

OPINIONS, ATTITUDES, AND RISK PERCEPTIONS ABOUT AMERICAN
ALLIGATORS (*ALLIGATOR MISSISSIPPIENSIS*) IN FLORIDA

By

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To my friends and family who helped and encouraged me during this process

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LIST OF ABBREVIATIONS

AMU	Alligator management unit
FWC	Florida Fish and Wildlife Conservation Commission
PCA	Principal component analysis
WAC	Wildlife acceptance capacity
WSAC	Wildlife stakeholder acceptance capacity

Abstract of Thesis Presented to the Graduate School
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OPINIONS, ATTITUDES, AND RISK PERCEPTIONS ABOUT AMERICAN
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By

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As American alligator (*Alligator mississippiensis*) populations in Florida have recovered from depressed levels in the 1960's, human-alligator conflicts have increased. Maintaining populations of potentially dangerous wildlife species at levels consistent with human desires can be a challenge. The Florida Fish and Wildlife Conservation Commission's (FWC) Alligator Management Program has previously conducted surveys of public opinions about alligators, and the purpose of this study was to gauge current experience, knowledge, attitudes and risk perceptions about alligators, as well as preferences for alligator population levels and opinions about management strategies.

A questionnaire with an explanatory cover letter was mailed to 2,600 randomly selected Florida households and 1,000 households that had reported a complaint about a nuisance alligator to the FWC within the previous year. We received 1,175 completed questionnaires, 60.3% ($n = 708$) of which were from the randomly selected households. Forty-four percent ($n = 510$) reported having requested that a nuisance alligator be removed, whereas 56% ($n = 644$) reported never having made such a request.

The general public reported relatively positive attitudes about alligators and relatively low perceived risk from alligators. We found differences between nuisance complainants and non-complainants in knowledge levels, attitudes, nuisance behavior beliefs, and risk perceptions associated with alligators. Stepwise regression was used to predict personal risk perception in a model which explained 37.7% of the variance. Binary logistic regression was used to predict a person's preferences for alligator populations in residential areas in a model with an overall accuracy rate of 79.2% and whether a person had complained about an alligator in a model with an overall accuracy rate of 79.6% and used to predict.

Understanding which factors are most important in perceived risk from alligators, tolerance of alligator behavior by the public, and how various groups of the public differ in these measures can help FWC tailor education efforts and management strategies for alligators in Florida. Managers should proactively use news and TV nature shows to stress the importance of appropriate behavior and the low probability of negative human-alligator encounters when those behaviors are upheld. Managers should not allow views of complainants to over-influence nuisance alligator policies.

CHAPTER 1 INTRODUCTION

The rebound of the American alligator (*Alligator mississippiensis*) population in the U.S. during the 1970s and its subsequent down-listing to “threatened due to similarity of appearance” in Florida in 1985 (Neal 1985), then range-wide in 1987 (Neal 1987), is often cited as an endangered species success story (Barrow 2009). This increase in alligator populations was accompanied by an increase in complaints about nuisance alligators (Woodward & Cook 2000).

Wildlife management decisions are increasingly being influenced by stakeholders (Riley et al. 2002). Groups who disagree with management recommendations have gone so far as to challenge them in court and propose ballot initiatives that restrict management options (Torres et al. 1996; Treves 2008). To attempt to preclude such controversy, state management agencies now routinely encourage citizen participation in decision-making (Gynn & Landry 1997). As a result, managers are challenged with maintaining wildlife populations at levels consistent with human desires (Riley & Decker 2000a). The concepts of Wildlife Acceptance Capacity (WAC) and Wildlife Stakeholder Acceptance Capacity (WSAC) have been described as the maximum number of a particular wildlife species acceptable to people in an area (Decker & Purdy 1988; Riley & Decker 2000a; Carpenter et al. 2000). Considering WSAC for large predators that prey on domestic animals and occasionally humans is particularly important (Riley & Decker 2000a). Smithem and Mazzotti (2008) examined risk perceptions and acceptance capacity for American crocodiles (*Crocodylus acutus*) in southern Florida. The alligator’s statewide distribution in Florida makes this study unique.

Alligator Population and Management in Florida

Alligators occur in all of Florida's 67 counties, and can occur in all types of aquatic habitats. The current statewide alligator population is estimated at 1.25 million, based on available habitat and average alligator densities within that habitat (FWC Alligator Management Program).

Florida's alligator populations have recovered from depressed levels during the 1960s (Woodward & Moore 1995), and the state's human population has markedly increased since that time (United States Census Bureau a). Not surprisingly, conflicts between people and alligators have risen steadily since the 1970s (Woodward & Cook 2000). The Florida Fish and Wildlife Conservation Commission (FWC; then the Florida Game and Freshwater Fish Commission) began managing alligators 1977. In 1978, the state began a program to remove problem alligators (Woodward & Cook 2000), and in 1981 began experimental harvests of alligators from public waters (Woodward et al. 1987). FWC's Alligator Management Program was "designed to conserve alligators and their habitat throughout the state by establishing mechanisms which will provide economic incentives for the public and private sector to conserve wetlands" (David 1986). Program elements include: alligator farming (and associated collection of eggs and hatchlings); harvest of alligators from public waters; harvest of alligators from private lands; and harvest of nuisance alligators that might pose a public safety risk.

Interested citizens can attend meetings of the FWC and voice their opinions on management policy directly to commissioners during public comment periods (FWC Commission Meeting Protocol). Individual FWC programs may also reach out to stakeholder groups proactively. For example, in late 2006 and early 2007, the FWC sought input from stakeholder groups, via an online survey, about possible changes to

the status and management of alligators in Florida (H. J. Dutton, personal communication). FWC received conflicting feedback from stakeholder groups; some believed alligator populations excessive while others believed that populations have already been reduced below desirable levels. Although informal, this survey highlighted a need for a more sophisticated examination of Floridians' knowledge and opinions about alligators. FWC has previously conducted surveys of public attitudes about alligators in 1976 (Hines & Scheaffer 1977) and 1996 (Duda et al. 1996), but questions of management interest have changed as alligator and human populations have changed. Knowledge of public perceptions about appropriate predator population levels is valuable in assessing probable reactions to management decisions (Jacobson et al. 2004).

McCleery et al. (2006) suggest that to improve wildlife attitudinal research, stakeholder groups should be targeted. However, when a wildlife species is widespread and conflicts occurs regularly in both urban/suburban and rural environments throughout the state, querying only known stakeholders may not be sufficient grounds on which to base management decisions. These groups represent specific interests and may not reflect those of the majority of the general public. While stakeholders may be the very people who should be targeted for opinions on local or specific interest concerns (crop depredation by deer, for example), the statewide distribution and public safety concern of alligators in Florida make its management unique. Reiter et al. (1999) found that the US public ranked human safety the most important factor that managers should consider when selecting management methods. By describing opinions of stakeholders (here, nuisance alligator complainants) as well as those of randomly

selected individuals, this study provides insight into preferences of both groups and differences between them.

Risk Perception as a Factor in Predator Acceptance

Research supports the idea that people are more willing to accept risks they feel they take voluntarily (Slovic 1987). For much of human history, occasional predation by wild animals was a risk that people had little control over. Destruction of the responsible animal was an option, but extirpation of the predator population was often not feasible given relative low human population density and lack of technology. Thus, historically, people had far less control over predator populations than today in many countries.

One might expect increases in actual control to accompany a corresponding decrease in perceived environmental risks. However, there can often be a gap between level of actual risk (as assessed by through scientific study) and that of perceived risk (as assessed by laymen). Whereas experts use complex analyses to assess risks, most people instead rely on “risk perceptions,” which are intuitive reactions (Slovic & Peters 2006). Slovic (1987) posits that most Americans believe that their levels of risk are increasing. Advances in detecting low-level risks and the media’s role in reporting hazards have been hypothesized as reasons for heightened risk perceptions (Zeckhauser & Viscusi 1990; Slovic 1987). Slovic (1987) further asserts that the resulting attempt by the American public to eliminate all risks (a quest for a “zero-risk society”), threatens political and economic stability. This phenomenon may also threaten local biodiversity, as people may be unwilling to accept risks associated with predators and seek to remove them from areas of human habitation.

Additionally, research suggests that in America, forces of modernization (e.g., urbanization, education, and income) are linked to a societal level shift from a

“domination” wildlife value orientation to one of “mutualism” (Manfredo et al. 2009). Manfredo et al. (2009) assert that the waning domination orientation corresponds to a higher prioritization of human well-being over wildlife (and greater acceptance of lethal control of wildlife), while the waxing mutualism orientation corresponds to a view of animals as having rights and deserving care and compassion (and reduced acceptance of lethal control of wildlife). This shift in values, and the laws and institutions reflecting those values, might lead to a reduction in perceived control over predator populations because, in short, extirpation of native wildlife (even potentially dangerous wildlife) is no longer socially acceptable.

Risks to people from wildlife can come not only in the form of direct personal harm, but also as risks to family members, others in the community, pets, or to livestock or crops (and thus livelihood). In Tanzania, locals living near preserves who suffer losses from wildlife and feel they are not able to control that risk are less likely to be supportive of preserve employees or of maintaining the preserves (Newmark 1993).

In the United States, wildlife is publicly owned and its habitat spans public and private lands. These facts, coupled with our democratic government system, result in wildlife management decisions based ultimately on public opinion (Zinn et al. 2000). Increasingly, stakeholders are influencing management decisions (Riley et al. 2002). Stakeholder groups often disagree about appropriate wildlife population levels, which can present a challenge for managers (Zinn et al. 2000).

Riley and Decker (2000b) demonstrated that knowledge of current population levels and personal involvement with cougars in Montana affected risk perception (thus WSAC). Considering WSAC for large predators that prey on domestic animals and

occasionally humans is particularly difficult (Riley & Decker 2000a). Zinn and Manfredi (1998) have shown that beliefs about appropriate management decisions are influenced by the species under consideration, the incident extremity (i.e., animal's behavior), and the response extremity (i.e., management action). Zinn and Pierce (2002) demonstrated that the acceptability of destroying a mountain lion increased as the situation increased in severity (e.g., from sighting a mountain lion to a fatal attack by a mountain lion on a human). These findings suggest that knowledge of stakeholders' tolerance (i.e., WSAC) of a species can help managers understand their views about possible management scenarios.

However, discussions of acceptance of large, potentially dangerous animals have almost exclusively focused on mammals (Kellert et al. 1996; Riley & Decker 2000a, 2000b; Røskoft et al. 2007; Naughton-Treves et al. 2003; Vaske & Needham 2007; Bath et al. 2008). Literature supports the idea that human perceptions of animals are affected by factors such as the species' presumed intelligence, cultural significance, morphology, and locomotion (Kellert et al. 1996). Thus there is reason to believe that attitudes and opinions about mammals may be different in important ways from those about other taxa.

Perceptions about crocodylians, for example, may be less favorable than those of mammals. Species' life history traits may be a factor. For example, cougars and other mammalian predators may be more secretive and likely to exist at lower densities in areas near humans than some crocodylians. Thus, the relative visibility and abundance of crocodylians in human-occupied areas may make potential risks from them more salient than those from other animals. As Caldicott et al. (2005) point out, crocodylians,

unlike most other animals, sometimes target humans as they would other prey items. Perhaps factors such as this and their strategy as an ambush predator, might contribute to an increased dread feeling associated with the idea of a crocodilian attack.

Smithem and Mazzotti (2008) found that residents and visitors have low risk perceptions of American crocodiles in south Florida, and generally view them favorably. Crocodiles were seen as beneficial and acceptance capacity for them was high. American crocodiles are a recovering species, federally listed as threatened. Røskaft et al. (2007) found that people were more supportive of increasing populations of predators that were fewer in number than those that were more common (even when they displayed more negative attitudes toward those animals). This suggests that current population size may be an important determinant of acceptance capacity.

American alligators, in contrast to crocodiles, are abundant throughout Florida. In Florida, the number of complaints about nuisance alligators has increased steadily as alligator populations have recovered (Woodward & Cook 2000). Nuisance complaints about crocodiles, too, have increased as their numbers have increased (Cherkiss et al. 2008).

Worldwide, views toward crocodilian conservation have become less positive as small populations have recovered (Caldicott et al. 2005). Our study helps to broaden the base of information about risk perception and acceptance capacity for crocodilians, particularly how these vary with species' relative abundance.

Conceptual Framework

Florida is experiencing human population growth and associated land use change that is projected to continue (Zwik & Carr 2006). This development in itself does not appear to preclude alligator use of human-altered habitats; alligators regularly inhabit

waters within residential areas, such as retention ponds and canals (personal observation). However, if residents have low acceptance capacity for alligators, they may be more likely to complain to the FWC about an alligator near their home (often resulting in the harvest of the alligator). Ultimately, this cycle could contribute to reduced (or absent) alligator populations in many residential areas. FWC's Alligator Management Program's stated goal is to "Manage Florida's alligator population for its long-term well-being and the benefits of users" (FWC Alligator Management Program). At times the two components of that goal (long-term well-being of alligators and benefits to people) could seem to be at odds, as in the scenario described above. Understanding which factors affect acceptance capacity for alligators (and why residents might complain about an alligator) can help the FWC tailor efforts to support both components of the goal, such as education aimed at increasing acceptance capacity for alligators.

A basic conceptual model for alligator population preference in this context is that knowledge of alligators, attitudes toward alligators, and experience with alligators are all related to each other and to perceptions of risk from alligators, which in turn drive alligator population preference (Figure 1-1). Riley and Decker (2000a) demonstrated that attitudes and perceived risks predict acceptance capacity for potentially dangerous wildlife. Smithem & Mazzotti (2008) extended that finding (attitudes predicted risk perceptions and both predicted acceptance capacity) to American crocodiles. While knowledge and experience were not significant predictors in their model for risk perceptions, a significant relationship with risk perception was found for both knowledge and experience (Smithem & Mazzotti 2008). The model includes two other potentially important predictors of risk perceptions and acceptance capacity for alligators: one's

probability of encountering an alligator (e.g., living or recreating near freshwater) and one's beliefs about what constitutes a nuisance alligator (Figure 1-1).

Slovic (1987) demonstrated that certain beliefs about a hazard—that it is involuntary, unfamiliar, not easily reduced, increasing, not well known to those exposed, or not well understood by experts—lead to higher perceived risks from that hazard, and a greater desire for a reduction of that risk. In addition to these factors identified by Slovic, risk perception in this context involves the following: perceived risk to one's self, family, pets, and others in the community; risks while engaged in recreation in and near the water. The size alligator believed to pose a threat to people can be viewed as a measure of perceived risk from alligators (i.e., people who view very small alligators as a risk to people can be conceived to have higher perceived risk from alligators).

Demographic factors such as age (Krester et al. 2009; Kellert et al. 1996; Kellert 1996), gender (Zinn & Pierce 2002), and having children in the home (Zinn & Pierce 2002), have been shown to affect views about wildlife (at least in some contexts), and others (such as race or education) might also have an effect. Heberlein and Ericsson (2005) demonstrated that people with a rural background have more positive attitudes toward predators and wildlife in general than multi-generational urbanites. Kidd and Kidd (1996) assert that children's exposure to wild animals and their environments can shape positive attitudes toward wildlife and conservation later in life. Thus, growing up near wild alligators was also hypothesized to have an effect on risk perceptions through attitudes.

This conceptual model was kept simple on purpose, to provide a framework for testing relationships between the various measures of attitudes, experience, beliefs,

and behaviors toward alligators. In reality, there are likely additional interactions not shown (e.g., between attitudes and nuisance behavior beliefs). The final component of the model, complainant status, can be understood as the next step which could result from alligator population preference. This measure is placed after preferences because it represents a movement beyond opinion (i.e., “intolerance,” “reduced acceptance capacity,” or “a preference for fewer alligators”) to action. While certainly not all people who have a preference about alligator populations will take action (i.e., file a complaint), the decision to file a complaint (to request that an alligator be removed) demonstrates a specific desire for a reduction in the number of alligators in a location (at least in one instance). Though highly simplified, this model provides a framework for testing relationships between these measures.

Study Purpose

The goals of this study were to describe the Florida public’s experience, knowledge, risk perceptions, attitudes, and beliefs about nuisance alligator behavior, and to gauge public awareness and acceptance for current FWC management practices. The project also sought to determine if differences in measures of interest existed between different segments of Florida’s population, for example, between urban and rural residents or between people who had previously requested removal of a nuisance alligator and those who had not. A final goal was to determine which factors were most important in predicting perceived risk from alligators and acceptance capacity (tolerance) for alligators, as indicated by either reported preference for alligator populations or by action taken to remove an alligator (i.e., an alligator complaint was made).

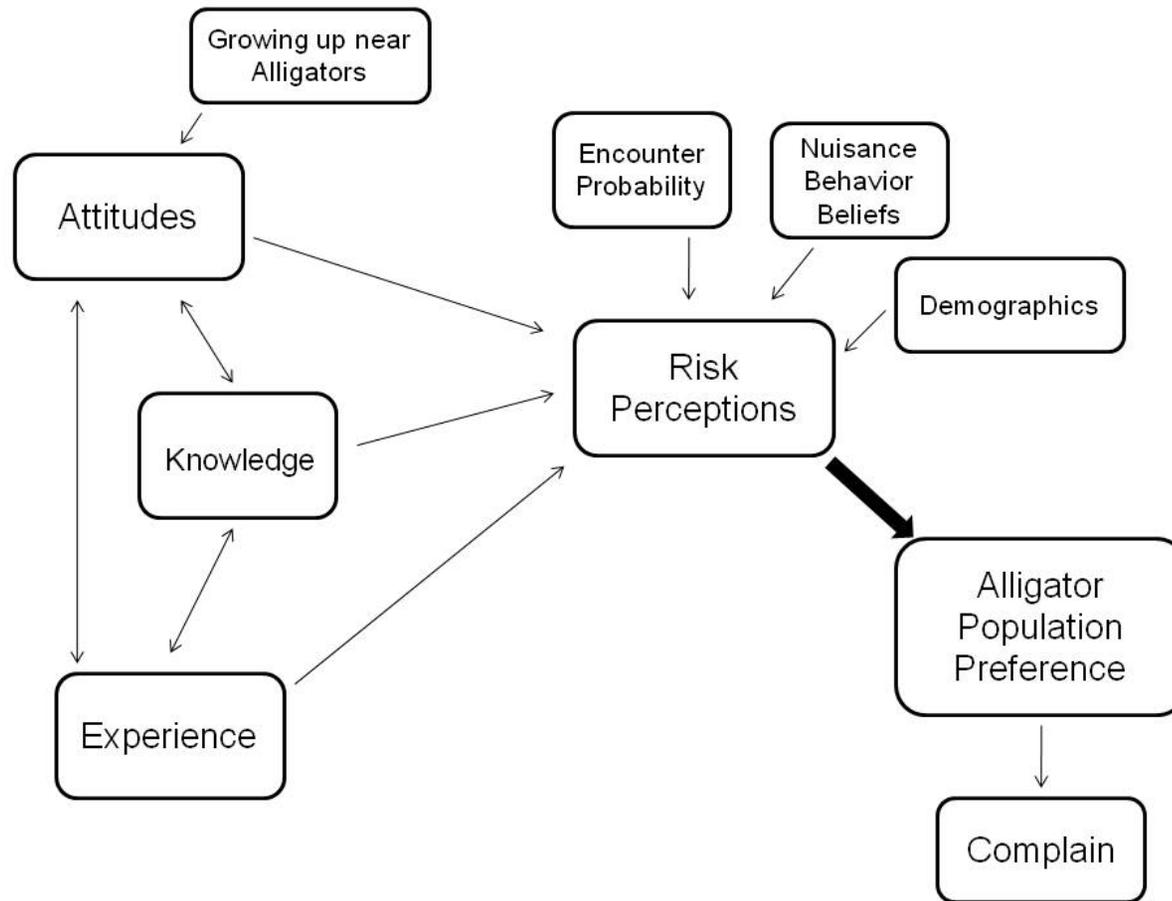


Figure 1-1. Conceptual model of relationships among experience with alligators, knowledge of alligators, attitudes about alligators, risk perceptions of alligators, preference for alligator population, and complaint status. Additional variables of interest include: growing up in a place with wild alligators, encounter probability (e.g., living or recreating near freshwater), nuisance behavior beliefs, and demographic variables.

