
Florida Private Landowner Wildlife Survey

Final Report, 2009

Willcox, A.S. and W.M. Giuliano



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EXECUTIVE SUMMARY

The Florida Fish and Wildlife Conservation Commission (FWC) identified 11 key areas in which to focus their private lands wildlife programs. To better understand the demographics, land use, and wildlife management and conservation behaviors of these landowners, the FWC partnered with the University of Florida Department of Wildlife Ecology and Conservation to conduct a study of the landowners in these areas. The results of this study will be used to augment current private lands wildlife management programs and serve as a baseline to evaluate these programs in the future.

One thousand sixty-eight surveys were returned by landowners, giving an overall response rate of 51%. Based on income, land use, and parcel acreage, the focus areas were divided into regions. The North contains areas with smaller parcels (279-431 acres), primarily production forest and native forest, and mean incomes ranging from \$50,000-\$99,000. The South had the largest parcels (1,316-19,892 acres), was primarily planted or native grassland, and the average income was \$100,000-\$149,000. The Central included moderately-sized parcels (224-616 acres), was a mixture of grassland and forest systems, and had mean incomes ranging from \$50,000-\$99,000.

Landowners were highly involved with wildlife management with 68% believing their regular land management practices benefitted wildlife and 58% actively managing for wildlife on their property. The wildlife most often managed for were deer (22%), followed by upland game birds (18%), and wildlife habitat in general (12%). Deer were more popular in the North and game birds in the South. More than 50% of landowners reported having problems with wildlife. The most common problems involved coyotes, hogs, and armadillos. The South reported the most problems with wildlife, but nuisance wildlife issues were commonplace across all regions.

Forty-four percent of landowners and their families hunted on their property, much higher than the national public average of 5%. Nearly one-quarter of landowners had land management plans and more than 50% indicated they would like to develop conservation and management plans in the future. Seven percent of landowners agreed with a statement that they have participated in a financial assistance program for wildlife management and 13% indicated they would apply for financial assistance for wildlife management in the future. Both with planning and financial assistance programs, there were 27% and 56%, respectively, of the landowners either undecided or uninformed of planning and financial assistance wildlife programs.

Private landowners in Florida have keen wildlife management and conservation interests. Many are already participating in wildlife management, financial assistance, and land planning initiatives. We suggest the FWC consider adapting their current programs to the needs of landowners in the three regions. Generally, it would be prudent to emphasize deer, upland game birds, and general habitat management coupled with problem wildlife control. Regardless of FWC goals, emphasizing these areas will also benefit the conservation of other, possibly of concern, species and develop relationships with private landowners that will facilitate future programs. Private lands biologists should work directly with landowners and other agencies in planning initiatives, remembering that wildlife management is not usually the primary landowner goal. Integrating wildlife management and private landowner objectives is an achievable goal as the landowners continue to be active stewards of Florida's rich natural and cultural resources.

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INTRODUCTION

Isolated protected areas in a landscape of urbanizing and working agricultural lands will likely never be able to effectively conserve wildlife as they are too small, fragmented, and of poor quality to provide suitable habitat and connectivity that healthy wildlife populations require (Scott et al. 2001). Most natural resource agencies continue programs that purchase land to place into public trust, but as land prices continue to increase, this, along with insufficient resources to properly manage these lands, makes a public lands system that could effectively conserve and manage all wildlife species both impractical and improbable. In Florida, the state with the highest percentage of public lands in the Southeast, for 179 rare taxa, existing public lands inadequately protect 56 species. And, it would require an estimated \$8.2 billion to purchase the remaining 1.65 million ha needed to fully protect these species (Kautz and Cox 2001). This amount would increase drastically if annual operating costs of the new public lands were included in these estimates. Therefore, wildlife conservation and management agencies must devise programs to encourage landowners to conserve healthy and stable populations of wildlife on private lands to compliment public lands programs.

Fish and wildlife agency personnel have been criticized in the past for designing and producing materials and programs that do not meet the needs of their targeted group (DiCamillo 1995). Wildlife programs are often designed without sufficient stakeholder input, and the biases and misperceptions of agency personnel negatively impact program implementation and stakeholder interactions (Enck and Decker 1997). The Florida Fish and Wildlife Conservation Commission (FWC), realized the shortcomings of designing programs without sufficient stakeholder input and are actively addressing the wildlife needs of all Floridians. The FWC formed a research partnership

with the University of Florida in December 2007 to proactively address participation in private lands wildlife programs. The research was designed to solicit input from FWC biologists and landowners to design a survey that was mailed to landowners across the state. The survey measured demographics, land use, and wildlife management and conservation behaviors of targeted landowners. The research results will augment private lands wildlife conservation programs to meet landowner concerns and serve as a baseline to monitor the private lands wildlife management programs over time.

Study area

The FWC identified 11 focus areas in which to concentrate technical and financial assistance for private landowners (Figure 1). The focus areas were developed to target: (1) high priority habitats identified in Florida's Wildlife Legacy Initiative, (2) large blocks of private land adjacent to public lands, and (3) clusters of landowners near areas with successful FWC private lands programs. The focus areas contained three general habitat types: scrub, sandhill, and dry prairie. Scrub is characterized by well-drained sandy soils, dominated by oak shrubs (*Quercus* spp.) and Florida rosemary (*Ceratiola ericoides*). Scrub can include an open or closed canopy sand pine (*Pinus clausa*) forest, has distinct boundaries where it adjoins pine forests and flatwoods, and is largely restricted to Florida. Sandhill is the elevated xeric portion of the high pine ecosystem. It is typified by sandy soils, an open canopy of primarily pine (*Pinus* spp.) and some oak, and an understory of perennial grasses and forbs. Sandhill high pine is found throughout the coastal plain from Alabama and east Texas to southeastern Virginia. Dry prairie is dominated by expanses of nearly treeless grasses and forbs,

acidic soils, and sparse palmettos (*Serenoa repens*) and shrubs. Dry prairie can become inundated with water in the height of the summer rainy season (Myers and Ewel 1990).



Landowner Assistance Program Focus Areas

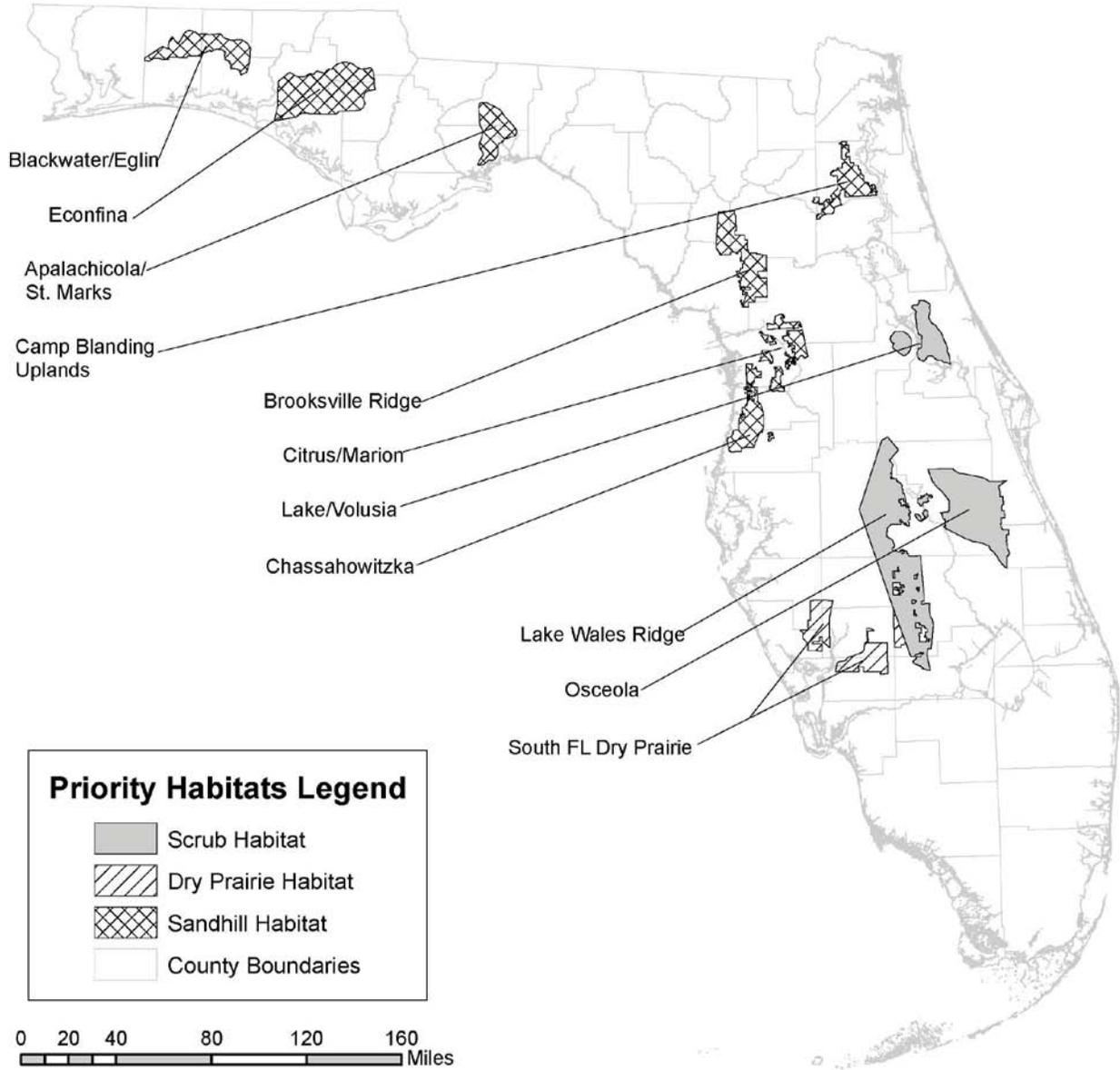


Figure 1. Florida Fish and Wildlife Conservation Commission private lands focus areas, 2006.

METHODS

Private lands biologist survey

We censused FWC regional coordinators and private lands biologists ($n = 16$) using the Internet to obtain their input for questionnaire construction. In the first round, we asked four open-ended questions:

- What are the benefits of managing for wildlife on private lands?
- Based on your knowledge and experience, what management actions can be conducted on private lands to benefit wildlife?
- What are the challenges and barriers to implementing wildlife management actions on private lands?
- What types of programs and activities could Florida Fish and Wildlife Conservation Commission provide to help landowners better manage for wildlife on private lands?

We compiled the responses and then administered a second round of questions asking them to rank the top four most important responses.

Private landowner focus groups

We facilitated focus group meetings of 6-12 landowners in five of the 11 focus areas. In these meetings, landowners were asked the same four questions as the FWC regional coordinators and private lands biologists to further questionnaire survey construction. They brainstormed ideas onto large 'Post-it' notes and then ranked them by affixing paper dots to their top four issues. We then facilitated discussions of the rankings.

Questionnaire design and administration

We developed a mail back questionnaire survey based on the FWC regional coordinator and private lands biologist survey, private landowner focus groups, and a previous pilot survey sent to a group of landowners in Alachua County. The questionnaire included items that measured land use, wildlife management activities, wildlife enterprises, wildlife recreation, and landowner demographics. We also used batteries of questions to predict participation in cost-share financial assistance programs, land planning programs, and the use of prescribed fire (Appendix 1).

We selected potential participants owning property in the focus areas from the Florida property tax parcel Geographic Information System database. Surveys were administered to a random sample of 3,377 landowners owning at least 20 acres, stratified by the 11 focus areas. We employed a five-wave mailing including a pre-letter, the survey, a post card reminder, a replacement survey for nonrespondents, and a third survey for nonrespondents (Dillman, 2000).

Analysis

Analysis of Variance and Likelihood Ratio statistics with Fisher's LSD post-hoc tests were used to compare similarities in variables with respect to focus areas. This allowed us to generalize and group focus areas with similar characteristics for regional analyses and potential regional private lands program development. All data were tested for normality and homogeneity of variance. Those violating test assumptions were rank transformed (Conover 1980, SPSS 2008). We concluded statistical significance at $P \leq 0.05$ for all tests. SPSS 16.0 GP (2008) was used for all statistical tests and Microsoft Excel (2007) to build all charts.

