

RESEARCH ARTICLE

Fishing at the Galata Bridge, İstanbul, in 2011-2012

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Abstract

The Galata Bridge, located at the entrance of the Gulf of Golden Horn, İstanbul, is famous for many fishermen fishing from the bridge. The Bridge was visited regularly to collect the information on the fish species and amount caught, fishing equipment, and number of fishermen from March 2011 to March 2012. *Trachurus* spp., *Spicara* spp. and *Mugil* spp. were typically seen throughout the year. In addition, with seasonal change, 20 fish species were observed. The average number of fishermen was 203 per day, and the estimated total fish catch amount at the Galata Bridge was about 64 tonnes in a year. Number of fishermen found at the Galata Bridge was constant throughout the year. Fishing materials such as fishing rods, fishing lines, baits and fishing weight, were found easily available at the bridge. This is the first systematic study on the fishing and related activities at the Galata Bridge.

Keywords: Galata Bridge, Golden Horn, amateur fishing, İstanbul

Introduction

Generally speaking, Turkish people do not consume much fish compared to the average fish consumption of the world although Turkey is surrounded by the Black Sea, Aegean Sea and Mediterranean Sea, which is a good position to consume various fish and sea food. According to Turkish Statistical Institute (Türkiye İstatistik Kurumu 2010), a Turkish person consumes 6.9 kg of fish and fish product in a year on average, while the average of the world is 16.7 kg. However, fishing is a popular hobby among people living in İstanbul. One of such popular fishing spots is the Galata Bridge in the Golden Horn (Figure 1) where many fishermen can be found not in relation to time or weather. At the same time, many tourists pass the Galata Bridge every day between the old city and the new city of İstanbul. Fishermen attract tourists to the Galata Bridge. In

that way, fishing at the Galata Bridge has become one of the famous tourist points in Istanbul.



Figure 1. Fishing at the Galata Bridge viewed from Karaköy.

Fishing at the Galata Bridge has been tradition in Istanbul. There is a special community of fishermen and people, which has existed for quite a long time. These days, however, bad-mannered people create problems by, for example, dumping trash or not releasing the small fish. To keep the traditional culture of the fishing at the Galata Bridge, it is necessary to learn the present situation.

Location and oceanographic characteristics of the area

The Galata Bridge connects Eminönü (the Old City side) to Karaköy (the New City side) and faces the Golden Horn and the Istanbul Strait (Bosphorus)(Figure 2). The Istanbul Strait is about 35 km long, 1.4 km wide and its narrowest part (İstiniye-Kandilli) is 720m wide. The maximum depth is 110m. The Marmara Sea is 11,500 km², 276 km long and 76 km wide. The maximum depth is 1335 m (Güven *et al.* 2010). The Marmara Sea is a transition zone between the Black Sea and the Mediterranean Sea. As a result of the positive water balance in the Black Sea, its water flows into the Marmara Sea through the Istanbul Strait, forming a brackish upper layer (depth 15-20m, 0.5-4.8 knots) with a salinity of 22-26‰. Below this upper layer, more saline (~39‰) Mediterranean water (1.6 knots) flows towards the Black Sea (Besiktepe *et al.* 1994).

The Golden Horn is a narrow natural estuary of the Istanbul Strait. It is 7.5 km long and 200-700 m wide. The maximum depth is around 40 m (Güven *et al.* 2010). Many environmental and pollution studies have been carried out in this

small inlet (e.g. Artüz and Korkmaz 1975) as it had been heavily polluted due to the dense human population surrounding it.

The length of the Galata Bridge is 490m, the width is 42m and the average height is 10m above water (Figure 3). Cars, buses and trams as well as pedestrians cross the bridge. There are some stands on the bridge which sell fishing rods, lines, weights, hooks, baits and so on. The number of such stands changes depending on the season and time of the day. Moreover there are four security offices on the bridge. Under the bridge there are restaurants and cafes. They re-opened for business in 2003.

The mean temperature of sea water at the surface is 16.0°C in spring, 26.1°C in summer, 18.2°C in autumn, 11.6°C in winter. The mean temperature of sea water at 10m depth in the water column is 14.9°C in spring, 21.5°C in summer 13.8°C in autumn, 9.7°C in winter. The yearly mean salinity of sea water at the surface is 19.4 ‰ and the bottom is 36.0 ‰ (based on data collected in 2007 by Z. Dorak, *pers.comm.*).

