

# **Florida Private Landowner Survey Phase IV Report**

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## Executive Summary

The Florida Fish and Wildlife Conservation Commission's 2014-2019 Agency Strategic Plan includes an initiative to work with Florida's private landowners to protect and manage wildlife and wildlife habitat on private lands. Since 2008, the Florida Private Landowner Survey has provided FWC with information about wildlife and habitat on private lands in Florida.

In 2019, the fourth phase of the Florida Private Landowner Survey was conducted to assess the state of wildlife and habitat management on private land. This survey built upon previous landowner surveys that were conducted in collaboration with the University of Florida in 2008, 2012, and 2015. A primary objective of the 2019 survey was to evaluate changes through time in wildlife and habitat management needs, and landowner interactions with FWC. The 2019 survey also expanded the survey methods to include landowners across the state, as prior surveys had been limited to specific Focus Areas.

The survey instrument was developed with input from FWC's Landowner Assistance Program (LAP) staff, FWC social science staff, FWC's Private Landowner Technical Assistance Group, and private landowners. The survey was mailed to 5,000 private landowners with  $\geq 20$  acres, selected through the property tax database. One thousand three hundred and forty (1,340) surveys were returned, and two hundred and five surveys (205) were undeliverable or ineligible, resulting in an overall response rate of 27.9%. Survey respondents owned a total of more than 686,000 acres of land across the state.

Survey results reflected the diversity of landowner management actions and priorities across Florida. The majority (82.8%) of respondents had used one or more habitat or land management practice in the last 5 years. Landowner awareness of and involvement with financial and technical assistance for habitat management varied. About 54% were aware of habitat management plan assistance (22% had a written plan) and 39% were aware of cost-share opportunities (7% had used cost-share in the last 5 years). About half of landowners were interested in receiving technical or financial assistance for habitat management. Landowners with greater acreage, especially those with more than 500 acres, were more likely to know about and use available assistance.

Landowner awareness of management plans and technical workshops showed no net change since 2012, while awareness of cost-share increased slightly. Landowner trust of FWC biologists increased between 2015 and 2019, while ratings of FWC performance were consistent. There was also a decrease in reported interactions with FWC law enforcement and biologists since 2015.

The FWC provides a vital service in effectively helping landowners to achieve their land management and conservation goals. Over the past decade, FWC has made progress in developing positive relationships with private landowners across the state. However, spreading awareness of conservation assistance and improving conservation on private lands remains a challenge.

## Introduction

## Survey Methods

The design of the 2019 FWC Private Landowner Survey duplicated the procedures used in the 2015 survey wherever possible. This consistency was intended to facilitate the comparison of survey results across survey phases (i.e., over time).

Landowner Assistance Program (LAP) staff compiled a list of 5,000 addresses to which the survey would be mailed. These addresses were acquired from the 2018 Florida Department of Revenue property tax database. A total of 3,000 addresses were located within Landowner Assistance Program (LAP) Focus Areas (Fig. 1), and the remaining 2,000 state-wide addresses were located outside of the LAP Focus Areas. These Focus Areas were previously identified in 2008 as regions of high priority habitats and conservation potential near existing public lands. While the Focus Area framework is no longer actively utilized by LAP, the 2019 landowner survey used these areas in order to replicate survey methods from prior survey phases.

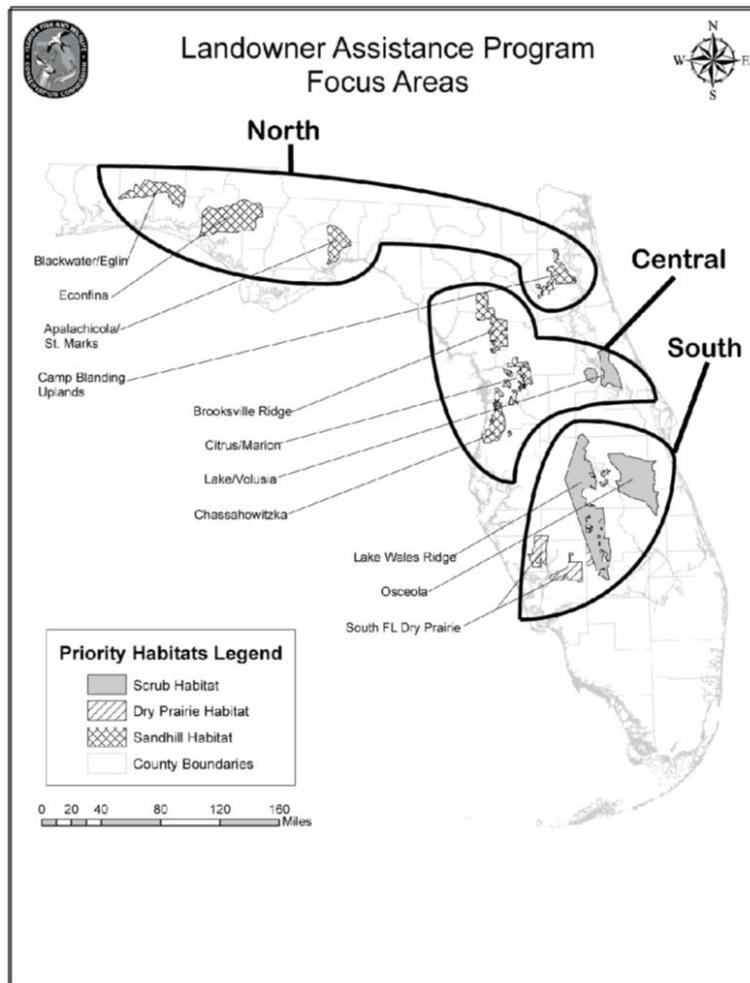


Figure 1. Focus Areas

We included land owners whose land met the following criteria: 1) At least 20 acres owned in one parcel; 2) Privately owned land; and 3) Department of Revenue land use classification of camps, cropland, dairies, forest, grazing, improved agricultural, orchards, ornamentals-miscellaneous agriculture, outdoor recreational, poultry, or timberland.

### Focus Area Sampling

Stratified random sampling was used to select 3,000 unique landowners from the sampling frame of possible Focus Area addresses. Within each survey region (North, Central, and South), 1,500 addresses were randomly selected. These were split approximately evenly among the Focus Areas in each region (e.g., the North region consisted of Econfina, Blackwater, Apalachicola, and Blanding areas; Fig. 1). Within each region, the pool of landowner parcels was divided into quintiles based on acreage (small, medium-small, medium, medium-large, and large), and the same number of parcels was picked from each quintile. After completing and combining all regions, all duplicate owners, duplicate addresses, and incomplete addresses were removed and replaced.

### State-wide Sampling

In recognition of LAP's statewide mandate, sampling for the 2019 survey was expanded beyond the geographic limits of previous phases of the survey to include 2,000 addresses for parcels outside of the Focus Areas. Stratified random sampling was used here as well, with state-wide addresses divided on a county basis to sample landowners across the state.

To the extent possible, an equal number of surveys were sent to each county in Florida in order to evenly sample across the state. To avoid oversampling counties within Focus Areas, counties that did not include Focus Areas were more heavily sampled in the state-wide address list. Beginning with a quota of 75 landowners per county, the number of Focus Area addresses that had already been selected were deducted from each county's quota. For instance, if 50 landowners were selected from the Leon County portion of the Apalachicola focus area, then 25 additional landowners outside of Focus Areas were randomly selected from Leon County for the state-wide address list. In many counties containing Focus Areas, no additional landowners were added for the state-wide address list. Addresses in the state-wide address list were also selected based on landholding size, as in the Focus Area Sampling. Within each county, the pool of landowner parcels was divided into quintiles based on acreage (small, medium-small, medium, medium-large, and large), and an even share of parcels were picked from each quintile. The State-wide survey regions (North, Central, and South) aligned with the area of the corresponding Focus Area region classifications. The number of surveys distributed differed by survey region, with fewer state-wide surveys distributed to Central Florida as this region had the fewest counties.

The final address list was checked for duplicate landowners and missing data. The largest parcel was selected for all duplicate landowner names and/ or addresses. Addresses clearly identifiable as companies or corporations were checked against [www.sec.gov/edgar](http://www.sec.gov/edgar) to identify publicly traded companies. These (n=41) were removed from the mail survey. The mailing address list was provided to the printing vendor, who verified the addresses against the United States Postal Service (USPS) address list.

For the focus area sampling regions, the 3,000 verified addresses included:

- 1,093 addresses for the North LAP Focus Areas;
- 1,004 addresses for the Central LAP Focus Areas; and
- 903 addresses for the South LAP Focus Areas.

For the state-wide sampling, the 2,000 verified addresses included:

- 927 addresses for the North region;
- 366 addresses for the Central region; and
- 707 addresses for the South region.

The Dillman Tailored Design Method, which uses repeated contacts to increase response rates, was used to implement the survey (Dillman et al. 2014). The survey was implemented in three waves. The initial mailing included a cover letter, survey booklet, and paid postage business reply envelope. The cover letter also included a URL that the respondent could optionally use to take the survey in an online format. The second mailing included a revised cover letter, a replacement survey booklet, and a paid postage business reply envelope. The third mailing consisted of a reminder postcard. The first round of the survey was mailed out on May 3, 2019. A second round of the survey was mailed out on May 28, 2019. Reminder postcards were sent on June 7, 2019.

### Online Survey

On July 2, 2019, an online announcement of the survey and a link to participate was posted as an FWC press release and distributed through the Gov Delivery system to the general public. Similar announcements and invitations to participate in the online survey were distributed to the Florida Cattlemen's Association, the Florida Farm Bureau, the Florida Forestry Association, and through the University of Florida's Florida Land Steward listserv. The results of this public online survey will be presented in a separate report.



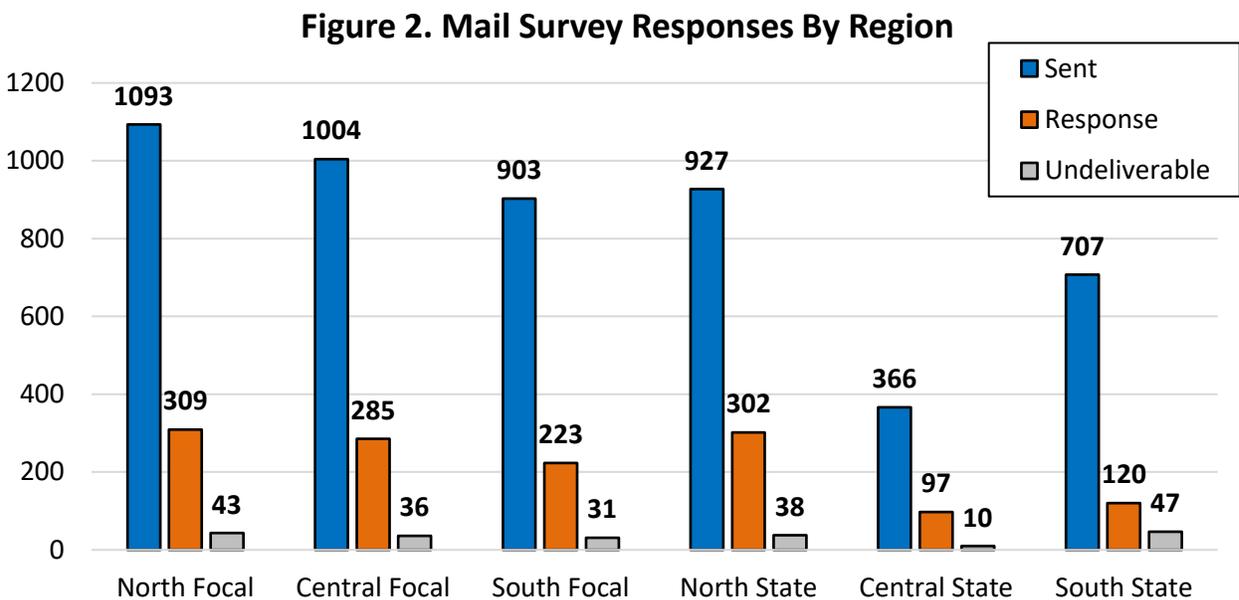
FWC Biologist, Joe Vaughn, helps landowners identify beneficial plants for wildlife. (FWC)

## Mail Survey Results

### Overview

We received 1,340 completed surveys. After correcting for 205 undeliverable surveys and deceased or ineligible respondents, the **overall response rate was 27.9%**.

We received 817 surveys from the FWC Focus Areas (Fig. 2). There were 309 surveys returned from the Northern Focus Area, 285 surveys from the Central Focus Area, and 223 surveys from the Southern Focus Area. A total of 523 State-wide surveys were received from outside of the Focus Areas. Response rates to individual survey questions varied, as not all respondents answered every question. Of the 1,340 completed surveys, 100 were completed through the optional online format. Four completed surveys were completed without an identifiable region code (i.e., the field was left blank in the online format).



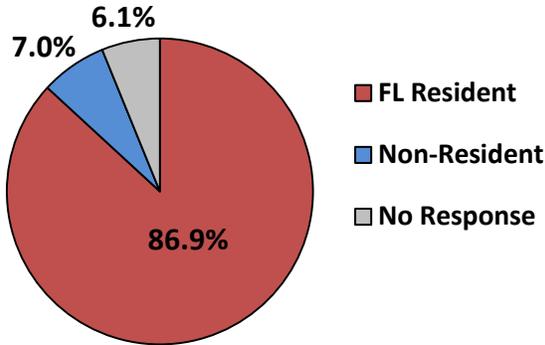
One hundred fifty-three respondents (11.4%) represented a corporation or business. Based on an assessment of landowner names listed in the mailing address database, approximately 1,592 of the 5,000 addresses included in the study belonged to corporate landowners. Accounting for undeliverable/ ineligible surveys, the response rate was approximately 10.0% from corporate landowners and about 36.3% from non-corporate landowners. A Mann-Whitney U test indicated that corporate respondents owned significantly more acreage (median= 1,001-5,000 acres) than non-corporate respondents (median= 101-500 acres;  $U = 47,803, p < 0.001$ ).

We assessed possible non-response bias using a wave analysis approach, which assumes that late respondents have higher similarity to non-respondents. Respondents were divided into two groups (response before 5/30; response on 5/30 or later) and demographic traits were compared. There were no significant differences in early and late respondents in terms of age, acres of land owned, residency, gender, or ethnicity.

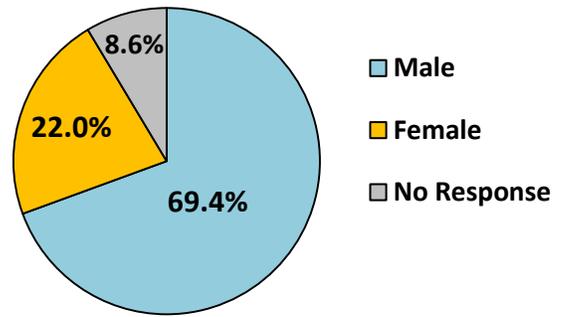
## Respondent Demographics

Basic demographic information was collected for non-corporate respondents (n=1,187). The majority of respondents were Florida residents (86.9%, Fig. 3). Respondents were predominantly male (69.4%, Fig. 4) and most identified as white (88.3%, Tab. 1).

