ORIGINAL

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
DEP15540	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
CHUCK BOWMAN
304-558-2157

VENDOR
*818132926 540-432-1888
RESPONSIVE MANAGEMENT
130 FRANKLIN STREET

HARRISONBURG VA 22801

SHIP TO
ENVIRONMENTAL PROTECTION,
DEPARTMENT OF
DIV OF WATER AND WASTE MGT
601 57TH STREET SE
CHARLESTON, WV
25304 304-926-0499

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/22/2011				

BID OPENING DATE: 09/20/2011 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		961-60	$40,000.00	$40,000.00

PUBLIC OPINION SURVEY SERVICES

THE WEST VIRGINIA PURCHASING DIVISION, FOR THE AGENCY, THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, IS SOLICITING BIDS FROM RESPONSIBLE VENDORS TO DESIGN, CONDUCT, ANALYZE AND REPORT THE RESULTS OF A MAJOR TELEPHONE SURVEY OF WEST VIRGINIA RESIDENTS RELATING TO THE EXTENT OF ALGAE GROWTH THAT IMPAIRS RECREATIONAL USE OPPORTUNITIES IN WEST VIRGINIA PER THE ATTACHED SPECIFICATIONS.

TECHNICAL QUESTIONS WILL BE ACCEPTED BY THE BUYER, CHUCK BOWMAN, UNTIL 5:00 PM ON FRIDAY, SEPTEMBER 9, 2011. QUESTIONS MUST BE SUBMITTED IN WRITING VIA FAX TO: 304.558.4115
OR BY E-MAIL
TO: CHARLES.A.BOWMANJR@WV GOV

WRITTEN SUBMITTED QUESTION REQUESTS MUST IDENTIFY THE RFQ# AND CONTAIN VENDOR CONTACT INFORMATION IN CASE THE BUYER REQUIRES CLARIFICATION.

THE PURCHASING DIVISION IS NOT RESPONSIBLE FOR FAILED OR INCOMPLETE TRANSMISSIONS. QUESTIONS RECEIVED AFTER THE 09/09/11, 5:00 PM DEADLINE MAY OR MAY NOT BE CONSIDERED AT THE DESCRETION OF THE PURCHASING DIRECTOR.

BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT WITHOUT FURTHER ORDER.

RECEIVED
2011 SEP 20 A 10:24
PURCHASING DIVISION
CHARLESTON, WV

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [signature] TELEPHONE 540.432.1888 DATE September 19, 2011

TITLE Executive Director FEIN 54.164.2830 ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
DEP15540	2

ADDRESS CORRESPONDENCE TO ATTENTION OF:
CHUCK BOWMAN
304-558-2157

VENDOR
*818132926 540-432-1888
RESPONSIVE MANAGEMENT
130 FRANKLIN STREET

HARRISONBURG VA 22801

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ENVIRONMENTAL PROTECTION,
DEPARTMENT OF
DIV OF WATER AND WASTE MGT
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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/22/2011				

BID OPENING DATE: 09/20/2011 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

NOTICE

A SIGNED BID MUST BE SUBMITTED TO:

DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
BUILDING 15
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25305-0130

THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:

SEALED BID

BUYER: CB-23

RFQ. NO.: DEP15540

BID OPENING DATE: 09/20/2011

BID OPENING TIME: 1:30 PM

PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:

540-432-1892

CONTACT PERSON (PLEASE PRINT CLEARLY):

Mark Damian Duda, Executive Director

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
[signature]	540.432.1888	September 19, 2011

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Executive Director	54-164-2830	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

DEP15540
BID SCHEDULE

ITEM NO.	QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
1	1 LS	Telephone Survey	$40,000	$40,000
		TOTAL	$ 40,000.00	
Authorized Signature: [signature]			Date: September 19, 2011	

RFQ No. DEP15540

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

West Virginia Code §5A-3-10a states: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate

DEFINITIONS:
"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, Limited Liability Company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

EXCEPTION: The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

Under penalty of law for false swearing (*West Virginia Code* §61-5-3), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

WITNESS THE FOLLOWING SIGNATURE

Vendor's Name: Responsive Management

Authorized Signature: [signature] Date: September 19, 2011

State of Virginia

County of Rockingham, to-wit:

Taken, subscribed, and sworn to before me this 19th day of September 2011

My Commission expires November 30, 2013

AFFIX SEAL HERE

NOTORY PUBLIC Alyson J. Lanier

Registration NO. 349115

Responsive Management

September 15, 2011

Mr. Charles Bowman
Department of Administration
Purchasing Division
Building 15
2019 Washington Street, East
Charleston, WV 25305-0130

Dear Mr. Bowman:

This proposal is being submitted in response to Request for Quotation (RFQ) #DEP15540, issued by West Virginia Department of Environmental Protection (DEP), to design and administer a public opinion survey to assess statewide public opinion on algae levels and its impact on public use of West Virginia waters. Responsive Management would very much appreciate the opportunity to work with DEP on a study designed to quantify residents' attitudes toward filamentous algae and/or rooted aquatic vegetation, to identify the public threshold for algae levels in West Virginia waters, and to better understand how algae levels impact public participation in aquatic recreational opportunities.

Responsive Management was established 21 years ago to help natural/aquatic resource, environmental, and outdoor recreation agencies and organizations better understand and work with their constituents, customers, and the public. Specializing in research for natural/aquatic resource, environmental, and outdoor recreation agencies, Responsive Management's professional associates have conducted more than 500 telephone surveys, mail surveys, focus groups, and in-person interviews exclusively on natural/aquatic resource, environmental, and outdoor recreation issues, including studies on water quality, coastal and wetlands restoration, fish and wildlife management, and habitat conservation.

Further, Responsive Management also has a longstanding relationship with the State of West Virginia. In fact, Responsive Management has conducted several major studies for or in the state. Most recently, Responsive Management was awarded a project with the West Virginia Division of Natural Resources to conduct a telephone survey of hunters in Hampshire County, West Virginia to quantitatively assess their opinions on and attitudes toward Chronic Wasting Disease (CWD) and the impact of restrictions and regulations on their hunting participation. Other projects include a study to determine West Virginia residents' opinions on black bears, black bear management, and black bear hunting; a telephone survey of West Virginia hunters was conducted to assess their opinions on issues related to deer, the deer hunting season, and hunter access to private lands; and a telephone survey of West Virginia rural landowners to assess their opinions on issues related to hunter access to private lands.

I believe our prior experience, exceptional customer service, and high level of credibility will prove a great asset for the successful completion of this project.

130 Franklin Street ■ Harrisonburg, VA 22801 ■ Phone 540-432-1888 ■ Fax 540-432-1892
www.responsivemanagement.com

Experience

No other firm has as much experience and working knowledge of conducting survey research measuring public opinions on and attitudes toward natural/aquatic resource, environmental, and outdoor recreation issues, including water quality issues. In fact, Responsive Management completed a very similar and complex project for the Ohio River Valley Water Sanitation Commission (ORSANCO). The purpose of this study was to provide baseline data on how many people from the point of the river's primary source of confluence (Pittsburgh, Pennsylvania) to its point of discharge (Cairo, Illinois) use the Ohio River for contact recreation, how frequently and when the Ohio River is used for contact recreation, site-specific frequency use, and site-specific Ohio River fish consumption rates.

For this project, Responsive Management conducted on-site intercept surveys and a telephone survey in eight states bordering the Ohio River (including West Virginia) to obtain in-depth understanding of factors related to contact recreational use of the Ohio River and fish consumption. Activities examined included power boating (other than personal watercraft), operating a personal watercraft, sailing, canoeing, kayaking, waterskiing or wakeboarding, tubing, swimming, diving, wading, and fishing. This project required several critical deadlines and cooperation with the Environmental Protection Agency (EPA) on survey design and development. The findings from this study helped the ORSANCO quantify current contact recreational use for various segments of the Ohio River and also assisted in the development of appropriate recreational use provisions and human health ambient water quality criteria for fish consumption.

Similarly, as part of a larger study of West Virginia residents' attitudes toward wildlife, Responsive Management also surveyed residents to determine their participation in fishing activities in West Virginia, their consumption of fish caught in West Virginia, and their attitudes toward fish consumption advisories. As another example, Responsive Management conducted a survey to determine the opinions of Maryland residents regarding the Chesapeake Bay and its resources. *Opinions of Maryland Residents Regarding the Chesapeake Bay and Bay Restoration Efforts* included a telephone survey of Maryland residents to assess participation and interest in Chesapeake Bay-related activities, to determine residents' ratings of the health and quality of Bay resources, and to identify perceived threats to the Bay. Responsive Management also completed a major study for the American Museum of Natural History to determine public opinion on and knowledge of water-related issues. For this project, Responsive Management conducted a nationwide survey of U.S. residents to determine public knowledge of water pollution and water protection attitudes; to identify areas of importance and concern by exploring public attitudes toward environmental issues, water, the ocean, and water resources; and to assess support for efforts to protect water resources. Findings from this study were used to develop the American Museum of Natural History's 2008 exhibition on water resources and water protection.

Responsive Management completed a study for the Georgia Department of Natural Resources, Pollution Prevention Assistance Division to better understand residents' attitudes toward and opinions on water resource issues in Georgia, their willingness to participate in water conservation measures, and the educational messages to which the Georgia public will respond in a statewide water conservation campaign. In Delaware, Responsive Management conducted a study for the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess Delaware residents' attitudes toward the environment and water quality issues, as well as their behaviors that affect water quality. Because Responsive Management has completed numerous studies concerning public opinion on aquatic resources and water quality issues, it has immediate access to these sources as well as comparable studies completed in other states; this access, combined with additional research, will prove invaluable for offering a larger context for study results, for understanding trends, and for ensuring the most comprehensive, accurate statistics for the Department.

Customer Service
Responsive Management works exclusively with natural/aquatic resource, environmental, and outdoor recreation agencies and organizations and has a 21-year track record of high customer satisfaction. The following are client comments regarding Responsive Management's work:

> *"His work demonstrates the highest standards of professionalism and the volume of work is truly prolific. Responsive Management has become one of the foremost and highly respected survey and research companies in the United States with respect to fisheries, wildlife, natural resources and outdoor recreation . . . . The quality of work directed by Mark Damian Duda has become a benchmark of comparison for others doing similar work in the field . . . ."*
> –Bruce Lemmert, President, Virginia Wildlife Society

> *"In addition to an impeccable research record with numerous wildlife management agencies, including our own, Responsive Management has a history of thorough data collection and analysis, the ability to maintain a research schedule and budget, as well as the ability to consistently produce legally and statistically defensible research documents."*
> –Wyoming Game and Fish Department

In the completion of all studies, Responsive Management provides thorough data analysis that will be displayed graphically in an easily understandable format. Responsive Management's experience conducting similar studies using scientifically sound research means that you can rest assured that your study will be completed both accurately and promptly.

Credibility and Proven Record
Responsive Management has been conducting textbook-quality research for natural/aquatic resource, environmental, and outdoor recreation organizations for 21 years. Many firms do not employ quality methodology and cut corners to increase profits; Responsive Management does not cut corners. When comparing firms, compare and contrast methodology, quality control, experience, and credibility. The more you examine its methods, the more you will see the methodologies Responsive Management uses are of the highest quality.

Responsive Management's research has been upheld in U.S. District Courts, used in peer-reviewed journals, and presented at major natural/aquatic resource conferences across the world. Its research has been featured in many of the nation's top media, including *Newsweek*, *The New York Times*, *The Wall Street Journal*, CNN, and on the front pages of *The Washington Post* and *USA Today*. For more information, please visit Responsive Management's website, www.responsivemanagement.com, which provides extensive information about its research, methodologies, and qualifications.

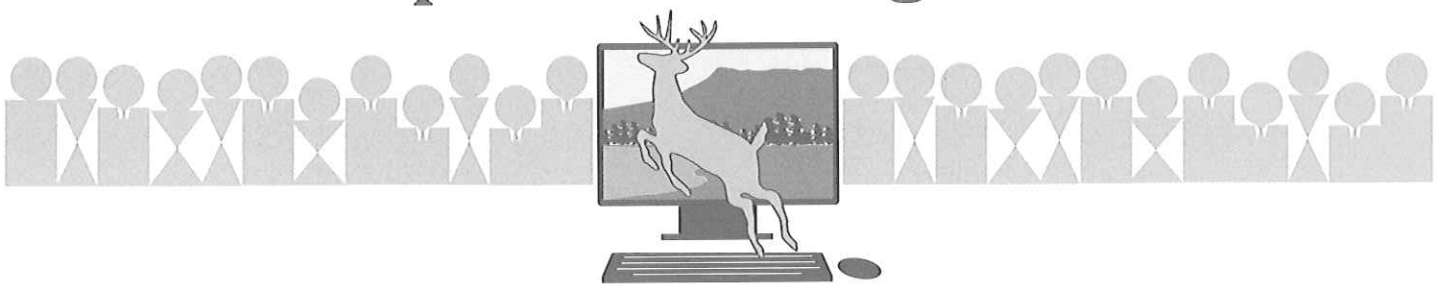
Through its dedication and commitment to excellence, Responsive Management can ensure the completion of a timely and quality study. Thank you for considering Responsive Management to conduct a study to assess statewide public opinion on algae levels and its impact on public use of West Virginia waters. I look forward to an opportunity to work with you.

Sincerely,

Mark Damian Duda

Mark Damian Duda, Executive Director
Responsive Management
130 Franklin Street
Harrisonburg, VA 22801
540-432-1888 (phone) / 540-432-1892 (fax)
www.responsivemanagement.com

Responsive Management



2011 WEST VIRGINIA ALGAE DESIGNATED USE IMPAIRMENT STUDY: UNDERSTANDING RESIDENTS' OPINIONS ON ALGAE LEVELS AND ITS IMPACT ON PUBLIC USE OF WEST VIRGINIA WATERS

Proposal for Survey Research Services for the West Virginia Department of Environmental Protection

Request for Proposal #DEP15540

Submitted by Responsive Management

September 2011

130 Franklin Street ■ Harrisonburg, VA 22801 ■ Phone 540-432-1888 ■ Fax 540-432-1892
www.responsivemanagement.com

"I regard Mark Damian Duda as an exceptional blend of intelligence, resourcefulness and professional competence. His leadership of the Responsive Management program has been distinguished and innovative . . . . Under his guidance, Responsive Management has been an outstanding source of information, ideas, and techniques helping to foster important and needed change."

–Dr. Steve Kellert, Professor, Yale University

"Responsive Management provided extraordinary services to my research project, which involved a large-scale telephone survey about cultural diversity and attitudes toward marine animals in Los Angeles. This was a challenging project, involving a lengthy survey that needed to be translated into several languages, and required a complex sampling strategy. Mark provided invaluable guidance in refining my survey instrument, structuring the sampling design, and working out the survey's logistics. And his friendly, knowledgeable and professional staff worked closely with me before, during and after the survey was completed. I would recommend Responsive Management to anyone planning a survey or focus group about wildlife and wildlife management."

–Dr. Jennifer Wolch, Professor, University of Southern California

"Mark Duda, Executive Director of RM, has worked with the Florida Wildlife Federation on a number of projects and was our Conservation Educator of the Year for his work in applying an understanding of people to wildlife issues. I highly recommend his and Responsive Management's abilities for work you have involving your constituency and wildlife issues, training workshops for your employees, or public opinion/attitude surveys."

–Manley K. Fuller III, President, Florida Wildlife Federation

"On behalf of Ducks Unlimited, I wish to thank you and your team at Responsive Management for your outstanding work . . . . You and your staff were pleasant, easy to work with, and very professional . . . . The questions and analysis were right on target to address important issues in habitat conservation."

–James K. Ringelman, Director of Conservation Programs, Ducks Unlimited Inc.

"Responsive Management is a terrific, long overdue marketing analysis tool that will enable natural resource organizations to broaden their focus and to increase their understanding of the diverse clientele groups they serve. A contemporary business approach by these people-oriented agencies will increase their effectiveness and efficiency in addressing the needs of their customers."

–Dr. Joe Schaefer, Professor, University of Florida

WHY RESPONSIVE MANAGEMENT?

✓ **Credibility.** Responsive Management is a leader in the public opinion and market research field and has conducted human dimensions research for almost every state natural/aquatic resource, environmental, and/or outdoor recreation agency and many of the nation's top universities. Universities include: Auburn University, Colorado State University, Duke University, George Mason University, Michigan State University, Mississippi State University, North Carolina State University, Oregon State University, Penn State University, Rutgers University, Texas Tech University, University of California-Davis, University of Florida, University of Montana, University of New Hampshire, University of Southern California, Virginia Tech, and West Virginia University. For this reason, Responsive Management offers a unique contextual framework and foundation of knowledge for better understanding study findings. Responsive Management has immediate access to national results and comparable studies completed in other states; this access, combined with additional research, will prove invaluable in providing the most comprehensive, accurate statistics and analysis for DEP.

✓ **Experience.** Responsive Management is an internationally recognized public opinion and market research firm specializing in natural/aquatic resource, environmental, and outdoor recreation issues. For 21 consecutive years, Responsive Management has been conducting survey research on public attitudes toward natural/aquatic resource, environmental, and outdoor recreation issues, including studies on water quality, coastal and wetlands restoration, marine wildlife and habitat conservation, climate change, and wildlife and endangered species management. As well, Responsive Management has been involved at the highest levels with numerous national and statewide communications, outreach, and educational programs, from recommendations, planning, and development to implementation and evaluation. Responsive Management has incorporated its research into numerous real-world communication/marketing strategies to achieve actionable results.

✓ **Facility and Expert Personnel.** Responsive Management maintains its own in-house, full-service telephone and mail survey research center, which is staffed with professional interviewers who are trained according to the standards established by the Council of American Survey Research Organizations, assuring rigorous oversight and strict quality control. Responsive Management consists of an Executive Director, Statisticians, Survey Center Managers, Qualitative Research Associates, Quantitative Research Associates, a Business Manager, and 50 professional interviewers.

✓ **Service.** Responsive Management will work directly with DEP to ensure that survey design and methodology meet the exact specifications, goals, and objectives of the study. Responsive Management will assist DEP in selecting the proper study design option to ensure a comprehensive review of best practices and recommendations, to maximize speed and accuracy, and to conduct a thorough study while minimizing costs. DEP will be directly involved throughout the entire study design process, and final approval of the methodology will be obtained from DEP prior to implementation.

✓ **Value.** Responsive Management offers the most cost-effective approach to study design without sacrificing the validity and reliability of study results. Responsive Management will work closely with DEP to determine the best methodology to ensure that all study objectives are achieved, that statistically valid data are obtained, and that scientifically defensible results are produced at a reasonable cost. Responsive Management is able to offer affordable survey design and completion because its work is completed in-house, eliminating the need for additional outsourcing, subcontracting expenses, or high university overhead charges.

TABLE OF CONTENTS

"On behalf of the entire staff at The Conservation Fund, I would like to extend my sincerest thanks to you and your wonderful team at Responsive Management for the work on our survey. Your professionalism and diligent work was truly outstanding. Your brilliant team's expertise shined through in every step of the survey process, delighting not only myself, but also our staff and in turn our partners.

"I personally sincerely appreciated working with you and your impressive staff. There were many late nights when I was thankful to be working with such a competent and hard-working team. My expectations were considerably surpassed. The meaningful work that you and your staff put in to the survey allowed for our July Real Estate Summit to be a great success. In addition, your presentation at the Summit allowed for all of our staff to properly understand the results and how we need to interpret our partners' needs in order to plan for the future of The Conservation Fund. Your candor, critical thoughts, and vast expertise have allowed for us to move forward on a firm foundation.

"Thank you again and the best wishes to you and your team at Responsive Management for the future."

–Meg McCants, The Conservation Fund

PURPOSE AND SCOPE

This proposal outlines the specific services, methodology, costs, and a timeline in response to Request for Quotation (RFQ) #DEP15540 issued by West Virginia Department of Environmental Protection (DEP) to design and administer a public opinion survey to assess statewide public opinion on algae levels and its impact on public use of West Virginia waters.

The West Virginia Department of Environmental Protection (DEP) oversees the Water Quality Standards Program, which is designed to monitor and control water quality as mandated by the Clean Water Act. Water Quality Standards (Standards) form the legal basis for controls on the amount of pollution entering West Virginia waters from sources such as industrial facilities, wastewater treatment plants and storm sewers. Standards are also the technical basis for reducing runoff from rural and urban areas. A standard can consist of either numeric or narrative limits for a specific physical or chemical parameter. Ultimately, a water quality standard is developed to help protect and maintain water quality necessary to meet and maintain designated or assigned uses, such as swimming, recreation, public water supply, and/or aquatic life.

As part of its efforts to develop Standards regarding filamentous algae and/or rooted aquatic vegetation in streams and waterways, DEP is seeking a statewide study to identify the public's threshold for algae levels in West Virginia waters. The purpose of this study is to determine what levels of algae impair an individual's ability to recreate in West Virginia waters, including swimming, fishing, and boating. Specifically, this study will be designed to quantify residents' attitudes toward filamentous algae and/or rooted aquatic vegetation, to identify the public threshold for algae levels in West Virginia waters, and to better understand how algae levels impact public participation in aquatic recreational opportunities. To accomplish the objectives of this study, Responsive Management proposes the following approach, further detailed in the section of this proposal titled "Proposed Methodology and Overall Approach":

Task 1. Design and Pretest Survey. Responsive Management will work directly with DEP to select images and develop a survey to assess public opinion on algae levels in West Virginia waters. Responsive Management will work collaboratively with DEP to develop the survey and to recommend the best methodology, taking into account that visual images of filamentous algae and/or rooted aquatic vegetation will need to be distributed and viewed at the time of survey implementation. Responsive Management will pretest the survey instrument and make any necessary revisions for logic, wording, and clarification.

Task 2. Develop Sample Frame. Responsive Management statisticians will develop a statistically valid sample size from among the general population in West Virginia. The sample size will be designed not only to provide representative results at the statewide level but also to provide comparative results with an oversampling of populations most likely to recreate in state waters (i.e., those living in border counties or within a certain distance of specific rivers and/or waters) for comparison with results from the general population statewide. Responsive Management proposes to obtain 400 completed interviews with West Virginia residents, 18 years old and older. The sample size will be designed to ensure a 95% confidence level and a sampling error

that will not exceed plus or minus 4.90 percentage points for the total population, age 18 years old and older.[1]

Task 3. Distribute Images and Administer Survey. Responsive Management will work with DEP to determine the best way to distribute visual images of filamentous algae and/or rooted aquatic vegetation to survey respondents. Responsive Management has conducted several studies in which visual images were distributed and has distributed images via Internet as well as through postal mail. Responsive Management recommends a multi-modal approach to image distribution. In this case, respondents will be contacted by telephone initially and provided an online link to the visual images for the study. The respondent can subsequently complete the interview over the phone with access to the images or schedule an appointment to complete the telephone survey at a later date and time more convenient for them. If the respondent does not have Internet access, they will be mailed a packet that includes the images and scheduled for a telephone interview upon receipt of the images packet.

Task 4. Analyze Survey Results. Responsive Management will analyze the data and submit a comprehensive final report that will identify public thresholds for algae in West Virginia waters. The final report will provide a snapshot of public use of West Virginia waters, public opinion on water quality and water quality issues, public response to visual images of algae, and public opinion on how algae levels impair their ability to recreate in West Virginia waters. Responsive Management will fully analyze data and interpret findings. All data collected will be processed and analyzed using SPSS for Windows software and proprietary software developed by Responsive Management. Data processing and analysis will include coding, preparation of straight tabulations, computer processing with crosstabulations, and preparation of study printouts.

