

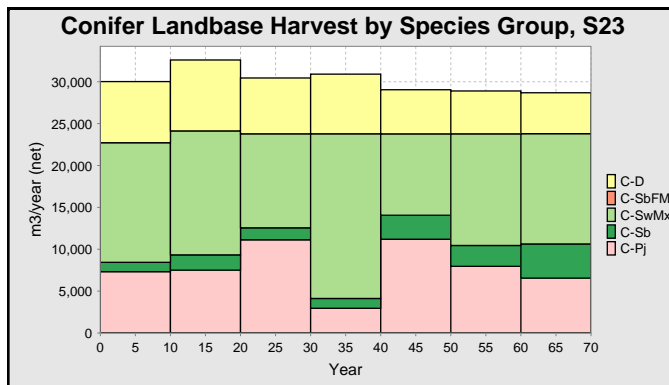
**The Alberta-Pacific FMA Area 2015 Timber Supply Analysis**  
**FMU S23 - V1\_S23\_refinement\_v5c**



Summary Category	Primary Conifer	Primary Deciduous	Total
Net Harvestable Landbase (ha)	-	-	54,495
2011 Approved AAC (net m3/yr)	27,578	89,029	116,607
Initial LRSY (net m3/yr)	25,765	93,399	119,164
2015 Patchworks AAC (net m3/yr)	23,684	90,646	114,330
Stand Retention Deduction	3% Pri only	5% Pri only	
Cull Deduction	2% Pri/Inc	4% Pri/Inc	

The landbase designation for this FMU is based on initial broad cover group assignments of D to deciduous and C/CD/DC to conifer.

**Patchworks Conifer Landbase Harvest Summary by Species Group: 70 Year Average**



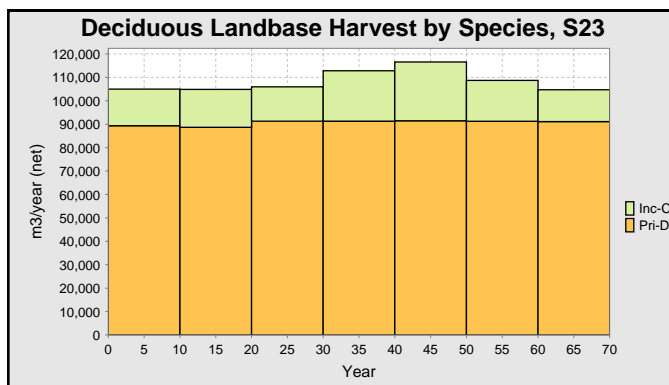
Primary Coniferous Average Harvest		
Species Group		net m3/year
C-SwMx	58%	13,741
C-Sb	9%	2,141
C-Pj	33%	7,802
<b>Total</b>		<b>23,684</b>

Primary SbFM Average Harvest		
Species Group		net m3/yr
C-SbFM	100%	0
<b>Total</b>		<b>0</b>

Incidental Deciduous Average Harvest		
Species Group		net m3/yr
D	100%	6,402
<b>Total</b>		<b>6,402</b>

**Conifer Landbase Harvest 30,086**

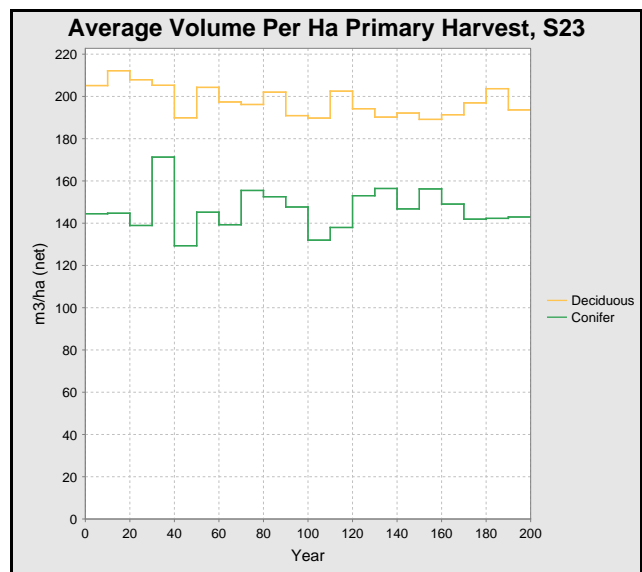
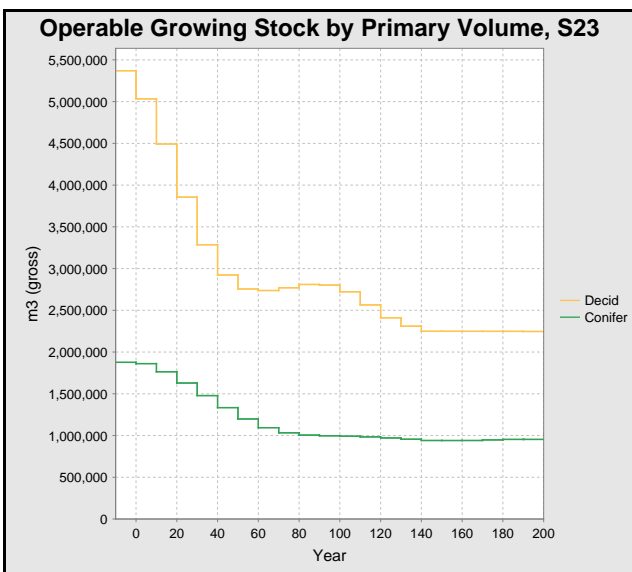
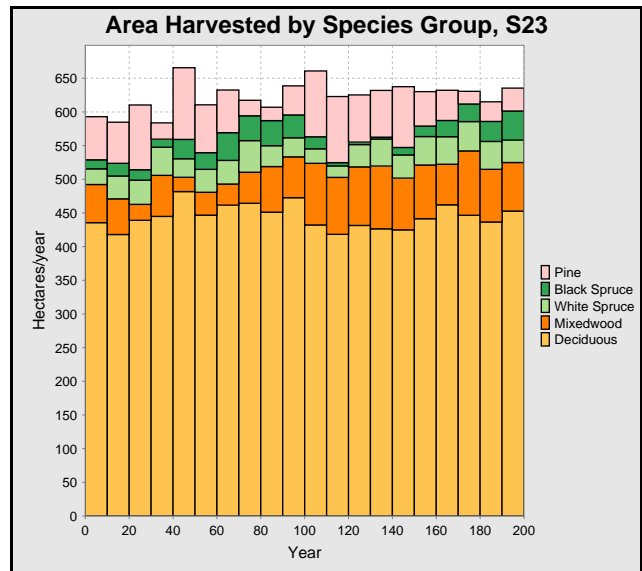
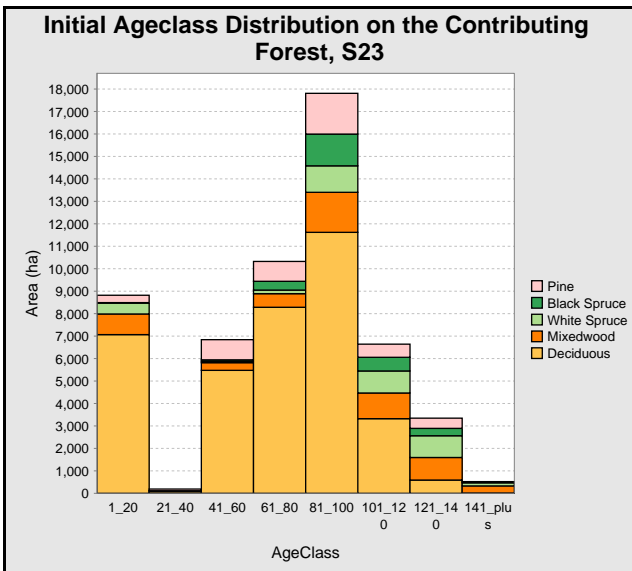
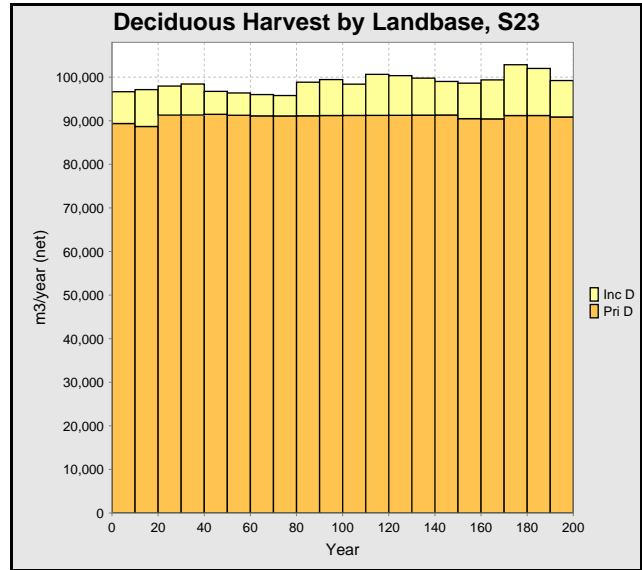
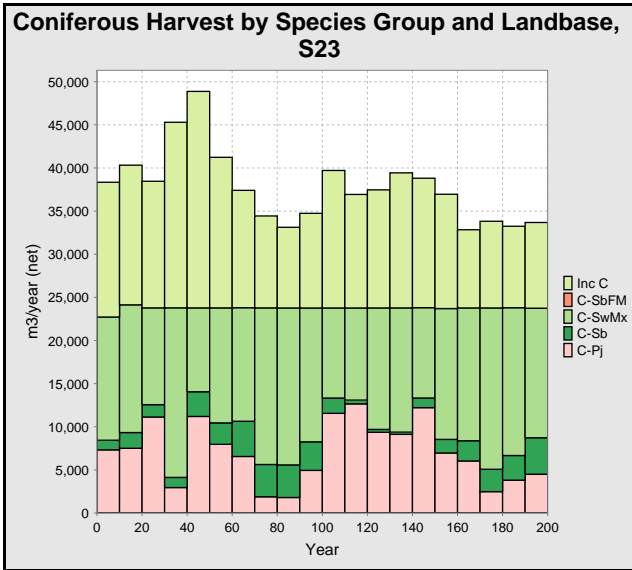
**Patchworks Deciduous Landbase Harvest Summary by Species Group: 70-year Average**

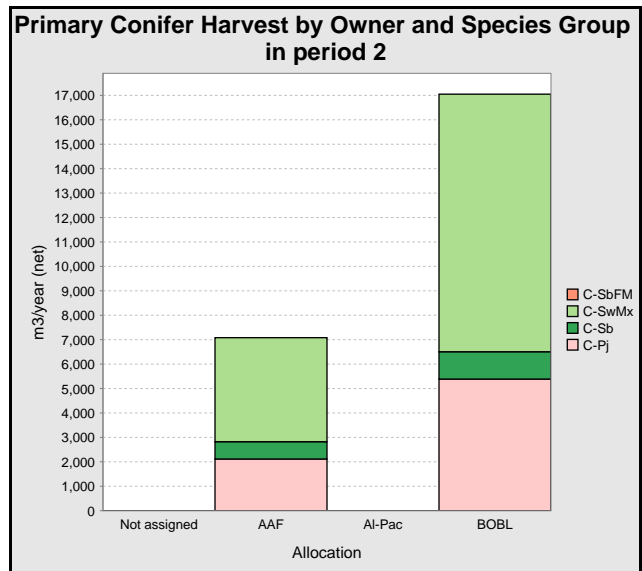
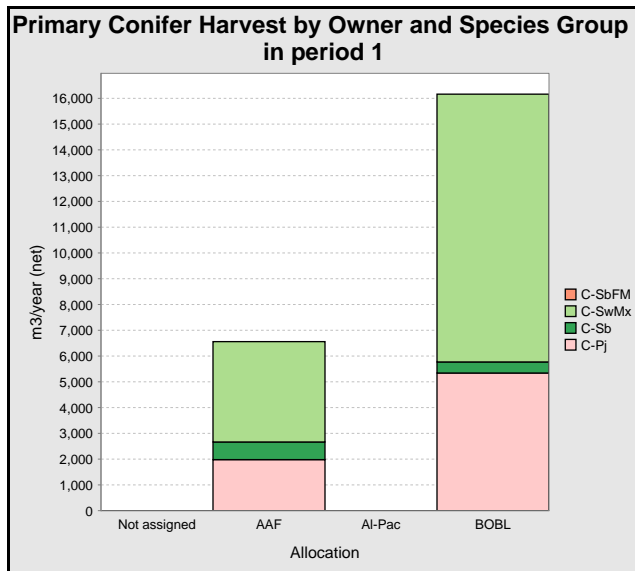
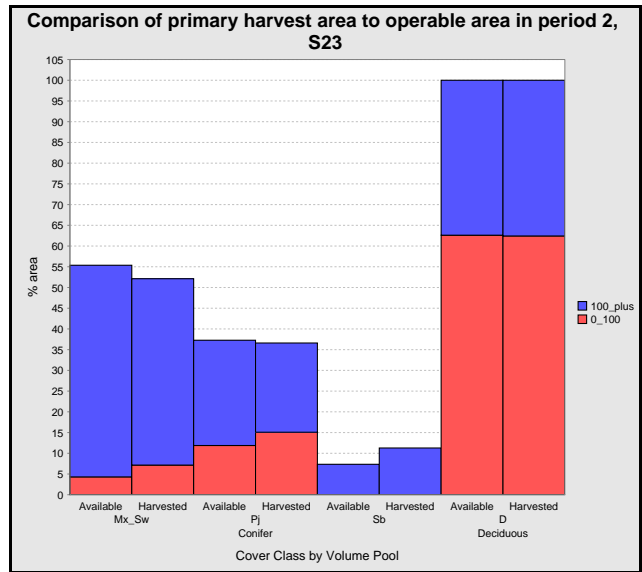
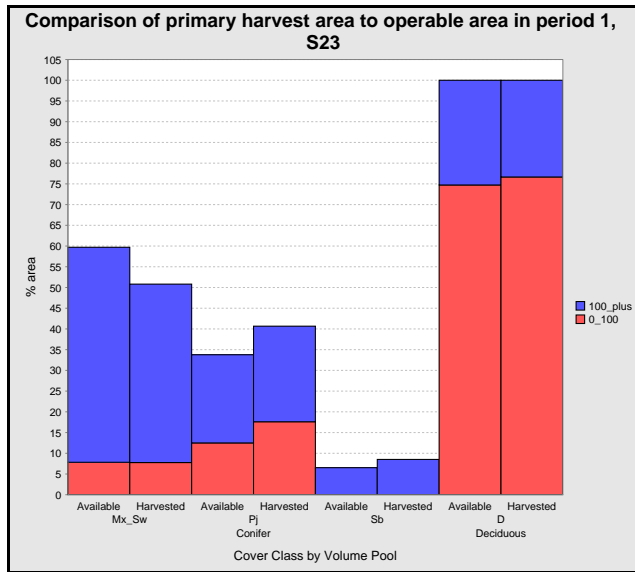


Primary Deciduous Average Harvest		
Species Group		net m3/yr
D	100%	90,646
<b>Total</b>		<b>90,646</b>

Incidental Coniferous Average Harvest		
Species Group		net m3/yr
C	100%	17,738
<b>Total</b>		<b>17,738</b>

**Deciduous Landbase Harvest 108,383**

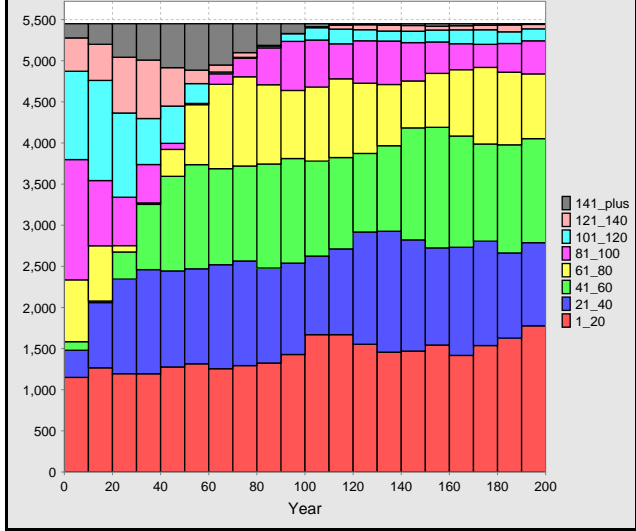




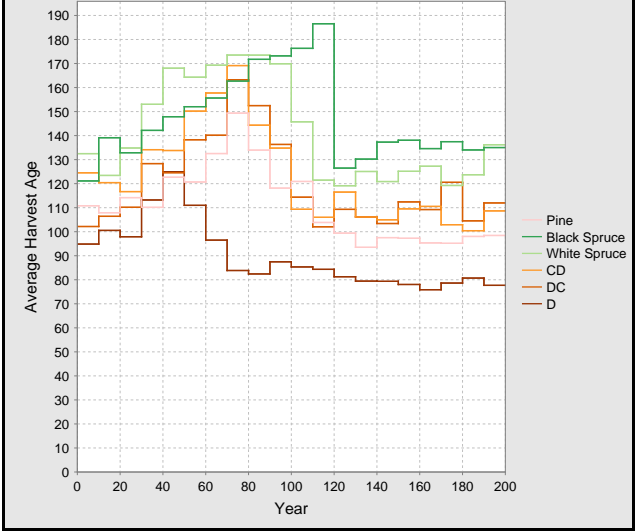
	C-Pj	C-Sb	C-SwMx	C-SbFM	Total
<b>Not assigned</b>	0	0	0	0	0
<b>AAF</b>	1,981	685	3,893	0	6,559
<b>Al-Pac</b>	0	0	0	0	0
<b>BOBL</b>	5,342	429	10,391	0	16,162

	C-Pj	C-Sb	C-SwMx	C-SbFM	Total
<b>Not assigned</b>	0	0	0	0	0
<b>AAF</b>	2,115	708	4,259	0	7,082
<b>Al-Pac</b>	0	0	0	0	0
<b>BOBL</b>	5,387	1,119	10,545	0	17,050

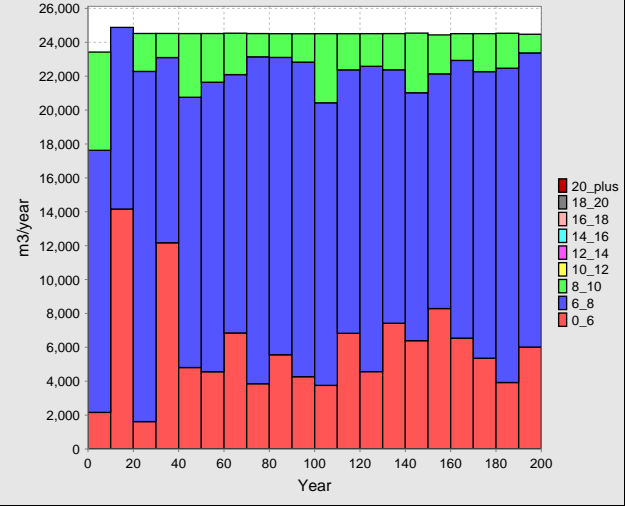
**Age Class Distribution on the Contributing Forest, S23**



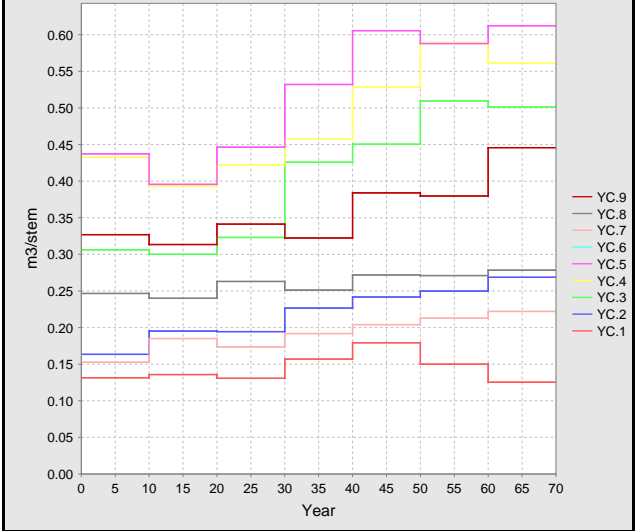
**Average Harvest Age by Species Group, S23**



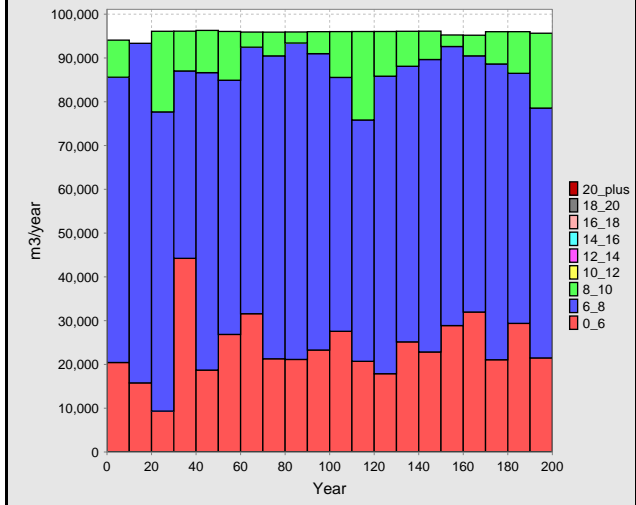
**Primary conifer volume by estimated haul times (h), S23**



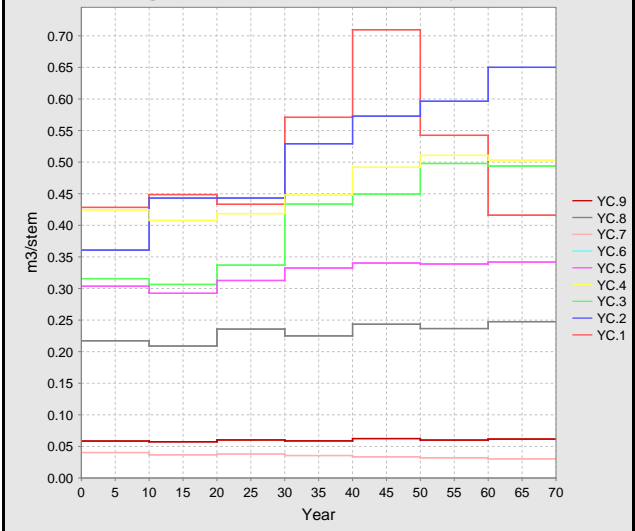
**Average Conifer Piece Size by YC, S23**



**Primary deciduous volume by estimated haul time (h), S23**



**Average Deciduous Piece Size by YC, S23**



## Strata description report - period 1

Area harvested by yield strata and age (hectares). This is an FMU summary of the digitally submitted file that details these areas by compartment.

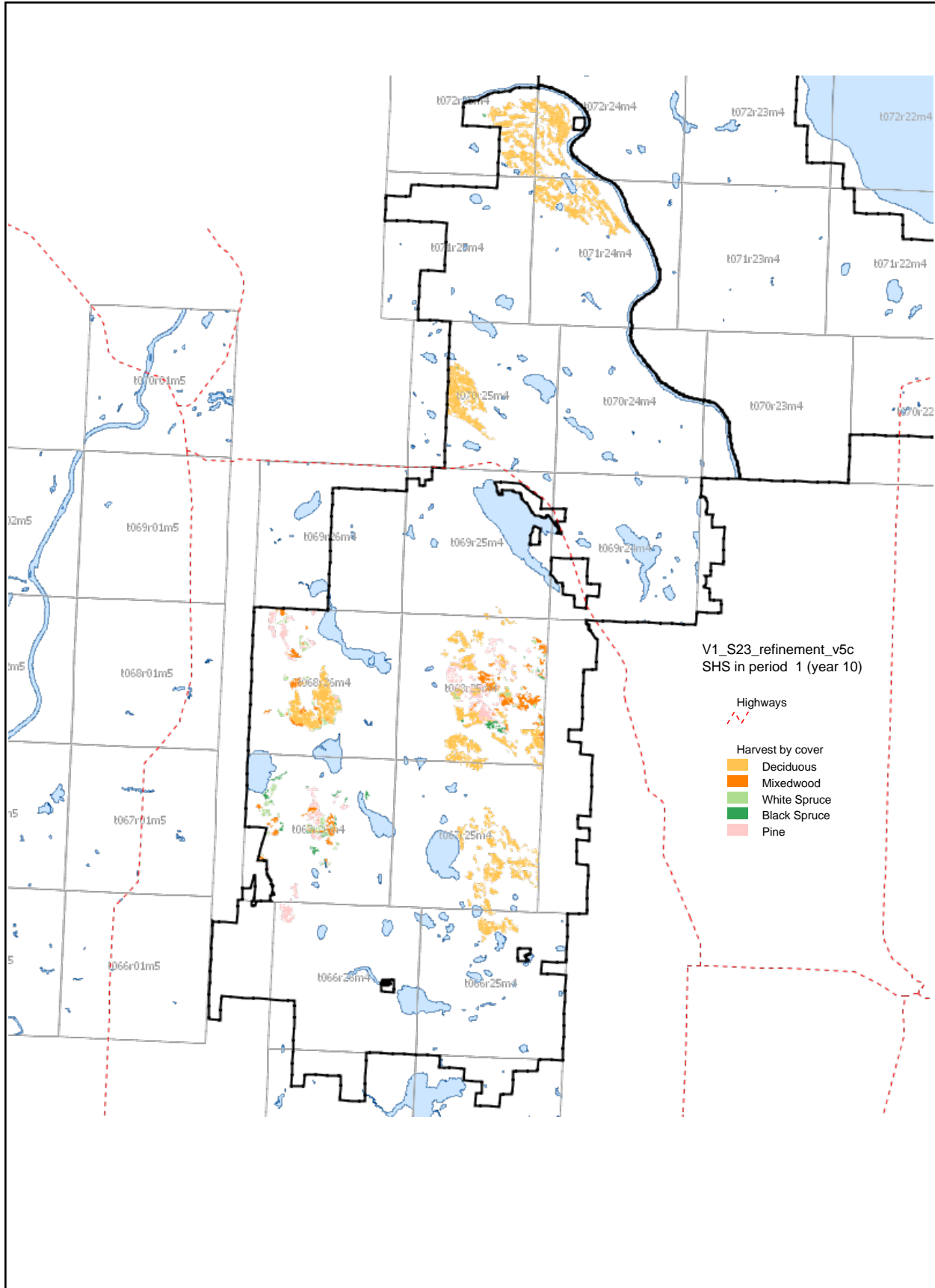
		Age Class										Total
		0_60	60_70	70_80	80_90	90_100	100_110	110_120	120_130	130_140	140_plus	
Strata	Aw-Nat	0	27	578	439	735	333	246	76	20	0	2,454
	AwU-Nat	0	73	398	256	833	277	8	22	36	0	1,903
	AwSx-Nat	0	0	0	10	57	45	42	0	24	8	187
	SxAw-Nat	0	0	0	5	50	16	0	26	98	186	380
	Sw-Nat	0	0	0	0	0	43	41	23	84	42	233
	SbFM-Nat	0	0	0	0	0	0	0	0	0	0	0
	SbG-Nat	0	0	0	0	0	0	0	130	4	0	134
	PjMx-Nat	0	0	0	0	45	5	0	22	0	0	72
	Pj-Nat	0	0	0	0	231	82	22	230	0	1	567
	Hw-RSA	0	0	0	0	0	0	0	0	0	0	0
	HwSx-RSA	0	0	0	0	0	0	0	0	0	0	0
	SwHw-RSA	0	0	0	0	0	0	0	0	0	0	0
	Sw-RSA	0	0	0	0	0	0	0	0	0	0	0
	SbHw-RSA	0	0	0	0	0	0	0	0	0	0	0
	Sb-RSA	0	0	0	0	0	0	0	0	0	0	0
	HwPI-RSA	0	0	0	0	0	0	0	0	0	0	0
	PIHw-RSA	0	0	0	0	0	0	0	0	0	0	0
	PI-RSA	0	0	0	0	0	0	0	0	0	0	0
	AwSx-Int	0	0	0	0	0	0	0	0	0	0	0
	SxAw-Int	0	0	0	0	0	0	0	0	0	0	0
	Sw-Int	0	0	0	0	0	0	0	0	0	0	0
AwSw-UP	0	0	0	0	0	0	0	0	0	0	0	
SwAw-UP	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>		0	101	976	710	1,953	800	358	528	267	237	5,929

## Strata description report - period 2

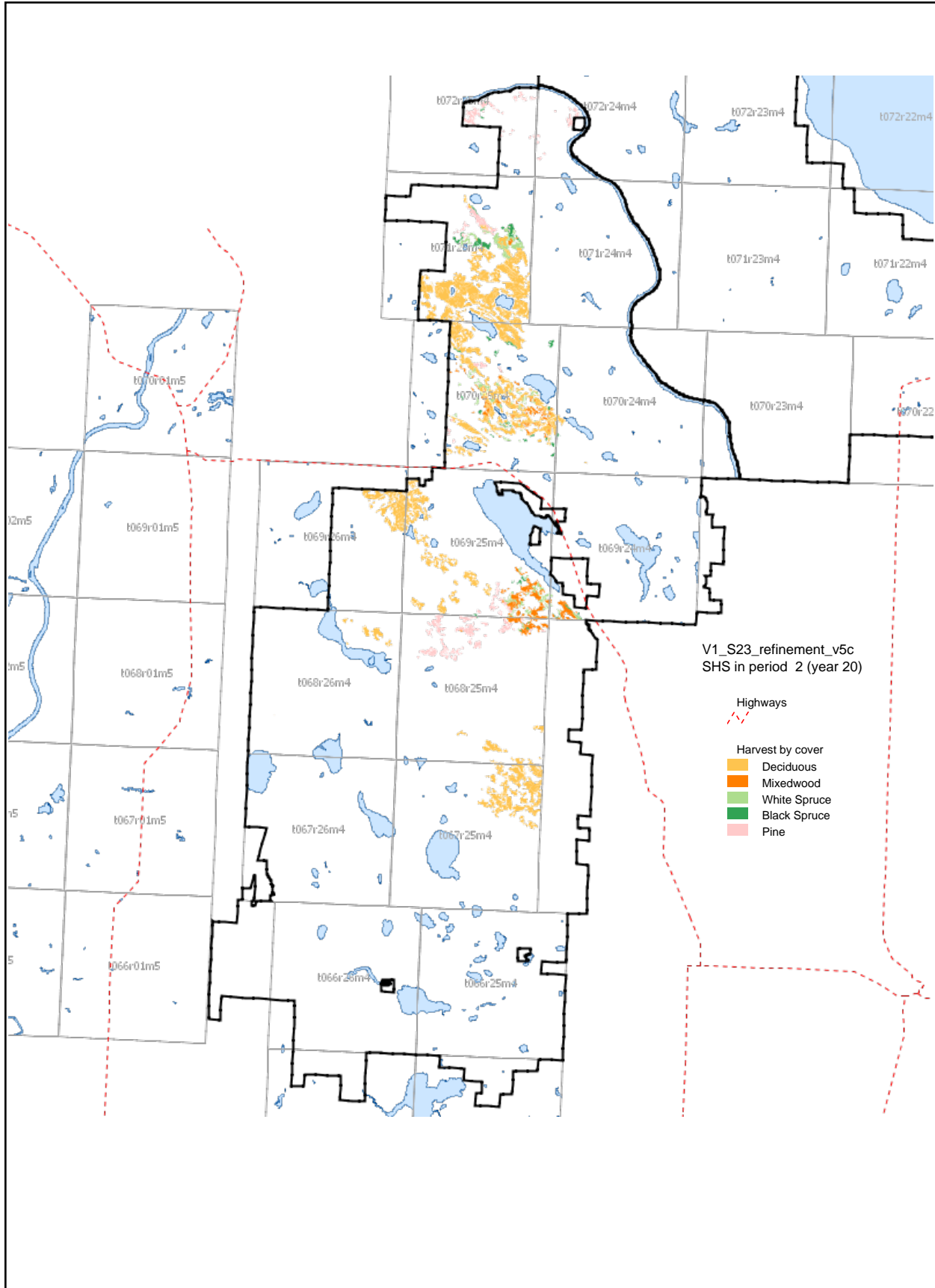
Area harvested by yield strata and age (hectares). This is an FMU summary of the digitally submitted file that details these areas by compartment.

