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Anglers Tagging and Marking Fish: Provincial and State Fishery Agency Views

ABSTRACT

In recent years, the involvement of anglers in fish tagging programs has begun to capture the interest of managers. I conducted a mail survey of provincial and state fishery agencies to discern where anglers could legally tag, mark, or attach telemetry devices to fish. In addition, I documented current provincial and state agency views toward fish tagging or marking by anglers. Anglers were allowed to tag or mark fish in most provinces and states; however, more restrictions were placed on marking and telemetering fish than on tagging. Of the issues covered in this survey, respondents indicated that fish mortality and fish injury were the most serious problems associated with fish tagging or marking by anglers; the next most serious problem was interference with agency studies. Provincial and state agencies in charge of saltwaters tended to agree that valuable data are obtained from angler-based fish tagging or marking activities and that these activities promoted positive public relations; agencies in charge of freshwaters tended to disagree with these statements.

In recent years, the involvement of anglers in fish tagging programs has begun to capture the interest of managers (Loftus et al. 2000). While organized angler-based tagging programs have been in existence for at least 40 years, they have been most prevalent in marine fisheries. Some agencies use angler-based tagging programs to collect data that they otherwise do not have the ability to collect. Other agencies discourage or prohibit tagging by anglers (Loftus et al. 2000). Recent availability of inexpensive tagging kits through sporting good retailers has raised concern that angler-based fish tagging may expand in inland waters (Loftus et al. 2000). At the 1998 Annual Meeting of the American Fisheries Society (AFS), discussions were begun on the range of issues associated with volunteer fish tagging (see *Fisheries* volume 25, number 4). Based on these discussions, Loftus et al. (2000) concluded that fisheries managers are faced with the task of discerning the legality of allowing anglers to tag fish in their jurisdictions as well as identifying the benefit and harm of such practices.

I conducted a mail survey of provincial and state fishery agencies to determine where anglers could legally tag, mark, or attach telemetry devices to fish. I also documented current agency views toward fish tagging and marking by anglers. Based on previous AFS discussions and the views of others (e.g., Costello 2000; Loftus et al. 2000; Lucy and Davy 2000; Wingate 2000), I surmised that agency views likely would differ based on type of water body managed (i.e., coastal waters, inland waters, or Great Lakes). Specifically, I hypothesized that managers in charge of coastal waters would favor angler-based fish tagging (e.g., Lucy and Davy 2000), whereas managers of inland waters would be against fish tagging by anglers (e.g., Costello 2000; Wingate 2000).

Methods

I conducted a mail survey in fall 1999 to assess the legality of anglers tagging (e.g., Floy and dangler tags), marking (e.g., fin clipping and dye injection), and attaching telemetry (radio or ultrasonic) devices to fish. Although differences between marks and tags are subtle (Guy et al. 1996), I differentiated between the two and provided several examples of each to help respondents answer the survey. Surveys were mailed on 27 September 1999 to the fish chiefs of 82 fishery agencies; these included 16 Canadian provincial agencies and 66 U.S. state agencies (some provinces and states have separate saltwater and freshwater agencies). I requested that the survey be directed to, and completed by, an agency individual that was aware of current regulations and agency views toward fish tagging and marking by anglers in each of three water body types (coastal waters, Great Lakes, and inland waters). On 29 December 1999, I sent a second request (along with a copy of the survey) to agencies that had not completed surveys for each appropriate type of water body.

The survey contained four parts (Figure 1). Part 1 asked for general information about the individual completing the survey. Part 2 consisted of three questions that asked if it is legal for anglers to tag, mark, and implant telemetry devices in fish located in public and private waters within the specified water type. Part 3 asked for current levels of concern about several issues related to angler-based tagging and marking of fish. Part 4 asked about level of agreement with several statements related to angler-based tagging and marking of fish.

Results were summarized by water body type. A chi-square test (a=0.05) for homogeneity was used to test for differences in agency responses based on type of water body managed.

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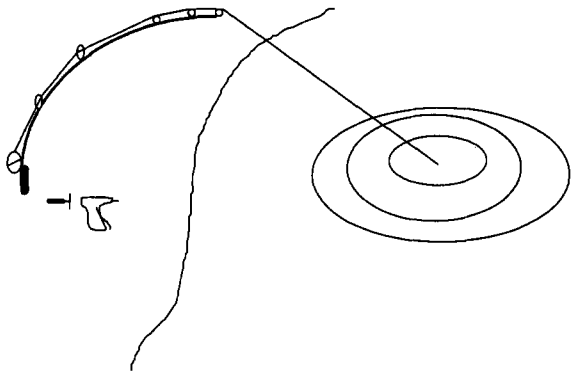
Figure 1. Mail survey sent to the fish chiefs of 16 provincial and 66 state agencies.