Task 5. Prepare and Submit Final Report. Responsive Management will create graphs to correspond to each question for easy review and visual display of survey data and will prepare a final report on the results of the study. The final report will include an analysis of overall findings, regional breakdowns, extensive crosstabulations, and nonparametric analysis.

"Mark Damian Duda is one of the nation's foremost researchers on public attitudes toward the environment."
–Associated Press

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[1] The sampling error is based on population estimates for West Virginia residents 18 years and older, totaling 1,465,576. Responsive Management proposes to complete 400 interviews with the general population to achieve a sampling error of +/- 4.90%. (U.S. Census Bureau, 2010.)

PROPOSED METHODOLOGY AND OVERALL APPROACH

The proposed telephone survey of West Virginia residents will be designed to quantify residents' attitudes toward filamentous algae and/or rooted aquatic vegetation, to identify the public threshold for algae levels in West Virginia waters, and to better understand how algae levels impact public participation in aquatic recreational opportunities. Responsive Management will provide full consultation and facilitate all phases of the survey, including but not limited to, designing the survey instrument, pretesting the survey, meeting with DEP staff as necessary (via telephone conference call), coding the survey for use with the computer-assisted telephone interviewing system, advising DEP regarding the most effective method for distributing visual images, distributing visual images, training and supervising interviewers, collecting data, conducting statistical analysis, interpreting results, preparing a final written report, and providing all other administrative activities necessary to successfully complete the project.

METHODOLOGY RECOMMENDATION

Measuring public opinion and participation using survey research methodology can be accomplished using a variety of techniques. The selection of a method of data collection always depends upon the survey population. Responsive Management will use its technology, expertise, and sound methodologies to assist the Department in better understanding West Virginians and their attitudes. Responsive Management has an in-house, multi-modal research center and has the experience and facilities for the creation, implementation, analysis, and interpretation of survey research implemented through a variety of methods, including mail surveys, telephone surveys, and Web-based surveys. Successful research studies depend largely on the selection of an appropriate data collection method, and each method of survey administration has unique advantages and disadvantages. Responsive Management will assist the Department in selecting the proper method of administration to yield the greatest response rate; maximize the speed and accuracy of data collection, cost effectiveness, and timeliness; and reduce respondent burden.

For this project, Responsive Management proposes to conduct a telephone survey and use a mail or Web-based component *only* for the distribution of images related to filamentous algae. In other words, a mail or Web-based component will be utilized for the distribution of visual images; however, Responsive Management recommends that the actual survey be conducted by telephone because this is the most reliable and statistically valid method for obtaining results that are representative of the general population. A complete discussion regarding the differences between telephone surveys and mail or Web-based surveys follows.

Although Web-based surveys are sometimes chosen because they are considered more cost-effective, Web-based surveys must be approached with caution. As research has shown, Web-based surveys tend to "attract younger, predominately Anglo respondents, and may suffer from higher non-response rates, more item omissions, and more negatively-valenced responses than telephone surveys."[2] Although Web-based surveys have proven effective in public opinion research on closed populations, such as government employees, agency employees, community and civic leaders, and professionals who typically have access to the Internet, Web-based

[2] Roster, C., Rogers, R., Albaum, G., & Klein, D. (2003). "Application of a Paradigm to Compare Sample Data: Web vs. Telephone Survey Results," in *Proceedings of Western Decision Sciences Institute.* Kauai, HI.

surveys do not accurately reflect the opinions and attitudes of the general population because many households do not have access to computers or email.[3]

In fact, Web-based surveys often yield inaccurate, unreliable, and biased results due to problems with sample validity, non-response bias, stakeholder bias, and unverified respondents. For example, Web-based surveys are not representative of various populations, including the general population, hunters, anglers, and other outdoor recreationists because a "master list" of email addresses for these groups does not exist, meaning that it is not possible to ensure that each member of the population has an equal chance of being selected to participate in the study. For a complete discussion on the differences between telephone and Web-based surveys, please see Responsive Management's peer-reviewed article: *The Fallacy of Online Surveys: No Data Are Better Than Bad Data.*[4] As shown in this article (see Appendix A), Responsive Management completed three separate projects that show that Web-based surveys should be considered with caution. These studies suggest that Web-based surveys are not representative, yield biased results, and lead to invalid conclusions.

Similarly, mail surveys have also proven biased for outdoor recreationists. For example, recreationists who are interested in the issue are more likely to respond, resulting in skewed results. In other words, respondents with a vested interest in the survey will choose to complete the survey, while other individuals may not and researchers have little "power of persuasion" to encourage a completed survey because there is no direct interaction between the respondent and the researcher. Additionally, in mail surveys, it is common for respondents to not follow skip patterns and fill in mail surveys incorrectly or write illegibly, which may result in inaccurate data. A telephone survey allows the interviewer to clarify or probe further when necessary and prevents mistakes as a result of illegible or misinterpreted handwriting on a mail survey.

Despite a rise in technology over the past few years, telephone surveys are still the most accurate and reliable method of obtaining data that is representative of the general population and core population groups. Responsive Management recommends a telephone survey in combination with a mail or Web-based component that allows access to visual images of algae. A telephone survey minimizes respondent burden, yields higher response rates, increases the representativeness of the sample, and reduces bias. Further, Responsive Management obtains cellular telephone numbers to reach elusive populations and further ensure the representativeness of the sample population. Responsive Management recommends a telephone (landline and cellular) survey of West Virginia residents with mail or Web-based component to be used for the distribution of images related to filamentous algae (rather than an *exclusively* mail or Web-based survey) for several primary reasons:

1. **Increased response rate and reduced bias.** Due to the near universality of telephone ownership and minimized respondent burden, surveys conducted via telephone (landline

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[3] Vaske, J. (2008). *Survey research and analysis: Application in parks, recreation and human dimensions.* State College, PA: Venture Publishing.

4 Duda, M. D., & Nobile, J. L. (2010). "The Fallacy of Online Surveys: No Data Are Better Than Bad Data." Human Dimensions of Wildlife, 15(1), 55-64.

and cellular) yield higher response rates, increase the representativeness of the sample, and reduce bias.

2. **Improved speed and accuracy of data collection**. Telephone surveys are typically the fastest and most accurate data collection method, allowing for increased control over data collection. A telephone (landline and cellular) survey will offer immediate access to responses for preliminary findings, and responses will be entered into the computer-assisted telephone interviewing (CATI) system as interviews are conducted, thereby eliminating any potential subsequent data entry errors.

3. **Cost-effective and eco-friendly**. Telephone surveys are both cost effective and eco-friendly; telephone surveys minimize paperwork, mailing costs, and waste.

"Responsive Management provided extraordinary services to my research project, which involved a large-scale telephone survey about cultural diversity and attitudes toward marine animals in Los Angeles. This was a challenging project, involving a lengthy survey that needed to be translated into several languages, and required a complex sampling strategy. Mark provided invaluable guidance in refining my survey instrument, structuring the sampling design, and working out the survey's logistics. And his friendly, knowledgeable and professional staff worked closely with me before, during and after the survey was completed. I would recommend Responsive Management to anyone planning a survey or focus group about wildlife and wildlife management."

–Dr. Jennifer Wolch, Professor, University of Southern California

"In addition to an impeccable research record with numerous wildlife management agencies, including our own, Responsive Management has a history of thorough data collection and analysis, the ability to maintain a research schedule and budget, as well as the ability to consistently produce legally and statistically defensible research documents."

–Wyoming Game and Fish Department

"His firm is recognized as the leading social science research firm in the nation that works in the natural resources arena."

–Dr. Steve L. McMullin, PhD, Associate Department Head and Associate Professor of Fisheries and Wildlife, Virginia Tech

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TASK 1: DESIGN AND PRETEST SURVEY

Responsive Management employs an interactive approach to survey design and survey implementation. To this end, the study will begin with an initial meeting, which will offer an opportunity for everyone to review the planning process, to identify all of the issues that the overall approach addresses, and to determine any areas and issues that the design does not adequately address. This initial meeting will also help confirm schedules, staff assigned to the project, and project requirements. In general, this meeting takes place via conference call and is designed to assist Responsive Management in generating an outline or list of topics and questions to be addressed by the telephone survey. At this point, Responsive Management will begin crafting a survey questionnaire and will work cooperatively with DEP via email and teleconference to design, develop, and finalize the survey instrument. Responsive Management will submit draft questionnaires and will work collaboratively with DEP representatives to develop additional questions or make revisions to the survey as necessary to meet the goals and objectives of the study.

Responsive Management ensures rigorous quality control efforts. Its surveys are subject to detailed in-house review by associate staff and professional interviewers prior to pretesting. Responsive Management's professional associates will review the questionnaire for content, format, question-flow, and CATI adaptability. Responsive Management will provide any recommended modifications to DEP based on their previous experience conducting similar surveys. Responsive Management's research associates will then computer code the survey for the CATI system, and its professional interviewers will complete an internal review of the questionnaire.

During Responsive Management's internal review of the questionnaire, each interviewer will complete the survey several times using many different answer sets to ensure the accuracy of phrasing, flow, and skip patterns. After completing an internal review, Responsive Management will pretest the survey instrument with a representative sample of West Virginia residents and recommend revisions based on pretest results. Responsive Management will submit a draft questionnaire and will work collaboratively with DEP to develop additional questions or make revisions to the survey instrument as necessary to meet the goals and objectives of the study, based on pretest results. This design process will ensure that the survey instrument meets the exact needs of DEP. Final approval of the methodology and survey instrument will be obtained from DEP prior to survey implementation.

"I also wanted to extend my thanks—albeit belated—for a great job with a task that at times might have seemed amorphous. The process worked and wouldn't have without your talent, experience, and expertise."

–Dennis Slate, National Rabies Management Coordinator, U.S. Department of Agriculture, Animal and Plant Heath Inspection Service (APHIS)

TASK 2: DEVELOP SAMPLE FRAME

Responsive Management proposes to obtain 400 completed interviews with West Virginia residents, 18 years old and older. The sample size will be designed not only to provide representative results at the statewide level but also to provide comparative results with an oversampling of populations most likely to recreate in state waters (i.e., those living in border counties or within a certain distance of specific rivers and/or waters) for comparison with results from the general population statewide. The sample frame will be designed to ensure a 95% confidence level and a sampling error that will not exceed plus or minus 4.90 percentage points for the total population, age 18 years old and older.[5] Note that Responsive Management is flexible and can conduct additional surveys based on the needs of the Department; pricing will be negotiable and will be adjusted accordingly.

For this study, Responsive Management will use random digit dialing (RDD) to collect data representative of the general population and to ensure that each state resident has an equal chance of being selected, in accordance with the standard telephone survey methodology guidelines established by Dillman (2007).[6] The RDD telephone survey methodology is the best and most accurate methodology available and is used for many purposes, including political polling, where accurate survey results are subject to "verification." Random selection of a sample from the state's general population, ages 18 and older, will be obtained from Survey Sampling International (SSI).

In the United States, the use of cellular telephones as the only telecommunications device has increased dramatically. As a result, research firms that do not conduct telephone surveys using both landline and cellular telephone numbers may obtain biased or skewed results, particularly for certain demographic groups. For this reason, Responsive Management conducts telephone surveys using landline and cellular telephone numbers. By doing so, Responsive Management is able to reach elusive populations, including young adults, singles, and mobile-only households, further ensuring the representativeness of the sample population.

"Responsive Management is one of the nation's most respected research firms in the area of public opinion about wildlife."

–Laury Parramore, U.S. Fish and Wildlife Service

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[5] The sampling error is based on population estimates for West Virginia residents 18 years and older, totaling 1,465,576. Responsive Management proposes to complete 400 interviews with the general population to achieve a sampling error of +/- 4.90%. (U.S. Census Bureau, 2010.)

[6] Dillman, D.A. (2007). *Mail and Internet Surveys: The Tailored Design Method.* New York: John Wiley & Sons.

TASK 3: DISTRIBUTE IMAGES AND ADMINISTER SURVEY

Responsive Management will work with DEP to determine the best way to distribute visual images to survey respondents. Responsive Management has conducted several studies in which visual images were distributed and has distributed images via Internet as well as through postal mail. Responsive Management recommends a multi-modal approach to image distribution. In this case, respondents will be contacted by telephone initially and provided an online link to the visual images for the study. The respondent can subsequently complete the interview over the phone with access to the images or schedule an appointment to complete the telephone survey at a later date and time more convenient for them. If the respondent does not have Internet access, they will be mailed a packet that includes the images and scheduled for a telephone interview upon receipt of the images packet.

Questionnaire Programming Language

The accuracy and quality of input is vital to providing scientifically defensible survey research. For this reason, Responsive Management will conduct telephone interviews using Questionnaire Programming Language (QPL), which is a comprehensive system for computer-assisted telephone interviewing (CATI) that provides complete capabilities for designing, administering, and managing telephone-based research operations. The survey instrument will be programmed to automatically skip, code, and/or substitute phrases in the survey based upon previous responses, as necessary, for the logic and flow of the interview. Any respondent-specific data provided can be programmed to appear to the interviewer as part of the text of any question or as a branching control or skip pattern.

Because Responsive Management uses CATI software for telephone interviews and data entry, it is very familiar with questionnaire design that requires complex skip logic and branching patterns and will ensure accurate survey design and QPL coding. Although the QPL system automates the telephone survey process and data entry, it *is not* an automated system: a live, professionally-trained interviewer will conduct the surveys with respondents and enter the data into the QPL system as the interview is conducted, thereby ensuring the accuracy and instantaneous availability of data. Survey data will be entered into the computer as the interview is being conducted, thereby eliminating any potential subsequent data-entry errors. Additionally, QPL can automatically check data upon entry for inconsistencies to ensure the integrity of data collection.

Telephone Interviewing Procedures and Facilities

High-quality data collection is critical to survey research. Responsive Management maintains its own centrally located, in-house telephone interviewing facilities. These facilities are staffed by professional interviewers with experience conducting computer-assisted telephone interviews on the subjects of natural/aquatic resource, environmental, and outdoor recreation issues, working under the close supervision of the Responsive Management professional staff. Because Responsive Management specializes in researching public opinion on natural/aquatic resource issues, interviewers conduct surveys *only* on these issues and understand the nuances involved in conducting the interviews.

To ensure that the data collected are of the highest quality, the interviewers are trained through lectures, role-playing, and video training, according to the standards established by the Council

of American Survey Research Organizations. The Survey Center Manager will conduct in-depth project briefings with the interviewing staff prior to their work on this study. Interviewers will be instructed on survey goals and objectives, the type of study, handling of survey questions, interview length, termination points and qualifiers for participation, reading of interviewer instructions, reading of the survey, reviewing of skip patterns, and probing and clarifying techniques necessary for specific questions on the survey.

Through use of the computer-assisted interviewing facilities, the survey data will be entered into the computer as the interview is being conducted, thereby eliminating any potential subsequent data-entry errors. After the interviews are obtained, the Survey Center Manager and/or statisticians will check each completed survey to check for clarity, completeness, and format. The Survey Center Manager will also monitor the telephone workstations without the interviewers' knowledge of which interviews will be monitored, thereby allowing the Survey Center Manager to maintain strict quality control over the data collection process.

Interviews will be conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday from 10:00 a.m. to 4:00 p.m., and Sunday 3:00 p.m. to 9:00 p.m., local time. A five-callback design will be used to maintain the representativeness of the sample, avoid bias toward people easy-to-reach by telephone, and provide an equal opportunity for all to participate. The five-callback system uses a total of at least four subsequent calls, often as many as eight, to each not-answered number selected in the original sample. Subsequent calls will be placed at different times of the day and different days of the week. In addition, respondents who decline to participate because of inconvenience will be called again to encourage their participation or to set an appointment for their participation. Converting refusals into completed interviews is an important part of Responsive Management's contact plan to help minimize nonresponse.

Response Rates

Response rate will be calculated by dividing the number of completed interviews by the number of all eligible telephone numbers. An eligible number is a working telephone number in a residence with someone with whom we can speak (e.g., not hearing disabled) and who meets the criteria for this study. Therefore, the only numbers not included in the response rate are business or government office numbers, deaf/language-barrier calls (languages other than English or Spanish), non-eligible respondents, and bad or disconnected numbers.

"There is no doubt that the Commission received the best and most cost-effective survey product available. You and your staff did an outstanding job preparing and conducting the survey and presenting the results . . . . I would especially like to thank you for working with staff to develop the fine product that we now cite and use nearly every day. We use the survey results as a touchstone for many discussions and subsequent management decisions. We are quite pleased with the survey product and we look forward to working with Responsive Management in the future."

–Peter A. Colangelo (retired), Executive Director, Pennsylvania Fish and Boat Commission

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TASK 4: ANALYZE SURVEY RESULTS

Analysis of Survey

All survey data will be processed and analyzed using SPSS for Windows software and proprietary software developed by Responsive Management. Data processing and analysis will include coding, preparation of straight tabulations, and preparation of study printouts. All data will be available in both hard copy and electronically in SPSS or Excel formats.

Responsive Management can provide a wide variety of statistical methods for this study. Descriptive analyses can be used to examine the characteristics of the samples, while inferential statistics will be used to project these analyses to make statements about the populations as a whole, where applicable. Nonparametric analyses can be performed on data that are entirely categorical (e.g., gender) or entirely ordinal (i.e., increasing levels of support of a statement), and parametric analyses can be performed on interval data (e.g., age). Univariate procedures examine relationships and differences among individuals on a single characteristic. Multivariate procedures examine these same relationships and differences among individuals using multiple characteristics.

This project will have two stages of statistical analysis. The first stage will be the descriptive analysis. This is the stage where attitudes, perceptions, opinions, and characteristics are described and summarized in graphs and tables. The exact method to be used to summarize the data will be dependent on the characteristics of the data (i.e., whether the data are categorical, ordinal, or interval). Categorical and ordinal data will be summarized as percents and sometimes in the form of measures of central tendency using medians. Interval data will be summarized in the form of central tendency using the mean.

The second stage of analysis will be the inferential analysis. This stage will analyze the relationships and differences among attitudes, perceptions, opinions, and characteristics being measured in the study. Selection of the type of statistical tests to be used will begin by deciding whether the questions are best answered by examining differences (e.g., analysis of variance) or by examining relationships (e.g., Pearson product-moment correlation). Within these two broad categories of differences and relationships are a multitude of statistical tests. The best one for each situation will be selected depending on whether the analysis is descriptive or inferential, whether the data are parametric or nonparametric, and whether the analysis is univariate or multivariate. In special cases, unique or less common analyses will be applied to clarify results that are otherwise difficult to interpret.

Statistical analyses identify significant findings. Survey results will be analyzed to obtain descriptive statistics as well as to examine relationships among variables. When crosstabulations of survey results are run, Pearson chi-square significance values will be used to confirm whether the relationship occurred by chance, using the formula below (Vaske, 2008)[7]:

[7] Vaske, J.J. (2008). *Survey research and analysis: Applications in parks, recreation and human dimensions.* State College, Pennsylvania: Venture Publishing, Inc.

Chi-Square Formula

$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

where: f_o represents the observed frequency in each cell
f_e represents the expected frequency for each cell

P-values will be calculated to determine the statistical significance of the relationship between variables. If the *p*-value is .05 or less, there is a 95% chance that the relationship did not occur by chance, meaning that if the survey were conducted 100 times on different samples that were selected in the same way, the findings of 95 out of the 100 surveys would fall within the sampling error range. Sampling errors will be calculated using the following formula.

Sampling Error Equation:

$$B = \left(\sqrt{\frac{\frac{N_P(.25)}{N_S} - .25}{N_P - 1}} \right) (1.96)$$

Where: B = maximum sampling error (as decimal)
N_P = population size (i.e., total number who could be surveyed)
N_S = sample size (i.e., total number of respondents surveyed)

Derived from formula: p. 206 in Dillman, D. A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.

Note: This is a simplified version of the formula that calculates the maximum sampling error using a 50:50 split (the most conservative calculation because a 50:50 split would give maximum variation).

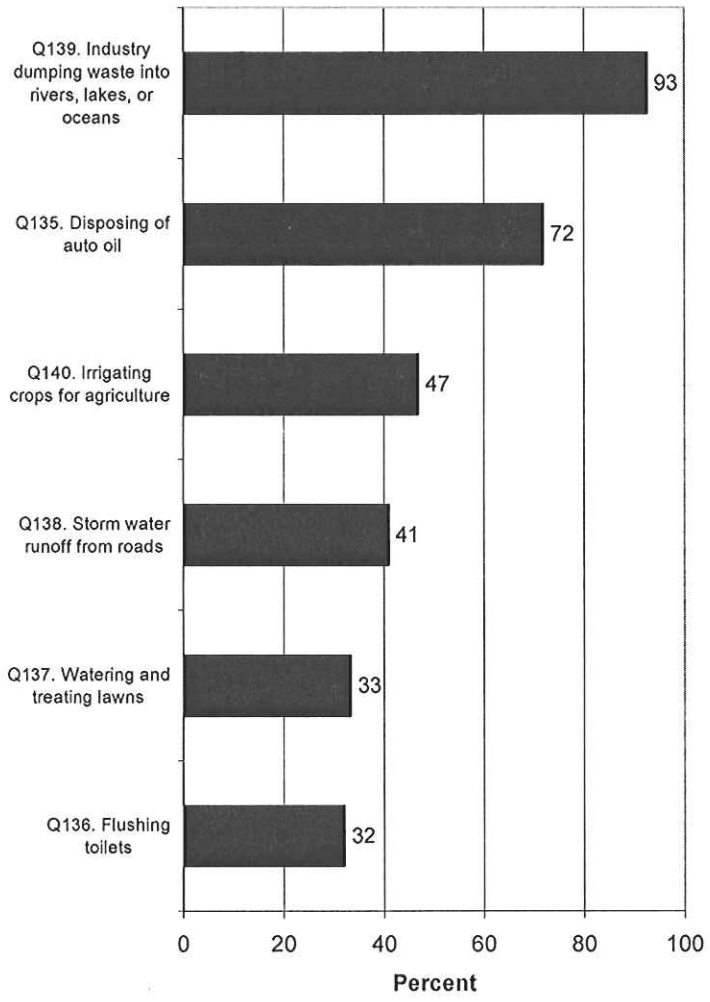
The following graphs are examples of Responsive Management's presentation of data analyses and survey results taken from *Americans' Knowledge of and Attitudes Toward Water and Water-Related Issues*. This study was conducted for the American Museum of Natural History to determine Americans' opinions on and knowledge of water and water-related issues and involved a telephone survey of the general population nationwide. As shown in the graph below, Americans are more likely to think that water quality is negatively affected by industry than by residential use of land: 93% said that the dumping of waste into rivers, lakes, and the ocean by industry has a major impact on the health of waters, while only 32% said that flushing toilets has a major impact, and 33% said that treating and watering lawns has a major impact. While the actual causes of water quality degradation vary from place to place, in many locations in the U.S., the causes at the bottom of the survey ranking (flushing toilets, runoff from treated lawns, and storm water runoff from roads) likely have an equal or greater impact than does industry.

"If there is anyone who can predict the future of our industry, he's it."

