

Forester Perceptions of Deer Depredation On the Forests of Michigan

Michigan Society of American Foresters

**Prepared by Bill Cook
January 2008**



Forester Perceptions of Deer Depredation On the Forests of Michigan

By Bill Cook, Michigan Society of American Foresters

Abstract: *In an effort to better understand the impacts of deer browsing on forest ecosystems, the Michigan Society of American Foresters (MSAF) distributed a survey tool to assess the perceptions of professional foresters regarding deer depredation within the state. MSAF foresters strongly believe that deer depredation is a significant problem across the forests of the state. However, they recognize that impacts are non-uniform within any particular landscape.*

Introduction

Deer impacts on forested ecosystems have been a topic of debate for at least 50 years (*Michigan Natural Resources Council, 1960*). Ecosystem impacts of deer in forested landscapes have been a contentious issue for decades. Comprehensive assessments covering the entire 19 million acre Michigan forest are lacking, contributing to uncertainty and a policy quagmire. A considerable amount of place-specific research exists (e.g. *Alverson & Waller, 1997; Case & McCullough, 1987, Frelich & Lorimer, 1985, McCullough, 1983*). A large body of research exists for states and regions outside Michigan that has relevance to Michigan ecosystems (e.g. *Latham, et al., 2005; Cote, et al., 2003; deCalesta, 1994; Healy, et al., 1997; Tilghman, 1989*). Much of this research demonstrates long-term negative impacts in particular forest types, forest conditions, geographical areas, affected ecological processes, taxonomic groups, etc.

The Michigan Society of American Foresters (MSAF) et al.¹ held a conference on the topic in June 2005 to highlight recent research on the topic. One of the outcomes from that conference was a perceived need for more and better data about the impacts of deer on Michigan forests. To partially address this need, a survey was developed to assess the *perception* of Michigan foresters regarding deer depredation.

The survey results clearly showed that Michigan foresters believe there is a significant deer depredation problem across the state. They believe impacts vary in time, space, with tree species, and by forest type. These perceptions represent the experience of professional foresters with, collectively, about 400 years of time in the forest over the past five years (2003-2007). Qualitatively, 182 foresters provided written statements which were parsed into 10 categories, resulting in 340 topical comments

While forest-wide assessments are lacking, 251 Michigan foresters have responded to conditions in 69 counties, representing all regions of the state. These perceptions do not reflect formal ecological field research, but they reflect the sort of trained observation that may be valuable in better understanding the conditions of Michigan's forests.

1. Conference co-sponsors were Besse Forest Products, Grossman Forestry Company, The Forestland Group, Michigan Association of Timbermen, MeadWestvaco (now NewPage, Inc. and Plum Creek Timber), and Weyerhaeuser.

Cover photo: Deer enclosure the MSU U.P. Tree Improvement Center near Escanaba. Cedar seedlings were planted in the open, in tree tubes, and within an enclosure fence.

The Survey Tool

The MSAF constructed, reviewed, and beta-tested the survey tool. Permission was received to use the MSAF member address list. The survey and a cover letter were mailed to all MSAF members in May 2007 and followed-up a week later with a reminder card. The complete survey is in Appendix 1. Surveys were mailed to 453 foresters, with 251 returned surveys (55%). The survey included 22 questions; 17 questions about perceptions and observations and 5 questions about employment and experience. Question types included yes/no/maybe, sliding scales, and check-offs.

Results

The responses from foresters clearly indicate that, in their professional opinions, negative ecological impacts of deer depredation are common across wide portions of Michigan's forests. While this survey assessed the *perspective* of foresters regarding deer depredation, the collective experience of foresters is extensive. Recorded responses to each survey question can be found in Appendix 2. Highlights include:

- The vast majority of foresters see deer impacts as common and as a problem. 13 respondents (5%) do *not* believe that deer have had a significant negative effect on forests. More than half could show someone deer damage in the field.
- 174 respondents (69%) report observing significant negative impacts for at least 10 years. Severe impacts on at least a portion of service areas, on a scale of 1 to 10, were rated an average of 7.0 by 215 foresters (86%).
- 40% of respondents have observed significant deer depredation across at least half their service area.
- With the survey assessing *perspective*, the pool of experience among foresters is extensive and covers at least two decades. Two-thirds of foresters report 20+ years of experience. 43% spend at least 40% of their time in the field.
- Foresters clearly recognize that the severity of deer impacts vary with time, space, tree species, and forest type.
- Over 2/3 of foresters see deer damage as patchy or with clear geographical trends. Most foresters do *not* see deer damage as uniformly widespread.
- Over 3/4 of observations include browsed tree seedlings, lack of expected regeneration, and/or an abundance of deer sign.
- Most affected forest types reported were northern hardwoods, swamp conifers (cedar in particular), and mixed upland hardwoods (especially oaks). When asked which forest types are *most threatened*, northern hardwoods was the most cited (39% of responses), followed by swamp conifers and mixed upland hardwoods. Sugar maple, cedar, red oaks, and red maple are the species most reported as experiencing more deer depredation than other species.
- Regarding trends in deer impact perspectives; 70% believe impacts have increased or stayed the same over the past 10 years and that impacts are likely to increase or stay the same over the next 10 years.
- All forest ownerships were observed with deer damage.
- 70% of foresters report hunting deer over the past 5 years. This is a much higher percentage than for the Michigan population (~8%).

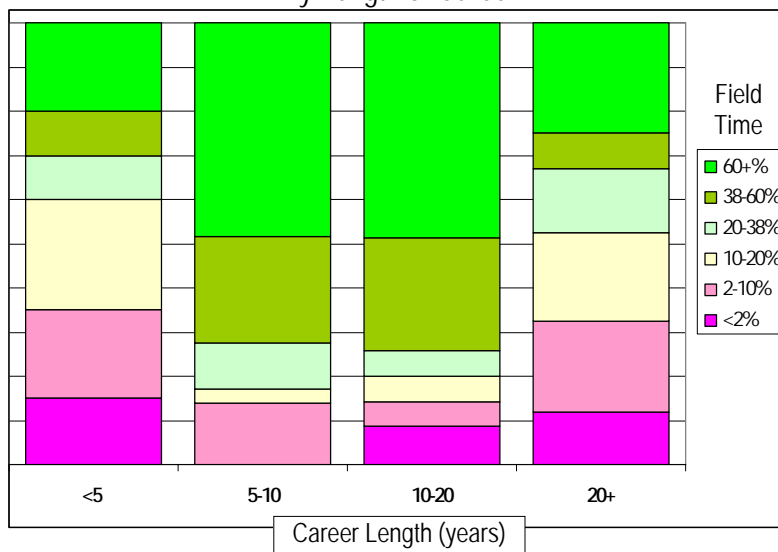
Nearly two-thirds (62%) of foresters were employed as consultants, by industry, or by state government. Most of the remaining foresters were retired, or employed by colleges/universities, the federal government, and conservation districts. About half the foresters (53%) engage in general forestry work, forest management, and/or timber harvesting.

Forester Regions of Experience		Residence of Foresters		
	Count	Pct.	Count	Pct.
Western U.P.	97	39.6	116	25.6
Eastern U.P.	77	31.4	106	23.4
Northern L.P.	97	39.6	108	23.8
Southern L.P.	45	18.3	123	27.2
	245*		453	

* 245 respondents with 316 responses, 245 was the divisor for the percentages.

Geographically, foresters reported experience as follows; 40% in the western U.P., 40% in the northern L.P., 31% in the eastern U.P., and 18% in the southern L.P. Using the MSAF mailing addresses as locations; forester distribution was 26% in the western U.P., 24% in the northern L.P., 23% in the eastern U.P. and 27% in the southern U.P. Of course, foresters can work in different regions throughout their career.

Percentage of Time Foresters Spend in the Field
By Length of Career



To help assess credibility to forester perceptions, the length of career and time in the field was determined. Currently, two-thirds of foresters have been in their careers 20+ years and 43% spend at least 38% of their time in the field (31% spend 60%+ of their time in the field). Forty foresters had at least 20 years of experience and spend at least 60% of their time in the field. Of these 40 foresters, 36 report 10+ years of significant deer damage and 25 report 25-75% of their service area is affected.

