

## USE OF TRAPPER HARVEST SURVEY DATA TO MEET ESSA INFORMATION NEEDS<sup>1</sup>

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*Abstract:* A mail survey of licensed trappers was conducted annually from 1976-1977 to 1979-1980 to obtain data to meet reporting requirements of the United States Endangered Species Scientific Authority (ESSA) on the status of the river otter (*Lutra canadensis*) in Mississippi. Estimates of harvest by trapping, number of trappers catching otters, trapper success, catch per unit effort, and species distribution were obtained from the data. An average of 356 licensed trappers caught an average of 1,155 river otters annually over the 4-year period. Occurrence of river otter was documented in 60 (73%) of 82 counties and 9 (90%) of 10 major river basins in Mississippi. Estimates of harvest and catch per unit effort indices indicated a stable or possibly increasing population density for river otter in Mississippi over the 4-year period.

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In 1976, the bobcat (*Lynx rufus*) and river otter were included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Appendix II listed species are defined as those not necessarily endangered or threatened at present but which may become so if world trade is not strictly monitored. Since 1977, the United States Endangered Species Scientific Authority (ESSA) and the Fish and Wildlife Service Wildlife Permit Office (WPO) have controlled export of pelts of Appendix II species. Each year the ESSA has solicited biological and trade status information from state management agencies. This information has been evaluated and either positive or negative findings have been made regarding export of pelts of Appendix II species. The WPO has either issued or denied export permits based on ESSA's findings for each state.

Information requested by the ESSA has included: (1) estimates of total harvest, (2) estimates of the numbers of trappers who trapped particular species, (3) indices of trapper success, and (4) estimates of species distribution. Methods for using annual trapper harvest survey data to provide the ESSA with these elements of requested information for river otter in Mississippi are presented here.

### METHODS

A mail survey of licensed Mississippi trappers was conducted annually by the Mississippi Department of Wildlife Conservation and Mississippi State University's Department of Wildlife and Fisheries from 1976 to 1979. Numbers of licensed trappers fluctuated

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between 2,300 and 3,200 over the 4-year period. For the 1976-77 and 1977-78 surveys, about 1,000 names and addresses were randomly selected from trapper address files. Initial mailings consisted of a cover letter, questionnaire and stamped return envelope. Reminder mailings to non-respondents consisted of a postcard (3 weeks after initial mailing) and a new set of survey materials (6 weeks after initial mailing). For the 1978-79 and 1979-80 surveys, questionnaires were mailed to all licensed trappers. Reminder mailings were sent to non-respondents during 1978-79, but no reminder mailings were conducted during 1979-80.

Questions for obtaining basic harvest information were identical from year to year and included: county trapped in most, number of days or nights traps were set, number of traps set, length of trapline, and number taken by trapping. Usable (complete and legible) survey responses were analyzed using the SAS-76 statistical package (Barr et al. 1976).

Estimates of the number taken by trapping, number of trappers, and 95 percent confidence limits were calculated using the survey sampling procedures described by Mendenhall et al. (1971). Limits for the 95 percent confidence intervals were used to infer trends in number of trappers and number of otters harvested. Mean harvest per trap night was calculated as an index of relative population density (Caughley 1977) on a statewide basis. Mean harvest per trapper (statewide basis) was calculated as an index of trapper success and tested by analysis of variance for differences by year (Steel and Torrie 1960).

Data from the 4 surveys were sorted to determine the distribution of river otter harvest by county. These data were used in conjunction with Mississippi Trappers Association (MTA) fur sale receipts to document the current distribution of river otter in Mississippi.

Table 1. Estimates of numbers of licensed trappers taking river otter and numbers of river otters harvested in Mississippi, 1976-1979.

Season	No. of trappers	Lower and upper limits of 95% confidence intervals	No. harvested	Lower and upper limits of 95% confidence intervals
1976-77	292	237 - 347	1,314	927 - 1,701
1977-78	317	348 - 386	1,009	769 - 1,249
1978-79	340	304 - 376	952	824 - 1,063
1979-80	477	424 - 530	1,345	1,168 - 1,522

Table 2. Estimates of mean otter harvest per trapper and mean harvest per trap night, 1976-79.