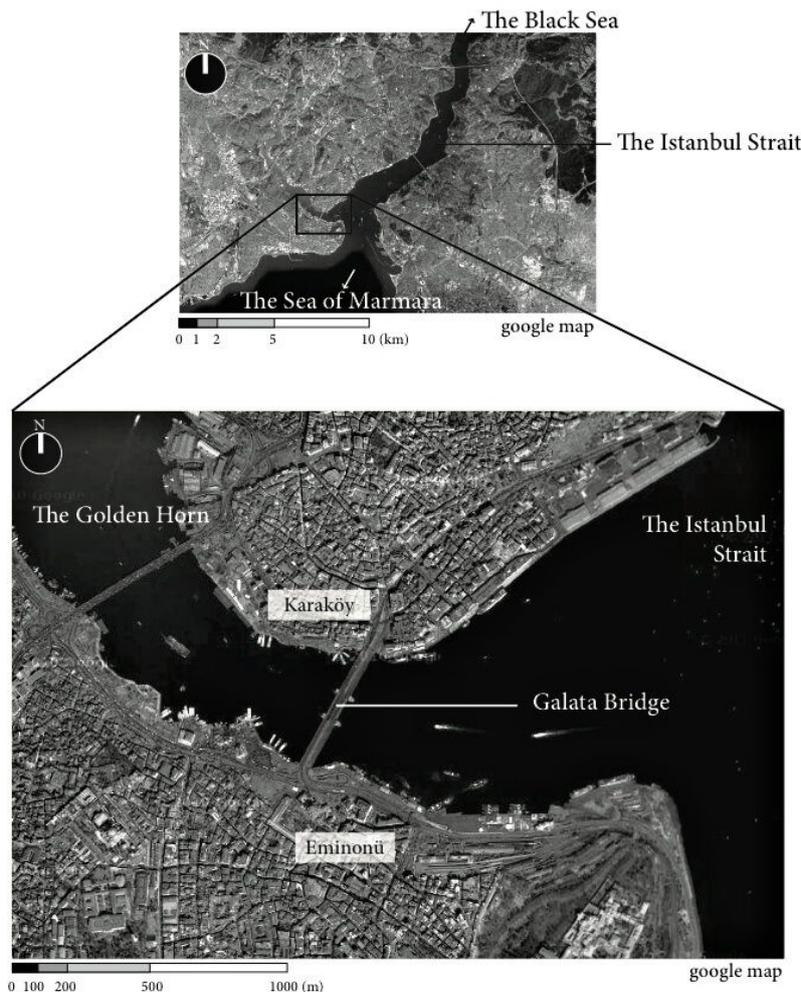


Figure 2. The location of the Galata Bridge.

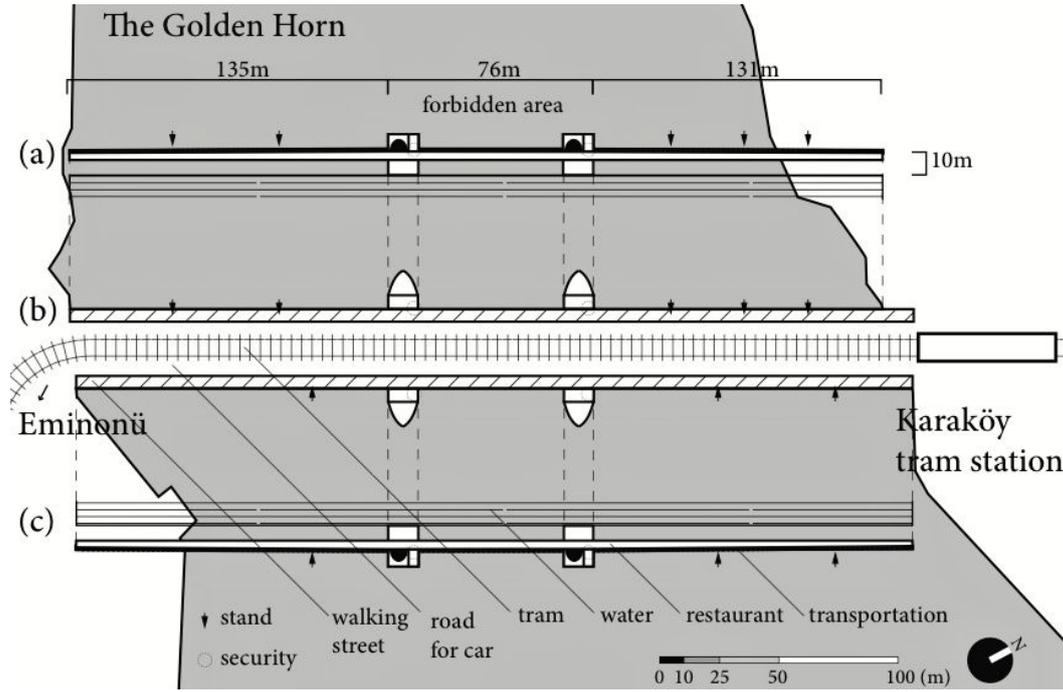


Figure 3. Diagram of the Galata Bridge; (a,c) side view, (b) view from top.

