

Analysis of Climate Change Impacts on Tree Species of the Adirondacks Region

Louis R. Iverson¹, Matthew P. Peters¹,
Anantha M. Prasad¹, Stephen N. Matthews^{1,2}

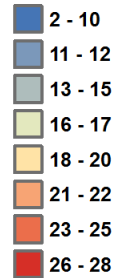
¹USDA Forest Service, Northern Research Station,
Northern Institute of Applied Climate Science,
Delaware, OH, USA

²School of Environment and Natural Resources,
The Ohio State University,
Columbus, OH, USA



PRISM 1981-2010

Mean Annual C



Current

Temperature will increase,
a lot, especially under high emissions

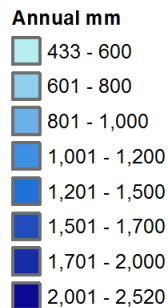
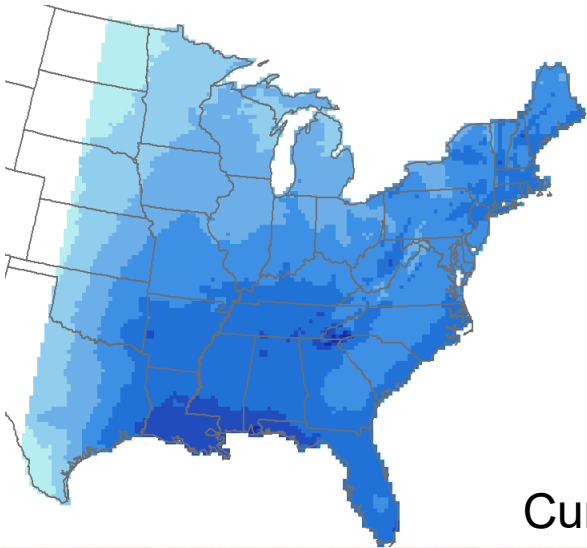
CCSM4 RCP 4.5
(2070-2099)

Low Emissions

GFDL-CM3 RCP 8.5
(2070-2099)

High Emissions

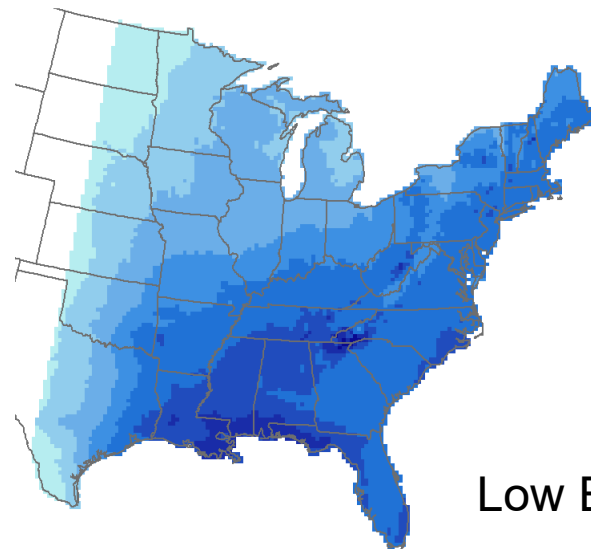
PRISM 1981-2010



Current

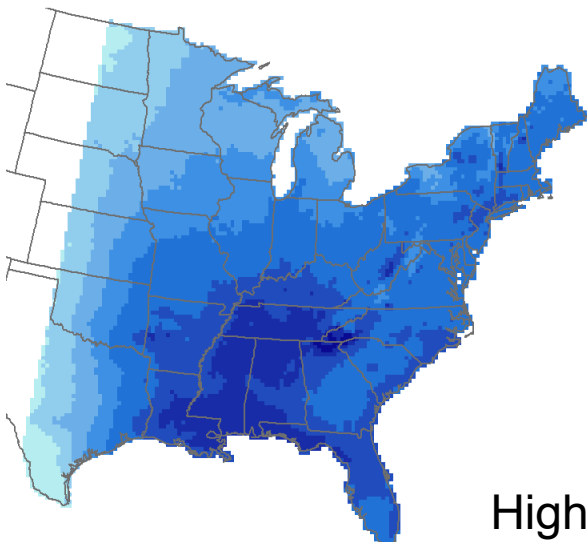
Precipitation may increase,
but still more physiological drought

CCSM4 RCP 4.5
(2070-2099)



Low Emissions

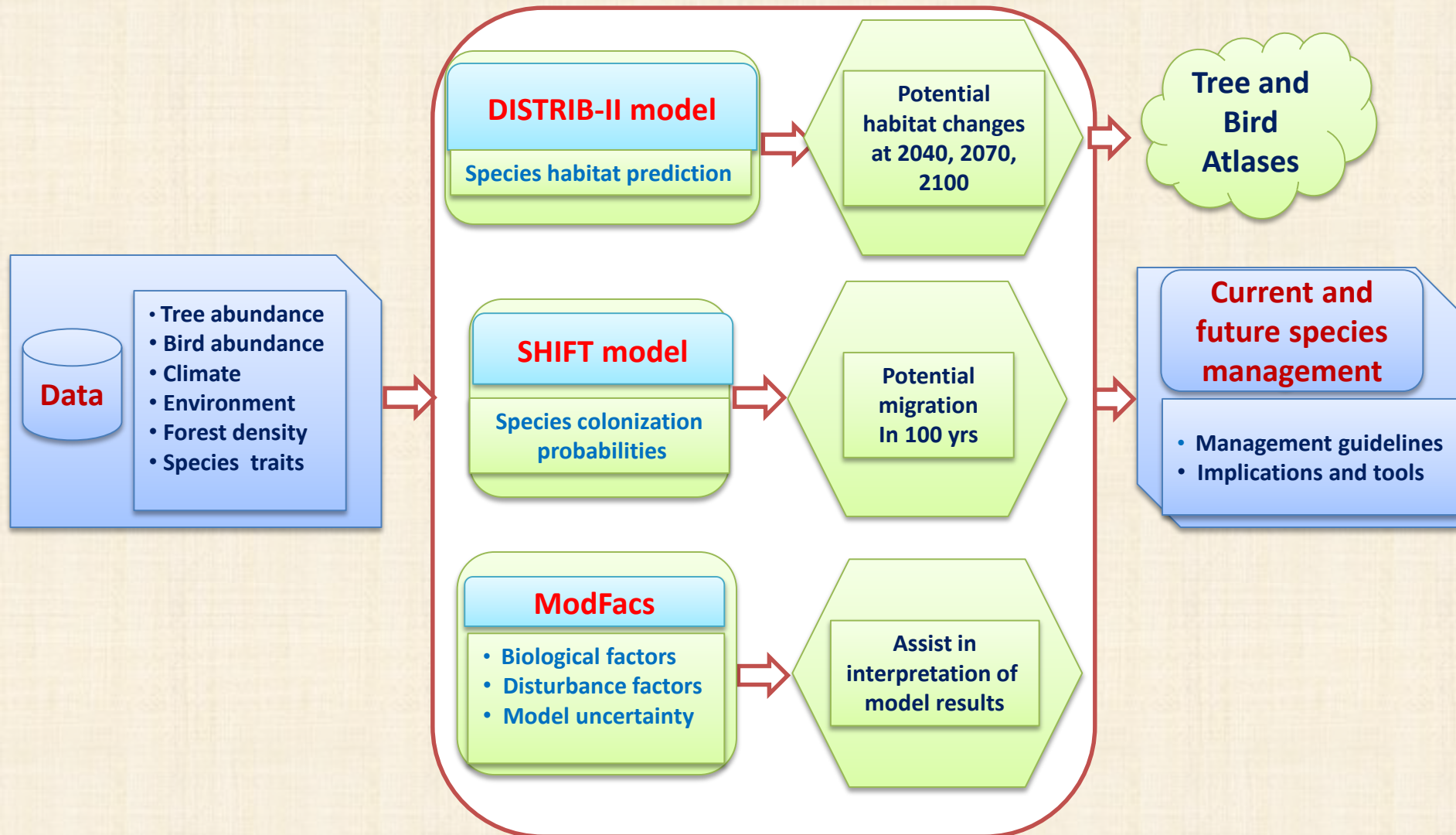
GFDL-CM3 RCP 8.5
(2070-2099)



High Emissions

MODELING POTENTIAL CHANGES IN TREE SPECIES HABITATS

Multi-stage modeling scheme



black oak (*Quercus velutina*)

Model Reliability: High ●

Current Distribution

Projected Future Habitat ●

Predictor Maps

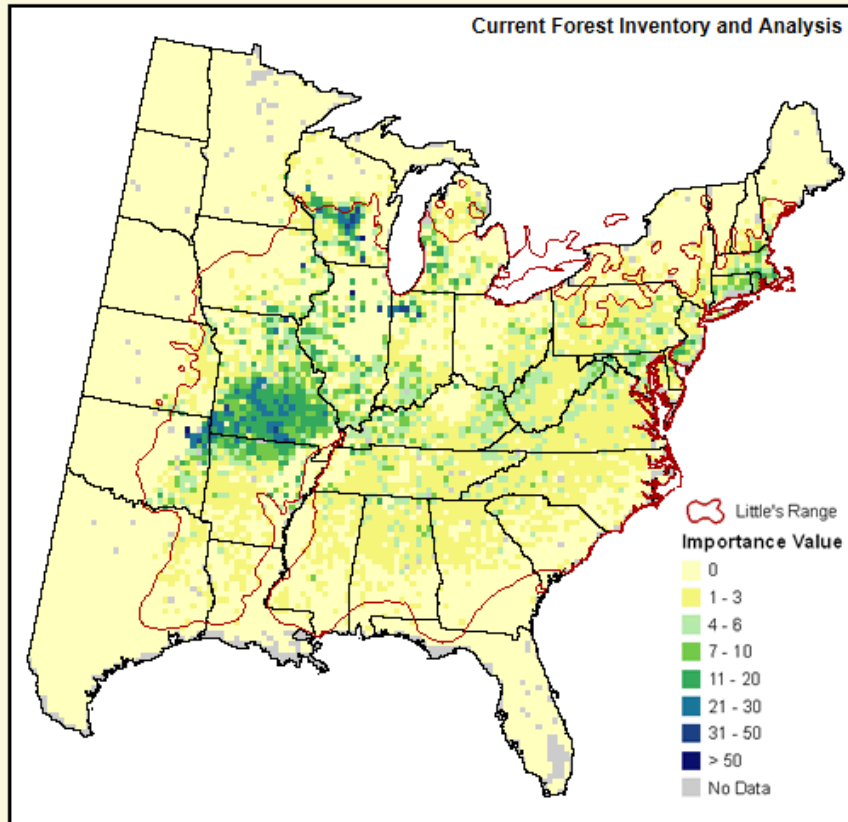
⚠ Cautions & Model Info

Current Distribution Maps for black oak

Help »

Current Forest Inventory and Analysis ▼

Compare Two Species



Notice:

This is an updated version of the Climate Change Tree Atlas. You can view the [previous black oak page](#), or [browse the previous Tree Atlas](#).

About black oak

Family: Fagaceae

Guild: persistent, large-seeded, advance growthdependent

Functional Lifeform: medium-size to large deciduoustree

- [Life History and Disturbance Response](#)
- [Silvics Manual](#)
- [Photos of black oak in USDA Plants Database](#)
- [View current and modeled black oak distributions in Google Earth](#) (227 KB)

[Download Google Earth for free](#)

► Climate Change Adaptability

► Summary of Predicted Changes

► Range and Niche Maps

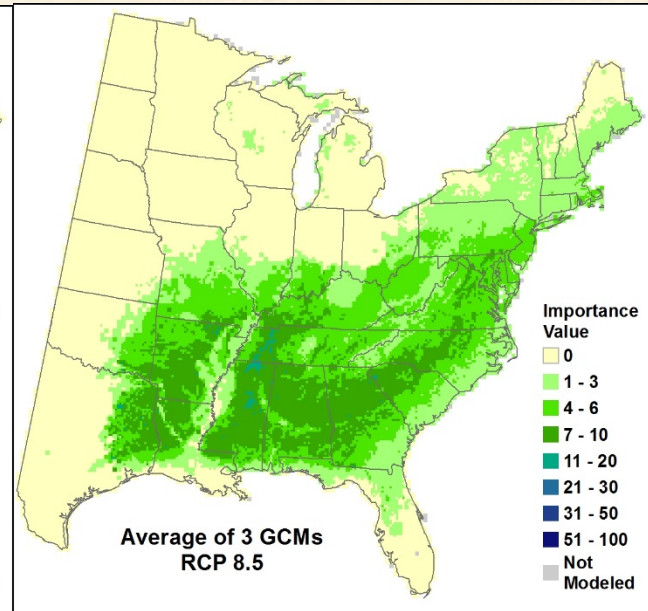
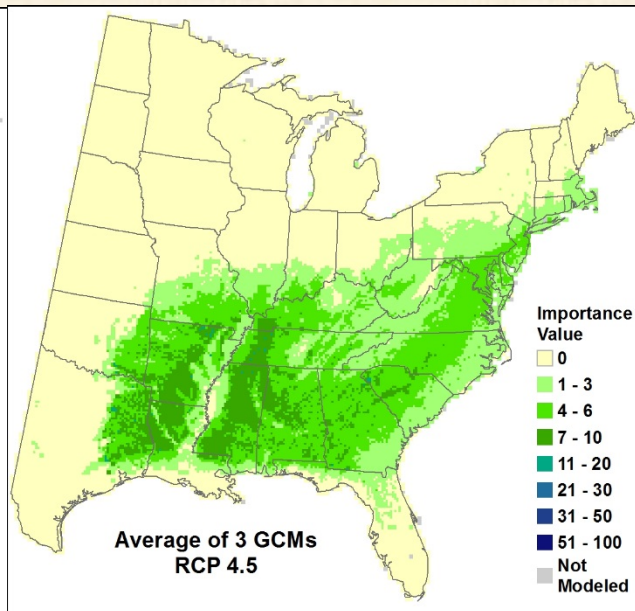
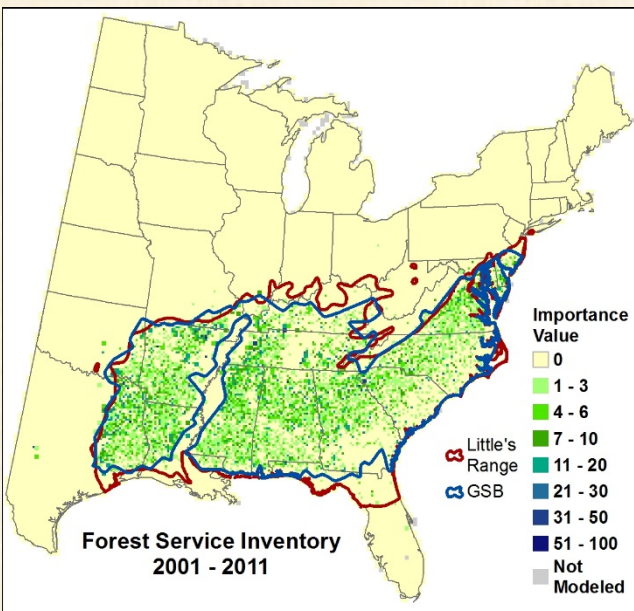
► Predictor Analysis

Potential Changes in Abundance and

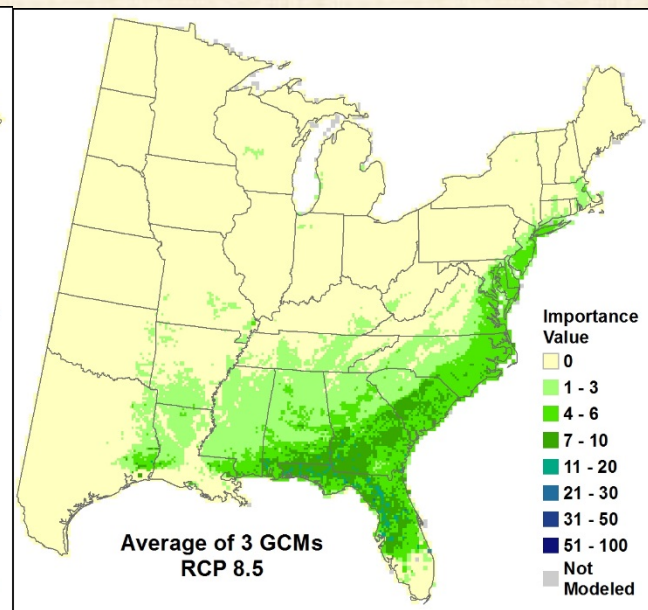
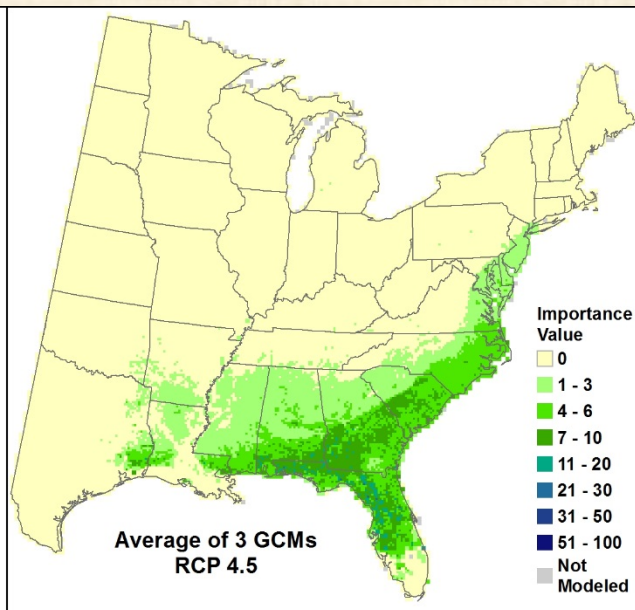
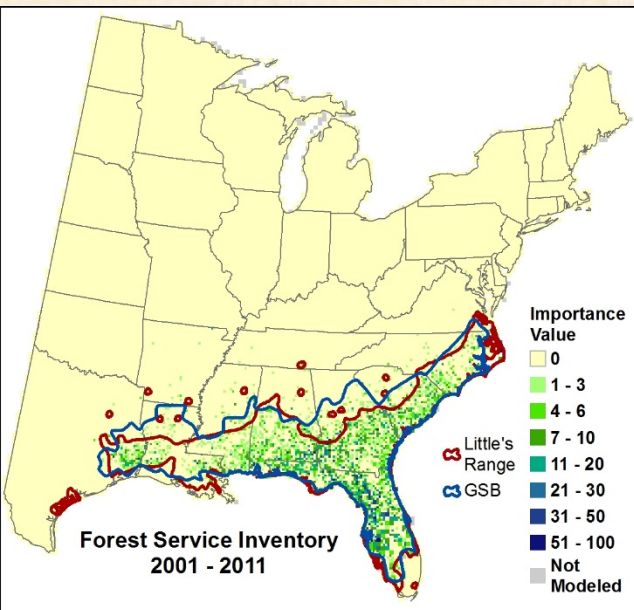
GCM SCENARIO	% Area Occ	Ave IV	Sum
Actual FIA	36	4.4	15,33

