

FINAL REPORT

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Recipient Organization: University of Georgia

Recipient Contact Person: Dr. Susan Wilde

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Project Title: Investigating Stakeholder Perceptions of Aquatic Plant Management on J. Strom Thurmond Lake

Accomplishments: What was done? What was learned?

As outlined in the original proposal, this project's primary goal was sampling five research identified J. Strom Thurmond Lake (JSTL) user groups—fishing license holders, state waterfowl stamp holders, registered boaters, campground visitors, and shoreline permit holders—from specific Georgia and South Carolina counties to evaluate their knowledge of a novel wildlife disease associated with hydrilla and opinions regarding potential management actions to control the aquatic macrophyte. The results of this study will aid JSTL managers in evaluating potential management action intended to reduce growth, density, and toxicity of an unidentified cyanobacterium growing epiphytically on hydrilla and causing wildlife mortality through transmission of Avian Vacuolar Myelinopathy (AVM). Distribution of the survey should also increase awareness among the local population and result in increased frequency of reporting sick wildlife and other AVM related events.

To meet this objective, we conducted a mail survey of adults belonging to the user groups identified above for the counties surrounding JSTL. The remainder of this report describes the sampling procedures and initial analysis of survey data.

Survey Sampling and Response Rates

During spring of 2013, researchers at the University of Georgia conducted a mail survey of research-identified user groups in the twelve counties most proximal to JSTL. South Carolina Counties included: Abbeville, Edgefield, Greenwood, and McCormick. Georgia counties included: Columbia, Elbert, Lincoln, McDuffie, Richmond, Taliaferro, Warren, and Wilkes. Complete population databases for campground visitors and shoreline permit holders were provided by the Army Corps of Engineers (ACOE), while those for fishing license holders, waterfowl stamp holders, and boat registrations were provided by South Carolina and Georgia Departments of Natural Resources. After all five user group population databases were obtained, they were merged into a single JSTL user database and duplicate users removed. Members from each user group were then randomly selected until the frequency at which each user group was sampled represented that group's proportion of the JSTL user population. Sample sizes (undeliverable mailings removed) with respect to each user group can be found in Table 1. An initial mailing of 3,000 surveys was then sent to our sample population; the first in a three contact procedure. To increase response rate, a follow-up postcard and second mail survey were sent at predetermined time intervals to all non-respondents. After all contacts, the overall response rate was 44.5%, when undeliverable mailings were removed from the sample and refusals are treated as responses. Better resolution on response rates is given in Charts 1 and 2. See Appendix A for data reflecting the accuracy of research-identified user groups.

Chart 1. Survey Response Rates

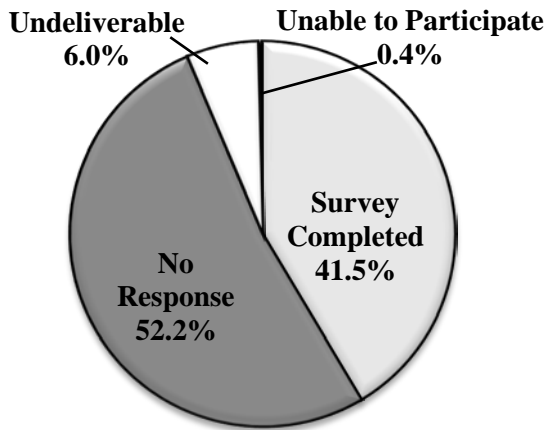


Chart 2. User Group Response Rates

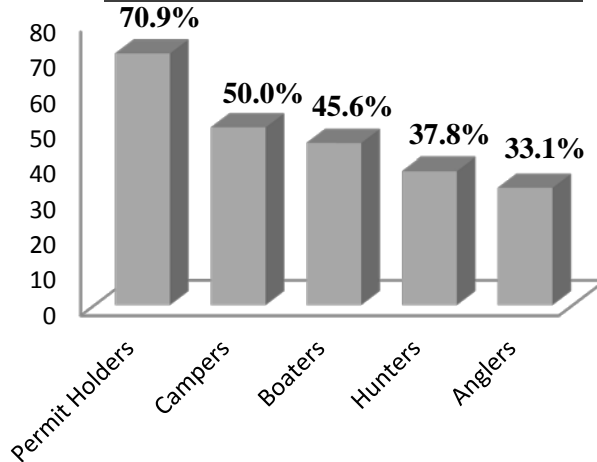


Table 1. User Group Sampling

User Group	Surveys Mailed (Undeliverables Removed)	Surveys Completed
Campers	374	187
Permit Holders	326	231
Anglers	774	256
Boaters	783	357
Hunters	564	213

Results

A primary objective of this study was evaluation of JSTL user knowledge regarding hydrilla and AVM. According to the ACOE Aquatic Plant Management Summary for 2012, slightly less than 7% of JSTL’s 71,100 acres is covered by hydrilla. Of those fishing JSTL in the past year, 63.4% of respondents reported fishing around hydrilla—suggesting users are sufficiently aware of the presence of hydrilla. Similarly, 64.7% of users report seeing signs directing them to check their boat and trailer for aquatic plants. There were significant differences among groups ($F=10.986$, $p<.000$) regarding prior AVM knowledge, with Shoreline Permit Holders, Boaters, and Campers all significantly differing (Table 2).