**Figure 3. Respondent Residency**



**Figure 4. Respondent Genders**



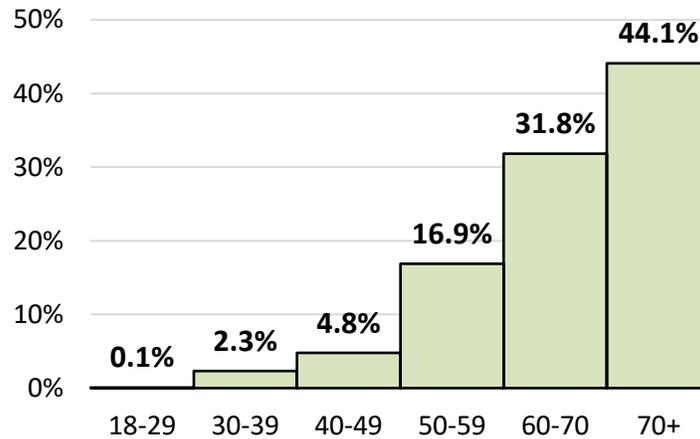
**Table 1. Respondent Ethnicities (n= 1,187)**

Ethnicity	Respondents	
	#	%*
White	1048	88.3%
Native American	27	2.3%
Latino/ Hispanic	18	1.5%
Asian	13	1.1%
African American	7	0.4%
No Response	96	8.1%

\*Percentages do not sum to 100 because the question allowed respondents to select multiple answers

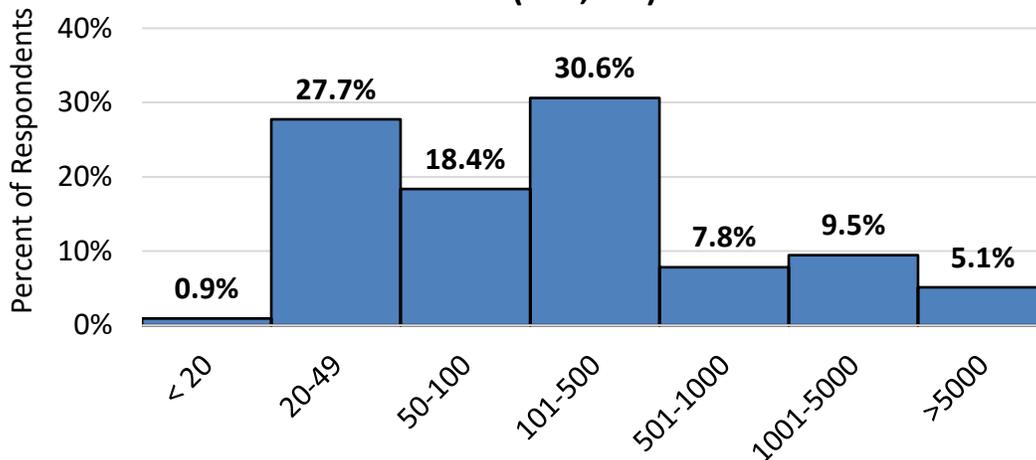
The median age of survey respondents was 60-70 years old (Fig. 5). Respondent ages were heavily skewed, with just under half of respondents (44.1%) aged over 70 years old.

**Figure 5. Respondent Ages (n=1,113)**



Respondents owned a median of 101-500 acres of land (Fig. 6). Sixty-six respondents (5.1%) owned or managed more than 5,000 acres of land. One respondent indicated their organization managed 90,000 acres in Florida, and another respondent noted ownership of 40,000 acres. Many respondents indicated multiple land uses. The most common land uses included pine forest (54.5%) and range/ pasture (54.2%).

**Figure 6. Acres of Land Owned By Respondents in Florida (n=1,291)**



## Land and Habitat Management

Respondents were asked about their use of several management practices over the past 5-year period. The most commonly used practices were exotic vegetation control and roller chopping (Tab. 2). The majority (82.8%) of respondents had used at least one of the assessed management practices in the last 5 years.

**Table 2. Number and Percent of Respondents Engaging in Specific Management Practices in Past 5 Years (n=1,340)**

Practice	Respondents Using Practice	
	#	%
Prescribed fire	367	27.4%
Exotic vegetation control	412	30.7%
Roller chopping	411	30.7%
Prescribed/ rotational grazing	400	29.9%
Livestock exclusion from natural waterbodies	148	11.0%
Stand thinning	208	15.5%
Long rotation for saw/ pole production	150	11.2%
Understory/ brush management	301	22.5%
Uneven age stand management	69	5.1%
Cover crops	152	11.3%
Field borders/ wildlife plantings	161	12.0%
Water conservation	151	11.3%



Respondents were also asked about several other specific management activities that may benefit native wildlife (Tab. 3 and 4). The establishment of native trees (average of 130 acres), maintenance of wildlife feeders (average of 2.0 feeders per property), and planting of wildlife food plots (average of 19.7 acres) were the most common actions taken by survey respondents over the last 5 years.

**Table 3. Number and Percent of Respondents Performing Specific Conservation Actions on Their Land in The Past 5 Years (n=1,340)**

Practice	Respondents Using Practice	
	#	%
Plant wildlife food plots	447	33.4%
Plant native trees	546	40.7%
Plant native groundcover	283	21.1%
Maintain nest boxes or birdhouses	314	23.4%
Maintain wildlife feeders	478	35.7%

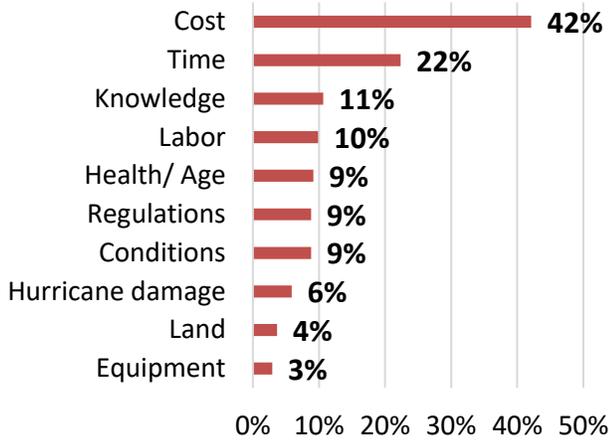
**Table 4. Average Amounts of Selected Conservation Actions Undertaken by Respondents in The Past 5 Years (n=1,340)**

Extent of Practice	Average Across Respondents
Acres of wildlife food plots	19.7
Acres of native trees	129.6
Acres of native groundcover	40.7
Number of nest boxes or birdhouses	1.6
Number of wildlife feeders	2.0

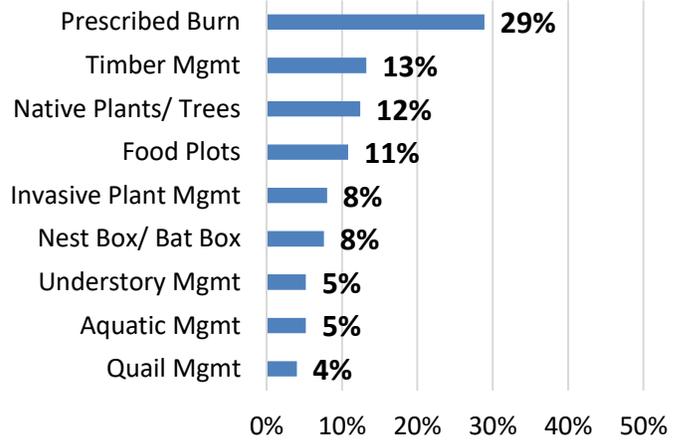


Twenty percent (20.4%) of respondents indicated that in the past 5 years they had been prevented from implementing a desired habitat management action. Of these respondents, 42.1% said that cost was a barrier to their management, and 22.3% said time was a barrier (Fig. 7). The main desired but uncompleted management actions (Fig. 8) were prescribed burning (29%), conducting timber management (13%), and planting native plants or trees (12%).

**Figure 7. Barriers to Desired Management (n=273)**



**Figure 8. Desired But Uncompleted Management Actions (n=249)**

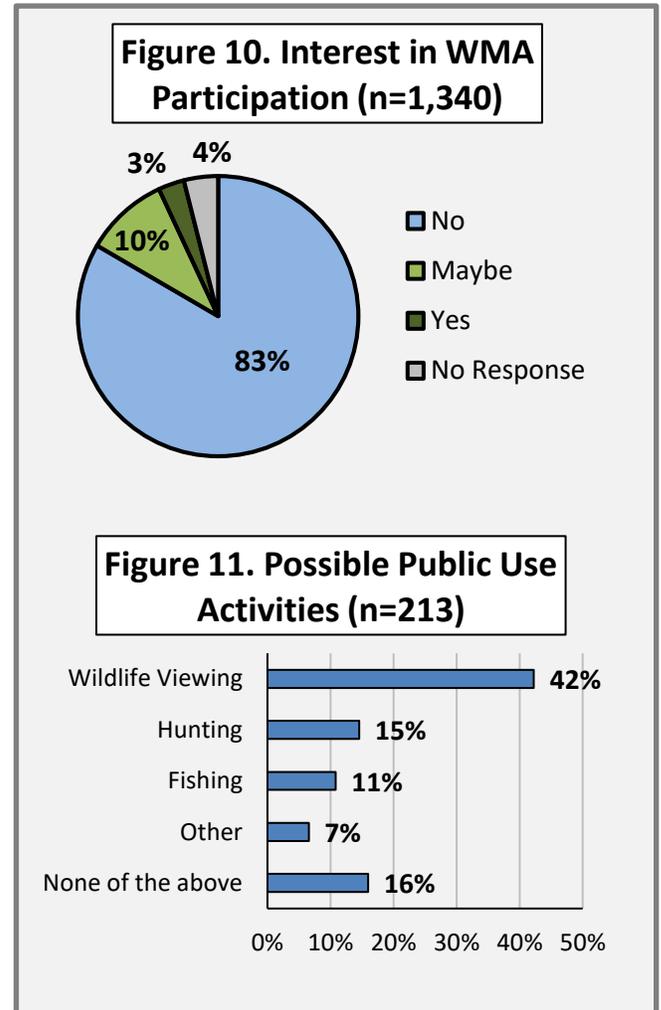


## Wildlife Management Areas

Through the Wildlife Management Area (WMA) system, the FWC partners with private landowners who voluntarily choose to lease land for public access. These areas are cooperatively managed for conservation and recreation.

Respondents were asked about their interest in participating in the WMA system through a voluntary lease agreement. A small minority of respondents (3%) responded with “yes”, while an additional 10% of respondents said they were potentially interested (Fig. 10).

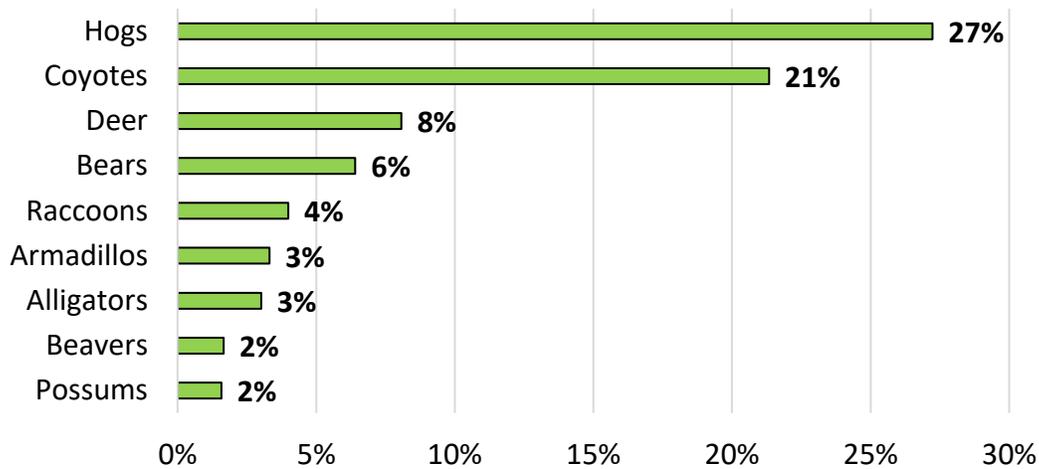
A follow up question asked interested respondents what public use activities they would consider allowing through a WMA lease arrangement (Fig. 11). The most common activity respondents would consider allowing was wildlife viewing (42%), while fewer respondents indicated willingness to allow hunting (15%) or fishing (11%). Some respondents indicated that while they had some interest in the WMA system, they would not be willing to allow access for any of the listed activities (16%).



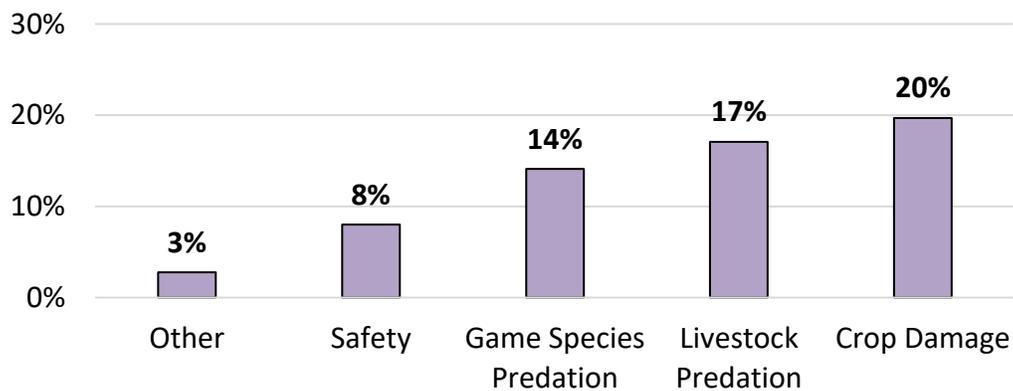
## Wildlife Conflict

A wide range of wildlife species have caused problems for landowners on their property (Fig. 12). The two most commonly reported problem species were wild hogs (27%) and coyotes (21%). Property damage, crop damage, and livestock predation were the primary wildlife issues experienced by respondents (Fig. 13).

