IV. SUMMARY

Amphibians are the first land dwelling vertebrates with an aquatic larval stage followed by terrestrial life. Amphibian species discovery exceeds all other vertebrates. However, they are more threatened and declining than birds and mammals. Studies on amphibians especially ecological aspects in India is meager. The present study was carried out with the following objectives 1. To understand the species richness, abundance and diversity, 2. To study the distribution pattern of anurans in agroecosystems of the district and 3. To study the niche breadth and overlap of anurans.

The present study was carried out in five locations namely Thamarikulam, Thuckaly, Thengapattanam, Bethany, Rathinapuram of Kanyakumari District of Tamilnadu. The study was carried out from November 2010 to April 2012. Predominant habitats in the study sites were paddy, coconut, banana, rubber and estuary. For the purpose of studying amphibians Visual Encounter Survey (VES) Method of Heyer et al. (1994) was chosen based on the pilot survey. Since the study sites were open without canopy cover the survey was carried out during night time from 18:00 hrs to 23:00 hrs.

A total of ten species of amphibians (viz. Duttaphrynus melanostictus, Euphlyctis cyanophlyctis, E.hexadactylyus, Fajervarya granosa, Fajervarya keralensis, Hoplobatrachus tigerninus, Microhyla ornata, Hylorana aurantiaca, Pseudophilautus kani and Polypedates maculatus) belonging to five families (Bufonidae, Dicroglossidae, Microhylidae, Ranidae and Rhacophoridae) were recorded during the study period in Kanyakumari District. Of them Hylorana
*Hylorana aurantiaca* comes under Vulnerable (VU) category of IUCN (International Union for Conservation of Nature and Natural Resources). The rest of the nine species were Least Concern (LC) category. Among the recorded species *Hylorana aurantiaca* and *Psuedophilautus kani* are endemic to Western Ghats.

The three field sites Thamarikulam, Thuckaly and Rathinapuram had equal number of seven species. Whereas, Bethany and Thengapattanam had only six species of anurans. Interestingly, Bethany dominated by rubber plantation close to the hill range of Western Ghats had three unique species *Fajervarya keralensis*, *Hylorana aurantiaca* and *Psuedophilautus kani* which were not recorded in other four sites.

The encounter rate of amphibians in Kanyakumari district was 2.63 individuals/man-hour. Among the locations Thamarikulam had the highest encounter rate of 3.75 individuals/man-hour and the lowest was Bethany 1.33/man hour. At species level the encounter rate varied. *Fajervarya granosa* was the most encountered species in four locations Thamarikulam, Thuckalay, Bethany and Rathinapuram. In Thengapattanam *Duttaphrynus melanostictus* was the encountered at 0.522/man-hour.

A total of 7099 individuals were observed during the survey. Among the recorded species *Fajervarya granosa* dominated the anuran community (3220 individuals 45%) followed by *Polypedatus maculatus* (1109 individuals, 15.62%), *Euphlyctis hexadactyla* (862 individuals 12.14%), *Duttaphrynus melanostictus* (768 individuals 10.82%). The rest of the species recorded were less than 10%. Among the five families, Dicroglossidae was the most dominant family by richness
(five species 50%) and abundance (67.91%), followed by Rhacophoridae two species (15.69%). Bufonidae (10.82%), Microhylidae (5.58%) and Ranidae (3.68%), were represented by only one species. Maximum number of anurans was encountered during the month October 2011 and the lowest in May 2011. Monthly population of anurans differed significantly.

Among the ten microhabitat used by amphibians irrespective of species grass followed by floor, litter and water were the most used microhabitat. Microhabitat usage by anurans of Kanyakumari varied significantly.

Among the five study sites three species *Duttaphrynus melanostictus* and *Fajervarya granosa* and *Polypedates maculatus* were present in all the localities and that shows these species are habitat generalist. Likewise, three species *Fajervarya keralensis, Hylorana aurantiaca* and *Pseudophilautus kani* were found only in Bethany. It showed that these three species are habitat specialist. The rest of the four species (*Euphlyctis cyanophlyctis, E.hexadactyla, Hoplobatrachus tigrinus* and *Microhyla ornata*) were found in three to four habitats. They are habitat intermediates.

Niche breadth of amphibians explained three species *Polypedates maculatus, Duttaphrynus melanostictus* and *Fajervarya granosa* had high average niche breadth value (based on locality and microhabitat) and are classified as habitat generalist. The niche breadth of the three species *Fajervarya keralensis, Hylorana aurantiaca, Pseudophilautus kani* their niche breadth scores were low compared to other species indicating narrow tolerance to environmental gradients and hence considered as habitat specialist.