–Florida Outdoor Writers Association

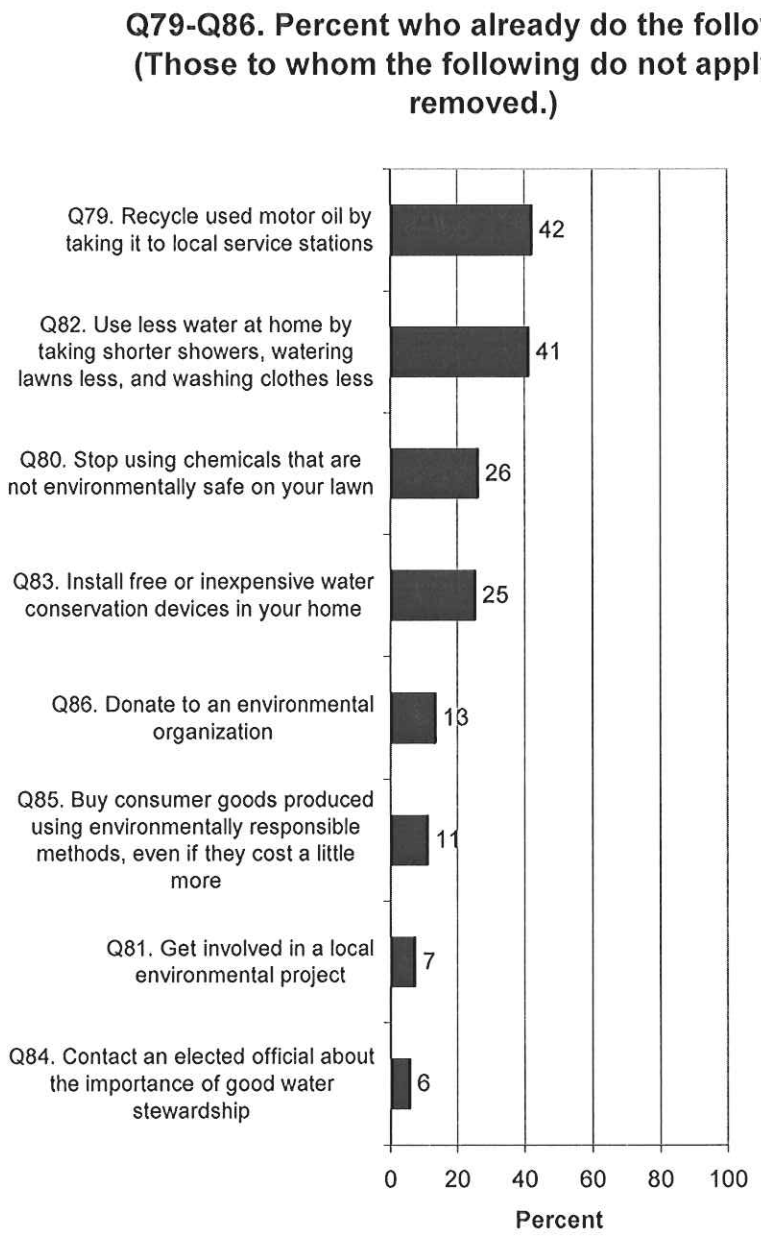
Sample Presentation of Data

Q135-Q140. Percent who think the following have a major impact on the health of bodies of water, such as oceans, rivers, and lakes.



Survey respondents were also asked about eight actions that they can take to make a positive impact on water resources; those to whom the action does not apply were removed from the data (e.g., those without a car to whom recycling used motor oil does not apply). The first graph of this series shows the percentage who said that they already do the action, and two actions have notably higher participation rates: recycle used motor oil (42% already do it) and consciously use less water at home (41%). On the other hand, contacting an elected official about water stewardship (6%) and getting involved in local environmental projects (7%) have low participation rates. These results are shown below.

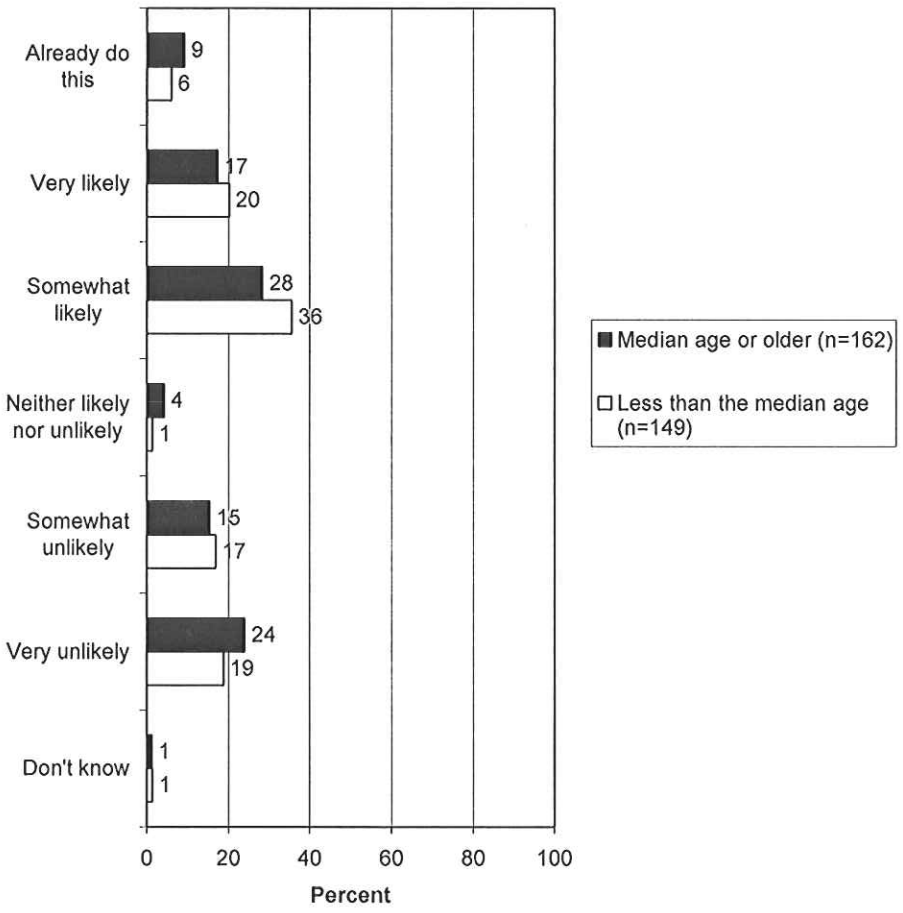
Sample Presentation of Data



As shown in the graph to follow, the data were run using an age split. Marked differences occurred on three questions. Regarding likelihood to get involved in an environmental project, older people were just slightly more likely to have already done this (9% of older people had, compared to 6% of younger people), but otherwise they were less likely to do this in the future (45% of older people, 56% of younger people).

Sample Presentation of Data

Q81. How likely or unlikely would you be to get involved in a local environmental project if you knew that it would make a positive impact on water resources? (Those to whom this does not apply are removed.)



"Thanks very much for the extra fast delivery of the final reports. It appears to be another great product. Our meeting is later this week, so we are now in great shape in terms of survey distribution. Thanks again for your fine attention to detail, and extraordinary efforts to accommodate our interests and concerns . . . . I look forward to crossing paths with you on future projects, and to adding a third year to our survey trend data in 2014!"

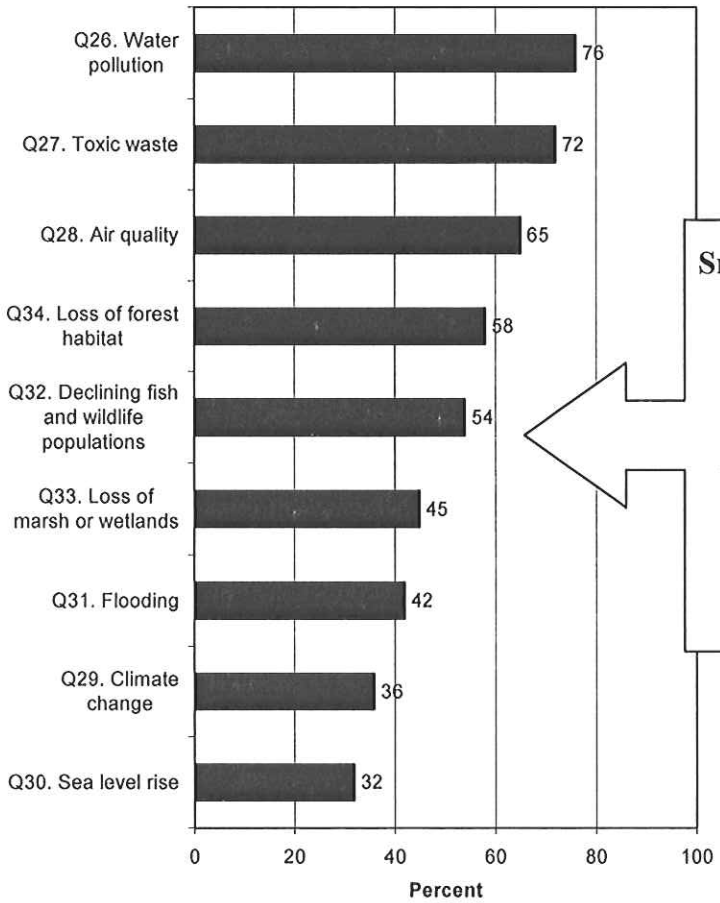
–Mark Ellingwood, New Hampshire Fish and Game Department

Regional Analysis

Responsive Management also routinely presents data by regional breakdown. As an example, the following graphs of regional analysis were taken from *Delaware Residents' Opinions on Climate Change and Sea Level Rise*. This study was conducted for the Delaware Department of Environmental Control (DNREC) to determine Delaware residents' opinions on climate change and sea level rise. Specifically, this study was designed to assess Delaware residents' and stakeholders' awareness and understanding of key issues regarding climate change and sea level rise; to determine their perception of its overall effect on the economy and ecology of the state; and to explore public opinion regarding long range planning for sea level rise loss and damage prevention. A series of questions asked residents to rate their concern about nine environmental issues in Delaware. At the top of the ranking by the percentage being *very* concerned (as well as the ranking by *very* or *somewhat* concerned) are three issues related to pollution: water pollution (76% are very concerned), toxic waste (72%), and air quality (65%). A middle tier consists of habitat and wildlife-related issues: loss of forest habitat (58%), declining fish and wildlife populations (54%), and loss of marsh or wetlands (45%). At the bottom are flooding (42%), climate change (36%), and sea level rise (32%).

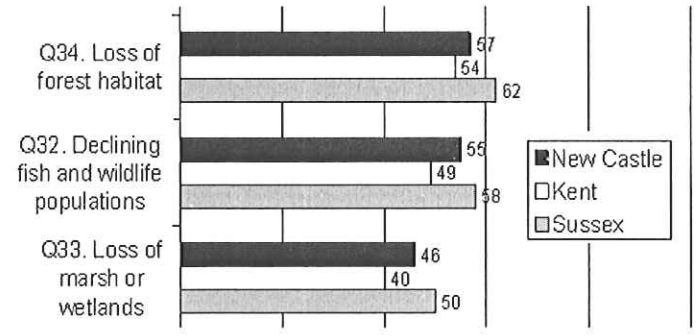
Sample Presentation of Data Breakdown by Region

Q26-34. Percent who are very concerned about the following environmental issues in Delaware.



The crosstabulation by county found several statistically significant differences in three of the questions in this series. Kent County residents, compared to residents of the other two counties, are the least likely to be concerned about air quality ($p \leq 0.05$). Kent County residents are the least likely to be concerned about climate change in Delaware ($p \leq 0.05$). Finally, Kent County residents are the least likely to be concerned about declining fish and wildlife populations in Delaware ($p \leq 0.01$).

Snapshot of Regional Differences



Nonparametric Analysis (Z-Scores)

The importance of a nonparametric analysis is that it allows for the identification of highly targeted populations based on demographic and attitudinal characteristics. Below is an example z-score table from *West Virginia Residents' Attitudes Toward Wildlife, Their Participation in Wildlife-Related Recreation, and Their Consumption of Fish Caught in West Virginia.* This study was conducted for the West Virginia Division of Natural Resources (WVDNR) to determine residents' attitudes toward wildlife, their participation in wildlife-related activities, their consumption of fish caught in West Virginia, and their attitudes toward fish consumption advisories. The study entailed a telephone survey of randomly selected West Virginia residents 18 years of age and older. The survey was conducted in December 2005, and Responsive Management obtained a total of 2,505 completed interviews.

A nonparametric analysis compares responses of people in a group with those not in that group. For instance, in the example below, the nonparametric analysis compares the responses of all anglers who rated the importance of controlling invasive species for the WVDNR's Wildlife Diversity Program less than 5 on a scale from 0 to 10, with 10 the most important. In other words, this variable identifies a target population that does not consider controlling invasive species an important priority for the WVDNR. The z-score analysis tests each variable to find significant correlations with this response. Z-scores can be very helpful in identifying characteristics that are more likely to be found in target populations.

For instance, in considering the variable, "Rated the importance of controlling invasive species less than 5," the nonparametric analysis compares this response with ratings 5 and above. The z-scores determine the strength of the relationship between the characteristic and the response to the question. A z-score that has an absolute value of 3.30 or greater indicates that the relationship is so strong that it would happen by chance only 1 out of 1,000 times ($p \leq 0.001$). A z-score that has an absolute value of 2.58 to 3.29 indicates that the relationship is so strong that it would happen by chance only 1 out of 100 times ($p \leq 0.01$). Finally, a z-score that has an absolute value of 1.96 to 2.57 indicates that the relationship is so strong that it would happen by chance only 5 out of 100 times ($p \leq 0.05$). Note that the strongest positive statistically significant correlations are at the top of the table, with the positive correlations getting weaker as one moves down the table (nonetheless, all variables in the table are statistically significant). The significance level is shown for each variable.

Sample Presentation of Z-Score Analysis

Rates the importance of controlling invasive species for the Division's Wildlife Diversity Program less than 5 (on a scale from 0 to 10, with 10 the most important)	Z-SCORE
Rates the importance of research and surveys for the Division's Wildlife Diversity Program less than 5	p ≤ 0.001
Rates the importance of fish and wildlife habitat management for the Division's Wildlife Diversity Program less than 5	p ≤ 0.001
Rates the importance of restoring native species of fish and wildlife for the Division's Wildlife Diversity Program less than 5	p ≤ 0.001
Rates the importance of conserving fish and wildlife habitat for the Division's Wildlife Diversity Program less than 5	p ≤ 0.001
Rates the importance of education about fish and wildlife for the Division's Wildlife Diversity Program less than 5	p ≤ 0.001
Rates the importance of recreational development for the Division's Wildlife Diversity Program less than 5	p ≤ 0.001

Rates the importance of conserving fish and wildlife habitat for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.001$
Rates the importance of wildlife habitat conservation less than 5	$p \leq 0.001$
Rates the importance of programs for providing outdoor recreational opportunities less than 5	$p \leq 0.001$
Rates the importance of programs for fish/wildlife conservation less than 5	$p \leq 0.001$
Would oppose yearly tax fee of $10 to raise public funds to preserve forests, mountains, and natural areas in WV	**$p \leq 0.001$**
Rates the importance of restoring native species of fish and wildlife for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.001$
Rates the importance of education about fish and wildlife for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.001$
Did not say would support spending public tax money to help preserve forests, mountains, and natural areas in WV	$p \leq 0.001$
Has participated in wildlife viewing in WV in past 2 years and would pay less than median amount to participate in educational programs designed to increase wildlife knowledge and skills	$p \leq 0.001$
Rates the importance of recreational development for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.001$
Rates the importance of programs for forest conservation less than 5	$p \leq 0.001$
Rates the importance of programs for farmland conservation less than 5	$p \leq 0.001$
Rates the importance of programs for clean air from 5 to 9	$p \leq 0.01$
Would oppose spending public tax money to help conserve private lands	$p \leq 0.01$
Rates the importance of fish and wildlife habitat management for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.01$
Did not indicate support for having black bears in WV	$p \leq 0.01$
Rates the importance of programs for schools and education from 5 to 9	$p \leq 0.01$
Thinks black bear population in WV should be decreased	$p \leq 0.01$
Has fished for black bass in past 2 years and prefers to fish for bass from the bank	$p \leq 0.01$
Highest educational level is no higher than high school, with or without a diploma	**$p \leq 0.01$**
Has participated in wildlife viewing in WV in past 2 years and would pay less than median amount for day of use of wildlife viewing area (1 dollar)	$p \leq 0.01$
Rates the importance of programs for roads and mass transit less than 5	$p \leq 0.01$
Rates the importance of programs for health care less than 5	$p \leq 0.01$
Has lived in WV median or more number of years (41 years)	**$p \leq 0.05$**
Thinks black bear population in county should be decreased	$p \leq 0.05$
Rates the importance of programs for forest conservation from 5 to 9	$p \leq 0.05$
Rates the importance of research and surveys for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.05$
Has fished in WV in past 2 years but did not say he/she was satisfied with fishing in WV over past 2 years	$p \leq 0.05$
Is at or above median age (53 years old)	**$p \leq 0.05$**
Is not interested in any of the listed activities in WV in the next 2 years	$p \leq 0.05$
Fished in past 2 years in WV but did not eat fish that were caught	$p \leq 0.05$
Rates the importance of programs for fish/wildlife conservation from 5 to 9	$p \leq 0.05$
Rates the importance of controlling invasive species for the Division's Wildlife Diversity Program from 5 to 9	$p \leq 0.05$
INSIGNIFICANT AND NEGATIVE Z-SCORES OMITTED	

The nonparametric analysis found, for instance, that those who rated the importance of controlling invasive species as less than 5 are more likely than are those who rated the importance 5 and above to have the following characteristics:

In general, these respondents are more likely to:

- Give lower ratings of importance for the WVDNR's conservation efforts
- Oppose yearly tax fee of $10 to raise public funds to preserve forests, mountains, and natural areas in WV
- Highest educational level is no higher than high school, with or without a diploma
- Has lived in West Virginia for 41 years or longer
- Is 53 years old or older

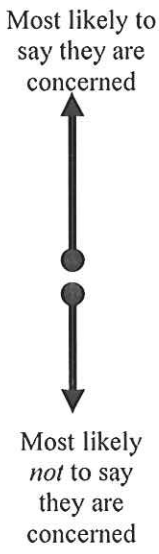
This does not mean that all those who rated the importance of controlling invasive species as less than 5 oppose a yearly tax fee of $10 to raise public funds to preserve forests, mountains, and natural areas in West Virginia (indeed, many anglers support a $10 tax fee to raise funds); rather, it means that anglers who rated controlling invasive species as less than 5 are more likely than are those who gave a higher rating to oppose a yearly tax fee. Likewise, not all respondents who give a lower rating of importance for controlling invasive species have been long-term West Virginia residents or are older than 53; however, respondents who gave this response are more likely to have these demographic characteristics. The nonparametric analysis simply indicates that these respondents have a greater likelihood of the aforementioned characteristics.

As another example, below is a z-score table from the study *Delaware Residents' Attitudes Toward and Behaviors That Affect Water Quality*, conducted for the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess Delaware residents' attitudes toward the environment and water quality issues, as well as their behaviors that affect water quality. The study entailed five focus groups conducted in Middletown, Wilmington, Dover, Lewes, and Delmar and a statewide telephone survey of Delaware residents. For this report, a nonparametric analysis examined how the various responses related to demographic characteristics. Responses for selected questions were tested by means of z-scores for relationships to demographic characteristics, such as gender, age, ethnicity, and the location of the respondent's residence. The analysis examined approximately 50 variables regarding demographic characteristics of the respondents. A positive z-scores means that the response and characteristic are positively related; a negative z-score means that the response and characteristic are negatively related.

The following z-score tabulation shows the characteristics (i.e., responses to other questions) that are significantly correlated with Delaware residents who are very or somewhat concerned about the impacts of home lawn care on water quality. The nonparametric analysis shows that those most likely *not* to say that the impact of home lawn care on water quality is not a concern have one or more of the following demographic characteristics: other race identified, retired, no high school diploma, male, in sales, and 65 years old and older (see tabulation below). For these groups, raising levels of concern would be an important goal. On the other hand, the groups most concerned have one or more of the following demographic characteristics: 35-44 years old, own less than 1 acre, female, neighborhood association member, income between $20,000 and $39,999, high school graduate or equivalent without college attendance, and white.

Q61. Would you say that you are very concerned, somewhat concerned, or not at all concerned about the impacts of home lawn care on water quality in Delaware? (Asked of those who said that they have a lawn.) (Response analyzed: very or somewhat concerned)

35-44 years old	3.08**
Owns less than 1 acre	2.72**
Female	2.66**
Neighborhood association member	2.32*
Income between $20,000 and $39,999	2.24*
High school graduate or equivalent	2.11*
White	2.07*
STATISTICALLY INSIGNIFICANT VARIABLES OMITTED	
65 years or older	-2.01*
Profession: Sales	-2.11*
Male	-2.60**
No high school diploma	-3.00**
Retired	-3.10**
Other race identified	-3.23**



The importance of a nonparametric analysis is that it allows for the identification of highly targeted populations based on demographic and attitudinal characteristics. Z-scores can and should be used to develop effective education and outreach strategies.

"I want to thank you for your efforts in assessing public knowledge, attitudes, and opinions regarding grizzly bear reintroduction to the Bitterroot Mountains of central Idaho. The professional rigor in the design, implementation and analysis of the random telephone survey was outstanding. I particularly valued and appreciated the close working relationship we had in developing this project and the prompt completion of the final report. We were quite pleased with every aspect of the job by Responsive Management."

–John Weaver, Team Leader, Bitterroot Grizzly Bear EIS, U.S. Fish and Wildlife Service

"Thanks for doing a bang-up job at the Conservation Planning Workshop last week. I've had much positive feedback on your presentation from other participants. Personally, I was impressed that you could come in cold, pick up the PowerPoint package and then present such a detailed, data-packed talk an hour or so later.

Thanks again for sharing your expertise."

–John Slown, U.S. Fish and Wildlife Service

TASK 5: PREPARE AND SUBMIT FINAL REPORT

Responsive Management will provide a detailed report outlining the results of the study designed to quantify residents' attitudes toward filamentous algae and/or rooted aquatic vegetation, to identify the public threshold for algae levels in West Virginia waters, and to better understand how algae levels impact public participation in aquatic recreational opportunities. The final report will include an executive summary with a "bullet" narrative of key findings and a brief description of methodology; an introduction; survey methodology, including a discussion of data analysis and statistical procedures; a tabular data report, including survey graphs and tables; statistical regional differences; crosstabulations; statistical significance levels for crosstabulations; trends analysis; and analyses and interpretations of "other" or open-ended survey questions. In addition to the electronic and written report, all data will be available in hard copy or on CD in SPSS or Excel format.

"Thanks again for all of your work on the statewide litter attitudes survey for Georgia and for participating in the Governor's Land Summit . . . . The campaign created exactly the buzz that we were after! . . . Your research certainly paved the way for us to launch the new "Litter. It Costs You" campaign. I have given several presentations on the development of the campaign in recent weeks that highlights decisions that were made to select the logo and tag line based on both the telephone survey and focus groups. Time and again, I have had people praise our thorough process and science-based decision-making . . . . In short, we're off to a great start, thanks to the foundation that you helped us set. I appreciate your guidance and input on this project from the outset and look forward to measuring our progress 12 to 18 months from now . . . . The work that Responsive Management has done for Georgia is extremely valuable and has staying power. In recent weeks, I've paged through not only the litter attitudes survey, but also the DNR strategic planning survey and the water messaging survey as well. They are amazing resources for us to have at our fingertips, and I don't know how any agency can make natural resources decisions without having a solid understanding of the human factor . . . . Please pass along our appreciation to Alison, Steve, Peter and the rest of the Responsive Management team."

