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Research Article

LIMNOLOGICAL STUDIES OF NILJE AND GOVELI PONDS OF KALYAN TALUKA, MAHARASHTRA, INDIA

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ABSTRACT

Water is considered as the elixir of life and is consumed in the greatest quantity throughout the world for drinking, bathing, washing, recreation, irrigation and aquaculture. Rivers, ponds, lakes and tanks are the major sources of the water. Present study undertaken to analyse water quality parameters of Nilje and Goveli ponds in Kalyan Taluka for the period of 12 months i.e. from June 2014 to May 2015. Various parameters like pH, Temperature, total hardness, alkalinity, chlorides, total solids, suspended solids, and total dissolved solids, nitrates, phosphates, silicates, CO₂, dissolved oxygen, biological oxygen demand, chemical oxygen demand, salinity and electrical conductivity were analysed as per the methods given in APHA (2005) and Trivedi and Goel (1984). The results reveals that all the parameters studied are within permissible limit according to Indian Standard specified for drinking water.

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INTRODUCTION

Ponds as source of water, are of fundamental importance to man. However pond may have been natural water source exploited by man at different time to meet different needs, or may have been created for a multitude of different purpose e.g. domestic or agricultural use, transport, defence, ritual and industrial use, swimming, fish farming or the creation of the picturesque (Ress, 1997, Narayan *et. al.* 2007, Bishnoi and Malik, 2008). Hence attempt was made to analyse physico-chemical parametres of these ponds to understand quality of water. These freshwater ponds namely Goveli and Nilje located in Kalyan Taluka (19°4' and 19°24'N and 73° and 73°24' E) of Thane District, Maharashtra, India. The total area of this taluka is 710 Km². The Kalyan Taluka is cubular in form, and in its western part a rich open plain. In the south and east ranges of hills running parallel with the boundary line, throw out spurs into the heart of plain. The climate is not very hot. The temperature ranges between 21.93^oC to 31.72^oC. It receives average rainfall 2355.2 mm.

So far no scientific study conducted on these ponds hence present investigation will help to create awareness among people in the Taluka and will be helpful to the scientific community in general and government in particular as a database for future investigations.

MATERIALS AND METHODS

For the study of physico-chemical parameters, the water samples were collected from different sites, at the boundaries of ponds and not from the central region of ponds as to reach centre, boat facility was not available.

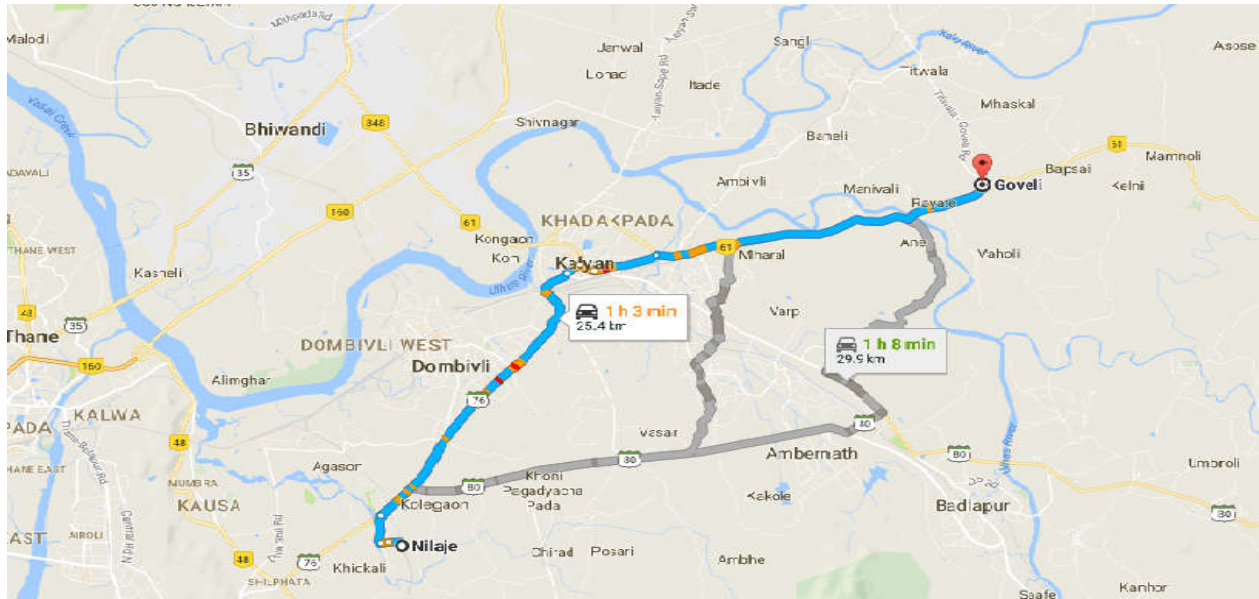
The water samples were collected fortnightly, in early morning hours. Clean plastic 2 litre carboys were used to collect water samples. pH, CO₂, air and water temperature were recorded on the spot and sample for DO also collected in BOD bottle and fixed immediately and analysed on the spot. Water analysis was performed as per the methods described in standard methods (APHA, 1992); Trivedi and Goel (1984) and Kodarkar (1992).

