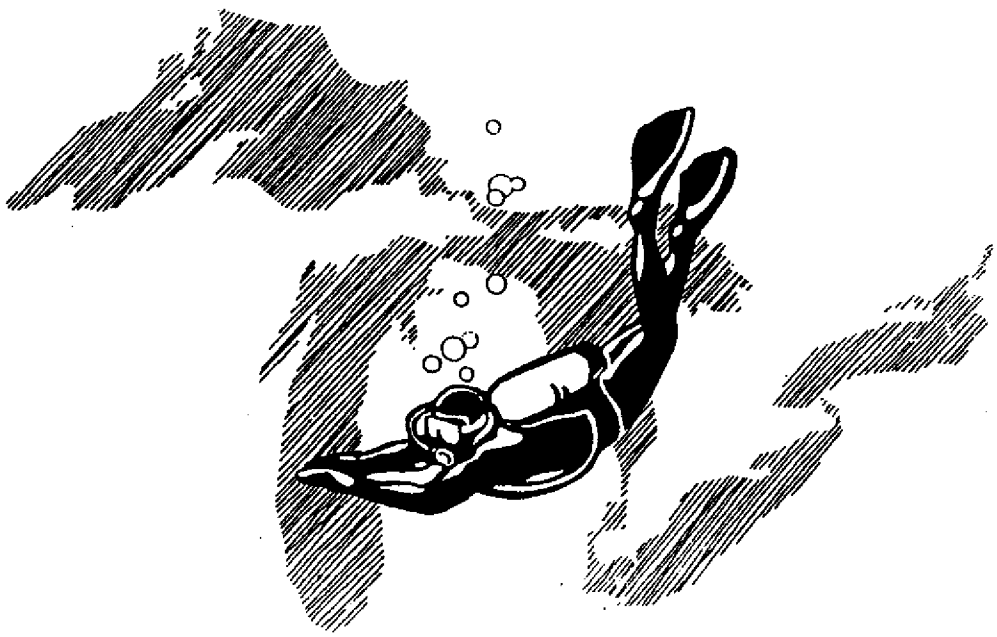
RESULTS OF THE SPORT DIVING AND GREAT LAKES AQUATIC PARKS SURVEY



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INTRODUCTION

Historical Perspective

Historic shipwrecks resting on Michigan Great Lakes bottomlands have been visited by recreational or sport divers using self-contained underwater breathing apparatus (scuba) since the 1950s (Vrana 1987; Holecek and Lothrop 1980). The annual visitation of sport divers to Michigan's historic shipwrecks seems to have increased over the last two decades, although quantitative figures are limited (Vrana and Panowski 1987; Kinnunen 1985, 1984; Pryor 1979). Recreation researchers can study these shipwrecks as cultural-environmental settings that provide personal benefits to sport divers (Holecek and Smiley 1982; Fridgen 1980; Pryor 1979). Shipwrecks may also be viewed as tourism attractions and community assets that provide monetary benefits to regional economies from the expenditures of sport divers, and non-divers that accompany the visiting divers (Gunn 1988; Peterson et al. 1987(a), 1987(b); Walsh 1986; Kinnunen et al. 1985; Holecek and Lothrop 1980; Tomasi 1979).

The archaeological study of shipwrecks can enhance our understanding of human history and past human lifeways (Gould 1983; Hulse 1979; Muckelroy 1978). The information and data obtained through historical archaeology are important to the disciplines of history and anthropology (Deagan 1982), and provides personal benefits to citizens who want to understand more about our past (Herbert et al. 1989). But, the use of a shipwreck for sport diving or archaeological study cause impacts that may decrease the relative worth or assigned value of the site for recreation and science (Graefe 1989; Walsh 1986; Holecek and Smiley 1982; Wildesen 1982).

In 1980, Public Act 182 was enacted to "protect and preserve" Great Lakes shipwrecks, primarily because sport divers and professionals in state government and universities began to recognize the benefits derived from shipwrecks and were concerned about uncontrolled impacts to these sites (Vrana and Halsey 1992). This act also authorized a process for establishing Great Lakes state bottomland preserves. The theft, vandalism and commercial salvage of shipwreck artifacts and other cultural resources within these areas are restricted. Instead, sport divers are encouraged to explore and photograph the natural and cultural features found within the preserves.

In 1988, the Michigan Legislature passed Public Act 452 which authorized larger penalties for regulatory violations and increased the area eligible for designation as preserves to 10% of the total Michigan Great Lakes bottomlands. Nine preserves have currently been designated which total over 2,000 square miles in area (see Appendix A). Great Lakes state bottomland preserves are now commonly known as *underwater preserves*.

The designation process generally begins with the organization of an underwater preserve support group representing the various interests within coastal communities (Kinnunen et al. 1985). Vrana (1991) found that the support groups (commonly known as *preserve committees*) are primarily composed of small business-related interests. A preserve committee assembles the required information needed to nominate a nearby area of Great Lakes state bottomlands, coalesces political support, and guides the designation process through state government. Eight preserve committees have remained in existence after the designation process in order to influence the development and management of their respective underwater preserves. Recently, a private nonprofit organization entitled the Michigan Underwater Preserves Council, Inc., was established in order to more effectively represent the interests of the preserve committees (Michigan Underwater Preserves Council 1992, 1989).

The Council has participated in some private-public partnerships for preserve development and management that include the funding of cooperative advertising campaigns with the Michigan Travel Bureau, the placement of standardized mooring buoy systems with the Michigan Department of Natural Resources, and the establishment of an avocational underwater archaeology course at St. Ignace with the Michigan Bureau of History. The preserve committees and the Council have worked closely with the Michigan Sea Grant College Program of Michigan State University and the University of Michigan since 1980 on a variety of projects involving survey research, diving safety and education, and remote sensing technology development and transfer (Vrana and Schwartz 1989; Swinehart 1988; Kinnunen et al. 1985).

Of particular importance to the Council and preserve committees (especially the members that operate charter services or other tourism related businesses/organizations) are the development of strategies/tactics to market the preserves to sport divers and other visitors (Michigan Underwater Preserve Council 1989-92; Vrana 1989). This interest has spurred a series of promotional activities that include information booths at trade and sport shows, the production of individual preserve/sport diving brochures, the production of a Michigan underwater preserves brochure, and advertising in the *Underwater USA* and *Skin Diver* magazines (Vrana 1989). A cooperative advertising campaign in 1989-90 resulted in the placement of full page color advertisements in three national issues of *Skin Diver* magazine, and a feature article on the preserves (Gentile 1990).

A prime reason that *Skin Diver* magazine was chosen as the advertising vehicle for the 1989-90 cooperative advertising campaign was that the magazine claimed a readership of one million active divers from an approximately 220,000 average paid circulation (including 175,000 subscribers) (Audit Bureau of Circulations 1989; Gonzalez-Church 1989). Subscribers have a high average household income and proclivity for dive travel (Harvey Research Organization, Inc. 1989). *Skin Diver* magazine estimated that 1.5 million people in the United States were active scuba divers in 1989 (Gonzalez-Church 1989). Feature articles, editorial segments and advertisements within the magazine focus on travel to and sport diving at tourism destinations. In addition, Council members perceived that the results from advertising in *Underwater USA* during 1988 were poor, although no formal evaluation was completed (Lindquist 1992).

Evaluative results from a conversion study of the 1989-90 cooperative advertisement campaign indicate that Michigan's underwater preserves may be an attractive sport diving destination for *Skin Diver* magazine subscribers (Stewart 1992(a)). Qualitative benefits of the *Skin Diver* magazine campaign include better understanding of the cooperative advertising process and the need for a clear definition of Council mission, goals and objectives. In 1992, the Council completed a strategic planning process in consultation with the Michigan State University Department of Park and Recreation Resources, and Michigan Sea Grant Extension. The process produced a mission statement and organizational objectives.

In addition to the perceived need of marketing the Michigan underwater preserves, influentials within preserve committees, the Michigan Underwater Preserves Council, Inc., the Michigan Sea Grant College Program, the Michigan State University Department of Park & Recreation Resources, and the Travel, Tourism and Recreation Resource Center, agencies of the State of Michigan, and sport diving organizations have debated and considered the development of underwater or aquatic *parks* in the Great Lakes since the mid-1970s (Halsey 1985; Kinnunen et al. 1985; Smiley and Holecek 1982; Holecek and Smiley 1982; Hulse and Holecek 1980; Hulse and Holecek 1979; Warner and Holecek 1978; Warner and Holecek 1975). Aquatic parks are viewed by these influentials as having different characteristics than underwater preserves, but there is a lack of user-based data that may help these influentials define the characteristics of an aquatic park.

Goals of the Survey

This survey was proposed as a part of the 1989-90 cooperative advertisement campaign in *Skin Diver* magazine and an assessment project funded by the Michigan Department of Natural Resources. It was designed as exploratory research that would generate data on *Skin Diver* magazine subscribers for use by Michigan underwater preserve-related organizations and businesses in planning strategies/tactics for marketing and visitor service development.

It should be noted that *Skin Diver* magazine conducts occasional subscriber surveys that detail demographics, diving involvement, dive travel, the use of diving equipment, boat ownership, and participation in other recreational activities (Harvey Research Organization, Inc. 1989). Although these types of data are valuable for the purposes of *Skin Diver* magazine, the design of strategies/tactics to market sport diving and develop underwater preserves and aquatic parks in the Great Lakes also require information and data on consumer beliefs, values, attitudes, preferences and other socio-pyschological and economic determinants of decision-making (Green et al. 1988; Dillon et al. 1987; Moschis 1987; Fenwick and Quelch 1984).

Other surveys that are available to the preserve organizations (i.e. Peterson et al. 1987(a), 1987(b); Holecek and Lothrop 1980(a); Holecek and Lothrop 1980(b)) or focus group studies of sport divers (i.e. Crane Enterprises 1987, 1985; Harvey Research Organization, Inc. 1981) deal with populations of divers other than *Skin Diver* magazine subscribers, and/or are qualitative in nature. These limitations severely restrict the application of results from other studies to *Skin Diver* magazine subscribers.

Therefore, the primary goals of this survey are to collect data from *Skin Diver* magazine subscribers on diving activity level, diving experience level, benefits sought in the sport diving experience, beliefs about Great Lakes sport diving and tourism, attributes sought in a Great Lakes aquatic park, attitudes toward removal of shipwreck artifacts, attitudes toward user fees and other managerial considerations, geographic location of residence, and a number of demographic variables that may be applied in the following activities:

1) Marketing underwater preserves as tourism destination areas for recreational or sport diving.
2) Planning and designing services, facilities, attractions, products or programs at Michigan underwater preserve areas.
3) Defining the concept of a Great Lakes aquatic park.
4) Assessing Michigan's underwater preserves for development into aquatic parks. Results from this survey are one part of this assessment, which is being completed by Michigan Sea Grant Extension for the Michigan Department of Natural Resources Land & Water Management Division.

In addition, there are other social-political reasons for gaining an understanding of large sport diver populations like *Skin Diver* magazine subscribers. These reasons include the following:

1) Sport divers are the primary users of in situ shipwreck sites and other Great Lakes underwater cultural resources. They have a large actual and potential impact upon these public resources through recreational activities. Therefore, knowledge of diving populations could be beneficial in controlling depreciative behavior and impacts on these sites.
2) Sport divers and sport diving-related businesses are organizing as political interest groups and demanding more participation in governmental decision-making involving the development and management of aquatic protected areas like the Michigan underwater preserves. In addition, perusal of popular national and regional sport diving publications indicate that a common lobbying platform of these groups is unrestricted or greater recreational access to public underwater resources. Assuming that sport diving on public underwater resources will increase due to these advocacy efforts, knowledge of diving populations could be beneficial in 1) understanding political agendas, 2) designing satisfying recreational experiences, and 3) reducing negative effects of over-crowding or congestion on certain sites.

METHODS

Population Characteristics

Skin Diver magazine subscribers with mailing addresses in the United States numbered approximately 168,500 individuals on December 31, 1989 (Audit Bureau of Circulations 1989). The number of subscribers was calculated by the magazine publisher, Petersen Publishing Company of Los Angeles, CA and certified by the Audit Bureau of Circulations (an independent company) in accordance with its bylaws and rules for auditing (Audit Bureau of Circulations 1989). The 1989 *Skin Diver* magazine subscriber survey indicated that 96.6% of the subscribers are certified scuba divers and 86.9% completed one or more diving trips in the last 12 months. Other results from the 1989 *Skin Diver* magazine subscriber survey are as follows.

- Subscribers have an average household income of $64,300; 73.1% are employed as business owners, managers, technicians, professionals, or sales people; 84.2% have attended college.
- They have been involved in diving for an average of 3.9 years and have spent an average of $2,150 on dive trips in the last 12 months.
- Most of the respondents (73.1%) took a domestic dive trip in the past 12 months. They averaged 5.1 trips annually.

The advantages of sampling this population include the following.

- In general, they represent an attractive tourism market (i.e. high income, well educated individuals with a propensity for dive travel).
- *Skin Diver* subscribers represent a variety of diving skill levels from all major certification agencies.
- This population can be easily segmented by *Skin Diver* geographic administrative regions that correspond with U.S. Census regions. The ability to segment by region may be an advantage in the future implementation of marketing mix tactics.
- The Michigan Underwater Preserves Council, Inc. and sport diving related businesses are likely to advertise in *Skin Diver* magazine in the future.
- *Skin Diver* magazine is cooperating in the survey, which has reduced the total cost.

Survey Population

Skin Diver magazine subscribers are separated into nine administrative regions within the United States. Of particular interest were subscribers within an approximate 1 to 1 1/2 days drive to the Michigan Great Lakes, and the large diving population known to reside in Florida. With these general criteria in mind, five *Skin Diver* magazine administrative regions (New England, Middle Atlantic, South Atlantic, East North Central, West North Central) and the states of Kentucky and Tennessee within the East South Central region were chosen as the survey population (Table 1). These regions total 126,500 subscribers, or approximately 75% of subscribers with United States mailing addresses (excluding U.S. possessions and military or civilian personnel overseas).

It is assumed that divers from these five regions are more familiar with cold water diving and are more likely to travel to the Great Lakes than more distant regions. The one exception is the South Atlantic region, which contains warm water diving areas in Florida, Georgia and the Carolinas. The South Atlantic region was included in the survey because it has the largest number of subscribers. Limiting samples to these five regions and the states of Kentucky and Tennessee also reduced survey costs.

Table 1. *Skin Diver* Magazine Administrative Regions.

Name of Region	States
New England	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
Middle Atlantic	New York, New Jersey, Pennsylvania
South Atlantic	Delaware, Maryland, D.C., Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
East North Central	Ohio, Indiana, Illinois, Michigan, Wisconsin
West North Central	Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, *Kentucky, *Tennessee

* Kentucky and Tennessee are actually in the East South Central region, but were included in this region because of their proximity to the Great Lakes and to save costs from surveying another complete region.

Survey Instrument

A draft mail questionnaire was designed by the researcher after development of research questions and review of the following information sources:

1) *An Analysis of the Development Needs of Michigan Bottomland (Underwater) Preserve Communities Using the Nominal Group Technique* (Vrana 1991).
2) The *Michigan Bottomland Preserves Inventory* (Vrana 1989).
3) Personal communications with preserve stakeholders.
4) Literature from the disciplines of park, recreation and tourism, business management and marketing, underwater archaeology and cultural resource management, fisheries and wildlife management, and other applied social sciences.
5) Studies funded by the Diving Equipment Manufacturers Association (DEMA).
6) Articles on sport diving in popular magazines and newsletters.
7) Personal communications with sport divers, and observations of sport diving behavior.

Unbalanced noncomparative rating scales with four response choices were chosen for attitude questions on aquatic park features (attributes sought) and benefits sought, based on the survey research of Ou (1991) and Kikuchi (1986). Balanced Likert-type scales were chosen for attitude questions associated with aquatic park development and management. Multiple choice and dichotomous response formats were used for other questions. Estimates of construct validity and reliability were not calculated.

After expert review, the draft mail questionnaire was pretested on a group of 50 sport divers from Michigan and 7 non-divers. The sport divers included individuals regularly involved in dive travel, or those considered stakeholders in underwater preserve development and management. The first pretest mailing was completed on January 24, 1991. The second pretest mailing was completed on February 8, 1991. A total of 35 questionnaires were returned for a response rate of 61.4%.