Using the mid-points of career length and weeks experience categories, foresters report a career total of about 4000 years of experience, with 369 years of field experience over the past five years. Of special note, considering the issue of deer, is that 72% of foresters have hunted deer in the past five years. Michigan issues about 750,000 deer hunting licenses each year, representing roughly 10% of citizens over the age of 18 years.

Over 3/4 of responses show deer damage is evaluated by foresters using observations of browsed tree seedlings, lack of expected regeneration, and an abundance of deer sign (including deer sightings). 85 percent of foresters have observed a "lack of expected regeneration" in forest environments. Lack of regeneration is an observation that most non-foresters might fail to observe, as they likely lack the ecological knowledge and experience of trained foresters. When asked specifically about a lack of

regeneration following silvicultural treatments designed to encourage regeneration, forester responses averaged 3.2 on a scale of 1 to 5 (5=great deal of failure).

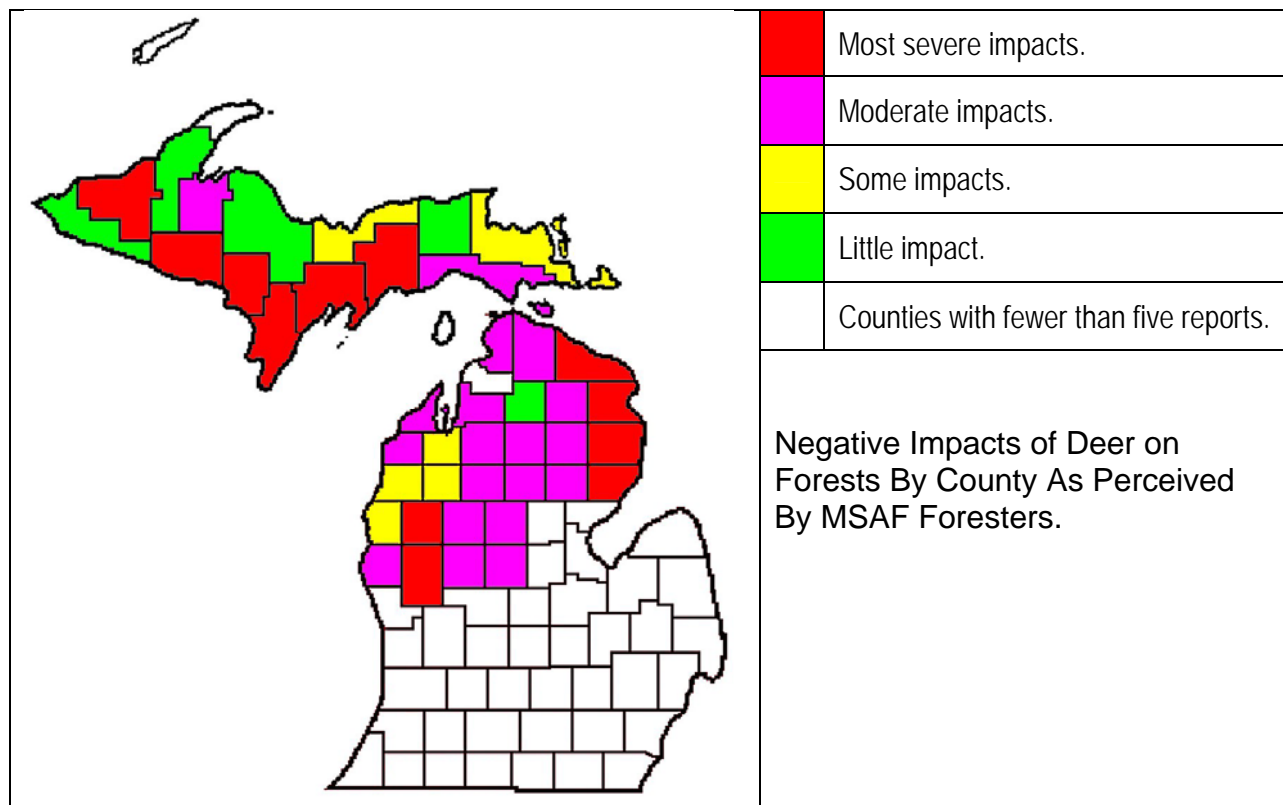
Regional Focus of Forester Responses		
Region	Region of Experience	Rate from 251 Survey Returns
Western U.P.	97	83.6
Eastern U.P.	77	72.6
Northern L.P.	97	89.8
Southern L.P.	45	36.6
Total	316	

Note: Some foresters indicated familiarity with more than one region.

In an attempt to identify counties where foresters believe deer depredation is particularly severe, both the number of counties and the number of responding foresters were considered. Using the percentage of “hits” received by each county and the percentage of foresters residing within a county, a value was determined by subtracting the percent foresters from the percent “hits”. Counties with a difference of

1.0+ were considered as having severe impacts; 0 to 0.9 with moderate impacts, -0.9 to 0 with some impacts, and less than -0.9 as having little or no impact. 41 counties have fewer than five responses and were not included in the calculations. Most of the excluded counties were located in the southern Lower Peninsula but should not be considered as counties with little or no impact. In fact, local studies and studies of similar habitat in other states suggest some of these southern counties may, indeed, have severe deer depredation issues in forests. The response rate from the southern counties was lower than that for the other regions of Michigan. This may, in part, account for the lack of “hits” on southern counties.

Although the southern L.P. received about half the number of responses from foresters, the perspectives were similar to those of other regions.



Regional Response Percentages to Selected Survey Questions.						
Question	Response	WUP	EUP	NLP	SLP	Statewide
Seen/aware of excessive browse damage?	yes	95.8	96.1	93.8	88.9	93.2
How long significant damage occurred?	10+ years	73.2	74.0	69.1	75.6	69.3
Significant negative effects on Michigan forests?	yes	89.7	90.8	84.2	80.0	86.7
Percent of service area with significant damage?	50%+	36.2	36.0	45.3	57.6	39.8
Degree of spatial variation in damage?	non-uniform	76.0	79.7	65.3	45.0	68.8
Could show specific sites?	yes	61.7	62.7	61.5	51.2	59.4
Trend over past 10 yrs?	incr. damage	35.5	40.3	27.5	48.8	34.6
Trend for next 10 years?	incr. damage	32.3	32.9	27.2	25.6	32.1
Hunted in the past five years?	yes	73.7	75.0	69.1	63.6	71.6

The final question of the survey presented an opportunity for foresters to add commentary about deer populations and forests. A total of 182 foresters wrote comments (see Appendix 3). Many of the comments consisted of more than one topic. Ten general categories of comment were identified and each comment was scored accordingly, resulting in 340 topical statements. Foresters are concerned about what they perceive as negative impacts of deer on forested ecosystems. Most of the comments supported the viewpoints of the quantitative responses. Some comments were clarifications of particular questions.

Foresters are concerned about the “politics” of resource management and the lack of science-based decision factors. Policy comments recommended lower deer populations (especially does) and adjusting hunting regulations. They recognize the need for more and better outreach programs, mostly to particular publics (e.g. hunters) but also to resource managers.

Comments about hunting concentrated on efforts to reduce deer herd size and re-establish more appropriate age-sex ratios. Comments were made about altering various seasons, special hunts, mandatory deer registration, permit changes, etc.

Geographical references commonly included the southern U.P., TB zone, hunt clubs, urban/farm interfaces, and the Lake Superior snow belt. Comments suggest that foresters are alert to trends in the landscape and ownership (management).

Regeneration comments often mentioned species, forest types, and deer yards that were more specifically evaluated in other survey questions. Many comments were about lack of regeneration in a variety of situations, often attributed to deer. Foresters

Topical Groups From Forester Comments	Count
DNR / policy comments	54
Geographical, ownership, spatial reference	51
Tree regeneration	50
Deer population dynamics	39
Ecological concerns	39
Education / perceptions	33
Hunting recommendations	30
Diseases (TB, CWD, Lyme, et al.)	8
Invasives	5
Other	31
Total	340
<i>Note: 182 foresters provided written comments. 97 statements contained more than one topic.</i>	

are concerned about landscape contexts, alternate stable states, wildlife habitat and populations, endangered species, and other ecosystem functions potentially altered by deer overabundance.