Climate Change Atlas - 4.5 m page views
<http://www.nrs.fs.fed.us/atlas>

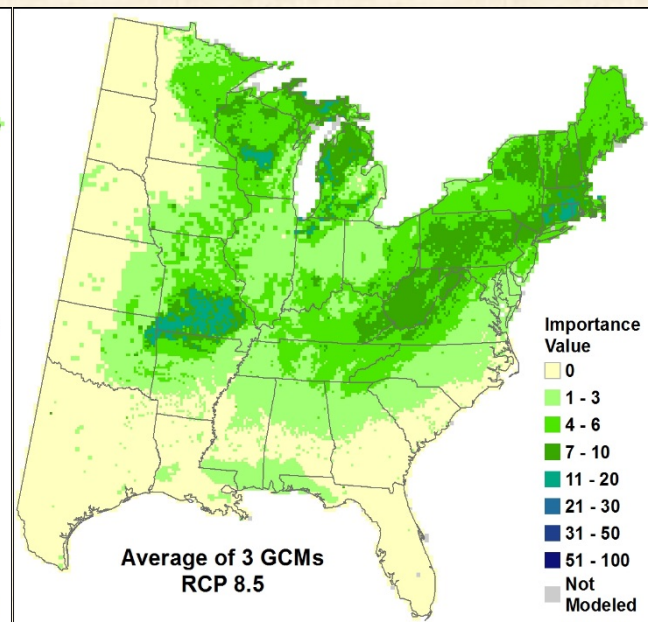
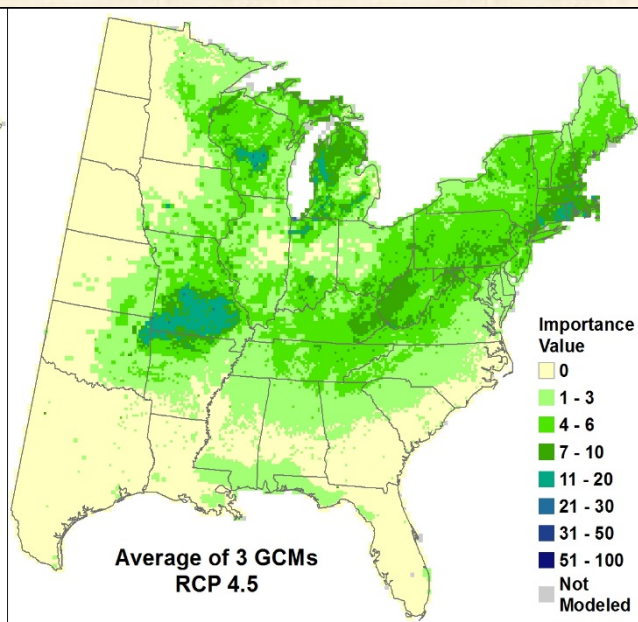
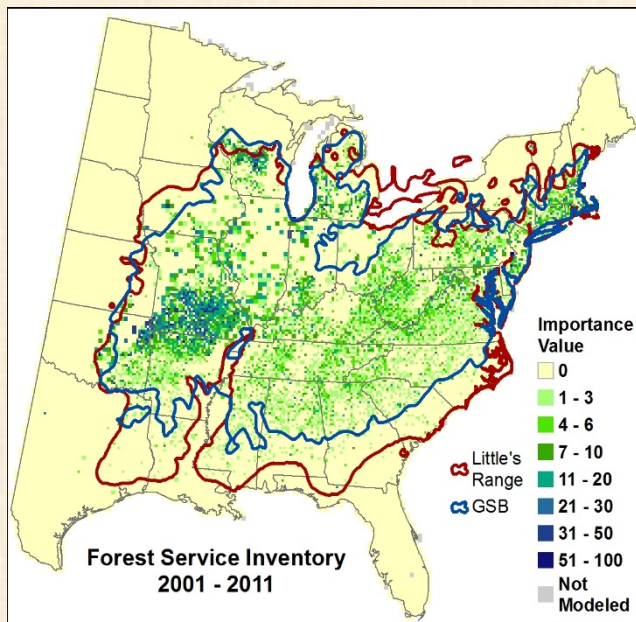
Southern Red Oak



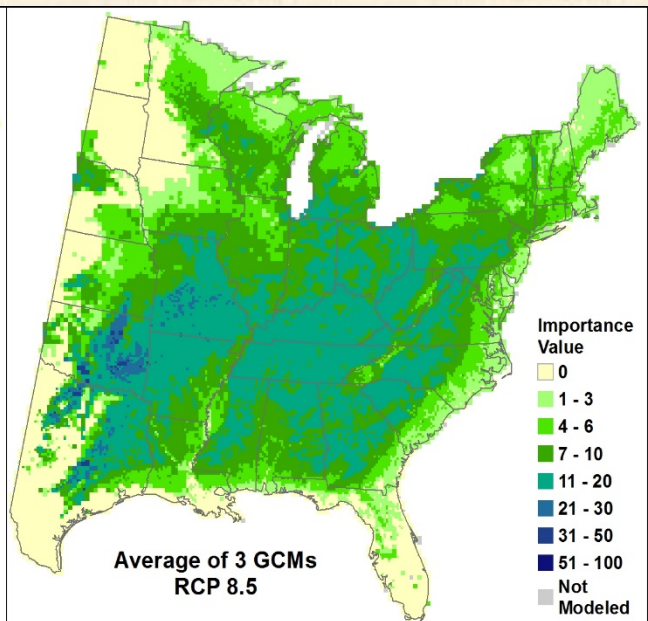
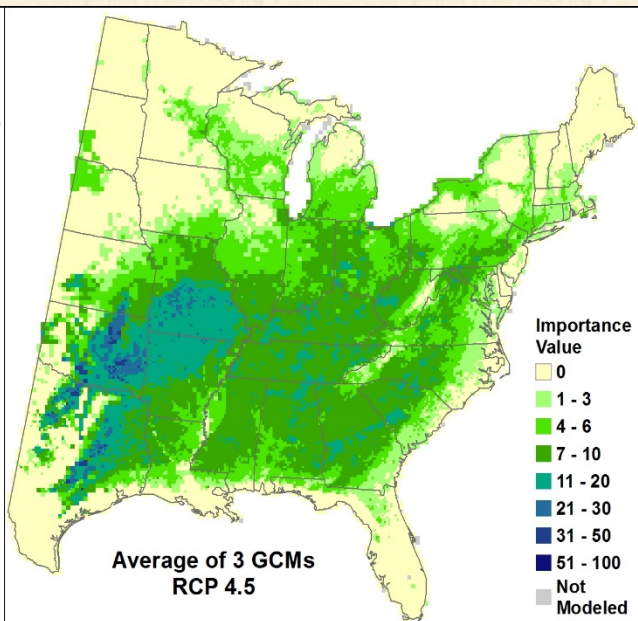
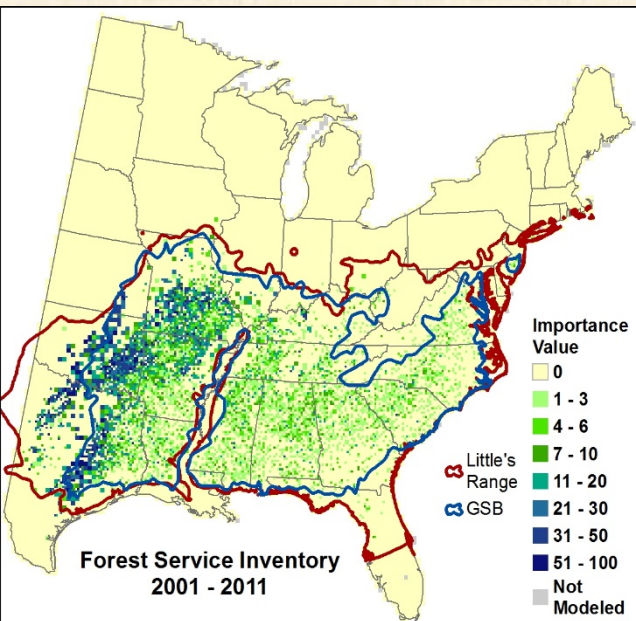
Laurel Oak



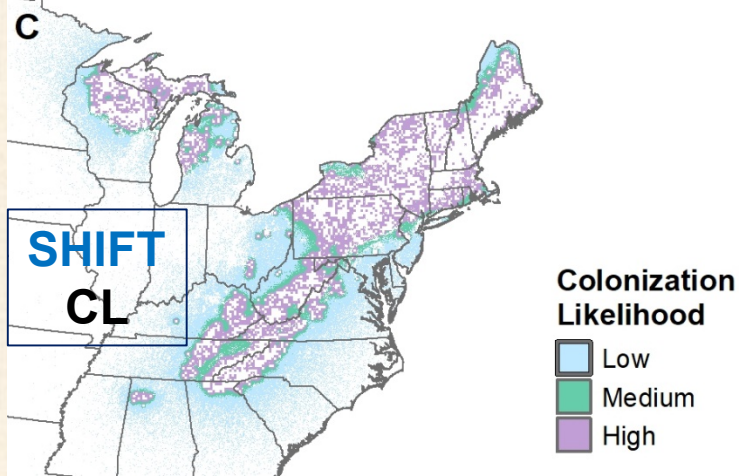
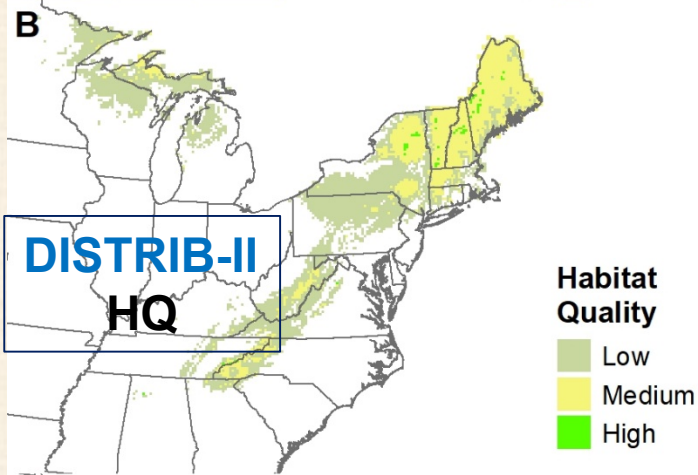
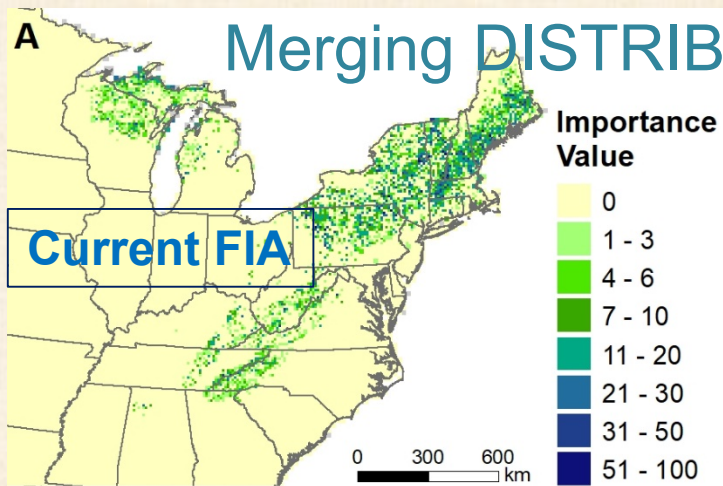
Black Oak



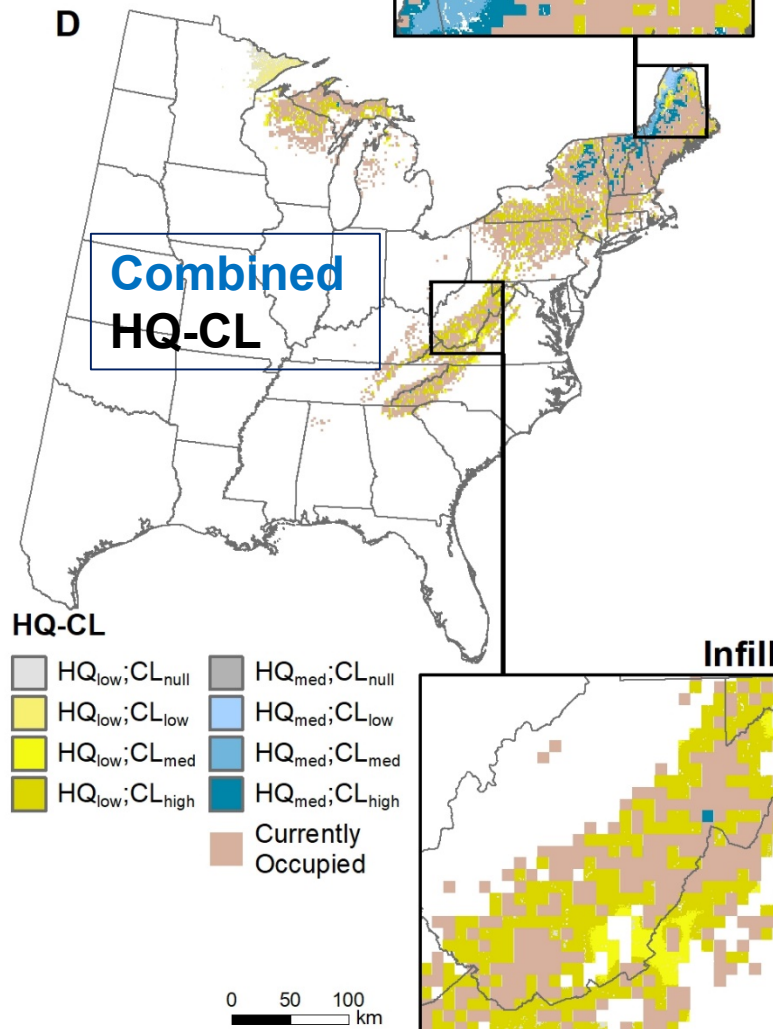
Post Oak



Merging DISTRIB-II with SHIFT

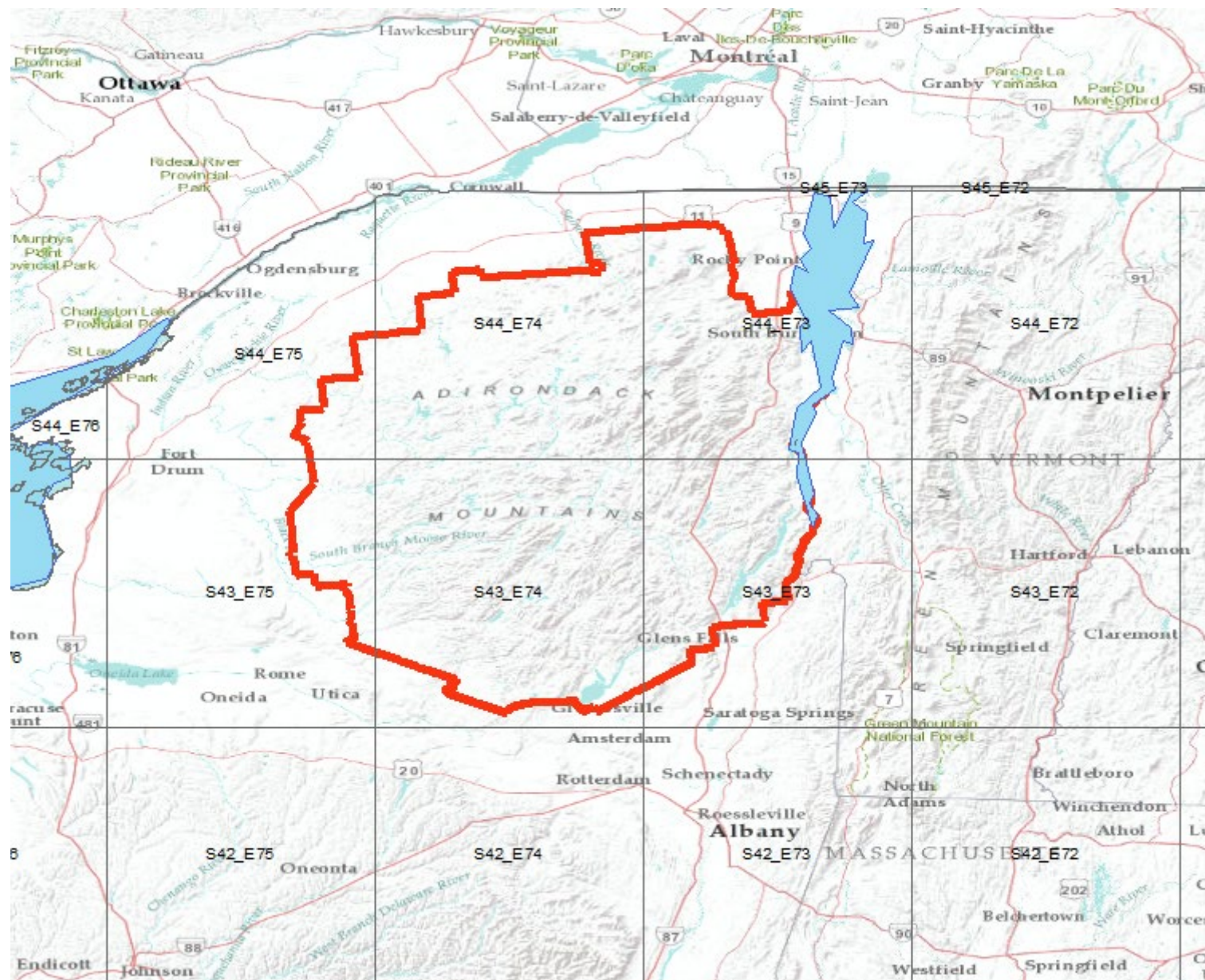


Eastern Hemlock
Habitat Quality & Colonization Likelihood



SUMMARIZING SPECIES ACROSS THE ADIRONDACKS REGION

Enable managers/publics to understand potential changes in
tree species for each particular area