Data from a total of 33 useable questionnaires was entered into SPSS Data Entry II and analyzed using SPSS PC+ frequencies for all variables. A mean was determined for the maximum willingness to pay question. Responses to open-ended questions were listed and reviewed. The questionnaire was revised using results from the pretest analysis and feedback from expert reviewers.

On February 27, 1991, the researcher met with a group of eight sport divers from the Lansing area (six of whom participated in the first pretest) and administered the revised questionnaire. The researcher then facilitated a group discussion and evaluation of questionnaire content and format, and recorded comments and suggestions from the group. This group pretest technique provided qualitative, in-depth perspectives of the questionnaire that seemed to complement the mail pretest.

Sampling Design

The sampling frame for the survey was the *Skin Diver* magazine subscriber list. This list was provided by the *Skin Diver* regional office located in Chicago, Illinois. *Skin Diver* magazine subscribers were stratified by geographical region (New England, Middle Atlantic, South Atlantic, East North Central and West North Central). Subscribers from Kentucky and Tennessee were added to subscribers from the West North Central region. Subscribers within each region were listed by zip code in ascending order (i.e. lowest numerical zip code to highest numerical zip code). A systematic sample with a random start was taken from the sampling frame by a commercial sampling firm on December 3, 1990. Four hundred samples were selected from each region in order to obtain an adequate number of returned surveys from each region (i.e. a target of 200 returned surveys from each region assuming a 50% return rate) for purposes of geographic segmentation. The total sample size was 2,000.

Survey Implementation

After final expert review of the questionnaire and survey design, two bulk rate mailings were completed. Bulk rate mail sent to addresses that had changed were returned to the researcher by the U.S. Postal Service with a current address (if known). This postal option is termed *Do Not Forward, Address Correction Requested, Return Postage Guaranteed*. A total of 187 bulk mail pieces were returned to the researcher by the U.S. Postal Service; 143 with address corrections, and 44 non-deliverables.

The first mailing included an introductory letter, eight page questionnaire (see Appendix B), and a stamped, addressed return envelope. It was completed on March 13, 1991. The second mailing included a revised introductory letter, another copy of the questionnaire, and a stamped, addressed return envelope. It was completed on May 8 and May 14, 1991. Results of the mailings are shown in Table 2 and Table 3.

Table 2. Results of Survey Mailings.

Variable	Results
Number of Questionnaires Mailed	2,000
Number of Re-Mails (due to change of address)	143
Number of Non-Deliverables	44
Total Number of Questionnaires Delivered	1,956
Number of First Mailing Returns	587
Number of Second Mailing Returns	217
Total Survey Questionnaire Returns	804
Percent Returned (804/1,956)	41.1%

Table 3. Percentage of All Returned Questionnaires by *Skin Diver* Magazine Administrative Region.

Region	# of Returned Questionnaires	% of All Returned Questionnaires *	Response Rate By Region (%)
New England	159	20.0	40.9
Middle Atlantic	156	19.0	39.6
South Atlantic	134	17.0	34.4
East North Central	193	24.0	48.9
West North Central	162	20.0	41.6
Totals	804	100.0%	41.1%

* Rounded to the nearest whole percent

Data Entry and Analysis

Results were entered into SPSS Data Entry II, verified and cleaned. Every 10th questionnaire plus the first and last questionnaire of the first and second mailings were verified (i.e. approximately 10% of returned questionnaires were verified). Because the total error rate was only .0020, no other surveys were verified. Descriptive statistics were generated using SPSS on the Michigan State University IBM mainframe computing system. The first stage of data analysis (as presented in this report) was limited to a narrative review and discussion of response frequencies and a few means and medians. The author intends to complete further statistical analysis of the database.

Nonrespondent Survey

A nonrespondent survey was completed during the winter of 1991-92. A systematic sample (with random start) of nonrespondents was chosen from each region of the sampling frame so as to obtain 10 nonrespondents from each region. A total of 50 nonrespondents were then contacted by telephone and interviewed, using a shortened version of the mail questionnaire. Results from the telephone survey indicate that a greater proportion of nonrespondents (approximately 10%) than mail survey respondents did not participate in any diving activity during the 12 months prior to the survey. Otherwise, the telephone survey suggests that the results from the mail survey are representative of both respondents and nonrespondents, although statistical measures of significance have not yet been completed.

Survey Bias

Respondents to the 1989 *Skin Diver* magazine subscriber survey were 83% male and 17% female, although actual readership is estimated as 65% male and 35% female (Harvey Research Organization, Inc. 1989). This difference may result from male heads of household being listed as the subscriber, thereby underrepresenting the views of female member(s) of the household, who may be active divers and participate in dive travel decisions. It suggests that survey results from *Skin Diver* magazine *subscribers* may not fully represent the characteristics, attitudes etc. of the estimated one million *Skin Diver* magazine *readership*.

Survey results also indicate that this population lacks knowledge of and experience with Great Lakes sport diving. The researcher has not drawn any conclusions on how this lack of knowledge and experience may have influenced the survey results (i.e. preferences and attitudes indicated by the respondents). It is possible that increased awareness of Great Lakes sport diving and tourism conditions by this population may substantially change their future preferences and attitudes.

RESULTS AND DISCUSSION

The sample of 2,000 *Skin Diver* magazine subscribers returned a total of 804 survey questionnaires for a 41.0% adjusted return rate (see the methods section for further information on returns by *Skin Diver* magazine subscribers). The total number of valid responses per question ranged from 758 to 800, with a mean of 787.7 and standard deviation (SD) of 8.09 valid responses per question.

The results and discussion section is divided into the following subsections: 1) demographics, 2) scuba diving background, 3) sport diving trip background, 4) Great Lakes sport diving beliefs, 5) attributes of a Great Lakes aquatic park, 6) benefits of sport diving, and 7) aquatic park development and management. The narrative review and discussion of results are based on frequencies of responses (a few means and medians), cited literature, and the experience of the author. The author intends to complete further statistical analysis of this database. A copy of the *Sport Diving and Great Lakes Aquatic Park Survey* questionnaire is found in Appendix B.

Demographics

Results:

Survey respondents are primarily male (82.1%) between the ages of 27 and 45 (66.0%), and are most likely to be married (59.7%). Households contain an average of just less than three people per household (mean = 2.78; SD = 1.32; median = 3.00). Most of the respondents (87.3%) have obtained at least some college or technical education. Over one-half (51.7%) of the respondents have completed a four year college degree and 20.7% have completed a graduate degree. Most respondents (68.1%) have an annual household income of $45,000 or greater, and about a quarter of the respondents (23.5%) have an annual household income of $90,000 or greater.

Discussion:

Respondents are generally well-educated and nearly 70% have an annual household income that is at least $ 15,000 greater than the median annual household income for the United States (estimated at $ 30,056 from 1990 U.S. Census figures) (U.S. Census Bureau 1992). The relatively high income level seems consistent with this population's propensity for dive travel. Most of the respondents (83.0%) participated in one or more sport diving trips during the twelve months prior to completing the survey. Over 20% participated in 5 or more sport diving trips during that time period.

Over one-third of the respondents (36.7%) are aged 27-36 and can be characterized as "late baby boomers," a group which represents 23 percent of all U.S. households and controls 21 percent of total household income (U.S. Travel Data Center 1989:27). By the year 2000, late baby boomers are expected to increase the size of the 35-44 age group by 32 percent and affect the travel industry in the following ways (Ibid. 1989:29):

1) More interest in specialty travel as hobbies and avocations become increasingly important.
2) An increased emphasis on raising children, resulting in diversification of family vacation travel alternatives. Travel without children is likely to remain important as a means of escape, or to reduce stress.
3) Multiple and varied vacation trips throughout the year.

Close to one-third of the respondents (29.3%) are aged 37-45 and can be characterized as "early baby boomers," a group which represents 21 percent of all U.S. households and controls 26 percent of total household income (U.S. Travel Data Center 1989:30). By the year 2000, early baby boomers are expected to become an active and premier travel market, and affect the travel industry in the following ways (Ibid. 1989:33):

1) The potential of increased travel activity because of growing affluence and reduced expenses.
2) Attraction to new, less traditional destinations, including "soft adventure" travel experiences, because of a psychological emphasis on experiences over material possessions.
3) An increase in visitation to "upscale" resorts and participation in activities such as golf and cultural events.

The demographic results from this survey appear to be consistent with results from the 1989 *Skin Diver* magazine subscriber survey (Harvey Research Organization 1989).

Scuba Diving Background

Results:

Nearly all of the respondents (96.5%) have been approved for scuba diving in the Great Lakes and elsewhere by a certifying organization. About 3% of the respondents (2.7%) indicated that they scuba dive even though they are not certified for diving. Almost one-half of the respondents (46.9%) have an open water diver certification, and nearly one-third have an advanced diver certification (31.5%). Another 12.5% are certified as dive master, assistant instructor, or instructor (which can be characterized as professional levels of certification). Most of the respondents were certified by either the Professional Association of Diving Instructors (PADI) (61.0%), National Association of Underwater Instructors (NAUI) (14.4%), Young Men's Christian Association (YMCA) (7.0%), or Scuba Schools International (SSI) (4.3%).

Slightly over one-third of the respondents (33.7%) have been scuba diving for 1-3 years. Another 39.4% have been scuba diving for 4-9 years. About one-quarter of the respondents (25.4%) have been scuba diving for 10 or more years. Over one-third of the respondents (36.4%) have completed 0-5 sport dives within twelve months prior to completing the survey. Over one-third (39.9%) have completed 6-20 sport dives during that same time period. Almost one-quarter of the respondents (23.4%) have completed 21 or more sport dives within twelve months prior to completing the survey.

A large percentage of the respondents (44.2%) have **not** completed a sport dive on a shipwreck within twelve months prior to completing the survey. Nearly 41% have completed 1-5 sport dives on a shipwreck during that same time period. Twelve percent of the respondents have completed 6-20 sport dives on a shipwreck within twelve months prior to completing the survey.

Households contain an average of less than 2 sport divers per household (mean = 1.54). Over half of the households (57.2%) have one diver per household, and one-third of the households (33.4%) have two divers per household. Almost 60% of the households (57.0%) do not have any female sport divers; nearly 40% of the households (39.7%) have only one female sport diver.

Discussion:

Almost one-half of the respondents (46.9%) possess an open water diver certification as their maximum certification level. Open water diver certification signifies completion of an entry-level skills training course. Slightly over one-third of the respondents (33.7%) have been scuba diving for only 1-3 years, and over one-third (36.4%) have completed only 0-5 dives within twelve months prior to completing the survey. These results indicate that this population of *Skin Diver* magazine subscribers contains a large number of beginning divers and/or divers that have low activity levels.

Beginning or low activity level divers could benefit from introductory training in cold water shipwreck diving (i.e. short courses), possibly as part of charter diving packages. A short course may: 1) make the visiting diver feel more confident in his or her actions, 2) increase satisfaction with the diving experience, and 3) add greater value to the charter boat experience as a whole.

The results also indicate that this population contains a large number of advanced sport divers. Assuming that advanced divers have different wants and needs than beginning divers in terms of the sport diving experience, it might be beneficial to tailor short courses in cold water shipwreck diving to these different experience/activity levels.

The potential of having a positive influence on safe diving practices through short courses in cold water shipwreck diving may be beneficial to any visiting sport diver, regardless of experience/activity level. Most respondents (90.7%) have not taken a diving trip to the Great Lakes within twelve months prior to completing the survey and are probably not very familiar with Great Lakes diving conditions.

In fact, almost half of the respondents (46.9%) acknowledged that "training in shipwreck diving" is a very important or crucial attribute of an aquatic park. Another 44.6% acknowledged that "training in dry suit (cold water) diving" is very important or crucial. A total of 67.9% of the respondents indicated that the "development of shipwreck diving skills" was a very important or crucial benefit of sport diving in general.

When considering the scuba diving background of this population from a marketing perspective, charter operators may find success in providing "recreational experiences" that are tailored to different experience/activity levels, or diving objectives (Crane Enterprises 1988). Beginning sport divers might prefer shallow bays or estuaries for introductory or orientation dives. Advanced sport divers might be more interested in unique or challenging diving experiences. An even greater customer-oriented approach might also be successful. In this approach, sport divers would be allowed to purchase "custom" diving experiences, which give participants a greater amount of decision-making responsibility in designing the actual charter trip.

Sport Diving Trip Background

Results:

Almost 17.0% of the respondents have not taken a diving trip within twelve months prior to completing the survey. A diving trip is defined as "any trip in which you completed one or more sport dives." Slightly over 40.0% have taken 1-2 diving trips and 20.5% have taken 3-4 diving trips during that same time period. Almost 22.0% of the respondents have taken 5 or more diving trips within twelve months prior to completing the survey.

Over one-third of the respondents (35.3%) have not taken a diving trip in the United States during the twelve months prior to completing the survey. About seventeen percent of this figure can be attributed to no trip activity. This indicates that 18.4% of the respondents completed all of their diving trips outside of United States boundaries.

About one-third have taken 1-2 diving trips in the United States and 14.8% have taken 3-4 diving trips in the United States during that same time period. Seventeen percent of the respondents have taken 5 or more diving trips in the United States within twelve months prior to completing the survey.

Most of the respondents have **not** taken a diving trip to either the Great Lakes (90.7%), or to the Michigan Bottomland (Underwater) Preserves (96.9%) within twelve months prior to completing the survey. If they made a decision in the future to visit the Great Lakes for sport diving, the large majority of respondents (88.1%) would **not** bring their own boat. Of those respondents that would bring a boat, the average length of the boat that they would bring is approximately 21 feet (median = 20 feet).

Most respondents (76.9%) would rent one or more pieces of scuba equipment from a Great Lakes dive shop if they visited the Great Lakes for sport diving. Table 4 lists the percentage of respondents that would rent different types of scuba equipment at a Great Lakes dive shop.

Table 4. Rental of Scuba Equipment at a Great Lakes Dive Shop.

Type of Equipment	% of Respondents That Would Rent
Air cylinder	57.6
Wetsuit	19.0
Drysuit	18.3
Underwater photo camera	13.0
Underwater video	12.5
Regulator	11.8
Buoyancy compensator	11.2
All the equipment I use	4.9

Discussion:

Nearly 91.0% of the respondents have **not** taken a sport diving trip to the Great Lakes within twelve months prior to completing the survey. If sizable segments of this population can be attracted to Great Lakes sport diving and tourism destinations, small businesses within preserve communities may benefit financially. Visitation by this population could be particularly worthwhile since over 25% of the total number of respondents are residents of states bordering one or more of the Great Lakes and may be more inclined to engage in long weekend and repetitive travel.

About 22.0% of the respondents participated in 5 or more sport diving trips within the twelve months prior to completing the survey. It could be especially beneficial for sport diving and tourism businesses to target and attract these high travel activity divers to the Great Lakes.

A challenge to Great Lakes sport diving businesses will be to demonstrate the value of diving at domestic destinations, and specifically Great Lakes destinations. A reduction in travel costs is an often-suggested incentive for domestic diving. But, the most important question is probably, "what types of sport diving and tourism experiences may have value to target market segments contained within this population?" In addition, it's important to understand the current perceptions of this population toward Great Lakes sport diving and tourism. It is perception rather than reality that drives travel decisions.

Great Lakes Sport Diving/Tourism Beliefs

Results:

Nine of the twenty-one belief statements (43%) elicited strong true or false responses. *A strong response for a belief statement is defined as a true (or false) response that totals at least 40% and is at least twice as large as the false (or true) response. Responses of a strong positive nature in terms of beliefs about Great Lakes sport diving and tourism are listed in Table 5.*

Table 5. Strong Positive Beliefs About Great Lakes Sport Diving/Tourism.