		Age Class										Total
		0_60	60_70	70_80	80_90	90_100	100_110	110_120	120_130	130_140	140_plus	
Strata	Aw-Nat	0	71	25	899	936	391	111	162	35	0	2,631
	AwU-Nat	0	0	22	359	298	423	307	113	27	0	1,549
	AwSx-Nat	0	0	0	27	87	143	9	0	5	38	310
	SxAw-Nat	0	0	0	2	3	20	16	40	9	129	220
	Sw-Nat	0	0	0	0	0	129	37	78	50	45	339
	SbFM-Nat	0	0	0	0	0	0	0	0	0	0	0
	SbG-Nat	0	0	0	0	0	0	0	71	42	75	188
	PjMx-Nat	0	0	0	0	40	7	1	6	5	0	59
	Pj-Nat	0	0	0	0	212	243	26	28	27	16	551
	Hw-RSA	0	0	0	0	0	0	0	0	0	0	0
	HwSx-RSA	0	0	0	0	0	0	0	0	0	0	0
	SwHw-RSA	0	0	0	0	0	0	0	0	0	0	0
	Sw-RSA	0	0	0	0	0	0	0	0	0	0	0
	SbHw-RSA	0	0	0	0	0	0	0	0	0	0	0
	Sb-RSA	0	0	0	0	0	0	0	0	0	0	0
	HwPI-RSA	0	0	0	0	0	0	0	0	0	0	0
	PIHw-RSA	0	0	0	0	0	0	0	0	0	0	0
	PI-RSA	0	0	0	0	0	0	0	0	0	0	0
	AwSx-Int	0	0	0	0	0	0	0	0	0	0	0
	SxAw-Int	0	0	0	0	0	0	0	0	0	0	0
	Sw-Int	0	0	0	0	0	0	0	0	0	0	0
	AwSw-UP	0	0	0	0	0	0	0	0	0	0	0
	SwAw-UP	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>		0	71	47	1,287	1,575	1,356	507	499	202	303	5,848

# Spatial Harvest Sequence - period 1 (years 1 - 10)



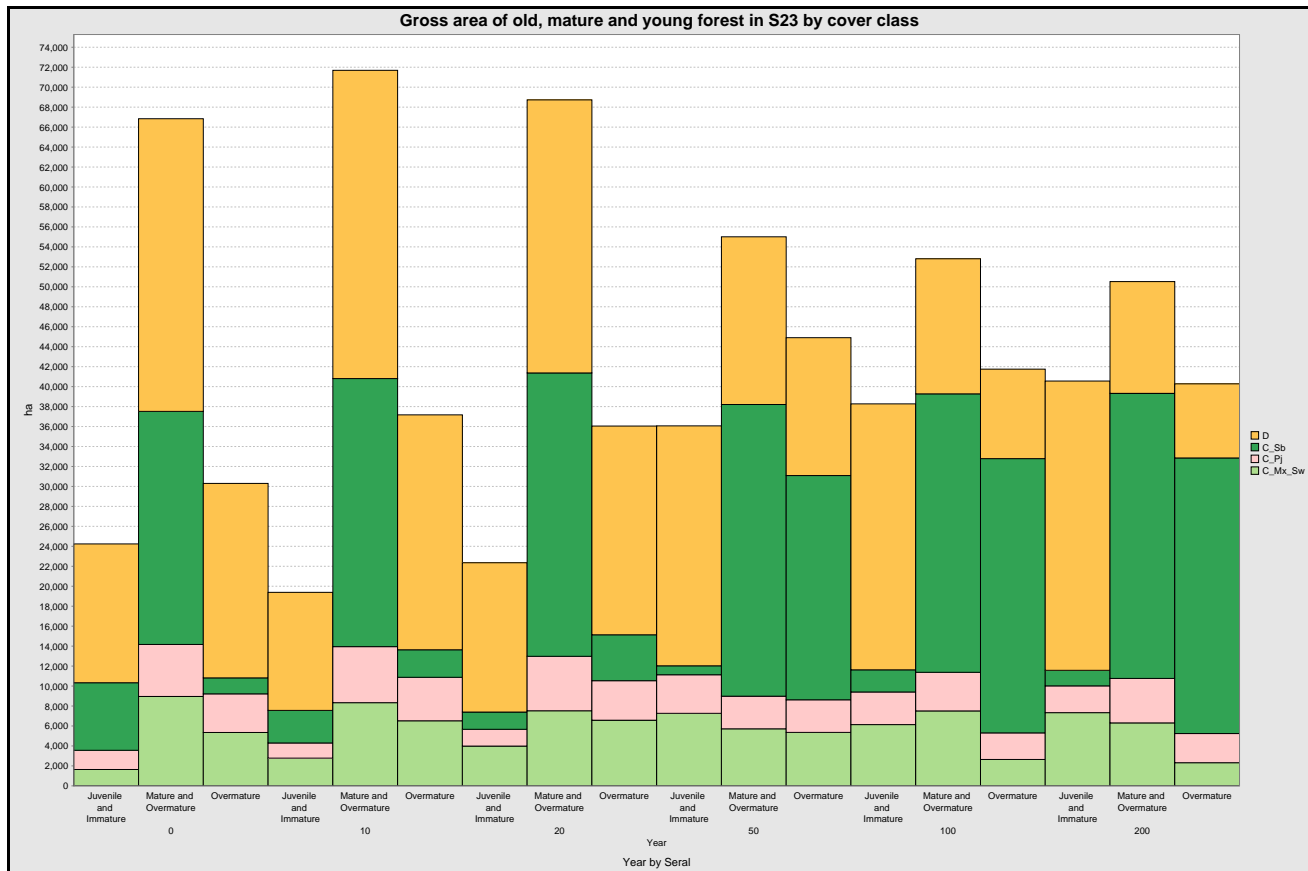
# Spatial Harvest Sequence - period 2 (years 11 - 20)





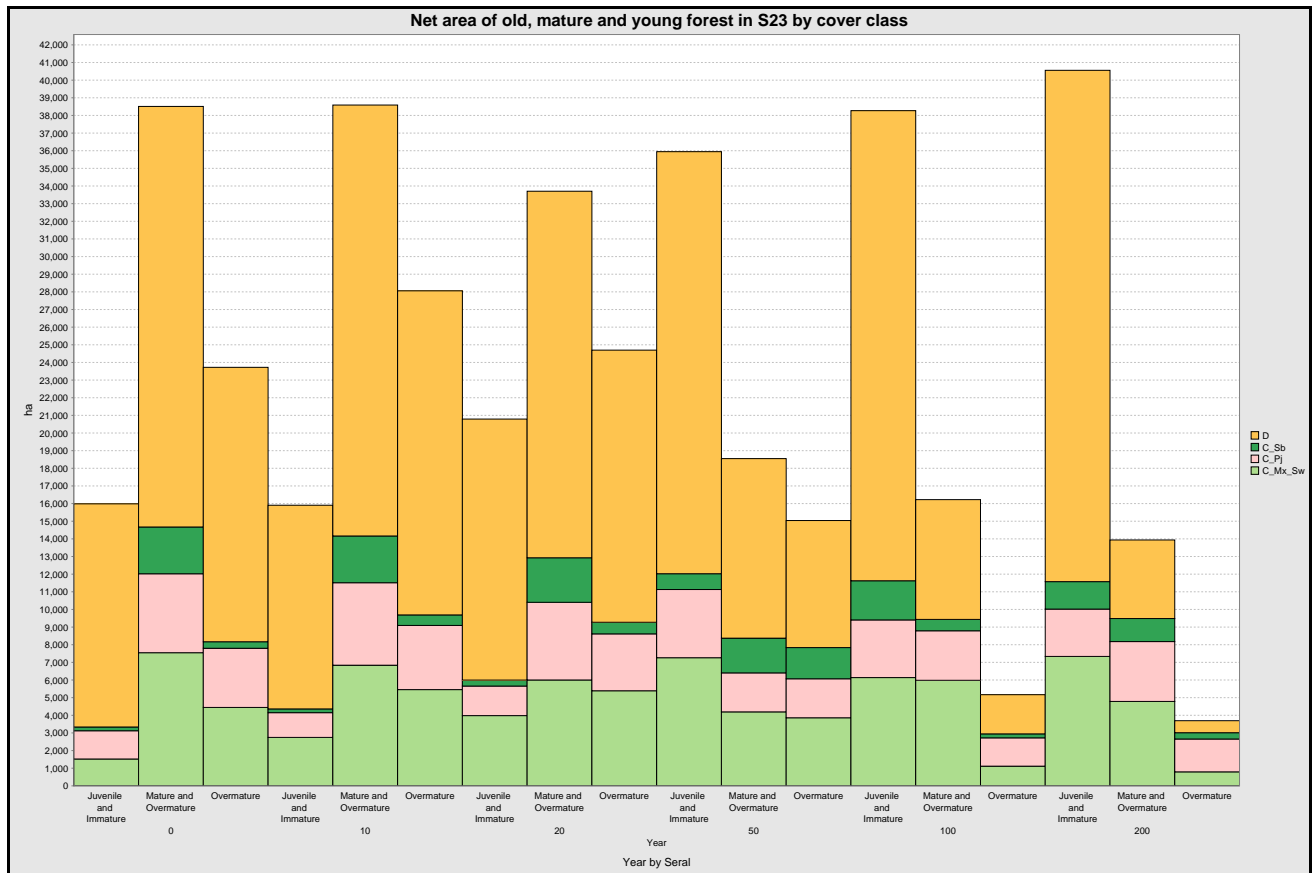
### Voit 1.1.1.1 a) Gross area of old, mature and young forest

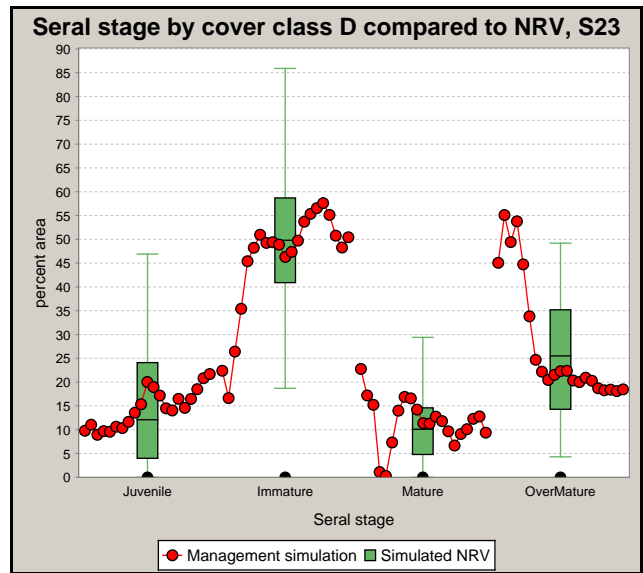
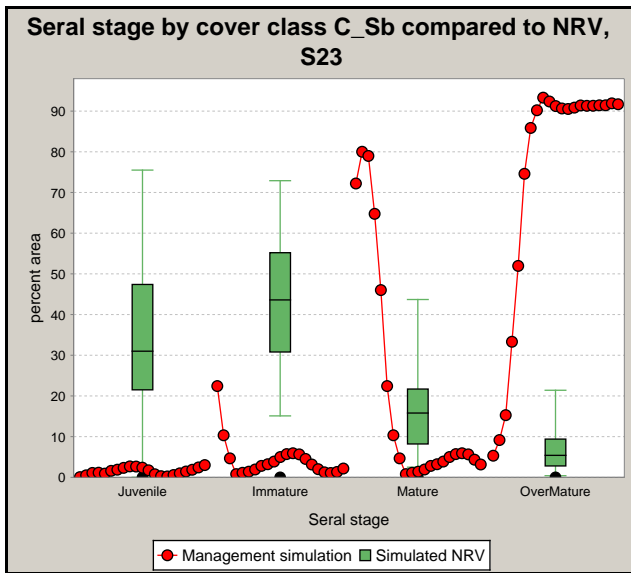
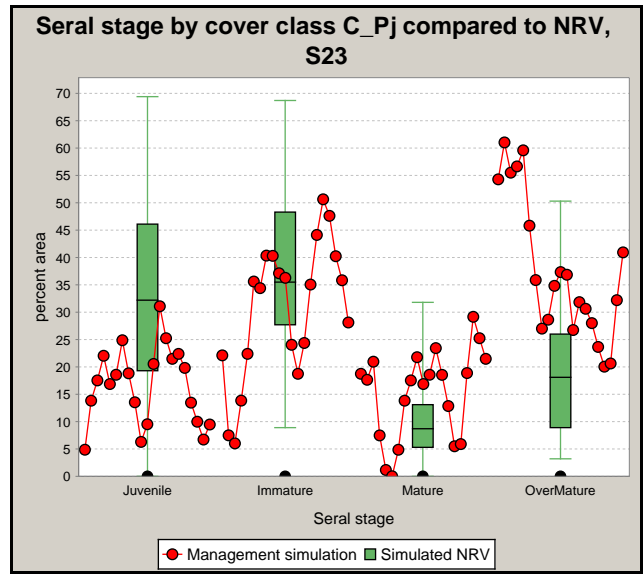
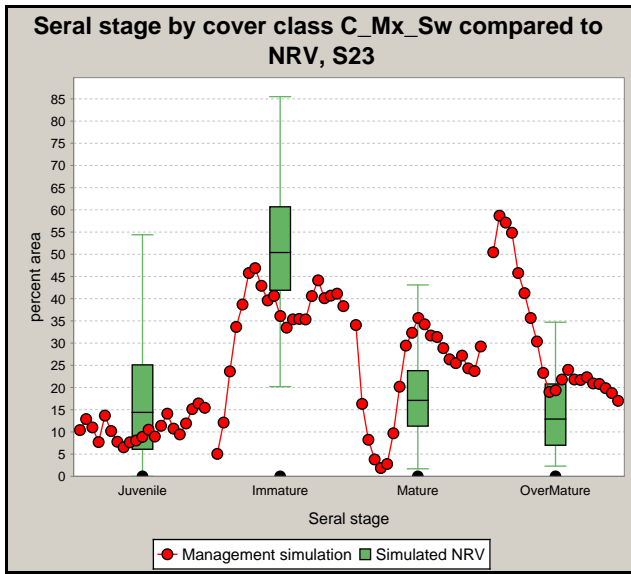
		C_Mx_Sw	C_Pj	C_Sb	D	Total	
Year	0	Juvenile and Immature	1,640	1,924	6,768	13,906	24,239
		Mature and Overmature	8,959	5,209	23,351	29,321	66,840
		Overmature	5,348	3,873	1,600	19,480	30,301
	10	Juvenile and Immature	2,779	1,521	3,261	11,829	19,389
		Mature and Overmature	8,336	5,613	26,858	30,883	71,690
		Overmature	6,522	4,354	2,760	23,535	37,171
	20	Juvenile and Immature	3,987	1,680	1,728	14,958	22,353
		Mature and Overmature	7,525	5,454	28,391	27,355	68,726
		Overmature	6,577	3,960	4,602	20,910	36,049
	50	Juvenile and Immature	7,268	3,865	898	24,037	36,069
		Mature and Overmature	5,717	3,269	29,221	16,804	55,011
		Overmature	5,356	3,269	22,467	13,812	44,904
	100	Juvenile and Immature	6,139	3,267	2,220	26,645	38,271
		Mature and Overmature	7,510	3,867	27,899	13,533	52,809
		Overmature	2,644	2,663	27,480	8,963	41,750
	200	Juvenile and Immature	7,337	2,682	1,557	28,982	40,558
		Mature and Overmature	6,312	4,452	28,562	11,196	50,522
		Overmature	2,322	2,920	27,613	7,424	40,279



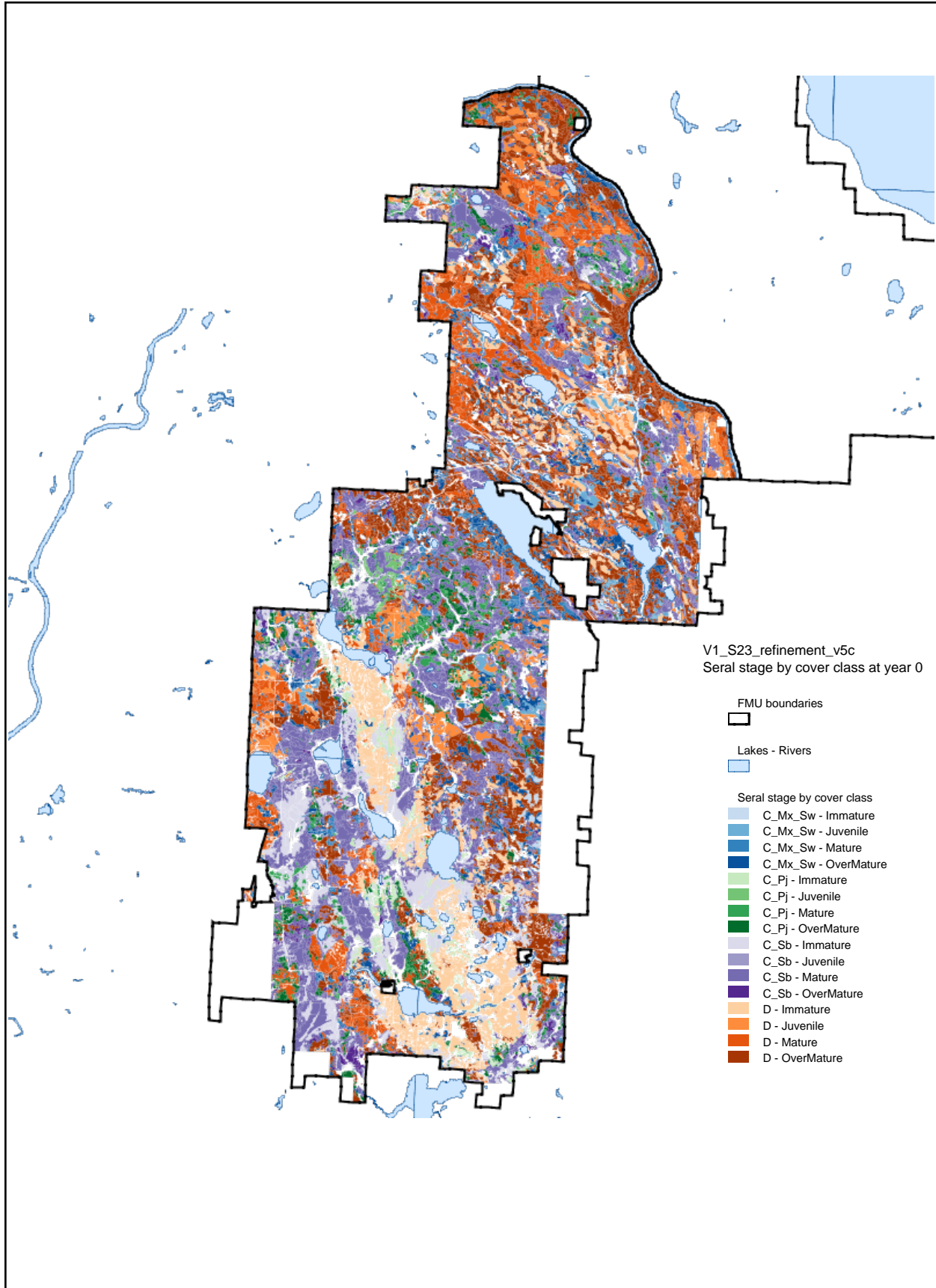
### Voit 1.1.1.1 b) Net area of old, mature and young forest

			C_Mx_Sw	C_Pj	C_Sb	D	Total
Year	0	Juvenile and Immature	1,524	1,600	213	12,648	15,985
		Mature and Overmature	7,548	4,475	2,651	23,836	38,510
		Overmature	4,445	3,354	372	15,552	23,723
	10	Juvenile and Immature	2,747	1,401	213	11,545	15,906
		Mature and Overmature	6,840	4,674	2,651	24,424	38,589
		Overmature	5,456	3,638	597	18,368	28,059
	20	Juvenile and Immature	3,983	1,674	338	14,795	20,790
		Mature and Overmature	6,003	4,401	2,526	20,776	33,705
		Overmature	5,391	3,225	657	15,425	24,698
	50	Juvenile and Immature	7,264	3,865	897	23,921	35,946
		Mature and Overmature	4,194	2,210	1,967	10,178	18,549
		Overmature	3,861	2,210	1,767	7,201	15,039
	100	Juvenile and Immature	6,139	3,267	2,220	26,645	38,271
		Mature and Overmature	5,983	2,808	644	6,789	16,224
		Overmature	1,117	1,604	226	2,220	5,168
200	Juvenile and Immature	7,337	2,682	1,557	28,982	40,558	
	Mature and Overmature	4,785	3,393	1,307	4,452	13,937	
	Overmature	795	1,861	358	681	3,695	

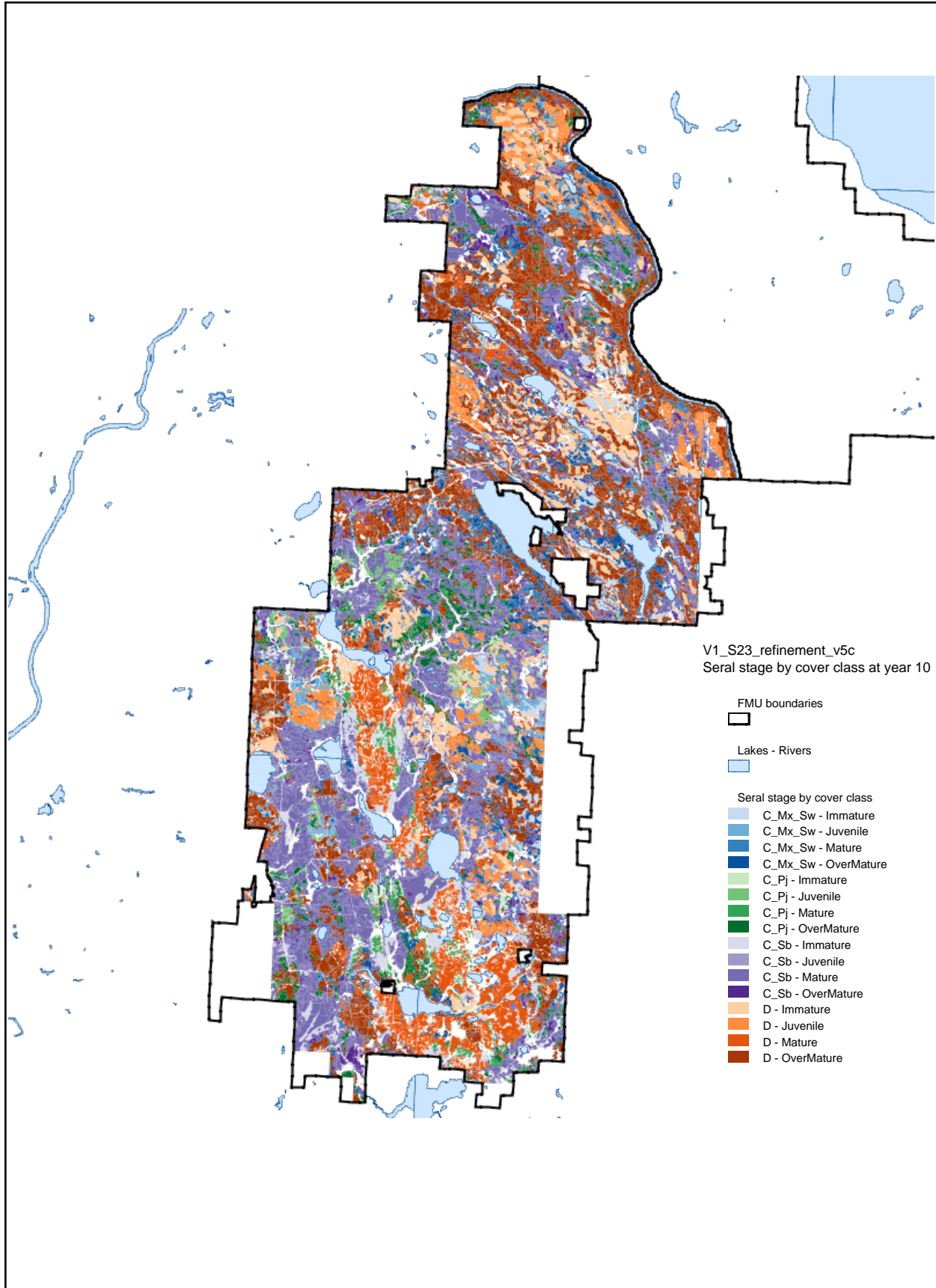




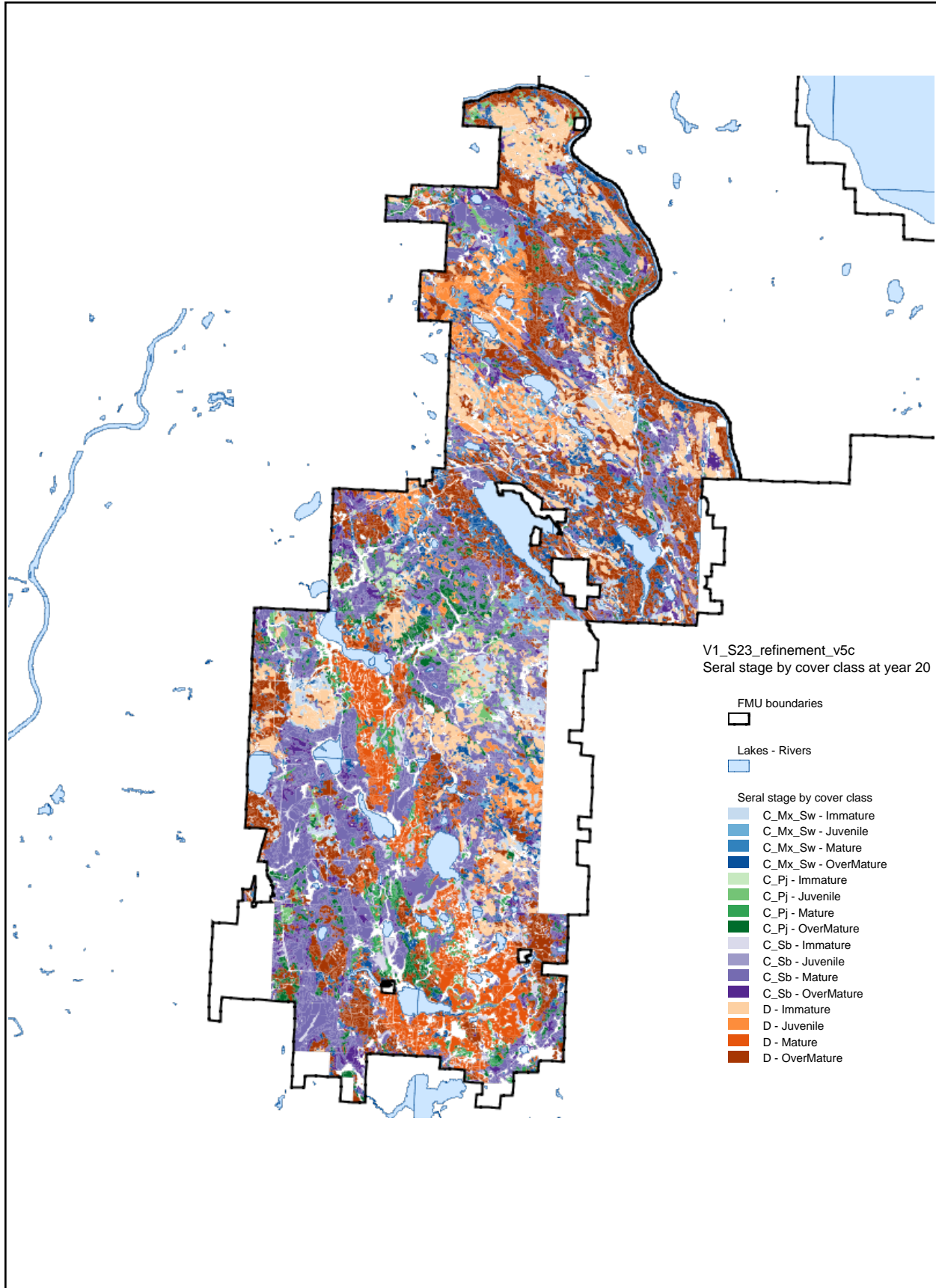
### Voit 1.1.1.1 Seral stage by cover class - period 0



