The Intentional & the Accidental:
The Role of Cultivated and Uncultivated Flowers in Supporting Plant Diversity and Insect Abundance on Farms.

Hawthorne Valley Farm Report

Farmer-Ecologist Research Circle
Feb. 2026

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Farm Description

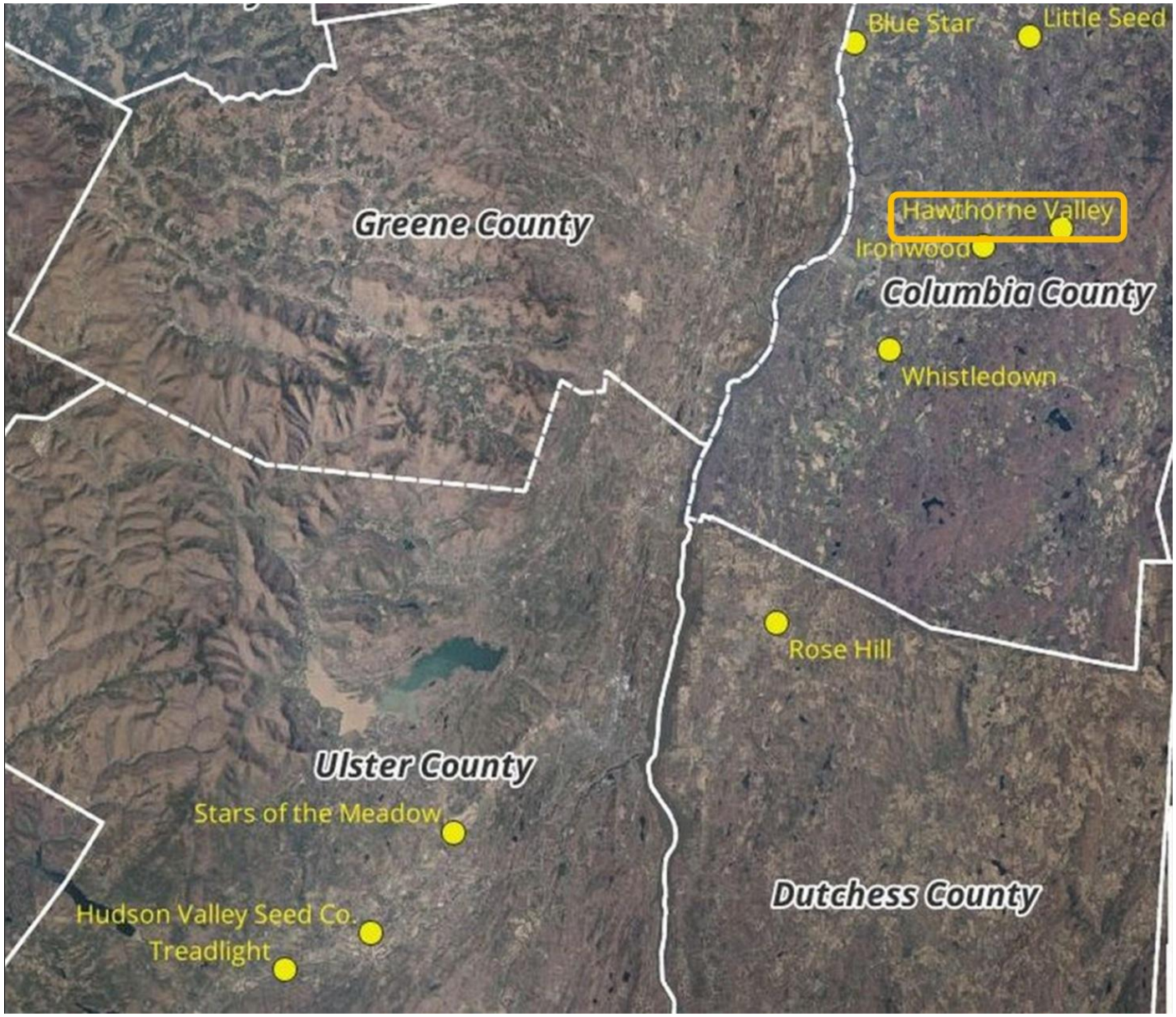


Figure 1. Hawthorne Valley is located in the center of Columbia County.

Including its leased land, Hawthorne Valley is a roughly 900 acre diversified biodynamic farm based in Hillsdale NY. It produces market vegetables, dairy products, beef, pork, chickens, and small grains. You-pick cut flowers are also grown as part of its CSA shares. We studied approximately 2.1 acres of this farm. Our study area was in the so-called Corner Garden, home to some of Hawthorne Valley's vegetable production, its cut flowers, and a beetle bank and other "beneficial habitats" planted with perennial flowers and grasses to support beneficial insects. The center portion of the study area was primarily in some stage of produce production. This was surrounded by a mowed area, relatively narrows strips of seeded annual cut flowers and perennial wildflowers, and a fenceline (Fig. 2).

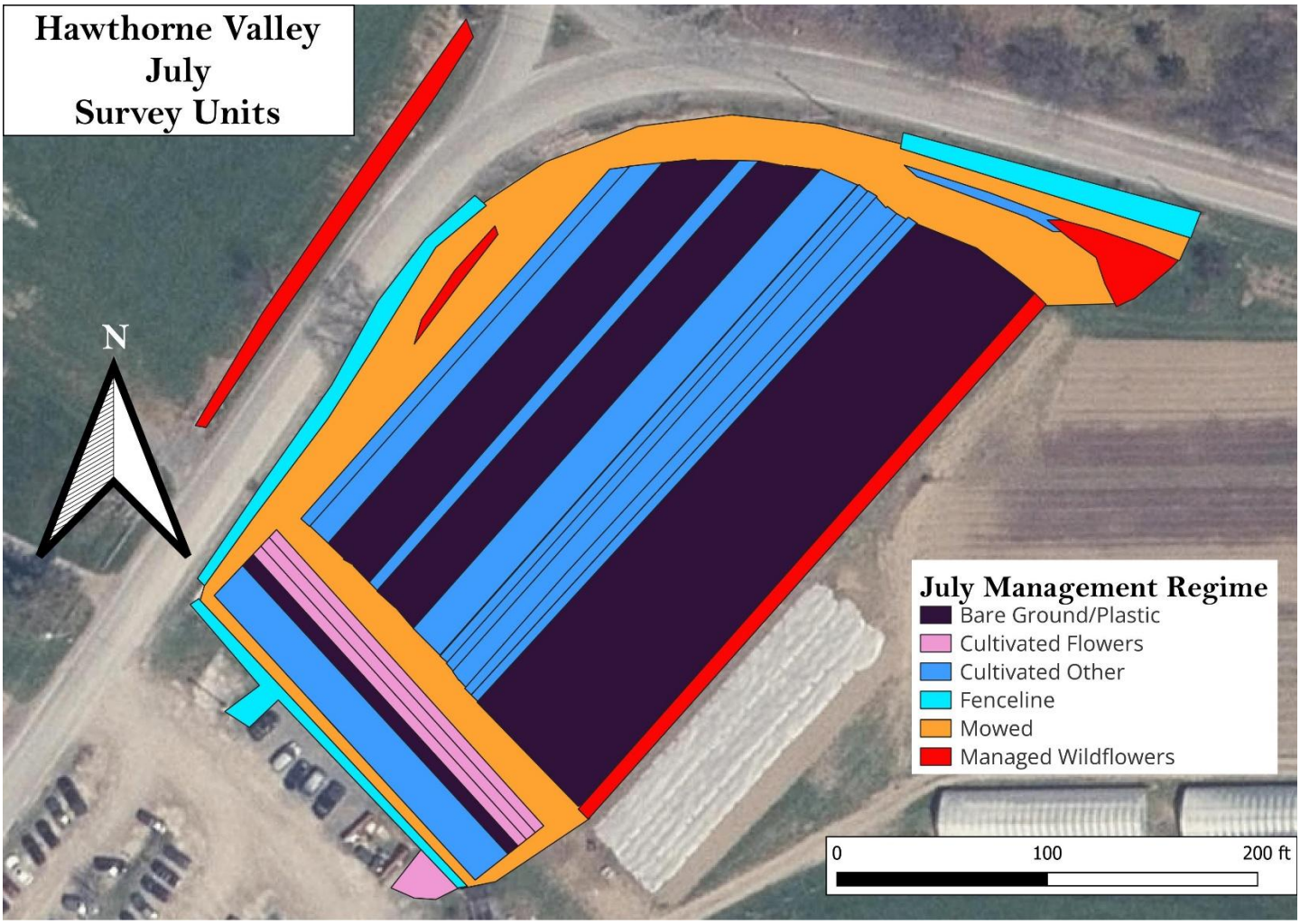


Figure 2. Generalized management regimes in the Hawthorne Valley survey units during July.

Botany

A total of 129 different flowers were found within the study area at Hawthorne Valley (see Appendix). Please remember that this does NOT represent a full botanical inventory of the studied portion of this farm – it only includes those plants actually seen in flower during our three survey outings. The plant list in the Appendix includes all species we have observed in bloom during our 2025 inventories in the survey units on July 3 ("June"), July 31 ("July"), and Sept. 13 ("Aug/Sept"). The list is organized alphabetically by common name. It also includes rows with (1) the scientific name of each species, (2) its native status (when known), (3) its regional rarity, (4) its ubiquity across the survey units at Hawthorne Valley during its flowering season, (5) duration of its observed flowering season at this farm, and (6) the specific months when we saw it flowering. Please see the caption of the Appendix for more details.