Belief Statement	Response (%)		
	True	False	No Opinion
There are numerous recreational activities in addition to diving in which to participate	63.7	4.7	31.6
There are numerous geologic features to explore	50.1	7.6	42.2
People in local communities are friendly	46.7	1.9	51.4
The Great Lakes region is too isolated	7.3	62.5	30.2
Shipwreck diving is very dangerous	23.0	58.5	18.5
Travel costs to the Great Lakes are too expensive	12.1	57.5	30.4
The lake water is too cold for sport diving	24.6	56.7	18.7
The Great Lakes are too polluted to safely dive	8.7	48.2	43.2
The shipwrecks are too deep for me to explore	7.7	44.2	48.1

Responses to other belief statements that could be interpreted as positive in terms of Great Lakes sport diving and tourism are listed in Table 6. These statements either have responses that total at least 40 percent, or a true (or false) response that is at least twice as large as the false (or true) response.

Table 6. Positive Beliefs About Great Lakes Sport Diving and Tourism.

Belief Statement	Response (%)		
	True	False	No Opinion
There are plenty of fish and other aquatic organisms to view	40.7	22.0	37.3
Visitor accommodations (i.e. lodging, restaurants) are generally of high quality	30.1	5.4	64.5
Shipwrecks are not crowded with divers . . .	29.0	7.7	63.4
Drysuits are needed to dive in the Great Lakes	26.0	40.7	33.3
Diving services & facilities are of poor quality	3.7	23.8	72.5

There were no responses of a strong negative nature in terms of beliefs about Great Lakes sport diving and tourism. A strong response for a belief statement is defined as a true (or false) response that totals at least 40% **and** is at least twice as large as the false (or true) response.

Responses to two belief statements that could be interpreted as negative in terms of Great Lakes sport diving and tourism are listed in Table 7. These statements elicited false responses that are at least twice as large as the true responses.

Table 7. Negative Beliefs About Great Lakes Sport Diving and Tourism.

Belief Statement	Response (%)		
	True	False	No Opinion
Underwater visibility is excellent for sport diving	16.1	34.3	49.6
Access to shipwrecks is not restricted by regulations	11.0	28.2	60.8

Other responses to belief statements that might be interpreted as negative in terms of Great Lakes sport diving and tourism are defined as true or false responses that total at least 19%. These responses are listed in Table 8.

Table 8. Other Negative Beliefs About Great Lakes Sport Diving/Tourism.

Belief Statement	Response (%)		
	True	False	No Opinion
Dry suits are needed to dive in the Great Lakes	26.0	40.7	33.3
The lake water is too cold for sport diving	24.6	56.7	18.7
Shipwreck diving is very dangerous	23.0	58.5	18.5
There are not enough diving services and facilities from which to choose	19.6	17.7	62.8
Costs of charter diving boats are too expensive	19.1	31.9	49.0
It's easy for me to get information about sport diving in the Great Lakes	38.7	23.8	37.4
There are few regulations on sport diving in the Great Lakes	13.7	22.8	63.5
There are plenty of fish and other aquatic organisms to view	40.7	22.0	37.3

In the preceding tables, four belief statements were listed as both positive **and** negative in terms of Great Lakes sport diving and tourism, based on the decision-making criteria provided by the researcher. Therefore, the aggregate responses to these four belief statements should be interpreted as "neutral" or "undetermined." These four belief statements are listed below.

- Dry suits are needed to dive in the Great Lakes
- The lake water is too cold for sport diving
- Shipwreck diving is very dangerous
- There are plenty of fish and other aquatic organisms to view

No opinion responses to belief statements ranged from 18.5% for "shipwreck diving is very dangerous" to 81.4% for "Michigan Bottomland (Underwater) Preserves are managed by state government." No opinion is defined as "can't make a clear choice between true and false". Belief statements with no opinion responses of 40% or larger are listed in Table 9.

Table 9. No Opinion Responses to Belief Statements.

Belief Statement	No Opinion (%)
Michigan Underwater Preserves are managed by state government	81.4%
Diving services and facilities are of poor quality	72.5%
Visitor accommodations (i.e. lodging, restaurants) are generally of high quality	64.5%
There are very few regulations on sport diving in the Great Lakes	63.5%
The shipwrecks are not crowded with divers	63.4%
There are not enough diving services and facilities from which to choose	62.8%
Access to shipwrecks is not restricted by regulations	60.8%
People in local communities are friendly	51.4%
Underwater visibility is excellent for sport diving	49.6%
Costs for charter boats are too expensive	49.0%
The shipwrecks are too deep for me to explore	48.1%
The Great Lakes are too polluted to safely dive	43.2%
There are numerous geologic features to explore	42.2%

Discussion:

Thirteen of twenty-one belief statements (62%) elicited no opinion responses that total over 40%. This result indicates that there is a general lack of knowledge within this population about Great Lakes sport diving characteristics and tourism. It also signals an opportunity to increase the awareness of sport divers to the characteristics/attributes of Great Lakes diving and tourism that might give this region a competitive advantage over other domestic regions, and lead to increased visitation (Siegel and Ziff-Levine 1989; Davidson 1987; Schultz et al. 1984). Awareness could be increased through advertising and other promotional efforts in the media, educational activities with sport diving certification agencies, and the use of visitor interpretation or communication techniques that influence beliefs (Manfredo et al. 1992; Fishbein and Manfredo 1992).

Of those respondents that could answer true or false, most seem to have positive beliefs about Great Lakes sport diving and tourism (Table 5 and Table 6). Negative beliefs of most concern involve the quality of underwater visibility, and regulations on access to shipwrecks (Table 7). The *perceived* low temperature of Great Lakes waters, high level of danger in shipwreck diving, lack of fish and aquatic organisms, amount of regulations on sport diving, and characteristics of certain diving-related services are also of concern to approximately 20-25% of the respondents (Table 8).

Attributes of a Great Lakes Aquatic Park

Results:

For this series of questions, respondents indicated the importance of 56 proposed attributes of a Great Lakes aquatic park by answering not important (N.I.), somewhat important (S.I.), very important (V.I.), or crucial. Attributes are characteristics/properties that constitute a product or service (in this case, a Great Lakes aquatic park). *The attributes are ranked in Tables 10A through 10D from the highest percentage of very important plus crucial responses to the lowest percentage of very important plus crucial responses.* "Emergency medical services" (Table 10A) received the highest ranking (91.0% of the responses were very important or crucial), and "dive sites that are greater than 130 feet in depth" (Table 10D) received the lowest ranking (only 5.9% of the responses were very important or crucial).

Table 10A. Attributes of a Great Lakes Aquatic Park that Received Responses of Very Important or Crucial that Total 60.0% or Greater.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Emergency medical services	1.1	7.9	46.1	44.9
Air compressor station	2.0	12.8	43.4	47.5
Protection of dive sites from theft and vandalism	2.7	11.5	64.7	21.1
Full service dive shop (air, rentals, sales, repair, travel)	2.0	12.8	47.8	37.4
Hospital	1.9	13.9	45.2	39.0
Good underwater visibility	1.7	15.1	57.8	25.4
Information center for diving conditions and dive sites	1.4	17.0	60.1	21.5
Accessible by private automobile	2.8	16.7	62.4	18.1
Boater search and rescue services	4.3	16.9	48.8	30.0
Enforcement of scuba diving regulations	6.4	19.5	55.6	18.5
An 800 number that can be used to obtain detailed information about the aquatic park	7.6	25.7	57.1	9.5
Biological dive sites (fishes, vegetation, invertebrates)	5.2	33.4	53.0	8.4
Mooring buoys over dive sites	8.0	31.3	50.7	10.0
Recompression chamber	8.5	31.5	40.9	19.1

Table 10B. Attributes of a Great Lakes Aquatic Park that Received Responses of Very Important or Crucial that Total 40.0% or Greater, but Less Than 60.0%.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
"Sit down," full menu restaurants	6.2	34.8	55.0	3.9
Dive sites that are over 50 ft but less than 100 ft in depth	8.5	33.6	51.8	6.1
An 800 number that can be used to book dive charters	12.9	30.6	48.9	7.6
Middle-priced hotels/motels	8.1	36.5	49.7	5.7
Economy hotels/motels	15.9	30.4	46.5	7.2
Recreation activities for non-divers	14.2	32.6	44.1	9.0
Dive sites that are less than 50 feet in depth	14.6	33.8	44.9	6.6
Geological dive sites	8.6	40.5	48.1	2.8
Accessible by commercial airline	20.2	31.8	37.7	10.3
Training in shipwreck diving	17.2	35.9	41.3	5.6
Dive sites that are accessible from land	12.8	41.4	39.9	5.9
Swimming Beaches	14.4	39.8	41.0	4.8
Charter boats that carry 6 or less sport divers	12.7	42.4	39.1	5.9
Mandatory diver registration program	24.3	30.7	35.4	9.6
Shipwreck sites caused by natural forces or human error	14.9	40.5	40.3	4.3
Training in dry suit (cold water) diving	21.7	33.8	37.7	6.9
Availability of rental cars	25.6	33.2	36.0	5.1

Table 10C. Attributes of a Great Lakes Aquatic Park that Received Responses of Very Important or Crucial that Total 20.0% or Greater, but Less Than 40.0%.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
A boat launching facility	35.8	24.5	34.5	5.2
Campgrounds	34.4	28.0	33.0	4.6
Marina	32.4	33.3	30.3	3.9
Park interpretive center	17.1	49.6	31.3	1.9
"Nightlife"	29.6	37.7	26.5	6.2
Fast food restaurants	20.7	47.0	29.3	3.0
"Upscale" resorts/hotels	29.0	39.3	29.5	2.3
Waterproof maps of dive sites	18.0	51.1	28.2	2.8
Ships intentionally sunk for sport diving	30.0	41.3	27.1	1.5
Other underwater maritime history sites (docks, wharfs)	17.2	56.5	25.1	1.1
Charter boats that carry more than 6 sport divers	30.3	46.1	21.8	1.8
Great Lakes maritime history museum	23.3	53.2	22.9	.6
An underwater biological sciences research project in which you can participate	36.9	40.6	21.2	1.3
An underwater archaeological research project in which you can participate	35.8	42.4	20.6	1.3
A boat rental service for divers (no captain provided)	42.5	35.8	19.7	2.0
An underwater geological sciences research project in which you can participate	37.8	41.4	20.1	.8
Great Lakes natural history museum (biology, geology)	26.2	53.7	19.3	.8

Table 10D. Attributes of a Great Lakes Aquatic Park that Received Responses of Very Important or Crucial that Total Less Than 20.0%.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Special events for divers (contests, festivals)	40.6	40.2	18.4	.9
Dive sites that are over 100 ft but less than 130 ft in depth	46.5	35.5	15.5	2.4
Accessible by bus	55.0	28.8	14.2	1.9
Accessible by train	58.7	29.5	10.2	1.7
A daycare center	71.5	19.0	8.5	1.0
A submarine tour service	62.3	29.6	7.8	.4
A glass bottom boat tour service	67.9	26.0	5.9	.3
Dive sites that are greater than 130 ft in depth	81.5	12.6	4.9	1.0

Tables 11 through 16 list the importance of certain attributes of a Great Lakes aquatic park by type of attribute. *These attributes are ranked in Tables 11 through 16 from the highest to lowest percentage of very important plus crucial responses.*

Table 11. Importance of Water Transportation Alternatives.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Charter boats that carry 6 or less divers	12.7	42.4	39.1	5.9
Charter boats that carry more than 6 divers	30.3	46.1	21.8	1.8
A boat rental service for divers (no captain provided)	42.5	35.8	19.7	2.0
Bring your own boat *	Indicated yes:			11.9

* From yes and no responses under Sport Diving Trips Questions

Table 12. Importance of Visitor Information Centers by Type of Facility.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Information center for diving conditions and dive sites	1.4	17.0	60.1	21.5
Park interpretive center	17.1	49.6	31.3	1.9
Great Lakes maritime history museum	23.3	53.2	22.9	.6
Great Lakes natural history museum	26.2	53.7	19.3	.8

Table 13. Importance of Dive Sites by Type of Attraction.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Good underwater visibility	1.7	15.1	57.8	25.4
Biological dive sites (fishes, vegetation, invertebrates)	5.2	33.4	53.0	8.4
Geological dive sites	8.6	40.5	48.1	2.8
Shipwreck sites caused by natural forces or human error	14.9	40.5	40.3	4.3
Ships intentionally sunk for sport diving	30.0	41.3	27.1	1.5
Other underwater maritime history sites (docks, wharfs)	17.2	56.5	25.1	1.1

Table 14. Importance of Dive Sites by Depth of Access.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Dive sites that are over 50 feet but less than 100 feet in depth	8.5	33.6	51.8	6.1
Dive sites that are less than 50 feet in depth	14.6	33.8	44.9	6.6
Dive sites that are accessible from land	12.8	41.4	39.9	5.9
Dive sites that are over 100 feet but less than 130 feet in depth	46.5	35.5	15.5	2.4
Dive sites that are greater than 130 feet in depth	81.5	12.6	4.9	1.0

Table 15. Importance of Accessibility to a Great Lakes Aquatic Park by Type of Transportation.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Accessible by private automobile	2.8	16.7	62.4	18.1
Accessible by commercial airline	20.2	31.8	37.7	10.3
Availability of rental cars	25.6	33.2	36.0	5.1
Accessible by bus	55.0	28.8	14.2	1.9
Accessible by train	58.7	29.5	10.2	1.7

Table 16. Importance of Lodging by Type of Facility.

Attribute	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Middle-priced hotels/motels	8.1	36.5	49.7	5.7
Economy hotels/motels	15.9	30.4	46.5	7.2
Campgrounds	34.4	28.0	33.0	4.6
"Upscale" resorts/hotels	29.0	39.3	29.5	2.3

Discussion:

This series of questions was developed to gain some understanding of what services, facilities, attractions, products or programs should be provided at a Great Lakes aquatic park in order to attract sport divers from this population and better satisfy their recreational wants and needs. An understanding of attributes sought can be helpful in designing information or evidence advertising and for increasing return visitation by the target market segments. Knowledge of the importance of these attributes is also needed to better define the concept of an aquatic park.

The results indicate that services and facilities that directly support sport diving participation (i.e. air compressor station, full service dive shop, information center for diving conditions and dive sites, an 800 number that can be used to obtain detailed information about the aquatic park and book dive charters, and mooring buoys over dive sites) seem to be the most important type of attribute that defines a Great Lakes aquatic park for this population (Table 10A). Services and facilities that support visitor safety programs (i.e. emergency medical services, hospital, boater search and rescue service, recompression chamber) seem to be the next most important type of attribute (Table 10A).

Results also indicate that the quality of the water based diving experience within an aquatic park may be strongly related to: 1) good water visibility, 2) dive sites with intact or relatively undisturbed resources, and 3) diving that is free of user conflict. This perspective is based on the percentages of very important or crucial responses to "good underwater visibility" (83.2%), "protection of dive sites from theft and vandalism" (85.8%), and "enforcement of scuba diving regulations" (74.1%).

The quality of the water based diving experience is probably an important determinant of value to visiting sport divers and should be investigated more fully from the perspective of service marketing (Mahoney and Warnell 1990; DeSouza 1989; Gale and Buzzell 1989). Improving the quality of water based experiences may be as or more important to visiting sport divers from a value added perspective than improving land based experiences.

Respondents evaluated three forms of water transportation as very important or crucial: 1) charter boats (45.0% for vessels that carry six or fewer sport divers and 23.6% for vessels that carry more than six sport divers), 2) boat rental services for divers (no captain provided) (21.7%), and 3) travel with their own boat (11.9%) that averages 21 feet in length (Table 11). In general, the results indicate that a variety of boat transportation services and facilities are needed at a Great Lakes aquatic park, but respondents favor the availability of smaller charter boats.

The percentages of respondents who considered a boat launching facility (39.7%) and a marina (34.2%) as very important or crucial, are similar to the percentage of respondents (33.6%) that consider boat rental services **or** travel with their own boat as very important or crucial. This is consistent with the fact that visitors who intend to bring their own boat or rent a boat at their travel destination would need to use launching facilities and/or a marina.

If respondents were to visit the Great Lakes, over three-quarters would rent one or more pieces of scuba equipment. Over 50.0% of the respondents indicated that they would rent an air cylinder and almost 20.0% indicated they would rent either a drysuit or wetsuit (Table 4). Although the choice of *weight belt* was omitted from the questionnaire, it is suspected that weight belts would also be an important rental item, especially for visitors arriving by commercial airline.