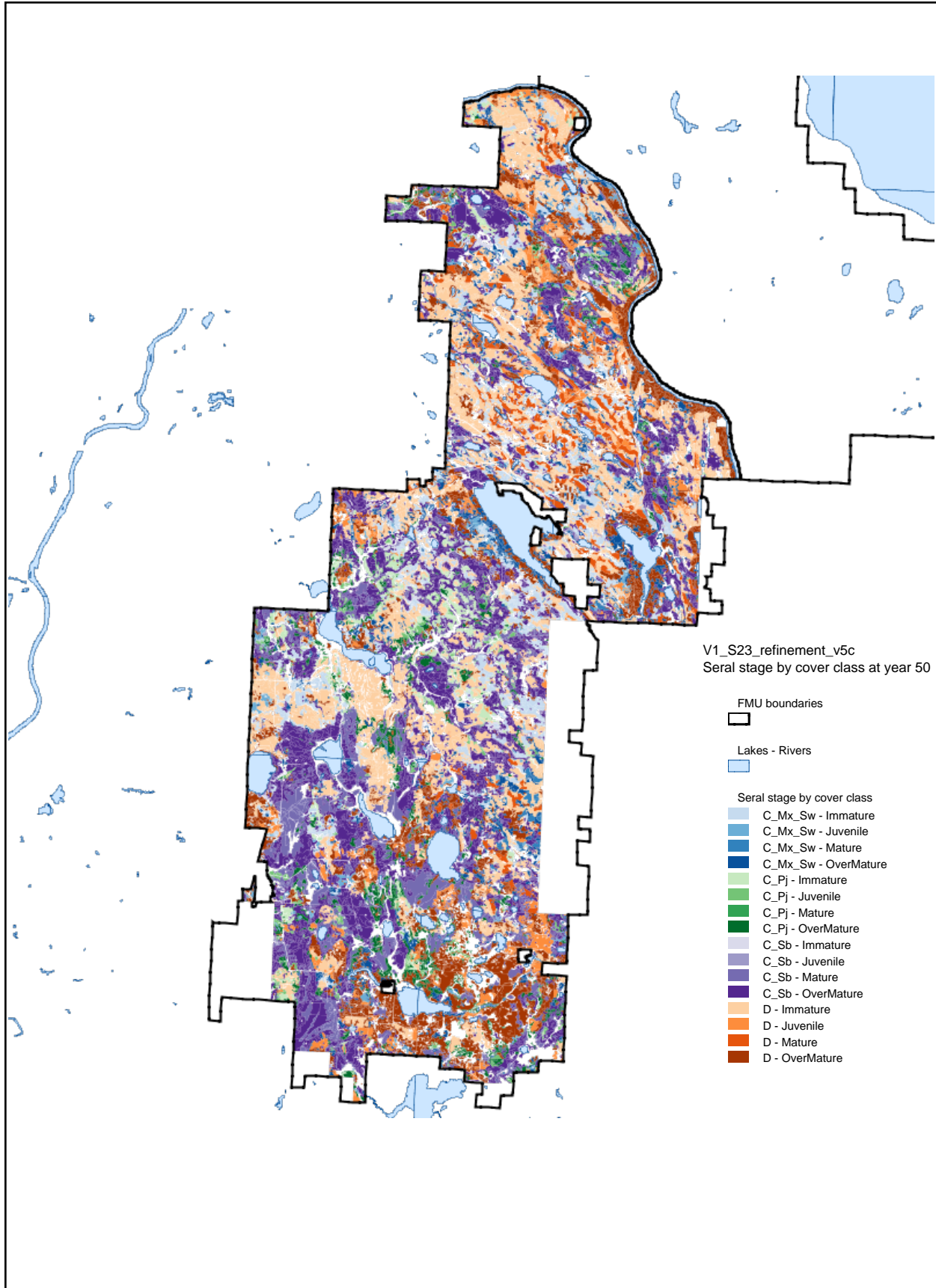
### Voit 1.1.1.1 Seral stage by cover class - period 1



### Voit 1.1.1.1 Seral stage by cover class - period 2



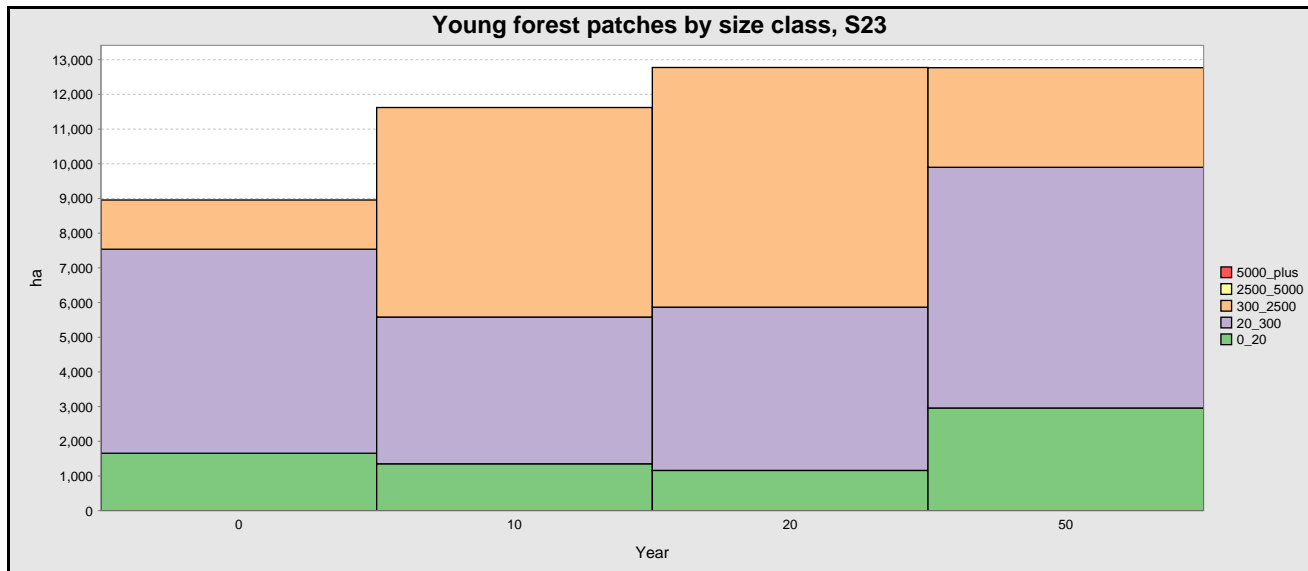
### Voit 1.1.1.1 Seral stage by cover class - period 5



### Voit 1.1.1.2a - Young Forest Patches

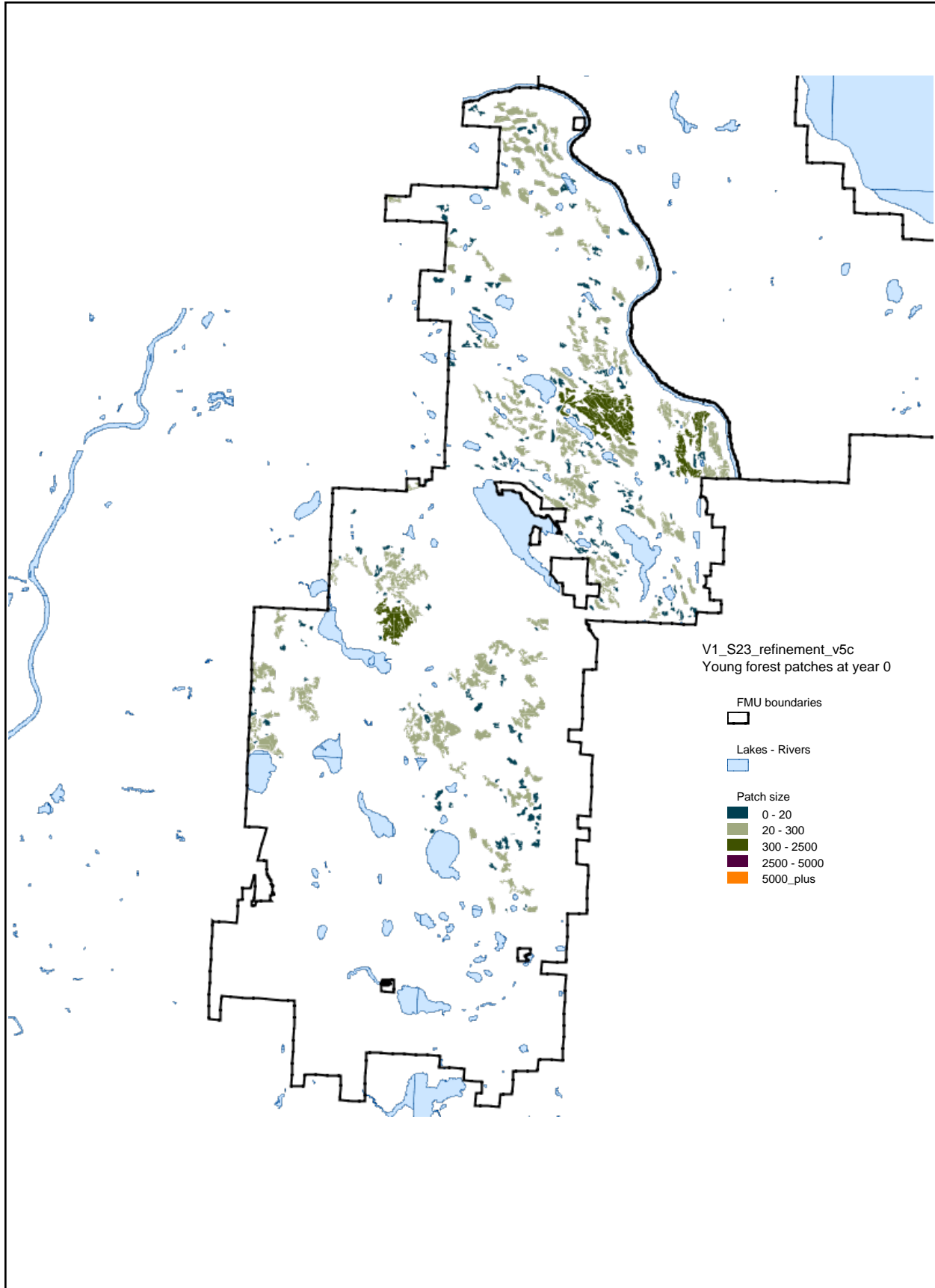
The following table shows the area (in hectares) and frequency (count) of the young forest patches by size class

PERIOD	YEAR	Area						Frequency					
		0_20	20_300	300_2500	2500_5000	5000_plus	Total	0_20	20_300	300_2500	2500_5000	5000_plus	Total
0	0	1,655	5,882	1,420	0	0	8,957	189	112	3	0	0	304
1	10	1,351	4,231	6,041	0	0	11,623	196	72	10	0	0	278
2	20	1,160	4,706	6,910	0	0	12,776	209	53	10	0	0	272
5	50	2,960	6,939	2,871	0	0	12,770	696	121	5	0	0	822

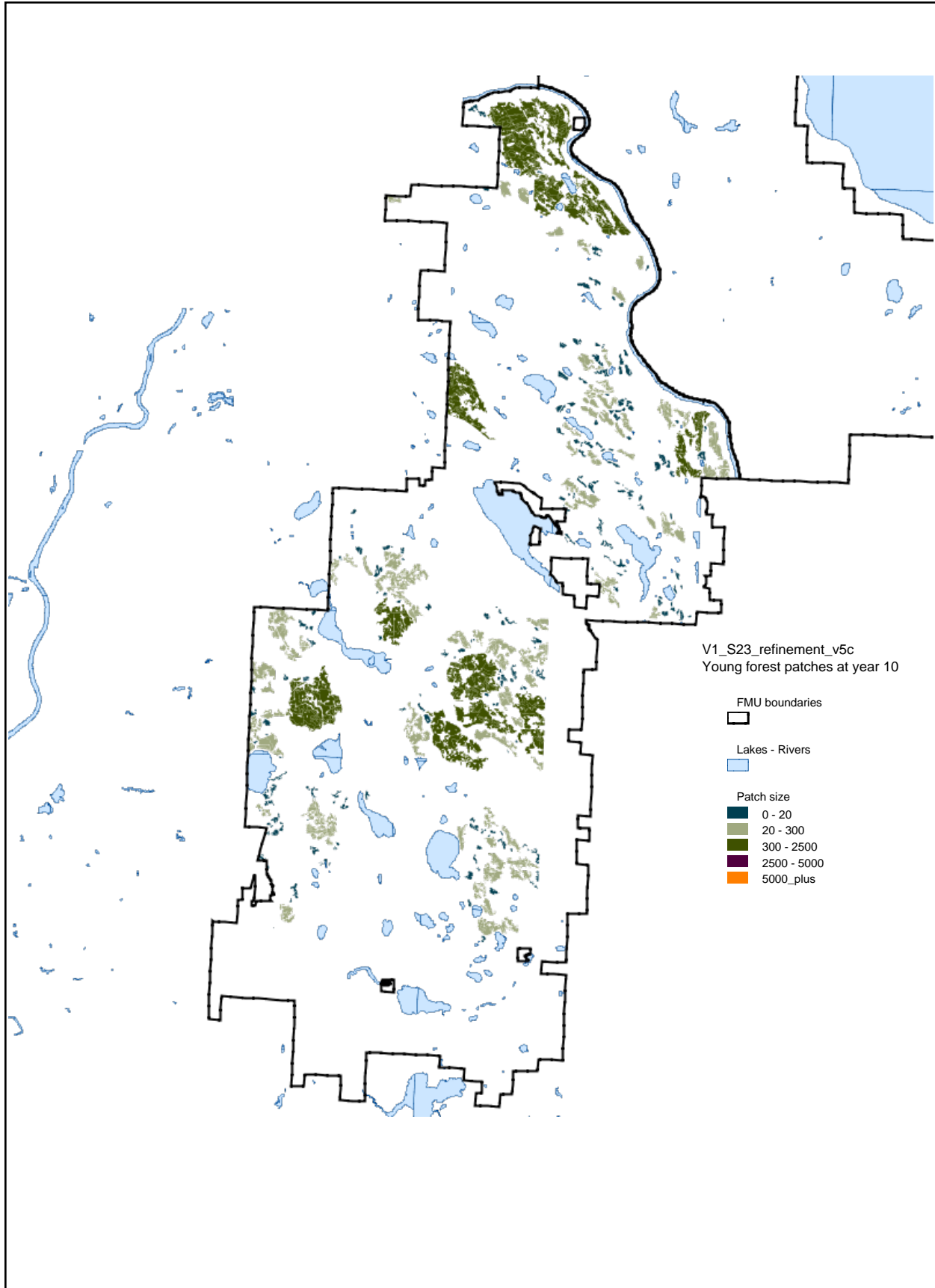




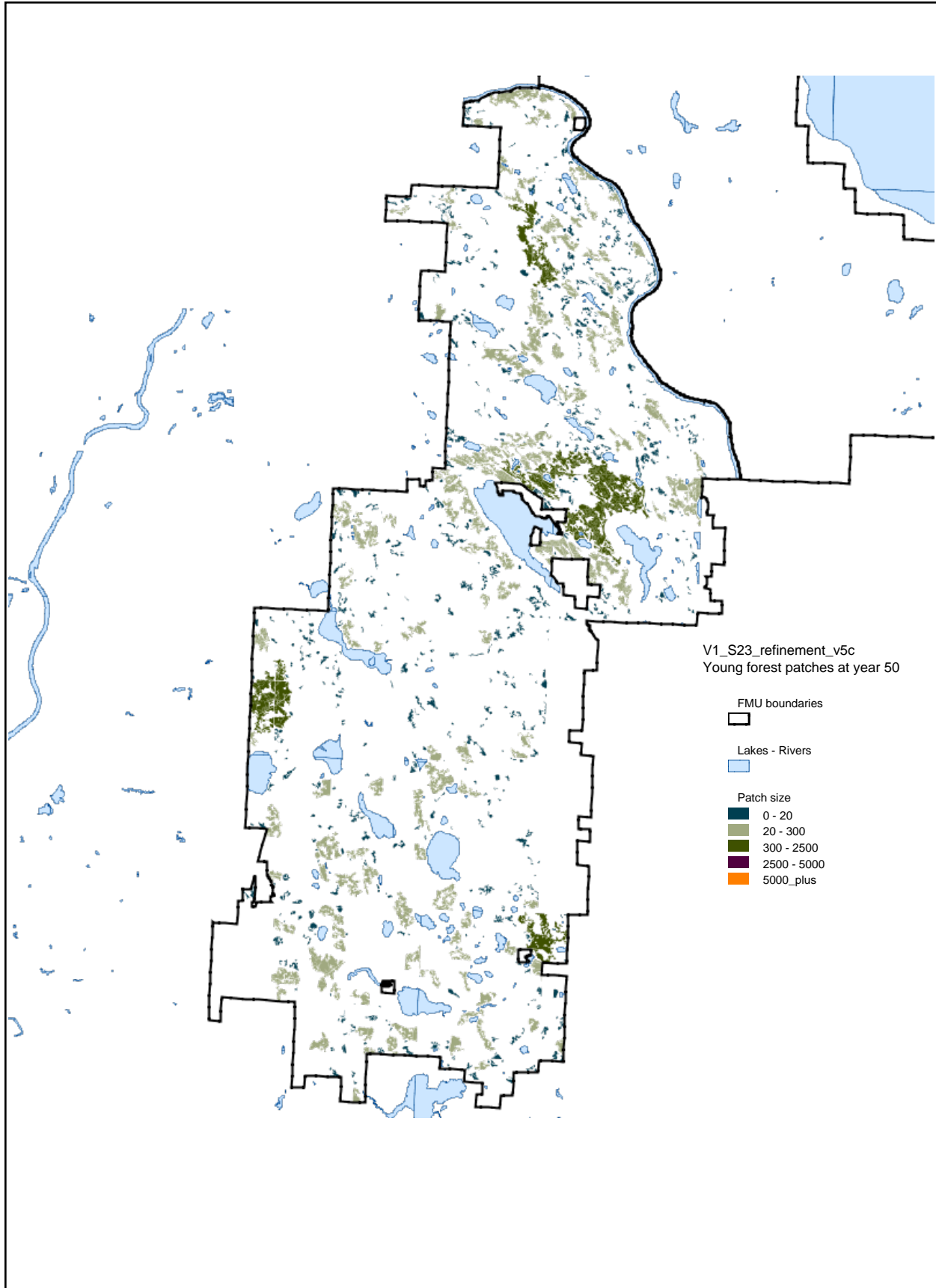
# Voit 1.1.1.2a - Young Forest Patches - period 0



# Voit 1.1.1.2a - Young Forest Patches - period 1



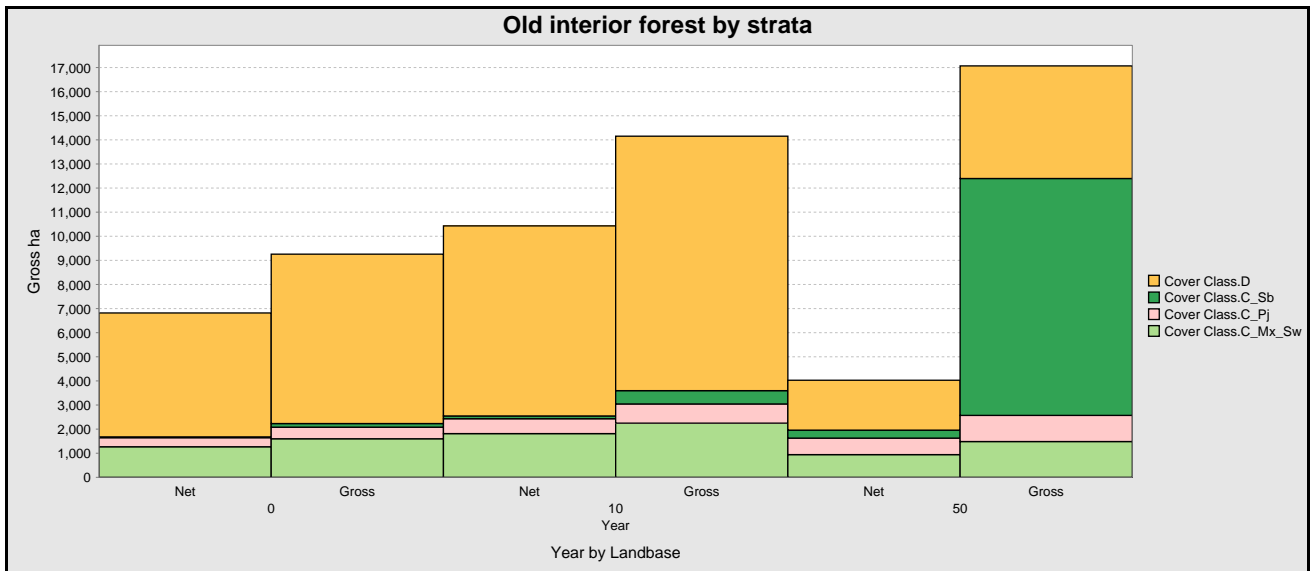
# Voit 1.1.1.2a - Young Forest Patches - period 5



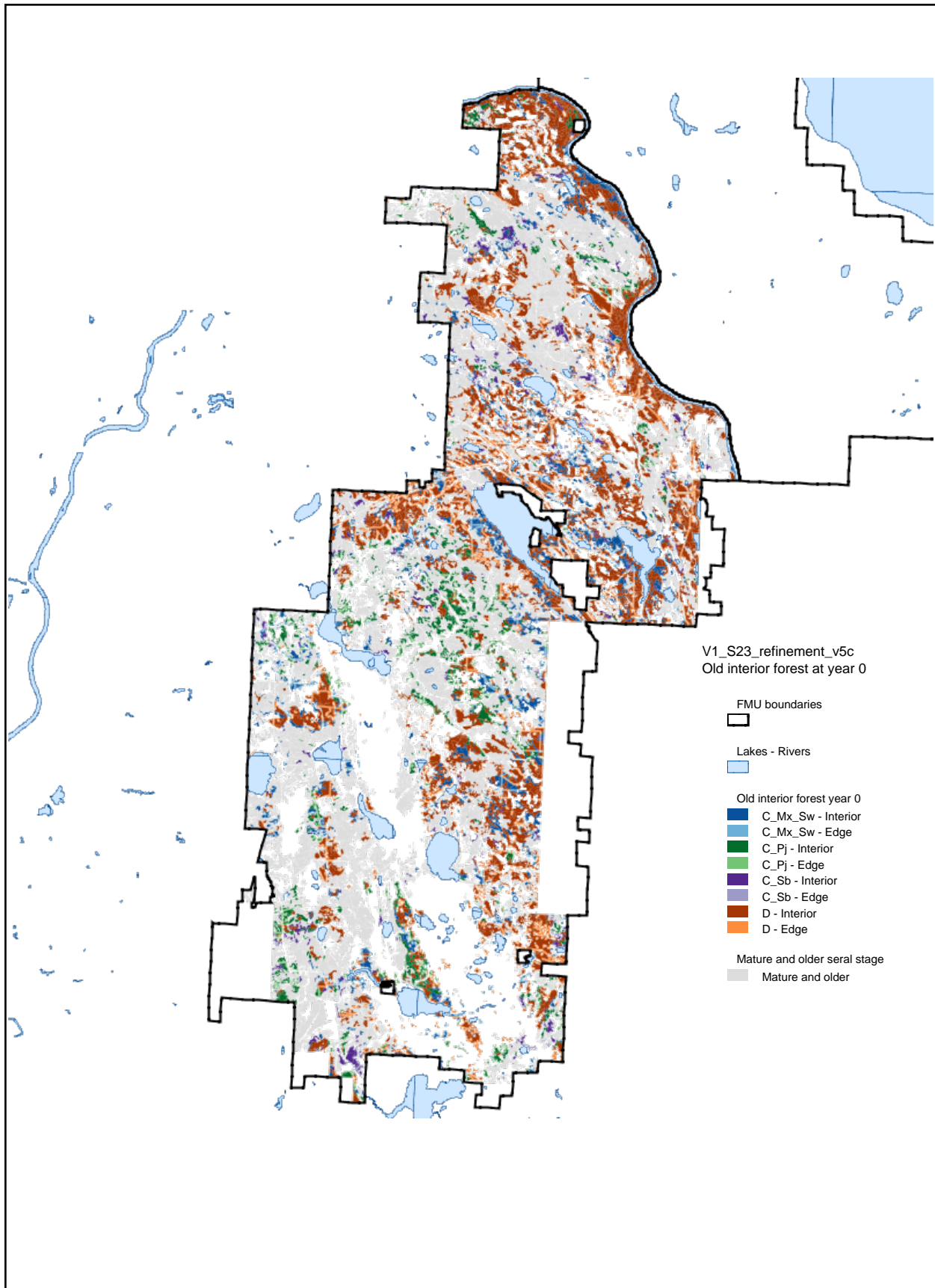
## Voit 1.1.1.2b - Interior Core Summary

Area in hectares of old interior cores larger than 100 hectares

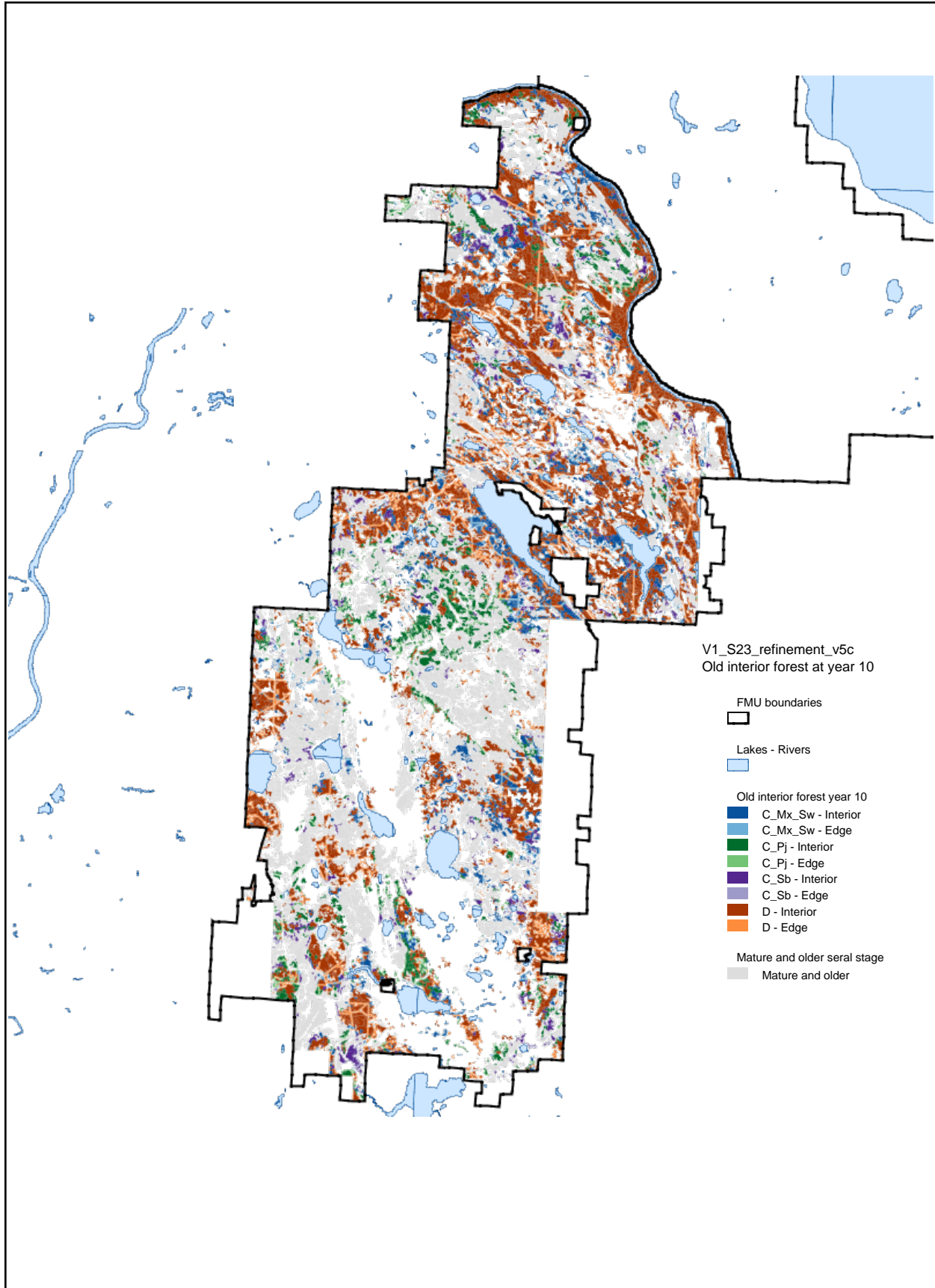
			Cover Class				Total
			C_Mx_Sw	C_Pj	C_Sb	D	
Year	0	Net	1,269	376	33	5,140	6,819
		Gross	1,601	480	150	7,028	9,258
	10	Net	1,814	617	115	7,883	10,430
		Gross	2,248	796	552	10,556	14,153
	50	Net	943	685	331	2,069	4,027
		Gross	1,485	1,085	9,827	4,671	17,068



