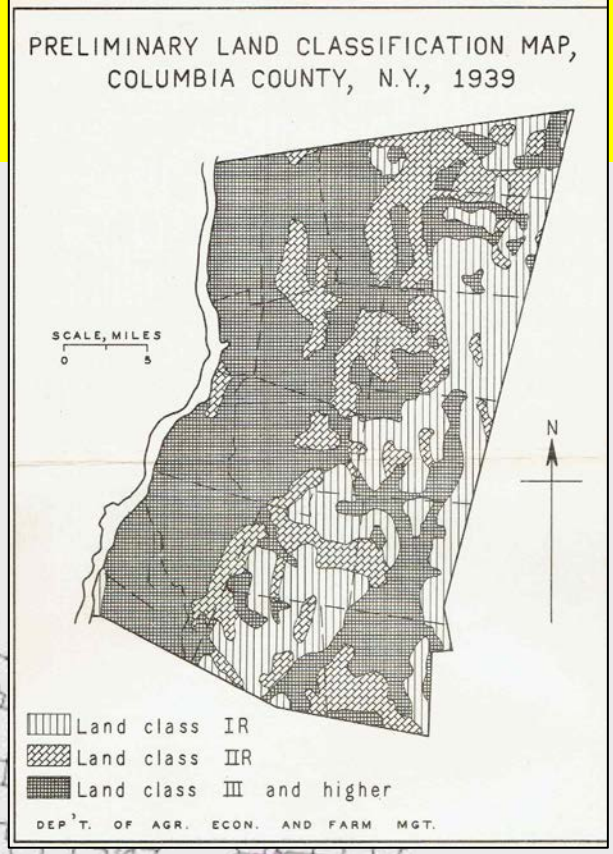
- Can make large colonies with conspicuous nests in open fields.

Not previously known farther east than Ohio.



Why in Columbia County?

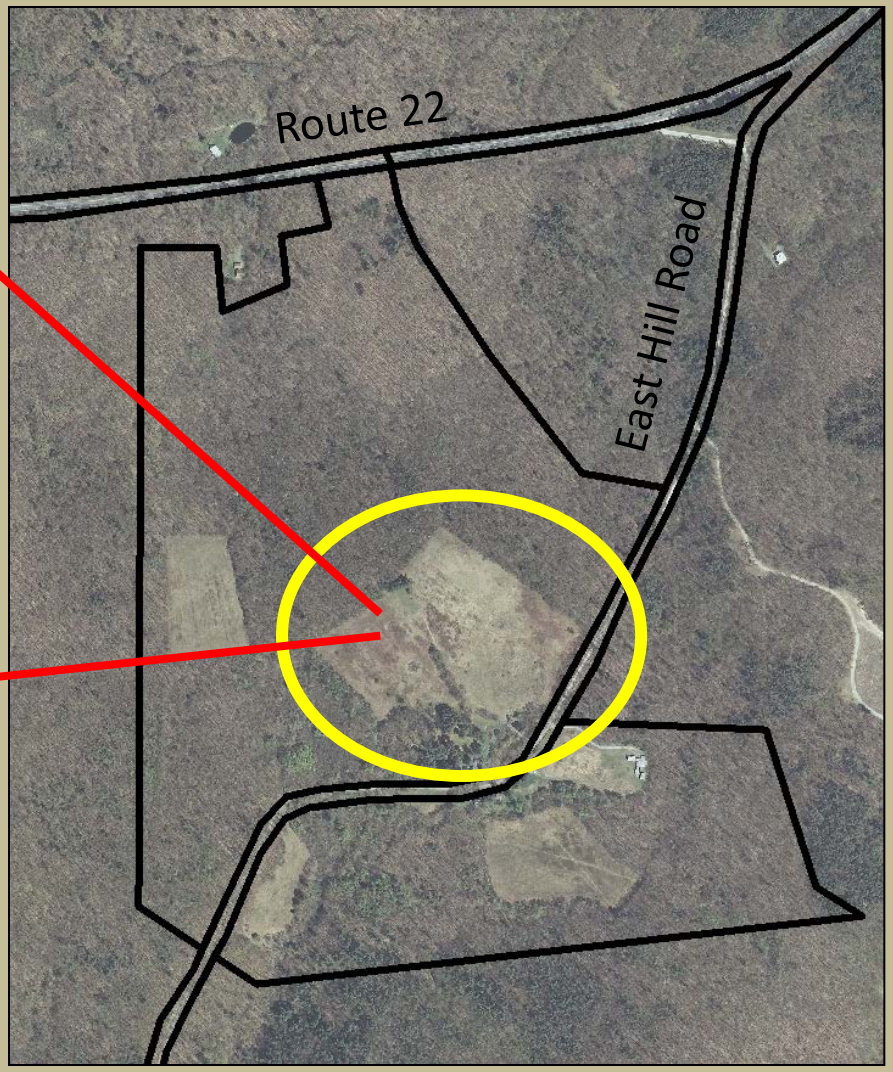
Map and ant work by Kyle Bradford.



Perhaps in part because of history.

Map and ant work by
Kyle Bradford.

