

# ISU Monarch Data Summary for NCIG

*Jarad Niemi, Seth Appelgate, and Nehemias Ulloa*

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Table ?? and ?? provide mean count of nectar plant species averaged across all data collection events. Values in table represent the specific counting unit for each species, not necessarily a whole plant. Table ?? and ?? provide nectar plant species density (per 100m<sup>2</sup>) averaged across all data collection events.

Here are some heatmaps for density of species planted with transects on the columns and species on the rows sorting transects by average density and sorting species by average presence.

Table 1: 2016 Nectar plant species density: average density (count / m<sup>2</sup>) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcre1a	tdun2a	tdun3a	tgro1a	tgro2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tprd1a	tprd2a	tsut2a	tver1a
black eyed susan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.63	-	-	-	-	-
common milkweed	-	-	-	-	-	-	-	-	-	0.01	0.02	-	-	-	-	-	-	-	-	-
golden alexanders	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ox eye sunflower	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-

Table 2: 2016 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	terel1a	tdun2a	tdun3a	tgr1a	tgr2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tprd1a	tprd2a	tsut2a	tver1a
alfalfa	-	-	-	0.08	-	-	-	-	-	4.53	0.34	-	-	-	-	-	-	-	-	-
birdsfoot trefoil	-	-	0.31	-	-	-	0.10	-	-	-	-	-	0.67	-	-	-	-	-	-	1.91
black medic	-	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
bladder campion	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
canada goldenrod	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-
canada thistle	-	0.04	-	-	-	-	-	0.01	-	1.56	0.76	-	-	-	-	-	0.00	0.08	-	-
carolina horsenettle	-	-	-	-	0.15	0.05	0.03	0.33	0.10	-	0.19	-	-	0.17	-	-	-	-	-	-
common cinquefoil	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
common dandelion	0.03	0.02	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
common evening primrose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	-	-
common mallow	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
common mullein	0.03	0.05	-	-	-	-	-	0.00	-	-	-	-	-	-	0.02	-	-	-	-	-
common yarrow	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-
compass plant	0.02	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
eastern daisy fleabane	-	-	-	-	0.01	-	0.02	0.12	-	-	-	-	-	-	0.02	-	-	-	-	3.73
flowering spurge	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3: 2016 Nectar plant species density: average density (count / m<sup>2</sup>) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcre1a	tdum2a	tdum3a	tgr1a	tgr2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tpri1a	tpri2a	tsut2a	tver1a
lanceleaf fogfruit	-	-	-	-	-	-	-	-	0.17	-	-	-	-	-	-	-	-	-	-	-
morning glory	4.63	-	-	-	0.01	-	-	-	-	0.43	0.18	-	-	-	-	-	-	-	-	-
plantain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
prickly lettuce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	-	-
queen annes lace	-	-	1.73	-	-	-	0.86	-	-	-	-	-	0.07	-	-	-	-	-	-	0.11
red clover	0.08	-	0.04	3.77	0.01	2.48	1.38	-	-	1.37	6.93	0.15	0.50	-	-	-	-	-	-	0.32
smartweed	0.03	0.03	-	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
stinging nettle	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-
velvetleaf	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
white clover	7.77	9.47	-	0.08	-	0.32	0.18	0.02	-	-	-	2.09	4.74	-	-	-	-	-	-	0.72
whitestar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	-	-	-	-	-
whorled milkweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-
wild mustard	-	-	-	-	-	0.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
yellow sweet clover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	-	-

Table 4: 2016 Nectar plant species density: average density (count / m<sup>2</sup>) across all rounds

Nectar Plant Species	tapp1a	tbcr1a	tbcr2a	tdav1a	tfs1a	thar1a	tjon1a	tnie1a	tpre1a	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttie1a	tvan1a	tvos1a
black eyed susan	-	-	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	1.42	-
blue vervain	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-
common milkweed	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
hoary vervain	-	-	-	-	-	0.06	0.38	-	-	-	-	-	-	-	-	-	-	-	-
ox eye sunflower	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	-
purple prairie clover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	-
sawtooth sunflower	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	-
wild bergamot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39	-

Table 5: 2016 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tapp1a	tbcrla	tbcr2a	tdav1a	tfsla	thar1a	tjon1a	tnie1a	tpre1a	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttie1a	tvan1a	tvos1a
alfalfa	-	-	-	-	-	0.22	-	-	-	-	-	-	-	-	-	-	-	-	2.01
brown eyed susan	-	-	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-	0.69	-
canada goldenrod	-	-	-	-	-	-	1.07	-	-	-	-	-	-	-	-	-	-	-	-
canada thistle	-	-	-	-	-	1.02	-	-	-	-	-	-	-	-	-	-	-	0.03	-
chicory	-	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-	-	-	-
common dandelion	-	-	-	-	-	-	-	-	0.01	0.05	0.27	0.37	0.19	0.02	0.17	0.18	-	-	-
eastern daisy fleabane	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-

Table 6: 2016 Nectar plant species density: average density (count / m<sup>2</sup>) across all rounds

Nectar Plant Species	tappl	tbcr1a	tbcr2a	tdav1a	tfs1a	thar1a	tjon1a	tnie1a	tpre1a	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttie1a	tvan1a	tvos1a
morning glory	-	-	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	0.01	-
musk thistle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
plantain	-	-	-	-	-	0.81	-	-	1.23	0.07	-	-	-	-	0.22	0.37	-	-	-
red clover	0.33	-	-	-	-	0.62	1.29	-	-	-	-	-	-	-	-	-	-	-	-
white clover	0.07	0.84	-	-	-	1.10	-	-	1.46	0.13	7.63	6.37	6.24	0.83	3.49	3.66	0.69	0.39	-
wild parsnip	-	-	-	0.01	-	-	0.23	-	-	-	-	-	-	-	-	-	-	1.11	0.04
yellow sweet clover	-	-	-	-	-	0.14	-	-	-	-	-	-	0.01	-	-	-	-	-	-



