

Problems Experienced By Inland Water Fishermen During The Pandemic (Covid-19): The case of Yozgat Province

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Abstract

The fishermen of Yozgat province, which is located in the middle of the steppe without a seashore, export the fish they catch abroad. During the pandemic, export in fisheries is restricted. For this reason, the aim of this study was to investigate the difficulties and problems experienced by fishermen in Süreyyabey and Gelin Güllü Dam lakes during the pandemic period covering the years 2020-2021 (March-2020; March 2021). In the study, 2 different questionnaire forms were carried out by face-to-face interviews with fishermen and cooperative presidents. As a result of the study; In the fishing period of July-December 2020 (6 months), there was no fish export and the fishery paused. In January-March 2021, exports started to be made at a certain quota. It was determined that 63.63% (n=21) of a total of 33 fishermen in Çekerek Dam Lake quit fishing, 66.66% (n=14) started farming, 33.33% (n=7) migrated, and 36.36% (n=12) continued fishing during the pandemic. In Gelin Güllü Dam lake, 35 % (n=7) of the total 20 fishermen quit fishing, 20 % (n=4) started farming and 65 % (n=16) continued fishing. Carp (*Cyprinus carpio*), Silver (*Atherina boyeri*), Siraz (*Capoeta pestai*), Sudak (*Sander lucioperca*) species were caught in the region during the pandemic. The problems experienced by the fishermen in the region; unregulated fishing, marketing, it was determined that they did not receive any government support.

Keywords: “Pandemic, fisheries, Süreyyabey dam lake, Gelin Güllü dam lake, Yozgat.”

1. Introduction

Çekerek Dam (Süreyyabey Dam), which ranks 10th among the dams in Turkey in terms of water collection and capacity, is a dam built between 1996-2004 for irrigation, energy and flood control purposes on Çekerek Stream in Yozgat province. The body volume of the dam is 7.500.000 m³, the height from the river bed is 103,00 m, the lake volume at normal water level is 1310,0 hm³, and the lake area at normal water level is 41,34 km². The surface area of Çekerek Dam is 4.133 hectares. In Kayabaşı Plain, it merges with the main branch of Yeşilırmak coming from Tokat (Tokat River) and forms Yeşilırmak. In spring and autumn, the water it carries increases and the river swells. The length of Çekerek Stream is 256 km and the rainfall basin is 12,000 km² [1].

Gelin Güllü Dam Lake is located in the Central Anatolia Region, 40 km south of Yozgat province (39°36'30 "N, 35°03'20 "E), at an altitude of 1050 m. The dam was built on the Delice River, a tributary of the Kızılırmak River, and the most important river source feeding the dam is the Kanak Stream. It has been determined that the water temperature in the lake, which is located in a region with a harsh continental climate, is around 25 °C at most in summer and drops to 0 °C in winter [2,3].

Gelingüllü reservoir started to hold water in November 1993 and its water elevation was 987.14 m in January 1994, while it exceeded 1000 m in a short period of one year, in other words, the environment has lost its river characteristics and started to gain lake characteristics. In order to encourage fishing in the region, 200.000 mirror carp of 3-5 cm size were grafted into this dam lake, which was established to create an agricultural water reservoir, for the first time in September 1994 and the mirror carp stock was renewed in the following years. The surface area of Gelin Güllü Dam is 2,320 hectares [4].

In this study, during the pandemic period (March 2020-2021), 12 out of 33 fishermen in Çekerek Dam Lake and 16 out of 20 fishermen in Gelin Güllü Dam lakes continued to actively fish. The aim of this study is to investigate the problems experienced by the fishermen of Yozgat province, who market the fish they catch abroad, during the pandemic.

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2. Material and Methods

2.1. Study Area

The study area is Çekerek and Gelin Güllü reservoirs in Yozgat province, which is located in the Central Anatolia Region, in the middle of the steppe with no coast to the sea (Figure 1).



