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Andrew Holdnak  
*Western Illinois University*

Ellen B. Drogin  
*University of Maryland*

Alan R. Graefe  
*Pennsylvania State University*

James M. Falk  
*University of Delaware*

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**A COMPARISON OF RESIDENTIAL AND VISITOR ATTITUDES TOWARD  
EXPERIENTIAL IMPACTS, ENVIRONMENTAL CONDITIONS AND  
MANAGEMENT STRATEGIES ON THE DELAWARE INLAND BAYS**

**BY**

**DR. ANDREW HOLDNAK, ASSISTANT PROFESSOR**

**DEPARTMENT OF RECREATION, PARKS AND TOURISM  
403 CURRENS HALL  
WESTERN ILLINOIS UNIVERSITY  
MACOMB, ILLINOIS 61455**

**DR. ELLEN B. DROGIN, LECTURER**

**DEPARTMENT OF RECREATION  
UNIVERSITY OF MARYLAND  
COLLEGE PARK, MARYLAND 20742**

**DR. ALAN R. GRAEFE, PROFESSOR**

**SCHOOL OF HOTEL, RESTAURANT AND RECREATION MANAGEMENT  
THE PENNSYLVANIA STATE UNIVERSITY  
STATE COLLEGE, PENNSYLVANIA 16802**

**AND**

**MR. JAMES M. FALK, PROJECT DIRECTOR**

**COLLEGE OF MARINE STUDIES  
UNIVERSITY OF DELAWARE  
LEWES, DELAWARE 19958**

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**ABSTRACT**

This paper compares different attitudes toward experiential impacts on boating, environmental conditions, and proposed management strategies held by permanent residents, seasonal residents and seasonal visitors to the Delaware Inland Bays. The

study found variation in opinions held by each group indicating the tourism manager should collect information from all groups before developing policy. Additionally, the manager should understand the varying impacts on boater satisfaction depending upon conditions.

## INTRODUCTION

The perceptions and attitudes of resource users (residents and visitors) towards experiential impacts are key to planning for the successful development, operation, and survival of tourism. Extensive research exists on residents' perceptions of the impacts of tourism (1-2, 5, 7-10). However, very little attention has been devoted to residents' behavioral response to impacts, foundations for these perceptions and how these responses differ from those of seasonal visitors. In fact, little research has focused on differences overall in opinions, perceptions and attitudes of these various user groups.

There is increasing recognition of the potential economic, social, cultural and environmental costs of tourism development. The scale of tourism continues to increase and with it the potential for significant tourist and host community repercussions (11). While conceding economic, political, and cultural benefits, tourism, like any other industry, is viewed as contributing to environmental degradation (e.g., crowding, noise, litter, property destruction, pollution, change in community appearance, depletion of plants and wildlife, and ad hoc development) (3-5). Yet, tourism, more than any other industry, relies on the attraction of a place. Research indicates that landscape and "environmental health and beauty" are key contributors to attraction, and that protection of the environment is essential for the continued success of any tourism destination (6). Liu and Var (5) noted overall agreement that long term planning by governing agencies can control these ecological impacts of tourism. There is therefore a need to not only understand and include the views of the local community at the outset of the

environmental planning process, but to acknowledge the input of visitors. If the expectations of seasonal residents and seasonal visitors are not met, these individuals may choose to relocate to a different destination or to pursue other recreational pursuits. The intent of this investigation was therefore to study the differences in perceptions and opinions of Delaware Inland Bay boaters--permanent residents, seasonal residents, seasonal visitors--regarding boating quality and impacts, litter and marine waste, changes in environmental quality and living resources, and management. To what degree do different publics view the quality of the recreation experience, assess conditions of the resource, and support management strategies?

## METHODOLOGY

User data, user characteristics, activities, perceptions and preferences for various management alternatives were collected from recreational boaters in Rehoboth, Indian River, and Little Assawoman Bays using several integrated methods. Initially, on-site field interviews were conducted at nine sampling locations around the bays during the summer of 1991. A total of 451 recreational users were interviewed. Additionally, 600 mail surveys were sent to shoreline residents living in the Inland Bays area. Two hundred and ninety residents responded to the questionnaires for a 58 percent response rate (after adjusting for nondeliverable addresses). In addition, on seven days during the month of August, on-water counts of boats were conducted on Rehoboth and Indian River Bays to ascertain the density levels of boating activities on the bays. Density levels were examined within distinct zones identified for each bay

system. The numbers of vehicles parked at major access points were also counted to help determine density levels.