–Beth Brown, Special Assistant to the Commissioner, Georgia Department of Natural Resources

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DELIVERABLES

Deliverables for this project include the following:

- Work plan and study design recommendations, including data collection methodology, that take into account the visual component required for this study
- Draft survey questionnaire for internal review and pretest
- A representative sample that will be a proportionate size for meaningful results at statewide levels
- Means and methods for distributing visual images to those participating in the survey
- Adjustments based on pretest results
- Final survey instrument
- Final written report of survey findings
- Any additional technical support or assistance, as needed to complete the project

DEPARTMENT PROVISIONS

DEP will work closely with Responsive Management to provide:

- Assistance in finalizing survey questions
- Visual images for distribution
- Management and coordination on contract development, billings, and payment
- Management and coordination related to deliverables
- Other support services and coordination that develop during the course of this project

REPORTING

During survey administration, key personnel assigned this project will provide regular progress updates and preliminary results, upon request. Updates may be provided on an as-needed basis or periodically throughout the duration of the study, as requested by the Department. Drafts of the final report will be submitted for DEP approval, and the Department will have an opportunity to respond with suggestions and revisions. The final report will not be released without final approval of DEP. DEP will be actively throughout each step of the process to ensure that the study design and methodology will meet the exact goals, objectives, and specifications required to provide statistically accurate and scientifically defensible results regarding public opinion on algae levels and its impact on public use of West Virginia waters.

"[T]he information you provided is exactly what we were looking for.

Thank you for the more detailed insights to certain survey responses and analyzing the data by level of avidity for the specified outdoor recreation activities. This information is useful in assessing how well current Department programs are meeting the broader needs of these stakeholders."

–Stephen Perry, Chief of Inland Fisheries Division, New Hampshire Fish and Game Department

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SURVEY SCHEDULE AND COSTS

The purpose of this study is to determine what levels of algae impair an individual's ability to recreate in West Virginia waters, including swimming, fishing, and boating. Specifically, this study will be designed to quantify residents' attitudes toward filamentous algae and/or rooted aquatic vegetation, to identify the public threshold for algae levels in West Virginia waters, and to better understand how algae levels impact public participation in aquatic recreational opportunities.

Responsive Management proposes to obtain 400 completed interviews with West Virginia residents, 18 years old and older. The sample size will be designed not only to provide representative results at the statewide level but also to provide comparative results with an oversampling of populations most likely to recreate in state waters (i.e., those living in border counties or within a certain distance of specific rivers and/or waters) for comparison with results from the general population statewide. The sample frame will be designed to ensure a 95% confidence level and a sampling error that will not exceed plus or minus 4.90 percentage points for the total population, age 18 years old and older.[8] Note that Responsive Management is flexible and can conduct additional surveys based on the needs of the Department; pricing will be negotiable and will be adjusted accordingly. The cost and timeline for the telephone survey, analysis, and the writing of the final report for the West Virginia Department of Environmental Protection is as follows:

Task	Timeline	Costs*
Task 1: Design and Pretest Survey	October 2011	$4,150.00
Task 2: Develop Sample Frame	October 2011	$2,355.00
Task 3: Distribute Images and Administer Survey	November-December 2011	$22,630.00
Task 4: Analyze Survey Results	December 2011-January 2012	$6,235.00
Task 5: Prepare and Submit Final Report	January-February 2012	$4,630.00
	TOTAL COST	**$40,000.00**

*Please note that our cost breakdowns include GSA-approved Responsive Management services through the General Service's Administration (GSA) Federal Supply Schedules program by using the Mission Oriented Business Integrated Services (MOBIS) Schedule. GSA established this Federal Supply Schedule to create an expedited procurement process by pre-qualifying contractors that provide professional management services. Based on GSA rates, rates used in cost calculations include all associated direct costs and indirect costs including wages, telephone charges, printing, prepaid insurance, and all standard overhead charges.

"I personally, sincerely appreciated working with you and your very professional and talented staff. I thought it was going to be difficult managing a project that was half done, but your assistance and guidance helped me catch up right away. Thank you again for a sensational job. Please relay my personal best to everyone at Responsive Management."

-Hardy Pearce, U.S. Department of the Interior

[8] The sampling error is based on population estimates for West Virginia residents 18 years and older, totaling 1,465,576. Responsive Management proposes to complete 400 interviews with the general population to achieve a sampling error of +/- 4.90%. (U.S. Census Bureau, 2010.)

VENDOR QUALIFICATIONS

BACKGROUND AND EXPERIENCE

Established in 1991 by Mark Damian Duda, Responsive Management has been conducting research for 21 years on public attitudes toward natural/aquatic resource, environmental, and outdoor recreation issues, including water quality issues. Its mission is to help natural/aquatic resource agencies and organizations better understand and work with their constituents, customers, and the public. In keeping with this mission, Responsive Management's professional associates have conducted more than 500 telephone surveys, mail surveys, focus groups, and in-person interviews exclusively on natural/aquatic resource, environmental, and outdoor recreation issues, including studies on water quality, coastal and wetlands restoration, and fish and wildlife management and habitat conservation. Additionally, Responsive Management routinely provides trends analysis, regional data analysis, and extensive nonparametric analysis. The geographic scope of its studies range from a single telephone exchange or zip code to studies conducted nationally. For all studies, Responsive Management follows the highest standards in conducting telephone surveys, mail surveys, focus groups, and personal interviews to ensure accurate, unbiased results.

Studies Conducted on Water Quality Issues

No other firm has as much experience and working knowledge of conducting survey research measuring public opinions on and attitudes toward natural/aquatic resource, environmental, and outdoor recreation issues. In fact, Responsive Management completed a very similar and complex project for the Ohio River Valley Water Sanitation Commission (ORSANCO). The purpose of this study was to provide baseline data on how many people from the point of the river's primary source of confluence (Pittsburgh, Pennsylvania) to its point of discharge (Cairo, Illinois) use the Ohio River for contact recreation, how frequently and when the Ohio River is used for contact recreation, site-specific frequency use, and site-specific Ohio River fish consumption rates.

For this project, Responsive Management conducted on-site intercept surveys and a telephone survey in eight states bordering the Ohio River (including West Virginia) to obtain in-depth understanding of factors related to contact recreational use of the Ohio River and fish consumption. Activities examined included power boating (other than personal watercraft), operating a personal watercraft, sailing, canoeing, kayaking, waterskiing or wakeboarding, tubing, swimming, diving, wading, and fishing. This project required several critical deadlines and cooperation with the Environmental Protection Agency (EPA) on survey design and development. The findings from this study helped the ORSANCO quantify current contact recreational use for various segments of the Ohio River and also assisted in the development of appropriate recreational use provisions and human health ambient water quality criteria for fish consumption.

Similarly, as part of a larger study of West Virginia residents' attitudes toward wildlife, Responsive Management also surveyed residents to determine their participation in fishing activities in West Virginia, their consumption of fish caught in West Virginia, and their attitudes toward fish consumption advisories. More recently, Responsive Management conducted a proprietary study to assess public participation in outdoor recreation activities in and around the Tittabawassee River and its floodplain and to investigate the effects of dioxin advisories on the value of outdoor resources in Michigan. This qualitative research project was conducted as part

of a cooperative natural resource damage assessment. The study entailed a series of 10 focus groups with individuals from the Midland-Saginaw-Bay City area, including area anglers, small game hunters, deer hunters, general outdoor recreationists who had not taken part in hunting or fishing, and Saginaw Chippewa Indian tribal members.

As another example, Responsive Management conducted a survey to determine the opinions of Maryland residents regarding the Chesapeake Bay and its resources. *Opinions of Maryland Residents Regarding the Chesapeake Bay and Bay Restoration Efforts* included a telephone survey of Maryland residents to assess participation and interest in Chesapeake Bay-related activities, to determine residents' ratings of the health and quality of Bay resources, and to identify perceived threats to the Bay. Responsive Management also completed a major study for the American Museum of Natural History to determine public opinion on and knowledge of water-related issues. For this project, Responsive Management conducted a nationwide survey of U.S. residents to determine public knowledge of water pollution and water protection attitudes; to identify areas of importance and concern by exploring public attitudes toward environmental issues, water, the ocean, and water resources; and to assess support for efforts to protect water resources. Findings from this study were used to develop the American Museum of Natural History's 2008 exhibition on water resources and water protection.

Responsive Management completed a study for the Georgia Department of Natural Resources, Pollution Prevention Assistance Division to better understand residents' attitudes toward and opinions on water resource issues in Georgia, their willingness to participate in water conservation measures, and the educational messages to which the Georgia public will respond in a statewide water conservation campaign. In Delaware, Responsive Management conducted a study for the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess Delaware residents' attitudes toward the environment and water quality issues, as well as their behaviors that affect water quality. The study entailed five focus groups conducted in Middletown, Wilmington, Dover, Lewes, and Delmar and a statewide telephone survey of Delaware residents. The telephone survey sample included residents of Delaware's five regions (North New Castle County, South New Castle County, Kent County, East Sussex County, and West Sussex County), and the data analyses considered the region in which the respondent lived.

Because Responsive Management has completed numerous studies concerning public opinion on aquatic resources and water quality issues, it has immediate access to these sources as well as comparable studies completed in other states; this access, combined with additional research, will prove invaluable for offering a larger context for study results, for understanding trends, and for ensuring the most comprehensive, accurate statistics for the Department.

The following is just a sampling of the extensive Responsive Management experience relevant to the survey research needs of the West Virginia Department of Environmental Protection. For additional information about Responsive Management's research, methodologies, and qualifications, please visit www.responsivemanagement.com.

- **A Study of Ohio River Contact Recreational Use, Characteristics Of Contact Recreational Use, And Site-Specific Fish Consumption Rates.** Responsive Management completed a large-scale study for the Ohio River Valley Water Sanitation Commission (ORSANCO) to provide baseline data on how many people use the Ohio

River for contact recreation, how frequently and when the Ohio River is used for contact recreation, site-specific frequency use, and site-specific Ohio River fish consumption rates.

- **West Virginia Residents' Attitudes Toward Wildlife, Their Participation in Wildlife-Related Recreation, and Their Consumption of Fish Caught in West Virginia.** This study was conducted for the West Virginia Division of Natural Resources (WVDNR) to determine residents' attitudes toward wildlife, their participation in wildlife-related activities, their consumption of fish caught in West Virginia, and their attitudes toward fish consumption advisories.

- **Outdoor Recreation in and Along the Tittabawassee River in Michigan.** This was a proprietary study conducted to assess public participation in outdoor recreational activities in and around the Tittabawassee River and its floodplain, and to investigate the effects of dioxin fish and game consumption and soil and sediment advisories on the value of outdoor resources in Michigan.

- **Opinions of Maryland Residents Regarding the Chesapeake Bay and Bay Restoration Efforts.** This study was conducted to determine the opinions of Maryland residents regarding the Chesapeake Bay and its resources. More specifically, a telephone survey of Maryland residents was conducted to assess participation and interest in Chesapeake Bay-related activities, to determine residents' ratings of the health and quality of Bay resources, to identify perceived threats to the Bay, and to assess public opinion on and support for Chesapeake Bay restoration efforts.

- **Americans' Knowledge of and Attitudes Toward Water and Water-Related Issues.** In a study conducted for the American Museum of Natural History to determine public opinion on and knowledge of water-related issues, Responsive Management completed a nationwide study of U.S. residents to determine public knowledge of water pollution and water protection attitudes; identify areas of importance and concern by exploring public attitudes toward environmental issues, water, the ocean, and water resources; and assess support for efforts to protect water resources.

- **Understanding the Georgia Public's Perception of Water Issues and the Motivational Messages To Which They Will Respond: Final Report.** In a study for the Georgia Department of Natural Resources, Pollution Prevention Assistance Division, Responsive Management conducted focus groups and a telephone survey of Georgia residents to better understand their attitudes toward and opinions on water resource issues in Georgia, their willingness to participate in water conservation measures, and the educational messages to which the Georgia public will respond in a statewide water conservation campaign.

- **Delaware Residents' Attitudes Toward and Behaviors that Affect Water Quality.** This study was conducted for the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess Delaware residents' attitudes toward the environment and water quality issues, as well as their behaviors that affect water quality.

The study entailed five focus groups conducted in Middletown, Wilmington, Dover, Lewes, and Delmar and a statewide telephone survey of Delaware residents.

- **National Oceanic and Atmospheric Administration Nonpoint Source Pollution Focus Groups.** Responsive Management conducted nationwide focus groups for the National Oceanic and Atmospheric Administration to assess the general population's opinions on and attitudes toward water pollution. The specific focus was on nonpoint source pollution.

- **Public Attitudes Toward Groundwater Pollution.** Responsive Management was commissioned by the University of Montana to conduct a telephone survey of Butte, Montana, residents to assess their opinions on and attitudes toward groundwater pollution issues.

- **Penobscot Nation Members' Attitudes Toward Pollution in the Penobscot River.** Responsive Management conducted a telephone survey of Penobscot Tribal members on the clean-up of the Penobscot River for the University of Montana.

- **Survey of Residents of the Pike Creek Watershed Regarding Attitudes Toward and Behavior Affecting Water Quality.** Responsive Management conducted this telephone survey of Delaware residents in the vicinity of Pike Creek for the Delaware Department of Natural Resources and Environmental Control to determine their opinions on and behaviors affecting water quality.

- **Effects of Delaware River Oil Spill on Waterfowl Hunter Behavior and Participation.** This study was conducted for the National Oceanic and Atmospheric Administration (NOAA) to determine the effects of the Delaware River oil spill on waterfowl hunter behavior and participation. The study entailed a telephone survey of waterfowl hunters from Camden and Salem Counties in New Jersey and New Castle County in Delaware.

- **National Aquatic Invasive Species Survey: Final Report.** For this project, Responsive Management conducted a mail survey of the fish and wildlife agency director or proxy from each state and territory to identify various strategies and programs used within each state for addressing the problem of aquatic invasive species. The study was used to help secure additional funding for each state, support the expansion of state authority as needed, and solidify the partnerships with appropriate federal agencies in addressing the problems of aquatic invasive species.

- **Attitudes Toward Marine Wildlife Among Residents of Southern California's Urban Coastal Zone.** For this project, Responsive Management conducted a telephone survey (administered in several languages) of southern California residents to assess public attitudes toward marine resources. The study was a cooperative effort with the University of Southern California.

- **Opinions on and Behaviors Affecting Water Issues in the Appoquinimink River Watershed Among Watershed Residents.** This study was conducted for the Appoquinimink River Association (ARA) to determine knowledge of, opinions on, and behaviors affecting water issues among residents of the Appoquinimink River watershed. The study entailed a telephone survey of residents from zip codes within the watershed.

- **New Hampshire Aquatic Resources Education Center and Program Analysis: Focus Group and Survey Report.** Responsive Management conducted focus groups and telephone survey of New Hampshire educators to assess their awareness of and attitudes toward the planned Aquatic Education Resources Center/Program (AREC). The study was used to assist the New Hampshire Fish and Game Department in planning and implementing the AREC.

- **Arkansas Residents' Awareness of and Attitudes Toward Aquatic Activities and Resources Management.** This study involved a telephone survey of Arkansas residents to assess their awareness of, participation in, and attitudes toward aquatic resource activities and the Arkansas Game and Fish Commission's aquatic programs. The study also assessed residents' attitudes toward a mandatory boater education course and their perceptions of Arkansas aquatic resources.

- **An Evaluation of the NOAA Coastal Services Center Coastal Resource Management Surveys.** This project involved a comprehensive evaluation of the National Oceanic and Atmospheric Administration, Coastal Services Center's coastal resource management survey. The study involved a review of the survey's purpose, the survey development process, the questions used to assess customer's needs and capabilities, the mechanism used to report the results internally and externally, as well as how the survey findings are incorporated into the Center's strategic planning and program development.

- **Coastal Training Needs Assessment and Market Inventory for the Jacques Cousteau National Estuarine Research Reserve.** For this project, Responsive Management completed a needs assessment of the coastal training program entailing a survey of coastal decision-makers throughout New Jersey to assess their knowledge, skills, and attitudes, to identify gaps and overlaps in available training services, and to identify topics where decision-makers want/need additional training and educational materials.

- **Implications of the Market Inventory and Needs Assessment of the Delaware National Estuarine Research Reserve.** Responsive Management conducted a follow-up report based on the market inventory and needs assessment of the Delaware National Estuarine Research Reserve that discusses the implications of the research and provides recommendations regarding the direction of coastal training for the Delaware Department of Natural Resources and Environmental Control and the National Oceanic and Atmospheric Administration.
- **Delaware National Estuarine Research Reserve: Market Inventory of Coastal Training in Delaware.** This study was conducted for the Delaware Department of Natural Resources and Environmental Control and the National Oceanic and Atmospheric Administration. For this project, Responsive Management completed

market analysis of coastal training programs in Delaware to create a statewide inventory of training programs, to identify gaps and overlaps in available training services, and to identify potential partnerships for Coastal Training Program efforts in Delaware. The study was used to guide the formulation of a strategic plan for the future of the Coastal Training Program.

- **Market Inventory/ Needs Assessment for the Sapelo Island National Estuarine Research Reserve.** This study was conducted for the Sapelo Island National Estuarine Research Reserve (hereinafter referred to as SINERR) to assess existing programs related to coastal training and to determine current and desired levels of coastal training among decision-makers in Georgia. The assessment was designed to identify any overlaps among various coastal training efforts; the full range of coastal issues that may need to be addressed through training and information but are not currently being adequately addressed; the professional decision-making groups that should be targeted for coastal training, including those not currently being adequately served; and the best strategies, technologies, and formats to educate and inform the decision-making groups, including a prioritization of the groups that most need specific additional information.

- **Hunters' and Anglers' Opinions on Global Warming and Climate Change.** This study was conducted for Trout Unlimited and the Wildlife Management Institute to determine hunters' and anglers' opinions on and attitudes toward global warming and climate change issues, including potential actions to address global warming and climate change. The study entailed a telephone survey of sportsmen from a sample obtained from hunting and fishing license records and Responsive Management databases of hunters and anglers in those states for which license data are not available.

- **Nationwide Opinion Survey of Hunters and Anglers Regarding Global Warming.** Hunters' and anglers' knowledge of, attitudes toward, and opinions on global warming issues, particularly as they relate to more specific policy issues, as well as message themes regarding global warming that resonate with sportsmen were assessed in a telephone survey conducted for the National Wildlife Federation. Sportsmen nationwide were interviewed, with oversamples and state-specific questions administered in Arkansas, Florida, Michigan, Minnesota, Pennsylvania, and South Carolina.

- **Marine Anglers' Opinions on and Attitudes Toward Recreational Fisheries Management.** This study was conducted for Environmental Defense to identify recreational and for-hire anglers' motivations for participating in recreational fishing, their attitudes toward fisheries management, and their opinions on regulations and the allocation of a limited fishery resource, with a specific focus on reef and ground fishing. The results of the study will assist Environmental Defense in developing an effective national strategy and communications plan to engage this politically strong constituency in national recreational fisheries reform.

Studies Conducted for or in the State of West Virginia

Responsive Management also has a longstanding relationship with the State of West Virginia. In fact, Responsive Management has conducted several major studies for or in the state. Most recently, Responsive Management was awarded a project with the West Virginia Division of Natural Resources to conduct a telephone survey of hunters in Hampshire County, West Virginia to quantitatively assess their opinions on and attitudes toward Chronic Wasting Disease (CWD) and the impact of restrictions and regulations on their hunting participation. Other projects include a study to determine West Virginia residents' opinions on black bears, black bear management, and black bear hunting; a telephone survey of West Virginia hunters was conducted to assess their opinions on issues related to deer, the deer hunting season, and hunter access to private lands; and a telephone survey of West Virginia rural landowners to assess their opinions on issues related to hunter access to private lands, deer harvest on private lands, deer crop damage, problems with hunter behavior, and potential programs to increase deer harvest on private lands. To follow is a list of major studies conducted for or in the State of West Virginia.

- **Hunters' Attitudes Toward Chronic Wasting Disease and the Impact of Management Efforts on Hunting Participation in Hampshire County, West Virginia.** To assess the outcomes of restrictions and regulations, which have been adopted to prevent the spread of CWD, the WVDNR commissioned Responsive Management to conduct a study to determine how these management efforts have impacted hunting participation in Hampshire County. This survey will be designed to achieve the following objectives:
    - Determine if the baiting and feeding ban of white-tailed deer affected hunters' participation in Hampshire County deer hunting seasons.
    - Determine if the carcass transport restriction of white-tailed deer from the CWD containment area affected hunters' participation in Hampshire County deer hunting seasons.
    - Determine if the presence of CWD affected hunters' attitudes to hunt in the containment zone or if they shifted their hunting areas because of the disease.

- **West Virginia Residents' Attitudes Toward Wildlife, Their Participation in Wildlife-Related Recreation, and Their Consumption of Fish and Wildlife Caught in West Virginia.** This 2005 study was conducted for the West Virginia Division of Natural Resources to determine residents' attitudes toward wildlife, their participation in wildlife-related activities, their consumption of fish and wildlife caught in West Virginia, and their attitudes toward consumption advisories.

- **2010-2011 West Virginia Hunter Survey: Hunting Participation and Success in West Virginia.** This study was conducted for the West Virginia Division of Natural Resources (WVDNR) to determine big and small game hunting participation, success, and pressure in the state, including estimates of the number of hunters for multiple species and white-tailed deer harvest at the county level. The study entailed two telephone surveys of West Virginia residents.

- **West Virginia Residents' Opinions on Black Bears and Black Bear Hunting.** This study was conducted for the West Virginia Division of Natural Resources to determine West Virginia residents' opinions on black bears, black bear management, and black bear hunting.

The study entailed a telephone survey of West Virginia residents aged 18 and over, and Responsive Management obtained a total of 1,206 completed interviews. Responsive Management completed a similar telephone survey for the state of Maryland. For this study, Maryland residents were asked questions about their contacts with black bears, attitudes toward black bears, strategies to avoid black bear nuisance behavior, and their opinion of regulated hunting of black bears.

- **West Virginia 1998 Landowner Survey.** For this project, Responsive Management conducted a telephone survey of West Virginia rural landowners to assess their opinions on issues related to hunter access to private lands, deer harvest on private lands, deer crop damage, problems with hunter behavior, and potential programs to increase deer harvest on private lands.

- **West Virginia 1998 Hunter Survey.** This telephone survey of West Virginia hunters was conducted to assess their opinions on issues related to deer, the deer hunting season, and hunter access to private lands.

- **West Virginia Wildlife Viewing Guide.** This is a book about the best locations for viewing wildlife within West Virginia, including directions to each site. The book also includes information about how best to watch wildlife and the ethics of wildlife viewing.

- **West Virginia Residents' Attitudes Toward the Land Acquisition Program and Fish and Wildlife Management.** This study involved a telephone survey of West Virginia residents to assess their attitudes toward fish and wildlife management, including funding issues and land acquisition.

- **Public Use of Wildlife Resources in West Virginia.** Responsive Management conducted a telephone survey of Randolph County, West Virginia, residents to assess their use of wildlife and forest products for West Virginia University.

"This is just a short note to thank you . . . for the outstanding service you provided in the recent survey effort. You delivered a product that precisely fits our needs and in a time frame that allows us to begin using the information immediately. I truly appreciate your dedication and professionalism. It's not an exaggeration to say that you exceeded my expectations."