CHAPTER 2 METHODS

Survey Instrument

The survey instrument was developed by University of Florida researchers in coordination with FWC alligator management and research staff. Questions were adapted from previous, similar studies (Riley 1998; Smithem 2005; Harvey et al. 2010) but modified for relevance to a statewide study about alligators, or developed to address specific management concerns. The questionnaire was pilot tested ($n = 17$) and refined, based on input from testing trials.

The final questionnaire was a 12-page booklet entitled “Alligators in Florida: A Survey of Your Views” and contained a total of 54 questions (Appendix E). The survey questions addressed six primary topics: experience with alligators, knowledge about alligators, attitudes about alligators, risk perceptions about alligators, nuisance behavior beliefs about alligators, and preferences for alligator populations. In addition to six primary topics, respondents were also asked about where they learned information about alligators and their opinions regarding current or proposed management scenarios. A final set of questions solicited demographic information regarding gender, age, ethnicity, education, income, organizational membership, presence of children and/or pets in the household, Florida residency, and community size (both current and childhood communities). Space for additional comments was provided at the end of the questionnaire.

Sampling Design

There were two target populations: (1) the general public, which included all Florida residents over the age of 18, and (2) people who had filed recent complaints

about nuisance alligators to FWC (Figure 2-1). Randomly selected Florida household addresses representing the general public ($n = 2600$) were purchased from the marketing firm Genysys Sampling (Marketing Systems Group; Fort Washington, Pennsylvania); the sampling frame was the US Postal Service's delivery sequence file. Purchased addresses were divided equally between urban and rural households. "Urban" households were identified as those within a US Census block group that contains all or part of an "Urban Area" or "Urban Cluster" (United States Census Bureau b). "Rural" households were identified as those not within a US Census block group that contains all or part of an "Urban Area" or "Urban Cluster."

The second target population was people who had a previous nuisance alligator experience. Randomly selected addresses of previous complainants ($n = 1000$) were obtained from a list of households filing complaints with FWC in 2008 about a nuisance alligator ≥ 1.2 m (≥ 4 ft) long. FWC generally does not remove alligators < 1.2 m (< 4 ft) long, because experts believe these alligators do not pose a risk to people or pets. Instead, FWC sends an educational pamphlet to those complainants. People complaining about such small alligators may have had heightened fears of alligators, and thus may not represent typical nuisance complainants. It is also likely those people have a negative view of the process (because the alligator they complained about likely was not removed). Because an aim of this study was to compare the general public to typical nuisance complainants, the decision was made to exclude records of calls about small alligators from the pool of potential nuisance experience households.

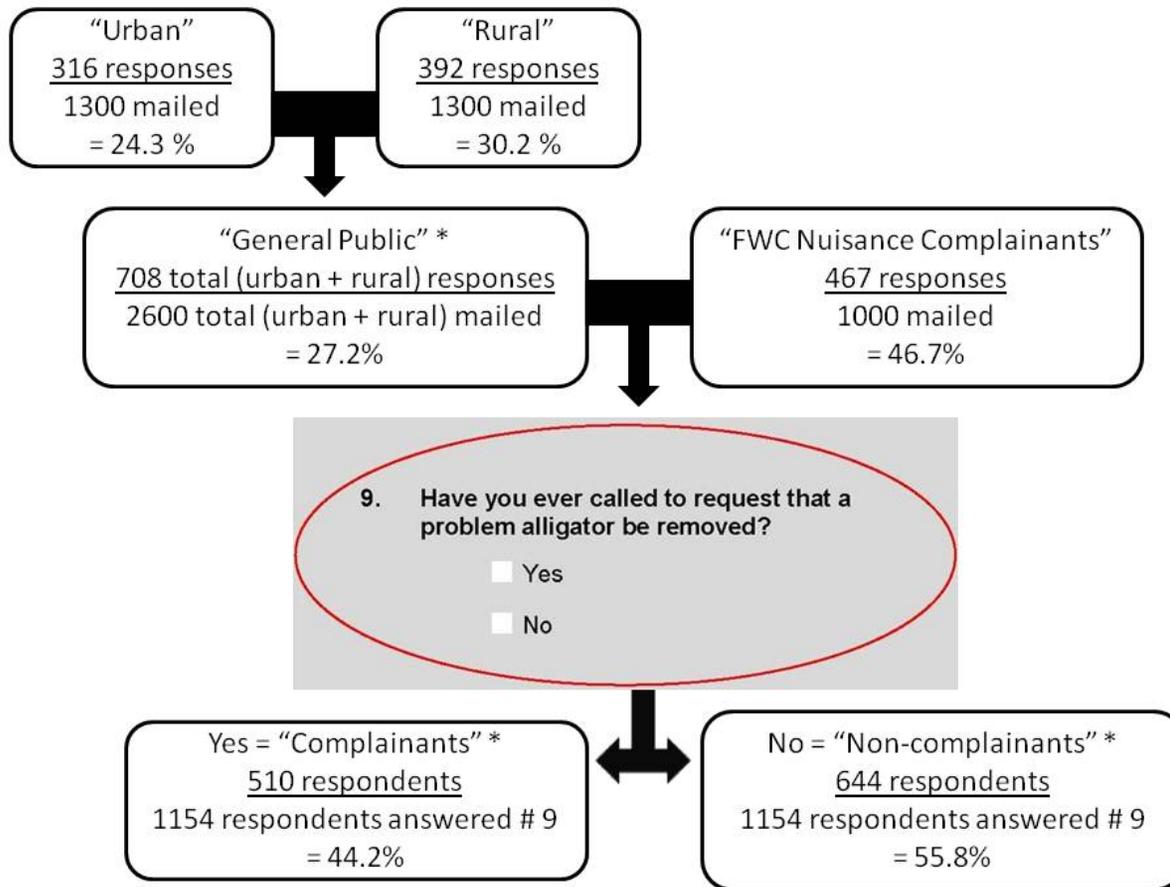


Figure 2-1. Sampling design for a 2009 survey about Floridians' views about alligators. Questionnaires were mailed to randomly selected urban and rural households as well as to households selected randomly from a list of 2008 callers to the FWC's "Nuisance Alligator Hotline." Urban and rural respondents did not differ on key measures and thus were pooled as the "General Public." Responses to the question, "Have you ever called to request that a problem alligator be removed?" were used to partition respondents into two groups: "Complainants" and "Non-complainants." Asterisks indicate groupings used for analyses ("General Public," "Complainants," and "Non-complainants").

Survey Deployment

In May and June 2009, a series of 4 mailings were sent (Dillman 2007). Mailings included an introductory postcard announcing the upcoming questionnaire, a survey and cover letter packet, a reminder postcard, and (for non-respondents) a second copy of the survey with a separate cover letter (Appendix A-E). Sampling frames based on USPS records may over-represent males as the head of household, so cover letters instructed the adult in the home with the most recent birthday to complete the questionnaire to further ensure a randomly drawn sample.

Response

Response Rate

We received 1,175 total responses (60.3% from the general public group, 39.7% from the FWC nuisance complainant group), (Figure 2-1). We attempted to collect a minimum of 1,300 surveys from each of two category types (rural and urban residents) and 1,000 from a third (nuisance alligator complainants), for a combined sample size not to exceed 3,600. A total of 1,198 questionnaires was returned. Twenty-three were excluded from analysis. Eight of those were blank except for comments in the free response section, six were duplicates from a household that had already submitted a completed survey (in those cases, the return survey received first was the one included in analysis), and nine were completed by children under the age of 18 (who were instructed not to participate in the cover letter).

The response rate for urban and rural groups was 30.2% and 24.3%, respectively, for an overall general public rate of 27.2% (Figure 2-1). The response rate for the FWC nuisance complainant group was 46.7%.

Non-Response Bias

Research has demonstrated that late respondents tend to be similar to non-respondents (Ary et al. 2006). In an effort to characterize non-response, responses by the general public to key variables were compared between early and late (those received after the second questionnaire booklets were mailed) respondents. Early responses accounted for 64.1% of the total and late responses accounted for 35.9%. No differences were found between early and late respondents on the following key measures: experience, attitude, personal risk, cognizance of risk, control of risk, active nuisance behavior beliefs, or preferences for alligators (in either residential or non-residential areas). Early respondents had significantly higher knowledge scores, lower user risk perceptions, and lower passive nuisance behavior beliefs, so responses on these measures may not be able to be generalized to the entire Florida population.

To further assess non-response, general public respondents were compared to the Florida public at large. Rates of response by demographic traits (with overall Florida data in parenthesis) were: male 57.5% (49.2%), female 42.5% (50.8%), white, non-Hispanic 82.1% (59.5%), black 3.6% (16.1%), Hispanic or Latino 8.6% (21.5%), Asian 1% (2.4%), American Indian or Alaskan native 0.7% (0.5%), high school graduate 96.9% (79.9%), bachelor's degree or higher 42.5% (22.3%), aged 65 and older 35% (17.2%), (United States Census Bureau c).

Coverage Error

As a result of the summer timing of the survey, our sample likely suffered from coverage error, with a disproportionate representation of permanent rather than seasonal Florida residents. Interactions between people and alligators would be expected to be most common in warm months due to increased activity in alligators and

increased water recreation activity by the public, and data from FWC's Statewide Nuisance Alligator Program supports that. Over the past five years (May 1, 2005 to April 30, 2010), 62% of nuisance alligator complaints occurred between the months of April to August (R. B. H., unpublished data). Thus, a survey designed to gauge opinions about alligators might expect better response during the time of year when interactions are more salient, even if this has the effect of excluding some residents who live in Florida seasonally. Also, residents who leave the state when interactions are most common might skew the data to reflect lower experience levels.

Survey Content

The questionnaire contained items covering the following topics: experience with alligators; sources of knowledge about alligators; knowledge of alligator biology, behavior and how to be safe around alligators; attitudes toward alligators; size estimates about which alligators pose a risk to people and pets; risk perceptions about alligators; preferences for alligator populations; knowledge and acceptance of FWC management scenarios, nuisance behavior beliefs about alligators, demographic questions, and an open response section. Key focus areas are described below.

Experience with Alligators

A series of nine statements described different experiences with alligators that ranged from first-hand, active interactions "Have personally had a frightening encounter with an alligator" to second-hand, passive stories "[Someone in my household] Read or heard about livestock being injured or killed by an alligator" (Appendix E, question 1). There were two check boxes for each of the nine statements: one box indicated that the respondent had personally experienced the interaction described in the statement, while the other box indicated that someone in their household had had such an experience.

Respondents could check both, one, or none of the boxes. Each respondent was assigned to one of the following five experience levels based on their reported interactions with alligators (adapted from Riley & Decker 2000a; Harvey et al. 2010):

- *Very high*: Respondents or members of their household had personally had a frightening encounter with an alligator.
- *High*: Respondents or members of their household knew a friend or neighbor who had a frightening encounter with an alligator or had a pet or livestock injured or killed by an alligator.
- *Moderate*: Respondents had read or heard of other people being injured or killed by an alligator.
- *Low*: Respondents had read or heard of an alligator being killed by authorities or read or heard about pets or livestock being injured or killed by an alligator.
- *Very low*: Respondents reported none of the above experiences.

The variable experience was treated as a five level categorical variable for reporting descriptive statistics. For simplicity, for bivariate analyses and for prediction of complaint status and alligator population preferences, experience levels were combined into two categories: 1) very low to moderate and 2) high to very high (Harvey et al. 2010).

Sources of Information about Alligators

Respondents were also asked how much they had learned about alligators from seven different information sources (the internet, books, TV nature shows, newspapers or TV news shows, school/classroom, personal outdoor experiences, and interpreters at zoos, nature centers or eco-tours). On a 5 point scale ranging from “almost nothing” (1) to “almost everything” (5), respondents were asked to rank the amount of their knowledge about alligators that came from each information source.

Knowledge about Alligators

Knowledge about alligators was based on 10 questions (6 multiple choice and 4 true/false questions) that addressed alligator habitat, distribution, behavior, status, and objective questions about risks posed to people (Appendix E, questions 3 - 8 and 11 - 14). Questions were designed to provide a mixture of easy, medium, and difficult questions. One point was awarded for each correct answer, and respondents were assigned a cumulative knowledge score ranging from 0 to 9 (no respondents answered all questions correctly). For analysis, only respondents who attempted 5 or more knowledge questions ($n = 1150$) were considered. The variable knowledge was treated as a continuous numeric variable.

One question (3, "Typically, American alligators are found in...") received a high proportion of multiple answers. Because there were two answers that were potentially correct for that question, the decision was made to consider that question correct if the respondent chose either the intended correct answer ("Freshwater streams, lakes, and marshes") or both that answer and the alternate correct answer ("Brackish coastal waters").

Attitudes about Alligators

Ten items (most adapted from Riley) were used to gauge attitudes about alligators (Riley 1998). Question 15 (Appendix E) consisted of 9 statements about alligators' value, presence in residential or non-residential areas, an ability to view alligators with answer choices on a 5 point scale ranging from "disagree strongly" (1) to "agree strongly" (5), (Table 2-1). Question 17 (Appendix E) dealt with "overall attitude toward alligators" with answer choices on a 5 point scale ranging from "very negative" (1) to "very positive" (5).

Table 2-1. Questions addressing attitudes toward alligators in a 2009 Florida survey

Number	Question	Component
15-1	The presence of alligators in wetlands in <i>natural</i> areas is a sign of a healthy environment	Attitude
15-2	The presence of alligators in wetlands in <i>residential</i> areas is a sign of a healthy environment	Attitude
15-3	The presence of alligators in Florida increases my overall quality of life	Attitude
15-4	I believe that alligators have value	Attitude
15-5	Alligators could benefit the local economy by being a tourist attraction	Attitude
15-6	People who live on the water choose to accept some level of risk from alligators	Attitude
15-7	I enjoy viewing alligators in natural areas	Attitude
15-8	It is important to me that alligators live in natural areas in Florida	Attitude
15-9	It is important to me to be able to see large alligators in natural areas	Attitude
17	My overall attitude toward alligators is:	Attitude

Response choices ranged from “Disagree strongly” (1) to “Agree strongly” (5) for all parts of question 15 and from “Very negative” (1) to “Very positive” (5) for question 17. Principal component analysis was employed to reduce the number of variables and all loaded onto a single component, the mean of which was used to compute the variable “attitude.”

Principal components analysis revealed one principal component (Table 2-1). Reliability analysis indicated that these 10 items provided a reliable variable ($\alpha=0.898$). A more thorough discussion of reliability analysis follows in the “Data Analysis” section. The mean of a respondent’s score on these 10 items was used to determine their score for the variable attitude, which was treated as a continuous variable. A higher score for the variable indicated more positive attitudes while a lower score equated to more negative attitudes toward alligators.

Size Estimates about Alligators

Three questions gauged respondents’ estimates of the sizes of potentially dangerous alligators. Question 18 asked respondents at what size they considered alligators to be “large” (Appendix E). Questions 19 and 20 asked respondents the smallest sized alligator they believed posed a risk of serious injury to either people or pets, respectively (Appendix E).

Risk Perceptions about Alligators

Two questions (each with 4 sub-parts) asked respondents to gauge the level of risk they believe exists to themselves, their family, their pets, their community, and the level of risk they believe exists when engaged in various water related recreational activities (Appendix E, question 21-22), (Table 2-2). Response choices ranged from “no or almost no risk” (1) to “great risk” (5). A “don’t know or not applicable” option was provided for each. Risk perception items were adapted from previous research (Riley 1998). Riley’s scale included only one question about personal risk, which our study broke down into four measures, to assess differences in perceived risk to self, family, pets, and others in the community. Formatting this item as a separate question

Table 2-2. Questions addressing risk perceptions about alligators in a 2009 Florida survey

Number	Question	Component
21-1	To what extent do you believe that alligators pose a risk to:	Personal
21-2		Personal
21-3		Personal
21-4		Personal
22-1	Please indicate the level of risk from alligators you believe exists when:	User
22-2		User
22-3		User
22-4		User
23	How much <i>control</i> do you think you have to <i>minimize</i> risks to yourself from alligators?	Control
24	How <i>easy</i> or <i>difficult</i> would it be for you to <i>minimize</i> your risk from alligators?	Control
25	Over the next five years, do you expect risks from alligators to <i>decrease</i> or <i>increase</i> ?	Personal
26	Do you think you have much <i>choice</i> over <i>accepting</i> any risks from alligators?	Control
27	Are risks from alligators a <i>new</i> kind of risk for you, or one that's old and <i>familiar</i> ?	Cognizance
28	Do you think you would be <i>aware</i> if you were in a situation that put you at risk from alligators?	Cognizance
29	Do you think you could <i>learn to live</i> with risk from alligators or would <i>constantly worry about</i> it?	Cognizance
30	Are the risks from alligators <i>well understood</i> or <i>not well understood</i> by experts?	Cognizance

Response choices ranged from “No or almost no risk” (1) to “Great risk” (5) for all parts of questions 21-22, with a “Don’t know / not applicable” option. Questions 23-30 were on a 1 – 5 scale with adjective endpoints, and a “Don’t know” option. Question 23-30 were re-coded as necessary for analyses so that for all, a 5 (highest perceived risk) equated to least control, most difficulty, increase, least choice, newest, least awareness, constant worry, and least understanding. Questions were shortened slightly for this table. Principal component analysis was employed to reduce the number of variables, and questions loaded 4 components (“personal”, “user”, “control”, and “cognizance”), the means of each were used to compute variables of the same names.

(Appendix E, question 21) made the survey more visually appealing. A question was also included about risks perceived during water recreation such as swimming and boating (Appendix E, question 22).

Eight more questions related to risk perception (Appendix E, questions 23-30) were asked on a 5 point semantic differential scale with adjective endpoints (Alreck & Settle 1995). Responses were re-coded for analysis as necessary so that for all questions, a higher numeric value response corresponded to a higher perceived risk.

The 16 total items were examined using principal component analysis in an attempt to reduce the number of variables. Four primary components emerged which were described as: "Personal Risk," consisting of questions 21 and 25; "User Risk," consisting of question 22; "Control of Risk," consisting of questions 23, 24 and 26; and "Cognizance of Risk", consisting of questions 27 through 30 (Table 2-2).

Reliability analysis was employed, and the components all formed reliable variables: Means of the values making up each component were used to compute 4 variables, which were treated as continuous: "Personal Risk" ($\alpha = 0.872$), "User Risk" ($\alpha = 0.777$), "Control of Risk" ($\alpha = 0.658$), and "Cognizance of Risk" ($\alpha = 0.663$).

Opinions about Alligator Management Strategies

Five questions gauged respondents' opinions about FWC management strategies currently in use.

Management on AMUs

A short paragraph described FWC's goal of maintaining alligator populations on specific waters where alligator hunting is permitted [Alligator Management Units (AMUs)] within 25% of the estimated population level before regulated alligator hunting

began. Two following questions asking respondents to rate their awareness of (question 32) and agreement with (question 33) this strategy on a scale from 1 to 5 scale, with 1 being “not at all aware” or “disagree strongly,” respectively and 5 being “completely aware” or “agree strongly,” respectively (Appendix E). A third question (34) asked respondents who thought the outlined approach should change to choose among 5 proposed alternatives (Appendix E).

Question 32 and 33 were each reduced into fewer response categories to simplify bivariate analyses. For question 32, “neutral” responses were treated as missing values and remaining responses were combined into two categories: 1) unaware and 2) aware. For question 33, “neutral” responses were treated as missing values and remaining responses were combined into two categories: 1) disagree and 2) agree.

Nuisance alligator management

A short paragraph describing FWC’s current procedure for handling nuisance alligators 1.2 m. (4 ft.) or larger in total length preceded one question (35) with 5 sub-parts (Appendix E). Respondents were asked to rate their agreement with 5 statements about the appropriateness of aspects of the procedure on 1 to 5 scale, with 1 being “disagree strongly,” and 5 being “agree strongly” (Appendix E).

