

## The General Profile of Aquarium Sector in Istanbul (Turkey)

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**Abstract:** A survey study was conducted in order to put forth the general status of aquarium sector in Istanbul (Turkey). Within the scope of this study, it is found out that 550-600 aquarium makers, 200 of which are registered to a non-governmental organization operate in Istanbul. A great amount as 50.8% of aquarium businesses in Istanbul is sole proprietorships. They work with a strategy of providing the living things (fish, plant, etc.) and materials (heater, filter, pump etc.) which they trade from domestic and foreign sources and transporting them to the customer. The members of Cyprinidae which is among the fish groups that aquarium makers in Istanbul sell at most, rank the first and Cichliade and living thing breeding groups follow them. It is observed that domestic retail sales are mostly done in winter season (90.9%). Additionally, data on issues such as educational status and work experiences of the employees in the sector, working capacities of the businesses, kinds of plant and animal types produced or imported.

**Key words:** Aquarium, trade, industry, Istanbul, imports, Turkey

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### INTRODUCTION

The hobby of aquarium is defined as the most attractive branch of hobby following photography. Every year, >1 billion aquarium fish, 4000 of which are fresh water fish and 1400 of which are sea type are bought and sold in the world (Whittington and Chong, 2007). In 2002, it was reported that 1.5-2 million people in the world were interested in sea aquariums as a hobby and half of them were in the USA and the rest was in Europe (Green, 2003).

On the other hand, considering >90% of the fish used in aquarium fish trade are fresh water fish (Whittington and Chong, 2007), it appears as a fact that approximately, 9 times >1.5-2 million hobbyists are dealing with freshwater aquariums. Adding 14% annual growth rate in aquarium sector (Bartley, 2000), the figurative side of this business can be seen.

The importance of the issue can be understood better when the sub industry branches such as fishmeal, decor, heater, glass, acrylic, filter, sand and scoop are involved in such a common branch of trade. The aquarium industry is a branch of trade where continual exchange is performed within the quadrangle of collector- producer, wholesaler, retailer and hobbyists. There are discrepancies regarding the order and accuracy of the

statistical records related with aquarium sector in several countries including developed ones. This condition can be better observed in developing countries as Turkey. It is difficult to come across reliable and comprehensive scientific data regarding aquarium sector in Turkey.

The capacity, size and level of extensivity of the aquarium making in the country as well as many other mysterious information source are not based on the scientific data. While 30.5% of the present population in Turkey live in four big cities (Istanbul, Ankara, Izmir and Bursa), 58.3% of this ratio live in Istanbul (TUIK, 2008). Istanbul has a population which is more than the sum of the populations of 3 most populated cities of the world (except itself).

Hosting 17.8% of the total country population, Istanbul is also the biggest city in terms of trade volume. On the other hand, Istanbul's population covers people migrating from all regions of Turkey. Hence, any research to be made in Istanbul can give estimations regarding the country in general.

Therefore, in this study, Istanbul was given priority for the general profile of aquarium sector. The questionnaires prepared for the purpose of putting 4th the status of aquarium facilities in this city were applied to aquarium makers in different regions of Istanbul within the first 3 months of 2009. The answers given to questions in

the survey were analyzed and interpreted and then it was attempted to estimate the general status of aquarium sector in this city.

## MATERIALS AND METHODS

According to the information obtained from Istanbul Aquarium makers Cooperation and Collaboration Association members of which are composed of professional aquarium operators and which is the only official association in Istanbul even in Turkey, it is estimated that there are 550-600 active aquarium makers in Istanbul, 200 of which are registered to the association. The contact addresses of 245 other aquarium makers besides the member aquarium makers were obtained from several different sources.

The addresses were classified according to districts. In selecting the districts where the questionnaires were applied, the total number of aquarium makers was considered. In 19 of the 50 districts where there was at least one aquarium maker, it was found out that there were >5 aquarium makers and these 19 were selected to apply the questionnaire (Table 1).