RESULTS

Response rates

One hundred six surveys were returned as undeliverable. Of the 3,271 deliverable addresses, we received 1,658 responses for an overall response rate of 51%. The returned questionnaires contained 86 unanswered surveys and 228 people who did not own 20 or more acres or were public landowners, resulting in 1,344 usable surveys. Response rates varied by focus area (Table 1).

Demographics

Most landowner respondents were 50-64 year old, well-educated white males (Tables 2, 3, & 4). There was no difference in respondent age among focus areas ($P = 0.450$, $n = 1,324$). However, there were differences among focus areas for respondent ethnic group ($P = 0.017$, $n = 1,308$). Inter-area comparisons were not conducted, as they would have little practical significance because the white ethnic group comprised the overwhelming majority of respondents, with focus areas ranging from 90-100% white. Respondent gender differed among focus areas ($P \leq 0.001$, $n = 1,327$). Although it was difficult to interpret practical significance between focus areas with post hoc tests, it is important to note that a considerable percentage of respondents were female.

Table 1. Florida Private Landowner Wildlife Survey response rates by focus area, 2008.

Focus Area	Usable Addresses	Responded	Response Rate
Apalachicola/St.Marks	325	199	61.23%
Blackwater/Eglin	421	202	47.98%
Brooksville Ridge	437	232	53.09%
Camp Blanding Uplands	247	120	48.58%
Chassahowitzka	200	86	43.00%
Citrus/Marion	89	35	39.33%
Ecofina	448	241	53.79%
Lake Wales Ridge	436	207	47.48%
Lake/Volusia Scrub	326	159	48.77%
Osceola Scrub	61	32	52.46%
Southern Florida Dry Prairie	281	145	51.60%
Total	3,271	1,658	50.69%

Table 2. Florida Private Landowner Survey respondent age by focus area, 2008.

Focus Area	Age												Total	
	19-24		25-34		35-49		50-64		65-79		> 80		Count	%
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		
Apalachicola/St. Marks	0	0.0	5	3.1	26	16.2	68	42.5	52	32.5	9	5.6	160	100.0
Camp Blanding Uplands	0	0.0	3	3.3	19	20.9	33	36.3	27	29.7	9	9.9	91	100.0
Brooksville Ridge	1	0.5	4	2.1	29	14.9	81	41.8	58	29.9	21	10.8	194	100.0
Citrus/Marion	0	0.0	0	0.0	4	16.0	10	40.0	9	36.0	2	8.0	25	100.0
Chassahowitzka	0	0.0	2	2.9	11	15.9	33	47.8	19	27.5	4	5.8	69	100.0
Southern Florida Dry Prairie	0	0.0	2	1.6	31	25	48	38.7	29	23.4	14	11.3	124	100.0
Ecofina	0	0.0	6	3.2	40	21.5	80	43.0	50	26.9	10	5.4	186	100.0
Blackwater/Eglin	0	0.0	3	1.8	32	19.5	67	40.9	52	31.7	10	6.1	164	100.0
Lake Wales Ridge	0	0.0	3	1.8	41	25.0	69	42.1	35	21.3	16	9.8	164	100.0
Osceola Scrub	0	0.0	1	4.3	5	21.7	12	52.2	5	21.7	0	0.0	23	100.0
Lake/Volusia Scrub	1	0.8	2	1.6	26	21.0	55	44.4	33	26.6	7	5.6	124	100.0
Total	2	0.2	31	2.3	264	19.9	556	42.0	369	27.9	102	7.7	1,324	100.0

Table 3. Florida Private Landowner Survey respondent gender by focus area, 2008.

Focus Area	Gender				Total	
	Female		Male			
	Count	%	Count	%	Count	%
Apalachicola/St. Marks	40	24.8	121	75.2	161	100.0
Camp Blanding Uplands	25	27.5	66	72.5	91	100.0
Brooksville Ridge	56	28.9	138	71.1	194	100.0
Citrus/Marion	3	12.0	22	88.0	25	100.0
Chassahowitzka	11	15.9	58	84.1	69	100.0
Southern Florida Dry Prairie	11	8.9	113	91.1	124	100.0
Ecofina	51	27.6	134	72.4	185	100.0
Blackwater/Eglin	41	25.0	123	75	164	100.0
Lake Wales Ridge	41	24.6	126	75.4	167	100.0
Osceola Scrub	2	8.7	21	91.3	23	100.0
Lake/Volusia Scrub	36	29.0	88	71.0	124	100.0
Total	317	23.9	1,010	76.1	1,327	100.0

Table 4. Florida Private Landowner Survey respondent ethnicity by focus area, 2008.

Focus Area	Ethnic Group										Total	
	White		Asian		Native American		African American		Latino			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Apalachicola/St. Marks	149	93.7	1	0.6	3	1.9	6	3.8	1	0.0	159	100.0
Camp Blanding Uplands	88	97.8	1	1.1	0	0.0	1	1.1	0	0.0	90	100.0
Brooksville Ridge	171	90.0	4	2.1	1	0.5	9	4.7	5	2.6	190	100.0
Citrus/Marion	23	95.8	0	0.0	0	0.0	1	4.2	0	0.0	24	100.0
Chassahowitzka	65	97.0	1	1.5	0	0.0	0	0.0	1	1.5	67	100.0
Southern Florida Dry Prairie	118	96.7	2	1.6	1	0.8	0	0.0	1	0.8	122	100.0
Ecofina	177	96.7	0	0.0	4	2.2	1	0.5	1	0.5	183	100.0
Blackwater/Eglin	156	95.1	3	1.8	2	1.2	1	0.6	2	1.2	164	100.0
Lake Wales Ridge	155	94.5	5	3.0	0	0.0	1	0.6	3	1.8	164	100.0
Osceola Scrub	23	100.0	0	0.0	0	0.0	0	0.0	0	0.0	23	100.0
Lake/Volusia Scrub	116	95.1	2	1.6	1	0.8	0	0.0	3	2.5	122	100.0
Total	1,241	94.9	19	1.5	12	0.9	20	1.5	16	1.2	1,308	100.0

Statewide, the most frequently reported income category was \$50,000-\$99,000 (Table 5). Income differed among focus areas ($P \leq 0.001$, $n = 1167$). There were three focus area groupings with similar incomes (Table 6). Respondents owning land in Osceola Scrub, Southern Florida Dry Prairie, and Lake Wales Ridge had the highest income, placing them in the 4th income bracket (\$100,000-\$149,000). The other two groups had different mean scores but both were in the 3rd bracket (\$50,000-\$99,000).

Most educated landowners have bachelor's degrees (25%), followed by some college (22%), high school diplomas (20%), master's degrees (12%), associates degrees (6%), doctorates (5%), professional degrees (5%), and less than a high school diploma (4%). Apalachicola/St. Marks was different than eight other areas and Osceola was different than five other areas, but there were no discernable trends among focus areas.

Land use

Statewide, landowners owned a mean of 1,129 acres (SE = 343.74, Min = 20, Max = 330,000). Mean acres per landowner varied considerably by focus area from 19,892 acres in Osceola Scrub to 224 acres in Lake/Volusia Scrub (Table 7). Focus areas were grouped based on differences in mean acreage (Table 7).

Table 5. Florida Private Landowner Survey respondent income by focus area, 2008.

Focus Area	Income												Total	
	\$0-\$24,999		\$25,000-\$49,999		\$50,000-\$99,000		\$100,000-\$149,000		\$150,000-\$199,000		>\$200,000			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Apalachicola/St. Marks	11	7.5	35	24	47	32.2	27	18.5	13	8.9	13	8.9	146	100.0
Camp Blanding Uplands	12	15	10	12.5	24	30.0	16	20.0	8	10.0	10	12.5	80	100.0
Brooksville Ridge	17	10.1	30	17.8	65	38.5	35	20.7	7	4.1	15	8.9	169	100.0
Citrus/Marion	2	10.5	3	15.8	8	42.1	3	15.8	2	10.5	1	5.3	19	100.0
Chassahowitzka	4	6.7	14	23.3	12	20.0	7	11.7	7	11.7	16	26.7	60	100.0
Southern Florida Dry Prairie	8	7.6	10	9.5	26	24.8	15	14.3	12	11.4	34	32.4	105	100.0
Ecofina	20	12.2	37	22.6	50	30.5	24	14.6	10	6.1	23	14.0	164	100.0
Blackwater/Eglin	21	14.7	24	16.8	50	35	35	24.5	4	2.8	9	6.3	143	100.0
Lake Wales Ridge	6	4.1	13	9	40	27.6	31	21.4	14	9.7	41	28.3	145	100.0
Osceola Scrub	0	0.0	2	9.5	5	23.8	2	9.5	2	9.5	10	47.6	21	100.0
Lake/Volusia Scrub	9	7.8	24	20.9	38	33.0	18	15.7	8	7.0	18	15.7	115	100.0
Total	110	9.4	202	17.3	365	31.3	213	18.3	87	7.5	190	16.3	1,167	100.0

Table 6. Florida Private Landowner Wildlife Survey respondent mean income comparisons by focus area, 2008.

Focus Area	Income Category ^a
Osceola Scrub	\$150,000-\$199,999A
Southern Florida Dry Prairie	\$100,000-\$149,999AB
Lake Wales Ridge	\$100,000-\$149,999AB
Chassahowitzka	\$100,000-\$149,999BC
Lake/Volusia Scrub	\$50,000-\$99,999CDE
Citrus/Marion	\$50,000-\$99,999CE
Camp Blanding Uplands	\$50,000-\$99,999CE
Apalachicola/St. Marks	\$50,000-\$99,999DE
Ecofina	\$50,000-\$99,999DE
Brooksville Ridge	\$50,000-\$99,999DE
Blackwater/Eglin	\$50,000-\$99,999E

^a within a column, areas with the same letter are not different ($P > 0.05$)

Table 7. Florida Private Landowner Survey respondent acreage by focus area, 2008.

Focus Area	Acreage				
	Mean ^a	SE	Median	Minimum	Maximum
Apalachicola/St. Marks	305.6E	102.8	60.0	20	13,137
Camp Blanding Uplands	431.0E	223.2	40.0	20	20,000
Brooksville Ridge	335.5E	121.7	60.0	20	23,000
Citrus/Marion	1,160.8BC	535.9	127.0	20	11,800
Chassahowitzka	615.9BD	188.6	68.0	20	8,200
Southern Florida Dry Prairie	1,315.8C	223.2	198.5	20	16,000
Ecofina	758.0DE	440.3	60.0	20	82,000
Blackwater/Eglin	279.5E	112.6	62.0	20	18,000
Lake Wales Ridge	2,426.5B	1,953.7	100.0	20	330,000
Osceola Scrub	19,891.8A	11,933.4	3,500.0	50	300,000
Lake/Volusia Scrub	223.8E	45.1	50.0	20	3,800

^a within a column, areas with the same letter are not different ($P > 0.05$)

Primary land uses were combined into three categories: 1) agriculture, 2) residential and industrial development, and 3) recreation. Statewide, 71% of landowners indicated their primary land use was agriculture, followed by development (20%), and recreation (9%; Table 8). Differences existed among focus areas ($P \leq 0.001$, $n = 1255$) and indicated several focus area groupings (Table 8). Generally, Southern Florida Dry Prairie, Lake Wales Ridge, Osceola Scrub, and Brooksville Ridge respondents classified themselves as agriculturalists more than the other focus areas.

We asked landowners to further classify their land use. They detailed the amount of land devoted to different uses (Figure 2). Landowners in the focus areas of the panhandle and northern parts of the state primarily reported having planted timber and native forest. The central portions of the state were fairly diverse, while the southern areas were dominated by planted grazing land, orchards and groves, native range, and native forest.

Landowners and their families owned their property for an average of 23 years ($n = 1319$, $SE = 0.565$, $Min = 0$, $Max = 200$). There were differences among focus areas ($P = 0.004$), with Ecofina respondents owning land for fewer years than five other focus areas and Dry Prairie less than three other areas (Table 9).

Regional groupings

As this survey was designed to influence private lands wildlife program development, modification, and implementation, we grouped focus areas, where appropriate, based on differences in demographics and land use variables. These

criteria were selected because we believed it important to tailor programs based on the typical type of landowner in the focus areas or grouped focus areas.

The only demographic variable with major tangible differences among areas was income. This is a particularly important variable with respect to current private lands management programs, as a major component of private lands programs has been financial assistance through cost-share or other assistance programs. In many of these programs, there is an upper income limit that disqualifies landowners from participation, and it is possible that landowners in higher income brackets do not need financial assistance for wildlife management or do not want to dedicate the time required for the application process (Willcox, unpublished data).