RESULTS AND DISCUSSION

pH value recorded in both the ponds was range between 7 to 8.4. The maximum value recorded in Nilje pond in the month of February 2015 while minimum value recorded in the month of September 2015. In Goveli pond maximum pH value recorded in the months of June 2014 and May 2015 while minimum value recorded in the month of August 2015. In both the ponds minimum value recorded in the rainy season while maximum value recorded in towards summer season.

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Google map showing Nilje and Goveli Village, Kalyan, Maharashtra

Table 1 Showing monthly fluctuations in physico-chemical parameters of Nilje and Goveli pond (from June-2014 to May-2015)

Months	pH		Air Temp. °C		Water Temp. °C		Ele. Conductivity Us		TDS mg/L		SS mg/L		TS mg/L		DO mg/L		Hardness mg/L	
	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO
June	7.8	8.4	31	30	27	29	440	181	160	120	80	280	240	400	7.27	3.7	175	150
July	7.51	7.2	27	25	26	25	210	190	220	160	60	0	300	160	7.5	7.1	100	100
Aug	7.51	7	28	29	26	25	250	140	180	200	60	20	240	220	8.06	6.87	125	125
Sept	7.01	7.2	28	29	27	28	320	180	20	140	120	0	140	140	6.21	5.95	175	125
Oct	7.8	7.2	29	29	28	28	410	220	60	200	280	160	340	360	6.88	6.35	225	125
Nov	7.81	7.25	27	28	25	27	470	250	460	200	0	0	460	200	6.61	5.55	300	225
Dec	7.81	7.4	24	26	23	23	490	270	760	200	240	120	1000	320	7.53	6.7	375	275
Jan	7.79	7.71	24	23	23	22.5	520	320	400	160	440	0	840	160	6.21	4.089	300	300
Feb	8.2	8.19	27	25	25	24	550	330	600	80	320	200	920	280	6.87	4.49	225	225
March	7.9	7.9	29	30	28	27	370	370	460	260	0	80	460	340	5.82	11.237	450	250
April	7.88	7.82	31	29	28	28	390	350	140	220	100	200	240	420	5.68	9.12	500	350
May	7.91	8.4	30	30	28	28	410	320	100	100	140	360	240	460	6.21	6.87	530	175

Maxima and Minima Highlighted

Table 2 Showing monthly fluctuations in physico-chemical parameters of Nilje and Goveli pond (from June-2014 to May-2015)