Table 2. AVM Awareness

Tukey HSD ^{a,b}				
User Group	N	Grouping at $\alpha=0.05$		
		1	2	3
Camper	186	1.52		
Angler	252	1.71	1.71	
Hunter	211	1.73	1.73	
Boater	345		1.77	
Shoreline Permit	229			2.06

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 234.200.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Another purpose of the survey was quantifying user support for hydrilla removal management strategies, especially the stocking of sterile grass carp. Generally, users were in support of reducing hydrilla in JSTL, with 84.5% of respondents preferring either less hydrilla or only native aquatic plants (Chart 3). Although all groups prefer hydrilla reduction, there exist a significant difference ($F=3.378$, $p=.009$) among group preference, with Boaters and Permit Holders being independent of other user groups (Table 3). Users were also largely supportive of stocking grass carp, as 74.3% of respondents indicated they are either indifferent to or in support of stocking the herbaceous fish. While there was no significant difference in user group support for stocking grass carp ($F=2.018$, $p=.09$), there was a significant difference in support for general hydrilla removal management ($F=6.945$, $p<.000$). Shoreline Permit Holders were significantly more supportive of general management action to remove hydrilla than all other users (Table 4). After being informed of AVM's presence at JSTL, 65.8% of respondents support removal of aquatic vegetation, even at the cost of reducing fish and waterfowl habitat.

Chart 3. Aquatic Vegetation Preference

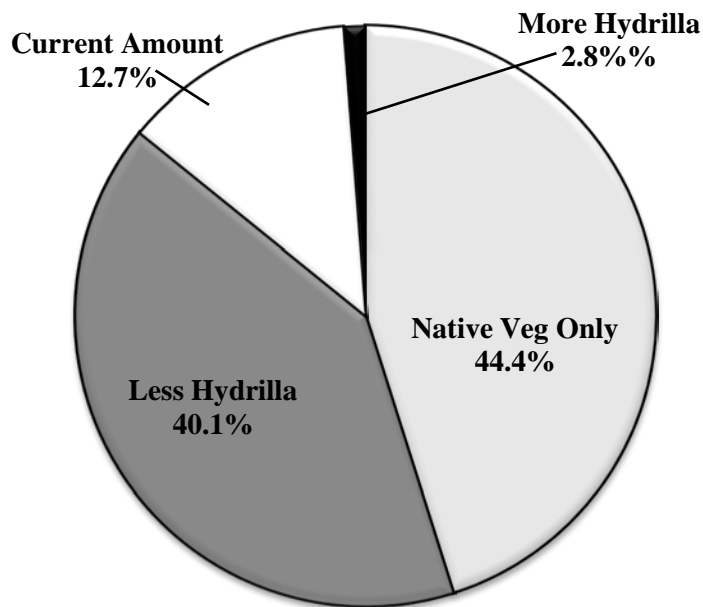


Table 3. SAV Preference Groupings

Tukey HSD ^{a,b}			
User Group	N	Grouping at $\alpha=0.05$	
		1	2
Shoreline Permit	225	.60	
Camper	173	.69	.69
Hunter	200	.71	.71
Angler	241	.79	.79
Boater	340		.83

Means for groups in homogeneous subsets are displayed.
 a. Uses Harmonic Mean Sample Size = 224.061.
 b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Table 4. Management Support Groupings

Tukey HSD ^{a,b}			
User Group	N	Grouping at $\alpha=.05$	
		1	2
Shoreline Permit	224	1.68	
Boater	341		2.06
Camper	180		2.07
Angler	247		2.08
Hunter	206		2.15

Means for groups in homogeneous subsets are displayed.
 a. Uses Harmonic Mean Sample Size = 228.777.
 b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

Lastly, the relationship between AVM awareness and support for management action was examined. AVM awareness was revealed to have a significant negative correlation with opposition to hydrilla removal management ($r=-.151, p<.000$) and the stocking of sterile grass carp ($r=-.138, p<.000$) (see Chart 4). Awareness was also significantly correlated with increased participation in prevention behaviors, such as checking boats and trailers for aquatic plants and subsequently removing them (Table 5).

