

**Management Implications of Angler Motivations and Preferences  
For Urban Fisheries**

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*Abstract.* - Fisheries managers may be better equipped to meet angler expectations if they understand why people fish and more importantly their expectations of the fishing experience. It is important to recognize that the angling population is not comprised of a single, homogeneous group, but rather a heterogeneous group made up of numerous subgroups. Therefore, motivational characteristics of angler subgroups should not be used to generalize behavior of the entire angling population. Experiences anglers seek to derive from fishing can be divided into two elements: activity-specific (unique to fishing) and activity-general (common to all outdoor recreational activities). Managers have the ability to control activity-specific elements, but it has been the perception that agencies are unable to control activity-general elements. This assessment may be the result of the limited training fisheries managers receive in human dimensions or because most managers rank catch-oriented goals as more important than non-catch or activity-general goals. In the context of the urban environment, changing cultural and demographic patterns are likely to shape angler motivations and preferences and as a result, fisheries management must adapt. This manuscript provides a review of angler motivations and preferences and elaborates on why the use of this information in a holistic management approach is critical for successful urban fisheries management.

Across the country, fisheries management agencies are being faced with stagnating or declining license sales (USDI 2007), increasing urbanization of the population, an aging angler population, and a growing population of minority constituents (Murdock et al. 1996). To further complicate matters, recent analysis of license sale databases has shown that only a small percentage of anglers purchase a fishing license every year, and as many as 40 percent of anglers buy a license only one of every five years (Southwick Associates 2007). Many fisheries agencies are addressing these issues in part by establishing urban fishing programs to promote and provide angling opportunities “close to home” for an increasingly urban population with the goal of recruiting and retaining anglers. This is a good strategy given most anglers cite “a lack of time” as their primary reason for discontinuing participation in the sport (Fedler and Ditton 2001). However, if managers are to maximize their success at recruiting and retaining new anglers they must do more than bring fishing opportunities to the urban masses; managers must develop a greater understanding of the reasons why diverse angler groups pursue the sport, and the expectations that determine their satisfaction with the angling experience if they are to tailor the most effective programs to recruit new anglers.

### **A Holistic Management Approach**

Fisheries managers have traditionally considered themselves to be trusted with the stewardship of fisheries resources to insure the maximum benefit of those resources to the populous. Historically, fisheries managers pursued this goal by following the

principle of maximum sustainable yield (MSY), the strategy of producing the greatest physical yield of fish for harvest (Nielsen 1999). While this remains a viable goal for commercial fisheries, numerous researchers have shown that recreational fishing quality is influenced by far more factors than simply the number and size of fish caught (McFadden 1969; Knopf et al. 1973; Driver 1976; Holland and Ditton 1992; Fedler and Ditton 1994; Fisher 1997; Radomski et al. 2001; Room and Loomis 2001; Arlinghaus 2006; Hutt and Bettoli 2007). Radomski et al. (2001) made the point that recreational fishing is a pleasure sport with angler satisfaction being determined by more than just fish caught. Realizations of this nature brought about the concept of optimum sustainable yield (OSY) which incorporates both sociological and economic concerns into the decision-making process (Nielsen 1999). Under the model of OSY, it can be argued that fisheries managers are not just resource managers, but are also *recreational* managers. Urban Fisheries management is an opportunity to embrace this new role by providing recreational diversity and, if successful, reverse the trend of declining fishing participation in the United States.

Knopf et al. (1973) argued that successful recreational planning required managers to view problems from a resource, activity, economic, and behavioral approach. The resource approach requires managers to take stock of the physical resources available to them as this will determine the opportunities available. Obviously, this approach covers most standard fisheries management activities. Additionally, urban fisheries managers can develop new and improve resources in the form of small ponds for stocking programs. In the activity approach, managers use past trends in resource consumption and participation to guild future management plans. Urban fisheries

managers can collect this data with angler surveys that estimate angling effort, number of trips, catch, and harvest. Several examples of angler surveys in urban fisheries can be found in these proceedings.

While the resource and activity approach were both embraced by disciples of MSY, the economic and behavioral approach were first adopted by fisheries managers under the principles of OSY. The economic approach evaluates the monetary value of fisheries resources and their economic impact on local communities. The economic approach also deals with questions of the appropriateness of government involvement in providing recreational opportunities and who should pay for them. Finally, the behavioral approach looks at fishing from the perspective of the overall angling experience (Knopf et al. 1973).