**Figure 12. Problem Wildlife Species Reported By Respondents (n=1,340)**

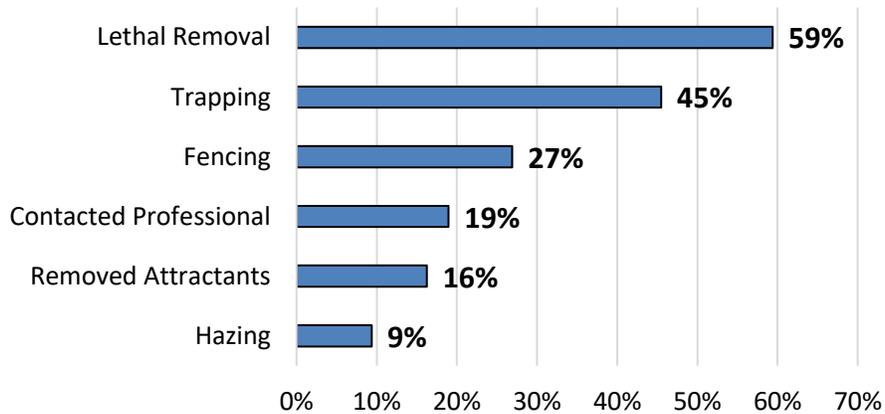


**Figure 13. Wildlife Issues Reported By Respondents (n=1,340)**



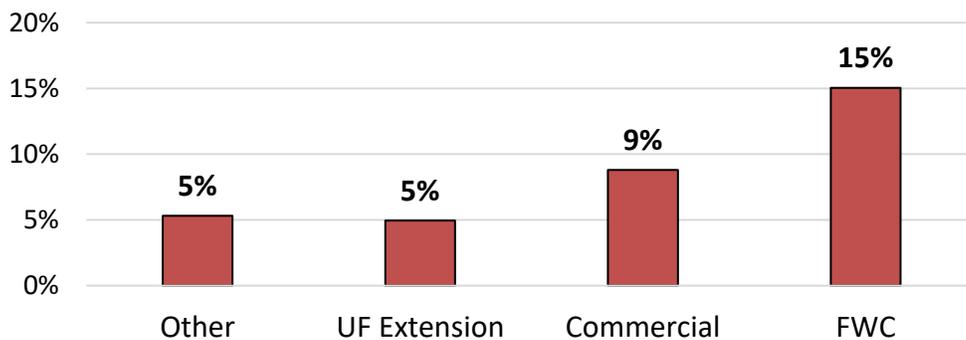
In response to these wildlife conflicts, 41% of respondents attempted to control the problem wildlife on their property in the last 5 years. Among landowners who attempted to control wildlife (Fig. 14), the most common actions used were lethal removal of non-protected wildlife (59%), and trapping (45%).

**Figure 14. Methods Respondents Used To Control Problem Wildlife (n=554)**



Most respondents (n=343, 61.9%) who attempted to control problem wildlife did not contact any organization to assist them. Fifteen percent (15%) of respondents who attempted wildlife control contacted FWC, while 9% sought assistance from a private professional (Fig. 15).

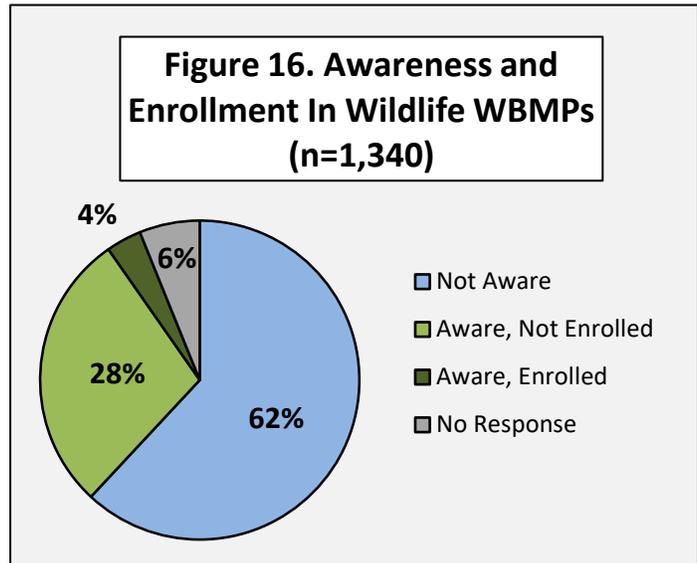
**Figure 15. Organizations Contacted By Respondents to Assist With Problem Wildlife (n=554)**



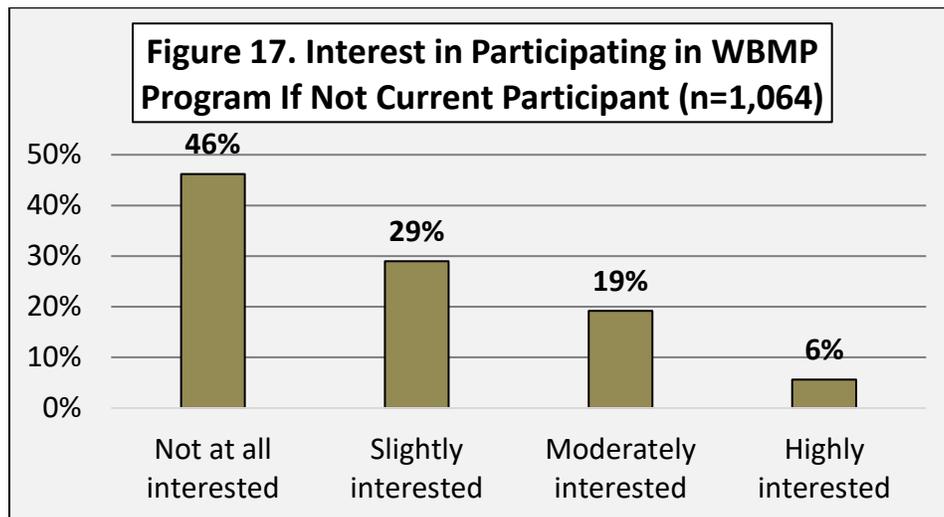
## Wildlife BMPs

Florida landowners may enroll in Forestry or Agriculture related Wildlife Best Management Practices (WBMPs). These WBMPs provide a voluntary alternative to incidental take permitting for state listed fish and wildlife.

Respondents were asked if they had heard of the Wildlife BMPs, and if they were enrolled (Fig. 16). Twenty-eight percent (28%) of respondents were aware of the Wildlife BMPs but were not enrolled. A small number of respondents (4%) were enrolled in the WBMPs at the time of the survey.



Among respondents who were not enrolled in Wildlife BMPs, 54% were at least slightly interested in participating in this type of program (Fig. 17).

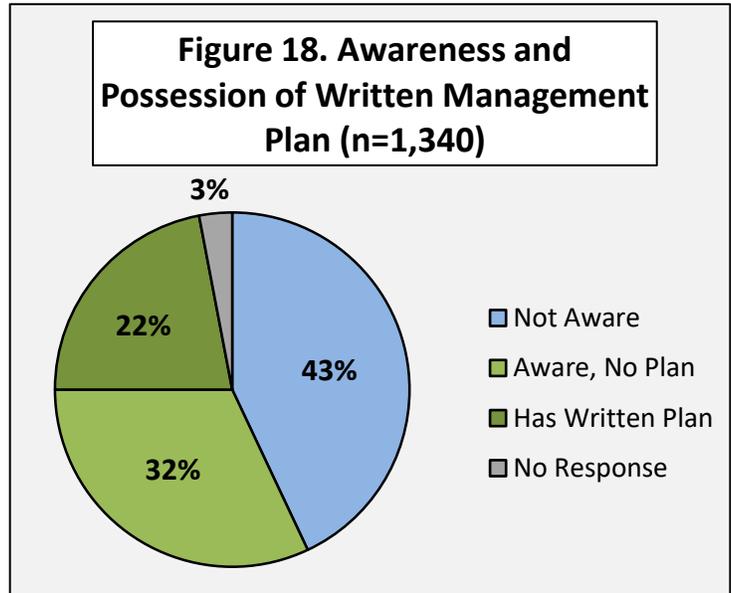


## Land Management Planning

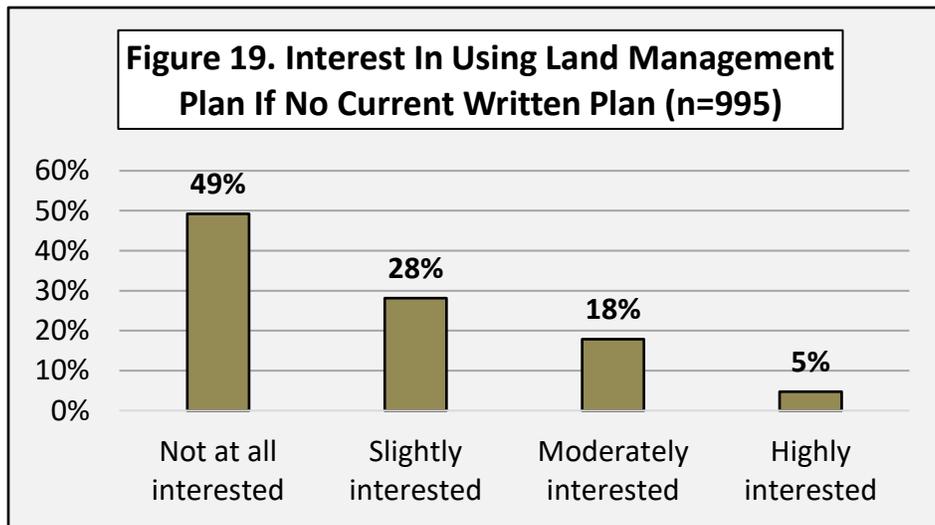
Written land management plans can help provide landowners with guidance on how to manage habitat and wildlife on their property. Several organizations in Florida can assist private landowners with writing land management plans.

Overall, 54% of respondents were aware that some government agencies assist landowners with preparing land management plans (Fig. 18).

About a quarter (22%) of respondents had a written management plan for their property.



Landowners who did not currently have a written management plan were asked their interest in using a land management plan in the future. About half (51%) of landowners without management plans were at least slightly interested in future use of a plan (Fig. 19).

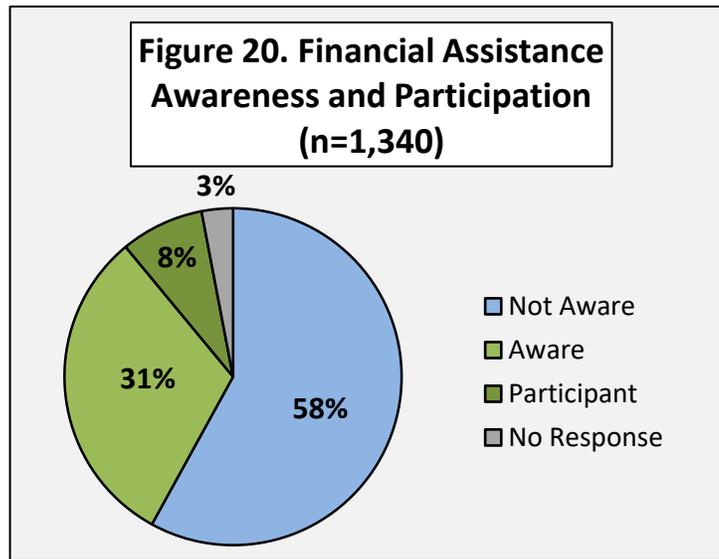


## Financial Assistance

Several governmental agencies at the federal and state level offer reimbursement programs to offset habitat management costs for private landowners.

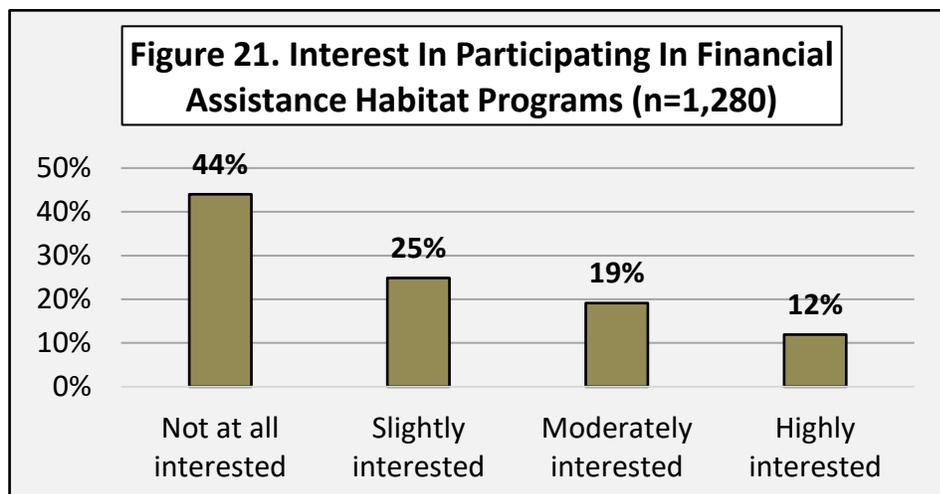
Overall, 39% of respondents were aware that some government agencies provide this type of financial assistance for habitat management (Fig. 20).

Only 8% of respondents had participated in a financial assistance program for habitat improvement in the past 5 years.



The primary organizations that provided landowners with financial assistance were the U.S. Department of Agriculture (USDA) and the Florida Forest Service. Landowners received financial assistance for a range of management actions, such as prescribed burning and native tree planting.

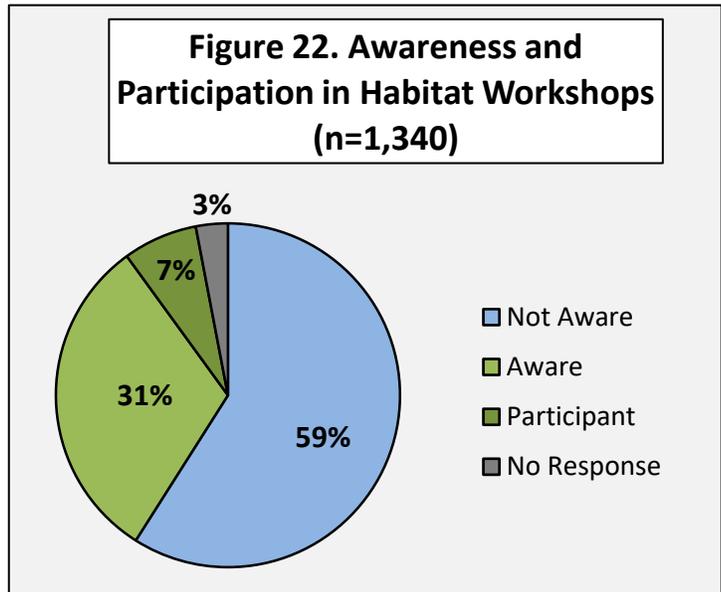
Respondents were asked their interest in participating in a financial assistance program for wildlife habitat improvement in the future. More than half (56%) of respondent landowners were at least slightly interested in future participation in a financial assistance program (Fig. 21).