Table 7: 2016 Nectar plant species density: average density (count / m<sup>2</sup>) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	tcr1a	tuth3b
common milkweed	-	-	-	0.00

Table 8: 2016 Nectar plant species density: average density (count / m<sup>2</sup>) across all rounds

Nectar Plant Species	tbzyd1a	tbzyd2a	tcrala	tuth3b
alfalfa	3.79	1.29	-	-
black medic	-	0.34	-	-
blue wild indigo	-	-	-	0.01
brown eyed susan	-	-	-	0.77
canada goldenrod	-	-	-	0.01
canada thistle	-	-	-	0.14
common cinquefoil	-	-	0.12	-
common dandelion	-	0.02	0.02	-
eastern daisy fleabane	-	-	0.05	-

Table 9: 2016 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	tera1a	tuth3b
red clover	0.58	0.70	2.30	-
white clover	6.45	7.57	1.92	-
white sweet clover	0.03	-	0.02	-
wild parsnip	0.00	-	-	-
yellow sweet clover	-	0.01	0.03	-

Table 10: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcre1a	tdun2a	tdun3a	tgro1a	tgro2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tprd1a	tprd2a	tsut2a	tver1a
black eyed susan	0.02	-	-	0.01	-	-	0.02	0.01	-	0.02	0.02	0.15	0.37	0.06	-	0.01	0.00	0.02	0.00	0.01
blue vervain	-	-	-	0.00	-	-	-	-	-	-	-	-	0.30	10.02	-	-	-	-	-	-
culvers root	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-
foxglove beardtongue	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-
hoary vervain	-	-	-	-	-	-	-	-	-	-	-	-	0.04	0.01	-	-	-	-	-	-
ironweed	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
ox eye sunflower	-	-	-	-	-	-	-	-	-	0.01	0.01	-	-	-	-	-	-	-	-	-
partridge pea	-	-	0.02	0.02	-	-	-	0.03	0.00	-	-	0.01	0.04	0.16	0.07	0.05	-	0.03	0.03	-
prairie cinquefoil	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
yellow coneflower	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	-

Table 11: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tbrela	tdun2a	tdun3a	tgro1a	tgro2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tpri1a	tpri2a	tsut2a	tver1a
alfalfa	-	-	-	0.16	-	-	-	-	-	0.34	-	-	-	-	-	-	-	-	-	-
bedstraw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.36	-	-	-	-
birdsfoot trefoil	-	-	0.18	-	-	-	-	-	-	-	-	5.74	1.84	-	-	-	-	-	-	0.70
black medic	0.03	-	-	-	0.01	0.01	-	2.98	1.64	-	-	-	-	0.33	0.01	2.55	-	-	-	-
bladder campion	0.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
brown eyed susan	-	0.01	0.01	-	-	-	-	0.01	0.02	-	-	-	-	-	0.07	-	-	0.01	-	0.00
buffalobur nightshade	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
canada thistle	-	-	-	-	-	-	-	-	-	-	0.04	-	-	0.02	-	-	-	-	-	-
chicory	-	-	-	-	-	-	-	-	-	-	-	0.18	0.03	-	-	-	-	-	-	-
clasping venus looking glass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	-	-	-	-
common cinquefoil	-	-	-	-	-	0.01	-	-	-	-	-	0.00	0.04	0.03	-	-	-	-	-	0.00
common dandelion	-	-	0.01	0.11	-	0.12	-	0.02	-	0.02	0.02	0.20	0.21	0.01	-	-	-	0.02	0.30	0.00
common mallow	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-
common mullein	-	-	-	-	-	-	-	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-
common purslane	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-
common yarrow	-	-	-	-	-	-	-	-	-	-	-	0.02	0.89	-	-	-	-	-	-	-
compass plant	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	0.04	-	-
eastern black nightshade	-	-	-	-	-	-	-	0.07	-	-	-	-	-	-	-	-	0.00	-	-	-
eastern daisy fleabane	-	-	-	0.02	-	0.23	0.26	0.50	0.74	-	-	-	-	-	0.01	0.24	-	-	-	0.20
field pennycress	-	-	-	-	-	-	-	-	-	0.33	0.02	0.01	-	-	-	-	-	-	0.07	-
groundcherry	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-	-	-	-

Table 12: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcere1a	tdun2a	tdun3a	tgro1a	tgro2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tprd1a	tprd2a	tsut2a	tver1a
hawkweed	-	-	-	-	-	-	-	-	-	-	-	1.07	-	-	-	-	-	-	-	-
morning glory	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
musk thistle	-	-	-	0.02	-	-	-	0.13	0.00	-	-	0.01	-	-	-	-	-	-	-	-
pineapple weed	0.27	-	-	-	-	-	-	0.03	0.01	-	-	-	-	-	-	-	-	-	-	-
prickly sowthistle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.01	-	-	-
prostrate knotweed	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-
prostrate vervain	240.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-
queen annes lace	-	-	4.49	-	-	-	0.97	0.02	0.08	-	-	0.43	0.68	0.07	-	0.00	-	-	-	1.60
red clover	0.05	-	0.49	1.30	1.35	7.13	0.12	0.08	0.09	8.44	8.98	3.60	3.96	0.01	0.01	0.17	-	-	-	0.16
rough avens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-
shepherds purse	-	-	0.02	0.09	-	-	-	-	-	0.04	0.53	0.04	0.03	-	-	-	0.21	0.00	0.86	-
shortstalk chickweed	-	-	-	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-	-	-
smartweed	0.03	0.29	0.02	0.03	4.37	0.95	0.07	0.02	0.11	0.08	0.17	7.83	2.57	-	-	-	-	-	-	-
venice mallow	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
white clover	-	-	0.04	0.87	-	0.67	0.01	0.75	6.06	0.03	-	0.75	1.74	0.18	-	-	-	-	-	1.85
white sweet clover	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
wild mustard	-	-	-	-	-	-	-	-	-	0.31	0.11	0.01	-	-	-	0.01	-	-	-	-
yellow sweet clover	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	0.02	-	-	-	-	-
yellow wood sorrel	-	-	-	-	-	-	-	0.10	0.32	-	-	-	-	0.40	-	0.05	-	-	0.02	-