Table 8. Florida Private Landowner Survey respondent primary land use by focus area, 2008.

Focus Area	Land Use						Total		
	Agriculture		Development		Recreation		Count	%	Grouping
	Count	%	Count	%	Count	%			
Apalachicola/ St. Marks	102	68.9	32	21.6	14	9.5	148	100.0	A
Camp Blanding Uplands	55	63.2	26	29.9	6	6.9	87	100.0	A
Brooksville Ridge	146	79.8	32	17.5	5	2.7	183	100.0	B
Citrus/Marion	17	70.8	4	16.7	3	12.5	24	100.0	ABC
Chassahowitzka	38	59.4	17	26.6	9	14.1	64	100.0	AC
Southern Florida Dry Prairie	108	88.5	12	9.8	2	1.6	122	100.0	BD
Ecofina	97	57.1	37	21.8	36	21.2	170	100.0	C
Blackwater/Eglin	97	60.2	44	27.3	20	12.4	161	100.0	AC
Lake Wales Ridge	134	83.2	20	12.4	7	4.3	161	100.0	BCD
Osceola Scrub	20	83.3	1	4.2	3	12.5	24	100.0	ACD
Lake/Volusia Scrub	75	67.6	28	25.2	8	7.2	111	100.0	AC
Total	889	70.8	253	20.2	113	9.0	1,255	100.0	

^a within a column, areas with the same letter are not different ($P > 0.05$)

Table 9. Number of years Florida Private Landowner Survey respondents' have owned their property, 2008.

Focus Area	No. of Years Property Owned				
	Mean	SE	Median	Minimum	Maximum
Apalachicola/ St. Marks	27.2	1.7	24.5	0	100
Camp Blanding Uplands	21.1	1.8	15.0	0	58
Brooksville Ridge	22.5	1.6	16.0	0	200
Citrus/Marion	23.3	2.8	29.0	1	50
Chassahowitzka	26.5	2.5	22.0	0	125
Southern Florida Dry Prairie	19.5	1.6	15.0	0	90
Ecofina	20.4	1.5	14.0	0	134
Blackwater/Eglin	24.3	1.4	20.0	0	100
Lake Wales Ridge	24.6	1.7	19.5	0	100
Osceola Scrub	30.79	5.8	20	1	100
Lake/Volusia Scrub	23.3	1.8	20	0	141

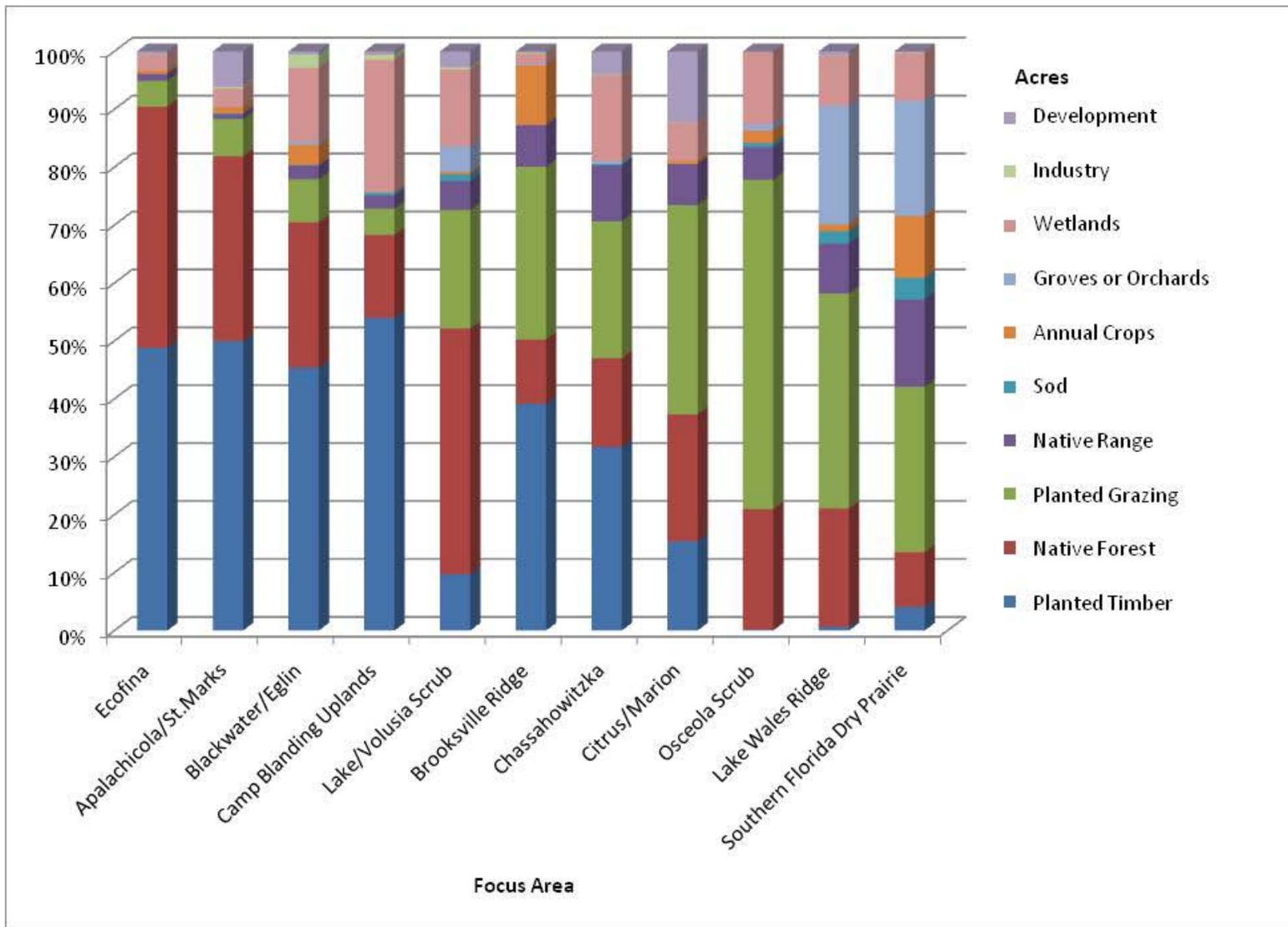


Figure 2. Land use among Florida Fish and Wildlife Conservation Commission Focus Areas. Focus areas are sorted by total percentage of trees (Planted Timber + Native Forest), 2008.

The land use variables that differed among areas included total acreage and land use. These variables are important when developing wildlife management programs as different types of use are more conducive to wildlife management, and different approaches are required for different land uses. Additionally, from a biological perspective, different species of wildlife are adapted to living in different habitats, thus land use will dictate which species can live in different areas.

We examined Tables 6, 7, and 8 and Figure 2 to understand overall patterns with respect to income, land size, and land use. Osceola Scrub, Lake Wales Ridge, and Southern Florida Dry Prairie were grouped together because landowners were typically from higher income brackets (\$100,000-\$149,000), land acreage was larger (1,316-11,934 acres), and lands contained a large proportion of native and planted grasslands (45%-60%; Figure 3). We formed a second group with Chassahowitzka, Citrus/Marion, and Brooksville Ridge as properties in these areas were moderately sized (336-1,161 acres), landowners had the second highest income (\$50,000-\$99,999), and land use was mixed between grassland and forest uses (30%-40% grassland, 35%-45% forest). The final grouping contained Apalachicola/St. Marks, Camp Blanding Uplands, Ecofina, and Lake/Volusia Scrub. These areas were primarily native forests and planted timber (50%-85%), landowners had lower incomes (\$50,000-\$99,999), and the properties were small (224-758 acres). These groupings will be referred to as North, Central, and South throughout the remainder of this report.

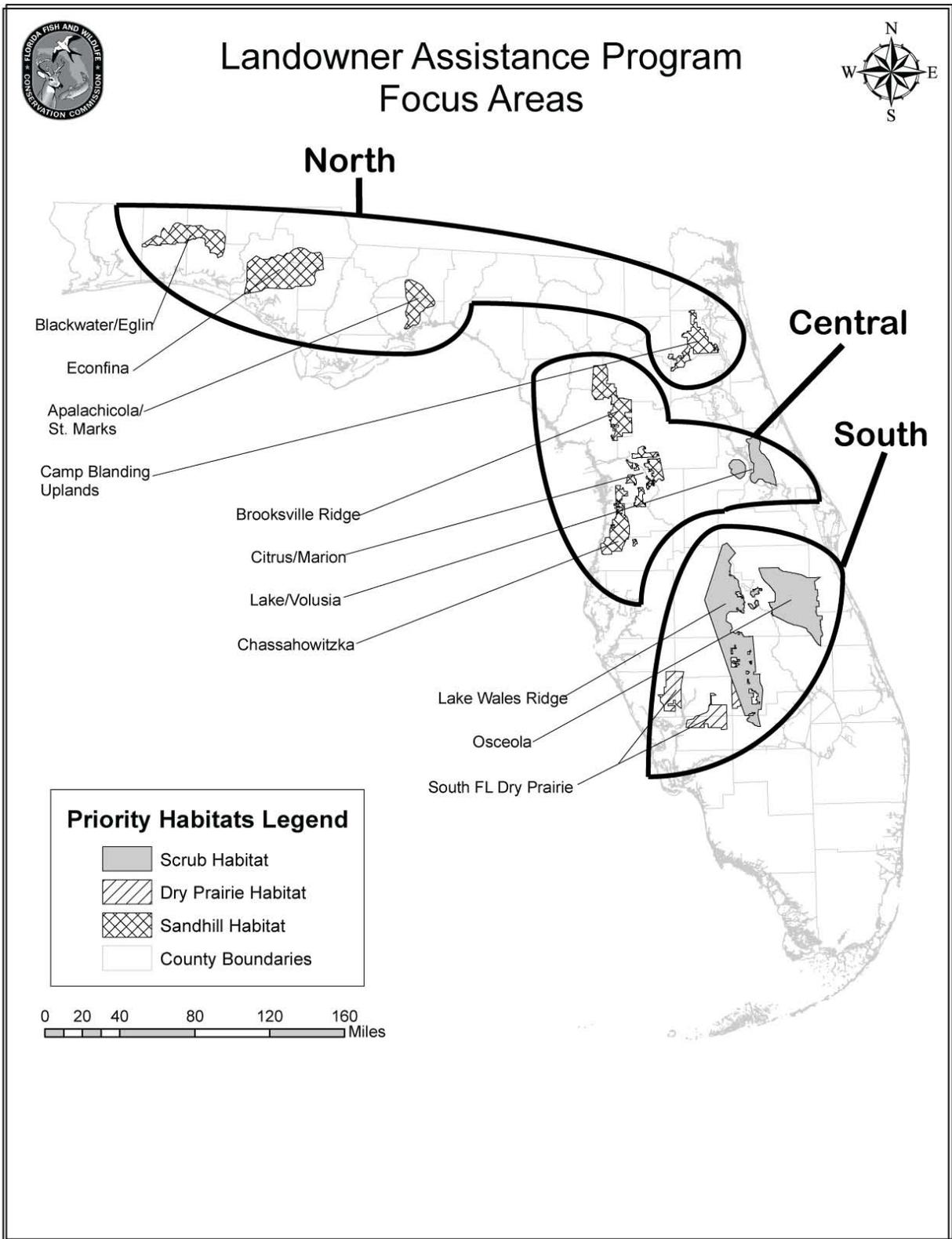


Figure 3. Focus Area groupings based on income, land use, and total acreage. These groupings were used to make regional comparisons for the Florida Fish and Wildlife Conservation Commission Private Landowner Survey, 2008.

Wildlife management and conservation

Statewide, 68% of landowners thought that their regular land management practices benefited wildlife and habitat (Table 10). There were differences among regional groups ($P \leq 0.001$, $n = 1,333$), with the North more often reporting their land management benefiting wildlife than the Central ($P \leq 0.001$, $n = 1016$), but not the South ($P = 0.165$, $n = 920$). The Central did not differ from the South ($P = 0.165$, $n = 730$).

Fifty-eight percent of landowners indicated that they actively managed for wildlife on their property (Table 11). Regionally, there were differences among groups ($P \leq 0.001$, $n = 1,337$), with the North actively managing for wildlife more than the Central ($P \leq 0.001$, $n = 1,020$) and South ($P = 0.002$, $n = 922$), but no difference between the Central and South ($P = 0.179$, $n = 732$).