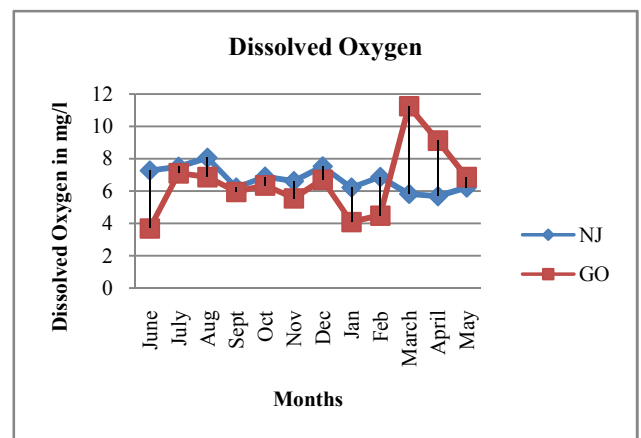
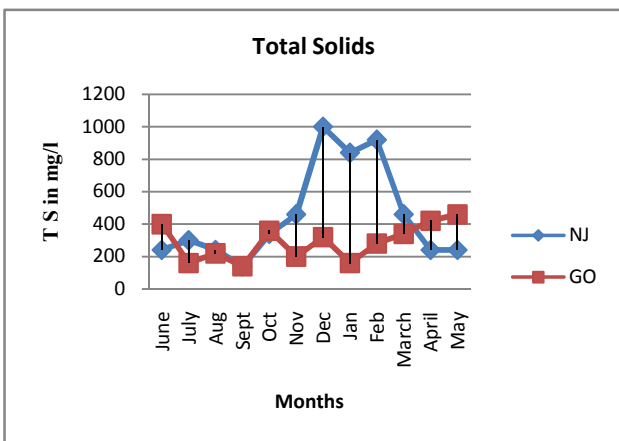
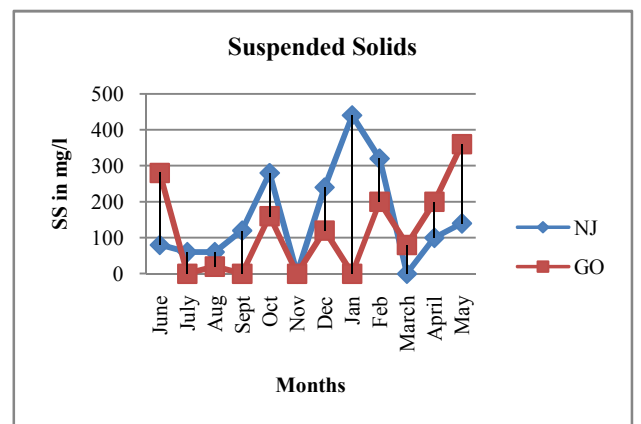
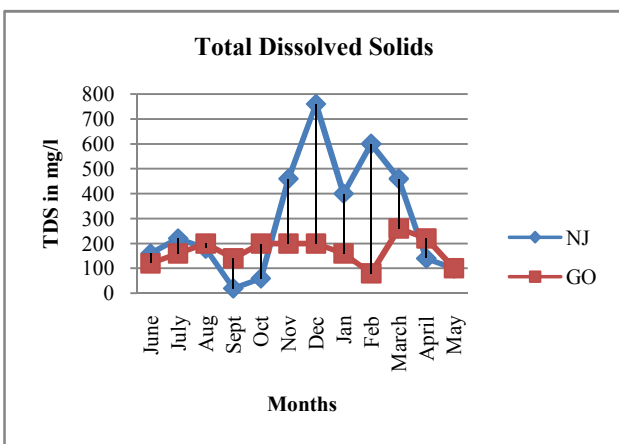
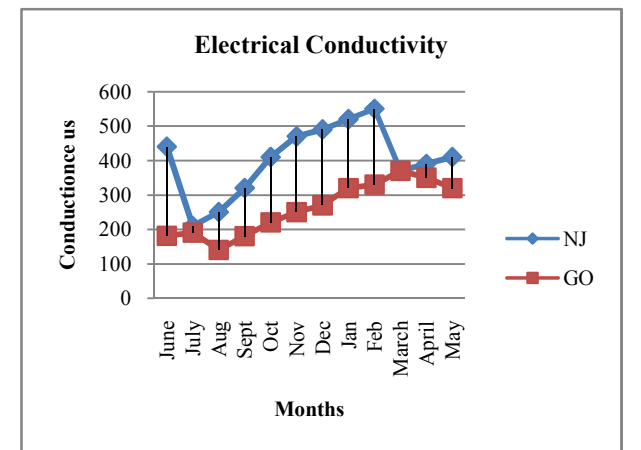
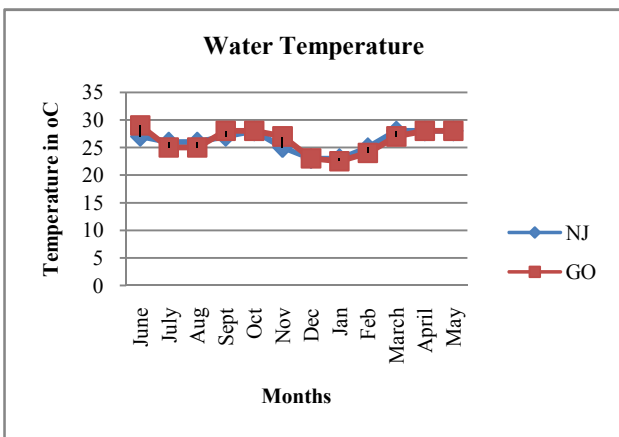
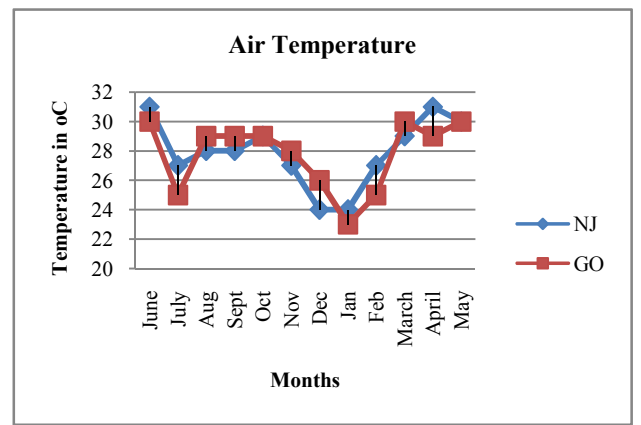
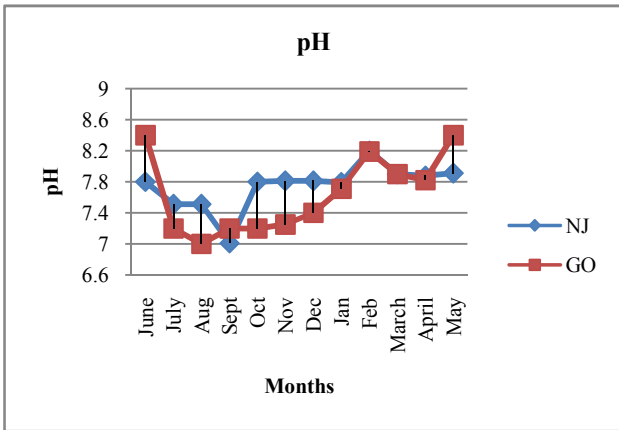
Months	Chlorides mg/L		Alkalinity mg/L		Nitrates mg/L		Phosphates mg/L		Silicates mg/L		Salinity ppt		BOD mg/L		COD mg/L		CO ₂ mg/L	
	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO	NJ	GO
June	70.92	35.46	175	100	0.15	0.04	0.11	0.54	4.80	5.18	0.128	0.064	4.8	4.8	48	152	8.8	22
July	53.19	53.19	75	100	0.78	0.31	0.14	0.63	5.72	7.32	0.128	0.096	4.2	4.2	52	80	17.6	4.4
Aug	70.92	35.46	125	75	0.17	0.40	0.15	0.13	10.89	19.38	0.128	0.064	2.4	4.2	20	32	4.4	4.4