Users were asked to provide detailed information on the locations of their recreational activities, their perceptions of use and environmental conditions at specified locations on the bays. As well, recreational users' perceptions about specific environmental quality problems (e.g., declining fisheries resources, deteriorating water quality, presence of litter and debris) occurring in the Inland Bays system, and the potential range of management strategies were evaluated. Boater survey responses were examined by user group classification: permanent residents (i.e., those residing in the Inland Bays area on a year-round basis); seasonal residents (i.e., persons who lived in the area on a seasonal basis whose primary residence was not in the Inland Bays area); and seasonal visitors (i.e., persons visiting the area on a short-term basis--tourists). All variables were descriptively analyzed. Statistical comparisons were subsequently made to assess whether these groups were significantly different. The statistical test used depended on the type of variable considered. Categorical variables (e.g., changes in environmental quality; management options) were analyzed using a chi square statistic, while continuous variables (e.g., perceived boating impacts; experiential quality) were analyzed using an analysis of variance test. In either case, levels of significance above .05 were not termed significant.

## RESULTS

### Profile of Boaters

Significant differences were seen between residence types on a number of descriptive variables (Table 1). Permanent residents traveled an average of 7.5 miles one way from home to visit the Inland Bays while seasonal residents averaged 132.0 miles and seasonal visitors averaged 233.6 miles. This difference was significant at the .01 level. The average number of days of boating on the Inland Bays was significantly different at the .05 level. Permanent residents boated an average of 41.3 days on the Inland Bays in 1990, while seasonal residents boated 32.5 days and seasonal visitors boated 17.6 days. A significantly greater average number of years of boating experience was reported by permanent residents (23.1 years), when compared to seasonal visitors (18.9 years), and seasonal visitors (14.5 years). The average perceived skill level of permanent residents was significantly higher, 2.8 (where 1=novice, 4=expert), than that of seasonal residents (2.6) and seasonal visitors (2.4). The only descriptive variable that did not differ significantly between user groups was the average number of days boating in 1990 at all locations. It should be noted that the combined boater count varies between several variables because all respondents did not answer all of the questions.

The most common boating group reported for every type of resident was family; however, some differences were noted between boating groups when viewed by residence type (Table 2). The group most likely to boat alone was permanent residents

while the group most likely to boat with family and friends was seasonal residents. The group that tended to visit more just with friends was seasonal visitors.

Visitors to the Inland Bays used a variety of water craft for their boating activities (Table 3). The most popular craft was the runabout which accounted for 53.2% of the total number of boats reported with pontoon boats being the second most popular craft (19.2%). Overall, powerboats of various types including cabin cruisers, runabouts, pontoon boats, and bass boats account for 85.6% of the boats on the bays. Other types of watercraft reported included sailboats (3.6%), sailboards (3.2%), rowboats (3.1%) and kayaks/canoes (.7%).

There were significant differences in watercraft types reported depending upon user group. Cabin cruisers were used more by seasonal residents while sailboats and rowboats were reported more often by permanent residents. Jet skis and sailboards were operated primarily by seasonal visitors and a few seasonal residents. No permanent residents reported using either jet skis or sailboards. Runabouts were equally popular for all groups while pontoon boats were popular for permanent residents and seasonal residents only. Few seasonal visitors reported using pontoon boats.

In aggregate, respondents spent 37.7% of their time fishing, 19.5% powerboating and 14.2% crabbing. The least amount of time was spent swimming (1.4%), waterskiing (2.9%), sailboarding (3.1%) and sailing (3.1%). As with boat types, some significant differences exist in activity participation between user groups. Permanent residents were the least likely to fish (29.7%) yet the most likely to powerboat (23.7%) and sunbathe/sightsee

(12.8%). They were the most likely group to sail (6.1%) yet the least likely to sailboard (0%). Seasonal visitors were the least likely to powerboat (8.1%) and the most likely to sailboard (14.7%). There were no significant differences between user group's participation in crabbing, clamming, waterskiing, swimming, or other activities.