Conclusions

Statewide vegetation surveys designed to fully provide a science-based assessment of the effects of deer depredation can be expensive and time-consuming. Michigan is not likely to engage this level of effort in the near future. As a result, deer management policy must be based on alternative factors. Currently, policy is made by the Michigan Natural Resources Commission based on recommendations from the Michigan DNR and public interest groups, especially hunting groups. The Michigan DNR employs science-based tools to estimate the size of Michigan's deer herd. However, the assessment the herd's ecological impact on forest ecosystems and other vegetation types is lacking or left to subjective input from agency personnel and interested publics.

Lacking effective vegetation assessment tools, ecological impacts by deer can be estimated only by extrapolation of existing research, professional opinion, and input from affected publics. This forester perspective survey may help fill the void by providing a measure of professional opinion from those with extensive training and experience with forest ecosystems. The overwhelming opinion among Michigan foresters is that deer depredation is a serious issue in many areas of the state, has been a serious issue for a long time, and will not likely change within the next decade. How policy makers value this collective professional opinion remains to be seen. However, for those willing to make an effort to change policy so that deer might resume a better balance with their habitats, this survey may have some importance.

References

Alverson W.S. and D.M. Waller. 1997. Deer populations and the widespread failure of hemlock regeneration in northern forests. pp. 280-297 in W. McShea and J. Rappole, eds., *The Science of Overabundance: Deer ecology and population management*, Smithsonian Inst. Press, Washington, DC.

Benson, D.E., R. Shelton, D.W. Steinbach. 1999. *Wildlife Stewardship and Recreation on Private Lands*. Texas A&M University Press. J.F. Winn ed.

Case, D.J. and D.R. McCullough. 1987. The white-tailed deer of North Manitou Island. *Hilgardia* 55 (9): 1-57.

Cote S.D., T.P. Rooney, J.P. Tremblay, C. Dussault & D.M. Waller. 2004. Ecological impacts of deer overabundance. *Annual Review of Ecology Evolution and Systematics* 35: 113-147.

deCalesta, D.S. 1994. Impact of white-tailed deer on songbirds within managed forest in Pennsylvania. *J. Wildlife Mngt.* 58: 771-718.

Forests and Whitetails: Striving for Balance. 2005. A conference of the Michigan Society of American Foresters, Little Bear Conference Center, St. Ignace, Michigan. Proceedings edited by Bill Cook available at <http://michigansaf.org>.

Frelich, L.E. and C.G. Lorimer. 1985. Current and predicted long-term effects of deer browsing in Michigan, USA. *Biological Conservation* 34: 99-120.

Healy, W.M., D.S. deCalesta, and S.B. Stout. 1997. A research perspective on white-tailed deer overabundance in the northeastern United States. *Wildlife Society Bulletin* 25: 259-263.

Latham, R.E., J. Beyea, M. Brenner, C.A. Dunn, M.A. Fajvan, R.R. Freed, M. Grund, S.B. Horsely, A.F. Rhoads, and B.P. Shissler. 2005. *Managing white-tailed deer in forest habitat from an ecosystem perspective: Pennsylvania Case Study*. Report by the Deer Management Forum for Audubon Pennsylvania and Pennsylvania Habitat Alliance, Harrisburg. xix + 340 pp.

McCullough, D.R. 1983. Rate of increase of white-tailed deer on the George Reserve: A response. *J. Wildlife Mngt.* 47: 1248-1250.

Michigan Natural Resources Council. 1960. *Relationship of timber and game in forest land management*. Annual meeting of the Michigan Natural Resources Council, Civic Center, Lansing, Michigan. 63 pp.

Tilghman, N.G. 1989. Impacts of white-tailed deer on forest regeneration in northwestern Pennsylvania. *J. Wildlife Mngt.* 53: 524-532.

SURVEY OF MICHIGAN DEER IMPACTS: PERCEPTIONS AMONG FORESTERS

This survey is a follow-up of the Michigan Society of American Foresters Conference entitled “Forests and Whitetails: Striving for Balance,” held in June 2005. One of the conference evaluation suggestions was to assess deer impacts across the state. A good way to begin this process is to gather input on perceptions and experiences from those who work in the habitats where deer live. Please take some time to think about the answers to these questions. Hopefully, the results will help all of us see these deer issues with a bit more clarity.

Perceptions of deer impacts

1. In your experience, as an overall impression, have you seen or been aware of excessive deer browsing on tree regeneration and/or understory flora?

Yes No Maybe (please circle one)

2. What are some of the signs, or factors, that you use to judge the intensity of deer impacts when in the field?

(please check all that apply)

- Browsed tree seedlings?
- Lack of expected tree regeneration?
- Abundance of deer sign?
- Lack of wildflower populations?
- Observations of others?
- Not sure
- _____

3. For how many years have you observed significant deer damage in forested areas?

0 1 2 3 4 5 6 7 8 9 10+ (please circle only one)

4. Do you believe deer have had significant negative impacts on forest regeneration, forest composition, and/or ecological dynamics in Michigan forests?

Yes No Maybe (please circle one)

5. If you answered “yes” to the previous question, how severely impacted has tree regeneration or understory vegetation been in your service area?

1 2 3 4 5 6 7 8 9 10 (please circle one)
1=low severity and 10=high severity

6. Across your service area, what percentage of the forest area would you say has significant deer browse problems?

Little/none 5-25% 25-50% 50-75% 75%+ (please circle one)

7. Of the counties or administrative units you are familiar with, in which have you seen the most deer damage in forested areas?

- Western U.P.
- Eastern U.P.
- Northern L.P.
- Southern L.P.
- Little/no damage

Counties or administrative units where you have seen overbrowsing.

8. Across your service area, to what degree of spatial variation in deer excessive browsing have you observed?

(please check one that best applies)

- Fairly uniform throughout your area
- Clear trend from one side to another
- Patchy distribution on a coarse scale
- Patchy distribution on a fine scale
- Little or no damage
- _____

9. In which broad forest type group would you say has experienced significant overbrowsing?

(check as many as might apply)

- | | |
|---|---|
| <input type="checkbox"/> Northern Hardwoods | <input type="checkbox"/> Upland Conifers / Pine |
| <input type="checkbox"/> Oak-Hickory | <input type="checkbox"/> Swamp Conifers |
| <input type="checkbox"/> Mixed Upland Hardwoods | <input type="checkbox"/> None with significant damage |
| <input type="checkbox"/> Aspen | <input type="checkbox"/> _____ |
| <input type="checkbox"/> Swamp Hardwoods | <input type="checkbox"/> _____ |

10. Are there certain tree species or genera experiencing more deer depredation than others in your service area and experience? If so, what are they?

(check as many as might apply)

- | | | |
|--------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> Sugar Maple | <input type="checkbox"/> Balsam Fir | <input type="checkbox"/> White Pine |
| <input type="checkbox"/> Red Maple | <input type="checkbox"/> Red Oaks | <input type="checkbox"/> Red Pine |
| <input type="checkbox"/> Cedar | <input type="checkbox"/> White Oaks | <input type="checkbox"/> Jack Pine |
| <input type="checkbox"/> Aspen | <input type="checkbox"/> Paper Birch | <input type="checkbox"/> Basswood |
| <input type="checkbox"/> Hemlock | <input type="checkbox"/> Yellow Birch | <input type="checkbox"/> Cherries |
| <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> No serious problems |

11. In which broad forest type group would you say is most threatened by overbrowsing?

(please check only one)

- | | |
|---|---|
| <input type="checkbox"/> Northern Hardwoods | <input type="checkbox"/> Upland Conifers / Pine |
| <input type="checkbox"/> Oak-Hickory | <input type="checkbox"/> Swamp Conifers |
| <input type="checkbox"/> Mixed Upland Hardwoods | <input type="checkbox"/> None, significantly |
| <input type="checkbox"/> Aspen | <input type="checkbox"/> _____ |
| <input type="checkbox"/> Swamp Hardwoods | <input type="checkbox"/> _____ |

12. Which ownerships seem to have significant deer damage? (check all that apply)

- State forest lands
- State park lands
- State fish & wildlife areas
- Federal forest lands
- National park lands
- Forest industry lands
- County, township or city parklands

- Private non-industrial forest lands
- School forest lands
- Tribal forest lands
- Urban/residential forests
- Unsure
- None, significantly
- _____

13. How much tree regeneration failure have you encountered where silvicultural treatments *should have* encouraged such regeneration?

