SUMMARY AND CONCLUSIONS
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Water samples from selected sampling spots of Amravati University Reservoir No. 1 were investigated for various physico-chemical and biological parameters during the years, 1999 and 2000.

The water temperature ranged between 20.22°C to 31.5°C. It followed more or less the similar trend as that of atmospheric temperature. However, any definite relationship between temperature and zooplankton could not be established.

The reservoir water was alkaline throughout the period
of investigation and ranged between 7.76 to 9.05.

Conductivity showed a significant positive correlation with DO, alkalinity and chlorides.

The Amravati university Reservoir contained the highest dissolved oxygen during winter months and minimum during rainy and summer months.

During March and April reduced transparancy was seen which could be due to abundant zoo and phytoplankton during these months.

Free CO$_2$ was not recorded due to its absence throughout the year, which might be because of its utilization in the formation of bicarbonates raising the alkalinity of the reservoir and also due to absence of weeds from the reservoir.

The reservoir water exhibited high values of total alkalinites throughout the year.

The water from Amravati University Reservoir was found to be very hard and the total hardness ranged between 17.7 to 366.2 mg/l. Maximum values of total hardness were recorded during winter and summer and minimum during rainy season. The higher values of hardness are found to be due to magnesium hardness. The magnesium hardness ranged between 12.38 mg/l to 52.19 mg/l. The percolation of magnesium increased the magnesium contents of
well waters from Amravati University campus making the well water not suitable for drinking as magnesium hardness above 30 mg/l results into gastro-intestinal troubles.

Chloride contents in reservoir water was found to be adequate and its presence showed a positive correlation with total as well as various groups of zooplanktons.

Sulphates, phosphates and nitrates were found to be low, however, the observed low values of these nutrients fall within the productive range as is evident from a very good biodiversity of zoo and phytoplankton.

The reservoir water showed 32.41 % protozoans; 34.29 % rotifers; 16.65 % ostracods, 3.38 % copepods and 3.37 % cladoceran population.

Rotifers dominated the reservoir and are represented by 64 species. The genera, Brachinous, Keratella, Cephalodella and Trichocerca were found to be the dominating rotifers throughout the year. The rotifers exhibited monthly variations. The genus Brachionus alone was represented by 7 species.

75 species of protozoans were recorded from the reservoir. Among rhizopods Actinosphaerium eichhornii, among ciliates, Paramoecium and Glaucoma and among flagellates Trachelomonas hispida dominated the Amravati University Reservoir.
Among cladocerans, out of the 16 species recorded, *Moina brachiata* dominated the reservoir throughout the year followed by *Daphnia* and then *Bosmina longirostris*.

In all 15 species of copepods were observed, out of which eight are calanoids and seven are cyclopoids. *Diaptomus* and *cyclops* dominated the reservoir from this group.

Eleven species of ostracods were recorded which includes five species of the genus *Cyclocypris*.

There were only minor difference in physico-chemical parameters of the five sampling spots selected however, spotwise distinction in biological parameters was noted e.g. Spot 2 and 4 exhibited relatively more zooplankton population as compared to spots 1, 3 and 5.

Phenolpthalein alkalinity, total hardness, magnesium hardness, chlorides and phosphates favoured and showed significant positive correlation with most of the groups of zooplankton in the reservoir under study.

From the physico-chemical and zooplankton abundance, the reservoir can be catagorised as a mesotrophic one. Among phytoplankton, 30 species of chlorophyceae, 23 species of bacillariophyceae 5 species of cyanophyceae were identified from the reservoir throughout the period of investigation.
Macroinvertebrates from Amravati University Reservoir were surveyed. Among insects, five species of coleoptera, four species of diptera, four species of ephemeroptera, seven species of hemiptera, five species of odonta and two species of trichoptera were observed. *Chironomous* larvae were frequently found at all periphery of the reservoir in mud. Among molluscs, seven species were on record during the period of investigation.

During the period of present investigation seventy species of birds were recorded. Prominant among them are Dabchick, White necked stork, Openbill stork, White stork, Painted stork, Grey heron, Pond heron, Purple heron, Spoonbill, Ruddy shelduck, Indian river tern, Shoveller, Garganey and Red crested pochard; indicating ample food like insects larvae, insect, crabs, snails, worms and phytoplankton. Large predators like fishes were totally absent from the reservoir.

Physico-chemical analysis of selected five wells from Amravati University campus was carried out during 1999 and 2000. All most all the wells have very hardwater, with more magnesium hardness, the total hardness, hardness as CaCO₃, Magnesium hardness, TDS are all above the permissible limits (WHO, ICMR). The pH of wells behind Botany department and Zoology department have water above pH 8.5 during July to October, which is above the prescribed permissible limit as per WHO but within maximum allowable limit as per ICMR. However, according to Indian standards also these parameters are beyond desirable limit.
On the basis of above findings, it may be inferred that the Amravati University Reservoir No. 1 is not only suitable for fish culture practices but also of use to maintain the water table in subsoil area of the University campus. However, the following suggestions are needed to be considered 1) percolation sites of the reservoir should be searched and efforts in the directions to stop the percolations should be made. 2) The two major water inlets from the catchment areas should be channelised properly, 3) Human and grazing activities in the catchment and submergence area should be banned.

However, in the present situation, to exploit this mesotrophic reservoir for fishery development, it is suggested that fish fingerlings of advanced stage of *Cyprinus carpio*, *Catla catla* and *Labeo rohita* may be introduced in the month of July and allowed to grow up to March/April before harvesting. During this period of 9 to 10 months, fishes can grow successfully to table size.

The well water parameters have crossed the desirable drinking water criteria with respect to pH, conductivity, TDS, total hardness, magnesium hardness etc. and hence it should be used with utmost care by treating it to minimise the excess values of the above parameters, and to bring them below the desirable limits of drinking water standards.