An information center for diving conditions and dive sites was considered very important or crucial by 81.6% of the respondents. An interpretation center (33.2%), Great Lakes maritime history museum (23.5%), and Great Lakes natural history museum (20.1%) were considered very important or crucial by far fewer respondents (Table 12). This result indicates a preference for information related directly to scuba diving activities, rather than thematic educational information. But, interpretive centers and museums may be much more important to non-diving visitors (including non-divers that accompany diving parties), or to divers during periods of inclement weather.

Results from this survey relating to the importance of different types of visitor information centers should be considered by underwater preserve committees and state agencies before establishing or funding these types of facilities in Michigan coastal communities. Nominal groups composed of preserve committees and the Michigan Underwater Salvage and Preserve Committee (a state government advisory body) identified interpretive centers and/or maritime museums as one of the most important needs for development of the underwater preserves as aquatic parks (Vrana 1991).

If the intended market for these facilities are visiting sport divers (especially this population of divers), then the development of information centers for diving conditions and dive sites may be of value. If the intended market for these facilities are primarily non-diving tourists, then park interpretive centers and/or museums might be most appropriate. Whatever the case, it is important to consider the audience(s) or market(s) (including target segments) for the proposed facility, and conduct some level of marketing plan and feasibility study before establishing that facility.

Alternative recreational activities such as special events for divers (contests, festivals) (19.3%), submarine tours (8.2%), and glass bottom boat tours (6.2%) were considered very important or crucial by low percentages of respondents. Swimming beaches (45.8%), and "nightlife" (32.7%) were considered very important or crucial by larger percentages of respondents.

The difference in these results can be explained in terms of perceived competition for time and substitutability of these alternative recreation activities (Walsh 1986). Special events and specialty boat tours that compete for the limited recreation time of visitors may be perceived as poor substitutes for sport diving. On the other hand, the use of beaches for swimming might be combined with and complement the sport diving activity, and nightlife takes place after the prime-time for sport diving activities.

Although over one-third of the respondents considered participation in underwater geological, biological or archaeological research projects as **not** important, other research (U.S. Travel Data Center 1989) and the success of the Save Ontario Shipwrecks program indicates that hobbyists or avocationalists may be a valuable market segment for "educational" experiences based out of an aquatic park. About 20% of the respondents considered participation in underwater research projects (geology, biology or archaeology) as very important or crucial.

These educational experiences may be offered as specialty diving courses, or for college or university credit instead of being promoted strictly as recreational activities. An annual basic training course in avocational maritime archaeology has been held successfully in St. Ignace, Michigan for the past three years as a specialty certification through the Scuba Schools International (SSI), and recently through the Young Men's Christian Association (YMCA) national program (Harrington 1990).

The diving attractions of most importance include good underwater visibility, biological dive sites, geological dive sites and shipwreck sites caused by natural forces or human error (Table 13). Shipwreck sites caused by natural forces or human error were preferred to ships intentionally sunk for sport diving by a margin of 16.0%, in terms of total very important and crucial responses. Most respondents would like dive sites to be accessible in less than 100 feet of water (Table 14). These results and the results of Tabata (1989) indicate that a diversity of sport diving attractions should be provided within a Great Lakes aquatic park at a range of depths under 100 feet.

The current emphases of dive site development in Michigan (i.e. locating sites, production of information about the site, and promoting the site with mooring buoys or loran coordinates) are on historic shipwrecks and other maritime history sites. The development of biological and geological dive sites might increase sport diver satisfaction by: 1) enhancing the understanding of Great Lakes ecosystem processes, 2) providing a greater variety of diving experiences, and 3) reducing crowding on historic shipwrecks. Development of these sites might also decrease negative impacts on the limited number of historic shipwreck sites by dispersing visitation.

Less than one-third of the respondents consider waterproof maps of dive sites as very important or crucial, although one-half thought the maps were somewhat important. This result seems inconsistent with the general comments of sport divers at Isle Royale National Park about an illustrated site guide for MONARCH, although some divers resented the placement of visible trail markers on the shipwreck (Vrana 1987). The result from this *Skin Diver* magazine survey might indicate a preference for personal "exploration and discovery" in the diving experience, rather than the perception of being guided by other authorities or experts.

There seems to be general concern for the protection of dive sites and diving experiences. Most respondents (85.8%) consider protection of dive sites from theft and vandalism, and enforcement of scuba diving regulations (74.1%) as very important or crucial attributes of a Great Lakes aquatic park. Another 45.0% of the respondents indicated that a mandatory diver registration program was important or crucial. In addition, a large percentage of respondents (68.3%) agree or strongly agree that "sport divers should **not** be allowed to remove shipwreck artifacts [from an aquatic park] under any circumstances" (Table 22).

These results might indicate a willingness by respondents to accept the use and enforcement of regulations as a means of protecting the quality of dive sites and reducing user conflict (spurred by overcrowding). But, before any conclusions can be made, there is a need for greater understanding of sport diver attitudes and opinions toward regulations, because many respondents also indicated that the Great Lakes are viewed negatively in terms of regulations (Table 7 and Table 8), and most respondents consider freedom of choice (86.2%) and the feeling of independence (71.9%) as very important or crucial benefits of sport diving (Table 17). Inappropriate regulations or excessive use of enforcement could decrease the satisfactions with and resultant benefits of the recreational experience, and create antagonistic relationships between recreational users and the resource management agency (Christensen 1986).

Most respondents would travel to a Great Lakes aquatic park by private automobile, or the combination of travel by commercial airline and rental car (Table 15). The respondents would stay in a variety of lodging, but are probably most inclined to stay in middle-priced or economy hotels and motels (Table 16). Over half of the respondents (58.9%) consider "sit down," full menu restaurants as very important or crucial, while 32.3% indicated that fast food restaurants were very important or crucial.

The high percentage of respondents (71.5%) that consider daycare centers **not** important indicates that visitation will be primarily from adults and older children. The family group size will probably be low, as suggested by the average household number of 2.78 and a median household number of 3.00 (16.4% of respondents are single; 33.3% have a household of two; 19.3% have a household of three; 20.6% have a household of 4 people). But these figures could be deceiving because singles and couples may join other family members or friends to visit aquatic parks in larger size parties. Over half of the respondents (53.1%) indicated that recreation activities for non-divers are very important or crucial. It is assumed that these non-divers are family members or friends that would accompany the responding sport divers.

Benefits of Sport Diving

Results:

For this series of questions, respondents indicated the importance of twenty different benefits of sport diving by answering not important (N.I.), somewhat important (S.I.), very important (V.I.), or crucial. *The benefits are ranked in Table 17 from the highest to lowest percentage of very important plus crucial responses.* "Enjoyment of underwater beauty and aesthetics" received the highest ranking (91.6% of the responses were very important or crucial), and "spear fishing" received the lowest ranking (only 8.7% of the responses were very important or crucial).

Discussion:

This series of questions was developed to gain some understanding of the perceived individual or personal benefits that this population gains from sport diving. A benefit can be defined as a "desirable change of state; it is a specified improvement in condition or state of an individual or group of individuals, of a society, or even of nonhuman organisms (Schreyer and Driver 1989:388)."

Respondents evaluated 20 benefit statements that were designed to fit into one or more of the ten benefit categories developed by Schreyer and Driver (1989:391) from interviews with water recreationists. These general benefit categories (and key words from the benefit statements used in this survey) are as follows:

1) personal development (skills, learning)
2) social bonding (friends, family)
3) therapeutic/healing (relaxation)
4) physical fitness/health
5) stimulation (exploration, excitement, risk-taking)
6) independence/freedom
7) nostalgia ("going back in time," maritime history, historic ship construction)
8) commodity-related (collection, fishing)
9) experiential (exploration, enjoyment, escape from routine, fantasize)
10) relations with nature (underwater beauty, aquatic ecology)

The results suggest that the most important personal benefits sought by this population are experiential, stimulation, independence/freedom and therapeutic/healing (Table 17). These benefit categories are followed closely by physical fitness/health, personal development, social bonding, and relations with nature. Risk-taking (which may be defined as an extreme form of stimulation) was very important or crucial to nearly one-quarter of the respondents. Although risk-taking did not receive a high ranking in relation to other benefits sought, the results indicate a potential for problems with visitor safety. In communications to this population, it may be worthwhile to stress the importance of following safe diving practices.

Table 17. Benefits of Sport Diving.

Benefit	Response (%)			
	N.I.	S.I.	V.I.	Crucial
Enjoyment of underwater beauty and aesthetics	1.0	7.4	59.0	32.6
Freedom of choice	2.1	11.7	71.4	14.8
Relaxation	.9	13.9	71.4	13.8
Escape from routine	2.3	14.8	70.4	12.5
Exciting experiences	2.3	16.9	67.4	13.4
Exploration	1.8	20.1	67.5	10.7
Feeling of independence	5.1	22.9	62.9	9.0
Physical fitness	4.8	24.7	60.1	10.4
Development of reef diving skills	4.9	25.8	59.6	9.7
Leisure time with family	7.7	23.2	61.7	7.4
Development of shipwreck diving skills	5.0	27.1	60.1	7.8
Social interaction with friends	6.4	29.9	58.5	5.2
Learning about aquatic ecology	4.3	32.8	57.1	5.8
Learning about maritime history	13.3	51.8	33.3	1.6
Fantasize about "going back in time"	40.8	32.7	23.1	3.4
Risk-taking	45.1	31.9	19.7	3.3
Learning about historic ship construction	26.9	51.7	20.3	1.1
Collection of shipwreck artifacts	48.6	32.4	17.1	2.0
Collection of geological specimens	56.1	30.1	13.0	.8
Spear fishing	71.5	19.8	7.2	1.5

Most respondents indicated that freedom of choice (86.2%) and feeling of independence (71.9%) were very important or crucial benefits of sport diving. These results seem consistent with social-psychological research indicating that the opportunity to choose is a key component of the intrinsic motivation necessary for leisure and recreation behavior (Iso-Ahola 1989). In other words, if there isn't a certain critical degree of freedom of choice or independence in a leisure or recreation activity, then that activity isn't considered leisure or recreation (Bregha 1980).

At this stage in the development of sport diving ethics, divers seem to expect a high degree of freedom in their underwater activities. This high expectation of freedom was especially prevalent when Great Lakes shipwrecks were considered "common property" (Vrana and Halsey 1992). Public resources as "commons" have poorly defined property rights and are therefore susceptible to vandalism and theft. Since 1980, these property rights have been more tightly defined through state and federal legislation (Ibid. 1992).

In addition, sport divers visiting Great Lakes shipwrecks and other underwater resources have generally not received much regulatory attention from government agencies. With the perception that state and federal agencies may increase the use of regulatory tactics, many sport divers seem concerned that their previous freedoms will be hindered or restricted. These sentiments are obvious in perusal of popular articles in sport diving magazines.

Therefore, resource managers will probably face important questions relating to *what* and *how* regulatory tactics will allow sport divers to remain satisfied with the recreation experience **and** protect shipwrecks or other sites from adverse impact? Further research into the satisfactions and benefits of sport diving can help to answer these questions. Communication and/or environmental education strategies/tactics that influence visitor behavior (including held values and ethics change) should also be investigated as alternative or complementary approaches to regulatory activities (Roggenbuck 1992; Caduto 1985).

Nostalgia ("going back in time," maritime history, historic ship construction) and commodity related (collection, fishing) benefits seem the least important to this population. The relatively low importance of benefits sought from nostalgia are consistent with other results that indicate a preference for biological and geological sites over shipwrecks and other underwater maritime history sites (Table 13).

In general, the results suggest that "recreation experiences" might be designed in terms of benefits sought, as well as experience/activity levels (see the section entitled *Scuba Diving Background*) (Schreyer and Driver 1989). Customer segments would be targeted based upon their benefits sought; charter or shore diving experiences could then be developed to provide those benefits. As an example, some divers may prefer a secluded, shallow-water bay with an abundance of aquatic vegetation/organisms that provide therapeutic benefits from relaxation and experiential benefits from enjoyment of natural beauty. Another segment of divers would prefer penetrating a deep water shipwreck using caving techniques that provide stimulation benefits from exploration, excitement and risk-taking. An understanding of the

benefits sought in sport diving could also be useful in designing marketing strategies/tactics (e.g. image advertising) for target market segment(s).

Aquatic Park Development and Management

Conversion of Michigan Underwater Preserves into Aquatic Parks:

Respondents were asked to read two paragraphs which defined underwater preserves and aquatic parks before indicating whether they favored or opposed conversion of **some** of Michigan's underwater preserves into aquatic parks.

The key characteristics of underwater preserves were:

1) protection of historical and natural resources through a "leave it alone" policy
2) limited resource management programs
3) sport diving is permitted but not encouraged *

* Although the private sector encourages and promotes sport diving within the underwater preserves, the intent was to characterize the present status of state management.

The key characteristics of aquatic parks were:

1) the provision of a diversity of services and facilities
2) significant resource management programs to protect the historical and natural resources **and** enhance visitor satisfaction
3) the encouragement of sport diving

*Result: Nearly all of the respondents (92.9%) indicated that they favored conversion of **some** of Michigan's underwater preserves into aquatic parks.*

Respondents were then asked to indicate a maximum willingness to pay (WTP) for a daily use permit to dive in a Great Lakes aquatic park. The question stated that funds from the sales of permits would be used to cover the costs of resource management programs that include scientific research, visitor information and education, emergency medical services, visitor safety, and law enforcement.

A contingent valuation format was chosen for this question in hopes of deriving a willingness to pay figure that could be used in estimating an assigned **value** (i.e. monetary measure of utilities) for an aquatic park. Utilities (useful qualities) are associated with benefits or attributes sought. The results should **not** be used as a basis for establishing user fees. Table 18 lists the willingness to pay by respondents in dollar ranges. The average WTP to pay for all respondents was $ 13.50; the median WTP was $ 10.00.

Table 18. Willingness to Pay for a Daily Use Permit to Dive in a Great Lakes Aquatic Park.

$ WTP	% of Respondents
0.00	3.1
1.00 - 5.00	30.2
6.00 - 10.00	34.6
11.00 - 15.00	8.3
16.00 - 20.00	10.4
21.00 - 25.00	6.5
26.00 - 50.00	5.7
51.00 - 100.00	0.9
101.00 - 500.00	0.2
Total:	99.9 %

Average WTP: $ 13.50 SD = 21.54
Median WTP: $ 10.00

The results indicate that there is value in establishing some aquatic parks, based on the market represented by subscribers to *Skin Diver* magazine. This value is primarily associated with the provision of a diversity of services and facilities, significant resource management programs, and the encouragement of sport diving. In addition to the value represented by an aquatic park, visiting sport divers and accompanying non-divers would contribute tourism related expenditures to local economies.

If one or more aquatic parks are justified based on the demand of one or more population(s) of sport divers (e.g subscribers to *Skin Diver* magazine), resource developers and managers should consider providing the attributes (i.e. services, facilities, attractions, products or programs) considered most important or crucial by that population(s) for obtaining a satisfying recreational experience (see section entitled *Attributes of a Great Lakes Aquatic Park*). But, developers and managers may not be wise to design an aquatic park for the "average" sport diver (as represented by the aggregate results of this report, or any other report) because the "average" sport diver does not exist.

Instead, a population of sport divers should be segmented into a number of potential markets, based on criteria such as demographics, geographic location, beliefs, benefits sought, or attributes sought. Then, the most attractive market segment(s) can be targeted through marketing activities and service/product development. Using this approach, resource developers and managers may find success in providing underwater preserves and/or aquatic parks with different characteristics that appeal to different target market segments from this sport diver population and others. This customer oriented approach to development and management can be implemented to: 1) fulfill organizational mission and objectives, 2) satisfy customer wants and needs, and 3) enhance the success of the program (Mahoney 1987).

Development and Management of Services, Facilities and Attractions at a Great Lakes Aquatic Park:

Respondents were divided on the role of government in the provision of services, facilities and attractions at an aquatic park (Table 19). A large percentage of the respondents (42.3%) seem to acknowledge that government has a developmental role that others might interpret as competitive with private enterprise.

Table 19. Responses to the Statement, "Government Should Provide Only Those Services, Facilities and Attractions at an Aquatic Park Which Private Enterprise Cannot Profitably Provide."

