

OVERVIEW OF MICHIGAN'S LOWLAND TIMBER RESOURCE

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Analysis Methods

Lowland Hardwood and
Lowland Softwood Forest
Types

Metrics:

- Area
- Inventory Volume
- Sawtimber Volume
- Biomass
- Growth
- Removals

Used 2008 Annualized
USDA-FS FIA database

- 1,341 Lowland HW Plots
- 1,305 Lowland SW Plots
- 10,397 Total Forest Plots
- Sampled 2004 to 2008

Lowland Hardwood Forest Types

- Black ash / American elm / red maple
- Red maple / lowland
- Balsam poplar
- Willow
- Silver maple / American elm
- Elm/ ash/ black locust
- Cottonwood / willow
- Sugarberry / hackberry / elm / green ash
Cottonwood
- Sycamore / pecan / American elm
- River birch / sycamore

Timberland: 2.5 million acres
13.2% of all timberland

Lowland Softwood Types

- Northern white-cedar
- Black spruce
- Tamarack

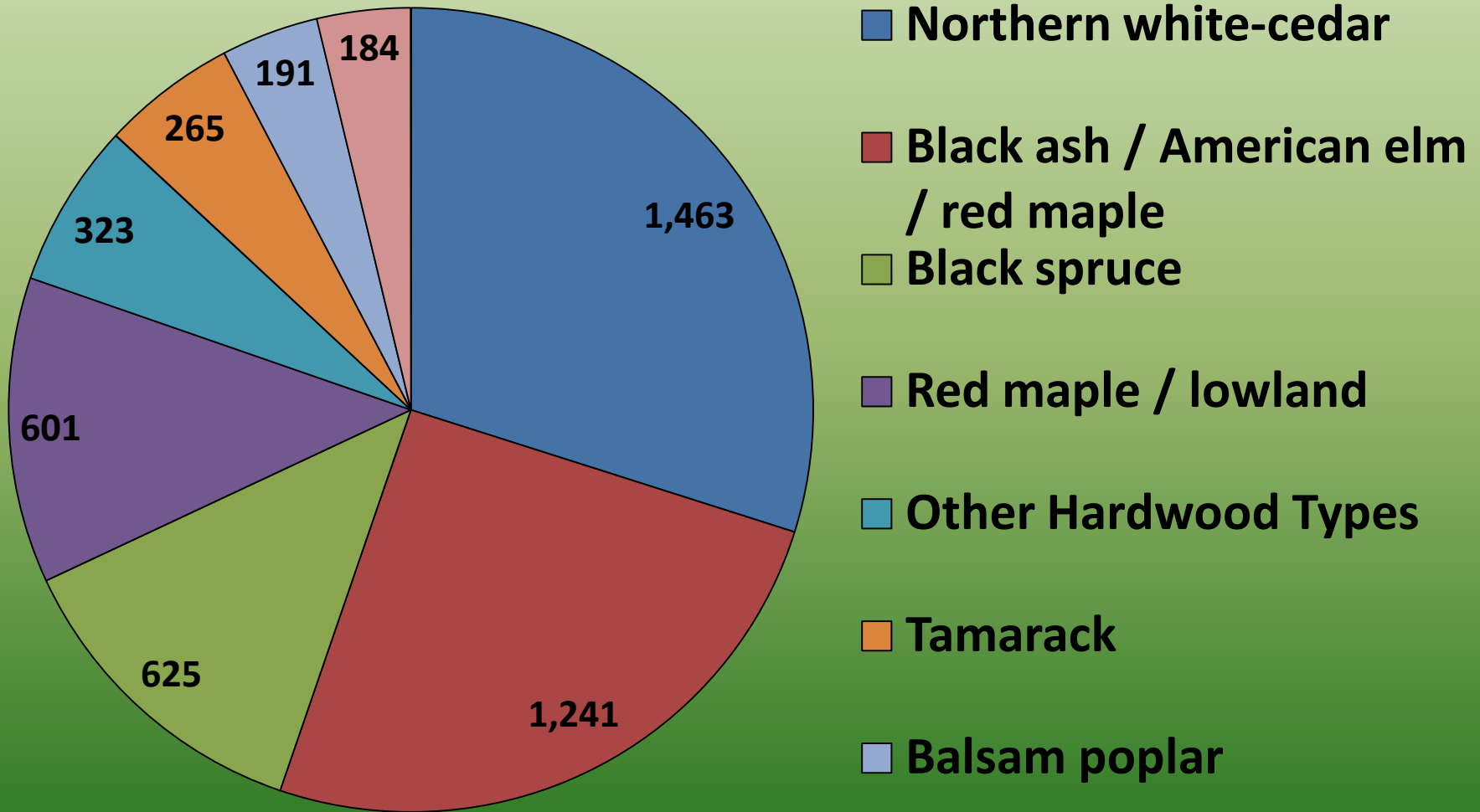
Timberland: 2.4 million acres
12.8% of all timberland

HOW MUCH TIMBERLAND?

