

**FISHERY COUNTRY PROFILE**

Food and Agriculture Organization of the United Nations

FID/CP/MKD

PROFIL DE LA PÊCHE PAR PAYS

Organisation des Nations Unies pour l'alimentation et l'agriculture

RESUMEN INFORMATIVO  
SOBRE  
LA PESCA POR PAISES

Organización de las Naciones Unidas para la Agricultura y la Alimentación

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2005**THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA**



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Macedonia has proclaimed independent statehood, but has not been formally recognized as a state by the United States.

Serbia and Montenegro have asserted the formation of a joint independent state, but this entity has not been formally recognized as a state by the United States.

### GENERAL ECONOMIC DATA

<b>Area:</b>	25 713 km <sup>2</sup>
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Total water area:	560 km <sup>2</sup>
Lake area:	2
Reservoirs:	467 km <sup>2</sup>
Rivers:	2
Fish ponds:	64 km <sup>2</sup>
	22 km <sup>2</sup>
	7 km <sup>2</sup>
Population (2003):	2 million
GDP (2003):	US\$ 3.2 billion
GDP per capita (2003):	US\$ 1 980
Agricultural GDP (2003):	12.2% of GDP

#### FISHERIES DATA

Commodity balance (2001):

	Production	Imports	Exports	Total supply	Per capita supply
	tons live weight			kg/year	
Fish for human consumption	800	6 698	207	7 291	3.6
Fish for animal feed and other purposes	381	-	-	-	

<b>Estimated employment (2004):</b>	320
Primary sector:	240
Secondary sector:	80
Gross value of catches (estimated total in 2004):	US\$ 6.4 million
Trade (2002):	
Value of Fisheries Imports:	US\$ 5 116 000
Value of Fisheries Exports:	US\$ 320 000

## HYDROLOGY AND FISHERIES POTENTIAL

Macedonia has 56 000 ha of water surfaces usable for fishery purposes, of which 46 700 ha are natural lakes, 6 400 ha are reservoirs, 2 200 ha are rivers and 700 ha are fish ponds.

Macedonia is landlocked with no access to the sea, so all fisheries are freshwater, primarily from the three large natural lakes: Ohrid (oligotrophic – 358 km<sup>2</sup>), Prespa (mesotrophic – 247 km<sup>2</sup>) and Dojran (eutrophic – 43 km<sup>2</sup>). All three lakes are transboundary. Lake Ohrid is shared with Albania, Prespa with Albania and Greece, and Dojran with Greece. There are six designated landing sites for the Lake Ohrid commercial fishery; Lake Prespa currently has no designated landing site, and landings are dispersed; Lake Dojran has four designated landing sites for its commercial fishery. Elsewhere, such as on the larger reservoirs, there are designated landing sites for the commercial sector, but there are no such sites for the recreational sector.

In hydrologic terms, Macedonia has four major basins: Vardar, Crni Drim, Strumica and Juzna Morava.

**The Vardar catchment** (draining to the Aegean) comprises the area around the River Vardar and its tributaries up to the border with Greece, including here the Macedonian part of Lake Dojran. This area covers 20 669 km<sup>2</sup> (80.4% of the national territory). Within Macedonia, the River Vardar is considered to have a length of 301 km. Its more important tributaries are the Treska, Lepenec, Pcinja, Bregalnica, Crna and Bosava rivers.

**The Crn (Black) Drim catchment** (draining to the Adriatic) includes Lakes Ohrid and Prespa and the area of the River Crn Drim, with its tributaries on the Macedonian side. This area covers 3 359 km<sup>2</sup> (13.1% of the national territory). This region is the most rich in water sources. The River Crn Drim, which has length of 44.5 km within Macedonia, forms as an outlet of Lake Ohrid on its northern part at the city of Struga, at an elevation 694 m above sea level. Its main tributary is River Radika, with the Spilje hydropower reservoir at the confluence of the Radika and Crn Drim.

**The Strumica catchment** (draining to the Black Sea) comprises the basins of the rivers Strumica, Cironska and Lebnica to the border with Bulgaria. The area is 1 649 km<sup>2</sup> (6.4% of the national territory). The main tributaries to the River Strumica are the Vodoca, Turija, Radovishka and Podareshka rivers. Overall, this area is poor in water resources.

**The River Juzna (South) Morava catchment** (draining to the Danube and ultimately the Black Sea) has an area of only 44 km<sup>2</sup> within Macedonia and has no significance as a water resource.

As the overall water resource are comparatively limited, there is only limited potential for fisheries in Macedonia, and the most valuable catch comes from Lake Ohrid, where the commercial fisheries target trout, eel and native carp.

## THE LEGISLATIVE AND ADMINISTRATIVE FRAMEWORK FOR THE FISHERIES SECTOR

There is no ministry specifically for fisheries, and fisheries fall under the jurisdiction of the Ministry of Agriculture, Forestry and Water Management (MAFWM). Because the Macedonian waters have a rich endemic ichthyofauna, the Ministry of Environment and Physical Planning (MOEPP) is also involved for biodiversity conservation matters. The administrative structure is illustrated in the organigram at the end of this paper.

Fisheries in Macedonia are regulated under the Fishery Law (1993), which addresses commercial fishery, sport fishing and fish production. The fishery sector is under the jurisdiction of MAFWM, which is responsible for issuing licences for concessions for commercial fishing companies and sport fishing associations (SFAs), as well permits for fish farm installation and operation.

Basically, commercial fishery is limited to the three natural lakes Ohrid, Prespa and Dojran, and to some of the reservoirs. Five-year concessions are given to a single fishing company on each waterbody, and the company is expected to develop a master plan for protection, improvement and usage of the relevant fish stock during their licence period. Apart from their great biological significance, all of the lakes have considerable commercial fish stock, which requires particular management. The plans are therefore expected to be submitted to MAFWM prior to issuing a licence, and MAFWM can request opinions from relevant scientific institutions.