2010

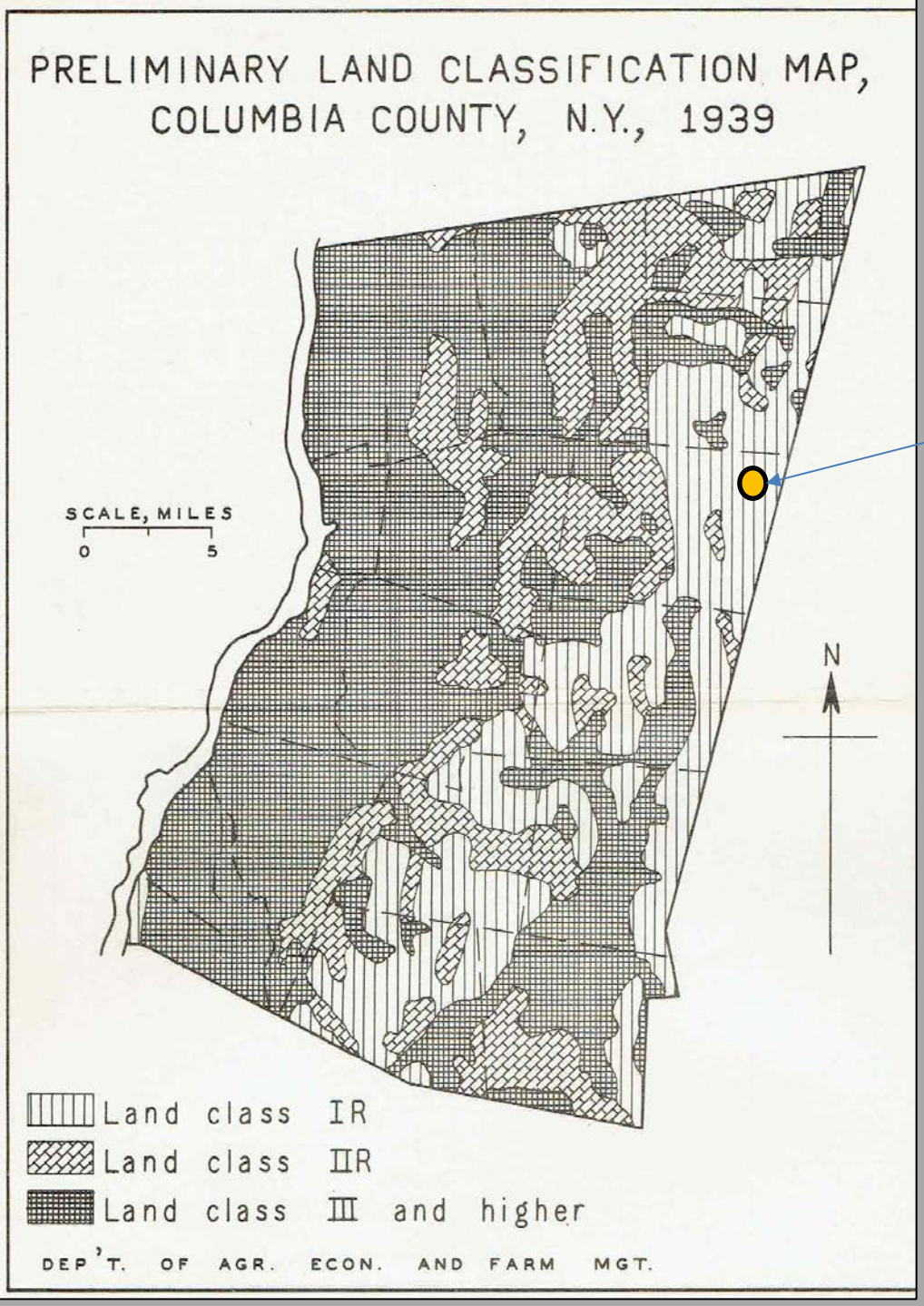


Edna St. Vincent Millay (1892-1950)

http://www.millaysociety.org

at **Steepletop** in Austerlitz (1925-1950), now a National Historic Landmark

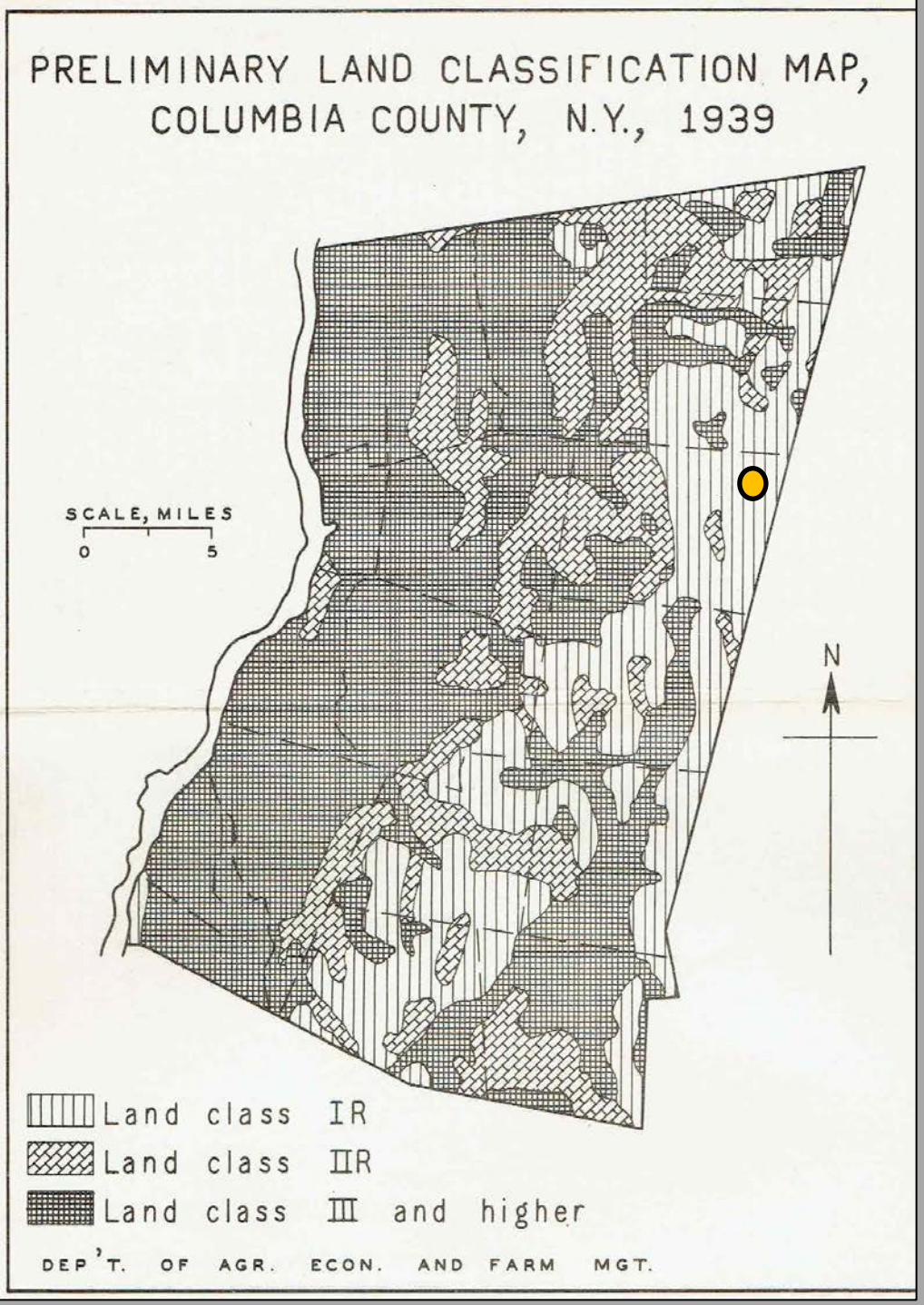
http://en. wikipedia.org



Steepletop

Edna St. Vincent Millay (1892-1950)

Columbia County Agricultural Survey, 1941



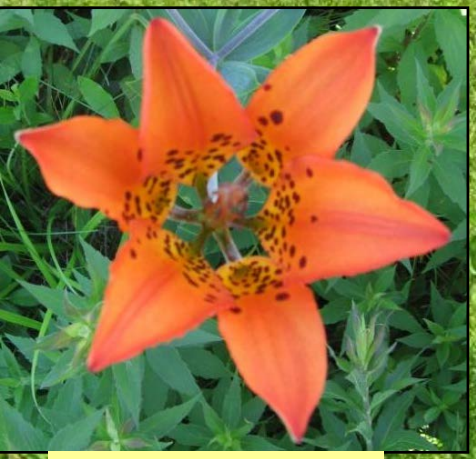
For a variety of reasons, Columbia County may have a relatively high density of agriculturally poor fields that are still at least partially open; from an ant's perspective, these might be special habitat.