Table 13: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tappl	tbcr1	tbcr2	tdav1	tfs1	thar1	tjon1	tnie1	tpre1	tpre2	tpre3	tpre4	tpre5	tpre6	tpre7	tpre8	ttie1	tvani	tvosi
black eyed susan	0.21	-	-	0.03	-	-	0.01	0.03	0.00	0.02	0.02	0.01	-	0.03	0.00	-	0.01	-	0.01
blue vervain	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	-
hoary vervain	-	-	-	-	-	0.01	0.28	-	-	-	-	-	-	-	-	-	-	-	-
ox eye sunflower	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-
partridge pea	0.05	0.10	0.08	-	-	-	0.03	0.03	-	-	0.00	-	-	0.01	-	-	0.04	0.49	0.02
purple prairie clover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-
wild bergamot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-
yellow cone flower	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-

Table 14: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tappla	tbcr1a	tbcr2a	tdav1a	tfis1a	thar1a	tjon1a	tnie1a	tpre1a	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttie1a	tvan1a	tvos1a
alfalfa	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
black medic	0.02	2.04	0.03	0.22	-	0.52	-	0.13	-	-	0.08	0.01	0.07	0.01	-	0.02	-	0.67	-
canada thistle	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
chicory	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-
common cinquefoil	-	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	0.00	-	-	-
common dandelion	0.06	0.11	0.03	-	-	-	-	0.01	0.06	0.06	0.03	0.02	-	-	-	-	0.03	-	-
compass plant	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
eastern daisy fleabane	-	-	-	-	-	-	-	-	-	0.33	-	-	-	-	-	-	-	-	-



Table 15: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tapp1a	tbcrla	tbcrla	tbcrla	tbsla	tharla	tjon1a	tnle1a	tpre1a	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttle1a	tvana1a	tvos1a
hawkweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13
hoary alyssum	-	-	-	-	-	0.49	-	-	-	-	-	-	-	-	-	-	-	-	-
maretail	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
morning glory	-	-	-	-	-	0.26	-	15.23	-	-	-	-	-	-	-	-	-	0.01	-
musk thistle	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-
pineapple weed	-	-	-	-	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-	-
prostrate vervain	-	1.40	-	-	-	-	-	-	-	-	-	-	-	-	-	1.55	-	-	-
queen annes lace	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-
red clover	2.11	-	-	-	-	-	0.04	0.41	-	-	-	-	-	-	-	-	-	-	-
shepherds purse	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	0.46	-	-	-	-
smartweed	1.68	0.35	0.79	-	28.25	0.08	-	1.09	-	1.51	0.15	0.18	0.11	2.38	-	0.07	0.12	-	0.34
velvetleaf	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
white clover	4.98	0.67	-	-	-	0.21	-	-	0.11	0.03	0.18	0.65	0.49	0.06	0.14	0.22	-	-	-
whorled milkweed	-	-	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-
wild parsnip	-	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	0.05	-
yellow sweet clover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	-

Table 16: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	tcr1a	tuth3b
black eyed susan	0.05	0.00	0.01	0.17
common milkweed	-	-	-	0.01
hoary vervain	0.00	-	-	-
partridge pea	0.08	0.05	0.15	0.05

Table 17: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	tcr1a	tuth3b
alfalfa	1.13	0.54	0.10	-
black medic	0.52	3.77	-	-
brown eyed susan	-	-	0.01	-
canada thistle	-	-	-	0.01
common cinquefoil	-	-	0.14	-
common dandelion	0.27	0.55	-	0.01
common evening primrose	-	-	0.17	-
eastern daisy fleabane	-	-	0.35	-

Table 18: 2017 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	tcr1a	tutb3b
hawkweed	-	-	-	1.28
musk thistle	-	-	-	0.00
prickly sowthistle	0.04	0.05	-	-
prostrate vervain	-	-	0.02	-
red clover	0.68	0.15	2.60	-
shepherds purse	0.23	0.41	-	-
smartweed	-	-	0.54	-
white clover	4.50	4.03	2.81	-
wild mustard	-	0.07	-	-

Table 19: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcre1a	tdun2a	tdun3a	tgro1a	tgro2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tpri1a	tpri2a	tsut2a	tver1a
black eyed susan	-	0.11	0.09	-	-	-	1.11	0.07	0.04	-	-	-	0.02	-	0.88	0.72	0.15	1.27	-	0.05
blue vervain	0.02	-	-	-	0.19	-	-	-	0.35	-	-	0.62	1.03	45.77	-	0.17	0.02	0.08	-	-
canada milk vetch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-
foxglove beardtongue	-	-	0.08	0.00	-	0.01	-	-	-	-	-	-	0.19	0.89	-	0.04	0.27	0.08	0.25	-
golden alexanders	-	-	0.01	0.02	-	-	-	-	-	0.01	-	0.02	-	0.05	-	-	-	-	-	-
great blue lobelia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-
hoary vervain	0.01	-	-	-	-	-	-	0.10	1.28	0.17	-	-	-	0.88	-	0.09	0.05	0.04	0.04	-
ironweed	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	0.00	-	-	-	-
leadplant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-
new england aster	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	-
ox eye sunflower	0.10	0.02	0.10	0.66	0.14	0.09	0.15	0.83	0.49	1.28	0.20	0.81	1.25	2.91	0.20	1.83	0.04	0.34	1.72	0.08
pale purple coneflower	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	0.01	-
partridge pea	-	-	-	-	-	-	-	0.01	-	-	-	-	-	0.02	0.16	0.08	0.03	0.10	-	0.04
prairie blazing star	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-
prairie cinquefoil	-	-	-	-	-	-	-	-	0.01	-	-	-	0.00	-	-	-	0.07	-	-	-
purple prairie clover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-
swamp milkweed	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
virginia mountain mint	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-
wild bergamot	0.06	0.12	-	0.02	-	0.01	0.02	-	-	2.08	0.21	0.56	0.98	1.15	-	0.22	0.73	0.11	0.70	-
yellow coneflower	1.13	0.78	0.49	1.55	0.16	0.13	0.10	0.60	0.90	2.76	1.05	5.03	5.20	4.40	0.90	3.41	1.83	1.65	15.93	0.02