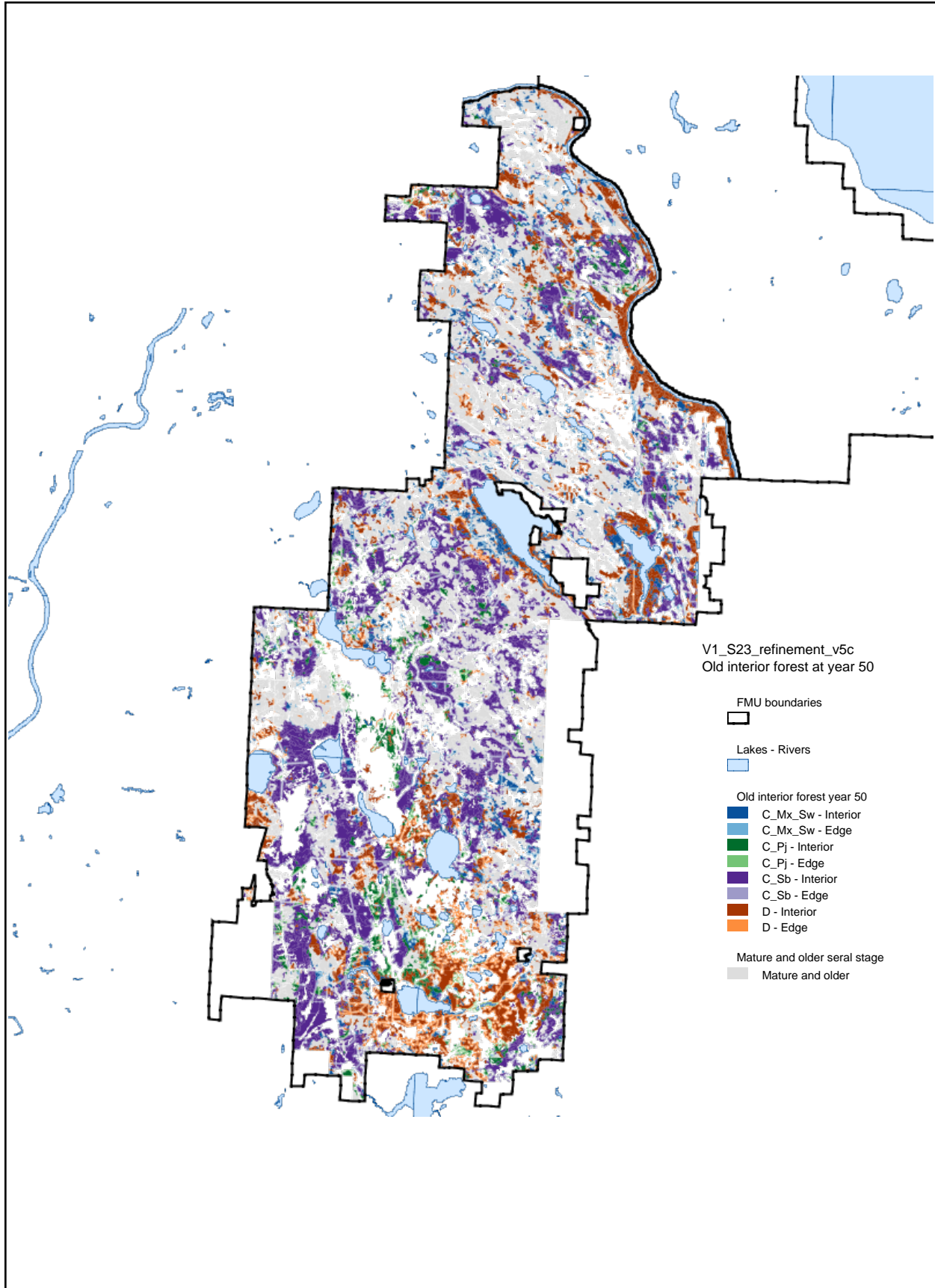
### Voit 1.1.1.2b - Old interior core - period 0



**Voit 1.1.1.2b - Old interior core - period 1**



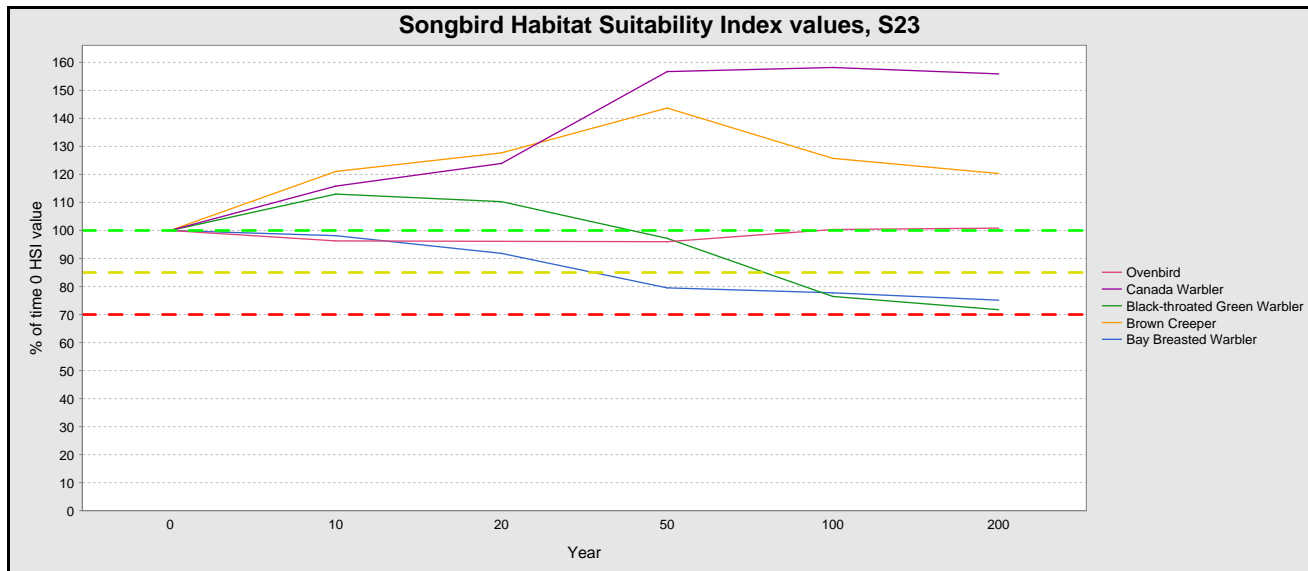
### Voit 1.1.1.2b - Old interior core - period 5



## Songbird Habitat Suitability Index values

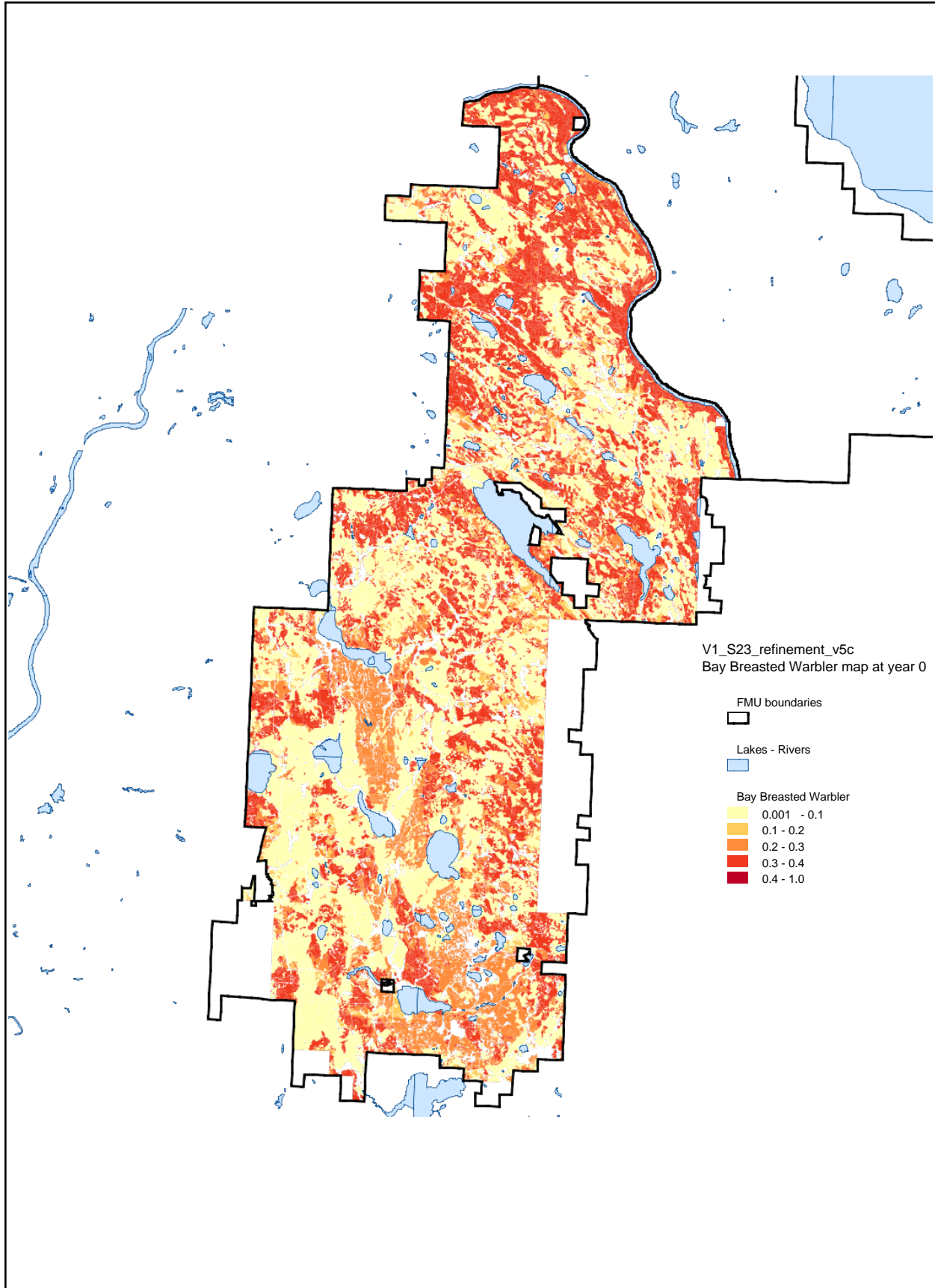
This table shows the songbird Habitat Suitability Index values as a percentage of levels that occurred at time zero. The line chart shows change relative to the time zero values. The dashed yellow reference line is 15% below the time zero value. The dashed red reference line is 30% below the time zero value.

Period	Year	Bay Breasted Warbler	Brown Creeper	Black throated Green Warbler	Canada Warbler	Ovenbird
0	0	100	100	100	100	100
1	10	98	121	113	116	96
2	20	92	128	110	124	96
5	50	80	144	97	157	96
10	100	78	126	76	158	100
20	200	75	120	72	156	101