According to Knopf et al. (1973), the behavioral approach is concerned with four things: reasons a person participates in fishing (motivations); types of fishing experiences the angler chooses to pursue (preferences); angler experiences as a result of participating in fishing (satisfactions); and finally, obstacles that might prevent anglers from pursuing their most preferred experience (constraints). The behavioral approach views fishing participation as a means of obtaining a desired outcome, and measures success not by the number of angler-days but by achievement of satisfactory angling experiences (Knopf et al. 1973). The behavioral approach recognizes the benefits anglers derive from fishing, be they physiological, psychological, economic, or social; and that anglers participate in fishing to achieve the benefits they have come to expect from the activity (Manning 1999). It also recognizes that different groups of individuals will participate in the same activity for different reasons; therefore, managers need to provide a diversity of tailored

fishing opportunities to insure the satisfaction of angling clientele. Understanding the reasons people fish, or their motivations, is essential to developing successful programs that meet the needs of potential urban anglers, for angler satisfaction is dependent on whether their desires (i.e. motives) are fulfilled (Holland and Ditton 1992). Only through the integration of data concerning fisheries resources, angling activity, economic impacts, and angling behavior can fisheries managers successfully plan under the principle of OSY.

### **The Behavioral Approach**

#### *Motivations*

Manning (1999) defines motivations as “desired psychological outcomes”. Starting with the earliest studies of why anglers fish, researchers have found the motivations of anglers to be diverse and their priorities unexpected. Knopf et al. (1973) suggested that angler motivations centered around four basic needs: temporary escape, achievement, explorations, and experiencing natural settings. The need to escape was found to be particularly acute for anglers living close to and within urban areas. Mandell and Marans (1972) also found a direct relationship between the need to escape and poor neighborhood quality.

It is interesting that the motivations for angling listed by Knopf et al. (1972) included no mention of catching fish. In fact, many early studies of angler motivations ignored catch-related motives because they were evaluating several different types of

outdoor recreationalists (Driver 1976; Buchanan 1983), which lead the researchers to concentrate on more general motives for recreating, or activity-general motives. Examples of activity-general motivations include escape, relaxation, spending time with friends or family, and physically challenging oneself (Knopf et al. 1973; Driver 1976; Fedler and Ditton 1994; Fisher 1997; Table 1). Activity-general motives can best be described as reasons for participating in any recreational activity as they are common to all, and are largely behind an individual's choice to recreate (Fedler and Ditton 1994; Fisher 1997; Arlinghaus 2006). Activity-specific motives are those that relate to a single activity, and in the case of fishing are usually catch related. Examples of activity-specific motives in fishing include the experience of the catch, pursuing a trophy, obtaining fish to eat, and testing one's angling skills (Fedler and Ditton 1994; Fisher 1997; Arlinghaus 2006; Table 1).

### *Preferences*

The subject of angler preferences are extremely broad, and cover a range of fishing trip attributes. The study of angler preferences can focus on everything from species of fish pursued, water-body types and locations, available facilities, angling techniques, and disposition of catch (i.e. harvest or catch-and-release). Angler preferences regarding fish species and angling locations vary greatly by region, and are well documented by national surveys regularly conducted by the United States Fish and Wildlife Service (USDI and USDC 2001). However, fisheries managers conducting surveys of specific angling groups should not take for granted that these preferences can

vary greatly between user groups within a region (Driver et al. 1984; Connelly et al. 2001; Schramm et al. 2003).

Another area of angler preferences that has received substantial attention in the literature is consumptive orientation (Fedler and Ditton 1986; Graefe and Fedler 1986; Aas and Kaltenborm 1995; Aas and Vitterso 2000; Sutton and Ditton 2004; Kyle et al. 2007; Anderson et al. 2007; Hunt et al. 2007). The concept of “consumptive orientation” is a measure of angler attitudes and preferences towards catching fish. Specifically, researchers have attempted to answer the age old question of what is more important to anglers; more fish or bigger fish, in addition to evaluating the importance of “catching something” and harvesting fish. It is no surprise that their findings have been diverse, so urban fisheries managers would do well to conduct their own evaluations, and should look to Anderson et al. (2007) validation of a 12-part attitudinal scale for measuring consumptive orientation (Table 2).