Lowland Type	EUP	WUP	NLP	SLP	Total
	Thousand Acres				
Lowland Hardwoods	364	274	766	1,137	2,541
Lowland Softwoods	1,149	605	564	35	2,353
All Lowland Types	1,512	879	1,330	1,172	4,894

Excludes low productivity sites and legally reserved lands.

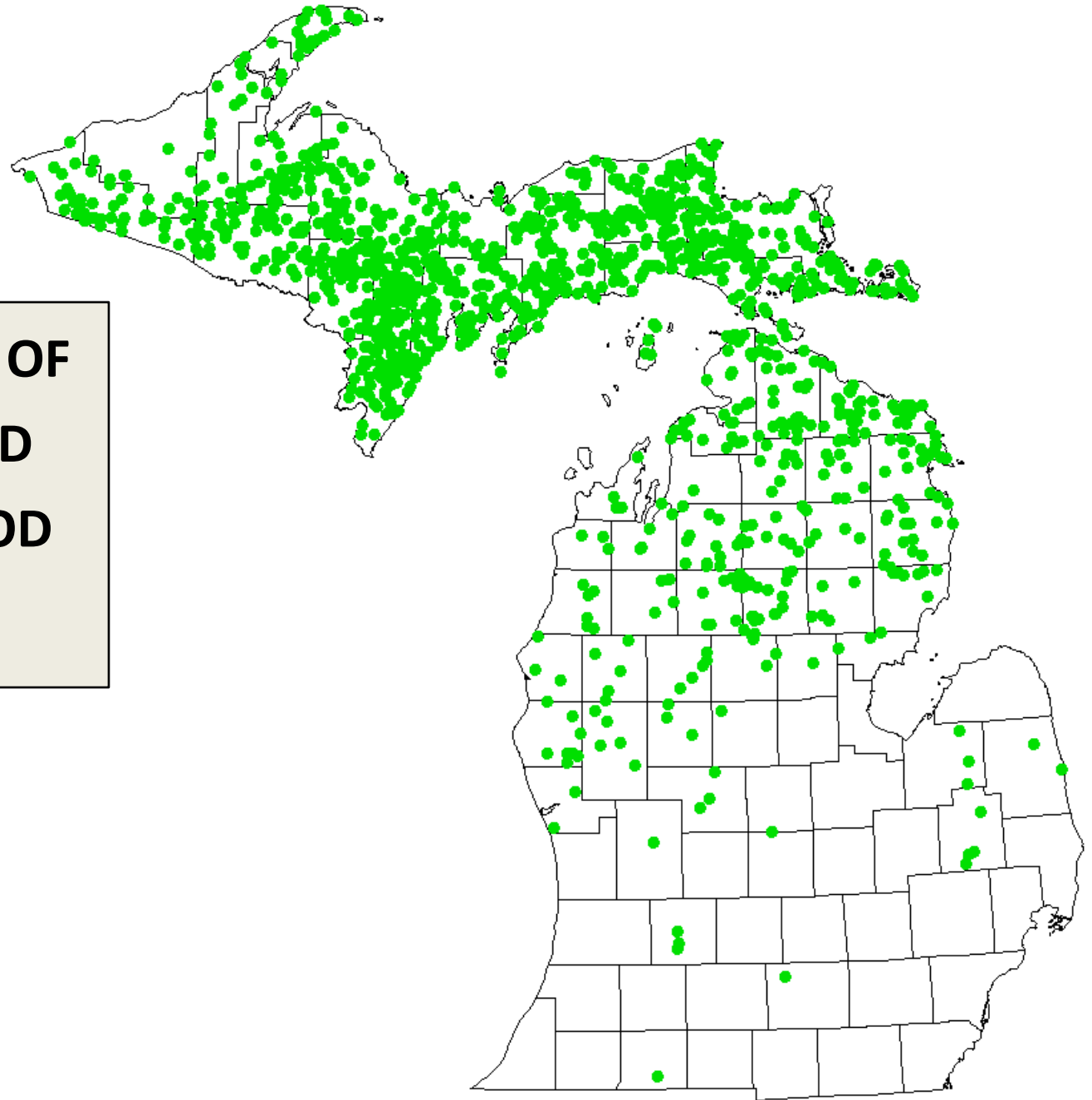
TIMBERLAND AREA BY LOWLAND FOREST TYPE (thousand acres)



