

A Comparative Analysis of Istanbul Fish Market Records Between 1998 and 2001

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Özet: 1998-2001 yılları arasında İstanbul balık hali verilerinin değerlendirilmesi. 1998-2001 yılları arasında İstanbul Su Ürünleri Hali'nde toplam 86 adet farklı tür pazarlanmıştır. Bu yıllar arasında hale en çok giriş yapan türler hamsi (*Engraulis encrasicolus* Linnaeus, 1758), istavrit (*Trachurus trachurus* Linnaeus, 1758), palamut (*Sarda sarda* Bloch, 1793), lüfer (*Pomatomus saltatrix* Linnaeus, 1766) ve mezgit (*Merlangius merlangus euxinus* Nordmann, 1840) olmuştur. Bu türlerin toplam miktarı dört yıllık hal üretim değerinin % 80,1'ini oluşturmuştur. Toplam üretim 1998-2000 yıllarında 23825-25228 ton arasında değişmiş olup, 2001 yılı önceki üç yılın ortalamasından % 51,0 oranında artarak 36771 ton olarak gerçekleşmiştir. İncelemeye alınan yıllar içerisinde en yüksek üretim Kasım ve Ekim aylarında gerçekleşmiştir. 2001 yılında toplam lüfer üretimi, önceki yılların ortalamasına göre % 497 oranında büyük bir artış göstermiştir.

Anahtar Kelimeler: İstanbul, Su Ürünleri Hali, balık türü, balık üretimi.

Abstract: A total of 86 different fish species were recorded in Istanbul Fish Market between 1998 and 2001. During these years, the highest productions were recorded for european anchovy (*Engraulis encrasicolus* Linnaeus, 1758), horse mackerel (*Trachurus trachurus* Linnaeus, 1758), bonito (*Sarda sarda* Bloch, 1793), bluefish (*Pomatomus saltatrix* Linnaeus, 1766) and whiting (*Merlangius merlangus euxinus* Nordmann, 1840). Total production amount of these 5 species was 80.1% of the production for the investigated years. Annual fish production varied between 23825 and 25228 ton from 1998 to 2000, however, the total production of 2001 was recorded as 36771 ton, an increase of 51%. November and October were observed as the highest production months during the four-year period. In 2001, the highest increase in terms of percentage compared to the previous three years production was observed in bluefish (497%).

Key Words: Istanbul, Fish Market, fish species, fish production.

Introduction

Being the biggest metropolitan in Turkey, Istanbul which links Asia to Europe, is a connection center for air, sea, and ground transportation. Therefore, it is one of the main cities for export and import of Turkey's fish products.

Istanbul Fish Market, established over a 26.000 m² area, is the largest fish market in Turkey. The fish are supplied to the Istanbul Fish Market from the Aegean Sea, the Marmara Sea, the Mediterranean

Sea, the Black Sea, inland waters, and from overseas. The products are either marketed to the public or exported.

In Turkey, the number of economical fish species is less than 100 according to DPT (2001). Timur and Doğan (1999), reported that a total of 73 fish species were marketed of which 5 were Molluscs, 3 were crustacean and 65 were finfish species at Istanbul Fish Market between 1996 and 1997.

The objective of the present study was to investigate the number fish species

marketed in Istanbul Fish Market between 1998-2001. In addition, monthly and annual production of these species was analyzed.

amounts (in ton) for each species. Then, the production amount determined for 1998, 1999, 2000 and 2001 years were compared with previous reports.

Materials and Methods

In this study, the fish production rates of Istanbul Fish Market between 1998 and 2001 were analyzed. Daily weight records of each species were summed to obtain monthly and annual total production

Results

A total of 86 fish species were marketed in Istanbul Fish Market between the years 1998 and 2001 of which were 74 finfish, 7 Crustaceans, and 5 Molluscs. These are as follows (in alphabetical order, Table 1):

Table 1. Fish species marketed in Istanbul Fish Market between 1998 and 2001.