### *Satisfaction*

By definition, an angling trip is satisfying when it exceeds the angler's expectations (Holland and Ditton 1992). Studies that have compared activity-general and activity-specific elements of the fishing experience have consistently found most anglers rate noncatch related elements higher than their catch related counterparts as reasons for fishing, although this can vary between angling segments (Driver and Knopf 1976; Holland and Ditton 1992; Fedler and Ditton 1994; Room and Loomis 2001). Holland and Ditton (1992) found that catch had a major influence on the fishing trip satisfaction



of only 25% of the anglers they surveyed. In a study comparing put-and-take versus wild trout anglers, Room and Loomis (2001) found neither group considered harvesting fish essential to a successful fishing trip. Surveys consistently find that a majority of anglers will rate their fishing trips as excellent or good while simultaneously rating their fishing success as fair or poor (Weithman 1999). Since Hudgins (1984) found angler ratings of fishing success to be directly related to contacts with fish it can be assumed that while catching fish is essential to fishing success, it is not essential to the overall quality of an individual angling trip.

These findings have often baffled fisheries managers who have interpreted these results as suggesting that catching fish is unimportant to anglers (Stroud 1984; Matlock et al. 1988). In a well documented case, Matlock et al. (1988) experienced large opposition to a harvest moratorium on select fish species in Texas following a large fish kill. The authors were surprised by the negative public reaction given the information in the literature. Similarly, Hutt and Bettoli (2007) discovered that while a majority of trout anglers fishing tailwaters in Tennessee placed low importance on catch-related motives, the majority of the anglers they surveyed opposed restrictive harvest regulations.

Recent research conducted by Arlinghaus (2006) has helped to explain the cause of inconsistent findings between motivations research and the experiences of managers working with anglers. Instead of enquiring into angler satisfaction with individual fishing trips, Arlinghaus (2006) sought to correlate angler satisfaction over the past year with catch and non-catch related motivations, and found angling year satisfaction was primarily explained by catch-related components of the fishing experience despite the majority of anglers placing low importance on catch-related motives. Arlinghaus (2006)

concluded that this was likely due to “the differential ease in satisfying the different activity-general and activity-specific aspects of the fishing experience.” In other words, the angler has more control over satisfying the need to escape than he/she does over the need to catch a fish. The inconsistency of the importance between daily and yearly fishing success makes sense given the nature of the sport. While no angler can expect to catch a fish every trip, they can rightfully expect to have the opportunity to catch and harvest fish every year. As such, catch related aspects of fishing are generally important to angling satisfaction in the long term but not always on a daily basis.

### *Leisure Constraints*

Leisure constraints are those factors that can adversely affect an individual’s ability to participate in or be fully satisfied with an activity. Crawford et al. (1991) classified constraints into a three level hierarchy; intrapersonal (i.e. perceived lack of skill), interpersonal (i.e. no one to participate with), and structural (i.e. lack of time; Table 3); that had to be negotiated one level at a time before an individual could participate in an activity. While intrapersonal constraints influence the preferences of individuals, interpersonal and structural constraints influence participation by affecting the availability of opportunities to recreate or affecting the ability of individuals to take advantage of existing recreational opportunities.

Constraints can affect the angling experience in several ways: they can reduce angler satisfaction without affecting participation, they can alter angling participation patterns by steering anglers away from preferred fishing opportunities to less desirable

ones, they can lead to reduced participation rates, or they can become non-negotiable and act as a barrier to future participation (Backman 1991; Jackson et al. 1993; Fedler and Ditton 2001; Sutton 2007). Studies have shown as many as 70% of active anglers experience some form of constraints that prevent them from fishing as much as they would like (Sutton 2007). Studies have consistently found that the primary constraints faced by active anglers relate to having a lack of time (Aas 1995; Fedler and Ditton 2001; Sutton 2007), while a study evaluating non-anglers found primary constraint to be the cost of fishing equipment and that they perceived fishing to be boring (Aas 1995). Addressing the constraints of both fishing participants and non-participants is essential to long term efforts to recruit new anglers and retain existing anglers.

