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Türkiye'de Gökkuşağı Alabalığı Yetiştiriciliğinin Mevcut Durumu

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Özet

Türkiye'de 2013 yılı itibariyle, balık ve kabuklu su ürünleri toplam üretim miktarı 607.515 tondur. Buna tatlısularda avcılık yoluyla yakalananların katkısı %5.8 olup, 35.074 tonluk miktarıyla toplam üretimdeki yeri oldukça azdır. Toplam balık üretiminde en çok öne çıkan türler alabalık, sazan, çipura, levrek, kalkan, midye, karides ve diğerleridir. Yine 2013 yılında, Alabalık toplam üretimi 122.873 tonlarda seyretmekte olup, avcılık ve üretim yolu ile üretilen toplam su ürünleri miktarının %20.23'ünü oluşturmaktadır. Bugün, Türkiye'de, balıkçılık sektöründe, gökkuşağı alabalığı yetiştiriciliği hala favori yatırım alanıdır.

Bu derlemenin amacı Türkiye'de gökkuşağı alabalığı (*Oncorhynchus mykiss*) yetiştiriciliği ve gelişim süreçlerine sektörel bağlamda farkındalık oluşturmaktır.

Anahtar Kelimeler: Gökkuşağı Alabalığı, Balık Yetiştiriciliği, Üretim Projeksiyonu, Türkiye.

The Present Status of Rainbow Trout Aquaculture in Turkey

Abstract

In Turkey, the total production of fish and shellfish was 607.515 tons in 2013. The contribution of freshwater catch was established 5.8% by 35.074 tons in the total fishery production and its value was really very small. The dominant species in total production were trout, carp, sea bass, sea bream, turbot, mussel, crayfish and etc. Total production of rainbow trout reached to 122.873 tons/year and its value was 20.23% in total fish production by captured and aquaculture in 2013. Today, rainbow trout aquaculture is still favor investment in fishery industry in Turkey.

This review aimed to inform about rainbow trout (Oncorhynchus mykiss) aquaculture and to raise awareness for its development trends in Turkey.

Keywords: Rainbow trout, Aquaculture, Production projection, Turkey.

INTRODUCTION

In the world, Salmons production is around 3 million ton (Table 1, Figure 1) [1]. The main producer countries are Italy, France, Denmark, Spain, Germany in Europe and Chile, Norway, Turkey, Iran and USA in the worldwide.

Rainbow trout eggs have been spawned since 1872 and distributed around the world by eyed-egg transfer. The first eggs transferred to New York State in 1874 from a native spring spawning stock from Campbells Creek on the McLeod River, California. The pioneering fish culturist Seth Green is attributed with initiating these first transfers. The first successful movement of eyed-eggs of *O.mykiss* out of the North America was made to Tokyo, Japan in 1877. This was followed by the 1885 shipments to England and Scotland. The original stock in Scotland was maintained at historical fish farm Howietown until 1990 [2]. European commercial rainbow trout farming started in Denmark in the 1890s. Eggs from hatchery stocks established in England, Scotland and Denmark were transferred to other European countries [3]. The first eyed-eggs were transferred to Turkey in 1970 by Mr. H.Papilla who sets up a private farm in Bilecik which is still operating presently. Then, some researches from Faculty of Agriculture, University of Ankara brought a second party from Italy to pilot trout farm of Ministry of Agriculture in Sarayönü, Konya [4].

In Turkey, rainbow trout is the most dominant freshwater fish species and they are employed by intensive culture methods in raceways ponds and floating net cages. The application of aquaculture in Rainbow trout has more significant places and it has widespread distribution in our freshwater ecosystems such as lake, streams and Dam Lake or reservoirs.

Turkish Aquaculture Sector in the World

In 2011, the annual average production of fish farmers in Norway was 195 tons per person, compared with 55 tones in Chile, 25 tones in Turkey, 10 tones in Malaysia, about 7 tones in China, about 4 tones in Thailand, and only about 1 tone in India and Indonesia. However, Turkish production is 23rd in the world production by aquaculture (Table 1).

In Salmon species, the world production was over 1.8 million tons in 2003, it was produced over 3 million tons in 2012 and its value was more than 15 billion dollars (Table 2, Figure 1). The rainbow trout production reached over

700.000 tones after 2010 in the world, its value exceeded over 3.5 billion dollars (Figure 2).