Sept	70.92	35.46	150	125	0.67	0.42	0.16	0.12	13.46	15.62	0.128	0.064	3.3	3.6	48	80	4.4	4.4
Oct	159.57	88.65	250	175	0.92	0.42	0.17	0.14	13.41	14.63	0.29	0.16	4.8	3.6	44	20	13.5	8.8
Nov	212.76	124.1	300	200	0.81	0.45	0.12	0.19	13.88	9.67	0.38	0.224	2.7	2.1	36	36	8.8	0
Dec	212.76	88.8	350	225	0.82	0.32	0.17	0.12	9.50	8.99	0.38	0.16	4.2	3.9	20	16	8.8	4.4
Jan	141.8	124.11	350	250	0.97	0.49	0.18	0.17	8.99	7.33	0.26	0.224	3.3	3.9	76	88	4.4	4.4
Feb	248.2	159.57	525	300	0.96	0.57	0.18	0.16	9.32	11.73	0.45	0.29	2.7	3.6	68	56	0	8.8
March	212.76	53.19	200	125	0.22	0.62	0.04	0.16	7.69	11.59	0.38	0.096	6.3	5.7	64	56	4.4	4.4
April	230.49	53.19	200	175	0.32	0.65	0.04	0.16	7.59	13.08	0.416	0.96	7.2	3.6	60	144	4.4	4.4
May	212.76	159.57	225	175	0.34	0.52	0.04	0.14	7.81	12.24	0.38	0.229	7.8	6	80	32	4.4	8.8