Question 35 was reduced into fewer response categories to simplify bivariate analyses. “Neutral” responses were treated as missing values and remaining responses were combined into two categories: 1) disagree and 2) agree.

Small nuisance alligator management

A short paragraph describing FWC’s current procedure for handling small [< 1.2 m. (< 4 ft.) in total length] nuisance alligators preceded one question (36) with 6 sub-parts (Appendix E). Respondents were asked to rate their agreement with 6 statements

about the appropriateness of current or proposed aspects of the procedure on 1 to 5 scale, with 1 being “disagree strongly,” and 5 being “agree strongly” (Appendix E).

Question 36 was reduced into fewer response categories to simplify bivariate analyses. “Neutral” responses were treated as missing values and remaining responses were combined into two categories: 1) disagree and 2) agree.

Beliefs about Nuisance Alligator Behaviors

One question with 10 sub-parts was used to gauge respondents’ attitudes about what makes an alligator a nuisance (Harvey et al. 2010). Respondents were asked to rate their agreement that statements described a nuisance situation on a scale from “disagree strongly” (1) to “agree strongly” (5). Measures included alligators in view of people and alligators exhibiting various behaviors such as basking, hissing, or biting people or pets (Appendix E, question 37). The statement “alligators are never a nuisance” was reverse coded for analysis so that it matched the others in terms of higher tolerance of alligator behavior being the lowest value on the scale (1) and least tolerance of alligator behavior being the highest value on the scale (5).

A principal components analysis was conducted, and each of the 10 items loaded onto one of two components. The first component indicated that the described alligator was engaged in some “active” nuisance behavior (4 scenarios: alligator has bitten a person or pet, alligator has been fed, and “alligators are never a nuisance”). The second component indicated the described alligator’s mere presence was perceived as a “passive” nuisance behavior (6 scenarios: alligator in view of people, person perceives alligator as threat, alligator basking, alligator approached by people, and alligator interfering with fishing). Reliability analysis showed that both formed reliable variables:

Table 2-3. Questions addressing beliefs about what constitutes nuisance alligator behavior in a 2009 Florida survey

Number	Question	Component
37-1	When any alligator is in view of people	Passive
37-2	When a large alligator is in view of people	Passive
37-3	When a person perceives an alligator as a threat	Passive
37-4	When an alligator is lying on land at the water's edge	Passive
37-5	When an alligator has been approached and hissed or snapped at that person	Passive
37-6	When an alligator is known to have been fed by people	Active
37-7	When an alligator is interfering with a person fishing	Passive
37-8	When an alligator has bitten a person	Active
37-9	When an alligator has bitten a pet	Active
37-10	Alligators are never a nuisance	Active

Response choices ranged from “Disagree strongly” (1) to “Agree strongly” (5) for all parts of question 37. Sub-part 37-10 was re-coded for analyses to match the other questions (i.e., a 5 equated to strongest agreement that the behavior was a nuisance [least tolerance for behavior]). Principal component analysis was employed to reduce the number of variables and all loaded onto 2 components (“active” and “passive”), the means of which were used to compute variables of the same names.

“Active Nuisance” ($\alpha = 0.739$) and “Passive Nuisance” ($\alpha = 0.884$). The mean of a respondent’s score on each of the 4 or 6 items was used to determine their score for the variables “Active Nuisance” or “Passive Nuisance,” respectively. Both were treated as continuous variables.

Demographics

Demographic questions were posed at the end of the survey to minimize non-response (Dillman 2007). The following variables were collected: type (seasonal or permanent) of Florida residency, length of Florida residency (for permanent residents only), sex, age, ethnicity, education, having children that live in or regularly visit the home, having pets that spend time outside the home, retirement status, organizational membership, and income. Questions to gauge the respondent’s past or present opportunity for contact with alligators were also included: community size (both current and childhood communities), growing up in a place with alligators, and recreation near fresh water.

Free Responses

The final page of the questionnaire provided space for respondents to share additional thoughts about alligators or alligator management (Appendix E). Responses were coded by the principal investigator as either “positive,” “neutral,” “negative,” or “unknown.” Responses were coded as positive if they reflected positive feedback about alligators, alligator conservation, or the FWC. They were coded as negative if they reflected negative feedback about these topics. They were coded as neutral if they did not address any of those topics. If the intent of the comment could not be discerned, it was labeled as “unknown” and was not included in the summary results.

Data Analysis

All statistical analyses were performed using PASW Statistics 18 (SPSS, Inc. 2009), except for Wilcoxon rank sum tests for differences in mean cognizance of risk and control of risk variables between nuisance alligator complainants and non-complainants, which were analyzed using program R (R Development Core Team 2010).

Descriptive Analyses

Descriptive statistics are provided for question sets pertaining to each of the six primary topics, as well as for questions regarding current and proposed management strategies, information sources, size estimates, and demographics.

Because no differences were found between urban and rural respondents on the following key measures: knowledge ($t = 0.45$, $p = 0.655$), attitude ($t = 0.53$, $p = 0.598$), personal risk perception ($t = 1.28$, $p = 0.200$), preference for alligator populations in residential areas ($t = 0.20$, $p = 0.906$), and passive nuisance behavior belief ($t = 1.29$, $p = 0.197$), data for urban and rural respondents were pooled and are reported as the “general public.” There was a significant difference between experience levels between urban and rural residents ($\chi^2 = 11.42$, $p = 0.22$), but experience is of interest primarily for its potential effect on risk perception and ultimately preference for alligator populations (Figure 1-1), and urban and rural residents did not differ on those measures.

Some (9.7%, $n = 67$) of the “general public” group reported that they had previously called to request a nuisance alligator be removed. Also, a few (4.3%, $n = 20$) of the “FWC nuisance complainant” group reported that they had *not* previously called to request a nuisance alligator be removed. This could be because the intended recipient had moved or the survey packet was delivered to the wrong address, or

because the member of the household who completed the questionnaire was not aware of or involved in the previous nuisance alligator complaint. Because of this overlap, the decision was made to use the self-reported measure of complaint status (i.e., the answer to the question, “Have you ever called to request that a problem alligator be removed?”) as the basis for assigning a respondent to either the “complainant” or “non-complainant” group (Figure 2-1).

Descriptive statistics for the general public and separately for nuisance complainants and non-complainants are provided for questions dealing with experience with alligators, sources of information about alligators, knowledge of alligators, attitude toward alligators, beliefs about nuisance alligator behavior, perceptions about risks from alligators, preferences for alligator populations in residential and non-residential areas, and awareness and acceptance of management strategies.

In addition to the descriptive statistics above, bivariate analyses were conducted to understand differences in the “general public” sample on key scaled variables of interest based on the following independent variables: sex, age, race, children living in the home, education, income, pets outside, residency on the water, and water recreation. Because the majority of general public respondents (87.4%) who gave their race identified themselves as non-Hispanic Caucasians, other racial groups were combined into a single group for comparison with non-Hispanic Caucasians. Length of Florida residency did not have a normal distribution, so a new variable was created with the square root of reported values for use in analyses. Researchers hypothesized that people who do not have children living in their households but do have children regularly visiting them (e.g., grandparents) might have different opinions about alligators

than people who have no children and no children regularly visit. Therefore, a variable was created that captured responses to both questions 49 and 50 (Appendix E), “children living in or visiting the home,” and it was included in bivariate analyses. Length of residency was used because most respondents (97.3%) were permanent Florida residents, and researchers hypothesized that residents who had lived in Florida longer may have different views about alligators than more recent arrivals because many people move to the state later in life. To better understand responses for management purposes, some additional questions of interest were also summarized by gender or by group membership for the general public.

Principal component analysis (PCA) is a useful when dealing with data sets with a large number of interrelated variables (Jolliffe 2002). The method seeks to reduce a large number of variables to a smaller number of variables, principal components, while still retaining as much of the original variation as possible (Jolliffe 2002). Correlations of individual items with the underlying principal component are called loadings. When more than one primary component is detected, rotating the data can help achieve a clearer pattern of the underlying components. Data were rotated with an Oblimin rotation. An oblique rotation, such as Oblimin, allows correlation in resulting components, and thus is suitable for data that are expected to be correlated (e.g., beliefs about alligators), as opposed to data that may not be expected to be correlated (e.g., home prices and crime rates) (Costello & Osborne 2005).

PCA was used for the measures of attitude, nuisance behavior beliefs, and risk perception to reduce the number of questions to a more manageable set of variables. For all variables formed using PCA, the mean of the individual items that loaded onto a

component were used to form the composite variable. Loadings of individual items were used to weight values to calculate the loaded mean of each measure. That loaded mean was then compared to the unloaded mean. In all cases, the two were greater than 95% correlated. For simplicity, only the unloaded means were used for analysis and only those are reported here.

Reliability analysis was performed on each of these composite variables to ensure that the variable was a consistent measure of the given construct. Reliability analysis tests whether items that purport to measure the same concept really do, by computing Cronbach's alpha (α), a measure of the intercorrelation among test items.

Bivariate analyses are given for personal risk perception, except for water recreation, which was tested against user risk perception instead. The personal risk perception component was chosen for most analyses because it seemed to be the most direct measure of perceived risk against which to test associations with other variables.

Because passive nuisance behavior beliefs are more interesting (because most people can reasonably consider an alligator that has bitten a person or pet a nuisance, but considering an alligator lying on the bank a nuisance is different), the passive component was chosen for bivariate analyses for the general public group.

Predictive Analyses

Predictive analyses were conducted to ascertain the individual contributions of variables hypothesized to be affect personal risk perception, residential alligator population preferences, and whether a person had complained about an alligator.

Personal risk perception

"Personal" risk perception was treated as the dependent variable in a multiple regression model that included the following independent variables: experience (all

categories), knowledge, attitude, passive nuisance behavior beliefs, whether the person lives on the water, the smallest sized alligator the person considers a risk to people, whether children live in or regularly visit the home, whether the person has outside pets, whether the person grew up in a place with wild alligators, whether the person recreates near freshwater in Florida, age, gender, education, and race. All respondents (both general public and FWC nuisance complainant target samples) were included in predictive analyses (Figure 2-1).

Non-response analyses indicated that the sample may not accurately represent the Florida public with respect to age, gender, education, and race. Because each of those measures were significantly associated with some or all key variables (experience, knowledge, attitude, personal risk perception, passive nuisance behavior beliefs, preferences for residential alligator populations, and complaint status), those demographic measures were included in predictive models in order to assess the net effect of other included variables.

In addition to the key variables (experience, knowledge, attitude, passive nuisance behavior beliefs), some other variables were included because they were hypothesized to affect personal risk perception. For example, a belief that a smaller sized alligator posed a risk to people was expected to predict higher perceived personal risk from alligators. One's potential for contact with alligators (e.g., living or recreating near freshwater) was also expected to affect perceived personal risk. The "personal" risk perception component also included questions about perceived risks to family members and pet, so having children who frequent the home or pets that spend time outside were also hypothesized to predict higher personal risk perception. Lastly,

growing up near wild alligators was hypothesized to predict lower personal risk perception from alligators (via attitudes), since area where one grew up has been shown to affect attitudes toward wildlife (Heberlein & Ericsson 2005).

Stepwise regression ($p < 0.05$ entry, $p > 0.10$ removal) was then conducted to identify the most appropriate set of predictors.

Alligator populations in residential areas

The respondents' preferences for alligator populations in residential areas was treated as the dependent variable in a binary logistic regression model that, consistent with the conceptual model (Figure 1-1), included the independent variables from the above model for personal risk perception [experience (2 categories), knowledge, attitude, passive nuisance behavior beliefs, whether the person lives on the water, the smallest sized alligator the person considers a risk to people, whether children live in or regularly visit the home, whether the person has outside pets, whether the person grew up in a place with wild alligators, whether the person recreates near freshwater in Florida, age, gender, education, race] and also included personal risk perception. All respondents (both general public and FWC nuisance complainant target samples) were included in predictive analyses (Figure 2-1).

In addition to the key variables (experience, knowledge, attitude, passive nuisance behavior beliefs, personal risk perception), other included variables were hypothesized to affect a person's preferences for residential alligator populations. The smallest sized alligator one considers a risk to people was hypothesized to predict preferences for alligator populations in residential areas because residents who complain about larger alligators often tolerate smaller alligators near their homes (personal observation). Thus people who feel that even small alligators pose a risk

would be expected to believe there are “too many” alligators in residential areas. As explained above, demographic measures of age, gender, education, and race were included in order to assess the net effect of other included variables. Living and recreating near water and presence of children and pets were expected to affect preference via risk perception, and growing up near alligators via attitudes (Figure 1-1).

Ordinal regression with a complementary log-log function was first attempted for this prediction, but it did not provide a good fit. It did not meet the test of parallel lines, indicating that the assumption that a single set of parameters is appropriate for all categories was violated (Chan 2005). Multinomial regression was then attempted. The resultant model did a poor job of predicting the percentage of respondents who thought there were “not enough” alligators in residential areas, correctly predicting that choice 0.0% of the time.

Most respondents answered either that there were “the right amount” or “too many” alligators in residential areas; only 2.6% ($n = 30$) thought there were “not enough.” Also, the categories of “right amount” and “too many” are more interesting from management and theoretical perspectives, because those are relevant to requests for nuisance alligator removal (or lack thereof). Therefore, I decided to conduct the analysis as a binary logistic regression with those who responded “not enough” treated as missing cases.

Backwards stepwise elimination was used with removal testing based on the probability of the Wald statistic. Hosmer and Lemeshow goodness-of-fit test was used to assess model fit.

Complainant status

Complainant status (whether the person responded they had ever requested that an alligator be removed) was treated as the dependent variable in a binary logistic regression model that, consistent with the conceptual model (Figure 1-1), included the independent variables from the above model for residential alligator population preferences [experience (2 categories), knowledge, attitude, personal risk perception, passive nuisance behavior beliefs, whether the person lives on the water, the smallest sized alligator the person considers a risk to people, whether children live in or regularly visit the home, whether the person has outside pets, whether the person grew up in a place with wild alligators, whether the person recreates near freshwater in Florida, age, gender, education, race] and also included residential alligator population preferences. All respondents (both general public and FWC nuisance complainant target samples) were included in predictive analyses (Figure 2-1).

In addition to the key variables (experience, knowledge, attitude, passive nuisance behavior beliefs, personal risk perception, and residential alligator population preferences), other variables were included that were hypothesized to affect whether a person had made a complaint about an alligator. Living or recreating near freshwater was expected to predict a higher likelihood of having made a complaint via risk perception (Figure 1-1), because of an increased potential for contact with alligators. A belief that a smaller sized alligator posed a risk to people was also expected to predict a higher likelihood of having made a complaint via risk perception. Having children who frequent the home or pets that spend time outside were hypothesized to predict higher likelihood of having made a complaint because young children and pets are likely less aware of danger from alligators, and residents may be more likely to request removal of

an alligator out of a desire to protect children and pets, again this relationship is via risk perception (Figure 1-1). Growing up near alligators was expected to have an affect via attitudes. As explained above, demographic measures of age, gender, education, and race were included in order to assess the net effect of other included variables.

Backwards stepwise elimination was used with removal testing based on the probability of the Wald statistic. Hosmer and Lemeshow goodness-of-fit test was used to assess model fit. In this test, the population is partitioned and observed and expected outcome rates are compared between groups. A lack of significant difference between observed and expected outcome probabilities indicates a good fitting model (Agresti 2002).

CHAPTER 3 RESULTS

General Public Respondent Characteristics

The majority (97.3%) of general public respondents identified themselves as permanent residents who had lived in Florida an average of 28.2 years (standard deviation [SD] = 18.6). The sample was 57.5% male and 42.5% female. The average age was 55.9 years (SD = 15.4) and ages ranged from 18 to 98. Most respondents (60.7%) were not retired.

Most respondents (87.4%) self-identified as Caucasian, non-Hispanic. All other categories accounted for less than 10% of respondents. About one fifth of respondents (22.3%) had a high school diploma or less, 35.3% had some college or a 2 year degree, 24.2% had completed 4 year degrees, and 18.3% had attended graduate or professional schools. Nearly one-third (31.6%) of respondents had household incomes of \$40,000 or less, 34.6% had incomes between \$40,001 and \$80,000, 20.3% had incomes between \$80,001 and \$120,000, 13.5% had incomes over \$120,001. Fifteen percent ($n = 107$) of respondents declined to answer the income question.

Relatively few (12.2%) indicated that they were members of an environmental or conservation organization, while 64.2% were members of other types of organizations. Almost a third (32.5%) responded that they grew up in an area with wild alligators. Many respondents (43.1%) indicated that they live on or beside a Florida lake, river, pond, or other wetland. Thirty percent (30.4%) reported having children living in their household (range = 1 - 5). Most respondents (59.6%) reported that children under the age of 18 either live in or regularly visit their home. Over two-thirds (69.6%) indicated that they

recreate near fresh water in Florida. About half (49.7%) of the respondents reported that they have pets that spend time outside.

When asked about the community where they live in Florida, 15.2% categorized it as “rural,” 31.7% indicated “small town,” 28.8% indicated “suburban,” and 24.3% indicated an “urban” area. When questioned where they grew up, the results were similar: 16.6% rural, 28.7% small town, 27.4% suburban, and 27.4% urban.

Differences between Complainants and Non-complainants

No significant difference was found between nuisance complainants and non-complainants in the variables of: permanent Florida residency ($\chi^2 = 0.03$, $p = 0.868$), length of Florida residency ($t = 1.66$, $p = 0.096$), age ($t = 1.25$, $p = 0.211$), retirement status ($\chi^2 = 1.71$, $p = 0.192$), membership in environmental or conservation organizations ($\chi^2 = 0.25$, $p = 0.617$), or membership in other organizations ($\chi^2 = 1.44$, $p = 0.230$), (Table 3-1). Community (rural, small town/small city, suburban, urban) where the respondent grew up ($\chi^2 = 6.12$, $p = 0.106$) and presence of wild alligators in the place where the respondent grew up ($\chi^2 = 0.04$, $p = 0.838$) were also not significantly different between complainants and non-complainants (Table 3-2).

Differences were found with respect to some other measures. Women were more likely than men to report having complained about an alligator ($\chi^2 = 9.93$, $p = 0.002$), (Table 3-1). Non-Hispanic Caucasians were more likely than other races to have complained ($\chi^2 = 11.62$, $p = 0.001$). Education had an effect on whether a respondent had complained, but the relationship was not linear: those with a high school GED or less education were less likely than expected to have complained, those with “some college” more likely, those with AA/AS or BA/BS less likely, and those with a graduate or professional degree more likely than expected ($\chi^2 = 13.27$, $p = 0.021$).

Table 3-1. Mean values or percentages of respondents by demographic categories in a 2009 Florida survey who reported they either *had* (comp.) or *had not* (non-comp.) ever requested that a problem alligator be removed

Variable	Comp.	Non-comp.	χ^2 or t	p
Mean age	56.8	55.7	t = 1.25	0.211
Mean years of perm. Florida residency	29.9	28.1	t = 1.66	0.096
% Permanent Florida residents	43.3	54.2	$\chi^2 = 0.03$	0.868
% Seasonal Florida residents	1.1	1.4		
% Male	21.5	32.3	$\chi^2 = 9.93$	0.002
% Female	22.8	23.4		
% Non-Hispanic Caucasian	40.0	46.2	$\chi^2 = 11.62$	0.001
% Other Races	4.4	9.4		
% High school GED or less education	7.2	13.0	$\chi^2 = 13.27$	0.021
% Some college education	12.3	12.9		
% Associate's or bachelor's degree	14.4	19.3		
% Graduate or professional degree	10.6	10.3	$\chi^2 = 52.23$	< 0.001
% Income of \$60,000 or less	14.7	30.3		
% Income of \$60,001 to \$80,000	7.0	7.0		
% Income of \$80,001 to \$100,000	4.9	7.4		
% Income of \$100,001 or more	16.5	12.4	$\chi^2 = 2.66$	0.103
% Children living in home	15.6	17.2		
% No children living in home	28.4	38.7	$\chi^2 = 29.34$	< 0.001
% Children live in or visit home	33.3	32.8		
% No children live in or visit home	11.2	22.7	$\chi^2 = 35.42$	< 0.001
% Pets outside	30.0	27.7		
% No pets outside	14.4	27.9	$\chi^2 = 1.71$	0.192
% Retired	19.1	21.7		
% Not retired	25.3	33.8	$\chi^2 = 0.25$	0.617
% Members of envir. / conserv. org.	6.1	7.0		
% Non-memb. of envir. / conserv. org.	38.3	48.6	$\chi^2 = 1.44$	0.230
% Members of other org.	29.8	35.5		
% Non-members of other org.	14.5	20.1		

Income also had a significant, but nonlinear relationship on likelihood of complaining about alligators. Those reporting incomes of \$60,000 or less were less likely than expected to have complained, whereas those with incomes over \$100,001 were more likely to have complained (Table 3-1). Those with incomes in the \$60,001 to \$80,000 range were more likely to have complained, while those in the \$80,001 to \$100,000 range were less likely to have complained ($\chi^2 = 52.23$, $p < 0.001$). When

incomes groups were combined into four categories of \$40,000 increments, those below \$80,000 were less likely than expected to have complained and those over \$80,001 were more likely than expected to have complained ($\chi^2 = 39.24$, $p < 0.001$).