Table 20: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcre1a	tdum2a	tdum3a	tgr1a	tgr2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tprd1a	tprd2a	tsut2a	tver1a
alfalfa	-	-	-	2.47	-	-	-	-	-	0.26	-	-	-	-	-	-	-	-	-	-
american bellflower	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-
birdsfoot trefoil	-	-	0.42	-	-	-	0.03	0.01	1.12	-	-	9.73	10.25	-	-	-	-	-	-	3.32
black medic	0.10	0.03	-	-	-	-	-	1.35	-	-	-	-	-	-	0.38	0.02	-	-	0.10	-
bladder campion	2.47	0.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
bull thistle	-	-	-	-	-	-	0.01	-	-	-	-	0.02	0.01	-	-	-	0.02	-	-	-
canada goldenrod	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	-	-	-	-	-	-
canada thistle	-	0.23	-	0.03	-	-	-	-	-	0.15	0.02	0.13	-	0.39	-	-	-	-	1.40	-
carolina horsenettle	-	-	-	-	0.11	0.02	-	0.06	0.05	-	0.04	-	-	-	0.00	-	-	-	-	-
catnip	-	-	-	-	-	-	-	0.16	-	0.33	-	-	-	-	-	-	-	-	2.21	-
chicory	-	-	-	-	-	-	-	-	-	-	-	1.07	-	-	-	-	-	-	-	-
common cinquefoil	2.53	0.42	0.01	-	0.01	-	0.01	-	0.01	-	-	0.18	0.13	0.08	-	-	-	-	-	-
common dandelion	0.01	0.01	-	-	-	0.01	-	0.00	0.01	-	-	-	-	0.01	-	-	-	-	0.01	-
common evening primrose	-	-	-	-	-	0.02	-	-	-	-	-	-	-	0.05	0.02	-	-	0.01	0.02	-
common mullein	-	-	-	-	0.01	-	-	0.18	0.19	-	-	-	-	0.00	0.00	0.01	-	-	-	-
common selfheal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30
common sneezeweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	-	-	-	-
common yarrow	-	-	-	-	-	-	0.03	-	-	-	-	-	0.24	-	0.26	-	-	-	-	-
compass plant	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
deptford pink	-	-	-	-	-	-	0.80	-	-	-	-	-	-	-	-	-	-	-	-	-
eastern daisy fleabane	-	-	3.26	-	1.87	3.95	9.28	0.52	3.02	-	-	0.01	0.04	0.02	1.27	17.02	-	0.05	-	10.25
field pennycress	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-
field thistle	-	-	-	-	-	-	-	-	-	-	-	-	-	0.31	-	-	-	-	-	0.10
flowering spurge	-	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 21: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tall1a	tall2a	tarm1b	tarm2a	tber1a	tber3a	tcre1a	tdun2a	tdun3a	tgro1a	tgro2a	tnkn1a	tnkn2a	tnor1b	tpio1a	tpio2a	tpdr1a	tpdr2a	tsut2a	tver1a
lanceleaf fogfruit	-	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-
lesser burdock	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-
maretail	-	-	-	0.31	-	-	0.07	-	-	-	-	-	-	-	-	-	-	0.39	0.18	-
morning glory	0.01	-	-	-	0.08	0.04	-	-	-	0.03	0.02	-	-	-	-	-	-	-	-	-
musk thistle	0.03	0.22	0.02	-	-	-	-	0.41	0.18	-	-	-	-	-	0.02	0.01	-	-	-	-
ox eye daisy	-	0.01	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-
plantain	0.09	-	-	0.17	-	-	-	-	0.01	-	-	0.02	-	-	-	-	-	-	-	-
prickly lettuce	0.01	-	-	-	-	-	1.18	0.17	0.03	0.19	-	-	-	-	-	-	-	0.01	-	-
prickly sowthistle	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
prostrate vervain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	-	-
queen annes lace	-	-	5.84	-	-	-	9.43	0.06	0.37	-	0.01	0.19	0.33	-	0.98	-	-	-	-	5.97
red clover	1.37	0.57	17.38	32.44	3.95	17.79	10.56	0.54	1.03	13.05	51.36	13.32	11.84	0.09	11.99	6.99	-	-	0.14	4.14
rough avens	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	0.03	-
smartweed	1.17	0.19	-	-	3.40	0.40	-	0.02	0.10	3.17	0.49	-	-	-	-	-	-	-	0.13	-
stinging nettle	-	-	-	-	0.10	-	-	0.23	0.02	-	-	-	-	-	-	-	-	-	-	-
tall thistle	-	-	0.01	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-
venice mallow	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
white clover	13.97	5.20	0.12	2.40	0.24	2.45	-	14.32	17.47	-	-	-	4.97	1.06	-	0.01	-	-	0.31	4.88
white sweet clover	0.03	-	0.91	-	-	0.37	-	-	-	0.11	-	0.01	-	0.50	-	-	-	-	0.00	-
whorled milkweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.41	-	-	-	-	-
wild cucumber	-	-	-	-	-	-	-	-	-	0.84	-	-	-	-	-	-	-	-	-	-
wild mustard	-	-	-	-	0.18	-	-	-	-	1.94	-	-	-	-	-	-	-	-	-	-
wild parsnip	-	-	-	0.02	0.71	0.52	0.08	0.20	-	-	-	-	-	0.03	-	-	-	-	-	-
yellow salsify	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-
yellow sweet clover	0.13	0.26	0.39	0.06	0.05	-	1.93	0.13	-	0.08	0.14	0.29	0.17	0.13	0.20	1.59	-	0.12	0.02	-
yellow wood sorrel	-	-	-	-	-	-	-	0.32	-	-	-	-	-	-	-	-	-	-	-	-