Fishing

Amateur fishing is for fun and relaxation. The Galata Bridge is in an urban environment, easy to reach by public transportation. Moreover, there are many sellers of fishing rods, lines, and baits on the bridge. The Galata Bridge, therefore, is an ideal location for amateur fishing. Relatively affordable prices of the fishing materials also attract the number of amateur fishermen to the bridge.

Aim of this study

Fishing at the Galata Bridge has been traditional in Istanbul for many years. There is no any other place like the Galata Bridge in the world. However, there has been no study on fishing at the Galata Bridge except some anecdotal articles, such as Öztürk (2011) and Zengin (2009). For example, kinds of species caught, methods of catch, or amount of catch each day have not been investigated. In this study, we aim to collect basic information as above to understand the present situation of the fishing at the Galata Bridge, so that its tradition can be better understood and maintained in Istanbul.

Materials and Methods

About twice a week, the Galata Bridge was visited and the number of fishermen was counted on four sites on the bridge (Figure 3) from March 2011 to March 2012. The interviews were made with the fishermen to obtain the information on

the fish species caught, their fishing methods, equipment, etc. The catch amount of fish was also estimated. To analyze the data, SPSS statistical package was used.

Results

Equipments and methods of fishing at the Galata Bridge

To fish, the materials mentioned below are needed. It is easy to buy these materials from the stands at the Galata Bridge or the fishing shops nearby. Indeed, anyone can start amateur fishing anytime he or she wants.

Fishing rods

Fishing rods are the basic equipment of fishing. Some stands at the Galata Bridge sell rods for 25-150TL (about 15-85 USD at the exchange rate in April 2012).

Fishing lines

In Turkey, generally the diameter of fishing line ranges from 0.10 mm to 2 mm. There are particular numbers to show the diameter, for example, no.30 means 0.30 mm in diameter. The color of fishing line should be same as the color of seawater. If the fishing line should be flexible so that it would last well and hard to tangle.

Fishing hooks

Fishing hooks also have particular numbers depending on the diameter and length. For fishing at the Galata Bridge, no. 5 is usually used.

Fishing weights

There are two kinds of fishing weight (Figure 4). Usually for *Trachurus* spp., 50~70g is popular. For bigger fish like *Pomatomus saltatrix* fishing weights of around 100g are used.

Baits

In order to catch fish successfully, baits are quite important. The species of fish caught can depend on the type of bait shown in Table 1. Sea worms are usually used for *Mugil* spp.(Kefal) at the Galata Bridge. They are brought from Izmir covered with sea weed. They die easily when it is hot and dry. *Crangon crangon* (Teke) are small shrimps, good for small fish bait as they are soft. Generally these are used in winter. In autumn and winter, *Engraulis encrasicolus* (Hamsi) can be seen as a bait. When fishermen catch small *Trachurus trachurus* (Kraça), some use them as a bait. Mussels are easy to collect on the sea shore in all seasons, and easy to open. However, fish sometimes eat mussel and sometimes not, depending on the season. Bread is the easiest bait to handle, but small fish can easily bite off bread from the hook. Therefore bread is used more for

feeding. It is often used as a bait in summer to catch *Mugil* spp. as well. Generally, these baits are used for all fish species. However, *Pomatomus saltatrix* (Lüfer/Çinekop), which is strictly ichthyophagos, only eat *T. trachurus* or *E. encrasicolus* (Alpbaz and Özer 1991).

Table 1. Basic baits used in the fishing at the Galata Bridge.