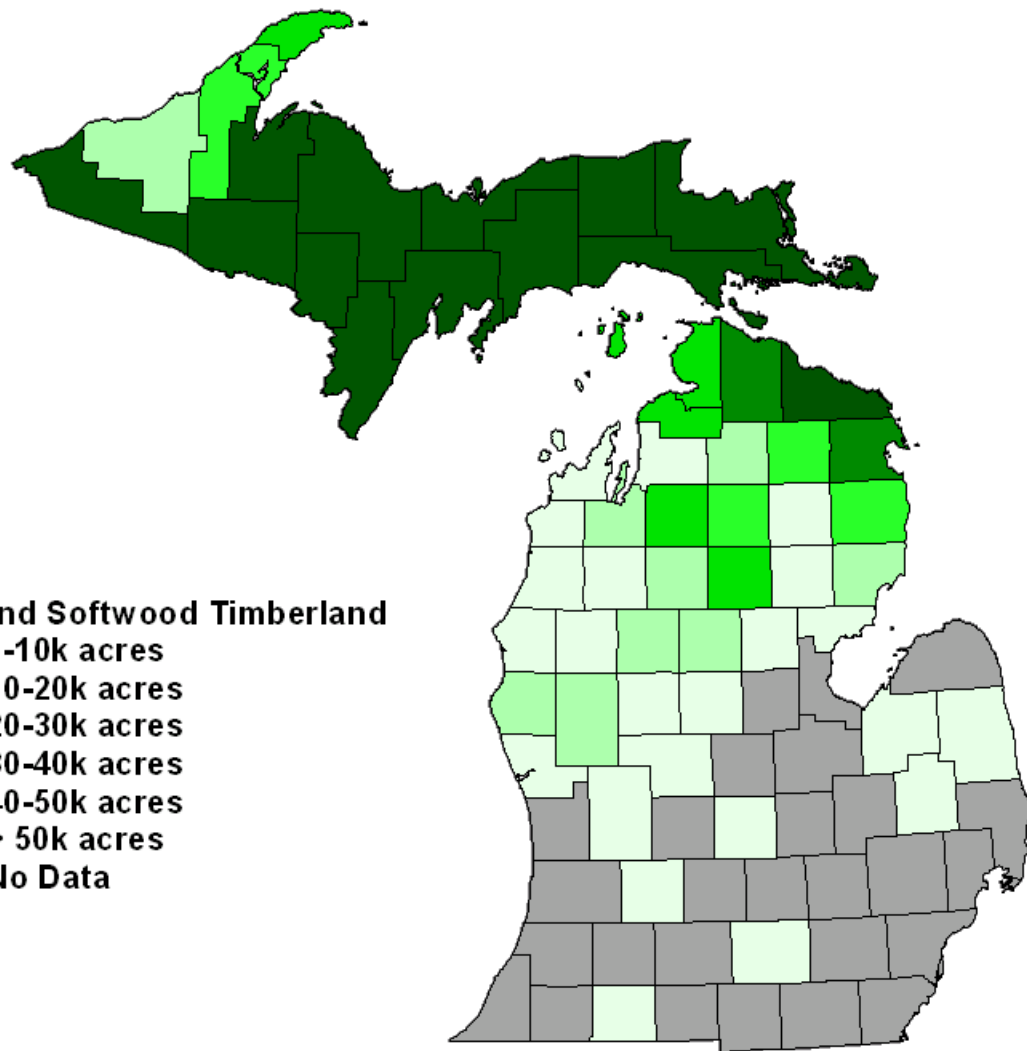
TIMBERLAND AREA FOR LOWLAND FOREST TYPES BY OWNER (thousand acres)

Lowland Type Group	Federal	Private	State/ Local	Total
Thousand Acres				
Lowland Hardwoods	139	2,008	395	2,541
Lowland Softwoods	304	1,294	755	2,353
All Lowland Types	442	3,302	1,150	4,894
Percent	9.0%	67.5%	23.5%	
All Forest Types	2,588	12,194	4,434	19,216
Percent	13.5%	63.5%	23.1%	100.0%

