RECREATION SPECIALIZATION: UPPER MANISTEE RIVER SHORELINE OWNER ANGLERS AND THEIR MANAGEMENT PREFERENCES

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Abstract: Recreation Specialization is managerial tool for identifying and describing the diversity within an outdoor recreation activity. Understanding diversity helps managers match recreators with the appropriate resources and forecast reaction to proposed policy changes. This study explored the relationship between specialization levels of upper Manistee River shoreline owner anglers and their management preferences. The study area is located in the northern Lower Peninsula of Michigan. This study was part of a culminating research effort that began in the fall of 2001. The Michigan Agricultural Experiment Station, the Michigan Department of Natural Resources, and the U.S. Forest Service sponsored these studies in part to obtain information about shoreline owners' property characteristics, recreational activities, and perceptions of environmental quality. Specialization was measured through four dimensions: skill, equipment, commitment, and centrality to lifestyle. In this study, mail surveys and a reminder postcard were sent all 601 shoreline owners, and 67% responded. Specialization level was linked to preference for stocking, fish habitat manipulation, and tackle restrictions, but was not linked to public access issues. Results also showed a small number of specialization indicators are capable of producing results similar to studies that used several indicators. The framework used to measure and report specialization in this study should make the concept more intuitively understandable.

Introduction

Hobson Bryan (1977) proposed the Concept of Recreation Specialization in the late 1970's as a managerial tool that could identify and explain the diversity of behaviors and attitudes within an outdoor recreation activity; Bryan used trout fishing. Identifying unique recreator groups helps managers match them with the resources available to meet their needs, which should minimize conflicts between and within groups using the same resource. The essence of recreation specialization is found in Michigan's fishing rules.

Managers can identify subgroups by collecting data related to specialization's four core dimensions: commitment/experience, skill level, equipment, and centrality to lifestyle. Commitment/experience refer to the number of days spent participating in the activity, usually within the previous 12 months and/or the total number of years spent participating in the activity. Skill level refers to a person's self-rated ability to combine his/her innate coordination and dexterity with their learned knowledge to competently perform a task (e.g., fishing). Equipment refers to the type of tools used (e.g., type of fishing rod and reel) to participate in the sport or the replacement cost of those tools. Centrality to lifestyle refers to the activity's importance in a recreator's life.

For example, Bryan (1977) created a continuum of four subgroups. "Occasionalists" fished with any type of reel, expressed limited commitment to the sport, were not skillful anglers, and did not consider fishing a central life interest. At the opposite end of the continuum were "technique-setting specialists." These anglers fly-fished, were very skillful, were very committed to the sport (i.e., fished often), and considered fishing a central life interest. "Generalists" and "technique specialists" represented the middle of the continuum. Bryan found these subgroups differed in their preference for policies on stocking, who they fished with, and how important fishing was during vacations.

Subsequent researchers invested their efforts into specialization's relationship with attitudes, motivations, behaviors, and preferences using other activities such as birdwatching, hiking, camping, hunting, and sailing. Three general conclusions emerged from those investigations: 1.) Specialization's ability to identify unique subgroups is generally accepted, 2.) There is no standard method for measuring and reporting specialization,

and 3.) Specialization is moderately successful in predicting management preferences.

Preferences are general beliefs about desirable or ideal conditions (Graefe, Donnelly, & Vaske, 1987). Preferences typically revolve around three general types of settings: physical, social, and managerial. Management preferences are the issue of concern for this study, and they address the visible evidence of regulation (e.g., signs and uniformed police), the degree of regulation (i.e., how many rules to obey), the type of maintenance performed, and the type of acceptable services and facilities found in the recreational area (Driver, 1989).

Specialization has not been applied to private landowners, the people who, in a fragmented landscape such as a state forest, must live with recreational policies day to day. Landowners have a vested in interest in recreational policies around their property because they cannot shift or substitute recreation sites as easily as visitors. Also, it was not known if the preferences associated with a landowner's specialization level would supercede or interact with the preferences associated with being a property owner. For example, previous studies found that as fishing specialization level increased, preference for fish habitat manipulation increased. Restricting the amount of vegetation removed from a shoreline is a habitat management technique, yet many shoreline owners remove such vegetation to view the water (Segerson, 2001).