Common Name	Range	%Cell	FIAsum	FIAiv	N
American beech	WDH	93.2	925.2	17.88	1
sugar maple	WDH	88	778.69	15.94	2
red maple	WDH	93.3	710.83	13.76	3
yellow birch	NDL	88.6	495.95	10.06	4
red spruce	NDH	80.3	472.75	10.6	5
balsam fir	NDH	70.6	397.6	10.12	6
eastern hemlock	NSH	56	336.54	10.81	7
eastern white pine	WDH	43	275.81	11.52	8
paper birch	WDH	47	150.92	5.77	9
black cherry	WDL	54.2	138.04	4.59	10
white ash	WDL	47.9	107.07	4.03	11
northern red oak	WDH	21.1	84.41	7.21	12
striped maple	NSL	61.2	72.85	2.14	13
quaking aspen	WDH	26.4	60.51	4.13	14
northern white-cedar	WSH	19.1	58.31	5.48	15
red pine	NSH	9.4	42.38	8.11	16
American elm	WDH	15.4	40.35	4.72	17
eastern hophornbeam; iron	WSL	33.9	34.97	1.86	18
tamarack (native)	NSH	11.5	31.08	4.88	19
bigtooth aspen	NSL	19.2	30.66	2.87	20
American basswood	WSL	24.6	27.1	1.98	21
black spruce	NSH	6.2	25.44	7.41	22
boxelder	WSH	1	23.9	43.23	23
Norway spruce	NSH	4.3	22.16	9.36	24
sweet birch	NDH	8.6	19.16	4	25
Scotch pine	NSH	3.5	16.45	8.34	26
black ash	WSH	7.8	13.76	3.17	27

gray birch	NSL	9.1	12.05	2.38	28
bitternut hickory	WSL	3.3	8.57	4.75	29
serviceberry	NSL	11.9	8.55	1.29	30
black locust	NDH	1.8	5.79	5.84	31
slippery elm	WSL	0.8	5.35	12.67	32
shagbark hickory	WSL	3.3	5.31	2.91	33
pin cherry	NSL	9.1	4.27	0.84	34
white oak	WDH	3.3	3.85	2.1	35
chestnut oak	NDH	1.4	3.51	4.53	36
white spruce	NSL	1.9	3.34	3.15	37
mountain maple	NSL	8.1	3.02	0.68	38
black oak	WDH	0.6	2.58	7.81	39
jack pine	NSH	0.4	2.55	10.8	40
eastern redcedar	WDH	0.8	2.46	5.71	41
eastern cottonwood	NSH	0.4	2.44	9.96	42
pitch pine	NSH	0.7	2.41	6.15	43
pignut hickory	WDL	1.9	2.16	2	44
American mountain-ash	NSL	3	2.06	1.25	45
balsam poplar	NSH	1.7	1.28	1.36	46
American hornbeam; musk	WSL	2.4	1.17	0.86	47
swamp white oak	NSL	0.2	0.6	6.28	48
chokecherry	NSLX	1.4	0.48	0.63	49
butternut	NSLX	0.9	0.32	0.62	50
silver maple	NSH	0.2	0.15	1.1	51
black willow	NSH	0	0.1	3.9	52
green ash	WSH	0.4	0.09	0.4	53
bur oak	NDH	0.2	0.05	0.53	54
flowering dogwood	WDL	0	0.02	0.75	55

Species Common Name

Common Name	Range	%Cell	FIAsum	FIAiv	N
American beech	WDH	93.2	925.2	17.88	1
sugar maple	WDH	88	778.69	15.94	2
red maple	WDH	93.3	710.83	13.76	3
yellow birch	NDL	88.6	495.95	10.06	4
red spruce	NDH	80.3	472.75	10.6	5
balsam fir	NDH	70.6	397.6	10.12	6
eastern hemlock	NSH	56	336.54	10.81	7
eastern white pine	WDH	43	275.81	11.52	8
paper birch	WDH	47	150.92	5.77	9
black cherry	WDL	54.2	138.04	4.59	10
white ash	WDL	47.9	107.07	4.03	11
northern red oak	WDH	21.1	84.41	7.21	12
striped maple	NSL	61.2	72.85	2.14	13
quaking aspen	WDH	26.4	60.51	4.13	14
northern white-cedar	WSH	19.1	58.31	5.48	15
red pine	NSH	9.4	42.38	8.11	16
American elm	WDH	15.4	40.35	4.72	17
eastern hophornbeam; iron	WSL	33.9	34.97	1.86	18
tamarack (native)	NSH	11.5	31.08	4.88	19
bigtooth aspen	NSL	19.2	30.66	2.87	20
American basswood	WSL	24.6	27.1	1.98	21
black spruce	NSH	6.2	25.44	7.41	22
boxelder	WSH	1	23.9	43.23	23
Norway spruce	NSH	4.3	22.16	9.36	24
sweet birch	NDH	8.6	19.16	4	25
Scotch pine	NSH	3.5	16.45	8.34	26
black ash	WSH	7.8	13.76	3.17	27

gray birch	NSL	9.1	12.05	2.38	28
bitternut hickory	WSL	3.3	8.57	4.75	29
serviceberry	NSL	11.9	8.55	1.29	30
black locust	NDH	1.8	5.79	5.84	31
slippery elm	WSL	0.8	5.35	12.67	32
shagbark hickory	WSL	3.3	5.31	2.91	33
pin cherry	NSL	9.1	4.27	0.84	34
white oak	WDH	3.3	3.85	2.1	35
chestnut oak	NDH	1.4	3.51	4.53	36
white spruce	NSL	1.9	3.34	3.15	37
mountain maple	NSL	8.1	3.02	0.68	38
black oak	WDH	0.6	2.58	7.81	39
jack pine	NSH	0.4	2.55	10.8	40
eastern redcedar	WDH	0.8	2.46	5.71	41
eastern cottonwood	NSH	0.4	2.44	9.96	42
pitch pine	NSH	0.7	2.41	6.15	43
pignut hickory	WDL	1.9	2.16	2	44
American mountain-ash	NSL	3	2.06	1.25	45
balsam poplar	NSH	1.7	1.28	1.36	46
American hornbeam; muskeg	WSL	2.4	1.17	0.86	47
swamp white oak	NSL	0.2	0.6	6.28	48
chokecherry	NSLX	1.4	0.48	0.63	49
butternut	NSLX	0.9	0.32	0.62	50
silver maple	NSH	0.2	0.15	1.1	51
black willow	NSH	0	0.1	3.9	52
green ash	WSH	0.4	0.09	0.4	53
bur oak	NDH	0.2	0.05	0.53	54
flowering dogwood	WDL	0	0.02	0.75	55

US Range Characteristics: **N**arrow/**W**ide range across N. America;
Spars**e**/**D**ense occupation; **L**ow/**H**igh abundance when present

Common Name	Range	%Cell	FIAsum	FIAiv	N
American beech	WDH	93.2	925.2	17.88	1
sugar maple	WDH	88	778.69	15.94	2
red maple	WDH	93.3	710.83	13.76	3
yellow birch	NDL	88.6	495.95	10.06	4
red spruce	NDH	80.3	472.75	10.6	5
balsam fir	NDH	70.6	397.6	10.12	6
eastern hemlock	NSH	56	336.54	10.81	7
eastern white pine	WDH	43	275.81	11.52	8
paper birch	WDH	47	150.92	5.77	9
black cherry	WDL	54.2	138.04	4.59	10
white ash	WDL	47.9	107.07	4.03	11
northern red oak	WDH	21.1	84.41	7.21	12
striped maple	NSL	61.2	72.85	2.14	13
quaking aspen	WDH	26.4	60.51	4.13	14
northern white-cedar	WSH	19.1	58.31	5.48	15
red pine	NSH	9.4	42.38	8.11	16
American elm	WDH	15.4	40.35	4.72	17
eastern hophornbeam; iron	WSL	33.9	34.97	1.86	18
tamarack (native)	NSH	11.5	31.08	4.88	19
bigtooth aspen	NSL	19.2	30.66	2.87	20
American basswood	WSL	24.6	27.1	1.98	21
black spruce	NSH	6.2	25.44	7.41	22
boxelder	WSH	1	23.9	43.23	23
Norway spruce	NSH	4.3	22.16	9.36	24
sweet birch	NDH	8.6	19.16	4	25
Scotch pine	NSH	3.5	16.45	8.34	26
black ash	WSH	7.8	13.76	3.17	27

gray birch	NSL	9.1	12.05	2.38	28
bitternut hickory	WSL	3.3	8.57	4.75	29
serviceberry	NSL	11.9	8.55	1.29	30
black locust	NDH	1.8	5.79	5.84	31
slippery elm	WSL	0.8	5.35	12.67	32
shagbark hickory	WSL	3.3	5.31	2.91	33
pin cherry	NSL	9.1	4.27	0.84	34
white oak	WDH	3.3	3.85	2.1	35
chestnut oak	NDH	1.4	3.51	4.53	36
white spruce	NSL	1.9	3.34	3.15	37
mountain maple	NSL	8.1	3.02	0.68	38
black oak	WDH	0.6	2.58	7.81	39
jack pine	NSH	0.4	2.55	10.8	40
eastern redcedar	WDH	0.8	2.46	5.71	41
eastern cottonwood	NSH	0.4	2.44	9.96	42
pitch pine	NSH	0.7	2.41	6.15	43
pignut hickory	WDL	1.9	2.16	2	44
American mountain-ash	NSL	3	2.06	1.25	45
balsam poplar	NSH	1.7	1.28	1.36	46
American hornbeam; muskeg	WSL	2.4	1.17	0.86	47
swamp white oak	NSL	0.2	0.6	6.28	48
chokecherry	NSLX	1.4	0.48	0.63	49
butternut	NSLX	0.9	0.32	0.62	50
silver maple	NSH	0.2	0.15	1.1	51
black willow	NSH	0	0.1	3.9	52
green ash	WSH	0.4	0.09	0.4	53
bur oak	NDH	0.2	0.05	0.53	54
flowering dogwood	WDL	0	0.02	0.75	55

%Cell: percentage of cells with the species present

Common Name	Range	%Cell	FIAsum	FIAiv	N
American beech	WDH	93.2	925.2	17.88	1
sugar maple	WDH	88	778.69	15.94	2
red maple	WDH	93.3	710.83	13.76	3
yellow birch	NDL	88.6	495.95	10.06	4
red spruce	NDH	80.3	472.75	10.6	5
balsam fir	NDH	70.6	397.6	10.12	6
eastern hemlock	NSH	56	336.54	10.81	7
eastern white pine	WDH	43	275.81	11.52	8
paper birch	WDH	47	150.92	5.77	9
black cherry	WDL	54.2	138.04	4.59	10
white ash	WDL	47.9	107.07	4.03	11
northern red oak	WDH	21.1	84.41	7.21	12
striped maple	NSL	61.2	72.85	2.14	13
quaking aspen	WDH	26.4	60.51	4.13	14
northern white-cedar	WSH	19.1	58.31	5.48	15
red pine	NSH	9.4	42.38	8.11	16
American elm	WDH	15.4	40.35	4.72	17
eastern hophornbeam; iron	WSL	33.9	34.97	1.86	18
tamarack (native)	NSH	11.5	31.08	4.88	19
bigtooth aspen	NSL	19.2	30.66	2.87	20
American basswood	WSL	24.6	27.1	1.98	21
black spruce	NSH	6.2	25.44	7.41	22
boxelder	WSH	1	23.9	43.23	23
Norway spruce	NSH	4.3	22.16	9.36	24
sweet birch	NDH	8.6	19.16	4	25
Scotch pine	NSH	3.5	16.45	8.34	26
black ash	WSH	7.8	13.76	3.17	27

gray birch	NSL	9.1	12.05	2.38	28
bitternut hickory	WSL	3.3	8.57	4.75	29
serviceberry	NSL	11.9	8.55	1.29	30
black locust	NDH	1.8	5.79	5.84	31
slippery elm	WSL	0.8	5.35	12.67	32
shagbark hickory	WSL	3.3	5.31	2.91	33
pin cherry	NSL	9.1	4.27	0.84	34
white oak	WDH	3.3	3.85	2.1	35
chestnut oak	NDH	1.4	3.51	4.53	36
white spruce	NSL	1.9	3.34	3.15	37
mountain maple	NSL	8.1	3.02	0.68	38
black oak	WDH	0.6	2.58	7.81	39
jack pine	NSH	0.4	2.55	10.8	40
eastern redcedar	WDH	0.8	2.46	5.71	41
eastern cottonwood	NSH	0.4	2.44	9.96	42
pitch pine	NSH	0.7	2.41	6.15	43
pignut hickory	WDL	1.9	2.16	2	44
American mountain-ash	NSL	3	2.06	1.25	45
balsam poplar	NSH	1.7	1.28	1.36	46
American hornbeam; musk	WSL	2.4	1.17	0.86	47
swamp white oak	NSL	0.2	0.6	6.28	48
chokecherry	NSLX	1.4	0.48	0.63	49
butternut	NSLX	0.9	0.32	0.62	50
silver maple	NSH	0.2	0.15	1.1	51
black willow	NSH	0	0.1	3.9	52
green ash	WSH	0.4	0.09	0.4	53
bur oak	NDH	0.2	0.05	0.53	54
flowering dogwood	WDL	0	0.02	0.75	55

FIAsum: Overall abundance based on areal coverage, basal area, and number of stems (sort item)

Common Name	Range	%Cell	FIAsum	FIAiv	N
American beech	WDH	93.2	925.2	17.88	1
sugar maple	WDH	88	778.69	15.94	2
red maple	WDH	93.3	710.83	13.76	3
yellow birch	NDL	88.6	495.95	10.06	4
red spruce	NDH	80.3	472.75	10.6	5
balsam fir	NDH	70.6	397.6	10.12	6
eastern hemlock	NSH	56	336.54	10.81	7
eastern white pine	WDH	43	275.81	11.52	8
paper birch	WDH	47	150.92	5.77	9
black cherry	WDL	54.2	138.04	4.59	10
white ash	WDL	47.9	107.07	4.03	11
northern red oak	WDH	21.1	84.41	7.21	12
striped maple	NSL	61.2	72.85	2.14	13
quaking aspen	WDH	26.4	60.51	4.13	14
northern white-cedar	WSH	19.1	58.31	5.48	15
red pine	NSH	9.4	42.38	8.11	16
American elm	WDH	15.4	40.35	4.72	17
eastern hophornbeam; iron	WSL	33.9	34.97	1.86	18
tamarack (native)	NSH	11.5	31.08	4.88	19
bigtooth aspen	NSL	19.2	30.66	2.87	20
American basswood	WSL	24.6	27.1	1.98	21
black spruce	NSH	6.2	25.44	7.41	22
boxelder	WSH	1	23.9	43.23	23
Norway spruce	NSH	4.3	22.16	9.36	24
sweet birch	NDH	8.6	19.16	4	25
Scotch pine	NSH	3.5	16.45	8.34	26
black ash	WSH	7.8	13.76	3.17	27