% Strongly Agree	% Agree	% Disagree	% Strongly Disagree
14.9	42.9	33.2	9.1

Most respondents (46.4%) prefer a cooperative management structure between the private sector and government to develop and manage a Great Lakes aquatic park, followed by state government, or a private non-profit corporation (Table 20).

Table 20. Preference for the Type of Organization to Develop and Manage a Great Lakes Aquatic Park.

Type of Organization	% of Respondents
Cooperative management structure between the private sector and government	46.4
State government	21.8
Private non-profit corporation	17.8
Federal government	5.5
Private (for profit) corporation	4.9
Local government	3.6
Total:	100.0 %

The results to these two questions (Table 19 and Table 20) suggest that government needs to have a role in development and management, but that decision-making should be shared to some degree with the private sector. It indicates an opportunity for public-private partnerships. Naisbitt and Aburdene (1990) have forecast a global trend toward privatization or different forms of power-sharing between government and private sector.

User Fees for the Development of Aquatic Park Services, Facilities and Attractions:

Attitudes toward user fees at a Great Lakes aquatic park were indicated by responses to a set of three questions (Table 21). Most respondents (85.4%) strongly agree or agree that, "government should charge the user only an amount needed to cover the costs of providing services, facilities and attractions at an aquatic park." But, over one-half of the respondents (55.6%) also strongly agree or agree that government should provide these services, facilities, and attractions at little or no cost to the user.

Table 21. Attitudes Toward User Fees at a Great Lakes Aquatic Park.

Statement for Response	Responses (%)			
	Strongly Agree	Agree	Disagree	Strongly Disagree
"Government Should Provide Aquatic Park Services, Facilities and Attractions at Little or No Cost to the User"	15.3	40.3	36.9	7.5
"Government Should Charge the User Only an Amount Needed to Cover the Costs of Providing Services, Facilities and Attractions at an Aquatic Park". . .	28.1	57.3	12.2	2.4
"Government Should Charge the User as Much as the Market will Bear in Providing Services, Facilities and Attractions at an Aquatic Park".	3.2	12.7	47.1	37.0

The results indicate some hesitancy toward the concept of user fees, but that this population would accept user fees as long as the charges reflected the actual costs of aquatic park operations. It is assumed that these aquatic park operations are perceived by users as adding value to their recreational experience. If this is not the case, then users may not support these operational services (Gale and Buzzell 1989; DeSouza 1989).

Removal of Shipwreck Artifacts:

Attitudes toward the removal of shipwreck artifacts from a Great Lakes aquatic park were indicated by the responses to a set of four questions (Table 22).

Table 22. Attitudes Toward the Removal of Shipwreck Artifacts from a Great Lakes Aquatic Park.

Statement for Response	Responses (%) Strongly Agree	Agree	Disagree	Strongly Disagree
"Sport Divers Should be Allowed to Remove Shipwreck Artifacts for Profit"	1.0	2.9	28.8	67.3
"Sport Divers Should be Allowed to Remove Shipwreck Artifacts ONLY as Personal Mementoes or Souvenirs"	3.8	19.2	31.1	45.8
"Sport Divers Should be Allowed to Remove Shipwreck Artifacts ONLY for Donation to Public Museums"	5.1	20.5	39.7	34.7
"Sport Divers Should NOT be Allowed to Remove Shipwreck Artifacts Under Any Circumstances"	44.9	23.4	24.7	7.0

Over two-thirds of the respondents (68.3%) agree or strongly agree that "sport divers should **not** be allowed to remove shipwreck artifacts from a Great Lakes aquatic park under any circumstances." This is an encouraging result considering the prevalence of the "finders, keepers" sport diving ethic in the recent past. But, the results also suggest some concern for the protection of shipwreck artifacts because a large percentage of respondents believe that sport divers should be allowed to remove artifacts for personal mementoes or souvenirs of the dive (23.0%), or for donation to public museums (25.6%). In addition, 19.1% of the respondents consider the collection of shipwreck artifacts as a very important or crucial benefit of sport diving (Table 17).

The results suggest a need for thoughtful and innovative strategies/tactics in resource protection. As an example, some sport divers have suggested the marketing of mementoes or souvenirs that can function as substitutes for artifacts taken from a shipwreck site. The substitute souvenirs might include commemorative coins or stamps that can be purchased from dive charter operators or dive shops upon proof of diving a particular site.

If target market segments are selected from this population, it will be important to inform these sport divers of the important benefits and value gained from leaving shipwreck artifacts in place. These benefits and value include the following (Decker and Goff 1987; Walsh 1986):

1) economic-social stability and community development (monetary value from tourism)
2) retaining the quality of dive sites for future visitation (option value)
3) protection for future generations (bequest and existence values)

Communication, education, and enforcement strategies/tactics can be designed within the framework of a marketing plan to reduce vandalism and theft. The private sector and resource management agencies should work together to plan and implement these strategies/tactics, and to monitor and evaluate impacts on dive sites related to recreational use. The choice of inadequate actions can accelerate the destruction of recreational and archaeological values, and "create unnecessary and adverse effects on the recreational experiences and activities of the users that can be as bad as the problems the strategies were meant to control (Christensen 1986:75)." As more sport divers visit the Great Lakes, it will become increasingly important to understand what works in controlling depreciative behavior, what doesn't work, and the unintended affects on visitor satisfaction.

CONCLUSION

A literature review of recreation research revealed a lack of quantitative attitudinal studies completed on this or other sport diving populations. The results of this exploratory survey research enhance our understanding of subscribers to *Skin Diver* magazine, even though analyses were limited to some descriptive statistics. The results indicate that this population is not homogeneous; it is comprised of diverse sport diver markets that can be segmented for the purposes of marketing and service/product development. After market segments are identified, an organization can select target sport diver segment(s) and develop its services, facilities, attractions, products, or programs for use by those target segment(s).

Kotler (1986) defines the sum of these segmentation processes as *target marketing* and believes that target marketing techniques can be used to increase the effectiveness, efficiency and competitive advantage of businesses. These advantages are also important in the government and private non-profit sectors, characterized by increased competition for limited public funds (Kotler 1982). Kotler (1986) suggests three basic steps in target marketing:

1) Market Segmentation
   A) Identify bases for segmenting the market
   B) Develop profiles of resulting segments
2) Market Targeting
   A) Develop criteria and measures of segment attractiveness
   B) Select the target segment(s)
3) Market Positioning
   A) Develop positioning for each target segment
   B) Develop marketing mix for each target segment

Market segments consist of *groups of consumers* that differ according to certain characteristics (i.e. *segmentation bases*) chosen by the resource developer, manager, or marketer (Spotts and Mahoney 1991; Shoemaker 1989; Woodside and Jacobs 1985). In terms of results from this survey, the segmentation bases may include diving activity level, diving experience level, benefits sought in the sport diving experience, beliefs about Great Lakes sport diving and tourism, attributes sought in a Great Lakes aquatic park, attitudes toward removal of shipwreck artifacts, attitudes toward user fees or other managerial considerations, geographic location of residence, or particular demographic characteristics.

Profiles that describe key characteristics of the various market segments are then developed (Uysal and McDonald 1989; Shoemaker 1989; Davis et al. 1988; Woodside et al. 1987; Woodside and Jacobs 1985). The profiles should offer tangible depictions and differentiation of the segments to decision-makers. An organization evaluates the market segment profiles for "closeness of fit" to its marketing, service/product development, or other objectives. The criteria and measures of segment attractiveness used in the evaluation process should be derived directly from those objectives. In some instances, an organization may revise an objective(s) based on the information provided by the profiles. Market segment(s) that comply most with organizational objectives become *target segments*.

After an organization carefully selects target segment(s), the profile of that target segment(s) can be used to develop positioning and marketing mixes for each target segment(s). The goal of positioning is to occupy a distinctive niche in the minds of target customers. Marketing mix strategies/tactics are developed to produce intended response(s) from the target segment(s). A marketing mix is a set of organizational offerings that may include service/product attributes, where and how recreational experiences are distributed to consumers, the price of those offerings, the types of promotion (i.e. personal selling, advertising, sales promotions, publicity, word-of-mouth), how customer service interactions are handled, or the style of organizational management (Morrison 1989; Mahoney 1987; Gordon 1987; Kotler 1986).

The choice of segmentation bases, development of profiles, evaluation of market segments, selection of target segments and design of marketing mixes are dependent upon an organizations' mission, goals and objectives in resource development and management (Webster, Jr. 1988; Mahoney 1987; Kotler 1986; Peter and Donnelly 1986). Goals for the Michigan Underwater Preserves Council, Inc. may include: 1) the enhancement of profit by preserve area businesses, 2) increasing Michigan's market share of domestic sport diving tourism, 3) providing an optimum level of recreational satisfaction to diving visitors or non-divers, 4) the protection of underwater cultural resources from adverse impacts, or 5) a combination of the preceding and other goals.

Objectives are derived directly from organizational goals and transform those goals into specific, quantifiable statements that can be measured, monitored and clearly evaluated for success. Strategic planning and management processes are used by organizations to develop clear and consistent mission, goals and objectives (Webster et al. 1989; Shrader et al. 1989; Robin and Reidenbach 1989; Webster, Jr. 1988; Morris 1987; Peter and Donnelly 1986; Kotler 1986).

Numerous authors have described the market segmentation, targeting and positioning processes for private sector products and services (Morton 1990; Davidow 1989; Morrison 1989; Dickson and Ginter 1987; Kotler 1986). Many authors believe that these marketing processes can be successfully applied to the management of common property or public resources by government agencies or private non-profit organizations (Salwasser and Contreras 1989; Payne 1988; Mahoney 1987; Kotler 1982; Kotler and Zaltman 1971). Public resource management is commonly characterized as a balancing act between recreational use and protection of the resource base.

The use of target marketing to protect a public resource (e.g. shipwreck sites) from depreciative behavior (e.g. theft, vandalism) can be illustrated with results from this survey. Almost 70% of respondents (68.3%) indicated that "sport divers should not be allowed to remove shipwreck artifacts under any circumstances from a Great Lakes aquatic park." With knowledge that a sizable number of "protective" consumers may exist within this population, market segmentation could reveal the profile(s) of sport divers with these "protective" attitudes. The profile(s) may indicate that the highest percentage of sport divers with protective attitudes reside in a certain geographic region, or prefer particular aquatic park services that are different than the sport divers who may engage in depreciative behavior. With this knowledge, the State of Michigan and/or the Michigan Underwater Preserves Council, Inc. could actively promote shipwreck diving in the

"protective" region, and/or develop a bundle of services that attract sport divers with the "protective" profile.

Conversely, if the highest percentage of sport divers with "non-protective" attitudes are found in a certain geographic region, or dislike particular aquatic park services, then the State of Michigan and/or Michigan Underwater Preserves Council, Inc. may decide to demarket shipwreck diving to these segments (Kotler and Levy 1971). Demarketing could include the use of advertising or public relations within a "non-protective" region to increase awareness of felony penalties for the theft of shipwreck artifacts, thereby decreasing demand for sport diving in Michigan. It may also involve development of services that are unattractive to sport divers who may engage in depreciative behavior.

But, a number of barriers seem to inhibit the adoption of a marketing (or customer) oriented approach to public resource management (Badovick and Beatty 1987; Daltus and McDonald 1987; Bonoma 1984). In particular, marketing concepts may be perceived as conflicting with the organizational culture of government agencies (Reimann and Wiener 1988; Pack 1987; Poole and Fixler 1987; Sappington and Stiglitz 1987; Badovick and Beatty 1987). Organizational culture can be viewed as a set of values/beliefs that are adopted and shared by individuals within specific situations or domains of activity. Management and decision-making style are important components of organizational culture (Payne 1988; Reimann and Wiener 1988; Gordon 1987).

The organizational culture within government agencies has been shaped by common practice in political process (Heywood 1986). According to this practice, the importance of the needs and wants of various constituencies (as supported by advocacy from interest groups or other forms of political influence) are debated during the legislative policy process. Statutes resulting from the legislative policy process outline how public funds and other resources should be allocated to satisfy those needs and wants. Parks and other public protected areas created under these statutes have been justified generally for the benefits provided to *all* citizens, present and future. The implementation of these statutes are delegated commonly to government agencies.

Once the responsibility for implementation is placed in the hands of a government agency, program-related decisions (like the development and management of an aquatic park) will probably be based primarily on the expert judgement of agency planners and resource managers. Agency experts may identify *equitable distribution* of benefits from public resources as an important criteria used in development and management decision-making (i.e. public resources should be made available to the "general public," or to all citizens) (Pack 1987; Sappington and Stiglitz 1987).

Equitable distribution and expert judgement provide some justification for government agencies to function as surrogates of market supply and demand. But, two problems may exist with this justification. First, the "general public" does not exist; and even if it did, an agency does not command the amount of resources needed to satisfy all citizens needs. Secondly, expert judgement is biased by 1) the lack of accurate data/information about different market segments comprising the organization's important user populations and other publics, and 2) the absence of a marketing (or customer) oriented approach. Because of these weaknesses, agency experts

may base resource management decisions primarily on perceived organizational needs, with some consideration for a hypothetical *general, average* or *desired* visitor, formed from very personal and held value-laden perspectives.

The culture resulting from this organizational environment may be classified as *exclusive* (Reimann and Weiner 1988). It is characterized by elitist management and decision-making styles anchored in well-entrenched organizational traditions (Ibid. 1988:40). In recent years, some studies indicate that this type of organizational culture and decision-making style in public resource management may be prone to ineffectiveness and inefficiency (Knuth and Nielsen 1989; National Parks and Conservation Association 1989; Honadle 1989; Absher et al. 1988; Chase 1988, 1987; Miller and Gale 1986; Hamilton-Smith 1986; Gitelson 1985; Lautenschlager and Bowyer 1985).

Government agencies may be able to improve their results in public resource management through 1) a better understanding of user populations and other publics, and 2) the application of target marketing or other customer-oriented approaches. Survey research is one method that can be used to gain a better understanding of user populations or other publics. In addition to target marketing, other customer-oriented approaches include practices in privatization, private-public partnerships, public involvement or citizen participation, community development, and quality assurance (Mahoney and Warnell 1990; Callahan 1989; Herbert et al. 1989; Tipple and Wellman 1989; Mahoney 1987; Poole and Fixler 1987; Crossley 1986; McLaughlin and Harris 1986; Kettner et al. 1985; Naisbitt 1982).

Marketing and customer-oriented approaches should not be based solely on the needs and wants of target resource *users*. In the case of Michigan underwater preserves, the needs and wants of non-divers, local communities, and other important publics (present and future) must be evaluated. In addition, the mission, goals and objectives of responsible public resource management agencies (e.g. conservation, protection and preservation) must be met if these organizations are to be successful.

The developmental history of Michigan's underwater preserves seems consistent with marketing and customer-oriented approaches to public resource management. A great deal of data/information has also been collected on user populations and other publics, as outlined below:

1) Nominal group processes were held in preserve communities to help determine developmental needs from the perspective of underwater preserve committees (Vrana 1991).
2) District Sea Grant Extension Agents have surveyed present underwater preserve users in order to gain an indication of their characteristics, wants and needs (Stewart 1992(b); Peterson et al. 1987(a), 1987(b)).

This survey was designed to enhance our understanding of the characteristics, wants and needs of a large *potential* user population, as represented by subscribers to *Skin Diver* magazine. The author intends to complete further statistical analysis of this database. These results, as well as data and information from other studies and reports produced by Michigan Sea Grant Extension and other organizations can be used to assess the development of Michigan's underwater preserve system.

References Cited

Absher, James D., Leo H. McAvoy, Rabel J. Burdge, and James H. Gramann. 1988. Public and commercial managers predicting recreationist opinions. Journal of Park and Recreation Administration 6(3):68-77.

Audit Bureau of Circulations. 1989. *Skin Diver* Magazine. Audit Bureau of Circulations, Schaumburg, IL.

Badovick, Gordon J., and Sharon E. Beatty. 1987. Shared organizational values: measurement and impact upon strategic marketing implementation. Academy of Marketing Science 15(1):19-26.

Bonoma, Thomas V. 1984. Making your marketing strategy work. Harvard Business Review 62(2):69-76.