Only one regionally uncommon native plant species, Germander, was found wild-growing in the study area at Hawthorne Valley Farm. It bloomed in late July along the fenceline and in the beetle bank, where it had not been seeded/planted. Ten other regionally rare or uncommon native species were found in bloom in the beetle bank and/or other beneficial habitats, where they had been seeded/planted. These included

Butterfly Milkweed, Common Sneezeweed, Flat-topped White Aster, Great Blue Lobelia, Narrow-leaved Mountain-mint, Ox-eye Sunflower, Showy Goldenrod, Smooth Blue Aster, Wild Bergamot, and Wild Senna.

Overall, Hawthorne Valley Farm had 16 unique flower species (12% of a total of 129 species) which were not observed at any other farm during our study in 2025. Half of these were wild-growing, non-native plants. Most of the rest were native and non-native cultivated flowers.

Figure 3 shows the number of flowering species at Hawthorne Valley during our three monthly visits in 2025. The species were grouped into four categories: wild-growing, native species; wild-growing, non-native species and wild-growing species we were unable to identify with certainty as native; cultivated native species; and cultivated non-native species.

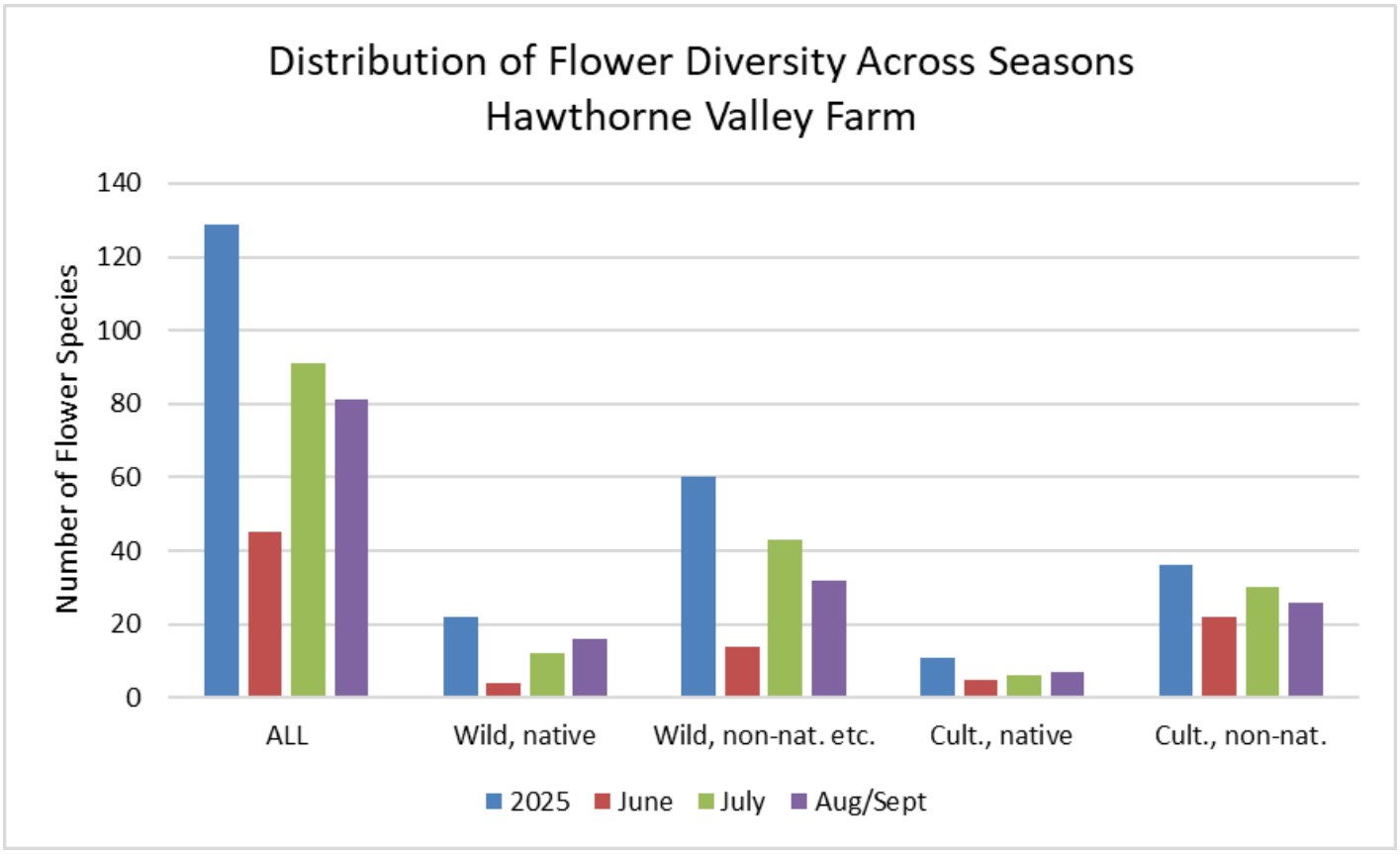


Figure 3. Distribution of flower diversity across the season at Hawthorne Valley Farm

Most of the plants that bloomed from June to Aug/Sept at Hawthorne Valley were wild-growing plants. At most other farms we studied in 2025 the diversity of all plants in bloom increased from June to Aug/Sept, however at Hawthorne Valley the diversity of all flowers peaked in July and dropped again in late summer. Furthermore, the difference between the diversity of flowers in early summer and mid summer was more extreme than on any other farm, with twice as many species in bloom on July 31 (“July”) than on July 3 (“June”). However, the pattern within the group of wild-growing native species was similar to that on most other farms: a steady increase of flower diversity throughout the season.

Figure 4 illustrates how much more wild-growing plants (compared to cultivated ones) contributed to the flower diversity in the survey units at Hawthorne Valley across the season. Surprisingly, even in the intentionally installed beetle bank and wildflower patches, the diversity of wild-growing flowers was almost always higher (and never less) than the diversity of seeded flowers during all sampling dates.

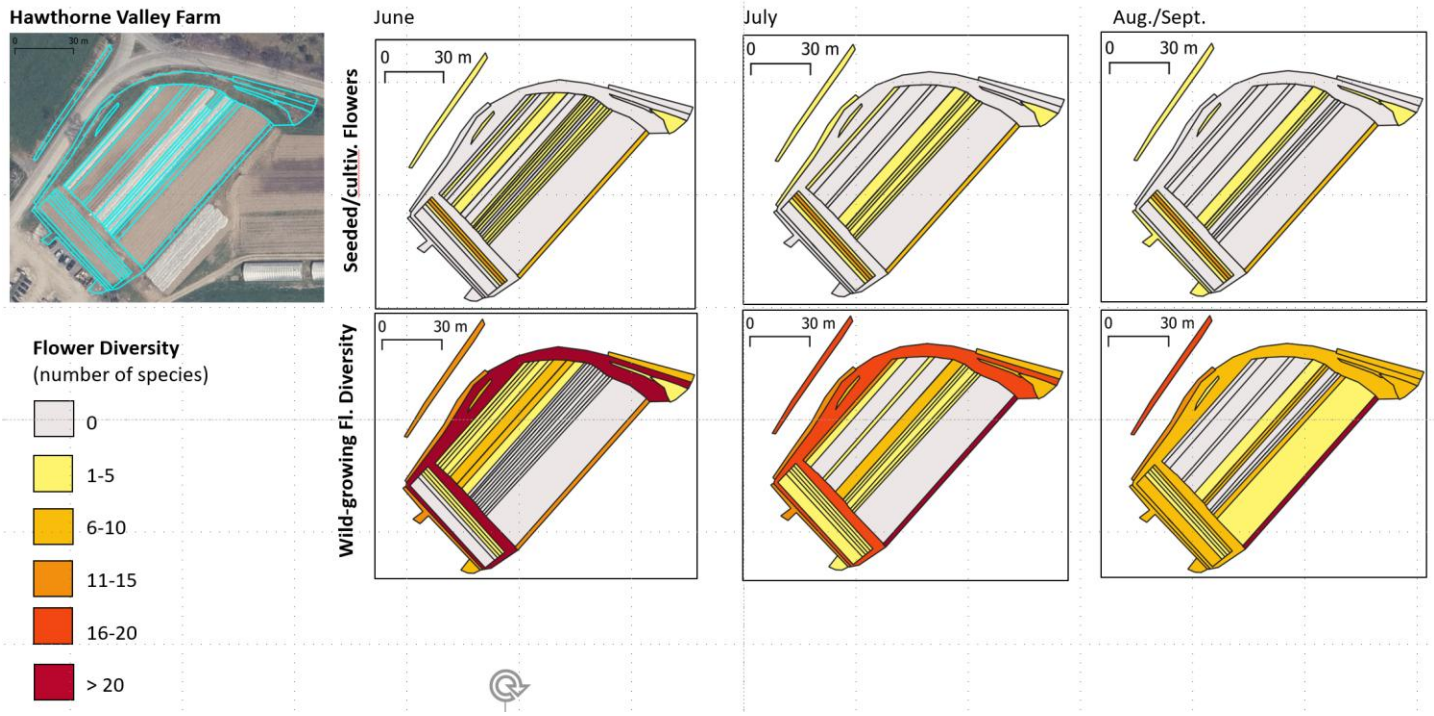


Figure 4. Comparative diversity of seeded/cultivated flowers (above) and wild-growing flowers (below) in the survey units at Hawthorne Valley.

