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ESTIMATION OF PRODUCTION AND ECONOMIC PARAMETERS CHARACTERISING SOME SPECIAL FISHING GROUNDS FOR ANGLERS

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ABSTRACT. Questionnaire studies were carried out on 11 special fishing grounds for anglers in Poland. Data were collected on production and economic parameters characterising these fishing grounds. Three groups of fishing grounds for anglers were distinguished based on species composition of the catch, but also the degree to which the respondents had completed the questionnaire forms. Basic production and economic parameters were analysed. Question whether it was justified to classify some water bodies as special fishing grounds for anglers was thoroughly discussed.

Key words: FISHERY ECONOMICS, ANGLING, SPECIAL FISHING GROUNDS FOR ANGLERS, PRODUCTION AND ECONOMIC PARAMETERS

INTRODUCTION

Special fishing grounds designated for anglers are a new issue in Polish fisheries. In fact, only when political and economic situation of the country had changed, resulting in significant transformation of Polish fisheries, such grounds appeared as a new model of fisheries management, most of all in artificial water bodies. Economic and social importance of such management is constantly increasing, and this phenomenon has been noticed by fishery sciences, resulting in the first articles dealing with this issue (Górny and Wołos 1993, Wołos and Górny 1993a, b, Mickiewicz 1997 a, b, 1998) as well as practical (Wołos 1994, Wołos and Mickiewicz 1997 a, b) and scientific publications (Wołos 1996, Goryczko and Dobosz 1997). These papers dealt with many problems related to special fishing grounds for anglers, such as principles of establishing, characteristics of anglers, and even effectiveness of various angling methods, but no attention has been paid so far to production and economic parameters of special fishing grounds in Poland.

Designation of some water bodies as special fishing grounds for anglers is becoming more and more popular. This results in the need of an at least preliminary (but possibly comprehensive) assessment of this form of the fisheries management. Such

an assessment requires data on basic production and economic parameters characterising management of the special fishing grounds. Such an analysis has been the aim of this study. Due to the fact that results of the study are based on data obtained in course of questionnaire surveys, this paper should be treated as the first and very preliminary assessment of the situation. Although the discussed fishing grounds have been selected based on completeness of the questionnaire forms, some of the answers are far from being comprehensive. Many owners of special fishing grounds did not supply some data, especially of an economic character, and more precisely - cost items.

The problem will be discussed in the paper, but it is worth mentioning now that - due to the above - some of the mean values presented in the results are rough estimates only.

MATERIAL AND METHODS

Materials consisted of questionnaires filled by the owners of 13 special fishing grounds for anglers distributed all over Poland (Tatra Mountains, Great Poland, Pomerania, Varmia, Mazuria, Lublin region) in 1996-1997. The forms contained questions dealing with basic characteristics of water bodies used as the special fishing grounds, organization of the fishing ground, composition and rates of stockings, anglers' pressure, fish catches, detailed economic and financial data, rules of fishing at the ground in question, advantages and disadvantages as seen by the owner. Eleven questionnaires were selected for analyses; two were discarded due to the lack of economic and financial data.

Completeness of economic data was taken along with the dominating fish species as the criteria for dividing the fishing grounds into the following categories:

- A and B - fishing grounds characterised by satisfactory economic results, in this- A - with noticeable domination of trout in anglers' catches, and
- B - with noticeable domination of carp.
- C - fishing grounds with incomplete economic data.

The following production and economic parameters were analysed in the whole sample and in the distinguished groups:

- characteristics of the water body,
- stockings,
- fish yields (kg/ha),

- percentage of particular fish species in the catch,
- particular income items,
- particular cost items,
- index of relative profitability, expressed as percentage ratio of incomes to costs.

RESULTS

General and production characteristics of the three groups of fishing grounds and totally of all grounds are given in Table 1.

TABLE 1

General characteristics of special fishing grounds

| Specification | | A | B | C | Totally |
|--|----------------------|------------|-----------|-----------|------------|
| Number of fishing grounds | | 3 | 5 | 3 | 11 |
| Area of the fishing ground - mean (ha) | | 0.408 | 2.408 | 2.767 | 1.960 |
| | from - to (ha) | 0.035-0.75 | 0.54-5.00 | 1.00-3.80 | 0.035-5.00 |
| Average number of water bodies at the fishing ground | | 1.7 | 2.2 | 3.3 | 2.4 |
| Average area of one water body (ha) | | 0.24 | 1.09 | 0.83 | 0.83 |
| Average share in anglers' catches (%) | Trout | 97.1 | 8.2 | 22.8 | 27.3 |
| | Carp | 1.9 | 88.6 | 69.8 | 69.8 |
| | Other | 1.0 | 3.2 | 7.4 | 2.9 |
| Average fish yield from the fishing ground (kg/ha) | by anglers | 12661 | 4645 | 397 | 3465 |
| | after season closing | 1020 | 289 | 432 | 386 |
| | totally | 13681 | 4934 | 829 | 3851 |
| Number of employees | Full-time | 3 | 6 | 8 | 17 |
| | Seasonal | 4 | 6 | - | 10 |
| | Family | 2 | - | 8 | 10 |
| | Totally | 9 | 12 | 16 | 37 |
| | per 1.0 ha | 7.3 | 1.0 | 1.9 | 1.7 |
| % of ground area having fish that had not been stocked | | - | 46.0 | 100 | 64.2 |
| Year when the ground was established | | 1992 | 1994 | 1995 | ≈ 1994 |
| Total area of the fishing grounds (ha) | | 1.225 | 12.04 | 8.30 | 21.665 |

Even if we assume that low number of the analysed fishing grounds does not allow for fully valid conclusions, some general regularities are still noticeable, important from an economic and management point of view. They also illustrate the need for specific studies, which should be carried out on a much broader scale.