In Turkey, aquaculture industry contributes to new employment opportunities. It reached to high export levels with increasing production capacity. However, in recent years both freshwater and sea farming have an increasingly important role in the production of fishery products. This sector initiated with rainbow trout culture in the early 1970 s and in recent years, it developed very fast. This fish is preferred because of its delicious taste and suitability to the water temperatures of the rivers and reservoirs in Turkey. Rainbow trout production was 48% of total fish production in 2004, it was reached 55% in 2013 (Table 3).

Table 1. The present of Turkey in fishery sector of the world [5].

	Turkish production	The World production	The order in The World
Aquaculture (Tones)	188.790	24.079.031	23
Captured (Tones)	514.755	93.494.340	29
Export (1000 USD)	432.555	122.666.460	44
Import (1000 USD)	270.905	123.429.950	49
Rainbow trout aquaculture (Tones)	100.239	770.385	2
Person consumption (kg/year)	7.3	18.9	-

Table 2. World aquaculture production of salmons between 2003-2012 [1].

Years	Production (tones)	Value (x1000 USD)	Calculated price USD/1 kg
2003	1.876.725	5.651.436	3,01
2004	1.986.934	6.685.469	3,36
2005	2.003.534	7.742.280	3,86
2006	2.122.152	9.845.889	4,64
2007	2.238.113	10.727.279	4,79
2008	2.313.006	10.727.279	4,64
2009	2.456.626	11.457.569	4,66
2010	2.422.494	12.674.813	5,23
2011	2.777.370	15.047.038	5,42
2012	3.227.629	15.276.134	4,73

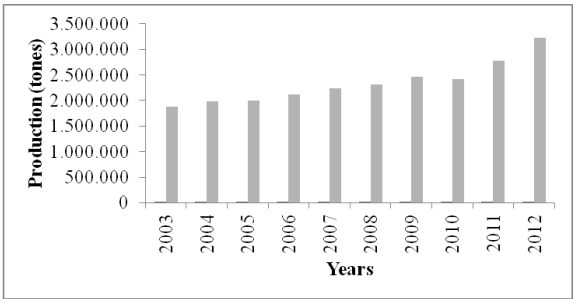


Figure 1. World aquaculture production by salmon species between 2003-2012.

Table 3. Trout production in Turkey by aquaculture between 2004-2013 (ton) [6].

Years	Inland water (trout)	Marine water (trout)	Total production (all fish species)	% of total production
2004	43.432	1.650	94.010	48
2005	48.033	1.249	118.277	42
2006	56.026	1.633	128.943	45
2007	58.433	2.740	139.873	44
2008	65.928	2.721	152.186	45
2009	75.657	5.229	158.729	51
2010	78.165	7.079	167.141	51
2011	100.239	7.697	188.790	57
2012	111.335	3.234	212.410	54
2013	122.873	5.186	233.394	55

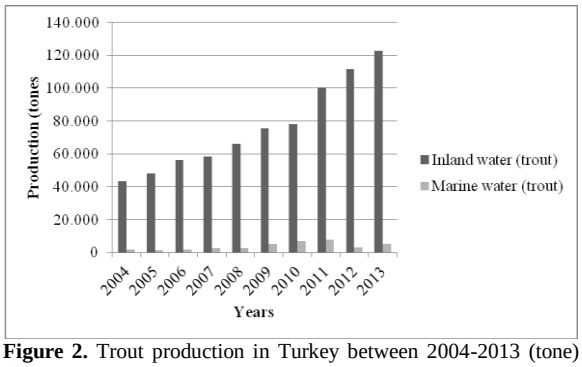


Figure 2. Trout production in Turkey between 2004-2013 (tone) (from [6]).

The Introduction of Some Wetlands and Distribution of Fishery Industry in Turkey

Turkey has 8333 km. coast having different ecological properties (Black, Mediterranean and Aegean Sea), natural lakes and dams and dam lakes whose numbers increase every day due to geographical location and being a peninsula. So Turkey is one of the best countries having ideal conditions on the basis of aquaculture (Table 3). However, there are 200 numbers Nature Lake which have totally 906.1 km^2 surface areas. Artificial lakes are 1000 numbers and about 280 km^2 surface area. There are 4 seas which has 246.072 km^2 surface areas, 293 reservoir for electricity power which has 4604 km^2 surface area. So Turkey is one of the best countries having ideal conditions on the basis of aquaculture (Table 4).