–Rob Manes, (Former) Assistant Secretary, Kansas Department of Wildlife & Parks (currently with The Nature Conservancy)

REFERENCES

Aquatic Use Impacts (3 References)

Contact: Steve Scheiblauer, Monterey Harbormaster
Alliance of Communities for Sustainable Fisheries
Office of the Harbormaster
City Hall
Monterey, CA 93940
(831) 646-3950
Scheibla@ci.monterey.ca.us

Project Title: *2009 Compendium of Three Reports Regarding the Monterey Bay Area Fisheries*
Project Description: From 2007-2009, Responsive Management interviewed more than 2,200 people in five separate surveys, asking them hundreds of questions regarding issues pertaining to the coastal communities of California. This report is a distillation of the multiple surveys conducted from March 2007 to February 2009. The studies included in this report were conducted to determine Californians' opinions on and attitudes toward commercial and recreational fishing in coastal areas of California, the ecological health of California's coastal fisheries and wildlife, and fisheries and wildlife management along the coast. Numerous questions were asked about water quality and the impact of commercial and recreational fishing on coastal areas.

Contact: Jim Eychaner, Recreation Planner
Washington State Recreation and Conservation Office
Post Office Box 40917 • Olympia, WA 98504
(360) 902-3011
JimE@rco.wa.gov

ProjectTitle: *Washington Boater Needs Assessment*
Project Description: As mandated by the Washington State Legislature. This study was conducted for the Washington State Recreation and Conservation Office (RCO) to determine the needs of Washington boaters and to help determine priorities for allocating resources. Boating professionals, law enforcement, educators, and the boating public were all interviewed in an effort to identify challenges, improvements, and additional needs for boating service providers and facilities. This survey included topics related to the environmental impact of boating on water sanitation, in particular environmental issues caused by invasive species. In general, boating providers show a greater concern for environmental issues in Washington than do the boaters themselves. Water quality was a major concern among all providers (note that water quality is the top natural resource concern among Americans). In particular, providers voiced concern about the potential for boaters to act indirectly as sources of pollution, such as through fuel spillage, the use of copper bottom painted boats, or by spreading contamination from pumpout and dump stations. A majority of providers (60%) cited marine sanitation as an area of particular importance. In the focus groups, participants named milfoil, stormwater regulations, boat emissions, beach and shoreline erosion, sediment management, and over-fishing as areas to include in environmental training programs for personnel and educational materials for boaters. Finally, note that fishing was the top activity among boaters (53% had fished in the past two years in Washington), thereby demonstrating latent concern among boaters over issues potentially affecting fishing, such as invasive species and water quality.

Contact: Susan Shingledecker, Assistant VP, Director of Environmental Programs
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147 Old Solomon's Island Road, Suite 513 • Annapolis, MD 21401
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sshingledecker@boatus.com

Project Title: *Anglers' Knowledge of and Attitudes Toward Monofilament Line Recycling*
Project Description: This study was conducted for BoatU.S. Foundation to assess anglers' awareness of and participation in the "Reel In and Recycle" monofilament line recycling program funded jointly by the NOAA Marine Debris Program and the National Fish and Wildlife Foundation and implemented by BoatU.S. Foundation. The purpose of the "Reel In and Recycle" program is to establish a nationwide monofilament recycling effort that makes recycling easy and convenient for anglers. This study is designed to assess anglers' awareness of problems and issues related to improper discard of monofilament line, to examine their behaviors and attitudes regarding recycling monofilament line, to identify barriers and challenges to recycling monofilament line, and to determine messages and themes that resonate with anglers and encourage monofilament line recycling. Results from this study will assist future planning, education, outreach, and program evaluation. The study entailed a telephone survey of licensed anglers in three states in which BoatU.S. Foundation has made numerous monofilament line recycling bins available: California, New Jersey, and Virginia. Responsive Management conducted this survey in May 2011 and obtained 306 completed surveys of anglers in California who lived and/or fished within a 20-mile radius of monofilament line recycling bins, 304 completed surveys of anglers in New Jersey who lived and/or fished within a 20-mile radius of monofilament line recycling bins, and 306 completed surveys of anglers in Virginia who lived and/or fished within a 20-mile radius of monofilament line recycling bins.

Additional References

Contact: Susan Love, Delaware Coastal Programs
Department of Natural Resources and Environmental Control
Division of Soil & Water Conservation
5 East Reed Street, Suite 201 • Dover, DE 19901
(302) 739-9283
Susan.Love@state.de.us

Project Title: *Delaware Residents' Opinions on Climate Change and Sea Level Rise*
Project Description: This study was conducted for the Delaware Department of Environmental Control (DNREC) to determine Delaware residents' opinions on climate change and sea level rise. Specifically, this study was designed to assess Delaware residents' and stakeholders' awareness and understanding of key issues regarding climate change, water quality issues, and sea level rise; to determine their perception of the overall effect of sea level rise on the economy and ecology of the state; and to explore public opinion regarding long range planning for sea level rise loss and damage prevention. The survey was conducted in December 2009, and Responsive Management obtained a total of 1,505 completed interviews.

Contact: Stephen Perry, Chief of Inland Fisheries
New Hampshire Fish and Game Department
11 Hazen Drive • Concord, NH 03301
(603) 271-1745
Stephen.Perry@wildlife.nh.gov

Project Title: *New Hampshire Residents' Opinions on and Participation in Outdoor Recreation*
Project Description: Responsive Management completed a study for the New Hampshire Fish and Game Department to better understand public opinion on and attitudes toward the Department's programs and services. The study entailed a telephone survey of New Hampshire residents ages 18 years and older. The survey was conducted during December 2009 and January 2010. Responsive Management obtained a total of 1,005 completed interviews. For the entire sample of New Hampshire residents, the sampling error is at most plus or minus 3.09 percentage points.

Contact: Ellen O'Connor, Interim Deputy Director
Evergreen Park and Recreation District
Post Office Box 520 • Evergreen, CO 80437
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eoconnor@eprd.co

Project Title: *Residents' Use of and Opinion on the Evergreen District and Its Programs and Facilities*
Project Description: For this study, Responsive Management designed and administered a district wide needs analysis/community survey for the Evergreen Park and Recreation District (EPRD) to assess community satisfaction with program, parks, and other services. The survey was conducted in June 2010. Responsive Management obtained a total of 1,008 completed interviews. For the entire sample of residents of the Evergreen District, the sampling error is at most plus or minus 3.04 percentage points.

Contact: Chris Ryan, Bear Biologist/Leader
West Virginia Division of Natural Resources
Capitol Complex, Bldg 3, Room 825
Charleston, WV 25305
(304) 558-2771

Project: *West Virginia Residents' Participation in Deer Hunting and Harvest of Deer*
Project Description: This study was conducted for the West Virginia Division of Natural Resources (WVDNR) to determine residents' participation rates in deer hunting and their harvest of deer. The study entailed a telephone survey of West Virginia residents aged 15 years and over. For the survey and the subsequent analysis, West Virginia was divided into 24 regions. To ensure that there would be enough respondents in each region for accurate analyses, Responsive Management obtained at least 100 completed interviews with deer hunters in each region. For statewide analyses, the data were weighted so that the proportions of the sample among the regions matched the distribution of the population statewide.

SELECTED PUBLICATIONS

Duda, M. D., Jones, M. F., & Criscione, A. E. (2010). *The Sportsman's Voice: Hunting and Fishing in America.* State College, PA: Venture Publishing.

This book provides federal and state legislators, policy makers, fish and wildlife professionals and students, conservation organizations, and individual hunters and anglers with information on hunting and fishing, including statistical findings on trends, participation, and the economic importance of those activities. This book evolved from a project commissioned by the Congressional Sportsmen's Foundation. For the final publication, Responsive Management worked with more than 20 fish and wildlife agency professionals and not-for-profit groups who reviewed the preliminary draft of the book and offered their comments and feedback. Their suggestions were incorporated into the final draft of the book.

Duda, M. D., & Nobile, J. L. (2010). "The Fallacy of Online Surveys: No Data Are Better Than Bad Data." *Human Dimensions of Wildlife, 15*(1), 55-64.

Internet or online surveys have become attractive to fish and wildlife agencies as an economical way to measure constituents' opinions and attitudes on a variety of issues. Online surveys, however, can have several drawbacks that affect the scientific validity of the data. In this article, Responsive Management describes four basic problems that online surveys currently present to researchers and then discusses three research projects conducted in collaboration with state fish and wildlife agencies that illustrate these drawbacks. Each research project involved an online survey and/or a corresponding random telephone survey or non-response bias analysis. Systematic elimination of portions of the sample population in the online survey is demonstrated in each research project (i.e., the definition of bias). One research project involved a closed population, which enabled a direct comparison of telephone and online results with the total population.

Ryan, C.W., Edwards, J.W., and Duda, M.D. (2009). "West Virginia Residents Attitudes and Opinions Toward American Black Bear Hunting." *Ursus, 20*(2). 131-142.

This peer-reviewed journal article highlights the major findings of a 2006 study Responsive Management conducted in partnership with the West Virginia Division of Natural Resources. A total of 1,206 West Virginia residents 18 years old and older were surveyed for this study to determine their opinions on black bears, black bear management, and black bear hunting. The analysis included a crosstabulation by region and by hunter/non-hunter. The results were weighted so that the proportions of the sample among the counties matched the distribution of the population statewide and demonstrate the importance of considering regional and sociodemographic differences in public opinion when making bear management decisions and determining wildlife population objectives.

Duda, M. D., Jones, M. F., & Criscione, A. (2009). "Public Awareness and Credibility of Fish and Wildlife Agencies in the Northeastern United States." *Human Dimensions of Wildlife 14*(2), 142-44.

This findings abstract presents the results of a study commissioned Northeast Conservation Information and Education Association (NCIEA) to measure and examine public awareness and knowledge of fish and wildlife agencies and the public's attitudes toward the credibility of fish

and wildlife agencies in the northeastern United States. The study entailed a telephone survey of residents' attitudes toward and opinions on fish and wildlife management issues and the state's fish and wildlife agency in all 13 member states of the NCIEA: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. The study consists of 13 separate state reports and a regional report of the cumulative results.

Inkley, D. B., Staudt, A. C., and Duda, M. D. (2009). "Imagining the Future: Humans, Wildlife, and Global Climate Change." In *Wildlife and Society: The Science of Human Dimension,* edited by Manfredo, M. J., Vaske, J. J., Brown, P. J., Decker, D. J., and E. A. Duke, 57-72. Washington: Island Press.

This book chapter discusses the impact of climate change on humans and wildlife. It begins with a discussion of climate change, its effects, and future implications for wildlife. The chapter also explores human attitudes on climate change and trends in public perceptions and views on global warming. It outlines several conservation actions and recommendations to help mitigate the effects of climate change on wildlife. Finally, this chapter stresses the value of human dimensions research in achieving these goals: human dimension researchers are challenged to identify what makes climate change a real concern for people and how to encourage people to take actions and change behaviors to reduce pollution to help minimize rapid climate change.

Duda, M. D., and Jones, M. F. (2008). "Public Opinion on and Attitudes Toward Hunting." Paper presented at the 73rd North American Wildlife and Natural Resources Conference, Phoenix, AZ, March 25-29, 2008. *Transactions of the 73rd North American Wildlife and Natural Resources Conference.* Washington: Wildlife Management Institute.

As debate over hunting in the United States continues, an objective analysis of public attitudes toward and opinions on legal hunting provides a fundamental context for any discourse on the controversy. Research indicates that most Americans support hunting in general; however, support for and opposition to hunting can vary dramatically based on numerous factors, including personal values and characteristics, attitudes toward hunters, attitudes toward animal welfare, the motivation for participating, and the species involved, to name a few. This paper discusses public opinion on and attitudes toward hunting and explores the characteristics that influence public opinion on hunting and hunting-related issues.

Responsive Management/NSSF. (2008). *The Future of Hunting and the Shooting Sports: Research-Based Recruitment and Retention Strategies.* Produced for the U.S. Fish and Wildlife Service under Grant Agreement CT-M-6-0. Harrisonburg, VA.

Responsive Management recently completed one of the largest studies on hunter recruitment and retention ever conducted. The study included a comprehensive literature review of past research; focus groups in diverse geographic areas of active hunters and shooters, lapsed hunters and shooters, non-hunters and non-shooters, and anti-hunters and anti-shooters; two nationwide telephone surveys with hunters and shooters and the general population; and final report, including actionable recommendation strategies. Currently, Responsive Management is working with the National Shooting Sports Foundation (NSSF), numerous state fish and wildlife agencies, conservation organizations, and industry on implementing the recommendations in this report. This report was the core of the 2008 Shooting Sports Summit and the impetus for

NSSF's *Task Force 20/20.* This task force was created to implement the strategic recommendations outlined in the report and develop an action plan to increase hunting and target shooting participation. Their goal is to increase both hunting and target shooting participation during the next five years. Based on recommendations in *The Future* report, *Task Force 20/20* has chosen several targeted areas of focus to increase hunter participation, recruitment, and retention: advancing youth shooting programs, tailoring products and services, addressing aging demographics, improving physical access and availability, and coordinating industry efforts.

Responsive Management. (2003). *Factors Related to Hunting and Fishing Participation Among the Nation's Youth.* Produced under Federal Aid in Sport Fish and Wildlife Restoration Grant Agreement 91400-01-0010. Harrisonburg, VA.

The future of hunting and fishing in the United States ultimately depends upon the commitment of future generations to these traditional fish and wildlife activities. The key to active participation in and commitment to hunting and fishing of future generations is fostering this commitment and participation among today's youth. The purpose of this study is to better understand the factors related to hunting and fishing initiation, participation, retention, and desertion among U.S. youth 8-18 years old. There are two major objectives of this study. The first objective is to identify the factors involved in the recruitment and retention of the nation's youth to hunting and fishing through primary and secondary research. The second objective is to recommend to the fish and wildlife management community programs and strategies that have the best chance of success in the recruitment and retention of the nation's youth in hunting and fishing participation based on the research findings.

Duda, M. D., Bissell, S. J., & Young, K. C. (1998). *Wildlife and the American Mind: Public Opinion on and Attitudes Toward Fish and Wildlife Management.* Produced under Federal Aid in Sport Fish and Wildlife Restoration Grant Agreement 14-48-0009-96-1230. Harrisonburg, VA: Responsive Management.

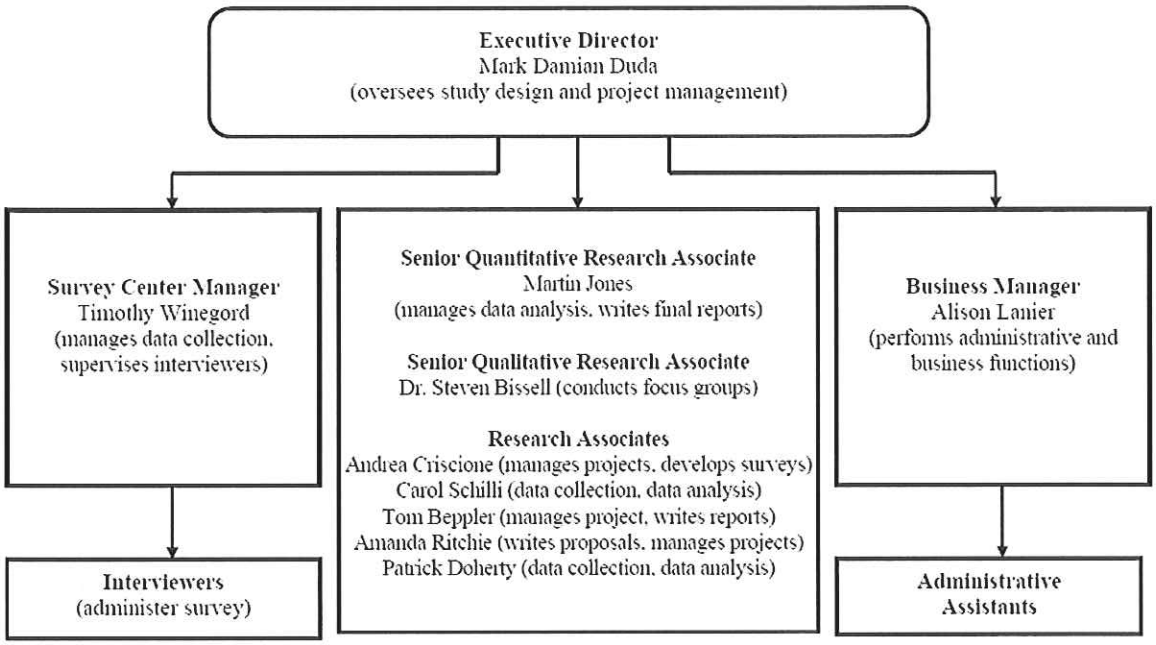
This book was developed to address the human element of fish and wildlife management and its importance for successful fish and wildlife programs. It highlights the importance of utilizing human dimensions research and techniques to better understand and work with the public and agency constituents when making fish and wildlife management decisions. The use of human dimensions research to better understand the public served will, ultimately, enhance the management of agency resources and increase public support.

"Mark Damian Duda is one of the nation's most respected researchers on natural resource issues."

–Steve Pennaz, Executive Director, North American Fisherman, North American Outdoor Group, Inc.

ORGANIZATIONAL STRUCTURE AND PERSONNEL

Responsive Management consists of an Executive Director, Statisticians, Survey Center Managers, Qualitative Research Associates, Quantitative Research Associates, a Business Manager, and 50 professional interviewers who conduct surveys and research *only* on public opinion on and attitudes toward natural/aquatic resource, environmental, and outdoor recreation issues. Please visit our website at www.responsivemanagement.com for additional information or to view our research studies. The following organizational chart illustrates the lines of authority for Responsive Management; all survey work will be completed in-house by Responsive Management's qualified Research Associates and professional interviewers.



For further information about Responsive Management or to discuss available services, please contact:

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or

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STAFF RESUMES

Mark Damian Duda

Mark Damian Duda is Executive Director of Responsive Management and will serve as project manager for this study, supervising all phases of project completion. Mark has directed more than 500 quantitative surveys and hundreds of focus groups concerning natural/aquatic resource, environmental, and outdoor recreation issues and is the author of three books about wildlife. His research has been featured in numerous journals, magazines, and major media, including CNN, *Newsweek*, *The New York Times*, *The Wall Street Journal*, and the front pages of both *The Washington Post* and *USA Today*.

Mark has been named Conservation Educator of the Year by both the Florida Wildlife Federation and National Wildlife Federation, was a recipient of the Conservation Achievement Award from the Western Association of Fish and Wildlife Agencies, and was named the Wildlife Professional of the Year by the Virginia Wildlife Society. He also received the Conservation Achievement Award in Communications from Ducks Unlimited, as well as an award from the Potomac Ducks Unlimited Chapter for his contributions as a researcher and writer. Mark holds a Master's degree from Yale University in natural resource policy and planning. Mark founded Responsive Management 21 years ago and has been intimately involved in all research projects.

Steven J. Bissell, Ph.D.

Dr. Steven Bissell is Senior Qualitative Research Analyst for Responsive Management. He has worked for more than 25 years as a human dimensions researcher in natural resources, Wildlife Conservation Officer, nongame and endangered species biologist, and land-use planner. His work experience includes direct work in outreach and communications as the Head of Environmental Education for the Colorado Division of Wildlife. Steve received his Ph.D. from the University of Colorado, with a specialization in qualitative research methods.

During his tenure with Responsive Management, Steve has performed data analysis and reported the findings on more than 100 studies involving public attitudes toward natural/aquatic resource, environmental, and outdoor recreation issues. Steve is a pioneer in utilizing focus groups concerning natural/aquatic resource and environmental issues and has conducted hundreds of focus groups about conservation values. He offers expertise in social science research combined with a strong background in the technical aspects of natural resource management, especially wildlife ecology and conservation biology.

Martin Jones

Marty Jones is Senior Quantitative Research Associate with Responsive Management and has researched and written exclusively about natural/aquatic resource, environmental, and outdoor recreation issues for the past 12 years. Marty serves as the lead technical report writer and is credited with writing and developing more than 200 surveys and reports focused on public attitudes toward natural resource issues. Marty holds a Master's degree in geography from the University of Vermont and a Bachelor's degree as a double major in English and geography from James Madison University. Prior to joining Responsive Management, Marty headed the technical writing department for a major engineering firm in Northern Virginia that did extensive wetlands and land-use research. For this project, Marty will oversee data analysis and prepare the final report for submission to DEP.

Marty was instrumental in developing the communications recommendations for a study of Georgia residents to better understand their attitudes toward and opinions on water resource issues in Georgia. Marty's numerous reports also include *Americans' Knowledge of and Attitudes Toward Water and Water-Related Issues, Delaware Residents' Attitudes Toward and Behaviors that Affect Water Quality*, and *A Study Of Ohio River Contact Recreational Use, Characteristics Of Contact Recreational Use, And Site-Specific Fish Consumption Rates*. Marty also wrote the reports for a programmatic evaluation of the North American Wetlands Conservation Act (NAWCA) in the United State and Canada during its first 10 years of implementation, an assessment of coastal training and education for the Sapelo Island National Estuarine Research Reserve (SINERR), and an evaluation of green infrastructure education in Delaware. More recently, Marty served as the project manager on a study conducted for the Delaware Department of Environmental Control to determine Delaware residents' opinions on climate change and sea level rise.

In addition to these major reports, Marty has served as the lead technical writer for more than 200 studies conducted for state natural resource and fish and wildlife agencies throughout the country, as well as studies for major conservation organizations such as Ducks Unlimited, the Izaak Walton League, and the Rocky Mountain Elk Foundation. Marty has been with Responsive Management for almost a decade and has been directly involved in the data analysis and development of nearly all of the firm's reports and planning documents. With few exceptions, Marty was the primary research associate and lead technical writer for many of the aforementioned studies.

Andrea M. Criscione

Andrea Criscione is a Research Associate with Responsive Management and a leader in survey design and development. Since joining Responsive Management, Andrea has assisted with and served as project manager for numerous studies related to natural resource and environmental issues. She is credited with writing and developing over 100 surveys focused on attitudes toward natural resource and environmental issues. She holds a Master's degree in English from Virginia Tech, with a concentration in communication studies, and a Bachelor's degree in sociology from Bridgewater College. For this project, Andrea will work closely with DEP to develop the 2011 West Virginia Algae Designated Use Impairment Survey.

Andrea has written numerous surveys concerning natural/aquatic resource, environmental, and outdoor recreation issues, including a survey of Georgia residents to better understand their attitudes toward and opinions on water resource issues in Georgia, a survey conducted for the Sapelo Island National Estuarine Research Reserve to assess existing programs related to coastal training and to determine current and desired levels of coastal training among decision-makers in Georgia, a survey to determine Monterey Bay area residents' opinions on the management of the Monterey Bay National Marine Sanctuary, and a nationwide opinion survey to assess knowledge of, attitudes toward, and opinions on global warming issues, to name only a few examples.

Andrea served as the project manager for two communication and outreach studies conducted for litter prevention and recycling campaigns in Georgia. She has also been directly involved in focus group facilitation and/or survey design and development for numerous studies, including a study to assess green infrastructure in Delaware, a survey of lapsed hunters in Virginia, and a

comprehensive analysis of demographic trends in Washington as well as an in-depth analysis of fishing participation and license sales in the state. Most recently, Andrea developed a survey for a complicated study to assess the way that chimpanzees are perceived by the public, including the way that media portrayals of chimpanzees affect the public perception of them. The study assessed respondents' reactions to images of chimpanzees and nine other species to examine differences in opinion based on four variables: type of medium, presence of humans, setting, and clothing. In addition to developing surveys and managing projects, Andrea also writes and edits reports and conducts focus groups.