Kinds of bait	Latin name	Turkish name	Target species	Sale*
Shrimp	<i>Parapenaeus longirostris</i>	Karides	For all species	○
Sea worm	-	Deniz kurt	For all species	○
Shrimp	<i>Crangon crangon</i>	Teke	<i>Dicentrarchus labrax</i>	×
Horse mackerel	<i>Trachurus trachurus</i>	Kraça	<i>Pomatomus saltatrix</i>	×
Anchovy	<i>Engraulis encrasicolus</i>	Hamsi	<i>Pomatomus saltatrix</i>	△
Chicken	-	Tavuk	<i>Merlangius merlangus</i>	×
Mussel	<i>Mytilus galloprovincialis</i>	Midye	For all species	×
Bread	-	Ekmek	<i>Mugil</i> spp.	×

*○: always on sale ×: not on sale △: sometimes on sale

Lure (Çapari)

Çapari is a lure with hook and plastic feather (Figure 5). It is in many different colors according to the weather and the color of sea water. It can be used for mainly small fish like *Trachurus* spp.



Figure 4. Fishing weight.



Figure 5. Lure (Çapari).

Other useful goods

These materials can be sold and used at the Galata Bridge.

1. A wooden board to hold the fishing rod on the guard rail (Figure 6) Almost every fisherman has a wooden board to hold his or her fishing rod on the guard rail. There are stands selling these boards at the bridge. By using the boards, fishermen do not need to hold the fishing rods all the time.

2. Fishing buoy (Figure 7)

A fishing buoy is especially used to catch *Mugil* spp. (Kefal). In summer *Mugil* spp. come to the surface, the baits must be kept near the surface. The fishing buoy allows the fishing line to float. There are many colors of fishing buoy.

3. Florescent stick (Figure 8)

Florescent sticks are used to recognize a fisherman's own fishing rods at night, as it is difficult to find his or her own fishing line in the dark. Therefore a fisherman fastens a florescent stick to the tip of the fishing rod.



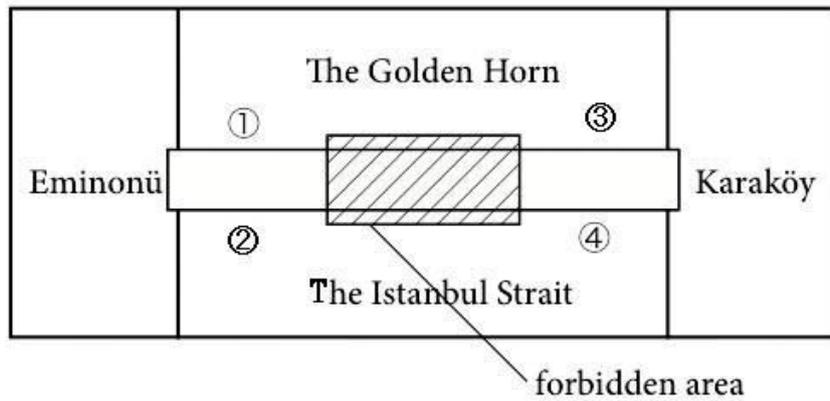
Figure 6. A wooden board.



Figure 7. Fishing buoys.



Figure 8. Florescent stick.



- ①Eminönü facing the Golden Horn ②Karaköy facing the Golden Horn
③Eminönü facing the Istanbul Strait ④Karaköy facing the Istanbul Strait

Figure 9. Four sites at the Galata Bridge.

Changes in site preference at the Galata Bridge

Generally, amateur fishermen are attracted to the crowded place, regardless of the season. In spring and autumn, fishermen catch more fish species because of migratory fish. For this reason, there are many professional fishermen in spring and autumn. However, in summer there are more amateur fishermen and foreign fishermen who come as tourists because of summer vacation. In summer it is difficult to stay at the bridge for a long time because of the heat and caught fish get spoiled easily. On the other hand in winter, the weather can be very poor and to stay at the bridge is difficult. Even in cold weather in autumn and winter, however, there are commercial migratory fish, for example *Pomatomus saltatrix* or *Sarda sarda*, so the number of fishermen is high. Moreover, the commercial fish such as *Trachurus* spp. or *Mugil* spp. are much bigger in winter than in summer. There was a significant difference on the number of fishermen between seasons (Kruskal-Wallis, $df=2$, $p=0,002$)