Table 3-2. Percentages of respondents by response category to questions related to potential alligator exposure in a 2009 Florida survey who reported they either *had* (comp.) or *had not* (non-comp.) ever requested that a problem alligator be removed

Variable	Comp.	Non-comp.	χ^2	p
% Grew up in area with wild alligators	14.8	18.2	$\chi^2 = 0.04$	0.838
% Did not grow up in area with alligators	29.6	37.4		
% Grew up in rural area	8.3	9.4	$\chi^2 = 6.12$	0.106
% Grew up in small town / small city	14.4	15.8		
% Grew up in suburban area	11.5	14.7		
% Grew up in urban area	10.0	15.9		
% Live in rural area	9.0	8.5	$\chi^2 = 18.26$	< 0.001
% Live in small town / small city	13.9	16.8		
% Live in suburban area	14.6	16.4		
% Live in urban area	6.8	14.0	$\chi^2 = 307.88$	< 0.001
% Live near freshwater	41.7	22.7		
% Do not live near freshwater	3.5	32.0	$\chi^2 = 24.40$	< 0.001
% Recreate near freshwater	36.0	38.7		
% Do not recreate near freshwater	7.9	17.4		

Not surprisingly, respondents who live near freshwater were more likely to have complained than those who do not ($\chi^2 = 307.88$, $p < 0.001$), (Table 3-2). Respondents with children living in the home were no more likely to have complained ($\chi^2 = 2.66$, $p = 0.103$), but those with children either living in or regularly visiting the home were more likely to have complained ($\chi^2 = 29.34$, $p < 0.001$). Those with pets outside were also more likely to have complained ($\chi^2 = 35.42$, $p < 0.001$). Whereas area where respondent grew up was not significantly associated with complaint status ($\chi^2 = 6.12$, $p < 0.106$), area where they currently live was associated with complaint status; urban residents were less likely than expected to have complained and the rest of the groups

(rural, small town, suburban) were more likely ($\chi^2 = 18.26, p < 0.001$). People who recreate near water were more likely to have complained than those who do not recreate near freshwater ($\chi^2 = 24.40, p < 0.001$).

Descriptive Analyses

Experience with Alligators

Most general public respondents (58.9%) had a moderate level of experience with alligators, but 15.2% had a very high level (Figure 3-1). Most respondents (84.5%) reported that they had observed an alligator in the wild.

For the general public group, no difference was found between experience categories by gender ($\chi^2 = 0.36, p = 0.550$), children living in the home ($\chi^2 = 2.44, p = 0.118$), pets outside ($\chi^2 = 2.50, p = 0.114$), education ($\chi^2 = 3.96, p = 0.555$), mean age ($t = 1.42, p = 0.155$) income ($\chi^2 = 8.43, p = 0.296$), or race ($\chi^2 = 0.02, p = 0.901$).

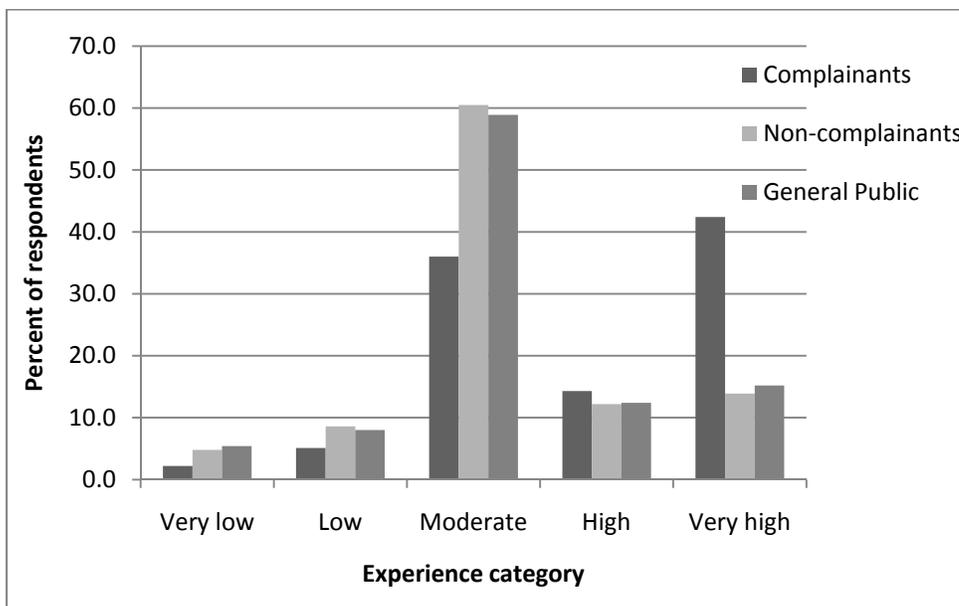


Figure 3-1. Experience levels with alligators in Florida for the general public, nuisance alligator complainants, and non-complainants in 2009

Differences were found with respect to other measures; those with children either living in or visiting the home had higher levels of experience than those without ($\chi^2 = 8.95, p = 0.003$). People who live on the water had greater experience with alligators ($\chi^2 = 16.08, p < 0.001$), as did people who recreate near freshwater ($\chi^2 = 8.01, p = 0.005$). Those with “high to very high” experience levels had a lived in Florida longer than those with “low to moderate” experience levels ($t = 2.79, p = 0.006$).

Table 3-3. Mean values or percentages of respondents who reported they either *had* (comp.) or *had not* (non-comp.) ever requested that a problem alligator be removed by response category to questions related to experience with, knowledge of, attitudes about, and perceived risk from alligators in a 2009 Florida survey

Variable	Comp.	Non-comp.	$\chi^2, t, \text{ or } W$	<i>p</i>
% "Very low to moderate" experience	19.1	41.2	$\chi^2 = 111.52$	< 0.001
% "High to very high" experience	25.2	14.5		
Mean knowledge score	5.97	5.55	$t = 4.77$	< 0.001
% Think alligator info. available	33.1	40.9	$\chi^2 = 1.55$	0.46
% Think alligator info. not available	4.9	5.6		
% "Almost everything" from personal exp.	7.7	6.1	$\chi^2 = 91.18$	< 0.001
% "Almost everything" from news	2.0	4.2	$\chi^2 = 13.60$	0.009
% "Almost nothing" from other sources	15.7	31.9	$\chi^2 = 41.07$	< 0.001
Mean attitude score	3.44	3.76	$t = 7.17$	< 0.001
Mean size "large"	2.00 m	2.07 m	$t = 1.83$	0.068
Mean size risk to people	1.26 m	1.24 m	$t = 0.56$	0.578
Mean size risk to pets	1.05 m	1.03 m	$t = 0.78$	0.436
Mean personal risk perception score	3.08	2.31	$t = 14.33$	< 0.001
Mean user risk perception score	2.84	2.59	$t = 5.56$	< 0.001
Mean cognizance of risk score	2.34	2.12	$W = 182999$	< 0.001
Mean control of risk score	2.36	2.01	$W = 185338$	< 0.001
% "Right amount" in residential areas	12.1	24.2	$\chi^2 = 67.78$	< 0.001
% "Too many" in residential areas	36.2	23.7		
% "Right amount" in non-residential areas	27.0	35.3	$\chi^2 = 31.83$	< 0.001
% "Too many" in non-residential areas	16.3	11.5		
Mean Active nuisance score	4.57	4.20	$t = 10.46$	< 0.001
Mean Passive nuisance score	3.20	2.68	$t = 9.19$	< 0.001

When responses were partitioned by complaint status, non-complainants were more likely to report having moderate levels of experience with alligators, while complainants were more likely to report having high levels of experience ($\chi^2 = 132.76$, $p < 0.001$), (Table 3-3). When experience levels were combined into two categories (“very low to moderate” and “high to very high”), complainants were more likely than non-complainants to have high to very high levels of experience with alligators ($\chi^2 = 111.52$, $p < 0.001$).

Sources of Information about Alligators

Of the general public, 73.1% of respondents thought that information about alligators was readily available to them. There was no difference between complainants and non-complainants in perceived information availability ($\chi^2 = 1.55$, $p = 0.460$).

The most important sources of information about alligators for the general public were TV nature shows and the news. Over half (57.1%) responded that they have learned either “much” or “almost everything” they know about alligators from nature shows on television. Over forty percent (41.7%) stated that they have learned “some” of what they know from TV news or newspapers. Other sources were less important, in particular the internet and school. Half (49.7%) of the general public responded that they have learned “almost nothing” about alligators from the internet, and 39.3% had learned “almost nothing” about alligators in the classroom (Figure 3-2).

General public information sources were also compared by gender. Females were more likely to gain information from books ($\chi^2 = 13.63$, $p = 0.009$), TV nature shows ($\chi^2 = 13.804$, $p = 0.008$), or outdoor experience ($\chi^2 = 13.34$, $p = 0.010$), while males were more likely to cite news as a source ($\chi^2 = 14.31$, $p = 0.006$).

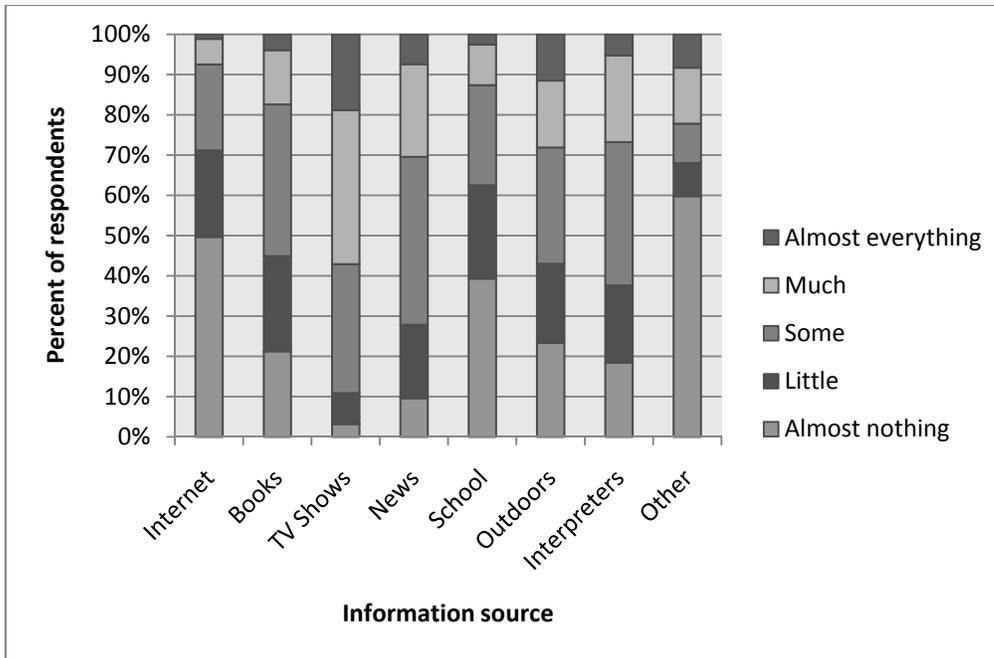


Figure 3-2. Amount the Florida public reported they had learned about alligators by information source in 2009

When information sources were compared by complainant status, the sources that differed between groups were “personal outdoor experience,” “newspapers or TV news shows,” and “other sources.” Nuisance alligator complainants were more likely to cite personal outdoor experience to have taught them “much” or “almost everything,” ($\chi^2 = 91.18, p < 0.001$), (Table 3-3). “News” differed as a source for each group; non-complainants were more likely to get a moderate amount (“some” or “much”) of their information from the news, but complainants were more likely to respond that they gained “almost nothing,” “little,” or “almost everything” from the news ($\chi^2 = 13.60, p = 0.009$). Non-complainants were much more likely to attribute “almost nothing” learned to “other sources” ($\chi^2 = 41.07, p < 0.001$). In the free response section, complainants often cited “nuisance alligator trapper” as an information source.

Knowledge of Alligators

Knowledge scores ranged from 0 to 9 correct answers (out of a possible 10); no respondents answered all knowledge questions correctly.

General public knowledge scores ranged from 1 to 9, with a mean of 5.5 (SD=1.5). For the general public, knowledge levels were not associated with length of residency ($F = 1.97$, $p = 0.161$), children living in the home ($t = 1.46$, $p = 0.145$), children living in or visiting the home ($t = 1.65$, $p = 0.099$), education ($F = 0.168$, $p = 0.995$), or income ($F = 1.02$, $p = 0.421$). There was a significant but small negative relationship between age and knowledge score ($F = 9.72$, $p = 0.002$, $R^2 = 0.013$). People with pets outside had a 0.6 higher mean knowledge score than people without outside pets ($t = 4.79$, $p < 0.001$). Males had a 0.3 higher mean knowledge scores than females ($t = 2.63$, $p = 0.009$). People who live adjacent to the water had a 0.2 higher mean knowledge score than people who did not live near the water ($t = 2.08$, $p = 0.038$). Non-Hispanic Caucasians had higher mean knowledge scores than other races ($t = 3.41$, $p = 0.001$). People who recreate near freshwater had a 0.3 higher mean knowledge score than people who did not recreate near freshwater ($t = 2.69$, $p = 0.007$).

Nuisance alligator complainants had a mean knowledge score of 5.97 (SD=0.63), significantly higher than non-complainants' mean score of 5.55 (SD=0.59) ($t = 4.77$, $p < 0.001$) (Figure 3-3). However, when question 6 ("To report a problem alligator, you should call...") was removed from analysis, the difference in knowledge levels between groups was no longer significant.

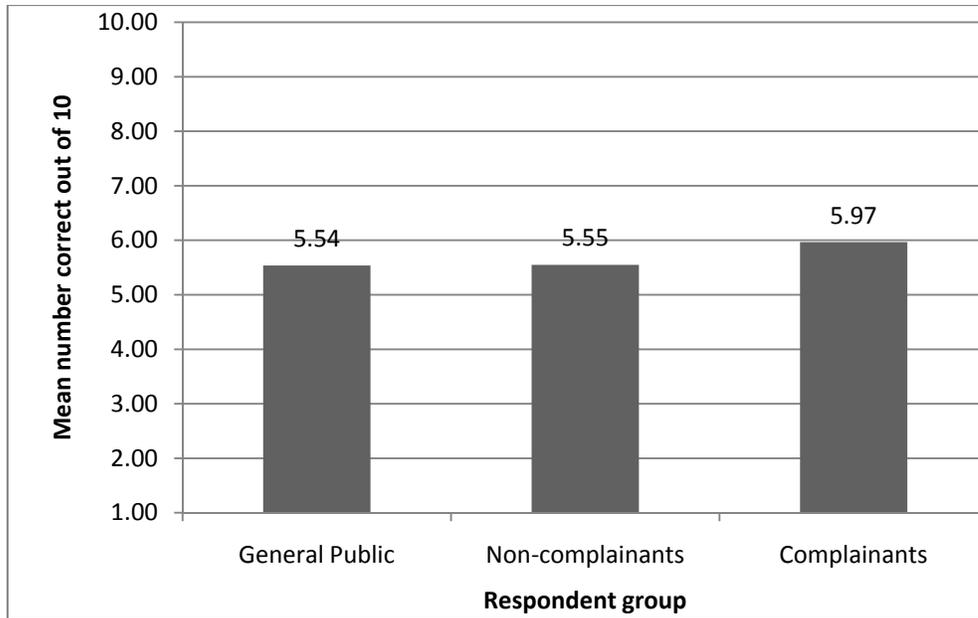


Figure 3-3. Mean scores of Florida’s general public, nuisance alligator complainants, and non-complainants to 10 questions that addressed knowledge of alligators in 2009

Attitudes about Alligators

Average attitude about alligators for the general public was between 3 and 4 on a 5 point scale (mean = 3.73, SD = 0.71), (Figure 3-4). For the general public, the mean attitude score for males was 0.29 higher than for females ($t = 5.32, p < 0.001$). Those who had outside pets had 0.14 higher mean scores than those who did not ($t = 2.57, p = 0.011$). Those who lived near the water had 0.12 higher mean scores than those who did not live near the water ($t = 2.19, p = 0.029$). Those who recreated near fresh water had 0.44 higher mean scores than those who did not recreate near fresh water ($t = 0.86, p < 0.000$). Respondents with children living at home had 0.14 higher mean attitude scores than those without children ($t = 2.32, p = 0.021$). No difference was found in attitude between respondents with children living in or visiting the home and those

without ($t = 0.44, p = 0.660$).

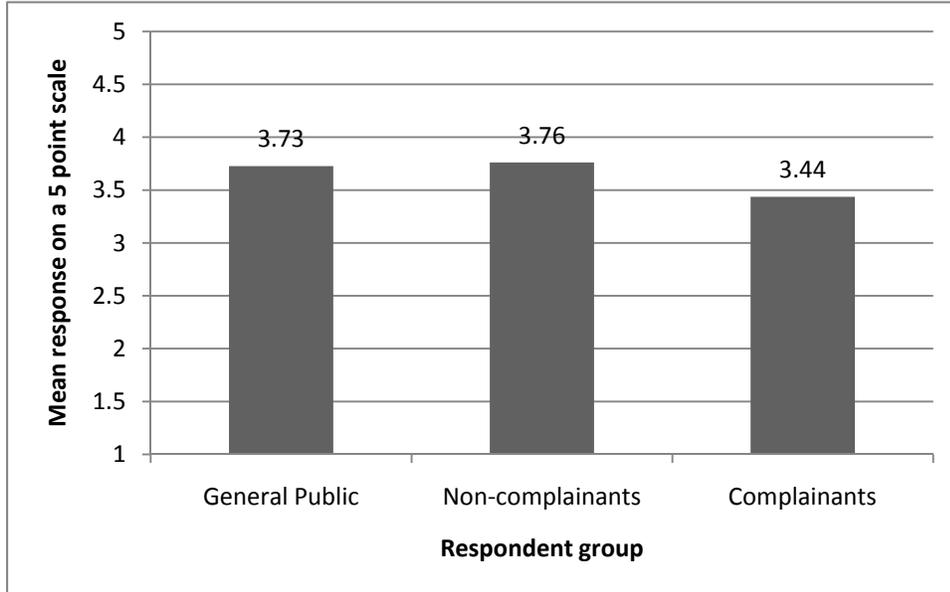


Figure 3-4. Mean scores of Florida’s general public, nuisance alligator complainants, and non-complainants on the principal component of 10 questions that addressed attitudes about alligators in 2009, with 1 as a “very negative” attitude about alligators and 5 as a “very positive” attitude about alligators

No significant association was found between length of residency and attitude score for the general public ($F = 1.07, p = 0.301$). An association was found between age and attitude ($F = 10.91, p < 0.001$); respondents aged 70 – 79 had lower mean attitude scores than those aged 30 – 39 ($p = 0.002$), 40 – 49 ($p < 0.001$), 50 – 59 ($p < 0.001$) and 60 – 68 ($p = 0.029$), and respondents aged 80 – 98 had lower mean scores than those aged 30 – 39 ($p = 0.014$), 40 – 49 ($p < 0.001$), and 50 – 59 ($p < 0.005$), (Figure 3-5). No significant association was found between education ($F = 1.19, p = 0.162$), race ($t = 0.49, p = 0.622$), or income ($F = 1.33, p = 0.060$) and attitude.