Figure 1. Study areas (Gelin Güllü Dam Lake and Çekerek Dam Lake)

In this study, Gelingüllü Dam Lake S.S. Esenli Town and Surrounding Villages Fishery Cooperative and Çekerek Dam Lake S.S. Çekerek Fishery Cooperative fishery cooperative presidents and members were interviewed and questionnaire forms were filled out. In the questionnaire forms; the number and status of fishermen fishing in the region during the pandemic, the number of fishing boats used in fisheries, socio-demographic characteristics of fishermen, types and characteristics (mesh size, length) of fishing gears used in fisheries, specials and amount of fishes caught, and the problems they experienced during the pandemic were included in the questions.

3. Results

The fishermen of Yozgat province export the fish they catch abroad. During the pandemic, exports in fisheries were restricted. For this reason; In the fishing period of July-December 2020 (6 months), fish exports were not made and fishing was paused. In January-March 2021 (3 months), exports started to be made at a certain quota. Fisheries data in Çekerek and Gelin Güllü Dam Lakes during the pandemic are given in Table 1.

Table 1. The Fisheries data from Çekerek and Gelin Güllü Dam Lakes during the pandemic

The Fishing Areas	The Lake Area (Hectar)	The number of fishermen after p.	The number of fishermen before p.	The number of boats
Çekerek Dam Lake	4133	33	12	12
Gelin Güllü Dam Lake	2320	20	13	13
Toplam	6453	53	25	25

As can be seen in Table 1, during the pandemic, the fishing area of Yozgat province was 6453 hectares in total and it was determined that fishing was carried out by 25 fishermen and 25 boats. The distribution of fishing gear used in the region is given in Figure 2.

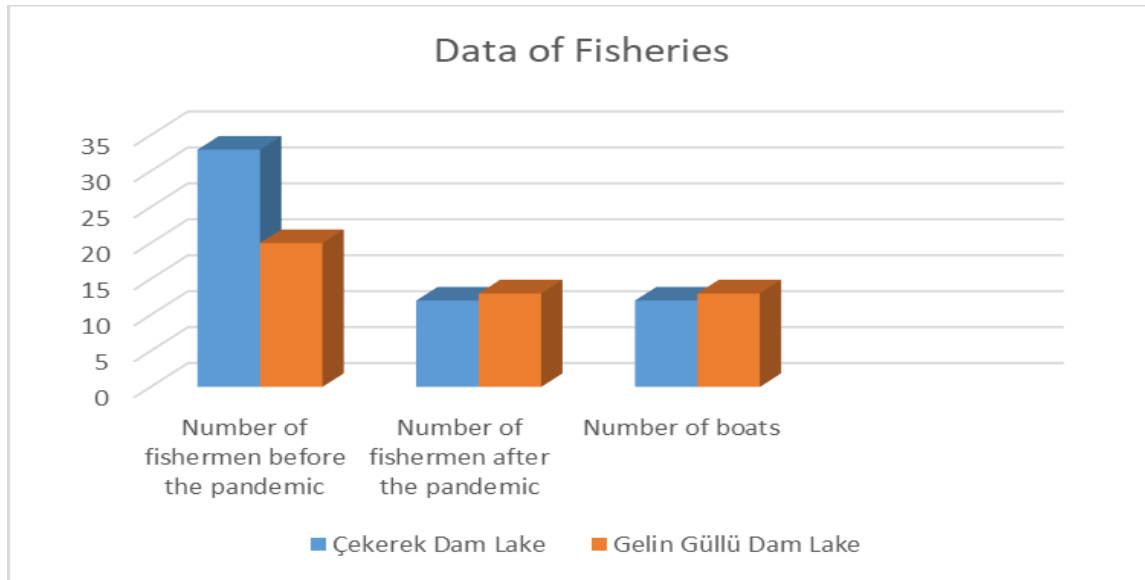


Figure 2. Data of fishing in the Çekerek and Gelin Güllü Dam Lakes

During the pandemic, it was determined that 21 of the total 33 fishermen in Çekerek Dam gave up fishing and 12 of them continued fishing, while 7 of the total 20 fishermen in Gelin Güllü Dam gave up fishing and 16 of them continued fishing.

