Summary (Chapter I)

Tadpoles of *H. temporalis* living in small aggregations during early stages of development with no obvious threat of desiccation exhibit kin discrimination behaviour. However, they either lose or simply do not show kin discrimination behaviour in their advanced stages of development when they begin to face risk of desiccation due to receding water levels. Familiarity with sibs is not a sole criteria responsible to discriminate sibs from non-sibs in tadpoles of *H. temporalis*. In contrast, tadpoles of *S. breviceps* living in rain-filled puddles having scattered distribution complete metamorphosis under perpetual threat of desiccation and as a consequence might not have evolved kin recognition systems. Cannibalistic tadpoles of *H. tigerinus* do not discriminate sibs from non-sibs in early stages of tadpole development regardless of hunger level and are indiscriminate predators to both sibs and non-sibs. The present study thus supports the view that kin discrimination behaviour in tadpoles may evolve in relation to their social habits, and hydroperiod of the water bodies in which they complete metamorphosis. Absence of kin discrimination in *H. tigerinus* tadpoles is perhaps associated with their nature of solitary living.
Summary (Chapter II)

The tadpoles of *Hylarana temporalis* in their early stages of development (stages 28-30) were tested to know whether, small aggregations seen in nature are likely members of kin group. The experiment conducted to find out aggregation pattern in these tadpoles reared with sibs and reared in mixed groups revealed that tadpoles of sib group exhibit aggregation behaviour while those from mixed group do not. The present study also shows that aggregation behaviour is not influenced by light intensity. Lastly, the study shows that the small groups of tadpoles that we observe in their natural habitat most likely belong to a parental line.
Summary (Chapter III)

Tadpoles living in aggregations share information about food cues with group members, the sense of perception of food cues would be weaker in individual tadpole than those not living in aggregations. Tadpoles forming dense aggregations, the perception of food cues would be weaker than those living in loose aggregations or not forming aggregations. Tadpoles of *Duttaphrynus melanostictus* living in dense aggregations, *Hylarana temporalis* living in loose aggregation and *Sphaerotheca breviceps* not forming aggregations were chosen for the study by varying density of tadpoles and providing them with different levels of food. Analysis of each species showed that, with an increase in density of tadpoles the time (min) taken to reach food patch declined significantly in all three species suggesting information sharing among the individuals. However, with increase in amount of food, the time required to reach the food patch declined in the tadpoles of *H. temporalis* and *S. breviceps* at any given density group but, not in *D. melanostictus* suggesting that individuals of former two species have better sense of food perception than latter. The present study suggests that, tadpoles of *H. temporalis* have a better sense of food perception than those of *D. melanostictus* and *S. breviceps* tadpoles. Individual tadpoles of *D. melanostictus* have least sense of food perception. Tadpoles of *H. temporalis* make use of personal information and shared information from group members and also odour gradients emanating from food to reach a food patch. Tadpoles of *D. melanostictus* make use of information sharing among individuals to reach a food patch. Tadpoles of *S. breviceps* use of personal information and may exhibit context dependent information sharing with other puddle members to reach a food patch.
Summary (Chapter III)

Tadpoles of *Duttaphrynus melanostictus* and *Sphaerotheca breviceps* co-occur in the same water pools in nature. Hence, a study was conducted to know whether, density of rearing (low and high) of tadpoles either with conspecifics or heterospecifics with different levels of food, results in intraspecific and interspecific competition in these two species of tadpoles. Metamorphic traits were taken as the criteria to assess different competition patterns. The increase in snout-vent length (SVL) and body mass and early attainment of metamorphic climax (MC) were considered as positive influence of competitive environment. The study revealed that intraspecific competition in tadpoles of *D. melanostictus* occur only when they are reared at high density with limited food since the metamorphs emerged from this group were smaller in size and there was delay in attaining MC. In contrast, the tadpoles of *S. breviceps* exhibited intraspecific competition when reared at high density regardless of food levels. Rearing together of the two species of tadpoles (mixed rearing) revealed no interspecific competition at lower density of rearing, regardless of food levels. However, in crowded condition coupled with limited food, tadpoles of both the species perform better depicting symmetric competition between the species. In contrast, when reared in crowded condition coupled with abundant food, the tadpoles of *S. breviceps* fair well and they have a negative influence on metamorphic traits of *D. melanostictus* suggesting asymmetric competition between the two species.