The purpose of this study then was to gather baseline data about the management preferences of upper Manistee River (UMR) shoreline owners, and to explore the relationship between those preferences and shoreline owner anglers' specialization levels.

Hypotheses
As specialization level increases, preference for (on the UMR):

1. Designated public access should decrease
2. Information about public access should decrease
3. Stocking should decrease
4. "Flies only" water should increase
5. Habitat restoration should increase
6. Habitat enhancement should increase

The North Central Research Station of the U.S.D.A.'s Forest Service and the Michigan Agricultural Experiment Station sponsored this study. These organizations also sought data about the characteristics of shoreline owners' properties, their perceptions of environmental quality, their likelihood of making the UMR the site of their permanent home if it was so not already, and their assessment of UMR managers' job performance (Nelson & Valentine, 2003).

The UMR is located in the northern Lower Peninsula of Michigan, a two and a half hour drive north from the capitol city of Lansing (Figure 1). The area is rural and forested. Although part of the river is still recovering from the effects of timber extraction in the late 1800's, the Michigan Department of Natural Resources' (MDNR) Fisheries Bureau classified much of the river as a blue ribbon trout stream and the Natural Resource Commission instituted quality fishing regulations (e.g., "flies only" zone) from M72 to the CCC State Forest Campground (the middle stretch of the river). Visitors enter the river through more than 40 access sites. Access sites range from road crossings to developed sites with restrooms and boat launch facilities. Fishing, nature observation, and camping are popular UMR activities (Nelson, Valentine, & Lynch, 2002).

Riparian ownership is public and private. The MDNR's Forestry, Minerals and Fire Management Division is the lead public land manager. The division receives support from the Fisheries Bureau, Law Enforcement Division, and Parks and Recreation Bureau. More than 600 different individuals and businesses own land adjacent to the UMR. UMR properties were classified as principal homes, second homes, vacant land with a temporary structure, or vacant land without a temporary structure.

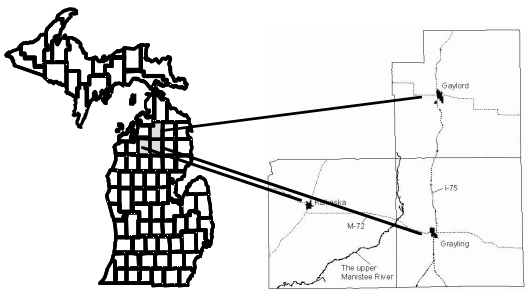

Figure 1. The upper Manistee River

Methods

This study was a census of upper Manistee River (UMR) private shoreline owners from Mancelona Road in Otsego County to M66 in Kalkaska County who fished at least once in their life. Many of the river's shoreline owners take advantage of the river's fishing opportunities, and trout are the most common target species (Nelson, Valentine, & Lynch, 2002).

The census was derived from a list of property owners obtained from Equalization Offices of the three affected counties. All 627 private shoreline owners were sent a recreational assessment questionnaire in the fall of 2001. After the fall 2001 survey effort, 601 shoreline owners remained to be included in this research effort. After three mailings and a postcard reminder (February to May, 2002), 580 shoreline owners remained in the sampling frame, of which 387 responded (67.1%). Three hundred forty three (88.6%) owners were eligible for analysis because they had fished at least once in their life.

Specialization was measured in a manner consistent with Bryan's (1977) framework and similar to Donnelly, Vaske, and Graefe (1986), Graefe, Donnelly, and Vaske (1987), and Miller and Graefe (2000). Each respondent received a specialization score based on their answers to four questions related to the core specialization dimensions: number of days fished from April 28 to September 3, 2001, skill level, preferred fishing method, and importance of fishing in life. The scores of each dimension were summed. Scores were only given to respondents who answered all four questions (315 of 343; ~92%). Table 1 summarizes the coding process.

The rationale for measuring specialization in this manner was to make the concept more intuitively understandable and operational for managers, recreators, and private interests.

The study's management preferences were selected based on indications from UMR managers and private interests that these issues were relevant to them and could be acted upon. Respondents could select "increase," "similar amount," or "decrease" with respect to those preferences. Hypotheses were tested with Chi-square calculations, and were accepted if $p<.05$.

