

# Bird and pollinator friendly farming practices co-benefit clean water, healthy soils, and climate solutions in the Lake Champlain Basin

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## INTRODUCTION

**Issue:** Intensification of agricultural practices in recent decades has contributed to soil erosion, eutrophic conditions in many waterbodies, and biodiversity loss. Meanwhile, many birds species, especially aerial insectivores, and native pollinators have sharply declined.

**Question:** How can farmland management designed for bird and bee conservation affect the provision of other ecosystem services?

**Possible solution:** Working on-the-ground with farmers to strategically target management of low-production areas (e.g., wet, shady) or margins (i.e., hedgerows and fallow fields), grasslands, forest patches, and riparian areas can have high environmental benefit with low impact on economic return. Establishing and maintaining habitat even in marginal areas provides co-delivery of enhanced ecosystem services, including soil conservation, water quality, and flood risk mitigation (Bradbury et al. 2010).

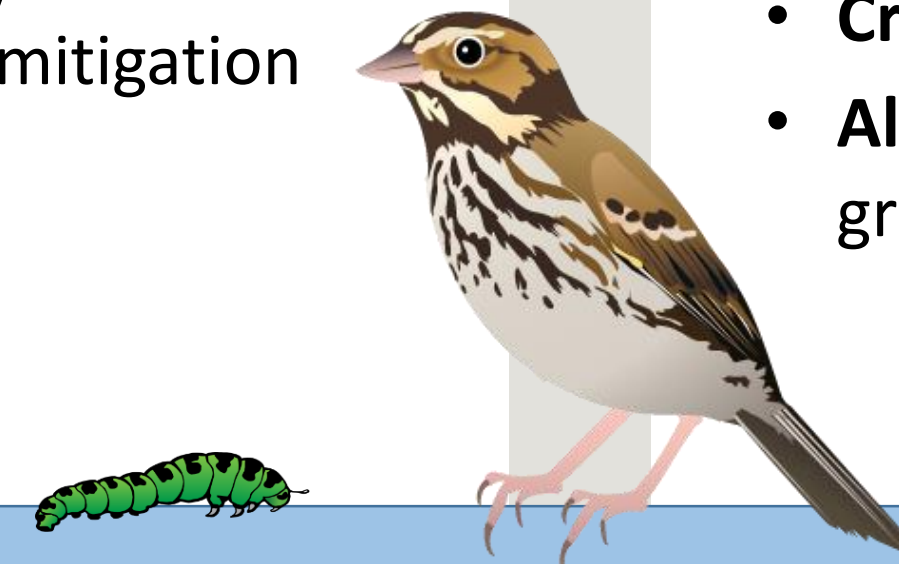


## APPLIED CONSERVATION METHODS

Examples of practices that provide critical forage, shelter, and breeding resources that can increase the abundance and diversity of bird and pollinator species up to **10-100-fold from conventional farming**:

- **Plant diverse native trees, shrubs, and perennials** that have co-evolved with our native fauna. 90% of insects are specialists on one species or genus of native plants!
- **Establish riparian buffers.** They connect habitat fragments and benefit water and soil.
- **Remove invasive plants.** They host few to no insects, offer poor nutrition, and replace natives.
- **Reduce pesticide use.** These chemicals are toxic and harmful to wildlife.
- **Install bird boxes, bee houses, and raptor perches** to supplement nest cavities and control pests.
- **Plant wildflowers** for native pollinators. This can increase long-term crop yield and farmer profit.
- **Create structurally complex hedgerows.** They can harbor 2-3X more bird species than bare margins.
- **Alter hayfield mowing.** Wait until after Aug 1 or before June 1, then wait 65 days to allow obligate ground nesting birds the chance to breed.