And thus, Table 1 reveals considerable differences between the distinguished categories of the fishing grounds. This fact is also of methodical significance; it suggests that in most cases no valid general characteristics can be made of the special fishing grounds if no attention is paid to their type, and that such characteristics can be used only on a limited scale.

As regards the fishing grounds in question, parameters of a more universal character were:

- relatively very small area of water bodies used as special fishing grounds for anglers;
- relatively high or even very high intensity of fishery management on the special fishing grounds, irrespective of their diversity. And thus, mean fish landings in kg/ha amounted to about 3850 kg/ha in special grounds with carp, and to over 4900 kg/ha in those with trout;
- in a similar way, relatively very high labour intensity, as illustrated by the number of employees per 1 ha of the ground;
- relatively short period since the establishment of the fishing grounds. None of the special fishing grounds under study was operating longer than 10 years. Obviously, the managers have no experience in keeping appropriate records of their operations, which makes more detailed analyses very difficult;
- special fishing grounds for anglers are strictly related to pond fish culture, either in a direct or in an indirect way.

Differences between the distinguished types of the fishing grounds become even more noticeable when economic data are taken into account. These data are presented in Table 2 for 10 fishing grounds (one ground from group B was discarded due to incomplete materials).

Parameters presented in Table 2 reveal considerable qualitative differences between A and B fishing grounds compared to C. Although economic data for the latter group seem less reliable, this being especially true of very low income (about 10 %) from the operations typical of special fishing grounds viz. fish sale to anglers, it still can be questioned whether these objects can really be called special fishing grounds for anglers. If so, then almost every water used by the fisheries, which is also made available for recreational fishing, should be called a special fishing ground for anglers.

Attention should be given to considerable differences in investment and operating costs between group A (trout fishing grounds) and B (carp fishing grounds),

TABLE 2

Characteristics of economic data

| Specification | | A | B | C | Totally |
|----------------------------|-----------------------------|--------|-------|-------|---------|
| Investment costs (zł/ha) | | 75105 | 4219 | 42 | 7370 |
| Operating costs (zł/ha) | | 94735 | 28442 | 518 | 21460 |
| Income (zł/ha) | | 110898 | 35858 | 4116 | 27903 |
| Index of profitability (%) | | 117.1 | 126.1 | 794.6 | 130.0 |
| Cost composition (%) | Stocking material | 87.1 | 81.7 | 98.8 | 84.0 |
| | Salaries | 8.1 | 14.2 | - | 11.9 |
| | Other costs | 2.8 | 3.4 | 1.2 | 3.2 |
| | Advertising | 1.4 | 0.7 | - | 0.9 |
| Income composition (%) | Fish sale to anglers | 92.9 | 82.2 | 10.3 | 80.4 |
| | Entrance tickets | - | 17.3 | 18.6 | 12.2 |
| | Other incomes | - | 0 | - | 0 |
| | Fish catch after the season | 7.1 | 0.5 | 71.1 | 7.4 |

which are much higher in the first group, as well as to the difference in income levels, this time in favour of group A.

Differences in profitability are relatively low, only 9 % in favour of group B, but they may be related to the differences of income composition in the two groups, namely lack of entrance tickets in group A (trout fishing grounds).

DISCUSSION

In West European countries, and more precisely Great Britain and France, incomes from sale of anglers' licences for fishing in natural waters are now decreasing, while there is an increase of incomes from private special fishing grounds designated for anglers (Ellis 1998, Jantzen 1998). Hence, it can be assumed that the same trend may occur in Poland. This would favour development of such special fishing grounds, but it also implies the need for assessing economic effectiveness of this type of fishery management.

This is confirmed also by the comparison of profitability index, which amounts to 130 % in special fishing grounds (Tab. 2) and to only 107.3 % in lake fishery management where recreational fishing is permitted (Wołos and Leopold 1997). The difference is obvious and does not require comments, but it certainly suggests that the demand for services offered by special fishing grounds will increase.

It is still problematic which objects should be called special fishing grounds for anglers. Katowice region of the Polish Anglers Association is a good example of this problem. There are 62 water bodies in this region (out of 154 surveyed) in which carp catches by anglers exceeded 50 % of all fish caught (Wołos, Teodorowicz, Brylski 1998), i.e. in reality these waters could be well defined as special carp fishing grounds for anglers.

In view of the above, a general conclusion can be formulated on the urgent need of defining complex criteria for distinguishing water objects managed by the fisheries in such a way that they might be classified as special fishing grounds. Apart from high sale of fish to anglers, intensity of management practices must be one of these criteria. This intensity may be expressed in investment costs, but also in their effects, as illustrated by the respective data in group A and B. Special fishing grounds should also be characterised by high comfort of fishing, proper facilities for accompanying persons etc. Unfortunately, our questionnaires did not deal with these aspects of the special fishing grounds.

When assessing characteristic economic parameters of special fishing grounds, one should never forget that these objects are also a source of many complex, intangible economic benefits (Wołos and Mickiewicz 1997a).

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STRESZCZENIE

OCENA PRODUKCYJNO-EKONOMICZNYCH PARAMETRÓW CHARAKTERYZUJĄCYCH WYBRANE ŁOWISKA SPECJALNE

Metodą badań ankietowych zebrano, a następnie poddano analizie produkcyjne i ekonomiczne parametry charakteryzujące 11 łowisk specjalnych w Polsce. Wyróżniono trzy grupy łowisk biorąc pod uwagę zarówno charakterystyczny skład gatunkowy odłowów jak kompletność uzyskanych danych ankietowych, oraz poddano analizie podstawowe wskaźniki produkcyjne i ekonomiczne. Poddano dyskusji celowość uznawania niektórych rodzajów obiektów wodnych jako łowiska specjalne.

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