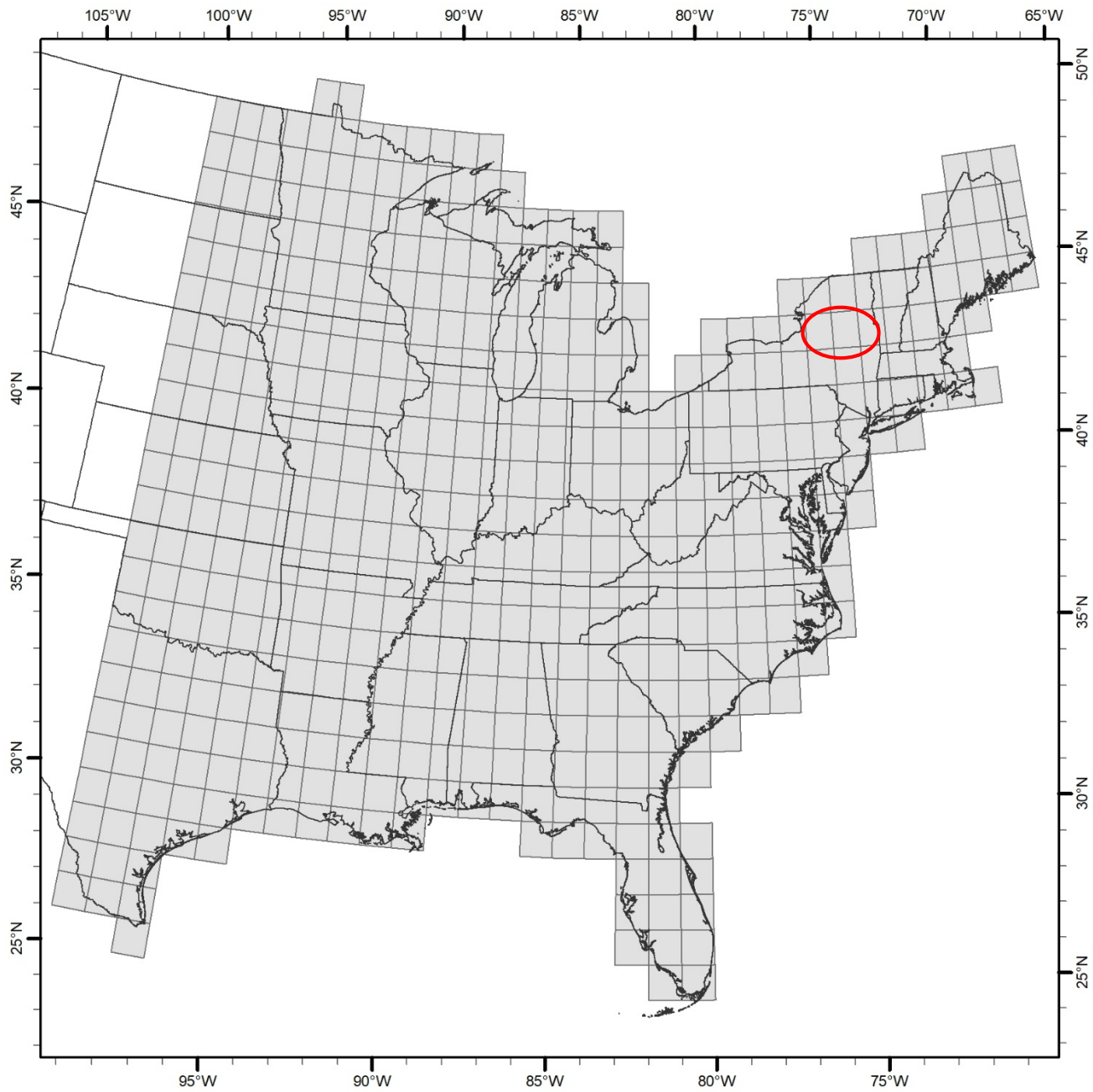
gray birch	NSL	9.1	12.05	2.38	28
bitternut hickory	WSL	3.3	8.57	4.75	29
serviceberry	NSL	11.9	8.55	1.29	30
black locust	NDH	1.8	5.79	5.84	31
slippery elm	WSL	0.8	5.35	12.67	32
shagbark hickory	WSL	3.3	5.31	2.91	33
pin cherry	NSL	9.1	4.27	0.84	34
white oak	WDH	3.3	3.85	2.1	35
chestnut oak	NDH	1.4	3.51	4.53	36
white spruce	NSL	1.9	3.34	3.15	37
mountain maple	NSL	8.1	3.02	0.68	38
black oak	WDH	0.6	2.58	7.81	39
jack pine	NSH	0.4	2.55	10.8	40
eastern redcedar	WDH	0.8	2.46	5.71	41
eastern cottonwood	NSH	0.4	2.44	9.96	42
pitch pine	NSH	0.7	2.41	6.15	43
pignut hickory	WDL	1.9	2.16	2	44
American mountain-ash	NSL	3	2.06	1.25	45
balsam poplar	NSH	1.7	1.28	1.36	46
American hornbeam; muskeg	WSL	2.4	1.17	0.86	47
swamp white oak	NSL	0.2	0.6	6.28	48
chokecherry	NSLX	1.4	0.48	0.63	49
butternut	NSLX	0.9	0.32	0.62	50
silver maple	NSH	0.2	0.15	1.1	51
black willow	NSH	0	0.1	3.9	52
green ash	WSH	0.4	0.09	0.4	53
bur oak	NDH	0.2	0.05	0.53	54
flowering dogwood	WDL	0	0.02	0.75	55

FIAiv: average relative importance (0-100) of species on plots where present

Common Name	Range	%Cell	FIAsum	FIAiv	N
American beech	WDH	93.2	925.2	17.88	1
sugar maple	WDH	88	778.69	15.94	2
red maple	WDH	93.3	710.83	13.76	3
yellow birch	NDL	88.6	495.95	10.06	4
red spruce	NDH	80.3	472.75	10.6	5
balsam fir	NDH	70.6	397.6	10.12	6
eastern hemlock	NSH	56	336.54	10.81	7
eastern white pine	WDH	43	275.81	11.52	8
paper birch	WDH	47	150.92	5.77	9
black cherry	WDL	54.2	138.04	4.59	10
white ash	WDL	47.9	107.07	4.03	11
northern red oak	WDH	21.1	84.41	7.21	12
striped maple	NSL	61.2	72.85	2.14	13
quaking aspen	WDH	26.4	60.51	4.13	14
northern white-cedar	WSH	19.1	58.31	5.48	15
red pine	NSH	9.4	42.38	8.11	16
American elm	WDH	15.4	40.35	4.72	17
eastern hophornbeam; iron	WSL	33.9	34.97	1.86	18
tamarack (native)	NSH	11.5	31.08	4.88	19
bigtooth aspen	NSL	19.2	30.66	2.87	20
American basswood	WSL	24.6	27.1	1.98	21
black spruce	NSH	6.2	25.44	7.41	22
boxelder	WSH	1	23.9	43.23	23
Norway spruce	NSH	4.3	22.16	9.36	24
sweet birch	NDH	8.6	19.16	4	25
Scotch pine	NSH	3.5	16.45	8.34	26
black ash	WSH	7.8	13.76	3.17	27

gray birch	NSL	9.1	12.05	2.38	28
bitternut hickory	WSL	3.3	8.57	4.75	29
serviceberry	NSL	11.9	8.55	1.29	30
black locust	NDH	1.8	5.79	5.84	31
slippery elm	WSL	0.8	5.35	12.67	32
shagbark hickory	WSL	3.3	5.31	2.91	33
pin cherry	NSL	9.1	4.27	0.84	34
white oak	WDH	3.3	3.85	2.1	35
chestnut oak	NDH	1.4	3.51	4.53	36
white spruce	NSL	1.9	3.34	3.15	37
mountain maple	NSL	8.1	3.02	0.68	38
black oak	WDH	0.6	2.58	7.81	39
jack pine	NSH	0.4	2.55	10.8	40
eastern redcedar	WDH	0.8	2.46	5.71	41
eastern cottonwood	NSH	0.4	2.44	9.96	42
pitch pine	NSH	0.7	2.41	6.15	43
pignut hickory	WDL	1.9	2.16	2	44
American mountain-ash	NSL	3	2.06	1.25	45
balsam poplar	NSH	1.7	1.28	1.36	46
American hornbeam; muskeg	WSL	2.4	1.17	0.86	47
swamp white oak	NSL	0.2	0.6	6.28	48
chokecherry	NSLX	1.4	0.48	0.63	49
butternut	NSLX	0.9	0.32	0.62	50
silver maple	NSH	0.2	0.15	1.1	51
black willow	NSH	0	0.1	3.9	52
green ash	WSH	0.4	0.09	0.4	53
bur oak	NDH	0.2	0.05	0.53	54
flowering dogwood	WDL	0	0.02	0.75	55

N: count of species (55 known present now)



S44_E75

S44_E74

S44_E73

Example Species Report

42 species of trees sorted in decreasing order of importance, plus 29 species with new habitat appearing by 2100 under high emissions

S43_E75

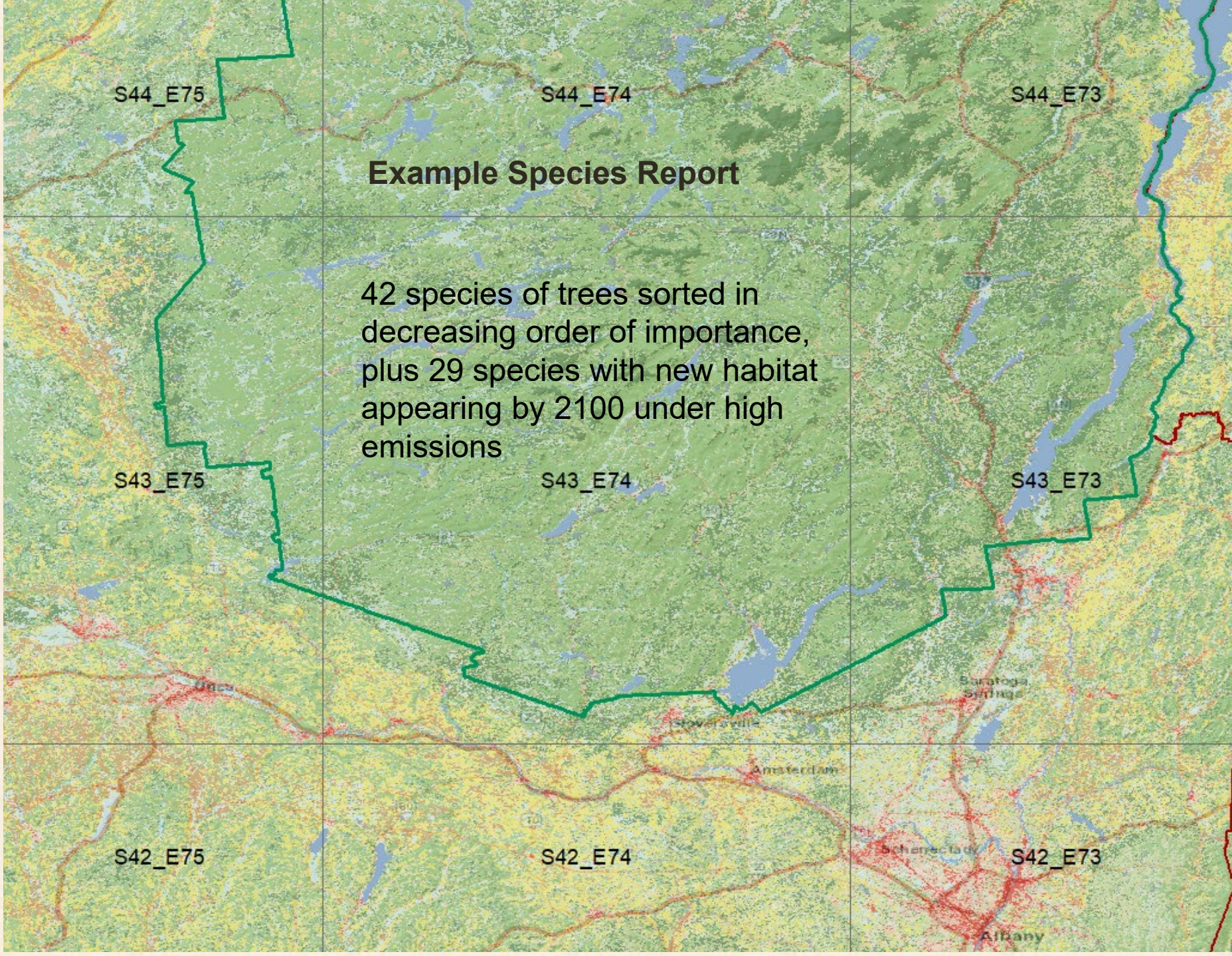
S43_E74

S43_E73

S42_E75

S42_E74

S42_E73



Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec	Very Lg. dec	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41
butternut	Juglans cinerea	NSLX	FIA	0.2	0.08	0.18	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	42

MR: model reliability – confidence in model based on statistics
(linked to number of samples)

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec	Very Lg. dec	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	No change	No change	Medium	Rare	Good	Good			2	40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41
butternut	Juglans cinerea	NSLX	FIA	0.2	0.08	0.18	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	42

Change Class – our interpretation of potential habitat changes by 2100, based on evaluating both low (RCP 4.5) and high (RCP 8.5) emissions scenarios.

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	Low	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
swamp white oak																
butternut																

Adaptability – capability to deal with extra disturbances with changing climate

Low values (pink) – species likely to do worse than Change Class;

Medium values (yellow) – species may do roughly as modeled;

High values (green) – species likely to do better than Change Class

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41
butternut	Juglans cinerea	NSLX	FIA	0.2	0.08	0.18	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	42

Abundance— Abundant/common/rare/absent class, based on FIAsum value. Used with Adaptability, and Change Class to generate Capability

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41

Capability – overall capability (RCP4.5 and 8.5) to cope with a changing climate (based on Abundance now, Change Class, Adaptability & Model Reliability)

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41

SHIFT45/85 – ‘infill+’ or ‘infill++’ – potential species to plant to expand its prominence from relatively low level now
(based on Habitat Quality and Colonization Likelihood)

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.36	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor				39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +		41



SSO Species Selection Option –

1= species does quite well now, should do well under climate change.

2= species relatively rare now, should be able to expand under climate change

Results for Newcomb 1 x 1

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American beech	Fagus grandifolia	WDH	High	94.6	861.72	18.09	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	88.9	598.76	13.42	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	95.7	542.14	11.7	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	3
yellow birch	Betula alleghaniensis	NDL	High	97.1	480.22	9.82	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
red spruce	Picea rubens	NDH	High	81.9	427.92	11.1	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	63.2	259.4	8.09	Sm. inc.	No change	Low	Abundant	Good	Fair			1	6
balsam fir	Abies balsamea	NDH	High	67.8	206.64	6.02	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	7
eastern white pine	Pinus strobus	WDH	High	34.5	122.56	7.11	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	8
white ash	Fraxinus americana	WDL	Medium	52	86.49	3.48	No change	No change	Low	Abundant	Fair	Fair			0	9
black cherry	Prunus serotina	WDL	Medium	54.2	78.91	2.88	Lg. inc.	Lg. inc.	Low	Abundant	Very Good	Very Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	66.7	66.56	2.12	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
quaking aspen	Populus tremuloides	WDH	High	22.6	51.78	4.73	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
paper birch	Betula papyrifera	WDH	High	22.8	35.34	3.02	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	11.8	35.17	5.85	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	14
northern red oak	Quercus rubra	WDH	Medium	15.2	29.94	3.77	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American elm	Ulmus americana	WDH	Medium	15.3	25.57	3.47	No change	No change	Medium	Common	Fair	Fair			1	16
boxelder	Acer negundo	WSH	Low	2.1	24.82	26.55	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
Scotch pine	Pinus sylvestris	NSH	FIA	3.5	19.23	10.29	Unknown	Unknown	NA	Common	NNIS	NNIS			0	18
Norway spruce	Picea abies	NSH	FIA	3.1	17.16	12.24	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	24.3	15.08	1.11	No change	No change	High	Common	Good	Good			1	20
American basswood	Tilia americana	WSL	Medium	19.2	14.4	1.22	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	13.8	12.05	1.76	No change	No change	Medium	Common	Fair	Fair			1	22
northern white-cedar	Thuja occidentalis	WSH	High	4.1	10.86	4.65	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	23
black ash	Fraxinus nigra	WSH	Medium	5.6	10.14	3.62	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	24
red pine	Pinus resinosa	NSH	Medium	2.9	8.87	6.32	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	25
serviceberry	Amelanchier spp.	NSL	Low	15.5	7.73	1.03	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
shagbark hickory	Carya ovata	WSL	Medium	0.8	4.52	9.66	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
pignut hickory	Carya glabra	WDL	Medium	1.6	4.27	4.57	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	28
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	4.5	4.24	1.81	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
gray birch	Betula populifolia	NSL	Low	4.5	3.48	1.49	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	8.6	3.43	0.92	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
bitternut hickory	Carya cordiformis	WSL	Low	3.5	2.61	1.12	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
black spruce	Picea mariana	NSH	High	1.5	2.3	2.46	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	33
American mountain-ash	Sorbus americana	NSL	Low	3.1	1.04	0.74	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
sweet birch	Betula lenta	NDH	High	1.5	0.94	0.67	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
white spruce	Picea glauca	NSL	Medium	1	0.66	0.71	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
white oak	Quercus alba	WDH	Medium	1.1	0.63	1.35	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.7	0.61	0.43	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
black willow	Salix nigra	NSH	Low	1.2	0.49	0.52	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
black locust	Robinia pseudoacacia	NDH	Low	1.1	0.28	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
swamp white oak	Quercus bicolor	NSL	Low	0.8	0.21	0.45	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41
butternut	Juglans cinerea	NSLX	FIA	0.2	0.08	0.18	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	42

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	43
shortleaf pine	Pinus echinata	WDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	44
pitch pine	Pinus rigida	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	45
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	46
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	47
pecan	Carya illinoensis	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	48
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	49
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	50
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	51
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	52
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	53
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	54
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +	3	55
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	56
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	57
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	59
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	60
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	61
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	62
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	64
balsam poplar	Populus balsamifera	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	66
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	68
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	70
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	71
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	72
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	73
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	74
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	75



SHIFT45/85 – ‘Likely+’ or ‘Likely++’ – Not recorded in FIA, but likely present
‘Migrate+ or Migrate++ - Potential to migrate – higher candidate for translocation

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	43
shortleaf pine	Pinus echinata	WDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	44
pitch pine	Pinus rigida	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	45
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	46
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	47
pecan	Carya illinoensis	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	48
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	49
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	50
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	51
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	52
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	53
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	54
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +	3	55
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	56
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	57
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	59
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	60
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	61
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	62
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	64
balsam poplar	Populus balsamifera	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	66
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	68
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	70
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	71
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	72
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	73
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	74
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	75



SSO Species Selection Option –

3= species not recorded now (FIA), with potential to migrate into area within 100 yrs

Summary for Newcomb 1x1 (S43_E74)