While almost half of the 245 businesses whose addresses were identified were found to be closed, 56 of the open ones accepted to participate in the study. In this study, these analyses which are estimated to represent approximately, 10% of the population were interpreted. Hence, the general profile of the aquarium makers in the city of Istanbul was presented. SPSS software was used in conducting the statistical analysis of the questionnaire.

Table 1: Frequency ratios of aquarium businesses in Istanbul according to districts (%). Businesses in regions estimated to have <5 aquariums within their boundaries

Region	n	Percentage
Kadikoy	28	11.4290
Pendik	16	6.5306
Maltepe	14	5.7143
Umraniye	14	5.7143
Uskudar	14	5.7143
Gaziosmanpasa	12	4.8980
Bakirkoy	11	4.4898
Eyup	10	4.0816
Buyuk Cekmece	9	3.6735
Avclar	8	3.2653
Esenler	8	3.2653
Bagcilar	7	2.8571
Eminonu	6	2.4490
Fatih	6	2.4490
Kartal	6	2.4490
Zeytinburnu	6	2.4490
Bahcelievler	5	2.0408
Beykoz	5	2.0408
Besiktas	5	2.0408
Others	55	22.4490
Total	245	100.0000

## RESULTS AND DISCUSSION

It is observed that in terms of foundation years of the businesses that participated in the study, 77.6% opened after 1990. Almost half of this 77.6% (34.5%) opened in the last 4 years. While the ratio of business owners whose research experience in this field is >16 years is 40.9, 22.7% is recorded to have 11-16 years of experience, 25% is recorded to have 6-10 years and 11.4% is recorded to have 0-5 years of research experience (Table 2).

It is found out that 81.4% of aquarium businesses are sole proprietorships, 11.9% are commercial partnerships, 6.8% are ordinary partnerships and all businesses are within the category of small and medium scale businesses (Table 2). Although, 84.7% of the business owners, 32.7% of whom are graduates of primary school, 38.2% are high school graduates and 29.1% are university graduates are affected by the economical crises (2008-2009 crises), 78% declare that they are glad that they are aquarium makers (Table 2). About 37.9% of the

Table 2: General profile of aquarium businesses. The foundation years, legal status, aquarium capacities, rental status, education status of the business owners, work experience and general condition of the workers

Parameters	Percentage	Parameters	Percentage
<b>Establishment dates of shops</b>		<b>Experience of the business owners</b>	
Before 1980	8.60	0-5 years	11.4
1980-1989	13.8	6-10 years	25.0
1990-1999	24.1	11-16 years	22.7
2000-2005	19.0	>16 years	40.9
After 2005	34.5	<b>Legal status of the shops</b>	
<b>Owner's education level</b>		Personal enterprise	81.4
Primary school	32.7	Simple partnership	6.80
High school	38.2	Commercial partnership	11.9
University	29.1	<b>Extra gain</b>	
<b>Property</b>		Yes	37.9
Tenant	88.1	No	62.1
Freeholder	11.9	<b>Economic crisis</b>	
<b>Satisfaction</b>		Effective	84.7
Satisfied	78.0	Ineffective	15.3
Dissatisfied	22.0	<b>Age group of workers</b>	
<b>Number of workers</b>		18-25	28.4
1	50.8	26-35	26.6
2	8.50	36-45	20.2
3	15.3	46 or more	24.8
4	11.9	<b>Sex ratio of workers</b>	
5 or more persons	13.6	Male	89.9
<b>Worker's education level</b>		Female	10.1
Primary school	24.7	<b>Rental fee TL</b>	
High school	55.6	500 or less	42.4
University	19.8	501-1000	15.2
<b>Season</b>		1001-1500	15.2
Spring	1.80	1500 or more	27.3
Summer	7.30	<b>Total water capacity (L)</b>	
Autumn	-	1000 ve alti	22.0
Winter	90.9	1001-2000	25.4
<b>Number of aquarium</b>		2001-5000	22.0
10 or less	6.9.0	5001-10000	20.3
11-30	44.9	10000 ustü	10.2
31-40	17.2	-	-
41-50	10.3	-	-
51 or more	20.7	-	-