Carol Schilli

Carol Schilli is a Research Associate Statistician with Responsive Management. Carol received her Bachelor's degree in mathematics, with a minor in biology and concentration in statistics, from Old Dominion University. Since joining Responsive Management, Carol has been responsible for computer coding survey instruments and performing data analyses on numerous natural/aquatic resource, environmental, and outdoor recreation studies.

Since joining Responsive Management, Carol has been responsible for computer coding survey instruments and performing data analyses on numerous natural/aquatic resource, environmental, and outdoor recreation studies. For example, Carol completed the data analysis on a large-scale study for the Ohio River Valley Water Sanitation Commission (ORSANCO) to quantify contact recreational use of the Ohio River and to assist in the development of water quality criteria for fish consumption. This complex study was conducted to provide baseline data on how many people from the point of the river's primary source of confluence (Pittsburgh, Pennsylvania) to its point of discharge (Cairo, Illinois) use the Ohio River for contact recreation, how frequently and when the Ohio River is used for contact recreation, site-specific frequency use, and site-specific Ohio River fish consumption rates. Carol also conducted extensive data analysis for studies regarding public opinion on littering and anti-littering programs in Georgia and a study conducted for the Delaware Department of Environmental Control to determine Delaware residents' opinions on climate change and sea level rise.

Most recently, Carol completed the data analysis for several large wildlife management and conservation planning projects. A recently completed study for the Alaska Department of Fish and Game was designed to assess Anchorage, Alaska residents' attitudes toward bears, their prey (moose and salmon), their habitat, and various bear management options. The results of this study will be used to update Anchorage's bear management plan. Other similar studies include a survey of public opinion on littering and anti-littering programs in Georgia and a study conducted for the Delaware Department of Environmental Control to determine Delaware residents' opinions on climate change and sea level rise.

Tom Beppler

Tom Beppler is a Research Associate with Responsive Management. He received his Bachelor's degree in English with a minor in world literature from James Madison University. Tom has managed several projects while at Responsive Management, written reports of survey results, developed survey instruments, conducted on-site intercepts, and written a handbook for conducting scientifically defensible survey research.

Tom recently served as the project manager for the *Programmatic Evaluation of the Marine Mammal Health and Stranding Response Program Networks in the Southeast and Southwest Regions*. As project manager, Tom worked with NMFS staff to design the final survey, approved by the OMB, for the assessment of the Marine Mammal Stranding Networks in the Southwest and Southeast Regions. Tom also served as the project manager for an important project conducted for the U.S. Fish and Wildlife Service's Manatee Recovery Implementation Team to assess existing education and public awareness materials and programs related to the Florida manatee. This study was designed to identify any overlaps among the various education and outreach efforts; the full range of manatee issues that may need to be addressed through education and outreach but are not currently being adequately addressed; the target audiences that should be served by the Education Working Group, including those not currently being adequately served; and the best strategies and technologies to educate and inform the target audiences, including a prioritization of the groups who most need specific additional information and how to get the information to them.

Several of the numerous studies Tom has been involved in include a *Needs Assessment for the Sapelo Island National Estuarine Research Reserve* to assess existing programs related to coastal training and to determine current and desired levels of coastal training among decision-makers in Georgia; a needs assessment of education and outreach materials and programs related to the Florida manatee; and an evaluation of the Pennsylvania Game Commission's Public Access Program.

Amanda C. Ritchie

Amanda Ritchie is a Research Associate with Responsive Management. She holds a Master's degree in English from James Madison University and a Bachelor's in English from Bridgewater College. Amanda is primarily responsible for proposal writing; since Amanda joined Responsive Management, the company has been awarded approximately $4.8 million in research funding by various federal, regional, and state natural resource and environmental organizations to conduct public opinion research on natural resource and environmental issues.

Amanda recently served as the project manager for a study of public opinion on hunting and fishing licenses in Minnesota. This study was conducted for the Minnesota Department of Natural Resources to develop legislative recommendations for modifying the Department's license packages and pricing options. Amanda also served as the project manager in the development of a marketing plan to increase freshwater fishing in the State of Washington; for a study to assess the impact of fishing license structure and fee changes on angler participation, license sales, and state revenue in Maryland; and for a study of educators and students in ten participating states regarding the impact of the National Archery in the Schools Program. Amanda has also assisted in study and survey design for several projects, including a recent survey on outdoor recreation in New Hampshire, *Hunters' Opinions on Wildlife Management and Other Hunting Issues in Washington*, an assessment to determine the value of commercial and recreational fishing for tourists visiting local California communities, a needs assessment of boating providers in Washington State, a survey on Washington State Parks for Washington State, and a study of recreational use of the Ohio River.

Patrick Doherty

Patrick Doherty is a Research Associate with Responsive Management. Patrick received a Bachelor's degree with a concentration in Government and History from the College of William and Mary. Since joining Responsive Management, Patrick has been responsible for computer coding survey instruments and data analysis. Most recently, Patrick has been working on the data analysis for a large-scale assessment of fishing, hunting, and shooting recruitment and retention programs. For this project, Responsive Management conducted a uniform assessment of attitudes and participation rates in hunting, fishing, and sport shooting *prior to* involvement in recruitment and retention programs applicable to these areas as well as *after* participation in such programs. Funded through the International Association of Fish and Wildlife Agencies' Mulitstate Conservation Grant Program, Responsive Management and the National Wild Turkey Federation partnered for this study designed to (1) measure interest and participation in hunting, fishing, and sport shooting before and after participation in various recruitment and retention programs and (2) identify specific, research-based recommendations and strategies to enhance hunting, fishing, and sport shooting recruitment and retention programs. Patrick has been working on data analysis collected on 34 different programs nationwide.

Alison J. Lanier

Alison Lanier has been the Business Manager for Responsive Management for more than decade with and is familiar with all logistical aspects of survey research. Alison performs all administrative duties; maintains all databases, accounts, and payroll; and conducts business planning. Although Alison's primary duties relate to her position as Business Manager, she also coordinates Responsive Management's focus group projects, and she has been directly involved in the development, implementation, and supervision of over 300 surveys. Alison received her Bachelor's degree in international business from James Madison University.

Timothy L. Winegord

Tim Winegord is the Survey Center Manager with Responsive Management. Tim is responsible for survey implementation and project supervision, including direct supervision of 50 professional interviewers. Tim conducts in-depth project briefings with interviewing staff prior to working on each study and also closely monitors telephone workstations, thereby providing strict control over the data collection process. Tim has managed the survey portion of almost 200 studies on natural/aquatic resource, environmental, and outdoor recreation issues.

Interviewers

Responsive Management maintains a full-service, state-of-the-art computer-assisted telephone and mail survey center with 50 professional interviewers who conduct surveys only on attitudes toward natural resource and conservation/environmental issues. To ensure that the data collected are of the highest quality, the interviewers are trained through lectures, role-playing, and video training, according to the standards established by the Council of American Survey Research Organizations.

APPENDIX A: THE FALLACY OF ONLINE SURVEYS

Human Dimensions of Wildlife, 15:55–64, 2010

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Taylor & Francis Group

The Fallacy of Online Surveys: No Data Are Better Than Bad Data

MARK DAMIAN DUDA AND JOANNE L. NOBILE

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Internet or online surveys have become attractive to fish and wildlife agencies as an economical way to measure constituents' opinions and attitudes on a variety of issues. Online surveys, however, can have several drawbacks that affect the scientific validity of the data. We describe four basic problems that online surveys currently present to researchers and then discuss three research projects conducted in collaboration with state fish and wildlife agencies that illustrate these drawbacks. Each research project involved an online survey and/or a corresponding random telephone survey or non-response bias analysis. Systematic elimination of portions of the sample population in the online survey is demonstrated in each research project (i.e., the definition of bias). One research project involved a closed population, which enabled a direct comparison of telephone and online results with the total population.

Keywords Internet surveys, sample validity, SLOP surveys, public opinion, non-response bias

Introduction

Fish and wildlife and outdoor recreation professionals use public opinion and attitude surveys to facilitate understanding their constituents. When the surveys are scientifically valid and unbiased, this information is useful for organizational planning. Survey research, however, costs money. Given the current budgetary climate and the uncertainty of the future, organizations are looking for ways to save money. Strategic planning and human dimensions information-gathering are no exception.

Online surveys are becoming increasingly popular as information-gathering tools. Marketing companies offer online surveys at seemingly reasonable rates. Online surveys *appear* to be easy to set up and administer in-house, can save time and money, and provide immediate results. Unfortunately, online surveys seldom provide scientifically valid, accurate, and legally defensible data. Recent collaborative research conducted by Responsive Management and three state fish and wildlife agencies provides clear examples of how online surveys can produce inaccurate, unreliable, and biased data. There are four main reasons for this: (a) sample validity, (b) non-response bias, (c) stakeholder bias, and (d) unverified respondents.

The challenges that online surveys present to obtaining scientifically valid survey results have been pointed out by others. Dillman, Smith, and Christian (2009), for example, cite the lack of standardization regarding e-mail address structure and how e-mail addresses are created, the absence of an online equivalent to the random digit dialing (RDD) algorithm for random selection of telephone numbers, and respondents' varying

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levels of capability in using the Internet as reasons that online surveys can result in invalid probability samples. Because a statistically valid sample frame cannot be established for most online surveys, non-response bias cannot be determined. As a result, little is currently known about non-response bias in Web-based surveys (Couper, 2000). Lack of control over the survey sample caused by stakeholder bias and unverified respondents can compromise the validity of online surveys and has been discussed in the literature (Bethlehem, 2008; Couper, 2000; Dillman et al., 2009; Vaske, 2008; Zhang, 1999).

Although there are several types of online surveys, including e-mails with embedded surveys, e-mail message requests for participation that include a link to a Web-based survey, and "open" Web-based surveys with no related e-mail request for participation, the latter two types of surveys are discussed here.

Sample Validity

Online surveys can yield inaccurate information regarding *sample validity*. For a study to be unbiased, *every member of the population under study must have a known chance of participating*. Unfortunately, it is not possible to draw a general public sample, where every member of the population has a known chance of being selected, from a population of online users. There are no representative samples of e-mail addresses for various populations, including the general population and, for example, registered voters, park visitors, and hunters and anglers. A "master list" of e-mail addresses for these groups does not exist because not all people within these populations have e-mail addresses or access to the Internet. When all members of the population under study have a known likelihood of participating, probability sampling allows for a relatively small sample size that can accurately represent the entire population (Dillman et al., 2009; Vaske, 2008).

Exceptions, however, can occur. One example is an internal survey of an agency or organization in which *all* potential respondents are known and have guaranteed Internet access, usually through their workplace. Studies such as these of fish and wildlife agencies have obtained results with scientifically valid sampling methodologies (e.g., Responsive Management, 2006b, 2007). Another exception occurs when participants are contacted by telephone and given the option of responding to the survey on the Internet, as opposed to a telephone interview. In these *mixed-mode surveys* (Couper, 2000; Dillman et al., 2009), the sample is not affected; respondents can still be selected based on randomly generated telephone numbers or a valid, representative sample of the population under study.

Online surveys can also result in invalid samples through *self-selection*. When online surveys available through an organization's Web site are accessible to anyone who happens to visit the site, the researcher has no control over sample selection. These are sometimes referred to as *self-selected opinion polls*, or SLOP surveys (American Association of Public Opinion Researchers, 2009). Such online survey results are biased because the respondents were not scientifically selected. The participants: (a) just happened to visit the Web site, (b) were persuaded by monetary or other incentives, (c) have a vested interest in the results or want to influence the findings, and/or (d) were driven to the site by others in the sample. This results in a *double bias* because the sample already excluded people without Internet access. People who are unaware that the survey exists do not have any chance of participating, which introduces further sampling bias. Access to a valid sample is the foundation for collecting data that are representative of the population. Without a valid sample, all data are questionable (Vaske, 2008).

Non-Response Bias

Research has shown that people who do not respond to requests to participate in a survey have the potential to be different from those who do respond, especially in general population surveys where response rates are low (Vaske, 2008). In these cases, *non-response bias* must be accounted for to ensure that survey results are representative of the population being studied. Because of the basic sample validity problems that online surveys present, a statistically valid sample frame usually cannot be established, and therefore the presence or absence of non-response bias cannot be determined.

There are several ways unique to online surveys in which respondents and non-respondents may differ. People who respond to a request to complete an online survey are likely to be more interested in the topic and therefore more willing to complete the survey, which biases the results. The very nature of the Internet, as an information-seeking tool, contributes to this form of bias. For example, someone who is interested in a survey's subject matter is more likely to seek information on the subject (e.g., via Google), and is more likely to stumble upon the online survey. More people with a heightened interest in the topic are "driven" to the online survey.

With a telephone survey, people are contacted who are not necessarily interested in the topic, and if they are not enthusiastic about completing the survey, a trained interviewer can encourage them to do so despite their disinterest, leading to results that more closely represent the whole population being studied, not just those with an interest in the subject. When a potential respondent is asked in an e-mail message to complete a survey, it is easy to delete the message (Vaske, 2008). Thus, those with a special interest in the topic will be more likely to respond, whereas those with only mild or no interest at all will be less likely to respond.

Mail filtering contributes to non-response bias in online surveys when e-mails are blocked or discarded by the recipient. Recipients can set the degree of message filtering. When this tolerance is strict, requests to participate may not be seen because the filter automatically "trashes" the survey request when it is delivered. Some users set up their e-mail account such that messages are not received unless the sender has been pre-approved. This completely removes these individuals from the possibility of receiving an invitation to participate in an online survey.

Finally, some potential respondents may have multiple e-mail addresses. It is impossible to know which is the individual's primary address or even if the person checks the account on a regular basis for incoming mail.

To illustrate the impact of non-response bias, two studies are presented. The first study is a non-response bias analysis conducted by Responsive Management and the Arizona Game and Fish Department (Responsive Management, 2006a). The second is a saltwater fishing and shellfishing study conducted by Responsive Management and the South Carolina Department of Natural Resources (Responsive Management, 2009a, 2009b).

Stakeholder Bias

Stakeholder bias can affect online survey results. People with a vested interest in the survey results can complete an online survey multiple times and urge others to complete the survey in order to influence the results. This practice (a.k.a. *poll crashing*) can be especially prevalent regarding issues that elicit high levels of concern (e.g., when a fish and wildlife agency wants to measure opinions on proposed regulation changes). Internet-savvy

individuals can write automated programs (i.e., *Internet bots*) that repeatedly cast votes to influence a poll's results.

Even when safeguards against multiple responses are implemented, there are workarounds. If a software protocol limits survey completions to one per e-mail address, a new e-mail account with a new address can be created and another survey completed with that address. If access is limited to one survey completion per computer, other surveys can be completed on other computers (e.g., at a friend's home, the workplace, or a public library). With online surveys where individuals have to sign up in order to participate, respondents can sign up under multiple names and e-mail addresses and vote multiple times through each address.

An example of stakeholder bias occurred in 2008, shortly after the Republican presidential candidate, Arizona Senator John McCain, announced that his vice presidential running mate would be Alaska Governor Sarah Palin. The Public Broadcasting Service (PBS) posted a one-question online poll on its Web site that asked, "Do you think that Sarah Palin is qualified to serve as Vice President of the United States?" with a choice of "Yes" or "No" as an answer (Siceloff, 2008). Respondents were initially allowed to vote repeatedly, but due to an overwhelming response, PBS implemented a registration system that limited votes to one per computer. Even after attempts to control multiple voting and moving the poll to a less prominent PBS Web page, people still sought out the site to cast votes. By October 15, 2008, 52 million votes were cast; 49% answered "Yes" and 49% answered "No" (Siceloff, 2008). In situations involving an issue that people feel strongly about, online survey results are not reliable because of the tendency to respond repeatedly.

Unverified Respondents

Without controls on who accesses online surveys, there is no way to verify respondents' demographic backgrounds. Even with safeguards implemented to control access to online surveys, there are multiple ways to circumvent those safeguards. The issue is further complicated when incentives are offered for completing online surveys (e.g., a chance to win a prize, discounts on purchases, a gift certificate). Incentives without close control over the sample simply encourage multiple responses from a single person. People with a strong desire for a prize or item can find ways around multiple response safeguards and complete several surveys, thereby increasing their chances of winning.

Weighting Data

For telephone and mail surveys, if the results of a non-response bias check show differences between people in the sample who completed a survey and those who did not complete it, data may need to be weighted for the sample results to be representative of the target population (Vaske, 2008). Weighting may also be necessary if the population proportions are known in advance and survey results reveal that specific groups or segments are overrepresented or underrepresented. Such weighting strategies, however, assume probability sampling. No amount of weighting can make up for an unrepresentative sample such as is typically found in online surveys.

Empirical Illustration

Three recent projects by Responsive Management and state agencies are used to compare results of online versus scientific telephone surveys within the same study topics.

For each telephone survey, a central polling site at Responsive Management allowed for quality control over the interviews and data collection. The survey center managers and other professional staff conducted project briefings with interviewers prior to administration of the telephone surveys. Interviewers were instructed on type of study, study goals and objectives, handling of survey questions, interview length, termination points and qualifiers for participation, interviewer instructions within the survey instrument, reading of the survey instrument, skip patterns, and probing and clarifying techniques necessary for specific questions on the survey instruments. Pre-tests of the questionnaires were conducted and revisions were made to the questionnaires based on the pre-tests.

North Carolina Sunday Hunting Study

Sunday hunting has been controversial in North Carolina, with strong feelings among both supporters and opponents. To help the North Carolina Wildlife Resources Commission (NCWRC) better understand the issue, the agency worked with Responsive Management and Virginia Tech to assess public opinion on Sunday hunting (Responsive Management, 2006c; Virginia Polytechnic and State University/Responsive Management, 2006). The study included an online opinion poll and a telephone survey.

The online poll was developed and placed on the NCWRC Web site to elicit feedback on support or opposition to Sunday hunting. The online poll (a non-random sample) was developed primarily as an outlet for people who wanted to be heard. In addition to a section asking about the respondent's gender, residence, land ownership status, and hunting participation, the online poll included an open-ended comments section. Responses were accepted from January 31, 2006, to August 31, 2006.

More than 10,000 responses to the poll were received through the NCWRC Web site. Responses were also collected by e-mail, telephone, and mail. All responses by all communication modes were categorized by (a) support for legalization of Sunday hunting in general, (b) opposition to legalization of Sunday hunting in general, and (c) no clear opinion expressed on the subject.

Responses were reviewed to eliminate multiple respondents; a small percentage of submissions was discarded based on strong evidence that the individuals responded to the poll multiple times. A few submissions were discarded because they were unrelated to the topic of Sunday hunting. The online poll, however, was not representative of the views of the general population or hunters because only those who were aware of the issue submitted their comments online or in writing (Virginia Polytechnic and State University/ Responsive Management, 2006).

For the telephone survey, interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday from noon to 5:00 p.m., and Sunday from 5:00 p.m. to 9:00 p.m., local time, using a five-callback design to maintain the representativeness of the sample, to avoid bias toward people easy to reach by telephone, and to provide an equal opportunity for all to participate. When a respondent could not be reached on the first call, interviewers placed subsequent calls on different days of the week and at different times of the day. The survey was conducted in June and July 2006 (n =1,212 completed interviews).

Findings of the telephone survey were reported at a 95% confidence interval. For the entire sample of North Carolina residents, the sampling error was at most ±2.815 percentage points. Sampling error was calculated using the formula detailed in Dillman (2000, p. 206).

The overall results indicated marked differences between the responses generated by the online poll and the scientific telephone survey results. Over half (55%) of the online

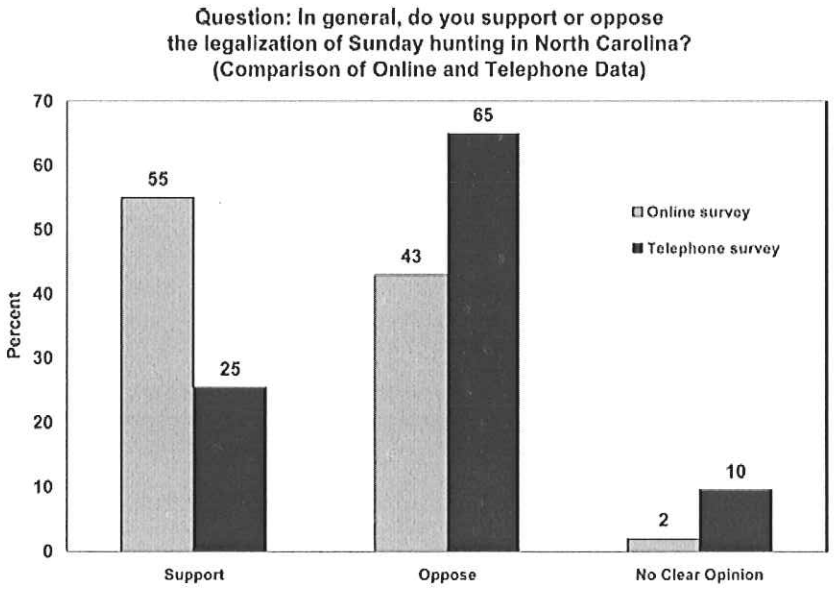

Figure 1. A comparison of results from a 2006 telephone survey conducted by Responsive Management, Virginia Tech, and the North Carolina Wildlife Resources Commission with an online survey posted on the NCWRC Web site (Responsive Management, 2006c).

respondents supported Sunday hunting, 43% were opposed, and 2% had no clear opinion (Figure 1). A quarter (25%) of the telephone respondents supported Sunday hunting, 65% were opposed, and 10% had no clear opinion. The difference (10% telephone vs. 2% online) in people who had no clear opinion on the subject of Sunday hunting suggests that more people with a vested interest in the results completed the online poll. Relying on the online poll results would have led to false impression of what the public was thinking regarding Sunday hunting in the state. Because the telephone survey used a randomly generated sample of North Carolina residents, results accurately reflected the population.

Arizona Big Game Hunt Permit Tag Draw Study

In 2006 the Arizona Game and Fish Department (AGFD) conducted an online survey to assess hunter attitudes toward the Arizona Big Game Hunt Permit Tag Draw, a topic with a high degree of interest to Arizona hunters. A 53-question online survey was developed cooperatively by the AGFD and Responsive Management. The survey was administered online by zoomerang.com, an online survey vendor. A hyperlink to the Web survey was distributed by e-mail to individuals who had provided an e-mail address when applying for the 2006 Fall Big Game Draw. Duplicate and invalid e-mail addresses were removed, and the survey was sent to 59,967 Fall Big Game Draw applicants. The Web survey program created a unique Web address for each e-mail address. The unique Web address ensured that multiple responses from a single e-mail address were removed, and a response from a specific e-mail address could be tracked if necessary. The Web survey was conducted August 15 to September 10, 2006. A total of 15,156 completed Web questionnaires was obtained.

Despite these methodological safeguards, the AGFD had doubts about the online survey's accuracy and worked with Responsive Management to conduct a non-response bias analysis. A telephone survey of the online survey non-respondents was conducted to assess non-response bias (Responsive Management, 2006a). Those who were contacted by e-mail but who did not respond were contacted by telephone and interviewed.

The non-response telephone survey questionnaire emulated the online questionnaire and was developed cooperatively by the AGFD and Responsive Management. Interviews were conducted using the procedures outlined earlier. The non-response telephone survey was conducted in October 2006. A total of 202 completed interviews was obtained. Findings of the non-response telephone survey are reported at a 95% confidence interval. For the entire sample of non-respondents, the sampling error was at most ±6.88 percentage points.

