ACKNOWLEDGEMENTS

It is my privilege to work under the able supervision and guidance of my esteemed teacher Prof. M.S. Johal, Fish and Fisheries Laboratory, Deptt. of Zoology, Panjab University, Chandigarh, benevolent enough to help me in the completion of this research work. His expert guidance, constant encouragement, scholarly supervision, deep understanding, critical review, penetrating analysis, firm determination and availability at odd hours have helped me to achieve this far distant goal.

I wish to express my sincere thanks to Prof. K.K. Tandon, Principal Scientist, Indo-U.S. Project, Deptt. of Zoology, Panjab University, Chandigarh for his moral support and gear me up. I remember with deep sense of gratitude at this juncture for his involvement and invaluable help in my research career.

I am extremely grateful to Indian Council for Agricultural Research, New Delhi for providing financial assistance to carryout the present research work.

I offer my warm thanks to Prof. S.K. Taneja, Chairman, Department of Zoology, Panjab University, Chandigarh for providing the necessary laboratory facilities.

I owe special thanks to the former chairmen, Prof. S.M. Handa and Prof. H.S. Banyal, Deptt. of Zoology, Panjab University, Chandigarh for their help at various stages.

I express my deep sense of gratitude to Dr. Kuldeep Kumar, Chief Warden and Director of Fisheries, Bilaspur, Himachal Pradesh and his staff for providing all the field facilities and the impetus to carry on the present research work.
Thanks are also due to Mr. M.L. Sharma Central Instrumentation Laboratory, Panjab University, Chandigarh for his everwilling help and moral support during the course of research.

The blessings and moral support of Mrs. Kuldeep Johal and Mrs. Tandon were a great source of strength and encouragement.

The criticism from my senior Dr. Anuj Kumar, Sawhney, Lecturer Zoology, Govt. college, Nalagarh has been a great source. He deserves special thanks.

I am most profoundly indebted to Prof. Harbans Singh, Head Deptt. of Zoology, Govt College, Hoshiarpur and my uncle Capt. Jagtar Singh for their constant encouragement and moral support at every moment.

I record my deep sense of appreciation to my colleagues, Dr. R.K. Negi, Yogesh K, Raval, Anil K, Tyor, Dr. Hamid Reza Esmaeili and Harinder Singh Banyal for their invaluable suggestions, support and companionship not only made this scientific journey easier but also helped me through those time when one is caught to emotional crossroads.

I express my heartfelt thanks to my friends Narender, Harjinder, Kiran, Sukhjit Gill, Sony, Deepak, Dalvir, Kulwinder, Pradeep, Manmohan, Sushila, Neetu and Urmil for providing invaluable support at every event and odd situations were of immense value for which I am highly obliged.

I warmly acknowledge the help rendered my juniors Upasana, Shalini, Ravneet, Jaspreet and Surbjeet for their every possible help in the compilation of thesis, the most arduous task in the any research work.

I am extremely thankful to Mr. Yoginder Pal, Mr. Mukesh and Mr. Prabhakar for providing every possible help during my research.
Thanks are due to Mr. Navtej Singh (Nanni), Centre Instrumentation Laboratory, Panjab University, Chandigarh for carrying out the photographic work.

For putting my work in black and white in a right way the credit goes to Mr. Pankaj Sharma, Ms. Pinki, Mr. Deep, Mr. Satnam and Mr. Surjeet of Pankaj Graphics by typing the manuscript even beyond the working hours.

I am indebted to Mr. Gurcharan Singh Bansal, Assistant Director Fisheries, Pong Dam, Mr. Vineet Sharma, Fisheries Officer, Haripur and other staff of their office for their kind help and valuable co-operation.

I am highly grateful to the Chowkidars of Department of Zoology Mr. Bhag Singh, Mr. Bishan Dev and Mr. Shiv Bhadur for their wholehearted co-operation during research.

Last but not least, here no words could adequately express feelings of regards to my mother without her boundless care, perpetual encouragement, sacrifice and constant support throughout my work. My sister Ms. Baljit deserves special thanks for all the love and affection, she showed during period of fellowship. I also extend my thanks to my brother-in-law Mr. Parmjit Singh Sidhu, sister Mrs. Harminder Sidhu, nephew Manpreet Sidhu and niece Jaspreet Sidhu and my relatives for their invaluable moral support and encouragement to make me reach this stage.

I shall be failing in my duties if I do not thank to the “Almighty God” for filling me up with enough strength to complete this scientific voyage.