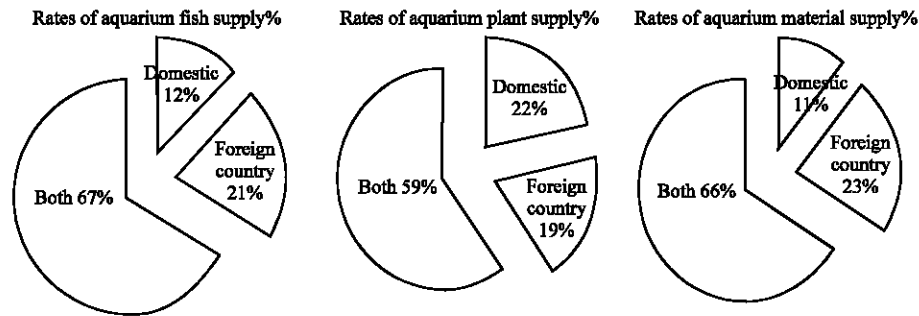


Fig. 1: Fish (fresh water and sea), aquarium plant and material supply places of the business domestic, foreign and both (= domestic+foreign)

same people have no other income than aquarium making (Table 2). While 88.1% of the business properties are rental, 42.4% of these have a rental expense of and below 500 TL and 15.2% have a rental expense between 501-1000 TL, 15.2% have a rental expense between 1001-1500 TL and 27.3% have a rental expense of and above 1500 TL (Table 2).

It is found out that in 96.5% of aquarium makers, sales vary depending on the season and the biggest sales are done in winter months with a ratio of 90.9% (Table 2). While only one person (business owner) works in 50.8% of the present aquariums in 8.5%, 2 people in 15.3%, 3 people in 11.9%, 4 people and in 13.6%, 5 people and more are working. Except the business owner, 55.6% of the workers are high school graduates while 24.7% are primary school graduates and 19.8% are university graduates.

Here, 89.9% of the workers are men and 28.4% are between the ages of 18-25, 26.6% are between the ages of 26-35, 20.2% are between the ages of 36-45 and 24.8% are of age 45 and above (Table 2). Where 83.1% stated that they work with a vet, 22% say they work with a water products engineer and 98.3% of these provide technical support for their customers (Table 3).

While only 35.7% produce fish themselves, 60.3% of them who sell aquarium plants, do not produce plant (Table 3). The sales of common living fish food like tubifex and water flea is unstable and only 3.5% state that they can produce living fish food (Table 3). While 44.9% of the businesses use 11-30 aquariums, water capacity of 52.5% is >2000 L (Table 2). Regarding the supply issue of fish, plant and material, domestic and foreign trade sources are used.

While 21% of the fish sold are only supplied from abroad, 12% only domestically and 67% are supplied from both sources (Fig. 1). The ratio of the ones supplying aquarium plants from both abroad and domestically is 60% while the ones supplying their materials in the same way is 66% (Fig. 1). While fresh water and sea fish as well as other water living things are supplied domestically from

Table 3: Percentage frequency of the ones selling plants and producing fish, plant and living fish food in their businesses. Percentage ratios of the ones working with at least one vet and a water products engineer and level of technical support to their customers

Parameters	Yes (%)	No (%)
Veterinary	83.1	16.9
Aquaculture engineer	22.0	78.0
Technical support	98.3	1.7
Fish breeding	35.7	64.3
Plant production	0.0	100.0
Plant sale	60.3	39.7
Live feed production	3.5	96.5

Table 4: Frequency ratios % of countries where businesses supply living things (fish and plants) and material