And maybe not just for ants…

Columbia County Agricultural Survey, 1941

Pale Green Orchid
(Platanthera flava)

Closed Gentian *(Gentiana clausa)*



Wood Lily *(Lilium philadelphicum)*

Spiked Lobelia *(Lobelia spicata)*

Coral Hairstreak

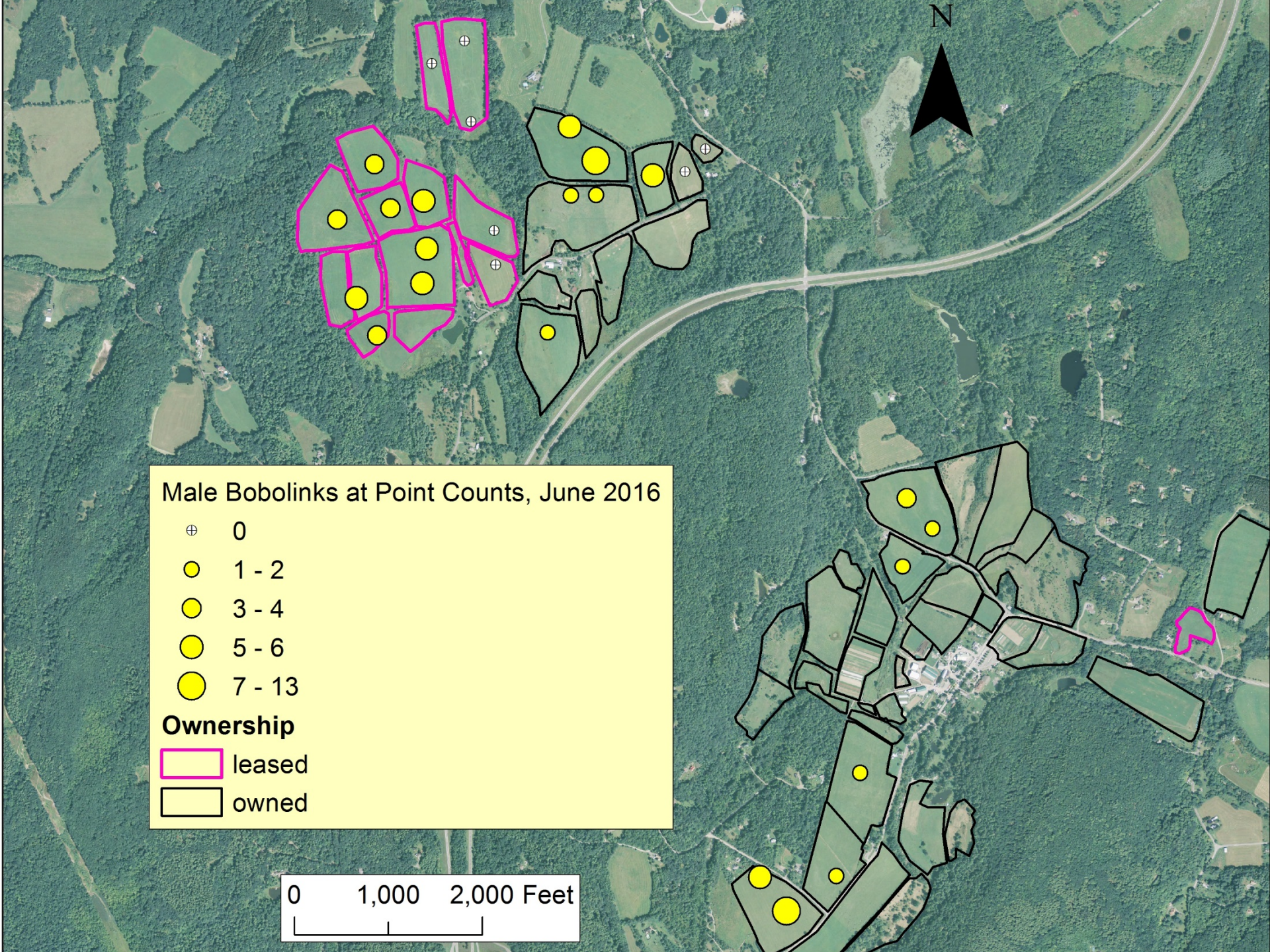