Those who responded to the original e-mail request and completed the online survey differed statistically from the non-responders who were contacted in the non-response telephone survey on 312 of the 766 variables examined in the study (i.e., 41% of the variables). Such differences are a problem simply because they exist. If both surveys were representative of the population of Arizona hunters who applied for the 2006 Fall Big Game Draw and provided an e-mail address, there should have been *no statistically significant differences*. This bias is in addition to the basic bias of omitting people who did not provide an e-mail address when applying.

Non-responders to the online survey were older on average than those who did respond ($\chi^2 = 668.50$, $df = 68$, $p < .001$). Non-responders to the online survey were also more likely than those who did respond to rate the importance of receiving two big game hunt permit tags each year as a 10 (extremely important) ($\chi^2 = 10.32$, $df = 1$, $p < .001$), to be willing to continue applying for a big game permit tag without success for longer periods of time (e.g., more than 10 consecutive years) ($\chi^2 = 143.69$, $df = 1$, $p < .001$), and to not belong to or have donated to hunting or conservation organizations ($\chi^2 = 14.06$, $df = 1$, $p < .001$).

South Carolina Saltwater Fishing and Shellfishing Study

In 2009, Responsive Management and the South Carolina Department of Natural Resources (SCDNR) conducted a survey to assess participation in and opinions on saltwater fishing and shellfishing in South Carolina and to better understand the accuracy and potential of online surveys (Responsive Management, 2009a, 2009b). Two different methodologies were used: a scientific survey conducted by telephone and a survey conducted via the Internet. This study is a best-case scenario regarding the evaluation of online surveys because it involved a closed population (i.e., people who obtained a South Carolina Saltwater Recreational Fisheries License). The entire database of Saltwater Recreational Fisheries License holders, including demographic and geographic information for each license holder, could be compared to both the telephone and online survey results.

The telephone survey was developed cooperatively by Responsive Management and the SCDNR. Interviews were conducted as described previously. The survey was conducted January 19 through January 23, 2009. A total of 1,709 completed interviews was obtained. Findings of the telephone survey are reported at a 95% confidence interval. For the entire sample, the sampling error was ±2.35 percentage points.

The telephone survey sample was randomly drawn from the *entire population* of people who held a Saltwater Recreational Fisheries License; for license holders who did not provide a telephone number, their telephone numbers were identified by reverse lookup. Every license holder had an equal chance of being contacted by telephone to take part in the survey.

The online survey used a sample consisting of people who held Saltwater Recreational Fisheries Licenses *who provided an e-mail address when they purchased their licenses.* This systematically excluded license holders who did not have computer access and license holders who chose not to provide an e-mail address.

Out of the total population of 102,610 license holders, approximately 16,100 license holders had provided e-mail addresses, which produced a sample size for the online survey of 12,405 license holders after undeliverable e-mail addresses were removed. Thus, even before any contacts were made, the online survey had eliminated approximately 88% of the possible sample systematically (i.e., the definition of bias). There was also notable non-response. Of the 12,405 license holders contacted by e-mail, only 2,548 responded online.

With a scientifically selected probability sample, reducing the sample size to this degree would not be a problem. The smaller sample would still be representative of the population as a whole, within a demonstrable sampling error. For the non-random online sample, reducing the sample size in this way biased the results.

With access to the database of all license holders, we were able to determine from the outset that respondents who were reachable by e-mail (n=12,405) differed statistically from the total population of license holders (n = 102,610) on several key demographic and geographic variables. Had the online sample been representative, there would have been *no statistically significant differences.*

The online respondents were more educated (χ^2= 42.23, df =1, $p < .001$), affluent (χ^2 = 75.15, df = 1, $p < .001$), and disproportionately male (χ^2 = 141.77, df = 2, $p < .001$) compared to the total population of license holders. About 6% of online respondents were female, compared to about 19% of the total population of license holders (Figure 2).

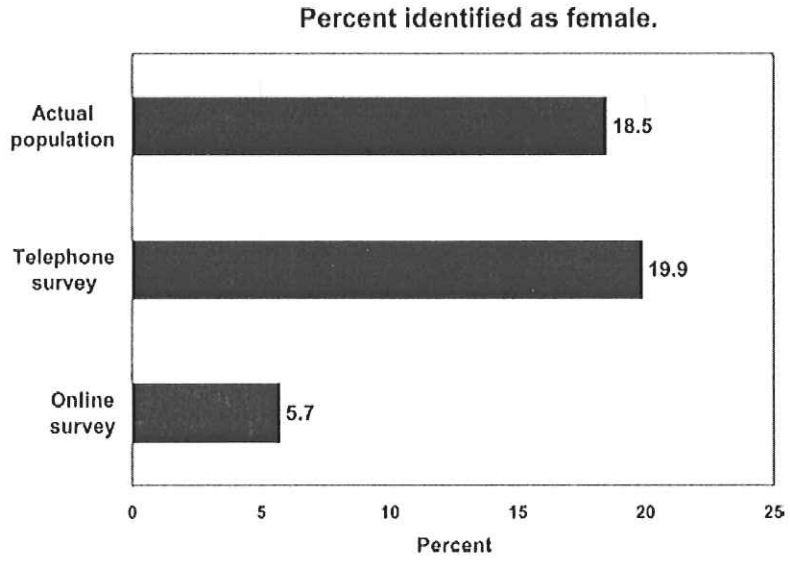

Figure 2. In an online survey regarding saltwater fishing and shellfishing in South Carolina, women were represented at only one third of what they should have been to represent the population as a whole. The telephone survey was much closer to representing the true proportion of females in the actual population (Responsive Management, 2009a).

By comparison, the telephone survey results were consistent with all the variables examined. For example, 19.9% of the telephone respondents were female, compared to 18.5% of the total population of license holders (Figure 2), well within an acceptable margin of error. Thus, the telephone results reflected the total population more accurately than the online results.

The online survey had a higher percentage of respondents in the "Don't know/no response" category than the telephone survey, and many questions were not answered at all. Respondents to the online survey were more avid than the actual population and appeared to be more disgruntled than the actual population, which might be a result of disgruntled people being more motivated to respond to the online survey (non-response bias).

Finally, an earlier random telephone survey allowed for comparisons between 2006 and 2008 samples (Responsive Management, 2009b). This comparison indicated a 2% decrease in saltwater fishing participation between the two study years ($\chi^2 = 7.08$, $df = 2$, $p < .05$). Because the samples for both telephone surveys were generated based on probability sampling, the two studies could be compared for statistical differences. An advantage of scientifically valid surveys is the ability to measure trends over time.

Conclusion

Online surveys are frequently not representative of the population of interest, can yield biased results, and may lead to invalid conclusions. With the exception of closed populations surveyed with specific safeguards in place (e.g., limiting the number of times a person can complete the survey), online surveys should be viewed cautiously. Obtaining representative, unbiased, scientifically valid results from online surveys is not possible at this time. There is no such thing as a complete and valid e-mail sample for most populations. Some individuals are systematically excluded (i.e., the definition of bias), and there is limited control over who completes the survey or how many times they complete the survey. These biases increase in a step-wise manner, starting out with excluding those without Internet access, then non-response bias, then stakeholder bias, then unverified respondents. As each of these becomes an issue, the data become farther and farther removed from being representative of the population as a whole.

Those not trained in survey research might assume that 10,000 responses are more accurate than 1,000. As shown by the North Carolina Sunday hunting study discussed earlier, however, earlier, *it is the method of sampling, not the sheer number of responses,* that determines sample validity. No matter how many responses are obtained, if the sample is not selected and managed properly by the researcher, the results cannot be extrapolated to the larger population. With careful and scientifically valid sample selection, a small sample size can be representative of the total population under study.

In the context of fish and wildlife management, scientifically valid human dimensions research is essential to making sound decisions. This article demonstrates the need for human dimensions research that is based on sound methodology, not on guesswork or exclusion of entire segments of a population. Just as fish and wildlife professionals rely on scientifically valid, unbiased research methods to manage habitat and species, management of the human element of fish and wildlife should be approached with equal rigor (Duda, 1986; Vaske, 2008).

References

American Association of Public Opinion Researchers. (2009). *Bad samples*. Retrieved April 3, 2009, from http://www.aapor.org/badandworsesamples

Bethlehem, J. (2008). *How accurate are self-selection web surveys?* The Hague/Heerlen: Statistics Netherlands.

Couper, M. P. (2000). Web surveys: A review of issues and approaches. *Public Opinion Quarterly, 64*, 464–494.

Dillman, D. A. (2000). *Mail and Internet surveys*. New York: Wiley.

Dillman, D. A., Smith, J. D., & Christian, L. M. (2009). *Internet, mail, and mixed-mode surveys: The tailored design method*. Hoboken, NJ: Wiley.

Duda, M. D. (1986). Wildlife management: The human element. *Florida Wildlife, 39*(5), 15–17.

Responsive Management. (2006a). *Arizona big game hunt permit tag draw study*. Study conducted for the Arizona Game and Fish Department. Harrisonburg, VA: Author.

Responsive Management. (2006b). *Coastal resource management customer survey*. Study conducted for the National Oceanic and Atmospheric Administration Coastal Services Center. Harrisonburg, VA: Author.

Responsive Management. (2006c). *Sunday hunting in North Carolina: Results of a telephone survey of North Carolina residents*. Study conducted for the North Carolina Wildlife Resources Commission. Harrisonburg, VA: Author.

Responsive Management. (2007). *Market inventory and needs assessment*. Study conducted for the Georgia Coastal Management Program and the Sapelo Island National Estuarine Research Reserve. Harrisonburg, VA: Author.

Responsive Management. (2009a). *Comparison of a telephone survey and a Web-based survey regarding shellfishing in South Carolina*. Study conducted for the South Carolina Department of Natural Resources. Harrisonburg, VA: Author.

Responsive Management. (2009b). *South Carolina saltwater anglers' participation in and satisfaction with saltwater fishing and opinions on saltwater fisheries management*. Study conducted for the South Carolina Department of Natural Resources. Harrisonburg, VA: Author.

Siceloff, J. (2008). *About the Sarah Palin poll*. Retrieved April 3, 2009, from http://www.pbs.org/now/palin-poll.html

Vaske, J. J. (2008). *Survey research and analysis: Application in parks, recreation and human dimensions*. State College, PA: Venture Publishing.

Virginia Polytechnic and State University/Responsive Management. (2006). *An assessment of public and hunter opinions and the costs and benefits to North Carolina of hunting on Sunday*. Report prepared for the North Carolina Wildlife Resources Commission.

Zhang, Y. (1999). Using the Internet for survey research: A case study. *Journal of the American Society for Information Science 51*(1), 57–68.

CLIENT COMMENTS

I also wanted to extend my thanks—albeit belated—for a great job with a task that at times might have seemed amorphous. The process worked and wouldn't have without your talent, experience, and expertise.

–Dennis Slate, National Rabies Management Coordinator, U.S. Department of Agriculture, Animal and Plant Heath Inspection Service (APHIS)

[T]he information you provided is exactly what we were looking for. Thank you for the more detailed insights to certain survey responses and analyzing the data by level of avidity for the specified outdoor recreation activities. This information is useful in assessing how well current Department programs are meeting the broader needs of these stakeholders.

–Stephen Perry, Chief of Inland Fisheries Division, New Hampshire Fish and Game Department

Mark Damian Duda is one of the nation's foremost researchers on public attitudes toward the environment.

–Associated Press

On behalf of the entire staff at The Conservation Fund, I would like to extend my sincerest thanks to you and your wonderful team at Responsive Management for the work on our survey. Your professionalism and diligent work was truly outstanding. Your brilliant team's expertise shined through in every step of the survey process, delighting not only myself, but also our staff and in turn our partners.

I personally sincerely appreciated working with you and your impressive staff. There were many late nights when I was thankful to be working with such a competent and hard-working team. My expectations were considerably surpassed. The meaningful work that you and your staff put into the survey allowed for our July Real Estate Summit to be a great success. In addition, your presentation at the Summit allowed for all of our staff to properly understand the results and how we need to interpret our partners' needs in order to plan for the future of The Conservation Fund. Your candor, critical thoughts, and vast expertise have allowed for us to move forward on a firm foundation.

Thank you again and the best wishes to you and your team at Responsive Management for the future.

–Meg McCants, The Conservation Fund

Thanks again for all of your work on the statewide litter attitudes survey for Georgia and for participating in the Governor's Land Summit . . . . The campaign created exactly the buzz that we were after! . . . Your research certainly paved the way for us to launch the new "Litter. It Costs You" campaign. I have given several presentations on the development of the campaign in recent weeks that highlights decisions that were made to select the logo and tag line based on both the telephone survey and focus groups. Time and again, I have had people praise our thorough process and science-based decision-making . . . . In short, we're off to a great start, thanks to the foundation that you helped us set. I appreciate your guidance and input on this project from the outset and look forward to measuring our progress 12 to 18 months from now . . . . The work that Responsive Management has done for Georgia is extremely valuable and has staying power. In recent weeks, I've paged through not only the litter attitudes survey, but also the DNR strategic planning survey and the water messaging survey as well. They are amazing resources for us to have at our fingertips, and I don't know how any agency can make natural resources decisions without having a solid understanding of the human factor . . . . Please pass along our appreciation to Alison, Steve, Peter and the rest of the Responsive Management team.

–Beth Brown, Special Assistant to the Commissioner, Georgia Department of Natural Resources

His firm is recognized as the leading social science research firm in the nation that works in the natural resources arena.

-Dr. Steve L. McMullin, PhD, Associate Department Head and Associate Professor of Fisheries and Wildlife, Virginia Tech

In surveying the Kansas public's attitudes about endangered species, we were dealing with a volatile issue. It is also one of the most important issues for wildlife management in Kansas. The review by RM of our survey instrument and subsequent endorsement provided a degree of credibility needed for this publicly sensitive project. In fact, the results, which demonstrated overwhelming support for our endangered species protection efforts, have yet to be met with any serious challenges. I'd give major credit to the helpful and critical review we received from Responsive Management. Thanks!

-Ken Brunson, Nongame Program Coordinator, Kansas Department of Wildlife & Parks

I want to thank you for your efforts in assessing public knowledge, attitudes, and opinions regarding grizzly bear reintroduction to the Bitterroot Mountains of central Idaho. The professional rigor in the design, implementation and analysis of the random telephone survey was outstanding. I particularly valued and appreciated the close working relationship we had in developing this project and the prompt completion of the final report. We were quite pleased with every aspect of the job by Responsive Management.

-John Weaver, Team Leader, Bitterroot Grizzly Bear EIS, U.S. Fish and Wildlife Service

I want to take this opportunity to express my thanks for your outstanding work .... This is a very fine report that has already proven helpful in discussions about funding and marketing issues with my staff and the Administration. I know that it will prove to be of similar value in upcoming discussions with external constituents and legislators.

This is the third time ... that my Department has contracted for your services, and I am pleased to have been personally involved in each survey. I continue to be impressed by your candid and thoughtful input, personalized approach to customer needs, and professional approach to survey design, implementation, and reporting. In sum, you do great work that results in a product with high outreach and advocacy value.

-Ronald Regan, (Former) Commissioner, Vermont Department of Fish and Wildlife (currently Executive Director for the Association of Fish and Wildlife Agencies)

You did an outstanding job putting the assessment together, as well as presenting the results. This information will be invaluable as we proceed with the National Marine Sanctuary (NMS) Revenue Enhancement Initiative.

Thanks again for a spectacular job.

-Karen M. Brubeck, National Oceanic and Atmospheric Administration

I would just like to take this quick opportunity to thank you and your staff on the tremendous work you recently completed for the West Virginia Division of Natural Resources. All too often we lack important human dimensions work in wildlife management decisions and focus only on biological data. I believe wildlife management decisions should be based on solid biological data; however, I also believe that we must use essential human dimensions work and public opinion to come up with the best management strategy. The survey of *West Virginia Residents' Opinions on Black Bears and Black Bear Hunting* that Responsive Management conducted for the West Virginia DNR was just the kind of information that we were so desperately lacking.

The report that Responsive Management supplied us with was very comprehensive, and the cross-tabulations supplied additional insight that may have otherwise gone undetected. The additional analysis that you and your staff did ... was above and beyond the call of duty and demonstrated the kind of expertise and caring attitude that your staff has about our natural resources. It also helped to demonstrate that while this survey was conducted on all residents of West Virginia, your staff was able to

identify our target audience very effectively and supplied us with the best possible data to make management recommendations.

-Dr. Chris Ryan, Supervisor of Game Management Services, West Virginia Division of Natural Resources

In addition to an impeccable research record with numerous wildlife management agencies, including our own, Responsive Management has a history of thorough data collection and analysis, the ability to maintain a research schedule and budget, as well as the ability to consistently produce legally and statistically defensible research documents.

-Wyoming Game and Fish Department

I'd like to say a few things about our survey contractor, Responsive Management of Harrisonburg, Virginia.

Responsive Management has grown to be the nation's premier survey research firm on fish, wildlife and natural resource issues.

When we began to look for a survey contractor for the wolf survey, we knew we needed good information, and we needed it fast. We contacted the University of [name withheld]. They couldn't meet our timeline. We contacted other potential contractors. They either couldn't do it the way we wanted, or couldn't meet our timeline. Responsive Management could. In fact, they have consistently been ahead of the timeline we were told was "simply unrealistic" by other survey researchers.

Their timeliness and efficiency is only one thing we've been impressed with. They have been very cooperative, taking great pains to address the concerns of the Commission and staff in developing a set of survey questions from our objectives, then repeatedly refining those questions to reflect our comments. Their cooperation has been outstanding.

From a technical standpoint, Responsive Management is simply the best. They have the best computer-assisted telephone interviewing system. Their interviewers are the most thoroughly trained, according to industry standards. They only conduct surveys on wildlife and natural resource issues. They always pre-test their surveys, something no other survey contractor has ever done for us. Their sampling is the most painstaking. They produce reports from the perspective of an unbiased third party, with full statistical analysis.

We're very happy with the work Responsive Management has done for us, and we're not alone. It was a pleasure to work with them on this survey.

-Walt Gasson, Wyoming Game and Fish Department

Aloha! Two reasons for this letter. First is to say thank you very much for all the great work you did on the freshwater fishing marketing study. We never imagined that the results would be that positive. Your expertise in asking the focus group questions and writing the surveys has given us a wealth of information. The opportunities provided for both the supporters of freshwater fishing and the environmentalists to work together is wonderful.

-Lynn McCrory, President, Kauai Economic Development Board

It is quite an understatement to say that I couldn't have done it without you all! From our very first conversations about survey design, timeline, budget, and data handling, you were attentive to my concerns as a graduate student and a newly initiated human dimensions researcher. Your professionalism and expertise made me feel quite confident about our partnership and about the quality of data. Furthermore, you included me in every aspect of the process and made me feel that my comments were valued . . . .

Upon my visit to Responsive Management . . . , it became quite clear to me why your firm is so highly praised throughout the field of human dimensions research. It was an absolute delight to see you guys in action . . . .

A world of thanks.

-Salinda Daley Bachelor, Birding Trail Coordinator, North Carolina Wildlife Resources Commission

Thanks very much for the extra fast delivery of the final reports. It appears to be another great product. Our meeting is later this week, so we are now in great shape in terms of survey distribution. Thanks again for your fine attention to detail, and extraordinary efforts to accommodate our interests and concerns .... I look forward to crossing paths with you on future projects, and to adding a third year to our survey trend data in 2014!

-Mark Ellingwood, New Hampshire Fish and Game Department

Responsive Management is one of the most respected research firms in our industry.

-Gary Bogner, President, Safari Club International

I am writing to extend my appreciation to you and your staff for the exemplary job you did with the development and production of *Saving Lives and Preventing Boating-Related Accidents: An Assessment of State Recreational Boating Safety Needs for the ... Aquatic Resources (Wallop-Breaux) Trust Fund* ....

The needs assessment has been very well received, and we anticipate utilizing the document as the primary educational tool for conveying our state resource needs to members of Congress and the Administration. The content, format and 'look' of the publication are first rate ....

I want to take this opportunity to thank you personally for your commitment, involvement and contribution to NASBLA's research agenda over the last few years. You have been a part of some of our most exciting and significant trend analysis and policy development to date.

-Alvin Taylor, President, National Association of State Boating Law Administrators

On behalf of Ducks Unlimited, I wish to thank you and your team at Responsive Management for your outstanding work .... You and your staff were pleasant, easy to work with, and very professional ... The questions and analysis were right on target to address important issues in habitat conservation.

-James K. Ringelman, Director of Conservation Programs, Ducks Unlimited Inc.

The admonition to "Know Thyself" was never more true than when it is applied to business. And helping us define our Bowhunting Market and who we are has recently been masterfully done for us by Mark Damian Duda and the folks at Responsive Management. In my 34 years in the Archery Industry, I have never seen such a complete and understandable marketing research exercise than what they have just completed for us. Mark has long been recognized as the leader in definitive research when it comes to our outdoor field, and he is a joy to work with, as is his entire staff. We can recommend Responsive Management in the highest possible terms.

-Dick Lattimer, President/CEO, The Archery Manufacturers & Merchants Organization

Responsive Management is one of the top research firms in the nation when it comes to our market and the shooting and hunting industry. During the research phase of this project, [Responsive Management] conducted both qualitative and quantitative research .... Needless to say, we learned a great deal in this process, and we are now better able to target our efforts and our resources.

-Peter J. Dart, (Former) President and CEO, Rocky Mountain Elk Foundation

Thank you, Mark, for the tremendous effort you and your staff have provided us in developing our recreation plan. From the survey design through data analysis, you and your dedicated staff have graciously assisted us throughout the process and beyond your contractual obligation. I am proud to present these survey findings and am confident in their source and meaning.

Mark, I want to extend a special thanks to Dr. Peter De Michele, who willingly provided me with much needed technical support. I appreciate his kindness, patience and most of all his sincerity in helping me understand and use the SPSS software. Also, it was a pleasure working with Alison Lanier. Whether by phone or e-mail, I came to expect a cheerful and responsive Alison at the other end graciously willing and able to assist me.

-Bob Ehemann, Division of Parks and Recreation, Delaware Department of Natural Resources and Environmental Control

The extensive *Future of Fishing* study conducted by Responsive Management provided the basis for the formation of RBFF and was the impetus for the strategies we employed to increase fishing participation. Sound research provides a firm foundation on which to grow, and RBFF's successful programs and marketing efforts would not have been possible without it.

-Bruce Matthews, Former President, Recreational Boating and Fishing Foundation

I would recommend Mark Duda to anyone wishing to assess public views. His style was interactive in the development of the instrument as well as during the assessment of the results. His knowledge and experience nationwide were tremendously helpful in framing the questions on the survey, and provided a basis to further understand not only what our citizens thought about our performance and what our priorities should be, but how it compared on a national level. Mark provided a professional presentation to our Wildlife Commission, and answered their queries from a technical expertise concerning the survey and what it meant that would have been difficult to manage on our own. I have utilized his graphs which he provided in Microsoft Power Point to develop programs for training of employees and presentations to public groups. In the final analysis of his services I would say that when it becomes time to do another assessment, Mark will be the first one contacted to see if he can do the work. I'd hire him again.

-John Bredehoft, Chief of Law Enforcement, Colorado Division of Wildlife

Mark Duda, Executive Director of RM, has worked with the Florida Wildlife Federation on a number of projects and was our Conservation Educator of the Year for his work in applying an understanding of people to wildlife issues. I highly recommend his and Responsive Management's abilities for work you have involving your constituency and wildlife issues, training workshops for your employees, or public opinion/attitude surveys.

