

# Use of a Readers Survey to Evaluate Fisheries Education Publications

**Louis A. Helfrich**, *Department of Fisheries and Wildlife Sciences, Virginia Tech, Blacksburg, VA 24061*

**Diana L. Weigmann**, *Virginia Water Resources Research Center, Virginia Tech, Blacksburg, VA 24061*

---

*Abstract:* Demand for an effective way to evaluate natural resource education programs and materials is increasing. In this study, a mail questionnaire survey was developed to examine the impact on riparian landowners of a cooperative extension education publication addressing river conservation. Our respondents held a favorable opinion about this publication. The majority of readers surveyed found it understandable, well organized, attractive, interesting, persuasive, educational, and sufficiently useful to be kept for future reference. Most readers expressed a willingness-to-pay price that exceeded the publication costs. The mail questionnaire survey technique provides a rapid, convenient, and objective approach for evaluation of educational publications. This method is useful in demonstrating the extent of use and effectiveness of an educational publication, characterizing readership, and justifying production costs to sponsors.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 41:502-507

---

Program evaluation is a major focus in natural resource extension education. Assessing the effectiveness and impacts of educational activities, most notably publications, workshops, training sessions, and radio and television presentations, are current imperatives. Undeniably, program evaluation is a necessary and constructive exercise that benefits overall efficiency and the strength of any educational effort. Evaluation is instructive in determining whether or not educational objectives are being accomplished and providing guidelines for improvement. Evaluation is also useful in reporting accomplishments and impacts. Decker (1986) distinguished the dual role of evaluation of extension programs for (a) management and improvement and (b) accountability and documentation. He emphasized the importance of evaluation as a decision-making tool for educators and administrators, as well as an important data source for generating increased public awareness and support.

Evaluation can be accomplished by a wide variety of direct and indirect methods. Typically, the target audience is requested to assess the worth of the program

or publication by responding to a survey; consumer preference and satisfaction surveys are familiar examples and, at times, unwelcome distractions to us all. Survey techniques can range from simple, informal observations and subjective opinions of a few key people, to complex mail questionnaires or telephone interviews and sophisticated personal home interviews. Selecting the most appropriate technique or combination of techniques and constructing a valid educational survey can be very difficult and complex. However, a wide selection of useful and authoritative literature is available (Moser and Kalton 1972, Dillman 1978, Rohs 1985).

Fisheries and wildlife extension specialists use a diversity of communication methods to deliver educational programs to a variety of audiences. Methods range from personal contacts (telephone calls, letters, on-site visits) and group presentations (workshops and conferences) to print media (personal letters, newsletters, bulletins) and mass media (radio and television). Of these, phone calls and publications are the most frequently used (Helfrich and Bromley 1984). Telephone calls afford advantages of flexibility, feedback opportunity, specificity, intimacy, and relative timeliness. Written publications can reach diverse and widespread audiences economically, instill confidence, and provide a stable, enduring, and authoritative record.

Publications are heavily used by the Cooperative Extension Service specialists and agents to promote sound fisheries and wildlife management. An abundance of extension service literature (over 800 titles) on wildlife, fish, and forest resources is available nationwide (Ruff and Craven 1986). New publications are being produced annually in response to growing public demands for natural resource information. Millions of copies of these publications are widely disseminated, usually free-of-charge, to the public. Production and distribution costs are substantial, yet their impact or effectiveness is seldom evaluated.

Evaluation of educational programs and materials can be based on knowledge gained by comparing pre- and post-performance on examinations. This type of analysis was used by Bromley and Hampton (1981) to evaluate the Virginia Hunter Education Program. Knowledge gained is more appropriately used to assess the effectiveness of a structured course of study in a formal classroom setting. In contrast, opinion measurement offers a practical, although more superficial, determination of whether or not an education publication, for example, successfully appealed to the readers. The assumption is that favorable public opinion is positively correlated with increased knowledge acquired. The overall assumption about education and human behavior is that people's behavior is influenced by their thoughts.

#### Case Study: A Readers Evaluation

The purpose of this study was to determine the usefulness of a mail questionnaire to evaluate an extension education publication on river conservation entitled "The Clinch, Powell, and Holston Rivers in Virginia and Tennessee: Water Quality and Wildlife." The opinions of readers concerning the usefulness, organization, attractiveness, capacity to motivate, shelf life, and economics of this publication were examined. Selected demographic characteristics and ability of the Virginia

Cooperative Extension System to reach the intended target audience, riparian landowners, were evaluated.