1 = very little failure to 5 = a great deal of failure

1 2 3 4 5 (please circle one)

14. Would you be able to show specific sites where regeneration has failed because of deer browsing impacts?

- Yes
- No
- Maybe

15. Over the past 10 years, do you feel deer depredation has . . .

Increased Decreased Stayed the Same Not Sure Not a problem (please circle one)

16. How would you predict trends in deer damage over the next 10 years?

Increase Decrease Stay the Same Not Sure Not a problem (please circle one)

17. Have you hunted deer in the past 5 years?

- Yes
- No

Background information

18. How would you best describe your employment category?

(please check only one)

- Forest industry/TIMO/REIT
- Forest Consultancy
- Conservation District
- State Government
- Federal Government
- College / University
- Non-Government / Non-Profit
- Retired
- _____

19. What sort of forestry or forest-related work do you do? (check all that apply)

- General forest management
- Tree planting and/or other regeneration activities

- Forest management plan writing
- Wildlife management
- Wildlife management plan writing
- Christmas tree management
- Nursery management

- Timber procurement
- Timber harvesting
- Non-timber harvesting
- Education / outreach
- _____

20. In what region or county(ies) of the state have you had most of your professional experience?

- Western U.P.
- Eastern U.P.
- Northern L.P.
- Southern L.P.

Counties where you have experience.

21. How long have you been practicing forestry in a professional capacity?

< 5 years 5-10 years 10-20 years 20+ years (please circle one)

22. Within the past five years, how many weeks would you estimate that you have spent in the field, professionally?

(please check only one)

- < 5 weeks
- 5-25 weeks (2-10% of your time)
- 25-50 weeks (10-20% of your time)
- 50-100 weeks (20-38% of your time)
- 100-150 weeks (38-60% of your time)
- 150+ (60%+ of your time)

23. What other concerns or interests do you have regarding deer populations and forest management? Feel free to use additional pages if necessary.

Please return completed survey to: Ingrid Klotz, 6005 J Road, Escanaba, MI 49829

Appendix Two - Simple response calculations using the total number of responses

	Response	Count	Pct.
1. In your experience, as an overall impression, have you seen or been aware of <i>excessive</i> deer browsing on tree regeneration and/or understory flora?	Yes	233	93.2
	No	9	3.6
	Maybe	8	3.2
	n =	250	

	Response	Count	Pct.
2. What are some of the signs, or factors, that you use to judge the intensity of deer impacts when in the field? (please check all that apply) <i>Note: most of the "other" responses further described the standard response.</i>	Browsed tree seedlings?	243	29.5
	Lack of expected tree regeneration?	214	26.0
	Abundance of deer sign?	181	22.0
	Lack of wildflower populations?	89	10.8
	Observations of others?	45	5.5
	Not sure?	1	0.1
	Other?	51	6.2
	n =	824	

	Response	Count	Pct.
3. For how many years have you observed significant deer damage in forested areas?	1-9 years	77	33.7
	10+ years	174	69.3
	n =	251	
<i>Note: The average for the 1-9 year response was 4.6 years.</i>			

	Response	Count	Pct.
4. Do you believe deer have had significant negative impacts on forest regeneration, forest composition, and/or ecological dynamics in Michigan forests?	Yes	216	86.7
	No	13	5.2
	Maybe	20	8.0
	n =	249	

	Response	Count	Avg.
5. If you answered "yes" to the previous question, how severely impacted has tree regeneration or understory vegetation been in your service area?	Scale 1 – 10		
	1 = little	215	7.0
	10 = severe		
<i>Note: This question was reported as somewhat confusing, as some respondents indicated a "severe" ranking for some forest types and a low impact ranking for other forest types.</i>			

	Response	Count	Pct.
6. Across your service area, what percentage of the forest area would you say has significant deer browse problems?	little/none	11	4.6
	5 – 25%	66	27.4
	25 – 50%	68	28.2
	50 – 75%	70	29.0
	75%+	26	10.8
	n =	241	
<i>Note: 40% of foresters reported impacts across 50% or more of their service area. Over 2/3 of foresters reported impacts across 25% or more of their service area. Few foresters reported little area affected.</i>			

	Response	Count	Pct.
7. Of the counties or administrative units you are familiar with, in which have you seen the most deer damage in forested areas? <i>Note: Foresters checked more than one region. Among the 453 foresters; 116 (26%) in the WUP, 106 (23%) in the EUP, 108 (24%) in the NLP, and 123 (27%) in the SLP. SLP foresters seemed to respond at a lower rate than foresters in other regions.</i>	Western U.P.	83	28.6
	Eastern U.P.	72	24.8
	Northern L.P.	84	29.0
	Southern L.P.	40	13.8
	Little/no damage	11	3.8
	n =	290	
	#foresters listing counties	177	

	Response	Count	Pct.
8. Across your service area, to what degree of spatial variation in deer excessive browsing have you observed?	Patchy distribution on a coarse scale	90	36.0
	Fairly uniform throughout your area	60	24.0
	Clear trend from one side to another	48	19.2
	Patchy distribution on a fine scale	34	13.6
	Little or no damage	10	4.0
	Other	8	3.2
	n =	250	

	Response	Count	Pct.
9. In which broad forest type group would you say has experienced significant overbrowsing? (check as many as might apply) <i>Note: Many foresters listed "cedar" as either a part of "swamp conifers" or as a separate forest type.</i>	Northern Hardwoods	188	26.6
	Swamp Conifers	132	18.7
	Mixed Upland Hardwoods	116	16.4
	Aspen	78	11.0
	Swamp Hardwoods	64	9.0
	Oak-Hickory	63	8.9
	Upland Conifers / Pine	30	4.2
	None with significant damage	28	4.0
	Other	8	1.1
		n =	707

	Response	Count	Pct.	Response	Count	Pct.
10. Are there certain tree species or genera experiencing more deer depredation than others in your service area and experience? If so, what are they? (check as many as might apply)	sugar maple	176	17.2	yellow birch	43	4.2
	cedar	169	16.5	basswood	21	2.1
	red oaks	115	11.2	red pine	19	1.9
	red maple	111	10.9	cherries	19	1.9
	hemlock	89	8.7	balsam fir	13	1.3
	aspen	82	8.0	jack pine	8	0.8
	white oaks	49	4.8	other (enter below)	8	0.8
	paper birch	47	4.6	no serious problems	8	0.8
	white pine	46	4.5	n=	1023	

	Response	Count	Pct.
11. In which broad forest type group would you say is <i>most</i> threatened by overbrowsing? (please check only one) <i>Note: Many forester checked more than one forest type. Also, many foresters listed "cedar" as either a part of "swamp conifers" or as a separate forest type.</i>	N.hardwoods	127	39.4
	swamp conifers	81	25.2
	mixed upland hdwds	39	12.1
	oak-hickory	24	7.5
	none, significantly	15	4.7
	aspen	12	3.7
	swamp hardwoods	9	2.8
	other	8	2.5
	upland conifer/pine	7	2.2
	n=	322	