-Manley K. Fuller III, President, Florida Wildlife Federation

This is just a short note to thank you . . . for the outstanding service you provided in the recent survey effort. You delivered a product that precisely fits our needs and in a time frame that allows us to begin using the information immediately. I truly appreciate your dedication and professionalism. It's not an exaggeration to say that you exceeded my expectations.

-Rob Manes, (Former) Assistant Secretary, Kansas Department of Wildlife & Parks (currently with The Nature Conservancy)

I personally, sincerely appreciated working with you and your very professional and talented staff. I thought it was going to be difficult managing a project that was half done, but your assistance and guidance helped me catch up right away. Thank you again for a sensational job. Please relay my personal best to everyone at Responsive Management.

-Hardy Pearce, U.S. Department of the Interior

The Marketing Workshop led by Mark Damian Duda excelled in all aspects. There was just the right mix of lecture and discussion, written material and graphics, seriousness and humor. Presentation of

information, enhanced by the use of multi-media-slides, overheads and videos, all helped get the message across.

Mark's enthusiasm for the material was captivating. The importance of Responsive Management principles hit you between the eyes, and plans to incorporate Responsive Management into ongoing operations automatically began to form. Discussion among participants was encouraged, and everyone's contribution was explicitly noted as important.

Humor, scattered throughout the workshop, made for a fun, rewarding two days. Expectations on the value of spending two days away from the "real work" were well exceeded. We'll be back for more.

-Recreational Fisheries Branch, British Columbia Ministry of Environment

Thanks for an outstanding presentation at the Northeast Fish and Wildlife Conference held in New Hampshire.... You really made an impression on the group. The fact that there was standing room only speaks well of your reputation. Your session was the best attended.

-Judy Cummings, Chief, Information and Education, New Hampshire Fish and Game Department

Responsive Management is one of the nation's most respected research firms in the area of public opinion about wildlife.

-Laury Parramore, U.S. Fish and Wildlife Service

Many thanks go to Mark Damian Duda, Steven J. Bissell and the staff of Responsive Management. Their dedication, creativity and hard work were unfailing throughout the entire research process.

-Paul W. Hansen, Executive Director, Izaak Walton League of America

Thank you for your capable and professional work in completing the recent survey of Pennsylvania anglers and boaters. There is no doubt that the Commission received the best and most cost-effective survey product available. You and your staff did an outstanding job preparing and conducting the survey and presenting the results.... In spite of the frequent requests for modifications during the survey development process, you were still able to complete the survey instrument, compile customer opinion and present results at the July commission meeting. We are extremely impressed with Responsive Management's capacity to meet tight deadlines!

-Peter A. Colangelo, (Retired) Executive Director, Pennsylvania Fish & Boat Commission

Over the past years, the Potomac Valley Chapter of Ducks Unlimited has honored certain outdoor writers for their contribution to the understanding and appreciation of the sustainable use of renewable resources. The Chapter has made this award only three times in the past....

It is my pleasure to inform you the Chapter has voted to have you receive this recognition at our 18th Annual Dinner & Reception.

-Stephen S. Boynton, The Potomac Valley Chapter of Ducks Unlimited Inc.

Thanks for doing a bang-up job at the Conservation Planning Workshop last week. I've had much positive feedback on your presentation from other participants. Personally, I was impressed that you could come in cold, pick up the PowerPoint package and then present such a detailed, data-packed talk an hour or so later.

Thanks again for sharing your expertise.

-John Slown, U.S. Fish and Wildlife Service

On behalf of the Freshwater Fisheries Division of the South Carolina Department of Natural Resources, I would like to thank Responsive Management for the outstanding job that they did on the recently completed survey of licensed anglers in South Carolina. Under your innovative guidance, we were able to ascertain public opinion on many fishery management issues. Your competence in assisting our staff to develop the survey in the most cost-effective manner was extremely important in these times of restricted funding. I was especially pleased with your staff's ability to work with colloquial names of places and species during the survey. In past surveys with other firms, many errors in data analysis occurred due to lack of training of the interviewers. Our requests for additional cross-referencing of data were handled promptly.

The product you provided fulfilled our needs and will play a major role in taking our department into the twenty-first century. It provides the catalyst for the department to recognize and adapt to change, to meet the needs of our constituents.

I want to sincerely thank you and your staff for producing a most informative document. The professional quality of the work, coupled with the personal approach of your organization, made the project most enjoyable to facilitate. I can think of no one that I would rather have do future surveys than Responsive Management.

-David Allen, Fisheries Biologist, South Carolina Department of Natural Resources

The motorboat access survey report has been distributed within the Department and has received many accolades. It has been very well received by our law enforcement officers. We have needed this type of document for some time, and we really appreciate the great job you and your staff did.

-Chris Burkett, Wyoming Game and Fish Department

I have known Mark Duda and Responsive Management for several years, but had the opportunity to work collaboratively with him and his staff over the past two years on a major project for the Commonwealth of Virginia. I have been impressed by the work of the whole Responsive Management organization. They produce good work and lots of it. Mark and his staff have done a lot to promote sound market-based research for natural resource management agencies.

-Dr. Brett Wright, Chair, Department of Parks, Recreation, and Tourism Management, Clemson University

On behalf of the New Hampshire Fish and Game Department, I would like to thank you and your staff for the outstanding job done in completing the *New Hampshire Freshwater Angler Survey*. The survey results are already in use by the Inland Fisheries Division staff when making fisheries management decisions and in developing work plans for fisheries research programs.

. . . I greatly appreciate all your efforts, and I look forward to working with you and your staff in the future.

-Stephen G. Perry, Chief, New Hampshire Fish and Game Department, Inland Fisheries Division

We would like to express our gratitude, on behalf of the Colorado Division of Wildlife, for your excellent efforts in collecting the data for our human dimensions study. . . . Your expertise contributed to a thorough and credible study. The results have been very useful and have reinforced our agency's broad-based funding approach to wildlife management.

-Colorado Division of Wildlife

On behalf of the staff of our Department, I would like to extend my sincere appreciation to you . . . for your gracious professionalism and assistance with the Responsive Management survey in our agency. I feel this process worked extremely well, and our interaction was truly beneficial to the development,

implementation and evaluation of this survey .... We deeply appreciate the support and enthusiasm that each of you gave to this effort.

-Larry D. Cartee, (Former) Assistant Executive Director, South Carolina Department of Natural Resources

Mark Duda, the Executive Director of Responsive Management, keynoted the interagency Watchable Wildlife Conference in Missoula, Montana. Mr. Duda is "in touch" with the needs of natural resource field personnel. His presentation reflected a combination of thorough preparation, technical field experience, and effective communication skills. He did an outstanding job of defining the scope and importance of the Watchable Wildlife Program.

-Dr. Bruce Hronek, Professor, Department of Recreational and Park Administration, Indiana University

I'm no fan of conferences, but I was intrigued by this session because it was billed as the best of its kind for fish and wildlife agencies. At the end of this four-day session, I can say that this is the best seminar I have ever attended.

-Todd Malmsbury, Colorado Division of Wildlife

If there is anyone who can predict the future of our industry, he's it.

-Florida Outdoor Writers Association

Shazam! You did it again! The survey report you generated for the Commission's Task Force on Outdoor Kansas is excellent. Even more impressive is the fact that you beat, by two days, the unreasonable deadline we gave you ....

I was not at all surprised that you delivered the survey and report services as agreed (that is the type of work you're known for), but I was impressed that the Responsive Management crew was able to get it done so quickly.

-Rob Manes, (Former) Assistant Secretary, Kansas Department of Wildlife & Parks (currently with The Nature Conservancy)

The Washington Department of Fish and Wildlife (WDFW) would like to thank you [Mark Duda], Kira, and the rest of your staff for the revised *Survey of Eastern Washington Upland Bird Hunters*. The revised report was excellent and will help WDFW manage upland birds based on good science. We appreciate your taking all of our comments on the draft report into consideration. Comparing results based on place of residence will be very useful to WDFW. The revised figures were clear and distinct .... We look forward to working with you again. Again, thank you for a detailed, final report.

-Tom McCall, Planning Biologist, Washington Department of Fish and Wildlife

I just wanted to get back to you to say thank you for the outstanding job you did on the recent opinion survey on deer, moose and bear management in New Hampshire. You did an outstanding job at preparing and conducting the survey, as well as presenting the results at our May Commission meeting. As you heard from members of the Commission and audience, interest in the survey results is high, and [the results] will be an important piece of the puzzle when developing our new 5-10 year management plans for these species. Our next challenge will be to integrate this information into a proactive strategy for big game populations in New Hampshire.

Thanks again for the highly professional job.

-James J. DiStefano, (Former) Executive Director, New Hampshire Fish and Game Department

On behalf of the West Virginia Division of Natural Resources, I want to commend you for your authorship of the excellent *West Virginia Viewing Guide.* Your professionalism and knowledge of wildlife and West Virginia served to make this a publication that we are not only proud of, but will enhance the image of our state. Because of your commitment to seeing that only the best would be acceptable for our state's guide, we have a publication that I believe to be the best in the series.

We are all appreciative of your efforts in producing the *West Virginia Viewing Guide.* You can count on our enthusiastic support for all of your future endeavors.

-Bernard F. Dowler, Chief of Wildlife Resources Section, West Virginia Division of Natural Resources

Thank you for meeting with my staff and me and reviewing the results of Georgia's first Responsive Management survey .... I especially appreciate the outstanding report and newsletter that you prepared and provided to us.

-David Waller, (Retired) Director, Georgia Department of Natural Resources, Wildlife Resources Division

I want to take this opportunity to thank you for your outstanding work on behalf of the Wildlife Division of the Vermont Fish and Wildlife Department. I greatly appreciated your candid counsel in the design of the survey and the enthusiasm you brought to the project. Your final report was very well done, and the extra effort you made to present the findings to myself and other Department staff was very valuable. *Vermont Residents' Opinions and Attitudes Toward Species Management* will prove to be a good first step for some of the planning that awaits us in the coming months.

-Ronald Regan, (Former) Commissioner, Vermont Department of Fish and Wildlife (currently Executive Director for the Association of Fish and Wildlife Agencies)

Just a short note to let you know that I received *Illinois Residents' Opinions and Attitudes Regarding Trapping, Fur Hunting and Furbearer Management.* Excellent job! I'm excited at the opportunities that exist for developing a focused, efficient educational program based on the results of this survey.

-Bob Bluett, Furbearer Program Manager, Illinois Department of Natural Resources

Responsive Management provides the opportunity and mechanism for focusing our resource management efforts where they are both wanted and needed. The public opinion workshop clearly and concisely introduces attendees to the processes of understanding public expectations of the agency, problems to avoid in implementing the processes, and the benefits derived from addressing those expectations. The subsequent availability of Responsive Management staff to advise on specified public opinion projects is a bonus. I definitely recommend the Public Opinion Workshop to all public resource managers.

-Virginia Vail, Division of Marine Fisheries, Florida Fish and Wildlife Conservation Commission

I'd like to thank you for doing such a fine job facilitating the two sessions on marketing at our recent Aquatic Resource Education Workshop. Your introductory session, in particular, gave our state colleagues excellent information on how to design education programs to achieve their objectives. Your insights have been a big help to both our own staff and the state coordinators.

-Libby Hopkins, U.S. Fish and Wildlife Service

Job well done. The past 6-month effort has done much to begin the resolution of the deer hunting controversy here in Maryland ....

I appreciate your timeliness and professionalism in carrying out this job. Your presentation certainly helped us put our best foot forward.

-Josh Sandt, Director, Maryland Department of Natural Resources, Wildlife Division

I thank you from the bottom of my heart for your excellent presentation at the Ecosystem Seminar Series. I now know why Mike Boylan strongly recommended you as a speaker.

-Jim Clark, Office of Training and Education, U.S. Fish and Wildlife Service

I was most pleased with the presentation Mark Damian Duda gave at our Utah Wildlife Fair. His presentation was timely, entertaining, professional and most importantly influential to the listening audience. I have found this to be consistent with everything that comes out of Responsive Management.

-Tim Provan, Director, Utah Division of Wildlife Resources

Your abilities . . . gave my staff confidence that the Responsive Management program is in good hands at the National level. We look forward to conducting another marketing workshop this fall with your assistance.

-Pat Graham, Director, Montana Department of Fish, Wildlife and Parks (currently the Director of The Nature Conservancy - Arizona Chapter)

The Colorado Division of Wildlife has used the C.I.P., Change Module, and Marketing Module, and found them to be quality products that address real needs of our agency. We have also appreciated the eagerness to help shown by the Responsive Management staff. The Responsive Management Program has helped us to become substantially better prepared to deal with the changing attitudes, beliefs and opinions of our constituents.

-Perry Olson, Director, Colorado Division of Wildlife

Our biologists and natural resource managers spend their professional lives implementing management programs designed to effect change. We regard natural change as normal. However, as professional natural resource managers, we do not as easily accept or embrace changes in our operating environment.

Responsive Management has been a catalyst to help recognize and adapt to change, for the Department. Responsive Management has resulted in meaningful strategic direction and a renewed commitment to our employees and customers.

-K.L. Cool, Director, Michigan Department of Natural Resources

I want to personally thank you for the substantial contribution to our successful staff conference in Corpus Christi. Your talk on Responsive Management: Integrating the Public into the Resource Management Equation was very timely and well received . . . . The staff really got a lot out of your presentation and the session.

-Rudolph Rosen, Director, Oregon Department of Fish and Wildlife

My compliments on a great presentation at the Watchable Wildlife Conference. Your tie to history and changes in technology were great in getting one to think of new ways to view this great challenge. Coming from one with a wildlife background, your comments were very credible and moved everyone to begin thinking of the human side of the coin. This is very critical, as many of us have a biological background and tend to view the world from a different perspective than many of our visitors.

-John T. Drake, Director, U.S. Forest Service Region 1, Wilderness, Recreation and Heritage Program

Responsive Management has been helpful in getting our telephone surveys started after we attended their well-presented training session. We have called upon them for technical advice many times . . . . When I call the RM office, I feel like I am talking to friends, yet they are well organized and professional. I am very pleased with the sponsorship arrangement.

-Steve Miller, Ohio Division of Wildlife

Congratulations! You folks did a great job on your new publication designed to inform Congress on the needs of a nationwide nongame program.

-Terry Johnson, Nongame Program Manager, Georgia Department of Natural Resources, Wildlife Resources Division

The timely, thorough stakeholder survey Responsive Management provided for the subcommittee considering new options for the *National Survey of Fishing, Hunting and Wildlife-Associated Recreation* got our activities off on the right foot. Thanks for the quick turn-around and quality work! I'm always impressed with your objectivity and with the thoroughness of your analyses; this project demonstrated both admirably. Thanks, too, for your patience with clients who didn't articulate their needs very well!

-Spence Amend, Management Assistance Team, U.S. Fish and Wildlife Service

Attached is a report entitled *Americans and Wildlife Diversity* that was produced for the Association's Fish and Wildlife Diversity Initiative. It is an excellent summary of the information available on public opinion, attitudes, interest and participation in, and funding for, wildlife viewing and wildlife diversity programs . . . .

Mark Damian Duda and Kira Young with Responsive Management did an outstanding job pulling this information together. I believe it will greatly assist both the Association and its Fish and Wildlife Diversity Funding Initiative and your own agency as it works toward building support for stronger wildlife diversity and watchable wildlife programs.

-Naomi Edelson, Wildlife Diversity Director, Association of Fish and Wildlife Agencies

Responsive Management's services have been instrumental in helping identify the priority needs of the many users of the *National Survey of Fishing, Hunting and Wildlife-Associated Recreation.* RM effectively and efficiently polled the Survey's State, Federal, and non-governmental users throughout the U.S. RM analyzed the results and presented them in a meaningful and timely manner so that planners had the information necessary to develop options for meeting future data needs. RM has been a professional, experienced, and knowledgeable contributor to the Survey Planning Project.

-Sylvia Cabrera, U.S. Fish and Wildlife Service

Responsive Management has been very "responsive" to the needs of the Maryland Wildlife Division on many levels. We particularly were interested in having RM do our watchable wildlife survey because of their extensive experience in social surveying, particularly concerning attitudes, perceptions, knowledge and activities involving wildlife.

-Edith Thompson, Maryland Department of Natural Resources

Mark Duda gave one of two presentations on a marketing approach to wildlife management to a major Ministry of Natural Resources staff workshop. Mark's presentation was excellent, and its influence on workshop discussions was obvious.

-Margaret McLaren, Wildlife Policy Branch, Ontario Ministry of Natural Resources

Thank you for speaking at the Perspectives in Urban Ecology Symposium. . . . Participants ranked you and Dr. David Goode, the keynote speaker who is Director of the London Ecology Unit, the two top speakers and ranked human dimensions research as the highest subject area of interest for all presentations.

-Betsy Webb, Curator of Zoology, Denver Museum of Natural History

Thank you for taking part in the Watchable Wildlife training session. . . . Your presentation on defining constituencies was very well received and was one of the highlights of the course.

-Lynn Engdahl, Manager, Phoenix Training Center, Bureau of Land Management

We receive many, many compliments on *A Bridge to the Future*; it has been received well by members of Congress, industry representatives, and state and federal fish and wildlife agencies.

I greatly appreciate the high quality expertise Mark Duda and Responsive Management offer. Mark has constantly offered good ideas, concise thinking and provided me a forum to brainstorm new approaches to aid in our wildlife conservation initiatives.

-Naomi Edelson, Wildlife Diversity Director, Association of Fish and Wildlife Agencies

I wanted to take this time and express our gratitude to you for your extensive participation in the Information and Education sessions at the Southeast Association of Fish and Wildlife Agencies Conference. Not only have I heard compliments regarding your presentation, but I've heard from several people who appreciated the fact that you were available for the duration of the seminars. That kind of support makes our work all that much worthwhile.

-Jeff Curtis, Virginia Department of Game and Inland Fisheries

We appreciate your participation in the panel discussion during the ACI conference . . . . Many of the panelists and the audience remarked that the discussion left them better prepared to cope with the complications that erupt frequently in our line of work. Your well-prepared demeanor seemed to serve as a catalyst for the scenario's progress, and I am grateful for that.

-Henry Cabbage, Public Information Director, Florida Fish and Wildlife Conservation Commission

Just a note to let you know how much I appreciated your presentation at our Wildlife Officer Recruit Academy. Your presentation was excellent.

-Captain Wayne King, Regional Law Enforcement Supervisor, Florida Fish and Wildlife Conservation Commission

I learned a great deal about my own personal beliefs and attitudes and, further, how difficult it is for one individual to change, let alone an entire agency. After now attending all RM training, the Change workshop strikes me as providing the most important information for organizations to grasp. It is also the most difficult.

-Stan T. Allen, Idaho Department of Fish and Game

Mark assisted me with the planning and development of two statewide turkey hunter surveys. The surveys involved measuring elements of turkey hunter satisfaction, hunter attitudes and hunter harvest. Mark's knowledge and experience with opinion surveys and questionnaire design saved me time and effort. In addition to being professionally capable, he was enthusiastic and took time away from his own work to help me out.

-Neil Eicholz, Coordinator, Wild Turkey Management, Florida Fish and Wildlife Conservation Commission

You bring a unique combination of personal effectiveness and important information . . . . You do an excellent job.

-Dr. Larry Harris, Professor, University of Florida

Responsive Management is a terrific, long overdue marketing analysis tool that will enable natural resource organizations to broaden their focus and to increase their understanding of the diverse clientele groups they serve. A contemporary business approach by these people-oriented agencies will increase their effectiveness and efficiency in addressing the needs of their customers.

-Dr. Joe Schaefer, Professor, University of Florida

I wanted to take a few minutes to let you know how much I enjoyed the Responsive Management training session in Tucson. I have to admit I was a little reluctant when I first saw the workshop agenda. But I think you did a marvelous job of mixing work, social, and free time to make it a most enjoyable time and learning experience for all participants.

-Stephen R. Wilson, Chief, Information and Education Section, Arkansas Game and Fish Commission

The Georgia Game and Fish Division was extremely pleased with the high quality products produced by Responsive Management .... Mark and his staff worked closely with us from the early planning stages of our two surveys through the interpretation of survey results. They were very competent, courteous and comfortable for our staff to work with.

-Ron Odom, Georgia Wildlife Resources Division

The marketing workshops were a success. I have heard many good comments from participants of both sessions. I have been at two meetings since the workshops where the people were thinking and talking about "markets" and were using many of the terms presented at the workshops.

Enclosed are the evaluation summary and the comment sheets for the second session. As in the first session, the vast majority enjoyed the course, believed they will use the information, learned a great deal about marketing and thought you did an excellent job.

I want to thank you personally for your efforts. You did an outstanding job of presenting ideas and concepts which are new to many of us.

-Tom Wasson, Ohio Division of Wildlife; and President, Organization of Wildlife Planners

I've just finished reviewing *A Bridge to the Future*. What a spectacular and useful document! I want to commend you for the tremendous job you did in writing the publication .... I know you put a tremendous amount of effort into this publication-it shows!

-Jay D. Hair, (Former) President, National Wildlife Federation

Working with Responsive Management on *A Bridge to the Future* was pure pleasure. The report was better than I envisioned and completed sooner than I anticipated. What's more, I believe it will be pivotal in finally securing funding for the Fish and Wildlife Conservation Act. I couldn't be more pleased!

-Doug Crowe, (Retired) Special Assistant to the Director, U.S. Fish and Wildlife Service

You did a bang-up job on the survey and in presenting the results to our Commission yesterday. Many Thanks!

-Don McKenzie, Arkansas Game and Fish Commission

Just a quick note of thanks for hosting such a great workshop. It really was jam packed with a lot of useful and interesting information. I wish you could go on the road and present this information regionally ... hint, hint. Please relay thanks to your staff for a smooth running event, and to the presenters for their excellent effort.

-Linda Sikorowski, Human Dimensions Specialist, Colorado Department of Natural Resources

The workshop Responsive Management just held was outstanding. You and your staff put together a "Cadillac" event!

–Julie Morin, U.S. Fish and Wildlife Service

I just wanted to thank you again for making your presentation to the Commissioners at the Southeastern Conference. The presentation contained lots of facts that will be beneficial to all who attended. I probably benefited from the information more than anyone. As usual, you did a great job. I never cease to be amazed at how productive and energetic you are.

–Victor J. Heller, Assistant Executive Director, Florida Fish and Wildlife Conservation Commission

We would like to thank you and your staff for your professionalism and hard work on the *Future of Fishing* study. We are pleased with the results of this study as well as the way in which they are presented in the study's final report.

The interest and anticipation that have been expressed in the final report echo the importance of this study to state fish and wildlife agencies across the country . . . . Thank you again for your efforts.

–Bob Miles, Resource Director, Association of Fish and Wildlife Agencies

Special thanks go out to the staff of Responsive Management . . . for going the extra mile in pretesting our biennial trends survey and making improvements to it and . . . for accommodating our special requests for analysis, graphs and report format. This report is being used more than any of the previous years' reports.

–Jeff Casper, Arizona Game and Fish Department

This most recent survey for the Theodore Roosevelt Conservation Alliance on hunter attitudes toward National Forests is outstanding work and will undoubtedly prove to be extremely valuable in our efforts to promote sound stewardship of the National Forest System.

–Paul Hansen, Executive Director, The Izaak Walton League of America

Mark Damian Duda is one of the nation's most respected researchers on natural resource issues.

–Steve Pennaz, Executive Director, North American Fisherman, North American Outdoor Group, Inc.