English name	Latin name
Aeneus Grouper	<i>Epinephelus guaza</i> Linnaeus, 1758
Angelshark	<i>Squatina squatina</i> Linnaeus, 1758
Angler	<i>Lophius piscatorius</i> Linnaeus, 1758
Annular seabream	<i>Diplodus annularis</i> Linnaeus, 1758
Atlantic mackerel	<i>Scomber scombrus</i> Linnaeus, 1758
Atlantic salmon	<i>Salmo salar</i> Linnaeus, 1758
Atlantic saury	<i>Scomberesox saurus</i> Walbaum, 1792
Big-scale sand smelt	<i>Atherina boyeri</i> Risso, 1810
Black scorpionfish	<i>Scorpaena porcus</i> Linnaeus, 1758
Black sea murex	<i>Rapana thomasiana</i> Crosse, 1861
Blackspot seabream	<i>Pagellus bogaraveo</i> Brünnich, 1768
Blue crab	<i>Callinectes sapidus</i> Rathbun, 1896
Blue skate	<i>Raja batis</i> Linnaeus, 1758
Bluefish	<i>Pomatomus saltatrix</i> Linnaeus, 1766
Bogue	<i>Boops boops</i> Linnaeus, 1758
Bonito	<i>Sarda sarda</i> Bloch, 1793
Brown meager	<i>Sciaena umbra</i> Linnaeus, 1758
Bullet tuna	<i>Auxis rochei</i> Risso, 1810
Chub mackerel	<i>Scomber japonicus</i> Houttuyn, 1782
Comber	<i>Serranus cabrilla</i> Linnaeus, 1758
Common carp	<i>Cyprinus carpio</i> Linnaeus, 1758
Common cuttlefish	<i>Sepia officinalis</i> Linnaeus, 1758
Common dentex	<i>Dentex dentex</i> Linnaeus, 1758
Common dolphinfish	<i>Coryphaena hippurus</i> Linnaeus, 1758
Common octopus	<i>Octopus vulgaris</i> Cuvier, 1797
Common seabream	<i>Pagrus pagrus</i> Linnaeus, 1758
Common sole	<i>Solea vulgaris</i> Quensel, 1806
Common two-banded seabream	<i>Diplodus vulgaris</i> Geoffroy St Hilaire, 1817
Crayfish	<i>Astacus leptodactylus</i> Eschscholz, 1823
Deep-water pink shrimp	<i>Parapenaeus longirostris</i> Lucas, 1846
Edible crab	<i>Cancer pagrus</i> Linnaeus, 1758
European anchovy	<i>Engraulis encrasicolus</i> Linnaeus, 1758
European barracuda	<i>Sphyrna sphyraena</i> Linnaeus, 1758
European eel	<i>Anguilla anguilla</i> Linnaeus, 1758
European flounder	<i>Platichthys flesus</i> Linnaeus, 1758
European hake	<i>Merluccius merluccius</i> Linnaeus, 1758

Table 1. continued

European lobster	<i>Homarus gammarus</i> Linnaeus, 1758
European pilchard	<i>Sardina pilchardus</i> Walbaum, 1792
European seabass	<i>Dicentrarchus labrax</i> Linnaeus, 1758
European sprat	<i>Sprattus sprattus</i> Linnaeus, 1758
European squid	<i>Loligo vulgaris</i> Lamarck, 1798
Flathead mullet	<i>Mugil cephalus</i> Linnaeus, 1758
Freshwater bream	<i>Abramis brama</i> Linnaeus, 1758
Garpike	<i>Belone belone</i> Linnaeus, 1761),
Gilthead seabream	<i>Sparus auratus</i> Linnaeus, 1758
Greater forkbeard	<i>Phycis blennoides</i> Brünnich, 1768
Horse mackerel	<i>Trachurus trachurus</i> Linnaeus, 1758
John dory	<i>Zeus faber</i> Linnaeus, 1758
Largescaled scorpionfish	<i>Scorpaena scrofa</i> Linnaeus, 1758
Leerfish	<i>Lichia amia</i> Linnaeus, 1758
Meagre	<i>Argyrosomus regius</i> Asso, 1801
Mediterranean mussel	<i>Mytilus galloprovincialis</i> Lamarck, 1819
Mediterranean moray	<i>Muraena helena</i> Linnaeus, 1758
Mediterranean scaldfish	<i>Arnoglossus laterna</i> Walbaum, 1792
Narrow-barred Spanish mackerel	<i>Scomberomorus commerson</i> Lacepède, 1800
Northern bluefin tuna	<i>Thunnus thynnus</i> Linnaeus, 1758
Northern pike	<i>Esox lucius</i> Linnaeus, 1758
Picarel	<i>Spicara smaris</i> Linnaeus, 1758
Piper gurnard	<i>Trigla lyra</i> Linnaeus, 1758
Poor cod	<i>Trisopterus minutus</i> Linnaeus, 1758
Rainbow trout	<i>Oncorhynchus mykiss</i> Walbaum, 1792
Red mullet	<i>Mullus barbatus</i> Linnaeus, 1758
Rocky goby	<i>Gobius paganellus</i> Linnaeus, 1758
Rudd	<i>Scardinius erythrophthalmus</i> Linnaeus, 1758
Salema	<i>Sarpa salpa</i> Linnaeus, 1758
Sheepshead bream	<i>Puntazzo puntazzo</i> Gmelin, 1789
Shi drum	<i>Umbrina cirrosa</i> Linnaeus, 1758
Silver scabbardfish	<i>Lepidopus caudatus</i> Euphrasen, 1788
Smooth-hound	<i>Mustelus mustelus</i> Linnaeus, 1758
Snake blenny	<i>Ophidion barbatum</i> Linnaeus, 1758
Spider crab	<i>Maja squinado</i> Balss, 1922
Spiny lobster	<i>Palinurus elephas</i> Fabricius, 1787
Streaked gurnard	<i>Trigloporus lastovitza</i> Bonnaterra, 1788
Striped red mullet	<i>Mullus surmuletus</i> Linnaeus, 1758
Striped seabream	<i>Lithognathus mormyrus</i> Linnaeus, 1758),
Sturgeon	<i>Acipenser sturio</i> Linnaeus, 1758
Swordfish	<i>Xiphias gladius</i> Linnaeus, 1758
Tub gurnard	<i>Trigla lucerna</i> Linnaeus, 1758
Turbot	<i>Psetta maxima</i> Linnaeus, 1758
Twaite shad	<i>Alosa fallax</i> Lacepède, 1803
Vadigo	<i>Campogramma glaycos</i> Lacepède, 1801
Channel catfish	<i>Silurus glanis</i> Linnaeus, 1758
White grouper	<i>Epinephelus aeneus</i> Geoffroy St Hilaire, 1817
Whiting	<i>Merlangius merlangus euxinus</i> Nordmann, 1840
Zander	<i>Sander lucioperca</i> Linnaeus, 1758