	Response	Count	Pct.
12. Which ownerships seem to have significant deer damage? (check all that apply) <i>Note: Foresters were employed in the following groups: 27.3% consultants or conservation district foresters 22.0% industry employed 16.7% state employed 6.1% federal employed</i>	private non-industrial	174	18.4
	state forest	150	15.9
	forest industry	114	12.1
	federal forest	107	11.3
	county, township, etc.	71	7.5
	state parks	59	6.3
	urban/residential	54	5.7
	school forest	53	5.6
	national park	44	4.7
	state fish & wildlife	43	4.6
	tribal forest	36	3.8
	unsure	18	1.9
	none	11	1.2
	other	10	1.1
	n =	944	

	Count	Avg.
13. How much tree regeneration failure have you encountered where silvicultural treatments <i>should have</i> encouraged such regeneration? 1 = very little failure to 5 = a great deal of failure	235	3.2

	Response	Count	Pct.
14. Would you be able to show specific sites where regeneration has failed because of deer browsing impacts?	yes	142	59.4
	no	33	13.8
	maybe	64	26.8
	n =	239	

	Response	Count	Pct.
15. Over the past 10 years, do you feel deer depredation has . . .	increased	82	34.6
	decreased	37	15.6
	stayed the same	85	35.9
	not sure	27	11.4
	not a problem	6	2.5
n =	237		

	Response	Count	Pct.
16. How would you predict trends in deer damage over the next 10 years?	increase	77	32.1
	decrease	17	7.1
	stay the same	104	43.3
	not sure	38	15.8
	not a problem	4	1.7
	n =	240	

	Response	Count	Pct.
17. Have you hunted deer in the past 5 years?	yes	174	71.6
	no	69	28.4
	n =	243	

	Response	Count	Pct.
18. How would you best describe your employment category? (please check only one) <i>Note: Nearly half the foresters work in the private sector.</i>	consultant	58	23.7
	industry	54	22.0
	state government	41	16.7
	retired	28	11.4
	college/university	26	10.6
	federal government	15	6.1
	conservation district	9	3.7
	other	9	3.7
	non-government/non-profit	5	2.0
		n=	245

	Response	Count	Pct.
19. What sort of forestry or forest-related work do you do? (check all that apply)	general forestry	192	26.6
	forest management	104	14.4
	timber harvesting	90	12.5
	tree planting	70	9.7
	education/outreach	70	9.7
	wildlife management	61	8.4
	timber procurement	44	6.1
	wildlife mgmt. plan writing	39	5.4
	other (enter below)	26	3.6
	non-timber harvesting	13	1.8
	Christmas tree	10	1.4
	nursery management	3	0.4
		n=	722

	Response	Count	Pct.
20. In what region or county(ies) of the state have you had most of your professional experience?	Western U.P.	97	30.7
	Eastern U.P.	77	24.4
	Northern L.P.	97	30.7
	Southern L.P.	45	14.2
	List Given	156	
	n =	316	

	Response	Count	Pct.
21. How long have you been practicing forestry in a professional capacity?	<5 years	19	7.8
	5-10 years	29	11.8
	10-20 years	35	14.3
	20+ years	162	66.1
<i>Note: the response to this question indicates hundreds of years of collective experience over at least two decades.</i>		n=	245

	Response	Count	Pct.
22. Within the past five years, how many weeks would you estimate that you have spent in the field, professionally? (please check only one)	<5 weeks (<2%)	25	10.2
	5-25 weeks (2-10%)	43	17.6
	25-50 weeks (10-20%)	40	16.4
	50-100 weeks (20-38%)	30	12.3
	100-15- weeks (38-60%)	31	12.7
	150+ weeks (60%+)	75	30.7
<i>Note: the response indicates that over half the foresters spent at least 50-100 weeks in the field over the past five years.</i>		n=	244

Appendix Three – Written Comments

Comments are copied verbatim except where authorship may be determined. Deletions are indicated in [brackets]. Signed statements have had names removed.

- I feel we likely have areas within Michigan that have reached "Altered Stable States", as explained at the St. Ignace conference. But due to past disturbance (timbering and slash fire era) on the landscape it's going to be almost impossible to recover and restore these sites to functioning ecosystems.
- Large tracts of private lands control their own deer populations.
- The continuance: deer baiting-it should be made illegal. Buck doe ratios should be better balanced.
- Deer in conjunction with non-native/invasive will completely destroy forest floor and understory/regeneration of canopy. Especially in the presence of buckthorn/honeysuckle. I have two very good examples of this situation in Midland.
- Probably the biggest issue is feeding, whether it is in urban or rural areas. The end result of this practice is over population in ecosystems not able to support the sustained over population of deer/other wildlife. So, one answer is eliminate artificial feeding. Politically, this is probably not going to happen for many reasons.
- In the past 6 months we have been performing forest inventories in Northern hardwoods and recording regeneration on every point. With this information we have noticed the change in overstory comp and understory. One, sugar maple overstory is changing to beech and ironwood. These inventories have captured what we have been seeing for a long time. Over populated. Regeneration of cedar 2. Forest fragmentation and loss of deer habitat range 3. Introduction of CWD (chronic wasting disease) 4. Excessive increase in deer license will detour deer hunting as a management tool 5. More deer in urban areas 6. More deer in farm areas for longer seasons 7. Lower deer numbers on state & national forest lands 8. The forested lands.
- MSAF needs to strongly recommend to DNR to keep deer numbers low for healthy forests, by harvesting antlerless deer in significant numbers. None of this trophy buck crap!
- We need funds to herbicide sedges & grasses underneath Northern hardwood stands. Needs to be accomplished before regeneration can occur. Deer (over population) has been a major problem in especially northern hardwood management.
- In spite of clear evidence of deer damage to forest reproduction and ecosystems, hunters seem to see fewer deer, and they and the general public find it hard to accept that there may be an over-abundance. So, while increasing deer harvest is the only reasonable/practical solution, the hunters can't be convinced.
- Lack of program(s) to reduce deer numbers, i.e. hunters not harvesting does (vs. bucks) because in their minds it's not "the right thing to do"!
- Questions 5-6 Depending on where you are in the State. Worked in Western UP [snip] & had tons of deer damage. Now I'm in the [west central Lower Peninsula] area & don't notice any.
- Deer yards and areas where supplemental feeding is going on have the worst problems. Damage is down since deer numbers are down. Southern areas with less now have more damage because of more deer.
- I'm concerned that the poaching of wolves will lead to increasing deer predation of seedlings. A healthy wolf population should help limit deer density. We need to support wolf recovery projects, while urging deer hunting as a management tool.
- More efforts to educate all levels of the public are needed, especially concerning the ecology of various tree species and communities/forest types. Foresters need to be more pro-active with all organizations- schools, sportsman groups, conservancies, etc. More efforts are needed through the media-by individual foresters and not just through reliance on SAF efforts.
- I am afraid that politics are starting to control deer numbers in my area, not carrying capacity.
- I believe deer feeding and baiting is causing a significant increase in deer populations.
- In the past couple of years I seem to be seeing some improved regeneration at least in some areas. Impact on canopy layers and dependent species. Changes on ground cover density and seed germination also changes in species composition, invasives. Concerned about proliferation of food plots in forest stands, i.e. lost of productive forest product acres, encourages deer to forage in forest. Impact of parcelization as it affects deer population & forest management options.
- The overall deer herd population and its affects on timber growth. How the deer herd population is managed. Reports of "farmers" gut shooting deer on their property when issued a large number of permits for crop damage.
- In general we have seen deer browse problems decrease in Menominee/Delta counties. Species such as white pine are more commonly observed regenerating successfully versus 10 years ago.
- Lack of understory shrubs, saplings and its affect on song birds. Already deteriorated wood lots not being able to recover.
- This problem is largely in the hands of State wildlife biologists who determine harvest levels and antlerless permits. They face enormous social pressures from hunters who want to see and harvest more deer.

Somehow, the hunting community must be made to see the irresponsibility of always wanting more and more deer!