Countries	Live supply (%)	Material supply (%)
China	-	61.1
Germany	3.0	33.3
Singapore	69.7	-
Indonesia	6.1	-
Taiwan	6.1	5.6
Other	15.2	-

cities such as Istanbul, Izmir, Mersin, Adana, Iskenderun, 69.7% of the living things coming from abroad are supplied from other countries such as Singapore, 6.1% from Indonesia, 6.1% from Taiwan, 15% from Thailand, Malaysia and the Czech Republic (Table 4). While 61.1% of the aquarium materials bought from abroad such as heater, motor, filter, accessories, etc., are supplied from China. About 33.3% of these are supplied from Germany and 5.6% from Taiwan (Table 4). The first among the most sold fish type is varieties of goldfish (32.5%) and following this there are cichlid types (27.8%), poeciliidae (26.6%), characins (5.3%) and sea fish (5.3%) (Table 5). The most sold plants among the generally sold ones are as follows, respectively: *Elodea* sp. (24.3%), *Anubias* sp. (17.8%) and *Echinodorus* sp. (10.3%), *Ludwigia* sp. (9.3%), *Vallisneria* sp. (8.4%), *Cabomba* sp. (6.5%), *Cryptocoryne* sp. (6.5%), *Hygrophila* sp. (4.7%), *Bacopa* sp. (3.7%), *Vesicularia* sp. (3.7%) and other (4.7%) (Table 5). The list of materials sold most is as follows: heater (26%), air motor and pump (19.5%),

**Table 5: Sales ratios % of the mostly sold fish, plant and material items**

Fish species	percentage
Goldfish (Cyprinids)	32.5
Cichlids	27.8
Live bearers	26.6
Characins	5.3
Saltwater fish	5.3
Other saltwater animals	2.4
<b>Aquarium plant species</b>	
<i>Elodea</i> sp.	24.3
<i>Anubias</i> sp.	17.8
<i>Echinodorus</i> sp.	10.3
<i>Ludwigia</i> sp.	9.3
<i>Vallisneria</i> sp.	8.4
<i>Cabomba</i> sp.	6.5
<i>Cryptocoryne</i> sp.	6.5
<i>Hygrophila</i> sp.	4.7
<i>Bacopa</i> sp.	3.7
<i>Vesicularia</i> sp.	3.7
Other	4.7
<b>Aquarium material</b>	
Heater	26.0
Air pump (Blower)	19.5
Filter	16.6
Accessory decor	13.6
Aquarium	4.7
Other	7.7

internal-external filter (16.6%), accessories-decor (13.6%), aquarium (4.7%) and others (7.7%) (Table 5). Business owners, most of whom (78%) are happy with their jobs stated that unrecorded shopping online affected their sales adversely.

On the other hand, aquarium makers who are legally supposed to work together with a professional vet stated that vets level of knowledge was not enough for fish health. It was found out that the obligation of working with vets did not help the business owners particularly in terms of fish health. The idea that preferring professional occupation group expert on the issue with knowledge of fish biology and fish health will be more helpful is common among the business owners. It restricts the preferences of the retailer that the number of importers supplying material from abroad is little (3-5 businesses). Lack of a professional organization (association, chamber, etc.) with the purpose of conveying the problems and needs of aquarium makers to the related authorities is also mentioned.

There is an expectation that with such organizations the number of unaware sellers and buyers will decrease. It is reported that there are health problems in living things imported from abroad. While declaring that domestic producers have so low capacities that it cannot meet the domestic demand, retailer businesses declare that imported living things' attraction capacity in terms of appearance and variety of types is higher than the domestic production. A great part as 50.8% of aquarium businesses in Istanbul is sole proprietorships. They research with a strategy of providing the living things

(fish, plant, etc.) and materials (heater, filter, pump, etc.) which they trade from domestic and foreign sources and transporting them to the customer.

It is known that only a few hundreds of 4000-5000 types of fresh water fish are popular in the world (Sales and Janssesns, 2003). In all of the countries, trading aquarium fish, fish are supplied by means of inter country exchange except domestic productions. The Czech Republic which is one of the three biggest countries in the world in terms of exporting capacity of fresh water aquarium fish, realized fresh water fish exporting of 23.5 million dollar in 2007 as well as importing amounted to 2.8 million dollars (FAO, 2008). Importing numbers are always higher than exporting numbers in countries such as the USA, Germany, France, Portugal, England, etc., which constitutes the market for exporting potential countries such as Singapore and the Czech Republic (FAO, 2008). That fish, plant and a great amount of materials are supplied by importing in Istanbul is similar to the general operating of aquarium sector in the world. For example while in 2007, the UK realized \$29.9 million from fresh water aquarium fish sales, \$4.1 million from sea fish importing, the country realized \$2.7 million from fresh water and approximately \$1 million from sea fish exporting (FAO, 2008).