Fish Tagging and Marking by Anglers:

an International Survey

Fish Tagging and Marking Survey

The purpose of this survey is to determine where fish tagging and marking by anglers is legal in North America and to identify some of the concerns and benefits of fish tagging and marking by anglers.

State/Province:_____

Agency:_____

Completed by:_____

Address:_____

_____

Phone:_____ E-mail:_____

This survey is completed for: (please circle one) Inland fisheries Coastal Great Lakes

Please answer the following questions based on the water type that you circled above.

1. In your state or province, is it legal for anglers to **tag** (e.g., Floy tags, dangler tags, etc.) fish:
   - A. in public waters? Yes No Not Applicable (i.e., no public waters in circled water type)
   - B. in private waters? Yes No Not Applicable (i.e., no private waters in circled water type)
2. In your state or province, is it legal for anglers to **mark** (e.g., fin clipping, dye injection, etc.) fish:
   - A. in public waters? Yes No Not Applicable (i.e., no public waters in circled water type)
   - B. in private waters? Yes No Not Applicable (i.e., no private waters in circled water type)
3. In your state or province, is it legal for anglers to implant telemetry (radio or ultrasonic) devices:
   - A. in public waters? Yes No Not Applicable (i.e., no public waters in circled water type)
   - B. in private waters? Yes No Not Applicable (i.e., no private waters in circled water type)
4. If anglers can legally tag or mark fish: Are limitations placed on anglers for season, numbers, allowable species, etc.?

   Yes No Not Applicable (i.e., anglers can **not** legally tag or mark fish)
5. Is there a current move in your state or province to change the existing regulations regarding fish tagging and marking by anglers?

   Yes No

   If Yes → Please explain._____

   _____

   _____

   _____

   Who wants to change it? (please circle all that apply)
   - a. Tournament fishing organizations
   - b. Conservation organizations
   - c. General anglers
   - d. Agency biologists
   - e. Other (please explain)_____
6. **Please rate your agency's level of concern for the following issues related to fish tagging and marking by anglers.**

	No Problem	Slight Problem	Moderate Problem	Serious Problem	Very Serious Problem
A. fish injury	1	2	3	4	5
B. fish mortality	1	2	3	4	5
C. interference with agency tagging or marking study	1	2	3	4	5
D. reduced aesthetic value of fish	1	2	3	4	5
E. angler conflict (i.e., those for vs. those against)	1	2	3	4	5
F. reduced quality of meat for consumption	1	2	3	4	5

7. **Please rate your agency's level of agreement with the following statements related to fish tagging and marking by anglers.**

	Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
A. Valuable data are obtained from fish tagging/marking by anglers.	1	2	3	4	5
B. Fish tagging/marking by anglers is good for public relations.	1	2	3	4	5
C. Rate of fish tagging/marking by anglers is increasing.	1	2	3	4	5
D. Anglers are knowledgeable in proper tagging/marking techniques.	1	2	3	4	5
E. Your agency promotes fish tagging/marking by anglers.	1	2	3	4	5

If you have suggestions or comments, please share them.

Thank you for completing this survey. Please return to: Dr. Kevin L. Pope
Department of Range, Wildlife, and Fisheries Management
Box 42125
Texas Tech University
Lubbock, Texas 79409

Table 1. Provincial and state responses pertaining to fish tagging and marking by anglers in public waters stratified by water type (i.e., coastal and inland waters).[a]