Aphrodite Frittilary

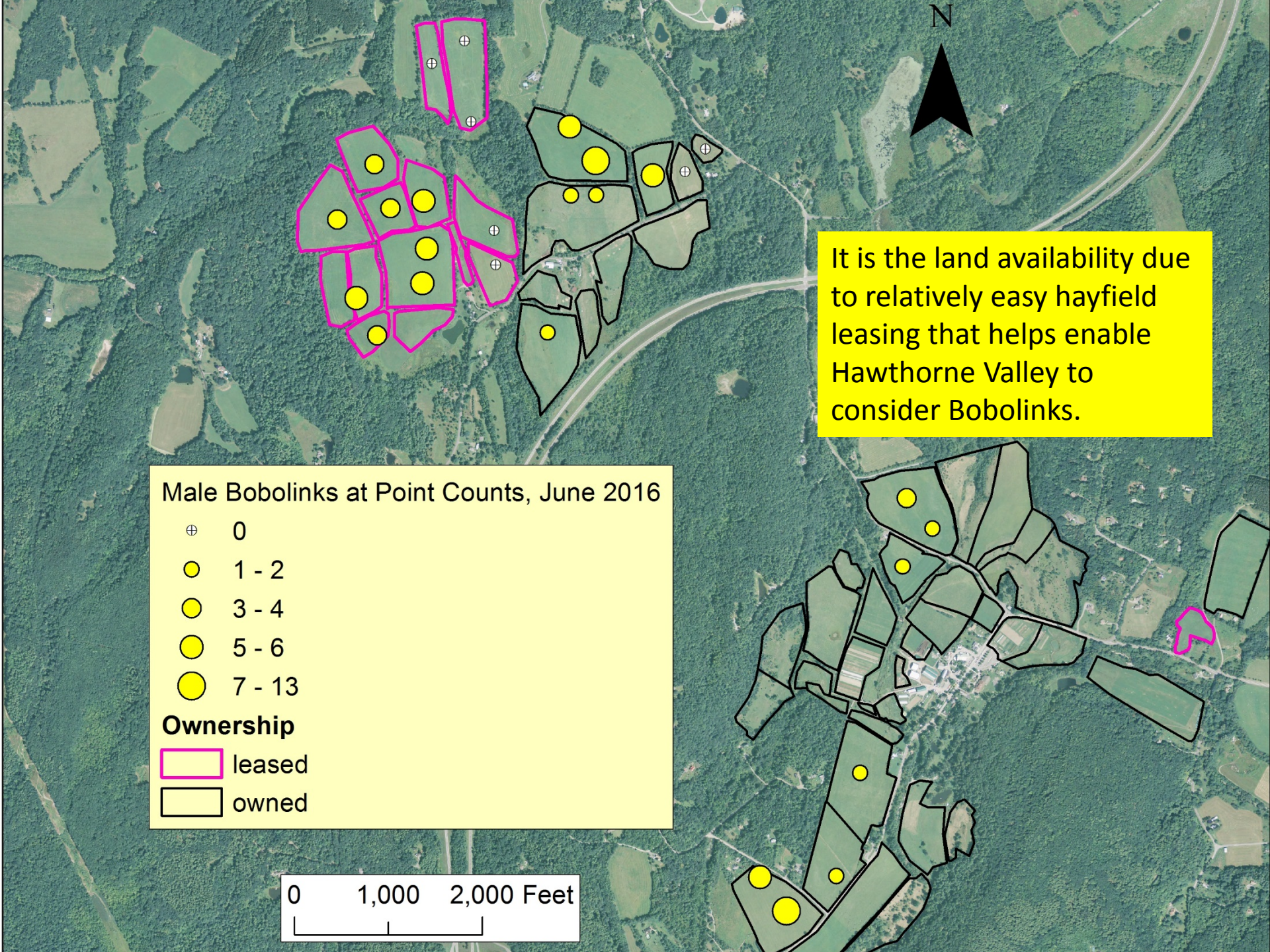
Grey Comma


Remember people?

Beyond the farmer,

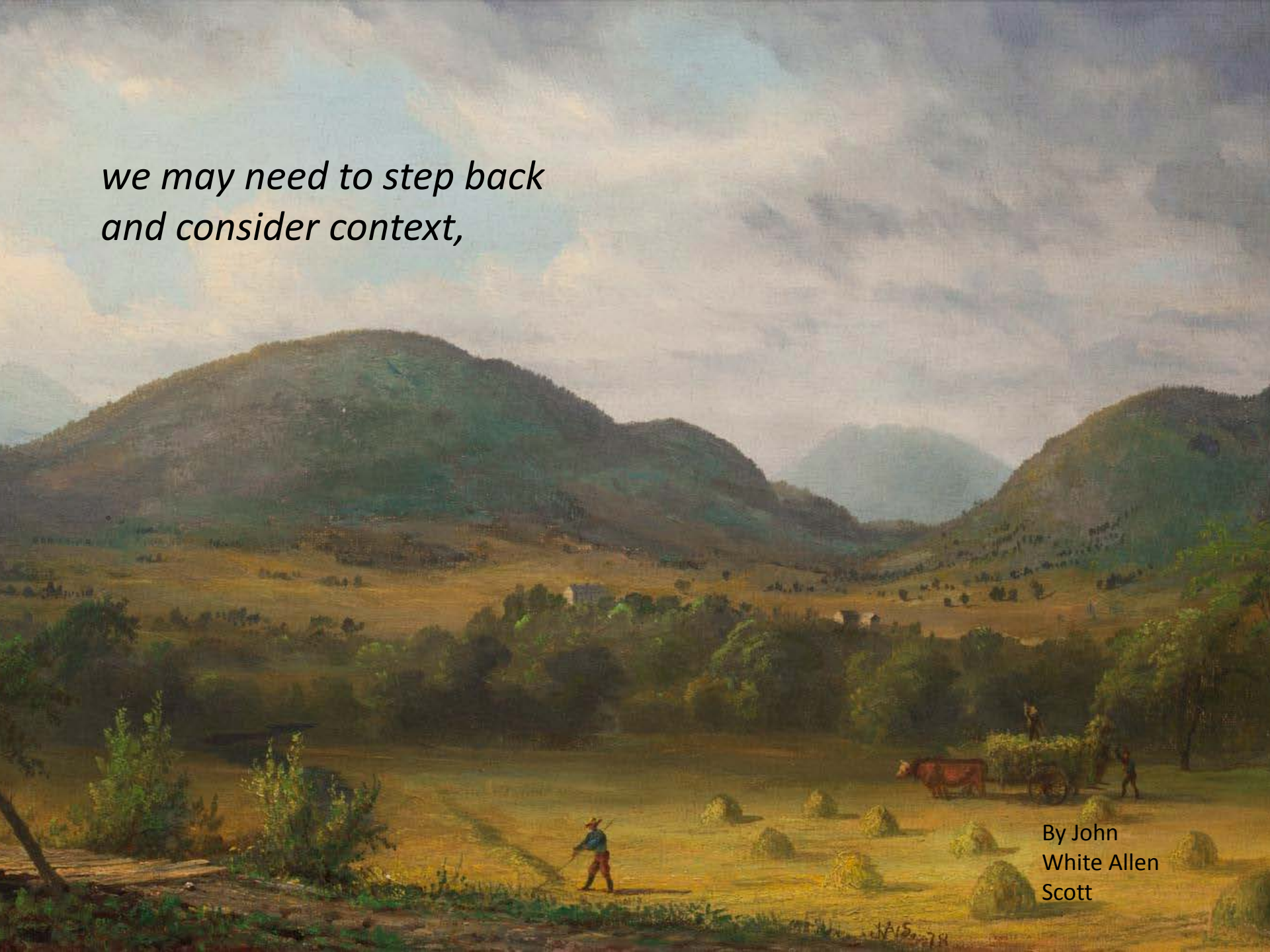
The social context is also important for determining the conservation value of fields.


