Summary and Conclusion

Morphometric investigations of an animal species help to understand the inter relation between the various bodily parameters like length, weight, fecundity etc. (Rahim, 1982). In the present study the relationship between various morphometric characters were undertaken.

1. The relationship between total length and carapace length was high with a correlation coefficient value of $r = 0.97$ for males $r = 0.95$ for females and 0.99 for both sexes combined.

2. The lowest correlation coefficient value was found for total length - rostrum length relationship with a $r'$ value of 0.49 for males 0.65 for females and 0.74 for both sexes combined. The insignificant results suggest the high activity of the animal (stricking against hard material while moving in search of food or escape).

3. The total length - abdomen weight relationship revealed that the females had a higher value ($r = 0.89$) than the males ($r = 0.80$). This may be due to the second chelate length of male which is very much heavier than the females.
4. The total length-body width growth parameter was found to be higher in males and from this it can be known that the male tends to get fatter than the females.

5. The mean \( \text{Kn} \) value showed that the condition factor was high for males and females at 9.3 cm size group indicating its maturation size.

6. The fecundity indicate that the number of eggs increase with increase in the length of prawn. Egg mass weight-fecundity relationship showed a higher coefficient value \((r = 0.97)\). This shows that the egg mass weight can be taken as a better index of fecundity than other parameters.

7. Light is the cardinal factor which justify the activity of living being as either diurnal or nocturnal forms. Prawns are nocturnal in habit. The results of the present study suggests that increased darkness improves the length and weight of the prawn than the normal day light conditions. It could confirm the nocturnal behaviour. The positive relationship is maintained up to an optimum level, after which it would not show any significant growth improvement and some time there is a reduction in growth also.

8. The darkness induced growth attitude of this prawn can be strategically made beneficial for the prawn culturist. That is by simulating low light / dim condition in the pond bottom by
reducing the intensity of day light in the open culture system also may expected to have similar effect on its growth.

9. Therefore, in culture condition the fallen direct light penetration in the pond can be reduced by growing trees on the bunds and by improving the planktonic productivity, which not only form as natural food but also reduce the diffusing light, simultaneously enhance the growth of prawns by stimulating the hormone system.

10. The data presented have given some knowledge to lipid metabolism in relation to the ovarian maturation of freshwater prawns. Literature shows that polyunsaturated fatty acids play an important role in constituting phospholipids and they are the precursors of some hormones.

11. The fatty acid composition of freshwater animals varies with ecological environment food and seasonal variations.

12. In prawn culture it would be one of the effective ways to improve the prawn quality production and the reproduction capacity, is supplementation of the artificial feed with W3 and W6 polyunsaturated fatty acids.

13. The present histological observation is aimed to find out the cellular functioning architecture of the testis, vas deferens and androgen gland of M. malcolmsoni based on light and electron microscopic and observations. It is very interesting to note that
more attention has been paid to differentiate the cell types in the epithelial regions of the VD. The main system is due to the great applied values of semenology in prawn aquaculture as it can help us to introduce the effective fertilization and larval production method. Though little information is available on the reproductive system of *M. malcolmsonii*, the present work details with the histological studies of male reproductive organs.

14. The present study reveals that the spermatozoa originated from the testis and passed through three different regions of vas deferentia. These mature sperms are settled at androgen gland and they are nourished here.

15. The TEM observations on various male reproductive organs suggest that the various stages of sperm development are noticed as seen in the other arthropod species.

16. It is obviously noted that the columnar cells are compressedly arranged on the epithelial wall and reach the lumen in the AVD region. Similar kind of reports were also noticed in the crustacean anatomy.

17. The secretory cells of the anterior vas deferens region has larger nucleus with irregular margin of nuclear envelope.