Figure 5 illustrates that flower diversity and abundance change quite independently of each other between survey units and across time. Survey units can have a high abundance of the flowers of a few species, for example in some of the vegetable/culinary herb beds at various times throughout the season. They can also have a lot of species with few flowers each, for example the mowed lawn around the beds in June.

Flower Visitor Community.

Hawthorne Valley tended to be about average in rates of insect observation, except for the relatively high rate of wasp observations and comparatively low rates of 'other bees' (Figure 6).

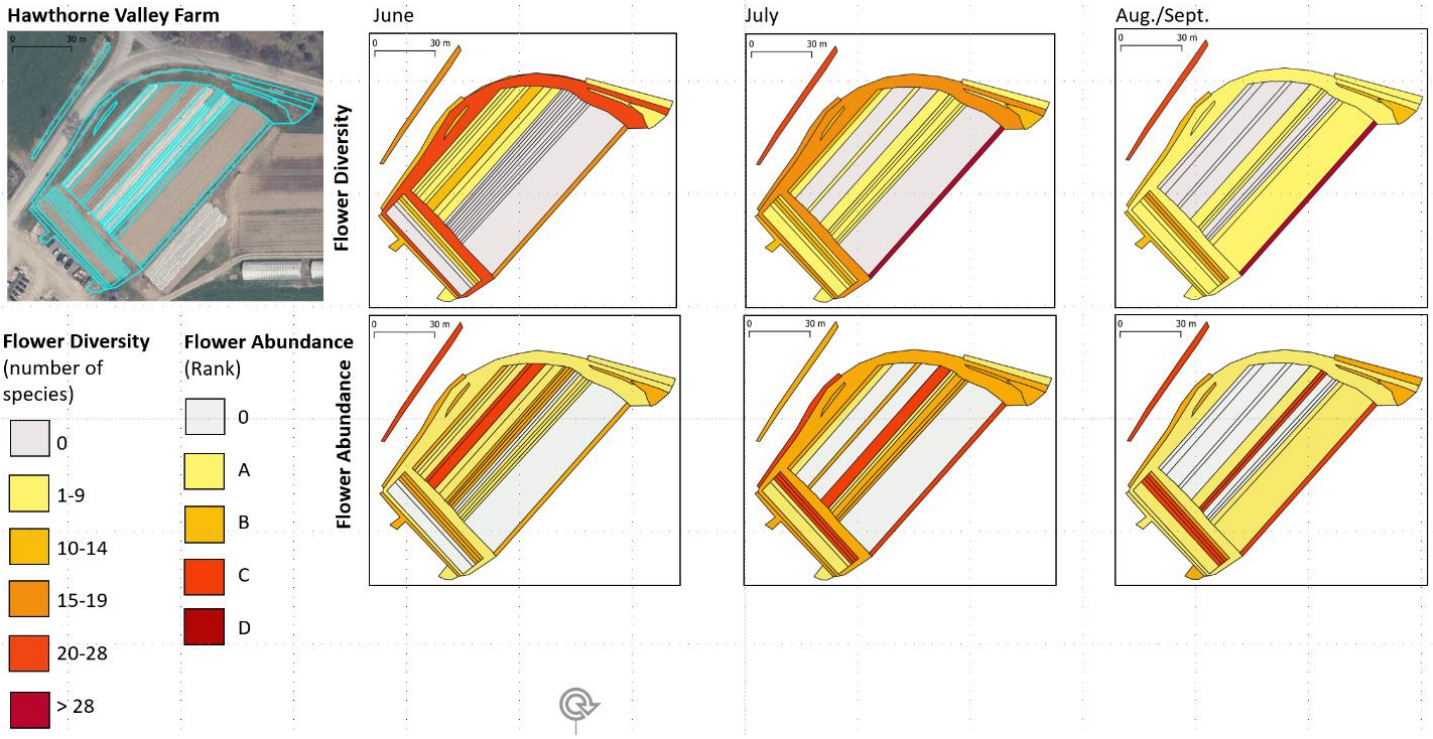


Figure 5. Flower diversity (row of maps above) and abundance (row of maps below) in the survey units at Hawthorne Valley. Claudia ranked flower abundances from A (least) to D (most) and also had a zero category.

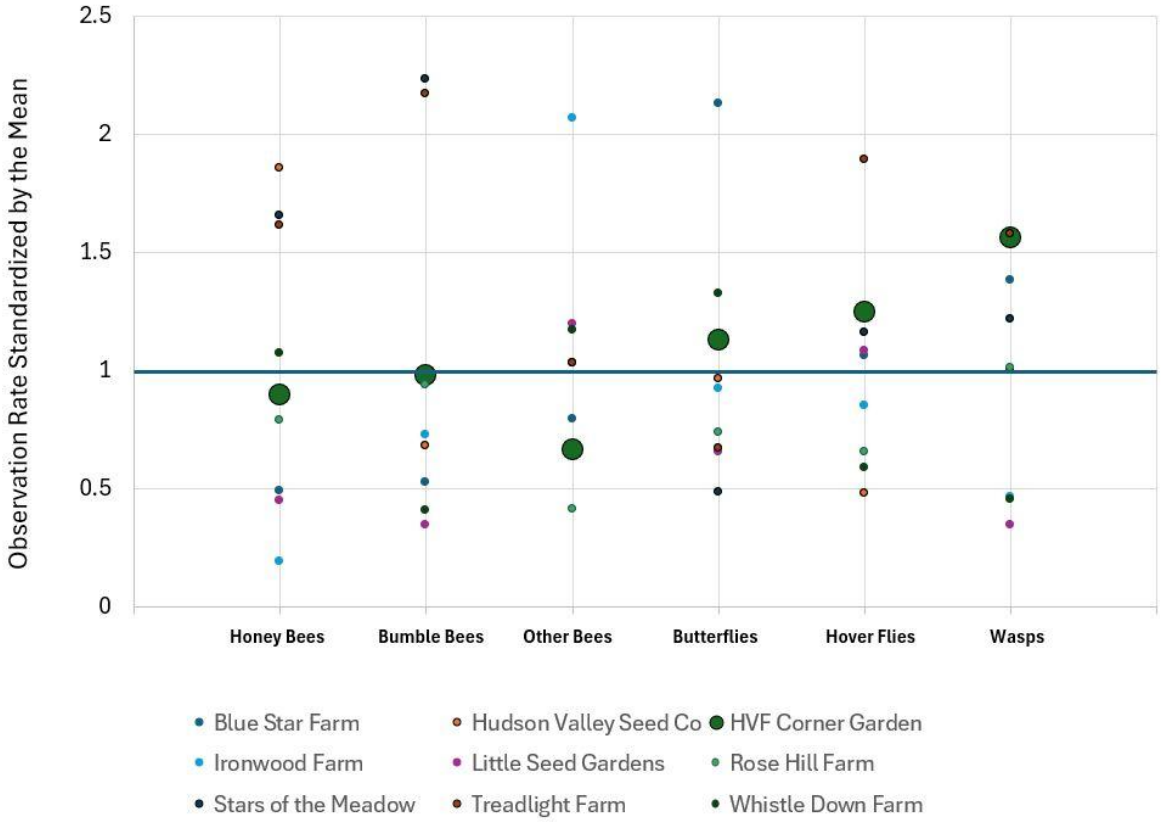
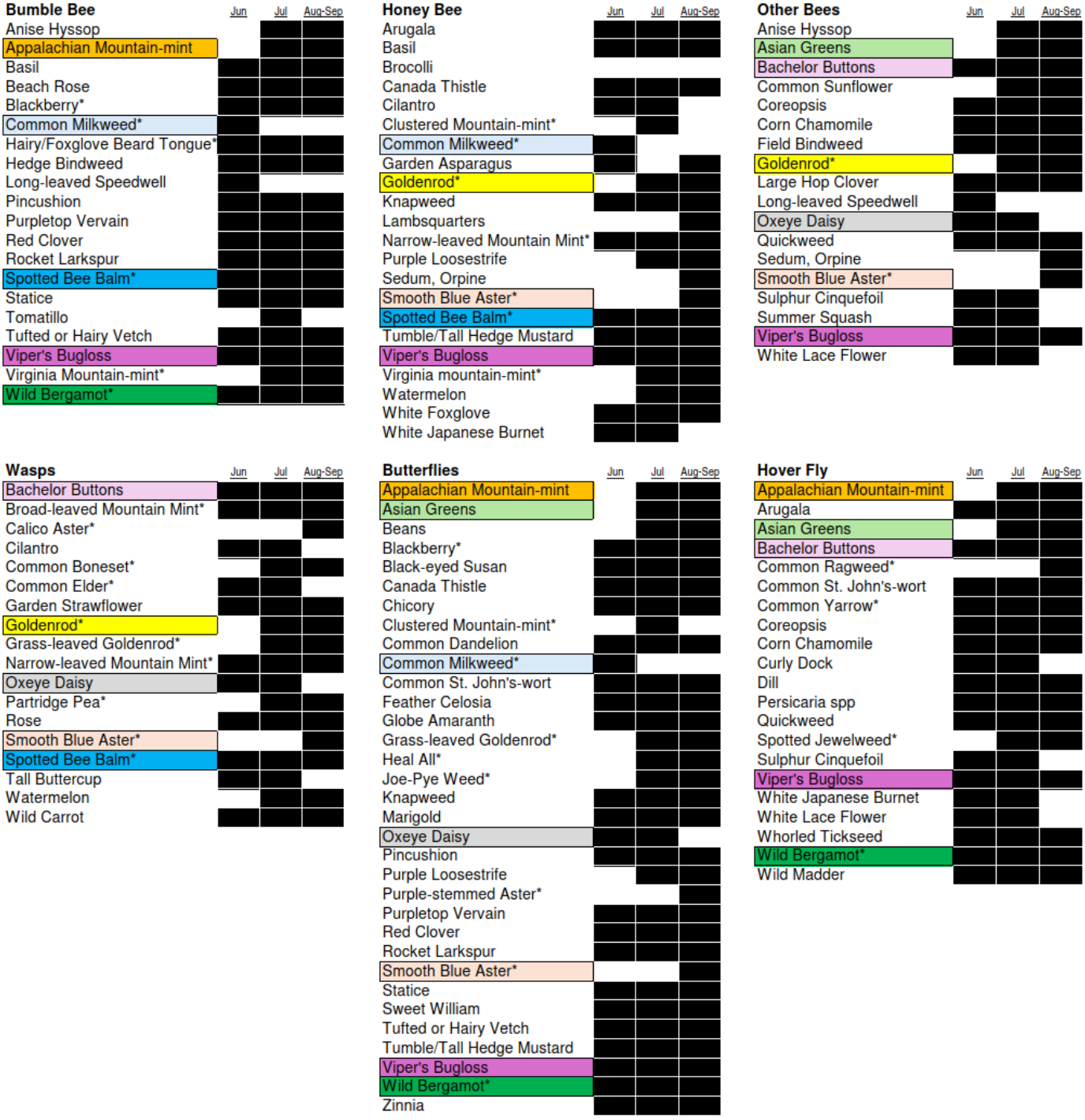