N
Male Bobolinks at Point Counts, June 2016
0
1 - 2
3 - 4
5 - 6
7 - 13
Ownership
leased
owned
0
1,000
2,000 Feet


N
It is the land availability due to relatively easy hayfield leasing that helps enable Hawthorne Valley to consider Bobolinks.
Male Bobolinks at Point Counts, June 2016
0
1 - 2
3 - 4
5 - 6
7 - 13
Ownership
leased
owned
0
1,000
2,000 Feet


By George Inness
(1825 – 1894)
For us to form a functional vision of a grass-based food system that 'works' for people and for nature

we may need to step back and consider context,




we may need to understand the different sorts of fields and organisms in the landscape,
By Martin Johnson Heade

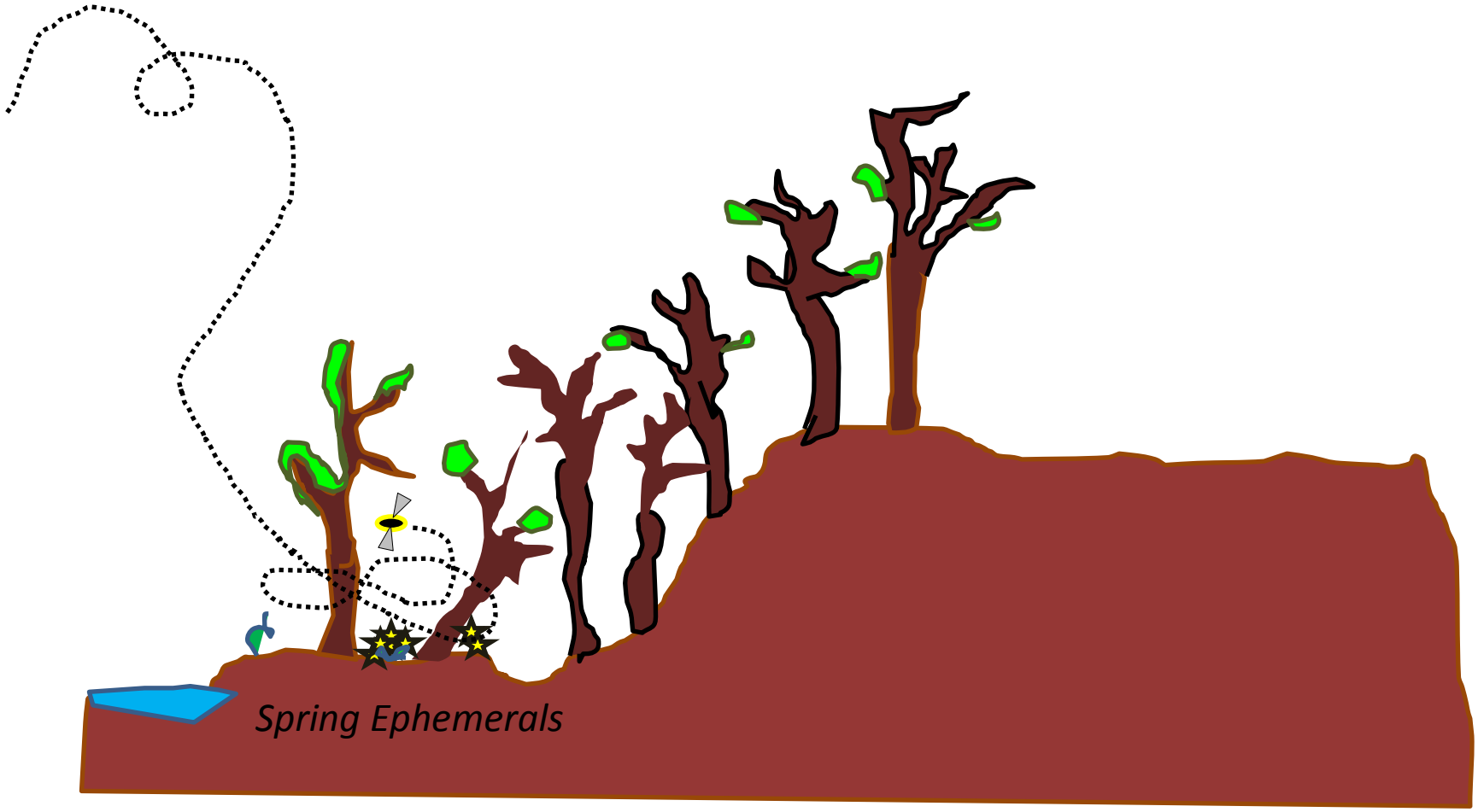

By George Inness
(1825 – 1894)
and we may need to specify what we want to get from our fields and understand the ecology and sociology of our interacting goals.