Results

Most of the respondents were male (84.1%). Principal home owners were typically older (42% were 65+) and retired (62%). Their median household income in 2001 was $40,000 to $59,999. Second home owners were typically younger (23% were 65+), still working (39% were retired), and had higher incomes ($80,000+) in 2001. Vacant land owners with and without temporary structures were the youngest (22% were 65+), were still working (22% retired), and had median household incomes $60,000-$79,999.

A fairly normal distribution of specialization scores emerged: "novice" - 32.1%; "intermediate" - 40.3%; "advanced" - 27.6%. Anglers in each specialization level were in their mid to late 50's

Table 1. — Revised indicators used to measure specialization

Indicators	Original measures	Score
Days fished during season (at preferred water body and UMR)	0-10	1
	11-30	2
	31+	3
Skill level	Beginner or beginner-intermediate	1
	Intermediate	2
	Intermediate-expert or Expert	3
Preferred fishing method	Spincasting	1
	Spinning or Baitcasting	2
	Fly-fishing	3
Importance of fishing in life	Not at all important or somewhat important	1
	Moderately important	2
	Very important or extremely important	3

A-priori, three specialization levels based on summated variable
Novice = 4-7; Intermediate = 8-10; Advanced = 11-12

Table 2. — Results of specialization segmentation process

Indicators	Original measures	Novice	Intermediate	Advanced
		32.1%	40.3%	27.6%
Days fished last 12 months	0-10	91.1%	41.7%	0.0%
(at preferred water body and UMR)	11-30	6.9	47.2	55.2
	31+	2.0	11.0	44.8
Skill level	Beginner or beginner-intermediate	42.6	4.7	0.0
	Intermediate	50.5	41.7	1.1
	Intermediate-expert or Expert	6.9	53.5	98.9
Preferred fishing method	Spincasting	26.7	4.7	0.0
	Spinning or Baitcasting	34.7	24.4	8.0
	Fly-fishing	38.6	70.9	92.0
Importance of fishing in life	Not at all important or somewhat important	82.2	14.2	0.0
	Moderately important	17.8	52.8	3.4
	Very important or extremely important	0.0	33.1	96.6

Table 3. — Specialization's relationship with management preferences

As level of specialization increases, preference for:	Test result	Hypothesis:
Designated public access should decrease	$X^2 = 1.910$, p = .752	Rejected
Information about public access should decrease	$X^2 = 2.877$, p = .579	Rejected
"Flies only" water should increase	$X^2 = 33.280$, p = .000	Accepted
Stocking should decrease	$X^2 = 9.374$, p = .052	Accepted
Habitat restoration should increase	$X^2 = 34.301$, p = .000	Accepted
Habitat enhancement should increase	$X^2 = 28.384$, p = .000	Accepted

Hypothesis accepted of p<.05

(average age) and most classified their UMR property as the site of their second home, particularly the advanced anglers (65.5%). Property type ownership however was not associated with any one level of specialization over another ($X^2 = 5.521$, p = .238). Advanced anglers more frequently reported household incomes of $80,000+ in the past year (44.8%), which is consistent with the findings of previous research that showed more specialized anglers usually earned more income. Finally, as the level of specialization increased, a greater number of anglers reported the Manistee River as their preferred fishing location. Bryan (1979) noted that an increasing level of specialization manifests itself in resource specificity. Although Bryan only addressed the type of water body preferred by his different anglers (deep water vs. shallow stream), this finding logically parallels that result and was statistically significant ($X^2 = 35.103$, p = .000). Table 2 highlights the specialization level segmentation results.

The majority of the hypotheses were accepted. Although previous investigators found a link between specialization level and public access issues, these results make sense in light of the unique circumstances on the UMR. The stocking hypothesis was accepted because its p-value was close enough to the acceptance threshold. Table 3 summaries the hypotheses testing results.

Discussion

Hobson Bryan's (1977) segmentation scheme was inflexible. For example, an angler would not be classified as a "technique-setting specialist" if the angler used spincasting equipment, even if the angler's skill level, centrality to lifestyle, and commitment indicators were consistent with such a classification. However, flexibility in measuring specialization addresses the complexity of individual development and in this study, produced results similar to Bryan's propositions.