That is, exporting figures are considerably below the importing figures. This condition is same in many countries (USA, Japan, Germany, UK, Russia, Portugal, Romania and Slovakia) including Turkey. In 2007, fresh water aquarium fish importing value of Turkey was \$1.8 million; on the other hand, exporting value was only \$8000 (FAO, 2008). Besides, \$194 thousand of aquarium sea fish was imported in the same year but no exporting was done. The Cyprinidae family including common types (goldfish, minnows, barbs, rasboras and danios) in global aquarium fish trade is one of the significant families.

Besides, family members such as Callichthyidae, Cichlidae, Characidae, Gastteropelecidae, Loricariidae and Osteoglossidae are among the other important groups used in aquarium trade (UNEP and WCMC, 2008). The members of Cyprinidae which is among the fish groups that aquarium makers in Istanbul sell at most, rank the first and Cichliade and living thing breeding groups follow them (Sales rates are respectively, 32.5, 27.8 and 26.6%). Similarly, it is reported that these three groups are among the mostly marketing fish type by aquarium makers in Izmir which is another big city of Turkey (Hekimoglu *et al.*, 2005). When sales list worldwide are considered, it is known that goldfish, Cichliade and living thing breeding groups (guppy, platy, swordtail and molly) are demanded more (Corfield *et al.*, 2008). In 2001, in a study made regarding the imported aquarium fish to

Turkey (Turkmen and Albaz, 2001) it was reported that importing firms prioritized the goldfish, living thing breeding groups and tropical kinds. In Table 6, 45% of the imported aquarium fish in Turkey find a market in Istanbul, 25% in Ankara and 10% are marketed in Izmir (Turkmen and Albaz, 2001).

Table 6: Types of aquarium fish imported to Turkey in 2009 (Aquarium plants are not in the list)

Imported Freshwater fish species	
Species	Common names
<i>Amphilophus citrinellus x Heros severus</i>	Blood Parrot x Convict Cichlid Hybrid
<i>Apteronotus albifrons</i>	Black ghost knifefish
<i>Astronotus ocellatus</i>	Oscar
<i>Balantiocheilos melanopterus</i>	Bala Shark
<i>Betta splendens</i>	Betta
<i>Carassius auratus</i>	Goldfish
<i>Centropyge lorculus</i>	Flame angel
<i>Chromobotia macracanthus</i>	Clown loach
<i>Colisa lalia</i>	Colisa
<i>Cyphotilapia frontosa</i>	Frontosa
<i>Cyrtocara moorii</i>	Blue dolphin
<i>Glyptoperichthys gibbiceps</i>	Sailfin pleco
<i>Haplochromis borleyi</i>	Redfin Cichlid
<i>Hemigrammus bleheri</i>	Rummy Nose Tetra
<i>Hyphessobrycon eques</i>	Serpae Tetra
<i>Hypostomus plecostomus</i>	Pleco
<i>Labidochromis caeruleus</i>	Yellow Lab
<i>Melanochromis auratus</i>	Auratus
<i>Melanoaenia boesemani</i>	Boesemani rainbowfish
<i>Metymnis hypsauchen</i>	Silver Dollars
<i>Microgeophagus ramirezi</i>	Ramirezi
<i>Moenkhausia sanctaefilomenae</i>	Red Eye Tetra
<i>Neolamprologus brichardi</i>	Brichardi
<i>Nimbochromis livingstoni</i>	Livingstone
<i>Nimbochromis verustus</i>	Verustus
<i>Osteoglossum bicirrhosum</i>	Arowana
<i>Pangasius hypophthalmus</i>	Pangasius Catfish
<i>Paracheirodon axelrodi</i>	Cardinal tetra
<i>Paracheirodon innesi</i>	Neon Tetra
<i>Poecilia latipinna</i>	Sailfin molly
<i>Poecilia reticulata</i>	Guppy
<i>Poecilia sphenops</i>	Molly
<i>Potamotrygon orbignyi</i>	Smooth back river stingray
<i>Pseudotropheus scalosi</i>	Saulosi
<i>Pseudotropheus socofofi</i>	Powder Blue Cichlid
<i>Pterophyllum Scalare</i>	Freshwater angelfish
<i>Puntius tetrazona</i>	Tiger barb
<i>Sciaenochromis ahli</i>	Electric blue hap
<i>Symphysodon aequifasciata</i>	Discus
<i>Thorichthys meeki</i>	Firemouth cichlid
<i>Trichogaster trichopterus</i>	Gourami
<i>Trigonostigma heteromorpha</i>	Harlequin Rasbora
<i>Tropheus duboisi</i>	Tropheus
<i>Tropheus moori</i>	Tropheus
<i>Xiphophorus helleri</i>	Swordtail
<i>Xiphophorus maculatus</i>	Platy
<b>Imported marine species</b>	
<i>Acanthurus leucosternon</i>	Surgeonfish
<i>Acanthurus lineatus</i>	Tang fish
<i>Acanthurus pyroferus</i>	Surgeonfish
<i>Actina equina</i>	Beadlet anemone
<i>Amblyeleotris randalli</i>	Prawn Goby
<i>Amphiprion chrysogaster</i>	Mauritian anemonefish
<i>Amphiprion frenatus</i>	Tomato clownfish

