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21

Assessment of the Physicochemical Properties of Rajjalwadi Water Reservoir near Sillod Town in District Aurangabad

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ABSTRACT

Water is one of the most important and basic need in the life of all living organisms including human being also. The changes occurred in the physicochemical properties of water due to the environment is one of the most challenging issues in everywhere. In Maharashtra and other places of India certain work done on the physicochemical properties of water. Changing environment is one of the major issue due to that water body causes variation in the physicochemical properties of water. The biological wealth of a water body is mainly dependent on its water quality and it is of major issue of concern to mankind today. Rajalwadi water reservoir near Sillod town in Aurangabad District of Maharashtra, it is the main source of water for the people of nearby area for drinking and domestic purposes. No previous record about the physicochemical properties of the water reservoir was found after the drought period. For the present work during the period of June 2018 to May 2019 the water samples were collected at the interval of one month. From these water samples different physicochemical properties analyzed and observed that most of the value shows variation in the range of water properties but these results are within the permissible limit and suitable for biodiversity and domestic purposes.

Keywords: Physicochemical properties, Rajalwadi, Water reservoir, Sillod town.

Introduction:

The first life was originated in the water. Every living organism cannotsurvive without water, sowater is most important in the life of living organisms. "Save Water Save Life" mostly this word used up by various advertisements through Government channel and social agencies. Because water is a universal solvent and essential to human health and food securing as well as ecosystem which contains food chain and food web. The occurrence of the living organisms influenced by water and the characteristics of water are changing due to environmental and other type of pollution. Human interference by the people in the study area are also responsible to disturb the properties and quality water. Water of the reservoir is used for different purpose like irrigation, home use and drinking for pet animals, Keeping in view the severity of the issues it is becoming necessary and important to analyzing the water properties periodically, that's why many workers from various places in India and abroad they engaged in this field and periodically analyzed the water samples from different sampling stations for its properties. Workers includes Anita Jadhav et. al. (2014) Ubarhande et al. (2017), Bade et. al. (2009), Medudhula et. al. (2012), AjitKalwale et. al. (2012), Pushpalata et. al. (2017), Umeshkumar Mishra (2016), Mudbe (2015), Sonia Sethi (2016), Chaudhari (2014), Dhugana (2019). Rajalwadi water reservoir is the source of water for Sillod town for drinking and domestic purposes. But after draught period no one carried out the work on this aspectso selected this water reservoir for the analysis of water properties.

Materials and Methods:

For the investigation of water properties in the changing environment the present work is done on the water reservoirRajalwadi after the drought period. It is located near the Sillod town in District Aurangabad Marathwada region of Maharashtra. For the present study, during the period of June 2018 to May 2019 water sample were collected with the interval of one month from selected sampling stations in 2-liter capacity of plastic containers. These water samples were subjected to analyze the physicochemical properties including pH, Temperature, Turbidity are recorded on the spot at the sampling station because these properties are liable to change during the transportation, for the analysis of other properties like dissolve of oxygen, free Co_2, Alkalinity, Hardness, TDS etc. samples of water brought to the laboratory within two hours of sample collection from the sampling site and analyzed. For

the analysis of pH recorded by using pH pen meter and for the analysis of theremaining physicochemical properties of water samples standard methods were used (APHA 1985, Kodarkar 1998).

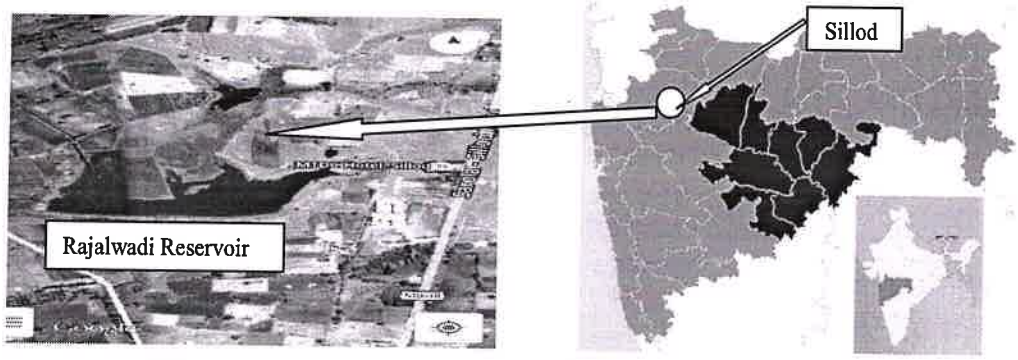

Fig.1: Map showing water reservoir Rajalwadinear Sillod town.

