The studies on physico-chemical parameters of Karadkhed Dam, District Nanded, Maharashtra, India

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ABSTRACT

The present study was conducted to assess the Physico-chemical Parameters of Karadkhed dam water of Deglur Taluka in Nanded district Maharashtra, India, during the year June 2016 to May 2017. Analysis was performed on 05 different parameters. The monthly Variation in the physical and chemical parameters such as Water transparency, Total Solids, Total dissolved solids, Total suspended solids and Total Alkalinity. Were investigated. All the parameter was beyond on the permissible limits. Aquatic ecosystem monitoring has been carried out in India based on either chemical or biological analysis. The result revealed that there were significant seasonal variations in some physico-chemical parameters and most of the parameters were in the normal range and indicated better quality of dam water.

Key word: Karadkhed dam, Water transparency, Total solids, Total Alkalinity.

INTRODUCTION

The quality of drinking water is essential for life. Fresh water bodies are important wetland located in and around human habitations as they are generally semi natural ecosystems constructed by man in landscape suitable for water stagnation (Dhembare and Pondhe, 1997). Life on the earth. All organisms depend on water for their survival and growth. Water is one of the most important and abundant compounds of the ecosystem (Hiware and Jadhav, 2001, Khatakar et al, 2004). The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life (Pawar, 2017a, 2017b, 2017a, 2017b, 2018a, 2018b). India has vast fresh water resources in the form of both lentic and lotic ecosystems. The lentic ecosystems have long attracted attention of ecologists, both for their importance as a source of drinking water and the development of fishers. Therefore, the attention is given on the physico-chemical factors which affect the aquatic inhabitants (Khatakar et al, 2004). All living organisms on the earth need water for their survival and growth. Water is one of the most important and abundant compounds of the ecosystem. An essential resource for human life, freshwater has no substitutes (Alka, 2014, Manjare et al.)
2010). Freshwater is also essential for many natural systems that support human well being. Expanding human activity has extensively altered the planets freshwaters, with modifications impacting the physical, chemical and biological features of aquatic system. This review emphasizes large-scale physical, chemical and biological changes in fresh waters and their associated arrivers, including human factors that affect fresh waters, but does not address institutional aspects of water management oxygen (Chandanshive, Jagtap, 2012, Pawar, 2017a, 2017b, 2017a, 2017b, 2018a, 2018b, 2018c). Aquatic ecosystems undergo constant change and adaptation and can withstand stress based on their unique physical, chemical and biological properties (Simpi et al., 2011, Meme et al., 2014). Each species of animal and plant has an optimal range for physical and chemical requirements. Aquatic organisms and the physical and chemical components of their environment are inseparably inter related and interact with each other. Many researchers have done studies on Physico-Chemical and biological characters of river and dam water. Dhembre and Pondhe (1997), Hiware and Jadhav (2001), Khatavkar et al. (2004), (Pawar, 2017a, 2017b, 2017a, 2017b, 2018a, 2018b, 2018c). Lendhe and Yergi (2004), Alka (2014), Manjare et al. (2010), Harmey et al. (2012), Chandanshive (2013), Jagtap (2012), Simpi et al. (2011), Meme et al. (2014). The present study was to accesses the ecosystem of Karadkhed dam Taluka Deglur in Nanded District Maharashtra by estimating the various physico-chemical parameters like Water transparency, Total solids, Total dissolved solids, Total suspended solids and Total Alkalinity.

MATERIAL AND METHODS

The water samples were collected for physico-chemical analysis from dam. At the regular intervals of one month a period of one year from June 2016 to May 2017. The samples are well mixed and stored in two litre plastic cans. Sample collection was usually completed during morning hours between 6:00 a.m. to 9:00 a.m. every for further analysis. The water transparency was estimated on the spot at the time of sampling while other parameters were estimated in the laboratory. Standard methods as prescribed APHA (1992), were followed for examination of various Physical and Chemical Parameters of Water.

RESULT AND DISCUSSION

The seasonal variation in physico-chemical parameters are given table respectively.

Water Transperancy

The water transparency depends on the micro organisms present in water bodies and suspended organic and inorganic matter present in water. In the present study it ranged from 31.5 to 76.2 cm. The water transparency values were maximum in the season of summer and minimum in the season of monsoon. The minimum value was recorded during September while maximum value was recorded during May. Bose (1956), pointed out that transparency is one of the most important factors governing the distribution of fishes as it directly influences the Planktonic Productivity.