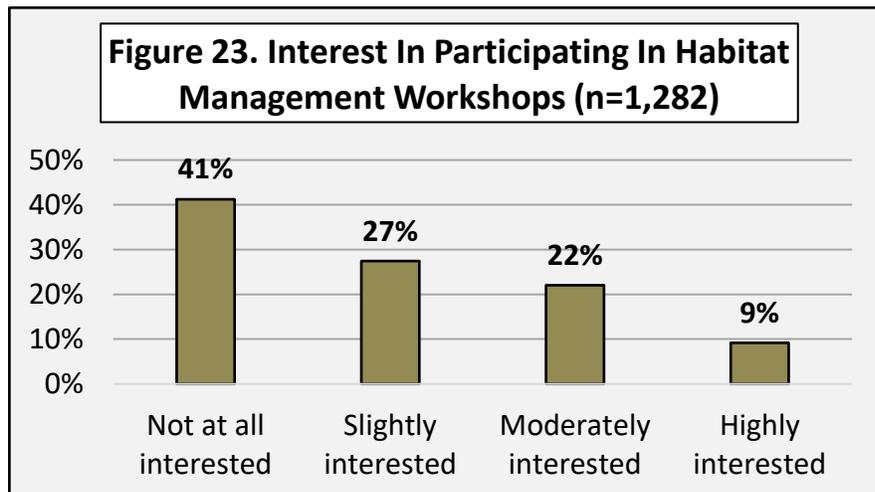
## Technical Assistance

Several organizations in Florida offer technical workshops on wildlife habitat improvement in which private landowners can participate. Overall, 38% of respondents were aware that some government agencies provide technical workshops on habitat improvement (Fig. 22).

Only 7% of respondents had participated in a technical workshop related to wildlife habitat improvement in the past 5 years. The primary organizations that provided landowners with workshops were University of Florida Extension, FWC, USDA, and the Florida Forest Service.

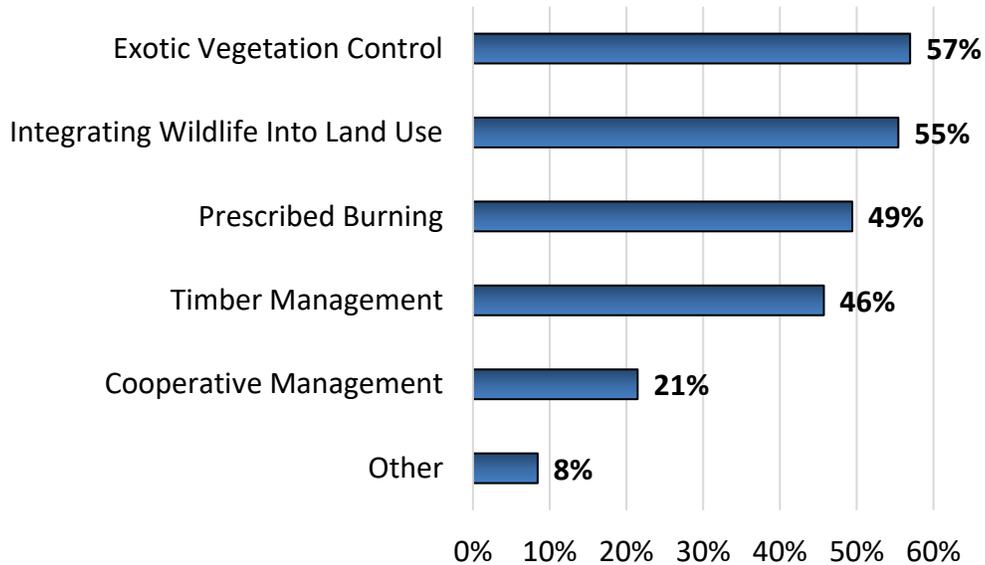


Respondents were asked their interest in participating in a workshop for wildlife habitat improvement in the future. More than half (58%) of respondent landowners were at least slightly interested in future participation in a workshop (Fig. 23).



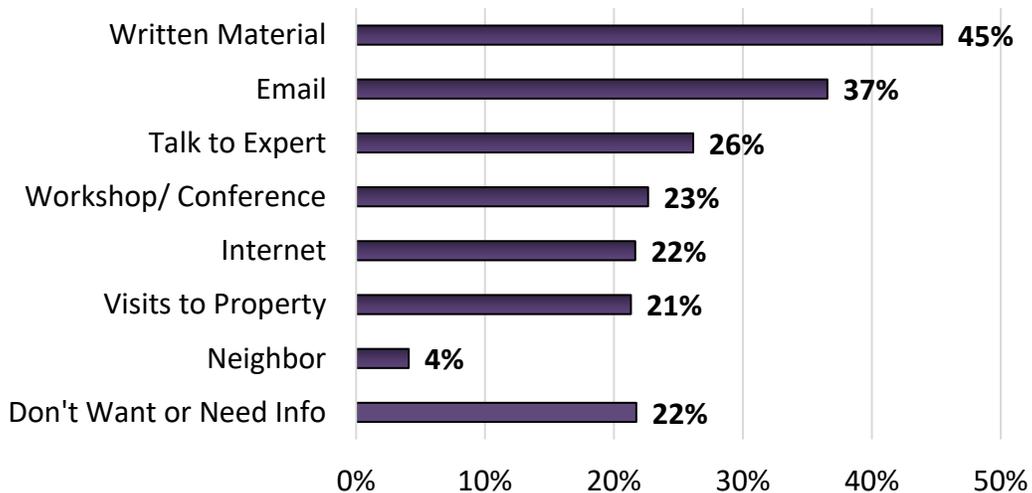
The workshop topics with highest respondent interest were exotic vegetation control (57%) and integrating wildlife into land use (55%; Fig. 24). There was also high interest in prescribed burning (49%) and timber management (46%). There was less interest in cooperative management with neighboring landowners, with 21% of respondents expressing interest in this topic.

**Figure 24. Preferred Workshop Topics (n=780)**



When asked how they would prefer to receive information or advice on land management, most respondents indicated that written material (45%) and email (37%) were a preference (Fig. 25). About a quarter (23%) said they would prefer workshops or conferences.

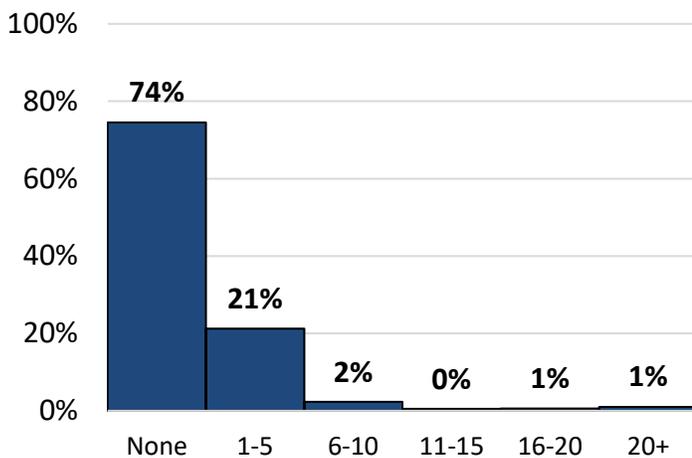
**Figure 25. How Respondents Would Prefer to Receive Information on Land Management (n= 1,330)**



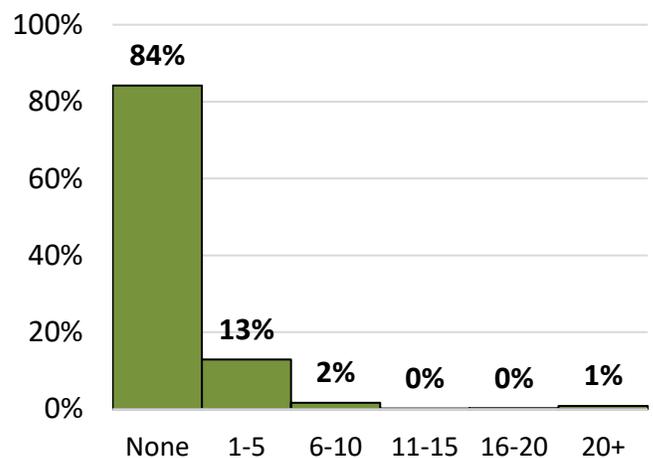
## Interactions with FWC

Respondents were asked if they had heard of the Florida Fish and Wildlife Conservation Commission (FWC) before the survey. The majority of respondents (87.8%) had heard of FWC before the survey. Survey respondents were also asked to indicate the number of times they had interacted with FWC biologists and FWC law enforcement officers in the past five years. The majority of respondents had not interacted with either FWC biologists or FWC law enforcement in the last 5 years. Those respondents who had interacted with the FWC were most likely to have interacted with biologists or law enforcement 1-5 times (once a year or less).

**Figure 26. Interactions With FWC Law Enforcement in Last 5 Years (n=1,274)**



**Figure 27. Interactions With FWC Biologists in Last 5 Years (n=1,272)**



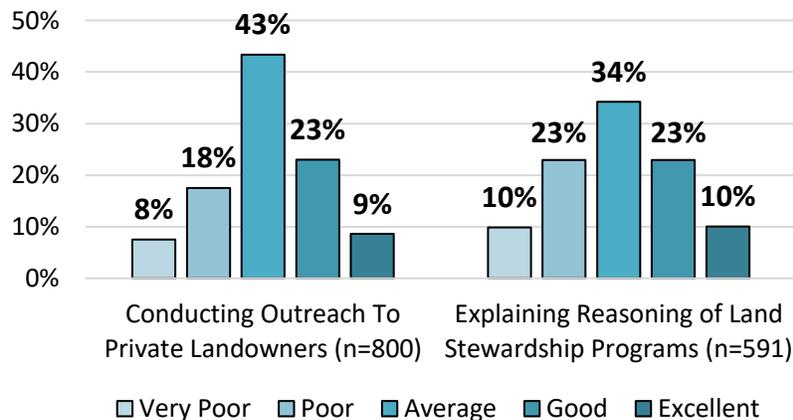
The most common interactions that respondents had with FWC was through FWC visits to respondent properties (Tab. 5). These property visits included visits by both FWC law enforcement and biologists. A tenth (10%) of respondents contacted FWC with a concern. Respondent reasons for contacted FWC with a concern varied, but concerns were primarily related to poaching or wildlife conflicts.

**Table 5. Types of Interactions with FWC Personnel (n=1,284)**

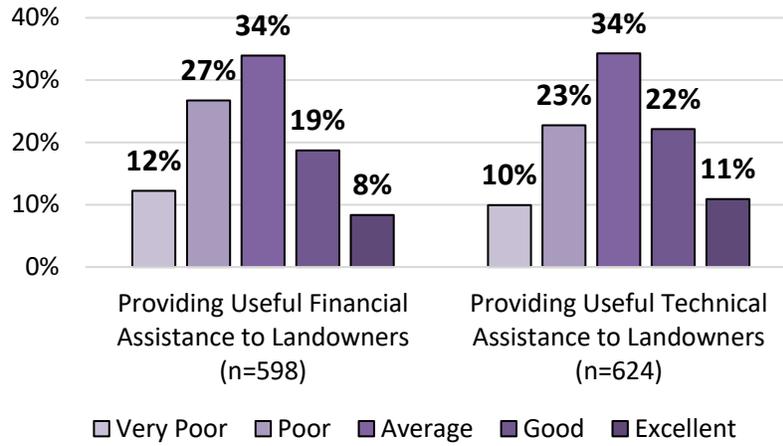
	All Respondents	
	#	%
FWC visited my property	207	16.1%
Attended a public meeting that involved FWC	79	6.1%
Attended an FWC workshop	49	3.8%
Received technical assistance from FWC	50	3.9%
Received financial assistance from FWC	8	0.6%
I contacted the FWC with a concern	137	10.7%
Other	74	5.8%
None	875	68.1%

Respondents were asked to rate FWC staff performance across several metrics, including outreach to landowners, explaining land stewardship programs, providing technical assistance, and providing financial assistance. Many respondents skipped these questions, especially those respondents who had not interacted with FWC staff. Ratings of FWC staff performance followed roughly bell-shaped distributions, with more responses of ‘average’ than either ‘very poor’ or ‘excellent’ (Fig. 28, Fig. 29). FWC staff performance was rated higher on average for ‘conducting outreach to private landowners’ and lower on average for ‘providing useful financial assistance to landowners’.

**Figure 28. Ratings of FWC Staff**

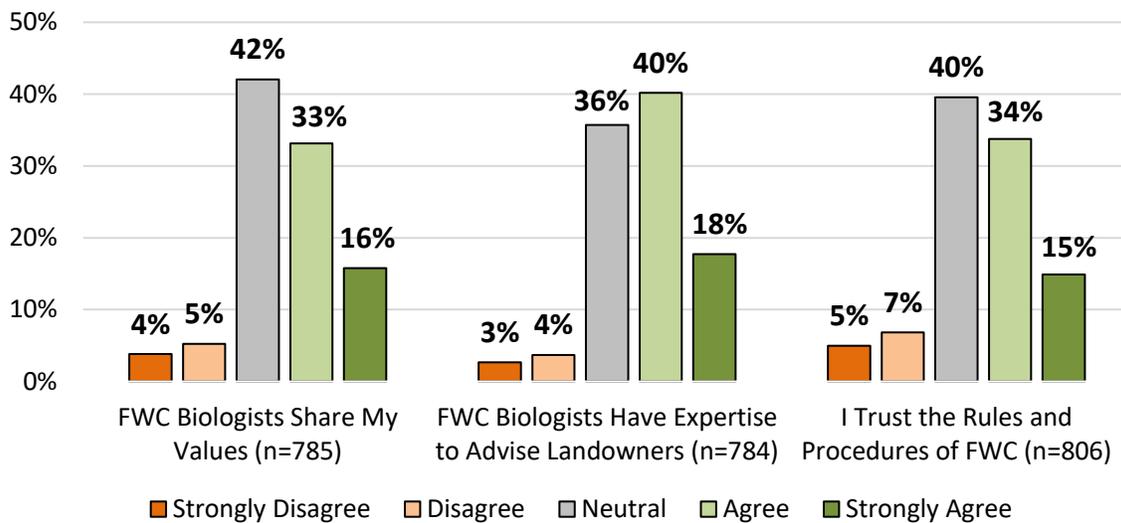


**Figure 29. Ratings of FWC Staff**



Landowner trust in FWC was assessed in three different categories drawn from the scientific peer-reviewed literature on trust in natural resource contexts. Trust is a multifaceted concept that can be understood as an individual’s affinitive, rational, and procedural trust (Stern and Coleman, 2015). Affinitive trust is tied to emotional connections and perceptions of shared values, while rational trust is based on evaluations of expertise. Procedural trust is related to trust in procedures and systems, such as FWC rules. Respondents had generally high trust for FWC in each of these three categories (Fig. 30). A small but notable proportion of respondents had low trust in FWC. Low overall interactions with FWC may explain why a large number of respondents skipped these questions, and why there were a high number of ‘neutral’ responses.