Results and Discussion:

The results of the present study i.e. range of obtained values of the collected water samples have been shown in the Table 1. These data values obtained range indicated that the variation occurs in the physicochemical properties of water samples from the Rajalwadi reservoir are due to the differences or changing environmental conditions.

Table.1. Table showing range of obtained values of physicochemical properties of water during the study period.

Sr. No.	Physicochemical properties	Range of the obtained values
01	pH (mg/lit)	6.9 - 7.5
02	Temperature (0C)	20 - 31.5
03	Turbidity (NTU)	8 – 26
04	Dissolve Oxygen (mg/lit)	3.8 - 5.7
05	Free Co_2 (mg/lit)	0.9 - 1.5
06	Alkalinity (mg/lit)	79 –147
07	Hardness (ppm)	37 - 67
08	T D S (mg/lit)	45 –131

pH:

It is the valuable and most important physical properties of water. It plays very important role to determine the stability and suitability of the water. During the study period

the obtained range of pH of the water found 6.9 - 7.5 mg/lit, in that the obtained minimum value of pH of the water is recorded during the month of April and obtained maximum value of pH of the water is recorded during the month of December. The results of the present study are more or less similar to the results of earlier study reported by(Ubarhande et. al. 2017) in their study minimum value of pH 7.0, 7.1 value observed by (Bade et. al. 2009), 6.99 value of pH reported by (Medudhula et. al. 2012), 7.0 to 8.1 values of pH obtained in their study to (AjitKalwale et. al. 2012)

Temperature:

It isalso most important physical properties of water. This property of water generally depends upon the atmospheric condition of the sampling station at the time sample collection. During the study period the obtained range of thetemperature of water from 20 - 31.5 0C, in that the obtained minimum value of water temperature recorded during middle of January month and obtained maximum value of water temperature recorded during middle period of the month of May. This variable range of temperature of water usually depends on the climatic factors or condition of particular location at the time of sampling. Such type of results is obtained to the workers like (Pushpalata J. K. et. al. 2017) values are 20.2, 20.5 at different sampling station, (Umeshkumar Mishra et. al. 2016) and (AjitKalwale et. al. 2012) also reported similar findings to the present results and the obtained values range from 19-28.

Turbidity:

It isimportant chemical properties of water. This property of water generally causes due to the presence of suspended matter in the water collected water sample. During the study period the obtained range of the turbidity of water from 8 - 26 NTU, in that the obtained minimum value of turbidity recorded at the end of January month and the obtainedmaximum value of turbidity of water recorded at the end of the month of June.(Mudbe P. K. 2015)reported the range of minimum 7.0 and maximum 24.0 turbidity value these results are similar to the obtained value of the present study.

Dissolved oxygen:

It is most essential property of water with the help of this propertythose living organism live in the water i. e. aquatic animals, necessity of DO is for well survival of these aquatic animals. The obtained range of Dissolve oxygen in the water from 3.8 - 5.7 mg/lit during the

study period. The minimum obtained value of Dissolve oxygen in the water recorded during the month of May and maximum obtained value recorded during the month of December.

Free Co_2:

Duringthe study period the obtained range of free carbon dioxide in the water from 0.9 - 1.5 mg/lit during the study period. The minimum obtained value of free carbon dioxide in the water recorded during the month of December and maximum obtained value recorded during the month of May. (Mudbe P. K. 2015) reported 2.0 the free Co_2 valuein the water sample, this value also more or less supported to obtained maximum value of the present study.

Alkalinity:

Alkalinity of natural waters is due to primarily to the salts of weak acids, although weak or strong bases may also contribute. Bicarbonate represents the major form of alkalinity. During the study period the obtained range of the alkalinity of water from 79 -147 mg/lit., in that the obtained minimum value of totalalkalinity recorded during the month of October whereas the obtained maximum value of total alkalinity of water recorded in the month of December. The results of total alkalinity in the present study are correlated to the month wise findings reported by (Mudbe P. K. 2015)

Total hardness:

Hardness of water mostly increases due to the mixing of domestic waste in that water reservoir. During the study period the obtained range of the total hardness of water from 37 - 67 ppm, in that the obtained minimum value of total hardness recorded during the month of April whereas the obtained maximum value of total hardness of water recorded in the month of December. Similar finding of the total hardness i. e. 67 reported in the month of October 2013 by (Umeshkumar Mishra et. al. 2016). Minimum value of total hardness 35 reported by(Mudbe P. K. 2015), and similar finding also reported by (Chaudhari U. E. 2014) in Satmoor Dam, all these findings reported by these workers are supported to the value obtained in the present study.