Chart 4. Management Support in Relation to AVM Awareness

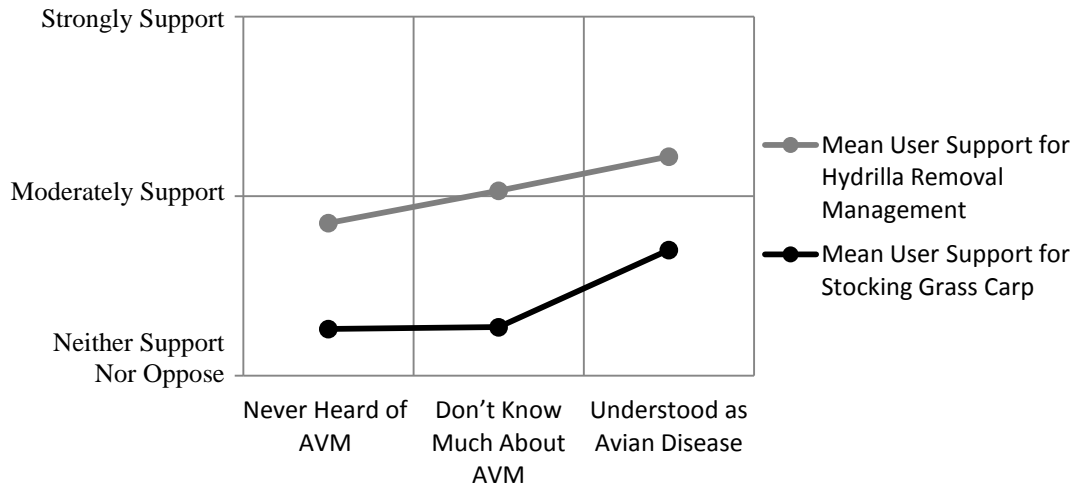


Table 5. Correlations between AVM Awareness and Prevention Behavior

Does AVM Awareness correlate to...	Checking Your Boat/Trailer	Removing Plants	Washing Your Boat/Trailer
Pearson Correlation (r)	.144	.124	.053
Sig. (2-tailed)	.000	.000	.095
N	991	982	997

For frequency and percent response to each survey question stratified by user group, see Appendix B.

Next steps: The research as outlined in the initial proposal for this project is now complete. We will continue to improve on this analysis and prepare a publication within the next 12 months.

I will be happy to provide clarification of this report or additional information as requested.

Sincerely,

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APPENDIX A
Assessment of Research-Identified User Groups

Did we accurately sample JSTL Campers?

	Research-Identified Campers that Self-Identified as JSTL campers	Research-Identified Campers that DID NOT Self-Identify as campers	Proportion of Self-Identified Campers targeted as campers
Frequency	163	12	163 of 447
Percentage	93.1%	6.9%	36.5%

Did we accurately sample JSTL Shoreline Permit Holders?

	Research-Identified Permit Holders that Self-Identified as JSTL permit holders	Research-Identified Permit Holders that DID NOT self-identify as a Permit Holder	Proportion of all Self-Identified JSTL permit holders targeted as Research-Identified Permit Holders
Frequency	214	10	214 of 337
Percentage	95.5%	4.5%	63.5%

Did we accurately sample JSTL Anglers?

	Research-Identified Anglers that Self-Identified as JSTL anglers	Research-Identified Anglers that DID NOT Self-Identify as anglers	Proportion of all Self-Identified JSTL anglers targeted as Research-Identified anglers
Frequency	205	18	205 of 925
Percentage	91.9%	8.1%	22.2%

Did we accurately sample JSTL Boaters?

	Research-Identified BOATERS that Self-Identified as JSTL boaters	Research-Identified BOATERS that DID NOT self-identify as JSTL boaters	Proportion of all Self-Identified JSTL boaters targeted as boaters
Frequency	195	126	195 of 635
Percentage	60.7%	39.3%	30.7%

Did we accurately sample JSTL Waterfowl Hunters?

	Research-Identified Hunters that Self-Identified as JSTL hunters	Research-Identified Hunters that DID NOT self-identify as JSTL hunters	Proportion of all Self-Identified JSTL hunters targeted as hunters
Frequency	16	43	16 of 53
Percentage	27.1%	72.9%	30.2%

Appendix B

Frequency & Percent Response to all Questions Stratified by Research-Identified User Group

1. Have you visited Thurmond Lake in the last 12 months? (Check one answer.)

		Yes	No
Camper	Frequency	164	23
	% of User Group	87.7%	12.3%
Shoreline Permit	Frequency	223	8
	% of User Group	96.5%	3.5%
Angler	Frequency	216	42
	% of User Group	83.7%	16.3%
Boater	Frequency	311	43
	% of User Group	87.9%	12.1%
Hunter	Frequency	179	35
	% of User Group	83.6%	16.4%
Total	Frequency	1093	151
	% of Respondents	87.9%	12.1%

2. How many years have you been visiting Thurmond Lake?

Research-Identified User Group	Mean Years Visited
Camper	25.7
Shoreline Permit	31.9
Angler	26.8
Boater	32.4
Hunter	29.1