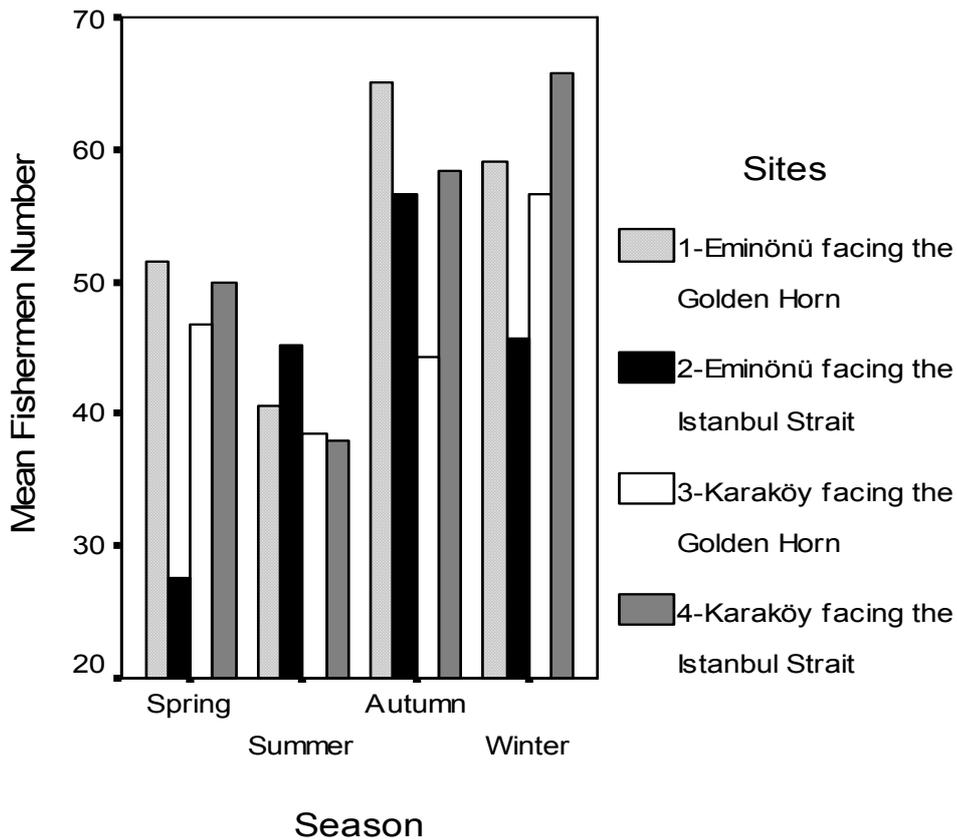


Figure 10. The seasonal change in the number of the fishermen at four different sites on the Galata Bridge.

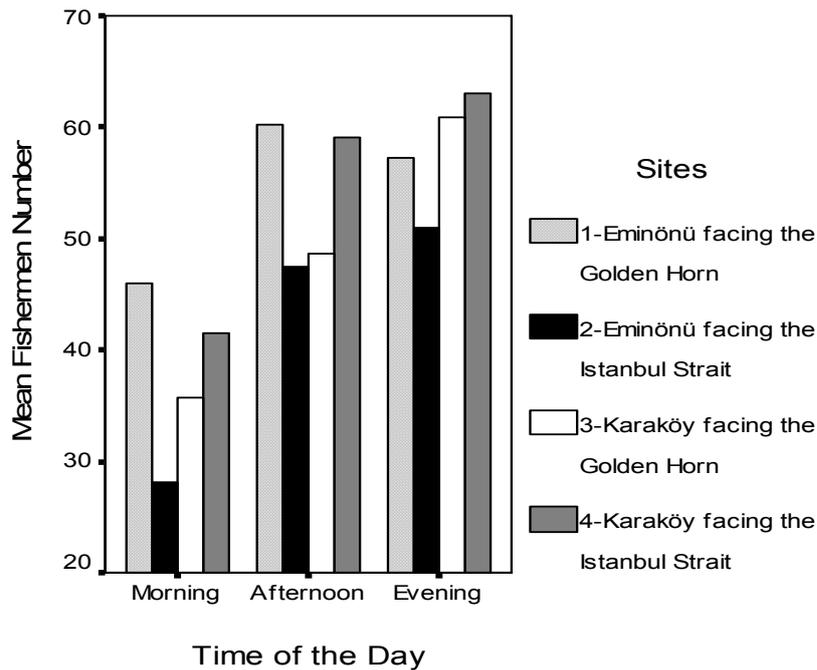


Figure 11. The change in the mean number of fishermen at four different sites on the Galata Bridge. (Morning: 6:00~12:00, Afternoon: 12:00~17:00 Evening: 17:00~6:00)

Generally there are more fishermen in the afternoon evening than in the morning (Figure 11). Amateur fishermen come just for fun or relaxation at the bridge in the midday. However, professional fishermen who depend on the fishing for living come to the bridge in the afternoon and stay over night. Especially big fish come to the surface at night and become easier to catch, thus many fishermen gather at night time. The most crowded time is around 15:00~18:00 in the evening. There was a significant difference between the numbers of fishermen in different time of the day (Kruskal-Wallis, $df=2$, $p<0,0001$).