- I work with a broad range of DNR staff-my perceptions are based on their reporting, including pictures, on site reviews, anecdotal discussions. DNR FMFM & Wildlife Division are working on ways to evaluate deer/moose/elk damage etc. There is a subgroup working on a 'risk map'.
- Oak regeneration is nearly non-existent in many oak-hickory woods as well as mixed hardwoods. I believe deer to be a significant factor. Several oaks in tree plantings are heavily browsed, but some do eventually make it past the deer, depending on the site. I believe the deer population needs to be reduced significantly. Several canopy openings created by timber-harvest regenerate to species other than oak, do in part to the lack of advanced oak regeneration from deer browse.
- Certain Northern Hardwood sites normally dominated by hard (sugar) maple are converting to ash and basswood due to heavy winter browsing. Specifically low snowfall areas bordering certain areas near Lake Superior.
- The DMAP tag system that has now been implemented on CFA lands is not conducive to allowing large acreage CFA landholders to encourage deer harvesting on these properties. There needs to be an easier means of distributing and reporting for the tags.
- Rabbits, hares and grouse all cycle over a 10 year period. Is it possible that deer also cycle, but over a much longer period? ALL are herbivores. Most of my work is state/federal but the NIPF is very frustrating because these people do not want lower deer numbers. Their logic is that the trees grew there back when hunting was good. Everything was better back then.
- We can no longer harvest or manage cedar because we cannot regenerate it, even though it is our most abundant species and of high value. The deer browse it to the ground.
- My concern is that so few of the general public has any idea of the great impact deer have on the nature of the forests. We need effective education about the problem. Perhaps every stop on the SAF auto tours along highways in Michigan should have fenced exclosures included.
- Most of our range is in T.B. core management area. Deer populations continue to congregate in agricultural-forest transitions. Forest management planning and silvicultural practices just have to consider the impacts of deer on crops and regeneration. The problem is not new. Anticipate population (deer) behavior and plan accordingly.
- In NE LP damage often related to proximity of farmlands.
- It is virtually impossible to manage upland hardwoods in an uneven-aged system do to excessive browsing. Sprawl is decreasing areas open to hunters yet leaving habitat for deer populations to grow especially when mixed w/agricultural lands. Sprawl is the biggest reason we have a deer population problem and laws limiting/preventing hunting.
- Lack of understanding-knowledge among deer hunters regarding the impact of excessive deer numbers.
- I love to see and hunt deer. In specific pockets/areas there are too many deer. Others (public land) there are too few. How do you fix that???? I love to see lots of deer. Browsing has affected ALL other wildlife species. Habitats-furs & feathers! My concern is mixed-next generation forestland is suffering, but I am a deer hunter.
- Over the years the deer population has been on the increase. Feeding programs were instituted to help deer through hard winters. Now the deer have grown far beyond the carrying capacity. Measures could be taken to reduce the herd. But-hunters have grown accustomed to seeing a lot of deer & don't want less. Deer hunting is a big business in the state. It would be very unpopular to reduce the herd. It's emotion packed. I remember the march on the DNR headquarters in the early 60's when they had a doe season in the U.P. There's no doubt in my mind we have a problem. But what to do....
- The balance has to be made and the forest managers cannot wait for the wildlife managers to make & take a stance. In the southern UP Northern Hardwood regeneration is a critical problem. Also, cedar and hemlock regeneration is critical and will become more so over the years. We need to state the point to the wildlife managers that keeping deer populations in check with the habitat is crucial to the health of the ecosystem. I believe that deer populations not only rest on the wildlife managers to issue enough doe permits, but the forest managers to come too grips with the fact that the harvesting creates the high deer numbers. Numbers have decreased somewhat & regeneration is getting better in some areas with lower deer numbers.
- In the past 9 years [snip] I have been working [snip] in the NE club country. The major problem with deer/forest management is the fact that very intelligent people (doctors, lawyers, CEO's) lose all capacity for logical rational thought when it comes to deer. No matter how convincing the evidence-including exclosures-there can never be enough deer. With too many it is "I only care about now-this year-hell with the future." I spend considerable time hunting & fishing on state & federal land and in most cases regeneration is good.
- Q7 Browse damage is not related to political boundaries. The damage I have observed is related to forest type and surrounding ecosystem
- We need to address this issue in the context of landscape ecosystem management. Certain land type associations were meant to support more deer due to prevalence of early successional habitat due to fire. Post-settlement farming communities on northern hardwood soils have supported large deer herds in areas where natural disturbances would not have supported them.

- Some agriculture/northern hardwood interface areas may need to be written off. The focus needs to be on large scale northern hardwood and swamp conifer communities. Our maintenance of aspen in many of these areas has further complicated the problem.
- NIPFs need to know how to manage timber in areas of heavy deer populations. In most cases proper management can adequately over-come deer browse.
 - The area I am familiar with has decreased in deer population.
 - Need to harvest more timber from National Forest lands to enhance the economy and wildlife.
 - I feel that the most pressing management issues are in more urbanized areas of the state.
 - DNR unwilling to issue doe permits where needed.
 - When deer (doe) permits were increased in the two counties I work in now, deer damage decreased so I believe hunting plays a big role in controlling deer damage.
 - Beaver flooding of deeryards with no subsequent white cedar regeneration in previously flooded areas. Tuberculosis and under-harvesting in private hunt-club lands between Northeastern Oscoda County and Hubbard Lake. Very sparse regeneration of desirable tree regeneration in this area. Loss of ground hemlock, Canada yew and other primary browse species throughout Northern Michigan.
 - Mild winter's that last several years have allowed deer to move and not yard up like they use to.
 - Northern hardwood regeneration in high deer density areas.
 - This survey is very misleading and poorly constructed!! Deer populations are very dynamic especially in the UP where we have migrations North to South. Severe depredation that occurred in the mid to late 90's may be mis-construed to be still occurring today by this survey. This survey is poorly done and as an SAF member, I likely will not support the results.
 - Eliminate baiting of deer for deer hunting. Categorize CF lands as "Private" rather than "Public" for antlerless use. Change DMA Program to allow an agreed upon number of tags to be purchased "over-the-counter", when the problem area is CF land.
 - Rules set by DNR that do not allow large area control of the deer population. DMAP tags are good for small areas but do not affect a region wide area.
 - Deer are being managed based in Lansing due to "the all mighty deer hunter" opinion not local wildlife biologist, "educated opinion". Big antler management vs. quality forest ecology.
 - There is a place for wolf and cougar populations. Most notable would be Southern UP. The predators tend to wander through. I have seen both species while in the woods, sometimes in low deer density areas.
 - I believe there is a need to harvest more does, especially in the northern regions of Upper Michigan. Southern Upper Michigan already has a doe tag system, however northern UP-should allow 2 bucks of 1 doe & 1 buck.
 - Lack of understanding of deer damage by general public, including hunters.
 - I have done a lot of work in eastern Baraga north of US 41, primarily T49N R31W. Deer populations are low, snows early and deep, no deer most of winter; maple reproduction good to profuse. White cedar reproduction excellent in proper conditions, NO evidence of deer browsing. In Witchlake (Chief Lake area of southwest Marquette County, saplings 3-4' high show evidence of repeated browsing, no seedlings in understory, sedges taking over as ground cover; deer populations are high.
 - I think MDNR wildlife division has set targets for deer numbers which are much too high for the carrying capacity of the land. The only good deer is venison. Question 8--Heavy browsing in winter deer areas (low snow areas). Little to none in high snow areas.
 - DNR doing a fair to good job. Hope deer TB problem is soon over (NE LP is shot out).
 - This past year I have been working with my son [snip]. I have not been in the woods as much as past years. I have dropped out of SAF & MFA but will still do TF inspections & look at friend's woods, Mm own 20A, tree farms, DNR sales, & forest service sales when I was buying wood is where this experience comes from. 35 years as field forester.
 - In the areas I notice the most damage it appears to be a deeryard issue, not a summer range issue.
 - SFI objectives on regeneration-meeting those in an all-aged hardwood forest.
 - Trend is toward less deer hunting, with those who do hunt still not harvesting sufficient does to hold population in check. Result-population out of control. Mild winters also contributing factor. Some form of herd culling-though very unpopular-may be only solution.
 - I work primarily in Menominee County, Michigan and in Marinette County, Wisconsin (which is adjacent to Menominee County). The difference in tree regeneration between one side of the Menominee River and the other is clearly apparent; Marinette County having far more. The difference has mostly to do with the WDNR having the resolve to manage deer scientifically rather than politically.
 - Experimenting with deer hunting regulations, e.g. hunters should be required to harvest a doe, and provide proof of the kill, before they can harvest a buck. Restricting archery season & banning youth hunt in select areas to ascertain whether this would help increase the kill. Requiring every hunter to register the deer they harvest. This will give a much more accurate assessment of the actual harvest.