### **The Heterogeneous Angler**

Further complicating matters is the fact that anglers are not a homogeneous group, but are in fact a mixture of many heterogeneous subgroups that place differing levels of importance on reasons for fishing, angling preferences, and management options (Bryan 1977; Chipman and Helfrich 1988; Ditton et al. 1992; Holland and Ditton 1992; Fisher 1997; Hunt and Ditton 1997; Hunt and Ditton 2002; Hutt and Bettoli 2007). Several studies have found that as angler experience increases their preferences and expectations become more refined through a process known as recreational specialization (Bryan 1977; Chipman and Helfrich 1988; Ditton et al. 1992; Fisher 1997; Hutt and Bettoli 2007). Specialized anglers tend to place greater emphasis on pursuing trophy fish and activity-general aspects of angling (Ditton et al. 1992; Hutt and Bettoli 2007) and support more

stringent regulations (Chipman and Helfrich 1988; Fisher 1997; Hutt and Bettoli 2007). Fedler and Ditton (1986) found that fishing frequency and experience were inversely related to high-consumptive orientation.

Angler motives, preferences, and constraints have also been shown to differ based on such disparate categories as gender, social group, race, ethnicity, and mode of fishing. In an evaluation of the influence of preferred social unit on angler preferences, Hunt and Ditton (1997) found that women were more likely to fish with family groups than men while Fedler and Ditton (2001) found women were more likely to discontinue angling than men. Women have consistently been found to be more constrained in their leisure activities than men largely due to their gender roles in society related to their family responsibilities (Jackson and Henderson 1995). This would seem to explain why women are more likely to fish with family groups. Jackson and Henderson (1995) also found that individuals with families with children, especially young children, faced greater constraints to recreational participation. Hunt and Ditton (1997) found anglers that fished most often with their families, regardless of gender, placed greater importance on catch-related aspects of the fishing experience and the quality of facilities available at fishing sites while anglers that primarily fished alone were found to place greater importance on their angling skill and fishing opportunities that were close to their work. These findings should have particular meaning to urban fishing managers as families are primary targets of many urban fishing programs.

Another target of urban fishing programs are minority anglers. Murdock et al. (1992) predicted that the growing minority population in the United States would lead to more minority anglers, especially in urban areas, and that minorities would be the fastest

growing segment of the angling population. Historically, minority groups have been underrepresented in the angling population (Hunt and Ditton 2002), and have been less invested, both monetarily and in time, than Caucasians (Waddington 1995). African-Americans and Hispanics typically also possess lower incomes and less education than their Caucasian counterparts (Murdock et al. 1996). Marginality theory holds that African-American under-representation in outdoor recreation is the result of their possession of fewer socioeconomic resources due to the history of discrimination in the United States (Washburne 1978; West 1989).

While Caucasians are most often introduced to fishing by their families (Yoesting and Durkehead 1973; Yoesting and Christenson 1981), Hunt and Ditton (2002) found minority anglers tended to start fishing at a later age than Caucasians, and were more likely to be introduced to fishing by friends than family members. However, many studies into minorities have suggested that their outdoor recreation activities are usually centered around family groups (Hutchinson and Fidel 1984; Stamps and Stamps 1985; Hutchinson 1987). Hunt and Ditton (2002) did find Mexican-Americans were more likely to fish with family and/or friends than other racial groups. Hunt and Ditton (2002) found minority anglers were more likely to fish from shore because they were less likely to live in a boat owning household. Hudgins (1984) reported that bank anglers placed greater importance on catch-related aspects of fishing than boat anglers, and Hunt et al. (2007) found African-Americans placed greater importance on the catch-related aspects of fishing than Caucasians.

Following extensive stream reclamation and restocking on Detroit's Huron River, Carl (1982) reported a shift in angler demographics following reclamation. Prior to the

reclamation anglers on the Huron River were predominantly African-American. However, following the rotenone of the river and stocking of traditional sportfish to replace rough fish (carp and small sunfish), creel surveys showed the Huron River to be dominated by Caucasian anglers despite the fact that fishing effort did not significantly increase following the reclamation. Carl (1982) also found no significant change in angler satisfaction. Carl (1982) did find that Caucasian were more interested in fishing for sport while African-Americans were more interested in catching fish to eat.