The Clinch, Powell, and Holston rivers, collectively, comprise the headwaters of the Tennessee River system in Virginia. These popular sport fisheries are valuable aquatic resources. They harbor an exceptionally rich diversity of freshwater fishes and mussels including many endangered and threatened species. In addition to their unique aquatic fauna, these rivers provide vital recreation and water resources to residents of southwestern Virginia. Continuous human alteration in the form of impoundments, erosion, and pollution accompanying agriculture, coal mining, construction, and other activities jeopardize the integrity of these ecosystems and adversely affect aquatic species. The extension publication evaluated in this paper was intended to encourage wise riparian land use and river protection.

## **Methods**

The information presented in this publication was obtained by a self-administered mail questionnaire. The questionnaire was distributed in the form of a readers survey concurrently with the extension publication, "The Clinch, Powell, and Holston Rivers in Virginia and Tennessee: Wildlife and Water Quality," by Virginia Cooperative Extension Service agents in Lee, Scott, Russell, Tazwell, and Washington counties. To encourage a high response rate, pre-paid postage (a stamped envelope) was provided. The intended target audience was riparian landowners along the Clinch, Powell, and Holston rivers and their tributaries, but the county extension agents also were encouraged to disseminate this publication and accompanying questionnaire to all interested citizens.

The 10-item questionnaire was designed and pretested to reduce ambiguity. A five-point Likert scale, ranging from agree to disagree, was used to measure readers opinions toward the quality, format, usefulness, and shelf life of the extension publication. Questions on selected demographic characteristics (age, sex, occupation, and education), riparian property ownership, and willingness-to-pay were included.

## **Results and Discussion**

Of the 125 coded questionnaires distributed by the agents, 66 usable ones (53% response rate) were returned. This return rate is relatively high when compared to similar mail questionnaire surveys which had return rates of less than 40% (Calhoun 1953, Harris and Bergersen 1985), and since no follow-up reminders were sent because the eligible respondents were unknown. A response rate of 51% is considered about average for a mail questionnaire using followup reminders (Smith 1980, Babbie 1973). Moreover, this response was considered satisfactory since our targeted sample population was landowners, not necessarily environmentally concerned readers. The low variation in response and the relatively high return rate appeared sufficient to minimize the influence of non-response bias.

Our respondents were predominantly middle-age adult (mean age, 51 years)

males (95%). The majority were employed in service or labor positions (39%); about 25% were professional or management level employees. Nearly one-half (45%) were high school graduates and over one-fourth were college graduates. A surprisingly large proportion of respondents (69%) were riparian landowners, suggesting that our targeted population was clearly identified and contacted by the extension agents (Table 1).

Our respondent's overall assessment of this publication was favorable (Table 2). A large proportion of the readers surveyed found the publication understandable (92%), well organized (82%), attractive and interesting (85%), persuasive (80%), and educational (77%). A majority of respondents (80%) indicated that this publication was sufficiently useful to be kept for future reference.

Clearly, most respondents valued this publication, expressing a positive opinion about all of the attributes examined. The economic dimension was measured by asking our respondents what they would be willing to pay for a single copy of this publication. A majority of readers surveyed (59%) were willing to pay \$3 or more per copy; 10% indicated a price per copy which exceeded \$4 would not be excessive. Only 41% of our readers undervalued this publication, expressing a willingness-to-pay price below printing cost.

Mail questionnaire surveys are powerful tools for assessing the perceptions of readers of educational publications. A mail questionnaire survey offers several advantages over interview methods. They are more economical in terms of both time and money, and a widespread group of respondents can be contacted rapidly. Greater privacy is afforded and respondents have time for reflection and consideration, increasing the probability of a critical, but honest, evaluation. Also, mail questionnaire surveys avoid interviewer errors and bias.