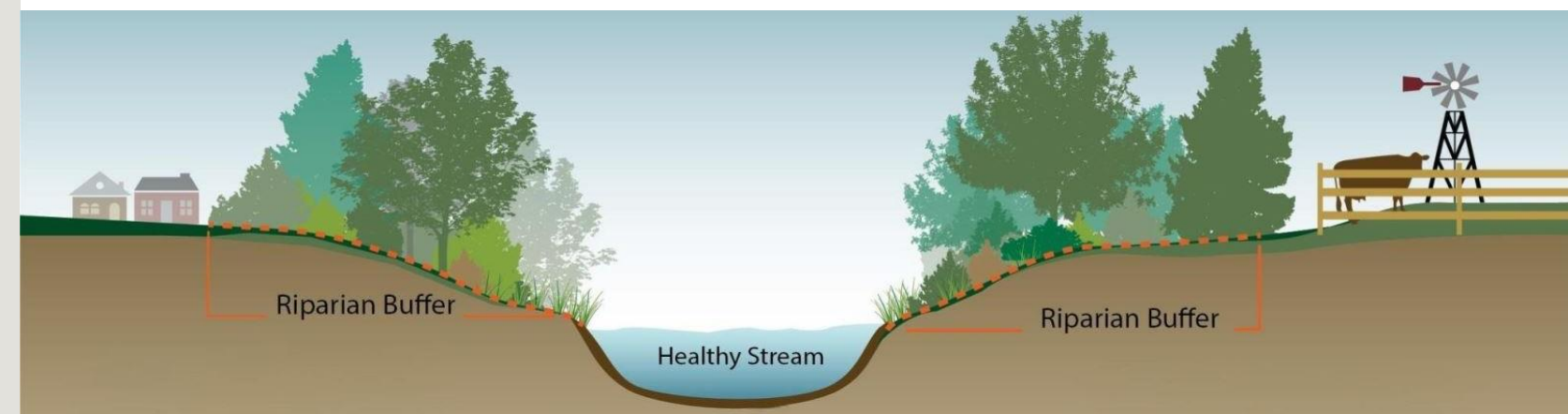
Pywell et al. 2012; Stanton et al. 2018; Tallamy, 2017; Garibaldi et al. 2014; Heath et al. 2017; Perlut et al. 2006.



## SOIL AND WATER BENEFITS

When you conserve land for the birds and bees, there are complementary effects for soil and water:

- Converting just 10% of a crop-field to diverse native perennial vegetation can reduce sediment transport by 95% and total phosphorous and nitrogen loss by 90% and 85%, respectively (Schulte et al. 2017).
- Re-establishing grassland from cropland can regenerate soil organic matter, improving soil health and microbial biota, nutrient and soil carbon storage, and flood regulation (De et al. 2020).
- Riparian buffers intercept surface run-off and mitigate flooding to co-benefit water quality while sequestering carbon as woody material grows.
- Cover crops reduce wind and water erosion and adding earlier blooming, higher floral rewards into seed mixes can support more wildlife. Cultivating diverse crops can increase plant functional diversity, which affects primary production and nutrient uptake (Bradbury et al. 2018).



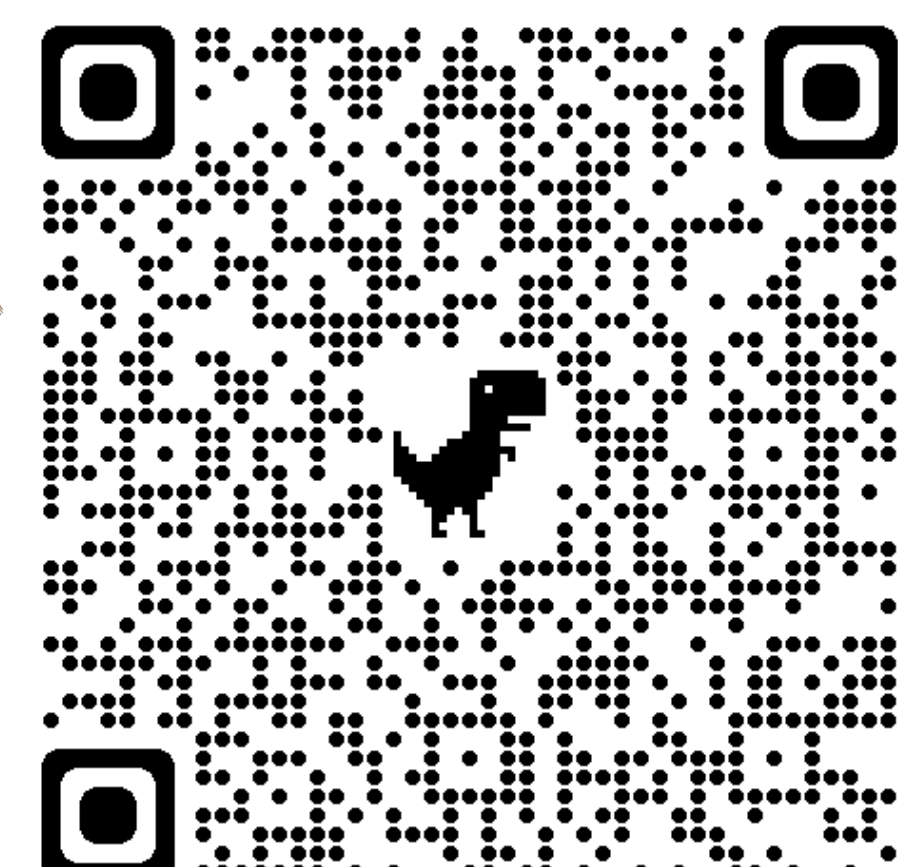
## IMPLICATIONS FOR CLIMATE AND FUTURE WORK