3. Which months did you most frequently visit Thurmond Lake in the last 12 months? (Check one answer.)

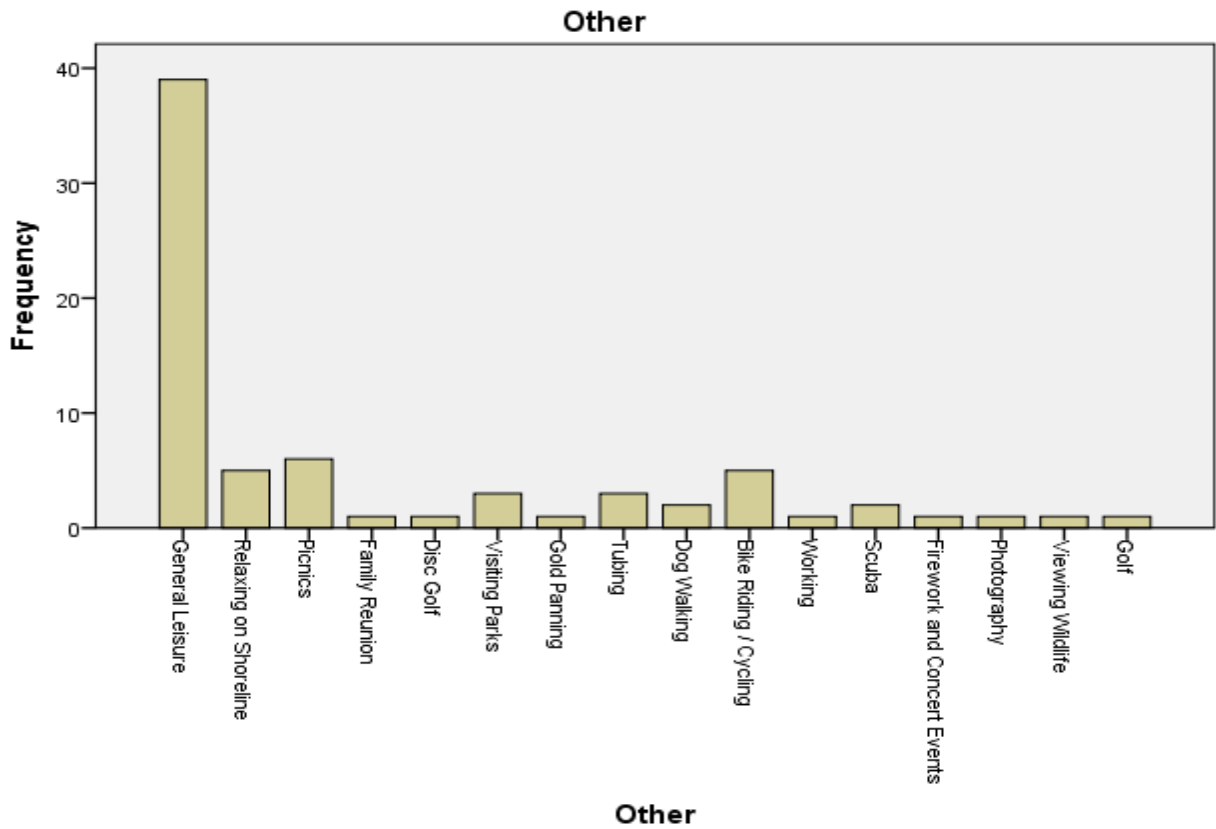
		Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Yr Round	Combination
Camper	Frequency	3	34	46	10	52	32
	% of User Group	1.7%	19.2%	26.0%	5.6%	29.4%	18.1%
Shoreline Permit	Frequency	0	8	37	3	165	13
	% of User Group	0.0%	3.5%	16.4%	1.3%	73.0%	5.8%
Angler	Frequency	2	38	64	3	94	29
	% of User Group	0.9%	16.5%	27.8%	1.3%	40.9%	12.6%
Boater	Frequency	5	34	89	6	143	46
	% of User Group	1.5%	10.5%	27.6%	1.9%	44.3%	14.2%
Hunter	Frequency	5	22	55	7	77	21
	% of User Group	2.7%	11.8%	29.4%	3.7%	41.2%	11.2%
Total	Frequency	15	136	291	29	531	141
	% of Respondents	1.3%	11.9%	25.5%	2.5%	46.5%	12.3%

4. How many days did you visit Thurmond Lake in the last 12 months? (Check one answer.)

		1-5 Days	6-14 Days	15-30 Days	30+ Days
Camper	Frequency	41	50	39	38
	% of User Group	24.4%	29.8%	23.2%	22.6%
Shoreline Permit	Frequency	16	12	18	177
	% of User Group	7.2%	5.4%	8.1%	79.4%
Angler	Frequency	46	39	56	81
	% of User Group	20.7%	17.6%	25.2%	36.5%
Boater	Frequency	54	64	57	143
	% of User Group	17.0%	20.1%	17.9%	45.0%
Hunter	Frequency	37	52	42	53
	% of User Group	20.1%	28.3%	22.8%	28.8%
Total	Frequency	194	217	212	492
	% of Respondents	17.4%	19.5%	19.0%	44.1%

5. Which activities did you participate in while at Thurmond Lake in the last 12 months?
 (Check all that apply.)

Activity	Frequency Selected	% of Respondents Represented
Power Boating	634	51.0%
Sailing	32	2.6%
Paddling	127	10.2%
Birding	159	12.8%
Hiking	204	16.4%
Swimming	621	49.9%
Camping	447	35.9%
Fishing	925	74.4%
Hunting	185	14.9%
Skiing / Jetski	331	26.6%
Other	73	5.9%



6. Which of the following best describes the type of access point you used most frequently on Thurmond Lake in the last 12 months? (Check one answer.)