Total dissolved solid:

Duringthe study period the obtained range of total dissolved solid in the water from 45 - 131 mg/lit. The minimum obtained value of total dissolved solid in the water recorded

during the month of August and maximum obtained value recorded during the month of December. Maximum value of TDS 130 reported by (Umeshkumar Mishra et. al. 2016) these values similar to the maximum value obtained in the present study.

Variation in the values of physicochemical parameters was observed according to the season in various months reported by (Anita Jadhav et. al. 2014) these findings are supported to obtained value of physicochemical properties of the present study. (Manjare S. A. et. al. 2010) reported that all parameters were within permissible limits according to the values obtained in their study, similarly physicochemical properties of water and obtained values are more or less correlate to the present study.

Conclusion:

Assessment of this water sample indicates that the value of physicochemical properties of water shows variation in the Rajalwadi water reservoirbut these results are within the permissible limit and suitable for biodiversity and domestic purposes. This also indicates that it is non-hazardous to biotic and abiotic components of an ecosystem.

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Department of Zoology R.S.S.P. Mandal's Nanasaheb Y. N. Chavan Arts, Science and Commerce College Chalisgaon
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Effect Of Abiotic Components On Fish Farming Near Sillod Town; District Aurangabad From Marathwada Region Of Maharashtra State.

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Abstract: *The present investigation deals with the effect of some abiotic factors on fish farming in Sillod tehsil from Aurangabad district of Marathwada region. Freshwater reservoirs in and around Sillod tehsil were used by the farmers for the purpose of fish farming as allied agricultural business. For this study small scale fish farming were selected randomly for collection of relevant information about the abiotic factors like temperature, light, humidity etc. and its effects on freshwater reservoir fish farming. From the above study it revealed that most of the fish farmers are aware about variation occurred in the abiotic factors, fish farmers of the study area agreed that fluctuation occurred in temperature, increased in light intensity and humidity has a negative effects on fish farming, some of the fish farmers agreed that changes in abiotic factors has also affect the food material available in the study area, ultimately it affects the growth performance of fish. General economy of fish farming in the study area also affected due to the high temperature. Farmers agreed that abiotic factor moisture or humidity encouraged the distribution and development of diseases in fishes. From the above observations it is recommended that there is need to create the awareness among the fish farmers about the effects of abiotic factors on fish farming and improving the production of fish farming and the economic status of fish farmers in the study area.*

Key words: *Abiotic Components, Fish Farming, Aurangabad, Marathwada.*

1. INTRODUCTION:

Fishes have been pursued by man from the times immortal. It has currently become very popular because the fish have been found to be excellent food and fisheries can be considerably contribute to the solution of our national problems such as self-sufficiency in food and unemployment. Fish resources from the natural water are limited. There is a need for protected water to conserve the fish wealth. Fisheries suffered a setback in a middle of the 19th century due to rapid progress in agriculture with application of science. However, fishery was put back on the rails by application of science to it in the present century. It has made a tremendous progress in the last few decades. India is the second-largest producer of fish in the world, contributing to 5.43% of global fish production. Apart from nutritional security, Indian fisheries also provide livelihood support to over 14 million (1.4 crores) people, Kapil Kajal (2020). Fisheries primarily started as capture fisheries in natural water, seas, rivers and lakes. Fish culture is the recent additional to fisheries, but it has acquired a great significance on account of the great prospectus it holds. Fisheries helps to national economy as well as helping as food resources of all over the countries. Fisheries is fast emerging as an important industry with immense job potentials. Freshwater reservoir small-scale fish farmers are the main producers of the fishery industry in many developing countries. The fish farming provides employment at the village level. It provides protein rich food for deadly growing poor population. It has higher nutritive and biological value, it contains only 1-2% fat, it does not contains carbohydrates, it carries good deal of vitamins as A, D, B, C, E and K that are necessary for good health.