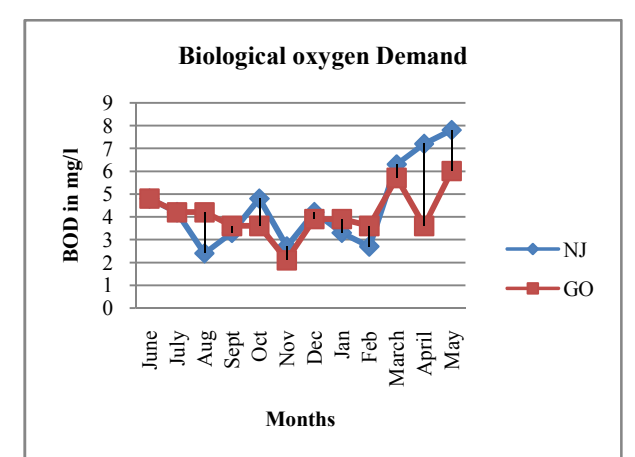
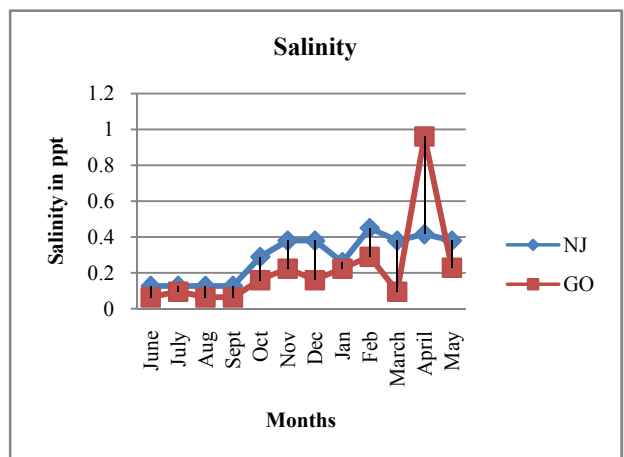
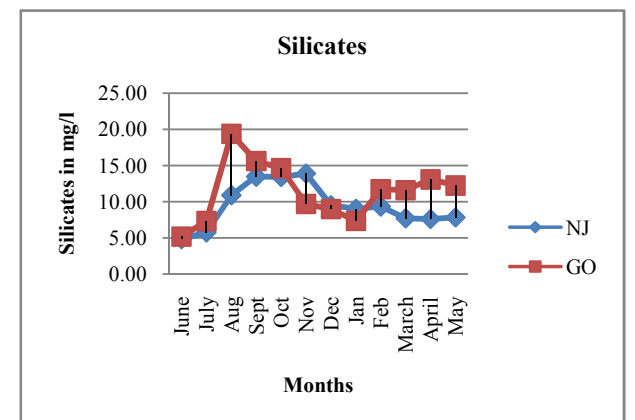
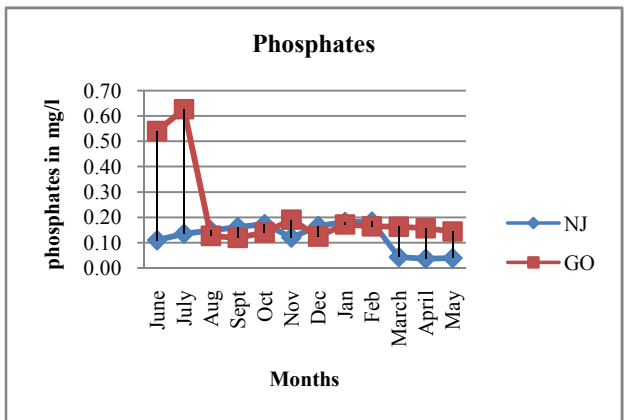
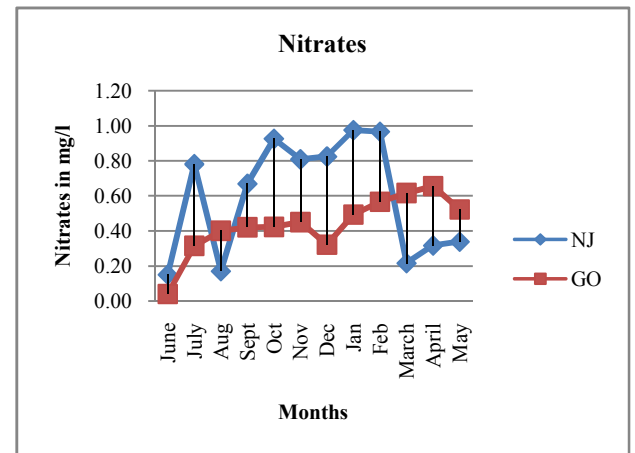
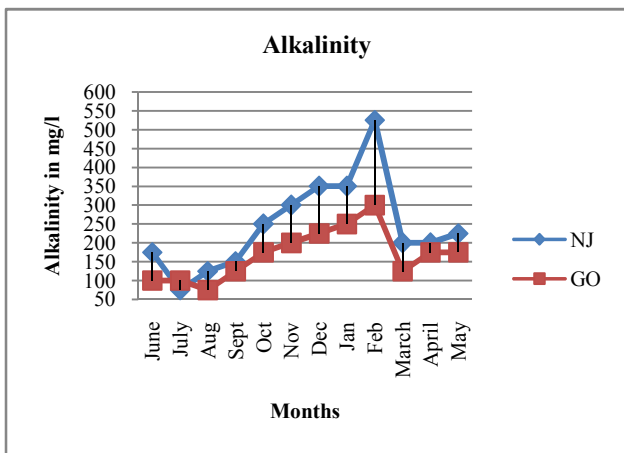
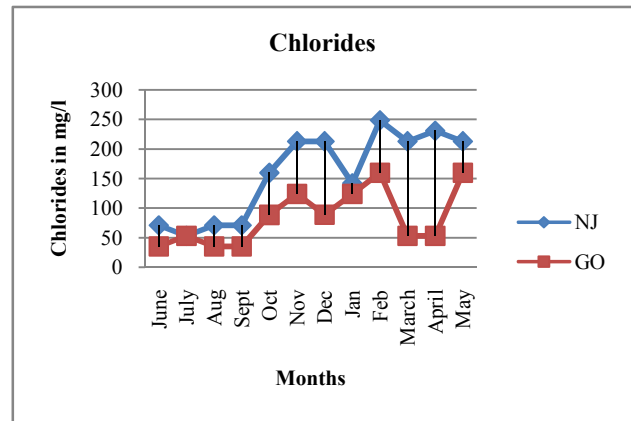
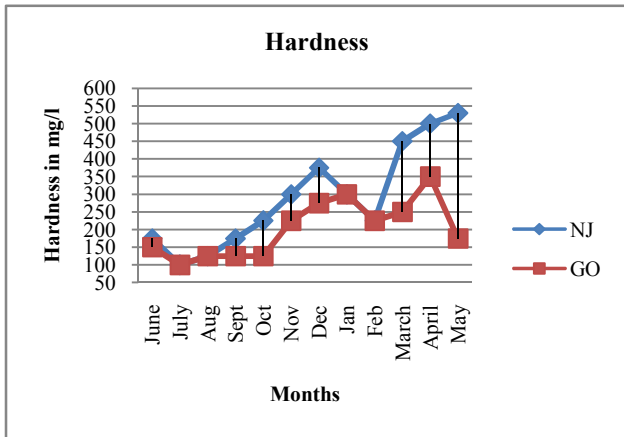
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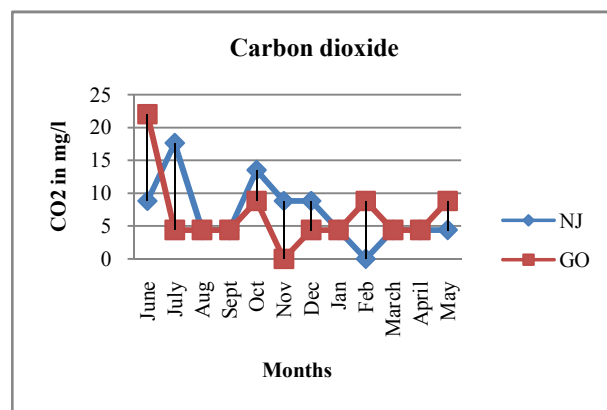
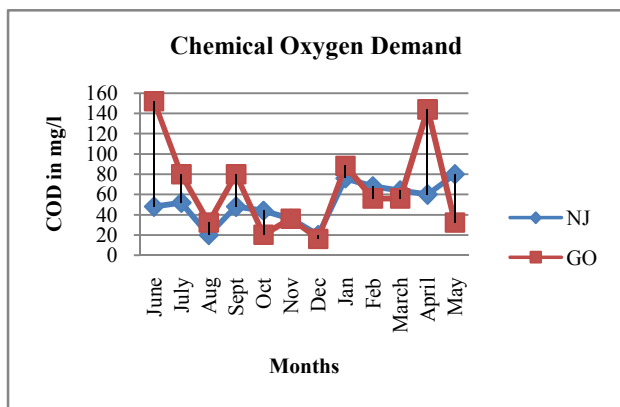
Similar results were observed by [Korgaonkar and et.al \(2014\)](#) in Osargaon pond of Sindhudurga district, Maharashtra.