The number of fish species retailed 1998 to 2001 (Figure 1). In the years in Istanbul Fish Market increased from investigated, the monthly amount of fish

products started to increase after August and realized the highest amount in November (24353.9 ton) (Figure 2). This rise was dictated by the increase of the amount of European anchovy and horse mackerel.

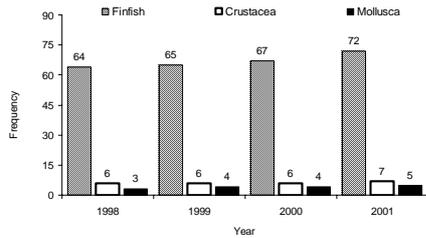


Figure 1. Species frequency sold in Istanbul Fish Market between 1998-2001.

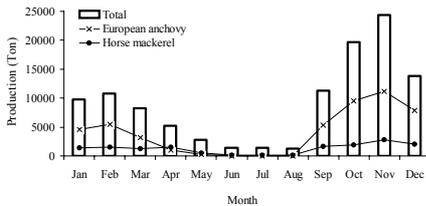


Figure 2. Total monthly production in Istanbul Fish Market between the years 1998-2001.

In terms of total production, european anchovy yielded the highest in the years investigated (48494.5 tons). Horse mackerel production, on the other hand, yielded as the second highest

amount (14776.5 tons) and increased steadily from 1998 to 2001 (Figure 3).

Annual fish production varied between 23800 and 25 300 tons from 1998 to 2000. In 2001, on the other hand, the total fish production (36771 tons) was 51% higher than the average of the previous three years (Table 2). The highest increase in terms of percentage compared to the previous three years production was observed in bluefish (497%).

The Istanbul Fish Market was mainly driven by European anchovy, horse mackerel, bonito, bluefish, and whiting (Figure 4). Only these 5 species exceeded 1 000 ton at least in one of the years investigated. In addition, these species comprised about 80.1% of the total four year production. European anchovy, for example, constituted more than half (55%) of the total production in 1999 (Figure 4).

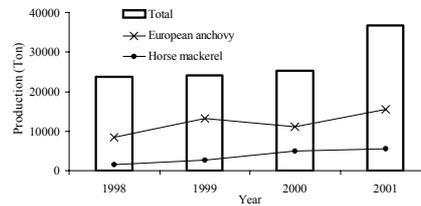


Figure 3. Yearly production in Istanbul Fish Market between the years 1998-2001.

Table 2. Production (ton) for the species between 1998 and 2001. Species yielding less than 1 ton were categorized in the ‘Other’ category.