Maharashtra has the largest number of manmade water bodies in the country and is geared up to expand its fisheries and aquaculture. The systematic structuring of policies and rigid implementation of the regulations for sustainable utilization of the available water resources for fisheries and aquaculture development should be given more attention to achieve the exemplary growth similar to Chhattisgarh State, Bhendarkar, *et al.,* (2020). The major environmental impacts on fisheries are due to change in land use pattern, transformation in river flow regime, riparian habitat loss, invasion of exotic species, over fishing and agricultural expansion, Mohite S. A. *et al.,* (2013). Freshwater aquaculture related environmental issues are analyze for formulating guidelines for the development of the fishery

sector, S. Ayyapan *et. al.* (1999). Different stress factors such as inadequate physicochemical and microbial quality of culture water, poor nutritional status and high stocking density can cause infection by opportunistic pathogens, Mishra S. S. *et al.,* (2017). Primary fish production in ponds is affected by the influence of environmental factors and management practices. Seasonal variations in the environmental factors have to be matched with effective management practices for optimum fish production, Sonia Bajaj (2017). Inland fishery productivity will also be affected by increased water temperatures, variability in water availability, eutrophication, stratification, and toxicity of pollutants. In addition, reduced habitat quality and availability of dissolved oxygen will affect productivity and the nutritional value of aquatic products, FAO (2014). The effects related to climate change involving freshwater ecosystems, are bound to affect fisheries and habitats together with the composition and location of production and will have major impacts on aquaculture productivity and livelihood security of fishers. In freshwater systems, ecosystem health and productivity is linked to water quality, NABARD (2018). The growth of mariculture is dependent on the availability of suitable farming areas for new facilities, particularly for open farming practices that realy on the natural oceanic environmental parameters such as temperature, oxygen, chlorophyll etc. Oyinlola M. A, *et al.,* (2018). Changes in fish population and ecosystem from climate change are likely to have resulting impacts on fisheries sector and national economics. Climate change may also directly affect fishing operations and fishing communities independently of impacts on fish and ecosystem, Sandhya Kupekar *et al.,* (2013). Fish farming has seriously influenced the aquatic environment, fish farming impacts phosphorus dynamics in lake sediments and important mechanisms for phosphorus immobilisation with low fish farming activities, Binyang Jia, *et al.,* (2015). Comparison of abiotic and biotic components of an aquaculture showed better DO and average salinity and gave better fish yielding, Virkar *et al.,* (2004). Due to the changes in abiotic variables its effects on the composition and structure of fish assemblages The composition and structure of fish assemblages showed significant differences, Abiotic variables, such as total phosphorus, dissolved oxygen, and conductivity, determined the distribution of fish assemblages, low species richness, species loss and diversity reduction, Daga, Vanessa Salete, *et. al.* (2012). Role of major abiotic factors such as water pH and hardness on the biological processes of fish like growth, survival, reproductive performance, pH as well as hardness plays an important role on the physiological as well as reproductive behaviour of the fish, Sambid Swain *et. al.* (2020). Fish production in reservoir is directly or indirectly dependent on the abundance of planktons, Makode, P. M. *et al.* (2010). The high value of dissolved oxygen coupled with low biochemical oxygen demand and other nutrient levels indicate that the water body is moderately oligotrophic in nature, these factors responsible for declining population of fish species, Thirumala. S, *et al.,* (2011).

Fish farming plays an important socio-economic and nutritional role in the livelihood of rural households in many developing countries. The fish farming can provide an alternate income source to the farmers in this region. It intends to create an opportunity for small farmers specially in the weaken sections of the society. Fishes are efficient converters of feed to meat within a short period of time. Fish farming provide source of income and employment to people compared to other allied agribusiness. The aim of the study was to analyze the variation in abiotic factors in the study area and its effects on fish farming in Sillod tehsil from district Aurangabad of Marathwada region. The main objective of the study includes level of awareness among the fish farmers about abiotic factors and obstacles occurred in fish farming due to the abiotic factors.

2. MATERIALS AND METHODS:

The study was conducted in Sillod tehsil from Aurangabad district of Marathwada region. The climatic condition of the study area has broadly classified in to three main seasons summer, winter and rainy season. Summer season starts from February to May, winter season between the month of October to January and rainy season during the month of June to September. Most of the people in the study area are the land farmers as India is the agricultural country. The environmental condition in the study area is favorable for certain agricultural activities and rearing of domestic animals, such as small scale fish farming, poultry farming and dairy. The small scale fish farming were randomly selected as sample for this study. To collect the relevant information, a semi-structured questionnaire was prepared. The information of variation in the abiotic factors and its effects on fish farming is also collected from selected fish farming through personal interview at the farming sites during the study period at different intervals. Information was obtained about variation in abiotic factors and its effects on fish farming, to evaluate the knowledge level about abiotic factors among the fish farmers. The detailed studies were undertaken with a view to find out the changeable condition in the form of abiotic factors and its effects on fish farming and awareness among the fish farmers and fisherman's.

