GENERAL SUMMARY AND CONCLUSIONS

The fresh water molluscs, *Lamellidens marginalis, Indonaia caeruleus, Lamellidens corrianus, Parreysia corrugata* and *Corbicula regulirs* are abundantly found in both the lotic and lentic water habitat of Maharashtra state.

The determinations of physico-chemical characteristics of the water *Lamellidens marginalis* the habitat (lotic water and lentic water) at Aurangabad as well as tap water used in the laboratory throughout the study period showed that water temperature fluctuated within a small range during the study period. The temperature of water from lentic habitat range between (from 15.7-32.0°C). While the temperature of lotic water was ranged between (from 16.3-32.1°C), and the temperature of tap water ranged between (from 16.3-31.5°C), during the throughout study period. The temperature was observed during summer season i.e. on may and low temperature during winter i.e. on January. The dissolved oxygen contents, the water up on the lentic as well as on lotic showed higher values from (6.9328-6.9918mg/l) during winter season, compared to those from other parts of Maharashtra. The solubility of oxygen was found to depend on the temperature and level of water. During summer season the dissolved
oxygen contents of water upon the lentic water habitat decreased to minimum (5.320-6.5691 mg/l).

The fluctuation in dissolved oxygen contents during monsoon (6.100 to 6.6666 mg/l) in lentic water habitat and (6.6260 to 6.7419 mg/l) in lotic water habitat, could be due the increased water level and turbidity. The higher value of oxygen contents where determined in winter (7.3011 to 7.7317 mg/l) upon lotic water habitat could be due increased biotic activities like photosynthesis of algal biomass.

The hardness of water in terms of carbonate fluctuated in a very wide range (90 to 150 ppm) in summer, (110 to 130 ppm) in winter water on lentic habitat, while the hardness of water on the lotic habitat is given below during different seasons it was ranged between (98 to 112 ppm) during summer, (130 to 169ppm) during monsoon and (118 to 127 ppm) during winter season. While on the other hand the hardness of tap water is ranged between (99 to 117 ppm) during summer, (147 to 149 ppm) during monsoon and (99 to 110 ppm) during winter season.

Higher values of hardness are obtained during monsoon (130 to 169 ppm) upon the lotic water habitat while very low values were obtained during the summer (90 to 95ppm) upon the lentic water habitat.
The increase or decrease of hardness is not a permanent feature of the habitat water and likely dependent on the level of water. However, values of hardness in summer sowed much depletion in calcium, which has considerable impact on the growth of shell-valves of the bivalves.

The rate of oxygen consumption of bivalve *Lamellidens marginalis* is increased during summer and monsoon which shows a seasonal pattern. The oxygen as well as the reproductive activity of the animal. Low rate of oxygen consumption was observed during winter in animal collected from lotic habitat as well as lentic habitat, which might be due to low temperature and low food availability. The males and females animals showed gametogenesis, maturation and lysis of unspawned gametes.

The respiratory rate increased during summer and monsoon, this period coincides which slow gametogenic activity of the animal. The higher temperature and low oxygen content caused increased filtration rate to meet the increased oxygen demand for the body maintenance metabolism. The day length gradually increased in summer and water level along the banks of river decreased, thus exposing the animals. The seasonal study showed weight specific oxygen consumption, i.e. increased in oxygen consumption when the
body weight decreased and vice versa i.e. with the gonad maturation and spawning. The male and female animals showed spawning during this period.

The changes in biochemical reserves like protein, glycogen, lipid and ascorbic acid showed close relationship with the reproductive activity and the favorable environmental conditions. It was observed that the contents were increased, when the gametes were matured in August and showed a decreased in September, when the spawning activity was at its peak. The metabolic rate was also lowered in this period, when the conditions were favorable i.e. increased in water level, turbidity, decreasing temperature and metabolic rate was slightly increased, the animals build up their body reserves. During May the animal showed continued gamatogenic stage. During this period the protein and lipid contents decreased and glycogen increased in small. The decreased levels of this content were probably due to nourishment for development of the gametes. The increased in glycogen contents could be accounted for the increased metabolic demand, when the temperature was high, water level was decreased and dissolve oxygen was low.
*Lamellidenes marginalis* is a monocious animal, the male and female ratio was 1:1 but the number of females more in monsoon and winter season.

Accessory sexual organs are gills. Both outer and inner gill lamina serve as *marsupia*, however, incubation of developing embryo and glochidia, occurred mainly in the outer demibranch. This conditions was observe in both groups of animals. Hepatic tubules and gonads are intertwined in each other. This condition suggests ready supply of nourishment for development of gonads. Apart from this, nutritive cells, lipid globules and lysis of mature gametes also occurred during gamatogenesis.

The reproductive stage consists of gamatogenesis, maturation, spawning and recovery. Resting period was not observed. The gametogenic activities being in April to May and follicle showed the presence of sperms morulae, spermatocytes and spermatids. In female gamatogenesis start in April, more pronounced in large size. Proliferation of small oogonia took place during the period from August, both the males and females were in maturation phase. A particular spawning condition was seen in females in May.


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