When partitioned by complaint status, mean attitude scores of nuisance alligator complainants (3.44, $SD = 0.84$) were significantly lower than those of non-complainants (3.76, $SD = 0.69$), ($t = 7.17, p < 0.001$) (Figure 3-4).

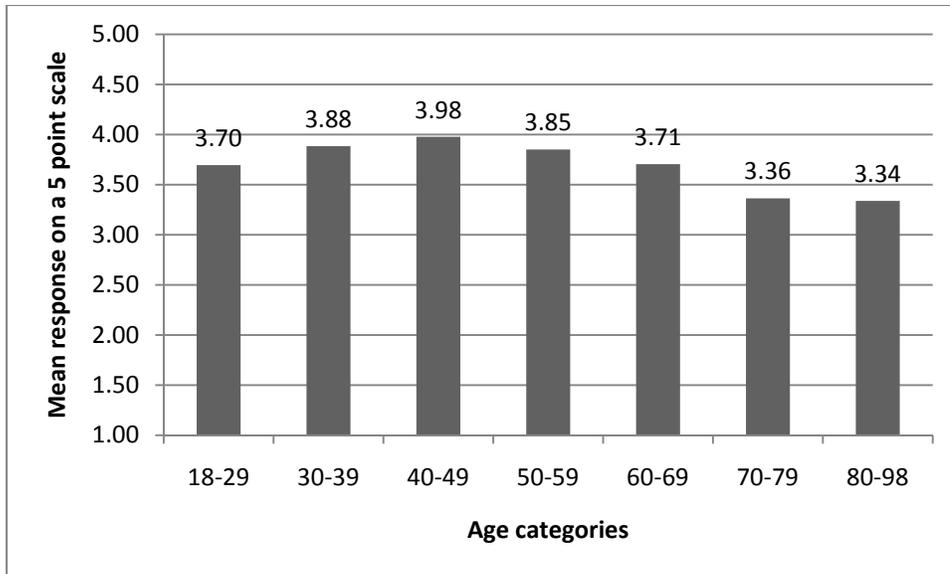


Figure 3-5. Mean scores by age of Florida’s general public on the principal component of 10 questions that addressed attitudes about alligators in 2009, with 1 as a “very negative” attitude about alligators and 5 as a “very positive” attitude about alligators

Size Estimates about Alligators

The general public considered alligators to be “large” at a mean total length of 2.08 m (6.82 ft), (SD = 0.72), whereas they considered people and pets to be at risk from alligators at a mean size of 1.24 m (4.08 ft), (SD = 0.60) and 1.04 m (3.40 ft) (SD = 0.49), respectively. The size thresholds for men were greater than those for women for all three questions. Men considered alligators to be “large,” at a mean size of 2.16 m (7.10 ft), (SD = 0.66) versus 1.93 m (6.35 ft), (SD = 0.75) for women ($t = 4.17, p < 0.001$). Men considered alligators to be a risk to people at a mean size of 1.34 m (4.41 ft), (SD = 0.59) versus 1.10 (3.63 ft), (SD = 0.57) for women ($t = 5.29, p < 0.001$). Men considered alligators to be a risk to pets at a mean size of 1.12 m (3.66 ft), (SD = 0.47) versus 0.93 m (3.04 ft), (SD = 0.45) for women ($t = 5.26, p < 0.001$).

Nuisance alligator complainants considered alligators to be “large,” at a mean size of 2.00 m (6.56 ft), (SD = 0.63), and they considered people and pets to be at risk

from alligators at a mean size of 1.26 m (4.13 ft), (SD = 0.53) and 1.05 m (3.45 ft), (SD = 0.45), respectively (Table 3-3). Non-complainants considered alligators to be “large,” at a mean size of 2.07 m (6.80 ft), (SD = 0.71), and they considered people and pets to be at risk from alligators at a mean size of 1.24 m (4.07 ft), (SD = 0.61) and 1.03 m (3.38 ft), (SD = 0.48), respectively. However, the differences in size thresholds between complainants and non-complainants were not significant for size considered “large” ($t = 1.83, p = 0.068$), size considered a risk to people ($t = 0.56, p = 0.578$) or size considered a risk to pets ($t = 0.78, p = 0.436$).

Risk Perceptions about Alligators

For the general public, all 4 of the risk perception factors had mean scores lower than the midpoint of the 5-point scale (Personal, 2.37, SD = 0.93; User, 2.62, SD = 0.76, Control 2.06, SD=1.07; and Cognizance, 2.17, SD=1.05), (Figure 3-6), indicating relatively low perceived risks from alligators.

Woman’s mean personal risk perception was 0.18 greater than that of men ($t = 2.51, p = 0.012$). No difference was found with respect to children living in the home ($t = 0.19, p = 0.849$), children living in or visiting the home ($t = 1.12, p = 0.264$), or pets outside ($t = 0.09, p = 0.929$). Those who lived on the water had a 0.30 greater mean personal risk perception score than those who didn’t live on the water ($t = 4.17, p < 0.001$). No significant association was found between personal risk perception score and length of residency ($F = 0.28, p = 0.597$), age ($F = 0.64, p = 0.423$), education ($F = 0.96, p = 0.539$), race ($t = 1.26, p = 0.207$), or income ($F = 1.04, p = 0.410$).

For user risk perception, those who did not recreate near water had greater mean user risk perception scores than those who did ($x = 2.86$ [SD = 0.75] versus $x = 2.49$ [SD = 0.73]), ($t = 5.93, p < 0.001$).

Nuisance alligator complainants perceived higher risks than non-complainants on all principal components. The greatest difference (0.77) was in the perceived level of personal risk ($t = 14.33, p < 0.001$), and the least difference (0.22) was in the cognizance of risk ($W = 182999, p < 0.001$), (Table 3-3). For perceived user risk, nuisance complainants had a 0.26 higher mean score than non-complainants ($t = 5.56, p < 0.001$). For perceived control of risk, nuisance complainants had a 0.35 higher mean score than non-complainants ($W = 185338, p < 0.001$).

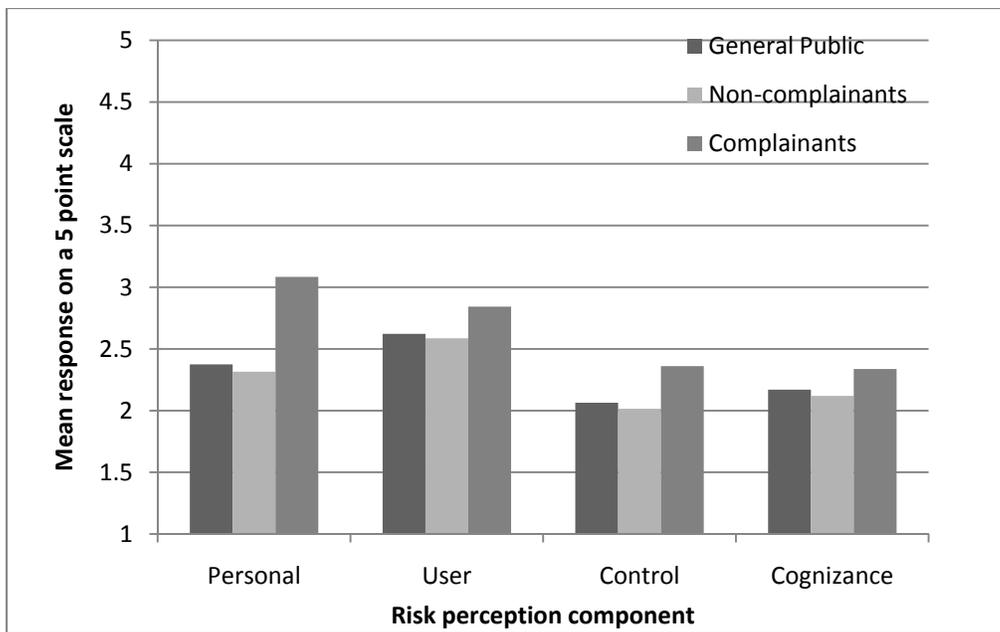


Figure 3-6. Mean scores of Florida’s general public, nuisance alligator complainants, and non-complainants on principal components found for 16 questions that addressed perceived risks from alligators in 2009, with 1 as “no or almost no” perceived risk and 5 as “great” perceived risk

Preferences for Alligator Populations

Most (64.2%) of the general public who offered an opinion thought non-residential areas had the “right amount” of alligators. The general public was split on the ideal amount of alligators in residential areas, with 44.9% thinking that residential areas have the “right amount” of alligators and 50.1% thinking “too many” alligators live in

residential areas. A minority of respondents who voiced an opinion thought there were “not enough” alligators in either residential or non-residential areas (5.0% and 13.2%, respectively) (Figure 3-7).

Men in the general public group tended to think there were “the right amount” or “not enough” alligators in residential areas, whereas women tended to think there were “too many” ($\chi^2 = 14.67, p = 0.001$). Those in the general public who recreated near fresh water tended to think the “the right amount” or “not enough” alligators live in residential areas, whereas those who did not recreate near fresh water thought there were “too many” alligators ($\chi^2 = 9.56, p = 0.008$). Those who lived on fresh water tended to think the “the right amount” or “not enough” alligators live in residential areas, whereas those who did not live on fresh water thought there were “too many” ($\chi^2 = 6.99, p = 0.030$). No significant difference was found between those with children living in the home ($\chi^2 = 1.43, p = 0.490$), children living in or visiting the home ($\chi^2 = 0.30, p = 0.863$), or outside pets ($\chi^2 = 0.94, p = 0.625$). No significant association was found between residential alligator preferences and income ($\chi^2 = 12.62, p = 0.557$), education ($\chi^2 = 10.30, p = 0.414$), or length of Florida residency ($F = 1.85, p = 0.158$). An association was found between age and residential alligator preferences ($F = 7.28, p = 0.001$). Mean age for those who responded there were “too many” alligators in residential areas was higher than those who thought there were either the “right amount” ($p = 0.009$) or “not enough” ($p = 0.018$). Non-Hispanic Caucasians were more likely to believe there were the “right amount” of alligators in residential areas, whereas other races were more likely to believe there were either “not enough” or “too many” alligators in residential areas ($\chi^2 = 8.27, p = 0.016$).

When responses were segmented by complaint status, most (73.8%), nuisance alligator complainants thought there were “too many” alligators in residential areas, and only 1.5% responded “not enough” to that question (Figure 3-7). Complainants were more likely than non-complainants to think there were “too many” alligators in either residential ($\chi^2 = 67.78, p < 0.001$), or non-residential areas ($\chi^2 = 31.83, p < 0.001$), (Table 3-7).

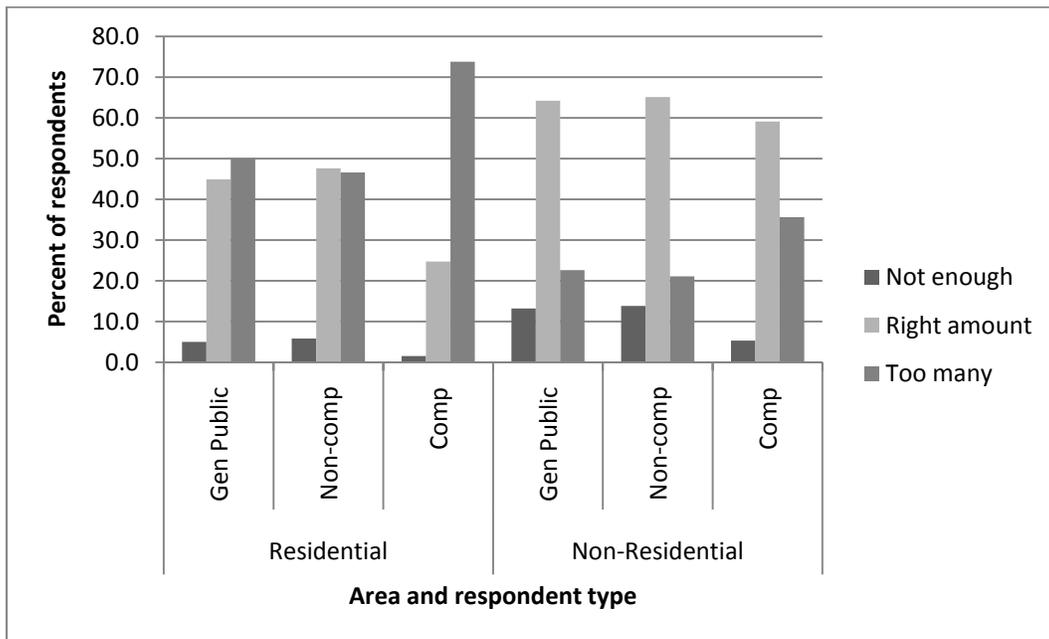


Figure 3-7. Opinions of Florida’s general public, nuisance alligator complainants, and non-complainants about the amount of alligators in residential and non-residential areas in 2009

The general public’s responses were also compared to those reported in a 1996 study of Floridians’ view about alligators (Duda et al. 1996). Views regarding alligators in non-residential areas had changed little, with slightly fewer people in 2009 stating there were “not enough” or the “right amount” of alligators, and slightly more choosing “too many” or “don’t know.” The difference between years was less than 5% for each category. For residential areas, slightly (3%) fewer people than in 1996 replied “not

enough” and the same amount (33%) replied “too many.” However, 10% less thought there were the “right amount” of alligators and 13% more replied “don’t know” (Figure 3-8).

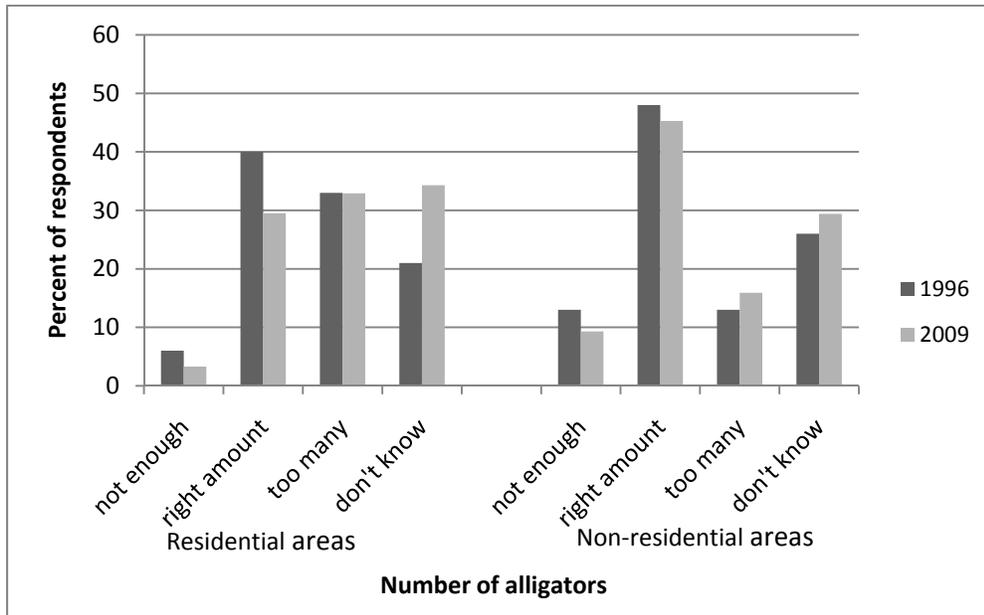


Figure 3-8. Opinions of Florida’s general public about the amount of alligators in residential and non-residential areas in 1996 and 2009

Opinions about Alligator Management Strategies

Management on AMUs

A substantial percentage of the general public were either “not at all aware” (37.9%) or “somewhat aware” (27.1%) of FWC’s strategy for managing alligator populations on AMUs. Despite limited awareness, most responded they either “agree” (47.7%) with this strategy, or are “neutral” (29.3%). Only 7.7% responded that they either “disagree” or “disagree strongly” (Figure 3-9). When asked if a change in this strategy was needed, 18.1% wanted more alligators harvested from AMUs, 8.6% wanted fewer alligators harvested from AMUs, 18.5% responded in favor of a workshop to formulate a new strategy, 30.9% responded, “I don’t know, and I don’t have any

suggestions” and 23.9% did not think the strategy should change. Awareness of the strategy was not related to agreement with the strategy ($\chi^2 = 2.52, p = 0.112$).

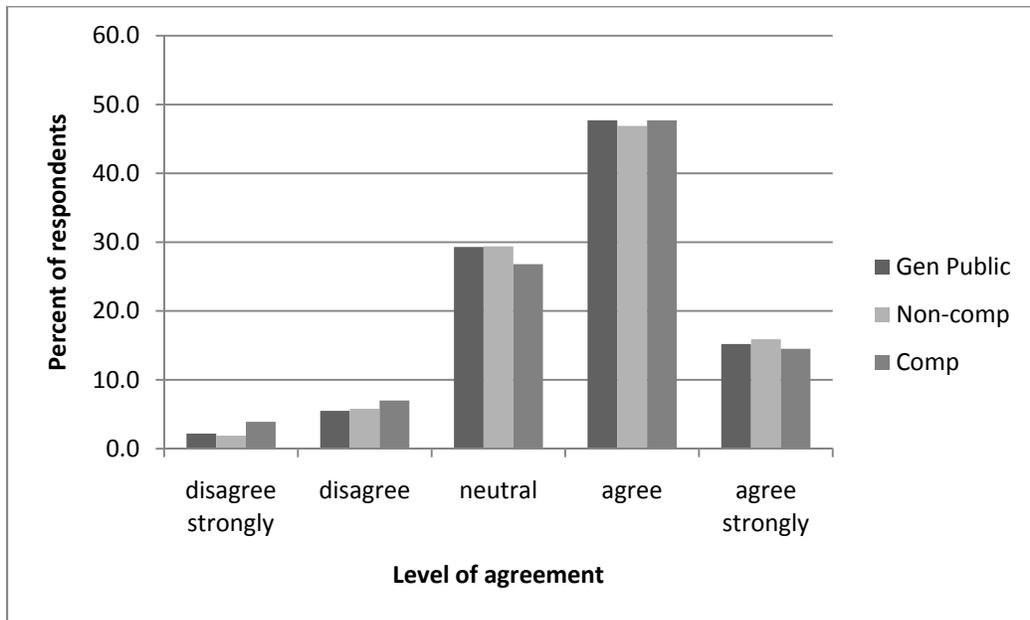


Figure 3-9. Levels of agreement with FWC’s strategy for maintaining alligator populations on AMUs at pre-harvest levels by the general public, nuisance alligator complainants, and non-complainants in Florida in 2009

Men in the general public group were more likely than women to be aware of FWC’s management strategy on AMUs ($\chi^2 = 8.34, p = 0.004$), but there was no significant difference in agreement with the strategy by gender ($\chi^2 = 0.15, p = 0.696$). No significant difference in awareness of ($\chi^2 = 3.29, p = 0.070$) or agreement with ($\chi^2 = 1.14, p = 0.286$) FWC’s management strategy on AMUs was found between those who lived on the water and those who did not. No significant difference in awareness of ($\chi^2 = 0.76, p = 0.385$) or agreement with ($\chi^2 = 0.001, p = 0.971$) FWC’s management strategy on AMUs was found between Non-Hispanic Caucasians and other races. Those who recreated near freshwater were more likely to be aware of FWC’s management strategy than those who did not ($\chi^2 = 23.23, p < 0.001$), but there was no significant difference in agreement between the groups ($\chi^2 = 0.15, p = 0.699$). No significant difference was

found in awareness of FWC's management strategy on AMUs by income ($\chi^2 = 4.62, p = 0.707$) or education ($\chi^2 = 10.06, p = 0.074$), nor was there a significant difference in agreement with the strategy by income ($\chi^2 = 11.02, p = 0.138$). There was a significant association between agreement with the strategy and education ($\chi^2 = 14.75, p = 0.011$), but it was not linear. When education levels were lumped into 3 categories (high school or less, some college or 2 year degree, and 4 year degree or higher), those with a 4 year degree or higher were more likely to be unaware of the strategy than other respondents ($\chi^2 = 7.20, p = 0.027$).