3. RESULTS AND DISCUSSION:

During the study period it was observed and found that most of the farmers have ability to adequate knowledge about keep the record and make observation about variation in abiotic factors and it influences their fish farming, Fish farmers with sufficient educational background are most likely to have better ability to keep records and make observation on effects of abiotic factors on their fish farming than the poor educational background. Majority of fish farmer have good years of farming experience and this may influence their level of performance and observation of

abiotic factors and its effects on fish farming. This indicates that the majority of the fish farmers in the study area agreed that they are aware of climate change in the form of abiotic factors and have noticed the effect and the rate of survival and performance of their fish farming.

During the study period it was observed that farmers agreed that high temperature and low rainfall have resulted to obstacles in availability of food. Majority of the farmers agreed that the food material are usually high during winter followed by rainy season as compare to the summer season which may significantly influence the cost production as well as the number of fishes reared by the farmer in his farming. From the data and information by the different sources majority of the fish farmers reported that occurrence of fish diseases only due to the variation occurred in the abiotic factors, particularly humidity and moisture. From the above observation it reveals that majority of the fish farmers agreed that moist climatic conditions encouraged the distribution and development of diseases in fishes in the study area. The abiotic factors affecting the performance and health productivity of fishes that include temperature, relative humidity, light, sunshine prevailing at a given time, These findings are more or less correlated to the findings of Sambid Swain *et. al.* (2020). During this study they also reported that high rainfall and relative humidity leads the infection of parasites that causes outbreak of diseases which invariably reduces fish production. They further reported that increase temperature reduces the feed intake capacity of fishes because more energy is needed to conserve the heat caused by high temperature, hence, a decreased in the rate of feed intake. Variations in the abiotic factors alters global disease distribution, affects feed intake, encourage outbreak of diseases which invariably affects fish production ultimately on the economy of fish farming, such type of findings are reported by Mishra S. S. *et al.* (2017). Temperature fluctuation and increased sunshine intensity has negative consequence on fish production resulting low production of fish farming, these reports are more or less correlated to the report of FAO (2014).

4. CONCLUSION:

From the above study and observations it can be concluded that most of the fish farmers are aware about variation occurred in abiotic factors and hence, most of the farmers observed how it effect on fish farming. The study further revealed that variation in the abiotic factors influence the emergence of new health disorders in fishes and increased its distribution. There is need to intensify awareness among the fish farmers about how to tolerate such type of effects of these abiotic factors on the fish farming. Fishery development agencies need to create the awareness among fish farmers and more about the effects on fish farming due to variation in abiotic factors. It also helpful to improve the status of fish farming as well as health status of fish and improve the socioeconomic status of the farmers of fish farming practices in the study area.

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The COVID-19 pandemic: Impact Assessment on Poultry Farming in Aurangabad District of Marathwada region.

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ABSTRACT

The COVID-19 is a major and wide global issue concern to the health of human being, it can lead to various severe problems created adverse impact on various agro-based sectors including poultry farming. Researchers from different fields have studied about the issues and have addressed the possible impacts of COVID-19 on variety of complex issues and problems associated with the poultry farming. Therefore, the present study aimed at to assessed the condition and challenges of COVID-19 by linking its impact on poultry farming with dependent peoples. The pandemic and lockdown impacted the overall poultry production system. This creates a results in drastic reduced value of consumption of poultry products. The study was conducted based on primary data collection, during the same period and its connection with poultry farming, its production, demand and supply was analyzed. Due to the situation of COVID-19 farmers faced various issues related to their need like low income, labor issues, starting of production, transportation problems, low demand of consumers, financial issues were identified. The present study shows that the impact of COVID-19 and its overall scenario on three different selected poultry farms in Aurangabad district. To assessing the impact on these farming a systematic study carried out with the help of collection of primary data from the study area, which provides the information about the impact on different parameters in the poultry farming.

Keywords: COVID-19, Poultry Farming, Aurangabad, Marathwada.

INTRODUCTION

In the year 2019, December 31st, in Wuhan, Hubei Province, China, reported the first cases of infection of a new corona virus (2019-nCoV) by (WHO, 2020), which generate and spread the disease known as COVID-19 (Wang, 2020). The disease occurred by corona virus, COVID-19, is a newly infectious disease caused by severe acute respiratory syndromes (SARS-2) i.e. corona virus 2 and it is the member of coronaviridae known to infect particularly the human beings, (Anderson et al., 2020). After some period the disease spread over in majority countries in the world.