Table 22: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tappla	tbcr1a	tbcr2a	tdavla	thsla	tharla	tjona	tnlela	tpre1a	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttlela	tvana	tvosla
black eyed susan	-	-	-	0.04	-	0.11	0.02	6.33	-	-	-	0.05	0.20	0.05	0.09	-	-	1.67	2.88
blue vervain	-	-	-	-	-	-	-	-	0.25	-	0.66	-	0.35	0.10	-	-	-	-	-
butterfly milkweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-
canada milk vetch	-	-	-	-	-	-	-	0.03	-	-	-	0.01	-	-	-	-	0.03	-	-
foxglove beardtongue	-	-	-	0.47	-	-	-	-	0.13	0.25	0.26	0.02	0.31	0.77	-	0.01	0.53	-	0.63
golden alexanders	-	-	-	0.13	-	-	-	-	-	-	-	-	-	-	-	0.08	0.06	-	0.14
hoary vervain	0.08	0.02	0.01	-	-	0.64	0.04	1.36	0.07	0.19	0.24	0.11	0.07	0.07	-	0.01	0.36	-	-
ironweed	0.01	-	0.03	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-
ox eye sunflower	1.25	1.42	0.09	0.95	-	0.74	0.26	1.69	1.38	1.90	4.77	1.83	1.67	0.03	0.36	1.45	4.27	3.35	0.77
pale purple coneflower	-	-	0.03	-	-	-	-	0.01	-	0.01	-	-	-	-	-	-	0.08	0.03	-
partridge pea	-	-	-	-	-	-	-	0.01	0.02	0.01	-	-	-	-	-	0.02	-	0.01	-
prairie cinquefoil	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
purple prairie clover	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	0.03	0.58	-
stiff goldenrod	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-
virginia mountain mint	-	-	-	-	-	-	-	-	0.12	-	-	-	-	-	-	-	-	-	-
white heath aster	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
wild bergamot	0.01	-	-	0.48	-	-	-	-	0.50	0.72	0.51	0.72	0.32	-	0.23	0.53	2.70	0.40	1.85
yellow coneflower	3.07	2.38	2.87	3.15	-	4.10	0.63	0.49	5.12	7.88	8.60	6.90	8.37	6.74	3.35	5.28	20.40	0.46	4.85



Table 23: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tapla	tberla	tber2a	tdavla	tfsia	tharla	tjonia	tniela	tprela	tpre2a	tpre3a	tpre4a	tpre5a	tpre6a	tpre7a	tpre8a	ttiela	tvania	tvosla
alfalfa	0.01	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	9.23
birdsfoot trefoil	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-
black medic	-	1.71	-	-	-	0.78	23.93	0.33	1.08	0.33	0.03	0.03	0.22	-	0.44	0.37	-	19.20	-
bladder campion	-	-	-	-	-	0.22	-	-	0.03	-	0.22	0.15	-	-	-	-	-	-	-
bog yellow-cress	-	-	-	-	-	-	-	-	0.09	-	0.01	-	0.38	-	-	-	-	-	-
canada goldenrod	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	0.00	-	-	-	-
canada lettuce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.72	-	-
canada thistle	0.17	-	-	0.39	-	-	-	0.12	0.15	0.05	0.02	-	-	-	-	-	0.78	-	-
catnip	-	-	-	-	-	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-
chicory	-	-	-	-	-	-	0.67	-	-	-	-	-	-	-	-	-	-	-	-
common cinquefoil	0.06	0.46	-	-	-	0.03	-	-	1.18	1.19	2.73	4.10	0.35	4.73	1.92	2.64	0.56	-	-
common dandelion	-	0.10	0.05	-	-	-	-	-	0.08	0.12	0.02	0.04	0.06	0.01	0.01	0.09	0.23	-	-
common evening primrose	-	0.05	-	0.08	-	-	0.01	-	0.36	-	-	-	0.23	-	-	-	-	-	0.09
cup plant	-	-	1.30	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-
eastern daisy fleabane	-	-	-	-	-	-	1.33	-	0.01	2.77	0.01	0.01	0.00	0.03	0.30	-	-	-	-
field pennycress	-	0.27	2.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
field thistle	-	-	-	-	-	-	0.03	-	0.03	0.01	-	0.01	-	-	-	-	-	-	0.01
groundcherry	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 24: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tappl	tbcr1	tbcr2	tdavl	tfsla	tharl	tjona	tniela	tprel	tpre2	tpre3	tpre4	tpre5	tpre6	tpre7	tpre8	ttiela	tvania	tvosla
hoary alyssum	-	-	-	-	-	17.97	-	-	-	-	-	-	-	-	-	-	-	-	-
lesser burdock	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-
maretail	0.27	0.03	0.01	0.01	-	0.06	-	-	-	-	0.00	-	0.00	0.97	-	-	-	-	-
morning glory	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
musk thistle	-	-	-	-	-	-	-	-	-	0.44	0.03	-	-	-	-	-	-	-	-
nodding stickseed	-	-	-	-	-	-	-	0.04	0.26	-	-	-	-	-	-	-	-	-	-
pineapple weed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
prickly lettuce	-	0.13	-	-	-	-	-	0.53	0.40	-	-	-	-	-	-	-	4.17	-	-
prostrate vervain	-	0.01	-	-	-	-	-	-	-	-	-	-	-	1.24	0.24	-	-	-	1.20
queen annes lace	-	-	-	-	-	0.03	-	-	-	-	-	-	-	0.10	-	-	-	0.40	-
red clover	5.81	3.53	-	-	-	13.11	1.95	25.49	0.21	0.02	-	-	-	-	-	-	-	1.04	-
rough cinquefoil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.56	-	-
shepherds purse	-	0.09	1.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
smartweed	0.37	-	-	0.33	-	0.06	-	-	1.31	0.54	0.78	-	0.10	-	-	2.22	7.56	-	-
velvetleaf	-	-	0.03	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
white clover	1.03	14.34	0.03	-	-	4.44	0.37	-	9.91	1.09	12.45	24.20	19.70	9.97	5.04	13.73	0.16	7.33	-
white sweet clover	-	2.51	0.01	21.26	-	-	0.75	1.23	0.97	0.03	0.02	0.21	0.04	-	0.10	-	-	1.33	23.58
wild mustard	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	0.13	-	-	-
wild parsnip	0.01	-	-	21.51	-	-	9.38	-	-	-	-	-	-	-	-	-	-	4.11	2.00
yellow sweet clover	1.16	-	-	0.47	-	0.22	1.41	0.20	0.08	0.04	0.01	0.29	0.24	-	0.14	0.12	-	4.27	6.89
yellow wood sorrel	0.04	-	-	-	-	-	0.35	-	-	-	-	-	-	-	-	-	0.07	-	-