Table 2. The fishing gears and the amount of fish caught during the pandemic in Çekerek and Gelin Güllü Dam lake.

Fishing Areas	Gillnets (m)	Trammel nets (m)	Seine Nets (1 pieces=200 m)	Amount of Fish Caught / Tonnes
Çekerek Dam Lake	12.000	10.000	8/1600	45
Gelin Güllü Dam Lake	15.000	12.000	13/2600	62
Toplam	27.000	22.000	21/4200	97

As can be seen in Table 2, it was determined that a total of 27,000 m of plain nets (50-80 mm mes size), 22,000 m of trammel nets (trammel; 120-180 mm, gillnets; 40-55 mm), 21 seine nets (bag 4-6 mm and lengths 80-200 m) were used during the pandemic. The amount of fish caught was 45 tonnes / 3 months in Çekerek Dam Lake and 52 tonnes / 3 months in Gelin Güllü Dam Lake. During the pandemic, the yield per hectare was determined as 10.88 kg / Çekerek and 9.60 kg / Gelin Güllü Dam Lake (Figure 3).

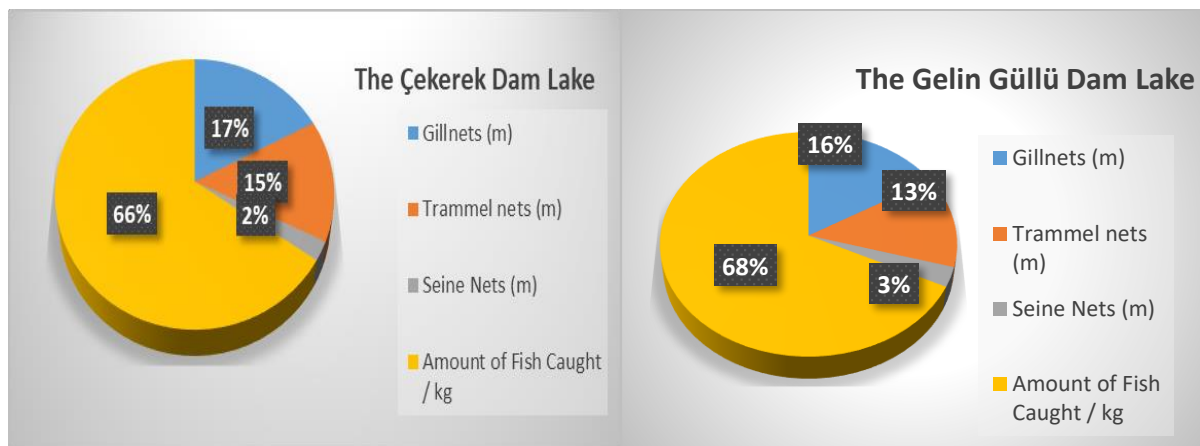


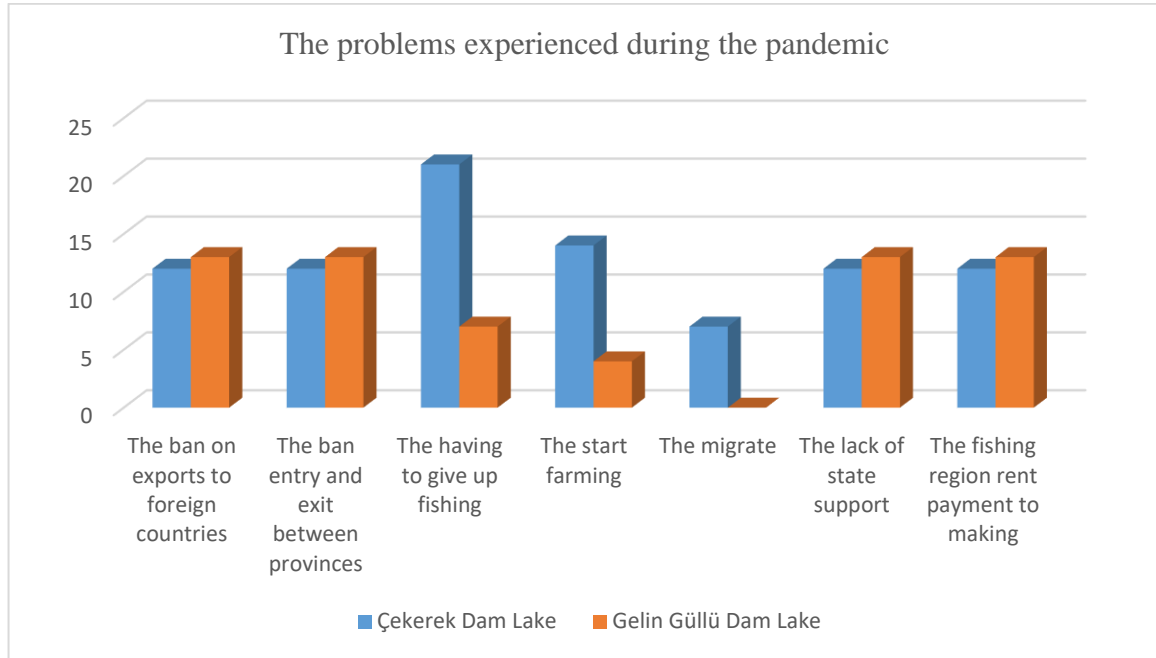
Figure 3. The fishing gears and the amount of fish caught in Çekerek and Gelin Güllü Dam lake.

Carp (*Cyprinus carpio*), Silver (*Atherina boyeri*), Siraz (*Capoeta pestai*), Sudak (*Sander lucioperca*) species were caught in the region during the pandemic. Among these species, silver fish is fished with seine nets. The arms of seine nets are 200 m long. Seine nets are laid at depths of 4-5 m from the shore in the shape of a crescent moon. One arm of the seine is laid on the shore with the other arm on the boat and fishing is carried out between 1 and 1.5 hours. Sudak (*Sander lucioperca*) is only fished in Gelin Güllü Dam Lake. The problems experienced during the pandemic are given in Table 3.