Fisheries managers conducting evaluations of the public, whether active anglers or non-participants, must avoid making categorizations about the average angler for it does not exist (Shafer 1969). Managers must take care to identify the different stakeholder groups they are serving, and consider their needs, preferences, and obstacles individually. Only then can managers hope to develop management plans to successfully recruit and retain anglers.

### **Recommendations for Urban Fisheries Management**

In order for urban fisheries programs to achieve their goal of increasing angling participation among urban residents and families, especially those minority groups that are already under-represented in the angling public, they must take into consideration the unique needs and limitations faced by their target audiences. Management efforts should be concentrated on those fisheries that are within close proximity to residential neighborhoods as opposed to those that are outside of town due to the predominance of constraints related to a lack of time. However, select fisheries located outside of town

can be managed for those that desire to temporarily escape the urban environment or find it unappealing as a fishing locale, subject further addressed in this book by Hal Schramm (Knopf et al. 1973; Schramm and Dennis 1993). Urban fisheries managers must also take into account the disadvantaged socioeconomic state of many urban residents when planning, especially among minority communities (Murdock et al. 1996); as such, providing bank access at urban fishing locations should be a priority and tackle loaner programs should be considered where possible (Aas 1995; Hunt and Ditton 2002). Many traditional fisheries are large bodies of water that are daunting for anglers that cannot afford a boat. Urban fisheries designed to attract families should also be sited with an eye towards the availability of additional facilities such as restrooms, adjacent parking lots, and playgrounds (Hunt and Ditton 1997).

Urban fisheries managers also need to keep in mind the more highly catch-oriented attitudes of anglers fishing with families and minority anglers. Heavily utilized urban resources will often require supplemental stocking to maintain desired catch rates. Managers should also keep in mind the potential threat of fish stocks that are contaminated by urban industrial pollution. The higher consumptive orientation of minority and family anglers puts them at greater risk of exposure to contaminants, which are often especially dangerous to young children (Hunt et al. 2007). The combined concerns of contaminants and high angling exploitation should lead urban fishing programs to seriously consider put-and-take stocking programs that utilize catchable-size fish over put, grow, and take operations. Programs such as those established by the Arizona and Arkansas Game and Fish Commissions, which are high-lighted in later chapters in this book, should serve as models for future urban fishing programs. Both

programs stock catchable sized fish into inner city park ponds that have abundant bank fishing access, making them ideal angling locations for disadvantaged urban minorities and families.

## **Conclusion**

If fisheries managers are to be successful at recruiting and retaining anglers within the growing urban environment, they must identify and address the needs of the changing urban constituency. Historically, fisheries managers have concentrated their attention to the management of fisheries resources through the stringent application of natural science, and have often been guilty of ignoring the nonmaterial needs of their stakeholders (Magill 1988). In today's changing world, fisheries managers that continue to operate in this fashion risk eroding their traditional stakeholder base, anglers, to point of making them obsolete. Only by adopting a holistic approach that takes into account the needs of the angling public in addition to resource issues, can fisheries agencies hope to stem the tide of declining fishing participation and maintain an invested stakeholder base that will continue to support the management and protection of fisheries resources for generations to come.



