The Human Dimension of Fisheries Survey Research: An Exploration of Varied Collection Modes

Investigación de Encuestas de la Dimensión Humana de la Pesca: Una Exploración de los Modos de Variada Colección

La Dimension Humaine des Pêches Survey Research : Une Exploration des Modes Collection Variée

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EXTENDED ABSTRACT

Recreational fisheries have received increasing recognition of its importance in terms of its social (Wilde et al. 1996, Hickley and Tompkins 1998), economic (Hutt et al. 2012) and ecological functions and impacts (Coleman et al. 2004, McPhee et al. 2002). Coupled with the inherent diffuseness of access and diversity of users, recreational fisheries management must be viewed as a complex socioecological system. As such, managers are in need of possessing an in-depth understanding of both the fisheries resources in question and the users that access those resources (Ward et al. 2013). Biophysical data and dynamics relevant to understanding the natural history of target species are relatively well understood and incorporated in decision support models for fisheries management (Hillborn and Walters 1992). By comparison, data concerning the demographics, preferences, and motivations of recreational anglers are just beginning to be integrated into natural resource management decisions (Fenichel et al. 2012).

Obtaining human dimensions data on a scale applicable to fisheries management agencies has been a challenge for researchers and managers. Traditionally, these data have been collected through mail-back surveys which are completed and returned by respondents from the target population. Survey instruments of this type have been essential tools for gathering socio-demographic and managerial preference data relevant to fisheries managers. However, recent trends across social science disciplines employing similar survey methodologies show a precipitous decline in response rates (Connelly et al. 2003, Stoop et al. 2010, Kreuter 2013). To alleviate the increasing disutility of traditional surveys some researchers have begun to utilize mixed-mode survey designs (Dillman 2000, Diment and Garret-Jones 2007, Dillman et al. 2009) which show potential to more efficiently improve response rates and generate reliable data. Yet, a trade-off exists in their ability to reach representative populations with significant difference observed in data collected by various survey methods (Babbie 1998, Dillman 2000).

A recent review of mail versus online survey mode responses indicated education and income to be more influential in mode selection than age (Sexton et al. 2011) and non-response and response tend to be similar across mail versus online survey modes (Lesser et al. 2011). Additionally, a large body of literature focusing on survey efficacy and evaluation illustrates mixed-mode survey methodologies provide an effective solution to declining response rates (Vaske 2011). As such and in collaboration with the Texas Parks and Wildlife Department (TPWD), a Statewide Survey of Licensed Anglers was conducted to:

i) Provide insight on the success of different modes of survey administration as evidenced by response rates and
ii) Better understand response-biases associated with different modes of survey administration as evidenced by composition of licensed Texas anglers, i.e., socio-demographics, avidity, and managerial preferences.

The statewide survey conducted in 2012 was administered to a stratified random sample of the previous year's licensed Texas anglers in three modes of response; mail-only (n = 4000), email-only (n = 4000), and mixed-mode (participants could respond via email or mail-back; n = 1000). The survey also obtained data related to angler's:

i) Constraints to participating,
ii) Satisfaction with their angling experience,
iii) Motivations for angling,
iv) Management preferences, and
v) Socio-demographic characteristics.

Effective response rates varied across treatments ranging from 63.4% for mixed-mode (n = 640), 29.9% for email-only (n = 2685), and 20.0% for the mail-only (n = 3486). Utilizing a multinomial logistic regression null-model (null = mail-only) approach, which assumes each mode of response contains a representative sample of anglers, we compared selected socio-demographics indicators; avidity, and managerial preferences across treatments. Results indicated significant differences in gender, income, and race across survey modes. Mail-only methods tended to elicit a higher proportion of

respondents who were situated in lower income brackets, female, African-American, and considered angling to be their most important activity. In contrast, limited differences were observed across treatments in relation to angler's avidity and managerial preferences. Proportionally, mail-only respondent's tended to place greater importance on being with family or experiencing new and different things whereas the importance of being with friends was proportionally higher in mixed-mode and email -only respondents.

Our results lend credence to the ability of mixed-mode survey methods to buoy declining response rates related to mail-back surveys. We obtained a satisfactory 63.4% response rate from mixed-mode surveys in comparison to only 29.9% and 20.0% for email-only and mail-only surveys, respectively. They also indicate that the generalizability of data obtained through survey methods is dependent upon the survey mode and its capacity to accurately represent the population from which samples are drawn. We observed limited disparity among mixed-mode and email-only surveys while the mail-only survey tended to be biased towards a sample that considered angling their most important activity, had lower income, and contained a significantly higher proportion of female and African American anglers. This finding indicates that our mixed-mode and email-only surveys were not effective in garnering responses from traditionally underrepresented populations of lower income individuals, females, and African-Americans.

For managers, our results illustrate the need to consider the efficacy of specific survey methods in attempts to obtain sufficient and representative data intended to inform fisheries management. Integrating surveys methods can broaden the managerial perspective and lessen uncertainty in the decision making process. By understanding the diverse needs of anglers, managers are positioned to make informed decisions, rules and regulations, and understand how specific users could be affected by policy. However, as a caveat, this only extends to information from an unbiased sample, that is, one which accurately reflects the diversity within the population. Generally, the surveys we received from anglers reflect populations with few differences in terms of managerial preferences and avidity. However, when coupled with response rates the generalizability becomes limited considering the proportion of the sample that did not respond. Furthermore, significant socio-demographic differences were observed among survey modes and email-only and mixed-mode tended to underrepresent already underrepresented populations of Texas anglers. Future research should consider utilizing mixed-mode survey methods as a viable alternative to traditional survey methods while also being aware of its limitations to represent a population. Management agencies may have to consider public awareness campaigns to make resource-users aware of the importance and utility of surveys in resource management.

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