There were always fishermen on the Bridge regardless of the weather, except when there was heavy snow (Figure 12). Generally speaking, on cloudy days more fish can be caught. On heavy rainy days and snowy days, it is very difficult to stay for a long time at the bridge. Therefore there were not many fishermen. However, even it is bad weather, if there are many fish, fishermen may come to the bridge. They keep contact with each other and share the information on the fish catch at the Galata Bridge. Therefore, the fishermen's number is changeable according to the information on fishing condition, but not the weather.

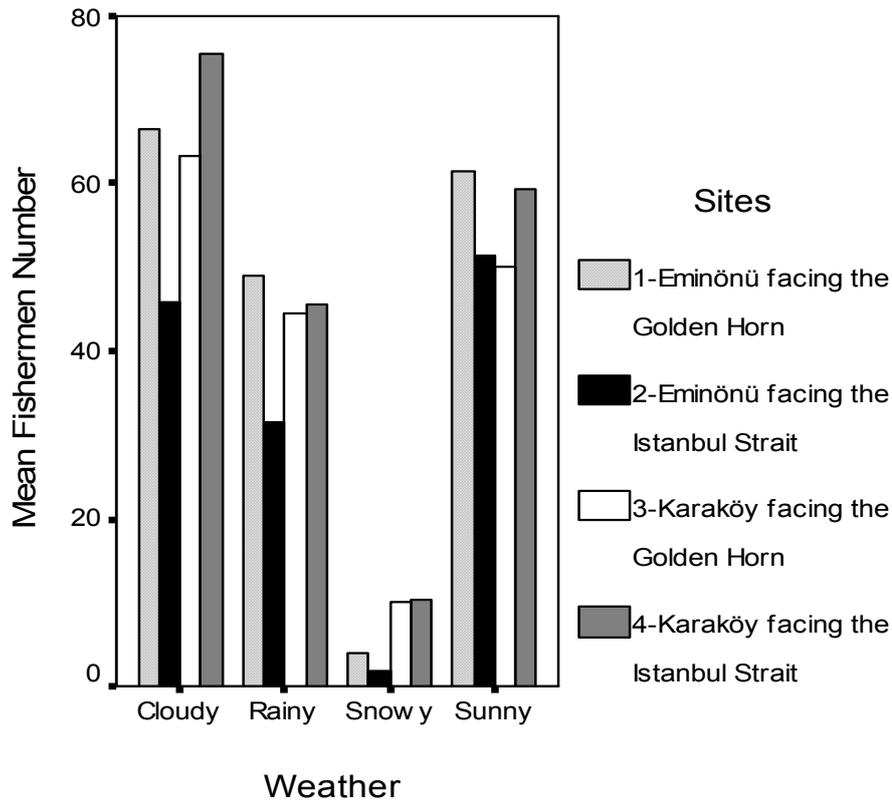


Figure 12. The change in the mean number of fishermen at four different sites on the Galata Bridge according to the weather.

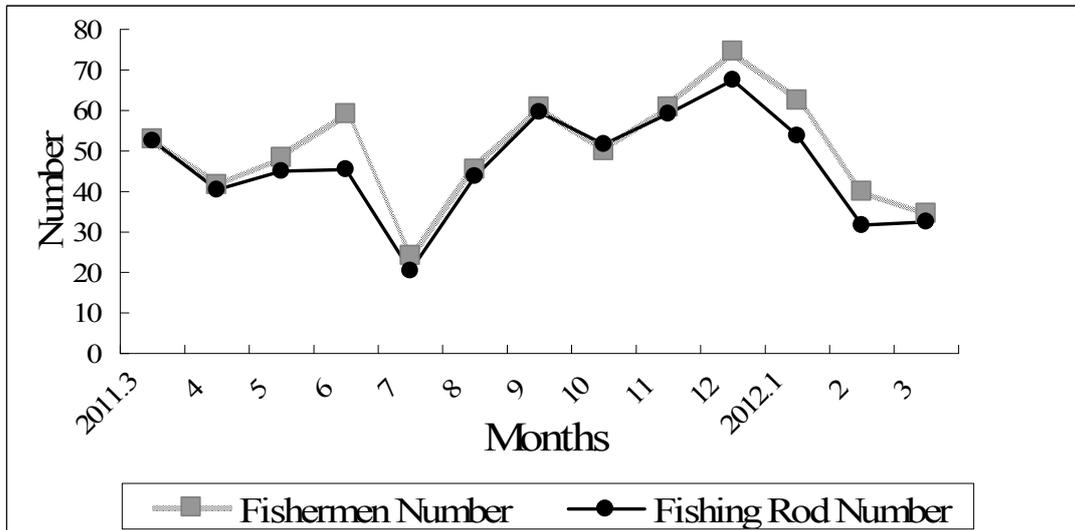


Figure 13. The change in the mean number of fishermen and fishing rods seen on the Galata Bridge.