Sport fishing is allowed on the lakes, but only on the basis of a subsidiary agreement between the SFA and the concession-holder.

Recreational fishing on rivers is also on a concession basis, but to the SFAs direct, and again on a five-year basis.

Both the commercial companies and SFAs have to submit a five-year plan for protection, improvement and responsible usage of the relevant fish stock. They are obliged to protect the stock, perform stocking programmes and provide physical protection and control.

MAFWM has a Directorate of Inspection that monitors the activities of the companies and SFAs through their reports or by direct field inspection. Some monitoring of fishing activity is effected through the police.

As all of the three great natural lakes are transboundary, there has been difficulty in coordinating lake-wide fishing-related activities. There have been some positive initiatives, but mainly at an informal expert level.

As the three large natural lakes are also very significant from the biodiversity point of view, there is special concern for them, and Macedonia has enacted legislation to protect them. A similar law has recently been enacted by Albania. These laws forbid the introduction of exotic species into the relevant lakes and their catchments.

Under the Fishery Law, regulations govern *inter alia* fishing methods, types of fishing gear, closed periods, and the cost of fishing licences for SFA members.

As with most of the former centrally planned economies of Eastern Europe, the sociopolitical changes of the last decade have been enormous, and the effect on the fishery sector has been negative. Previously, the fishing sector was organized through three subsectors: commercial, fish farming and recreation (sport) fishing, but from 1995 this arrangement collapsed.

Currently, the only active government involvement in fisheries management is collecting taxes from the commercial concession companies and from the SFAs, although about half of the income is returned to the fishery fund. However, despite the decreasing catch from all the lakes, instead of using the fund for improving the fish stock situation, it has been used to prop up fishing companies.

### **Aquaculture**

While the commercial catch from open waters is decreasing, fish production from farms and ponds has been increasing.

### **Management measures**

There are no official limits in terms of Total Allowable Catch for Macedonian rivers. Some stocking with exotic species has occurred.

Resource management regimes for the lakes were formerly calculated on a five-year basis according to the biology of the fish species involved. This applied primarily to Lake Ohrid, and was joint with Albania until 1993. As the Lake Ohrid trout population has drastically declined, there is an initiative within the Lake Ohrid Conservation Project (LOCP) to implement a joint Macedonia-Albania Lake Ohrid Fish Stock Assessment (LOFSA). However, immediate action is required to prevent overfishing of the endangered valuable indigenous species, notably Lake Ohrid trout and *belvica*. At Lake Prespa, a tri-lateral project for protection of the area is in its early stages of implementation.

### **Recreational fishing**

In the Soviet era the sport fishing sector was quite strong, with membership of SFAs peaking at around 14 500 in the 1980s. With the fundamental changes in the socio-political environment of the 1990s, membership fell drastically, until now it is around 5 000. SFAs on rivers operate by direct permit from MAFWM, and then issue day licences to members. On the Lakes, the SFAs operate on a permit basis under the commercial licensees. Fishing in the lakes is strictly controlled, with only a limited number of days available, and limitations on permitted gear. Control is strictest in the high-value trout fishery.

### **RESOURCE STATUS, PRODUCTION AND UTILIZATION**

There are no recent stock assessments available. Catch reports are unreliable. It is estimated that annual production is about 2 000 t.

Fish from lake catches or fish farms are sold whole and unprocessed, and sold in local general markets, through small shops in towns or direct to hotels and restaurants. There are no fish markets per se.

There is considerable demand for the trout and eels from Lake Ohrid, but little demand for other species. Fish farmers have difficulty in marketing their products due to low prices. Competition from cheap frozen imports has biased the market.

### **RESEARCH**

Several institutions have research interests in aspects of fisheries. However, their activities are severely constrained by limited financial and human resources.

- Hydrobiological Institute, Ohrid – taxonomy, population dynamics, ecotoxicology, applied fishery, aquaculture and fish diseases.
- Faculty of Agriculture, Skopje – education in taxonomy and aquaculture.
- Faculty of Natural Sciences and Mathematics, Institute of Biology, Skopje – histology and histopathology.
- Faculty of Veterinary Medicine, Skopje.
- Institute of Animal Sciences, Skopje – taxonomy, biomanipulation and river fishery.
- Faculty of Biotechnology, Bitola.

#### **FOREIGN AID**

Until now, assistance has been confined to support for project preparation. Support for management of endangered and shared stocks in the lakes is urgently needed if the biodiversity is to be conserved in a sustainable manner.

There are several project proposals outstanding for improving the situation, which have been passed and evaluated very positively in various donor conferences for the region, but have still to receive funding. These projects mainly concern fishery reorganization, habitat restoration, wetlands, and hatchery facility reconstruction. They all of them have been included in the National Action Plan for Biodiversity Protection.

#### **CONTACTS**

Ministry of Agriculture, Forestry and Water Management (MAFWM) – [www.mzsv.gov.mk](http://www.mzsv.gov.mk)

Ministry of Environment and Physical Planning (MOEPP) – [www.moep.gov.mk](http://www.moep.gov.mk)

Hydrobiological Institute, Ohrid – [www.hio.edu.mk](http://www.hio.edu.mk)(under construction)

Faculty of Agriculture, Skopje – [www.zf.ukim.edu.mk](http://www.zf.ukim.edu.mk)

Faculty of Natural Sciences and Mathematics, Skopje – [www.pmf.ukim.edu.mk](http://www.pmf.ukim.edu.mk)

#### **ORGANIZATION OF THE FISHERIES SECTOR**