Of the respondents who indicated they actively managed for wildlife, they primarily managed for deer (22%), followed by upland game birds, and general wildlife habitat (Figure 4). We also examined each type of wildlife by region (Table 12). Considering the top five groups, there were regional differences in what was managed. Deer management was higher in the North than Central ($P \leq 0.001$, $n = 601$) and South ($P = 0.022$, $n = 568$), and higher in the South than Central ($P = 0.011$, $n = 381$). Upland game bird management was higher in the South than North ($P \leq 0.001$, $n = 568$) and Central ($P \leq 0.001$, $n = 381$), but did not differ between the North and Central ($P = 0.151$, $n = 601$). General wildlife habitat management was not different between South and Central ($P = 0.424$, $n = 381$) or Central and North ($P = 0.079$, $n = 601$), but South was higher than North ($P = 0.010$, $n = 568$). No differences were detected among

groups for small mammals (squirrels, rabbits, raccoons etc.; $P = 0.171$, $n = 775$) or songbirds ($P = 0.149$, $n = 775$).

Table 10. Florida Private Landowner Survey respondent opinion that their regular land management activities benefit wildlife and habitat, 2008.

Regional Group	Land Management						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	83	13.8	441	73.1	79	13.1	603	100.0
Central	87	21.1	251	60.8	75	18.2	413	100.0
South	57	18.0	214	67.5	46	14.5	317	100.0
Total	227	17.0	906	68.0	200	15.0	1,333	100.0

Table 11. Florida Private Landowner Survey respondents who actively managed for wildlife, 2008.

Regional Group	Wildlife Management				Total	
	No		Yes			
	Count	%	Count	%	Count	%
North	210	34.7	395	65.3	605	100.0
Central	208	50.1	207	49.9	145	100.0
South	143	45.1	174	54.9	317	100.0
Total	561	42.0	776	58.0	1,337	100.0

Table 12. Wildlife managed for by Florida Private Landowner respondents (number, %), 2008.

Wildlife group	Response	Regions			Total
		South	Central	North	
Deer	No	65 (37)	104 (50)	109 (28)	278 (36)
	Yes	109 (63)	103 (50)	285 (72)	497 (64)
Upland game birds	No	61 (35)	108 (52)	199 (51)	368 (48)
	Yes	113 (65)	99 (48)	195 (50)	407 (53)
General habitat	No	104 (60)	132 (64)	279 (71)	515 (67)
	Yes	70 (40)	75 (36)	115 (29)	260 (34)
Small mammals (squirrels, rabbits, raccoons, etc.)	No	126 (72)	135 (65)	255 (65)	516 (67)
	Yes	48 (28)	72 (35)	139 (35)	259 (33)
Songbirds	No	128 (74)	138 (67)	258 (66)	524 (68)
	Yes	46 (26)	69 (33)	136 (35)	251 (32)
Fish	No	137 (79)	171 (83)	290 (74)	598 (7)
	Yes	37 (21)	35 (17)	104 (26)	176 (23)
Reptiles and amphibians	No	134 (77)	157 (76)	326 (83)	617 (80)
	Yes	40 (23)	50 (24)	68 (17)	158 (20)
Threatened and endangered species	No	138 (79)	182 (88)	354 (90)	674 (87)
	Yes	36 (21)	25 (12)	39 (10)	100 (13)
Total per wildlife group		394 (100)	207 (100)	174 (100)	775 (100)

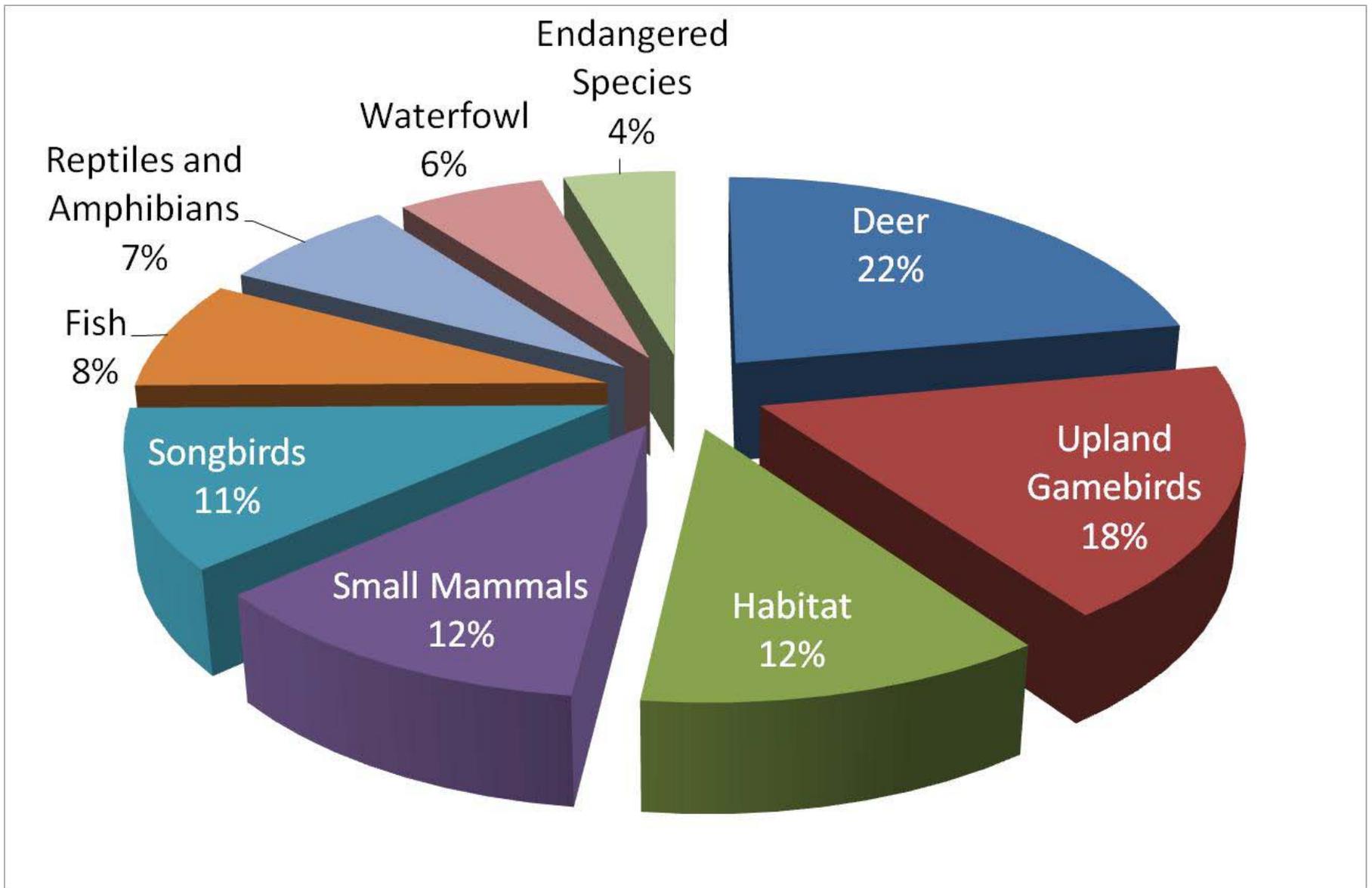


Figure 4. Wildlife and habitat managed for by Florida Private Landowner Wildlife survey respondents, 2008.

We asked a series of questions about common land management practices that benefit wildlife including planting trees, grasses, shrubs, and food plots, feeding wildlife, using prescribed fire, and installing nest boxes or other wildlife shelters (Figure 5). There were differences among regions, with the North reporting they planted food plots more than the South ($P \leq 0.001$, $n = 814$) and Central ($P \leq 0.001$, $n = 913$). The South planted food plots more often than Central ($P = 0.002$, $n = 649$). Landowners from the North fed wildlife more than the South ($P = 0.010$, $n = 818$) and Central ($P \leq 0.001$, $n = 915$), and the South more than Central ($P = 0.002$, $n = 651$). The North installed more nest boxes or other wildlife shelters than the South ($P = 0.017$, $n = 814$) and Central ($P = 0.013$, $n = 912$), but there was no difference between the South and Central ($P = 0.194$, $n = 648$). The North also planted more native trees than the South ($P \leq 0.001$, $n = 816$) and Central ($P \leq 0.001$, $n = 911$), and the Central planted more native trees than the South ($P \leq 0.001$, $n = 649$). The North planted more native grasses and shrubs than the South ($P \leq 0.001$, $n = 815$) and was not different from Central ($P = 0.061$, $n = 910$). The Central planted more native grasses and shrubs than the South ($P \leq 0.001$, $n = 647$).

Statewide, most landowners reported not having invasive exotic plants on their property (Table 13). However, the South had more problems with invasive exotic plants than North and Central ($P \leq 0.001$, $n = 826$, $P \leq 0.001$, $n = 659$, respectively), and Central was higher than North ($P = 0.010$, $n = 919$). Of landowners who had exotic species, the South averaged 482 acres of exotics, Central 232 acres, and North 67 acres. If they have or were to have invasive exotic plants on their land in the future, landowners were primarily concerned (76%), with 19% neutral, and 5% unconcerned.

The South was concerned more often than North ($P = 0.001$, $n = 772$) and Central ($P = 0.027$, $n = 623$), but Central and North did not differ ($P = 0.587$, $n = 853$).

The use of prescribed fire did not differ between the North and South ($P = 0.712$, $n = 814$), but they both were higher than Central ($P = 0.003$, $n = 910$ and $P \leq 0.001$, $n = 648$, respectively). Statewide, of landowners using prescribed fire, an average of 404 acres were burned annually ($n = 252$, $SE = 92.883$, $Min = 1$ $Max = 20,000$). Acres burned annually varied considerably, with the South burning the most followed by Central and South (Table 14). The South burned more acres annually than the North and Central ($P \leq 0.001$ and $P \leq 0.001$, respectively), but the Central and North did not differ ($P = 0.605$). Landowners, their families, and staff conducted most of the burning themselves (67%, $n = 261$), followed by private contractors (16%, $n = 60$), public agencies (12%, $n = 48$), and neighbors (5%, $n = 20$). More detailed multivariate analyses of social norms, attitudes, and perceived behavior with respect to prescribed fire will be conducted and reported in a separate manuscript.