		Private	Commercial	Public	Not Sure	Combination of Access
Camper	Frequency	5	2	160	2	5
	% of User Group	2.9%	1.1%	92.0%	1.1%	2.9%
Shoreline Permit	Frequency	181	4	26	0	13
	% of User Group	80.8%	1.8%	11.6%	0.0%	5.8%
Angler	Frequency	31	8	174	4	12
	% of User Group	13.5%	3.5%	76.0%	1.7%	5.2%
Boater	Frequency	61	19	219	5	23
	% of User Group	18.7%	5.8%	67.0%	1.5%	7.0%
Hunter	Frequency	24	10	138	3	14
	% of User Group	12.7%	5.3%	73.0%	1.6%	7.4%
Total	Frequency	302	43	717	14	67
	% of Respondents	26.4%	3.8%	62.7%	1.2%	5.9%

7. In the last 12 months, did you purchase a recreational fishing license in Georgia or South Carolina? (Check all that apply.)

		Yes, GA	Yes, SC	Yes, Both	No
Camper	Frequency	79	54	2	41
	% of User Group	44.9%	30.7%	1.1%	23.3%
Shoreline Permit	Frequency	90	45	8	85
	% of User Group	39.5%	19.7%	3.5%	37.3%
Angler	Frequency	102	114	18	17
	% of User Group	40.6%	45.4%	7.2%	6.8%
Boater	Frequency	167	88	18	68
	% of User Group	49.0%	25.8%	5.3%	19.9%
Hunter	Frequency	96	82	11	22
	% of User Group	45.5%	38.9%	5.2%	10.4%
Total	Frequency	534	383	57	233
	% of Respondents	44.2%	31.7%	4.7%	19.3%

If you did purchase a license in Georgia and/or South Carolina in the last 12 months, did you fish on Thurmond Lake? (Check one answer.)

		Yes	No
Camper	Frequency	115	24
	% of User Group	82.7%	17.3%
Shoreline Permit	Frequency	141	18
	% of User Group	88.7%	11.3%
Angler	Frequency	187	49
	% of User Group	79.2%	20.8%
Boater	Frequency	241	42
	% of User Group	85.2%	14.8%
Hunter	Frequency	149	37
	% of User Group	80.1%	19.9%
Total	Frequency	833	170
	% of Respondents	83.1%	16.9%

If you did fish on Thurmond Lake in the last 12 months, what was the primary way that you fished?

		Bank	Boat	Both
Camper	Frequency	36	80	4
	% of User Group	30.0%	66.7%	3.3%
Shoreline Permit	Frequency	36	108	7
	% of User Group	23.8%	71.5%	4.6%
Angler	Frequency	30	153	9
	% of User Group	15.6%	79.7%	4.7%
Boater	Frequency	19	226	8
	% of User Group	7.5%	89.3%	3.2%
Hunter	Frequency	29	125	7
	% of User Group	18.0%	77.6%	4.3%
Total	Frequency	150	692	35
	% of User Group	17.1%	78.9%	4.0%

Which of the following species did you typically fish for? *(Check all that apply.)*

Species	Frequency Selected	% of Anglers Represented
Largemouth Bass	585	70.2%
Bream / Sunfish	480	57.6%
Catfish	384	46.1%
Striped/Hybrid Bass	439	52.7%
Crappie	572	68.7%

8. In the **last 12 months**, did you purchase a state waterfowl stamp in Georgia or South Carolina? *(Check all that apply.)*

		Yes, GA	Yes, SC	Yes, Both	No
Camper	Frequency	5	2	0	170
	% of User Group	2.8%	1.1%	0.0%	96.0%
Shoreline Permit	Frequency	11	5	1	212
	% of User Group	4.8%	2.2%	0.4%	92.6%
Angler	Frequency	18	20	4	209
	% of User Group	7.2%	8.0%	1.6%	83.3%
Boater	Frequency	23	20	1	300
	% of User Group	6.7%	5.8%	0.3%	87.2%
Hunter	Frequency	26	18	2	165
	% of User Group	12.3%	8.5%	0.9%	78.2%
Total	Frequency	83	65	8	1056
	% of Respondents	6.8%	5.4%	0.7%	87.1%

If you did purchase a state waterfowl stamp in Georgia and/or South Carolina in the last 12 months, did you hunt waterfowl on Thurmond Lake? (Check one answer.)