Bregha, Francis J. 1980. Leisure and freedom re-examined. Pages 30-37 in Goodale, Thomas L., and Peter A. Witt, editors. Recreation and Leisure: Issues in an Era of Change. Venture Publishing, State College, PA.

Caduto, Michael J. 1985. A Guide on Environmental Values Education. UNESCO, Paris.

Callahan, Larry. 1989. The basics of privatization. Parks and Recreation 24(10):56-59.

Chase, Alston. 1988. Are national parks endangered species? Courier September:36-38.

Chase, Alston. 1987. Playing God in Yellowstone: The Destruction of America's First National Park. Harcourt Brace Jovanovich, Publishers, New York.

Christensen, Harriet H. 1986. Vandalism and depreciative behavior. Pages 73-87 in Laura B. Szwak, editor. A Literature Review: The President's Commission on Americans Outdoors. U.S. Government Printing Office.

Crane Enterprises. 1987. The Currents Shaping Diving. Diving Equipment Manufacturers Association, Tustin, CA.

Crane Enterprises. 1985. Report on qualitative research study among non-divers concerning their feelings about and attitudes toward scuba diving. Diving Equipment Manufacturers Association, Tustin, CA.

Crossley, John C. 1986. Public-Commercial Cooperation in Parks and Recreation. Publishing Horizons, Inc., Columbus, Ohio.

Daltas, Arthur, and Philip McDonald. 1987. Barricades to strategic marketing thinking. Planning Review 15(1):8-15.

Davidow, Wiliam H. 1989. The ultimate marketing weapon. Business Marketing 74(10):56-64.

Davidson, Thomas Lea. 1987. Assessing the effectiveness of persuasive communications in tourism. Pages 473-479 in Richie, J.R. Brent, and Charles R. Goeldner. Travel, Tourism and Hospitality Research: A Handbook for Managers and Researchers. John Wiley and Sons, Inc., NY.

Davis, Duane, Jeff Allen, and Robert M. Cosenza. 1988. Segmenting local residents by their attitudes, interests, and opinions toward tourism. Journal of Travel Research 26(2):2-8.

Deagan, Kathleen. 1982. Avenues of inquiry in historical archaeology. Pages 151-177 in Advances in Archaeological Method and Theory, Vol. 5. Schiffer, Michael B., editor. Academic Press, New York.

Decker, Daniel J., and Gary R. Goff. 1987. Valuing Wildlife: Economic and Social Perspectives. Westview Press, Boulder, CO.

DeSouza, Glenn. 1989. Now service businesses must manage quality. The Journal of Business Strategy 10(3):21-25.

Dickson, Peter R., and James L. Ginter. 1987. Market segmentation, product differentiation, and marketing strategy. Journal of Marketing 51(2): 1-10.

Dillon, William R., Thomas J. Madden, and Neil H. Firtle. 1987. Marketing Research in a Marketing Environment. Times Mirror/Mosby College Publishing, St. Louis.

Fenwick, Ian, and John A Quelch. 1984. Consumer Behavior for Marketing Managers. Allyn and Bacon, Inc., Newton, MA.

Fishbein, Martin, and Michael J. Manfredo. 1992. A theory of behavior change. Pages 29-50 in Manfredo, Michael J., editor. Influencing Human Behavior: Theory and Applications in Recreation, Tourism, and Natural Resources Management. Sagamore Publishing, Inc., Champaign, IL.

Fridgen, Joseph D. 1980. Environment-behavior research: implications for the study of leisure and recreation behavior. Pages 357-389 in Social Psychological Perspectives on Leisure and Recreation. Iso-Ahola, Seppo E., editor. Charles C. Thomas, Springfield, Illinois.

Gale, Bradley T., and Robert D. Buzzell. 1989. Market perceived quality: key strategic concept. Planning Review 17(2):6-16.

Gentile, Gary. 1990. Great wrecks of the Great Lakes: diving Michigan's underwater preserves. Skin Diver 39(6):60-63, 213-215.

Gitelson, Richard J. 1985. Role conflict and role ambiguity in the National Park Service. Journal of Park and Recreation Administration 3(4):11-21.

Gonzalez-Church. 1989. Michigan's bottomland preserves and *Skin Diver* magazine. Skin Diver Magazine, Chicago.

Gordon, Judith. 1987. A Diagnostic Approach to Organizational Behavior. Allyn and Bacon, Inc., Boston.

Gould, Richard A. 1983. Shipwreck Anthropology. University of New Mexico Press, Albuquerque.

Graefe, Alan R. 1989. Visitor impact management. Pages 213-234 in Towards Serving Visitors and Managing Our Resources. Graham, Robert, and Richard Lawrence, editors. Proceedings of a North American workshop on visitor management, February 14-17, 1989. University of Waterloo, Waterloo, Ontario.

Green, Paul E., Donald S. Tull, and Gerald Albaum. 1988. Research for Marketing Decisions. Prentice-Hall, Inc., Englewood Cliffs, NJ.

Gunn, Clare A. 1988. Tourism Planning. Taylor & Francis, NY.

Halsey, John R. 1985. Michigan's Great Lakes bottomland preserves. Pages 65-76 in Lien, Jon, and Robert Graham, editors. Marine Parks & Conservation: Challenge and Promise (Volume 2). National and Provincial Parks Association, St. Johns, NFLD.

Hamilton-Smith, Elery. 1986. Holism and technologism: contrasting styles in park management. Pages 52-62 in Papers from the First National Symposium on Social Science in Resource Management, May 12-16, 1986. Lee, Marty, and Perry Brown, editors. Oregon State University, Corvallis.

Harvey Research Organization, Inc. 1989. *Skin Diver* Magazine Subscriber Survey. Peterson Publishing Company, Los Angeles.

Harvey Research Organization, Inc. 1981. A market attitude study of the sport diving industry. Diving Equipment Manufacturers Association, Tustin, CA.

Herbert, David T., Richard C. Prentice, and Colin J. Thomas. 1989. Heritage Sites: Strategies for Marketing and Development. Avebury, Brookfield, Vermont.

Heywood, John L. 1986. Human use of parks. Pages 29-35 in Laura B. Szwak, editor. A Literature Review: The President's Commission on Americans Outdoors. U.S. Government Printing Office.

Holecek, Donald F., and E. Thomas Smiley. 1982. Management guidelines for Michigan's Great Lakes bottomland preserves. Michigan Sea Grant Extension, MICHU-SG-82-201. Michigan State University, East Lansing.

Holecek, Donald F., and Susan J. Lothrop. 1980. Shipwreck vs. nonshipwreck scuba divers: characteristics, behavior, and expenditure patterns. MICHU-SG-80-205. Michigan Sea Grant Extension, Michigan State University, East Lansing.

Holecek, Donald F., and Susan J. Lothrop. 1980. Attitudes of a scuba diving population concerning government regulation of underwater resources. Michigan Sea Grant Extension, MICHU-SG-80-201. Michigan State University, East Lansing.

Honadle, George. 1989. Interorganizational cooperation for natural resource management: new approaches to a key problem area. Transactions 54th North American Wildlife and Natural Resources Conference 54:271-276.

Hulse, Charles A., and Donald F. Holecek. 1980. Michigan's coastal waters: a pilot study in underwater cultural resources. Michigan Sea Grant Extension, MICHU-SG-80-204. Michigan State University, East Lansing.

Hulse, Charles A., and Donald F. Holecek. 1979. Underwater parks: symposium proceedings. Cooperative Extension Service, Bulletin E-1350. Michigan State University, East Lansing.

Hulse, Charles A. 1979. An archaeological perspective on the value of Great Lakes shipwrecks. Pages 57-59 in Hulse, Charles A., and Donald F. Holecek, editors. Underwater parks: symposium proceedings. Cooperative Extension Service, Bulletin E-1350. Michigan State University, East Lansing.

Iso-Ahola, Seppo. 1989. Motivation for leisure. Pages 385-419 in E.L. Jackson and T.L. Burton, editors. Understanding Leisure and Recreation: Mapping the Past, Charting the Future. Venture Publishing, Inc., State College, PA.

Kettner, P., J.M. Daley, and A.W. Nichols. 1985. A model for organizational and community change. Pages 21-41 in Kettner et al., editors. Initiating Change in Organizations and Communities: A Macro Practice Model. Brooks/Cole Publishing Company, Monterey, CA.

Kikuchi, Hideo. 1986. Segmenting Michigan's Sport Fishing Market: Evaluation of Two Approaches. Ph.D. Dissertation. Department of Park & Recreation Resources, Michigan State University, East Lansing.

Kinnunen, Ron. 1985. 1985 Alger Underwater Preserve diver information survey results, expenditures, and secondary economic impacts. Alger Underwater Preserve Committee, Inc., Munising, MI.

Kinnunen, Ron, Jon Peterson, Steve Stewart, and Carol Swinehart. 1985. Sea grant research and community development make Michigan's bottomland preserves a reality. Pages 77-84 in Lien, Jon, and Robert Graham, editors. Marine Parks & Conservation: Challenge and Promise (Volume 2). National and Provincial Parks Association, St. Johns, NFLD.

Kinnunen, Ron. 1984. 1984 Alger Underwater Preserve diver information survey results, expenditures, and secondary economic impacts. Alger Underwater Preserve Committee, Inc., Munising, MI.

Knuth, Barbara A., and Larry A. Nielsen. 1989. Social and institutional performance indicators for wildlife and fishery resource management systems. Society and Natural Resources 2(4):329-344.

Kotler, Philip. 1986. Principles of Marketing. Prentice-Hall, Englewood Cliffs, New Jersey.

Kotler, Philip. 1982. Marketing for Nonprofit Organizations. Prentice-

Hall, Englewood Cliffs, NJ.

Kotler, Philip. 1971. Demarketing, yes demarketing. Harvard Business Review 49(6):74-80.

Kotler, Philip, and Gerald Zaltman. 1971. Social marketing: an approach to planned social change. Journal of Marketing 35:3-12.

Lautenschlager, R.A., and R. Terry Bowyer. 1985. Wildlife management by referendum: when professionals fail to communicate. Wildlife Society Bulletin 13:564-570.

Lindquist, Peter. 1992. Personal communication. Michigan Underwater Preserves Council, Inc.

Mahoney, Edward M., and Gary R. Warnell. 1990. Quality Assurance: A Management Strategy for Recreation and Tourism. Travel, Tourism and Recreation Resource Center, Michigan State University, East Lansing.

Mahoney, Edward M. 1987. Marketing Parks and Recreation: The Need for a New Approach. Department of Park and Recreation Resources, Michigan State University, East Lansing.

Manfredo, Michael J., Alan D. Bright, and Glenn E. Haas. 1992. Research in tourism advertising. Pages 327-368 in Manfredo, Michael J., editor. Influencing Human Behavior: Theory and Applications in Recreation, Tourism, and Natural Resources Management. Sagamore Publishing, Inc., Champaign, IL.

McLaughlin, William J., and Charles C. Harris. 1986. Regional resource recreation planning. Pages 105-119 in Szwak, Laura B., editor. A Literature Review: The President's commission on Americans Outdoors. U.S. Government Printing Office, Washington, D.C.

Michigan Underwater Preserves Council, Inc. 1992. Mission statement and organizational objectives. Michigan Underwater Preserves Council, Inc., St. Ignace, MI.

Michigan Underwater Preserves Council, Inc. 1989. Bylaws. Michigan Underwater Preserves Council, Inc., St. Ignace, MI.

Michigan Underwater Preserves Council, Inc. 1989-92. Minutes of monthly meetings. On file with MUPC, Inc., St. Ignace, MI.

Miller, Marc L., and Richard P. Gale. 1986. Professional styles of federal forest and marine fisheries resource managers. North American Journal of Fisheries Management 6(2):141-148.

Morris, Elinor. 1987. Vision and strategy: a focus for the future. Journal of Business Strategy 8(2):51-58.

Morrison, Alastair M. 1989. Hospitality and Travel Marketing. Delmar Publishers, Inc., Albany, NY.

Morton, John. 1990. How to spot the really important prospects. Business Marketing 75(1):62-67.

Moschis, George P. 1987. Consumer Socialization: A Life-Cycle Perspective. Lexington Books, Lexington, MA.

Muckelroy, Keith. 1979. Maritime Archaeology. Cambridge University Press, New York.

Naisbitt, John, and Patricia Aburdene. 1990. Megatrends 2000. William Morrow and Company, Inc., New York.

Naisbitt, John. 1984. Megatrends: Ten New Directions Transforming Our Lives. Warner Books, Inc., New York.

National Parks and Conservation Association. 1989. National parks: from vignettes to a global view. NPCA, Washington, D.C.

Ou, Sheng Jung. 1991. An Assessment of the Impacts of Alternative Factor Analysis on the Stability of Cluster Membership. Ph.D. Dissertation. Department of Park & Recreation Resources, Michigan State University, East Lansing.

Pack, Janet R. 1987. Privatization of public-sector services in theory and practice. Journal of Policy Analysis and Management 6(4):523-540.

Payne, Adrian F. 1988. Developing a marketing oriented organization. Business Horizons 31(3):46-53.

Peter, J. Paul, and James H. Donnelly, Jr. 1986. Strategic planning. Pages 10-27 in Marketing Management: Knowledge and Skills. Business Publications, Inc., Plano TX.

Peterson, Jon P., Thord Sundstrom, and Steve Stewart. 1987(a). A profile of Great Lakes diver activity, travel, and expenditure patterns. MICHU-SG-87-508. Michigan Sea Grant Extension, Michigan State University, East Lansing.

Peterson, Jon P., Thord Sundstrom, and Ronald Kinnunen. 1987(b). 1986 recreational diving activity in Michigan bottomland preserves. MICHU-SG-87-506. Michigan Sea Grant Extension, Michigan State University, East Lansing.

Poole, Robert W., and Philip e. Fixler. 1987. Privatization of public sector services in practice: experience and potential. Journal of Policy Analysis and Management 6(4):612-625.

Pryor, Richard. 1979. Recreational interests in underwater resources. Pages 20-25 in Hulse, Charles A., and Donald F. Holecek, editors. Underwater parks: symposium proceedings. Cooperative Extension Service, Bulletin E-1350. Michigan State University, East Lansing.

Reimann, Bernard C., and Yoash Wiener. 1988. Corporate culture: avoiding the elitist trap. Business Horizons 31(2):36-44.

Robin, Donald P., and R. Eric Reidenbach. 1989. Integrating social responsibility and ethics into the strategic planning process. Business & Professional Ethics Journal 7(3&4):29-46.

Salwasser, Hal, and Glen Contreras. 1989. A marketing approach to fish and wildlife program management. Transactions North American Wildlife and Natural Resources Conference 54:261-270.

Sappington, David E., and J.E. Stiglitz. 1987. Privatization, information and incentives. Journal of Policy Analysis and Management 6(4):567-582.

Schreyer, Richard, and B.L. Driver. 1989. The benefits of leisure. Pages 385-419 in E.L. Jackson and T.L. Burton, editors. Understanding Leisure and Recreation: Mapping the Past, Charting the Future. Venture Publishing, Inc., State College, PA.

Schultz, Don E., Dennis Martin, and William P. Brown. 1984. Strategic advertising campaigns. Crain Books, Chicago.

Shoemaker, Stowe. 1989. Segmentation of the senior pleasure travel market. Journal of Travel Research 27(3):14-21.

Shrader, Charles B., Charles L. Mulford, and Virginia 1. Blackburn. 1989. Strategic and operational planning, uncertainty, and performance in small firms. Journal of Small Business Management 27(4):45-60.

Siegel, William, and William Ziff-Levine. 1989. Evaluating tourism advertising campaigns: conversion vs. advertising tracking studies. Journal of Travel Research 28(3):51-54.

Smiley, E. Thomas, and Donald F. Holecek. 1982. Aquatic park management: symposium proceedings. Michigan Sea Grant Extension, MICHU-SG-900. Michigan State University, East Lansing.

Spotts, Daniel M., and Edward M. Mahoney. 1991. Segmenting visitors to a destination region based on the volume of their expenditures. Journal of Travel Research 29(4):24-31.

Stewart, Steve. 1992(a). Conversion study results: *Skin Diver* magazine cooperative advertising campaign. On file with Michigan Sea Grant Extension, Michigan State University, East Lansing.