Table 25: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	tcr1a	tubh3b
black eyed susan	0.00	0.05	0.05	2.29
blue vervain	-	-	0.02	-
butterfly milkweed	0.03	-	-	-
foxglove beardtongue	0.06	0.09	-	-
golden alexanders	0.00	-	-	-
hoary vervain	0.09	0.01	0.02	0.00
ox eye sunflower	2.36	1.44	0.69	0.13
pale purple coneflower	0.01	0.01	-	-
partridge pea	-	-	-	0.08
prairie cinquefoil	-	0.00	-	-
purple prairie clover	-	-	0.00	-
swamp milkweed	-	0.01	-	-
tall boneset	-	-	0.01	-
wild bergamot	0.68	2.26	-	0.13
yellow coneflower	5.90	6.87	1.66	1.82

Table 26: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbvdl1a	tbvdl2a	tcr1a	tut3b
alfalfa	2.73	0.52	-	-
brown eyed susan	-	-	-	0.03
canada thistle	-	0.03	-	0.07
common cinquefoil	-	-	1.64	0.02
common dandelion	0.01	0.01	-	-
common mullein	-	0.00	-	0.04
eastern daisy fleabane	-	-	0.34	-

Table 27: 2018 Nectar plant species density: average density (count / m2) across all rounds

Nectar Plant Species	tbyd1a	tbyd2a	trala	tuth3b
maretail	-	-	3.65	1.67
morning glory	-	-	-	0.00
musk thistle	-	-	-	0.05
panicledleaf tick trefoil	-	-	-	0.03
prickly lettuce	-	-	0.05	-
red clover	2.06	1.11	9.45	-
white clover	28.82	13.27	10.94	1.20
white sweet clover	-	0.07	0.08	-
white vervain	-	-	-	0.30
wild mustard	-	-	0.43	0.13
wild parsnip	0.15	0.14	-	2.38
yellow sweet clover	-	1.83	-	0.03

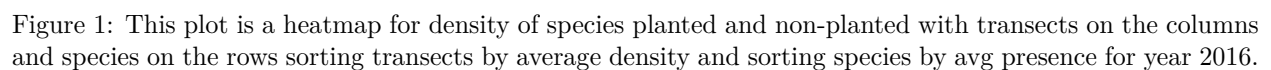


Figure 2: This plot is a heatmap for density of species planted and non-planted with transects on the columns and species on the rows sorting transects by average density and sorting species by avg presence for year 2017.