The numbers of fishermen fishing rods correlate well (Figure 13). Generally a fisherman brings one fishing rod, but some fishermen bring two fishing rods. Some fishermen come with family or friends. Especially in spring, a warm

season, most fishermen fish with friends or families and spend time at the bridge, so the number of fishing rods was smaller than the number of people. There was no significant difference between the number of fishermen on four different sites (Kruskal-Wallis, $df=3$, $p=0,061$).

Fish caught at the Galata Bridge

Table 2 shows the list of fish caught at the Galata Bridge. Some species have regulation for length limit and maximum amount according to the Regulations 2/2 for controlling amateur fishing in 2011 (Amatör (Sportif) Amaçlı Su Ürünleri Avcılığını Düzenleyen 2/2 Numaralı Tebliğ, accessed at <http://www.balikavi.net/dokuman/tebling.php>, Jan. 2012), which are effective for amateur fishermen with fishing rods.

One is allowed to catch fish 5% smaller than the minimum length. Amateur fishermen can catch a total of 5 kg of fish per day regardless of the species.

Table 2. List of fish caught at the Galata Bridge.

Species (Turkish name)	Latin name*	Minimum length (cm)
Commercial fish		
İstavrit	<i>Trachurus</i> spp.	13
İzmarit	<i>Spicara</i> spp.	-----
Kefal	<i>Mugil</i> spp.	20
Lüfer (Çinekop)	<i>Pomatomus saltatrix</i>	20
Seasonal fish		
Barbunya –Tekir	<i>Mullus</i> spp.	13
Çaça	<i>Sprattus sprattus</i>	-----
Eşkine	<i>Sciaena umbra</i>	-----
Gelincik	<i>Gaidropsarus mediterraneus</i>	-----
Gümüş balığı	<i>Atherina boyeri</i>	-----
Hamsi	<i>Engraulis encrasicolus</i>	-----
İskorpit Lipsos	<i>Scorpaena</i> spp.	-----
Karagöz	<i>Diplodus vulgaris</i>	18
Kırlangiç	<i>Trigla lucerna</i>	-----
Levrek	<i>Dicentrarchus labrax</i>	18
Mezgit	<i>Merlangius merlangus</i>	-----
Palamut –Torik	<i>Sarda sarda</i>	25
Sardalya	<i>Sardina pilchardus</i>	-----
Tirsi	<i>Alosa fallax</i>	-----
Uskumru	<i>Scomber scombrus</i>	20
Zargana	<i>Belone belone</i>	-----

*Latin names according to Golani *et al.* (2006)

Table 3. The calendar of fish caught at the Galata Bridge.

Month	1	2	3	4	5	6	7	8	9	10	11	12
Species												
<i>Trachurus</i> spp.	•											
<i>Mugil</i> spp.	•											
<i>Spicara</i> spp.	•											
<i>Atherina boyeri</i>			•									
<i>Pomatomus saltator</i>										•		
<i>Sardina pilchardus</i>				•								
<i>Merlangius merlangus</i>					•							
<i>Sciaena umbra</i>					•							
<i>Scorpaena</i> spp.						•						
<i>Trigla lucerna</i>								•				
<i>Sprattus sprattus</i>				•								
<i>Engraulis encrasicolus</i>					•							
<i>Mullus barbatus</i>					•							
<i>Gaidropsarus mediterraneus</i>						•			•			
<i>Belone belone</i>										•		
<i>Sarda sarda</i>								•				
<i>Alosa fallax</i>					•							

Table 3 shows the months in which each particular fish species is caught at the Galata Bridge. Some species are caught throughout the year, such as *Trachurus* spp., *Mugil* spp., *Spicara* spp., while some migratory species such as *Pomatomus saltator* and *Sarda sarda* are caught in autumn. There are also species that are caught in spring, such as *Atherina boyeri*. In summer *Sardina pilchardus*, *Merlangius merlangus* and *Sciaena umbra* are caught. Especially in May and June, there are additional species found at the Galata Bridge.

Problems at the Galata Bridge

Since the Galata Bridge is always full of people, such as tourists and fishermen, some problems can be anticipated. The following complaints are common at the bridge.

