

FISHERY





MK - NI 041

FISH STOCK CHARACTERISTICS

Period of indicator assessment

- September 2007 – April 2008

Explanation

- Justification for indicator selection

There is diverse fish fauna at relatively small area in the Republic of Macedonia. Characterization of the fish stock will have great practical significance in terms of various fish species distribution, fish stocks management and their sports, fishing, scientific and other meaning. This will create the possibility for sustainable exploitation of fish stocks, their qualitative and timely protection and implementation of adequate interventions aimed at increased fish populations density in fishing waters.

Definition

The indicator shows the number of freshwater species living in waters and lakes in the Republic of Macedonia and the fish species represented in fishponds that are subject to aquicultural production.

At present, the indicator shows the status of:

- catch of two economically significant fish species in fishing waters;
- total catch of other fish species in fishing waters;
- total aquicultural fish production in fishponds.

Units

Number of fish species, kilograms (tones) fish catch.

Policy relevance of the indicator

List of relevant policy documents

The Study on the State of Biological Diversity in the Republic of Macedonia and the National Strategy for Biological Diversity Protection with Action Plan establish integrated approach to the protection and sustainable use of biological diversity components including fishery.

Legal grounds

The Law on Fishery and Aquiculture (Official Gazette of the Republic of Macedonia No. 62/2008) regulates the management, planning, commercial management and aquiculture of fish in fishing waters, fish ponds, semi fish ponds, cages and other fish breeding resources.





Targets

The main goal of this indicator is to define the number and abundance of fish species in freshwater basins and fishponds. This will enable sustainable fish management and exploitation through fishing, as well as implementation of certain interventions, especially in the domain of fish population reproduction and protection.

Key policy issue

How sustainable is the fish catch in the Republic of Macedonia?

Key message

Fishing and fish stock exploitation in fishponds and artificial water accumulations in the Republic of Macedonia is under permanent supervision, with constant care for the fish stocks and regular stocking with economically important fish species. In this way, sustainable development and exploitation of fish as an important economic resource is provided, as well as for sports fishing. Exploitation of fish stocks from natural lakes has been coping with permanent problems for a longer period, including over-fishing and uncontrolled fish catch in those aquatic ecosystems. These activities affect particularly the endemic fish species, such as Ohrid trout (*Salmo letnica Kar.*), as well as other endemic species represented by small populations in certain aquatic ecosystems. Scientific institutions in the Republic of Macedonia, in the frames of their annual programmes and their primary activity of freshwater ecosystems monitoring and protection, carry out regular monitoring of the fish stock status, within the limits of their possibilities.