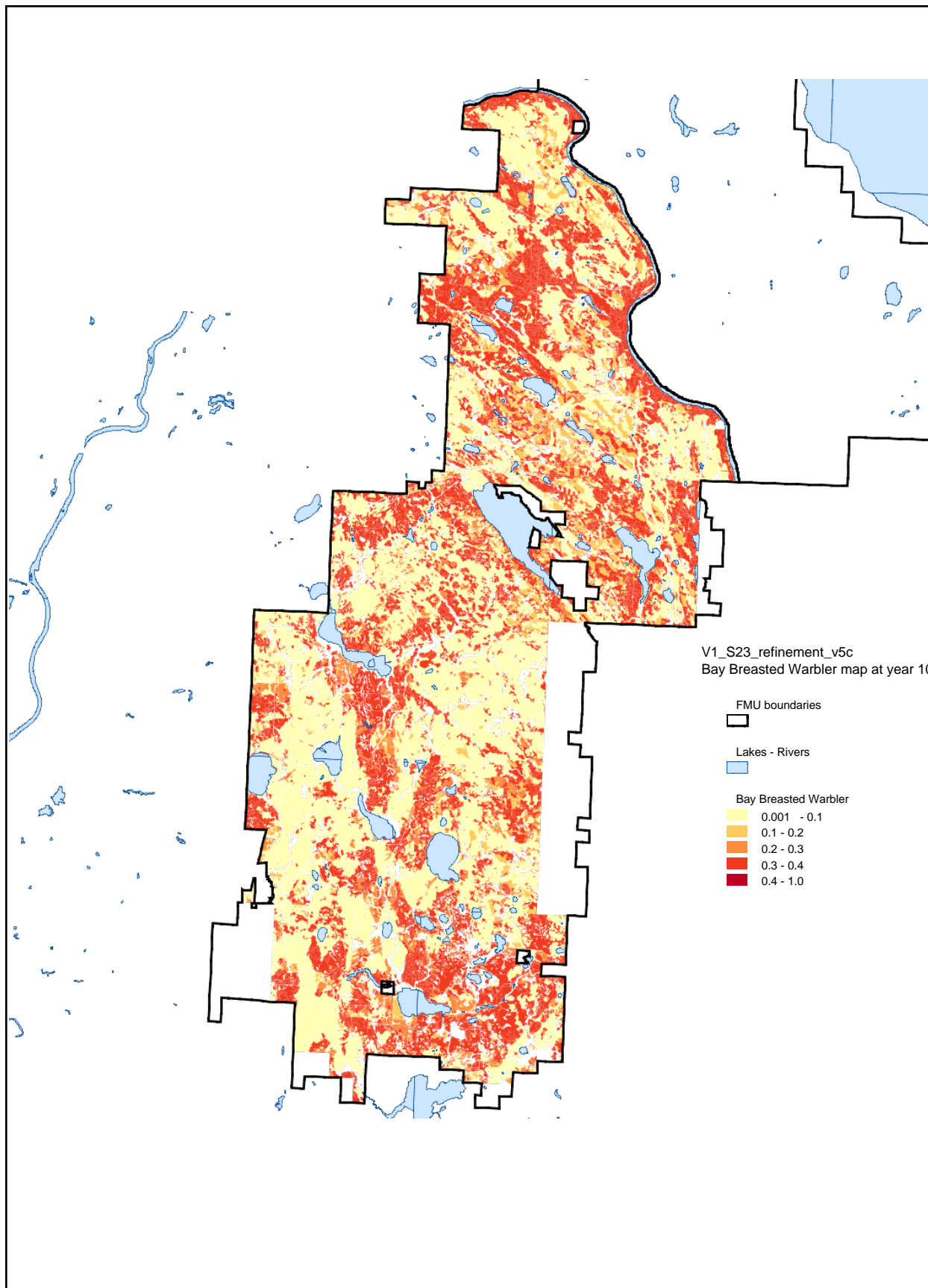




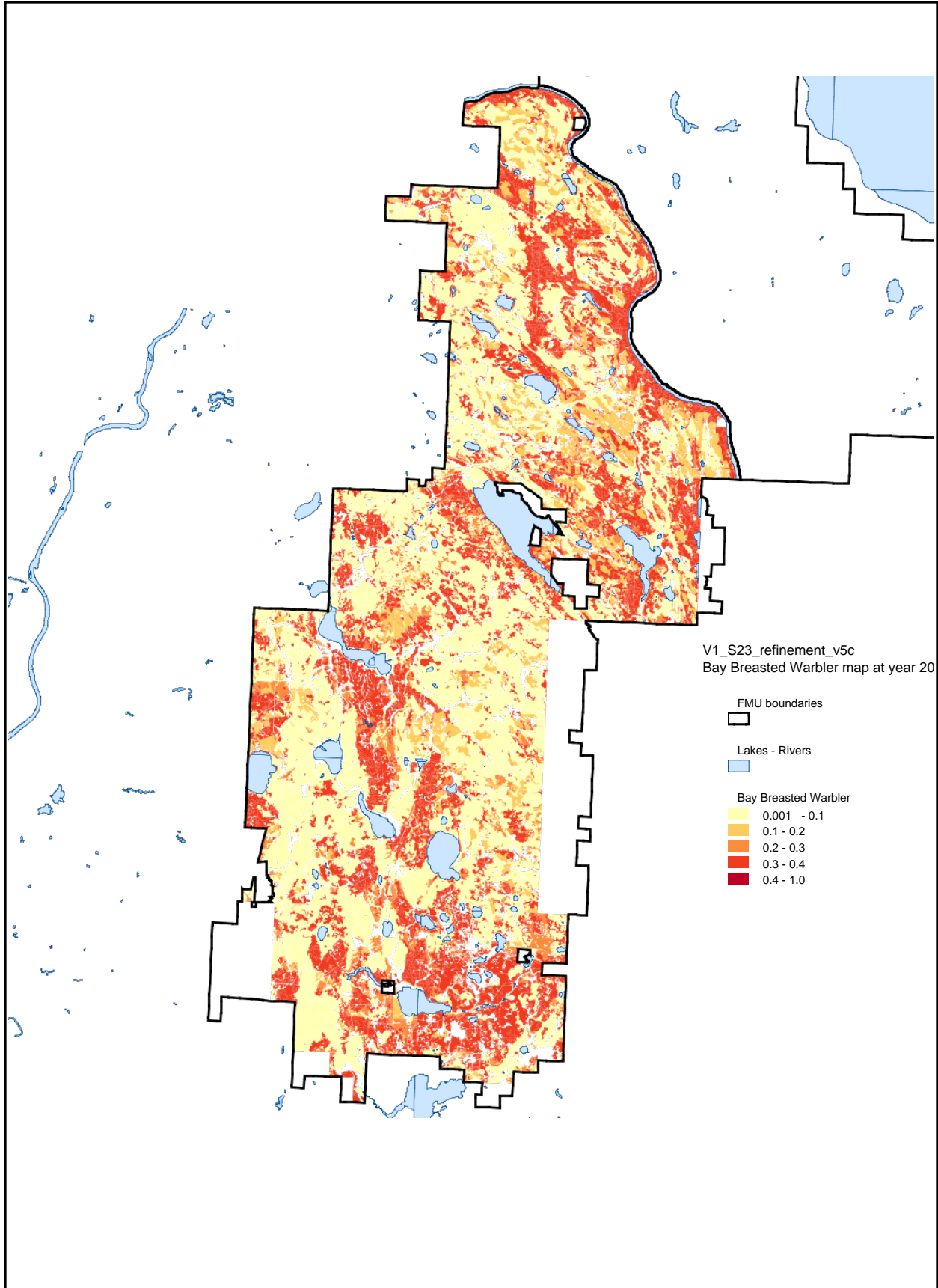
# Bay Breasted Warbler HSI - period 0



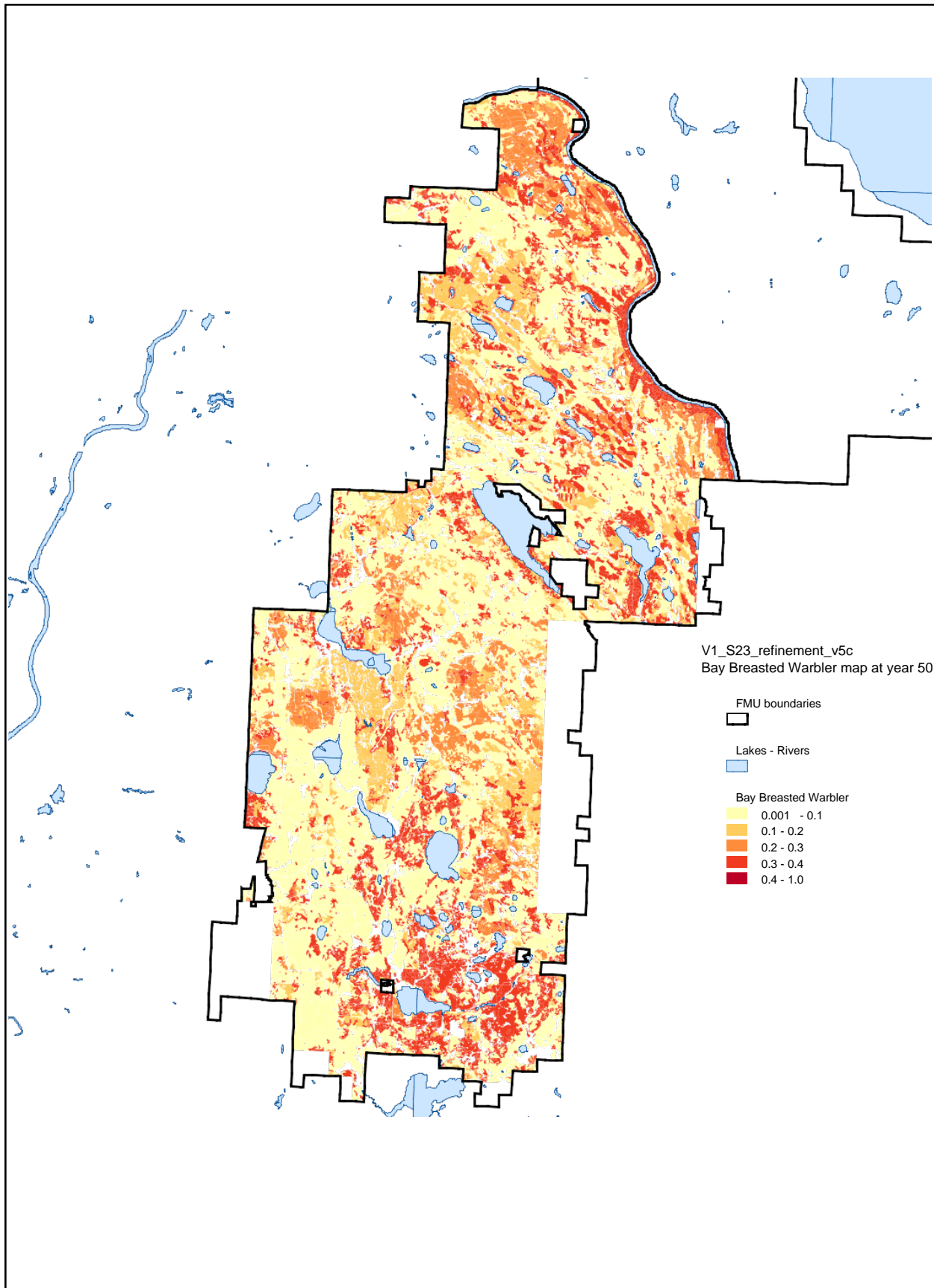
# Bay Breasted Warbler HSI - period 1



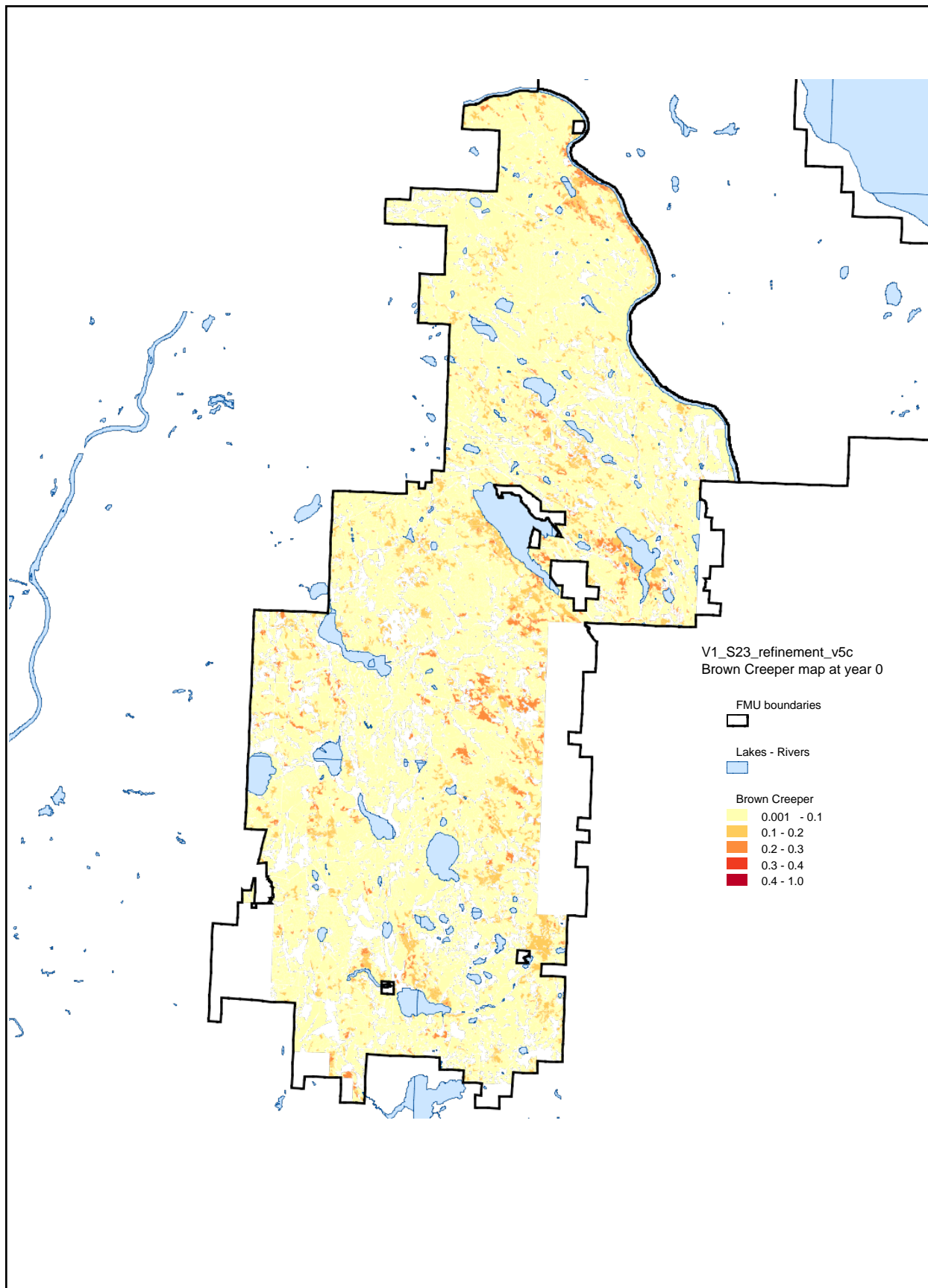
## Bay Breasted Warbler HSI - period 2



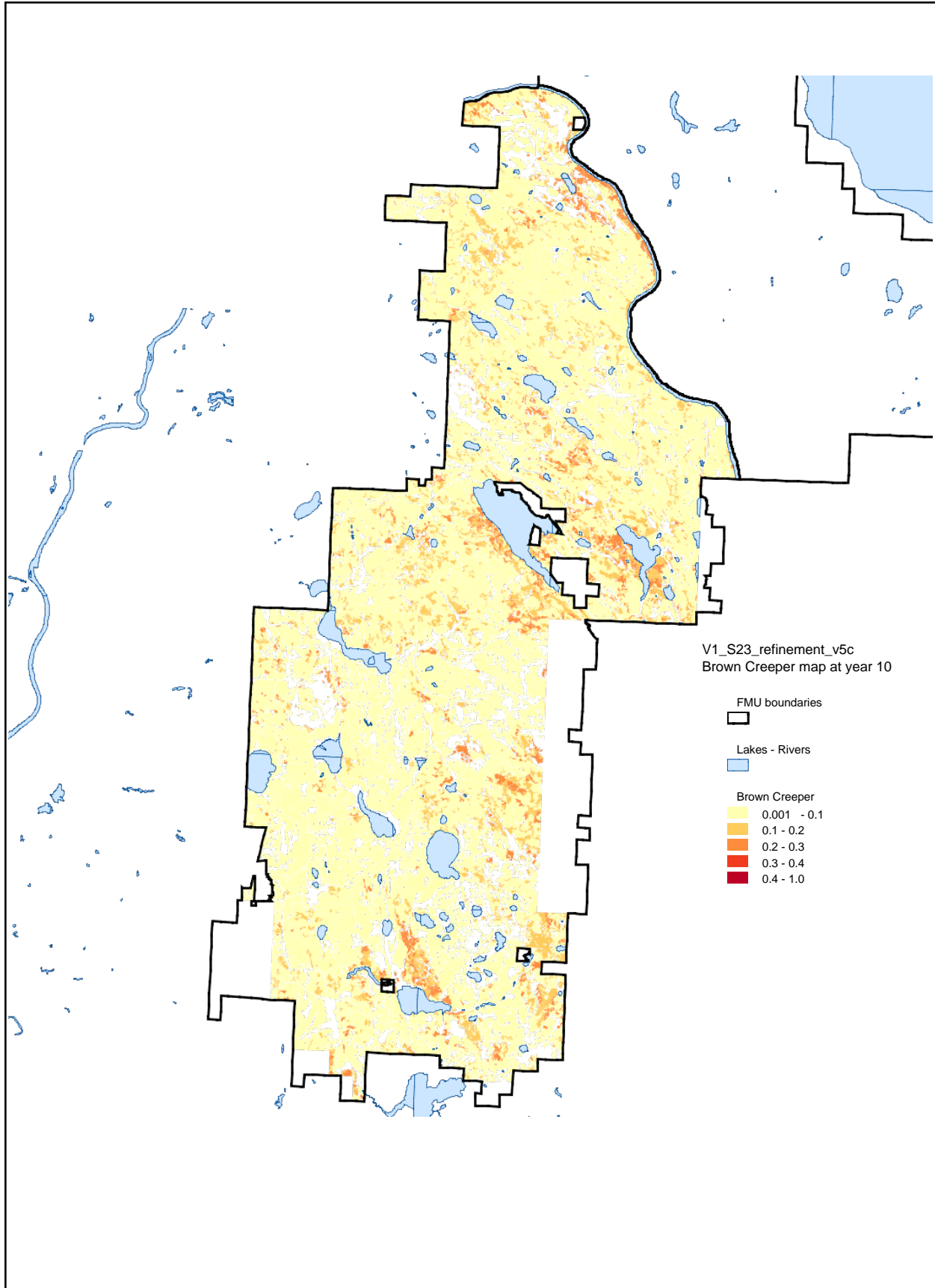
# Bay Breasted Warbler HSI - period 5



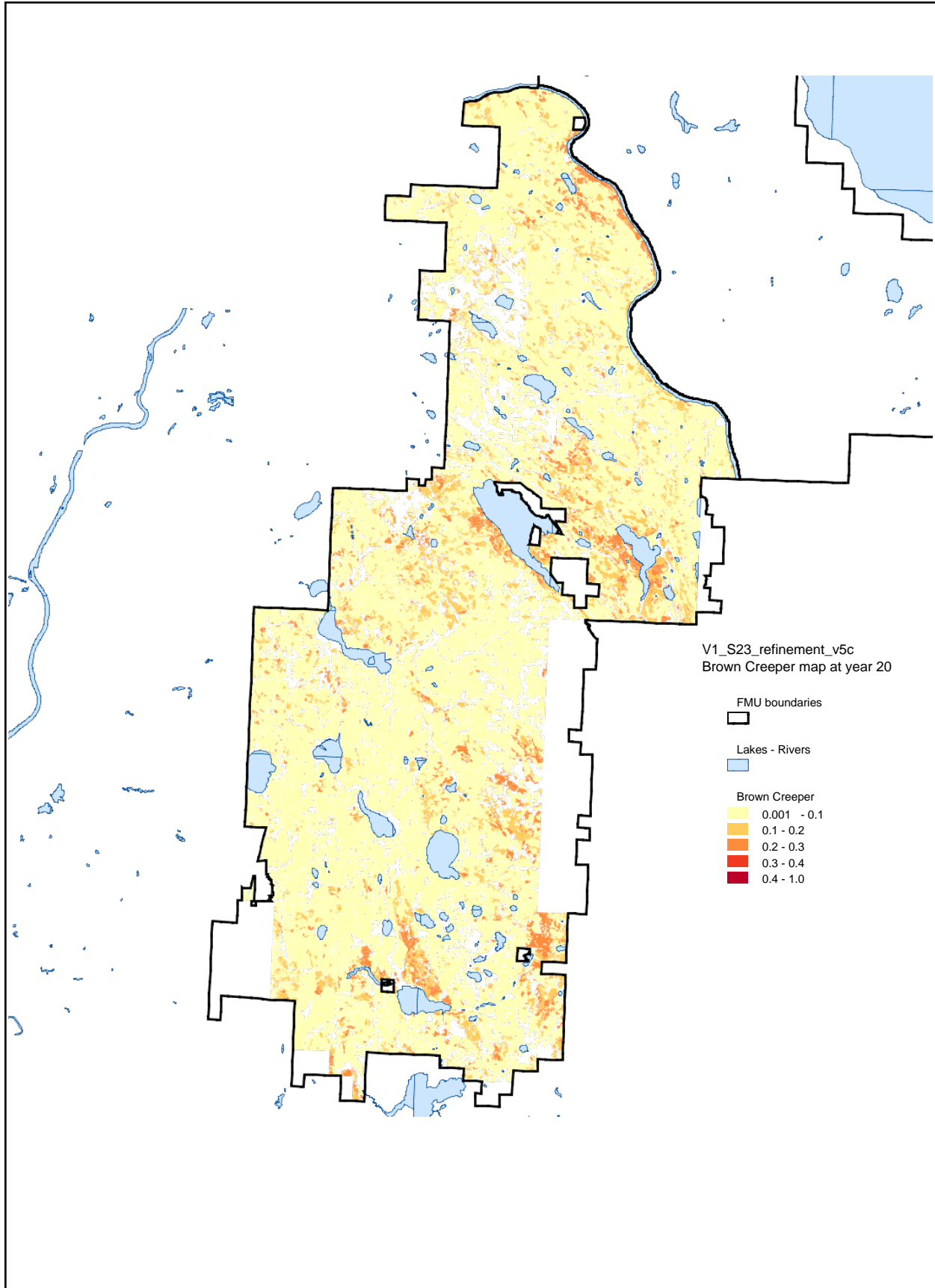
# Brown Creeper HSI - period 0



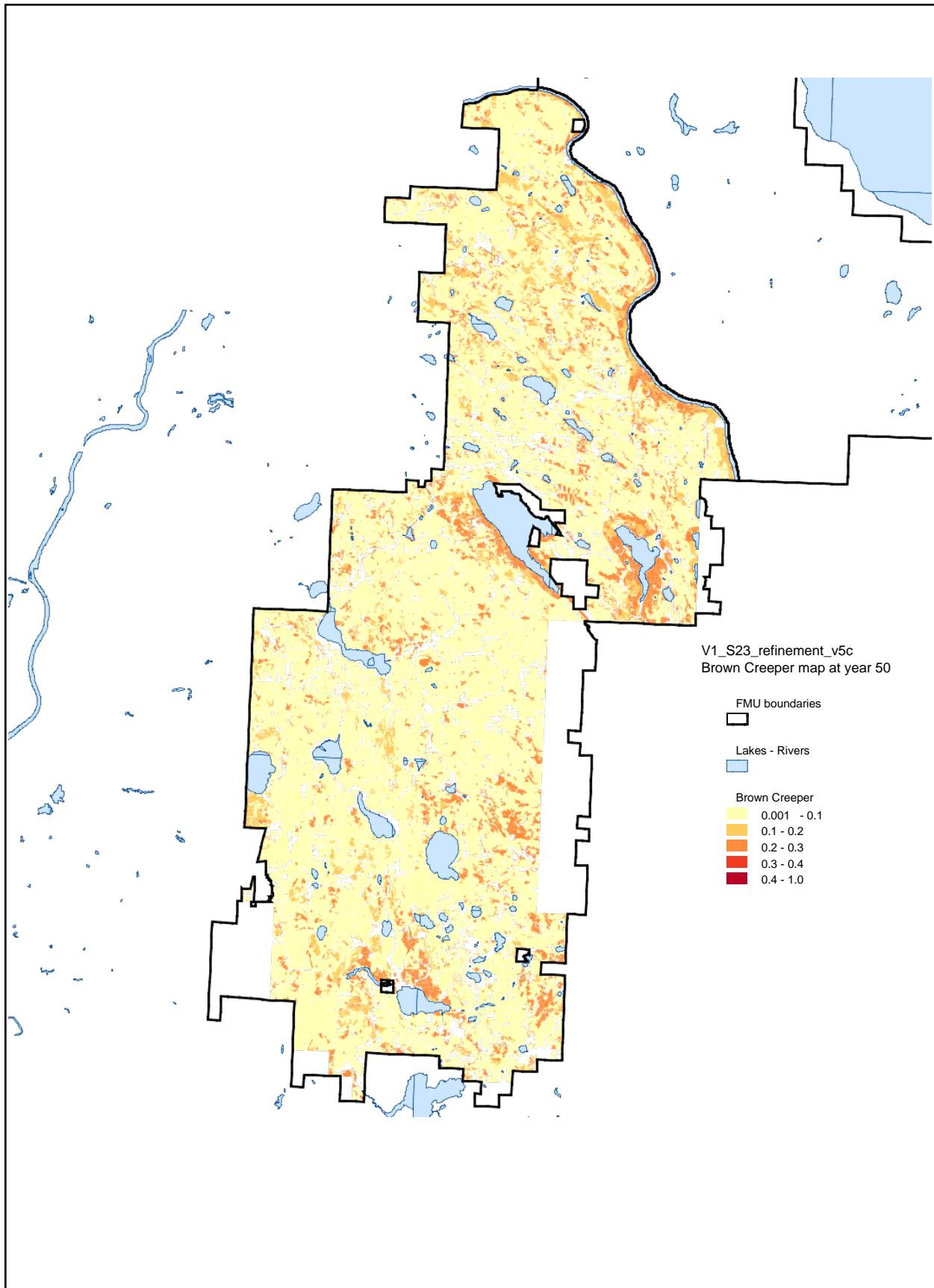
# Brown Creeper HSI - period 1



# Brown Creeper HSI - period 2

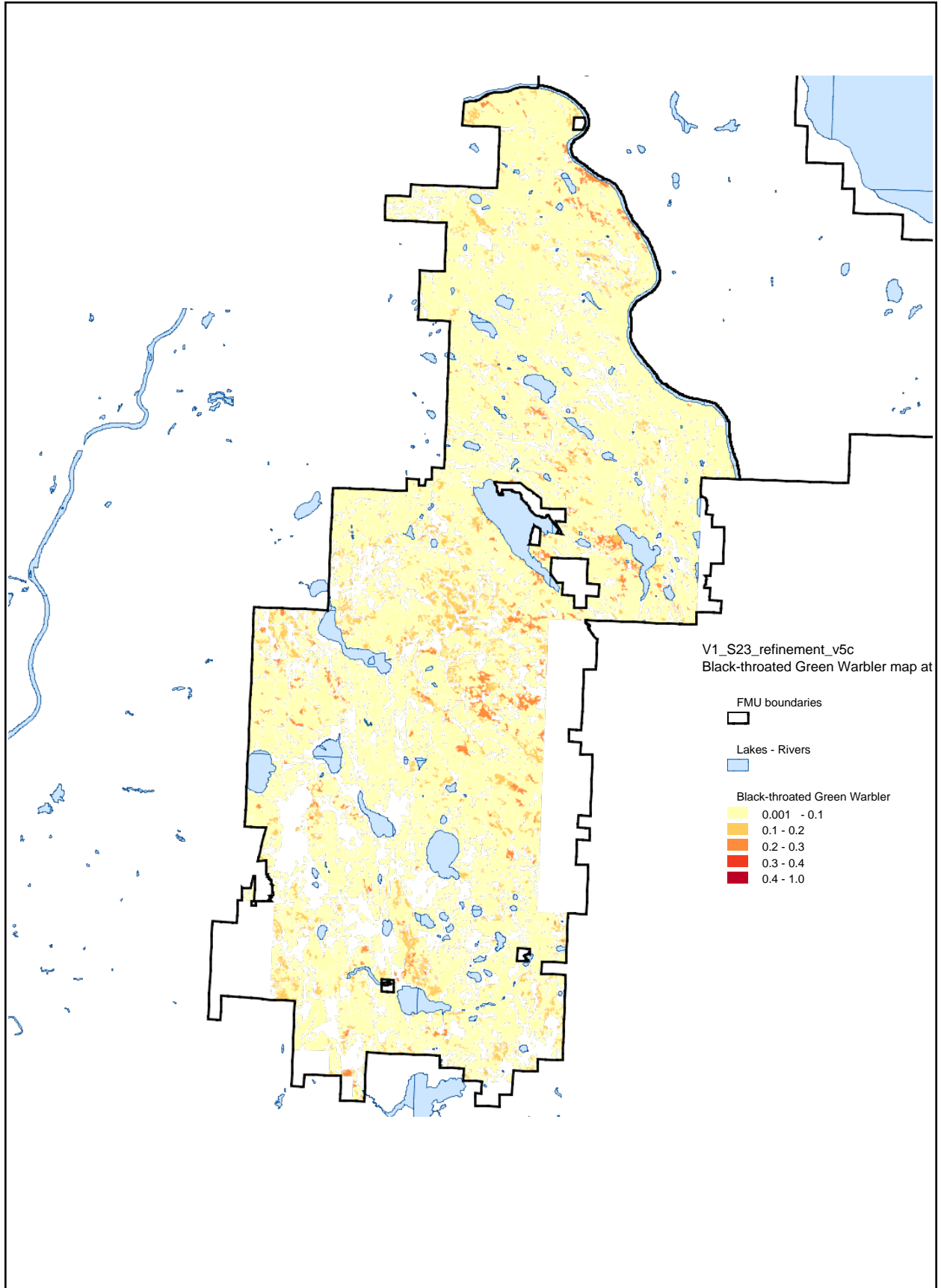


# Brown Creeper HSI - period 5

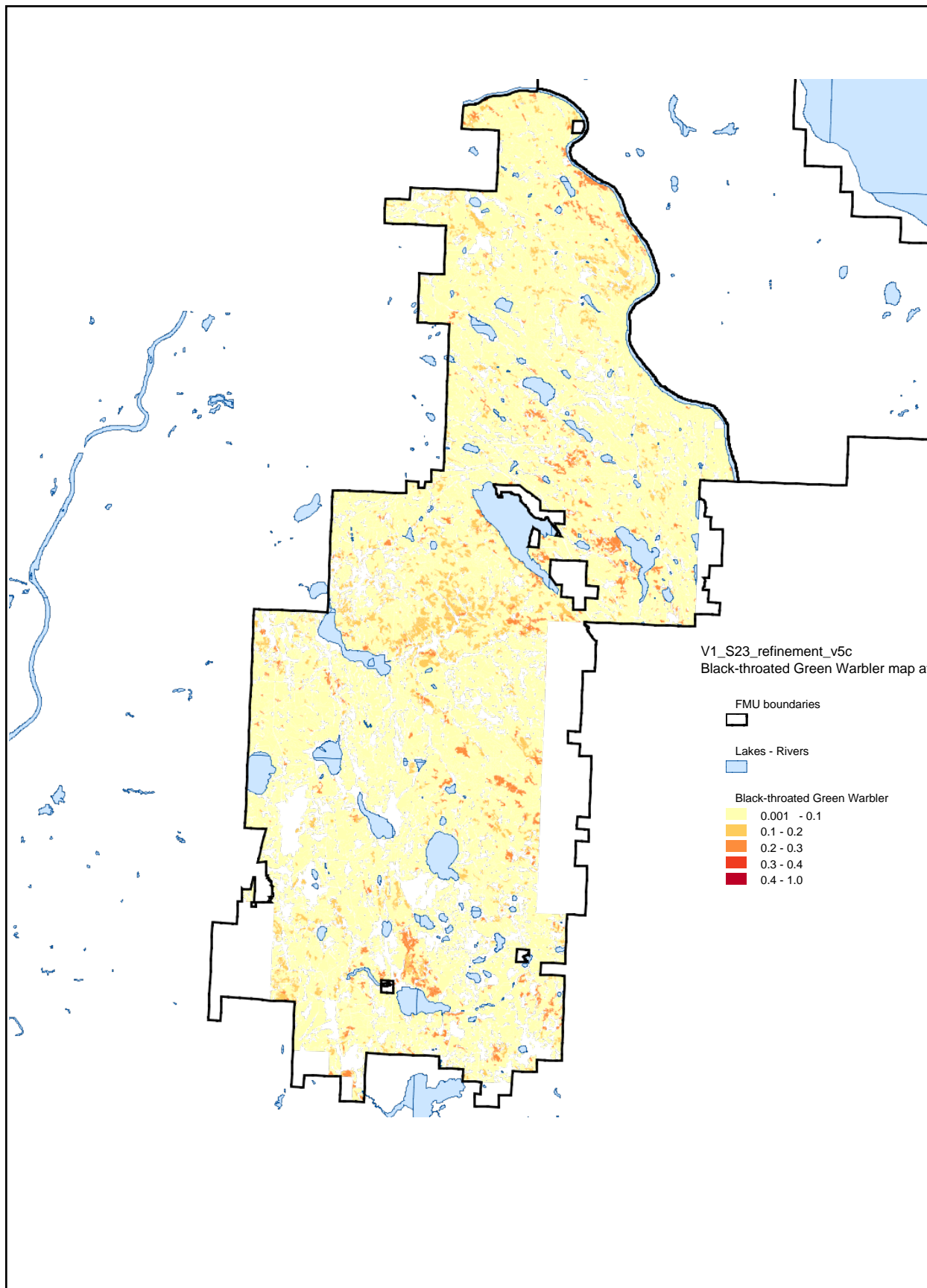




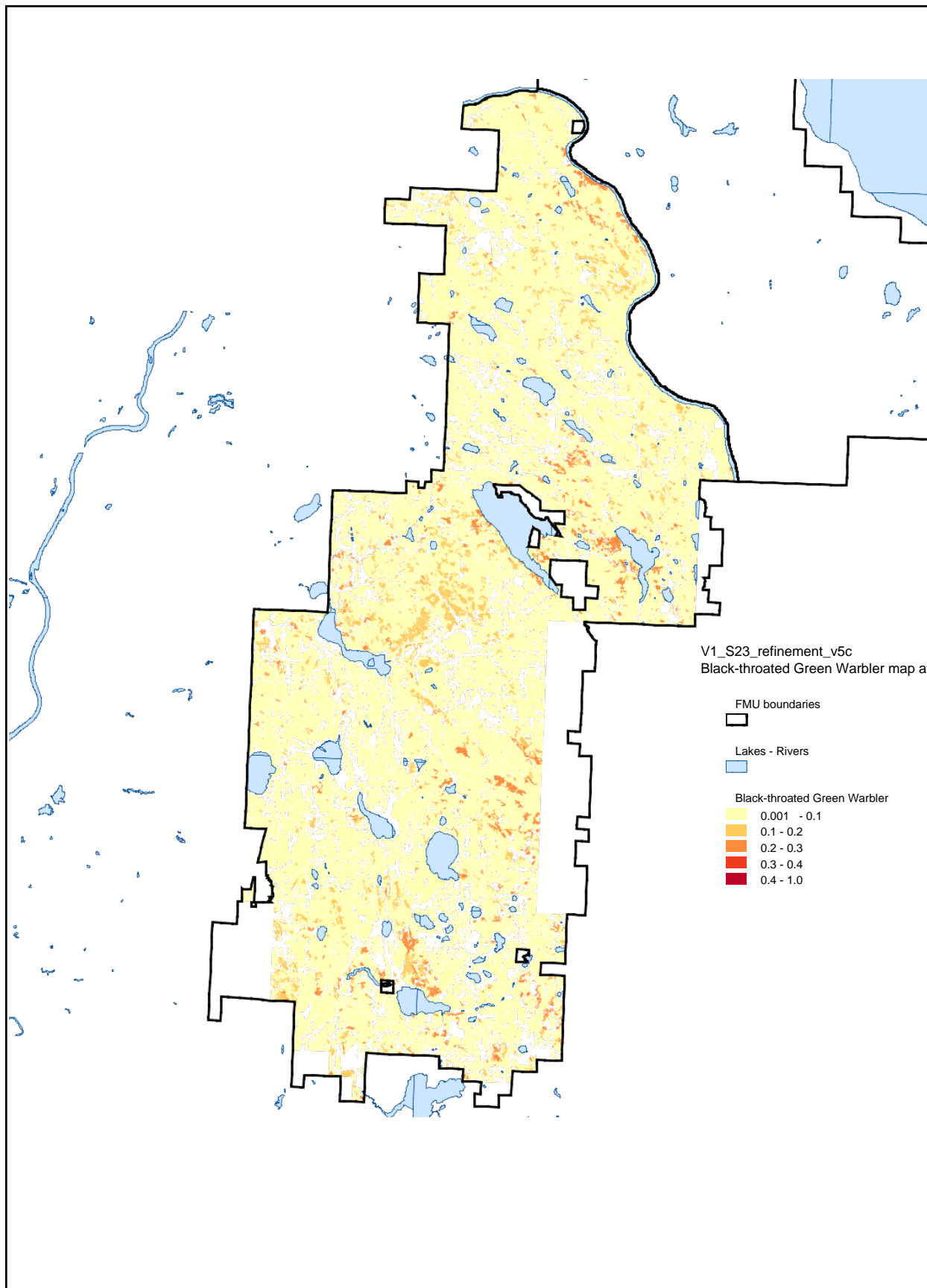
# Black-throated Green Warbler HSI - period 0



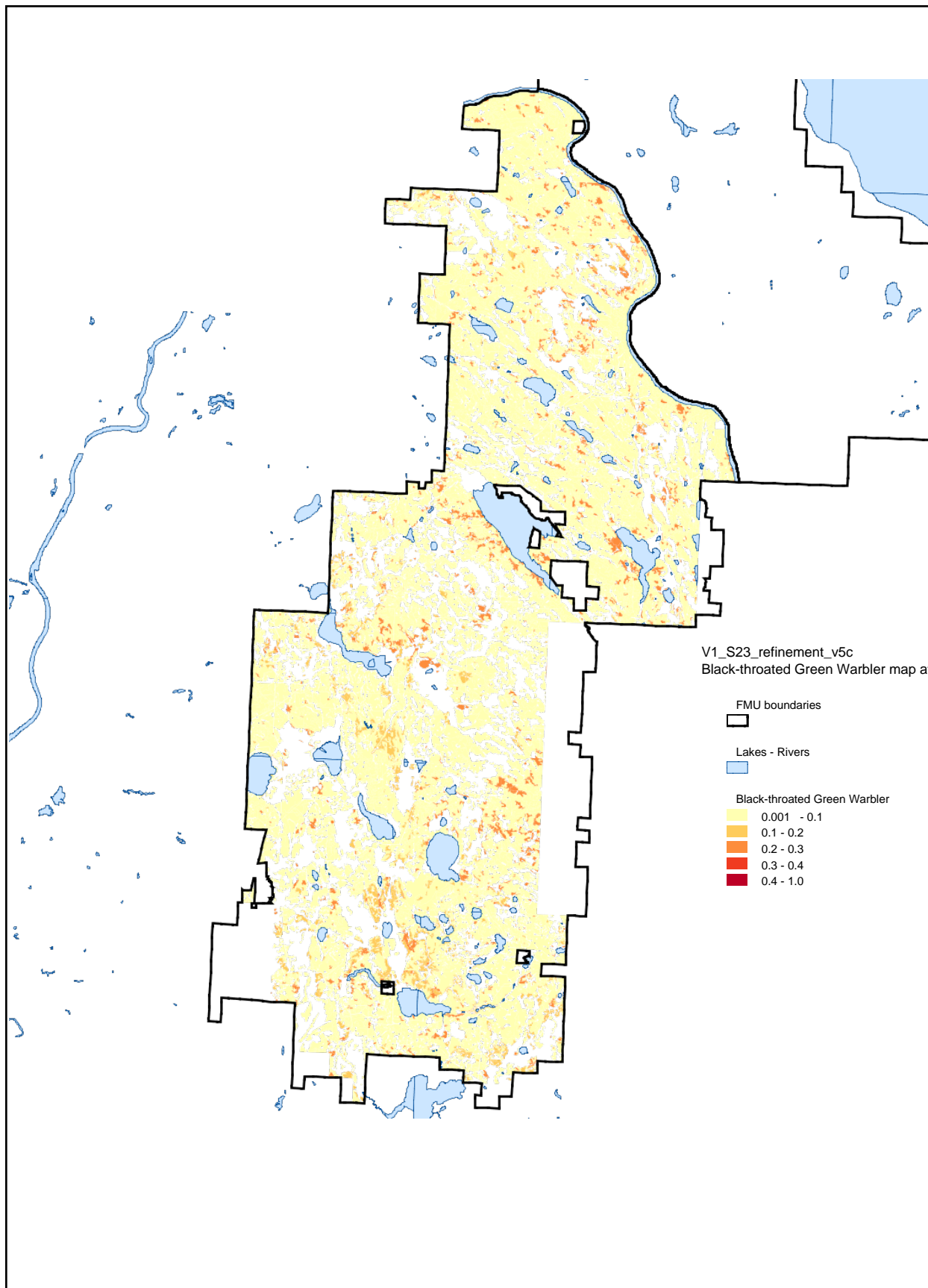
# Black-throated Green Warbler HSI - period 1



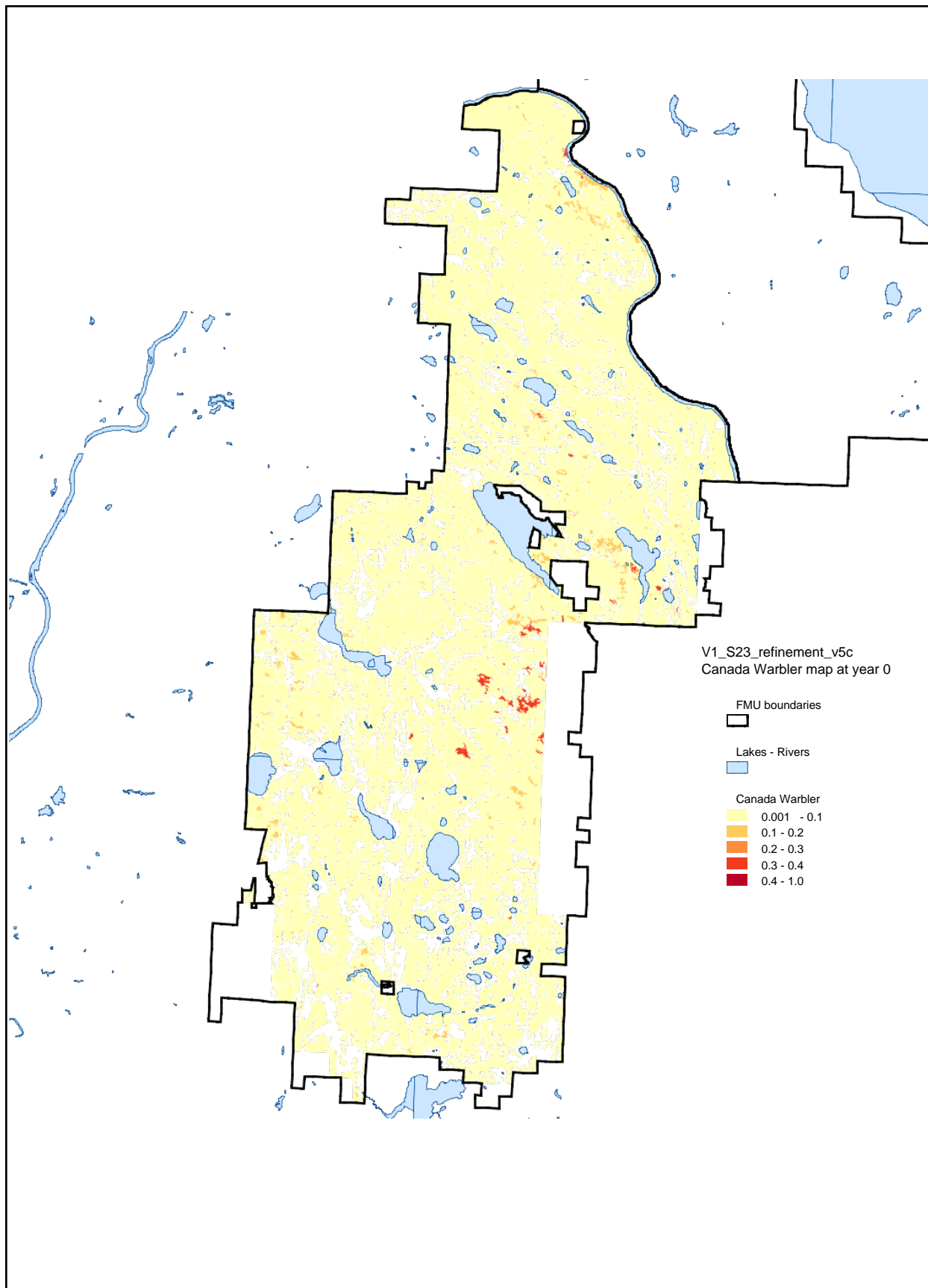
## Black-throated Green Warbler HSI - period 2



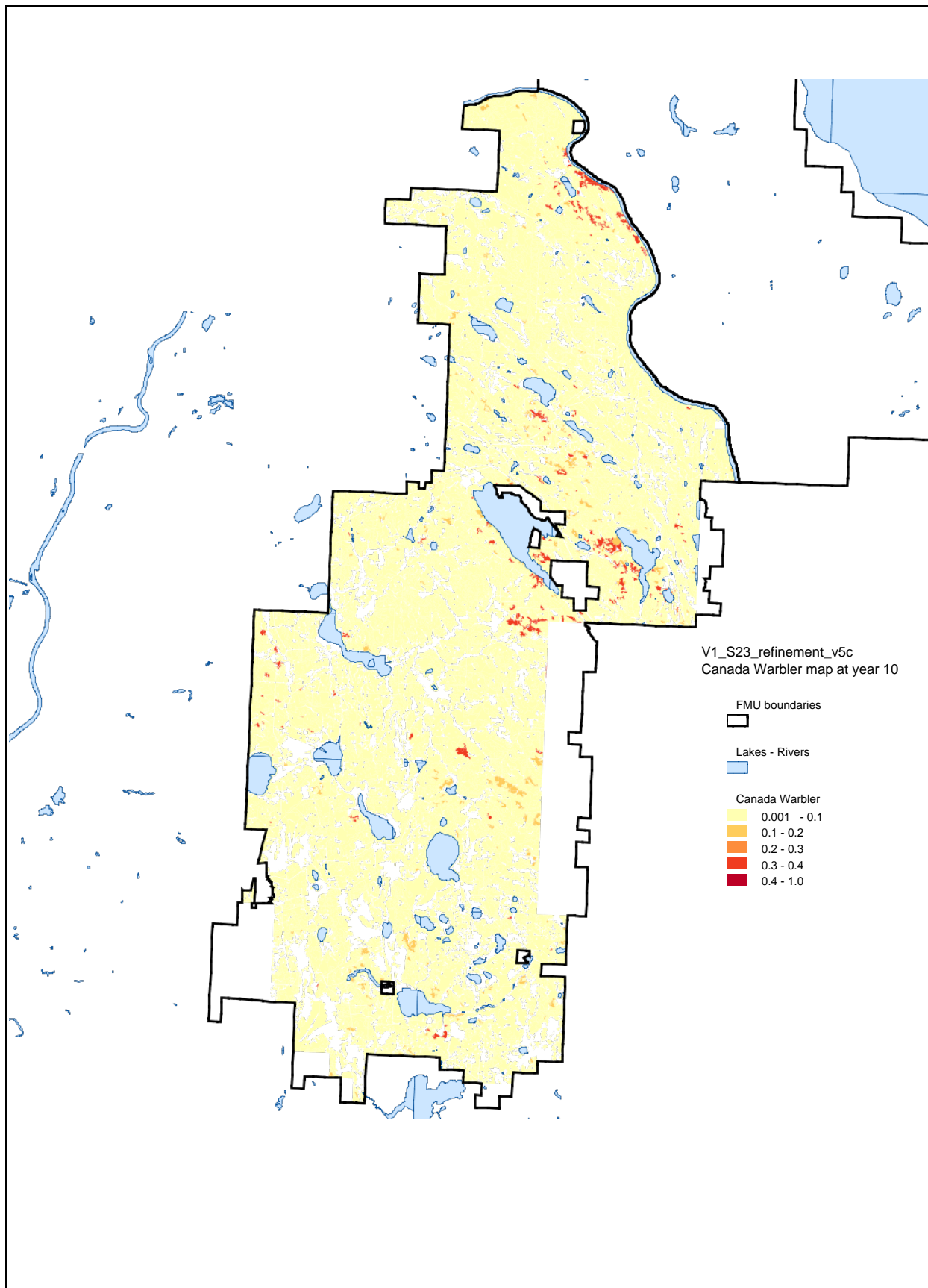
# Black-throated Green Warbler HSI - period 5