- Garbage on the street
Because so many people cross this bridge, there is much trash such as tea cups and plastic bags. Sometimes the street becomes full of trash. Moreover fishermen are used to throwing trash on the street.
- Bad smells of fish on the street
Some fishermen cut baits and put them directly on the guard rails of the bridge. The fish they caught are put in the buckets on the street. All of these can contribute to bad smells on the bridge, especially in the heat.

- **Danger of fishing weights**
When fishermen throw fishing rods, the rods need power to throw fishing hooks further. They pull fishing rods as much as possible before casting. When they pull fishing rods, it is dangerous for passers-by as the fishing weights may cause injury. Also for passers-by under the bridge, there are possibilities of fishing weights falling from the bridge above. Such accidents with fishing weights have been seen often at the Galata Bridge.
- **Illegal salesmen**
There are many salesmen at the Galata Bridge who sell tea, sandwiches, water and so on. Salesmen need permission to sell food or goods on the bridge, but most do not have it. Generally stands on the bridge do not have permission either, which was a claim made by some passers-by.
- **Decrease of fish due to illegal trawl fishing**
Almost all fishermen are concerned with the decrease of fish stocks. They assume it is because of trawl fishing. Trawl fishing is not allowed in the Istanbul Strait but some fishermen operate trawl fishing illegally. Compared to the past, the catch of fish is certainly decreasing. Amateur fishermen complain about this condition to fishermen and marine police, but authorities have not been able to manage illegal fishing strictly.
- **By-catch of small fish**
Most fishermen especially amateurs, are not concerned with the size of the fish caught. When fries are caught, they do not always throw them back to the sea. If this practice continues, there will be fewer fries and fish in the future.

Discussion

The total catch amount of fish at the Galata Bridge can be estimated with our data. Table 4 shows the estimate of the total catch amount of fish at the Galata Bridge by both amateur and experienced fishermen. It is presupposed that amateur fishermen fish at the bridge for three days or less in a week and with the experience of less than 10 years, while experienced fishermen fish at the bridge for four days or more in a week and with the experience of more than 10 years. This data has been collected by the interviews at the Galata Bridge.

Table 4. The average of frequency of fishing and catch amount of fish by amateur and experienced fishermen.

	Amateur	Experienced
The ratio of amateur and experienced	82.7%	17.3%
The frequency of fishing in a week	1.3 days	5.6 days
The minimum average of catch of fish in a day per person	1.9 kg	6.0 kg
The average of number of fishermen per a day	168 people	35 people
The total amount of fish per year	19918.18 kg	56448 kg

According to this estimation, amateur fishermen catch about 19.9 tonnes of fish in a year and experienced fishermen catch fish about 56.4 tonnes in a year. That is a total of 76366.18kg (about 76 tonnes) of fish caught. This amount deserves to be considered.

Generally, the regulation is only for fishing with fishing boat. Although there are some regulations for fishermen with fishing rods, they are not strict. However, to keep this traditional fishing at the Galata Bridge, all of fishermen should concern fishery resources. At the same time regulations are also necessary. If nothing is done, the amount of fish will certainly decrease, as even now the catch of fish is decreasing because of illegal fishing. Toward the end of this study, the regulation was modified to control the size and amount of the fish caught by Istanbul Municipality. Now only a warning has been given, but later violators may need to pay penalty. The implementation has been started but reinforcement needs to be controlled constantly.

On the other hand, if the weather was quite bad, the survey at the Galata Bridge could not be done. Given this, the average numbers of fishermen and fishing rods may change depending on the weather. To learn more accurate numbers, the survey must be done on a regular basis and must not be influenced by the weather conditions.

Conclusion

By this study at the Galata Bridge, data such as the average number of fishermen in a year, fish species at the Galata Bridge or fishing methods at the bridge were collected. The Galata Bridge is quite important as a touristic place in Istanbul, and from a fisheries point of view, important as the way of migratory fish. However, if the present situation continues, fish resource in Istanbul will decrease. There are already some regulations for amateur fishing in Turkey, but only few fishermen follow them. For example, although a license is needed to do amateur fishing in Turkey, most fishermen do not know about it. Nowadays Istanbul municipality tries to control the length of caught fish at the Galata Bridge. This attempt is a step towards sustainable fisheries. To keep traditional amateur fishing at the Galata Bridge, each fisherman should think about sustainable fishing. In addition, to keep the fishing comfortable and enjoyable at the Galata Bridge, every fisherman should have good manners.

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