Temperature is a primary environmental factor that affects and governs the biological activities and solubility of gases in water. Owing to the gases in air, humidity, dust and other colloidal particles, the air temperature is always higher than water temperature ([Mohammad et.al., 2015](#)).

In the present study air temperature was recorded in the range of 24°C (Dec. 2014 and Jan-2015) to 31°C (June-2014 and April-2015) in Nilje pond where as in Goveli pond it was recorded in the range of 23°C (Jan-2015) to 30°C (June-2014, March and May 2015).







The water temperature during study period recorded in the ranged of 23^oC (Dec-2014 and Jan-2015) to 28^oC (Oct-2014, March, April and May-2015) in Nilje pond whereas in Goveli pond it was observed in the range of 22.5^oC (Jan-2015) to 29^oC (June-2014). Highest values of temperatures were recorded during June 2014 in both the ponds though it was rainy season ideally but during that year raining was started in the month of July 2014 and summer was prolonged hence highest temperature recoded in the month of June 2014. The minimum values of temperatures were recorded in the winter season in both the ponds. Similar findings were recorded by Jain *et.al.*(1996) and D.L. Bharamal and D.S. Korgaonkar (2015).

The electrical conductivity of water is related to the nature and concentration of ionized substances in the water and to the temperature of the water (Jain, Renu 2008). In present investigation electrical conductivity was recorded in the range between 210us/cm (July-2014) to 550 us/cm (February-2015) in Niljepond and in Goveli pond it was recorded in the ranged of 140 (August-2014) us/cm to 370 us/cm (March-2015). The fluctuation in electrical conductivity in the both ponds during study may be due to inflow from surface runoff, discharge of sewage waste, washing clothes, bathing, immersion of Idol, discharge of silt and salts from agricultural field and cleaning vehicle any other anthropogenic activities. The maximum values were recorded in both the ponds during winter and summer season. Similar finding were recorded by Dixit *et.al.*(1989) and Jain Renu (2008).

Total dissolved solids value range between 20 mg/L (Sept-214) to 760 mg/L (December-2015) in Nilje pond whereas in Goveli pond recorded in between 80 mg/L (Feb-2015) to 260 mg/L (March-2015). Study shows that total dissolved solids shows high value during winter season in Nilje pond and in Goveli pond during summer may be due to evaporation rate of water.

Suspended solids value range between 0.0 mg/L (Nov-2014 and March-2015) to 440 mg/L (January-2015) in Nilje pond and 0.0 mg/L (July, September-2014 and January-2015) to 360 mg/L (May-2015) in Goveli pond. The higher fluctuation in the value may be due to torrential rain which through washes down the top soil. This event stops once the rainy season is over leading to a drastic fall in the value (Pandeyet.al., 2014).

Total solids value range between 140 mg/L (September 2014) to 1000 mg/L (December-2015) in Nilje pond and 140 mg/L (September 2014) to 460 mg/L (May-2016). Higher value of total solids recorded in Nilje ponds during winter season.

The Dissolved oxygen values recorded 5.68(April-2015) to 8.06 (August-2014) mg/L in Nilje pond whereas 3.7 (June-2014) to 11.237 (March-2015) mg/L in Goveli pond. Fritsch (1907) stated that the oxygen contents would be low considering their high temperature in tropical water. Similar finding were also recorded by Pandeyet.al (2014) in the ponds of Bilaspur District C.G.

The total hardness were recorded in Nilje pond between the range of 100 mg/L (July-2014) to 530 mg/L (May-2015) whereas in Goveli pond were recorded in the ranged of 100 mg/L (July-2014) to 350 mg/L (April-2015). The higher value of hardness ascribed to accumulation of dissolved materials due to water pollution by discharging sewage waster like any anthropogenic use like washing clothes, bathing etc. The higher value of hardness recorded in both the ponds during summer season. Hulyal and Kaliwal (2011) found that higher value in summer and lower in winter season. They attributed to decreases in water volume and increases in rate of evaporation at high temperature.

The chlorides values recorded in the range of 53.19 mg/L (July-2014) to 248.2 mg/L (February-2015) in Nilje pond whereas 35.46 mg/L (Jan, Aug, Sept-2015) to 159.57 mg/L (Feb and May 2015). The highest value recorded towards summer season in both the ponds and lower values in winter and rainy season. The higher concentration of chlorides is considered to be an indicator of higher pollution due to higher organic waste of animal origin (Moundiotiya *et al.*, 2004). The concentration of chlorides in water bodies increases during summer season due to evaporation of water and concentration of salt due to increase in water and atmospheric temperature. Similar findings were also recorded by Jana (1973) at West Bengal and Sehgal (1980) at Surinsar Lake, Jammu. The chloride concentration of lake water depends upon the degree of pollution resulting from the waste materials poured into the ponds.

The total alkalinity values range between 75 mg/L (July-2014) to 525 mg/L (February-2015) in Nilje Pond and 75 mg/L (August-2014) to 300 mg/L (February- 2015). The higher value of alkalinity recorded in the both the ponds during winter season may be due to organic load. Natural water bodies in tropics usually show wide range of fluctuations in their total alkalinity value depending upon the geography and different season (Pandey *et.al.*, 2014).