The World Health Organization (WHO) has officially declared the corona virus a global pandemic, as of 21 May 2020, there had been more than 6,86 million corona virus cases and 398483 deaths worldwide (World meters 2020). Now, due to COVID-19 creates global health problem and it also affecting the normal development of the various sectors of the society. The pandemic situation disturbing all components of the life including humanity. Many people are staying at their home to minimize the transmission and spreading of the corona virus in the worldwide. Most of the countries are adopting some preventive measures against the pandemic situation, like compulsory lockdowns, restriction in travel, social distancing, work from home, online works wherever possible. During the COVID-19 pandemic period the agricultural related production is affected. The economic status of the various country is mostly dependent on agriculture activities, poultry sector is one of the major activity run in the country. Now not only the world but also all parts of the country is struggling to combat impact of Covid-19 by disrupting industries and agricultural fields including poultry farming along with the dependent peoples. Poultry plays an important role in the diet of the people in various community due to easily available and economical for deadly growing poor population. Poultry sector is not only playing an important role in maintaining nutritional demand but also it help to improve the socioeconomic status of the farmers.

The poultry farming takes several diversified forms and productivity depends upon land, human resources and skill, infrastructure and capital. The socio-economic and political situation also plays a significant role in development and existence of the poultry industry. I almost all over the world, poultry industry production is becoming increasingly organized, specialized and shaping in to an industry of national economical importance. The poultry farming can provide an alternate to the farmers in the region reeling under repeated drought spell. Maharashtra is amongst the leading states for commercial layer farming and broiler farming. Sources indicated that government of India has focused on promoting "desi" poultry along with bio-secure environment. It intends to create an opportunity for small farmers specially in the weaken sections of the society. The government has taken decision to promote poultry farming in tribal and backward regions of north Maharashtra and Marathwada. (Khapre, 2015).

Due to over spreading of Corona virus the strict lockdown applicable in India. It has directly impacted to various agriculture activities including poultry farming. Major population in India is depends on the agricultural activities and thus found the impact of this situation on the agriculture activities. It shows variation in different part of the country. The lockdown also has severely impacted to the rural population particularly farmers have been impacted due to lockdown on their livestock rearing, (Kelkar Bhakti 2020). In India rural areas constitutes maximum poultry production whereas urban area constitutes maximum consumption (NAPEP, 2017). Transportation of poultry production has become completely compromised as a results of lockdown, (Kollluri et al. 2020). National smallholder poultry development trust, the largest poultry enterprises fir dalit and tribal women of the country was severely compromised and losses in their turnover due to covid situation, (Kanitkar and Tushir 2020). India at present, is the fourth largest poultry production in terms of volume, (Shukla, 2020), the incidence of COVID-19 pandemic at the beginning of the year brought an unpredictable impact on the poultry sector, (Biswal, 2020). Considering the fact of COVID-19 the aim of the present study is to analyze the direct or indirect impact of COVID-19 on the selected poultry farming in Aurangabad district of Marathwada region.

MATERIAL AND METHODS

The present study was conducted among the three different selected poultry farms in Aurangabad district of Marathwada region, under the administrative division of Aurangabad. The poultry farms in district Aurangabad were selected and categorized as small, medium and large poultry farms depending on the bird rearing capacity. The three poultry farms were randomly selected as sample for this study. The whole area of the Aurangabad division is fully locked due to spreading of COVID-19 Considering the severity and spread of disease in the study area, it was not possible to do extensive fieldwork, with a wider and a larger samples. Thus in the form of three different poultry farms were chosen as a sample for the study. For collecting the information and data the study was conducted based on primary data sources collected by applying a tools such as telephonic interview. Use of telephonic interview to conduct the study during such

lockdown period and helped to collect the data quickly. The data were collected by the survey methods including a semi-structured questionnaire. The questionnaire focused the questions on impact on poultry farming, poultry transportation, status of market and consumer demand. Individual interviews and telephonic interviews with poultry farming dependent communities were conducted in these three different poultry farms from the district Aurangabad of Marathwada region. Information was obtained about the problems faced by the farmers during the pandemic situation. The detailed studies were undertaken with a view to find out the issues and pandemic associated problems among the poultry farmers.