Table 3. The problems experienced by fishermen during the pandemic

The problems	Number of fishermen		Number of fishermen	
	in Çekerek D. L. (n)	%	in Gelin Güllü D. L.	%
The ban on exports to foreign countries	12	36.36	13	15
The ban entry and exit between provinces	12	36.36	13	15
The having to give up fishing	21	63.63	7	35
The start farming	14	66.66	4	20
The migrate	7	33.34	-	0
The lack of state support	12	36.36	13	15
The fishing region rent payment to making during the pandemic	12	36.36	13	15
The number of fisherman Before the pandemic	33	-	20	-

As can be seen in Table 3, during the interviews with fishermen who are members of Fisheries Cooperatives and cooperative presidents, it was asked about the problems they face in fishing; 63.63% (n=21) of a total of 33 fishermen in Çekerek Dam gave up fishing during the pandemic, 66.66% (n=14) started farming, 33.33% (n=7) migrated, 36.36% (n=12) continued fishing. 35% (n=7) of a total of 20 fishermen gave up fishing 20% (n=4) started farming, 65% (n=13) continued fishing in the Gelin Güllü Dam lake .

**Figure 4. The problems experienced by fishermen during the pandemic**

Problems experienced by the fishermen in the region; ban export abroad, ban entry and exit between provinces, reasons such as having to gave up fishing, starting farming, having to migrate due to unemployment, lack of state support, lease payments for fishing grounds during the pandemic period were identified (Figure 4).