The nitrate is the basic constituent of all organisms and plays a vital role in metabolism growth, reproduction and transmission

of heritable characters (Mudgal *et al.*, 2013). In the present investigation value of nitrate ranged between 0.15 mg/L (June-2014) to 0.97 mg/L (January-2015) in Nilje pond and 0.04 mg/L (June-2014) to 0.65 mg/L (March-2015) in Goveli pond. Similar fluctuations in nitrates value were found by Pejaver and Minakshi (2008) in Kalwa Lake, Thane.

In the present study values of phosphates range between 0.04 mg/L (March and April-2015) to 0.18 mg/L (January and February-2015) in Nilje pond whereas in Goveli pond values of phosphates found in the ranged of 0.12 mg/L (September and December-2014) to 0.63 mg/L (July-2014). The highest values recorded in Nilje pond in the winter season whereas in Goveli pond highest value recorded in the month of June-2014. Highest value of phosphates recorded in Goveli pond in the month of July 2014. Agricultural runoff during rainy season discharging phosphates into water bodies (Korgaonkar *et al.*, 2014). Inflow of fertilizers and detergents into water body are responsible for high concentration of the phosphates, is stated by Tuzen *et al.* (2002).

Silicates are an important chemical parameter of any water body which helpful to enhance the growth of diatoms and having the growth of silica shell (Pejaver and Minakshi, 2008). During present investigation, the range of silicates found in Nilje pond was between 4.8 mg/L (June-2014) to 13.88 mg/L (November-2014) while in Goveli pond it was between 5.18 (June-2014) to 19.38 mg/L (August-2014). Similar results finding also recorded by Pejaver and Minakshi (2008) in Jail and Kalawa Lake, Thane, Maharashtra.

In present study Salinity was recorded in the range of 0.128 ppt (June to September-2014) to 0.45 ppt (February-2015) in Nilje pond and 0.064 ppt (June to September-2014) to 0.96 ppt (April-2015) in Goveli pond. Salinity found higher in winter season to summer may be due to evaporation of water and concentration of salts and minerals. Similar findings were also recorded by Pejaver and Minakshi (2008) in Jail and Kalawa Lake, Thane, Maharashtra.

Biological Oxygen Demand is dissolved oxygen required by micro-organism for aerobic decomposition of organic matter present in water (Pandey *et al.*, 2014). Jain and Dhamija (2000) found that Biological Oxygen Demand as an important parameter in aquatic ecosystem to establish the status of pollution. BOD value in present investigation recorded in the range of 2.4 mg/L (August-2014) to 7.8 mg/L (May-2015) in Nilje pond whereas in Goveli pond between 2.1 mg/L (November-2014) to 6 mg/L (May-2015). The maximum BOD value recorded in both ponds during summer season. Similar Findings were reported by Yadav *et al.*, (2013) they found highest value of BOD in early rainy season. Seasonally, the Biological oxygen demand was highest during late summer /early rainy season. High BOD during late summer/early rainy season may be due to the presence of several microbes in water bodies (Pandey *et al.*, 2014).

In the present investigation COD value recorded in the range of 20 mg/L (August and December-2014) to 80 mg/L (May-2015) and in Goveli pond it was recorded in between the ranged of 16 mg/L (December-2014) to 152 (June-2014). Lowest value of COD recorded in the winter season whereas highest value recorded in the summer season but in Goveli pond it was

recorded in the month of June though its falls in monsoon season but during 2014 raining was started from the month of July-2014 hence June-2014 may be considered as summer for this study. The higher value of COD recorded in summer may be due to higher organic load in the ponds and also because of higher evaporation rate of water during summer which leads concentration of all the chemical constituents, compounds, minerals and salts and may help to increase COD level of pond water. Similar results were observed by Pandey *et al.* (2014) in pond water of Bilaspur district, Dakshini and Soni (1979) stated that domestic sewage and industrial waste are main factors responsible for increase in COD values which they studied in Yamuna river.

The concentration of CO₂ recorded in the range of 0.0 mg/L (February-2015) to 17.6 mg/L (July-2014) in Nilje pond whereas in Goveli pond it was recorded between 0.0 mg/L (November-2014) to 22 mg/L (June-2014). The released of Carbon dioxide in the atmosphere reduces concentration of CO₂ in water. Some amount of CO₂ also consumed by photosynthetic organisms like aquatic flora (Phytoplankton and macrophytes) which may decrease the concentration of CO₂ in aquatic ecosystem.

CONCLUSION

According to present study we can conclude that all the physico-chemical parameters of Nilje and Goveli ponds were within permissible limit as per Indian Standard for drinking water but above the permissible limit as per WHO standards for drinking water hence water of these ponds may be utilize for domestic use and human consumption with some precautionary treatment. The present study may also help to provide baseline data to stakeholders and government officials to plan conservation strategies and monitor these water bodies.