**Figure 30. Landowner Trust In FWC Biologists and Procedures**



## Open Ended Comments Summary

### Recommendations for FWC

Respondents were asked to make recommendations regarding how the FWC could improve its effectiveness in working with private landowners. A total of 242 respondents provided comments. These comments were placed into categories shown in the Table 6:

**Table 6. Respondent Suggestions for FWC to Improve its Working Relationship with Private Landowners (n=242)**

<b>Recommendation Theme</b>	<b>Number making recommendation</b>	<b>Percent making recommendation</b>
Better Communication/ Outreach	70	28.9%
Regulation Change	34	14.1%
Enforcement Change	20	8.3%
More Visits	18	7.4%
Mail Information	16	6.6%
More Workshops	16	6.6%
Staff Training/ Hiring	16	6.6%
Better Networking	7	2.9%
Praise	20	8.3%
Miscellaneous	14	5.8%

Broadly, respondents made suggestions related to FWC's outreach strategies, regulations, or staff behavior (Tab. 6). General suggestions to increase outreach and improve communication with private landowners were the most common responses. Some respondents specifically called for an increase in site visits, mailed information, or habitat related workshops. Recommendations related to regulations and enforcement were also common, with respondents asking for better enforcement to deal with poaching and regulatory changes that would help private landowners.

Table 7 provides examples of recommendations included in each of the thematic categories. Full comments (lightly edited to remove identifiable information) can be found in Appendix 3.

**Table 7. Example Recommendations from Respondents on how the FWC Can Improve its Working Relationship with Private Landowners**

Theme	Example Responses
Better Communication/ Outreach	<ul style="list-style-type: none"> <li>• <i>I think getting the word out that you are willing to help people with management and advice is a good start. I believe if they feel you will help, they will take advantage.</i></li> <li>• <i>Be sure to interact with hunt clubs and school students. Many landowners have trouble during hunting season and with kids trespassing onto property</i></li> </ul>
Regulation Change	<ul style="list-style-type: none"> <li>• <i>Go back to supporting hunting and fishing instead of complicating game rules</i></li> <li>• <i>Leave them alone, landowner should be able to manage their property</i></li> </ul>
Mail Information	<ul style="list-style-type: none"> <li>• <i>I have numerous other interactions with FWC. I received this survey from a database of FL landowners. I suggest sending an informational 'flier' to this entire database outlining FWC services and include contact info.</i></li> <li>• <i>Publicize somehow more info by social media or emails or mail. Never hear or know a way to learn.</i></li> </ul>
Enforcement Changes	<ul style="list-style-type: none"> <li>• <i>A focus on cooperative ventures, less aggressive accusatory intervention from FWC law enforcement</i></li> <li>• <i>Have more game wardens for addressing poachers</i></li> </ul>
More Visits	<ul style="list-style-type: none"> <li>• <i>Large tracts (over 100 acres) assign a rep. to make personal contact</i></li> <li>• <i>Stop by private land get to know owners and their problems. There is some good contact but not widespread</i></li> </ul>
More Workshops	<ul style="list-style-type: none"> <li>• <i>Offer more workshops that teach us useful skills and give us knowledge on land and wildlife management issues</i></li> <li>• <i>Offer workshops AFTER business hours, or on weekends. Publish workshop schedules well in advance. Don't hide info on assistance programs.</i></li> </ul>
Staff Training/ Hiring	<ul style="list-style-type: none"> <li>• <i>Having more FWC personnel to interact with landowners</i></li> <li>• <i>High turnover in FWC makes establishing relationships difficult</i></li> </ul>
Better Networking	<ul style="list-style-type: none"> <li>• <i>Cooperate with UF/ IFAS. Build relationships with private agricultural organizations.</i></li> <li>• <i>More interaction- attend local meetings of interested parties- maybe Cattlemen, Farm Bureau, extension type meetings just to build relationships</i></li> </ul>

## Focus Area vs. State-wide

A main objective of this project was to expand the scope of the landowner survey to include landowners across the state. Declining response rates in the Focus Areas, FWC’s movement away from the Focus Area framework, and a need to understand landowners state-wide motivated the survey expansion. Comparing the survey results from the Focus Areas to respondents outside of the Focus Areas will help to assess the utility of the Focus Areas in the future. Differences between Focus Area and non-Focus Area respondents might be expected in terms of landowner awareness of land management assistance, and landowner interactions with FWC.

Chi- square and Mann-Whitney U tests were used to evaluate differences based on Focus Area location. Bonferroni corrections for multiple comparisons were applied when assessing statistical significance for each set of tests (each table in this section represents a set of tests). When a large number of statistical tests are used, the odds of a false positive result are increased. The Bonferroni correction creates a stricter significance threshold.

Demographically, respondents inside and outside of the Focus Areas were similar. There were no significant differences in terms of respondent gender ratios ( $\chi^2 = 0.69, p = 0.406$ ), Florida residency ( $\chi^2 = 0.01, p = 0.920$ ), or median age ( $U = 142741; p = 0.988$ ). Respondents from the Focus Areas did own significantly less acreage than respondents from outside Focus Areas (Mann-Whitney test,  $U = 216,422; p < 0.001$ ). Focus Area respondents owned a median of 50-100 acres, while state-wide respondents owned a median of 101-500 acres.

Respondents from the Focus Areas were not significantly different in their awareness of FWC (Tab. 8). There were also no significant differences in awareness of management plan assistance, cost-share, or technical workshops.

**Table 8. Awareness of FWC and Habitat Management Assistance (n=1,340)**

		Focus Area	State-wide	$\chi^2$	<i>p</i> -value
Aware of FWC	Yes	727	446	2.02	0.155
	No	67	54		
Aware of Plans	Yes	442	286	0.25	0.620
	No	355	217		
Aware of Cost-share	Yes	321	199	0.03	0.865
	No	476	301		
Aware of Workshops	Yes	308	200	0.18	0.670
	No	484	299		

There were no significant differences between Focus Area and State-wide respondents in possession of a written management plan, use of cost-share, or participation in technical workshops (Tab. 9).

**Table 9. Respondent Participation in Management Assistance in Past 5 Years (n=1,340)**

		Focus Area	State-wide	$\chi^2$	<i>p</i> -value
Has Current Plan	Yes	171	126	2.43	0.119
	No	629	376		
Used Cost-share	Yes	42	56	0.80	0.371
	No	459	740		
Attended Workshops	Yes	51	37	0.48	0.488
	No	747	464		

A greater percentage of respondents outside of the Focus Areas implemented conservation practices than respondents from inside the Focus Areas (Tab. 10). However, most of these differences were not statistically significant, except for stand thinning, which State-wide respondents implemented more (20%) than Focus Area respondents (12.5%).

**Table 10. Respondents Engaging in Specific Management Practices in Past 5 Years (n=1,340)**

	Focus Areas		State-wide		$\chi^2$	<i>p</i> -value
	#	%	#	%		
Prescribed fire	203	24.8%	162	31.3%	6.46	0.011
Exotic vegetation control	232	28.4%	179	34.6%	5.51	0.019
Roller chopping	235	28.8%	174	33.6%	3.35	0.067
Prescribed/ rotational grazing	255	31.2%	141	27.2%	2.67	0.102
Livestock exclusion from natural waterbodies	87	10.6%	60	11.6%	0.25	0.616
Stand thinning	102	12.5%	104	20.1%	13.86	<0.001
Long rotation for saw/ pole production	77	9.4%	73	14.1%	6.81	0.009
Understory/ brush management	166	20.3%	134	25.9%	5.47	0.019
Uneven age stand management	31	3.8%	38	7.3%	8.01	0.005
Cover crops	79	9.9%	71	13.7%	4.41	0.036
Field borders/ wildlife plantings	97	11.9%	64	12.4%	0.05	0.817
Water conservation	82	10.0%	68	13.1%	2.95	0.086
Plant wildlife food plots	261	31.9%	185	35.7%	2.13	0.145
Plant native trees	307	37.5%	237	45.8%	9.22	0.002
Plant native groundcover	172	21.0%	110	21.2%	0.01	0.926
Maintain nest boxes/ birdhouses	195	23.8%	118	22.8%	0.21	0.645
Maintain wildlife feeders	298	36.4%	178	34.4%	0.64	0.426

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$



Focus area respondents were also similar to state-wide respondents for those conservation actions that were evaluated by area or quantity of use (Tab. 11). These two categories of respondents reported similar use of wildlife food plots, native groundcover, nest boxes/ birdhouses, and wildlife feeders. However, respondents from focus areas did report significantly higher acres of native tree establishment than state-wide respondents.

**Table 11. Average Extent of Conservation Actions Undertaken by Respondents in the Past 5 Years (n=1,340)**

	Focus Areas	State-wide	<i>U</i>	<i>p</i> -value
Acres of wildlife food plots	14.9	27.5	201280	0.055
Acres of native trees	94.9	155.0	207887	0.004
Acres of native groundcover	20.3	53.0	192044	0.846
Number of nest boxes/ birdhouses	1.6	1.7	188066	0.556
Number of wildlife feeders	1.8	2.1	189496	0.800

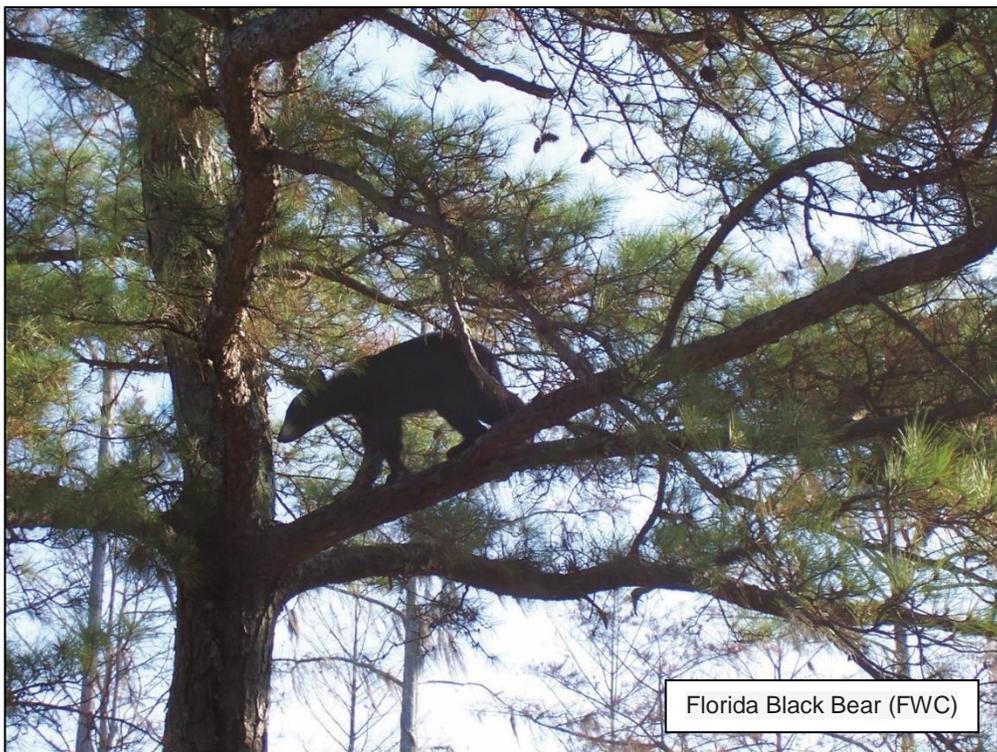
Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Given that the Focus Areas originated as an FWC classification to prioritize conservation in the targeted region, the percentage of FWC interactions might be expected to have been greater for respondents from these areas. However, there were no significant differences between Focus Area and State-wide respondents in terms of their interactions with FWC (Tab. 12).

**Table 12. Types of Interactions with FWC Personnel (n=1,340)**

	Focus Areas		State-wide		$\chi^2$	p-value
	#	%	#	%		
FWC visited my property	124	15.2%	84	16.2%	0.38	0.537
Attended a public meeting that involved FWC	51	6.2%	27	5.2%	0.53	0.468
Attended an FWC workshop	32	3.9%	16	3.1%	0.56	0.454
Received technical assistance from FWC	28	3.4%	22	4.2%	0.67	0.413
Received financial assistance from FWC	4	0.5%	4	0.7%	0.45	0.502
I contacted the FWC with a concern	75	9.2%	59	11.4%	1.37	0.242

Overall, the survey responses indicated few differences between Focus Area and state-wide respondents. Focus Area respondents did have significantly lower acreage, had implemented less stand-thinning, and had regenerated fewer acres of native trees. However, there were no significant differences in terms of awareness of land management assistance, participation in management assistance, or interactions with FWC.



Florida Black Bear (FWC)

## Results by Acreage

In this section, survey results from different categories of respondent acreage are compared. Three acreage categories were chosen; <50 acres, 50-500 acres, and >501 acres. We expected that respondents who owned or managed more acres of land would be more likely to implement conservation actions and have more interaction with FWC and other natural resource organizations. Chi-square tests were used in this section, with significant results indicating a difference among the three levels of acreage examined.

There were many statistically significant results in this section. In general, respondents with more acres of land had higher awareness, reported higher use of conservation actions, and had more interactions with FWC.

In terms of awareness, there was not a significant difference among acreage categories in respondent awareness of FWC (Tab. 13). However, there were differences in terms of awareness of management plans, cost-share, and habitat workshops. Respondents with more than 501 acres reported the highest awareness of these forms of assistance.

**Table 13. Awareness of FWC and Habitat Management Assistance by Acreage**

	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)	$\chi^2$	<i>p</i> -value
Aware of FWC	86.0%	87.3%	91.3%	3.43	0.180
Aware of Plans	40.7%	56.3%	71.6%	67.33	<0.001
Aware of Cost-share	28.0%	39.9%	54.3%	49.42	<0.001
Aware of Workshops	28.6%	37.2%	55.0%	50.39	<0.001

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

In addition to greater awareness of management assistance, respondents with more acreage also expressed significantly greater interest in the three forms of management assistance (Tab. 14). A Kruskal-Wallis test was used to compare among the three acreage categories.

**Table 14. Average Interest in Habitat Management Assistance by Acreage**

	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)	$\chi^2(2)$	<i>p</i> -value
Interest in Management Plan Assistance	0.64	0.83	0.98	19.35	<0.001
Interest in Cost-Share	0.74	1.00	1.36	50.66	<0.001
Interest in Workshop	0.81	0.97	1.33	43.64	<0.001

(0= not at all interested, 1= slightly interested, 2=moderately interested, 3= highly interested; Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$ )

Higher proportions of respondents with more than 500 acres had written management plans, had used cost-share assistance in the past 5 years, and had attended a habitat workshop in the past 5 years (Tab. 15).

**Table 15. Participation in Habitat Management Assistance by Acreage**

	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)	$\chi^2$	<i>p</i> -value
Current Written Plan	11.1%	20.7%	41.2%	87.16	<0.001
Used Cost-share	1.3%	6.3%	18.0%	79.73	<0.001
Attended Workshop	2.4%	5.5%	14.2%	39.38	<0.001

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

For the majority of conservation activities assessed in the survey, respondents with greater than 500 acres reported more use of that activity than respondents with fewer acres (Tab. 16). The activities with no significant differences across acreage categories were livestock exclusion from natural waterbodies, establishment of native trees, establishment of native groundcover, and maintenance of nest boxes/ birdhouses.

