

2022 Herbaceous Weed Report

Prepared by Molly Duncan

Summary

Weeds Swept (patrolled) by Management Type	Acres swept (patrolled)	Worker Hours	Herbicide (gal)	Avg. gal/acre	Avg. hour/acre
Mowed	1530	85	0	N/A	0.056
Second Sweep	1128	69	63	0.056	0.061
Backpack	771	209	323	0.419	0.271
Tractor JD9	715	105	1240	1.734	0.147
Basal Bark	473	110	310	0.655	0.233
Tractor Big Boom	395	49	4025	10.184	0.124
Tractor Boomless	376	61	2971	7.903	0.162
Spade	295	45	10	0.034	0.153
Third Sweep	59	16	8	0.135	0.270
Other	2	2	3	1.717	1.145
Totals	5744	751	8953		

Table 1: Summary of stewardship performed by Nachusa’s staff and seasonal crew in 2022. The crews sweep fields, meaning they walk or tractor drive fields. For example, 1530-acres mowed means we swept that huge area with a mower on the back of tractor. The mower was rarely mowing. Example 2: Backpack sweep of 771 acres just means we swept/patrolled those acres, not applied herbicide to all of them. The “Second Sweep” category does not specify between management types, meaning it could be a second sweep done with the mower, a backpack sprayer, etc.

Nachusa staff and seasonal crew treated a record 5,744 acres for weeds in 2022. It should be noted that this is largely due to the work of Nachusa’s Land Steward, Phil Nagorny. He conducted transects in many of the plantings using a tractor and either a small flail mower or a batwing mower. The 2022 season was the first year this method was used extensively.

Weed Species

Weed Species	Worker Hours	Acres	Herbicide (gal)	Avg. hours/acre
White Sweet Clover	151	2402.20	1621	0.063
BFT	103	611.76	567	0.168
Yellow Sweet Clover	98	1284.46	2945	0.076
Reed Canary	73	155.25	1306	0.470
Asian Bushclover	60	164.62	75	0.364
Mesophytic Trees	46	173.60	539	0.265
Honeysuckle	45	122.85	255	0.366
King Devil	40	308.52	322	0.130

Other	25	34.88	90	0.717
Willow	16	53.24	869	0.301

Table 2: Summary of the top 10 weeds managed for in 2022

Although multiple weed species can be treated for in a sweep, this table only analyzes data from weeds that were inputted as the primary target (“Weed Species 1” in Field Maps).

Yellow and White Sweet Clover and BFT continue to be the weeds that require the most resources to treat. On the other hand, Reed Canary and Asian Bushclover (ABC) were the most time intensive, requiring the most worker hours per acre. Additionally, the treatment of ABC increased significantly in 2022, as shown by **Table 3**.

Year	Worker Hours	Acres	Herbicide (gal)
2022	60	164.62	75
2020	2	4.95	0.5
2019	2	4.00	1
2017	15	66.78	302.6

Table 3: Summary of Asian Bushclover efforts from 2017-2022.

Records for 2017, 2019, and 2020 refer to ABC as *Lespedeza cuneata*. Although the two weeds are similar, we now recognize our populations as *Lespedeza daurica*.