Province/State	Is it legal for anglers to: Tag fish?	Mark fish?	Attach telemetry devices to fish?
Coastal waters (saltwater)			
Canada			
Newfoundland	No	No	No
Nova Scotia	Yes	Yes	Yes
USA			
Alabama	Yes	Yes	Yes
California	Yes	Yes	Yes
Connecticut	Yes	No	No
Delaware	Yes	Yes	Yes
Florida	Yes	Yes	Yes
Georgia	Yes	Yes	Yes
Hawaii	Yes	Yes	Yes
Louisiana	Yes	Yes	Yes
Massachusetts	Yes	Yes	Yes
Mississippi	Yes	Yes	Yes
New Hampshire	No	No	No
New Jersey	Yes	Yes	Yes
New York	Yes	Yes	Yes
North Carolina	Yes	Yes	Yes
Rhode Island	Yes	Yes	Yes
South Carolina	Yes	Yes	Yes
Texas	Yes	Yes	Yes
Virginia	Yes	Yes	Yes
Washington	Yes	Yes	Yes
Inland waters			
Canada			
Alberta	Yes	Yes	Yes
British Columbia	Yes	Yes	Yes
Manitoba	No	No	No
Newfoundland	No	No	No
Nova Scotia	Yes	Yes	Yes
Ontario[b]	Yes	Yes	Yes
PEI	No	No	No
Quebec	Yes	Yes	Yes
Saskatchewan	No	No	No
Yukon	No	No	No

Province/State	Is it legal for anglers to: Tag fish?	Mark fish?	Attach telemetry devices to fish?
Inland waters			
USA			
Alabama	Yes	Yes	Yes
Arkansas	Yes	Yes	Yes
California	Yes	Yes	Yes
Colorado	No	No	No
Delaware	Yes	Yes	Yes
Georgia	Yes	Yes	Yes
Hawaii	Yes	Yes	Yes
Idaho	No	No	No
Illinois[b]	Yes	Yes	Yes
Indiana[b]	Yes	Yes	Yes
Iowa	Yes	Yes	Yes
Kansas	Yes	Yes	Yes
Kentucky	Yes	Yes	Yes
Louisiana	Yes	Yes	Yes
Maine	No	No	No
Maryland	Yes	Yes	Yes
Massachusetts	Yes	Yes	Yes
Michigan[b]	Yes	Yes	Yes
Minnesota[b]	No	No	No
Mississippi	Yes	Yes	Yes
Missouri	No	No	No
Montana	Yes	Yes	Yes
Nebraska	Yes	Yes	Yes
Nevada	Yes	Yes	No
New Hampshire	Yes	Yes	Yes
New Jersey	Yes	No	No
New Mexico	Yes	Yes	Yes
New York[b]	Yes	Yes	Yes
North Carolina	Yes	Yes	Yes
North Dakota	No	No	No
Ohio[b]	Yes	Yes	Yes
Oklahoma	No	No	No
Oregon	No	No	No
Pennsylvania[b]	Yes	Yes	Yes
South Carolina	Yes	Yes	Yes
South Dakota	Yes	Yes	Yes
Tennessee	Yes	Yes	Yes
Texas	Yes	Yes	Yes
Utah	No	No	No
Vermont	Yes	Yes	Yes
Virginia	Yes	Yes	Yes
Washington	Yes	Yes	Yes
Wisconsin[b]	Yes	Yes	No
Wyoming	No	No	No

[a] **For comparison purposes only. In many provinces and states, fish tagging or marking is regulated when legal. Check with agency to obtain exact regulations before conducting any tagging or marking of fish.**

[b] **Regulations were identical for Great Lakes.**

Results and Discussion

Response rates for surveys were 66% (21 of 32), 100% (9 of 9), and 87% (54 of 62) for coastal, Great Lakes, and inland waters, respectively. Eight (10%) of the respondents were fishery chiefs; all other respondents were individuals chosen by fishery chiefs. Few differences existed between responses for Great Lakes and inland waters within an agency; thus, data for Great Lakes and inland waters were combined within each provincial and state agency into a broad inland waters category. Two coastal agencies and 15 inland water agencies indicated that it was not legal for anglers to tag fish in their respective areas (Table 1). These same agencies plus one additional agency indicated that it was not legal for anglers to mark fish in public waters, and several additional state agencies indicated that anglers could not legally implant telemetry devices in fish within public waters (Table 1). Surprisingly, most provinces and states allowed anglers to tag and mark fish; however, more restrictions were placed on marking and telemetering fish than on tagging. No difference was found between water body types (i.e., coastal and inland waters) for yes-no responses to legality questions for angler-based fish tagging or marking in public (all P>0.07) or private (all P>0.68) waters.