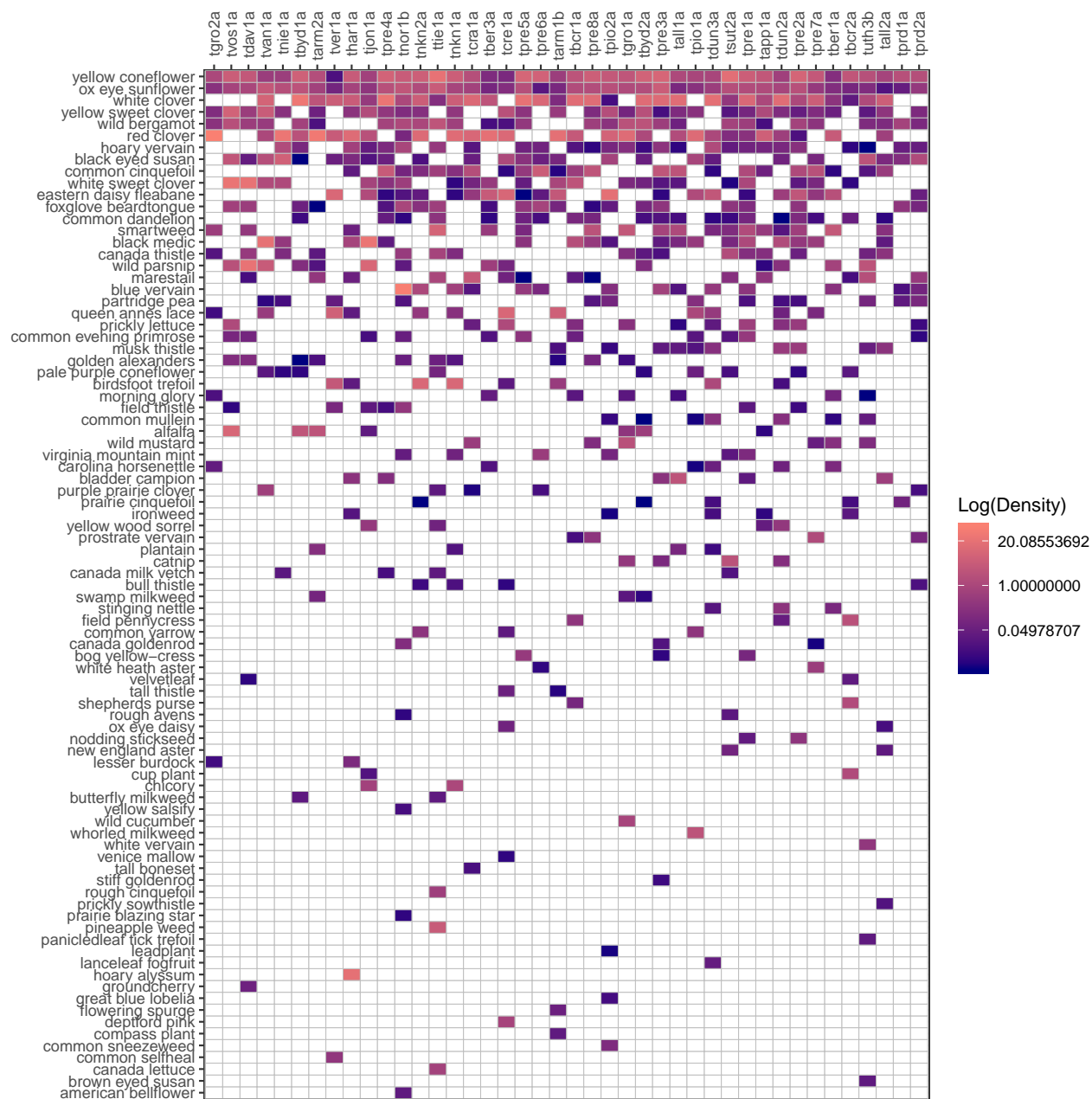
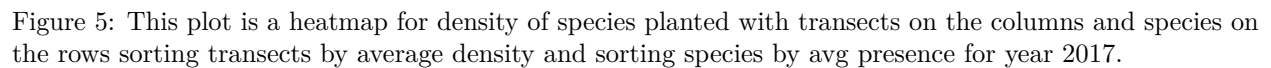
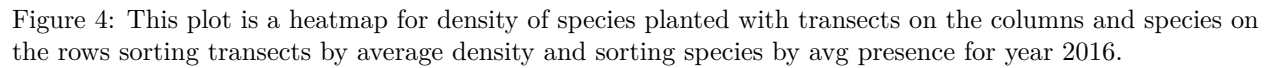
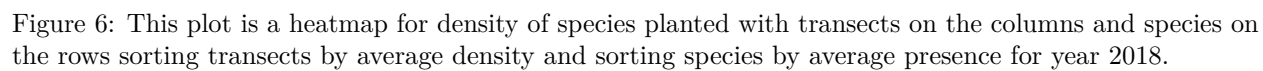
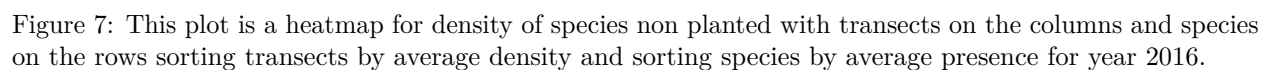


Figure 3: This plot is a heatmap for density of species planted and non-planted with transects on the columns and species on the rows sorting transects by average density and sorting species by avg presence for year 2018.