Figure 6. The standardized Hawthorne Valley observation rates for the various insect groups relative to the mean for all farms (the solid line at 1).

Table 1. Most favored plants by our six insect groups, based on data from all farms and all outings. Lists are alphabetical and only include those flowers with notably higher than average visitation rates by the given groups. Plant species native to the Hudson Valley are marked with an asterisk. Colored boxes highlight those species found on three or more lists. Black blocking indicates flowering times observed during the season.



Flower-favorability Data & Maps

For convenience, the flower favorability table from the main blog is repeated here (Table 1), even though those data are a summary of observations across all farms and outings.

Figures 7A-F show the flower favorability maps for Hawthorne Valley. By glancing over the following maps and Fig. 8, one sees that the flower favorability of most units is relatively low, perhaps especially so in June. The flower offering appears most tempting for 'other bees' (Fig. 7C), although this did not translate into high visitation rates (Fig. 6). The peripheral areas – the beetle bank, the cut flowers, the fence line and even, sometimes, the mowed ground seemed to be the most consistently favorable, but weeds in a few of the veggie beds also contributed.

In those survey units where there are flowers at Hawthorne Valley, the flower composition seemed relatively good. However, within the study area, the amount of ground occupied by those flowers was relatively small. If more support for the insect community were a goal, it might be appropriate to try to find ways to further expand the patches of annual or perennial flowers, using species similar to those already present, but boosting their overall abundance. Flower favorability in June seemed relatively low (Fig. 7A-F), and including a few more June-flowering species might be helpful.

Potential Next Steps

We studied a relatively small parcel at Hawthorne Valley and, as with the other farms, only during June-Aug/Sept. A quick and dirty assessment of flowers outside of the 2025 study area (including the floodplain forest and nearby pond edge) and earlier in the season could be helpful for determining which, if any, floral resources are provided by those spaces and at what time in the season.

We were surprised by the diversity of flowers in the mowed survey unit in June (Figure 5) and it might be worth experimenting a little with the timing and frequency of mowing to see if the abundance of flowers in the mowed unit can be increased and their duration extended.

The relevance of our work to farm production depends upon the degree to which flower visitors are relevant to crop pollination and the biocontrol of crop pests. From previous work, we know that parasitoid wasps are actively attacking Asparagus Beetles and Striped Flea Beetles in these beds, although we don't know if those wasps are actually playing a role in the control of these agronomic pests. One line of future work might be to focus on determining the pollinators of those crops needing pollination for food production and on expanding our observations of the parasitoids and aphid-consuming hover fly maggots.

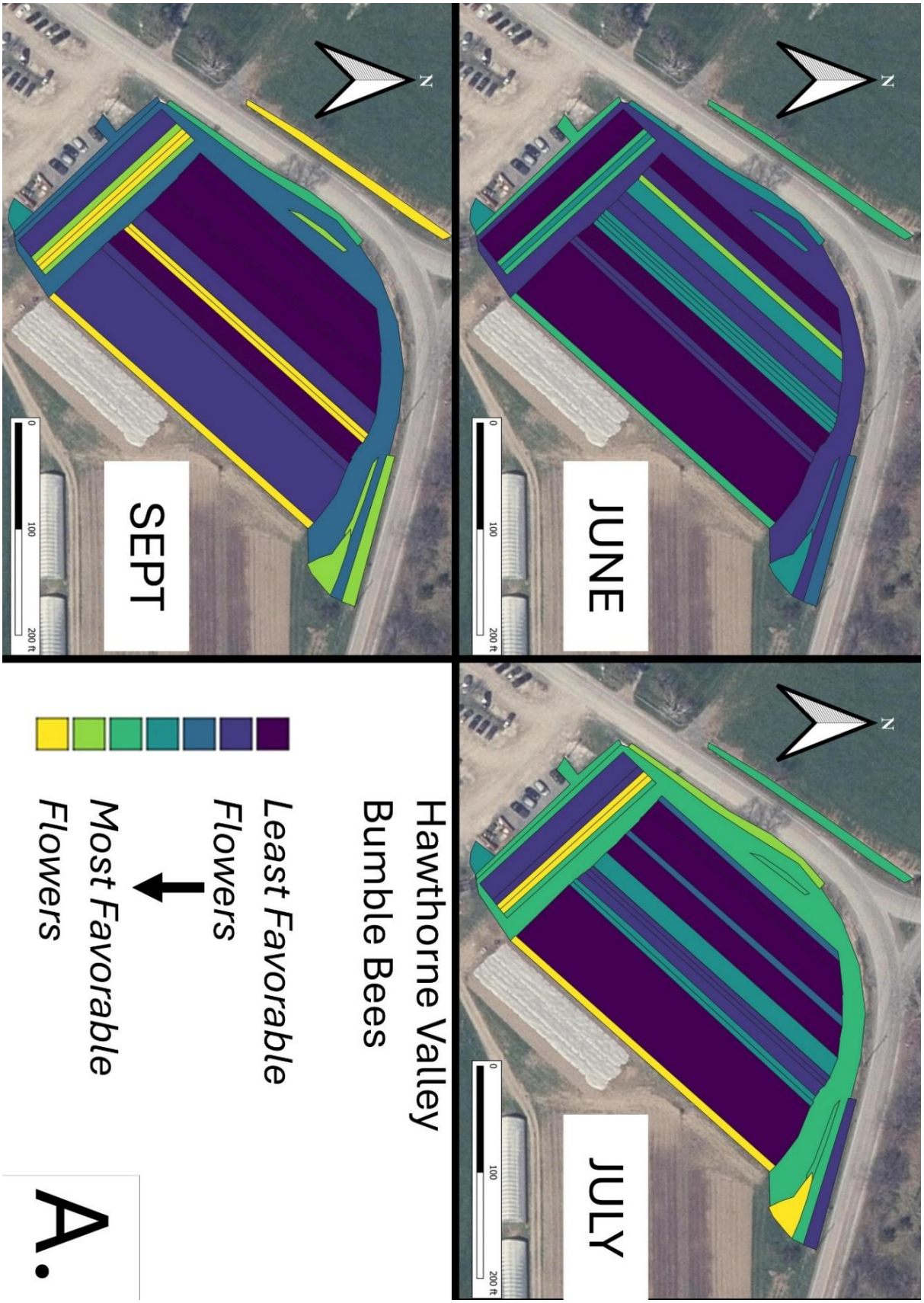


Figure 7A. Flower favorability for bumble bees in the different survey units and different months at Hawthorne Valley. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