**Table 16. Number and Percent of Respondents Engaging in Specific Management Practices in Past 5 Years by Acreage**

	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)	$\chi^2$	<i>p</i> -value
Prescribed fire	12.1%	22.0%	59.2%	184.72	<0.001
Exotic vegetation control	17.0%	27.1%	57.4%	120.85	<0.001
Roller chopping	18.0%	25.0%	59.9%	139.76	<0.001
Prescribed/ rotational grazing	21.0%	27.4%	47.4%	49.83	<0.001
Livestock exclusion from natural waterbodies	6.5%	11.7%	15.6%	11.87	0.003
Stand thinning	6.5%	11.6%	36.0%	113.74	<0.001
Long rotation for saw/ pole production	4.0%	12.0%	18.7%	32.08	<0.001
Understory/ brush management	12.1%	20.0%	40.5%	71.03	<0.001
Uneven age stand management	1.6%	3.3%	13.8%	54.14	<0.001
Cover crops	4.0%	11.7%	20.1%	37.39	<0.001
Field borders/ wildlife plantings	6.7%	11.6%	20.1%	23.93	<0.001
Water conservation	5.1%	9.7%	23.2%	51.04	<0.001
Plant wildlife food plots	17.3%	35.0%	51.6%	77.42	<0.001
Plant native trees	34.5%	42.9%	45.3%	5.78	0.056
Plant native groundcover	18.6%	21.4%	24.2%	1.70	0.428
Maintain nest boxes or birdhouses	22.4%	24.8%	21.8%	1.42	0.491
Maintain wildlife feeders	29.1%	34.8%	46.4%	16.54	<0.001

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Respondents with more acreage were more likely to report interactions with FWC personnel (Tab. 17). These interactions included site visits, attendance at public meetings, workshops, and technical assistance.

**Table 17. Types of Interactions with FWC Personnel by Acreage**

	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)	$\chi^2$	p-value
FWC visited my property	3.8%	12.8%	38.8%	153.80	<0.001
Attended a public meeting that involved FWC	2.7%	5.4%	11.8%	23.36	<0.001
Attended an FWC workshop	2.2%	2.2%	9.0%	28.03	<0.001
Received technical assistance from FWC	1.3%	2.7%	9.7%	33.83	<0.001
Received financial assistance from FWC	0.0%	0.5%	1.7%	8.07	0.018
I contacted the FWC with a concern	6.2%	8.7%	18.0%	26.04	<0.001
Other contact	9.4%	10.6%	21.8%	26.19	<0.001

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Respondents with greater land acreage were more likely to have interacted with FWC law enforcement (Tab. 18). There were significant differences between acreage and law enforcement interactions (Kruskal-Wallis test,  $\chi^2(2) = 99.40$ ,  $p < 0.001$ ). There was also a significant positive correlation between respondent acreage and interactions with law enforcement ( $r_s = 0.27$ ,  $p$ -value  $< 0.001$ ).

**Table 18. Interactions with FWC Law Enforcement in the Last 5 Years by Acreage**

FWC Law Enforcement Interactions	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)
No interactions	82.7%	73.7%	51.6%
1-5 interactions	11.1%	21.1%	31.8%
6-10	1.1%	0.8%	6.9%
11-15	0%	0%	2.1%
16-20	0%	0.5%	1.4%
>20	0.8%	0.5%	2.4%

While respondents with greater acreage reported more interactions with FWC biologists, this association was not statistically significant (Tab. 19). Number of interactions with biologists did not differ significantly among the three acreage categories (Kruskal-Wallis test,  $\chi^2(2) = 2.34, p = 0.310$ ). There was no significant correlation between acreage and biologist interactions as measured in this study ( $r_s = -0.05, p = 0.495$ ).

**Table 19. Interactions with FWC Biologists in the Last 5 Years by Acreage**

FWC Biologist Interactions	<50 Acres (n=371)	50-500 Acres (n=632)	>501 Acres (n=289)
No interactions	87.6%	84.0%	64.7%
1-5 interactions	5.7%	10.6%	26.0%
6-10	1.1%	1.1%	2.8%
11-15	0.3%	0.2%	0%
16-20	0.3%	0.2%	0.3%
>20	0.5%	0.5%	2.1%

In general, respondents with acreage >501 acres had higher awareness, reported higher use of conservation actions, and had more interactions with FWC.



## Results by Respondent Age

In this section, survey results were compared against respondent ages. Chi square tests and Kruskal-Wallis tests were used to assess difference between three age groups (<60 years old, 60-70 years old, and >70 years old). Chi square tests found no significant difference in awareness of management assistance between the three age groups (Tab. 20).

**Table 20. Awareness of Habitat Management Assistance by Respondent Age**

	<60 Years Old	60-70 Years Old	>70 Years Old	$\chi^2$	<i>p</i> -value
Aware of FWC	90.7%	90.4%	83.3%	8.21	0.017
Aware Written Plan	52.6%	59.6%	51.7%	5.33	0.070
Aware Cost-share	37.7%	42.4%	36.3%	3.30	0.192
Aware Workshop	36.2%	41.2%	34.4%	3.89	0.145

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

In terms of participation in management assistance, there was no difference between age groups in terms of recent use of cost-share or recent workshop attendance (Tab. 21). There was a significant difference in the proportion who had a written management plan between groups, with respondents over 70 being less likely to have such a plan.

**Table 21. Participation in Habitat Management Assistance By Respondent Age**

	<60 Years Old	60-70 Years Old	>70 Years Old	$\chi^2$	<i>p</i> -value
Current Written Plan	25.0%	24.3%	16.9%	9.09	0.011
Used Cost-share	6.3%	8.5%	4.7%	5.09	0.079
Attended Workshop	5.6%	7.3%	4.5%	3.17	0.205

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Respondent age was significantly related to interest in habitat management assistance (Tab. 22). There were significant differences between age groups for interest in all three types of assistance, with average interest decreasing with higher age.

**Table 22. Interest in Habitat Management Assistance by Respondent Age**

	<60 Years Old	60-70 Years Old	>70 Years Old	$\chi^2(2)$	<i>p</i> -value
Interest in Written Plan	1.04	0.88	0.62	35.42	<0.001
Interest in Cost-share	1.30	1.14	0.76	52.47	<0.001
Interest in Workshop	1.21	1.14	0.79	45.48	<0.001

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$



FWC Biologist, Jeremy Martin reviews property maps with private landowners. (FWC)

## Longitudinal Comparisons

The FWC’s Private Lands Strategic Initiative set several objectives related to private lands conservation in Florida. The objectives most closely tied to this survey report are:

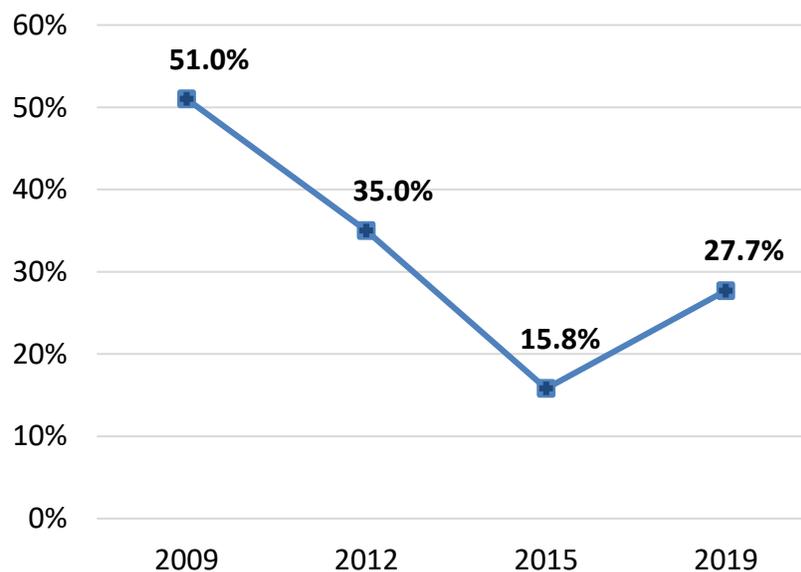
*“As indicated by the Private Landowner Survey, by the end of 2020, increase landowner awareness of FWC and its programs by 25%, and increase positive, ongoing, mutually trusting relationships with landowners by 15%.”*

While the Strategic Initiative focused specifically on the years 2015-2020, survey results from 2012, 2015, and 2019 are used here to evaluate the metrics of awareness and involvement with FWC. For this section, only the data collected from the Focus Areas are utilized from the 2019 survey in order to make comparisons to previous years in which only the Focus Areas were surveyed. Data from respondents with less than 20 acres in 2019 (n = 9) were not included here.

### Survey Methods

Through intentional design, the overall survey methods were similar among survey years. However, response rates have varied considerably (Fig. 31, from 51% in 2008 to 15.8% in 2015). This drop coincides with an overall decline in mail survey response rates across the United States, and could be related to changes in booklet/ mailing designs. For example, the 2008 survey included a five-part mailing series (a pre-letter, survey, postcard reminder, replacement survey, and second replacement survey). This was reduced to four components in 2012, and three components in 2015 and 2019. The 2015 survey also included several questions about endangered species, a potentially controversial topic that likely reduced response rates.

**Figure 31. Private Landowner Survey Response Rates**

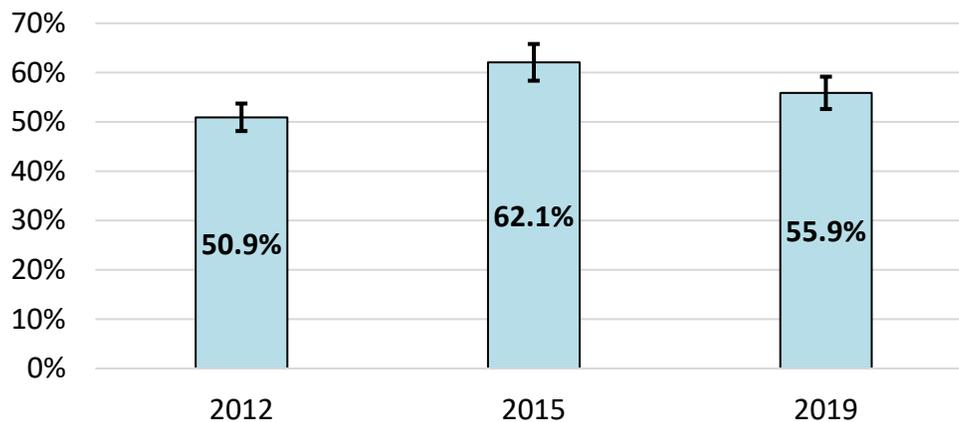


## Awareness

In 2019, landowner awareness of FWC was high; 88.9% of respondents had heard of FWC before the survey. This question was first introduced in the 2019 survey, so comparisons to previous years are not available. Changes in ‘landowner awareness of FWC and its programs’ were therefore assessed using several other measures, including respondent awareness of different types of assistance (i.e., management plans, financial assistance, and workshops) and reception of FWC assistance in each of these areas. Confidence intervals for population proportions were constructed at the 95% confidence level. A finite population correction factor was also applied using the sampling frame size for each survey year (7,000 in 2008, 8,141 in 2012, 5,876 in 2015, and 7,597 in 2019).

In 2012, the proportion of landowners who were aware of management plan assistance was 50.9%  $\pm$  2.8% (Fig. 32). This figure increased to 62.1%  $\pm$  3.7% in 2015, but decreased to 55.9%  $\pm$  3.2% in 2019. A Chi-square test confirmed a significant difference in plan awareness between years ( $\chi^2 = 19.24$ ;  $p < 0.001$ ).

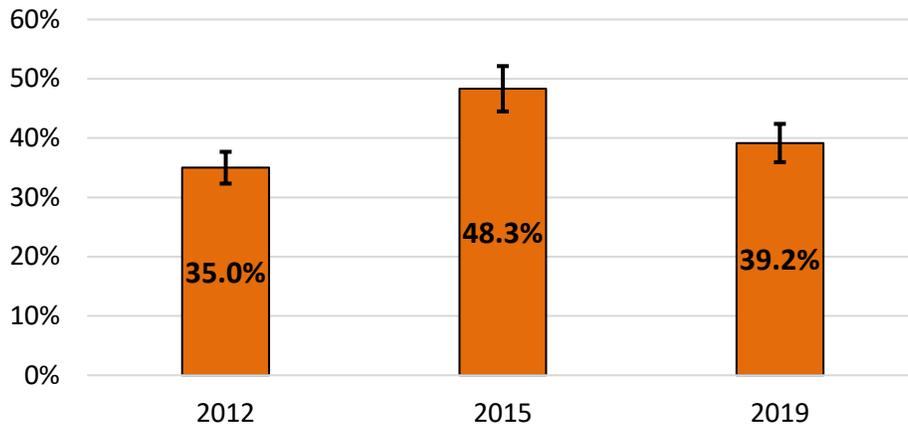
**Figure 32. Aware of Management Plan Assistance:  
Landowners with >20 Acres in Focus Areas**



Error bars represent 95% confidence interval for population proportion

The proportion of landowners who were aware of technical workshops for habitat management was 35.0%  $\pm$  2.7% (Fig. 33). This had increased to 48.3%  $\pm$  3.8 in 2015 but decreased to 39.2%  $\pm$  3.2 in 2019. A chi-square test confirmed a significant difference in workshop awareness between years ( $\chi^2 = 28.23$ ;  $p < 0.001$ ).

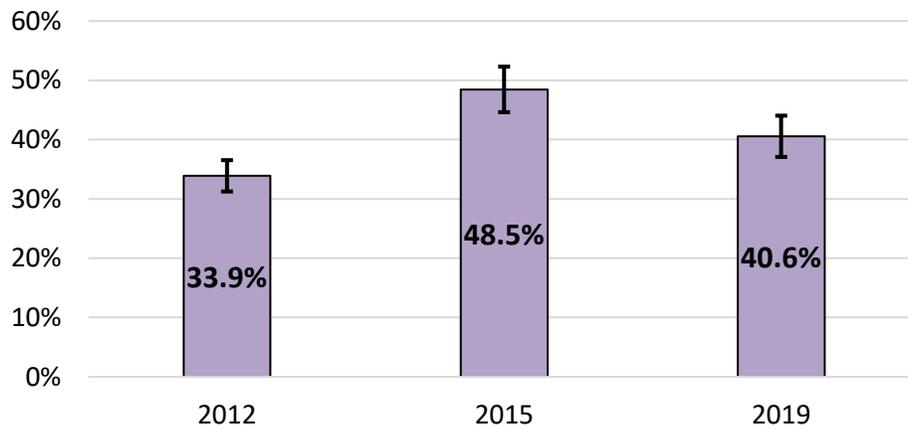
**Figure 33. Aware of Workshop Assistance:  
Landowners with >20 Acres in Focus Areas**



Error bars represent 95% confidence interval for population proportion

In 2012, the proportion of landowners who were aware of cost-share assistance was 33.9% ± 2.6% (Fig. 34). This figure increased to 48.5% ± 3.8% in 2015 but was down to 40.6% ± 3.5% in 2019. A Chi-square test confirmed a significant difference in cost-share assistance between years ( $\chi^2 = 34.20$ ;  $p < 0.001$ ).