### **Perceptions of Boating Quality and Impacts**

All user groups reported that they enjoyed their trip and felt it was worth the money that they spent on it; however, many noted that it did not measure up to their ideal or best-ever boating outing. Although not significantly different, permanent residents rated the quality of their trip the highest (8.0 on a 1 to 10 scale), while seasonal residents rated their experience 7.3, and seasonal visitors rated their trip 7.2 (Table 4). All user groups tended to feel that the bays were moderately crowded (4.5-4.9 on a 9-point scale index), but the number of boats on the bays generally had little or no effect on their overall enjoyment levels. Permanent residents reported higher levels of displacement (2.3 on a 1 to 5 scale index), for example, avoiding favorite parts of the bay due to crowding, staying off the bays during part of the day due to crowding, giving up activities because of water quality than seasonal residents (2.1) and visitors (2.1). Most boaters (74-92%) agreed that conditions on the bays the day they boated were safe, and only a minority (21-46%) said that they had observed any unsafe boating situations. Permanent resident responses showed more concern about safety on the bays than either of the other user groups. Very few boaters (2-5%) acknowledged that they nearly had an accident on the day they were sampled, while most (42-64%) felt that there were

adequate law enforcement patrols on the bays. Permanent residents (42%) were the only group where less than a majority felt that current law enforcement patrols were adequate (64% - seasonal residents; 52% - seasonal visitors). Permanent residents (21%) were more sensitive to the noise of other boaters (11%-seasonal residents; 12% seasonal visitors), and they also observed more inappropriate boater behavior (31%) than seasonal residents (19%) or visitors (14%).

### **Perceptions of Litter and Marine Waste**

Very few boaters reported seeing marine debris or litter during their boating trips (Table 5). Permanent residents (who are more sensitive to litter and debris) consistently reported a higher frequency of observing marine debris and were significantly more likely to report reduced enjoyment of their trip because of debris (5.1 on a 9-point scale; 4.3 for seasonal residents; 4.1 for seasonal visitors).

### **Perceived Changes in Environmental Quality and Living Resources**

Permanent residents (57%) were much more likely than seasonal residents (32%) and seasonal visitors (27%) to state that the environmental quality (water quality and clarity) of the bays was deteriorating, and had a stronger feeling (66%) than seasonal residents (48%) and visitors (42%) that the bays' living resources (e.g., fish, crabs, clams) were deteriorating (Table 6). Similarly, seasonal residents (37%) and visitors (34%) had a stronger sense that the environmental quality of the bays was improving than did permanent residents

(19%).

### **Management Options**

The majority of all user groups tended to support most of the management options presented to them. There was overwhelming support for prohibiting all discharges of pollutants into the bay waters, establishing off-limit zones to protect sensitive resources, and restricting building and development. Permanent residents (70%) favored restricting the number of marinas more than seasonal residents (49%) or visitors (39%). Permanent and seasonal residents (70% each) more strongly supported stricter limits on harvesting the bays' living resources than did seasonal visitors (55%). The majority of all groups (53-62%) favored zoning the bay waters for certain activities, with seasonal visitors voicing the strongest support. The least-favored options by all groups included limiting the size and power of boats (35-50%), restricting the number of boat ramps (23-39%) and limiting the number of boats on the bays (14-25%). Permanent residents did, however, favor these options to a greater degree than did seasonal residents or visitors.

### **Management Restrictions of Offered by Boaters**

Permanent residents mentioned that jetskiing should be limited or zoned within the bays (18%), boater safety and education programs should be required (15%), boat speeds and wakes should be controlled (10%), and pollution should be controlled and sewer systems developed (10%). Seasonal residents indicated that there was a need to require boater safety and education

programs (29%), limit or zone jet-skiers (18%), control pollution and develop sewer systems (8%), and limit boat speeds and control wakes (7%). Seasonal visitors suggested that boat speed and wakes should be controlled (21%), boater safety and education programs should be required (13%), additional marine patrols should be added to enforce laws (13%), and the size and number of powerboats should be restricted on the bays (13%).