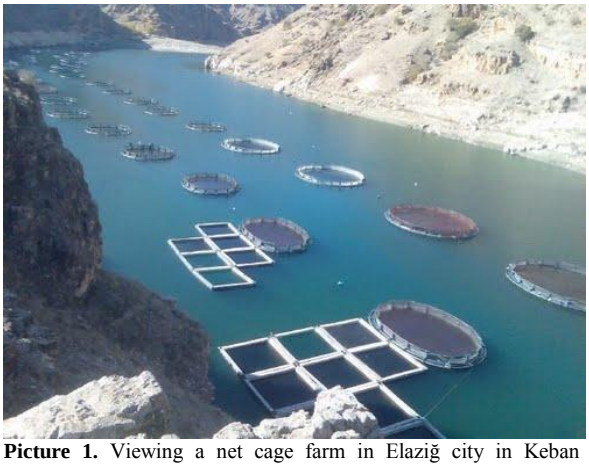
The first rainbow trout (*Oncorhynchus mykiss*) farm was established in the Marmara region in 1971. However, in 2007 country-wide production was approximately 58,000 tons [7] from a total of 880 rainbow trout farms. Producers of trout are mainly concentrated in the Aegean region where approximately 25% of the total production is obtained. Furthermore, since this fish has the ability to live in slightly salty water as well as in freshwater, which is its natural habitat; trout are also grown on farms in Ordu, Rize and Sinop. These are provinces in the Black Sea region, where the salt content is lower than in other seas of Turkey. But the leader provinces are Elazığ, Muğla, Kayseri and Burdur in the rainbow trout production, respectively (Table 5, Picture 1).

Table 4. Some important nature lakes, dam lakes and rivers in Turkey [8].

Nature Lakes (surface, over 100 km^2)		Dam lakes (Reservoirs) (surface, over 200 km^2)		Rivers (Length, km) (in Turkey)	
Van	3.713	Atatürk	817	Fırat	1.263
Tuz	1.500	Keban	675	Dicle	523
Beyşehir	656	Karakaya	298	Kızılırmak	1.355
Eğirdir	468	Hirfanlı	263	Aras	548
İznik	298			Sakarya	824
Çıldır	115			Büyük Menderes	548
Akşehir	353			Seyhan	560
Eber	126			Yeşilırmak	519
Burdur	200			Ceyhan	509
Manyas	166			Murat	562
Ulubat	134				

Table 5. Provinces with the highest production of rainbow trout at inland in Turkey

Region	Name of Province	Production (about 10.000 tones)
Eastern of Turkey	Elazığ	14.286
Western of Turkey	Muğla	13.900
Middle of Turkey	Kayseri	11.227
South-West of Turkey	Burdur	9.724



Picture 1. Viewing a net cage farm in Elaziğ city in Keban reservoir [10].

Importing and Exporting of Rainbow Trout in Turkey

Greece, Italy, the Netherlands, Japan and Spain are the main countries to which Turkey exports fisheries. They make up 74% of total fisheries export and Turkish fisheries export is in the 17th country in the world's total exports. The main export products are European bass, gilthead sea bream, rainbow trout and tuna. A large portion of Turkey's fisheries export consists of fresh-chilled fish. Turkey's total export of frozen and smoked trout is approximately $85 million. Whereas, the rainbow trout was imported about 99 tons with value of $796.590 [9].

Some Problems of Rainbow Trout Aquaculture in Turkey

There are some problems of rainbow trout aquaculture in Turkey both net cages and raceways ponds. Especially;

a) The period of rearing at 8-10 ^{0}C with raceways ponds wipe on very long time over 12 months in Eastern of Turkey. Whereas this period is are only 6-8 months at reservoirs. Some farmers in Eastern of Turkey must change to their tradition. All cold waters can use for reproduction of fry.

b) The farmers are spent more foods to grow up all frys by high feed consumption but low weight gain. Also rainbow trout price is very high over 2 dollars/kg. Therefore some investors have been more economic problems.

c) The reservoirs of Turkey have more large surface and suitable for rainbow trout aquaculture. It should apply new investments on these free areas of reservoirs.

Finally, we can talk more about the problems of rainbow trout aquaculture in Turkey, but we wished to say only main of them. Recently, rainbow trout aquaculture sector are growing up rapidly but unrestrained or no control over sector. Turkey needs organizational structures which are technical groups, sales groups and cooperatives, local official and civil societies of rainbow trout at every region. So sector of rainbow trout will grow up and take more economic development in Turkey.

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