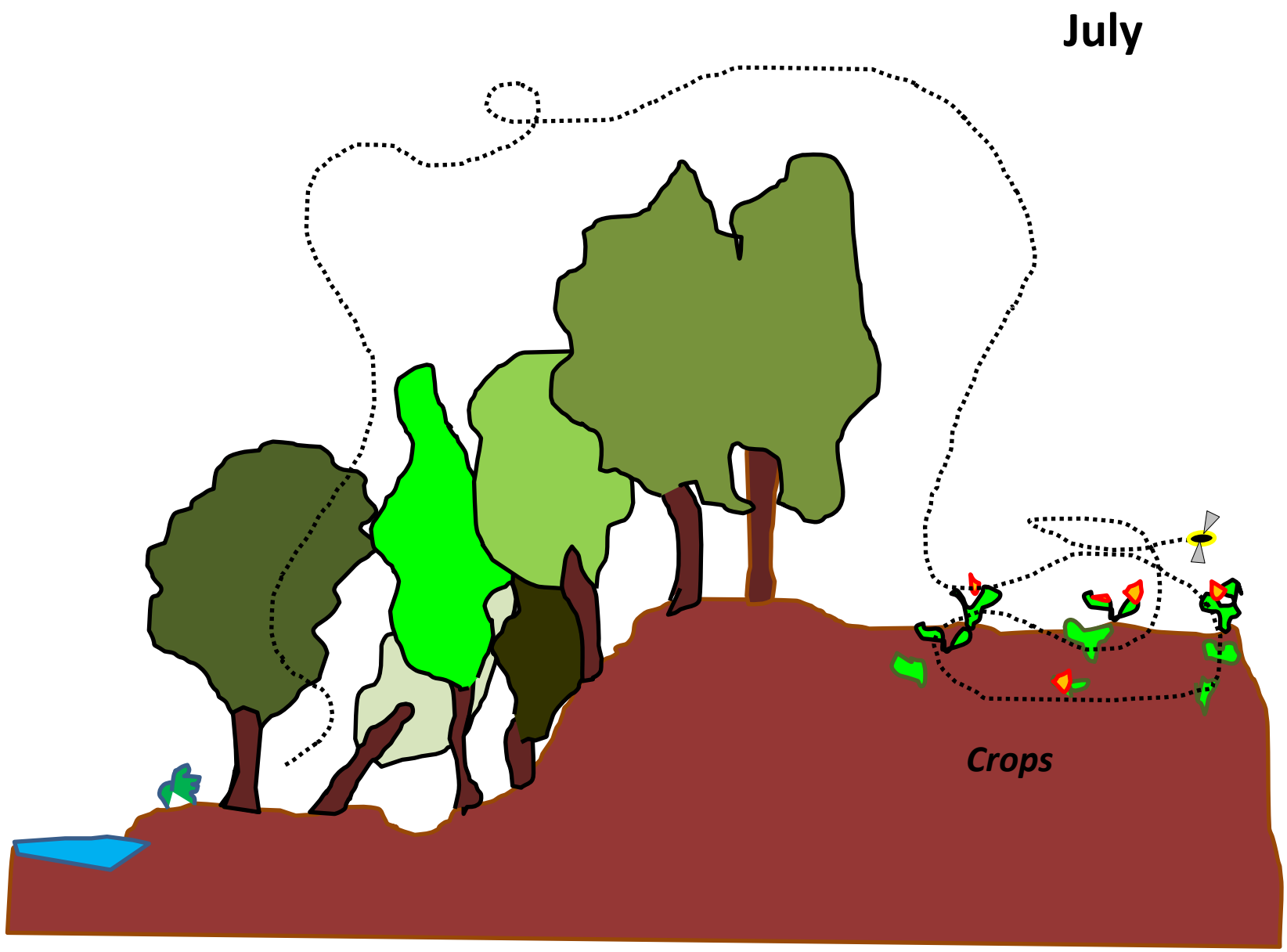
From titanoutletstore.com

It may not turn out looking like a 19th century pastoral, but we are probably going to need the landscape-scale cultural and ecological vision the Hudson River School implied and that, consciously or not, some communities in that landscape practiced.


Context helps
determine the

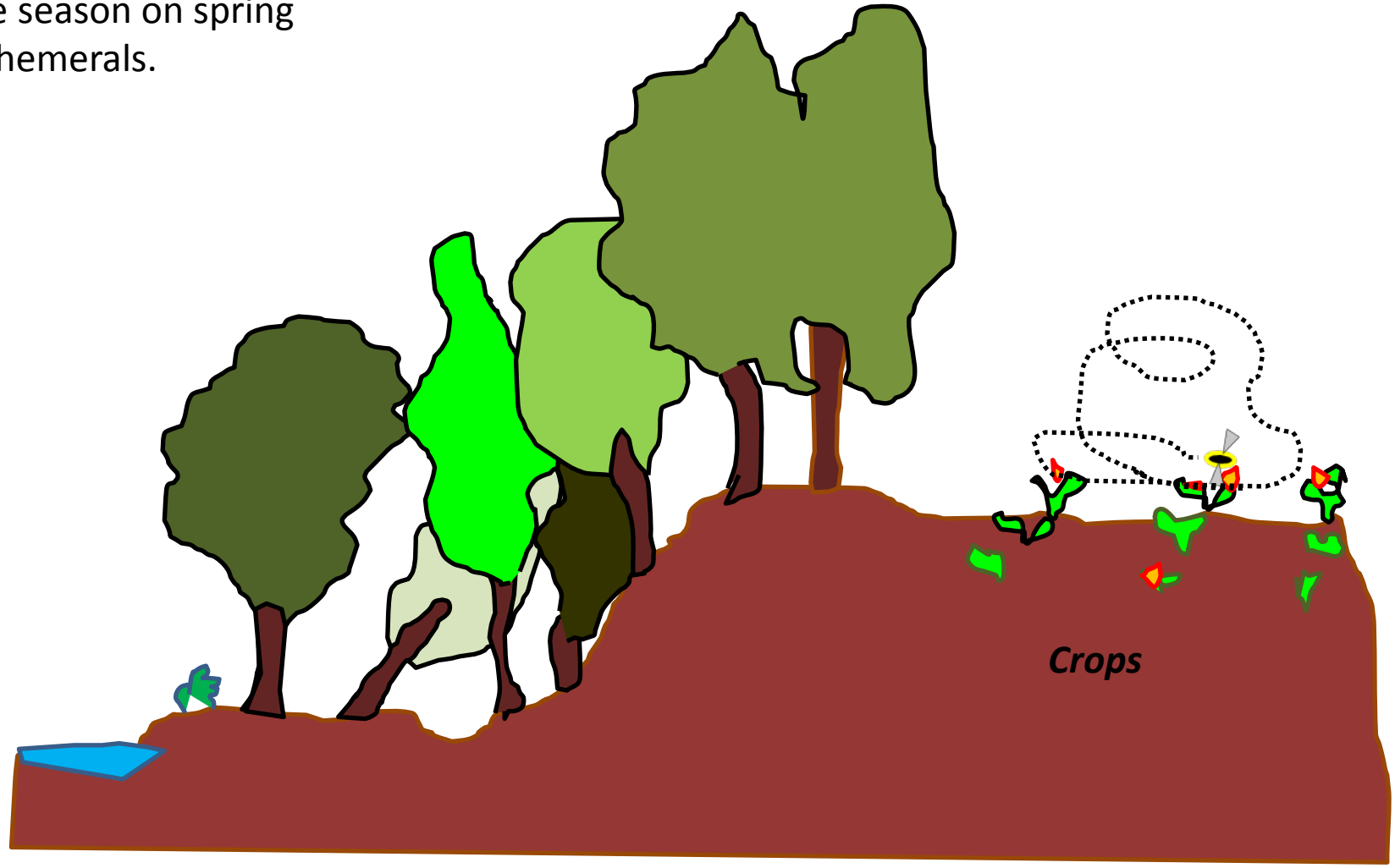
May




July
Crops

At least one quarter of the summer bee species in crops started the season on spring ephemerals.