**LOCATION OF
LOWLAND
SOFTWOOD
PLOTS**



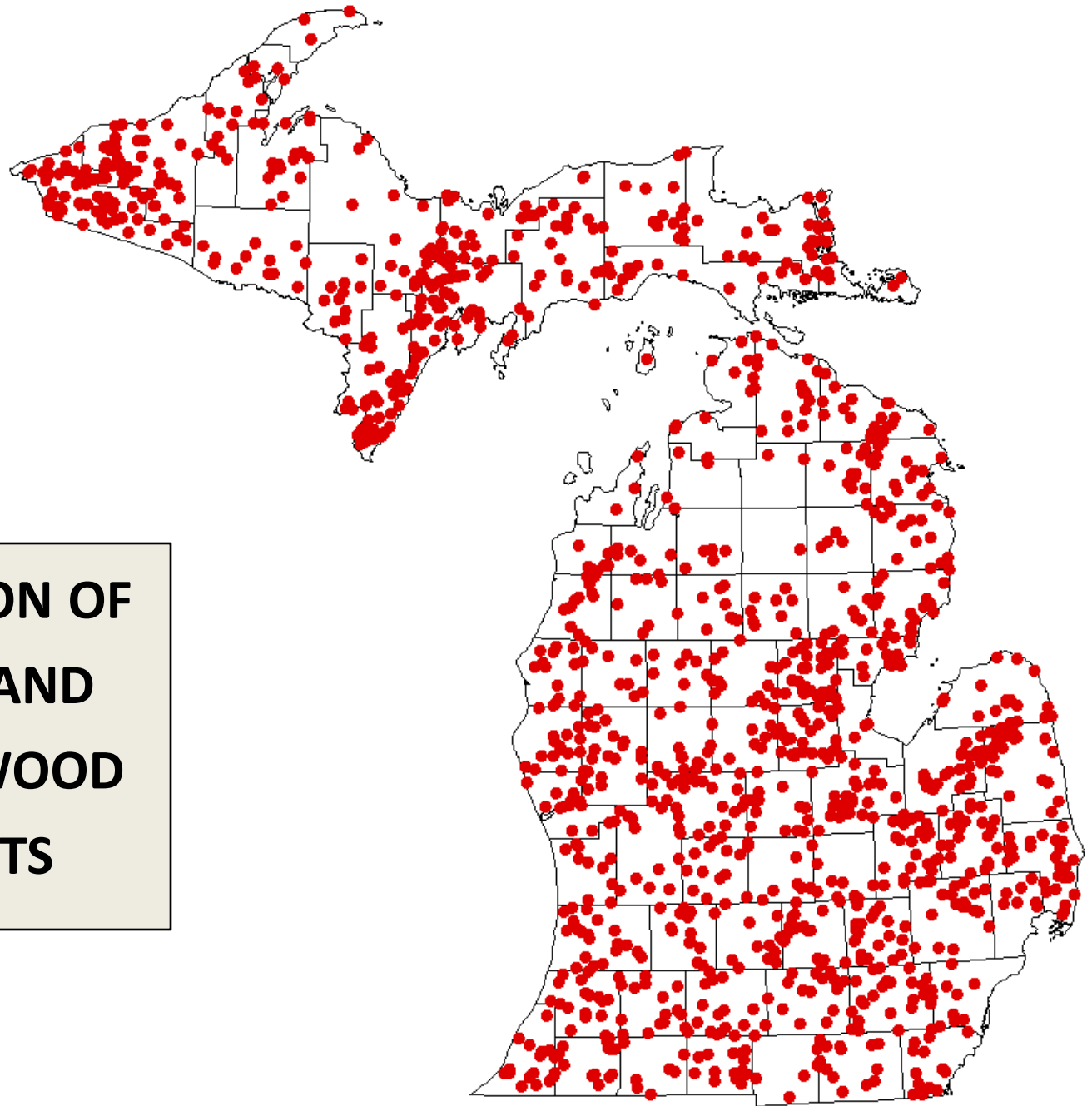
LOWLAND SOFTWOOD TIMBERLAND BY COUNTY



TOP TEN COUNTIES WITH LOWLAND SOFTWOOD TIMBERLAND

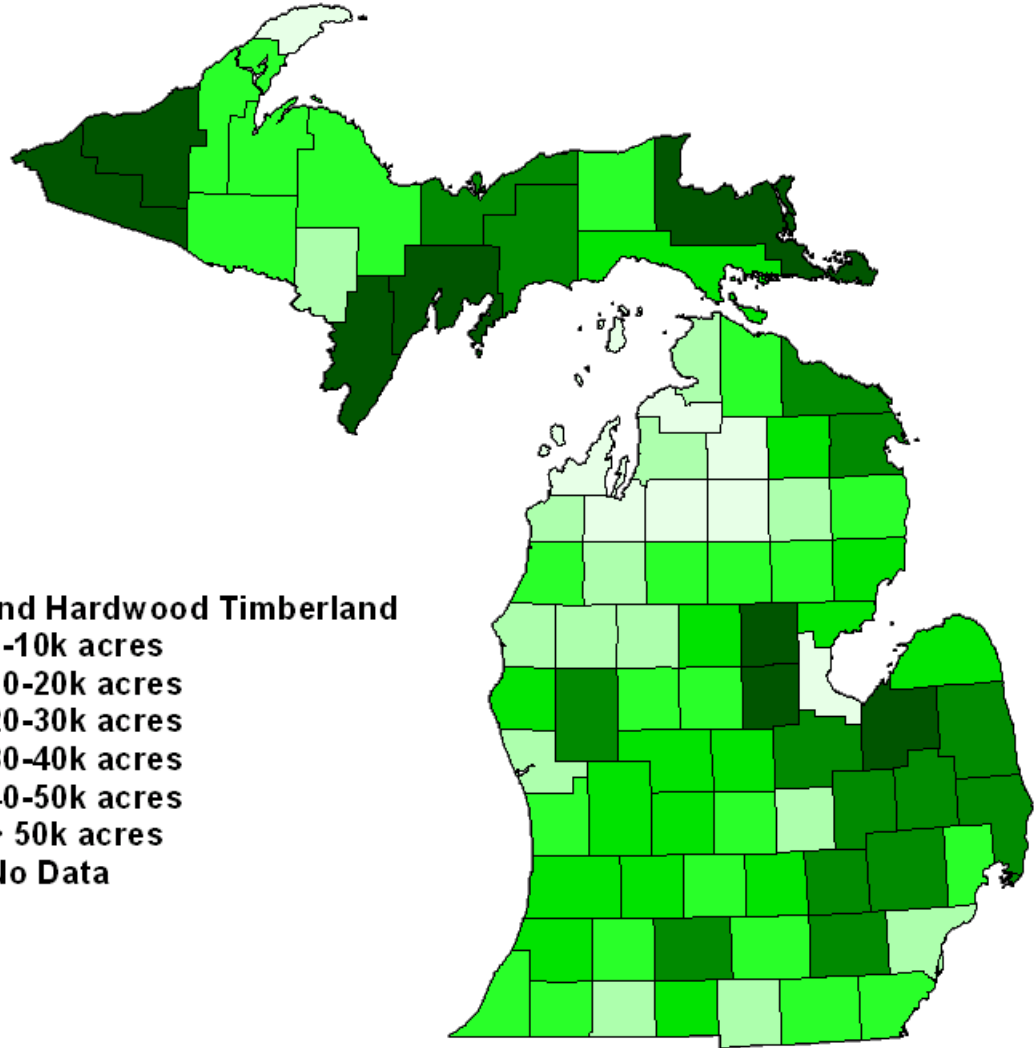
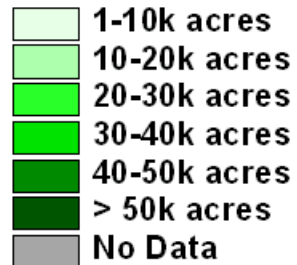
Rank	County	Thousand Acres
1	Chippewa	206
2	Marquette	198
3	Mackinac	192
4	Menominee	184
5	Schoolcraft	180
6	Delta	175
7	Luce	161
8	Dickinson	100
9	Iron	91
10	Baraga	76

**LOCATION OF
LOWLAND
HARDWOOD
PLOTS**



LOWLAND HARDWOOD TIMBERLAND BY COUNTY

Lowland Hardwood Timberland



TOP TEN COUNTIES WITH LOWLAND HARDWOOD TIMBERLAND

Rank	County	Thousand Acres
1	Gogebic	86
2	Delta	81
3	Menominee	79
4	Ontonagon	68
5	Gladwin	56
6	Tuscola	54
7	Chippewa	51
8	Midland	51
9	Sanilac	50
10	St. Clair	49