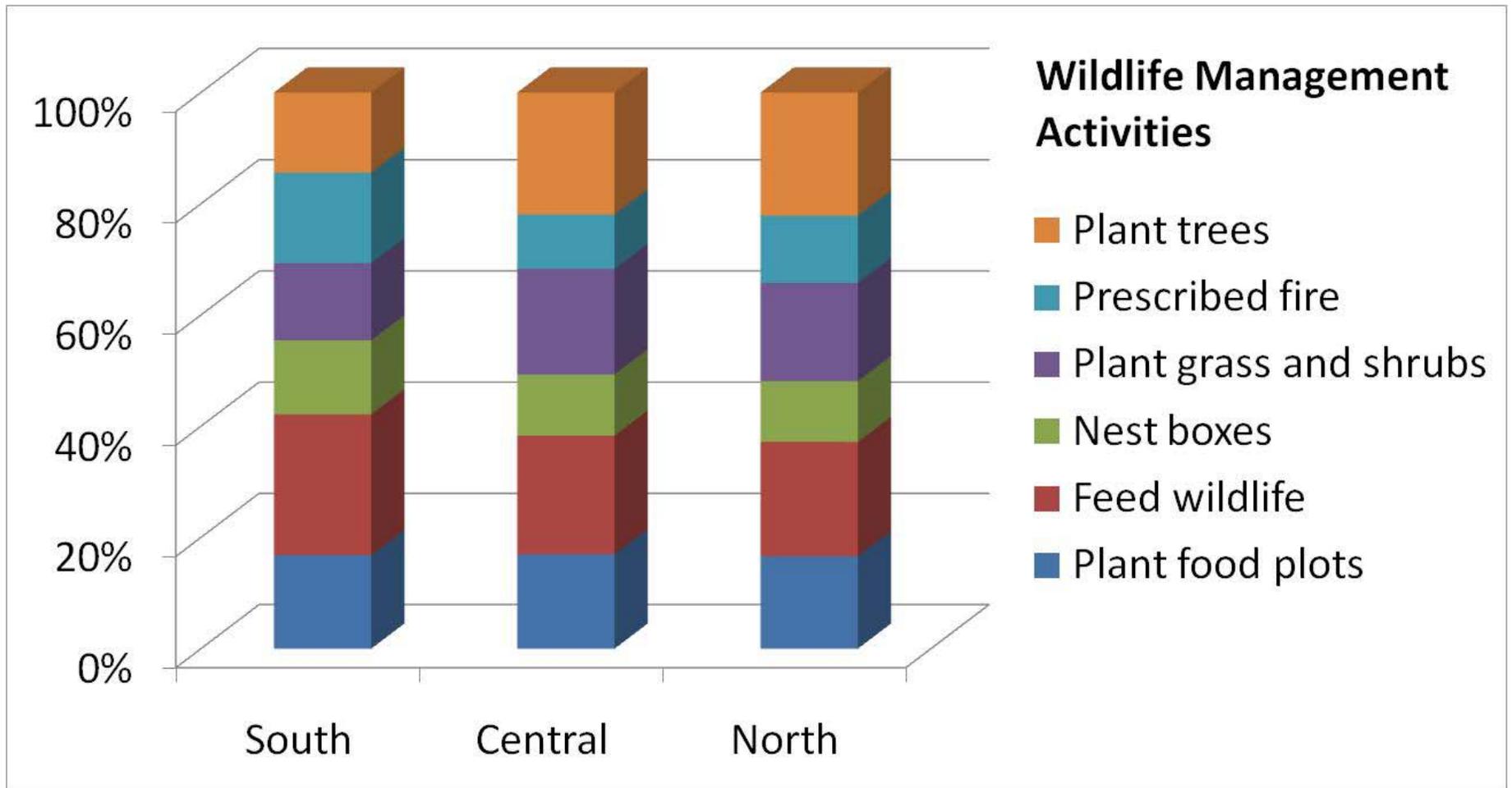


Figure 5. Beneficial wildlife land management activities reported by Florida Private Landowner Wildlife survey respondents by region, 2008.

Table 13. Exotic species reported, Florida Private Landowner Survey, 2008.

Regional Group	Exotic Species						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	291	53.6	80	14.7	172	31.7	543	100.0
Central	192	51.1	84	22.3	100	26.6	376	100.0
South	72	25.4	173	61.1	38	13.4	283	100.0
Total	555	46.2	337	28.0	310	25.8	1,202	100.0

Table 14. Annual acreage burned using prescribed fire by region, Florida Private Landowner Survey, 2008.

Regional Group	Annual Acres Burned				
	Mean	SE	Median	Minimum	Maximum
North	177.6	56.0	50.0	1	5,000
Central	240.0	90.2	40.0	1	3,500
South	906.8	288.1	250.0	1	20,000

Statewide, more than 50% of landowners reported having problems with wildlife (Table 15). The South reported having problems with wildlife more than North ($P \leq 0.001$, $n = 859$) and Central ($P \leq 0.001$, $n = 671$), but there was no difference between Central and North ($P = 0.612$, $n = 950$). Landowners reported coyotes, hogs, armadillos, raccoons, and rodents caused most of the problems (Figure 6). Of the top five problem wildlife species, there were differences in some types among regions. There were no differences for coyotes between the North and South ($P = 0.108$, $n = 859$) or North and Central ($P = 0.156$, $n = 950$), but South was higher than Central ($P = 0.007$, $n = 671$). Wild hog reports were higher in the South than Central ($P \leq 0.001$, $n = 671$) and North ($P \leq 0.001$, $n = 859$), and Central was higher than North ($P = 0.003$, $n = 950$). There was no difference for armadillos between the North and South ($P = 0.072$, $n = 859$), South was higher than Central ($P = 0.000$, $n = 671$), and North was higher than Central ($P = 0.020$, $n = 950$). Raccoons were reported more frequently in the South than North ($P \leq 0.001$, $n = 859$) and Central ($P = 0.006$, $n = 671$), but no difference was detected between North and Central ($P = 0.174$, $n = 950$). There were no differences among any regions for rodents ($P = 0.102$, $n = 1,239$). Of the people who indicated they had problems with wildlife, 58% control or attempt to control them (Table 16). The South reported actively controlling for problem wildlife more than the North ($P \leq 0.001$, $n = 463$) and Central ($P = 0.005$, $n = 367$), with North and Central having no difference ($P = 0.238$, $n = 442$).

Table 15. Landowner reported problems with wildlife by region, Florida Private Landowner Survey, 2008.

Regional Group	Problems with Wildlife						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	263	46.2	271	47.6	35	6.2	569	100
Central	179	47.0	173	45.4	29	7.6	381	100
South	85	29.3	195	67.2	10	3.4	290	100
Total	527	42.5	639	51.5	74	6.0	1,240	100.0

Table 16. Landowners that control or attempt to control problem wildlife, Florida Private Landowner Survey, 2008.

Regional Group	Control Problem Wildlife						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	131	48.7	137	50.9	1	0.4	269	100.0
Central	76	43.9	94	54.3	3	1.7	173	100.0
South	54	27.8	137	70.6	3	1.5	194	100.0
Total	261	41.0	368	57.9	7	1.1	636	100.0

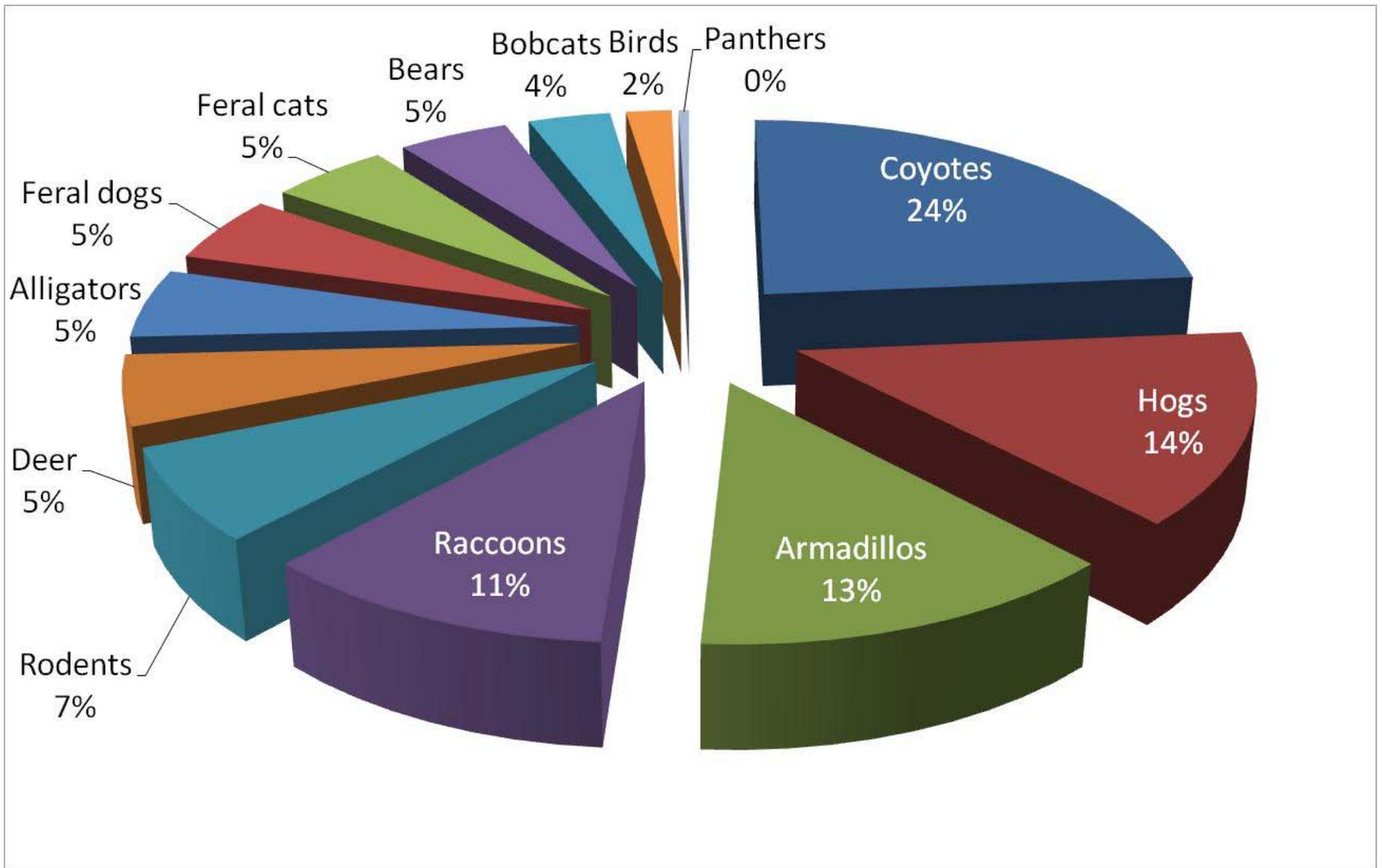


Figure 5. Types of problem wildlife reported by Florida Private Landowner Wildlife Survey respondents, 2008.

Forty-four percent of landowner respondents or their families hunted (Table 17). Respondents from the Central region hunt less than the North ($P \leq 0.001$, $n = 981$) and South ($P \leq 0.001$, $n = 694$), and the North and South were not different ($P = 0.882$, $n = 877$). Statewide, 6% of landowners lease their land to hunters with no differences among regions ($P \leq 0.244$, $n = 1,277$; Table 18). Twenty-two percent of landowners practice quality deer management (Table 19). The North and South did not differ for quality deer management ($P = 0.207$, $n = 868$), but both were greater than Central ($P \leq 0.001$, $n = 972$ and $P \leq 0.001$, $n = 684$, respectively). Only 3% of landowners conducted guided hunts and 4% conducted ecotourism, bird watching, or wildlife viewing tours.

Forty-two percent of landowners maintained their Greenbelt for tax purposes (Table 20). The South had more landowners with a Greenbelt than the North and Central ($P \leq 0.001$, $n = 869$ and $P \leq 0.001$, $n = 869$, respectively), but North and Central were not different ($P = 0.121$, $n = 972$). Five percent of landowners had conservation easements on their property (Table 21). The South had more reported easements than North and Central ($P \leq 0.001$, $n = 873$ and $P = 0.002$, $n = 686$, respectively), but North and Central did not differ ($P = 0.572$, $n = 975$). Thirteen percent of landowners indicated they would be interested in placing a conservation easement on their property with no differences among regions ($P = 0.833$, $n = 1,117$; Table 22).

Twenty-four percent of landowners indicated they had a land management plan (Table 23), with no differences among regions ($P = 0.112$, $n = 1,234$). Of the people who had management plans, most were personally developed (50%), 29% had a Forest Stewardship plan, 13% had Natural Resource Conservation Service conservation plans, and 8% had private contractor developed plans. There were no differences among

regions for personally developed plans ($P = 0.129$, $n = 294$) or private contractor developed plans ($P = 0.799$, $n = 293$). The North and Central did not differ in Forest Stewardship plans prepared ($P = 0.561$, $n = 217$), but both were greater than the South ($P \leq 0.001$, $n = 220$, $P = 0.010$, $n = 151$, respectively). Landowners living in the South reported having Natural Resource Conservation Service conservation plans more than the North ($P = 0.001$, $n = 220$), the Central was greater than the South ($P = 0.009$, $n = 216$), and the South and Central did not differ ($P = 0.530$, $n = 150$).

When landowners were asked if they have or are currently developing a conservation and land management plan, 24% agreed or strongly agreed with the statement (Table 24). When landowners were asked if they would like to develop a conservation and management plan in the future, 30% agreed or strongly agreed with the statement (Table 25). The regional groups did not differ for either statement ($P = 0.068$, $n = 1130$, $P = 0.676$, $n = 1121$, respectively). Many respondents chose not to fully complete the battery of questions on land planning, likely due to questionnaire fatigue. This made detailed analyses of attitudes, social norms, and perceived behavioral control impossible.

Table 17. Landowners that hunt on their property, Florida Private Landowner Survey, 2008.

Regional Groups	Hunt				Total	
	No		Yes			
	Count	%	Count	%	Count	%
North	281	48.3	301	51.7	582	100.0
Central	289	72.4	110	27.6	399	100.0
South	144	48.8	151	51.2	295	100.0
Total	714	56.0	562	44.0	1,276	100.0

Table 18. Landowners who lease their property to hunters, Florida Private Landowner Survey, 2008.