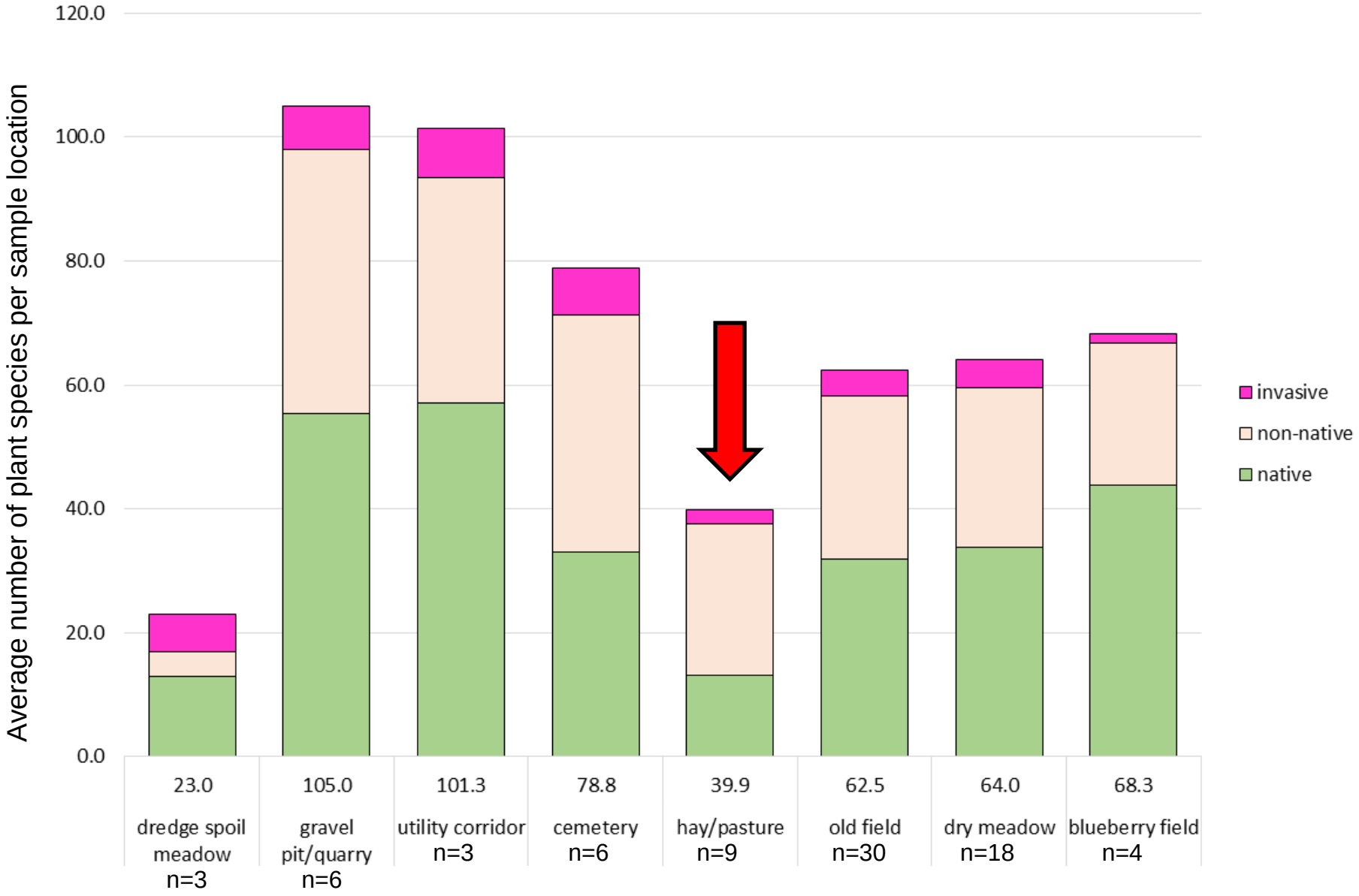
July



We are going to need to incorporate our new agronomic and ecological understandings together with the new realities of land ownership.

This evening can help you be part of that.

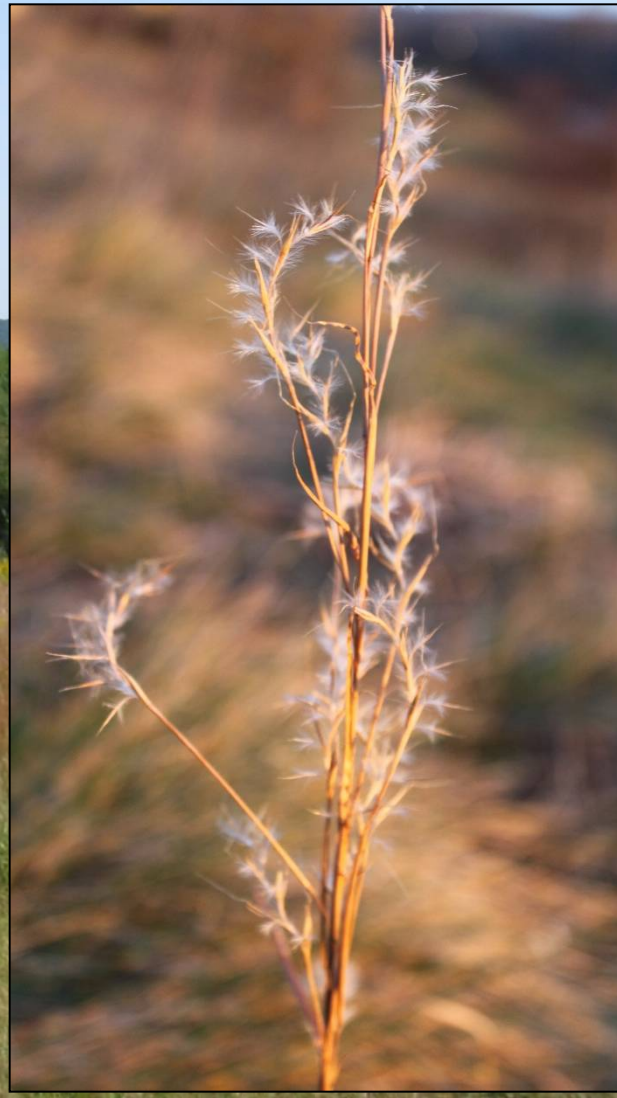
Comparative Plant Diversity and Composition in Upland Meadow Habitats



Little Bluestem (*Schizachyrium scoparium*)

Little Bluestem (*Schizachyrium scoparium*)

Little Bluestem (*Schizachyrium scoparium*)



Little Bluestem (*Schizachyrium scoparium*)