Weed Species	Worker Hours	Acres	Herbicide (gal)	Avg. hours/acre
White Sweet Clover	151	2402.20	1621	0.063
<i>Second Sweep</i>	36	1065.92	1	0.034
<i>Mowed</i>	34	706.97	0	0.048
<i>Tractor JD9</i>	27	204.78	110	0.132
<i>Spade</i>	24	167.42	3	0.143
<i>Backpack</i>	14	52.79	17	0.265
<i>Tractor Boomless</i>	9	120.05	430	0.075
<i>Tractor Big Boom</i>	7	84.26	1060	0.083
BFT	103	611.76	567	0.168
<i>Backpack</i>	53	237.59	131	0.223
<i>Second Sweep</i>	22	36.20	49	0.608
<i>Tractor JD9</i>	16	286.18	240	0.056
<i>Third Sweep</i>	8	20.30	7	0.394
<i>Tractor Big Boom</i>	3	22.32	100	0.134
<i>Tractor Boomless</i>	1	9.18	40	0.109
Yellow Sweet Clover	98	1284.46	2945	0.076
<i>Mowed</i>	36	779.20	0	0.046
<i>Tractor Boomless</i>	20	155.08	1370	0.129
<i>Tractor Big Boom</i>	17	205.88	1530	0.083
<i>Spade</i>	12	39.43	7	0.304
<i>Backpack</i>	9	52.23	13	0.172
<i>Tractor JD9</i>	4	52.63	25	0.076
Reed Canary	73	155.25	1306	0.470
<i>Backpack</i>	23	38.17	36	0.603
<i>Tractor JD9</i>	22	66.88	365	0.329
<i>Tractor Boomless</i>	22	38.50	735	0.571
<i>Tractor Big Boom</i>	6	11.70	170	0.513
Asian Bushclover	60	164.62	75	0.364
<i>Backpack</i>	41	98.62	40	0.416
<i>Second Sweep</i>	9	25.69	8	0.350
<i>Third Sweep</i>	7	33.37	0	0.210
<i>Tractor JD9</i>	3	6.94	27	0.432

Table 4: Summary of the top 5 weeds by management type. Bolded values are totals for the entire species and italicized values are specific to management type

Weed Species	Worker Hours	Acres	Herbicide (gal)	Avg. hours/acre
White Sweet Clover	151	2402.20	1621	0.063
<i>Tractor</i>	<i>77</i>	<i>1116.06</i>	<i>1600</i>	<i>0.34</i>
<i>On-Foot</i>	<i>38</i>	<i>220.21</i>	<i>20</i>	<i>0.41</i>
BFT	103	611.76	567	0.168
<i>Tractor</i>	<i>20</i>	<i>317.68</i>	<i>380</i>	<i>0.299</i>
<i>On-Foot</i>	<i>53</i>	<i>237.59</i>	<i>131</i>	<i>0.223</i>
Yellow Sweet Clover	98	1284.46	2945	0.076
<i>Tractor</i>	<i>77</i>	<i>1192.80</i>	<i>2925</i>	<i>0.334</i>
<i>On-Foot</i>	<i>21</i>	<i>91.66</i>	<i>20</i>	<i>0.477</i>
Reed Canary	73	155.25	1306	0.470
<i>Tractor</i>	<i>50</i>	<i>117.08</i>	<i>1270</i>	<i>1.413</i>
<i>On-Foot</i>	<i>23</i>	<i>38.17</i>	<i>36</i>	<i>0.603</i>
Asian Bushclover	60	164.62	75	0.364
<i>Tractor</i>	<i>3</i>	<i>6.94</i>	<i>27</i>	<i>0.432</i>
<i>On-Foot</i>	<i>41</i>	<i>98.62</i>	<i>40</i>	<i>0.416</i>

Table 5: Summary of Table 4 comparing management by tractor vs. on-foot. Data from resweeps were not included as they can be done by tractor, spade, etc.

The general trends from Table 4 and Table 5 show that the tractor was the most efficient tool to treat Yellow and White Sweet Clover in 2022. For BFT and ABC, on-foot treatments were often the most efficient. This is likely because treating BFT and ABC requires more time devoted to searching for the plant, whereas the Sweet Clovers are relatively easy to spot from a tractor.

Management Units

Management Unit	Worker Hours	Acres	Herbicide (gal)
Hook Larson	46	147.03	127
Meiners Wetlands	21	70.34	155
Leopold Knob	16	49.25	29
Seven Knobs	11	13.33	15
Big Woods Prairie Planting	11	14.74	108
Oak Island	10	59.60	10
Prairie Potholes	9	94.81	17
Clear Creek Knolls	8	137.92	30
East Heinkel	7	76.92	3
Senger	7	59.322	112

Table 6: Summary of the top 10 most resource-intensive management units in 2022

It should be noted that the most resource-intensive unit was actually “(blank),” meaning that no management unit name was inputted in Field Maps. Entries without a management unit totaled 529 worker hours, 4,488 acres, and 8,037 gallons of herbicide. This implies that management unit names need to be more standardized so that there is less confusion when inputting the name of an area.