Regional Groups	Lease to Hunt				Total	
	No		Yes			
	Count	%	Count	%	Count	%
North	543	93.3	39	6.7	582	100.0
Central	382	95.5	18	4.5	400	100.0
South	274	92.9	21	7.1	295	100.0
Total	1,199	93.9	78	6.1	1,277	100.0

Table 19. Landowners practicing quality deer management, Florida Private Landowner Survey, 1008.

Regional Group	Quality Deer Management						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	326	56.4	159	27.5	93	16.1	578	100.0
Central	292	74.1	48	12.2	54	13.7	394	100.0
South	180	62.1	74	25.5	36	12.4	290	100.0
Total	798	63.2	281	22.3	183	14.5	1,262	100.0

Table 20. Landowners who maintained a greenbelt, Florida Private Landowner Survey, 2008.

Regional Group	Greenbelt						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	257	44.5	205	35.5	115	19.9	577	100.0
Central	192	48.6	144	36.5	59	14.9	395	100.0
South	85	29.1	178	61.0	29	9.9	292	100.0
Total	534	42.2	527	41.7	203	16.1	1,264	100.0

Table 21. Landowners with conservation easements, Florida Private Landowner Survey, 2008.

Regional Group	Conservation Easement						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	458	78.8	23	4	100	17.2	581	100.0
Central	303	76.9	21	5.3	70	17.8	394	100.0
South	240	82.2	25	8.6	27	9.2	292	100.0
Total	1,001	79.0	69	5.4	197	15.5	1,267	100.0

Table 22. Landowners interested in conservation easements, Florida Private Landowner Survey, 2008.

Regional Group	Interest in Easement						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	268	53.0	60	11.9	178	35.2	506	100.0
Central	182	51.4	45	12.7	127	35.9	354	100.0
South	140	54.5	35	13.6	82	31.9	257	100.0
Total	590	52.8	140	12.5	387	34.6	1,117	100.0

Table 23. Landowners with management plans, Florida Private Landowner Survey, 2008.

Regional Groups	Management Plan						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	400	70.5	144	25.4	23	4.1	567	100.0
Central	294	77.4	74	19.5	12	3.2	380	100.0
South	198	69.0	77	26.8	12	4.2	287	100.0
Total	892	72.3	295	23.9	47	3.8	1,234	100.0

Table 24. Agreement with a statement about current management plan development, Florida Private Landowner Survey, 2008.

Regional Group	I Have or Am Currently Developing a Conservation and Management Plan												Total	
	Don't Know		Strongly Disagree		Disagree		Neither Agree or Disagree		Agree		Strongly agree			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
North	51	9.7	97	18.4	145	27.6	98	18.6	110	20.9	25	4.8	526	100.0
Central	46	13.3	70	20.2	85	24.6	74	21.4	59	17.1	12	3.5	346	100.0
South	24	9.3	38	14.7	63	24.4	69	26.7	46	17.8	18	7	258	100.0
Total	121	10.7	205	18.1	293	25.9	241	21.3	215	19.0	55	4.9	1,130	100.0

Table 25. Agreement with a statement about future management plan development, Florida Private Landowner Survey, 2008.

Regional Group	I Would Like to Develop a Conservation and Management Plan												Total	
	Don't Know		Strongly Disagree		Disagree		Neither Agree or Disagree		Agree		Strongly agree			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
North	104	19.9	41	7.8	60	11.5	155	29.6	126	24.1	37	7.1	523	100.0
Central	68	20.0	29	8.5	37	10.9	108	31.8	71	20.9	27	7.9	340	100.0
South	36	14.0	25	9.7	29	11.2	88	34.1	63	24.4	17	6.6	258	100.0
Total	208	18.6	95	8.5	126	11.2	351	31.3	260	23.2	81	7.2	1,121	100.0

Fourteen percent of landowners indicated they have received financial assistance for land management activities, with no differences among regions ($P = 0.397$, $n = 1273$; Table 26). The most frequent financial assistance program reported was the Environmental Quality Incentives Program (EQIP; 33%), followed by the Landowner Incentives Program (LIP; 28%), Conservation Reserves Program (CRP; 23%), and the Wildlife Habitat Incentives Program (WHIP; 12%). Landowners in the South participated in EQIP more than the North ($P \leq 0.001$, $n = 129$) and Central ($P = 0.003$, $n = 93$), and Central was greater than North ($P = 0.007$, $n = 126$). There were no differences among regions for WHIP ($P = 0.877$, $n = 174$) and LIP ($P = 0.534$, $n = 174$). The North participated in CRP more than the South ($P \leq 0.001$, $n = 129$), but was not different from Central ($P = 0.082$, $n = 126$), and Central was not different than South ($P = 0.058$, $n = 93$).

When asked if they have participated in financial assistance programs for wildlife habitat management, 7% either strongly agreed or agreed with the statement (Table 27). When landowners were asked if they plan to apply for wildlife management financial assistance programs in the future, 13% agreed or strongly agreed with the statement (Table 28). There were no regional differences detected for past ($P = 0.059$, $n = 1142$) or future ($P = 0.997$, $n = 1142$) participation in wildlife management financial assistance programs. Many respondents chose not to fully complete the battery of questions on cost-share programs, likely due to questionnaire fatigue. Thus, detailed analysis of attitudes, social norms, and perceived behavioral control was not possible.

Table 26. Landowners who received financial assistance for land management, Florida Private Landowner Survey, 2008.

Regional Group	Financial Assistance						Total	
	No		Yes		Don't Know			
	Count	%	Count	%	Count	%	Count	%
North	481	82.6	83	14.3	18	3.1	582	100.0
Central	339	85.2	45	11.3	14	3.5	398	100.0
South	237	80.9	48	16.4	8	2.7	293	100.0
Total	1,057	83.0	176	13.8	40	3.1	1,273	100.0

Table 27. Agreement with a statement about current participation in wildlife management financial assistance programs, Florida Private Landowner Survey, 2008.

Regional Group	I Have Participated in a Cost-Share Financial Assistance Program for Wildlife Management												Total	
	Don't Know		Strongly Disagree		Disagree		Neither Agree or Disagree		Agree		Strongly agree			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
North	60	11.3	184	34.8	183	34.6	74	14.0	18	3.4	10	1.9	529	100.0
Central	56	15.8	120	33.8	111	31.3	46	13.0	17	4.8	5	1.4	355	100.0
South	32	12.4	76	29.5	80	31.0	41	15.9	16	6.2	13	5.0	258	100.0
Total	148	13.0	380	33.3	374	32.7	161	14.1	51	4.5	28	2.5	1,142	100.0

Table 28. Agreement with a statement about future participation in wildlife management financial assistance programs, Florida Private Landowner Survey, 2008.

Regional Group	I Will Apply for a Wildlife Management Cost-Share Financial Assistance Program in the Future												Total	
	Don't Know		Strongly Disagree		Disagree		Neither Agree or Disagree		Agree		Strongly agree			
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
North	176	33.1	70	13.2	98	18.5	120	22.6	45	8.5	22	4.1	531	100.0
Central	116	32.9	47	13.3	59	16.7	89	25.2	28	7.9	14	4.0	353	100.0
South	80	31.0	33	12.8	45	17.4	66	25.6	22	8.5	12	4.7	258	100.0
Total	372	32.6	150	13.1	202	17.7	275	24.1	95	8.3	48	4.2	1,142	100.0

DISCUSSION AND RECOMMENDATIONS

Wildlife management already plays a major role on private lands in Florida, with nearly 70% of respondents indicating that their routine land management activities benefit wildlife and nearly 60% of them actively managing to promote wildlife on their property. In this study, more respondents indicated they were actively managing for wildlife when compared to other studies of agriculturalists in the Southeast (Conover 1998). However, it is unclear what is causing the dissimilarity, as study sampling frames differ and the regional study was conducted 14 years before the current study. Wildlife management is by no means a completely positive experience, as more than 50% of landowners had problems with wildlife. This dichotomy of both managing to promote wildlife populations and managing to prevent wildlife damage is not new in the Southeast. In 1994, agriculturalists in this region reported spending the most money nationally to increase wildlife populations while at the same time spending the second highest amount of money to control problem wildlife (Conover 1998). It is therefore important when designing or modifying private lands wildlife management and conservation programs to be aware that both positive and negative wildlife population objectives may exist, sometimes on the same property. To meet landowner wildlife objectives, private lands wildlife biologists need to be able to address these issues simultaneously to achieve goals that include protecting some land uses from destructive animals while increasing wildlife populations elsewhere on the property.

The use of prescribed fire is arguably one of the most powerful and useful means for managing wildlife habitat in much of the Southeast and Florida, as it mimics historical lightning strikes and removes hardwoods, promotes grasses and forbs, and

reduces canopy cover (Van Lear et al. 2005). More than 25% of landowners conduct prescribed burns on their property, but this could be difficult to maintain as urban and suburban development continues to encroach on open spaces, increasing the liabilities and dangers associated with fire. If logistically possible, nearly all natural systems found among the regions could benefit from the frequent use of prescribed fire. Private lands biologists should continue their efforts to promote the use of prescribed fire and assist landowners with its implementation.

Land management and conservation plans are popular with landowners. This is true for both those who currently have or are developing plans and those who intend to develop them in the future. When asked about interest in developing a plan in the future, more than 30% agreed with the statement, less than 20% disagreed, and approximately 50% were ignorant or undecided. It is important that private lands biologists avail their services to this 30% but, concurrently, agencies are in the position to influence the 50% who don't know or are neutral about management and conservation plans. Additionally, with the average land ownership of 23 years, it is important for landowners to plan at least 10 years ahead for multiple land uses and resources. Conservation plans can also make landowners more competitive for financial assistance and tax relief programs. Agencies can provide information to landowners about management and conservation plans and the technical assistance programs available, so that the 50% can make informed decisions about management plans and seek assistance if needed.

Financial assistance programs for wildlife management are less popular with landowners than land and conservation planning programs. Only 7% of landowners

have participated in these programs and only 12.5% plan on applying for them in the future. The 50% undecided or ignorant figure is similar to that for future management plans, but the major difference is that more than 30% of landowners disagreed with the statement about applying for wildlife management financial assistance in the future. As with planning, agencies could influence the 50% neutral or uninformed landowners through information campaigns if they wanted to increase landowner informed decision making about financial assistance programs and potentially increase participation.

With hunting remaining very popular amongst private landowners in Florida, agencies should consider expanding their game species management programs. The 44% of landowners or their families who hunt is much greater than the regional average of 4% and national average for the general population of 5% (US Department of the Interior et al. 2006). Additionally, agencies may want to consider tailoring wildlife-specific programs to regions where the types of wildlife are most popular. Our results showed a strong preference for deer management in the North whereas landowners in the South showed an inclination toward upland game birds. Agencies should consider pairing a game species focus with general habitat management because general habitat management was the third most common type of wildlife management. Where agency goals primarily focus on nongame or threatened and endangered species, tailoring programs to popular game species with similar needs will indirectly accomplish those goals. Additionally, game species programs will initiate and strengthen positive landowner relationships with the FWC, potentially increasing the opportunity to promote other wildlife programs. These wildlife programs should be integrated into the existing primary land use, as the majority of landowners reported their daily land management

practices already benefit wildlife. If developed, these programs should also address problem wildlife issues tailored to the most destructive wildlife species, mainly coyotes, feral hogs, and armadillos.

Landowner demographics and land use vary significantly across the state, but by examining key variables, we were able to make three key groupings: North, South, and Central. Coincidentally, these groupings parallel the geography of Florida, thus enabling regional programming. Regional differences should be considered in both the design and physical implementation of private lands programs. The North should emphasize wildlife management in natural and production forests, as those are the primary land uses and types. The North has the highest number of focus areas and the smallest mean acreage per landowner. This will require more private lands wildlife staff and likely the establishment of cooperatives between neighbors to impact large continuous tracts. As staff resources are a common limiting factor in private lands wildlife management programs, the establishment of a landowner wildlife leaders program could increase wildlife program outreach capabilities. This type of program would train and certify interested landowners to assist their neighbors with wildlife management activities and planning. These landowner wildlife leaders would require material and technical support from private lands biologists to ensure high quality transfer of information between agencies and landowners. This region has the greatest percentage of Forest Stewardship plans. This ongoing, successful partnership between multiple agencies should continue to grow and incorporate recommendations from this report into their program.

