

Angler Awareness and Acceptance of a Mandatory Crappie Harvest Regulation at Lake Fork Reservoir, Texas

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Abstract: To reduce mortality of crappie *Pomoxis* spp. caught from deep water in winter, beginning in 1991 the Texas Parks and Wildlife Department (TPWD) replaced the statewide 254-mm minimum length limit for crappie with a mandatory harvest regulation during December through February on Lake Fork Reservoir. The special regulation required anglers to harvest the first 25 crappie, regardless of size, with no catch-and-release or culling. Anglers (364 parties, 750 anglers) seeking crappie were asked questions regarding their awareness, their acceptance and how they learned of the regulation during access point creel surveys, December through February, 1991–92 and 1992–93. A majority of the parties were aware (98.6%) and in favor (94.5%) of the regulation. The TPWD Texas Fishing Guide, local newspaper articles, and word-of-mouth were most often cited as the source of information. This study justifies efforts to educate the public regarding fishery management practices.

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Fishery harvest regulations are typically designed to protect a particular segment of a population. Such is the case with a statewide 254-mm minimum length limit on crappies *Pomoxis* spp. in Texas. However, during the winter on certain reservoirs, crappie are commonly caught from water deeper than 10m, resulting in high mortality of fish that are caught and released (Childress 1989). When this occurs, the 254-mm minimum length limit no longer provides protection of the targeted segment of the population. This has occurred on Lake Fork Reservoir in northeast Texas (personal observation). It was common for anglers to catch 65 crappie in order to obtain a daily bag of 25 fish greater than 254 mm (TPWD unpublished data). A large percentage of the released fish would die (Childress 1989). Anglers commonly reported large numbers of dead fish. As a result, in 1991 the Texas Parks and Wildlife Department (TPWD) implemented special crappie harvest regulations on this reservoir in effect from De-

ember through February each year. During this period, the 254-mm minimum length limit is replaced with a mandatory harvest regulation requiring each angler to harvest only the first 25 crappie caught per day, regardless of size, with no catch-and-release or culling. The specialized regulation was implemented to reduce total mortality of crappie associated with winter deep-water fishing.

In addition to monitoring fish populations after implementation of a harvest regulation change, assessing the knowledge and attitudes of anglers can be helpful to fishery managers. Helfrich et al. (1987) used on-site and mail surveys to determine angler awareness and preferences for largemouth bass *Micropterus salmoides* regulations. Similarly, telephone surveys were used to assess the effectiveness of Florida Game and Fresh Water Fish Commission programs by determining angler opinions (Hardin et al. 1987). Schramm and Dennis (1988) noted evaluation of success is important to any fishery management program, and angler satisfaction is often used as a measure of program success.

Innovative regulations are only as effective as efforts to educate the public, and will only achieve their intended benefits if public awareness and compliance are high. To evaluate the success of TPWD's efforts to educate the public regarding the mandatory harvest regulation, the goals of this study were to 1) measure angler awareness and acceptance of this special regulation, and 2) determine which methods of disseminating information were most effective.

Methods

Thirty-three access point creel surveys were conducted at 4 public access ramps on Lake Fork Reservoir, December through February, 1991–92 and 1992–93. These surveys were conducted according to guidelines described in the TPWD Inland Fisheries Assessment Procedures manual (TPWD In Revision). Creel information obtained included hours fished, target species, distance from home, trip rating, and fish caught and released. Fish caught and kept were measured and weighed. Creel dates, start times, and access points were randomly selected with the following exception. The majority of crappie anglers used only one of the access points (Access point #1—Hwy 154 bridge) during the winter months. Therefore, creel efforts were concentrated on that ramp to increase sample size. Whenever random scheduling assigned another access point, a second creel survey was conducted concurrently at that ramp. All parties intercepted were interviewed. Those anglers specifically seeking crappie were asked additional questions regarding the mandatory harvest regulation. Questions included “Are you aware of the regulation change on crappie?”, “Are you in favor of or opposed to this regulation change?”, and “How did you learn of the regulation change?”.

Results and Discussion

In 1991–92 and 1992–93 respectively, 186 parties (372 anglers) and 178 parties (378 anglers) seeking crappie were interviewed during creel surveys at

Lake Fork Reservoir. These anglers expended 3,382.75 angler hours and harvested 4,002 crappie.

Nearly all anglers (98.6% overall) stated they were aware of the mandatory harvest regulation with the level of awareness measured at 98.4% in 1991–92 to 98.9% in 1992–93. This is considerably higher than reported in other studies. Schramm and Dennis (1988) found that only 56% of anglers had knowledge of current fishing regulations at urban lakes in Lubbock, Texas. Only 32% of anglers fishing from boats were aware of size and creel limits upon arriving at the James River, Virginia (Kokel et al. 1991). Awareness of largemouth bass anglers varied depending on the type of regulation in three sections of the Shenandoah River, but was highest (70%) in the section with the most complex regulation; this was primarily due to a publicity campaign instituted by the Virginia Commission of Game and Inland Fisheries in that section (Helfrich et al. 1987).