No difference was found by age for awareness of ($t = 0.13, p = 0.896$) or agreement with ($t = 0.62, p = 0.533$) FWC's management strategy on AMUs. An association was found by length of residency for awareness of FWC's management strategy on AMUs ($t = 4.81, p < 0.001$); those who were aware had lived in Florida longer. There was no difference in mean length of Florida residency between those who agreed and those who disagreed with FWC's management strategy on AMUs ($t = 0.79, p = 0.431$).

Among those of the general public who indicated they were a member of a hunting organization ($n = 71$), 11.3% were "not at all," 12.7% "slightly," 26.8% were "somewhat," 25.4% were "very," and 23.9% "completely" aware of FWC's management strategy on AMUs. Of these, 1.4% "disagreed strongly," 7.0% "disagreed," 9.9% were "neutral," 47.9% "agreed," and 33.8% "agreed strongly" with the strategy. Of those that responded to whether the FWC should change the strategy, 40% wanted to harvest more alligators, 5.7% to harvest fewer, 14.3% wanted a workshop to formulate a new strategy, 11.4% offered no suggestion, and 28.2% wanted no change in harvest levels.

Among the general public members who reported membership in an environmental or conservation organization ($n = 84$), 34.9% were “not at all,” 14.5% “slightly,” 26.5% were “somewhat,” 10.8% were “very,” and 13.3% “completely” aware of the FWC’s management strategy on AMUs. Of these, 4.9% “disagreed strongly,” 6.1% disagreed,” 23.2% were “neutral”, 40.2% “agreed,” and 25.6% “agreed strongly” with the FWC’s strategy. When asked whether the FWC should change the strategy, 17.3% wanted more alligators harvested, 11.1% wanted fewer alligators harvested, 28.4% wanted a workshop to formulate a new strategy, 19.8% offered no suggestion, and 23.5% wanted no change in harvest levels.

Nuisance alligator complainants were more likely than non-complainants to be aware of FWC’s management strategy on AMUs ($\chi^2 = 5.35$, $p = 0.021$), but they were no more likely to agree with the strategy ($\chi^2 = 2.56$, $p = 0.110$), (Table 3-4).

Nuisance alligator management

When asked about management criteria for nuisance alligators (alligators had to ≥ 1.2 m (4 ft) in total length and a real or perceived threat to people, pets or property and a complaint about the alligator had to have been received by FWC), most (63.4%) of the general public either “agree” or “strongly agree” that the policy for handling nuisance alligators is appropriate (Table 3-1). Relatively strong agreement was also reported for private communities’ (48.3%) and private landowners’ (45.9%) rights to have all alligators removed from their property. However, the public generally did not support the right of a landowner to have all alligators removed from public water adjacent to their property, with 61.7% either stating they either “disagree strongly” or “disagree” with that statement. Similarly, 53.5% disagreed that a municipality should be able to have all alligators removed from within its boundaries.

Agreement with the overall nuisance alligator policy of removing only those alligators ≥ 1.2 m (4 ft) in total length was further examined for the general public. No significant differences were found in agreement with the nuisance alligator policy based on education ($\chi^2 = 1.22$, $p = 0.943$), race ($\chi^2 = 1.45$, $p = 0.229$), income ($\chi^2 = 6.03$, $p = 0.536$), water recreation ($\chi^2 = 0.32$, $p = 0.573$), children at home ($\chi^2 = 1.43$, $p = 0.232$), children living in or visiting the home ($\chi^2 = 1.34$, $p = 0.244$), pets outside ($\chi^2 = 1.75$, $p = 0.187$), or respondent living on the water ($\chi^2 = 3.63$, $p = 0.057$). Women were more likely to disagree with the nuisance alligator policy ($\chi^2 = 4.97$, $p = 0.026$). People who agreed with the policy had lived in Florida longer ($t = 2.15$, $p = 0.032$) and were older ($t = 5.46$, $p < 0.001$) than those who disagreed.

Those who belonged to a hunting group were in greater agreement with the policy ($t = 2.28$, $p = 0.023$), than those who did not. No significant difference was found between members of environmental or conservation organizations and non-members in their agreement with the nuisance alligator policy ($t = 0.27$, $p = 0.786$).

When responses were partitioned into complainant and non-complainant groups, levels of agreement with the nuisance alligator policy varied. However, for most questions, the bulk of respondents answered in the same way as did the general public. The one statement about which respondents disagreed was, "A city should have the right to remove all alligators within its boundaries." For that statement, complainants tended to "agree" or "strongly agree" with that statement (41.2%), while non-complainants and the general public tended to "disagree" or "strongly disagree" (55.8% and 53.5%, respectively). Respondents did tend to have an opinion about nuisance

Table 3-4. Mean values or percentages of respondents who reported they either *had* (comp.) or *had not* (non-comp.) ever requested that a problem alligator be removed by response category to questions related to alligator management in a 2009 Florida survey

Variable	Comp.	Non-comp.	χ^2 or t	<i>p</i>
% Aware of AMU strategy	14.0	13.8	$\chi^2 = 5.35$	0.021
% Unaware of AMU strategy	29.8	42.4		
% Agree with AMU strategy	38.4	48.9	$\chi^2 = 2.56$	0.110
% Disagree with AMU strategy	6.7	6.1		
% Agree with nuisance alligator policy	40.8	41.0	$\chi^2 = 23.44$	< 0.001
% Disagree with nuisance alligator policy	5.3	12.8		
% Support communities' right to remove alligators	32.3	30.2	$\chi^2 = 23.71$	< 0.001
% Do not support communities' right to remove alligators	13.2	24.4		
% Support landowners' removal of alligators	32.0	29.5	$\chi^2 = 26.40$	< 0.001
% Do not support landowners' removal of alligators	13.4	25.2		
% Support private owner removing alligators from adjacent public water	18.6	12.1	$\chi^2 = 51.71$	< 0.001
% Do not support private owner removing alligators from adj. public water	24.1	45.2		
% Support city's right to remove alligators	22.2	18.3	$\chi^2 = 32.33$	< 0.001
% Do not support city's right to remove alligators	21.2	38.2		
% Agree with small nuisance alligator policy	29.7	45.8	$\chi^2 = 36.11$	< 0.001
% Disagree with small nuisance alligator policy	15.2	9.3		
% Agree alligators posing no risk should be left alone	29.4	47.5	$\chi^2 = 19.66$	< 0.001
% Disagree alligators posing no risk should be left alone	12.7	10.4		
% Support residents relocating small alligators	9.5	12.6	$\chi^2 = 0.12$	0.728
% Do not support residents relocating small alligators	34.5	43.5		
% Support residents killing small alligators	9.9	5.1	$\chi^2 = 32.36$	< 0.001
% Do not support residents killing small alligators	34.6	50.4		
% Support private trappers relocating small alligators	26.7	36.3	$\chi^2 = 0.74$	0.39
% Do not support private trappers relocating small alligators	16.8	20.2		
% Support private trappers killing small alligators	10.3	7.1	$\chi^2 = 20.61$	< 0.001
% Do not support private trappers killing small alligators	32.9	49.7		

alligators, though; regardless of group segmentation, for no statement did the “neutral” response category garner the greatest percentage of respondents.

Nuisance alligator complainants were more likely to support FWC’s policy for handling nuisance alligators ($\chi^2 = 23.44$, $p < 0.001$), (Table 3-4). Nuisance alligator complainants were also more likely than non-complainants to support communities’ ($\chi^2 = 23.71$, $p < 0.001$), private landowners’ ($\chi^2 = 26.40$, $p < 0.001$), and cities’ ($\chi^2 = 32.33$, $p < 0.001$) right to remove all alligators from their property, as well as a landowners’ right to remove all alligators from adjacent public waters ($\chi^2 = 51.71$, $p < 0.001$).

Small nuisance alligator management

Most (67.2%) of the general public either “agree” or “strongly agree” that FWC’s policy for handling small nuisance alligators was appropriate (Table 3-5). The majority (71.3%) agreed that if small alligators don’t pose a risk, they should not be removed. The public did not support ability of residents to personally relocate or kill small alligators, nor did they support hiring of private nuisance wildlife trappers to kill small alligators. However, a majority (53.5%) of the public did support allowing residents to hire private trappers to relocate small alligators (Table 3-5).

When questions about small nuisance alligators were partitioned by complaint status, differences were found in all areas except the two questions related to relocating small alligators. Both complainants and non-complainants showed little support for residents’ ability to relocate small alligators, and both groups showed slightly more support for the ability to pay private trappers to relocate small alligators (Table 3-4). Non-complainants were more supportive of the current policy for managing small alligators ($\chi^2 = 36.11$, $p < 0.001$), and showed more agreement for the statement that small alligators posing no risk should be left alone ($\chi^2 = 19.66$, $p < 0.001$). Although

both groups disagreed with killing small alligators (either personally or by nuisance wildlife trappers), complainants showed less disagreement ($\chi^2 = 32.36, p < 0.001$) and ($\chi^2 = 20.61, p < 0.001$), respectively.

Table 3-5. Percent of the Florida public who agree or disagree with statements regarding nuisance alligator management in 2009

Statement	Disagree strongly or Disagree	Neutral	Agree or Agree strongly
FWC's policy for nuisance alligators is appropriate	18.5	18.2	63.4
A private community should have the right to remove all alligators	34.5	17.2	48.3
A landowner should have the right to remove all alligators from property	35.2	18.9	45.9
A landowner should have the right to remove all alligators from adjacent public water	61.7	18.4	20.0
A city should have the right to remove all alligators	53.5	18.7	27.9
FWC's policy for <i>small</i> nuisance alligators is appropriate	15.8	17.0	67.2
If alligators don't pose a risk, they should not be removed	17.4	11.4	71.3
Residents should be able to <i>relocate</i> small alligators	66.1	14.3	19.7
Residents should be able to <i>kill</i> small alligators	78.2	12.2	9.5
Residents should be able to pay private trappers to <i>relocate</i> small alligators	28.6	18.2	53.3
Residents should be able to pay private trappers to <i>kill small alligators</i>	74.0	13.8	12.2

Shaded cells indicate responses chosen by the greatest percentage of the public.

Beliefs about Nuisance Alligator Behaviors

For the “passive nuisance” component, the general public had a mean below the midpoint on the scale ($x = 2.73, SD = 0.97$) indicating overall disagreement that those traits described nuisance alligator behaviors (Figure 3-10). For the “active nuisance”

component, the general public had a mean of 4.22 (SD = 0.65), indicating overall agreement that those traits described nuisance behaviors (Figure 3-10).

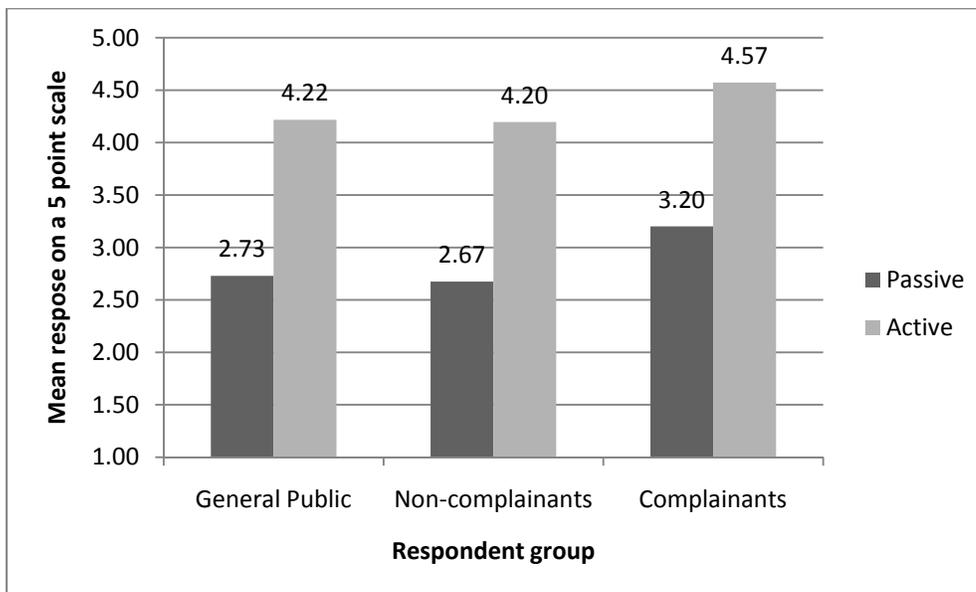


Figure 3-10. Mean scores of Florida's general public, nuisance alligator complainants, and non-complainants on principal components found for 10 items that addressed beliefs about what makes an alligator a nuisance in 2009. A value of 1 indicated strong disagreement that the described situation constituted a nuisance (i.e., higher tolerance of alligators) and value of 5 indicated strong agreement that the situation constituted a nuisance (i.e., lower tolerance of alligators).

No significant difference was found in the general public's beliefs about passive nuisance alligator behaviors based on living near the water ($t = 0.95, p < 0.345$), children living in the home ($t = 1.70, p = 0.090$), or children living in or visiting the home ($t = 1.32, p = 0.187$). People who do not recreate near water had a 0.54 greater mean passive nuisance behavior belief scores than those who do ($t = 6.820, p < 0.001$). People with outside pets were less likely to believe a situation constituted a passive nuisance behavior than those with no outside pets ($t = 4.38, p < 0.001$). Women had 0.37 greater mean passive nuisance behavior belief scores than men ($t = 5.01, p < 0.001$). Non-Hispanic Caucasians had lower mean passive nuisance behavior belief

scores than other races ($t = 3.71, p < 0.001$). Length of Florida residency had no effect on passive nuisance behavior beliefs ($F = 2.32, p = 0.128$). There was a significant but small positive relationship between passive nuisance behavior beliefs and age ($F = 9.97, p = 0.002, R^2 = 0.046$). There was a significant relationship between passive nuisance behavior beliefs and income ($F = 2.15, p = 0.037$); those with household incomes less than 40,000 dollars had higher mean passive nuisance behavior beliefs than those with household incomes over 120,000 dollars ($p = 0.038$). No significant association was found with between passive nuisance behavior beliefs and education ($F = 0.68, p = 0.639$).

Mean scores of complainants differed from non-complainants on both components. For “Passive Nuisance,” the mean score for complainants was 3.20 (SD = 0.95), whereas the mean score for non-complainants was 2.68 (SD = 0.95), ($t = 9.19, p < 0.001$). For “Active Nuisance” the responses between groups were closer, but still different. The mean score for complainants was 4.57 (SD = 0.53) whereas the mean score for non-complainants was 4.20 (SD = 0.65), ($t = 10.46, p < 0.001$).

Free Responses

Although necessarily subjective, the coded free responses are summarized here: 45.1% of the comments were positive, 28.0% were neutral, and 26.9% were negative.

Correlations among Key Measures

Correlations among key measures are given for the general public only. Experience with alligators was positively correlated with knowledge of alligators, personal risk perception, and opinions about alligator populations in residential areas, but it was not correlated with other measures (Table 3-6). All other measures were correlated (Table 3-6).

Table 3-6. Pearson correlation coefficients for key measures related to the Florida public's opinions about alligators in 2009

	EXP	KNOW	ATT	PERSONAL	USER	CONTROL	COGNIZANCE	RESIDENTIAL	NON-RESIDENTIAL	PASSIVE	ACTIVE
EXPERIENCE	1	.082*	.037	.174**	-.006	.004	-.059	.099*	.088	-.053	.012
KNOWLEDGE		1	.286**	-.082*	-.212**	-.164**	-.246**	-.205**	-.124*	-.294**	-.091*
ATTITUDE			1	-.321**	-.361**	-.388**	-.387**	-.548**	-.464**	-.597**	-.288**
PERSONAL				1	.444**	.280**	.321**	.389**	.433**	.274**	.226**
USER					1	.310**	.334**	.316**	.286**	.398**	.213**
CONTROL						1	.300**	.234**	.198**	.391**	.171**
COGNIZANCE							1	.289**	.208**	.396**	.152**
RESIDENTIAL								1	.418**	.482**	.399**
NON-RESIDENTIAL									1	.357**	.260**
PASSIVE										1	.485**
ACTIVE											1

* correlation is significant (2 - tailed) at the $p = 0.05$ level

** correlation is significant (2 - tailed) at the $p = 0.01$ level

Measures included: experience with alligators, knowledge of alligators, attitudes about alligators, perceptions of personal risk from alligators, perceptions of risk when using the water for recreation, perceptions of one's control over alligator-related risks, perceptions of one's understanding of alligator-related risks, beliefs about an alligator's mere presence constituting a "passive" nuisance, and beliefs about an alligator's behavior constituting an "active" nuisance.

Predictive Analyses

Personal Risk Perception

Significant predictors of perceived personal risk from alligators included: experience, attitude, passive nuisance behavior beliefs, whether the person lives on the water, the smallest sized alligator the person considers a risk to people, and whether the person has outside pets (Table 3-7). Knowledge score, children living in or visiting the home, growing up in a place with alligators, water recreation, age, gender, education, and race were not significant predictors of perceived personal risk from alligators.

Table 3-7. Variables in a multiple regression model for predicting perceived level of personal risk from alligators in Florida in 2009

Variable (R ² = 0.379)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Attitude	-0.399	0.045	-0.316	-8.918	0.000
Experience	0.189	0.024	0.212	7.752	0.000
Lives on water (yes)	0.419	0.056	0.209	7.504	0.000
Passive Nuisance	0.162	0.034	0.166	4.763	0.000
Size risk to people	-0.040	0.015	-0.074	-2.723	0.007
Pets outside (yes)	0.127	0.054	0.065	2.338	0.020
Water recreate (yes)	0.119	0.063	0.053	1.879	0.060
Age	-0.003	0.002	-0.042	-1.450	0.147
Child live / visit (yes)	0.072	0.055	0.036	1.302	0.193
Education	-0.016	0.017	-0.025	-0.933	0.351
Race (Caucasian)	-0.049	0.076	-0.018	-0.648	0.517
Grew up near gators (yes)	0.032	0.056	0.016	0.572	0.568
Gender (male)	-0.020	0.053	-0.010	-0.382	0.702
Knowledge	0.005	0.019	0.007	0.255	0.799
<i>Constant</i>	2.885	.300		9.619	.000

Measures included: attitudes about alligators, experience with alligators, whether respondent lived adjacent to freshwater, beliefs about passive nuisance alligator behavior, size alligator respondent believed posed a risk to people, whether the respondent had outside pets, whether the respondent recreated near freshwater, age, whether children lived in or regularly visited the home, education, race, whether the respondent grew up in a place with wild alligators, gender, and knowledge of alligators. For binomial variables, reference categories are given in parentheses.

When stepwise regression was conducted, the resultant model included the variables: experience, attitude, passive nuisance behavior beliefs, whether the person lives on the water, the smallest sized alligator the person considers a risk to people, whether the person has outside pets, whether the person recreates near freshwater, and age (Table 3-8). No difference was found between the $P > 0.10$ removal threshold and the more conservative value of $P > 0.20$ in identifying the best model for explaining personal risk perception, so the $P > 0.10$ threshold was used. The model explained 37.7% of the variance. Model fit was assessed by visually inspecting standardized residuals for normality.

Table 3-8. Variables in a stepwise multiple regression model for predicting perceived level of personal risk from alligators in Florida in 2009

Variable ($R^2 = 0.376$)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Experience	.193	.024	.217	8.045	.000
Attitude	-.398	.044	-.316	-9.127	.000
Passive Nuisance	.166	.034	.170	4.948	.000
Lives on water (yes)	.419	.055	.209	7.619	.000
Size risk to people	-.040	.014	-.075	-2.785	.005
Pets outside (yes)	.138	.053	.071	2.607	.009
Water recreate (yes)	.136	.061	.061	2.223	.026
Age	-.004	.002	-.054	-2.012	.045
<i>Constant</i>	2.854	.275		10.372	.000

Measures included: attitudes about alligators, whether the respondent lived adjacent to fresh water, experience with alligators, beliefs about an alligator's mere presence constituting a "passive" nuisance, the size alligator the respondent believed posed a risk to people, whether the respondent recreated near freshwater in Florida, whether the respondent had outside pets, and age. For binomial variables, reference categories are given in parentheses.