The South had the fewest number of focus areas and the highest mean acreage per landowner, but they also contain two of the largest focus areas: Lake Wales Ridge and Osceola Scrub. The South should focus on wildlife management in predominantly grassland systems and integration into cattle management. Landowners reported a high (61%) occurrence of invasive exotic plants. The FWC should consider joint programs with the Department of Environmental Protection and others in this region to promote exotic removal programs to improve wildlife habitat. As some of the largest parcels in Florida are found in this region, there is the potential to impact high acreage using fewer properties than other regions. This region also had the highest percentage of Natural Resource Conservation Service (NRCS) conservation plans. The FWC already collaborates extensively with NRCS and this successful partnership should continue to be fostered. It may also be prudent to incorporate recommendations from this report into the NRCS conservation planning program to further address wildlife management and conservation issues. This region could require substantial private lands biologist staff time as these large parcel land managers and landowners may require complex plans developed in-person with wildlife agency staff.

The Central, being a mixture of the demographics and land uses of the North and South, will require a diverse approach. Private lands staff must be well versed in wildlife management for grassland and forested systems and able to address wildlife management issues in both cattle and forest production. Central programs should build on the successes of wildlife programs from the North and South to adapt to field realities. This is not only true for the Central, as there will frequently be landowners in all the regions that differ from the general groupings we have made. We, therefore,

recommend frequent contact among the private lands biologists from all regions to facilitate the exchange of current technical information and discuss current landowner wildlife issues encountered in the field.

In addition to variables that affected landowners regionally, there were universal factors that could assist in wildlife program design. Landowners listing agriculture as their primary land use were in the majority (70%). Wildlife management programs should focus on integrating wildlife management into agricultural systems to increase quality and quantity of preferred species while minimizing crop depredation. With 70% of landowners indicating they had some higher education past high school, education programs and workshops should be conducted at the senior high school to university level. There is substantial participation in programs like Greenbelt that reduce taxes or evaluate agricultural property values differently than other land uses. With the recent constitutional amendment to include conservation lands in similar types of programs, these might be of interest to landowners. Additionally, although there is currently not much participation in conservation easement programs, 13% of landowners were interested in placing a conservation easement on their property and 35% did not know enough about them to have an opinion. The FWC should continue promoting conservation easements and consider working closely with non-governmental easement organizations like the Conservation Trust for Florida. The national Land Trust Alliance has an Internet-based tool to identify national, statewide, and local land trust organizations.

In conclusion, private landowners in Florida continue to be the stewards of the vast majority of wildlife and wild places. Agencies should be encouraged by this and

modify their current private lands programs to meet the needs of this demographic. The primary focus of private lands in Florida remains agriculture and agencies should design wildlife programs knowing that they will usually be secondary to the primary land-use objectives. The best approach may be through holistic land and conservation planning that integrates wildlife into normal land use operations where possible, addresses wildlife issues contrary to the primary land use, and tailors programs to increase wildlife quantity and quality specific to landowner preferred wildlife and habitat. The planning process should facilitate the passage of technical knowledge between landowner and agency biologists so that they can work together to effectively integrate wildlife management on private lands.

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APPENDIX



Florida Private Landowner Wildlife Survey

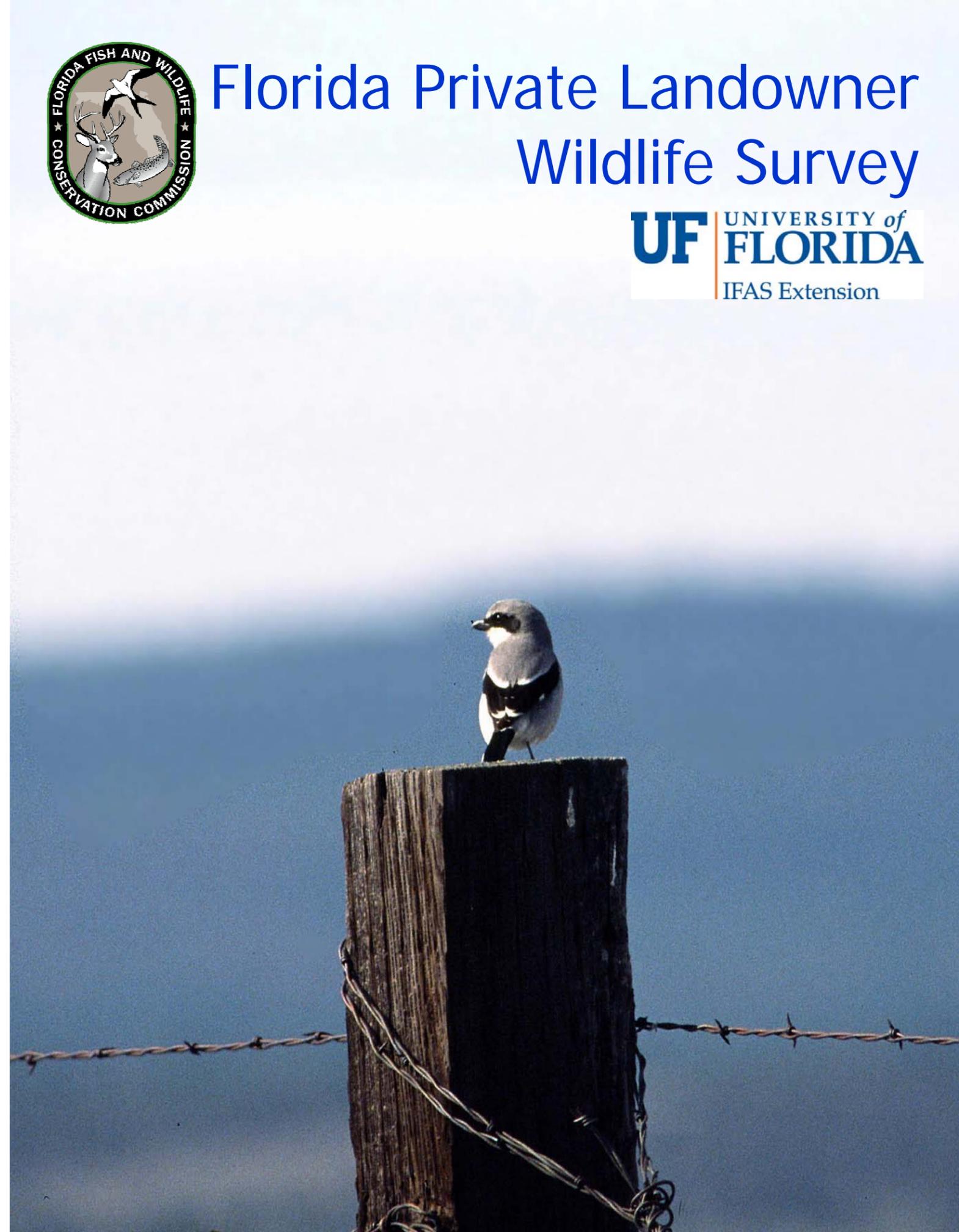


LANDOWNER ASSISTANCE PROGRAM



For more information please visit:
www.MyFWC.com/LAP

This survey is being funded by a State Wildlife Grant
as part of Florida's Wildlife Legacy Initiative
Printed on at least 30% post-consumer recycled paper



Your thoughts and opinions are very important to us. Thank you very much for taking time to complete this survey. The results of this survey will be used to shape private lands wildlife management and conservation programs across the state of Florida.

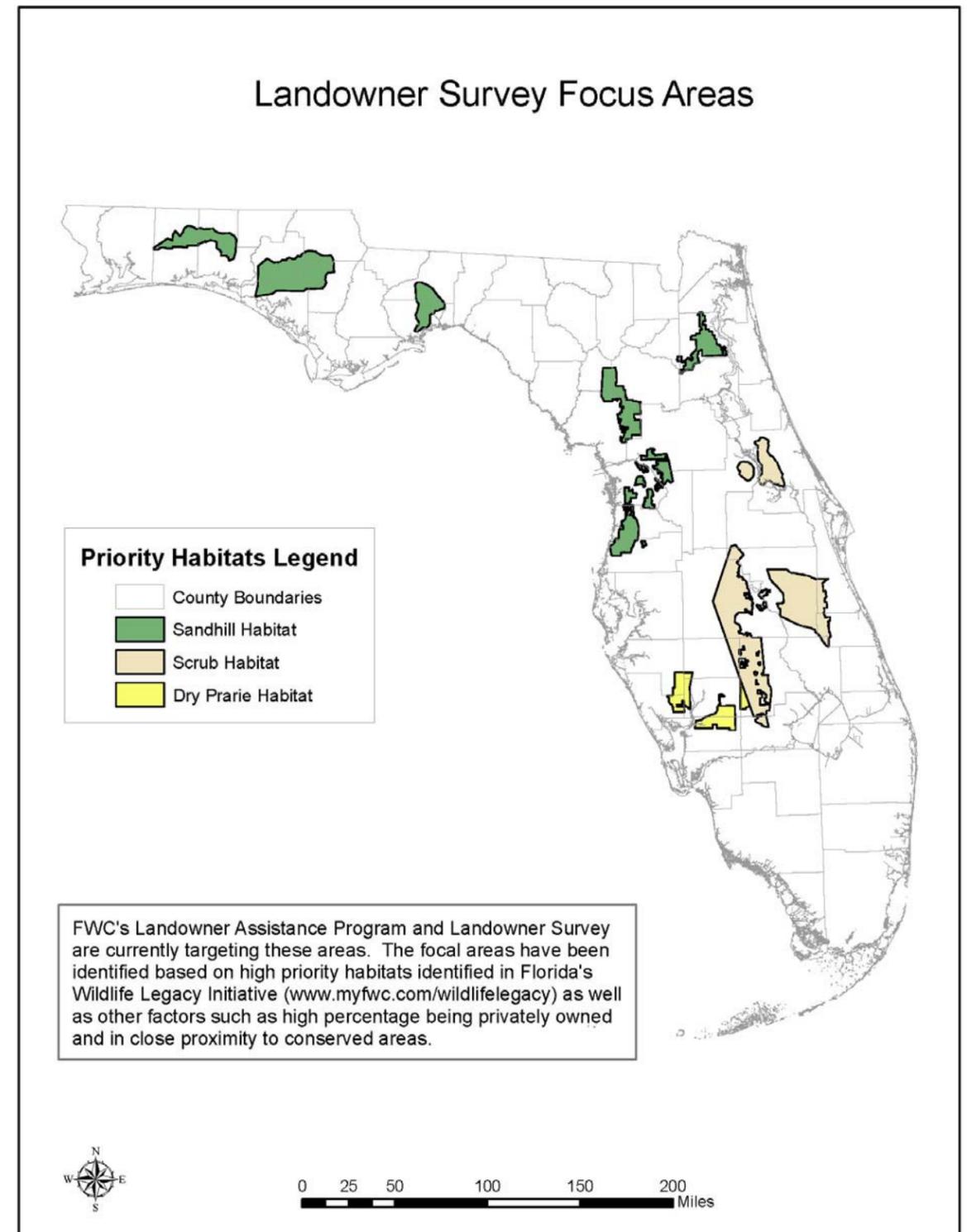
Thank you for your valued participation,



Adam S. Willcox
Doctoral Student
Department of Wildlife Ecology and Conservation
Institute of Food and Agricultural Sciences
University of Florida
awillcox@ufl.edu



Chris Wynn
Landowner Assistance Program Coordinator
Florida Fish and Wildlife Conservation Commission
Chris.Wynn@MyFWC.com



Now, we will close with a few easy questions, which are included to ensure that survey respondents represent the diversity of landowners across the state of Florida.

1) How old are you? **mark one**

- less than 18 years
- 19-24 years
- 25-34 years
- 35-49 years
- 50-64 years
- 65-79 years
- more than 80 years

2) What is your gender? **mark one**

- Male
- Female

3) What is your ethnicity? **mark one**

- White
- Asian
- Native American
- Black/African American
- Latino/Hispanic
- Other (please specify) _____

4) What is your household income? **mark one**

- \$0-\$24,999
- \$25,000-\$49,999
- \$50,000-\$99,999
- \$100,000-\$149,999
- \$150-\$199,999
- More than \$200,000

5) What is the highest level of education you attained? **mark one**

- Less than a high school diploma or equivalent
- A high school diploma or equivalent
- Some college
- Associate degree
- Bachelors degree
- Masters degree
- Professional degree
- Doctorate

In the interest of conserving state financial resources and paper would you be willing and able to take a future wildlife survey over the Internet? **mark one**

- Yes
- No
- Don't Know

Is there anything else you would like to add?