Species present – can infill

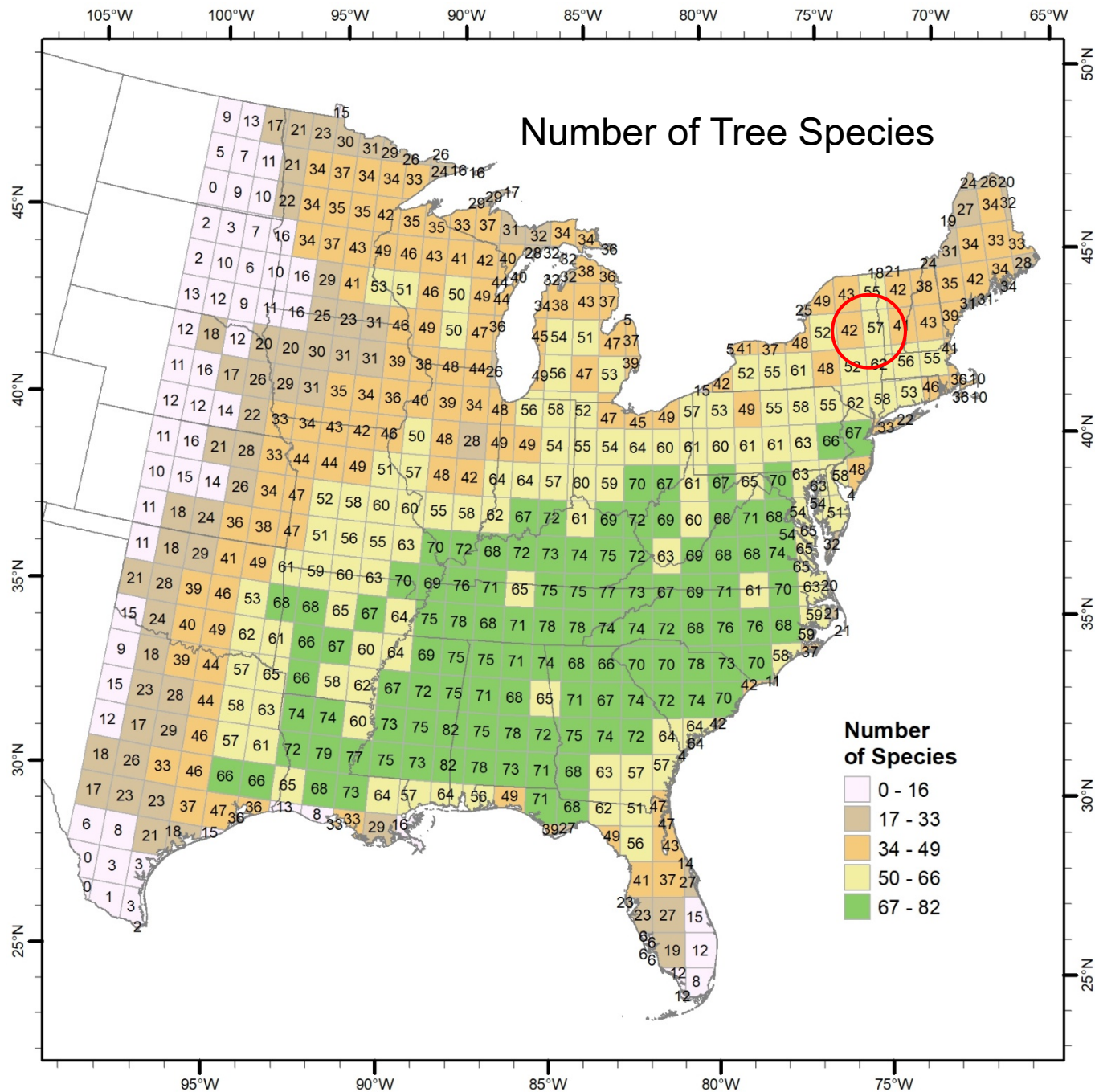
Common Name	Scientific Name	SHIFT45	SHIFT85
boxelder	Acer negundo	Infill +	Infill +
black ash	Fraxinus nigra	Infill +	Infill +
red pine	Pinus resinosa	Infill +	Infill +
shagbark hickory	Carya ovata	Infill +	Infill +
pignut hickory	Carya glabra		Infill +
bitternut hickory	Carya cordiformis	Infill +	Infill +
sweet birch	Betula lenta		Infill +
swamp white oak	Quercus bicolor		Infill +
northern red oak	Quercus rubra	Infill ++	Infill ++

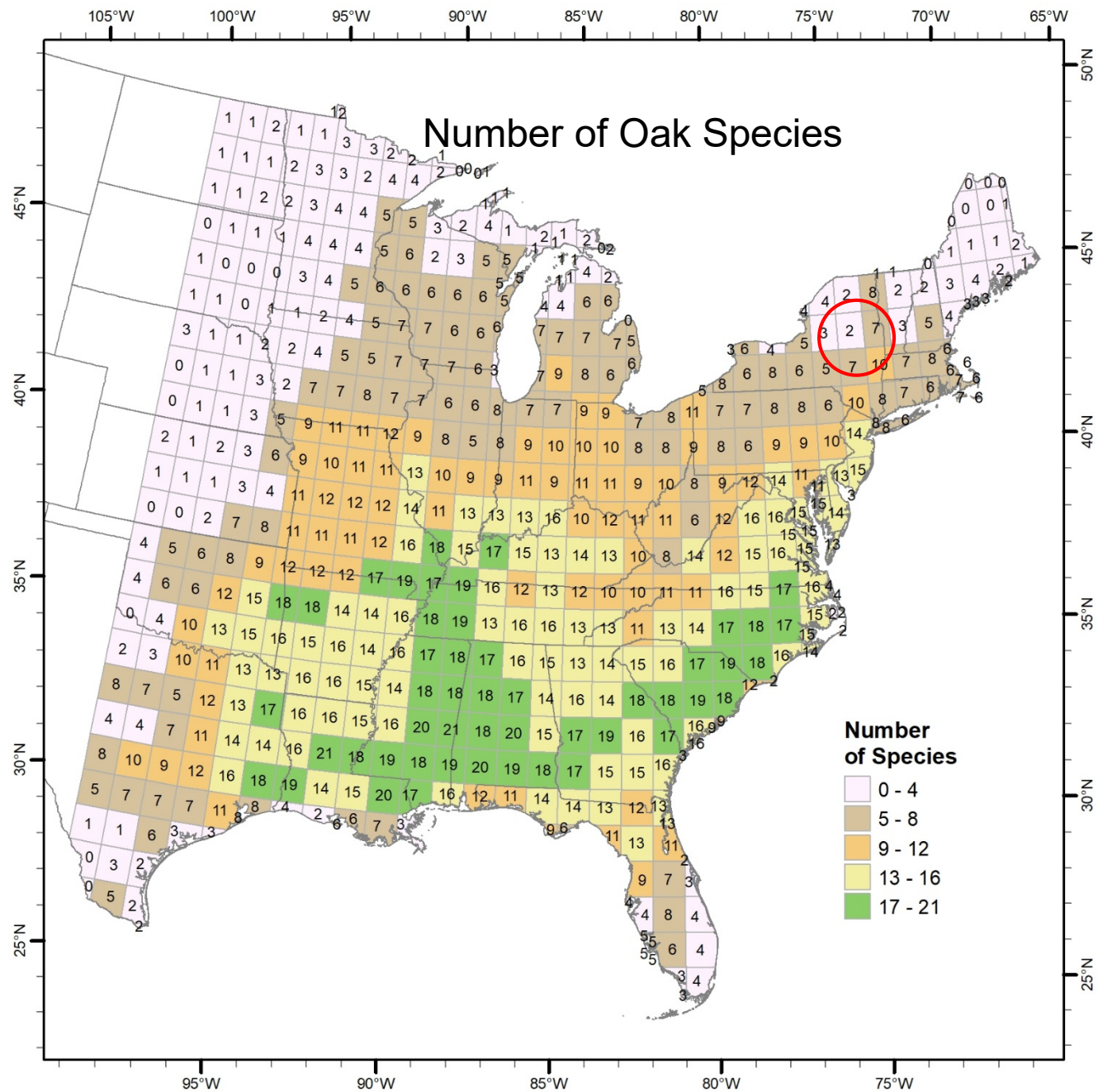
Species absent – possible translocate

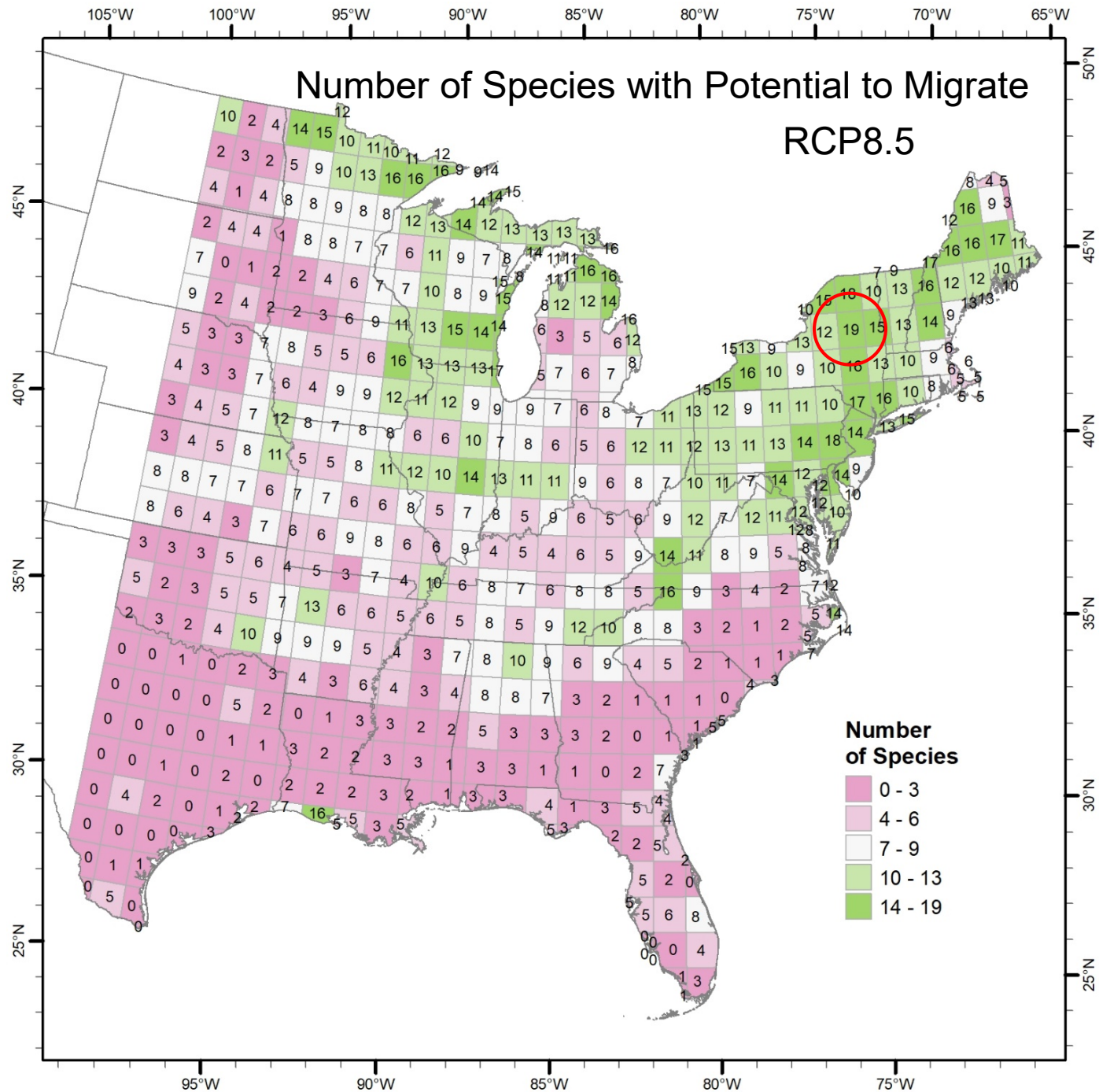
Common Name	Scientific Name	SHIFT45	SHIFT85
silver maple	Acer saccharinum		Migrate ++
mockernut hickory	Carya alba		Migrate +
hackberry	Celtis occidentalis	Migrate +	Migrate +
eastern redbud	Cercis canadensis		Migrate +
flowering dogwood	Cornus florida		Migrate +
common persimmon	Diospyros virginiana		Migrate +
eastern redcedar	Juniperus virginiana	Migrate +	Migrate ++
sweetgum	Liquidambar styraciflua		Migrate +
yellow-poplar	Liriodendron tulipifera	Migrate +	Migrate ++
cucumbertree	Magnolia acuminata		Migrate +
blackgum	Nyssa sylvatica	Migrate +	Migrate +
sycamore	Platanus occidentalis	Migrate +	Migrate +
scarlet oak	Quercus coccinea	Migrate +	Migrate ++
chinkapin oak	Quercus muehlenbergii		Migrate +
pin oak	Quercus palustris	Migrate +	Migrate +
chestnut oak	Quercus prinus	Migrate ++	Migrate ++
post oak	Quercus stellata		Migrate ++
sassafras	Sassafras albidum	Migrate ++	Migrate ++
slippery elm	Ulmus rubra	Migrate +	Migrate +

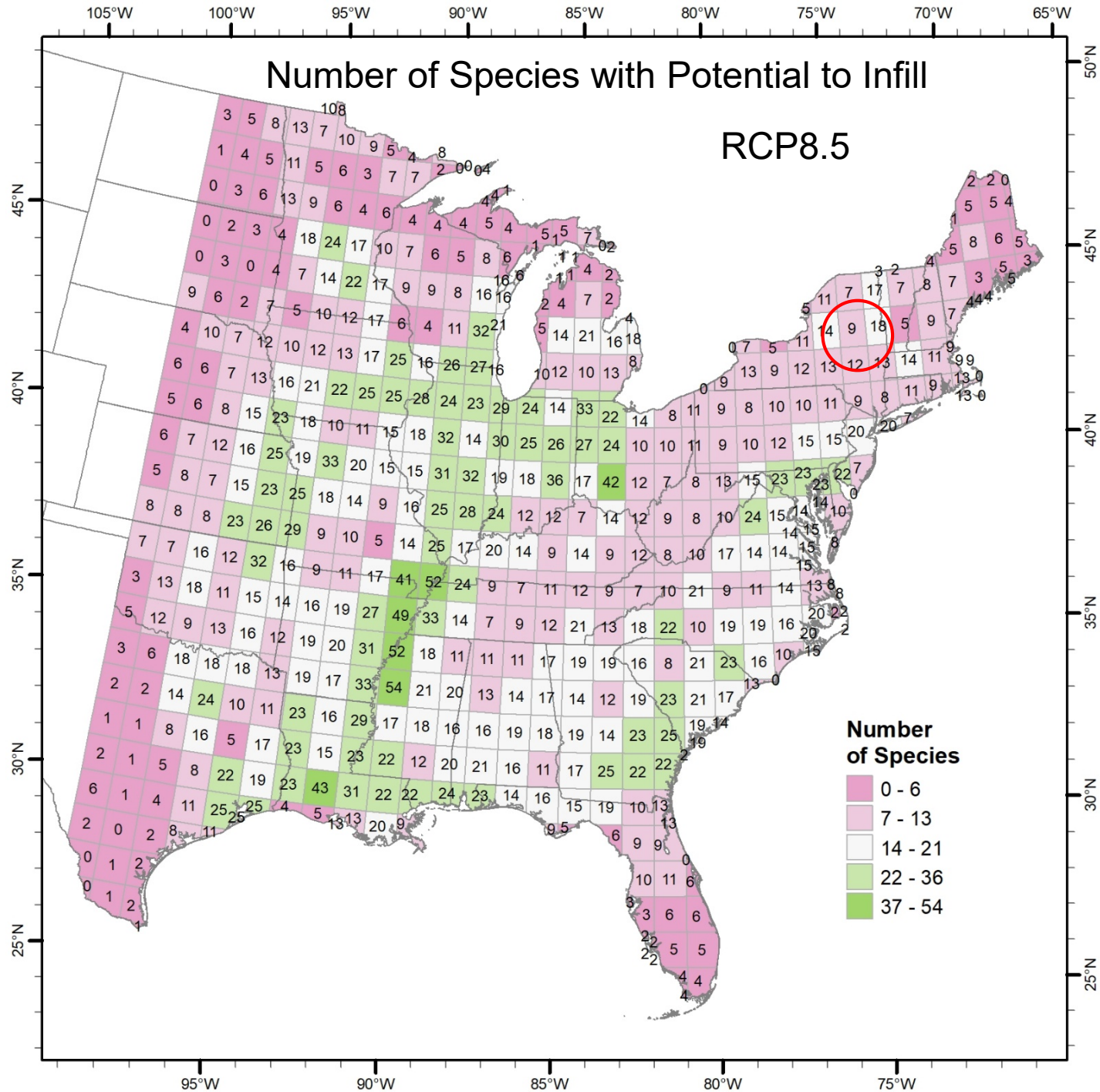
Species likely present

Common Name	Scientific Name	SHIFT45	SHIFT85
pitch pine	Pinus rigida	Likely +	Likely +
green ash	Fraxinus pennsylvanica	Likely +	Likely +
black walnut	Juglans nigra	Likely +	Likely +
eastern cottonwood	Populus deltoides	Likely +	Likely +
black oak	Quercus velutina	Likely +	Likely +