A smaller set of specialization indicators reduces the amount of data required to measure specialization. That data may even be available from existing sources such as license banks, U.S. Fish and Wildlife Service reports or other

university reports. Ultimately, this specialization measurement scheme should make the concept more intuitively understandable for resource management stakeholders.

Overall, shoreline owner anglers had a similar relationship with management preferences as visitors in previous studies. Recall that it was unknown if the preferences associated with property ownership would interact with the preferences of specialization level. In this study, specialization level was linked to preference for habitat manipulation, tackle restrictions, and stocking, but was not linked to public access issues.

It is logical that specialization level was not linked to preference for designated public access or information about public access. Two possible reasons and one probable reason could explain these results. First, it is possible that shoreline owners were concerned that additional public access would breed more conflict between themselves and recreators. Three commercial canoe liveries operate in the study area, and they attract considerable business from large groups of college-age people. In data not presented here, trespass and noise from drunken canoeists was a common issue of concern (Nelson & Valentine, 2003). If additional public access were installed, that could offer canoeists a wider variety of trip lengths, which could increase the amount of contact between shoreline owners and these recreators if their homes were near a new access point. Second, it is possible that shoreline owners believed additional public access and information about it would reduce the conflict between themselves and canoeists. If canoeists were given information about the location of public access, then they might avoid trespassing because they knew an access site was nearby. Third, public access is of probable universal importance to shoreline owners who want access to productive fishing areas and put-in sites for watercraft so they and their guests can float back to their property.

Stocking had a slightly weaker relationship with specialization level than hypothesized. It is possible that life course interacts with specialization. Life course refers to stages of life (e.g., single, married, retired, etc.). One of the common suggestions shoreline owners had for managers was an exception for children under 12 in the quality fishing zone because children have difficulty using fly-fishing equipment. If shoreline owners were considering one exemption, perhaps they were considering a second by supporting stocking efforts because it would increase the probability of their children catching fish. In this situation, the preferences of life course interact with the preferences of specialization level. Future research into this topic would clarify the reasons for stocking's weak relationship with specialization level of UMR shoreline owners.

Bryan (1979) proposed that anglers of increasing specialization level desire settings they can manipulate to distinguish between luck and skill when catching a fish. "Flies only" water offers such a setting. In this study though, "flies only" water was most strongly supported by the advanced anglers, and they do not represent the majority of shoreline owners.

The findings related to habitat enhancement and restoration are consistent with previous studies in that as level of specialization increased, so did preference for these types of habitat manipulation. For UMR managers though, it is important to note that a majority in all specialization levels preferred to increase these efforts. A future study that forces respondents to prioritize these two options should offer more insightful results because in this study, respondents answered under the assumption that resources exist to do both.

Recommendations

Since Bryan (1977) framed the concept, very few investigators measured or reported specialization level the same way. Some researchers measured specialization with more than four indicators, other with less. Some researchers reported specialization through each dimension (more than one specialization score) while others did not. Since specialization was designed for managers, standardizing specialization measurement and reporting procedures would make the concept more intuitively understandable to them, and hopefully then, more likely to be used.

Specialization does not state that recreators must enter the continuum at the general end, nor does it say that they will/must reach the specialized end. It would be useful then to know what triggers an evolution in specialization level, how long do

individuals stay in one level, why do they stop moving within the continuum, and can a person's level of specialization ever go down and what does that mean for the concept?

Also, specialization was not designed to explain all of the variance all the time. Therefore, it would be helpful to understand the circumstances where specialization is not useful in explaining the variance, for example in the stocking hypothesis.

Finally, managers would benefit from measuring the specialization levels of their visiting anglers. For example, how would a specialization makeup of 80% "advanced" in visitors versus 27% "advanced" in shoreline owners affect management decisions. Whose preferences take priority? Also, understanding the preferences associated with a specialization level and knowing which specialization level is in the majority, should help managers forecast reaction to proposed policies. For example, an upper Manistee River's management plan is currently under public review. Perhaps managers should begin projecting responses of UMR shoreline owners with respect to the plan's propositions so they can begin formulating answers before the public hearings.

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