		Yes	No
Camper	Frequency	1	12
	% of User Group	7.7%	92.3%
Shoreline Permit	Frequency	7	22
	% of User Group	24.1%	75.9%
Angler	Frequency	14	45
	% of User Group	23.7%	76.3%
Boater	Frequency	15	47
	% of User Group	24.2%	75.8%
Hunter	Frequency	16	43
	% of User Group	27.1%	72.9%
Total	Frequency	53	169
	% of Respondents	23.9%	76.1%

9. Do you have a shoreline permit on Thurmond Lake? (Check one answer.)

		Yes	No
Camper	Frequency	3	180
	% of User Group	1.6%	98.4%
Shoreline Permit	Frequency	228	1
	% of User Group	99.6%	0.4%
Angler	Frequency	26	227
	% of User Group	10.3%	89.7%
Boater	Frequency	69	279
	% of User Group	19.8%	80.2%
Hunter	Frequency	19	192
	% of User Group	9.0%	91.0%
Total	Frequency	345	879
	% of Respondents	28.2%	71.8%

10. Do you own property on Thurmond Lake? (Check one answer.)

		Yes	No
Camper	Frequency	3	180
	% of User Group	1.6%	98.4%
Shoreline Permit	Frequency	228	1
	% of User Group	99.6%	0.4%
Angler	Frequency	26	227
	% of User Group	10.3%	89.7%
Boater	Frequency	69	279
	% of User Group	19.8%	80.2%
Hunter	Frequency	19	192
	% of User Group	9.0%	91.0%
Total	Frequency	345	879
	% of Respondents	28.2%	71.8%

If Yes, is this your primary residence? (Check one answer.)

		Yes	No
Camper	Frequency	1	11
	% of User Group	8.3%	91.7%
Shoreline Permit	Frequency	92	124
	% of User Group	42.6%	57.4%
Angler	Frequency	14	23
	% of User Group	37.8%	62.2%
Boater	Frequency	26	51
	% of User Group	33.8%	66.2%
Hunter	Frequency	9	20
	% of User Group	31.0%	69.0%
Total	Frequency	142	229
	% of Respondents	38.3%	61.7%

11. In the last 12 months, have you visited the Thurmond Lake visitor center? (Check one ans)

		Yes	No
Camper	Frequency	50	131
	% of User Group	27.6%	72.4%
Shoreline Permit	Frequency	50	178
	% of User Group	21.9%	78.1%
Angler	Frequency	45	205
	% of User Group	18.0%	82.0%
Boater	Frequency	94	255
	% of User Group	26.9%	73.1%
Hunter	Frequency	36	176
	% of User Group	17.0%	83.0%
Total	Frequency	275	945
	% of Respondents	22.5%	77.5%

12. In the last 12 months, have you visited any of the websites below? (Check all that apply.)

Website	Respondents visiting site	% of Respondents Represented
Thurmond	260	20.9%
GA DNR	492	39.5%
SC DNR	329	26.4%

13. In your opinion, how important or unimportant are each of the following benefits of Thurmond Lake? (Circle one number for each row.)

Mean Response by User Group

	Water Supply	Fishing Opp	Birding Opp	Wildlife Habitat	Hunting Opp	Flood Control	Pwr	Boating Opp	Camping Opp	Hiking Opp
Camper	4.69	4.28	3.17	4.41	3.30	4.16	3.98	4.46	4.61	3.76
Shoreline Permit	4.50	4.23	3.35	4.41	3.37	3.98	3.32	4.51	3.82	3.61
Angler	4.57	4.44	3.16	4.49	3.66	4.11	3.96	4.33	4.06	3.42
Boater	4.49	4.31	3.08	4.39	3.44	4.05	3.78	4.43	4.05	3.55
Hunter	4.49	4.49	3.25	4.62	3.93	4.16	3.93	4.46	4.19	3.61

14. Which statement below best describes your opinion about aquatic plants in Thurmond Lake? (Check one answer.)

		Less Hydrilla	Current Amount	More Hydrilla	Natives Only
Camper	Frequency	63	24	3	83
	% of User Group	36.4%	13.9%	1.7%	48.0%
Shoreline Permit	Frequency	106	12	2	105
	% of User Group	47.1%	5.3%	0.9%	46.7%
Angler	Frequency	89	36	10	106
	% of User Group	36.9%	14.9%	4.1%	44.0%
Boater	Frequency	147	47	14	132
	% of User Group	43.2%	13.8%	4.1%	38.8%
Hunter	Frequency	68	31	4	97
	% of User Group	34.0%	15.5%	2.0%	48.5%
Total	Frequency	473	150	33	523
	% of Respondents	40.1%	12.7%	2.8%	44.4%

15. Have you fished around hydrilla in Thurmond Lake in the last 12 months? (Check one ans)

		Yes	No
Camper	Frequency	74	102
	% of User Group	42.0%	58.0%
Shoreline Permit	Frequency	102	127
	% of User Group	44.5%	55.5%
Angler	Frequency	132	119
	% of User Group	52.6%	47.4%
Boater	Frequency	158	189
	% of User Group	45.5%	54.5%
Hunter	Frequency	103	107
	% of User Group	49.0%	51.0%
Total	Frequency	569	644
	% of Respondents	46.9%	53.1%

Characterize your total fish catch numbers in areas with hydrilla as compared to areas without hydrilla? (Check one answer.)