Stewart, Steve. 1992(b). Michigan underwater preserves sport diver survey. Unpublished manuscript on file with Michigan Sea Grant Extension, Michigan State University, East Lansing.

Swinehart, Carol Y. 1988. Buried treasures -- Michigan's bottomland preserves. Extension Review 59(2):10-11.

Tabata, Raymond S. 1989. The Use of Nearshore Dive Sites by Hawaii's Recreational Dive Industry. M.S. Thesis, Department of Geography, University of Hawaii.

Tipple, Terence J., and J. Douglas Wellman. 1989. Life in the fishbowl: public participation rewrites public foresters' job descriptions. Journal of Forestry 87(3):24-30.

Tomasi, George. 1979. Diving and tourism. Pages 26-28 in Hulse, Charles A., and Donald F. Holecek, editors. Underwater parks: symposium proceedings. Cooperative Extension Service, Bulletin E-1350. Michigan State University, East Lansing.

U.S. Census Bureau. 1992. 1990 U.S. Census. U.S. Department of Commerce, Washington, D.C.

U.S. Travel Data Center. 1989. Discover America 2000: The Implications of America's Changing Demographics and Attitudes on the U.S. Travel Industry. Travel Industry Association of America, Washington.

Uysal, Muzaffer, and Cary D. McDonald. 1989. Visitor segmentation by trip index. Journal of Travel Research 27(3):38-42.

Vrana, Kenneth J., and John R. Halsey. 1992 (in press). Shipwreck allocation and management in Michigan: a review of theory and practice. Historical Archaeology (26)4.

Vrana, Kenneth J. 1991. An Analysis of the Development Needs of Michigan Bottomland (Underwater) Preserve Communities Using the Nominal Group Technique. Report on file at Michigan Sea Grant Extension, Michigan State University, East Lansing and the Michigan Coastal Zone Management Program, Lansing.

Vrana, Kenneth J. 1989. Michigan Bottomland Preserves Inventory. Michigan Sea Grant Extension, MICHU-SG-89-500. Michigan State University, East Lansing.

Vrana, Kenneth J., and John Schwartz. 1989. Instrumented sled, ROV join to provide enhanced images of *Edmund Fitzgerald*. Sea Technology 30(12):17-21.

Vrana, Kenneth J. 1987. Managing shipwrecks in a national park: the Isle Royale experience. Pages 475-525 in Daniel J. Lenihan, editor. Submerged Cultural Resources Study: Isle Royale National Park. Southwest Cultural Resource Center Professional Paper No. 8, National Park Service, Santa Fe, NM.

Vrana, Kenneth J., and Bruce Panowski. 1987. Sport diving visitation at Isle Royale National Park 1980-1986. Unpublished manuscript on file with Michigan Sea Grant Extension, Michigan State University, East Lansing.

Walsh, Richard G. 1986. Recreation Economic Decisions: Comparing Benefits and Costs. Venture Publishing, Inc., State College, PA.

Warner, Thomas D., and Donald F. Holecek. 1978. Underwater parks: an unexplored recreation frontier? Park and Recreation 13(11):18-20.

Warner, Thomas D., and Donald F. Holecek. 1975. The Thunder Bay shipwreck survey study report: a summary of findings for an underwater inventory of Lake Huron shipwrecks. Department of Park and Recreation Resources, Michigan State University, East Lansing.

Webster, James L., William E. Reif, and Jeffrey s. Bracker. 1989. The manager's guide to strategic planning tools and techniques. Planning Review 17(6):4-48.

Webster Jr., Frederick E. 1988. The rediscovery of the marketing concept. Business Horizons 31(3):29-39.

Wildesen, Leslie E. 1982. The study of impacts on archaeological sites. Pages 51-96 in Advances in Archaeological Method and Theory, Vol. 5. Schiffer, Michael B., editor. Academic Press, New York.

Woodside, Arch G., Victor J. Cook, Jr., and William A. Mindak. 1987. Profiling the heavy traveler segment. Journal of Travel Research 25(4):9-14.

Woodside, Arch G., and Laurence W. Jacobs. 1985. Step two in benefit segmentation: learning the benefits realized by major travel markets. Journal of Travel Research 23(1):7-13.

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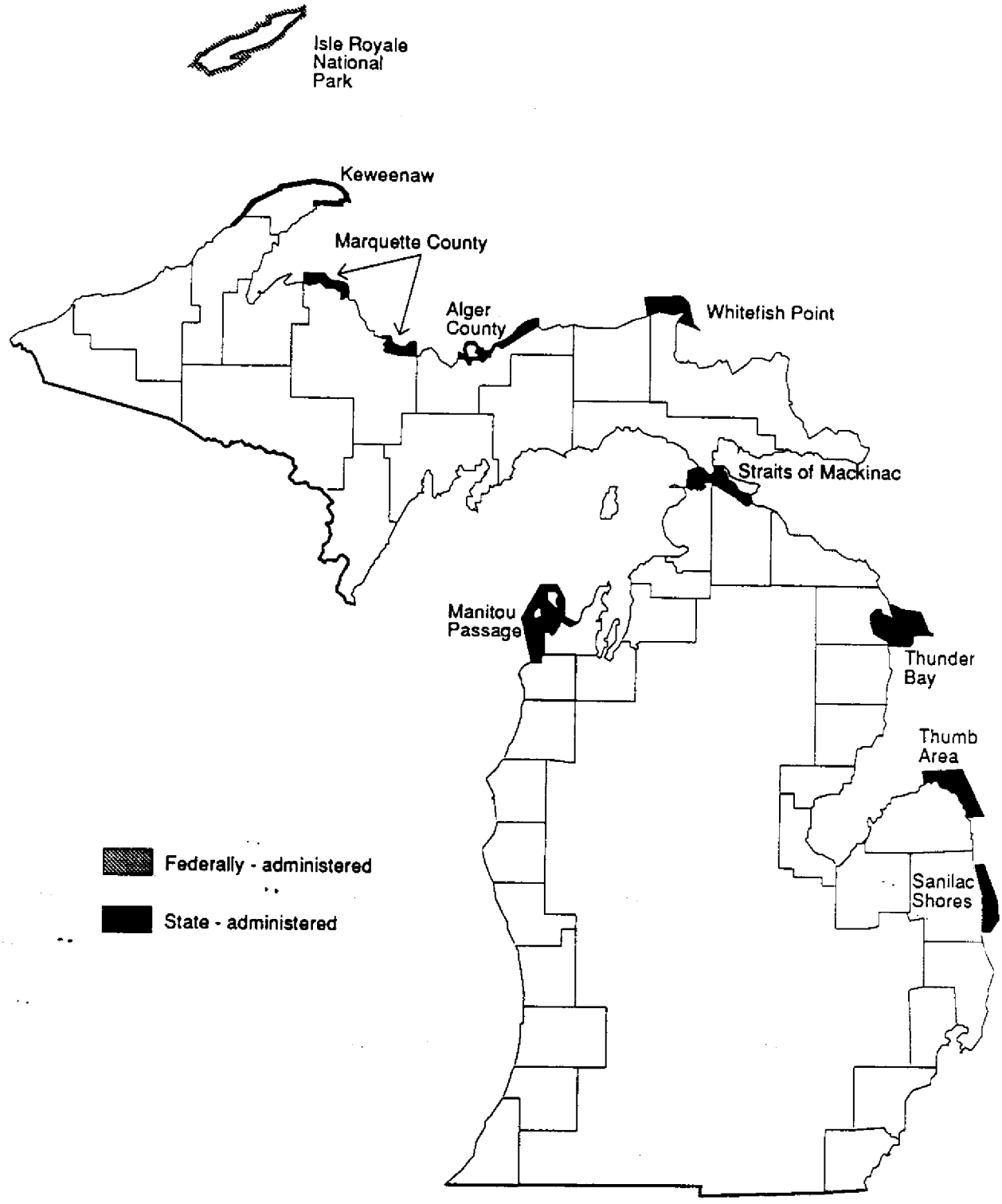
APPENDIX A



MICHIGAN UNDERWATER PRESERVES

APPENDIX B

Michigan Sea Grant College Program

Dear Sport Diver:

PLEASE. We need your participation on the enclosed sport diving survey, EVEN IF YOU HAVE NEVER VISITED THE GREAT LAKES.

This survey offers an important opportunity for you to represent many other sport divers that have similar beliefs and recreational needs. Your answers will help us provide the right mix of services, facilities and attractions for present and future sport diving visitors. ***In addition, our receipt of your completed questionnaire will make you eligible in a drawing for FREE CHARTER BOAT SERVICES at one or more of our Michigan Underwater Preserves.***

This survey is sponsored by the Michigan Sea Grant College Program and the Travel, Tourism and Recreation Resource Center of Michigan State University, the Michigan Underwater Preserves Council, Inc., and the Michigan Department of Natural Resources. Results will be published in *Skin Diver* magazine.

Your responses are COMPLETELY CONFIDENTIAL. Your address will not be given to any other organization for ANY reason. You indicate your voluntary agreement to participate by completing and returning this questionnaire. ***Please help us make Great Lakes sport diving a great experience for you, your family and friends!***

Please call (517) 353-9568 if you have any questions.

Sincerely,

Ken Vrana

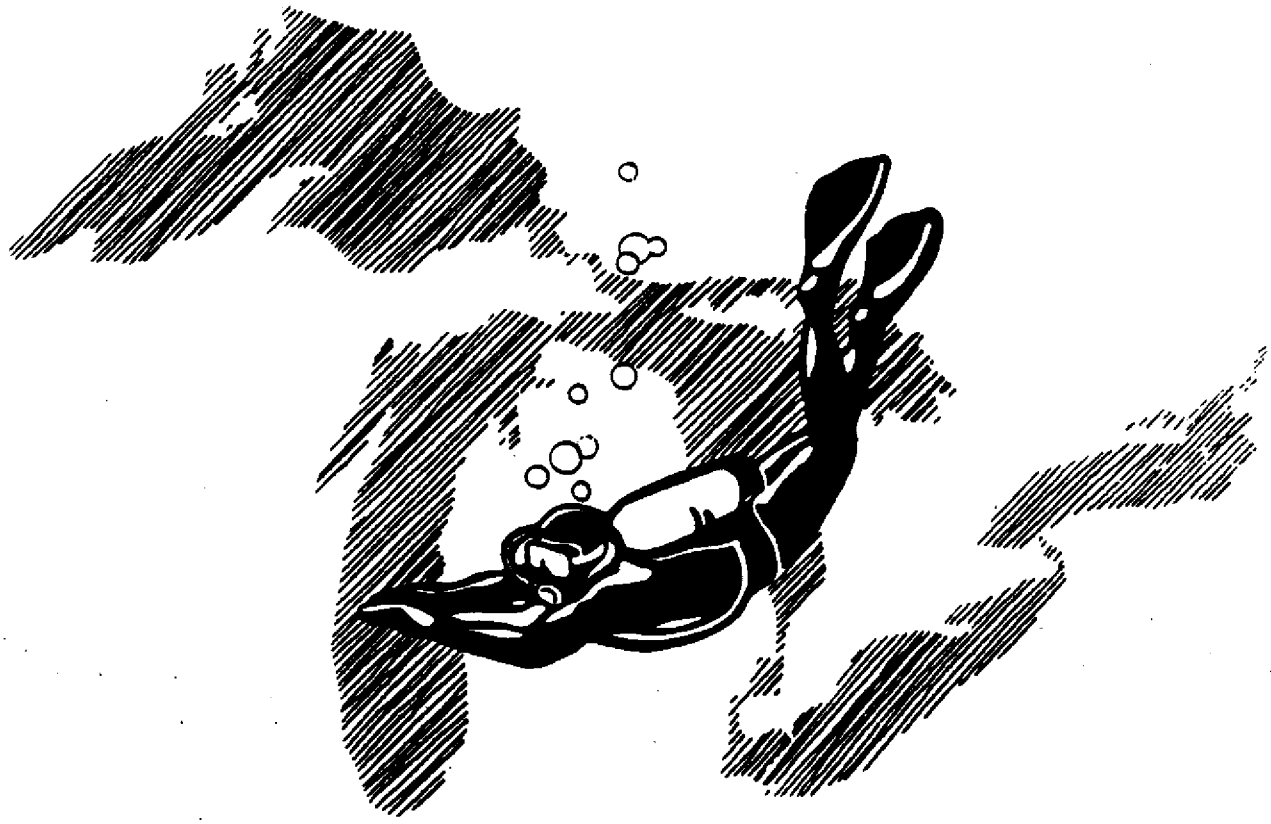
Michigan Sea Grant Extension

Cooperative Program

University of Michigan • 4107 I.S.T. Building • 2200 Bonisteel Boulevard • Ann Arbor, Michigan 48109 • (313) 763-1437

Michigan State University • 334 Natural Resources Building • East Lansing, Michigan 48824-1222 • (517) 353-9568

Sport Diving and Great Lakes Aquatic Parks Survey



Michigan Sea Grant Extension

Michigan Sea Grant College Program
Michigan State University

Please complete the *entire* questionnaire and return it in the enclosed, stamped envelope.

Thanks!

Ken Vrana
Michigan Sea Grant Extension
334 Natural Resources Building
Michigan State University
East Lansing, MI 48824-1222

A) Sport Diving Activity Questions

Please check **ONE BOX** for each question.

1. How many **SPORT DIVES** have you completed within the last 12 months?

[ ] None	[ ] 16-20	[ ] 36-40
[ ] 1-5	[ ] 21-25	[ ] 41-45
[ ] 6-10	[ ] 26-30	[ ] 46-50
[ ] 11-15	[ ] 31-35	[ ] 51 or more sport dives

2. How many **SPORT DIVES** have you completed on **SHIPWRECKS** within the last 12 months?

[ ] None	[ ] 16-20	[ ] 36-40
[ ] 1-5	[ ] 21-25	[ ] 41-45
[ ] 6-10	[ ] 26-30	[ ] 46-50
[ ] 11-15	[ ] 31-35	[ ] 51 or more sport dives

B) Sport Diving Trips Questions

Please check **ONE BOX** for each question, or write in your answer where indicated.

1. How many **DIVING TRIPS** have you completed within the last 12 months (count any trip in which you completed one or more sport dives)?

[ ] None	[ ] 5-6	[ ] 11-12
[ ] 1-2	[ ] 7-8	[ ] 13-14
[ ] 3-4	[ ] 9-10	[ ] 15 or more diving trips

2. How many of the **DIVING TRIPS** that you completed within the last 12 months were to destinations in the United States (count any trip in which you completed one or more sport dives in the United States)?

[ ] None	[ ] 5-6	[ ] 11-12
[ ] 1-2	[ ] 7-8	[ ] 13-14
[ ] 3-4	[ ] 9-10	[ ] 15 or more diving trips

3. How many of the **DIVING TRIPS** that you completed within the last 12 months were to the Great Lakes (count any trip in which you completed one or more sport dives in one or more of the Great Lakes)?

[ ] None	[ ] 5-6	[ ] 11-12
[ ] 1-2	[ ] 7-8	[ ] 13-14
[ ] 3-4	[ ] 9-10	[ ] 15 or more diving trips

4. How many of the **DIVING TRIPS** that you completed within the last 12 months were to Michigan Bottomland (Underwater) Preserves (count any trip in which you completed one or more sport dives in one or more Michigan Bottomland (Underwater) Preserves)?

[ ] None	[ ] 5-6	[ ] 11-12
[ ] 1-2	[ ] 7-8	[ ] 13 or more diving trips
[ ] 3-4	[ ] 9-10	[ ] not sure

5. If you visit the Great Lakes for sport diving, would you bring your own boat? [ ] Yes [ ] No

   If yes, what is the length of the boat you would bring? _____ feet

NEXT PAGE

B) Sport Diving Trips Questions (continued)

Please check **ONE OR MORE** boxes for this question.

6. If you visit the Great Lakes for sport diving, what scuba equipment are you likely to rent at a Great Lakes dive shop?