Thank you for participating in this survey. Please fold it and mail it in the envelope provided.

1) Do you own or manage 20 or more acres? **mark one**

- No
- Yes

If **No**, please **stop** here, fold this booklet, place it in the prepaid envelope and drop it in the mail to prevent you receiving future mailings from us. We apologize for the inconvenience and will remove you from the mailing list.

If **Yes**, please continue to fill out this survey

2) What is your primary land use? **mark one**

- Agriculture
- Residence
- Recreation
- Industrial
- Development
- Other (please list): _____

3) How many acres do you own? *indicate number of acres*
_____ acres

4) How much of your property is currently in the following? *indicate estimated number of acres for each*

- Planted timber: _____ acres
- Native forest: _____ acres
- Planted grazing or pastureland: _____ acres
- Sod: _____ acres
- Native grassland or range: _____ acres
- Annual row crops: _____ acres
- Perennial groves or orchards: _____ acres
- Wetlands, lakes, and rivers: _____ acres
- Industry: _____ acres
- Residential development: _____ acres
- Other (please list): _____ land type AND acres

5) How long have you owned your property? *indicate number of years*
_____ years

6) Do your regular land management practices promote wildlife and habitat? **mark one**

- Yes
- No
- Don't Know

7) Do you actively manage for wildlife on your property? **mark one**

- Yes
- No

8) If **Yes to #7**, which wildlife do you manage for? **mark all that apply**

- Deer
- Songbirds
- Upland game birds (quail and turkey)
- Waterfowl (ducks and geese)
- Reptiles and amphibians (turtles, snakes, lizards, frogs, etc.)
- Rare or threatened species
- Fish
- Small to medium sized mammals (rabbits, squirrels, raccoons, etc.)
- Wildlife habitat in general rather than specific types of animals
- Others (please list): _____

9) Do you have invasive exotic plants on your property (e.g., cogon grass, soda apple, Japanese climbing fern, Brazilian pepper, etc.)? **mark one**

- Yes
- No
- Don't Know

10) If **Yes to #9**, on how many acres do they occur? *indicate estimated number of acres*
 _____ acres

11) If you have or were to have invasive exotic plants on your property, how concerned would you be about controlling them? **mark one**

- Unconcerned Neutral Concerned
-

12) Do you plant native trees on your property for reforestation? **mark one**

- Yes
- No
- Don't Know

13) Do you plant native grasses and shrubs on your property? **mark one**

- Yes
- No
- Don't Know

14) Do you plant wildlife food plots on your property? **mark one**

- Yes
- No
- Don't Know

15) Do you put out feed for wildlife on your property? **mark one**

- Yes
- No
- Don't Know

16) Do you install nest boxes or other wildlife shelters on your property? **mark one**

- Yes
- No
- Don't Know

17) Do you conduct prescribed burns on your property? **mark one**

- Yes
- No
- Don't Know

18) If **Yes to #17**, how many acres do you burn each year? *Indicate estimated number of acres*
 _____ acres

19) Who conducts prescribed burns on your property? **mark all that apply**

- You and your family or staff
- Private contractor / consultant
- Public agency
- Neighbors
- I don't use prescribed fire
- Others (please list): _____

38) Developing land management and conservation plans and maps are tools agencies use to increase wildlife management on private lands (e.g. the Forest Stewardship Program or NRCS Conservation Plans). Please indicate below how strongly you agree or disagree with the following statements. **Circle only one answer for each statement**

	Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree	Don't Know
A. I have or am developing a conservation and land management plan.	1	2	3	4	5	DK
B. I would like to develop a conservation and land management plan.	1	2	3	4	5	DK
C. Conservation and management plans are useful tools for landowners.	1	2	3	4	5	DK
D. Conservation and management plans benefit wildlife habitat management.	1	2	3	4	5	DK
E. My neighbors encourage me to develop a land management and conservation plan.	1	2	3	4	5	DK
F. My neighbors' approval matters to me.	1	2	3	4	5	DK
G. State and federal agencies assist landowners on an individual basis to develop land management and conservation plans.	1	2	3	4	5	DK
H. The hands-on assistance of state and federal agencies is important to me.	1	2	3	4	5	DK
I. Wildlife professional groups (e.g. National Wild Turkey Federation, Nature Conservancy) encourage land and conservation planning.	1	2	3	4	5	DK
J. The attitudes of wildlife associations matter to me.	1	2	3	4	5	DK
K. Agricultural professional groups (e.g. Cattlemen's Association, Florida Farm Bureau) encourage land and conservation planning.	1	2	3	4	5	DK
L. The attitudes of agricultural professional groups matter to me.	1	2	3	4	5	DK
K. The state and federal agencies do not have enough time to develop land management and conservation plans.	1	2	3	4	5	DK
J. The busy schedules of state and federal agencies prevents me from getting a land management and conservation plan.	1	2	3	4	5	DK
L. The application and process for getting a land management and conservation plan is complicated.	1	2	3	4	5	DK
M. I have not been able to get a land management and conservation plan because the process is too complex.	1	2	3	4	5	DK
N. I have heard about land management and conservation plans.	1	2	3	4	5	DK
O. Because I have not heard of land management and conservation plans, I have not considered getting one.	1	2	3	4	5	DK

32) Do you have problems with nuisance wildlife? *mark one*

- Yes
- No
- Don't Know

33) If **Yes to #32**, which types of wildlife cause you problems? *mark all that apply*

- Deer
- Hogs
- Coyotes
- Panthers
- Armadillos
- Raccoons
- Bobcats
- Birds
- Alligators and crocodiles
- Bears
- Rats and rodents
- Feral cats
- Feral dogs
- Others (please list): _____

34) Do you currently control or attempt to control nuisance wildlife? *mark one*

- Yes
- No
- Don't Know

35) Do you currently have a management or conservation plan for your property? *mark one*

- Yes
- No
- Don't Know

36) If **Yes to #35**, which type of land management plan do you have? *mark all that apply*

- Forest Stewardship
- USDA, NRCS Conservation Plan
- Personally developed
- Private contractor developed
- Others (please list): _____

37) How frequently do you work with the following groups or agencies? *Circle one for each group*

	Never	Rarely	Sometimes	Often	Don't Know
A. USDA National Resources Conservation Service	1	2	3	5	DK
B. USDA Farm Service Agency	1	2	3	5	DK
C. Florida Fish and Wildlife Conservation Commission	1	2	3	5	DK
D. UF Institute of Food and Agricultural Sciences (IFAS)	1	2	3	5	DK
E. The Nature Conservancy	1	2	3	5	DK
F. Various Conservation Trusts	1	2	3	5	DK
G. Private Game Management Groups (e.g., QU, DU, NWTF)	1	2	3	5	DK

20) Prescribed fire is one of the most used land management tools for wildlife habitat management and many agricultural activities in Florida. Please indicate below how strongly you agree or disagree with the following statements. **Circle only one answer for each statement**

	Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree	Don't Know
A. I use an adequate amount of prescribed fire on my property.	1	2	3	4	5	DK
B. Fire is important for wildlife habitat management.	1	2	3	4	5	DK
C. I like to use prescribed fire on my property.	1	2	3	4	5	DK
D. Fire is important for many agricultural activities.	1	2	3	4	5	DK
E. My neighbors like me to use prescribed fire.	1	2	3	4	5	DK
F. My neighbors' approval matters to me.	1	2	3	4	5	DK
G. State and federal agencies encourage me to use prescribed fire.	1	2	3	4	5	DK
H. The attitudes of state and federal agencies are important to me.	1	2	3	4	5	DK
I. The general public approves of me using prescribed fire.	1	2	3	4	5	DK
J. The attitudes of the general public matter to me.	1	2	3	4	5	DK
K. Technical skills are needed to conduct prescribed burns.	1	2	3	4	5	DK
J. I have or have access to people with adequate technical skills to conduct prescribed burns.	1	2	3	4	5	DK
L. Special equipment is necessary to conduct prescribed burns.	1	2	3	4	5	DK
M. I have access to the equipment necessary to conduct prescribed burns.	1	2	3	4	5	DK
N. Prescribed burns are relatively cheap to conduct.	1	2	3	4	5	DK
O. I have enough finances to conduct prescribed burns.	1	2	3	4	5	DK
P. Prescribed burns do not require many laborers.	1	2	3	4	5	DK
Q. I have access to sufficient labor to conduct prescribed burns.	1	2	3	4	5	DK
R. There are substantial liability risks associated with prescribed burns.	1	2	3	4	5	DK
S. Liability risks make me less likely to burn a sufficient amount of my land.	1	2	3	4	5	DK
T. Burning regulations are too restrictive.	1	2	3	4	5	DK
U. Regulations make me less likely to conduct enough prescribed burns.	1	2	3	4	5	DK

21) Do you or your family hunt on your property? *mark one*

- Yes
- No

22) Do you lease your property to hunters? *mark one*

- Yes
- No

23) If **Yes to #22**, how many acres do you lease and what do you charge? *indicate estimated number of acres and price*

_____ acres
 _____ \$ charged per acre

24) Do you conduct guided hunts? *mark one*

- Yes
- No

26) Do you practice Quality Deer Management? *mark one*

- Yes
- No
- Don't Know

25) Do you conduct ecotourism, bird watching, or wildlife viewing tours? *mark one*

- Yes
- No

26) Do you have and maintain a 'Greenbelt' for tax purposes? *mark one*

- Yes
- No
- Don't Know

27) Do you have a conservation easement on your property? *mark one*

- Yes
- No
- Don't Know

28) If **No to #27**, would you be interested in placing a conservation easement on your property? *mark one*

- Yes
- No
- Don't Know

29) Have you ever received financial assistance for land management activities? *mark one*

- Yes
- No
- Don't Know

30) If **Yes to #29**, in which programs have you participated? *mark all that apply*

- Environmental Quality Incentives program (EQIP)
- Wildlife Habitat Incentives Program (WHIP)
- Landowner Incentives Program (LIP)
- Partners for Fish and Wildlife (PFW)
- Conservation Reserves Program (CRP)
- Common Species Common (CSC)
- Wetlands Reserve Program (WRP)

31) Cost-share financial assistance programs are a tool agencies use to increase wildlife management on private lands. In these programs, landowners apply to agencies to share the cost of wildlife management activities. Please indicate below how strongly you agree or disagree with the following statements. **Circle only one answer for each statement**

	Strongly Disagree	Disagree	Neither Disagree or Agree	Agree	Strongly Agree	Don't Know
A. I have participated in cost-share financial assistance programs for wildlife habitat management.	1	2	3	4	5	DK
B. I will apply for a wildlife management cost-share financial assistance program in the future.	1	2	3	4	5	DK
C. Cost-share programs can benefit wildlife habitat management.	1	2	3	4	5	DK
D. Cost-share programs are useful tools for landowners.	1	2	3	4	5	DK
E. My neighbors encourage me to enter into cost-share programs.	1	2	3	4	5	DK
F. My neighbors' approval matters to me.	1	2	3	4	5	DK
G. State and federal agencies promote cost-share programs to me.	1	2	3	4	5	DK
H. The attitudes of state and federal agencies are important to me.	1	2	3	4	5	DK
I. Wildlife and agricultural professional associations (e.g. Cattlemen's Association, National Wild Turkey Federation, Society of American Foresters, the Nature Conservancy) encourage me to participate in cost-share programs.	1	2	3	4	5	DK
J. The attitudes of wildlife and agricultural associations matter to me.	1	2	3	4	5	DK
K. The application process for cost-share programs is complicated.	1	2	3	4	5	DK
J. Because the application process is complicated, I don't apply for cost-share programs.	1	2	3	4	5	DK
L. The amount of money in cost-share programs is low, especially considering inflation.	1	2	3	4	5	DK
M. I do not apply for cost-share programs because the money awarded is low.	1	2	3	4	5	DK
N. I receive timely announcements about cost-share programs.	1	2	3	4	5	DK
O. Getting timely announcements about cost-share programs makes me more likely to apply for them.	1	2	3	4	5	DK
P. Cost-share contracts are restrictive.	1	2	3	4	5	DK
Q. Restrictive cost-share contracts make me less likely to apply for them.	1	2	3	4	5	DK
R. I am not eligible for cost-share financial assistance because my income is too high.	1	2	3	4	5	DK