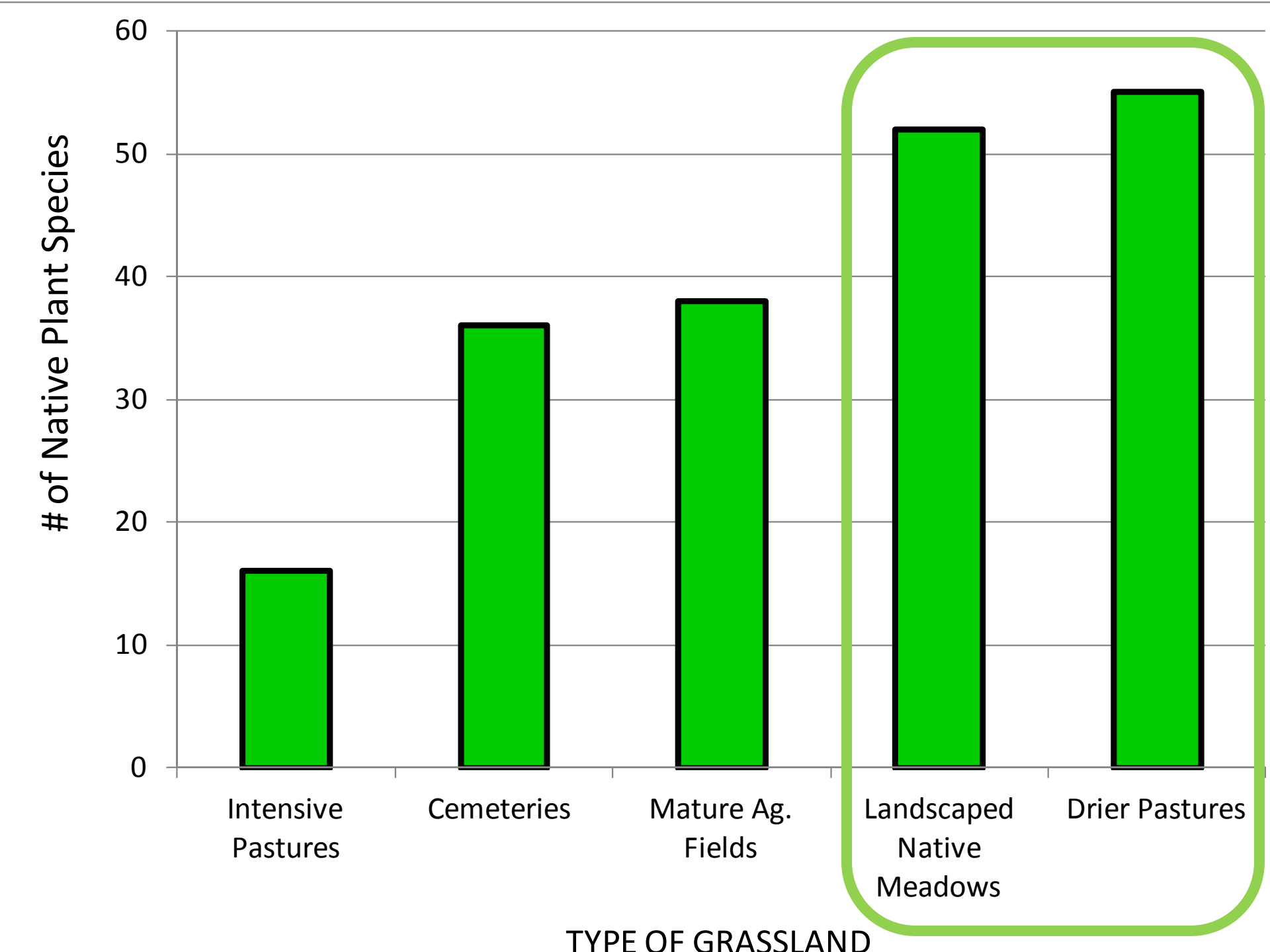
Indian Skipper

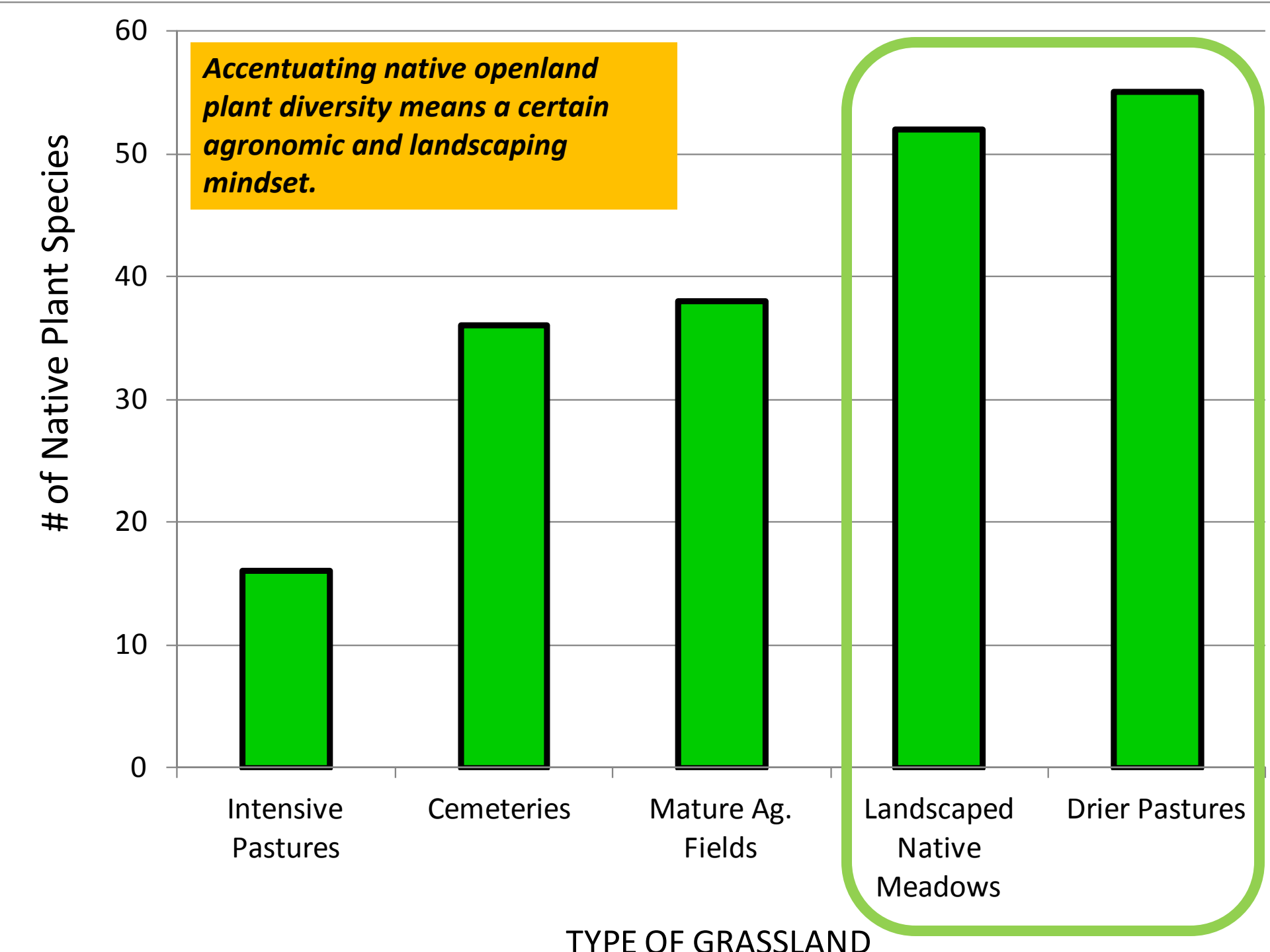
Little Bluestem
(*Schizachyrium scoparium*)

Cobweb Skipper

Management for Habitat Conservation:

- No fertilizer!
- Rotational mowing/grazing
- Mow after grassland birds have fledged
- Burning?


# of Native Plant Species
60
50
40
30
20
10
0
Intensive Pastures
Cemeteries
Mature Ag. Fields
Landscaped Native Meadows
Drier Pastures
TYPE OF GRASSLAND


Accentuating native openland plant diversity means a certain agronomic and landscaping mindset.
# of Native Plant Species
60
50
40
30
20
10
0
Intensive Pastures
Cemeteries
Mature Ag. Fields
Landscaped Native Meadows
Drier Pastures
TYPE OF GRASSLAND