Total Solids, total dissolved solids and total Suspended Solids

The total solids ranged from 271 to 395 mg/l. The total dissolved solids ranged from 192 to 284 mg/l. The total suspended solids ranged from 62 to 164 mg/l. The high contents of total solids elevate the density of water and such a medium increases Osmoregulatory stress on aquatic biota. The excessive total dissolved solids generally affect palatability. In river total dissolved solids increase is attributed to pollution by effluents. The values of all water sample are within the permissible limits prescribed by WHO. Alaka (2014), reported that the amount of total dissolved solids detected from water sample at Borgaon was 347.16 mg/l to 738.0 mg/l.

Total Alkalinity

Water is said to be alkaline when the concentration of hydroxyl ion exceeds that of hydrogen ions. Chemically pure water is neutral having equal amount of hydrogen and hydroxyl ion. The total alkalinity of Karadkhed Dam water varied between 92 to 205 mg/l. These values are without the desirable limit according to ICMR and BIS specification. Sakhre and Joshi (2003) found the alkalinity values varied from 672 to 1023 mg/l in papnas a minor wetland in Tuljapur Town, Maharashtra.
The studies on physico-chemical parameters of Karadkhed Dam

Table 1: Studies on Physico-Chemical Parameters of Karadkhed Dam During the Year June 2016 to May 2017.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Water transparency cm.</th>
<th>Total Alkalinity (mg/l)</th>
<th>Total solids (mg/l)</th>
<th>Total Dissolved Solids (mg/l)</th>
<th>Suspended Solids (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station</td>
<td>A  B  C  D</td>
<td>A  B  C  D</td>
<td>A  B  C  D</td>
<td>A  B  C  D</td>
<td>A  B  C  D</td>
</tr>
<tr>
<td>June</td>
<td>62.2 65.3 63.1 64.7</td>
<td>192 195 199 201</td>
<td>324 330 335 340</td>
<td>238 241 243 245</td>
<td>86 89 92 95</td>
</tr>
<tr>
<td>July</td>
<td>51.2 53.5 56.1 58.3</td>
<td>165 168 170 172</td>
<td>345 348 352 358</td>
<td>348 252 258 258</td>
<td>97 96 100 97</td>
</tr>
<tr>
<td>August</td>
<td>42.5 42.2 44.1 43.3</td>
<td>156 158 153 160</td>
<td>371 375 378 380</td>
<td>362 264 268 274</td>
<td>109 111 110 106</td>
</tr>
<tr>
<td>September</td>
<td>33.5 36.2 31.6 38.3</td>
<td>162 168 165 169</td>
<td>385 387 390 395</td>
<td>271 275 270 282</td>
<td>114 114 120 113</td>
</tr>
<tr>
<td>October</td>
<td>42.2 44.1 48.3 45.2</td>
<td>158 162 164 160</td>
<td>371 374 378 384</td>
<td>251 256 259 262</td>
<td>120 118 119 122</td>
</tr>
<tr>
<td>November</td>
<td>47.2 49.5 51.3 52.6</td>
<td>122 124 128 130</td>
<td>345 348 350 354</td>
<td>240 242 248 251</td>
<td>105 106 102 103</td>
</tr>
<tr>
<td>December</td>
<td>51.1 53.5 52.7 55.7</td>
<td>116 112 118 120</td>
<td>380 382 384 387</td>
<td>221 218 223 229</td>
<td>159 164 161 158</td>
</tr>
<tr>
<td>January</td>
<td>55.2 57.3 56.5 58.1</td>
<td>95 92 98 94</td>
<td>366 364 368 375</td>
<td>276 278 280 284</td>
<td>90 86 88 91</td>
</tr>
<tr>
<td>February</td>
<td>59.1 60.2 61.5 62.3</td>
<td>114 118 120 116</td>
<td>271 275 278 295</td>
<td>192 194 202 198</td>
<td>79 81 76 97</td>
</tr>
<tr>
<td>March</td>
<td>63.5 64.2 65.5 66.6</td>
<td>142 148 144 149</td>
<td>283 286 290 296</td>
<td>201 203 205 208</td>
<td>82 83 85 88</td>
</tr>
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<td>April</td>
<td>67.1 68.3 69.6 69.9</td>
<td>187 190 192 188</td>
<td>295 298 300 304</td>
<td>229 236 234 240</td>
<td>66 62 66 64</td>
</tr>
<tr>
<td>May</td>
<td>72.2 74.1 75.5 76.2</td>
<td>197 199 202 205</td>
<td>320 314 319 324</td>
<td>242 246 248 250</td>
<td>78 68 71 74</td>
</tr>
</tbody>
</table>
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