[ ] None	[ ] Air Cylinder	[ ] Underwater Video
[ ] Drysuit	[ ] Regulator	[ ] Underwater Photo Camera
[ ] Wetsuit	[ ] Buoyancy Compensator	[ ] All the equipment I use

C) Great Lakes Sport Diving Belief Questions

Which of the following statements about sport diving **IN THE GREAT LAKES** do **YOU** believe are **True**, or **False**, or **No Opinion (can't make a clear choice between True and False)**.

1.	It's easy for me to get information about sport diving in the Great Lakes.	[ ] True	[ ] False	[ ] No Opinion
2.	There are very few regulations on sport diving in the Great Lakes.	[ ] True	[ ] False	[ ] No Opinion
3.	The lake water is too cold for sport diving.	[ ] True	[ ] False	[ ] No Opinion
4.	There are numerous recreational activities in addition to diving in which to participate.	[ ] True	[ ] False	[ ] No Opinion
5.	There are numerous geologic features to explore.	[ ] True	[ ] False	[ ] No Opinion
6.	There are plenty of fish and other aquatic organisms to view.	[ ] True	[ ] False	[ ] No Opinion
7.	Underwater visibility is excellent for sport diving.	[ ] True	[ ] False	[ ] No Opinion
8.	There are **not** enough diving services and facilities from which to choose.	[ ] True	[ ] False	[ ] No Opinion
9.	Diving services and facilities are of poor quality.	[ ] True	[ ] False	[ ] No Opinion
10.	Dry suits are needed to dive in the Great Lakes.	[ ] True	[ ] False	[ ] No Opinion
11.	Access to shipwrecks is **not** restricted by regulations. . . .	[ ] True	[ ] False	[ ] No Opinion
12.	The shipwrecks are **not** crowded with divers.	[ ] True	[ ] False	[ ] No Opinion
13.	The shipwrecks are too deep for me to explore.	[ ] True	[ ] False	[ ] No Opinion
14.	Shipwreck diving is very dangerous.	[ ] True	[ ] False	[ ] No Opinion
15.	Costs for charter diving boats are too expensive.	[ ] True	[ ] False	[ ] No Opinion
16.	Visitor accomodations (i.e. lodging, restaurants) are generally of high quality.	[ ] True	[ ] False	[ ] No Opinion
17.	People in local communities are friendly.	[ ] True	[ ] False	[ ] No Opinion
18.	The Great Lakes region is too isolated.	[ ] True	[ ] False	[ ] No Opinion
19.	Travel costs to the Great Lakes are too expensive.	[ ] True	[ ] False	[ ] No Opinion
20.	The Great Lakes are too polluted to safely dive.	[ ] True	[ ] False	[ ] No Opinion
21.	Michigan Bottomland (Underwater) Preserves are managed by state government.	[ ] True	[ ] False	[ ] No Opinion

NEXT PAGE

D) Aquatic Park Features Questions

The State of Michigan is considering converting some of its Bottomland (Underwater) Preserves into aquatic parks. How important **TO YOU** are the following services, facilities or attractions, in order **FOR YOU** to have a satisfying experience at a Great Lakes **aquatic park** or nearby community? Please check **ONE BOX** for each feature listed below. *It is critical that you answer every question.*

	FEATURES	Not Important	Somewhat Important	Very Important	CRUCIAL (won't visit without it)
1.	Full service dive shop (air, rentals, sales, repair, travel)	[ ]	[ ]	[ ]	[ ]
2.	Air compressor station	[ ]	[ ]	[ ]	[ ]
3.	Mooring buoys over dive sites	[ ]	[ ]	[ ]	[ ]
4.	Information center for diving conditions and dive sites	[ ]	[ ]	[ ]	[ ]
5.	Park interpretive center	[ ]	[ ]	[ ]	[ ]
6.	Recompression chamber	[ ]	[ ]	[ ]	[ ]
7.	Waterproof maps of dive sites	[ ]	[ ]	[ ]	[ ]
8.	Mandatory diver registration program	[ ]	[ ]	[ ]	[ ]
9.	Enforcement of scuba diving regulations	[ ]	[ ]	[ ]	[ ]
10.	Shipwreck sites caused by natural forces or human error	[ ]	[ ]	[ ]	[ ]
11.	Ships intentionally sunk for sport diving	[ ]	[ ]	[ ]	[ ]
12.	Other underwater maritime history sites (docks, wharfs)	[ ]	[ ]	[ ]	[ ]
13.	Biological dive sites (fishes, vegetation, invertebrates)	[ ]	[ ]	[ ]	[ ]
14.	Geological dive sites	[ ]	[ ]	[ ]	[ ]
15.	Dive sites that are accessible from land	[ ]	[ ]	[ ]	[ ]
16.	Dive sites that are less than 50 feet in depth	[ ]	[ ]	[ ]	[ ]
17.	Dive sites that are over 50 ft but less than 100 ft in depth	[ ]	[ ]	[ ]	[ ]
18.	Dive sites that are over 100 ft but less than 130 ft in depth	[ ]	[ ]	[ ]	[ ]
19.	Dive sites that are greater than 130 ft in depth	[ ]	[ ]	[ ]	[ ]
20.	Good underwater visibility	[ ]	[ ]	[ ]	[ ]
21.	Protection of dive sites from theft and vandalism	[ ]	[ ]	[ ]	[ ]
22.	Charter boats that carry 6 or less sport divers	[ ]	[ ]	[ ]	[ ]
23.	Charter boats that carry **more** than 6 sport divers	[ ]	[ ]	[ ]	[ ]
24.	A boat rental service for divers (no captain provided)	[ ]	[ ]	[ ]	[ ]
25.	A boat launching facility	[ ]	[ ]	[ ]	[ ]
26.	Marina	[ ]	[ ]	[ ]	[ ]

NEXT PAGE

D) Aquatic Park Features Questions (continued)

How important **TO YOU** are the following services, facilities or attractions, in order **FOR YOU** to have a satisfying experience at a Great Lakes **aquatic park** or nearby community? Please check **ONE BOX** for each feature listed below. *It is critical that you answer every question.*

FEATURES	Not Important	Somewhat Important	Very Important	CRUCIAL (won't visit without it)
27. Great Lakes natural history museum (biology, geology)	[ ]	[ ]	[ ]	[ ]
28. Great Lakes maritime history museum	[ ]	[ ]	[ ]	[ ]
29. Swimming beaches	[ ]	[ ]	[ ]	[ ]
30. A glass bottom boat tour service	[ ]	[ ]	[ ]	[ ]
31. A submarine tour service	[ ]	[ ]	[ ]	[ ]
32. Special events for divers (contests, festivals)	[ ]	[ ]	[ ]	[ ]
33. Recreation activities for non-divers	[ ]	[ ]	[ ]	[ ]
34. "Upscale" resorts/hotels	[ ]	[ ]	[ ]	[ ]
35. Middle-priced hotels/motels	[ ]	[ ]	[ ]	[ ]
36. Economy hotels/motels	[ ]	[ ]	[ ]	[ ]
37. Campgrounds	[ ]	[ ]	[ ]	[ ]
38. Fast food restaurants	[ ]	[ ]	[ ]	[ ]
39. "Sit down," full menu restaurants	[ ]	[ ]	[ ]	[ ]
40. A daycare center	[ ]	[ ]	[ ]	[ ]
41. "Nightlife"	[ ]	[ ]	[ ]	[ ]
42. Emergency medical services	[ ]	[ ]	[ ]	[ ]
43. Hospital	[ ]	[ ]	[ ]	[ ]
44. Boater search and rescue services	[ ]	[ ]	[ ]	[ ]
45. Accessible by private automobile	[ ]	[ ]	[ ]	[ ]
46. Accessible by commercial airline	[ ]	[ ]	[ ]	[ ]
47. Accessible by bus	[ ]	[ ]	[ ]	[ ]
48. Accessible by train	[ ]	[ ]	[ ]	[ ]
49. Availability of rental cars	[ ]	[ ]	[ ]	[ ]
50. An 800 number that can be used to book dive charters	[ ]	[ ]	[ ]	[ ]
51. An 800 number that can be used to obtain detailed information about the aquatic park	[ ]	[ ]	[ ]	[ ]
52. Training in shipwreck diving	[ ]	[ ]	[ ]	[ ]
53. Training in dry suit (cold water) diving	[ ]	[ ]	[ ]	[ ]

NEXT PAGE

D) Aquatic Park Features Questions (continued)

It is critical that you answer every question.

FEATURES	Not Important	Somewhat Important	Very Important	CRUCIAL (won't visit without it)
54. An underwater archaeological research project in which you can participate	[ ]	[ ]	[ ]	[ ]
55. An underwater biological sciences research project in which you can participate	[ ]	[ ]	[ ]	[ ]
56. An underwater geological sciences research project in which you can participate	[ ]	[ ]	[ ]	[ ]

E) Benefits Questions

HOW IMPORTANT TO YOU are the following BENEFITS of sport diving ? Please check ONE BOX for each benefit listed below. *It is critical that you answer every question.*

BENEFITS	Not Important	Somewhat Important	Very Important	CRUCIAL (won't dive without it)
1. Development of reef diving skills	[ ]	[ ]	[ ]	[ ]
2. Development of shipwreck diving skills	[ ]	[ ]	[ ]	[ ]
3. Learning about aquatic ecology	[ ]	[ ]	[ ]	[ ]
4. Learning about maritime history	[ ]	[ ]	[ ]	[ ]
5. Learning about historic ship construction	[ ]	[ ]	[ ]	[ ]
6 Social interaction with friends	[ ]	[ ]	[ ]	[ ]
7. Leisure time with family	[ ]	[ ]	[ ]	[ ]
8. Physical fitness	[ ]	[ ]	[ ]	[ ]
9. Relaxation	[ ]	[ ]	[ ]	[ ]
10. Exploration	[ ]	[ ]	[ ]	[ ]
11. Exciting experiences	[ ]	[ ]	[ ]	[ ]
12. Feeling of independence	[ ]	[ ]	[ ]	[ ]
13. Escape from routine	[ ]	[ ]	[ ]	[ ]
14. Freedom of choice	[ ]	[ ]	[ ]	[ ]
15. Risk-taking	[ ]	[ ]	[ ]	[ ]
16. Collection of shipwreck artifacts	[ ]	[ ]	[ ]	[ ]
17. Collection of geological specimens	[ ]	[ ]	[ ]	[ ]
18. Spear fishing	[ ]	[ ]	[ ]	[ ]
19. Enjoyment of underwater beauty and aesthetics	[ ]	[ ]	[ ]	[ ]
20. Fantasize about "going back in time"	[ ]	[ ]	[ ]	[ ]

NEXT PAGE

F) Aquatic Park Management and Funding Questions

Please read the following statements.

- The State of Michigan owns Great Lakes shipwrecks and other underwater resources.
- The State of Michigan is interested in developing Great Lakes aquatic parks which feature shipwrecks and other underwater resources.
- State funds from public taxes are becoming scarce for use in the development and management of Great Lakes aquatic parks.
- Some sport divers want to visit Great Lakes aquatic parks now and in the future.
- Other sport divers don't intend to visit Great Lakes aquatic parks, but want these areas protected and managed for future generations.

With these statements in mind, please answer the following questions.

1. Government should provide only those services, facilities and attractions at an aquatic park which private enterprise cannot profitably provide. Please check ONE box.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

2. Which one of the following organizations do you **most** prefer to develop and manage a Great Lakes aquatic park? Please check **ONE** box.

[ ] Federal Government
[ ] State Government
[ ] Local Government
[ ] Private Non-Profit Corporation
[ ] Private (For Profit) Corporation
[ ] Cooperative Management Structure between the Private Sector and Government

It is reasonable to assume that government will have some development and management responsibilities. With this in mind, please answer the following questions.

3. Government should provide aquatic park services, facilities and attractions at little or no cost to the user. Please check **ONE** box.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

4. Government should charge the user only an amount needed to cover the costs of providing services, facilities and attractions at an aquatic park? Please check **ONE** box.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

5. Government should charge the user as much as the market will bear in providing services, facilities and attractions at an aquatic park. Please check **ONE** box.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

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G) Great Lakes Aquatic Park Ethics Questions

Please indicate whether **YOU** agree or disagree with the following statements about the removal of shipwreck artifacts from a Great Lakes **aquatic park**. Please check **ONE BOX** for each statement.

1. Sport divers should be allowed to remove shipwreck artifacts for profit.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

2. Sport divers should be allowed to remove shipwreck artifacts **ONLY** as personal mementoes or souvenirs of the dive.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

3. Sport divers should be allowed to remove shipwreck artifacts **ONLY** for donation to public museums.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

4. Sport divers should **NOT** be allowed to remove shipwreck artifacts under any circumstances.

[ ] Strongly Agree [ ] Agree [ ] Disagree [ ] Strongly Disagree

H) Great Lakes Aquatic Park Valuation Questions

Please read the following paragraphs.

Underwater Preserves

Presently, seven underwater preserves have been designated in Michigan's Great Lakes. The primary purpose of preserves is the protection of historical and natural resources through a "leave it alone" policy. Resource management programs are **limited**. Sport diving is permitted but **not encouraged** in underwater preserves.

Aquatic Parks

The state of Michigan and local communities bordering the preserves are considering converting **some** of these underwater preserves into aquatic parks. Aquatic parks would provide a diversity of services and facilities. **Significant** resource management programs would be provided to protect the historical and natural resources **and enhance visitor satisfaction. Sport diving would be encouraged** in these aquatic parks.

With these statements in mind, please answer the following question.

1. Do you favor or oppose the conversion of **some** of Michigan's underwater preserves into aquatic parks?

_____Favor _____ Oppose

Now, please read the following paragraph.

Assume that you will have to purchase a daily use permit to dive in a Great Lakes **aquatic park**. The funds from the sales of permits will be used to cover the costs of **resource management** programs that include scientific research, visitor information and education, emergency medical services, visitor safety, and law enforcement. At this time, there are no plans to charge user fees. However, your answers will help us determine the relative **values** of these areas as **aquatic parks**.

With these statements in mind, please answer the following question.

2. What is the **MAXIMUM** amount you would be willing to pay for a **daily** use permit to dive in a Great Lakes **aquatic park?**

$ _____per day

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I) Demographics Questions

Please check ONE BOX for each question, or write in your answer where indicated.

1. Gender

[ ] Male [ ] Female

2. Marital Status

[ ] Married [ ] Single [ ] Widowed/Separated/Divorced

3. Age

[ ] 14 and Younger [ ] 27-36 [ ] 46-56 [ ] 68-79
[ ] 15-26 [ ] 37-45 [ ] 57-67 [ ] 80 and older

4. Education (Please indicate the HIGHEST level of education obtained.)

[ ] Some Grade School [ ] Junior College/Technical School Graduate
[ ] Some High School [ ] Four Year College Graduate
[ ] High School Diploma [ ] Some Graduate Study
[ ] Some College or Technical School [ ] Completed Graduate Degree

5. Scuba Certification (Please indicate the HIGHEST level of certification obtained.)

[ ] I do not scuba dive [ ] Dive Master
[ ] I scuba dive, but I'm not certified [ ] Assistant Instructor
[ ] Open Water Diver [ ] Instructor
[ ] Advanced Diver [ ] Other (please specify) _____

6. Agency of Scuba Certification (for HIGEST Level of certification obtained)

[ ] I don't scuba dive or I'm not certified [ ] NAUI
[ ] PADI [ ] YMCA
[ ] SSI [ ] Other (please specify) _____

7. How many YEARS have you been a Scuba diver?

[ ] 0 [ ] 7-9 [ ] 16-18
[ ] 1-3 [ ] 10-12 [ ] 19-21
[ ] 4-6 [ ] 13-15 [ ] 22 or more years

8. Household

How many people are in your household (including yourself)?_____people

How many people in your household are **sport divers** (including yourself)? _____ sport divers

How many of the **sport divers** in your household are male (including yourself)? _____males

How many of the **sport divers** in your household are female (including yourself)? _____ females

9. Household Income

[ ] Under $15,000 [ ] $60,000-$74,999 [ ] $120,000-$134,999
[ ] $15,000-$29,999 [ ] $75,000-$89,999 [ ] $135,000-$149,999
[ ] $30,000-$44,999 [ ] $90,000-$104,999 [ ] $150,000-$299,999
[ ] $45,000-$59,999 [ ] $105,000-$119,999 [ ] $300,000 and Over