People who live on the water, those with outside pets, and those who recreate near freshwater had higher personal risk perceptions, holding other variables constant.

As experience levels or passive nuisance behavior beliefs increased, so did personal

risk perception. As attitude increased, personal risk perception decreased. Older respondents had lower personal risk perceptions. Alligator size was inversely correlated; the smaller sized alligator a person thought was risky to people, the higher their personal risk perception.

Alligator Populations in Residential Areas

The binary logistic regression model for preferences of respondents for alligator populations in residential areas was able to accurately predict those who thought there were the “right amount” 70.8% of the time, and those who thought there were “too many” 84.1% of the time, for an overall prediction rate of 78.9%. Significant predictors of preferences were: attitude, sized alligator a person thought was risky to people, passive nuisance behavior belief, personal risk perception, and age (omnibus $\chi^2 = 321.00$, $p < 0.001$). The goodness-of-fit test indicated a good fitting model ($\chi^2 = 2.67$, $p = 0.953$).

Table 3-9. Variables in a binary logistic regression model used to predict whether respondents in a 2009 survey believed there were “too many” alligators in residential areas in Florida

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Attitude	-1.401	.216	42.161	1	.000	.246	.161	.376
Personal risk	.701	.137	26.149	1	.000	2.016	1.541	2.638
Passive nuisance	.711	.145	23.890	1	.000	2.036	1.531	2.707
Age	.018	.008	5.864	1	.015	1.019	1.004	1.034
Size risk to people	-.126	.063	4.014	1	.045	.882	.780	.997
<i>Constant</i>	1.327	1.248	1.131	1	.288	3.770		

Measures included: attitudes about alligators, perceived personal risk from alligators, beliefs about an alligator’s mere presence constituting a “passive” nuisance, age, and the size alligator the respondent believed posed a risk to people.

For each unit increase in attitude score, we expect a 0.246 decrease in the odds of responding there are “too many” alligators in residential areas, holding all other independent variables constant (Table 3-9). The effect of passive nuisance is in the

opposite direction; for each unit increase in passive nuisance scores, we expect a 2.036 increase in the odds of responding there are “too many” alligators in residential areas (Table 3-9).

Complainant Status

The binary logistic regression model to predict complainant status was able to accurately predict those who had not filed a complaint 76.9% of the time, and those who had filed a complaint 82.1% of the time, for an overall prediction rate of 79.5%. All Significant predictors of status were: experience with alligators (“very low to moderate” or “high to very high”), knowledge of alligators, beliefs about an alligator’s mere presence constituting a “passive” nuisance, perceived personal risk from alligators, whether the respondent lived adjacent to fresh water, whether the respondent grew up in a place with wild alligators, whether the respondent recreated near freshwater, whether children lived in or regularly visited the home, and preferences for alligator populations in residential areas (omnibus $\chi^2 = 362.85$, $p < 0.001$), (Table 3-10). The goodness-of-fit test indicated a good fitting model ($\chi^2 = 4.68$, $p = 0.791$).

For each unit increase in personal risk score, we expect a 1.492 increase in the odds of having requested that an alligator be removed (a “yes” status), holding all other independent variables constant (Table 3-10). The odds of having requested that an alligator be removed are 11.970 times higher for people that live on the water than for those who do not.

Table 3-10. Variables in a binary logistic regression model used to predict whether respondents in a 2009 survey had ever complained about a nuisance alligator in Florida

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Lives on water (yes)	2.395	.263	83.098	1	.000	10.970	6.554	18.358
Exper. (high / v. high)	.978	.214	20.970	1	.000	2.660	1.750	4.044
Knowledge	.325	.076	18.390	1	.000	1.383	1.193	1.605
Passive Nuisance	.433	.130	11.016	1	.001	1.541	1.194	1.990
Personal Risk	.400	.135	8.786	1	.003	1.492	1.145	1.943
Grew up gators(yes)	-.641	.222	8.325	1	.004	.527	.341	.814
Res. pref. (too many)	.658	.249	6.968	1	.008	1.930	1.185	3.145
Child live / visit (yes)	.436	.228	3.661	1	.056	1.547	.989	2.418
Water recreate (yes)	.477	.279	2.927	1	.087	1.611	.933	2.784
<i>Constant</i>	-7.317	.763	91.902	1	.000	.001		

Measures included: whether the respondent lived adjacent to fresh water, experience with alligators (“very low to moderate” or “high to very high”), knowledge of alligators, beliefs about an alligator’s mere presence constituting a “passive” nuisance, perceived personal risk from alligators, whether the respondent grew up in a place with wild alligators, preferences for alligator populations in residential areas, whether children lived in or regularly visited the home, and whether the respondent recreated near freshwater. For binomial variables, reference categories are given in parentheses.

CHAPTER 4 DISCUSSION

Response

For the general public group, we had a response rate of 27%, and for the targeted nuisance alligator complainants, we had a response rate of 47%. Mail survey response rates vary based on factors such as the length of questionnaire, repeat contacts, incentives, topic salience, and education levels of target populations, but rates below 30% are not uncommon (Ary et al. 2006; Dillman 2007). Early respondents from our general public sample had higher knowledge scores, lower user risk perceptions, and lower passive nuisance behavior beliefs than later respondents, suggesting responses on these measures may not be able to be generalized to the entire Florida population.

The general public group may over-represent males, non-Hispanic white people, more highly educated people, and those aged 65 and older. Since gender, age, education and race each had a significant relationship to with one or more key variables, they were all included in predictive models in order to assess their impact. Education and race were not significant predictors of personal risk perception, residential alligator population preference, or complaint status. Age was a significant predictor of personal risk perception and preferences.

A majority of survey respondents (97%) identified themselves as permanent residents. This is not surprising given the timing of the survey deployment (May / June). Characteristics may differ in seasonal residents, and future research might compare statewide attitudes between permanent and seasonal residents. What is surprising, perhaps, is that permanent residents indicated they had lived in Florida an average of 29 years. This might indicate a bias toward longer term residents being more willing to

respond to the questionnaire, perhaps because this study had less relevance for people with limited experience with alligators or because those people felt their opinions on the issue were less important. A large percentage of respondents indicated that they live near water (43% of the general public and 64% overall). Our survey may over-represent those who live near water due to increased salience of the topic with those people. The sample may have been biased toward people with greater interest in alligators due to lack of compensation for completing the survey. The decision to omit complainants of small alligators in the nuisance complainant target population may have resulted in a lower reported risk for that group than truly existed (because those who reported small alligators may have perceived alligators as riskier than others).

Overall Findings

The general public reported moderate levels of experience with alligators, moderate knowledge about alligators, relatively positive attitudes toward alligators, and a low perceived risk from alligators. Overall, the public believed that the “right amount” of alligators inhabited non-residential areas, but they were divided on their beliefs about alligators in residential areas; half thought there were “too many” and 45% thought there were the “right amount.” This study also found that the general public considered personal risk from alligators low and voluntary (i.e., the respondent was able to control exposure to risk), supporting existing literature that risks viewed as voluntary are accompanied by less fear (Slovic 1987; Smithem & Mazzotti 2008; Harvey et al. 2010).

When characteristics were examined by complaint status (i.e., whether the person had ever requested a problem alligator be removed), clear differences emerged. As expected, people who had complained about a nuisance alligator reported higher levels of experience with alligators, more negative attitudes about alligators, and they were

more likely to believe an alligator's behavior or presence constituted a nuisance. Nuisance alligator complainants perceived alligators as a greater personal risk, a greater risk during water-related recreation, a risk they had less control over, and less well understood risk than did non-complainants; the largest difference was in the perceived level of personal risk. Complainants were also more likely than non-complainants to believe there were "too many" alligators in either residential or non-residential areas.

Regardless of group segmentation (i.e., general public, complainants, and non-complainants), all groups had mean knowledge scores above the midpoint on the scale, indicating moderate levels of knowledge about alligators. No-one answered all 10 knowledge questions correctly, suggesting some questions may have been too difficult. A more thorough pre-testing may have helped identify this issue. There was a significant (if fairly small) difference in knowledge between nuisance alligator complainants and non-complainants. When the question about how to report a nuisance alligator was removed the difference between complainants and non-complainants was no longer significant, suggesting the difference in groups lies in their knowledge about how to report a problem. Knowledge was not a significant predictor of one's personal risk perception or one's preference for alligator populations in residential areas.

People who lived or recreated near freshwater had more positive attitudes than those who did not. People who did not recreate near freshwater were more likely than those who did recreate near water to believe that an alligator's presence constituted a nuisance and that alligators posed a greater risk to people engaged in water recreation

activities. Water recreation was also a significant predictor an increase in perceived personal risk from alligators.

Smithem and Mazzotti (2008) found that negative attitudes toward American crocodiles were correlated with higher perceived risks to people from crocodiles. Our findings are consistent with that; negative attitudes toward alligators were correlated with higher scores on all risk perception factors. More positive attitudes predicted lower risk personal perceptions. Other factors predicting risk perception were: higher experience levels, more belief that an alligator's presence constituted nuisance, living on the water, and belief that smaller alligators posed a risk to people.

As found by Smithem and Mazzotti (2008) and Riley and Decker (2000a), this study found that risk perception and attitude were predictors of acceptance capacity, using alligator population preferences ("right amount" or "too many") in residential areas as a proxy for acceptance. People who thought they were at greater risk from alligators and those who were more likely to think an alligator's presence was a nuisance were more likely to think there were "too many" alligators in residential areas. Alligator size was inversely correlated with views of alligator populations in residential areas; the smaller sized alligator a person thought was risky to people, the more likely they were to believe there were "too many" alligators in residential areas.

Whether a respondent lived adjacent to freshwater was the most important factor in predicting whether they had ever complained about an alligator in a model with an overall accurate prediction rate of 79.5%. Experience, knowledge, beliefs a about what constitutes a nuisance alligator, personal risk perception, and whether they thought there were "too many" alligators in residential areas were other positive predictors of

whether a person had complained about an alligator. Having grown up in an area with wild alligators predicted a decreased likelihood of having complained. Interestingly, attitude was not a significant predictor of complaint status. However, the inclusion of other variables with which attitude was correlated may have obscured its effect.

Demographic Differences

Literature has shown that older individuals tend to have more negative views about wildlife (Krester et al. 2009; Kellert et al. 1996; Kellert 1996). Our results show that respondents over 70 years old had more negative attitudes about alligators than those between the ages of 30 and 59. However, in our study older respondents' attitudes did not significantly differ from those of younger respondents, whereas Kellert (1996) found young adults to have views which contrast with elders. It is not clear whether these differences reflect a decline in attitudes with age, or a cohort effect. For example, middle-aged individuals grew up during the rebound of alligator populations, thus their positive attitudes could be related to a view of the alligator as a symbol of successful conservation efforts.

When other variables were held constant, age was a significant predictor of personal risk perception but not in the direction expected; an increase in age actually predicted lower risk perception scores. However, an increase in age predicted higher likelihood of believing there were "too many" alligators in residential areas. Age was not a significant predictor of whether or not someone had complained about an alligator. These findings suggest that although age does affect alligator population preference, it does not do so via risk perception.

Risk perception literature has shown that men tend to perceive lower environmental risks than women (Bord & O'Connor 1997; Finucane et al. 2000; Kellert

& Berry 1987; Zinn & Pierce 2002). Hines and Scheaffer (1977) found that men in Florida “were 8 times more likely than women to regard large alligators in urban areas as only rarely dangerous.” Duda and colleagues (1996) found that men were more likely than women to think there were “not enough” alligators in Florida residential areas. Harvey and coworkers (2010) found that men had more positive attitudes toward alligators and were more likely to regard an increase in the alligator population on Sanibel Island, Florida as positive. This study further supports this gender discrepancy. Men in the general public group had more positive attitudes toward alligators, lower perceptions of personal risk, and were less likely to believe there were “too many” alligators in residential areas or that the presence of an alligator constituted a passive nuisance situation. However, when other factors were held constant, gender did not emerge as a significant predictor of personal risk perception, belief that there were “too many” alligators in residential areas, or whether an individual had filed a complaint, suggesting that the gender difference, though significant, is not as important as other factors to those measures.

Comparison with Past Alligator Opinion Surveys

Some of Floridians’ views about alligators seem to be quite stable. Hines and Scheaffer (1977) found that 92% of respondents believed that alligators had value. Our study found that 84% of the general public either “agree” or “strongly agree” with that statement. Methodological differences between the two studies preclude drawing too many conclusions from this information (Dillman & Christian 2005), but it is clear that Floridians still overwhelmingly believe alligators are “an important part of the Florida scene” (Hines & Scheaffer 1977). Opinions of alligator populations in non-residential areas seem relatively consistent with the 1996 study by Duda et al.; slightly fewer

people in 2009 people thought there were “not enough” or the “right amount” of alligators, and slightly more thought there were “too many” alligators or chose “don’t know.” Fewer people in 2009 than in 1996 thought there were the “right amount” of alligators in residential areas, but there was not a corresponding increase in the percentage of people who thought there were “too many” alligators. Instead, more people in 2009 than in 1996 responded that they “don’t know” about alligator populations in residential areas. Thus people in 2009 appeared less likely to have a strong opinion on the subject.

Management Recommendations

The general public cited TV nature shows, and secondarily news, as their most important sources of information about alligators. If FWC seeks to take a lead role in shaping alligator-related messaging to the public, staff experts should continue to take advantage of opportunities to work with nature shows and news outlets whenever possible. If obstacles to these collaborations exist, hosts or reporters will likely look elsewhere for “expert” opinions, potentially compromising consistency (or even accuracy) of available public information about alligators.

Public reliance on news as a major information source also provides managers the opportunity to tailor messaging based on current events. Gore and coworkers (2005) found that media coverage did not cause an appreciable increase in perceived risk from bears after a bear-related human fatality in the area; they hypothesized the reason was that coverage consistently stressed the rarity of such dangerous encounters. Managers should develop a sound bite that stresses the unlikelihood of the negative encounters with alligators if appropriate behaviors are followed, and include it consistently with public messages about alligators.

Gore and Knuth (2009) later found that a communication campaign's operating environment (i.e., external conditions) plays a critical role in the effort's effectiveness. This suggests an opportunity for FWC to be proactive in messaging whenever environmental or social conditions might generate an increase in public interest in alligators. For example, in addition to press releases about risk-reducing behavior in the spring (as alligator activity increases in many parts most of the state) or in response to high profile alligator bites to people or pets, consider press releases during droughts (when alligators may be concentrated in visible areas), or concurrent with alligator hunting announcements, for example.

Other information sources were rated as less important. The internet is a cost effective method of providing information (Smithem & Mazzotti 2008), but respondents learned little about alligators from this source, perhaps because the mean age for general public respondents was 56 years (thus most did not grow up using the internet as a reference). Schools were also rated as a relatively unimportant information source, perhaps because 68% of respondents did not grow up in a place with wild alligators. Nonetheless, finding ways to integrate information about alligators into the classroom can be invaluable to engender positive attitudes from children as they mature (Kidd & Kidd 1996).

Managers are becoming increasingly aware that a focus on changing human behavior can provide longer-term and less conflict ridden solutions than dealing with animals alone (Baruch-Mordo et al. 2009). Although one might expect people with outside pets to dislike alligators (which often prey on pets), those with outside pets actually had more positive attitudes about alligators than those without outside pets.

Although research in this area is somewhat limited, Bjerke et al. (2003) found that pet owners had more positive attitudes about urban wildlife than people without pets. Pet owners were also less likely to believe that the mere presence of an alligator constitutes a nuisance. However, alligators do pose a risk to pets that spend time close to or in the water, and people who complain about nuisance alligators often cite concern for pets as a reason they want an alligator removed (personal observation). Removing an alligator near a complainant's home might temporarily reduce risk to pets (i.e., because that specific alligator no longer poses a risk), but there is no guarantee another alligator is not present or will not move into the area. Also, alligator removal can foment conflict between the complainant and neighbors who do not want the alligator removed (personal observation). Our findings indicate that pet owners, because of their positive attitudes and their belief that an alligator's mere presence does not constitute a nuisance, may be receptive to information about how to keep their pets safe without removing alligators. Education efforts aimed at reducing conflict between people and alligators should stress the importance of behavior modification of people (e.g., not allowing pets near the water).

The general public agreed with FWC's current AMU management strategy, despite their limited awareness of the topic. Their responses to the "Active" nuisance behavior belief statements reflected that there are certain situations in which most people would consider an alligator to be a nuisance. However, their general disagreement with the "Passive" nuisance behavior belief statements showed that most Floridians do not consider the mere presence or normal behavior of an alligator to be a nuisance. They agreed with FWC's overall handling of nuisance alligators, but they did not support a

city or private landowner's ability to indiscriminately remove alligators from public waters. They agreed with FWC's current handling of small alligators, and they did not support the handling or killing of small alligators by on-site residents. However, they did support allowing residents to pay private trappers to relocate small alligators. FWC should evaluate the appropriateness and feasibility of allowing private wildlife trappers to relocate small alligators for a fee.

Conclusion

Stakeholders increasingly influence wildlife management decisions (Riley et al. 2002). While this may enhance acceptability of resulting decisions in some contexts (Guynn & Landry 1997), particularly active groups may over-influence policy in others (Baker & Fritsch 1997; Loyd & DeVore 2010). Managers should guard against generalizing views of a single vocal stakeholder group to the general public. Predator management in the western U. S. in the 20th century demonstrates the perils of that approach; hunters and ranchers persuaded the federal government to employ bounties, trapping, and poisoning to control predator populations, followed by a public backlash resulting in ballot initiatives and ultimately reduced management options (Torres et al. 1996; Treves et al. 2006; Treves 2008). Our study demonstrates that the views of a particular stakeholder group (in this case, nuisance alligator complainants) can vary in important ways from others.

Predator management requires striking a balance between animal conservation and human safety (Clark et al. 1995). Removing all risks from society is not possible, and attempting to do so would not only be prohibitively expensive (Slovic 1987) but could have other negative impacts, such as reduced biodiversity and public backlash as in the example of predator control in the western U. S.

FWC's current management strategies do appear to strike the proper balance with the public, who showed overall support for strategies on AMUs as well as many aspects of the nuisance alligator policy. Still, future efforts to encourage stakeholder participation should include outreach to the public at large, not just known constituents. If tools such as online surveys are used, respondents should be asked about their affiliation with stakeholder groups (i.e., alligator hunter, nuisance complainant, etc.), so that the managers can assess whether one group is over-represented. Formulating nuisance alligator policies based on input received largely from those with negative or fearful views about alligators could result in over-harvest of alligators from residential areas. Although this may seem acceptable to some (half the general public respondents who offered an opinion thought there were "too many" alligators in residential areas), the issue is not so straightforward. Homes are often adjacent to natural lakes and wetlands, and the public was largely not supportive of indiscriminate removal of alligators from public waters by either private landowners or municipalities. Also, the public had relatively positive attitudes toward alligators, and perceived relatively low risks from them. Substantial reduction of alligator populations in residential areas could trigger a backlash which limits options for management. Care must be taken to not allow "squeaky wheel" constituents to over-influence decisions.

APPENDIX A
THE ANNOUNCEMENT POSTCARD

In a few days you will receive in the mail a request to fill out a brief questionnaire for an important research project being conducted by the University of Florida and the Florida Fish and Wildlife Conservation Commission.

It concerns your opinions about alligators and their management in Florida.

The study is important because it will help the Fish and Wildlife Conservation Commission understand Floridians' beliefs about alligators and how to better educate people about alligators.

We hope that you will complete the questionnaire as soon as you receive it. Only with your help can our research be successful. Thank you for your time and consideration!