AREA OF LOWLAND HARDWOOD TIMBERLAND BY PHYSIOGRAPHIC CLASS

Group	Sub-Group	Thousand Acres	Percent
Hydric	Beaver ponds	22	0.9%
	Other hydric	297	11.7%
	Swamps/bogs	629	24.7%
	All Hydric	947	37.3%
Mesic	Bottomlands	366	14.4%
	Flatwoods	910	35.8%
	Other mesic	137	5.4%
	Rolling Uplands	159	6.3%
	All Mesic	1,573	61.9%
Xeric	Deep sands	19	0.7%
	Other xeric	2	0.1%
	All Xeric	21	0.8%
	Total	2,541	100.0%

AREA OF LOWLAND SOFTWOOD TIMBERLAND BY PHYSIOGRAPHIC CLASS

Group	Sub-Group	Thousand Acres	Percent
Hydric	Beaver ponds		0.0%
	Other hydric	120	5.1%
	Swamps/bogs	1,731	73.6%
	All Hydric	1,851	78.7%
Mesic	Bottomlands	68	2.9%
	Flatwoods	306	13.0%
	Other mesic	53	2.3%
	Rolling Uplands	46	1.9%
	All Mesic	473	20.1%
Xeric	Deep sands	25	1.1%
	Other xeric	4	0.2%
	All Xeric	28	1.2%
	Total	2,353	100.0%

SPECIES GROUPS

Group	Species
Aspen	bigtooth aspen, quaking aspen
Maple	boxelder, red maple, silver maple, sugar maple
Oak	white oak, swamp white oak, northern pin oak, bur oak, pin oak, northern red oak, black oak
Upland HW	yellow birch, paper birch, American beech, white ash, coffeetree, black walnut, black cherry, black locust, sassafras, American basswood
Lowland HW	black ash, green ash, balsam poplar, black willow, American elm, Siberian elm, slippery elm, rock elm
Pine	jack pine, red pine, eastern white pine, and exotics such as Scotch and Austrian pine
Upland SW	balsam fir, white spruce, eastern hemlock and exotics such as Norway and blue spruce, and Douglas-fir
Lowland SW	tamarack (native), black spruce, northern white-cedar and other exotic larch species

AVERAGE GROWING STOCK VOLUME FOR LOWLAND HARDWOOD STANDS ON TIMBERLAND

Species Group	GS Volume	Percent	Volume per Acre	Cords per Acre
	MMCF		CF	Cords
Aspen	167	5.1%	66	0.8
Maple	1,120	34.1%	441	5.6
Oak	153	4.7%	60	0.8
Upland HW	517	15.7%	204	2.6
Lowland HW	884	26.9%	348	4.4
Pine	79	2.4%	31	0.4
Upland SW	177	5.4%	70	0.9
Lowland SW	188	5.7%	74	0.9
All Species	3,285	100.0%	1,293	16.4

AVERAGE GROWING STOCK VOLUME FOR LOWLAND SOFTWOOD STANDS ON TIMBERLAND

Species Group	GS Volume	Percent	Volume per Acre	Cords per Acre
	MMCF		CF	Cords
Aspen	83	2.5%	35	0.4
Maple	114	3.5%	48	0.6
Oak	9	0.3%	4	0.0
Upland HW	159	4.8%	68	0.9
Lowland HW	118	3.6%	50	0.6
Pine	190	5.8%	81	1.0
Upland SW	243	7.4%	103	1.3
Lowland SW	2,375	72.2%	1,010	12.8
All Species	3,291	100.0%	1,399	17.7

NET ANNUAL GROWTH FOR LOWLAND HARDWOOD STANDS ON TIMBERLAND

Species Group	Million Cubic Feet	Percent
Aspen	1.8	2.0%
Lowland HW	24.8	27.6%
Lowland SW	3.7	4.1%
Maple	34.0	37.9%
Oak	4.7	5.3%
Pine	2.2	2.5%
Upland HW	15.4	17.2%
Upland SW	3.0	3.4%
All Species	89.7	100.0%
Net Growth, Cubic Feet per acre	35.3	