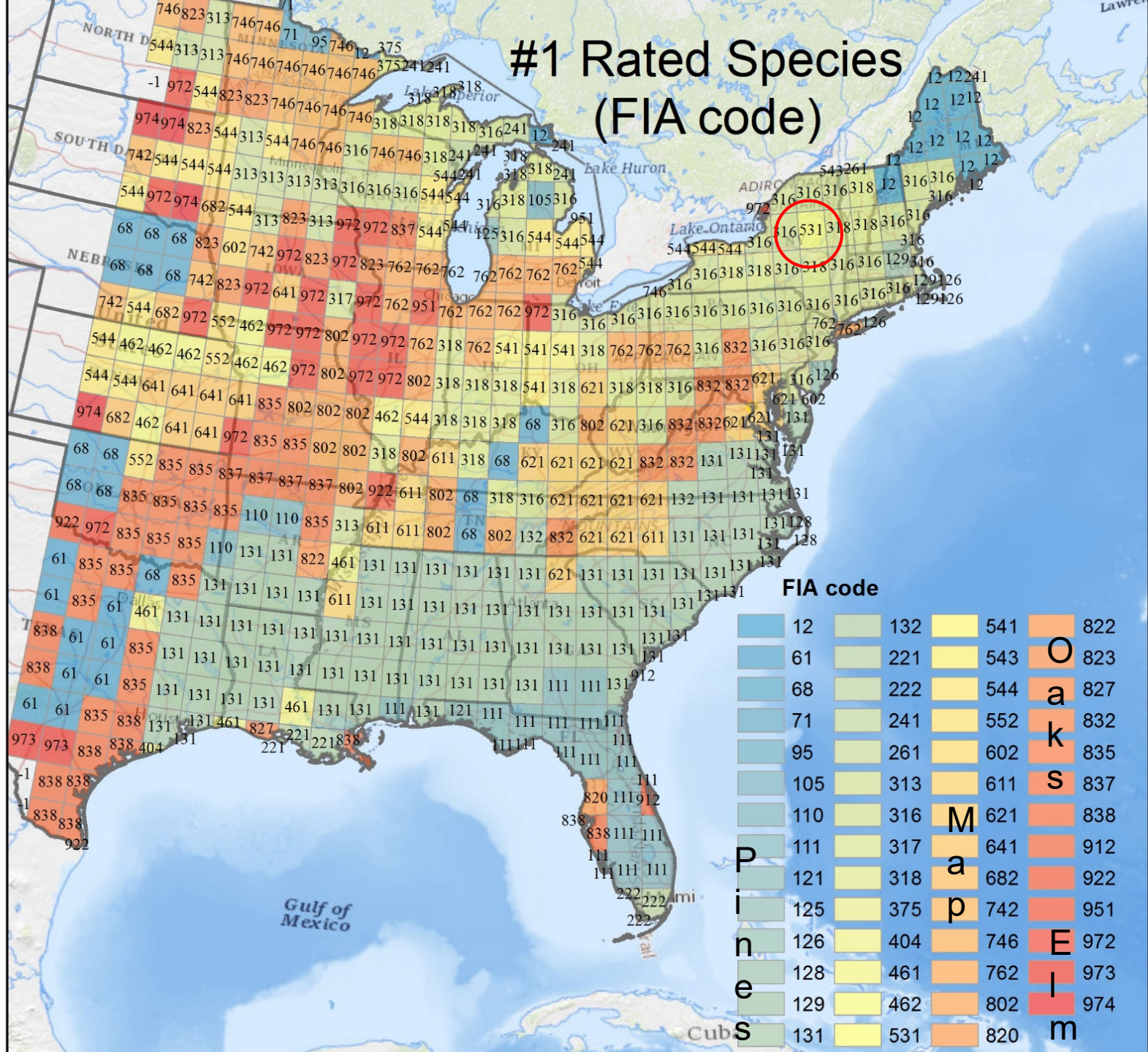




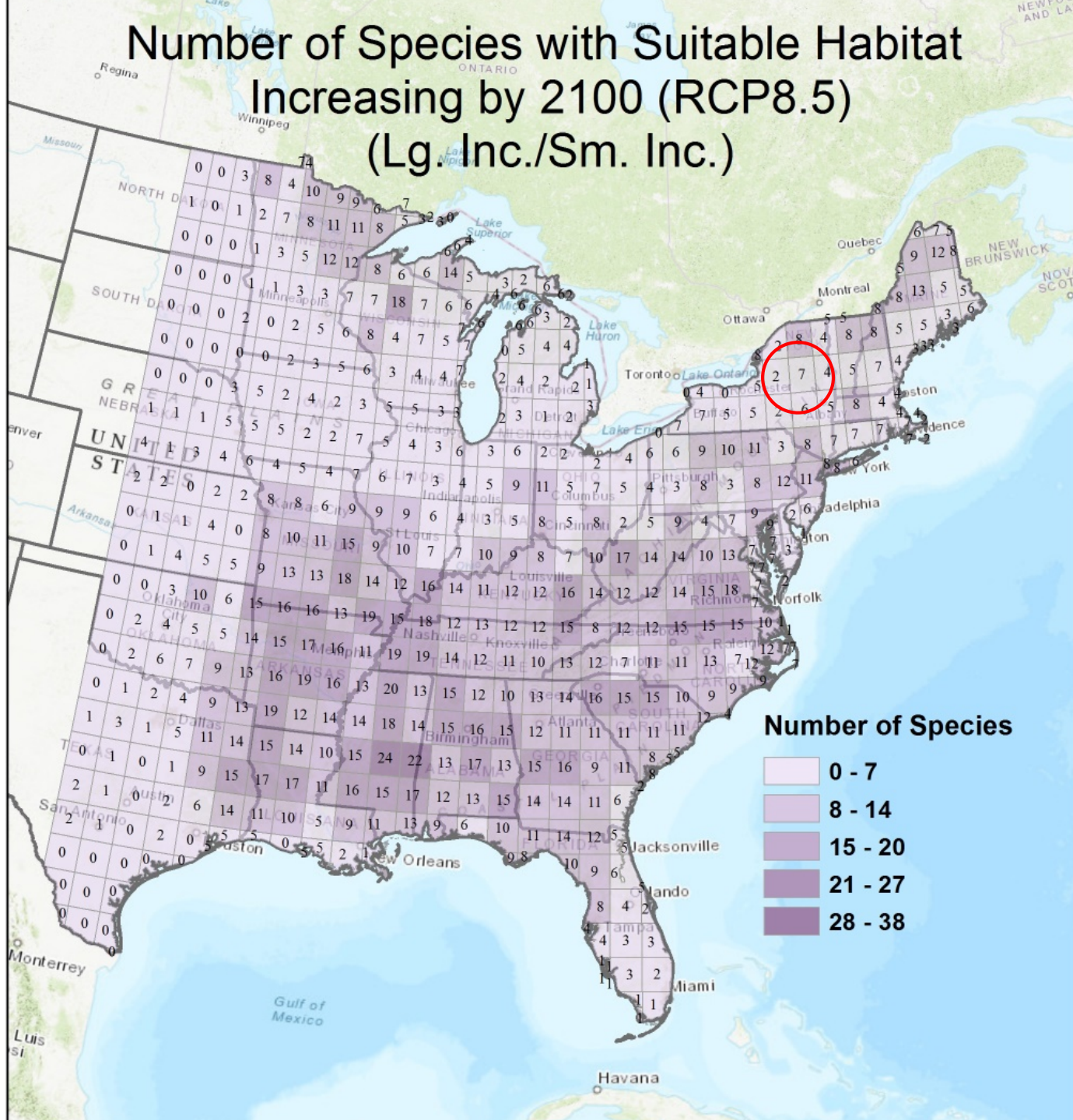




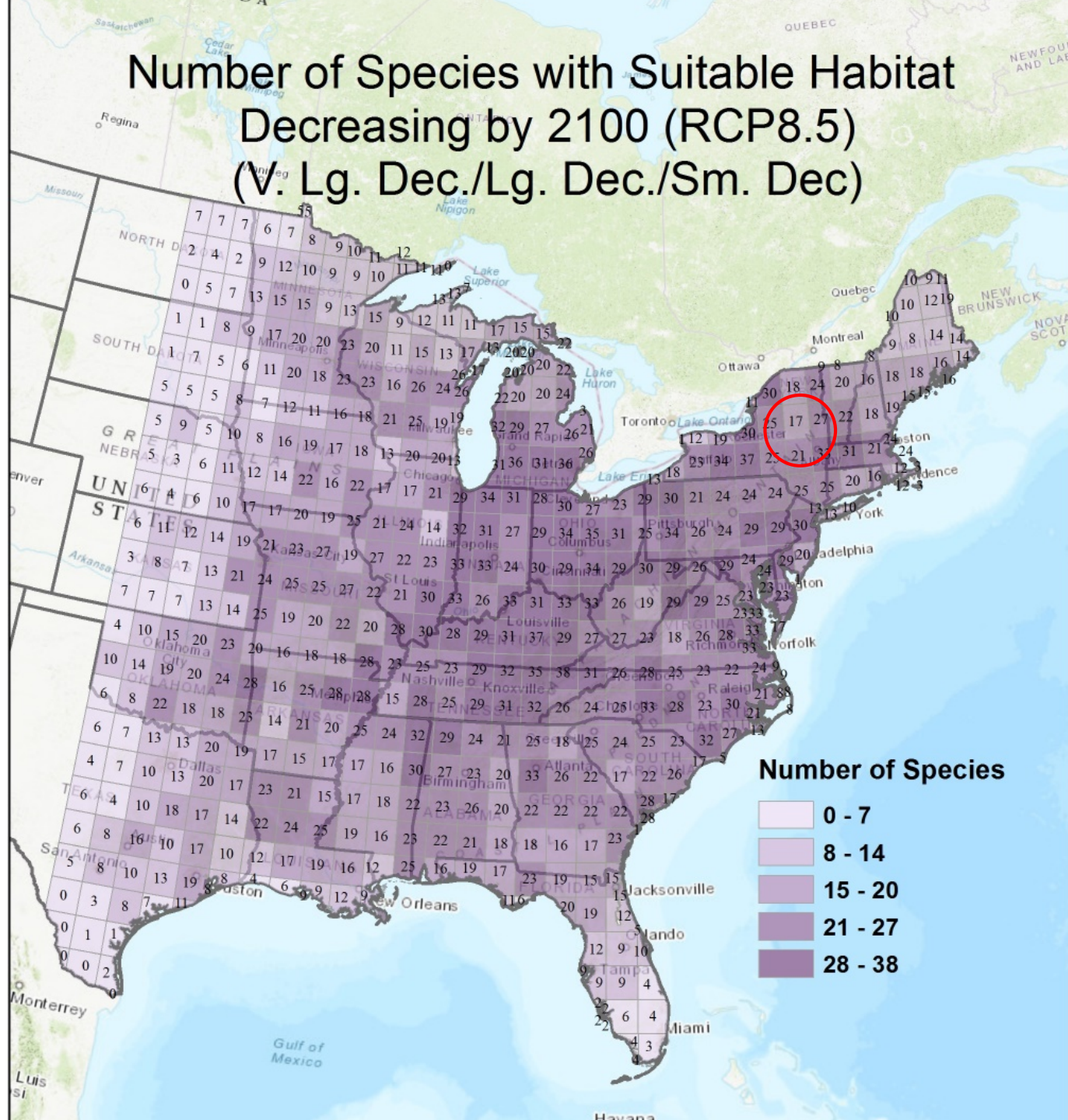
#1 Rated Species (FIA code)



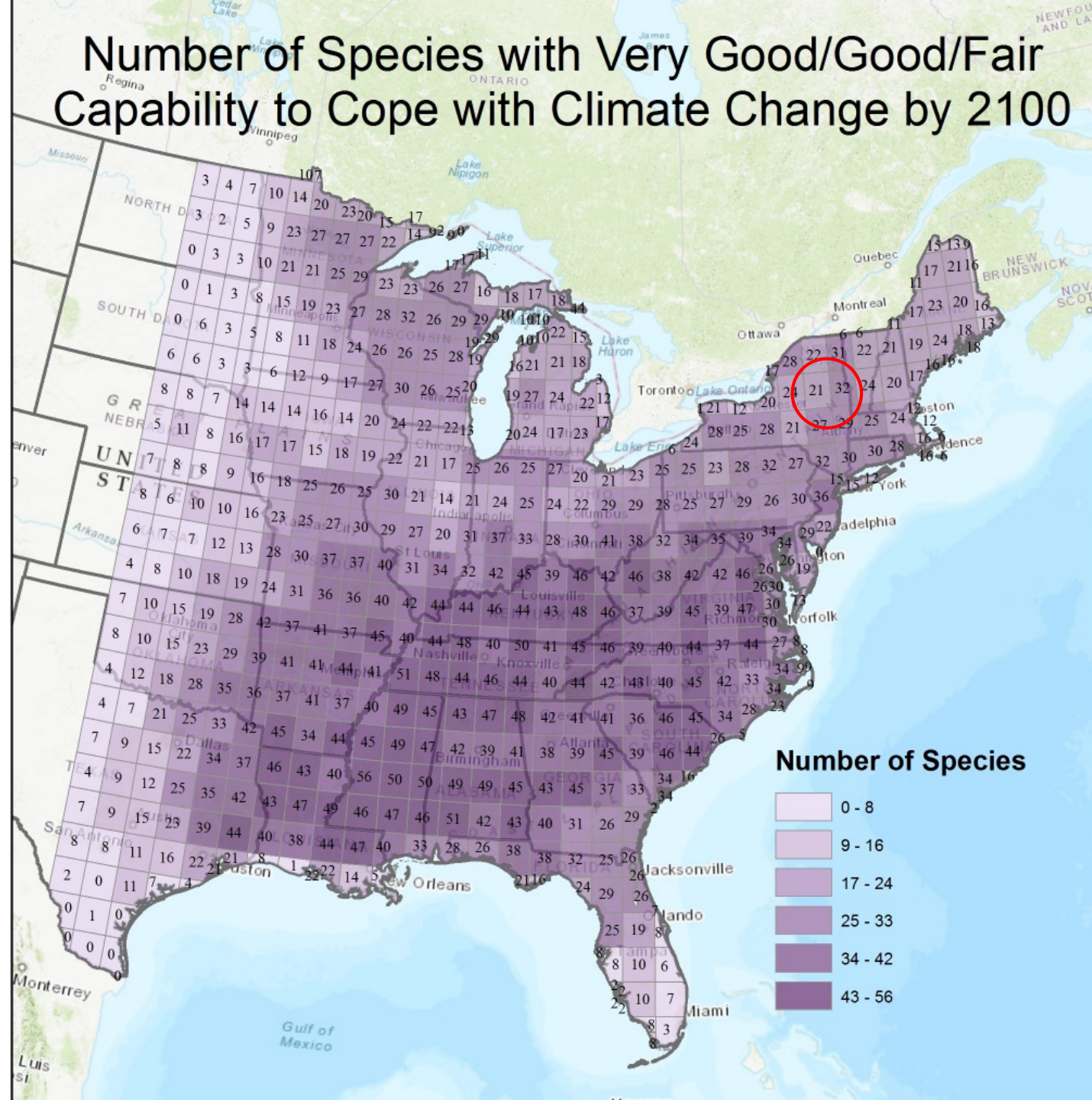
Number of Species with Suitable Habitat Increasing by 2100 (RCP8.5) (Lg. Inc./Sm. Inc.)



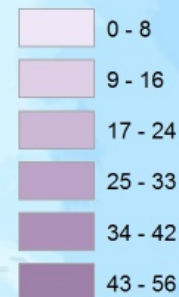
Number of Species with Suitable Habitat Decreasing by 2100 (RCP8.5) (V. Lg. Dec./Lg. Dec./Sm. Dec)



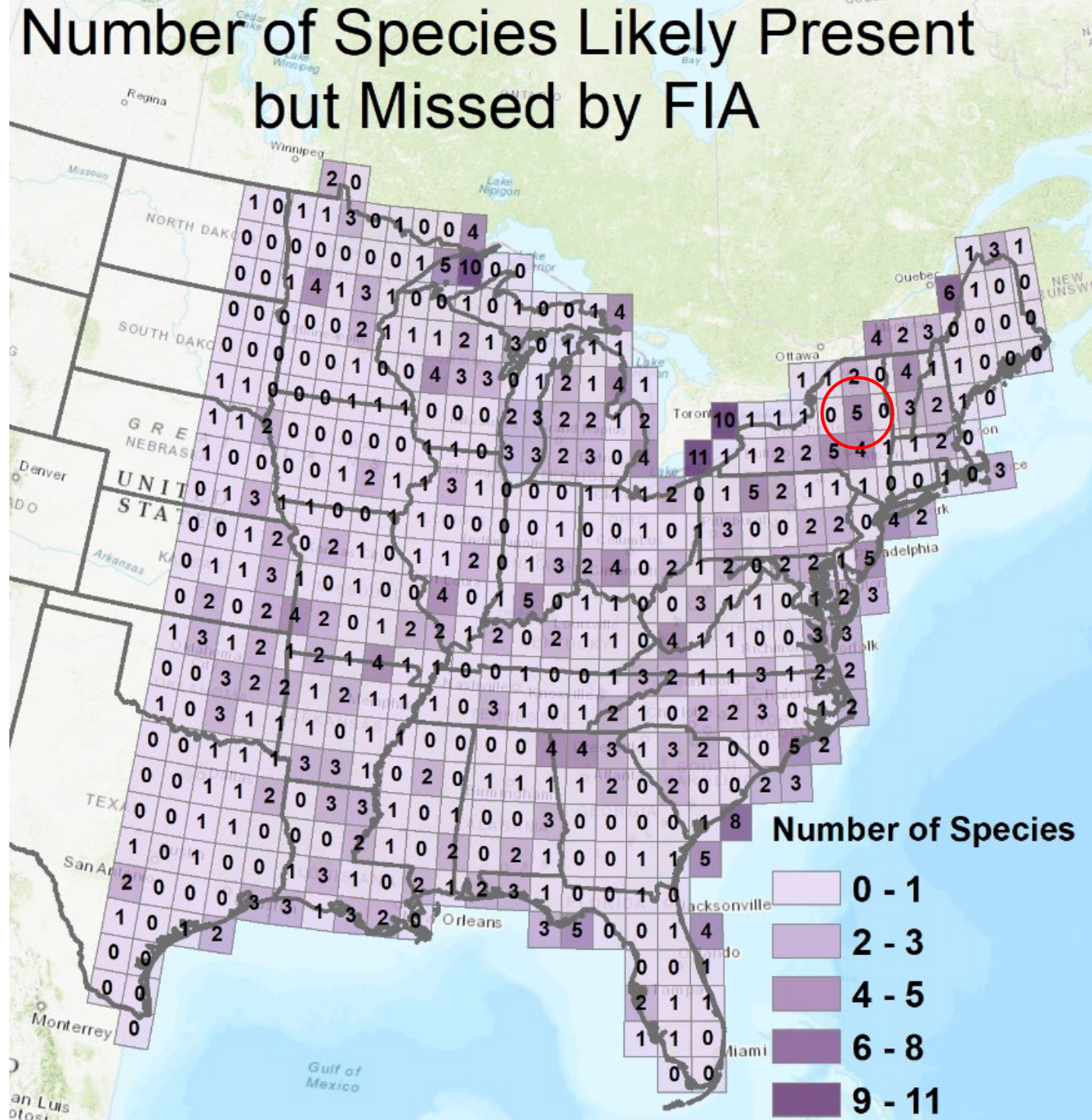
Number of Species with Very Good/Good/Fair Capability to Cope with Climate Change by 2100