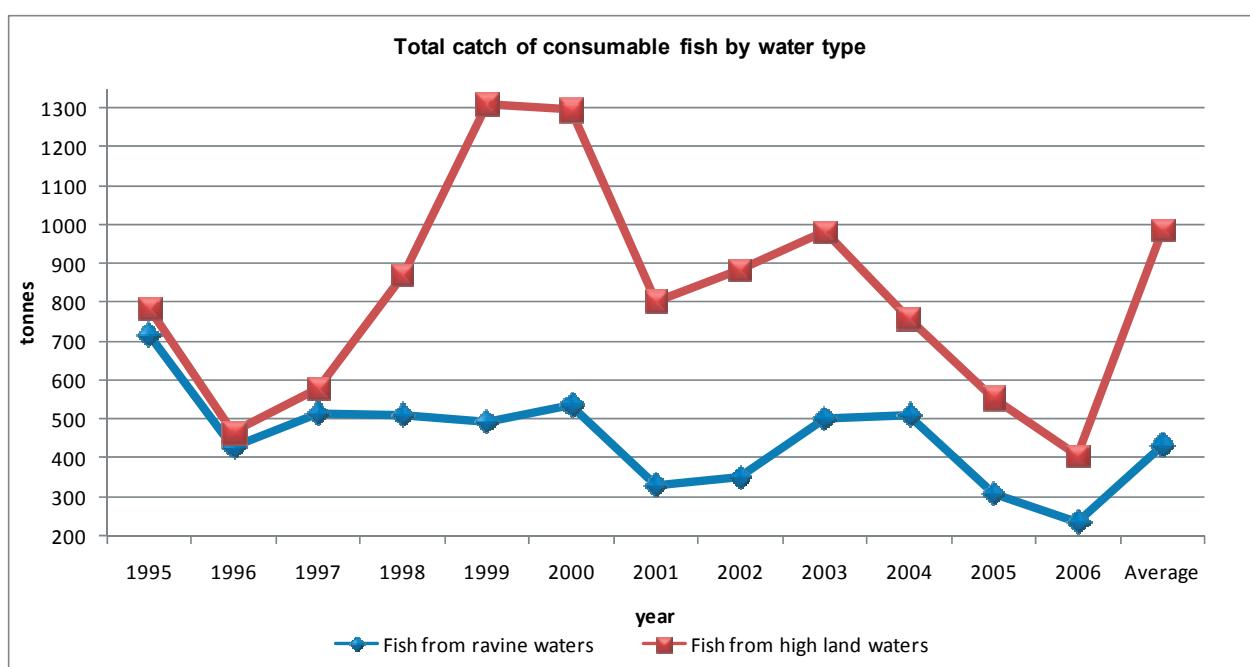


Diagram 1





Total fish catch by fish species in 2006

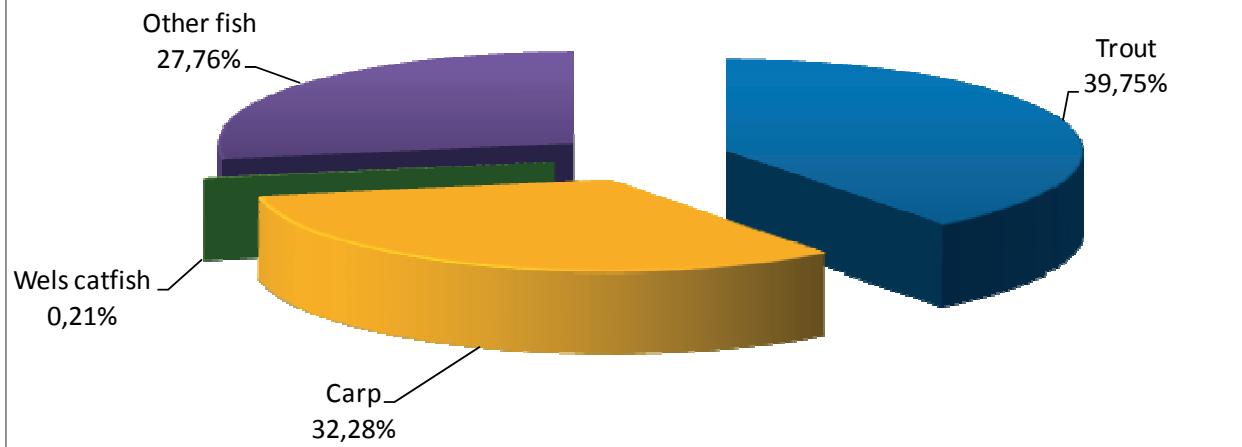


Diagram 2

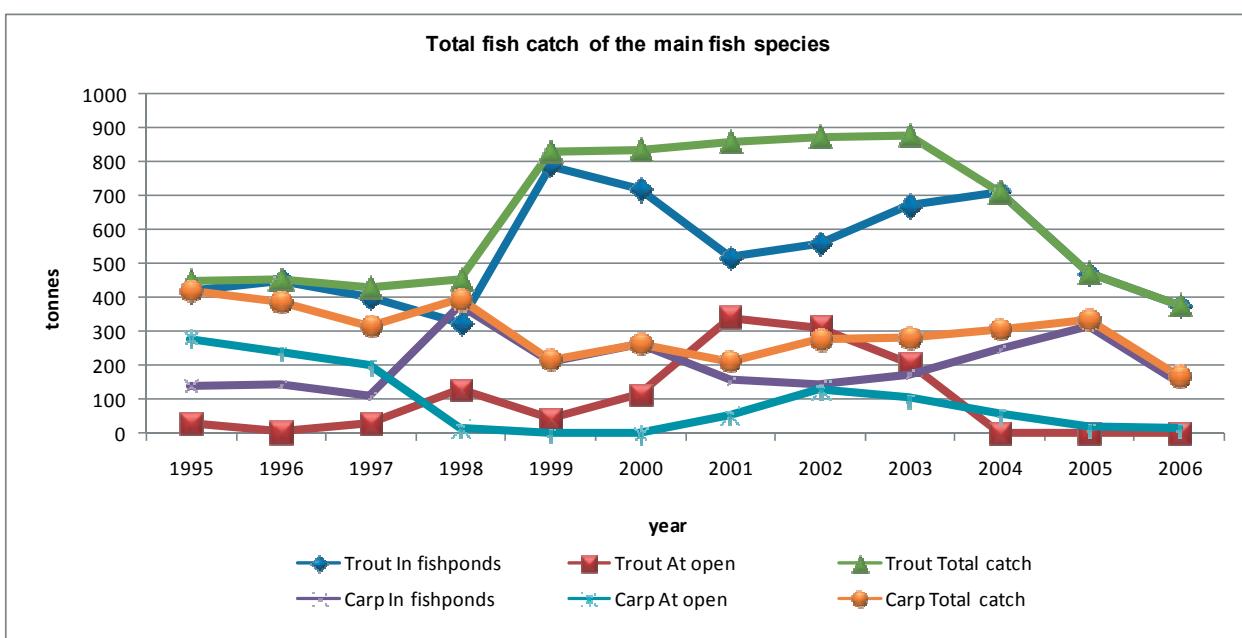


Diagram 3

Assessment

National literature contains numerous works dealing with certain aspects (systematic, biological, economic, sports and fishing aspects). Several authors, like Stanko Karaman in his work „*Pisces Macedoniae*“ of 1924, Mirce Naumoski in „*Fish in Macedonia. Systematic association, biology and importance*“ of 1995 and Simo Georgiev in „*The key in identification of Osteichthyes and Cephalaspidomorpha in the Republic of Macedonia*“ of 1998, focus on ichthiofauna in our country.