**Figure 34. Aware of Costshare Assistance:  
Landowners with >20 Acres in Focus Areas**

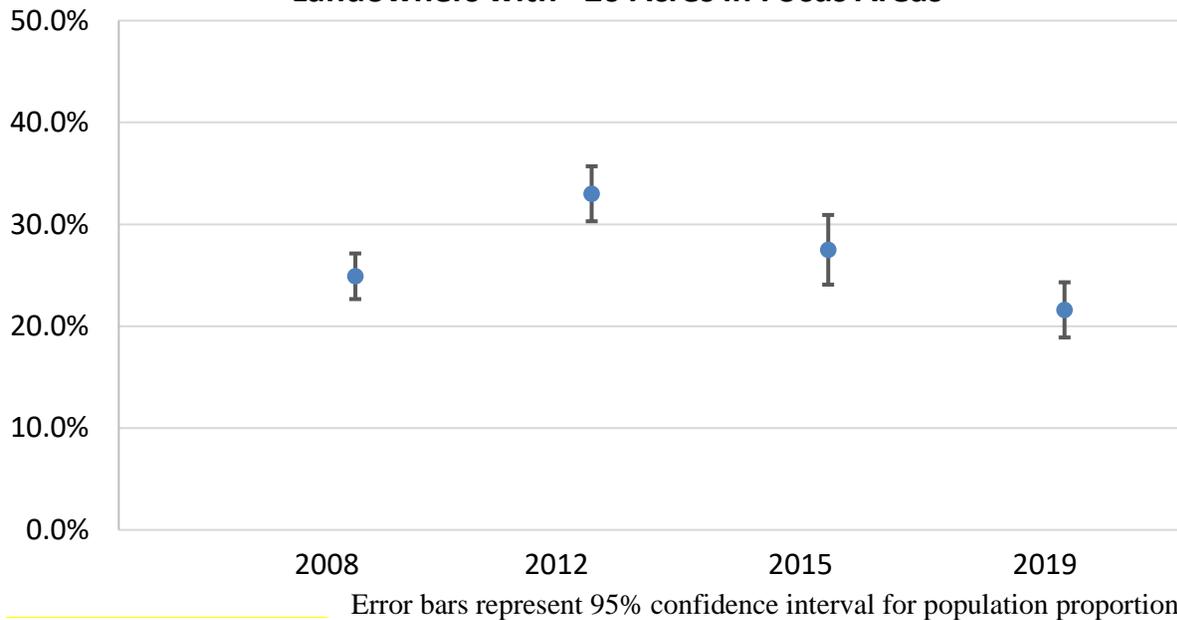


Error bars represent 95% confidence interval for population proportion

## Assistance Participation

In addition to awareness of conservation technical and financial assistance, the landowner survey has also collected information related to landowner use of conservation assistance. About a quarter of landowners with more than 20 acres in the focus areas had a written management plan over the past ten years (Fig. 35). In 2008, the proportion of landowners with a written management plan was  $24.9\% \pm 2.2\%$ . This increased to  $33.0\% \pm 2.7\%$  in 2012, but decreased to  $27.5\% \pm 3.4\%$  in 2015 and  $21.6\% \pm 2.7\%$  in 2019. A Chi-square test confirmed a significant difference in the proportion of respondents that had management plans between years ( $\chi^2 = 959.5; p < 0.001$ ).

**Figure 35. Proportion with Written Management Plans:  
Landowners with >20 Acres in Focus Areas**



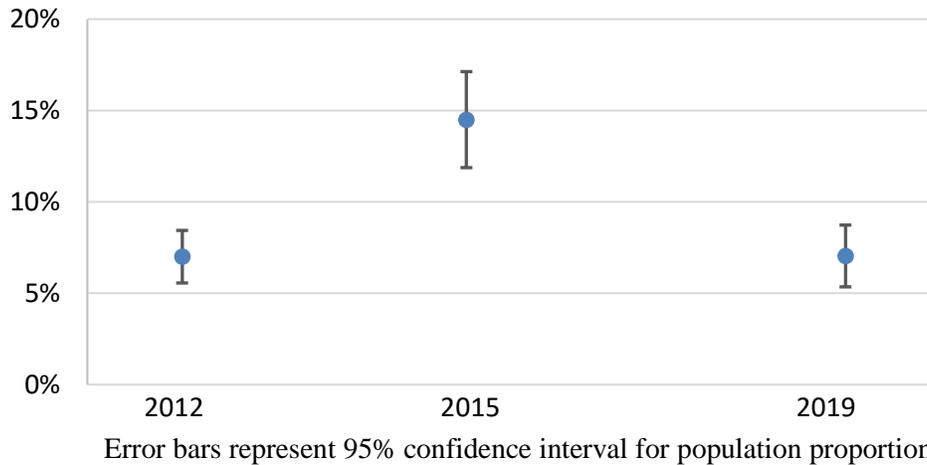
Among landowners with a written management plan, about half had plans that were prepared in the past five years (Tab. 23). There was no significant difference between 2015 and 2019 in the length of time since plans were prepared (Mann-Whitney test;  $U = 9,475.5, p = 0.841$ ).

**Table 23. Years Since Most Recent Written  
Management Plan Prepared**

Years Since Plan Prepared	2015 (n=149)	2019 (n=155)
1-5 years	49.4%	47.7%
6-10 years	22.2%	17.4%
11-15 years	13.6%	5.8%
More than 15 years	8.0%	12.3%
No Response	6.8%	16.8%

In 2012, the proportion of landowners who had received cost-share was  $6.7\% \pm 1.4\%$  (Fig. 36). This figure increased to  $15\% \pm 2.6$  in 2015 but was down to  $7.1\% \pm 1.7$  in 2019.

**Figure 36. Proportion Receiving Cost Share Landowners with >20 Acres in Focus Areas**

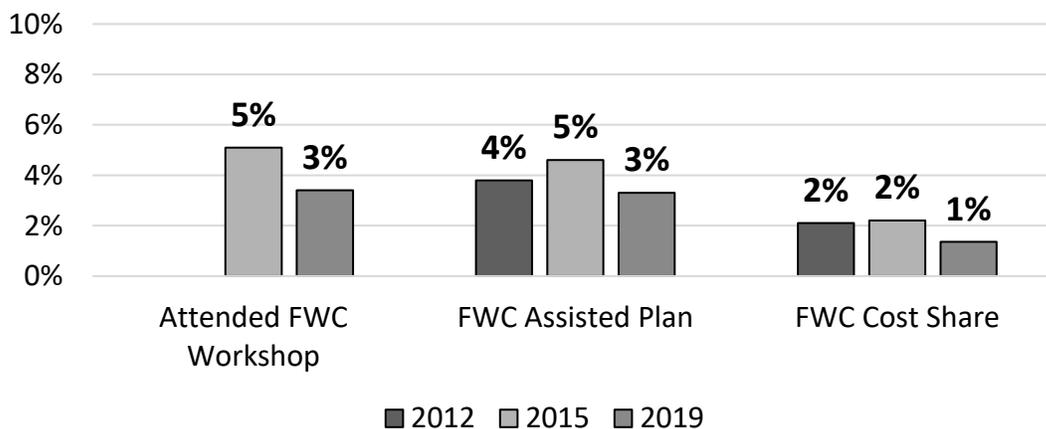


### FWC Interactions

Several variables were considered in order to evaluate positive, ongoing, mutually trusting relationships with FWC. Landowner trust of FWC, ratings of FWC staff, and frequency of interactions with FWC were considered important aspects in this area of performance.

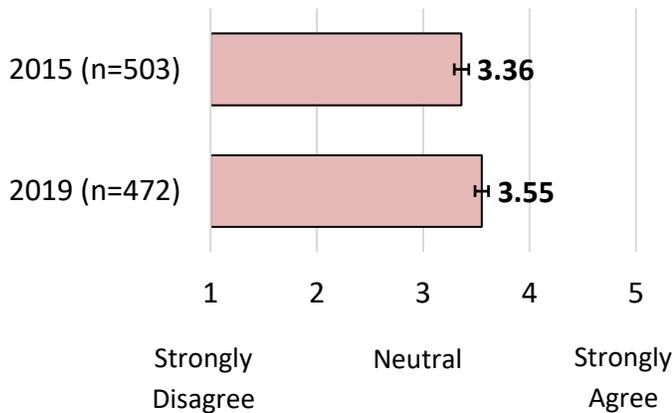
In addition to asking whether respondents had participated in management assistance in general, we also asked about FWC assistance specifically. The areas of assistance from FWC that were evaluated included management plan development, FWC cost-share, and FWC workshops. Participation in these forms of assistance was consistent across survey years (Fig. 37).

**Figure 37. Proportion Receiving FWC Assistance: Landowners with >20 Acres in Focus Areas**

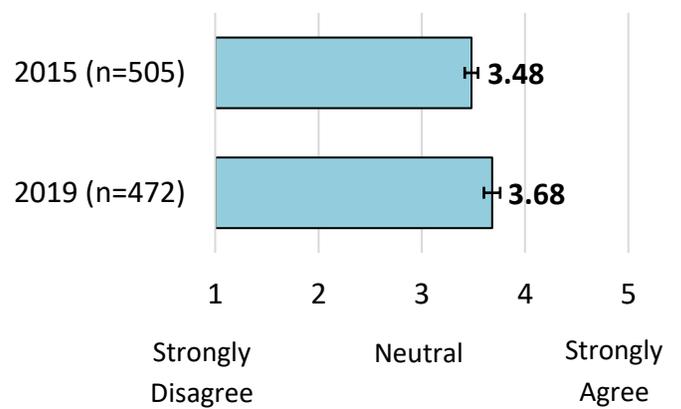


Respondents were asked in 2015 and 2019 about their trust for FWC biologists. These questions were related to affinitive trust (based on shared values) and rational trust (based on expertise). In both survey years, the average response for these items were between ‘neutral’ and ‘agree’ (Fig. 38, 39). In 2019, respondents had higher affinitive trust and rational trust compared to 2015.

**Figure 38. FWC Biologists Share My Values Regarding Stewardship for Wildlife**

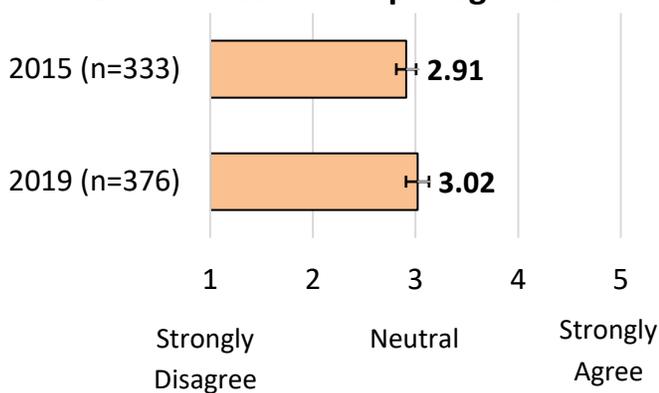


**Figure 39. FWC Biologists Have Expertise To Advise Landowners On Land Stewardship**

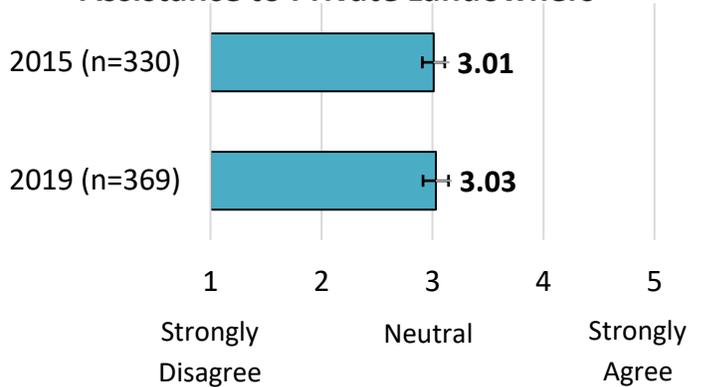


Respondents were asked in 2015 and 2019 to rate FWC staff performance in several areas. The topics included performance explaining land stewardship programs, providing technical assistance, and providing financial assistance. In both survey years, the average response for these questions were roughly ‘neutral’ (Fig. 40, 41, 42). There was no significant difference between 2015 and 2019 responses in terms of these performance ratings.

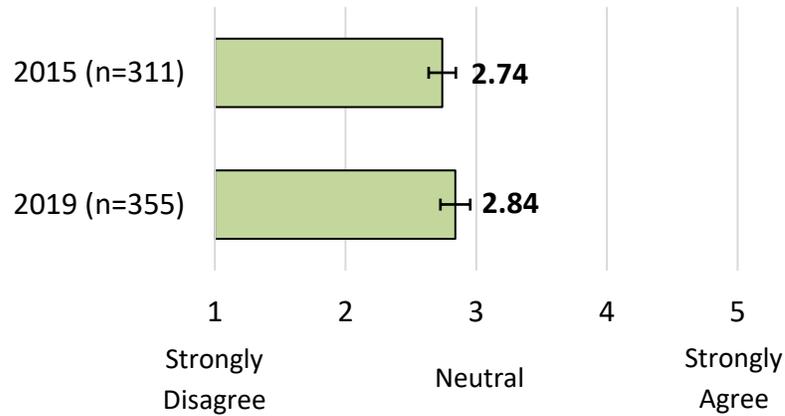
**Figure 40. Explaining Reasoning Of Land Stewardship Programs**



**Figure 41. Providing Technical Assistance to Private Landowners**



**Figure 42. Providing Financial Assistance Programs to Private Landowners**



Respondents in 2019 generally reported fewer interactions with FWC than in 2015. There were significant differences in the proportion of respondents reporting FWC site visits, technical assistance, financial assistance, and contact over concerns (Tab. 24).

**Table 24. Types of Interactions with FWC in Last 5 years**

	2015 (n=608)	2019 (n=747)	$\chi^2$	p-value
FWC visited my property	22.9%	16.6%	8.40	0.004
Attended a public meeting that involved FWC	7.7%	6.8%	0.41	0.523
Attended an FWC workshop	5.1%	4.3%	0.50	0.479
Received technical assistance from FWC	8.6%	3.7%	13.93	0.002
Received financial assistance from FWC	2.8%	0.5%	11.23	<0.001
I contacted the FWC with a concern	18.6%	10.4%	18.36	<0.001
Other	7.1%	6.2%	0.46	0.499

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Respondents reported a greater number of recent interactions with FWC Law Enforcement in 2015 compared to 2019 (Tab. 25;  $U = 246,718$ ;  $p = 0.005$ ).

**Table 25. Interactions with FWC Law Enforcement in the Last 5 Years**

<b>FWC Law Enforcement Interactions</b>	<b>2015 (n=588)</b>	<b>2019 (n=785)</b>
No Interactions	69.0%	75.7%
1-5 Interactions	24.1%	20.1%
6-10 Interactions	4.6%	1.9%
11-20 Interactions	1.2%	0.7%
>20 Interactions	1.0%	1.5%

The same trend followed for interactions with FWC biologists. A greater number of recent interactions with FWC biologists were reported in 2015 compared to 2019 (Tab. 26;  $U = 255,885$ ;  $p < 0.001$ ).