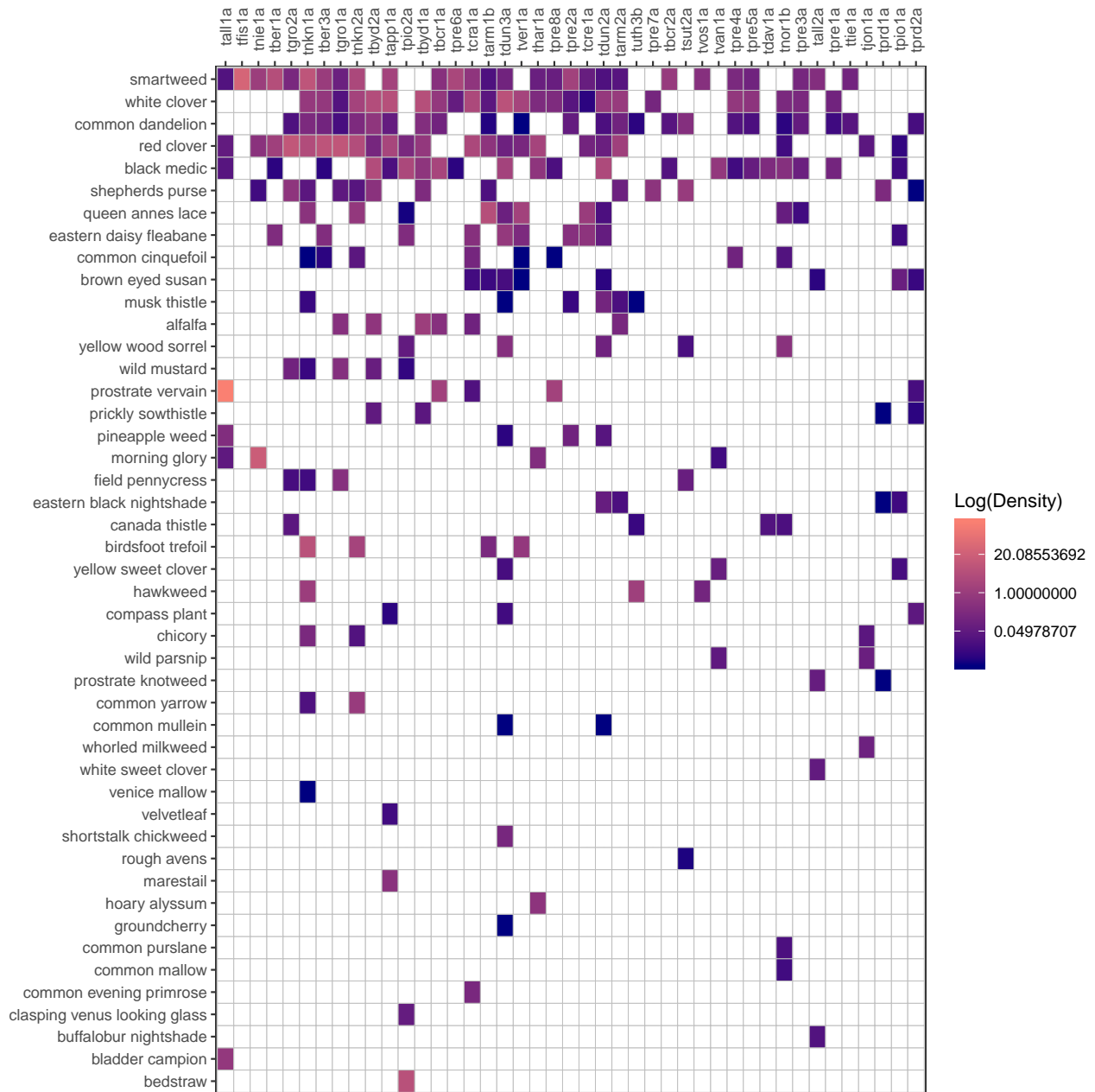


Figure 8: This plot is a heatmap for density of species non planted with transects on the columns and species on the rows sorting transects by average density and sorting species by average presence for year 2017.

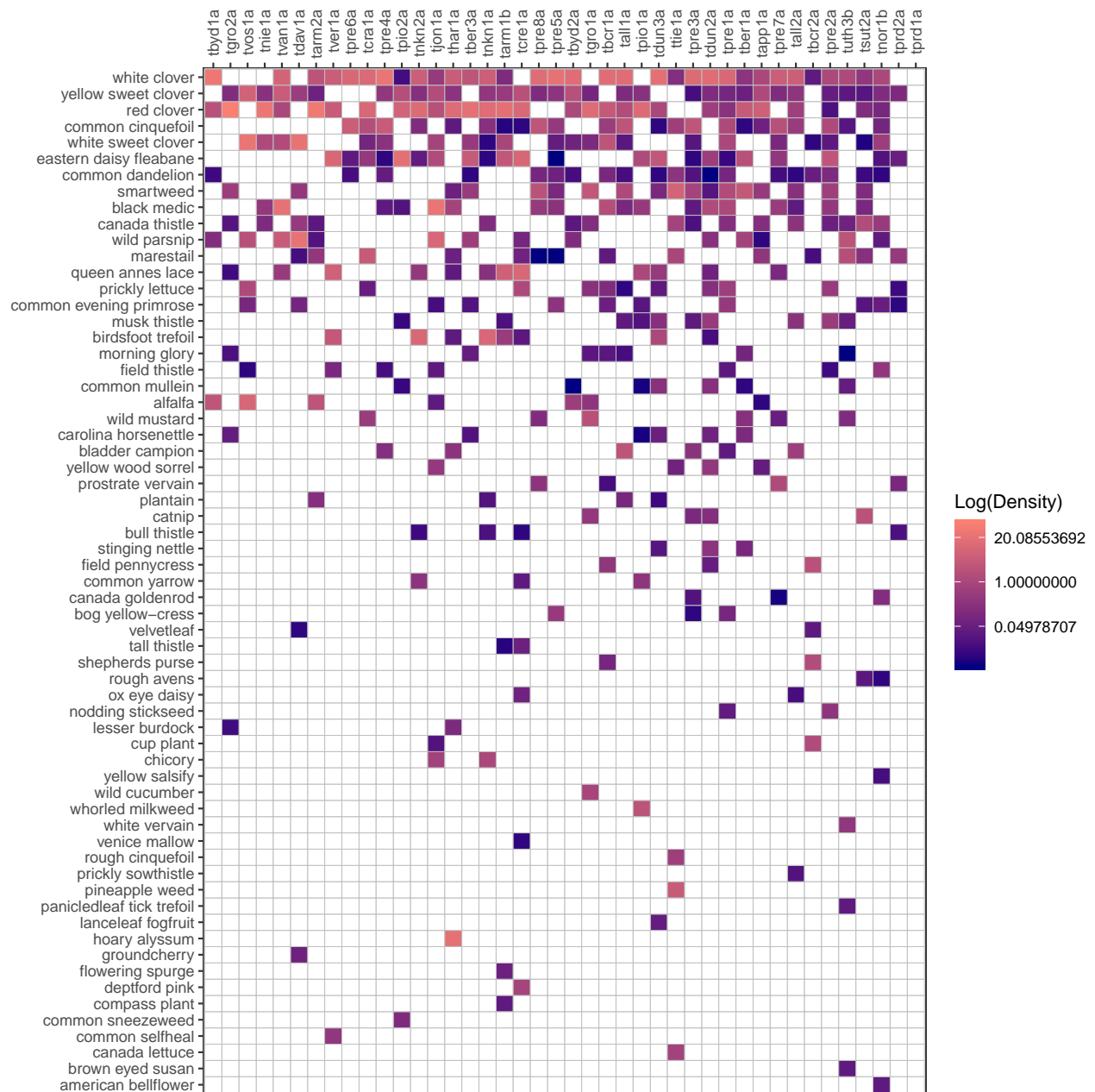


Figure 9: This plot is a heatmap for density of species non planted with transects on the columns and species on the rows sorting transects by average density and sorting species by average presence for year 2018.