Acknowledgements

I take this opportunity to express my reverence to my Research Mentor, Dr. M David who introduced me to a fascinating realm of Ecotoxicology. His inspiring guidance and constant motivation have helped me to understand better and remain optimistic. I am grateful to him for giving me liberty in the work undertaken and for unwavering support and encouragement during my doctoral programme. Although this eulogy is insufficient, I preserve an everlasting gratitude for him.

I am grateful to my teachers who inspired my interest in Science and ushered me towards a career in Biological Sciences.

True mentors are the anonymous reviewers who showed the rationale of research to me. This has greatly helped in improving the insights, skills and taught process in the approach, design and analysis of research problems.

I am forever indebted to my University (Karnatak University) for awarding research students meritorious scholarship: University Research Studentship (URS).

I am grateful to

- Dr. AA Hooli (Principal) and Dr. VH Arali (Ex-Principal), Karnatak Science College, Dharwad for providing basic facilities for the present research work.

- The faculties: Prof. (Smt.) KB Karale, Dr. (Smt.) NV Biradar, Dr. (Smt.) AS Bellad, Dr. (Smt.) MS Nayak, Dr. CB Ganesh, and Dr. (Smt.) Pratibha Deshmukhe, Department of Zoology, Karnatak Science College, Dharwad.

- Prof. (Smt.) BA Shanbhag, Prof. R Nazeer Ahamad, Prof. (Smt.) K Pancharatna, Dr. (Smt.) LS Inamdar and Dr. N Shivanna, P.G. Department of Studies in Zoology, Karnatak University, Dharwad.
My earnest, humble, and sincere thanks to

♦ The authorities of University Scientific Instrumentation Centre (USIC), Karnataka University, Dharwad for providing and helping me to utilize GC-MS, HPLC, AAS, UV-visible, FT-IR, and Image Analyzer for the current research.

♦ Non-teaching staff of Karnataka Science College and Karnataka University for their help, genuine support and co-operation during my research work.

♦ Shri. Arun Salimath, Proprietor, Allied Scientific Agency, Bhairidevarkoppa, Hubli for timely supply of analytical grade chemicals for my research work.

♦ Shri. VK Dhulkhed, Chief Executive Officer (CEO), Fish Farmers Development Agency, Dharwad and Shri. ST Sreenivas, Assistant Director of Fisheries, Fish Seed Rearing Centre, Neerasagar for their timely supply of test species during this study.

♦ Dow Agro Sciences India Pvt. Ltd., Ratnagiri (District), Maharashtra - 415 722, India for providing Standard Reference Material (SRM; high purity technical grade chlorpyrifos) for my research work.

♦ Dr. RH Chandan, Pathologist, Chandan Diagnostic and Dental Clinic, Dharwad for his kind and sincere guidance to me in carrying out the haematology of the experimental fish.

♦ Shri. Vinayak Naik and Shri. Nagaraj Naik, Proprietor, Shri. Maha Ganapati Computers, Dharwad for their marvelous art and typesetting work in this thesis.
My heartfelt thanks to my senior researchers: Dr. MS Prashanth, Dr. SB Mushigeri, Dr. R Shivakumar, Dr. HB Shivakumar, Dr. (Smt.) VR Naik, Prof. RM Pattar and to my research colleagues Prof. G Krishnamurthy, Prof. Rafeek Ahmed Maniyar, V Munaswamy, SG Chebbi, VK Patil, SR Marigoudar, JB Chittaragi, VS Karigar and MY Shivaraj for their motivation, subtle guidance, constant help, technical support and discussions.

Undoubtedly, immortal peoples had been associated with this thesis and are impossible to me to mention all of them. In this regard, my honest, humble, and sincere thanks to all the individuals who have in any way been associated with the completion of this research work.

I am forever indebted to my parents, sisters, brothers and of my family for their love, caring, unfailing support, tremendous patience, sacrifice, and encouragement.

Ramesh Halappa
List of research publications from the present work