Table 6: Continue

Imported Freshwater fish species	
Species	Common names
<i>Amphiprion ocellaris</i>	Clownfish
<i>Amphiprion percula</i>	Percula Clownfish
<i>Amphiprion perideraion</i>	Pink Anemonefish
<i>Anthellia glauca</i>	Waving Hand Coral
<i>Apolemichthys trimaculatus</i>	Angelfish
<i>Aulonocara jacobfreibergi</i>	Malawi butterfly
<i>Balistoides conspicillum</i>	Triggerfish
<i>Calcinus laevimanus</i>	Hermit Crab
<i>Carermlaria obesa</i>	Sea Pen
<i>Centropyge bicolor</i>	Bicolor angelfish
<i>Centropyge bispinosus</i>	Marine angelfish
<i>Centropyge heraldi</i>	Heraldi Angelfish
<i>Chaetodon collar</i>	Butterflyfish
<i>Chelmon rostratus</i>	Copperband butterfly fish
<i>Chiloscyllium punctatum</i>	Brownbanded bamboo shark
<i>Chromis viridis</i>	Green chromis
<i>Chrysiptera parasema</i>	Yellowtail Blue Damsel
<i>Clavularia viridis</i>	Green Star Polyp
<i>Coelogorgia palmosa</i>	Branched pipe
<i>Cryptocentrus cinctus</i>	Yellow Watchman Goby
<i>Dascyllus trimaculatus</i>	Domino damsel
<i>Dendrochirus zebra</i>	Zebra lionfish
<i>Dendronephthya rubeola</i>	Large soft tree coral
<i>Discosoma nummiformis</i>	Mushroom anemone
<i>Discosoma sp.</i>	Mushroom anemone
<i>Discosoma sp.</i>	Mushroom Anemone
<i>Escenius bicolor</i>	Bicolor blenny
<i>Forcipiger longirostris</i>	Longnose butterfly fish
<i>Fromia milleporella</i>	Red starfish
<i>Gramma loreto</i>	Royal gramma
<i>Halichoeres chrysus</i>	Wrasse
<i>Heniochus acuminatus</i>	Longfin Bannerfish
<i>Heteractis aurora</i>	White Beaded Anemone
<i>Heteractis crispa</i>	Sebae/Leather Anemone
<i>Heteractis magnifica</i>	Magnificent Anemone
<i>Jorunna funebris</i>	-
<i>Labroides dimidiatus</i>	Cleaner wrasse
<i>Lemnalca cauliflower</i>	Cauliflower Coral
<i>Lo vulpinus</i>	Foxface Rabbitfish
<i>Lysmata amboinensis</i>	Skunk Cleaner Shrimp
<i>Lysmata debelius</i>	Fire shrimp
<i>Macolor niger</i>	Black and white snapper
<i>Macroactyla doreensis</i>	Long Tentacle Anemone
<i>Naso elegans</i>	Naso Tang
<i>Naso lituratus</i>	Orangespine unicornfish
<i>Nemateleotris magnifica</i>	Orange Firefish
<i>Neopetrolisthes ohshimai</i>	Anomone crab
<i>Odontodactylus scyllarus</i>	Peacock mantis shrimp
<i>Palythoa caribaeorum</i>	-
<i>Panulirus versicolor</i>	Spiny lobster
<i>Paracanthurus hepatus</i>	Blue tang fish
<i>Paraglyphidodon oxyodon</i>	Damsel
<i>Parazoanthus axinellae</i>	Yellow cluster anemone
<i>Pomacanthus imperator</i>	Emperor angelfish
<i>Pomacanthus semicirculatus</i>	Koran Angelfish
<i>Pomacentrus alleni</i>	Damsel
<i>Protula magnifica</i>	Coco Worm
<i>Pseudanthias pleurotaenia</i>	Squarespot Anthias
<i>Pseudanthias tuka</i>	Purple Anthias
<i>Pterapogon kauderni</i>	Banggai cardinalfish
<i>Pygophilites diacanthus</i>	Royal angelfish
<i>Radianthus malu</i>	Anemone
<i>Radianthus ritteri</i>	Anemone
<i>Rhinecanthus aculeatus</i>	Huma Huma Trigger
<i>Rhinomuraena quaesita</i>	Ribbon morray Eel
<i>Ricordea florida</i>	Ricordia Mushroom