### **Management Suggestions Offered by Boaters**

Twenty percent of all permanent residents favored controlling pollution in the bays, additional marine patrols to enforce laws (noted by 16%), and undertaking additional dredging in the bays (15%). Seasonal residents and visitors were similarly supportive of pollution control (26% and 23%, respectively), additional dredging (21% and 11%), and having more marine patrols to enforce the laws (9% and 20%). Seasonal visitors further identified controlling development and protecting critical areas (11%), and improving fisheries management in the bays (11%) as their primary suggestions for management.

## **DISCUSSION**

Boating activity is expected to rise in the future as rapid development of Sussex County continues. Because of the complex environmental and socioeconomic issues involved, Delaware officials need to understand more about the impacts on the bays, as well as perceptions of boaters, before allowing further development or access to continue. Analyses indicate that the three user groups utilized in this study are distinct in their perceptions of experiential quality, environmental conditions and preferences for Inland Bays management options. Resource managers must decide the relative importance of these distinct user groups and what priorities, if any, should be given to groups in future planning efforts.

While managers may base their decisions on any criteria they consider relevant, data on boater perceptions and attitudes and the existence of distinct target markets provide one additional source of information for decision making. If resource managers determine that additional regulations and controls be enacted to better manage boating activity in the bays, boaters' opinions about certain measures should be considered. If such regulations are supported by a majority of boaters, there should be wider acceptance and less likelihood of non-compliance. Conversely, if management measures are perceived to have limited support, additional education and stronger enforcement may be necessary.

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TABLE 1

ANALYSIS OF BOATER PROFILE INFORMATION BY RESIDENT TYPE

	Combined		Permanent Resident		Seasonal Resident		Seasonal Visitor		F Value
		N=		N=		N=		N=	
Average Miles from Permanent Residence to Inland Bays	91.4	694	7.5	312	132.0	277	233.6	105	16.6**
Average 1990 Total Boating Participation (days)	41.0	683	47.0	304	37.8	274	32.0	105	1.7
Average 1990 Boating on Inland Bays (days)	34.1	683	41.3	304	32.5	274	17.6	105	3.5*
Average Years Boating Experience	20.1	683	23.1	304	18.9	274	14.5	105	14.1**
Average Perceived Boating Skill Level (1=novice to 4=expert)	2.7	631	2.8	264	2.6	263	2.4	104	7.7**

\*Differences significant at the .05 level

\*\*Differences significant at the .01 level

TABLE 2  
ANALYSIS OF BOATING GROUP TYPES BY RESIDENT TYPES

	Combined		Permanent Resident		Seasonal Resident		Seasonal Visitor		Chi Square
	N	%	N	%	N	%	N	%	
Family	322	53.7	140	55.1	139	54.1	53	60.2	18.5**
Friends	89	12.7	41	16.1	30	11.7	18	20.5	
Family and Friends	137	22.8	48	18	75	29.2	14	15.9	
Alone	41	6.8	25	9.8	13	5.1	3	3.4	
	599	100.0	254	100.0	257	100.0	88	100.0	

\*Differences significant at the .05 level

\*\*Differences significant at the .01 level

TABLE 3

## SUMMARY OF WATERCRAFT BY RESIDENT TYPES

	Combined		Permanent Resident		Seasonal Resident		Seasonal Visitor		Chi Square
	N	%	N	%	N	%	N	%	
Cabin Cruiser	62	10.7	14	6.1	39	15.7	9	9.2	123.8**
Runabout	307	53.2	114	49.4	137	55.2	56	57.1	
Kayak/Canoe	4	.7	3	1.3	0	.0	1	1.0	
Sailboat	21	3.6	16	6.9	3	1.2	2	2.0	
Rowboat	18	3.1	13	5.6	4	1.6	1	1.0	
Jet Ski	10	1.7	0	.0	5	2.0	5	5.1	
Pontoon Boat	111	19.2	56	24.2	51	20.6	4	4.1	
Sailboard	19	3.2	0	.0	4	1.6	15	15.3	
Bass Boat	14	2.4	7	3.0	2	.8	5	5.1	
Other	11	1.9	8	3.5	3	1.2	0	0	
Total	577	100.0	231	100.0	248	100.0	98	100.0	