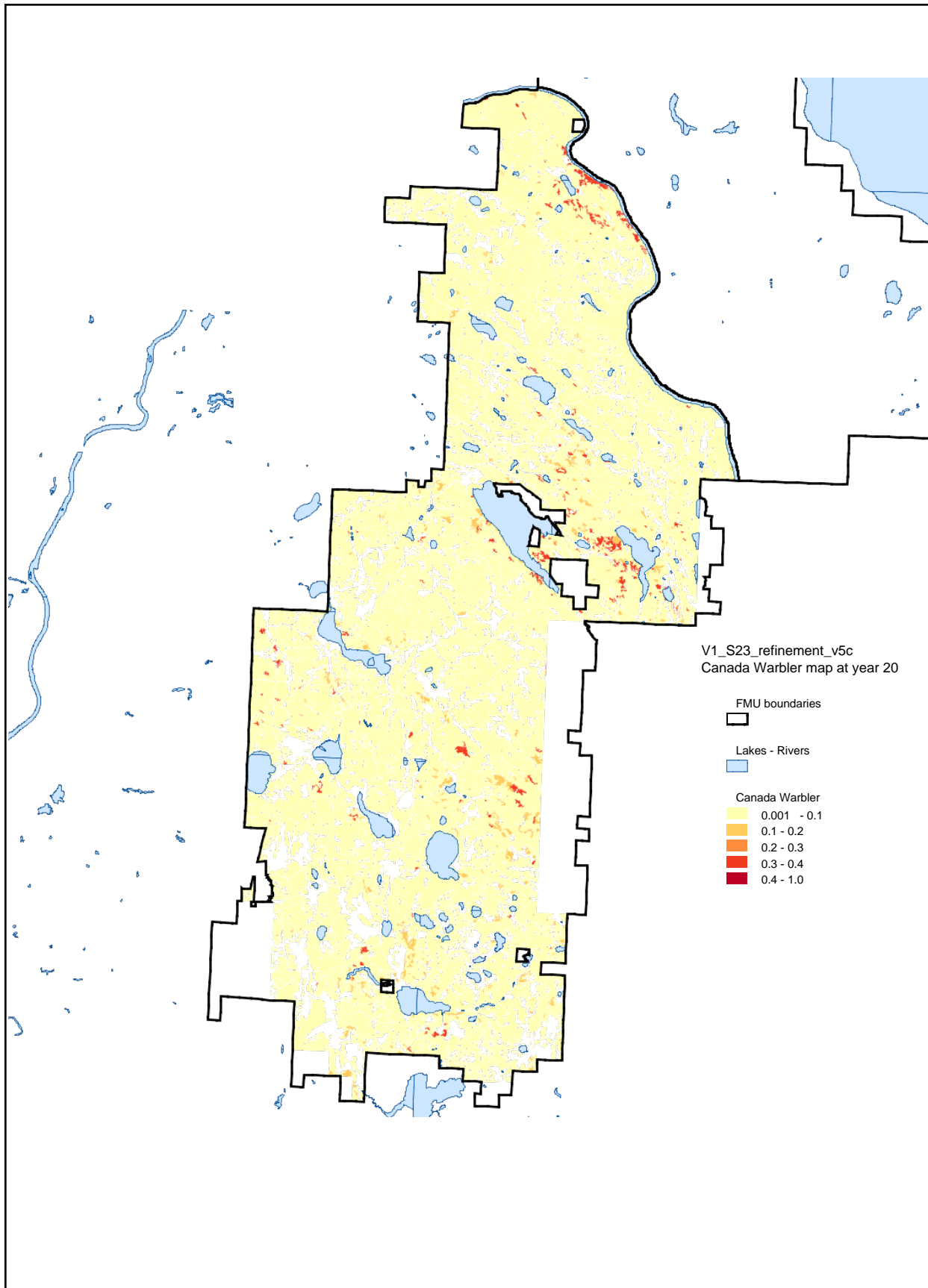
# Canada Warbler HSI - period 0



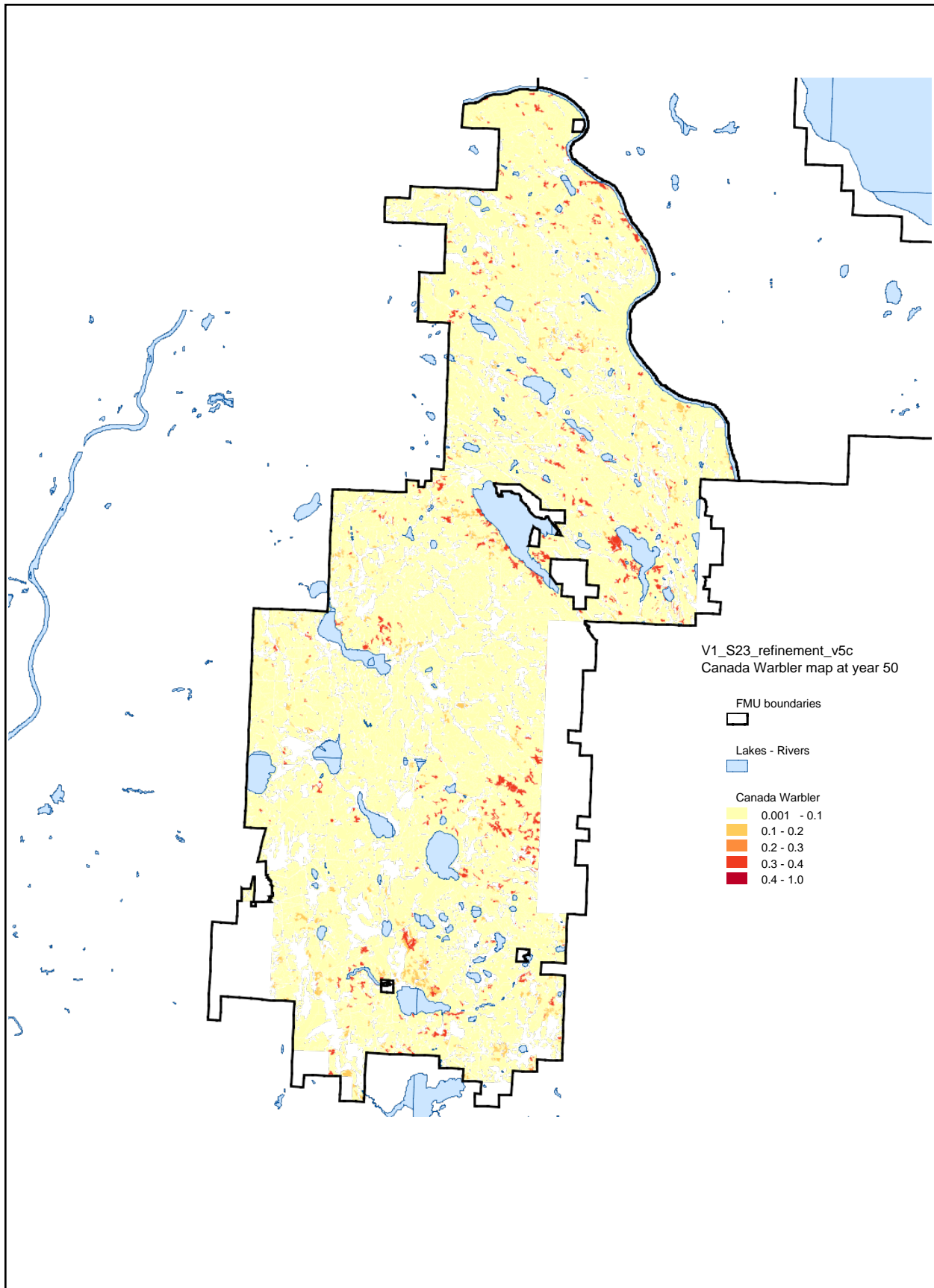
# Canada Warbler HSI - period 1



# Canada Warbler HSI - period 2

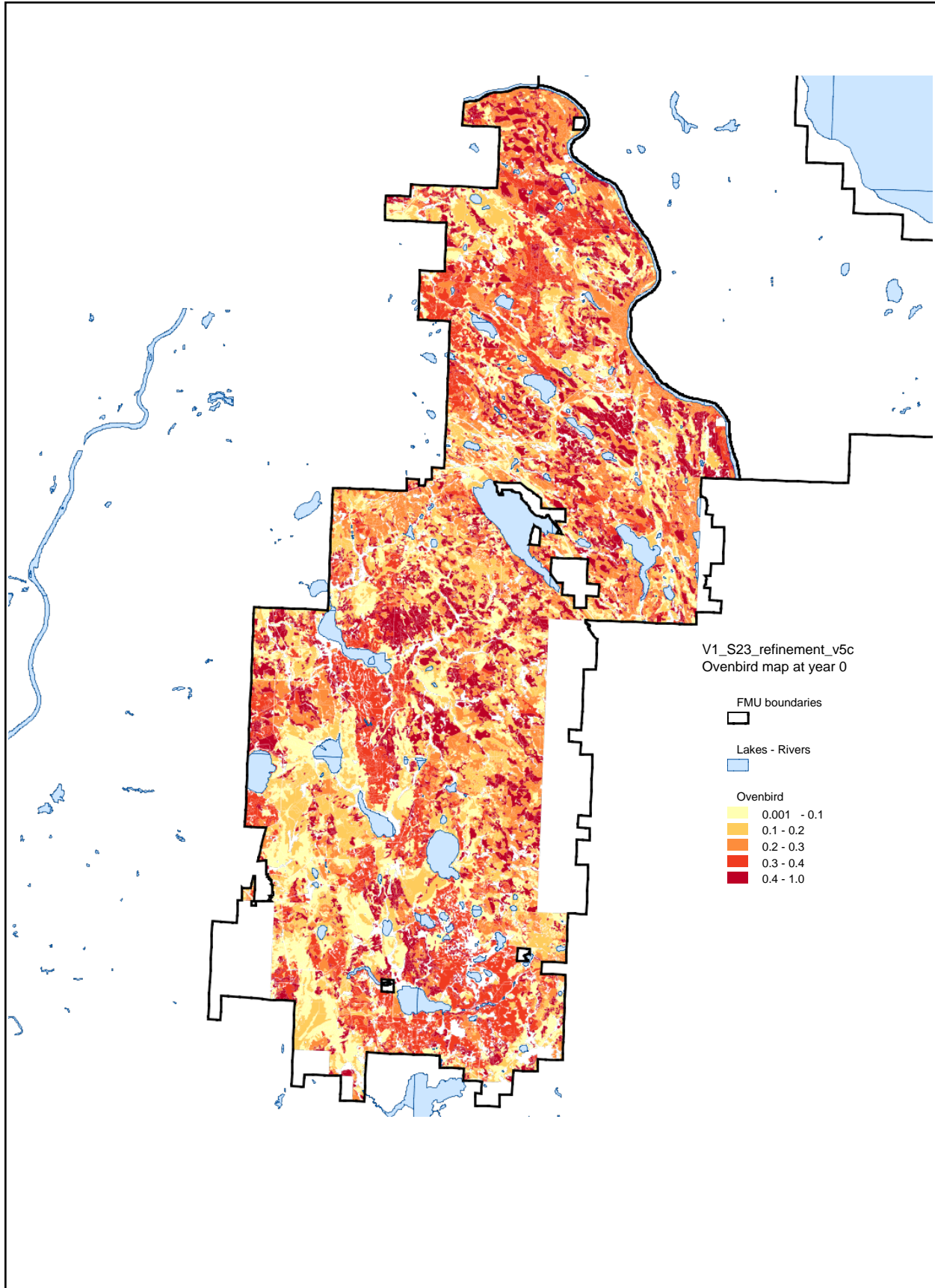


# Canada Warbler HSI - period 5

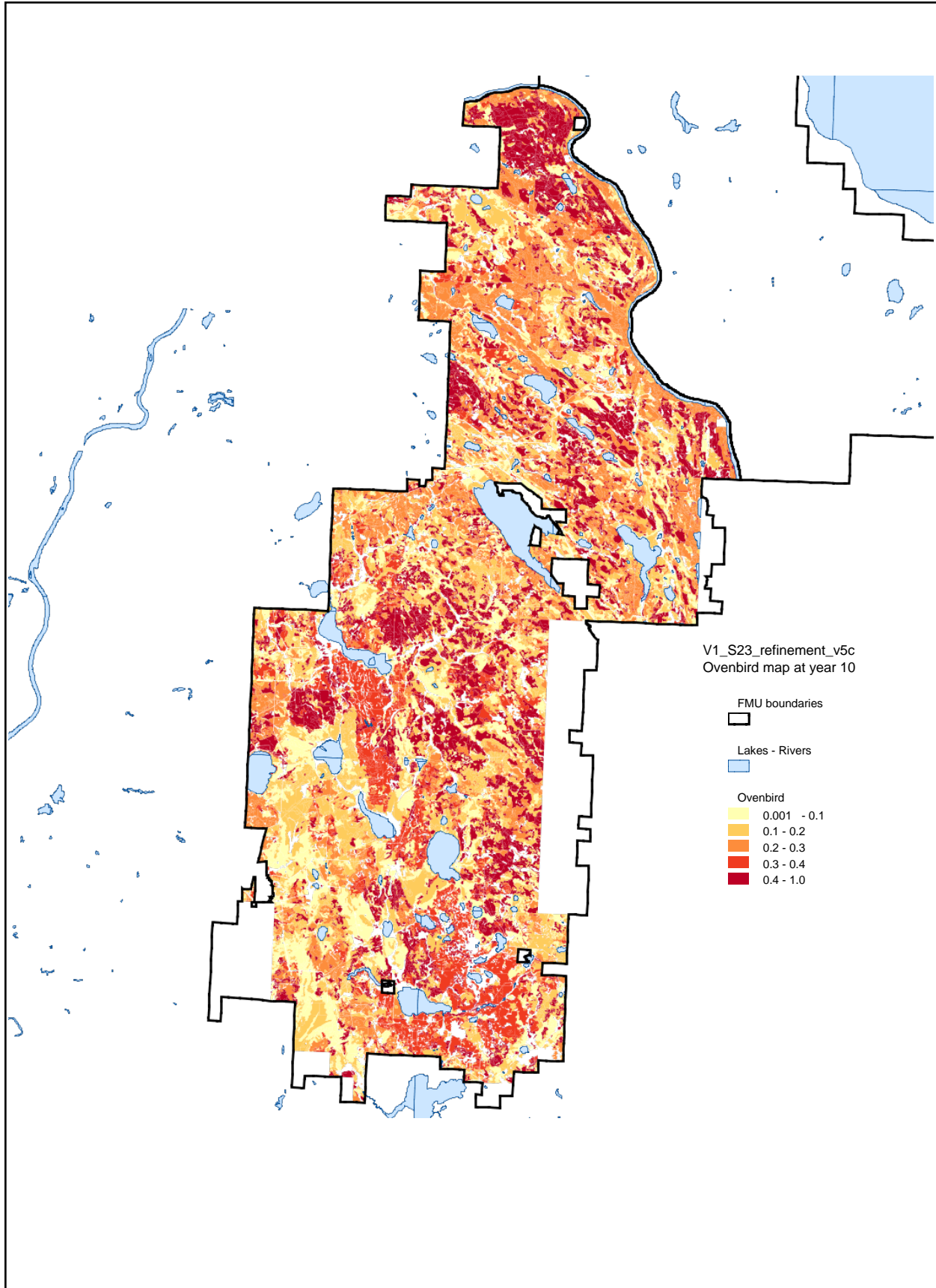




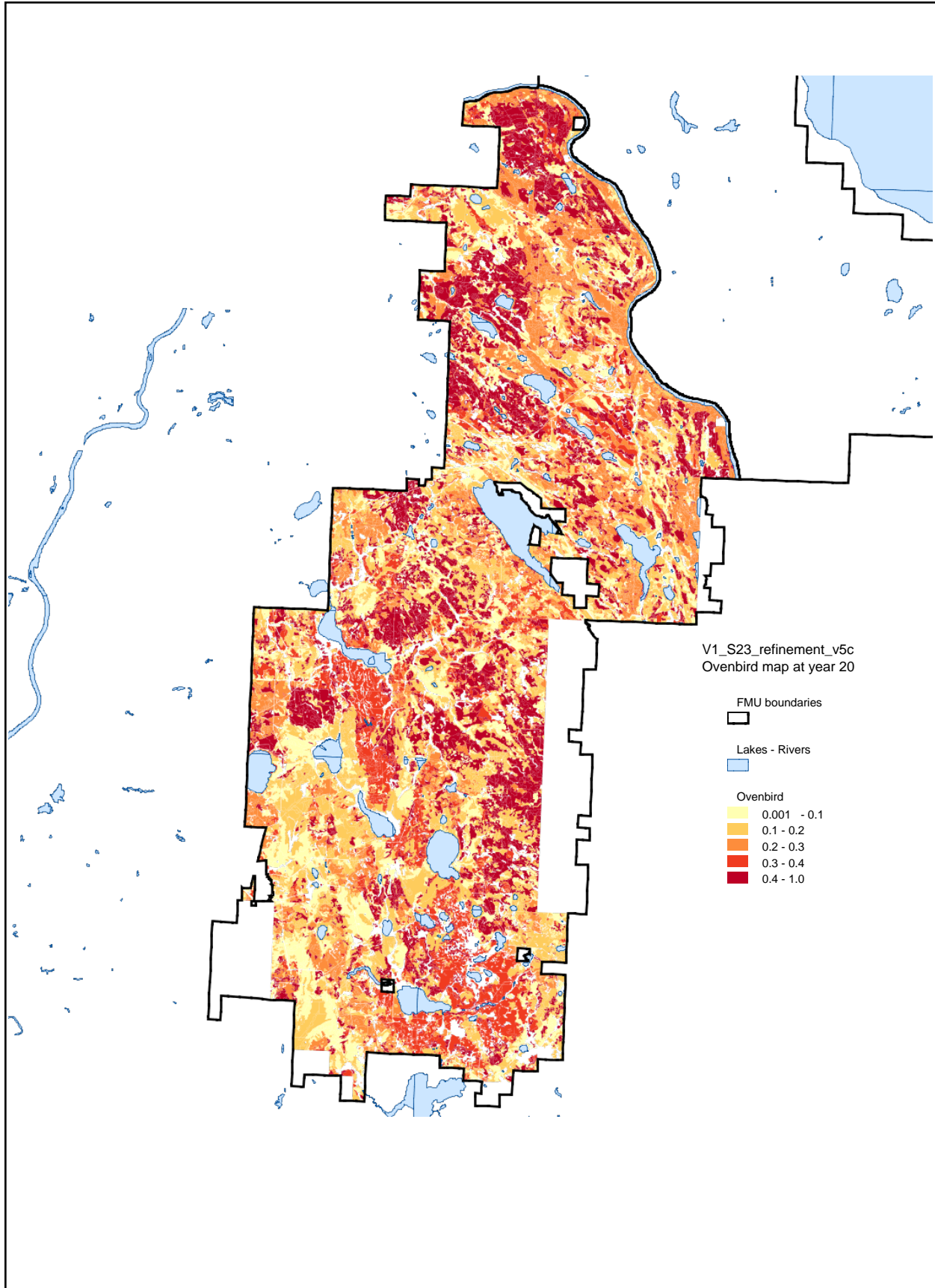
# Ovenbird HSI - period 0



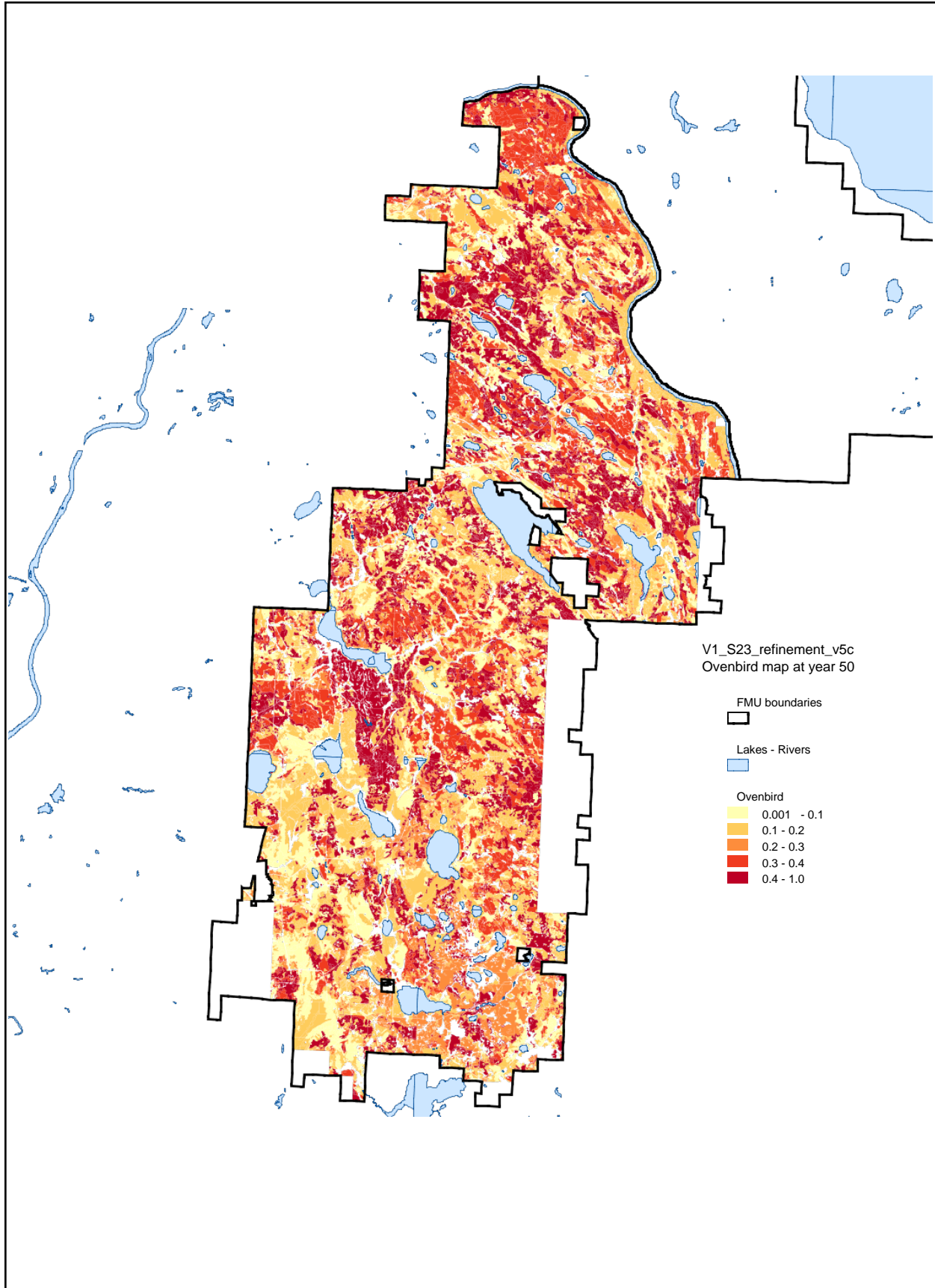
# Ovenbird HSI - period 1



# Ovenbird HSI - period 2



# Ovenbird HSI - period 5

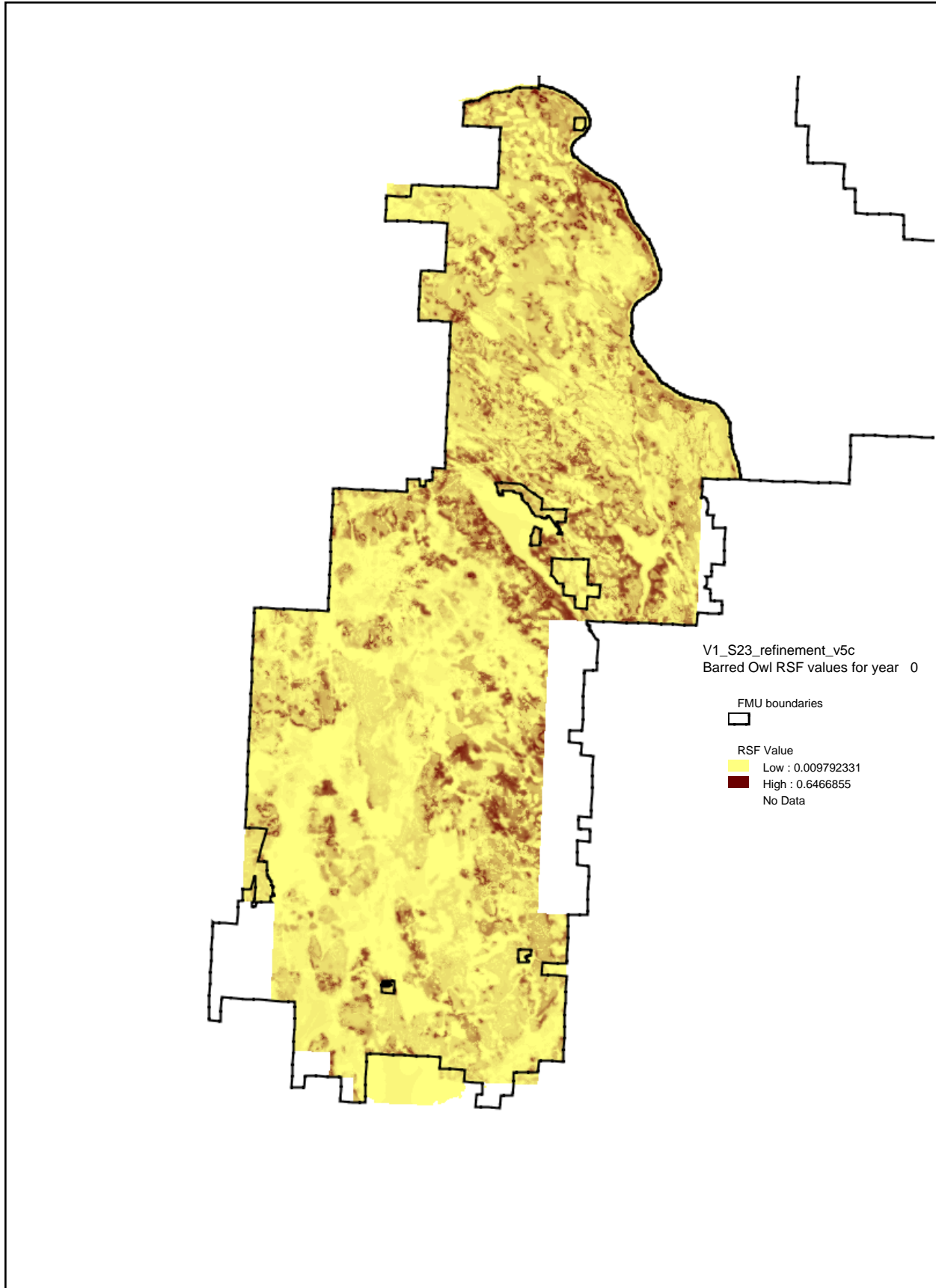


## Barred Owl Model Summary

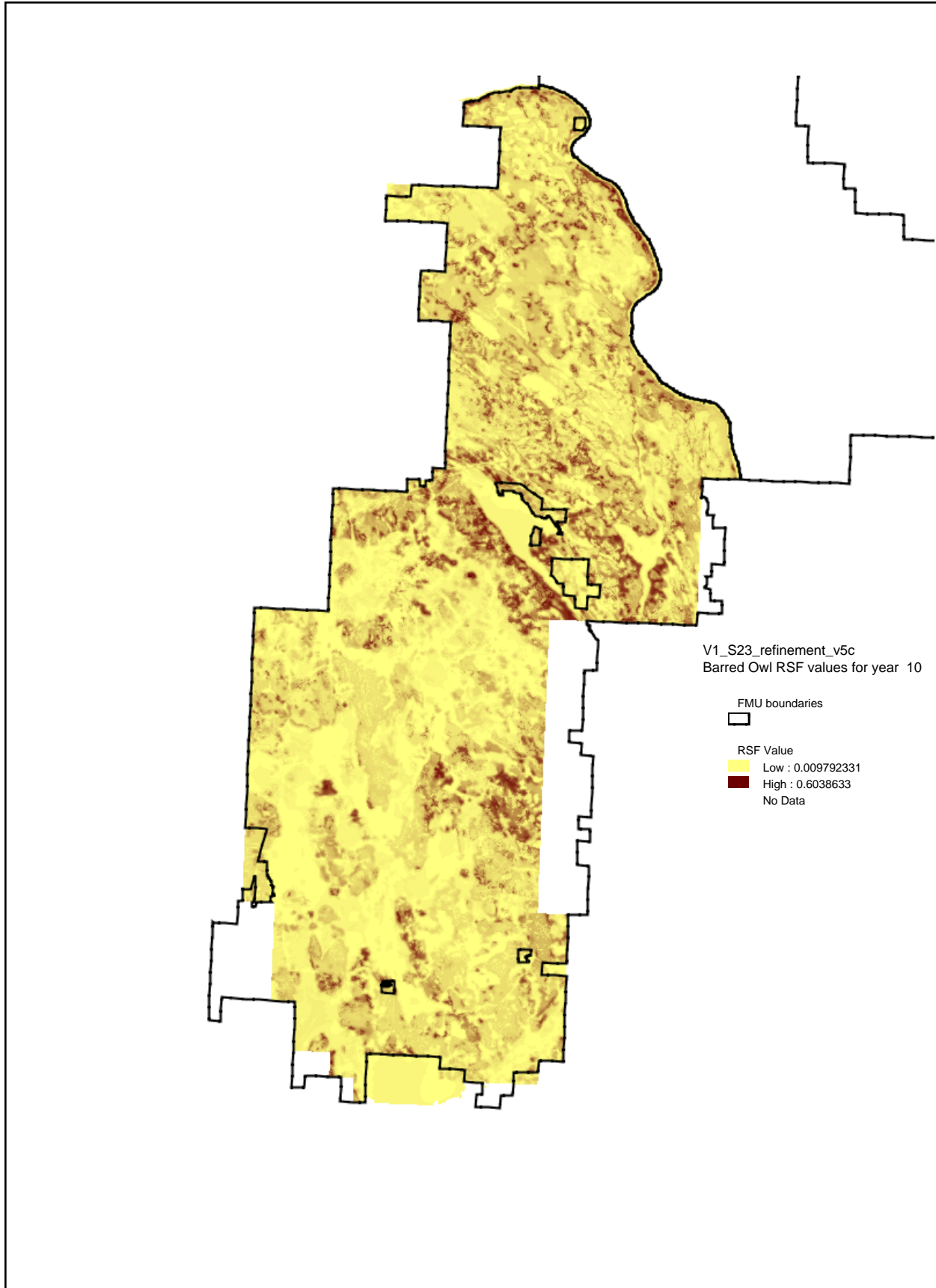
This table shows the results of the Barred Owl model. The breedpair value is a sum of the pixels from the breepair layers. The Resource Selection Function (RSF) values are the mean and standard deviation of the values from the RSF model layers.