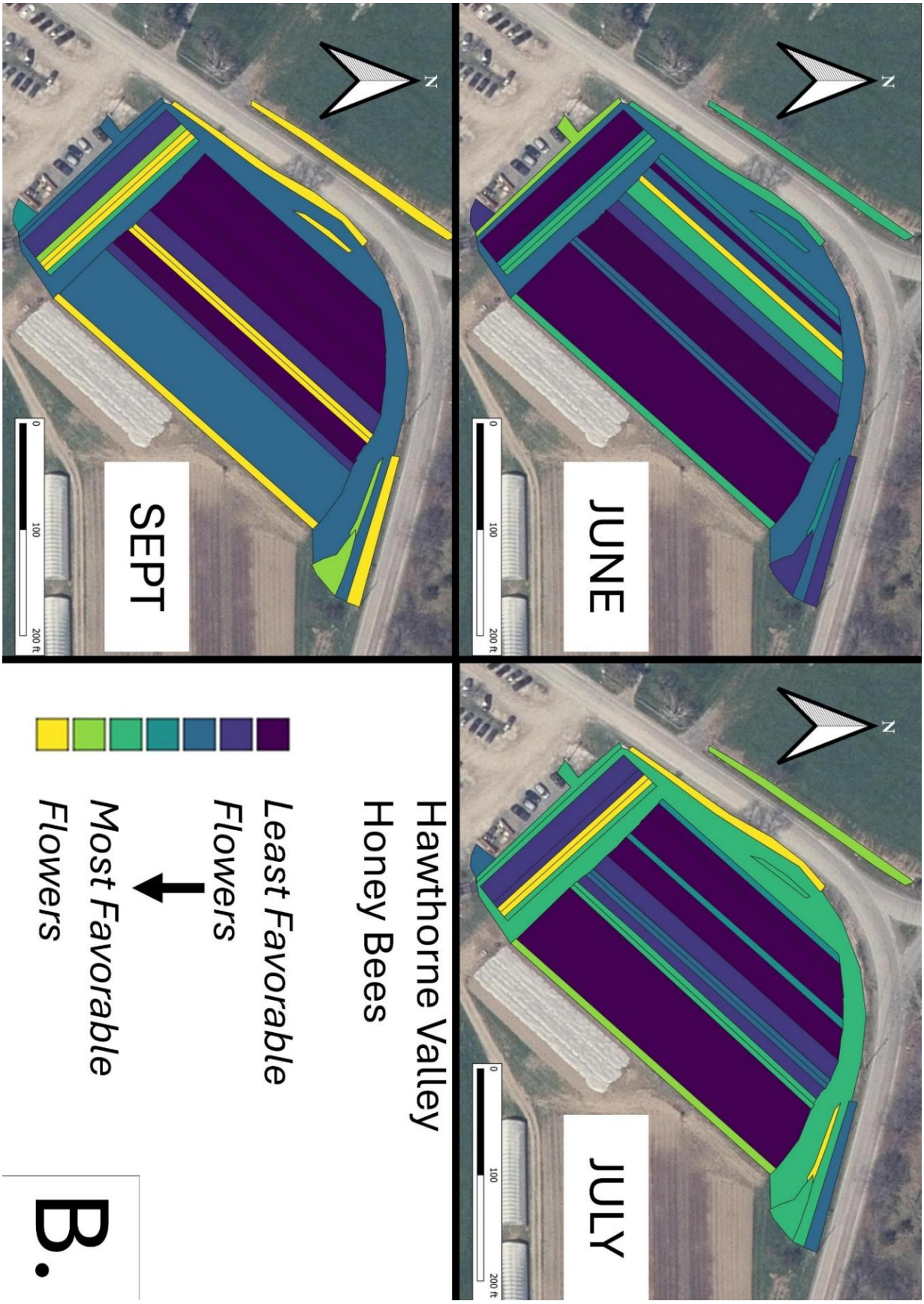


Figure 7B. Flower favorability for honey bees in the different survey units and different months at Hawthorne Valley. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

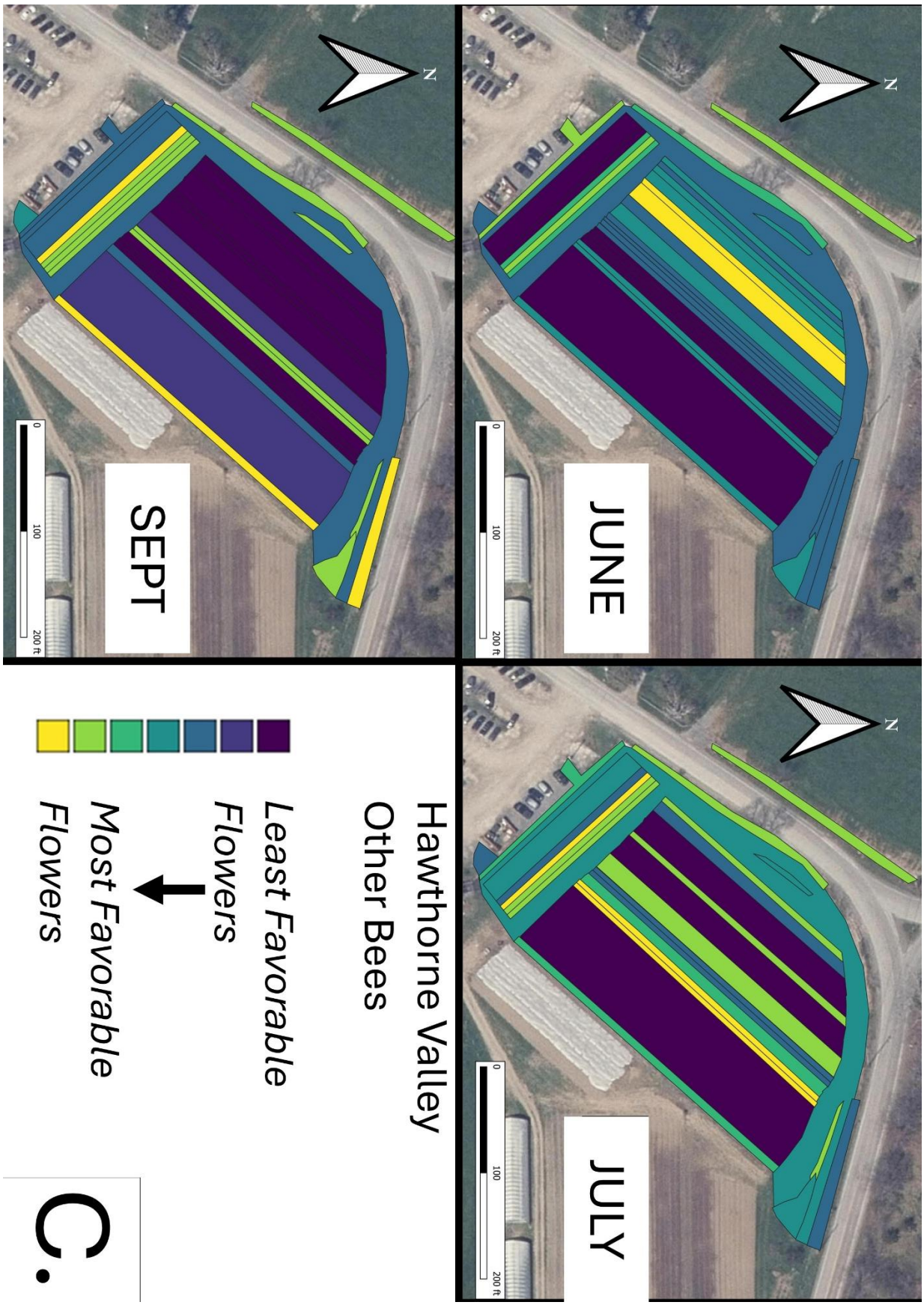


Figure 7C. Flower favorability for other bees in the different survey units and different months at Hawthorne Valley. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