Number of Species with Poor/Very Poor/Lost Capability to Cope with Climate Change by 2100

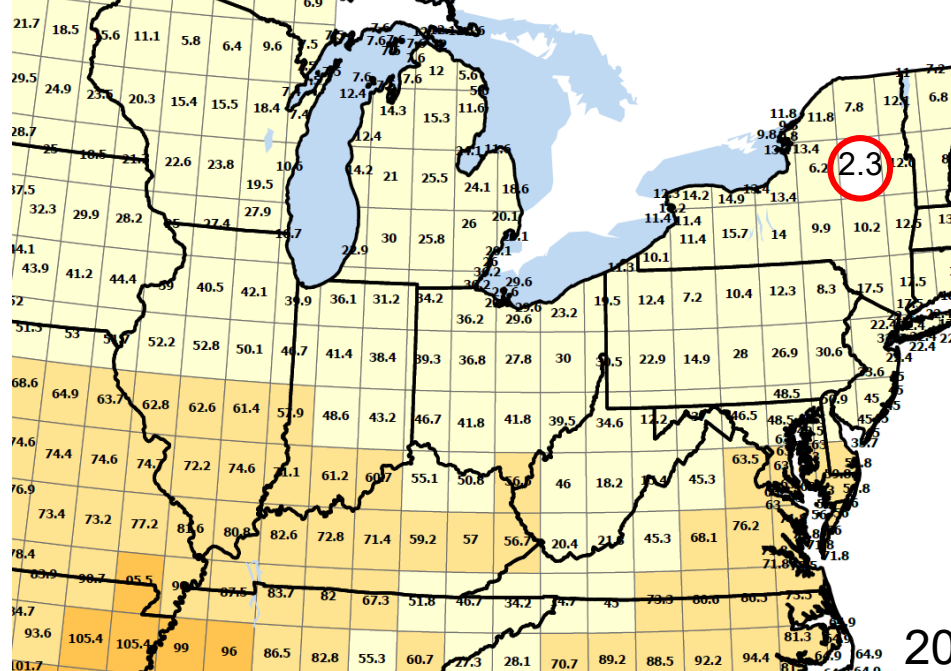
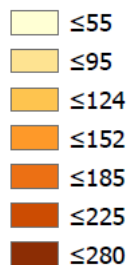


Number of Species Likely Present but Missed by FIA

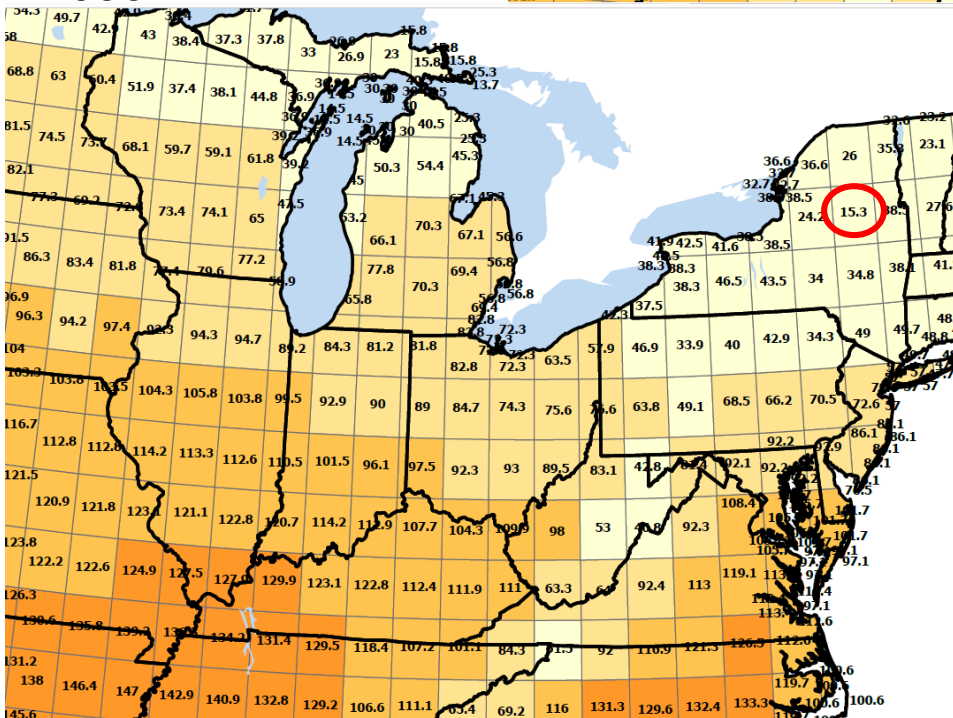


2009

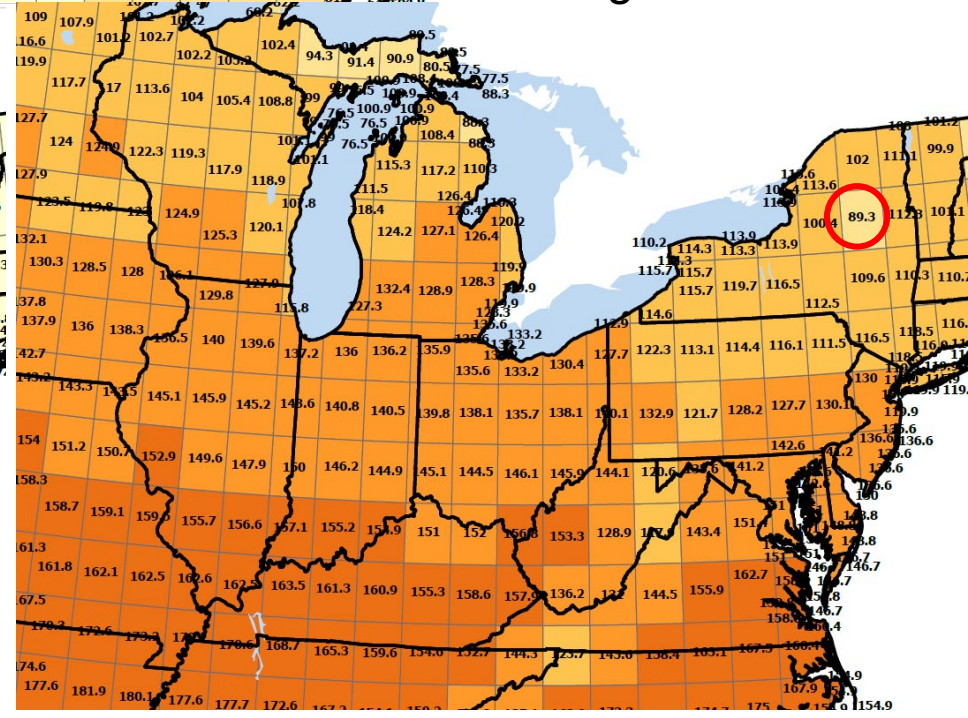
Days over 86F



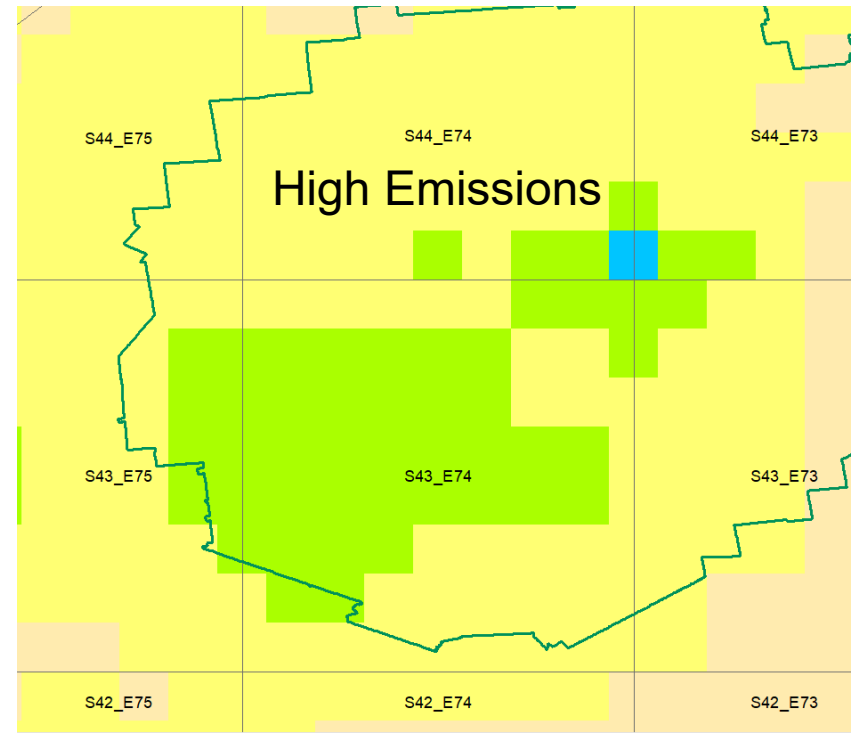
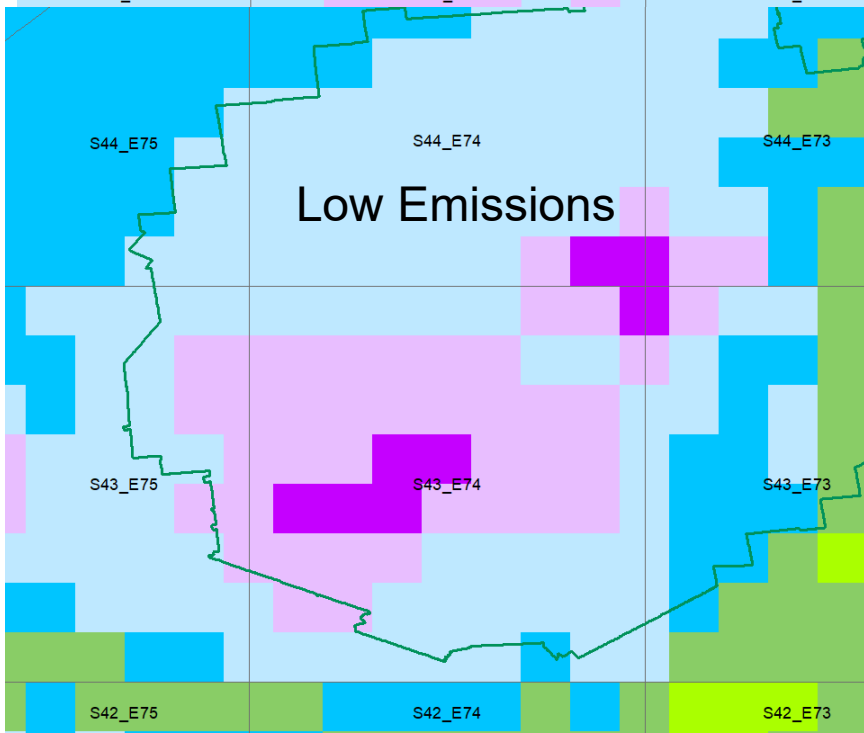
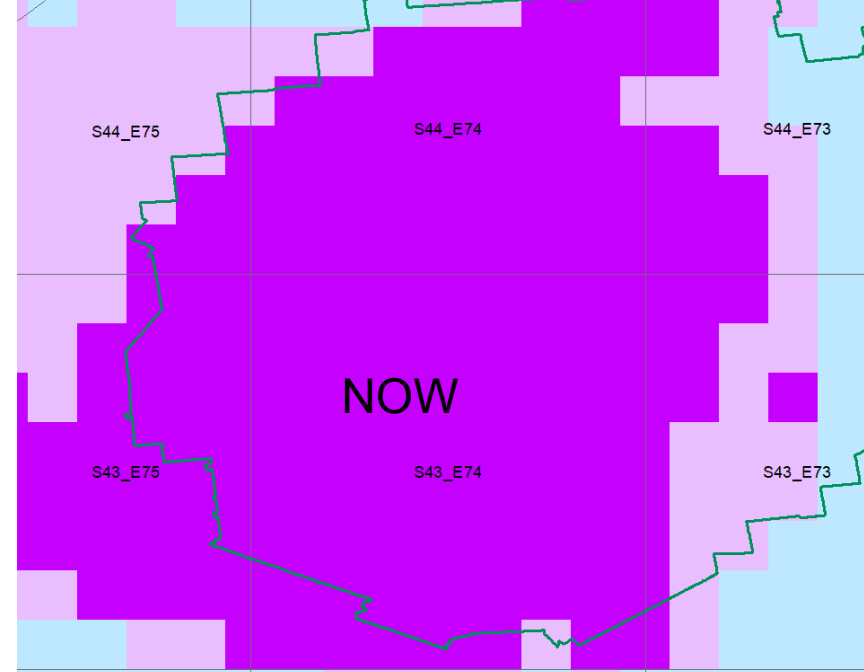
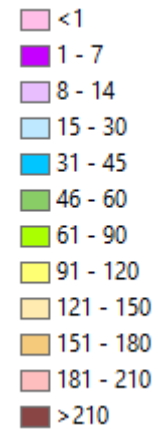
2099-low emissions