- Question 14: Oaks & aspen eventually get above browse. Little sugar maple reproduction--turning towards hard maple and beech
- Effects on "natural" ecosystem patterns & processes, as well as forest restoration non-game wildlife conservation
- CWD will solve the deer problem
- Most problem areas of high deer populations seem to be the low snowy areas where yarding occurs. Many problems also have occurred, in my opinion, where artificial feeding has occurred which results in artificially high deer populations which over stresses the carrying capacity of the land.
- Need for quality, science based research & outreach, including social science research as well as ecological & silvicultural. Bill-did you pretest this questionnaire? Sorry but I can't help editing social science instruments.
- My answers were based on the 15 years I spent working [in the U.P.], not the last 17 years [in the L.P.]. Question #22 probably should have been 100-150 weeks, it was for the last 5 years I was at Naubinway. I did not base any answers on the last 17 years because I have been working in [??] country and [??] damage is much than [??] damage around here.
- Small mammals and urban forestry.
- Deer impacts must be reduced! Proper management, continuing research & public outreach to general public and hunters needs to be expanded.
- Primary concern is that with our mild winters and hunter adversity to lowering deer numbers (don't see as many deer etc), that the problem is going to stay at the same level or as I believe, get worse. The whitetail deer hold the trump card in this state-not-sound forest management.
- It is ironic - we "forester & loggers" are directly responsible for the high deer population-by providing ideal food and habitat through proper forest management (both spatially & temporally) deer have proliferated to an absurdly high level - yet we are the only ones complaining about high deer densities! We are experiencing the results of great forest management, with a lack of overall ecosystem management. This problem is ours to suffer, but not ours to fix - only wildlife management policies can bring this situation back to a healthy balance.
- We need tools & products to help control them. Forest management and DNR harvest controls are not doing it.
- Thank you for taking a serious problem, seriously.
- Most areas in the Lake Superior snow belt are not significantly impacted by deer browse. For the most part there is thick regeneration from seedling to large saplings in the northern hardwoods. On [snip] property in NW Delta County the understory is missing. There is 20-25 years of regeneration missing. The last few years, I have seen some seedling survival in the sugar maple, whether they survive to a sapling is another thing.
- Although it appears that deer populations may have decreased some over the past 10 years, serious regeneration problems persist. In some cases because there are still too many deer (S. Central U.P.) and in other cases due to sedge invasion that occurred when deer numbers were higher (S. Marquette, N. Iron counties).
- The most insidious and least recognized impacts are very long-term (going back over 20+ years). These include loss of many understory plants such as Trillium, yew, hazel, blackberry. Aspen regeneration is impossible in certain locations, and white pine has great difficulty.
- Lots more wolf signs.
- Herd is not being managed on a small enough scale. Deer units are much too large to account for large differences in forest types v population numbers.
- Lack of public understanding of deer management, impacts of deer populations on forest ecosystems.
- Need to stop managing deer from a political standpoint. Has turned into an emotional free-for-all. Should be purely science-based, but good-luck on achieving that!
- My wife and I own and operate a [snip] tree farm in [snip] Clare County. We are also avid deer hunters. This tree farm has been in my family since 1951. Over these years I have seen deer population numbers fluctuate. Our farm once had large beds of trilliums along the stream. The high deer numbers in the 1980's destroyed most of them. Currently the deer numbers have been low. Our experienced deer hunters last year saw one deer per two hours of hunting. I am still seeing deer damage in our aspen regeneration and my planting of northern white cedar . I am trying for a balance between the deer and our tree farm.
- Hemlock & yellow birch regeneration is absent. Too many deer in recent years. In my work area, too many "does", to few "bucks".
- Deer populations in the Superior Watershed, except during a short period during the Jan-Mar period, are currently impacting very little winter feed areas since the population is down. No summer range damage anywhere. Deer population in the NLP are down currently so that very little browse damage is evident in areas that I visit. The TB zones are down by 75% from 5 -6 years ago.
- Wolves have significantly altered deer numbers and deer activity over the past three years. Am seeing much less deer browsing impacts in western U.P.
- Deer impacts are subtle and insidious, making it hard to demonstrate effects. There is a need for several long-term demonstration areas (exclosures) to educate the general public.
- Also, Michigan studies of the decrease in species richness, plants, shrubs, and impacts on other wildlife species has been down in Pennsylvania.
- Effects patchy and run on a north-south trend (EUP).

- Do not see much overbrowsing during last 5 years with the lower deer populations in NE Michigan (LP).
- Deer management is a localized consideration and must be undertaken that way. Education will take time and must be conducted until those influencing harvesting of deer understand their importance. Some areas are getting the idea! Other regions are not.
- 1) deer browse seems to be a problem, 2) individuals enjoy hunting deer, 3) there needs to be some middle ground to address these issues
- Q5-moderate damage in hardwoods, severe damage in cedar
- Q5 impact varies north (score=5) to south (score=9)
- Q13 regeneration hasn't failed, but regeneration is all damaged / deformed
- Lack of doe permit opportunities on CFA lands (corporate ownership primarily).
- That animal rights groups might someday reduce deer harvest rates
- Small acreage harvests on private lands is resulting in no or unfavorable regeneration.
- I have not seen significant browse damage in the Lake Superior watershed. South of the Lake Superior watershed it becomes difficult to find hemlock and white cedar regeneration.
- Political aspects of herd management. Inconsistent leadership and no one determined to fight the battles.
- Overbrowsing is causing loss of plant species diversity. Preferred food is disappearing.
- Q5 "10" on cedar and sugar maple
- Extensive comments on attached page.
- Wildlife biologists have been slow to acknowledge / accept ecological damage foresters have been complaining about for decades.
- State of Michigan promotes high deer populations.
- Deer hunting is declining.
- I work [snip] counties. The northern hardwood stands are going to become extinct due to lack of reproduction. The deer have exterminated Trillium & leeks from our hardwood stands in Menominee County, except for fenced areas.
- Deer make it impossible for landowners to grow red pine, the most profitable planted conifer, in Menominee County.
- Most deer damage is in areas with high deer densities, near agriculture land, and on hunt clubs.
- Liberal deer permits have significantly reduced browse in many, but not all, areas. Liberal doe hunting in high density areas is the only practical way of keeping populations in check and limiting browse.
- QDM was tried for 5 years in the area I hunt, but the DNR Wildlife Division did not buy into it because for 3 of those years, no antlerless permits were issued on public lands. We need to harvest does, but the DNR Wildlife Division is playing politics.
- Prime carrier of Lyme's disease!
- Q5 previous service area was south central UP and deer impact was severe (score=9)
- Deer populations in certain regions remain high. Continued mild winters will allow herds to grow. Deer management (i.e. killing deer) must continue to be aggressive.
- Regarding regeneration-in areas in southern UP until other ecological factors besides deer are dealt regeneration in northern hardwoods will be difficult. Hemlock and cedar regeneration across the UP will be a challenge regardless of the number of deer. Hemlock and cedar taste too good.
- After two decades or more of observations and startling differences between regeneration in fence-enclosed plots and overbrowsed areas outside such plots, there are still wildlife biologists and natural resource managers denying any data exists showing a problem that is traceable to deer.
- Feel deer population in Oceana County holding the same or dropping a bit. Fruit crop damage, other agriculture as well is major issue. Pine, oak, upland hardwoods receive significant low foliage predation.
- I feel that previous management styles have led to artificially high deer populations over the past few decades. It is difficult to attempt tree regeneration for certain species due to the high deer population. We need to figure out ways to solve these problems.
- Q16 depends on weather and hunting pressures, doe permits, etc.
- There is an increase in deer browsing in those areas that are suitable for winter deer yards, example-southern UP, L'Anse-Skaneec area.
- More and better data are needed, but the impacts are currently clearly obvious and deer pressures should be dramatically reduced in many regions. But that ain't gonna happen.
- If deer are kept at high enough populations for the average non-resource professional person to see lots of them, then that number of deer will have very negative impacts on foresters to regenerate preferred species.
- Damage is localized on specific areas.
- Q5 score higher is specific areas.
- Too many people feel that the artificial high population that we currently have is normal and complain when managers try to reduce deer densities. Education to landowners is needed and hunters to show how harmful high populations can be and practicing rules such as QDM can satisfy both foresters and hunters.
- Confounding effects of turkeys on acorns
- The role of deer exclosures in highly visible, easily accessible places for public, news media, etc. to see. Need to examine (show) impacts, if any, of deer on rare-endangered plants, flowers by botanists (not so much

foresters) and this will take initiatives & push by key line officers (forest supervisors).