One major disadvantage in using a self-administered mail questionnaire is failure to receive an adequate response. A low response rate increases the probability of an unrepresentative sample and non-response bias. To avoid these problems, the questionnaire used in this study was designed to be easy to complete, consisting of short, easily comprehensible and unthreatening questions. Open-ended questions

**Table 1.** Demographic characteristics of respondents.

Variable	Respondents (%)	Variable	Respondents (%)
Age		Education	
25-44	58	<12 years	21
45-64	21	High School	45
>64	21	College	29
Sex		Graduate School	5
Male	95	Occupation	
Female	5	Professional	11
Landowner		Skilled	17
Riparian	69	Service/Labor	39
Non-riparian	31	Farmer	18
		Retired	15

**Table 2.** Results of a readers' survey of a publication on the Clinch, Powell, and Holston rivers in Virginia and Tennessee ( $N = 66$ ).

Variable	Percent of respondents				
	Agree	Tend to agree	No opinion	Tend to disagree	Disagree
Easily read	92	8	0	0	0
Well organized	82	18	0	0	0
Colorful, interesting	85	15	0	0	0
Motivated protection	80	20	0	0	0
Increased knowledge	77	23	0	0	0
Save as a reference	80	13	1	6	0

were minimized, whereas multiple-choice questions (a 5-point Likert scale ranging from agree to disagree) that simplified responding were maximized.

Other considerations for improving response rate that were incorporated into this survey included free, first class postage on a return envelope, a cover statement emphasizing the usefulness of each response, a polite tone, and an assurance of confidentiality. Our relatively high response rate also may be attributed to the high subject appeal, meaningfulness, and potential benefits of the practical stream management methods offered to the readers, most of whom (69%) were riparian landowners.

The evaluated publication, with its clearly identifiable purpose that specifically related to the objectives of targeted clients, substantially contributed to education and information gains for the reader as measured by the questionnaire. Strong evaluations typically occur when readers experience some tangible reward, such as increased income as a result of their improved knowledge. However, even when the benefits are relatively intangible, as in the case of riparian landowners in this study, readers recognize the assistance received and ascribe positive value to the publication.

The use of replacement questionnaires and followup reminders to encourage the completion and return of the questionnaires was not possible in this study since our readers were unknown. In similar surveys, a publication distribution list should be maintained to facilitate contacting nonrespondents. We did not establish a deadline for the return of the questionnaire, or volunteer to provide a summary of the results, or offer a premium or reward; such considerations and incentives may be useful in increasing the response rate.

The mail questionnaire survey represents a rapid, convenient, and objective approach to evaluate fisheries and wildlife educational publications and materials. Our questionnaire can be readily adapted or revised to evaluate specific interests of concern in other similar publications. In this study, the method has proved useful in planning future publications, documenting their usefulness and effectiveness, and identifying the level of audience support. The method is particularly valuable in demonstrating impact and accountability, and in justifying to sponsors and employers the time and costs incurred to develop and produce such educational materials.

## Literature Cited

- Babbie, E. R. 1983. The practice of social research. Wadsworth Pub. Co. Inc., Belmont, Calif., pp. 384.
- Bromley, P. T. and E. L. Hampton. 1981. Considerations in evaluating hunter education programs. Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 35:689-694.
- Calhoun, A. 1953. State-wide California angling estimates for 1951. Calif. Fish and Game. 39(1):102-113.
- Decker, D. J. 1986. An organizational philosophy for program evaluation in Cornell cooperative extension programming. Cornell Coop. Ext. Serv., Cornell Univ., Ithaca, New York. 4pp.
- Dillman, D. A. 1978. Mail and telephone surveys: the total design method. John Wiley and Sons, Inc., New York. 325pp.
- Harris, C. C. and E. P. Bergersen. 1985. Survey on demand for sport fisheries: problems and potentialities for use in fisheries management planning. N. Am. J. Fish. Manage. 5:400-410.
- Helfrich, L. A. and P. T. Bromley. 1984. Cooperative extension service education in fisheries in the United States. Fisheries 8(3):18-21.
- Moser, C. A. and G. Kalton. 1972. Survey methods in social investigation. Basic Books, Inc., New York. 549pp.
- Rohs, R. F. 1985. Questionnaire construction. Univ. Ga. Coop. Ext. Serv. Publ. MP211. Athens. 23pp.
- Ruff, R. L. and S. R. Craven. 1986. A bibliography of cooperative extension service literature on wildlife, fish, and forest resources. Univ. Wis. Coop. Ext. Serv., Madison. 56pp.
- Smith, C. L. 1980. Attitudes about the value of steelhead and salmon angling. Trans. Am. Fish. Soc. 109:272-281.