## References

- Aas, Ø., and B. Kaltenborn. 1995. Consumptive orientation of anglers in Engerdal, Norway. *Environmental Management* 19:751-761.
- Aas, Ø., and J. Vittersø. 2000. Re-examining the consumptive concept. Some suggestions from confirmatory factor analysis. *Human Dimensions of Wildlife* 5:1-18.
- Andersen, D. K., R. B. Ditton, and K. M. Hunt. 2007. Measuring angler attitudes toward Catch-related aspects of fishing. *Human Dimensions of Wildlife* 12:181-191.
- Arilinghaus, R. 2006. On the striking disconnect between motivation and satisfaction in recreational fishing: the case of catch orientation in German anglers. *North American Journal of Fisheries Management* 26:592-605.
- Backman, S. J. 1991. An investigation of the relationship between activity loyalty and perceived constraints. *Journal of Leisure Research* 23:332-344.
- Barnett, L.A., and G.E. Chick. 1986. Chips off the ol' block: parents' leisure and their children's play. *Journal of Leisure Research* 18:266-283.
- Buchanan, T. 1983. Towards an understanding of variability in satisfaction within activities. *Journal of Leisure Research* 15:39-51.
- Carl, L.M. 1982. Social impacts of a stream reclamation project on urban anglers. *North American Journal of Fisheries Management* 2:164-170.
- Crawford, D. W., E. L. Jackson, and G. Godbey. 1991. A hierarchical model of leisure constraints. *Leisure Sciences* 13:309-320.
- Bryan, H. 1977. Leisure value systems and recreational specialization: the case of trout fishermen. *Journal of Leisure Research* 9:174-187.
- Chipman, B.D., and L. A. Helfrich. 1988. Recreational specializations and motivations of Virginia river anglers. *North American Journal of Fisheries Management* 8:390-398.
- Connelly, N. A., B. A. Knuth, and T. L. Brown. 2001. An angler typology based on angler fishing preferences. *Transactions of the American Fisheries Society* 130: 130-137.
- Ditton, R. B., D. K. Loomis, and S. Choi. 1992. Recreational specialization: re-conceptualization from a social worlds perspective. *Journal of Leisure Research* 24:33-51.
- Driver, B. L., C. Phillips, E. P. Bergesen, and C. C. Harris. 1984. Using angler preference

- data in defining types of sport fisheries to manage. *Transactions of the North American Wildlife and Natural Resources Conference* 49:82-90.
- Fedler, A.J., and R.B. Ditton. 1986. A framework for understanding the consumptive orientation of recreational fishermen. *Environmental Management* 10:221-227.
- Fedler, A. J., and R. B. Ditton. 1994. Understanding angler motivations in fisheries management. *Fisheries* 19:6-13.
- Fedler, A. J., and R. B. Ditton. 2001. Dropping out and dropping in: a study of factors for Changing recreational fishing participation. *North American Journal of Fisheries Management* 21:283-292.
- Fisher, M. R. 1997. Segmentation of the angler population by catch preference, participation, and experience: a management-oriented application of recreational specialization. *North American Journal of Fisheries Management* 17:1-10.
- Graefe, A. R., and A. J. Fedler. 1986. Situational and subjective determinants of Satisfaction in marine recreational fishing. *Leisure Sciences* 8:275-295.
- Holland, S. M., and R. B. Ditton. 1992. Fishing trip satisfaction: a typology of anglers. *North American Journal of Fisheries Management* 12:28-33.
- Hudgins, M. D. 1984. Structure of the angling experience. *Transactions of the American Fisheries Society* 113:750-759.
- Hunt, K. M., and R. B. Ditton. 1997. The social context of site selection for freshwater fishing. *North American Journal of Fisheries Management* 17:331-338.
- Hunt, K. M., and R. B. Ditton. 2002. Freshwater fishing participation patterns of racial and ethnic groups in Texas. *North American Journal of Fisheries Management* 22:52-65.
- Hunt, K. M., M. F. Floyd, and R. B. Ditton. 2007. African-American and Anglo anglers' attitudes toward catch-related aspects of fishing. *Human Dimensions of Wildlife* 12:227-239.
- Hutchinson, R., and K. Fidel. 1984. Mexican-American recreation activities: a reply to McMillan. *Journal of Leisure Research* 16:344-349.
- Hutchinson, R. 1987. Ethnicity and urban recreation: whites, blacks, and Hispanics in Chicago's public parks. *Journal of Leisure Research* 19:205-222.
- Hutt, C. P., and P. W. Bettoli. 2007. Preferences, specialization, and management attitudes of trout anglers fishing in Tennessee tailwaters. *North American Journal of Fisheries Management* *in press*.