		More Fish with Hydrilla	Equal Catch	More Fish w/o Hydrilla	Don't Know
Camper	Frequency	8	18	44	31
	% of User Group	7.9%	17.8%	43.6%	30.7%
Shoreline Permit	Frequency	4	17	81	39
	% of User Group	2.8%	12.1%	57.4%	27.7%
Angler	Frequency	19	48	69	35
	% of User Group	11.1%	28.1%	40.4%	20.5%
Boater	Frequency	17	42	96	60
	% of User Group	7.9%	19.5%	44.7%	27.9%
Hunter	Frequency	22	32	52	31
	% of User Group	16.1%	23.4%	38.0%	22.6%
Total	Frequency	70	157	342	196
	% of Respondents	9.2%	20.5%	44.7%	25.6%

Characterize the size of the fish you caught in areas with hydrilla as compared to areas without hydrilla? (Check one answer.)

		Larger with Hydrilla	Similar Size	Larger Fish w/o Hydrilla	Don't Know
Camper	Frequency	6	23	21	50
	% of User Group	6.0%	23.0%	21.0%	50.0%
Shoreline Permit	Frequency	2	34	42	59
	% of User Group	1.5%	24.8%	30.7%	43.1%
Angler	Frequency	16	58	46	50
	% of User Group	9.4%	34.1%	27.1%	29.4%
Boater	Frequency	19	64	56	76
	% of User Group	8.8%	29.8%	26.0%	35.3%
Hunter	Frequency	13	53	29	41
	% of User Group	9.6%	39.0%	21.3%	30.1%
Total	Frequency	56	232	194	276
	% of Respondents	7.4%	30.6%	25.6%	36.4%

**16. Have you hunted waterfowl around hydrilla in Thurmond Lake in the last 12 months?
(Check one answer.)**

		Yes	No
Camper	Frequency	1	182
	% of User Group	0.5%	99.5%
Shoreline Permit	Frequency	6	220
	% of User Group	2.7%	97.3%
Angler	Frequency	7	246
	% of User Group	2.8%	97.2%
Boater	Frequency	12	334
	% of User Group	3.5%	96.5%
Hunter	Frequency	10	199
	% of User Group	4.8%	95.2%
Total	Frequency	36	1181
	% of Respondents	3.0%	97.0%

**Characterize your waterfowl harvest in areas with hydrilla as compared to areas without hydrilla?
(Check one answer.)**

		More Waterfowl with Hydrilla	Equal Harvest	More Waterfowl without Hydrilla	Don't Know
Camper	Frequency	1	0	0	10
	% of User Group	9.1%	0.0%	0.0%	90.9%
Shoreline Permit	Frequency	1	2	5	9
	% of User Group	5.9%	11.8%	29.4%	52.9%
Angler	Frequency	3	5	2	13
	% of User Group	13.0%	21.7%	8.7%	56.5%
Boater	Frequency	6	3	3	22
	% of User Group	17.6%	8.8%	8.8%	64.7%
Hunter	Frequency	6	3	2	11
	% of User Group	27.3%	13.6%	9.1%	50.0%
Total	Frequency	17	13	12	65
	% of Respondents	15.9%	12.1%	11.2%	60.7%

17. While at Thurmond Lake, have you seen signs about checking your trailer and boat for aquatic plants? (Check one answer.)

		Yes	No
Camper	Frequency	118	65
	% of User Group	64.5%	35.5%
Shoreline Permit	Frequency	126	98
	% of User Group	56.3%	43.8%
Angler	Frequency	169	68
	% of User Group	71.3%	28.7%
Boater	Frequency	223	118
	% of User Group	65.4%	34.6%
Hunter	Frequency	131	70
	% of User Group	65.2%	34.8%
Total	Frequency	767	419
	% of Respondents	64.7%	35.3%

18. If you use a boat at Thurmond Lake, how often do you do each of following activities after boating? (Circle one number in each row. Leave blank if you do not use a boat.)

Mean Response by User Group

	Check for Plants	Remove Plants	Wash Boat/Trailer
Campers	3.01	3.06	2.74
Permit Holders	2.94	3.03	2.68
Anglers	3.15	3.19	2.81
Boaters	3.04	3.02	2.70
Hunters	3.20	3.22	2.70

19. What is your opinion regarding the use of sterile grass carp to control hydrilla in Thurmond Lake? (Check one answer.)