4. Discussion and Conclusion

In a study on fish catching in yozgat province, it was determined that the freshwater production in the provinces in the Central Anatolia Region was 1045 tonnes in Kırşehir, 765 tonnes in Yozgat, 464.8 tonnes in Kayseri, 178 tonnes in Aksaray and 20 tonnes in Nevşehir in the 2016-2017 fishing season, respectively [1]. In this study, it was determined that 97 tonnes of fish were caught in total.

Demir [1], determined that 450 tonnes of fish were caught from Çekerek and 315 tonnes of fish were caught from Gelin Güllü reservoir in 2016-2017. The number of fishermen was determined as 23 in Gelin Güllü reservoir and 16 in Çekerek reservoir. The total amount of gill nets used was 26000 m in Gelin Güllü reservoir and 16600 m in Çekerek reservoir. In addition, it was determined that a total of 750 fykenets were used for crayfish fishing.

In this study, it was determined that a total of 97 tonnes of fish were caught during the pandemic. 45 tonnes of these fish were caught from Çekerek and 62 tonnes from Gelin Güllü reservoirs. There has been a decrease in the number of fishermen due to the abandonment of fishing. In addition, since they marketed their fish to the exporting company, there were great difficulties during the pandemic and the fishing data decreased considerably.

During the fishing period of July-December 2020 (6 months), no fish exports were made and the fishery stagnated. However, in January-March 2021, exports started to be made at a certain quota. It was determined that 63.63% (n=21) of a total of 33 fishermen in Çekerek dam gave up fishing, 66.66% (n=14) started farming, 33.33% (n=7) migrated, and 36.36% (n=12) continued fishing during the pandemic. In Gelin Güllü Dam Lake, 35 % (n=7) of the total 20 fishermen gave up fishing, 20 % (n=4) started farming and 65 % (n=13) continued fishing.

There are studies on fish catching in inland waters. Some of these studies are as follows. The annual amount of fishery products caught by fishermen who are members of fishery cooperatives in the Eastern and Southeastern Regions in a total area of 530.146 ha is 6.355 tonnes/year. Van province ranks first in production with 70.03% [5]. The amount of fish caught by cooperatives in Elazığ province was determined as 4.6, 6.7 and 6 tonnes in Kemaliye, Peri and Göktepe regions, respectively, in 2003-2004 fishing season [6]. They reported that the annual total amount of fish caught in Keban Dam Lake was 480 tonnes/year and the amount of crayfish was 17 tonnes/year, 7.71% of the annual catch was provided by Elazığ province, 27.08% by Tunceli province and 5.21% by Erzincan province [7]. The aquaculture production in Adıyaman province in 2013 was determined as 643 tonnes [8], It has been stated in the studies that the marketing problem of Yozgat province was also experienced before the pandemic and other problems.

The fish caught by the Central Anatolia Region Fisheries Cooperatives are exported not only to domestic markets but also to foreign countries. Especially silver fish is widely fished in the inland waters of our country and exported to some European Union countries in significant quantities. Fishing of other fish species silver fish were an alternative source of income for fishermen when they were prohibited. happens. Most of the co-operatives in the Central Anatolia Region are not able to meet together and make decisions cooperative where they can receive and discuss the problems and solution proposals of the cooperative.

It has been determined that they do not have buildings. Ineffective management of co-operatives, the inability of fishermen to organise themselves among themselves, and the rental price of the cooperative financial difficulties in payment, decrease in the amount of economic fish, fishing the tools and equipments do not comply with the standards, the fishermen catch the fishery products some co-operatives have ceased to operate due to problems such as individual marketing. They stated that they tended to stop. Co-operative members' aquaculture products In the event that the co-operative does not act in accordance with the articles of association of the Fisheries and Aquaculture. In case of liquidation decision as a result of the inspections of the General Directorates of Products unmanageable co-operatives are terminated. Landing of the landed catch by middlemen and brokers points and offered to the market. The biggest fishery in aquaculture One of the problems is the inability to market the products under favourable conditions and prices. One of the most important problems of co-operatives is to prevent catching is the inability to move on [1,10,11,12,13,14]. In this study, it was determined that there were similar problems with the studies mentioned above.