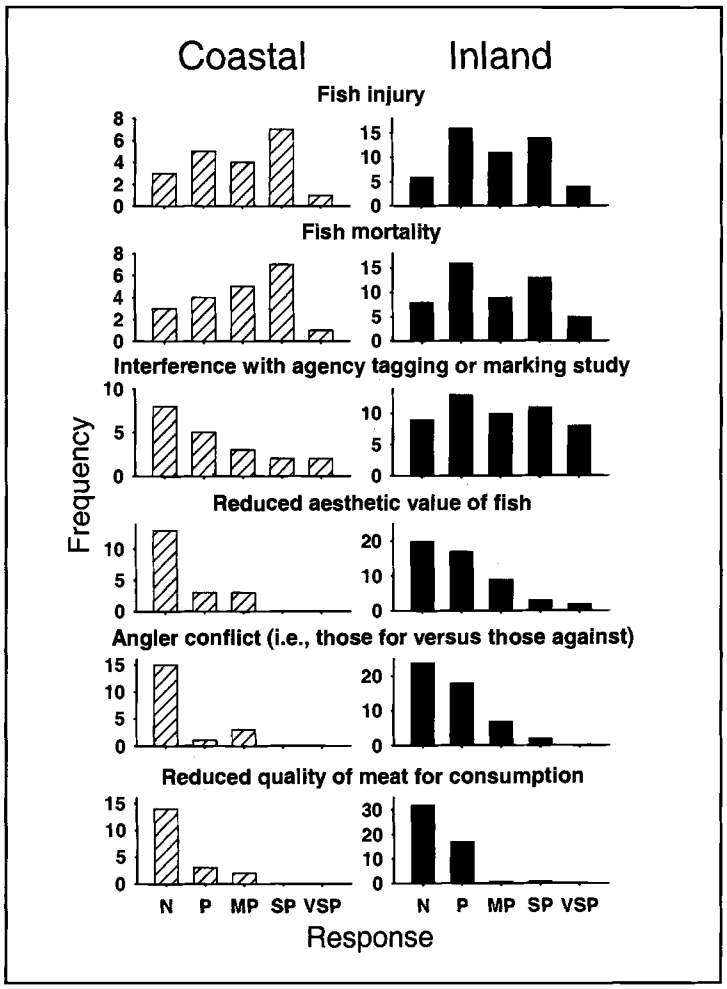


Figure 2. Frequency of provincial and state agency's concern with issues related to fish tagging and marking by anglers. Responses are stratified into coastal (left) and inland (right) waters. Response choices were: no problem (N), slight problem (P), moderate problem (MP), serious problem (SP), and very serious problem (VSP).

Confusion still exists about the legality of fish tagging and marking by anglers and many agency personnel are struggling to get a handle on this issue. Loftus et al. (2000) listed states where anglers could not legally tag fish in freshwaters; that listing was not consistent with the results of this survey (Table 1). Numerous possibilities exist for these discrepancies. The legislation is complicated and some respondents in either study may have been confused or uninformed about current regulations. Further, questions about legality issues were different in these two studies. Loftus et al. (2000) asked if angler-based tagging in freshwater systems was illegal by law or regulation. I asked if it was legal for anglers to tag or mark fish. Respondents may have considered exceptions or extreme examples when answering the different questions. For example, it is illegal for anglers to tag fish in Arkansas without a permit (Loftus et al. 2000), but tagging is legal if a permit is obtained. I recommend that all anglers contact the appropriate agency to obtain exact regulations before conducting any fish tagging or marking. Anglers who want to tag or mark fish in private waters also should heed this caution as several provinces and states prohibit or regulate this activity (Table 1). In addition, many provinces and states have fishing regulations that regulate means of take and require illegal fish (e.g., fish below a length limit) to be returned to the water as quickly as possible with the least possible injury.

Several respondents indicated desires to change existing regulations for fish tagging or marking by anglers. Some would like changes that would clarify current regulations, whereas others would like more restrictive regulations. For example, the respondent from the Rhode Island Department of Environmental Management, Division of Fish and Wildlife, would like to require protocols for angler-based fish tagging or marking activities that follow guidelines set forth by the Atlantic States Marine Fishery Commission's Interstate Tagging Committee (see White and Kline 2000).

Of the issues covered in this survey, the greatest proportion of "moderate" to "very serious problem" responses were for fish mortality and fish injury (Figure 2). The cumulative effects of angling and tagging are sparsely documented (Tranquilli and Childers 1982), but mortality from these two activities likely increases with increasing water temperatures (Muoneke and Childress 1994; Bettoli and Osborne 1998; Wilde 1998). The issue with the next greatest proportion of "moderate" to "very serious problem" responses was interference with agency studies (Figure 2). The only difference (X^2=7.91, d.f.=3, P=0.048) among water body

types for agency level of concern was on the issue of angler conflict (i.e., anglers favoring fish tagging and marking versus anglers opposed to such activities) with respondents from inland water agencies more concerned about possible conflicts than respondents from coastal water agencies (Figure 2). No other differences in agency level of concern were found among water body types (all $P>0.20$; Figure 2).