- Q6 well managed aspen seems to do pretty well, in spite of high deer numbers.
- Q13 especially hardwood tree plantings efforts and lowland cedar, hemlock, birch natural regeneration.
- Q13 these regenerations (hardwoods) delayed or slowed down by browsing but some success seems to eventually come.
- Recent ATV restrictions may prevent hunters from accessing remote areas, thus creating an imbalance of deer management.
- Narrow down present DMUs, finding lands with abundance of deer, and add extension number to existing DMU - make public aware of problem area along with landownership "CFR"-private, make sure there are enough permits, antlerless deer need to be reduced.
- No real info to aide either wildlife or forestry in understanding this problem or addressing it!
- In my area, hardwoods (e.g. sugar maple, red maple) are most threatened statewide, possibly swamp conifers & hemlock are most threatened & have been for many years.
- Proliferation of high fence "shooting" preserves and the many related problems such as disease, public image, interferences with wildlife movement, etc.
- Damage to other wildlife habitat
- Elimination of certain favorite food plants.
- Creation of an ugly barren forest understory or lack of flowers, herbs, shrubs, etc.
- Uneven management (northern hardwoods) generally seems to produce regeneration or lesser quality & undesirable species. Even-aged management (shelterwood & clearcut) or heavier thinning 60-70 BA produces more regeneration & better quality. Aspen when clearcut can survive deer browse but light hardwood thinnings do not in my experience.
- Disappearance of Canada yew in NW Emmet County in the understory.
- Problems with population estimates-need 100% check-in during hunts. Problems with age/sex ratios-too many does (older) and too few bucks (most are young).
- Too many deer in certain areas-management unit size?
- Loss of critical habitat cover-cutting practices, regeneration problems, land use.
- Deer browse not only impacts tree regeneration but seems to increase grass/sedge composition. Once established it further imperils seedling establishment likely by changing the moisture regime so much that the seedlings cannot compete.
- Q15 because of TB status and liberal deer hunting
- Q16 this may change because of poor timber markets
- Our ability to manage with proper harvesting has been greatly reduced because of poor timber markets! Doing

a lot of work in the TB zone has allowed much better regeneration because of lower deer numbers!

- Q15 what is showing are the accumulated effects
- Q20 Michigan resident for < one year
- Bow season - require hunters to harvest a doe before they can obtain a buck permit.
- In specific areas of Michigan, deer populations need to be reduced, and/or different/modified silvicultural practices should be developed to manage against deer browse.
- I have noticed major deer browse impact on northern hardwood forests concentrated throughout the south central U.P. and in certain locations of Marquette, Ontonagon, and Gogebic counties.
- The deer impact on the swamp conifer type is noticed throughout our entire range but it is spotty.
- Q5 / Q6 depends on the location
- I do not feel qualified to make judgment on many of the questions you pose. I have observed deer damage on several field trips in various parts of the state over a period of years.
- Q4 but not in all areas and not in all forest types
- Q5 varies from 1 to 10 depending on location & forest type.
- Q13 total failure-none, failure to get preferred species (e.g. sugar maple) is common.
- Q16 as long as MDNR wildlife division is allowed to manage deer herd, rather than politicians.
- The reduction in the deer herd in the last 10 years in the "club country" of the NLP has made a significant improvement in the regeneration issue here. However, regeneration of maple seedlings is still a problem. We need to continue to aggressively manage the herd.
- Deer browsing pressure decreased when the deer herd was reduced to combat TB but the herd is increasing its population again and many hunters still feel the herd is too small.
- With the deer herd at its present level, cedar & red oak regeneration will always be difficult if not impossible.
- Q5 not severe in northern UP, very severe in southern UP and southern Michigan
- Q6 little/none in Marquette County, 75%+ in southern UP and southern Michigan.
- Q13 northern Marquette County=1, NLP=5, southern UP=5, EUP=5
- Q15 increased in the southern UP
- Q16 increase in the SUP & NLP / or increase slightly in the NUP.
- The biggest deer management problem is controlling deer numbers in areas south of the snow belt.
- The MSAF needs advice and recommendations from nationally recognized John J. Ozoga, 30-year white-tailed deer research biologist (now retired, writer, and research editor for Deer and Deer Hunting magazine) to get our

thoughts together property on white-tailed deer management issues.

- Deer + worm interactions, deer + moose interactions, inability of vegetation to recover when browsing is reduced
- Increase doe harvest. No more than one buck per hunter per year.
- Q5 selected species
- State needs to help private forest land owners with deer fencing costs (e.g. Fraser fir Christmas tree plantations).
- Some questions were a bit confusing. Hard to tell whether you are asking about our current work area or our impression of the statewide picture. I answered some in one way, some another. Sorry if I'm just adding to the confusion!
- Some plants are so scarce state-wide that we tend not to notice their absence
- Q20 I have worked statewide but now concentrate my [snip] work to EUP and NLP.
- I would like to see deer numbers of approximately 15-20 per sq. mi. in areas where damage is evidenced. Populations above that level seem to be the "dividing" line between acceptable damage/regeneration levels and what I would consider non-acceptable damage & regeneration. Most in northern hardwoods and conifer swamps with cedar components.
- Corrective measures on a broad scale won't work. Forest regeneration problems as related to deer tend to be localized. Plans to lower deer populations in order to promote forest regeneration needs to be in very localized situations. Broad-stroke solutions will further alienate Michigan's deer hunters from policy-makers. Townships are too large an area. Problems exist in areas of 3-4 sections.
- Imbalanced priorities. Forests are the foundation ecosystem!
- Forest management and deer hunting have, are, and will always be connected. The number one generator of revenue is forest products, the number one recreational use is deer hunting and grouse, turkeys, woodcock, rabbits, etc. This applies to public and private lands. The target should be a continuing balance of habitat by rotating age classes from regeneration to maturity, recognizing species and site capability. Then depending on natural losses, the deer harvest can be adjusted to fit the habitat (forest). A misconception is that private non-industrial landowners do not harvest in proportion. I believe this is false. Harvest levels are high on private lands. The state (MDNR) does a decent to good job. Unfortunately, the U.S. Forest Service, with nearly 3 million acres in the state, is a detriment to the forest products industry and sport hunting by – call it what you will – mismanagement, under achieving, overprotectionish. Instead of protect, the U.S. Forest Service is all about neglect. How long has it been since deer hunting has been decent on federal lands in the eastern U.P.? Try 1950s. In addition to lack of harvesting (EUP) the decline of the yarding areas needs to be addressed (white cedar plant?), plus the EUP has wolf predation along with coyotes. In the northern lower, the deer have been migrating – especially off USFS – to forest/farm transition areas creating high density pockets resulting in agricultural crop damage, consequently block and unlimited antlerless deer permits are issued reducing deer population by my estimate 75%. The only area I've heard (not seen) that deer populations hinder forest regeneration is in the western U.P. counties bordering Wisconsin. If that is the case, it should be addressed on a local, situation by situation basis.