Species	Year				Total
	1998	1999	2000	2001	
European anchovy	8509.0	13228.8	11180.7	15576.0	48494.5
Horse mackerel	1528.5	2733.4	5005.3	5509.2	14776.5
Bonito	5268.2	527.2	1033.0	4144.1	10972.5
Bluefish	1491.2	801.4	773.8	6097.6	9163.9
Whiting	754.4	1657.4	1108.4	1049.7	4569.9
European pilchard	896.8	845.5	720.7	388.5	2851.5
European hake	797.4	389.4	214.7	209.2	1610.6
Sea bass	317.6	390.5	422.2	477.1	1607.4
Rainbow trout	838.8	232.1	293.4	160.9	1525.2
Deep-water pink shrimp	408.4	316.4	474.2	285.1	1484.0
Chub mackerel	438.0	318.0	340.0	303.7	1399.8

Table 2. continued

Gilt head sea bream	246.6	347.8	413.2	353.3	1360.9
Atlantic mackerel	127.2	236.2	588.3	356.1	1307.8
Striped red mullet	211.0	452.3	364.1	267.5	1294.9
Turbot	286.7	280.4	415.0	276.8	1258.9
European sprat	533.9	48.3	152.5	85.3	820.0
Flathead mullet	111.4	224.6	216.8	204.9	757.6
Bullet tuna	76.6	87.1	282.6	270.7	717.0
Picarel	40.8	85.4	131.5	83.3	341.1
Twaite shad	67.2	52.3	40.6	103.3	263.3
Common dolphinfish	2.1	4.4	200.1	6.3	212.9
Smooth-hound	23.9	34.3	109.8	22.7	190.7
Other	849.6	739.9	747.6	539.2	2876.3
Total	23825.4	24033.1	25228.4	36770.5	109857.4

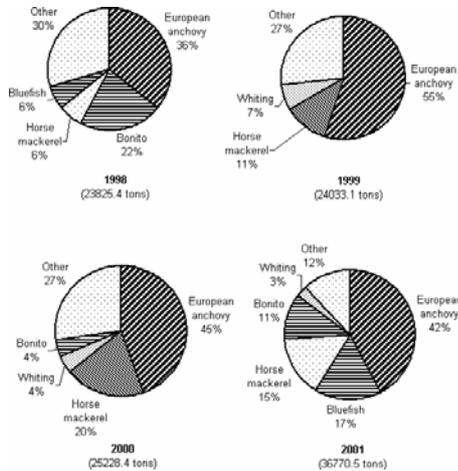


Figure 4. Production percentages of fish species yielding more than 1000 tons for each year. Production of fish species less than 1000 tons were combined in the "Other" category.

Discussion

In the present study, a total of 86 fish species were recorded in Istanbul Fish Market between 1998 and 2001 of which were 74 finfish, 7 crustaceans, and 5 molluscs. As seen in Figure 1, the number of finfish species between 1998 and 2000 ranged from 64-67, however, the species number increased to 72 in 2001. Timur and Doğan (1999) reported 65 finfish, 5 crustaceans, and 3 molluscs for the same location during the years of 1996 and 1997.

The fish production record in Istanbul Fish Market for 1996 or 1997 was approximately 23300 tons (Timur and Dogan, 1999). It displayed slight increases during 1998 (23825 tons), 1999 (24033 tons) and 2000 (25228 tons), respectively. However, a pronounced increase (36770 tons) was observed in 2001.

The results showed that the most significant species were European anchovy (44%), horse mackerel (13%), and bonito (10%) for the years investigated. According to the results of Timur and Dogan (1999), the most significant species marketed in Istanbul Fish Market were European anchovy (50%), horse mackerel (19%), bonito (11%), whiting (11%), and European pilchard (9%) during 1996 and 1997. The percentages of whiting and European pilchard decreased to 4% and 3%, respectively between 1998 and 2001. The most obvious increase was observed in bluefish production with 6098 tons in 2001. In this connection, European pilchard (55%) and European anchovy (12%) were found to be the most important species in terms of total production in Çanakkale Fish Market (Tekinay *et al.*, 2001).

Mean total production of Izmir Fish Market, another important fish market in Turkey, was reported as 5916 tons for the period of 1985-1995 (Elbek *et al.*, 1999) compared to the mean total production of

Istanbul Fish Market of 27464 tons. Tekinay *et al.* (2001) reported that the average production rate of Çanakkale Fish Market between 1996 and 2001 was 254 tons which is 108 times lower than the average production of Istanbul Fish Market (27464 tons) between 1998 and 2001. This is mainly due to the fact that Istanbul is the biggest trade center of Turkey.

Monthly total production were highest between September and November and were lowest between June and August in Istanbul Fish Market (see Figure 2). Identical results were reported by Elbek *et al.* (1999) for Izmir Fish Market between 1985 and 1995.

From Turkey's total production, about 4.0% of european anchovy, 8.6% of bonito, and 22.6% of horse mackerel were marketed in Istanbul Fish Market in 2000 (Anonymous, 2001).

As a result, the present study demonstrated that not only the total production but also the number of marketed fish species increased from 1998 to 2001 in Istanbul Fish Market.

In conclusion, main fish markets in Turkey should be re-organized in terms of records and product quality by

implementing the standards of European Union. Also should the records of important fish markets such as Istanbul, Izmir, Ankara, Trabzon, Adana, etc. be continuously monitored.

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