**Table 26. Interactions with FWC Biologists in the Last 5 Years**

<b>FWC Biologist Interactions</b>	<b>2015 (n=587)</b>	<b>2019 (n=783)</b>
No Interactions	73.6%	84.5%
1-5 Interactions	19.3%	12.8%
6-10 Interactions	3.6%	1.3%
11-20 Interactions	1.5%	0.6%
>20 Interactions	2.0%	0.8%

Overall there was mixed evidence of progress in meeting the Private Lands Strategic Initiative objectives for improving awareness of assistance and working relationships with landowners. While landowner awareness of management plans and technical workshops showed no net change since 2012, awareness of cost-share did increase significantly. Landowner trust of FWC biologists increased between 2015 and 2019, but ratings of FWC performance stayed at the same levels. Finally, there was a decrease in reported interactions with FWC law enforcement and biologists since 2015. While the strict measures of improving awareness by 25% and increasing working relationships by 15% were not achieved according to this assessment, the results also show clear progress in terms of building relationships with private landowners.

## Regional Comparisons

In this section, the 2019 survey results are compared between three main geographic regions delineated in the survey: North, Central, and South Florida. Previous phases of the landowner survey have found important differences between these regions in terms of landowner demographics and land management. Chi-square tests were used in this section, with significant results indicating a difference among regions.

In terms of awareness, there was not a significant difference among regions in respondent awareness of FWC (Tab. 27). Respondents from North Florida reported the highest awareness of management plans, cost-share, and habitat workshops. However, differences in awareness between regions were not significant.

**Table 27. Awareness of FWC and Habitat Management Assistance by Region (n=1298)**

	North	Central	South	$\chi^2$	<i>p</i> -value
Aware of FWC	90.0%	92.0%	90.3%	1.26	0.532
Aware of Plans	59.4%	54.0%	52.1%	5.41	0.067
Aware of Cost-share	44.3%	35.2%	38.0%	8.65	0.013
Aware of Workshops	40.7%	36.4%	40.2%	1.88	0.390

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Respondents on average expressed slight interest in the three forms of management assistance (Tab. 28). Kruskal-Wallis tests were used to compare among the three regions. There were no significant differences between regions for interest in management assistance.

**Table 28. Average Interest in Habitat Management Assistance by Region**

	North	Central	South	$\chi^2(2)$	<i>p</i> -value
Interest in Management Plan Assistance	0.86	0.66	0.79	7.20	0.027
Interest in Cost-Share	1.09	0.91	0.96	5.81	0.055
Interest in Workshop	1.07	0.90	0.94	8.31	0.016

(0= not at all interested, 1= slightly interested, 2=moderately interested, 3= highly interested; Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$ )

Higher proportions of respondents from North Florida had written management plans, had used cost-share assistance in the past 5 years, and had attended a habitat workshop in the past 5 years (Tab. 29).

**Table 29. Participation in Habitat Management Assistance by Region**

	North	Central	South	$\chi^2$	<i>p</i> -value
Current Written Plan	26.3%	24.2%	15.0%	16.29	<0.001
Used Cost-share	10.4%	4.9%	5.4%	13.48	0.009
Attended Workshop	8.5%	5.1%	5.4%	12.99	0.002

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

North Florida respondents reported highest participation with FWC-led management plans, cost share, and technical workshop assistance (Tab. 30). However, participation in FWC-led assistance were not significantly different between regions.

**Table 30. Participation in FWC Provided Habitat Management Assistance by Region**

	North	Central	South	$\chi^2$	<i>p</i> -value
FWC Assisted Plan	3.6%	2.4%	2.6%	1.92	0.383
Received FWC Cost-share	1.8%	1.3%	0.3%	3.45	0.178
Attended FWC Workshop	3.3%	2.1%	2.6%	1.26	0.534

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

There was high variability between regions for the conservation activities assessed in the survey (Tab. 31). South Florida respondents reported higher use of exotic vegetation control, roller chopping, prescribed grazing, wildlife plantings, and water conservation. North Florida respondents reported highest use of prescribed fire, stand thinning, long rotations, understory management, native tree planting, stand thinning, food plots, nest boxes, and wildlife feeders.

**Table 31. Number and Percent of Respondents Engaging in Specific Management Practices in Past 5 Years by Region**

	North	Central	South	$\chi^2$	<i>p</i> -value
Prescribed fire	32.9%	21.4%	30.4%	14.54	<0.001
Exotic vegetation control	26.8%	28.7%	47.2%	42.96	<0.001
Roller chopping	29.4%	26.5%	44.5%	29.74	<0.001
Prescribed/ rotational grazing	18.1%	36.8%	49.1%	99.02	<0.001
Livestock exclusion from natural waterbodies	11.0%	11.1%	13.5%	1.42	0.492
Stand thinning	26.0%	10.0%	6.4%	72.59	<0.001
Long rotation for saw/ pole production	17.9%	10.6%	2.8%	46.52	<0.001
Understory/ brush management	28.9%	20.9%	18.1%	15.80	<0.001
Uneven age stand management	8.4%	3.9%	2.1%	17.93	<0.001
Cover crops	13.9%	12.3%	8.6%	5.62	0.060
Field borders/ wildlife plantings	16.4%	10.6%	8.9%	12.62	0.002
Water conservation	10.5%	7.5%	19.3%	24.83	<0.001
Plant wildlife food plots	45.3%	25.5%	27.8%	48.53	<0.001
Plant native trees	52.7%	41.8%	26.5%	58.22	<0.001
Plant native groundcover	24.8%	21.7%	18.2%	5.28	0.071
Maintain nest boxes or birdhouses	30.7%	25.0%	13.6%	32.76	<0.001
Maintain wildlife feeders	40.2%	36.5%	34.0%	3.65	0.161

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Regarding specific types of interactions with FWC, such as site visits, attendance at public meetings, workshops, and technical assistance, there were no significant differences among the three regions (Tab. 32).

**Table 32. Types of Interactions with FWC Personnel by Region**

	North	Central	South	$\chi^2$	<i>p</i> -value
FWC visited my property	16.4%	16.4%	19.2%	1.22	0.542
Attended a public meeting that involved FWC	7.2%	4.5%	7.1%	2.94	0.230
Attended an FWC workshop	4.7%	3.4%	3.2%	1.47	0.479
Received technical assistance from FWC	4.7%	3.7%	3.6%	0.86	0.652
Received financial assistance from FWC	0.9%	0.3%	0.6%	1.26	0.533
I contacted the FWC with a concern	11.9%	9.9%	10.7%	0.90	0.638

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Respondents in Central Florida reported fewer interactions with FWC law enforcement than other regions, but this difference was not statistically significant (Tab. 33). There was no significant difference in number of FWC law enforcement interactions between regions (Kruskal-Wallis test,  $\chi^2(2) = 2.84, p = 0.242$ ).

**Table 33. Interactions with FWC Law Enforcement in the Last 5 Years by Region**

<b>FWC Law Enforcement Interactions</b>	<b>North</b>	<b>Central</b>	<b>South</b>
No interactions	74.3%	77.2%	71.8%
1-5 interactions	21.2%	19.6%	22.9%
6-10 interactions	2.6%	1.6%	2.5%
11-15 interactions	0.3%	0.0%	1.2%
16-20 interactions	0.7%	0.3%	0.6%
>20 interactions	0.9%	1.4%	0.9%

While respondents in South Florida reported more interactions with FWC biologists, this association was not statistically significant (Tab. 34). The number of interactions with biologists did not differ significantly among the three acreage categories (Kruskal-Wallis test,  $\chi^2(2) = 0.295, p = 0.863$ ).

**Table 34. Interactions with FWC Biologists in the Last 5 Years by Region**

<b>FWC Biologist Interactions</b>	<b>North</b>	<b>Central</b>	<b>South</b>
No interactions	84.3%	85.0%	83.2%
1-5 interactions	12.8%	11.4%	14.6%
6-10 interactions	1.4%	2.2%	1.6%
11-15 interactions	0.2%	0%	0.3%
16-20 interactions	0.3%	0.3%	0%
>20 interactions	1.0%	1.1%	0.3%

There were clear differences between regions in preference for workshop topics (Tab. 35). North Florida respondents were more interested in prescribed burning and timber management, while more respondents in South Florida were interested in exotic vegetation control. These patterns match 2015 survey results on workshop topic preferences.

**Table 35. Preference for Workshop Topics (n=783)**

	<b>North</b>	<b>Central</b>	<b>South</b>	$\chi^2(2)$	<b>p-value</b>
Integrating Wildlife	56.2%	55.4%	54.3%	0.19	0.908
Prescribed Burning	55.7%	46.1%	40.4%	13.06	0.001
Exotic Vegetation Control	47.5%	59.8%	73.9%	36.79	<0.001
Timber Management	57.5%	47.5%	19.7%	73.23	<0.001
Cooperative Management	20.4%	23.5%	21.8%	0.78	0.679

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

In general, written materials and e-newsletters were the preferred outreach method for respondents (Tab. 36). There were also some regional differences in preference for outreach methods. North Florida respondents expressed higher preferences for technical workshops and interactions with an expert.

**Table 36. Preference for Outreach Method**

	<b>North</b>	<b>Central</b>	<b>South</b>	$\chi^2(2)$	<b>p-value</b>
Talk to an expert	25.1%	23.9%	20.8%	2.26	0.323
Visits to property	21.7%	19.4%	14.7%	6.93	0.031
Written materials	45.6%	35.4%	39.0%	10.92	0.004
Email/ e-newsletter	32.7%	30.3%	36.7%	3.31	0.191
Internet	20.4%	19.7%	18.2%	0.66	0.719
Workshop/ conference	24.0%	19.4%	15.5%	9.92	0.007
Don't want/ need information	17.9%	22.9%	19.4%	3.67	0.160

Green highlighted cells indicate significance using Bonferroni correction at  $\alpha=0.05$

Overall, respondents from North, Central, and South Florida were similar in terms of awareness and interest in management assistance. A higher proportion of North Florida respondents had management plans, received cost share, and implemented forestry related management practices. Interactions with FWC and preferences for outreach were similar across these three regions.

## Discussion

### Methods

The Focus Area framework provided a lens for the Florida Fish and Wildlife Conservation Commission to target assistance in high priority conservation areas in the state. However, current efforts by FWC's Landowner Assistance Program are provided to private landowners across Florida. Our results indicate that landowners within the Focus Areas are comparable to landowners state-wide in terms of demographics, conservation awareness, and conservation actions. Regionally focused outreach and research can be important for private lands conservation, which was highlighted in the report from the first Florida Private Landowner Survey in 2008. But using the Focus Area framework may be unnecessary for future evaluation, since these geographic distinctions are no longer emphasized within FWC.

The 2019 survey received a higher response rate than the prior phase, which was a positive sign for the survey design and accuracy of results. However, the response rate is still relatively low (below 60%; Stedman et al. 2019) and remains a possible source of bias in this study. To ensure respondent confidentiality, survey booklets did not include unique ID codes that could be used for a conventional non-response bias check. Instead, the wave analysis evaluation was used, which demonstrated similarity between early and late respondents. Demographic consistency across survey years also increases confidence in the validity of comparisons among surveys.

The survey itself was a useful and positive outreach tool, as evidenced by multiple open-ended responses. For example, one respondent commented that *"This survey is a great start, making landowners aware of available programs"* and another wrote that *"I think outreach efforts (like this survey) are helpful. In addition to gathering information on landowners needs, it also provides information on services available (resources) through the FWC."* Twenty respondents specifically made requests for more information or assistance from FWC in response to the survey. The mail survey also included a link to the Landowner Assistance Program website ([www.MyFWC.com/LAP](http://www.MyFWC.com/LAP)).

## Recommendations

Our results demonstrated large differences in awareness and participation in management assistance based on acreage. Specifically, landowners with more acreage, especially more than 500 acres, were more likely to know about and be interested in participating in conservation assistance. Landowners with more acreage were also more likely to have used available assistance, and to have implemented conservation actions on their land. Current government initiatives to assist private lands conservation in Florida by both state and federal agencies use limited resources most efficiently by working with landowners with larger parcels. The results of this survey indicate that Florida landowners with more acreage receive financial and technical assistance from public agencies at higher rates. Programs directed toward people who own, rent, or manage less land acreage are also vital for engaging the public in habitat and wildlife conservation. Important topics such as wildlife friendly landscaping and wildlife conflict reduction can be relevant and necessary for these groups. Existing efforts such as University of Florida Extension outreach and FWC's Backyards and Beyond program provide areas in which to expand technical outreach to the public.

One key trend seen through the survey results is the aging of private landowners in Florida. The proportion of survey respondents over the age of 70 years old increased from 22.3% in 2012 to 44.1% in 2019. Intergenerational land transfer and legacy planning has important implications for habitat and wildlife conservation. While we did not directly assess the prevalence of legacy plans, the proportion of respondents with written management plans (22%) provides a view into the relatively low rate of long-term property planning. FWC and other organizations that assist private landowners in Florida should be aware of this trend and emphasize opportunities for interested landowners to learn about long-term conservation options.

A major objective of the survey was to evaluate how landowner interactions with FWC and awareness of management assistance have changed over time. We found that landowner awareness of cost-share increased since 2012, and landowner trust of FWC biologists increased between 2015 and 2019. The survey also found a decrease in reported interactions with FWC law enforcement and biologists between 2015 and 2019. Overall these results provide mixed evidence of progress in meeting FWC's Private Lands Strategic Initiative objectives for improving awareness of assistance and working relationships with landowners.

Evaluating FWC's Landowner Assistance Program through multiple methods is important to provide a full picture of the program's impact. For example, following up with landowners who have worked with the Landowner Assistance Program on their experiences with the program should be a priority in the future. This group would have unique perspectives on the benefits of the program and valuable recommendations for improvement.

The Landowner Assistance Program is providing an important service to Florida's landowners and has made progress working with landowners across the state. As FWC faces new and existing social and ecological challenges to conservation on private lands, working to understand and assist private landowners is critical.

## References

Dillman DA, Smyth JD, Christian LM (2014). *Internet, phone, mail, and mixed mode surveys: The tailored design method* (4th ed) Hoboken, NJ, US: John Wiley & Sons Inc.

Stedman RC, Connelly NA, Heberlein TA, Decker DJ, Allred SB (2019). The end of the (research) world as we know it? Understanding and coping with declining response rates to mail surveys. *Society and Natural Resources* 32(10): 1139-1154.

Stern MJ, Coleman KJ (2015). The multidimensionality of trust: applications in collaborative natural resource management. *Society and Natural Resources*. 28(2): 117-132.

## Appendices

Appendix 1: Survey Instrument

Appendix 2: Cover Letters

Appendix 3: Full Respondent Comments