Management Unit	Worker Hours	Acres	Herbicide (gal)
Hook Larson	46	147.03	127
<i>Backpack</i>	23	80.80	14
<i>Spade</i>	12	31.24	8
<i>Second Sweep</i>	7	22.66	5
<i>Mowed</i>	2	5.61	0
<i>Tractor Big Boom</i>	2	6.72	100
Meiners Wetlands	21	70.34	155
<i>Backpack</i>	8	7.62	11
<i>Basal Bark</i>	8	54.57	24
<i>Tractor Big Boom</i>	4	7.23	120
<i>Spade</i>	1	0.92	0
Leopold Knob	16	49.25	29
<i>Third Sweep</i>	8	20.30	7
<i>Backpack</i>	4	13.86	14
<i>Second Sweep</i>	4	15.09	8
Seven Knobs	11	13.33	15
<i>Backpack</i>	11	13.33	15
Big Woods Prairie Planting	11	14.74	108
<i>Backpack</i>	8	13.06	38
<i>Tractor JD9</i>	3	1.69	70
Oak Island	10	59.60	10
<i>Backpack</i>	10	59.60	10
Prairie Potholes	9	94.81	17
<i>Backpack</i>	8	93.25	7
<i>Tractor JD9</i>	1	1.56	10
Clear Creek Knolls	8	137.92	30
<i>Basal Bark</i>	6	128.86	30
<i>Spade</i>	2	9.06	0
East Heinkel	7	76.92	3
<i>Backpack</i>	7	76.92	3
Senger	7	59.32	112
<i>Backpack</i>	5	51.32	12
<i>Tractor Boomless</i>	2	8.00	100

Table 7: Breakdown of Table 6 by management type

Management Unit	Worker Hours	Acres	Herbicide (gal)
Hook Larson	46	147.03	127
<i>Asian Bushclover</i>	26	103.20	16
<i>Yellow Sweet Clover</i>	17	38.73	108
<i>Butter and Eggs</i>	2	0.20	2
<i>White Sweet Clover</i>	1	4.90	1
Meiners Wetlands	21	70.34	155
<i>Mesophytic Trees</i>	8	54.57	24
<i>Asian Bushclover</i>	7	7.38	8
<i>Yellow Sweet Clover</i>	4	7.23	120
<i>White Sweet Clover</i>	2	1.16	3
Leopold Knob	16	49.25	29
<i>BFT</i>	16	49.25	29
Seven Knobs	11	13.33	15
<i>Asian Bushclover</i>	8	4.73	14
<i>BFT</i>	3	8.60	1
Big Woods Prairie Planting	11	14.74	108
<i>BFT</i>	8	13.06	38
<i>Reed Canary</i>	3	1.69	70
Oak Island	10	59.60	10
<i>King Devil</i>	10	59.60	10
Prairie Potholes	9	94.81	17
<i>BFT</i>	5	49.97	2
<i>King Devil</i>	3	43.28	5
<i>N/A</i>	1	1.56	10
Clear Creek Knolls	8	137.92	30
<i>Black Locust</i>	6	128.86	30
<i>White Sweet Clover</i>	2	9.06	0
East Heinkel	7	76.92	3
<i>King Devil</i>	5	65.82	1
<i>White Sweet Clover</i>	2	11.09	2
Senger	7	59.32	112
<i>Yellow Sweet Clover</i>	7	59.31	110
<i>Autumn Olive</i>	<i>N/A</i>	0.02	2