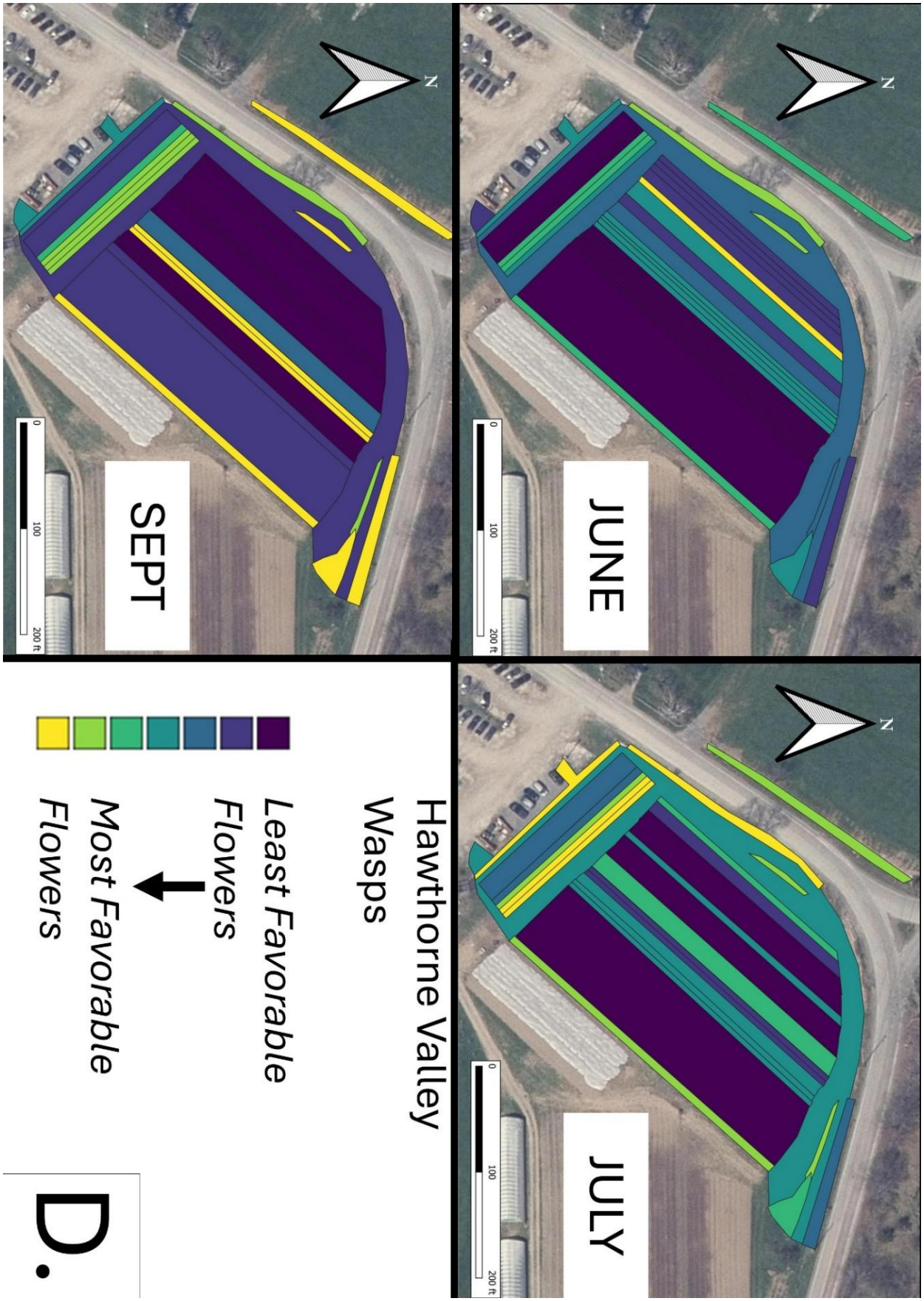


Figure 5Flower favorability for wasps in the different survey units and different months at Hawthorne Valley. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

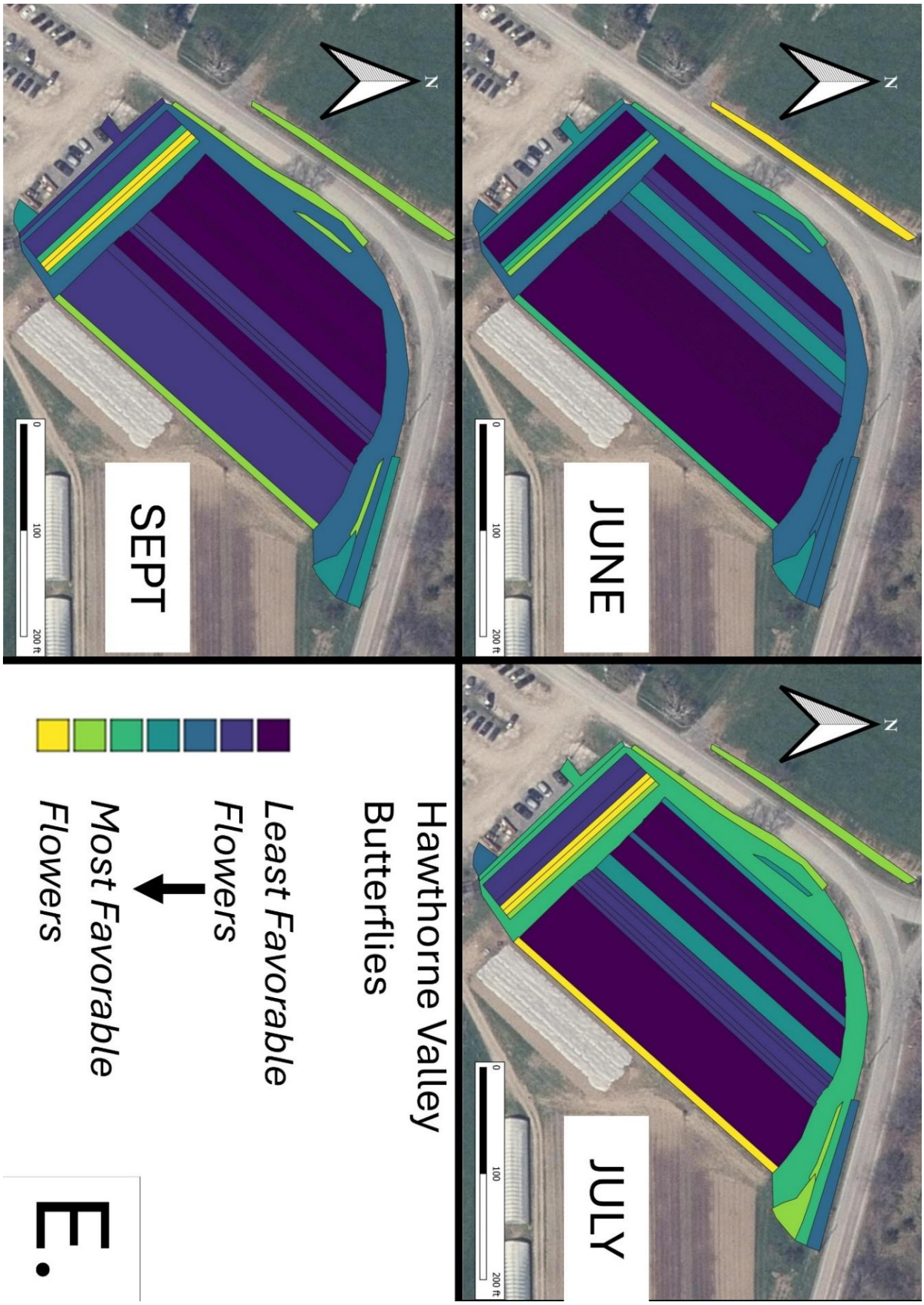


Figure 7E. Flower favorability for butterflies in the different survey units and different months at Hawthorne Valley. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

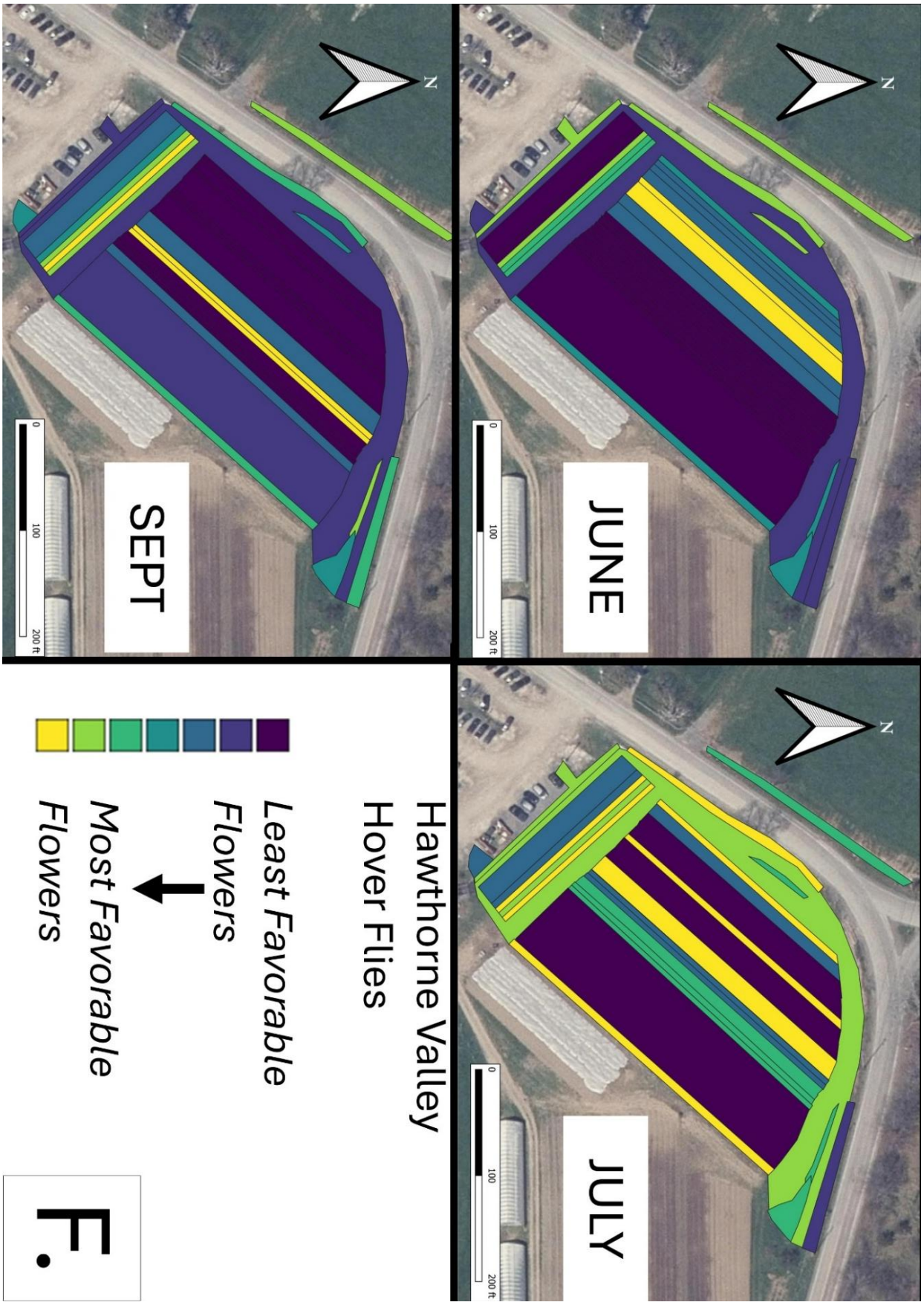


Figure 7F. Flower favorability for hover flies in the different survey units and different months at Hawthorne Valley. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

