

ACKNOWLEDGEMENTS

With deep sense of gratitude, I express my heartfelt indebtedness to my research supervisor and mentor Prof. (Dr.) **A.P. Das**, Head, Department of Botany, North Bengal University (NBU), for his esteemed supervision and guidance. His constant encouragement and inspiration during the gestation period of my research has been a motivating factor to complete this piece of work. Without his co-operation and guidance this endeavour would not have been possible.

I also express my deep sense of gratitude to my co-supervisor Prof. (Dr.) **Sarnam Singh**, Forestry and Ecology Division (FED), Indian Institute of Remote Sensing (IIRS), Dehra Dun for his esteemed supervision, valuable comments, creative suggestions, full hearted helps and encouragement to see this piece of work to completion.

I acknowledge the financial help from Department of Space (DoS) and Department of Biotechnology (DBT) through the project entitled "Biodiversity Characterisation at Landscape Level using Remote Sensing and Geographic Information System".

I express my gratitude and thankfulness to all my teachers in the Department of Botany, North Bengal University, Prof. P.K. Basu, Prof. B.N. Chakraborty, Prof. P.K. Sarkar, Prof. U. Chakraborty, Dr. A. Saha, Dr. A. Sen, and Dr. R. Chakraborty (now in the Dept. of Biotechnology, NBU) for rendering every possible help and encouragement during the research period. I also extend my thanks to Mr. P. Mandal (also a faculty member), laboratory assistants, office staff and other attendants of Department of Botany and also of the Centre for Life Sciences for their help and assistance.

I would like to thank Dr. P.S. Roy, Deputy Director, RS & GIS, NRSA, Hyderabad (formerly dean, IIRS) for his all round support in the "Biodiversity Characterisation" project. I am deeply indebted to Prof. (Dr.) S.P.S. Kushwaha, Head, Forestry and Ecology Division (FED), Indian Institute of Remote Sensing (IIRS), Dehra Dun for sharing with me the satellite data of Darjiling district and for providing much needed support during my stay at IIRS. Thanks are also due to Dr. V.K. Dhudwal, Dean, IIRS, Dehra Dun for letting me work at FED and avail Library facilities of the campus and for providing various

logistic support. I would like to thank all faculty members and the office staff of FED, for various helps they rendered to me during my work at IIRS.

Identification and authentication of some unidentified and doubtful specimens would not have been possible without the co-operation from the Botanical Survey of India. At this juncture, I would like to thank Dr. H.J Chowdhery, Joint Director, Central National Herbarium (CAL) Shibpur and Dr. A.S. Chauhan, Joint Director, Botanical Survey of India Sikkim Himalayan Circle (BSHC), Gangtok, for helping me during identification work and availing library facilities.

Forest department officials have been very co-operative and provided all possible help during research period, I thank them all. I also thank Dr. Jagdish Chandra, In-charge Research Station (ICFRE), Sukna for providing climatic data.

I would like to take this opportunity to thank my teacher Dr. Dorjay Lama, Sr. Lecturer, St. Josephs' College, Darjiling, from whom I learned to observe and admire nature during my college days. He was always there in difficult times to lend helping hand and has been a constant source of inspiration.

I am greatly benefited from the senior scholars in the plant taxonomy and environmental Biology laboratory. At this juncture, I wish to thank Dr. P.C. Rai, Dr. Santosh Kr. Rai, Dr. A.F.M. Manzur Kadir, Dr. R.B. Bhujel, Dr. Achinta Kr. Samanta, Dr. S.K. Mukherjee, Dr. T.S. Gupta, Ms Sushma Tamang, and Mr. Lalit Rai for their kind suggestion and encouragement. Junior scholars Chandra Ghosh, Bidya Devi Sharma, Monoranjan Choudhury, Suman Nirola, Pranay Bantawa, Utpal Dutta and subsequent batches of Taxonomy special paper students were co-operative and helpful I wish to thank them all. I am greatly helped by Nabin Singha both in field and Laboratory. The Herculean task of processing large number of specimens would not have been possible without his help. I would like to thank him for all help he rendered to see me through.

Motherly treatment of Mrs. Rubi Das, has never let me feel away from home and had always provided me moral and emotional support in this long drawn research work and needs special mention.

I would like to thank Mr. Suman Rai, Regional Director, Ashoka Trust for Research in Ecology and the Environment, Eastern Himalaya Office, for allowing me to use office computer during the final compilation work.

Thanks are due to Mr. Debjyoti Bhattacharjee, research scholar CNH, who took trouble beyond mention to help me in all possible ways during my stay at Howrah. I am greatly benefited from the research scholars of FED. Help rendered to me by Subrato Nandy needs special mention during remote sensing and GIS analysis. Subrato Paul, Gaurav Srivastav, Pooja Narula, Nikhil Lele provided technical help in landscape analysis during my work at FED at IIRS, I thank them all.

I would like to thank my seniors in the hostel Mr. Pushkar Parajuli, Mr. Navin Poudyal, Mr. Rajkumar Chetteri, Mr. Samir Bal for their brotherly treatment. Their valuable suggestion and encouragement was a source of inspiration. My friends, Rinchen Sherpa, Punita Alley, Anirudra Gurung, Cyaria Pradhan, Merab Basnet, Arindam Roy, Bijoy Moktan, Laxuman Sherpa, Parimal Mandal, Anil Razak, Ram Tamang, Kiran Pradhan, Arati Mukhia, Rashi Subba were always there through thick and thin. Their full-hearted support and co-operation is fondly acknowledged.

Last but not the least, I would like to thank my parents, *Papa*, **Shri Mohan Lall**, *Ama*, **Shrimati Mankumari** for their love and blessings. My brother Raju, and sisters Mala, Prasanti, Bandana, Binu and Satya have provided support without complaints. It was due to my family members forbearing that I could complete this work.

I am grateful to the numerous villagers, shepherds and innkeepers at high altitudes who always welcomed with hospitality and provided food and shelter. Countless names may have been missing from this list but to them I say that though their names may not be here on the paper they shall always remain in my heart.

Upakar Rai
09/09/2006

[Upakar Rai]

University of North Bengal