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References

- APHA.2005. Standard methods for the examination of water and waste water. American Public Health Association, 21 Ed. Washington, DC.
- Korgaonkar D.S., D.L.Bharamal and Y.J.Koli 2014, Physico-chemical study of the freshwater pond Osargaon-Ghonsari in Kankavlitluka of District Sindhudurg, Maharashtra, India, *International Journal of current microbiology and applied sciences*, 3(10) 889-896
- Dakshini K. M. M. and Soni J. K. 1979. Water quality of sewage drains entering Yamuna in Delhi. *Indian J. Environ. Hlth.*, 21(4): 354-360
- Diwedi BK., Pandey GC. 2002. Physicochemical factors and algal diversity of two ponds GirjaKund and Maqubara pond, Faizabad. *Pollution Research*, 21: 361-370.
- Dixit, S.C., Limnological studies of Physico chemical properties of Tighara Lake with special reference to

- Plankton. Ph.D. Thesis, Jiwaji University, Gwalior (1989).
- Hujare, M.S., (2008), Seasonal Variation of Physico-Chemical Parameters in the Perennial Tank of Talsande, Maharashtra. *Ecotoxicology and Environmental Monitoring*. 18(3): 233-242.
- Hulyal SB., Kaliwal BB. 2011. Seasonal Variations in Physico-chemical characteristics of Almatti Reservoir of Bijapur district, Karnataka State. *International Journal of Environmental Protection*, 1: 58-67
- Jain, R. 2008. Physico-Chemical seasonal analysis of Singwasa reservoir, Guna, M.P. (India); *Journal of Environmental Research and Development*, 3(1):191-197.
- Jain, S.M., Sharma, M. and Thakur, R. 1996. Seasonal variations in physico-chemical parameters of Halai reservoir of Vidisha District, India. *Indian Journal of Ecobiology*. 8(3): 181-188.
- Jain Y., Dhanija SK. 2000. Studies in a Polluted centric water body of Jabalpur with special reference to which Physico-chemical and biological parameters. *Journal of Environment Biology*, 7: 83-88.
- Jana, B.B. 1973. Seasonal periodicity of plankton in fresh water ponds, West Bengal, India. *Journal of International Rev. Ges. Hydrobiology*. 58: 127-143.
- Joshi, H.V. and Patel, R.S. 2012. Comparison of the Physico-chemical status of two lakes-Malap lake and Mindhal lake under biotic stress of Visnagar Taluka in Mehsana District, Gujarat, India; *International Journal of Scientific and Research Publications*, 2(9): 01-08.
- Mohammad M. John, P.V. Krishna, O.A. Lamma and Shabbar Khan, Analysis of Water Quality using Limnological Studies of Wyra Reservoir, Khammam District, Telangana, India, *International Journal of current microbiology and applied sciences*, (2015) 4(2): 880-895
- Moundiotiya, C., Sisodia, R., Kulshreshtha, M. and Bhatia, A.L. 2004. A case study of the Jamwa Ramgarh Wetland with special reference to physico-chemical properties of water and its environs. *Journal of Environmental Hydrology*. 12: 24.
- Mudgal L.K., Malakar B. Kumar S., (2013), Assessment of water quality of Narmada river with reference to physico-chemical parameters at Indra Sagar dam (Punassa), India, *J. Aqua. Biol.* 27(1): 51-55
- Paramanik R.C., Chikkaswamy B.K. 2014. Physico-chemical parameters of Kanakapura Lake, Bangalore Rural. *International Journal of Biosciences and Nanosciences* 1(2): 46-49.
- Pandey Pratibha, Pankaj K. Sahu, Y.N. Jha, Assessment of Physico-chemical parameters from Pond Water of Bilaspur District, C.G., *International Journal of Biological Sciences*, (2014) 1(4): 63-74.
- Pathak, S.K. and L.K. Mudgal, Limnological and Biodiversity of Fish fauna in Virla reservoir, Khargone (M.P.) India. *J. Env. Cons.* 6 (1), 41-45, (2005).
- Patni S., Prakash B., Sharma A. 2006. Monitoring of Budha Pushkar Lake with special reference to physico-chemical characteristics. *Indian Journal of Environmental Science*, 10(11): 159-161.
- Pejaver M. and Gurav M. (2008), Study of water quality of Jail and Kalwa Lake, Thane, Maharashtra, *J. Aqua. Biol.* 23(2), pp: 44-50.
- Pejaver M. and N. Raut (2002) Nutrient management from lakes in Thane City (Maharashtra) *Indian J. Environ and Ecoplan.* 6(2) pp: 349-354.
- Pejaver M., V. Somani and M. Borkar (2002), Physicochemical studies of Lake Ambeghosale from Thane, India. *J. Ecobiol.* 14(4), pp: 277-281.
- Jain Renu, Physico-chemical seasonal analysis of Singwasa reservoir Guna, M.P. (India), *Journal of Environment and Development*, 2008 3(1):191-197.
- Sehgal, H.S. 1980. Limnological studies of Lake Surinsar Jammu, with reference to Zooplankton and Fisheries. Ph.D. thesis, University of Jammu, Jammu.
- Singh R.P., Mathur P. 2005. Investigation of variations in physicochemical characteristics of a fresh water reservoir of Ajmer city, Rajasthan. *Indian Journal of Environmental Science*, 9: 57-61.
- Trivedi, R.K. and Goel, P.K. (1984) Chemical and Biological methods for water pollution studies, Environmental Publications, Karad, India, 1-215
- Tuzen M., Aydemir E. and Sari H. 2002 Investigation of some physical and chemical parameters in the river Yeshlirmak in Tokat region, Turkey, *Fresenius Environ. Bull.*, 11(4): 202-207.
- Wetzel R.G. 1975. Limnology, W.B. Saunders Company Pub. Philadelphia, London, Toronto pp. 740.
- Yadav P., Yadav V.K., Yadav A.K., Khare P.K. 2013. Physico-chemical characteristics of freshwater pond of Orai, U.P., central India. *Octa Journal of Biosciences*, 1(2):177-184.

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