Acknowledgements

During this study; I would like to thank Yozgat Bozok University Faculty Member Assoc. Prof. Dr. Güllü Kırat for her help in surveying fishermen in Çekerek and Gelin Güllü Dam Lakes.

References

- [1] Demir, H. "Some Aquaculture Products in interior Anatolia Region Structure of Cooperatives and Fishing Vessels Technical Specifications of Fishing vessels". Ordu University, Institute of Science and Technology, Master Thesis, p 67,2019.
- [2] Kırıkaya, Ş. G., Ekmekçi, F. G. "Growth Characteristics of Mirror Carp (*Cyprinus carpio* L., 1758) Living in Gelin Güllü Dam Lake". Turk J Vet Anim Sci. 28: 1057-1064, 2004.
- [3] Ekmekçi, F. G., Kırıkaya, Ş.G. "An Example for Determination of Changes in Fish Growth During Ontogeny in Dam Lake: Mirror Carp Population in Gelin Güllü Dam Lake (Yozgat, Turkey)". Turk J Vet Anim Sci. 28; 1129-1135, 2004.
- [4] Anonim. "Yozgat provincial environmental status report" https://webdosya.csb.gov.tr/db/ced/editordosya/Yozgat_icdr2023.pdf-(Erişim tarihi: 03.06.2023), 2013.

- [5] Ural, M., Canpolat, İ. “The structure of fishery cooperatives in Eastern and Southeastern Anatolia and technical characteristics of fishing gear and fishing boats”. Turkish Science Research Foundation, 2(4), 372-384, 2009.
- [6] Orsay, B., Duman, E. “Kemaliye, Peri and Göktepe regions Investigation of fishing catch power and various characteristics”. Firat University Science and Journal of Engineering Sciences.17(1), 121-129, 2005.
- [7] Dartay, M., Canpolat, İ. “Keban Dam Lake (Elazığ, Turkey) fisheries problems and solution proposals”. Ege Journal of Fisheries and Aquatic Sciences , 33(3), 291-298, 2016.
- [8] Bayhan, Y. K., Korkmaz, S., Olgunoğlu, M. P. “Fisheries of Adıyaman province current situation and problems”. Yunus Research Bulletin, (4), 37-46, 2014.
- [9] Canpolat, İ., Memişoğlu, E., Gürçay, S., Birici, N., Arısoy, G. “Current status of fishery cooperatives in Elazığ province”. Yunus Research Bulletin, (1), 11-21, 2015.
- [10] Dartay, M., Canpolat, İ. “Socio-economic structure of fishermen who are members of fishery cooperatives in Keban Dam Lake (Elazığ, Turkey)”. Ege Journal of Fisheries and Aquatic Sciences , 34(1), 41-46, 2017.
- [11] Dartay, M., Duman, E., Duman, M., Ateşşahin, T. “Socio-economic analysis of fishermen in Pertek region of Keban Dam Lake”. Ege Journal of Fisheries and Aquatic Sciences, 26 (2), 135-138, 2009.
- [12] Karademir, M., Arat, M. E. “Problems encountered in aquaculture co-operatives and solution suggestions: The case of Istanbul province”. Marmara University Suggestion Journal, 11(41), 133-156, 2014.
- [13] Mete O. S., Yüksel, F. “Socio-economic Analysis of Commercial and Sport Fishing in Seyhan Dam Lake” Journal of Science and Youth, 2 (1), 2014.
- [14] Ergüden, D., Alagöz Ergüden, S. and Öztekin, R. “Seyhan Dam Lake Fisheries Problems and Solutions”, Turkish Journal of Aquatic Life,, 3-5 (5-8): 93-97,2007.