		Breedpair	RSF	
		Sum	Mean	StDev
Year	0	704,719	0.11109	0.10209
	10	548,138	0.1042	0.09555
	20	384,177	0.09794	0.0889
	50	352,113	0.09239	0.08323

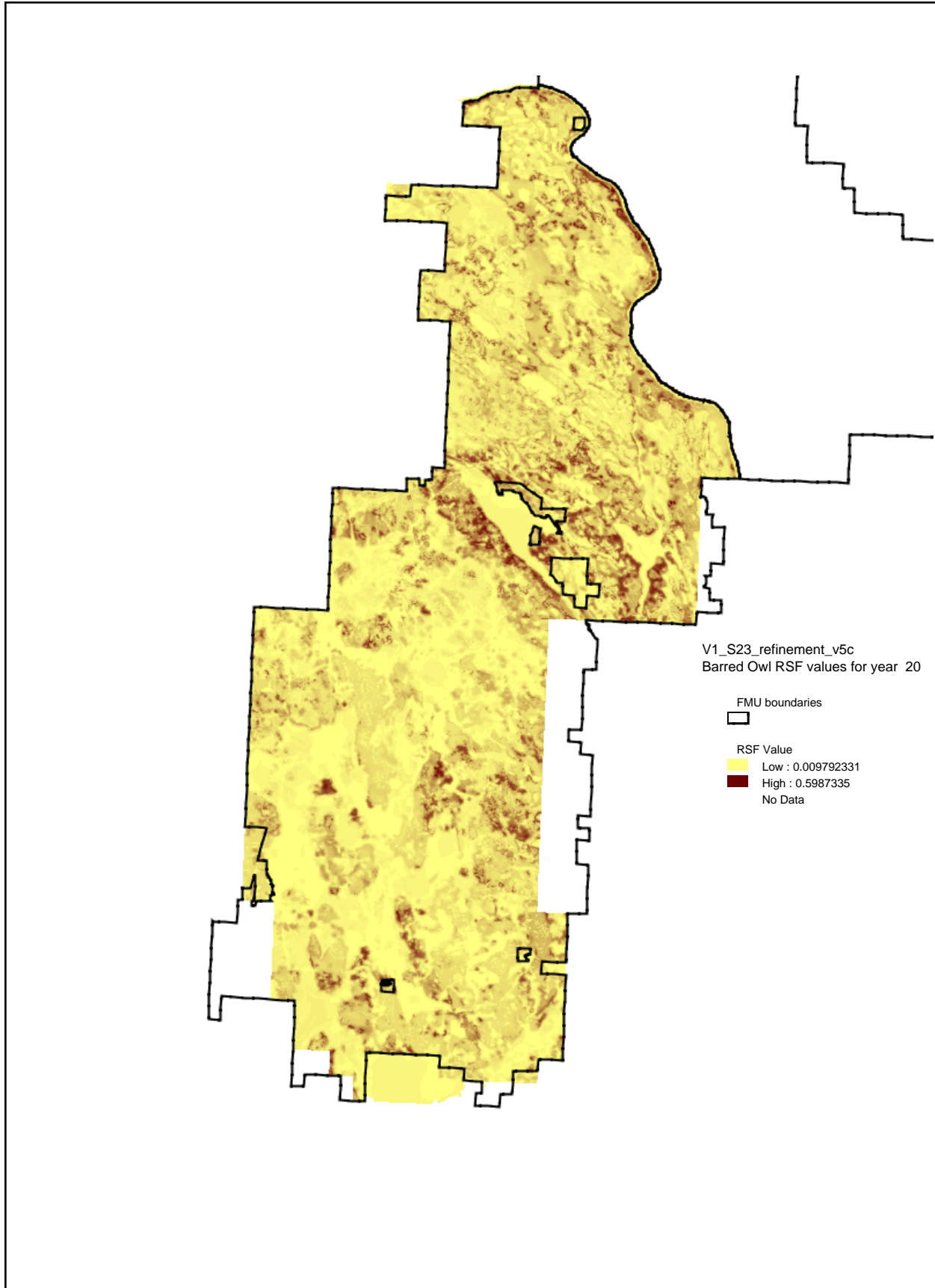
# Barred Owl RSF - period 0



# Barred Owl RSF - period 1

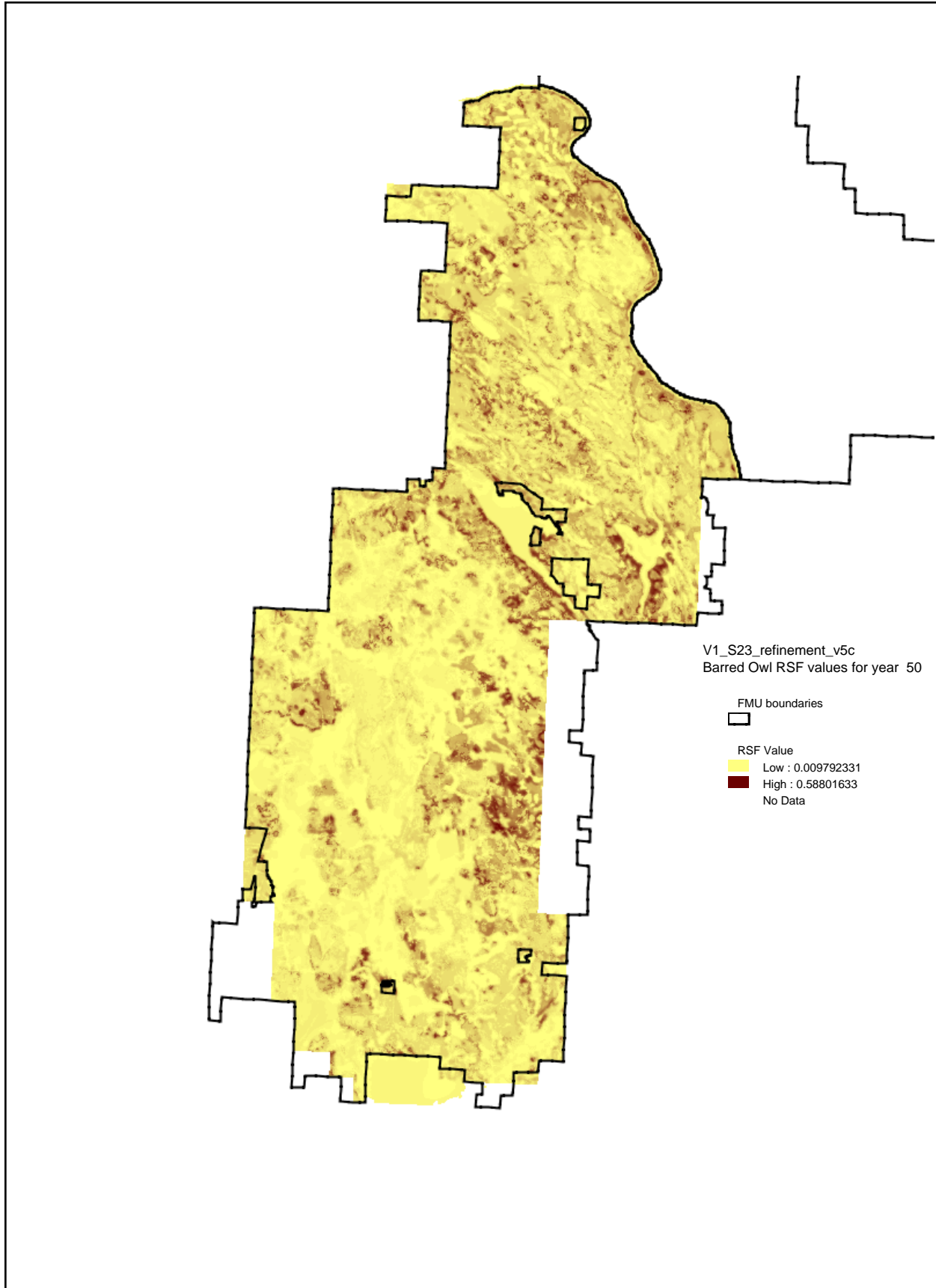


# Barred Owl RSF - period 2

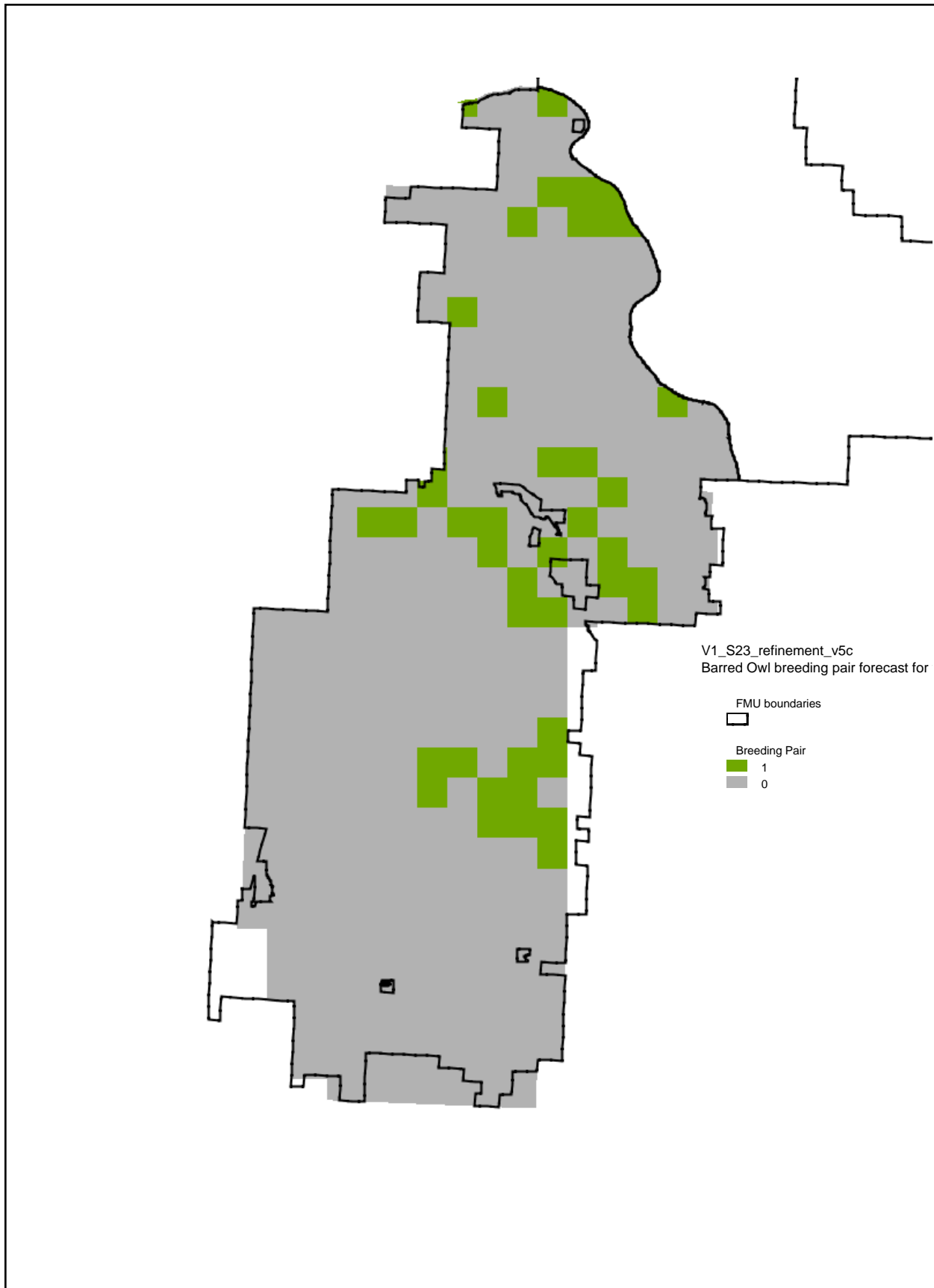




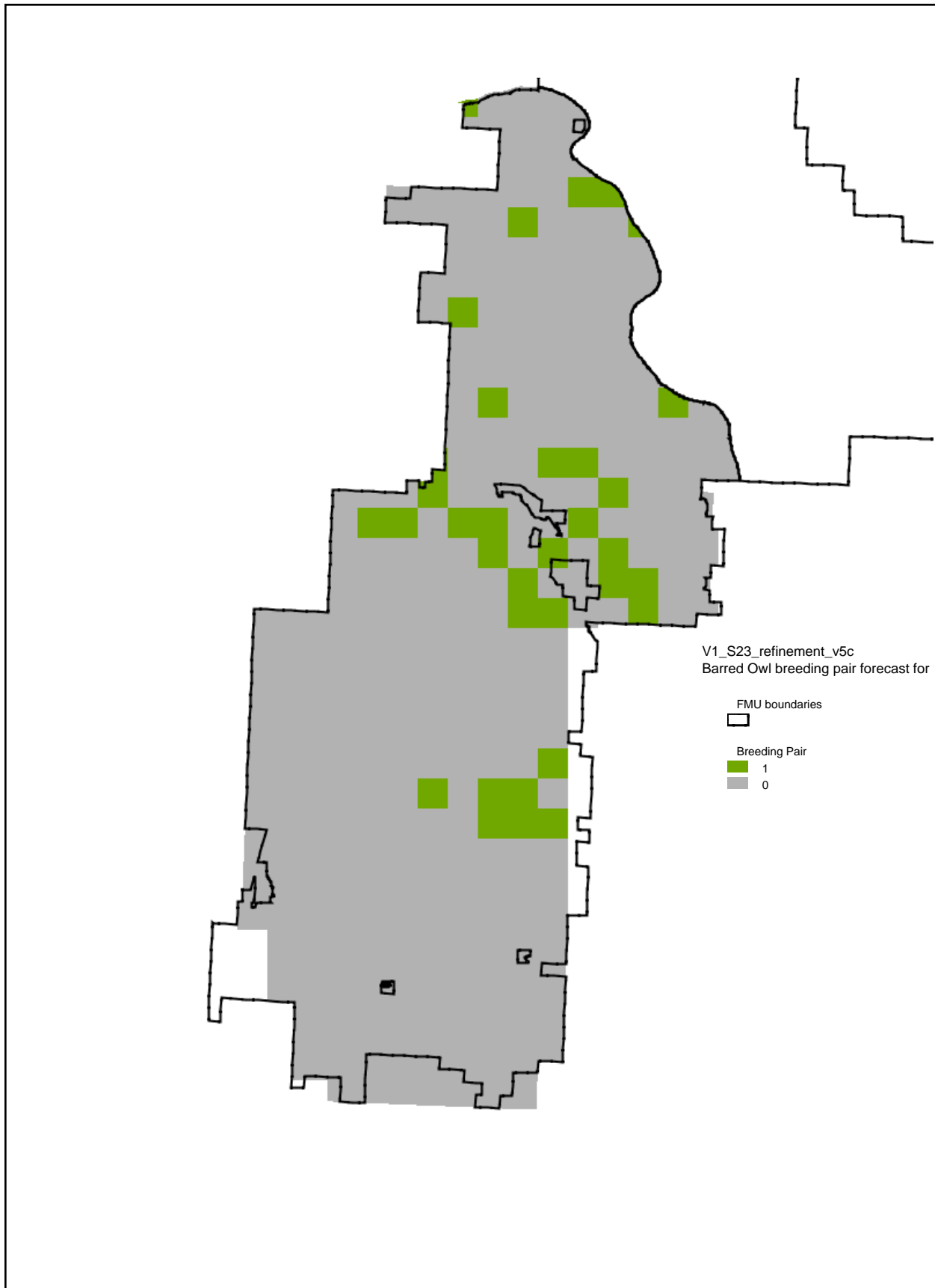
# Barred Owl RSF - period 5



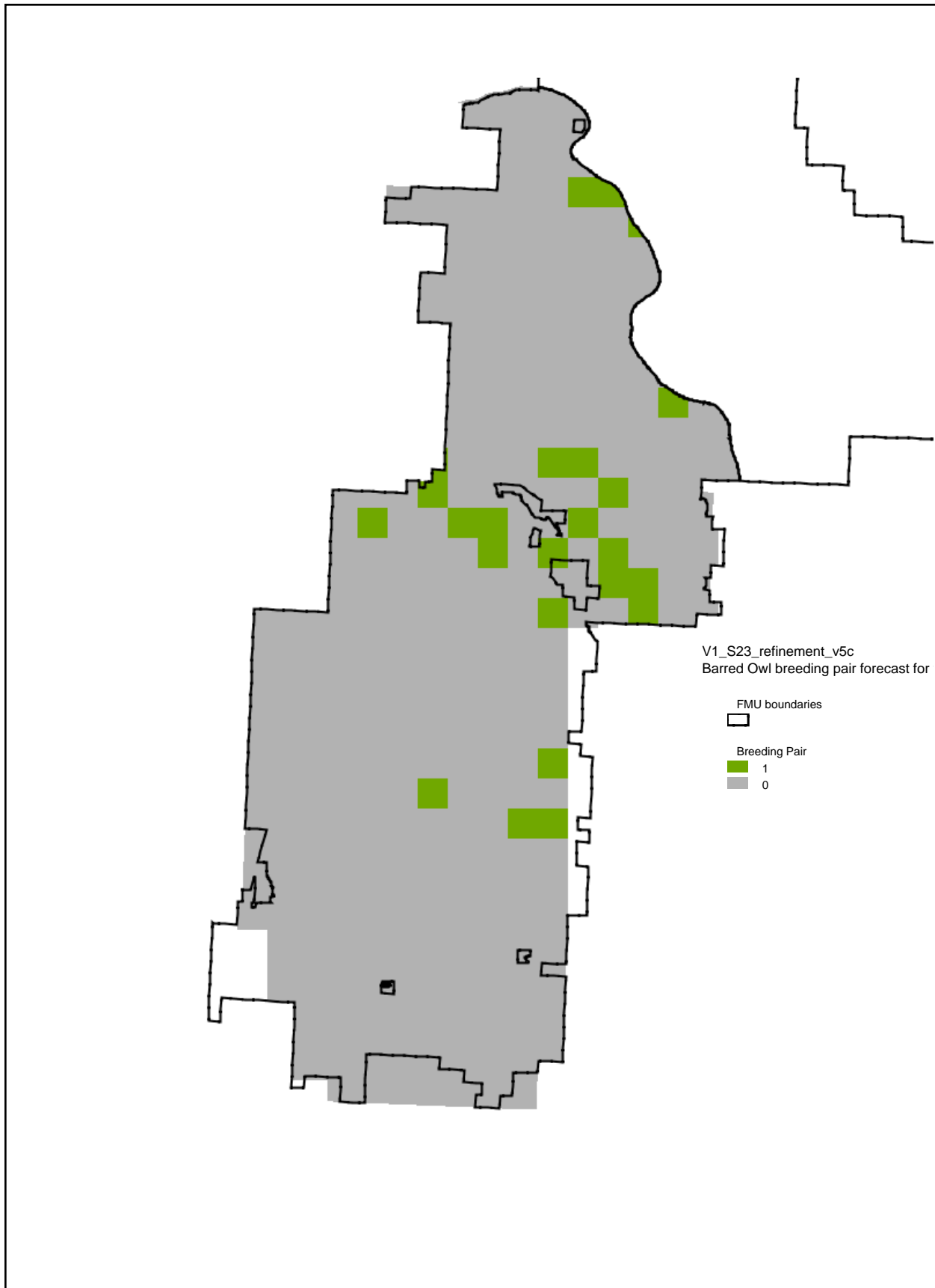
# Barred Owl Breed Pair - period 0



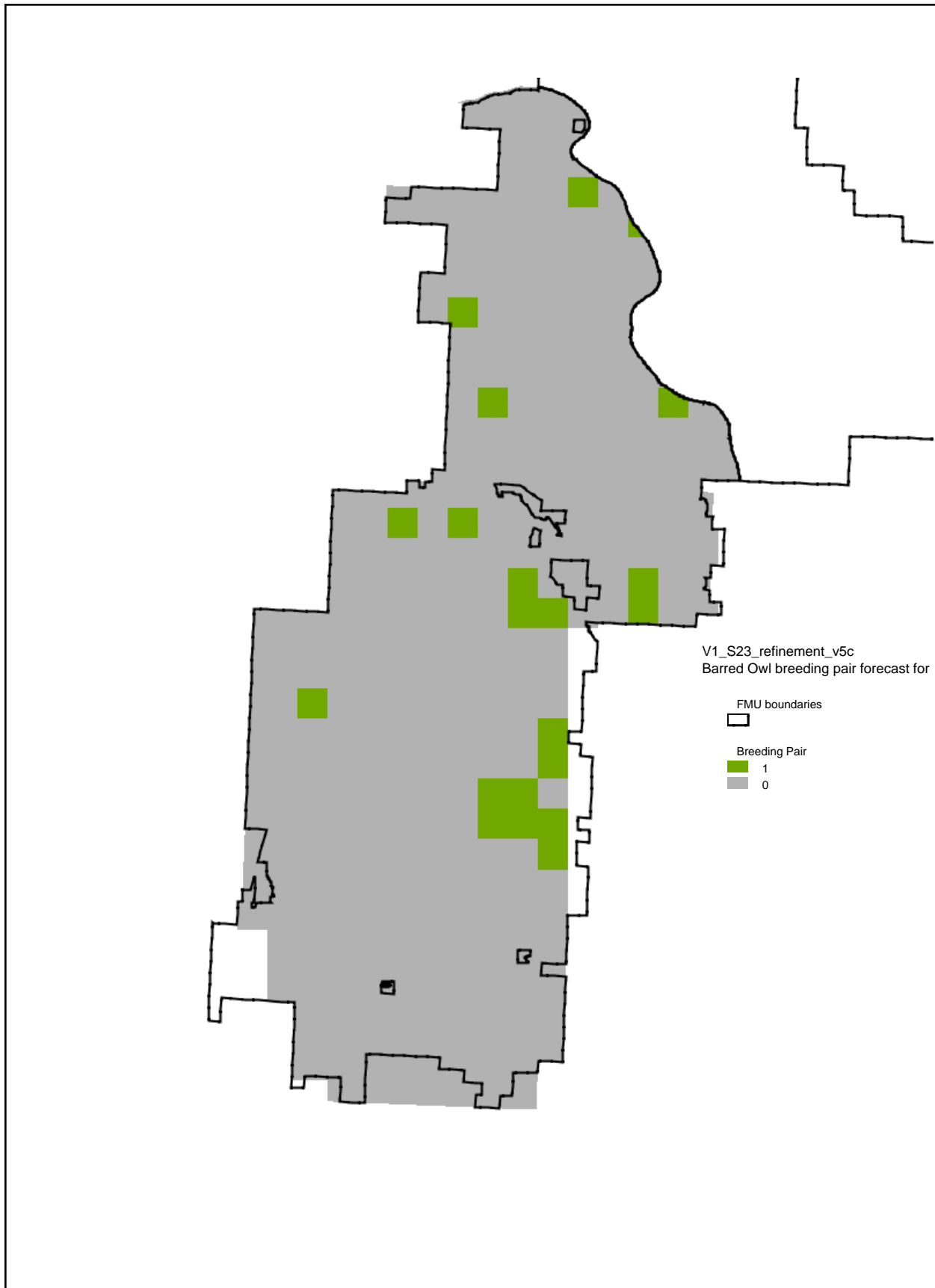
# Barred Owl Breed Pair - period 1



# Barred Owl Breed Pair - period 2



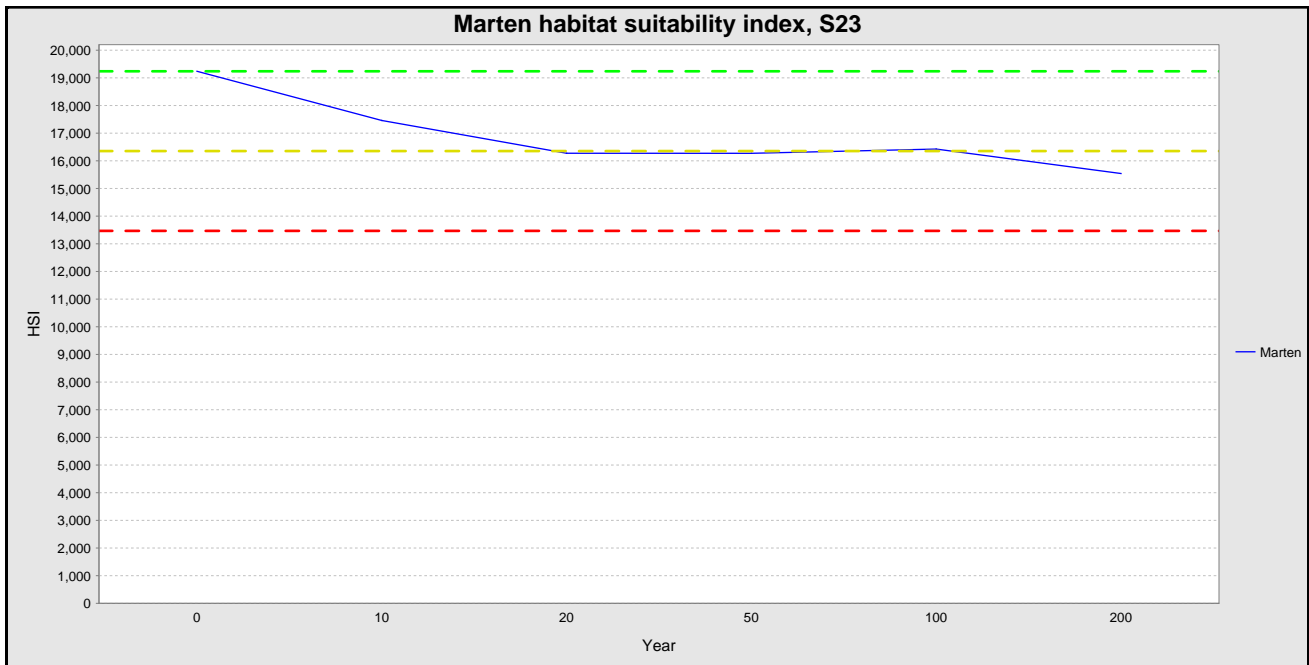
# Barred Owl Breed Pair - period 5



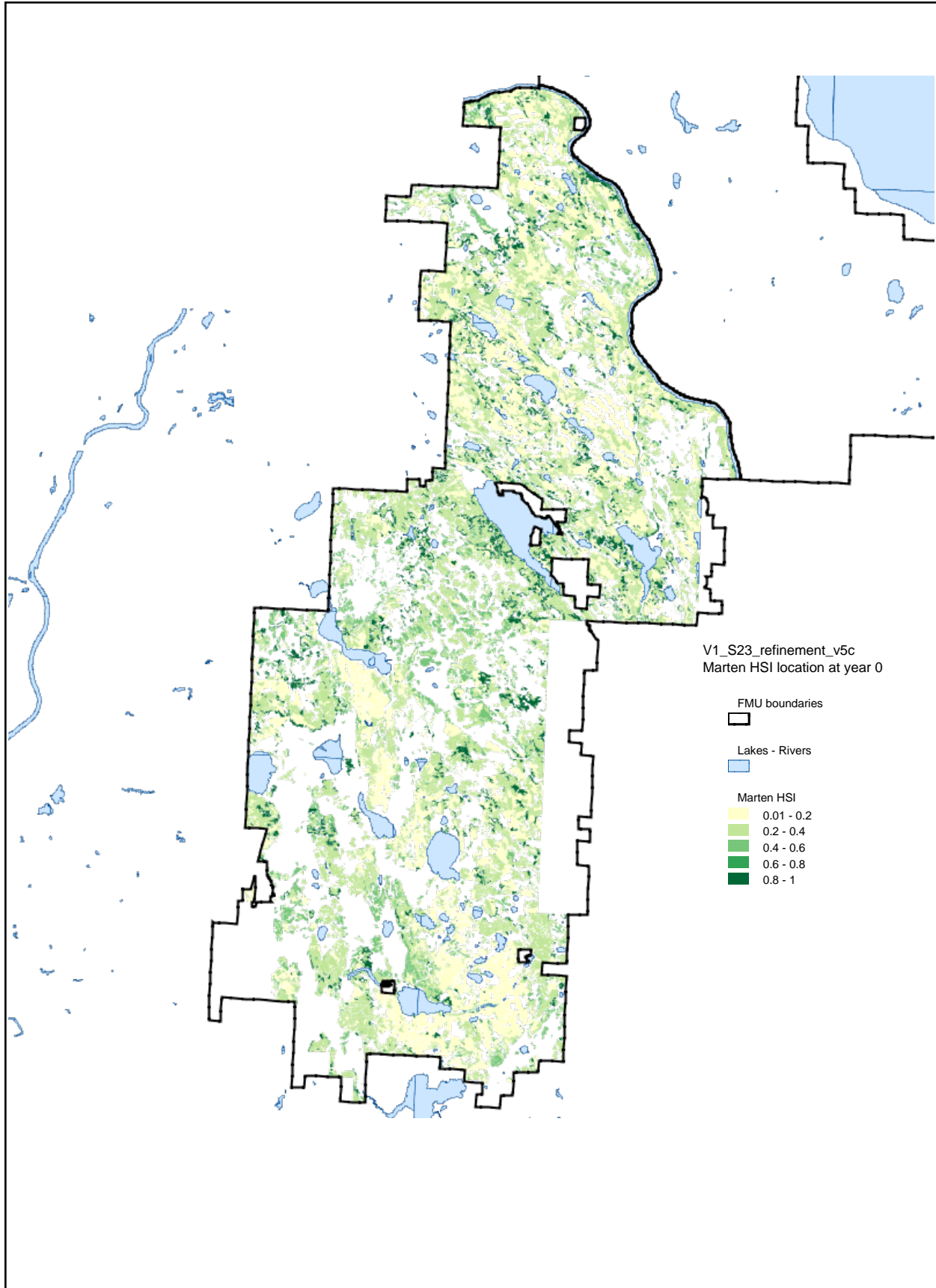
## Marten Habitat Suitability Index values

This table shows the summed Habitat Suitability Index (HSI) values from the Marten model by period. The line chart shows the change in summed HSI values relative to the time zero values. The dashed yellow reference line is 15% below the time zero value. The dashed red reference line is 30% below the time zero value.