Table 8: Breakdown of Table 6 by weed type

Comparison by Steward

Steward Name	Acres	Worker Hours	Herbicide (gal)
PN	3305.06	228	6589
<i>Mowed</i>	1318.04	68	0
<i>Second Sweep</i>	1038.87	35	0
<i>Tractor Boomless</i>	354.58	55	2691
<i>Tractor Big Boom</i>	337.85	28	3230
<i>Tractor JD9</i>	255.71	41	667
<i>Backpack</i>	0.01	1	1
Crew	1393.65	305	585
<i>Backpack</i>	676.35	151	262
<i>Basal Bark</i>	386.86	77	248
<i>Spade</i>	255.08	38	10
<i>Second Sweep</i>	55.05	31	58
<i>Third Sweep</i>	20.30	8	7
BK	927.49	182	1709
<i>Tractor JD9</i>	459.58	64	573
<i>Mowed</i>	211.70	17	0
<i>Tractor Big Boom</i>	57.39	21	795
<i>Backpack</i>	50.26	46	44
<i>Basal Bark</i>	41.62	12	12
<i>Third Sweep</i>	38.94	8	1
<i>Second Sweep</i>	27.06	1	1
<i>Tractor Boomless</i>	21.35	6	280
<i>Spade</i>	17.84	5	0
<i>Other</i>	1.75	2	3
BK & other (SK, Crew, etc.)	90.29	17	39
<i>Backpack</i>	44.52	11	16
<i>Spade</i>	22.04	2	0
<i>Basal Bark</i>	16.36	2	19
<i>Second Sweep</i>	7.37	2	4
MC	24.25	2	1
<i>Basal Bark</i>	24.25	2	1
SK	2.25	10	30
<i>Basal Bark</i>	2.25	10	30

Table 9: Summary of 2022 stewardship by steward name and management type

It is important to note that Land Steward Phil Nagorny treated more acres for weeds than every other steward combined, again highlighting the efficiency of using the tractor and mower for weed transects in plantings. Also, for ease of data analysis, stewards should use the same name for all entries; changing the capitalization or spacing will result in several different steward names for the same person (ex. BK vs. Bk or PN vs. pn).

Comparison by Year

Year	Acres	Worker Hours	Herbicide (gal)	Avg. hour/acre
2022	5745	751	8953	0.131
2020	2989	738	3486	0.247
2019	3005	1101	2752	0.366
2017	1666	948	2952	0.569

Table 10: Comparison of Nachusa's stewardship totals from 2017-2022

Since 2017, Nachusa has nearly doubled the number of acres treated, while roughly halving the average hours per acre spent doing so.

Key Takeaways

- Conducting weed transects using a tractor and mower notably increased the efficiency of Nachusa's weed management efforts in 2022. The efficacy and long-term viability of this method will need to be evaluated in future seasons. It raises the question of if Nachusa would be best served using a tractor and mower for the majority of its weed sweeps, while a smaller seasonal crew focuses on remnants and high priority weeds that are harder to spot from a tractor (ABC, BFT, etc.).
- Worker resources devoted to ABC increased significantly in 2022. New populations were discovered and should be revisited in 2023. The impacts of these efforts should be evaluated during future weed seasons to assess whether new approaches are required to curtail the presence of ABC on the preserve. Additionally, the preemergent herbicide Escalade will be sprayed on ABC and BFT areas after the spring fire season.
- The majority of acres treated in 2023 were inputted into Field Maps without a management unit name. Unit names may need to be more standardized so that there is less confusion when inputting the name of an area.
- Since 2017, Hook Larson has consistently been one of the most resource-intensive management units. In 2022, one-third of worker hours at Hook Larson were spent spading out seeding Sweet Clover. Mowing earlier in the summer could help reduce time spent spading later.
- Making more than one or two visits to weed occurrences makes a big difference and the 2022 crew was patient and persistent (BK).

Priorities for 2023

- Hook Larson sweet clover areas
- Units where preemergent herbicide Escalade was sprayed (BFT & ABC areas)
- ABC locations