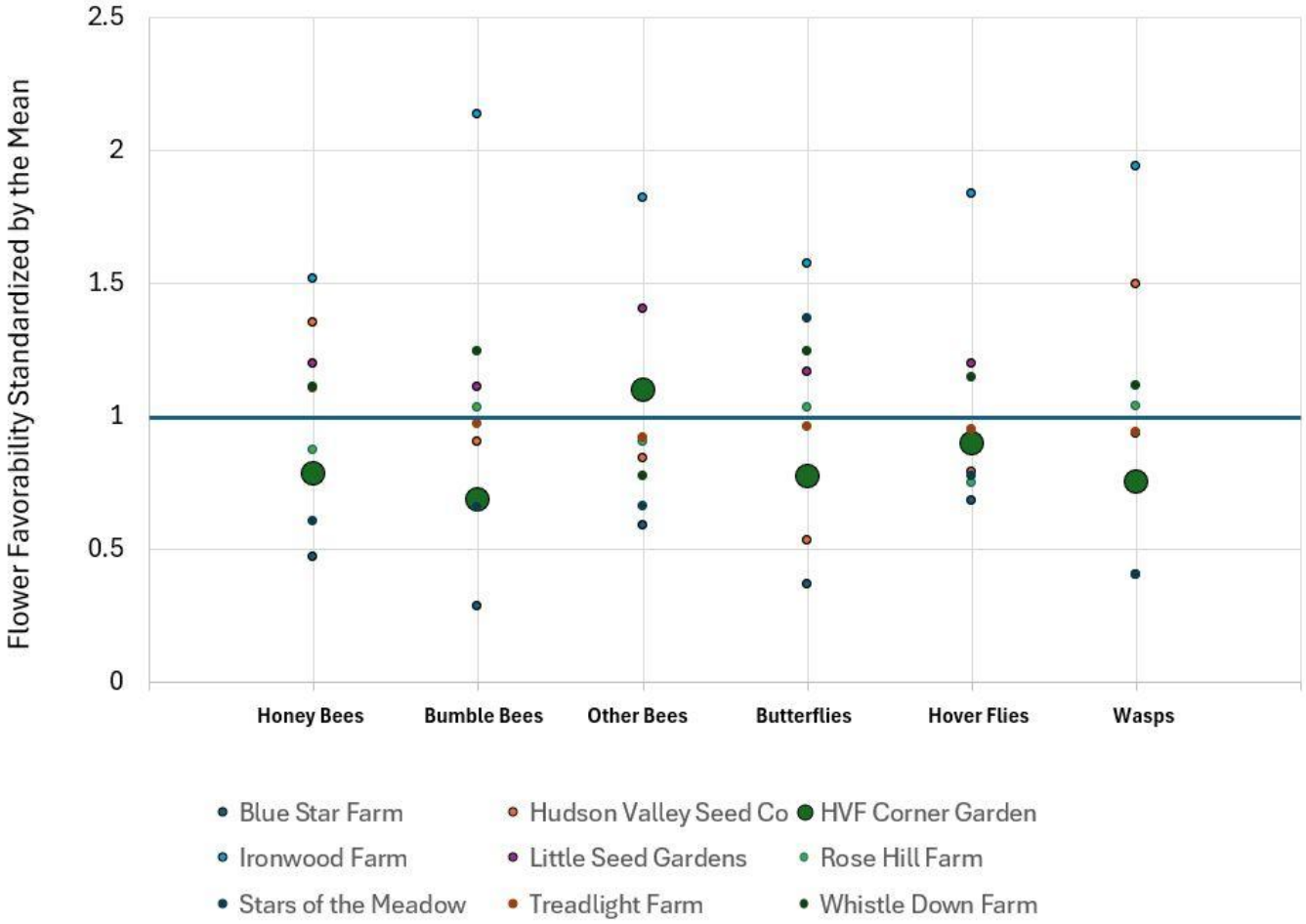


Figure 8. Standardized flower favorability scores by insect group. The solid line at one indicates the mean value across all farms.

Acknowledgments

Thanks to farmers Todd Newlin and Spencer Fenniman for facilitating our work.

Appendix

On the following three pages, you find the appendix with the list of plants seen in bloom in the survey units of Hawthorne Valley during three surveys in 2026. The column annotations are explained below.

Native: Indicates whether a species is considered native to the Hudson Valley, "Y" or not, "N." Non-native invasive species are denoted "N-I." Wild-growing species have only the entry "Y," "N," or "N-I." Cultivated species have an added "cult." Additional entries in parentheses indicate that a usually wild-growing plant is occasionally cultivated, "(cult)," or a usually cultivated plant is occasionally also found wild, "(wild)."

Rarity: A star * in this column flags species we consider rare or uncommon in the Hudson Valley.

Ubiquity: The values are calculated as the average % of survey units at the farm which contained the species in bloom during the months of its flowering season.

Duration: The number of months (1 to 3) in which the species was observed in bloom at the farm.

Fl. Season: Indicates with an "x" the months in which the species was observed in bloom at the farm.

Appendix: List of Plants Found in Bloom in the Study Units of Hawthorne Valley Farm During Three Surveys in 2025

			Rarity	Ubiquity	Duration	Fl. Season		
Common Name by Groups	***Scientific Name***	**Native**	**regionally rare/uncommon**	**avg. % of units during flowering season**	**# months in bloom (of 3)**	**June**	**July**	**Aug/Sep**
alyssum, hoary	*Berteroa incana*	N		5.7	2	x	x	
amaranth, globe	*Gomphrena globosa*	N cult		3.7	3	x	x	x
amaranth, red-rooted	*Amaranthus retroflexus*	Y		32.5	2		x	x
arugala	*Eruca sativa*	N cult		3.5	2	x		x
aster, awl	*Symphyotrichum pilosum*	Y		7.4	1			x
aster, calico	*Symphyotrichum lateriflorum*	Y		3.7	1			x
aster, flat-topped white	*Doellingeria umbellata var. umbellata*	Y cult	*	3.7	1			x
aster, lance-leaved	*Symphyotrichum lanceolatum var. lanceolatum*	Y		18.5	1			x
aster, New England	*Symphyotrichum novae-angliae*	Y		14.8	1			x
aster, smooth blue	*Symphyotrichum laeve var. laeve*	Y cult	*	3.7	1			x
bachelor's button	*Centaurea cyanus*	N cult		3.7	3	x	x	x
basil	*Ocimum basilicum*	N cult		3.9	2		x	x
beardtongue, foxglove	*Penstemon digitalis*	Y cult (wild)		6.7	1	x		
bedstraw, hedge (wild madder)	*Galium mollugo*	N		27.1	3	x	x	x
bee-blossom, biennial	*Oenothera gaura (Gaura biennis)*	U		3.9	2		x	x
bergamot, (common) wild	*Monarda fistulosa*	Y cult (wild)	*	10.2	3	x	x	x
bindweed, black	*Fallopia convolvulus*	N		4.9	3	x	x	x
bindweed, field	*Convolvulus arvensis*	N-I		6.1	3	x	x	x
bindweed, hedge	*Calystegia sepium*	N		6.1	3	x	x	x
blazing-star	*Liatris sp.*	N cult		4.0	1		x	
boneset, common	*Eupatorium perfoliatum*	Y		4.0	1		x	
butter-and-eggs	*Linaria vulgaris*	N		3.7	2	x	x	
calendula; marigold	*Calendula officinalis*	N cult		3.7	3	x	x	x
campion, white	*Silene latifolia*	N		8.6	3	x	x	x
carpetweed	*Mollugo verticillata*	N		20.0	1		x	
carrot, wild	*Daucus carota*	N		16.6	3	x	x	x
celosia, feather	*Celosia argentea (Plumosa group)*	N cult		7.3	3	x	x	x
celosia, pink-spiked	*Celosia argentea (Spicata group)*	N cult		6.0	3	x	x	x
chamomile, corn	*Anthemis arvensis*	N		12.9	3	x	x	x
chamomile, pineapple weed	*Matricaria discoidea*	N		6.7	1	x		
chicory	*Cichorium intybus*	N		22.2	3	x	x	x
cilantro	*Coriandrum sativum*	N cult		3.7	2	x	x	
cinquefoil, silver	*Potentilla argentea*	N		3.3	1	x		
clover, red	*Trifolium pratense*	N (cult)		15.7	3	x	x	x
clover, white	*Trifolium repens*	N		8.6	3	x	x	x
coneflower varieties	*Echinacea purpurea varieties*	N cult		4.0	1		x	
coneflower, eastern purple	*Echinacea purpurea*	N cult		8.8	3	x	x	x
coreopsis, lance-leaved	*Coreopsis lanceolata*	N cult		7.6	2		x	x
cosmos, garden (white, pink, red)	*Cosmos bipinnata*	N cult		3.7	3	x	x	x
craspedia, sunball	*Craspedia globosa*	N cult		3.9	2		x	x
cress, field penny	*Thlaspi arvense*	N		10.6	3	x	x	x
crown-vetch	*Securigera (Coronilla) varia*	N		9.7	3	x	x	x
cucumber	*Cucumis sativus*	N cult		3.7	2	x	x	
daisy, oxeye	*Leucanthemum vulgare*	N		10.0	1	x		
dandelion, common	*Taraxacum officinale*	N		6.7	1	x		
deadnettle, henbit	*Lamium amplexicaule var. amplexicaule*	N		26.7	1	x		
dill	*Anethum graveolens*	N cult		9.0	2	x	x	
dock, curly	*Rumex crispus ssp. crispus*	N		4.0	1		x	
eggplant	*Solanum melongena*	N cult		3.7	1			x
fleabane, daisy	*Erigeron annuus*	Y		36.6	3	x	x	x
germander	*Teucrium canadense*	Y	*	12.0	1		x	
goat's-beard	*Tragopogon pratensis*	N		3.7	2	x	x	
goldenrod, flat-topped	*Euthamia graminifolia*	Y		3.9	2		x	x
goldenrod, showy	*Solidago speciosa var. speciosa*	Y cult	*	11.1	1			x
goldenrod, tall	*Solidago altissima ssp. altissima*	Y		29.6	1			x
goldenrod, wrinkle-leaved	*Solidago rugosa var. rugosa*	Y		7.4	1			x
horse-nettle	*Solanum carolinense var. carolinense*	Y		12.0	1		x	
horseweed	*Erigeron canadensis var. canadensis*	Y		7.4	1			x
hyssop. anise	*Agastache foeniculum*	N cult		7.4	1			x