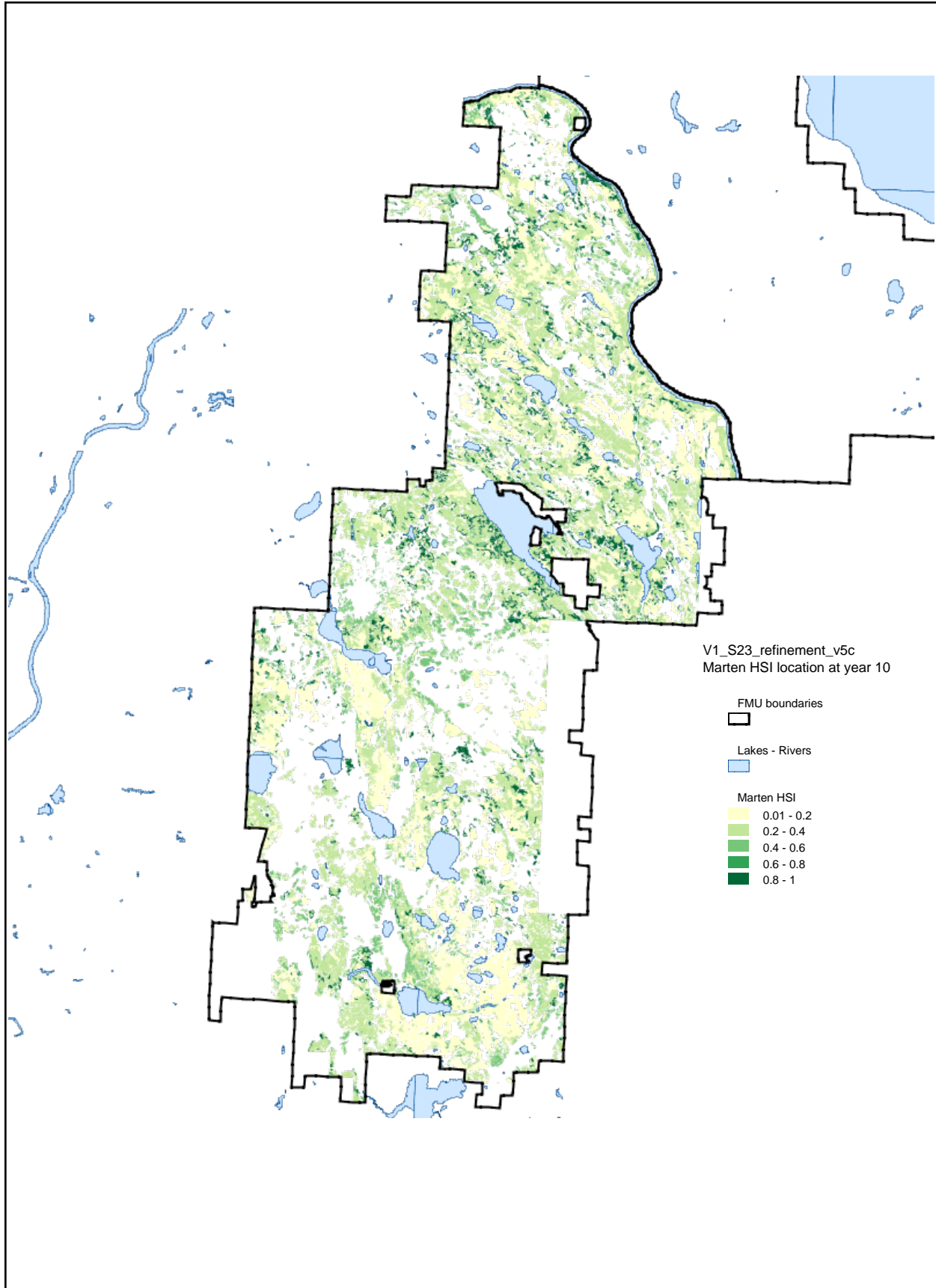
		Statistic		
		Mean	Stdev	Sum
<b>Year</b>	<b>0</b>	1.0594	2.6826	19,244
	<b>10</b>	0.9614	2.4389	17,464
	<b>20</b>	0.8962	2.2992	16,279
	<b>50</b>	0.8961	2.4033	16,278
	<b>100</b>	0.9045	2.4466	16,431
	<b>200</b>	0.8558	2.3028	15,546



# Marten Habitat Suitability Index - period 0

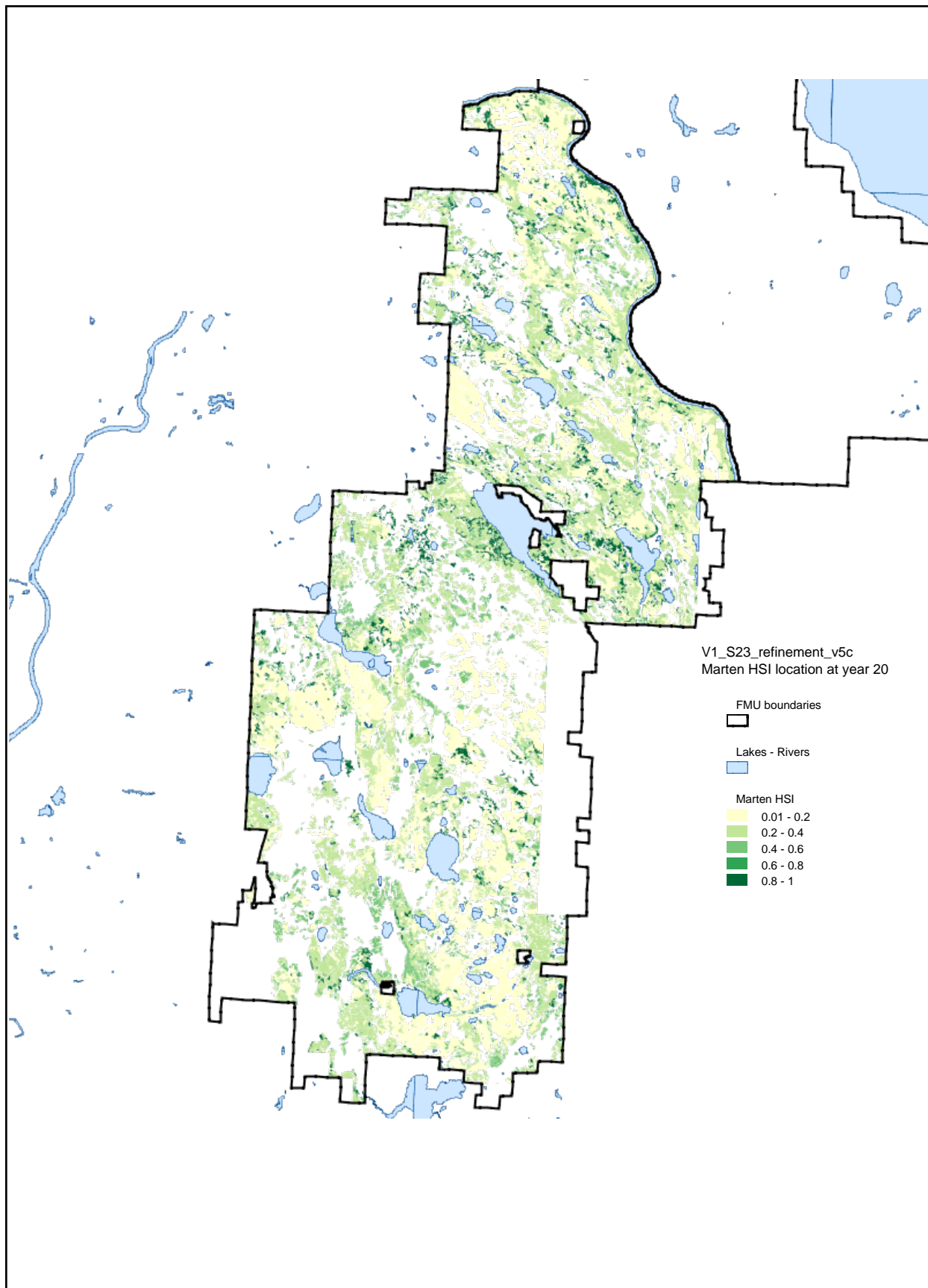


# Marten Habitat Suitability Index - period 1

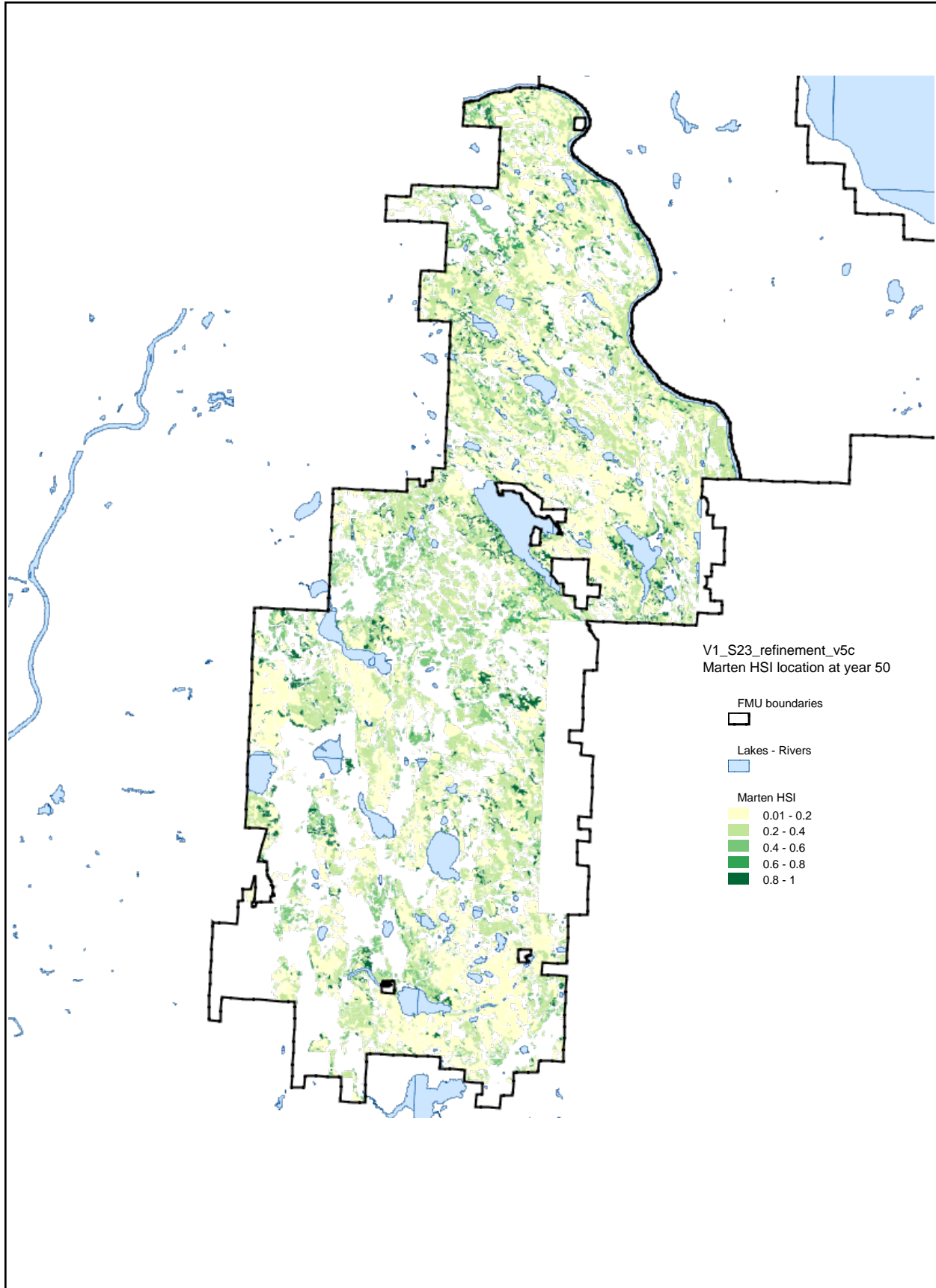




## Marten Habitat Suitability Index - period 2



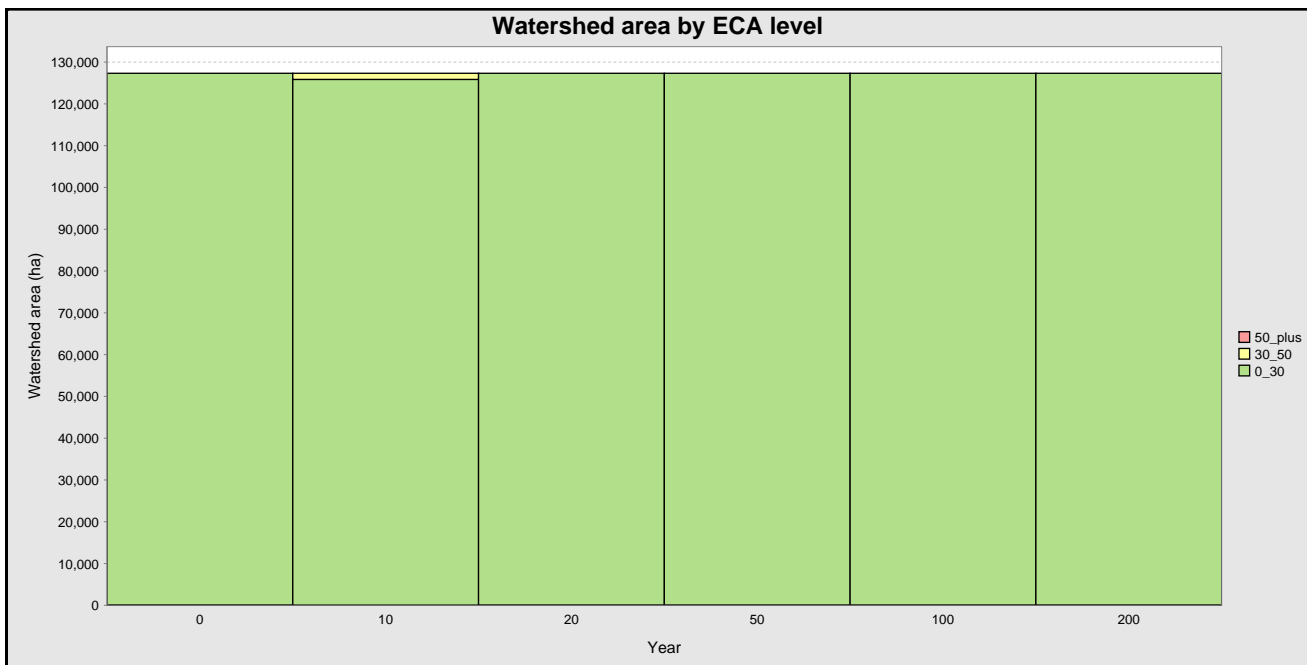
# Marten Habitat Suitability Index - period 5



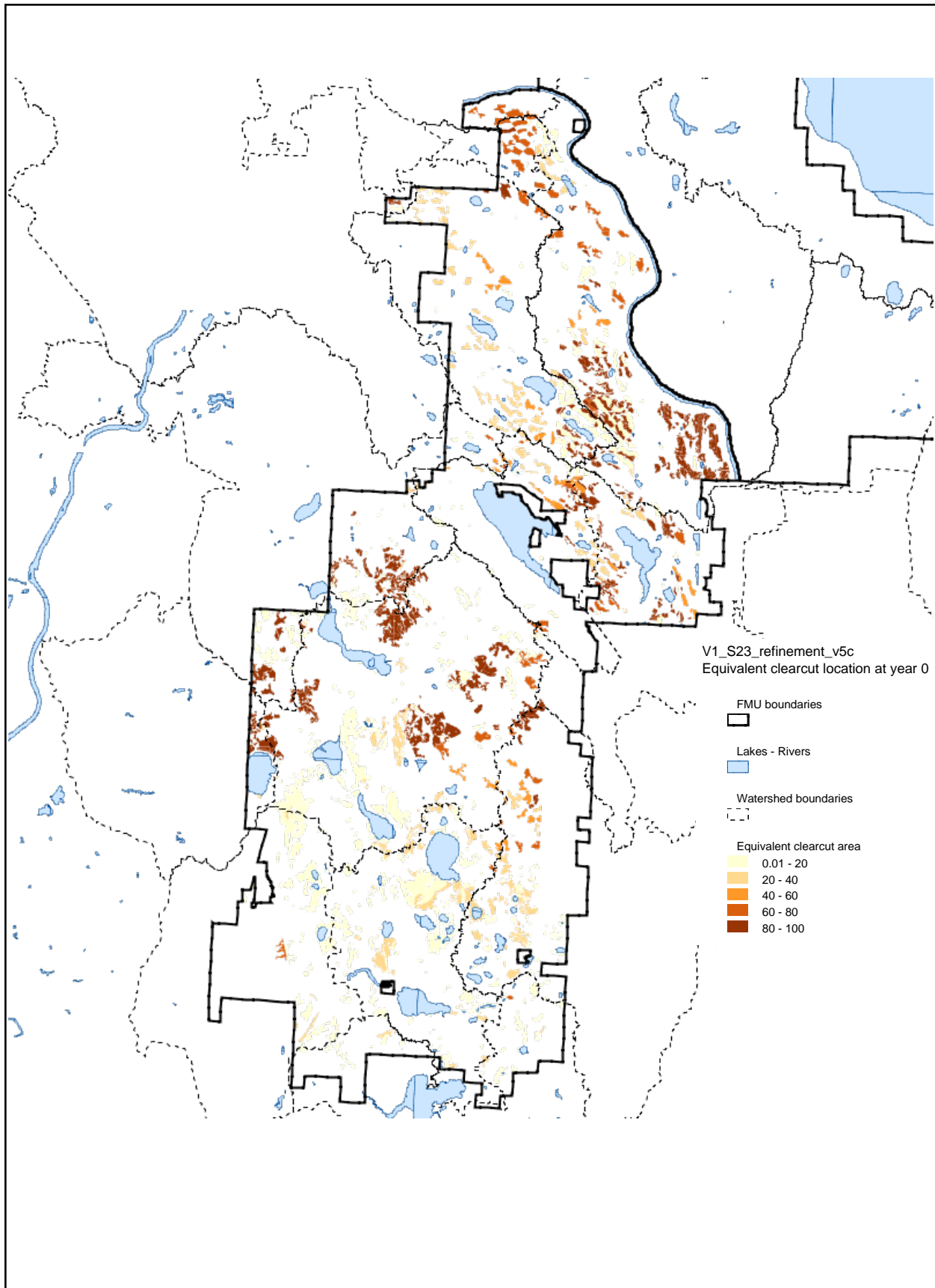
## ECA Assessment Values

This table shows the summed values from the Equivalent Clearcut Area (ECA) model. The values are calculated by classifying the percent disturbance in each watershed, and then summing the watershed area by the percent disturbance classes. The target is to have less than 30% disturbance in each watershed. This target is sometimes not possible due to the occurrence of large natural disturbances, or not practical when small slivers of watersheds overlap the FMU boundary.

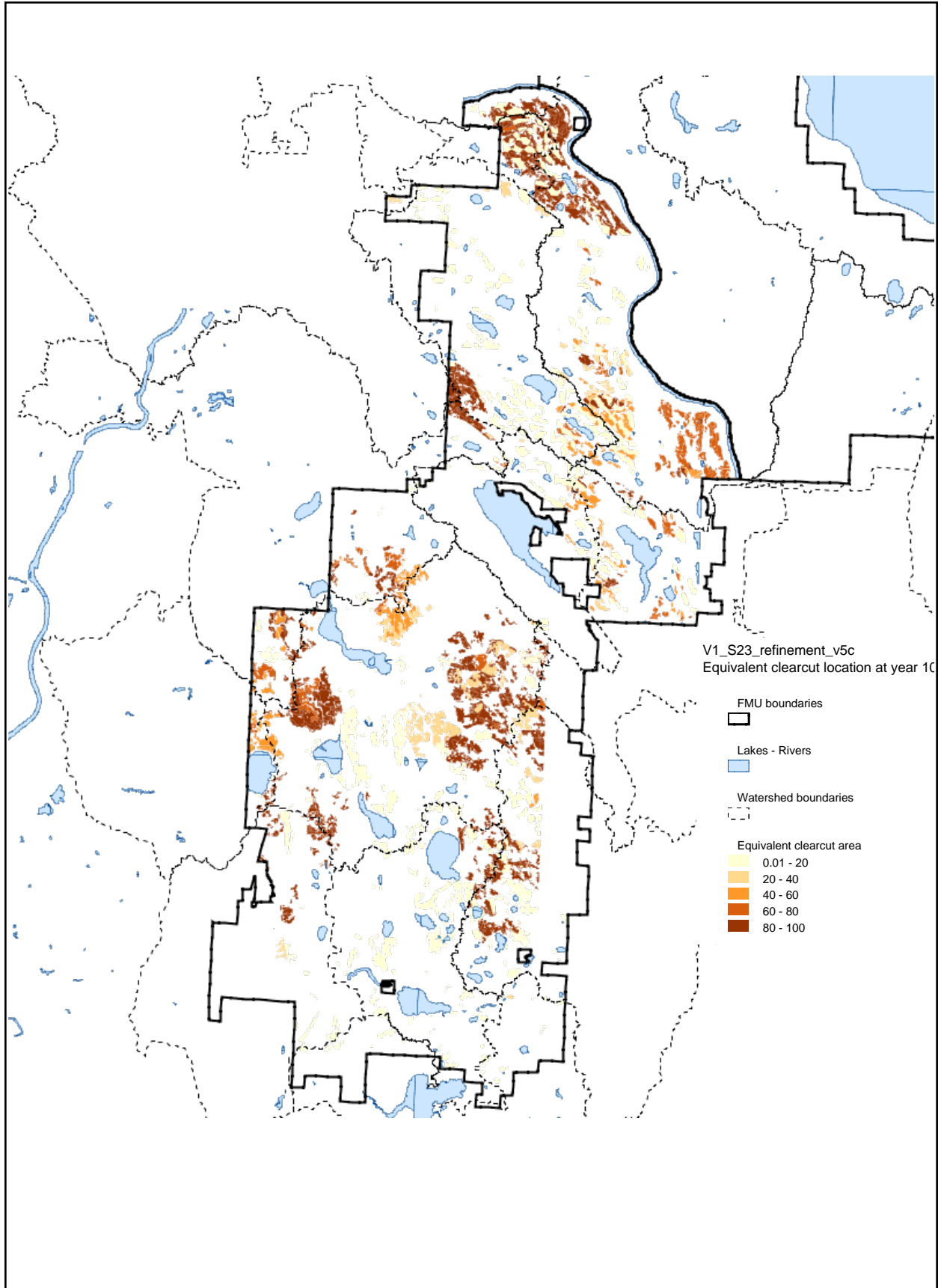
Period	Year	0_30	30_50	50_plus	Total
0	0	127,327	0	0	127,327
1	10	125,859	1,468	0	127,327
2	20	127,327	0	0	127,327
5	50	127,327	0	0	127,327
10	100	127,327	0	0	127,327
20	200	127,327	0	0	127,327



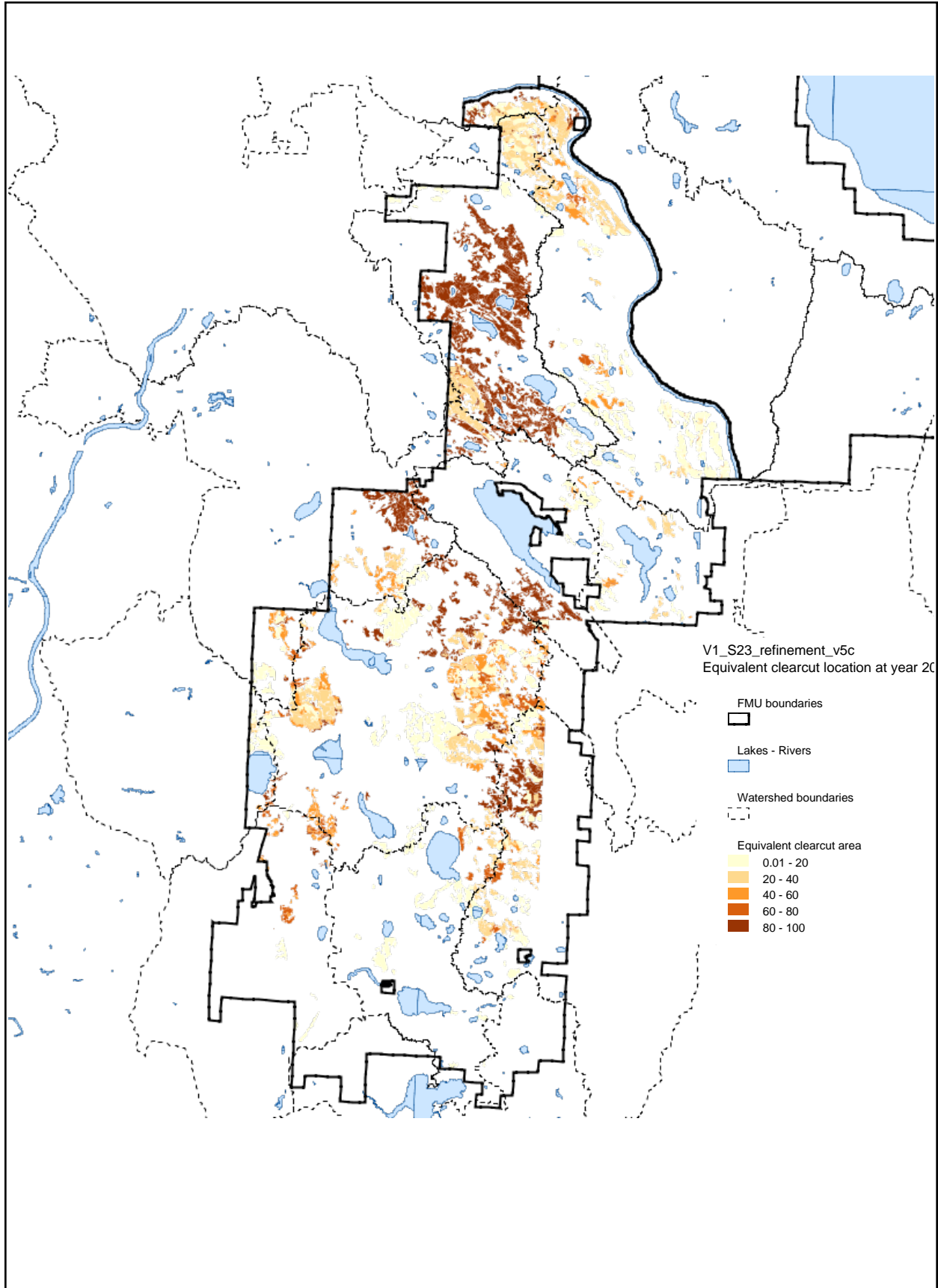
### Voit 3.2.1.1 Equivalent clearcut area - period 0



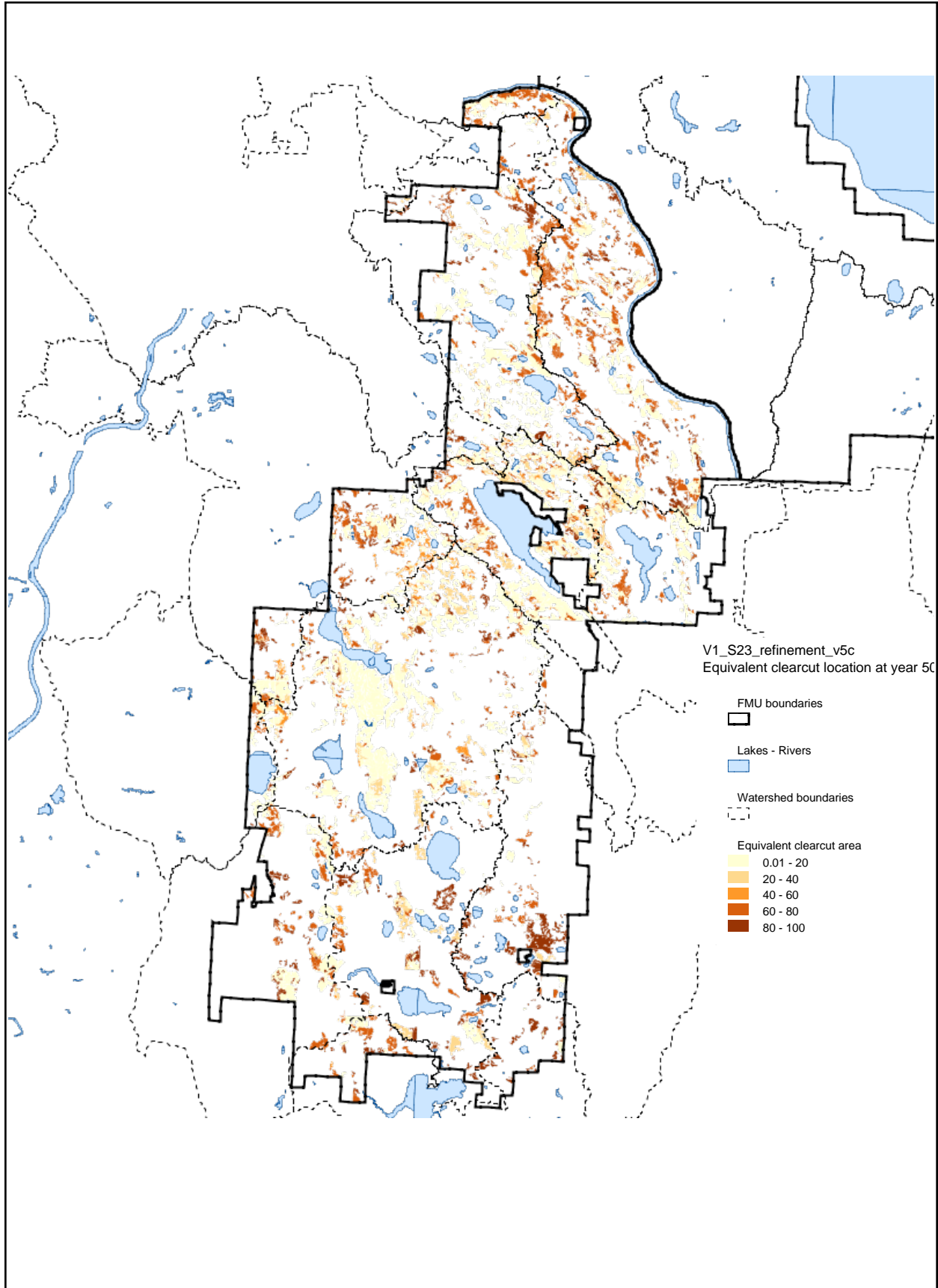
### Voit 3.2.1.1 Equivalent clearcut area - period 1



### Voit 3.2.1.1 Equivalent clearcut area - period 2



### Voit 3.2.1.1 Equivalent clearcut area - period 5



## Scenario parameters

The indicators in this appendix represent the Preferred Forest Management Scenario (PFMS) that was simulated with the Patchworks™ forest management planning model using the following set of parameter and objectives:

SHS Refinement Scenario - V5c. Schedule operationally refined SHS for Period 1 and Period 2 (no model allocations within first 20 years). Apply all base model objectives, caribou and NRV patches to determine long term sustainability impacts of SHS. Add NTA (Marten and Songbird) minimum objectives. Even-flow 200 year planning horizon with 20 year SHS.

This scenario has the following characteristics:

- Primary harvest for conifer and deciduous by FMU.
- Primary even flow harvest
- Primary non-declining managed GS by FMU for the last 50 years.
- Using the Adjust50 volume type
- Using the ORIG\_AREA no succn tracks
- Using SHS version 5
- Silviculture transition ratios for AwU set to 70/15/15.
- Limit SbFM harvest
  - No SbFM harvest allowed in S23
- Cover/Seral targets at SRNV quartile levels with weight=10.0
- Initial planned harvest locked for 20 years.
- Pre-defined block schedule
  - Using ../fmus/S23/blocks/schedule\_V5.csv
  - No MPB in Caribou zone
- Transportation budget set to limit road access footprint with least impact on wood supply
- Road construction budget places a maximum upper bound on captial construction
- Harvest patches follow NRV distribution for first 40 years
- Marten HSI target to retain habitat
- Songbird HSI target to retain habitat