RESULTS AND DISCUSSION

Three different category of poultry farm according to the rearing capacity of birds were selected in this study area. Those were small, medium and large poultry farms. In this study the farmers and dependent peoples were involved from small, medium and large poultry farming. COVID-19 Scenarios in the study area by observing though the media and many experts from the government bodies mention that detection of the infected persons due to the lack of monitoring and schedule of insufficient test. During the study period the increase trends of positive cases in the study area was found. Many people from the study area did not follow the suggested quarantine and found to meet friends and family and travel here and there. To control the situation the government shut down all educational institutions, government also banned all political, social, cultural, and religious gatherings in the country. Response of the poultry farmers and dependent communities on COVID-19 People who were solely dependent on poultry farming i.e. rearing of poultry, poultry selling and poultry farming were facing difficulties to combat emerging COVID-19 situation. During the study and according to obtained data it was observed that large poultry farmer could not go out for their necessary demand regarding the poultry due to COVID restriction while medium and small poultry farmers mentioned COVID put adverse impact on their poultry production due to scarcity of input and service provider. All the farmers reported that COVID-19 would negatively affect resource of poultry dependents income due to restrictions placed on them.

Due to COVID-19 the poultry production system and dependent in the study area is facing a crisis. In addition to affecting the public health sector, COVID-19 has covered the country's economy, business activities, transportation, food supply, food security and more. The lockdown situation has made the food supply worse respectively. Supply of poultry resources that play an important role in the diet and nutrition of the people is also become disrupted. The study found that COVID-19 was affecting the poultry production system in two significant aspects, the supply and demand for food. These two aspects were directly related to food of the people. Its adverse impact on consumer demand and consumption. The findings also agreed with global situation where 820 million people were more vulnerable with incurable starvation and less access to consume nutritious diet (Siche 2020). Poultry farmers prohibited from working on their fields and unable to collect necessary essentials by selling their products in the market, ultimately low income families faced more problems. Impact on poultry farmers and hatcheries COVID-19 directly and indirectly hampered poultry food production system drastically. Marginal poultry farmers use the birds mainly to meet home consumption demand and sold the remaining production that added money to their family income. Poultry farmer and the entrepreneurs indicated that transportation of poultry, feed and other necessary inputs was the main problem.

Table 1: Obtained information about the impact of COVID-19 on poultry farming from Aurangabad district.

Category of Poultry Farm	Impact of COVID-19 on different parameters of poultry farming							
	Panic	Illness	Labor	Consumers	Production	Transportation	Financial	Income
Small	++	++	++	+++	++	++	+++	+++
Medium	+++	++	+++	+++	+++	+++	+++	+++
Large	+++	++	+++	+++	+++	+++	+++	+++

(+: Minimum Impact, ++: Moderate Impact, +++: Maximum Impact)

Large poultry farmers also reported that they couldn't sell mature birds due to transportation complexity and low market demand but the farmers spent extra money to feed the birds that ultimately reduced family income and increase expenditure as well. All Poultry Farmers reported that they could not start new farming cycle due to unsold birds that also declining the selling price of poultry and adverse impact in the poultry farming. Farmers reported that gradual weight loss due to inadequate food supply day after day, due to lack of medicine, necessary ingredients and improper management of the farming were getting abnormal growth of the birds Because of these problems, farmers, workers, hatchery owners and related members were facing losses which ultimately could have a long term impact on poultry economy. During the pandemic period their life and life of the people associated with them became more difficult than before. Poultry farmers and allied peoples faced major problems to lockdown periods like low rate of poultry, low income, lack of alternative income generating activities, low consumer demand, meanwhile a majority of the labor engaged in processing and marketing were unemployed. Poultry farmers faced problems related to illness and unemployment were the main issues. They become stay at their home due to the situation and stop their source income.

CONCLUSIONS

The pandemic known as deadly COVID-19 disease has significant impacts on human and agriculture activities, with poultry farming. Farmers compromised due to movement restrictions, reduced in demand of poultry products its impact on the poultry farmers and associated people. So it is necessary to take the action against the issues occurred due to corona virus particularly to the poultry farmers and associated people from the rural area. This paper will contribute to the scenario of current COVID-19 pandemic and its impact on poultry farming in the study area.

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Diversity Assessment of Fishes from Khelna Reservoir in Aurangabad District of Maharashtra.

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Abstract: *The present study deals with the diversity assessment of fishes from Khelna reservoir in Sillod tehsil, Aurangabad district of Maharashtra, India. Khelna reservoir is a medium project built across the Khelna river basin. It is used for the purpose of irrigation, drinking and for fish production. During the study period it was found and observed that it having the diversity of fish fauna. It included six species of fishes, all the species were found in this water reservoir and recorded throughout the year. During the assessment it was also revealed that these species are having economic importance. Conservation of these species is also necessary for the balancing of the freshwater ecosystem.*

Key Words: *Fish diversity, Khelna reservoir, Aurangabad, Maharashtra.*

Introduction:

Freshwater reservoir small-scale fish farmers are the main producers of the fishery industry in many developing countries. The fish farming provides employment at the village level. It provides protein rich food for deadly growing poor population. It has higher nutritive and biological value, it contains only 1-2% fat, it does not contain carbohydrates, it carries good deal of vitamins as A, D, B, C, E and K that are necessary for good health. Fish farming plays an important socio-economic and nutritional role in the livelihood of rural households in many developing countries. The fish farming can provide an alternate income source to the farmers in this region. It intends to create an opportunity for small farmers specially in the weaken sections of the society.