The State Statistical Office of the Republic of Macedonia collects data, on annual basis, on fish





catch in fishing areas, as well as on fish production in fish ponds, which is further processed as total fish catch by species, from ravine and high land waters, fish balance and by fish ponds types.

Table 1, with regard to total catch (production of commercial fish and fishing by sports fishermen), shows that the average fish catch in the Republic of Macedonia is 1 285 tonnes of different fish species, noting that the yield has decreased during the last several years because some fishing companies, business entities and concessionaires have lost their licenses for fishing activities in certain water basins, and significant number of sports fishing clubs have been terminated. In the total commercial fish catch, the contribution of catch from high land waters is 2/3, but it has to be noted that this value also incorporates the production of commercial fish in fish ponds.

Diagram 1 shows that the carp is predominant fish species in the total fish catch from both water types, while trout is leading in high land waters.

Methodology

■ Methodology for the indicator calculation

Source of data and methodology for the indicator calculation

The source of data on the characteristics of fish stocks in the Republic of Macedonia is the State Statistical Office and their methods are used for data processing.

Uncertainty

Uncertainty derives from the assumed incomplete data on fish catch in rivers and lakes. The uncertainty increases further because of the limited number of literature data on genetic structure of fish populations in natural aquatic ecosystems.

Data specification

Title of the indicator	Source	Reporting obligation
Fish stock characteristics	– State statistical office	– FAO – Fisheries and Aquaculture Department





Data coverage (by years):

Table 1: Total fish catch in the Republic of Macedonia in tonnes

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Average
Total catch	1505	898	1099	1388	1804	1834	1135	1238	1486	1271	868	646	1285
At open	945	428	588	686	930	852	458	533	326	312	61	89	445
In fishponds	560	470	511	702	874	982	677	705	1160	959	787	557	838
Sturgeons			2	6									
Zander				29	7	7	4	5	5	0	0	0	4
Wels catfish	3		3	3	3	3	3	2	2	15	2	4	4
Carp	420	251	316	94	215	263	163	178	280	307	187	167	220
Pike				2	3		3	3	1	4	0	2	2
Tench	4		3	2	1	1			1	58	57	7	21
Mixed fish 1	3		3	3	4	19	12	15	15	53	26	10	19
Mixed fish 2	19		8	35	18	28	17	20	23	25	10	10	19
White fish			4	18	22	20	12	15	16	27	26	12	19
Bleak	200	179	120	236	130	110	68	74	89	23	4	12	64
Eel	70		60	72	60	50	50	40	40		0	3	35
Alosa talax												0	0
Grey mullet												2	2
Other fish - bought out				15	32	38			31			9	28
<i>Fish from ravine waters</i>	719	430	519	515	495	539	332	352	503	512	312	238	436
Trout	450	268	429	433	832	836	23	28	880	712	442	378	516
Huchen	161	96	151	214	244	173	517	564	25			3	254
<i>Thymallus thymallus</i>							107	117				9	78
Other fish	175	104		226	233	286	156	177	78	47	114	18	139
<i>Fish from high land waters</i>	786	468	580	873	1309	1295	803	886	983	759	556	408	987

Table 2: Total fish catch in the Republic of Macedonia in tonnes

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Average
<i>Fish from ravine waters</i>	719	430	519	515	495	539	332	352	503	512	312	238	436
<i>Fish from high land waters</i>	786	468	580	873	1309	1295	803	886	983	759	556	408	987





General metadata

Code	Title of the indicator	Compliance with CSI EEA or other indicators		Classification by DPSIR	Type	Linkage with area	Frequency of publication
MK NI 041	Characteristic of the fish fund	FISH 3	Fish stock characteristics	C		Water Biodiversity Tourism	Annually

Geographical coverage: Republic of Macedonia

Temporal coverage: 1997 - 2007

Frequency of data collection: The database of the State Statistical Office of the Republic of Macedonia contains major temporal series on the total catch of freshwater fish species existing in our natural and artificial water basins and that temporal series is divided into two parts – data before 1987 and data on the total fish catch after 1987. Data is collected from two sources: commercial entities registered under the national classification of activities, as commercial fish producers – fish ponds and different forms of fishing associations – sports fishermen. There are two main types of commercial fish production in fish ponds the Republic of Macedonia: fish ponds for trout production, dominated by Californian trout and fish ponds for carp production, where one could also rarely find the species of wels catfish, carp, etc.

Future activities

■ Short-term activities

- Definition of autochthonous fish species in rivers and lakes;
- Taking of measures for protection of introduced alien species not specific for the relevant aquatic ecosystems in the past;
- Population and genetic investigation of fish populations, especially endemic and threatened species.

c. Status

- Activities are underway

Deadline: Activity is permanent

■ Long-term activities

- Undertaking of comprehensive population and genetic study of several fish species, especially endemic and threatened species.