- Jackson, E. L., D. W. Crawford, and G. Godbey. 1993. Negotiation of leisure constraints. *Leisure Sciences* 15:1-11.
- Jackson, E. L., and K. A. Henderson. 1995. Gender-based analysis of leisure constraints. *Leisure Sciences* 17:31-51.
- Kellert, S. R. 1980. American's attitudes and knowledge of animals. *North American Wildlife and Natural Resources Conference* 45:111-124.
- Knoph, R. C., B. L. Driver, and J. R. Bassett. 1973. Motivations for fishing. *Transactions of the North American Wildlife and Natural Resources Conference* 38:191-219.
- Kyle, G., W. Norman, L. Jodice, A. Graefe, and A. Marsinko. 2007. Segmenting anglers using their consumptive orientation profiles. *Human Dimensions of Wildlife* 12:115-132.
- Magill, A. W. 1988. Natural resource professionals: the reluctant public servants. *The Environmental Professional* 10:295-303.
- Mandell, L., and R. Marans. 1972. Participation in outdoor recreation: a national perspective. Report prepared for U.S. Department of Interior, Bureau of Outdoor Recreation. Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor.
- Manning, R. E. 1999. *Studies in outdoor recreation: search and research for satisfaction* 2<sup>nd</sup> edition. Oregon State University Press, Corvallis, Oregon.
- Matlock, G. C., G. E. Saul, and C. E. Bryan. 1988. Importance of fish consumption to sport fishermen. *Fisheries* 13:25-26.
- McFadden, J. G. 1969. Trends in freshwater sport fisheries of North America. *Transactions of the American Fisheries Society* 98:136-150.
- Murdock, S. H., K. Backman, R. B. Ditton, M. N. Hoque, and D. Ellis. 1992. The implications of demographic change for participation in fishing in Texas. *North American Journal of Fisheries Management* 12:548-558.
- Murdock, S. H., D. K. Loomis, R. B. Ditton, and M. N. Hoque. 1996. The implications of demographic change for recreational fisheries management in the United States. *Human Dimensions of Wildlife* 1(4): 14-37.
- Nielsen, L. A. 1999. History of inland fisheries management in North America. Pages 3-30 in C. C. Kohler and W. A. Hubert editors. *Inland Fisheries Management in North America*. American Fisheries Society, Bethesda, Maryland.

- Radonski, P. J., G. C. Grant, P. C. Jacobson, and M. F. Cook. 2001. Visions for recreational fishing regulations. *Fisheries* 26:7-18.
- Ross, M. R., and D. K. Loomis. 2001. Put-and-take fisheries: investigating catch and retention assumptions. *Fisheries* 26:13-18.
- Schramm, H. L., and J. A. Dennis. 1993. Characteristics and perceptions of users and nonusers of an urban fishery program in Lubbock, Texas. *North American Journal of Fisheries Management* 13:210-216.
- Schramm, H. L., P. D. Gerard, and D. A. Gill. 2003. The importance of environmental quality and catch potential to fishing site selection by freshwater anglers in Mississippi. *North American Journal of Fisheries Management* 23:512-522.
- Shafer, E. L. 1969. The average camper who doesn't exist. U.S. Forest Service Research Paper NE-142.
- Southwick Associates, Inc. 2007. Angler trends: finding new and lapsed anglers, plus license renewal rates. National Technical Report for the American Sportfish Association and Association of Fish and Wildlife Agencies. Southwick Associates, Fernandina Beach, FL.
- Stamps, S. M., and M. B. Stamps. 1985. Race, class and leisure activities of urban residents. *Journal of Leisure Research* 17:40-56.
- Stroud, R. H., ed. 1984. Marine recreational fisheries 8. National Coalition for Marine Conservation, Savannah, GA.
- Sutton, S. G. 2007. Constraints in recreational fishing participation in Queensland, Australia. *Fisheries* 32:73-83.
- USDI and USDC (U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau). 2001. 2001 National Survey of fishing, hunting, and wildlife-associated recreation. U.S. Government Printing Office, Washington, D.C.
- USDI (U.S. Department of Interior Fish and Wildlife Service). 2007. Fishing and hunting recruitment and retention in the U.S. from 1990 to 2005. U.S. Government Printing Office, Washington, D.C.
- Waddington, D. G. 1995. Participation and expenditure patterns of Black, Hispanic, and women anglers. Addendum to 1991 national survey of fishing, hunting, and wildlife-associated recreation. U.S. Fish and Wildlife Service, Report 91-3, Washington, D.C.
- Washburne, R. F. 1978. Black under-participation in wildland recreation: Alternative

explanations. *Leisure Sciences* 1:175-189.

West, P. J. 1989. Urban region parks and black minorities: Subculture, marginality, and interracial relations in park use in the Detroit metropolitan area. *Leisure Sciences* 11:11-28.