Season	Mean harvest per trapper <sup>1</sup>	Mean harvest per trap night
1976-77	4.31	---
1977-78	3.07	0.6
1978-79	2.64	0.5
1979-80	2.82	0.6

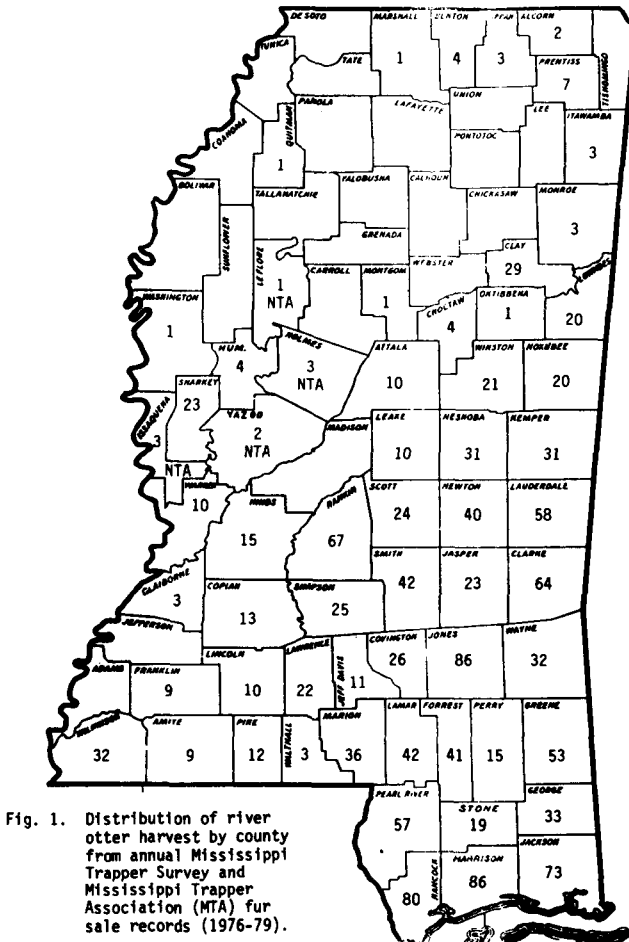
<sup>1</sup>F = 2.07 w/ 3,471 d.f., P > 0.05.

## RESULTS AND DISCUSSION

The proportion of usable questionnaires returned was about 53 percent for 1976-77 and 1977-78, 48 percent for 1978-79, and 37 percent for 1979-80. No significant difference ( $P > 0.05$ ) in the number who trapped otter was apparent for the first three years of the surveys (Table 1). However, the number who trapped otter was significantly greater ( $P=0.5$ ) during the 1979-80 survey. Estimates of the number of otters harvested showed a similar pattern (Table 1).

Although mean harvest per trapper generally declined over the 4-year period, differences were not statistically different (Table 2). Mean harvest per trap night was essentially constant over the period. As the number of trappers increased during this time, these data suggest that river otter population density remained stable or possibly increased during this period.

Distribution of harvest and MTA fur sale data indicated otter presence in 60 (73%) of Mississippi's 82 counties (Fig. 1). The harvest distribution showed that river otter occurred in 9 of the state's 10 major river basins. Extensive channelization of many streams in



north Mississippi and resultant habitat losses may have been responsible for the lack of trapping harvest in counties of north Mississippi (Gray and Arner 1977). As river otter are extremely mobile (Trippensee 1953) and the acreage of beaver (*Castor canadensis*) impounded water throughout Mississippi is increasing (Arner and DuBose 1978), it is likely that the species enjoys even wider distribution.

Trapper harvest survey data for 4 successive seasons were used to fulfill basic information requirements of the ESSA for Appendix II species. Trapper harvest surveys can provide management data with relative ease and low costs. Annual costs of the survey (excluding the time of biologists) were less than \$1,500. Surveys should be conducted annually to meet minimum ESSA information requirements and to provide meaningful management information.

Other data, such as age structure and general condition, should be used in conjunction with the surveys to formulate management plans. Ideally, data should be summarized on a management unit basis to insure the welfare of local populations. We are currently developing a river otter management unit system for Mississippi on the basis of watersheds.

Biases in trapper harvest survey data are inherent and should be recognized. Non-response bias is always possible in survey data and can be difficult to assess (Mendenhall et al. 1971). Distribution of harvest is associated with distribution of trapping effort, thus lack of harvest replies for particular land units may not necessarily mean absence of the species. Measures of trapper success and catch per unit effort must be interpreted under the assumptions of constant conditions of catchability and trapping effort. Nonetheless, trapper survey data can provide information on harvest, distribution, and relative population density that enables better decision making in the management of furbearers.

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