The high percentage of angler awareness in this study was possibly a result of only interviewing crappie anglers. Since they were directly affected, these anglers may have been more inclined to seek information on regulations for these species. However, in a statewide survey in Florida, only 36% of bass anglers knew there was no statewide minimum length limit for bass (King et al. 1979).

Another possible explanation for high awareness was anglers responding positively either out of fear of law enforcement or out of embarrassment about not knowing the regulation. This effect was minimal because each interview was prefaced by asking if anglers would answer questions for a creel survey. Anglers also reported very little catch-and-release of crappie (8 parties reported releasing 31 crappie for both periods). Although most anglers would not admit to a violation, many, when asked if fish were released, cited the mandatory harvest regulation. This was prior to the additional questions regarding the regulation. Additionally, TPWD personnel observed very few instances of anglers releasing crappie or of dead crappie floating during these 2 winter periods.

The high level of awareness regarding this regulation was attributed to two other factors. The first was that the regulation was initiated, in part, because of public concern regarding the problem of winter crappie mortality at Lake Fork Reservoir. Some anglers, especially those who commonly fished for crappie at Lake Fork, were aware of the problem and may have been anticipating some action from TPWD. These anglers would have been more inclined to seek information regarding the crappie fishery and any pending regulation changes or management activities.

The other factor was TPWD's media campaign to inform the public of both the problem and the efforts to solve it. TPWD used several methods to inform the public of the regulation change. The most common were press releases for newspapers, outdoor magazines, radio and television. These releases, distributed statewide, thoroughly explained the problem and the biological justification behind the mandatory harvest regulation. Additionally, personal interviews and appearances were conducted by fishery managers and law enforcement officials for newspapers, radio and television. TPWD also listed all fishing

regulations in the annual TPWD Texas Fishing Guide. These guides were available free-of-charge wherever fishing licenses were sold and at most TPWD offices.

Nine different answers were given to the question regarding how anglers had learned of the special regulation. The most common response was the TPWD Texas Fishing Guide (34.4%), followed by newspaper articles (31.6%). Other methods were word-of-mouth (14.2%), local marinas (3.9%), law enforcement personnel (3.4%), radio (2.8%), magazines (1.7%) and television (0.5%). In 1992-93, 56 anglers (7.5%) stated they had learned of the regulation the previous year, but were not able to give specific information as to how it was originally learned. In Florida, anglers reported outdoor magazines were the most common source of fishery information and stated more information should be distributed through television, newspapers, and brochures (Hardin et al. 1987). Warren (1980) stated successful communication is best achieved through using a variety of sensory media. Our results reflect the emphasis placed on each medium by TPWD. TPWD extensively used local newspapers as a source to distribute the information, and to a lesser extent, the other forms of mass media communications.

The acceptance of a fishery management practice cannot be measured by the level of awareness or public knowledge. However, angler support for any regulatory effort is associated with the anglers' level of familiarity with the regulation (Reichers et al. 1991). Sound management practices must be explained to the public in order to gain support. Crappie anglers at Lake Fork Reservoir overwhelmingly supported the mandatory harvest regulation. Each year, more than 90% of the anglers (94.5% overall) interviewed responded that they were in favor of the regulation. This level of support is extremely high. Kornman (1990) reported 76% of bass anglers were in favor of a 381-mm minimum length limit on bass in Kentucky.

Champeau and Thomas (1991) stated integration of survey data with information concerning angler attitudes, behaviors and perceptions is necessary when developing management strategies. Reichers et al. (1991) urged managers to understand the attitudes of the user groups, and apply strategies that encourage greater acceptance of new ideas. Crappie are often specifically targeted for harvest, therefore, the mandatory harvest regulation, despite being a new concept, was acceptable to crappie anglers. A similar regulation on other species not often targeted for harvest (e.g., largemouth bass) would most likely receive less support, regardless of the public relations efforts involved.

As pointed out by Colvin (1991), compliance is an important factor in the effectiveness of any regulation. During this study, only eight of the parties interviewed reported releasing crappie, a violation of the mandatory harvest regulation. Anglers apparently understood the biological reasoning behind the regulation as a result of public education efforts, thus minimizing the occurrences of non-compliance. This further stresses the benefits of intensive public relations efforts in regards to management activities.

Maximizing publicity is listed as one aspect of creating fisheries with higher fishing value (Nielson et al. 1980). A variety of methods of disseminating information are available to resource managers, most of which are currently being used to some extent. However, based on a survey of print editors in Florida, Cabbage (1986) indicated the need and desire for more and better information from conservation agencies and provided guidelines for resource managers on preparing news releases.

In conclusion, development of fishery management plans should not only include biological considerations, but sociological factors (i.e. angler attitudes, opinions, and preferences) as well. Fishery managers should also pay particular attention to media campaigns regarding these activities because the future of our natural resources depends on proper management and education. The efficacy of resource management practices, particularly harvest regulations, is based upon the knowledge, acceptance, and compliance of the resource users, thereby, stressing the importance of and justifying efforts to educate the public regarding these management activities. Support for the mandatory crappie harvest regulation at Lake Fork Reservoir is likely a result of these types of efforts.

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