Weithman, S. A. 1999. Socioeconomic benefits of fisheries. Pages 193-213 in C. C. Kohler and W. A. Hubert, editors. *Inland Fisheries Management in North America*. American Fisheries Society, Bethesda, MD.

Yoesting, D.R., and D.L. Burkhead. 1973. Significance of childhood recreation experience and adult leisure behavior: an exploratory analysis. *Journal of Leisure Research* 5(4): 25-36.

Yoesting, D.R., and J. E. Christenson. 1981. Reexamining the significance of childhood recreation patterns on adult leisure behavior. *Leisure Sciences* 1:219-229.

Table 1. – Motivations for angling by associated dimension listed in Sutton (2007). The list includes both activity-general and activity-specific motivations. While the list is not all inclusive of potential motivations for fishing, it does include those most often used in motivational studies of anglers.

| Dimension           | Motivational Item  |
|---------------------|--|
| Catching fish       | To catch fish for eating<br>For the experience of the catch<br>To catch a record or trophy fish<br>For the fun of catching fish<br>For the challenge or sport of fishing |
| Relaxation          | For relaxation<br>To get away from the regular routine<br>To get away from crowds<br>To escape the demands of others<br>To experience solitude or tranquility            |
| Excitement          | To experience new and different things<br>To experience adventure and excitement<br>To have thrills  |
| Socializing         | To do something with the family<br>To bring your family closer together<br>To be with friends<br>To be with others who enjoy the same things you do                      |
| Experiencing nature | To be outdoors<br>To be close to the water<br>To experience unpolluted natural surroundings<br>To learn more about nature<br>To be close to nature                       |

Typically measured on 5-point Likert-type scales where 1 = very unimportant; 2 = unimportant; 3 = neutral; 4 = very important; and 5 = very important.

Table 2. – Twelve statements validated by Andersen et al. (2007) as a model to measure four dimensions of angler's catch-related attitudes towards recreational fishing<sup>a</sup>.

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Attitudes toward catching something

- A fishing trip can be successful even if no fish are caught <sup>b</sup>
- If I thought I wouldn't catch any fish, I wouldn't go fishing
- When I go fishing, I'm not satisfied unless I catch at least something

Attitudes towards catching number of fish

- The more fish I catch, I happier I am
- A successful fishing trip is one in which many fish are caught
- I'm happiest with a fishing trip if I catch at least the limit

Attitudes toward catching large/trophy game fish

- I would rather catch 1 or 2 big fish than 10 smaller fish
- I'm happiest with the fishing trip if I catch a challenging game fish
- I like to fish where I know I have a chance to catch a "trophy" fish

Attitudes towards retaining fish

- I usually eat the fish I catch
  - I'm just as happy if I don't keep the fish I catch <sup>b</sup>
  - I'm just as happy if I release the fish I catch <sup>b</sup>
- 

<sup>a</sup>Respondents are asked to indicate the level of their agreement or disagreement with each statement on a 5-point Likert-type scale: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; and 5 = strongly agree.

<sup>b</sup>Item is reverse coded for statistical analysis (i.e. it is inversely related to the attitude dimension being measured).

Table 3. – Examples of leisure constraints to fishing listed under the three levels identified by Crawford et al. (1991).

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Intrapersonal

- I lack angling skills
- Fishing is boring
- I do not want to hurt fish
- I have no interest in fishing
- I have no energy after work
- Physically unfit to participate

Interpersonal

- I have no one to fish with
- I am not compatible with other anglers
- Family or friends quit fishing
- It is difficult to find people to fish with
- I have too many work/family commitments

Structural

- I do not have time to go fishing
  - I lack transportation to fishing locations
  - Fishing equipment and supplies are too expensive
  - I do not have access to fishing opportunities close to home
  - Fishing areas are too crowded
  - Fishing regulations are too complicated
  - Fishing regulations are too restrictive
  - I cannot catch enough fish to suit me
  - I cannot afford to go fishing more often
  - I lack information on fishing opportunities
  - Fishing facilities are poorly developed and/or maintained
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Respondents are asked to indicate the level of their agreement or disagreement with each statement on a 5-point Likert-type scale: 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; and 5 = strongly agree.