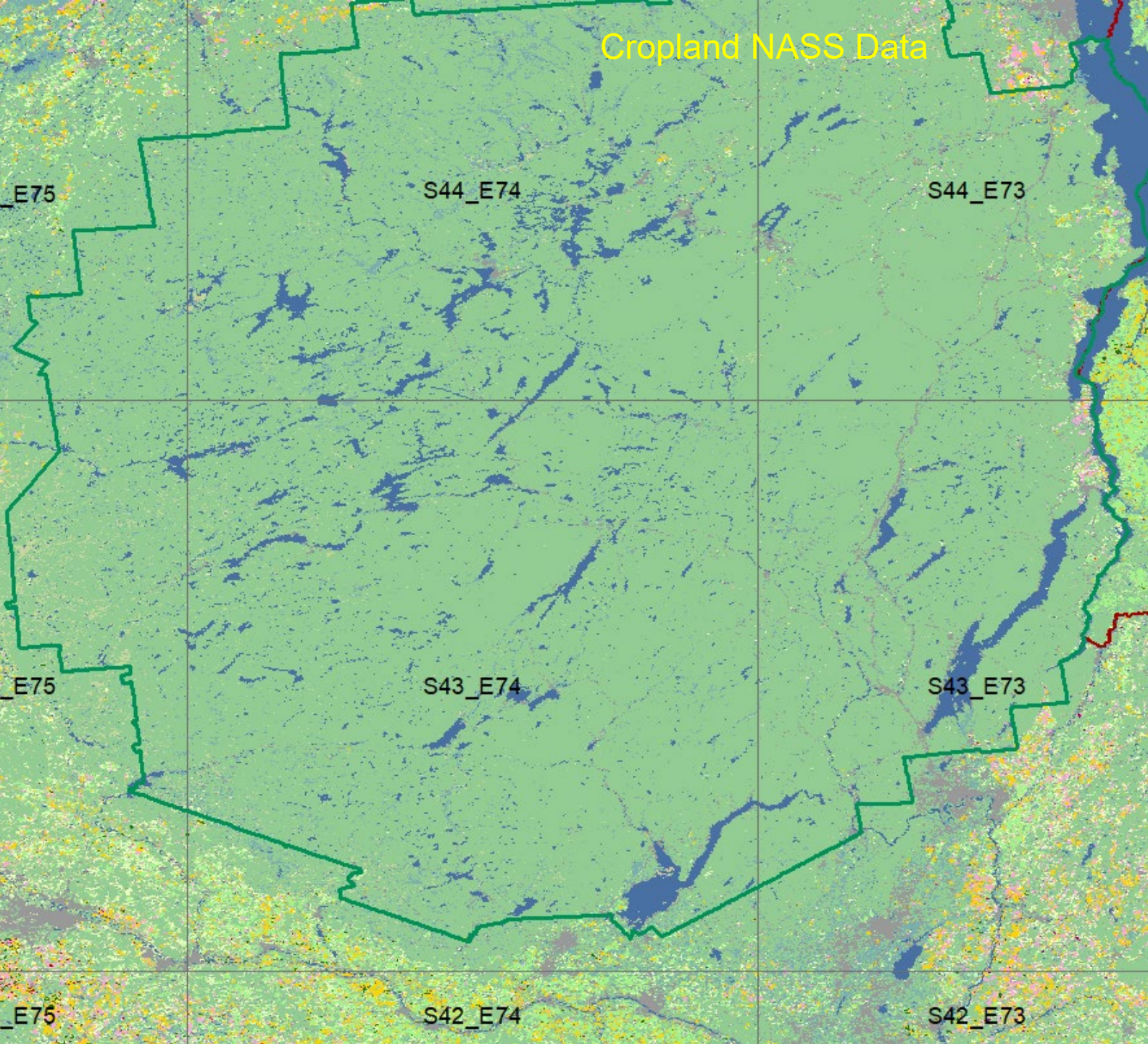


2099-high emissions



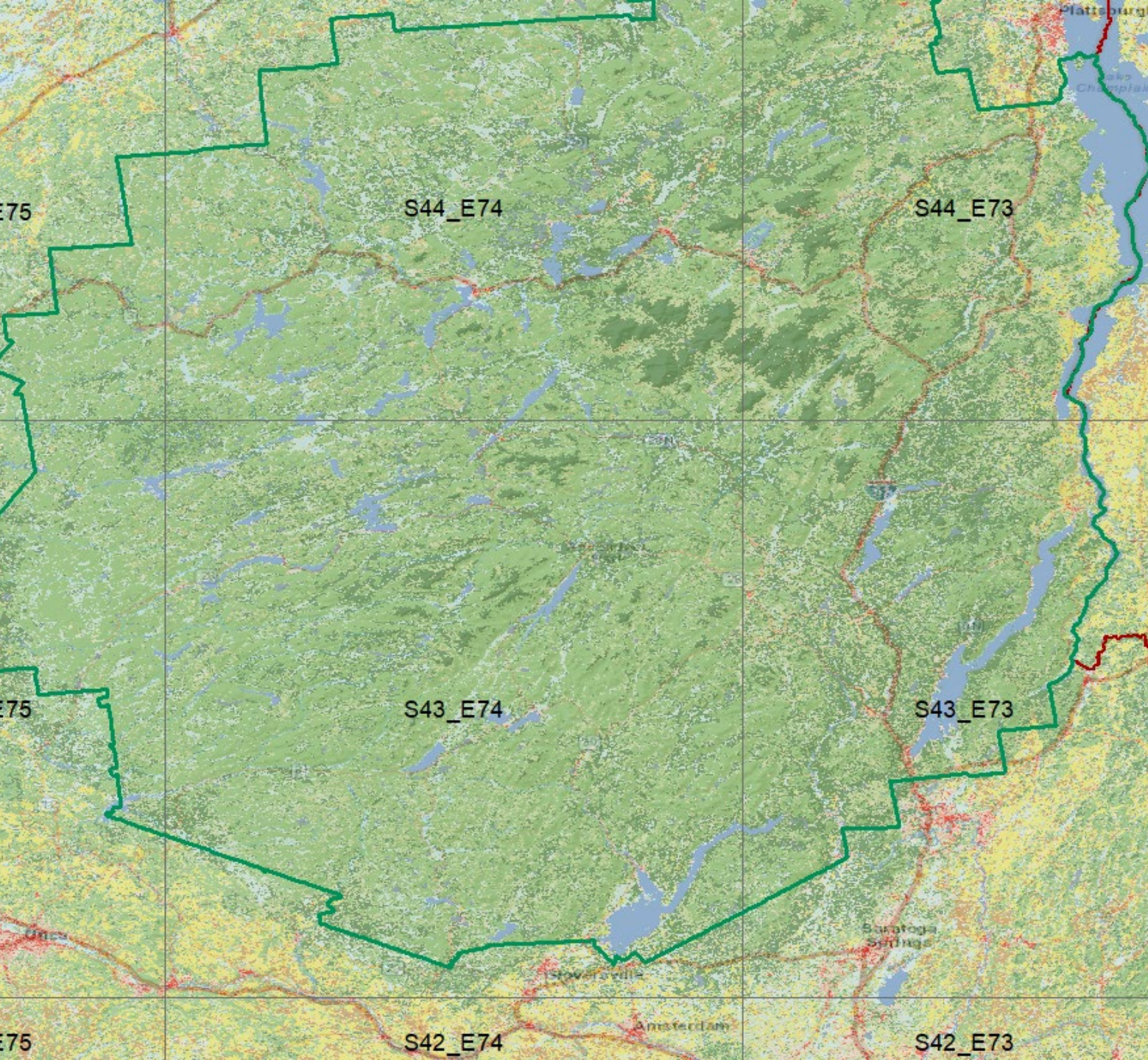
Days above 30C (86 F)





Cropland NASS Data

NAME	S43_E74
DECIDUOUS_	4925.635
EVERGREEN_	1812.053
MIXED_FORE	653.1021
OPEN_WATER	489.1959
WOODY_WETL	343.8918
SHRUBLAND	197.6832
OTHER_HAY_	174.9906
DEVELOPED_	134.8893
GRASSLAND_	75.816
HERBACEOUS	53.1306
CORN	40.2651
DEVELOPED1	28.1934
ALFALFA	19.1466
DEVELOPE_1	11.4768
BARREN	11.4228
SOYBEANS	6.4233
FOREST	3.15
DEVELOPE_2	3.0294
OATS	0.6561
WINTER_WHE	0.2079
RYE	0.2079
BARLEY	0.1935
CLOVER_WIL	0.1413
DRY_BEANS	0.1089
MISC_VEGS_	0.0999
TRITICALE	0.063
DBL_CROP_L	0.0414
CHRISTMAS_	0.0396
SORGHUM	0.0198
SOD_GRASS_	0.018
APPLES	0.0081
SPELTZ	0.0054
BLUEBERRIE	0.0045
SPRING_WHE	0.0027
BUCKWHEAT	0.0027
A_	0.0009
POTATOES	0.0009
GRAPES	0.0009

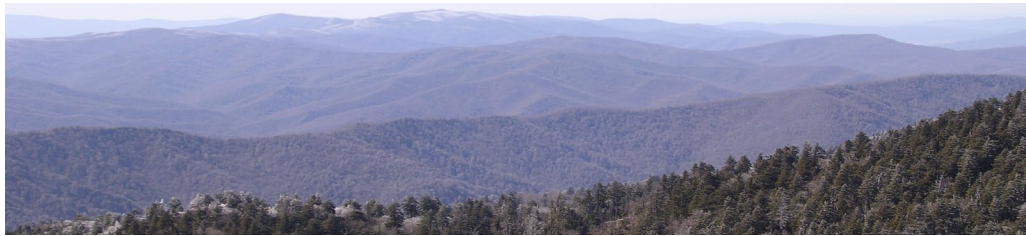


National Land Cover Data

km²

NAME	S43_E74
DECIDUOUS_	4549
EVERGREEN_	1567
MIXED_FORE	1106
WOODY_WETL	687
OPEN_WATER	419
HAY_PASTUR	276
DEVELOPED_	140
CULTIVATED	50
SHRUB_SCRU	48
EMERGENT_H	43
HERBACEUOU	37
DEVELOPED1	35
BARREN_LAN	13
DEVELOPE_1	12
DEVELOPE_2	3

What about birds?



- Based on nearby Vermont's Birder's dozen
- (slides curtesy of Steve Matthews)

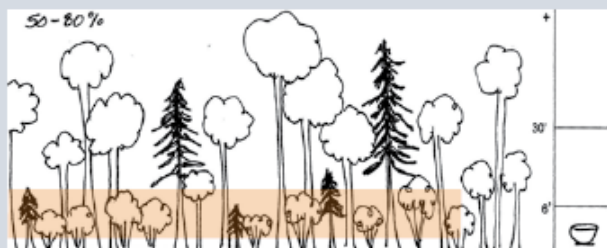


Black-throated Blue Warbler

BTBW



Dendroica caerulescens



ID Tips Deep blue on top with black mask and throat; white wing-patch "handkerchief."

Song A thick & buzzy *I'm-so-la-zee* with endnote rising up to the "blue" sky.

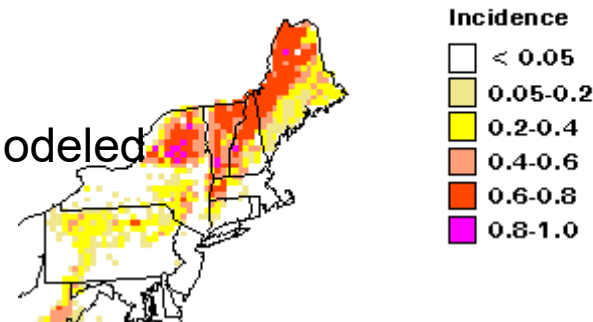
Habitat Large, continuous tracts (250+ acres) of hardwood or mixedwood with 50-80% canopy cover and a dense understory (0-5' layer) of hobblebush and/or small saplings of sugar maple, American beech, striped maple, and softwoods.

Territory 2.5 – 10 acres (smaller in forests with a dense and diverse understory).

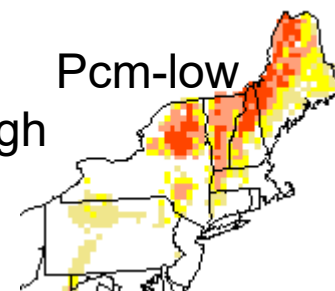
Nest Open cup of bark strips held together with spider web and saliva placed in the fork of a sapling or shrub in 0-5' layer.

Food Insectivorous, feeding largely on moth and butterfly larvae and adults.

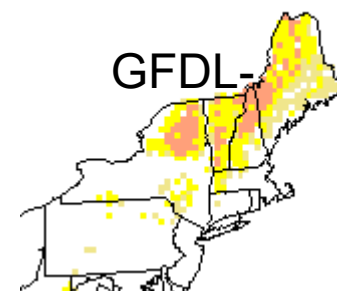
Current Modeled



High



GFDL-



Projected to decline in habitat (small decreaser) with a ratio of 0.81 to 0.51 for the NE depending on scenario.

Further, model shows strong association with mixed woods (black spruce, yellow birch, striped maple) as well as climate determinants

Canada Warbler

CAWA



Wilsonia canadensis



ID Tips Necklace of black stripes on bright yellow throat and belly; complete white eye-ring.

Song Often has soft introductory chips, then *I'm-IN-here, but-you-CAN'T-SEE-ME*.

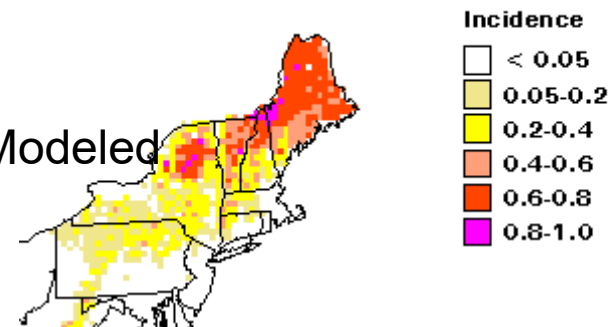
Habitat Most abundant in moist, mixedwood forests with a 50-70% canopy cover and dense understory (0-5') and midstory (6-30'). Often found in swamps, riparian areas, and upland forests with mossy hummocks, root masses, and downed logs.

Territory Males arrive before females and defend small (~0.6 acre) territory until nesting begins. After nesting begins, males found roaming over larger (2-3 acre) area in New York.

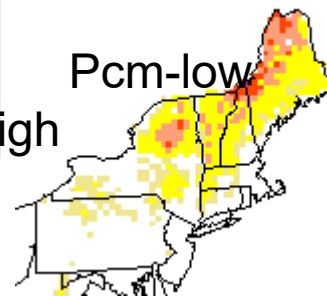
Nest Open cup on or near ground on mossy hummock, stump or log, or upturned tree roots.

Food Flying insects and spiders.

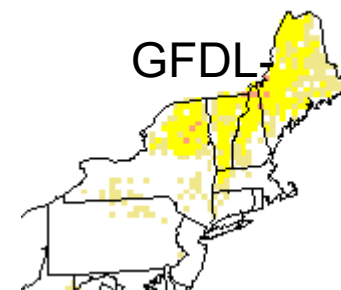
Current Modeled



High



GFDL



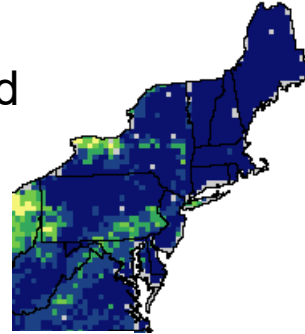
Projected to decline in habitat (small decreaser) with a ratio of 0.61 to 0.31 for the NE depending on scenario.

Further model shows association with balsam fir, hemlock, and summer temperatures

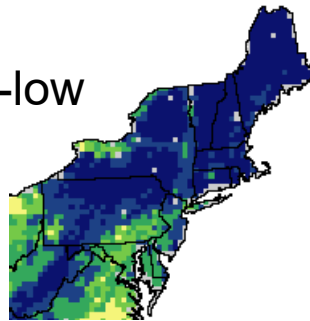
Ovenbird example



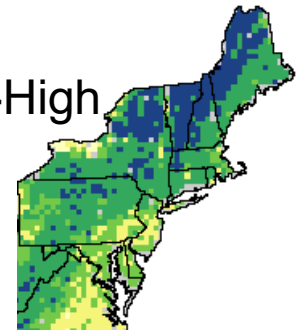
Current Modeled



Pcm-low



GFDL-High



Projected to decline in habitat (small decreaser) with a ratio shallower declines projected (0.95 to 0.60) depending on scenario.

Distribution model shows strong association with white and chestnut oak as well as maples and climate determinants

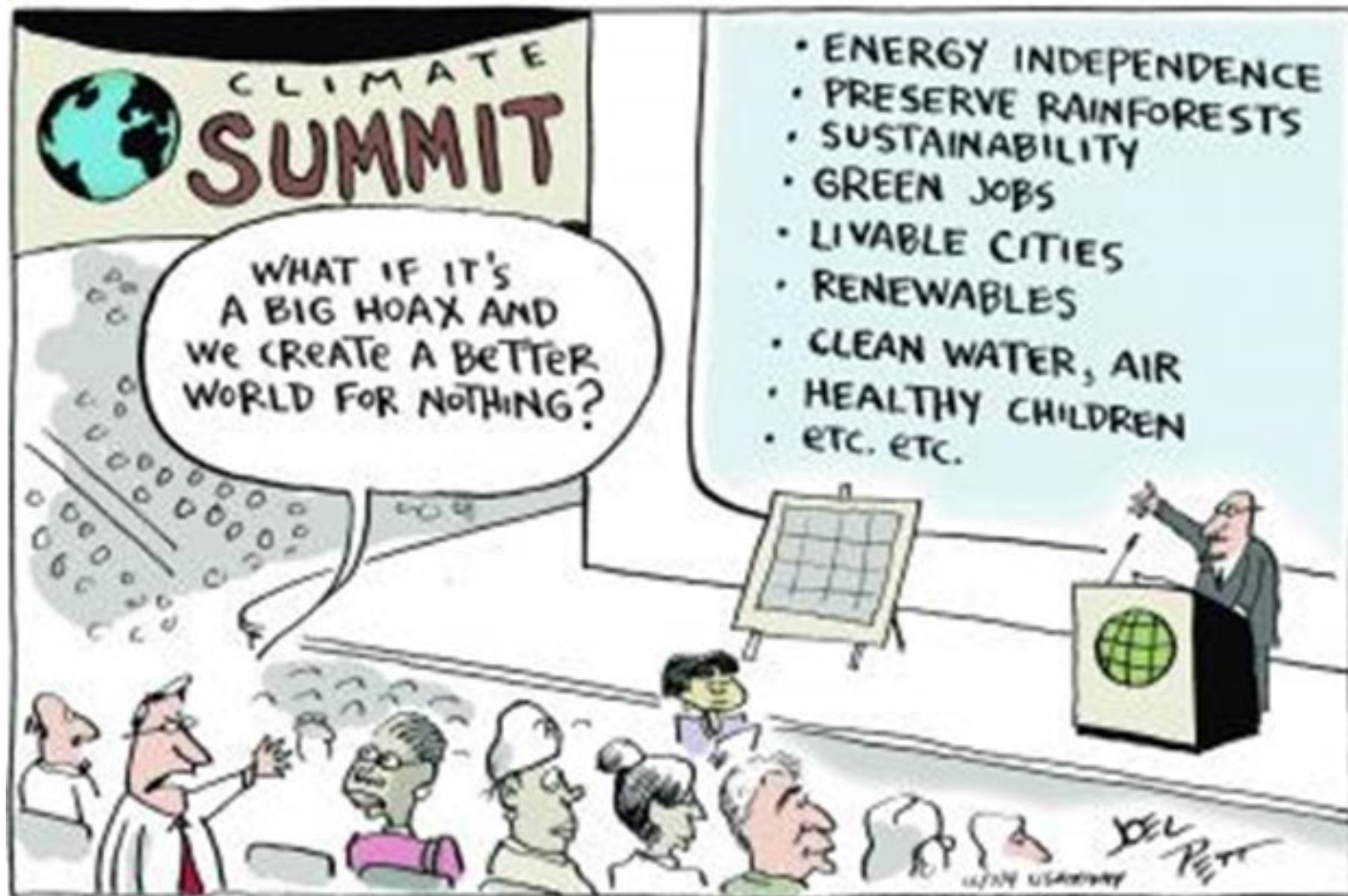
Focus on birders dozen

SppCN	ModRely	Low emission	High emission	Change class
Black-throated Blue Warbler	High	0.81	0.51	Sm. Dec
Black-throated Green Warbler	Medium	0.76	0.39	Sm. Dec
Blue-headed Vireo	Medium	0.75	0.38	Sm. Dec
Canada Warbler	Medium	0.69	0.35	Lg. Dec.
Eastern Wood-Pewee	Low	1.3	1.6	Sm. Inc.
Veery	High	0.88	0.33	Sm. Dec
White-throated Sparrow	High	0.75	0.36	Sm. Dec
Wood Thrush	High	1.0	0.76	No Change
Yellow-bellied Sapsucker	High	0.77	0.3	Sm. Dec
Mourning Warbler	Medium	0.57	0.27	Lg. Dec.
Nashville Warbler	High	0.54	0.27	Lg. Dec.

Conclusions

- DISTRIB-II uses all updated data to populate models. Impacts are greater with RCP 8.5 (high emissions) scenario.
- We provide wall-to-wall outputs of current and potential species habitats, coping capabilities, and migration potentials.
- More richness now and in future in South, but North has more potential for adding new species via migration (assisted or not). The Adirondacks are modeled to gain up to 19 migrants.
- The intention is to enable publics and managers, no matter where in the eastern US, to better understand their current and potential future species assemblages.
- Summary maps across the country allows spatial comparisons among 1x1 degree grids.
- We are working to make these data available on web, but in meantime, contact us.

Thank you!



Louis Iverson louis.iverson@usda.gov 740-368-0097

All publications available at <http://www.treesearch.fs.fed.us/> or
Google Scholar or Web of Science or ResearchGate: 'louis iverson'

Atlas web site <http://www.nrs.fs.fed.us/atlas>