Sincerely,



Blair Hayman
Survey Director



APPENDIX B
THE FIRST COVER LETTER



Institute of Food and Agricultural Sciences
Fort Lauderdale Research and Education Center

3205 College Avenue
Fort Lauderdale, FL 33314
Telephone: 954-577-6300
Fax: 954-475-4125

Date, 2009

*Last Household
Street
City, FL zip*

The University of Florida and the Florida Fish and Wildlife Conservation Commission are conducting a survey of people to learn about their views concerning American alligators. We would like to find out your opinions about alligators in various settings. Your responses will help the commission decide how best to manage alligators in residential and non-residential places, and how to better educate Florida's citizens about alligators. The survey will take about 20 minutes to complete.

You are one of a small number of households randomly chosen to participate in this study. To ensure that the views of men and women are equally represented, we ask that the adult in your home who has had the most recent birthday completes the survey. Your answers will be kept confidential to the extent provided by law. No names or ID numbers will ever be associated with your answers. We will use your answers only in summary with answers of other respondents.

Your participation is voluntary. You do not have to answer any question that you do not wish to answer. We believe that there are no risks to you from participating in this study. There are also no direct benefits or compensation to you for participating. If you have questions about your rights as a research participant in this study, contact the UFIRB office, Box 112250, University of Florida, Gainesville, FL 32611-2250.

If you have questions about the survey, please call [REDACTED], or send an email to [REDACTED]. We have enclosed a postage paid envelope for you to mail your completed survey to us. Thank you so much for your help!

Sincerely,

A handwritten signature in blue ink that reads 'Blair Hayman'.

Blair Hayman
Fish and Wildlife Conservation Commission

A handwritten signature in blue ink that reads 'Frank Mazzotti'.

Frank Mazzotti
University of Florida

The Foundation for The Gator Nation
An Equal Opportunity Institution

APPENDIX C
THE REMINDER POSTCARD

A week ago you received a questionnaire seeking your views on alligators and their management in Florida. You were randomly selected from a list of Floridians.

If you have already completed the questionnaire, please accept our sincere thanks. If you haven't completed and mailed the questionnaire, please do so today. This survey was sent to only a small representative sample of households. Therefore, it is extremely important that your questionnaire be included. This will help ensure that the survey will accurately represent the views of all Floridians.

If by some chance you did not receive the questionnaire, or it got misplaced, please call or email me and I will get another copy in the mail to you today. If you have any questions about how to complete this survey, please feel free to call me.

Sincerely,



Blair Hayman
Survey Director



APPENDIX D
THE SECOND COVER LETTER



Institute of Food and Agricultural Sciences
Fort Lauderdale Research and Education Center

3205 College Avenue
Fort Lauderdale, FL 33314
Telephone: 954-577-6300
Fax: 954-475-4125

Date, 2009

Last Household
Street
City, FL zip

A couple of weeks ago, we sent you a survey asking about your opinions about alligators in Florida. As of today, however, we have not received your completed survey.

Many people have already responded. They described their thoughts about alligator management and the risk they believe alligators might pose to people in different settings. The results will be very useful to the Florida Fish and Wildlife Conservation Commission.

We are writing again because of the importance that your questionnaire has for helping to get accurate results. Although we sent questionnaires to people across Florida, we need to hear from nearly everyone in the sample to be sure that the results are truly representative. We ask that the adult in your home who has had the most recent birthday completes the survey.

Your participation is voluntary. The survey will take about 20 minutes to complete. You do not have to answer any question that you do not wish to answer. We believe that there are no risks to you from participating in this study. There are also no direct benefits or compensation to you for participating. If you have questions about your rights as a research participant in this study, contact the UFIRB office, Box 112250, University of Florida, Gainesville, FL 32611-2250.

We will keep your answers confidential to the extent provided by law. No names or ID numbers will ever be associated with your answers. We will use your answers only in summary with answers of other respondents.

If you have questions about the survey, please call [REDACTED] or send an email to [REDACTED]. We have enclosed a postage paid envelope for you to mail your completed survey to us. Thank you so much for your help!

Sincerely,

A handwritten signature in blue ink that reads 'Blair Hayman'.

Blair Hayman
Fish and Wildlife Conservation Commission

A handwritten signature in blue ink that reads 'Frank Mazzotti'.

Frank Mazzotti
University of Florida

The Foundation for The Gator Nation

An Equal Opportunity Institution

APPENDIX E
THE SELF-ADMINISTERED QUESTIONNAIRE

Alligators in Florida: A Survey of Your Views



University of Florida
Department of Wildlife Ecology and Conservation
110 Newins-Ziegler Hall
Gainesville, FL 32611-0430

Florida Fish and Wildlife Conservation Commission
Alligator Management Program
620 South Meridian Street
Tallahassee, FL 32399-1600



We hope that you will enjoy completing this survey about alligators in Florida, and we thank you for your assistance. First, we would like to ask you some questions about the types of experiences you have had with alligators.

1. Which of the following types of interactions with American alligators have you or members of your household experienced?

Check ALL that apply:

	Youself ▼	Others in your household ▼
Observed an alligator in the wild (anywhere other than captivity)	<input type="checkbox"/>	<input type="checkbox"/>
Read or heard of an alligator being killed by authorities	<input type="checkbox"/>	<input type="checkbox"/>
Had a pet injured or killed by an alligator	<input type="checkbox"/>	<input type="checkbox"/>
Had livestock injured or killed by an alligator	<input type="checkbox"/>	<input type="checkbox"/>
Have personally had a frightening encounter with an alligator	<input type="checkbox"/>	<input type="checkbox"/>
Have a friend or neighbor who had a frightening encounter with an alligator	<input type="checkbox"/>	<input type="checkbox"/>
Read or heard of other people being injured or killed by an alligator	<input type="checkbox"/>	<input type="checkbox"/>
Read or heard of pets being injured or killed by an alligator	<input type="checkbox"/>	<input type="checkbox"/>
Read or heard about livestock being injured or killed by an alligator	<input type="checkbox"/>	<input type="checkbox"/>

2. How much have you learned about alligators from each of the following sources?

<i>Check one answer for each item:</i>	-----Amount Learned-----				
	Almost nothing ▼	Little ▼	Some ▼	Much ▼	Almost everything ▼
From the internet	<input type="checkbox"/>				
From books	<input type="checkbox"/>				
From TV nature shows	<input type="checkbox"/>				
From newspapers or TV news shows	<input type="checkbox"/>				
From school / the classroom	<input type="checkbox"/>				
From personal outdoor experiences	<input type="checkbox"/>				
From interpreters at zoos, nature centers or eco-tours	<input type="checkbox"/>				
From other sources (<i>please specify</i>): _____	<input type="checkbox"/>				

Next we would like to ask about your knowledge of alligators.

Check the **BEST** answer:

3. Typically, American alligators are found in:
 - The Gulf of Mexico
 - The open ocean
 - Freshwater streams, lakes, and marshes
 - Brackish coastal waters
4. During the warm months, when are alligators most active?
 - In the morning
 - In the afternoon
 - In the evening and at night
 - Time of day does not affect alligator activity
5. What is the current status of the alligator population in FL?
 - Threatened with extinction
 - Stable but not common
 - Abundant
 - Overpopulated
6. To report a problem alligator, you should call:
 - Your city or county animal control
 - 911
 - Your local police or sheriff's non-emergency line
 - The FWC's Nuisance Alligator Hotline
7. What is the land speed of alligators when they pursue prey?
 - Less than 10 miles per hour
 - 10-20 miles per hour
 - More than 20 miles per hour
 - Alligators do not typically run after prey on land
8. Over the last 60 years, the rate of serious, unprovoked alligator bites to people (number of bites per million Florida residents) has:
 - Decreased
 - Remained about the same
 - Increased slightly
 - Increased greatly
9. Have you ever called to request that a problem alligator be removed?
 - Yes
 - No
10. Do you think information about alligators is readily available to you?
 - Yes
 - No
 - Don't know

11. Alligators eat mainly animals that are in the water or near the water's edge.

- True
- False

12. Alligators might be found anywhere there is standing freshwater in Florida.

- True
- False

13. Typically, alligators bite people only when they have been fed by people or when they are defending a nest or young.

- True
- False

14. Large alligators provide benefits to the ecosystem that are different from benefits provided by small alligators.

- True
- False

The following questions will help us understand your attitude toward alligators and the level of risk you perceive from alligators.

15. To what extent do you agree or disagree with each of the following statements?

	Disagree strongly ▼	Disagree ▼	Unsure ▼	Agree ▼	Agree strongly ▼
The presence of alligators in wetlands in <i>natural</i> areas is a sign of a healthy environment	<input type="checkbox"/>				
The presence of alligators in wetlands in <i>residential</i> areas is a sign of a healthy environment	<input type="checkbox"/>				
The presence of alligators in Florida increases my overall quality of life	<input type="checkbox"/>				
I believe that alligators have value	<input type="checkbox"/>				
Alligators could benefit the local economy by being a tourist attraction	<input type="checkbox"/>				
People who live on the water choose to accept some level of risk from alligators	<input type="checkbox"/>				
I enjoy viewing alligators in natural areas	<input type="checkbox"/>				
It is important to me that alligators live in natural areas in Florida	<input type="checkbox"/>				
It is important to me to be able to see large alligators in natural areas	<input type="checkbox"/>				

16. Do you live on or beside a lake, river, pond, or other wetland?

No *If no, please skip to question 17*

Yes *If yes, please check your agreement or disagreement with the following statements:*

	Disagree strongly ▼	Disagree ▼	Unsure ▼	Agree ▼	Agree strongly ▼
I enjoy viewing alligators from my home	<input type="checkbox"/>				
My neighbors appreciate having alligators in our neighborhood wetlands	<input type="checkbox"/>				
The presence of alligators near my home increases my overall quality of life	<input type="checkbox"/>				
If I saw an alligator near my home, I would probably want it removed	<input type="checkbox"/>				
The presence of alligators near my home decreases my property value	<input type="checkbox"/>				

17. My overall attitude toward alligators is:

Very negative
▼

Somewhat negative
▼

Neutral
▼

Somewhat positive
▼

Very positive
▼

18. At what size do you consider an alligator to be "large"?

1 Foot or less	2 Feet	3 Feet	4 Feet	5 Feet	6 Feet	7 Feet	8 Feet	9 Feet	10 Feet	11 Feet	12 Feet	13 Feet or more
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
<input type="checkbox"/>												

19. What is the *smallest* alligator that you believe presents a risk of serious injury to *people*?

1 Foot or less	2 Feet	3 Feet	4 Feet	5 Feet	6 Feet	7 Feet	8 Feet	9 Feet	10 Feet	11 Feet	12 Feet	13 Feet or more
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
<input type="checkbox"/>												

20. What is the *smallest* alligator that you believe presents a risk of serious injury to *pets*?

1 Foot or less	2 Feet	3 Feet	4 Feet	5 Feet	6 Feet	7 Feet	8 Feet	9 Feet	10 Feet	11 Feet	12 Feet	13 Feet or more
▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼
<input type="checkbox"/>												

21. To what extent do you believe that alligators pose a risk to:

	No or almost no risk ▼	Little risk ▼	Some risk ▼	Much risk ▼	Great risk ▼	Don't know/ not applicable ▼
You personally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your family members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your pets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others in your community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. Please indicate the level of risk from alligators you believe exists when:

	No or almost no risk ▼	Little risk ▼	Some risk ▼	Much risk ▼	Great risk ▼	Don't know/ not applicable ▼
Swimming in <i>designated</i> swimming areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swimming <i>outside of</i> designated swimming areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canoeing or kayaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boating (other than in a canoe or kayak)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. How much *control* do you think you personally have to *minimize* risks to yourself from alligators?

Very little	1	2	3	4	5	Great deal	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

24. How *easy* or *difficult* would it be for you to *minimize* your risk from alligators?

Very easy	1	2	3	4	5	Very difficult	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

25. Over the next five years, do you expect the risks that alligators pose to people in Florida to *decrease* or *increase*?

Decrease	1	2	3	4	5	Increase	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

26. Do you think you have much *choice* over *accepting* any risks from alligators?

Very little	1	2	3	4	5	Great deal	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

27. Are risks from alligators a *new* kind of risk for you, or one that's old and *familiar*?

Familiar	1	2	3	4	5	New	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

28. Do you think you would be *aware* if you were in a situation that put you at risk from alligators?

Very aware	1	2	3	4	5	Very unaware	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

29. Do you think the risk you face from alligators is the kind of risk that you could *learn to live* with or that you would *constantly worry* about?

Learn to live with	1	2	3	4	5	Constantly worry about	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

30. Are the risks from alligators in Florida *well understood* or *not well understood* by experts?

Well understood	1	2	3	4	5	Not well understood	Don't know
	<input type="checkbox"/>		<input type="checkbox"/>				

The next questions are designed to gauge your opinions about alligator populations and alligator management approaches by the Florida Fish and Wildlife Conservation Commission (FWC).

31.	Not enough alligators ▼	The right amount of alligators ▼	Too many alligators ▼	Don't Know ▼
In waters within <i>residential</i> areas in FL, are there...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In waters within <i>non-residential</i> areas in FL, are there...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Some lakes and wetlands with substantial alligator populations are managed by the FWC to allow permitted people to hunt adult alligators on those waters. These areas are called Alligator Management Units (AMUs). The FWC's goal is to limit alligator population growth on AMUs, without reducing the number of alligators to an unsustainable level. The FWC attempts to maintain an AMU between 25% above and 25% below the number of alligators that lived there before alligator hunting was reinstated in Florida.

	Not at all aware	Slightly aware	Somewhat aware	Very aware	Completely aware
	▼	▼	▼	▼	▼
32. Were you aware of FWC's strategy for maintaining alligator populations on AMUs?	<input type="checkbox"/>				

	Disagree strongly	Disagree	Neutral	Agree	Agree strongly
	▼	▼	▼	▼	▼
33. Do you agree or disagree with the management approach outlined above?	<input type="checkbox"/>				

34. If you think FWC should *change* its approach for managing alligators on AMUs, do you think FWC should: *Check the BEST answer*

- Allow more alligators to be harvested from AMUs
- Allow fewer alligators to be harvested from AMUs
- I don't know, but I think a special workshop should be held to formulate a new approach
- I don't know, and I don't have any suggestions
- I don't think the approach should change

The FWC's policy is that alligators can be considered a nuisance if they are **at least four feet in length and a real or perceived threat to people, pets or property**. When the FWC receives complaints about alligators which meet that policy, the alligators are usually harvested (killed) by a contracted professional alligator trapper. Products, such as meat and leather goods, are made from the alligators, which is how the trapper is compensated for this service. A very small number are sold alive to farms or exhibits; none are relocated back into the wild.

35.	Disagree strongly	Disagree	Neutral	Agree	Agree strongly
	▼	▼	▼	▼	▼
FWC's policy for handling nuisance alligators is appropriate	<input type="checkbox"/>				
A private community should have the right to remove all alligators from its property	<input type="checkbox"/>				
A large private landowner should have the right to remove all alligators from their property	<input type="checkbox"/>				
A private landowner adjacent to a public waterway should have the right to remove all alligators from the water near their property	<input type="checkbox"/>				
A city should have the right to remove all alligators from within its boundaries	<input type="checkbox"/>				

Currently, the FWC **does not** allow **small** alligators (less than four feet in length) to be harvested or relocated except in special circumstances, because the FWC does not consider small alligators to be a threat to people, pets or property in most instances.

36.	Disagree strongly	Disagree	Neutral	Agree	Agree strongly
FWC's policy for handling small nuisance alligators is appropriate	<input type="checkbox"/>				
If alligators don't pose a risk to people or pets, they should not be removed	<input type="checkbox"/>				
Residents should be allowed to relocate small alligators themselves	<input type="checkbox"/>				
Residents should be allowed to kill small alligators themselves	<input type="checkbox"/>				
Residents should be able to pay private nuisance wildlife trappers a fee to relocate small nuisance alligators	<input type="checkbox"/>				
Residents should be able to pay private nuisance wildlife trappers a fee to kill small nuisance alligators	<input type="checkbox"/>				

37. In your opinion, which of these situations do you believe makes an alligator a “nuisance”?

	Disagree strongly	Disagree	Neutral	Agree	Agree strongly
When any alligator is in view of people	<input type="checkbox"/>				
When a large alligator is in view of people	<input type="checkbox"/>				
When a person perceives an alligator as a threat	<input type="checkbox"/>				
When an alligator is lying on land at the water's edge	<input type="checkbox"/>				
When an alligator has been approached and hissed or snapped at that person	<input type="checkbox"/>				
When an alligator is known to have been fed by people	<input type="checkbox"/>				
When an alligator is interfering with a person fishing	<input type="checkbox"/>				
When an alligator has bitten a person	<input type="checkbox"/>				
When an alligator has bitten a pet	<input type="checkbox"/>				
Alligators are never a nuisance	<input type="checkbox"/>				

The next questions will help us compare your responses to others. Your answers are strictly confidential, and will never be associated with your name.

38. Which best describes the community where you live in Florida?

- Rural area (pop <2,500) Small town/small city Suburban area Urban area (pop >50,000)

39. Which best describes the community where you lived most of the time when you were growing up?

- Rural area (pop <2,500) Small town/small city Suburban area Urban area (pop >50,000)

40. Did the place where you grew up have wild alligators? Yes No

41. Do you recreate in or near fresh water in FL? Yes No

42. Are you a *permanent* Florida resident? Yes → for how many years?
 No

43. Are you a *seasonal* Florida resident? Yes → for how many years?
 No

If you are a *seasonal* Florida resident, where is your permanent residence?

state / province

country

44. What is your gender: Male Female

45. What is your age?

46. Are you Hispanic or Latino? Yes No

47. What is your race? *Check as applicable*

- American Indian or Alaskan native White
 Asian Other (please specify)
 Black or African American _____

48. What is your highest level of formal education? *Please check only ONE*

- | | |
|---|---|
| <input type="checkbox"/> Some high school or less | <input type="checkbox"/> Completed 2 year degree |
| <input type="checkbox"/> High school diploma or GED | <input type="checkbox"/> Completed 4 year degree (BA or BS) |
| <input type="checkbox"/> Some college but no degree | <input type="checkbox"/> Graduate school or professional school |

49. How many children currently live in your household?

50. If none, do children under the age of 18 regularly visit your home? Yes No

51. Do you have any pets that spend time outside? Yes No

If yes, please list the number and type of pets:

52. Are you retired? Yes No

53. What types of local organizations do you belong to?

Check ALL that apply

- | | | |
|--|---------------------------------------|---|
| <input type="checkbox"/> Civic or Social | <input type="checkbox"/> Conservation | <input type="checkbox"/> Firearm enthusiast |
| <input type="checkbox"/> Religious | <input type="checkbox"/> School based | |
| <input type="checkbox"/> Environmental | <input type="checkbox"/> Hunting | |

54. Please indicate your household annual income before taxes last year.

Please check only ONE

- | | |
|--|---|
| <input type="checkbox"/> \$20,000 or less | <input type="checkbox"/> \$80,001 - \$100,000 |
| <input type="checkbox"/> \$20,001 - \$40,000 | <input type="checkbox"/> \$100,001-\$120,000 |
| <input type="checkbox"/> \$40,001 - \$60,000 | <input type="checkbox"/> \$120,001-\$140,000 |
| <input type="checkbox"/> \$60,001 - \$80,000 | <input type="checkbox"/> \$140,001 or more |

Thanks so very much for your time and opinions!

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BIOGRAPHICAL SKETCH

Blair Hayman was born in Albemarle, North Carolina in 1978. In 1991, she moved with her family to Leesburg, Florida where she graduated from Leesburg High School in 1996. From there she went to Tulane University in New Orleans, Louisiana, where she earned a Bachelor of Science with a double major in ecology and evolutionary biology and environmental studies in 2000. After graduating from college, she moved to California, where she mist-netted and banded songbirds as an intern and later field biologist for the Institute for Bird Populations. She also worked as a scientific aide for the California Department of Fish and Game, dealing primarily with mule deer, elk, waterfowl and shorebirds. In 2004, she returned to Florida to accept a position with the Florida Fish and Wildlife Conservation Commission's Alligator Management Program. From 2005 to 2010, she served as the Assistant Coordinator of the Statewide Nuisance Alligator Program. In 2007, she enrolled at the University of Florida to pursue a Master of Science in the Department of Wildlife Ecology and Conservation.