NET ANNUAL GROWTH FOR LOWLAND SOFTWOOD STANDS ON TIMBERLAND

Species Group	Million Cubic Feet	Percent
Aspen	-0.1	-0.3%
Lowland HW	0.6	1.3%
Lowland SW	41.1	86.8%
Maple	1.5	3.2%
Oak	0.0	0.0%
Pine	2.7	5.7%
Upland HW	0.0	0.0%
Upland SW	1.6	3.3%
All Species	47.4	100.0%
Net Growth, Cubic Feet per acre	20.1	

BIOMASS IN BOLES AND TOPS ON LOWLAND HARDWOOD STANDS

Species Group	Million Gr Tons	Percent	Green Tons per acre
Aspen	6.5	5.3%	2.6
Lowland HW	35.7	28.9%	14.1
Lowland SW	5.0	4.0%	2.0
Maple	41.2	33.4%	16.2
Oak	7.6	6.2%	3.0
Pine	2.1	1.7%	0.8
Upland HW	19.8	16.1%	7.8
Upland SW	5.5	4.5%	2.2
All Species	123.4	100.0%	48.6

ANNUAL REMOVALS FOR LOWLAND HARDWOOD STANDS ON TIMBERLAND

Species Group	Million Cubic Feet	Percent
Aspen	3.2	13.1%
Lowland HW	7.4	29.8%
Lowland SW	0.9	3.7%
Maple	5.3	21.5%
Oak	0.7	2.9%
Pine	0.6	2.4%
Upland HW	7.1	28.6%
Upland SW	2.7	11.0%
All Species	24.8	100.0%
Removals per acre	9.8	

ANNUAL REMOVALS FOR LOWLAND SOFTWOOD STANDS ON TIMBERLAND

Species Group	Million Cubic Feet	Percent
Aspen	0.3	3.9%
Lowland HW	1.1	13.2%
Lowland SW	3.7	44.9%
Maple	0.4	4.6%
Oak	0.0	0.0%
Pine	1.8	21.4%
Upland HW	0.3	3.7%
Upland SW	1.0	12.2%
All Species	8.4	100.0%
Removals per acre	3.6	

BIOMASS IN BOLES AND TOPS ON LOWLAND SOFTWOOD STANDS

Species Group	Million Gr Tons	Percent	Green Tons per acre
Aspen	3.3	3.4%	1.4
Lowland HW	4.7	5.0%	2.0
Lowland SW	63.1	66.4%	26.8
Maple	4.5	4.7%	1.9
Oak	0.4	0.4%	0.2
Pine	5.1	5.4%	2.2
Upland HW	6.5	6.9%	2.8
Upland SW	7.4	7.8%	3.1
All Species	95.0	100.0%	40.4

SUMMARY

- Almost 5 million acres of lowland forests in Michigan
- About equally divided between lowland hardwood and softwood types
- More lowland softwoods in the upper peninsula, more hardwoods in the lower peninsula
- National forests have 9% of the lowland forests, State have 23.5% and private landowners have 67.5%
- Most lowland softwood stands are on hydric sites, 79%.
Most lowland hardwood stands are on mesic sites, 62%.
- Lowland hardwood stands are typically more diverse with more species groups represented than lowland softwood stands.

SUMMARY

- There are about 6.6 billion cubic feet of growing stock volume in lowland forest types. This is roughly equally distributed between softwood and hardwood types.
- Lowland forest types have about 1,300 cubic feet per acre of growing stock timber. Lowland hardwoods have about 16.4 cords per acre and lowland softwoods have 17.7 cords, on average.
- Net annual growth is 137.1 million cubic feet per year on all lowland forests. Lowland hardwoods are growing 89.7 million cubic feet or 35.3 cubic feet per acre per year. Softwood forests are growing 47.4 million cubic feet or 20.1 cubic feet per acre per year.

SUMMARY

- Annual removals from lowland forests are 33.2 million cubic feet per year. Removals from lowland hardwoods forests are 24.8 million cubic feet or 9.8 cubic feet per acre per year. Removals from lowland softwood forests are 8.4 million cubic feet or 3.6 cubic feet per acre per year.
- Growth-removals ratios are 3.6 for lowland hardwood forests and 5.6 for lowland softwood forests.
- Net growth in excess of removals are 64.9 million cubic feet annually for lowland hardwoods and 89 million cubic feet annually for lowland softwoods.
- There are 218 million green tons of biomass in boles and tops in lowland forests. Lowland hardwood stands have 48.6 green tons per acre. Softwood stands have 40.4 green tons per acre.



Questions?