\*Differences significant at the .05 level

\*\*Differences significant at the .01 level

TABLE 4  
ANALYSIS OF BOATING QUALITY AND IMPACTS BY RESIDENT TYPE

	Combined		Permanent Resident		Seasonal Resident		Seasonal Visitor		F Value
		N=		N=		N=		N=	
Trip quality <sup>1</sup>	7.6	580	8.0	226	7.3	252	7.2	102	n.s.
Crowding <sup>2</sup>	4.7	612	4.5	249	4.8	259	4.9	104	n.s.
Displacement Index <sup>3</sup>	2.2	616	2.3	253	2.1	259	2.1	104	10.2**
Safety <sup>2</sup>	3.8	586	3.6	230	3.9	252	3.9	104	18.4**
Law Enforcement <sup>2</sup>	3.2	607	2.9	248	3.5	256	3.3	103	19.3**
Noise <sup>2</sup>	2.2	610	2.4	248	2.1	258	2.2	104	7.9**
Behavior of Others <sup>2</sup>	2.4	603	2.6	242	2.3	257	2.2	104	8.4**

\*Differences significant at the .05 level

\*\*Differences significant at the .01 level

<sup>1</sup>Scale 1=low, 10=high

<sup>2</sup>Scale 1=low, 5=high

TABLE 5  
 MEAN REPORTED OBSERVATIONS OF DEBRIS TYPES  
 BY RESIDENT TYPE (N=522)

	Combined	Permanent Resident	Seasonal Resident	Seasonal Visitor	F	Sig. of F
Plastic	1.35	1.47	1.32	1.18	8.497	.000**
Glass	1.07	1.13	1.03	1.05	4.023	.018*
Metal	1.16	1.26	1.11	1.06	7.052	.001**
Paper	1.36	1.54	1.27	1.19	14.180	.000**
Plant	1.54	1.61	1.58	1.31	5.581	.004**
Animal	1.18	1.17	1.19	1.2	.128	.880
Debindex	7.39	7.84	7.19	6.88	7.816	.000**

\*Significant at the .05 level

\*\*Significant at the .01 level

TABLE 6

## ANALYSIS OF PERCEPTIONS OF ENVIRONMENTAL QUALITY AND SELECTED MANAGEMENT OPTIONS BY RESIDENT TYPE

	Combined		Permanent Resident		Seasonal Resident		Seasonal Visitor		F Value
		N=		N=		N=		N=	
<i>Environmental equality</i>									
Environmental quality is deteriorating (water quality & clarity) <sup>1</sup>	2.1	679	2.1	383	2.1	272	2.3	104	n.s.
Quality of Living resources are deteriorating (fish, crabs & clams) <sup>1</sup>	2.2	680	2.1	383	2.1	273	2.4	104	6.2**
<i>Management Options</i>									
Restrict the number of marinas <sup>1</sup>	1.5	673	1.4	299	1.6	270	1.7	104	10.0**
Restrict the number of ramps <sup>1</sup>	1.8	671	1.9	297	1.8	270	1.9	104	n.s.
Limit number of boats <sup>1</sup>	2.0	668	2.0	294	2.0	270	2.0	104	n.s.
Limit size of boats <sup>1</sup>	1.7	676	1.6	299	1.7	273	1.7	104	3.3*
Limit the harvest <sup>1</sup>	1.4	676	1.4	303	1.4	279	1.6	104	4.3*
Off Limits <sup>1</sup>	1.2	676	1.2	301	1.2	271	1.1	104	6.9**
Prohibit discharge <sup>1</sup>	1.1	678	1.1	304	1.0	270	1.0	104	n.s.

\*Differences significant at the .05 level

\*\*Differences significant at the .01 level

<sup>1</sup>Scale 1=high level of agreement, 5=low level of agreement.