Freshwater ecosystem in the form of standing and running water bodies like pond, lake, reservoir, stream, river etc. included aquatic biodiversity [1]. About 21730 species of fishes have been recorded in the world (nelson 2006) Water reservoir conserve a variety of fish species which leads and support for the commercial fisheries [2]. There is a rich diversity of fish in Maharashtra, fish fauna and distribution is useful for designing and implementing conservation strategies [3]. India has prolonged inland fisheries resources with different aquatic water bodies such as tributaries and distributaries of river system and interconnection of canals crisscrossing of the country, it included natural lakes and large number of reservoirs [4]. The Indian reservoirs harbors a variety of fish species and primarily express the fish faunal diversity, fishes are rich in proteins, vitamins, nutrients and thus are the chief source of food [5]. India is endowed with vast resource of reservoirs with more than 3.0 million hectors of water spread area. The fish species diversity which is currently recognized worldwide, and shows 25000 species are found in freshwater ecosystem and about 11.7% are found in Indian waters. Thus, freshwater fish discovery can save a platform of livelihood and biodiversity of conservation value [6] (www.fishbase.org/search.php). Biodiversity in inland waters is important to sustain health of the ecosystem as well as the prosperity of our society. It is also significant for its economic value as a habitat for commercially important species and plays an important role in food and nutritional security of people, specialy in the rural areas [7]. Among the fish culturing countries in the globe, India took a major share of large diversity of fish fauna and more number of threatened fish [7]. Fishes are efficient converters of feed to meat within a short period of time. Fish farming provide source of income and employment to people compared to other allied agribusiness. The aim of the study was to assessment and documents of the diversity of fishes from Khelna reservoir from Sillod tehsil in Aurangabad district, Maharashtra, India.

Materials and Methods:

Khelna reservoir located in Sillod tehsil near Palod town was selected for the assessment of diversity of fishes. This reservoir is spread is a hectares area and fed from local run off water from

agriculture fields and seasonal rainfall. It has been used for fish production. For the assessment of fish diversity sampling was done at different intervals from each season of the annual cycle during June 2016 to May 2017. During the study period fishes were collected personally and collected with the help of skillful fisherman. Collected samples of different fishes preserved in 5% formalin solution and brought to the laboratory for further study. On the basis of standard methods and by referring standard literature of various taxonomic keys are used for identification of collected fishes [8, 9, 10, 11, 12].

Results and Discussion:

Khelna reservoir is one of the major waterbody in Sillod tehsil of Aurangabad district in terms of area and water holding capacity compare to the other reservoir in the study area. For this study selection of this reservoir is due to the poor attention has been paid towards the development of fisheries and systematic assessment of fish diversity. The present study focused on the fish diversity of the reservoir and there is a need to generate the data and information about the diversity.

The present assessment was undertaken to prepare a primary checklist of fishes from Khelna reservoir and it is the first efforts in this direction. During the study period it was observed that a total of six species were recorded from the Khelna reservoir. Details of these fishes along with their economic value are listed in the table 1.

Table 1. Fish species and economic status during the annual cycle 2016-17.

Sr. No.	Name of the species	Economic status
1	*Catla catla*	High
2	*Mastacembulus armatus*	Less
3	*Labeo rohita*	High
4	*Glossogobius giuris*	High
5	*Cyprinus carpio*	High
6	Channa striata	High

Species diversity of fishes in the reservoir is very less as compared to other reservoirs in the district Aurangabad and in Maharashtra, Hiware and Pawar [13] reported 43 species of fishes in Nathsagar reservoir, 21 fish species reported by Sakhare and Joshi [14] in Bori reservoir, 9 species are reported by Keshave and Landge [15] from Isapur dam in Maharashtra.

From the above observation and results of the study it can be concluded that the diversity of fishes from Khelna reservoir is less but according to their economic status there is possibility to increase the fish diversity in future. For that the awareness among the fisherman and proper management strategies of the reservoir according to the aquatic life of the reservoir should plan in future.

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