Table 6: Continue

## Imported Freshwater fish species

Species	Common names
<i>Ricordea yuma</i>	Mushroom Coral
<i>Sabellastarte indica</i>	Tubeworm
<i>Salaris fasciatus</i>	Jewelled blenny
<i>Sarcophyton</i> sp.	Coral
<i>Signigobius biocellatus</i>	The Two Spot Goby
<i>Simularia asterolobata</i>	Soft coral
<i>Simularia brassica</i>	Leather Finger Coral
<i>Simularia dura</i>	Cabbage Leather Coral
<i>Sphaeramia nematoptera</i>	Pajama cardinalfish
<i>Stenopus hispidus</i>	Coral Banded Shrimp
<i>Tectus niloticus</i>	Trochus shell
<i>Thalassoma hardwicke</i>	Six-Banded Wrasse
<i>Xenia distorta</i>	Xenia Field Sweet Pea
<i>Xenia umbellata</i>	Pulsing Xenia
<i>Zanclus canescens</i>	Moorish Idol
<i>Zebrasoma flavescens</i>	Yellow Tang
<i>Zebrasoma scopas</i>	Brown Scopas Tang
<i>Zoanthus pulchellus</i>	Sea mat coral
<b>Imported Brackish water species</b>	
<i>Monodactylus sebæ</i>	Mono Sebae
<i>Monodactylus argenteus</i>	Mono
<i>Scatophagus argus</i>	Scat
<i>Selenotoca multifasciata</i>	Spotbanded Scat

## CONCLUSION

Considering the trade volume in Istanbul, the importance of a survey made within the boundaries of this city is better understood. Moreover, it is recorded that imports increase in the months of September, November, December, January, February and March. In this study, it is observed that domestic retail sales are made mostly in winter months (90.9%). In 2005, a similar questionnaire study was done in Izmir, the third biggest city of Turkey (Hekimoglu *et al.*, 2005). The results of the study made by Hekimoglu *et al.* (2005) and this present study have similarities in many aspects. For example while 79% of aquarium businesses were rental in Izmir, 88.1% are rental in Istanbul. Sales take place mostly in winter season in both cities. Also the majority of the workers in both cities is graduates of high school and lower degrees and composed of male individuals. In terms of the fish, plant and material kind that are mostly sold there are some similarities between Izmir and Istanbul. That the surveys made in two of the most crowded cities of Turkey show similar results demonstrates that the results put forth the general condition of aquarium makers in Turkey with strong and reliable estimations.

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