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alyssum, hoary	*Berteroa incana*	N		5.7	2	x	x	
ironweed, New York	*Vernonia noveboracensis*	Y (cult)		5.7	2		x	x
Jerusalem-artichoke	*Helianthus tuberosus*	N cult		7.4	1			x
Jerusalem-oak	*Dysphania botrys*	N		7.4	1			x
knapweed, brown	*Centaurea jacea*	N-I		36.5	2		x	x
knapweed, spotted	*Centaurea stoebe ssp. micranthos*	N-I		5.9	2		x	x
knotweed, common	*Polygonum aviculare*	N		7.4	1			x
lady's-thumb	*Persicaria maculosa*	N		27.6	3	x	x	x
lamb's-quarters	*Chenopodium album*	N		22.2	1			x
lemonbalm	*Melissa officinalis*	N cult		4.0	1		x	
lettuce, prickly	*Lactuca serriola*	N		4.0	1		x	
lobelia, great blue	*Lobelia siphilitica var. siphilitica*	Y cult	*	7.4	1			x
loosestrife, purple	*Lythrum salicaria*	N-I		3.9	2		x	x
love-in-a-mist	*Nigella damascena*	N cult		4.0	1		x	
love-lies-bleeding	*Amaranthus caudatus*	N cult		3.7	3	x	x	x
mallow, musk	*Malva moschata*	N		12.0	1		x	
marigold (all varieties)	*Tagetes sp. (all varieties)*	N cult		7.4	3	x	x	x
medic, black	*Medicago lupulina*	N		14.7	3	x	x	x
milkweed, butterfly	*Asclepias tuberosa*	Y cult	*	3.7	2	x	x	
milkweed, common	*Asclepias syriaca*	Y		10.0	1	x		
mistflower	*Conoclinium coelestinum*	N cult		3.7	1			x
motherwort	*Leonurus cardiaca*	N		3.7	2	x	x	
mountain-mint, narrow-leaved	*Pycnanthemum tenuifolium*	Y cult	*	7.7	2	x	x	
mugwort	*Artemisia vulgaris var. vulgaris*	N-I		3.7	1			x
mullein, common	*Verbascum thapsus*	N		5.7	2	x	x	
mustard, hedge	*Sisymbrium officinale*	N		13.0	3	x	x	x
mustard, tumble /tall hedge	*Sisymbrium altissimum/loeselii*	N		10.7	2	x	x	
parsnip, wild	*Pastinaca sativa*	N-I		6.7	1	x		
pimpernel, scarlet	*Lysimachia (Anagallis) arvensis*	N		3.7	1			x
pincushion flower (all colors)	*Scabiosa atropurpurea*	N cult		3.9	2		x	x
pink, Deptford	*Dianthus armeria*	N		8.6	3	x	x	x
plantain, narrow-leaved	*Plantago lanceolata*	N		3.7	2	x	x	
primrose, common evening	*Oenothera biennis*	Y		13.1	2		x	x
purslane, common	*Portulaca oleracea*	N		10.0	1	x		
quickweed	*Galinsoga sp.*	N		47.8	3	x	x	x
radish, wild	*Raphanus raphanistrum*	N		8.7	2	x	x	
ragweed, common	*Ambrosia artemisiifolia*	Y		29.6	1			x
senna, wild	*Senna hebecarpa*	Y cult	*	8.0	1		x	
shepherd's-purse	*Capsella bursa-pastoris*	N		10.0	1	x		
smartweed, dock-leaved	*Persicaria lapathifolia*	Y		15.4	2		x	x
smartweed, low	*Persicaria longiseta*	N		4.0	1		x	
smartweed, Pennsylvania	*Persicaria pensylvanica*	Y		3.7	1			x
snapdragon, common	*Antirrhinum majus*	N cult		3.7	3	x	x	x
sneezeweed, common	*Helenium autumnale*	Y cult	*	3.9	2		x	x
sorrel, common yellow wood	*Oxalis stricta*	Y		18.8	3	x	x	x
sorrel, sheep	*Rumex acetosella ssp. pyrenaicus*	N		4.0	1		x	
sow-thistle	*Sonchus sp.*	N		8.0	1		x	
speedwell, germander	*Veronica chamaedrys*	N		10.0	1	x		
squash (summer)/zuchini	*Cucurbita pepo*	N cult		3.7	2	x	x	
St. John's-wort, common	*Hypericum perforatum ssp. perforatum*	N		10.7	2	x	x	
statice	*Limonium sinuatum*	N cult		3.7	3	x	x	x
strawflower, garden	*Xerochrysum bracteatum*	N cult		6.2	3	x	x	x
sunflower, common	*Helianthus annuus*	N cult		3.7	1			x
sunflower, ox-eye	*Heliopsis helianthoides var. helianthoides*	Y cult	*	10.9	3	x	x	x
Susan, black-eyed	*Rudbeckia hirta*	N cult (wild)		8.6	3	x	x	x
Susan, black-eyed (w/ red flowers)	*Rudbeckia sp. var*	N cult		4.0	1		x	
Susan, brown-eyed	*Rudbeckia triloba var. triloba*	U		9.6	2		x	x
sweet william	*Dianthus barbatus*	N cult		3.7	3	x	x	x
sweetclover, white	*Melilotus albus*	N		13.4	3	x	x	x

Appendix: List of Plants Found in Bloom in the Study Units of Hawthorne Valley Farm During Three Surveys in 2025

			Rarity	Ubiquity	Duration	Fl. Season		
Common Name by Groups	***Scientific Name***	**Native**	**regionally rare/uncommon**	**avg. % of units during flowering season**	**# months in bloom (of 3)**	**June**	**July**	**Aug/Sep**
alyssum, hoary	*Berteroa incana*	N		5.7	2	x	x	
sweetclover, yellow	*Melilotus officinalis*	N		3.7	2	x	x	
thistle, Canada	*Cirsium arvense*	N-I		4.0	1		x	
tomato	*Solanum lycopersicum*	N cult		3.7	2	x	x	
trefoil, bird's foot	*Lotus corniculatus*	N		14.8	3	x	x	x
velvetleaf	*Abutilon theophrasti*	N		3.7	1			x
vervain, purpletop	*Verbena bonariensis*	N cult		7.4	3	x	x	x
vervain, white	*Verbena urticifolia*	Y		4.0	1		x	
vetch, tufted or hairy	*Vicia cracca/villosa*	N		12.9	3	x	x	x
violet, European field	*Viola arvensis*	N		3.3	1	x		
virgin's-bower, Japanese	*Clematis terniflora*	N-I		3.7	1			x
yarrow, common	*Achillea millefolium*	Y (cult)		14.7	2	x	x	
zinnia, garden	*Zinnia sp.*	N cult		3.7	3	x	x	x