		Strongly Support Grass Carp	Moderately Support Grass Carp	Neither Support nor Oppose Grass Carp	Moderately Oppose Grass Carp	Strongly Oppose Grass Carp
Camper	Frequency	45	43	45	25	22
	% of User Group	25.0%	23.9%	25.0%	13.9%	12.2%
Shoreline Permit	Frequency	78	50	47	25	24
	% of User Group	34.8%	22.3%	21.0%	11.2%	10.7%
Angler	Frequency	60	71	53	31	26
	% of User Group	24.9%	29.5%	22.0%	12.9%	10.8%
Boater	Frequency	80	93	71	48	51
	% of User Group	23.3%	27.1%	20.7%	14.0%	14.9%
Hunter	Frequency	48	41	57	34	20
	% of User Group	24.0%	20.5%	28.5%	17.0%	10.0%
Total	Frequency	311	298	273	163	143
	% of Respondents	26.2%	25.1%	23.0%	13.7%	12.0%

20. Before receiving this survey, had you heard of Avian Vacuolar Myelinopathy (AVM)? (Check one answer.)

		Unaware of AVM	Knew a Little about AVM	Basic AVM Awareness
Camper	Frequency	123	30	33
	% of User Group	66.1%	16.1%	17.7%
Shoreline Permit	Frequency	85	45	99
	% of User Group	37.1%	19.7%	43.2%
Angler	Frequency	141	43	68
	% of User Group	56.0%	17.1%	27.0%
Boater	Frequency	182	60	103
	% of User Group	52.8%	17.4%	29.9%
Hunter	Frequency	115	39	57
	% of User Group	54.5%	18.5%	27.0%
Total	Frequency	646	217	360
	% of Respondents	52.8%	17.7%	29.4%

21. Before receiving this survey, did you know that AVM has been observed at Thurmond Lake? (Check one answer.)

		Yes	No
Camper	Frequency	42	143
	% of User Group	22.7%	77.3%
Shoreline Permit	Frequency	123	105
	% of User Group	53.9%	46.1%
Angler	Frequency	76	174
	% of User Group	30.4%	69.6%
Boater	Frequency	124	225
	% of User Group	35.5%	64.5%
Hunter	Frequency	75	137
	% of User Group	35.4%	64.6%
Total	Frequency	440	784
	% of Respondents	35.9%	64.1%

22. Researchers have found that birds at Thurmond Lake are exposed to AVM when they eat hydrilla. To reduce exposure to AVM in Thurmond Lake would require removal of most aquatic plants and a reduction in fish and waterfowl habitat. Would you support this management action? (Circle one answer.)

		Yes	No
Camper	Frequency	107	62
	% of User Group	63.3%	36.7%
Shoreline Permit	Frequency	162	51
	% of User Group	76.1%	23.9%
Angler	Frequency	153	86
	% of User Group	64.0%	36.0%
Boater	Frequency	218	116
	% of User Group	65.3%	34.7%
Hunter	Frequency	121	81
	% of User Group	59.9%	40.1%
Total	Frequency	761	396
	% of Respondents	65.8%	34.2%

**23. What is your opinion regarding how hydrilla should be managed in Thurmond Lake?
(Check one answer.)**

		Strongly Support Removal	Moderately Support Removal	Neither Support nor Oppose Removal	Moderately Oppose Removal	Strongly Oppose Removal
Camper	Frequency	62	60	43	13	2
	% of User Group	34.4%	33.3%	23.9%	7.2%	1.1%
Shoreline Permit	Frequency	130	53	28	9	4
	% of User Group	58.0%	23.7%	12.5%	4.0%	1.8%
Angler	Frequency	88	88	46	14	11
	% of User Group	35.6%	35.6%	18.6%	5.7%	4.5%
Boater	Frequency	135	101	67	25	13
	% of User Group	39.6%	29.6%	19.6%	7.3%	3.8%
Hunter	Frequency	71	67	43	17	8
	% of User Group	34.5%	32.5%	20.9%	8.3%	3.9%
Total	Frequency	486	369	227	78	38
	% of Respondents	40.6%	30.8%	18.9%	6.5%	3.2%

24. What is your gender? (Check one answer.)

	Frequency	Percent
Male	1052	85.7
Female	175	14.3

25. How old are you?

Mean = 55.5yrs old

26. Including yourself, how many people live in your household?

Mean = 2.7 persons

27. What is the highest level of education you have completed? (Check one answer.)

	Frequency	Percent
Some High School	41	3.4
High School Grad	247	20.4
Some College/Tech School	286	23.6
Tech School grad	163	13.5
College Grad	272	22.5
Some Graduate	41	3.4
Grad Degree	160	13.2

28. What was your total household income before taxes and deductions in 2011? (Check one)

	Frequency	Percent
\$25k or less	68	6.3
\$25-40k	122	11.3
\$40-60k	182	16.9
\$60-80k	184	17.1
\$80-100k	187	17.4
over \$100k	333	30.9