Our work aims to support long-term productivity of the land and financial sustainability of farm operations. We seek to better understand their motives, interests, and abilities to incorporate conservation practices.

Farmland management that considers bird and pollinator conservation also provides enhanced ecosystem services including soil conservation, water quality improvement, flood risk mitigation, and pollination. Planting wooded buffers is a natural solution to fight climate change threats and benefits hydrological processes (Seavy et al. 2009). Compared with their annual row-crop counterparts, native perennial plant communities enhance hydrologic regulation and foster more carbon sequestration and storage, and support populations of beneficial organisms.

Integrating resource patches and managing field edges for habitat provides forage and nesting habitat, overwintering sites for bees, and generally fosters greater biological functioning, resilience, and stability with more diverse native communities.

To learn more about Bird and Bee Friendly Farming, visit [vt.audubon.org/farming](http://vt.audubon.org/farming) or scan the QR code.

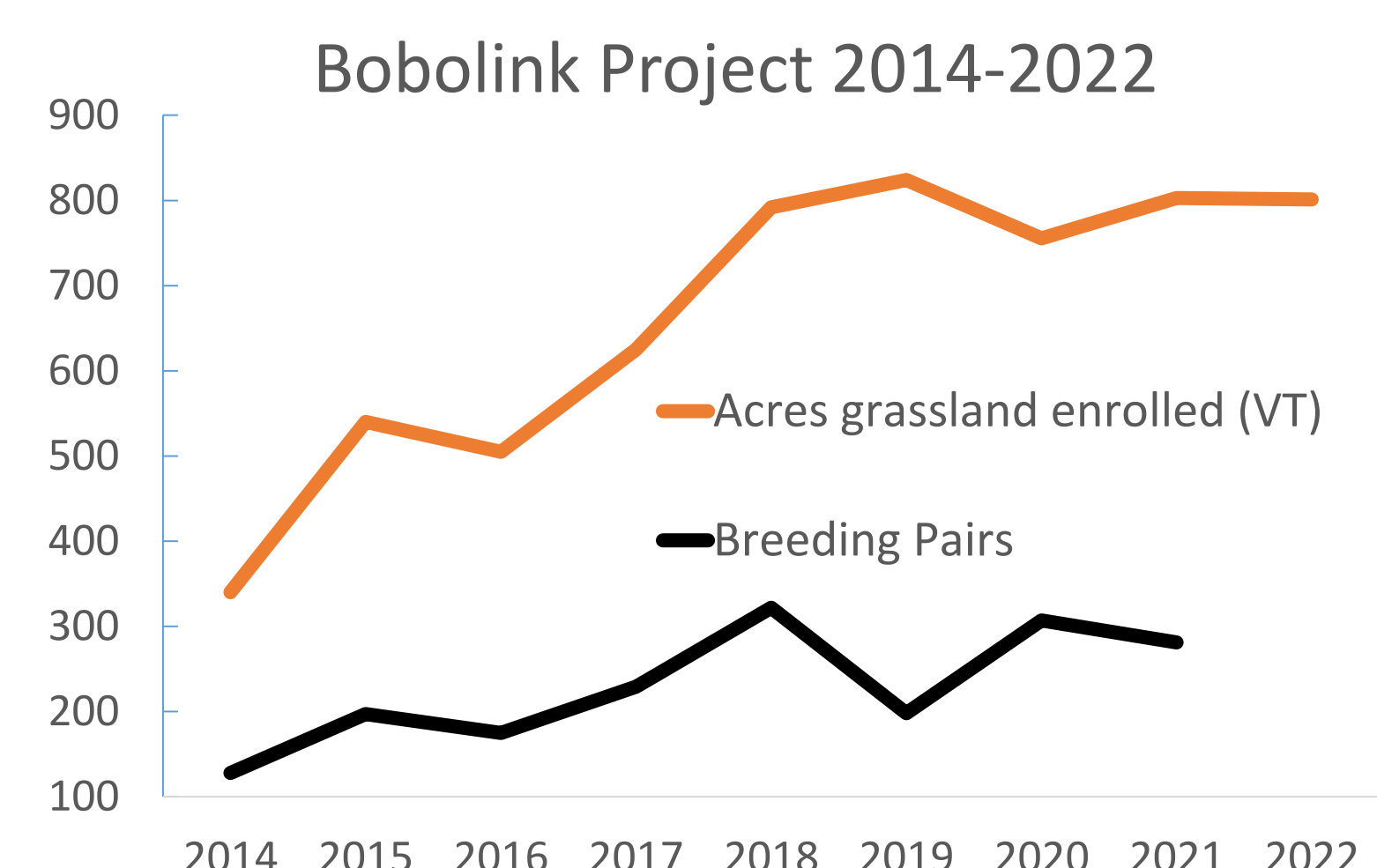


## “RESULTS”

Vermont farms that have taken action on recommended management:

- 9 Ben and Jerry's Caring Dairy Farms
- Intervale Center and Farms (Digger's Mirth Collective; Intervale Community Farm, Sugar Snap, Hallow Herb), Burlington
- Isham Farm, Williston
- Philo Ridge Farm, Charlotte

**Bobolink Project** – Financial compensation for delayed or early-late hayfield mowing. In 2022, 1000+ acres enrolled and 16 of 20 farms in VT




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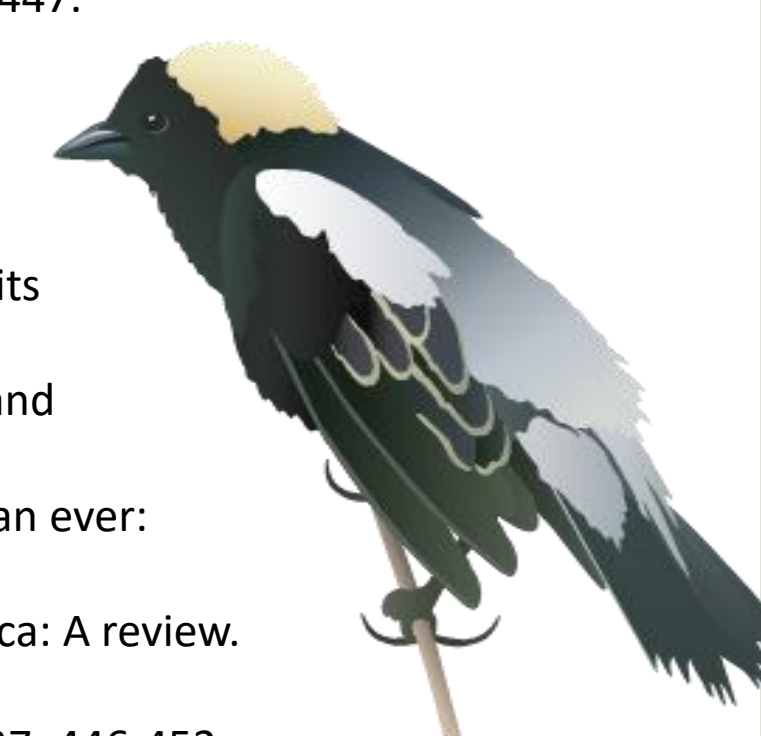
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