Among water body types, no difference was found for respondents' agreement with the statement that angler-based fish tagging or marking activities are increasing ($X^2=8.20$, d.f.=4, $P=0.08$). Significant differences were found for the other four statements (all $P\leq0.0013$). Based on the level of agreement with statements made in this survey, a majority of respondents indicated that anglers are not knowledgeable of proper fish tagging or marking techniques (Figure 3). However, the level of agreement differed between water body types ($X^2=17.6$, d.f.=3, $P=0.0005$), with 25% of coastal respondents slightly agreeing that anglers are knowledgeable in proper tagging and marking techniques, whereas no inland water respondents agreed (Figure 3). In addition, more agencies in charge of coastal waters promoted angler-based fish tagging or marking ($X^2=17.8$, d.f.=4, $P=0.0013$). However, most agencies did not promote angler-based fish tagging or marking. Agencies in charge of saltwaters tended to agree that valuable data are obtained from angler-based fish tagging or marking activities and that these activities promoted positive public relations; agencies in charge of freshwaters tended to disagree with these statements (Figure 3).

At the 1998 AFS symposium, a clear dichotomy emerged between tagging programs conducted in freshwater and those conducted in saltwater (Loftus et al. 2000). In that symposium, little support was expressed for freshwater tagging programs, whereas saltwater tagging programs were praised. From my survey, I believe this dichotomy accurately portrays the different views and attitudes of provincial and state agencies toward angler-based fish tagging and marking.

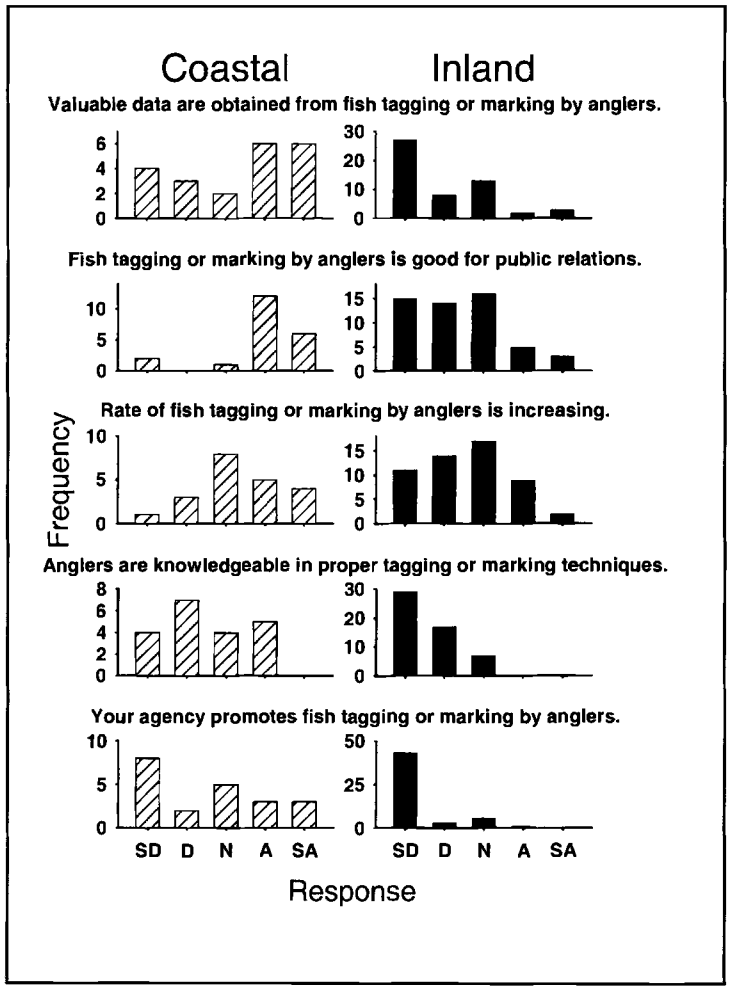


Figure 3. Frequency of provincial and state agency's agreement with statements related to fish tagging and marking by anglers. Responses are stratified into coastal (left) and inland (right) waters. Agreement choices were: strongly disagree (SD), slightly disagree (D), neutral (N), slightly agree (A), and strongly agree (SA).

Acknowledgments

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