122-147 J. Nat. Hist. Mus. Vol. 29, 2015

CONTRIBUTIONS OF BOTANISTS OF NATURAL HISTORY MUSEUM (TRIBHUVAN UNIVERSITY) TO RESEARCH AND EDUCATION IN NEPAL

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ABSTRACT

This paper deals with the contribution of botanists of Natural History Museum,Tribhuvan University, Nepal in the field of plant research and education. Of the 14 listed, only two botanists are continuing their service in the museum. Their research works mainly focused on collection and exploration of flora, supervision of dissertation including publication of 171 articles in different journals of national and international repute. Apart from this, their contributions in education/training by organizing seminars/trainings/workshops are highly significant.

Keywords: botany education/training, plant research, plant specimen collection, thesis research

INTRODUCTION

Natural History Museum (NHM) was established by Tribhuvan University, the pioneer University of Nepal, under it's Institute of Science (Currently, Institute of Science and Technology) on July 17, 1975 at the foothill of Swayambhu, the World Heritage Site. This museum is located approximately 5 km west from Kathmandu Metropolitan City. Basically, this museum was proposed to: (i) house Nepalese flora, fauna and paleontological specimens; (ii) conduct research and education activities in Nepal for generating data and conservation of precious natural resources; and (iii) prepare documents related to natural history of Nepal.

This museum is the scientific authority for the fauna of CITES (Convention on International Trade on Endangered Species of Wild Fauna and Flora) in Nepal (TU Today, 2015). This museum now has its collections of more than 55,700 specimens of plants, animals, and fossils (TU Today, 2015). Some of the interesting specimens that visitors love to see include two headed snake, king cobra, 20'4'' long exuviae of python, molar teeth and skull of *Archidiscodon* (3 to 1 million years old), molar teeth of *Ramapithecus* (11 million years old), skull and lower jaw of Hippopotamus, embryos (of human, elephant and rhinoceros), different species of *Cordyceps*, insectivorous plants, samples of medicines and artefact collections (Dangol, 2013).

One of the significant publications of this museum is the Journal of Natural History Museum which is brought out annually since 1977 and includes original research findings on different aspects of flora, fauna and geology of the country. Besides this, it has also published several books and field guide books based on the research and experiences. This museum is also offering opportunities to all interested student volunteers of national and international levels,

faculties and researchers for the shorter or longer periods to work with the scientists of the museum in the field of flora, fauna and palaeontology of Nepal. Botanists and zoologists are working significantly to achieve the goals and objectives of this museum through thier research, publications and education/trainings. The purpose of this paper is to highlight the contribution made by the botanists of NHM focussing their significant research and educational activities.

MATERIALS AND METHODS

A preliminary study was done to collect the list of botanists who are currently working or had worked in the Natural History Museum and was done by consulting the yearly register books of the museum and General Administrative Office of Tribhuvan University, Kirtipur. To obtain data of their collections, the register books of plant collections were consulted. Moreover, to record the research projects and publications (books, journal articles, popular articles, proceedings papers, abstracts, research reports), libraries of NHM and TU, internets (Google scholar) and websites (www.nhmnepal.edu.np) were visited and were verified accurately. An annex of the publications of the botanists of the museum was prepared for developing database with published literatures. Official documents were reviewed and administration staffs of the Natural History Museum were consulted to record the contribution made in the sector of education and training from its establishment period to date.

RESULTS AND DISCUSSION

State of botanists in the Museum

Natural History Museum has employed botanists and zoologists as its faculty to conduct research in natural science discipline. If we look the table 1, there is the list of 14 faculties now working or have worked in the museum as botanists. Two botanists (Keshab Shrestha and Hemant Ram Bhandari) worked for more than 2 decades. Most of other botanists have worked for a shorter period and left the museum to join Amrit Science Campus (Devendra Mananda Bajracharya and Roshani Manandhar) or Trichandra Campus (Anjali Maiya Shrestha and Suman Bhattarai) or Central Department of Botany (Mohan Siwakoti) or RECAST (Shilesh Chandra Singh and Shova Devi Shrestha). Nirmala Pradhan and Dharma Raj Dangol are only the two botanists currently working in museum (table 1).

TABLE 1. Botanists of Natural History Museum and their position and service year.

SN	Name	Position[7]	Service year in NHM	Start	End
1	Shailesh Chandra Singh, Ph.D.[1]	Reader	4	2032.4.1	2036.12.5
		Professor	4	2051.6.6	2055.6.5
2	Nirmal Kumar Bhattarai[6]	Assistant lecturer	3 months	2034.1.2	2034.3.30
3	Hemant Ram Bhandari[2]	Lecturer	21	2037.3.23	2058.1.30
4	Roshani Manandhar[4]	Assistant lecturer	2	2038.7.24	2040.8.1
5	Suman Bhattarai[3]	Assistant lecturer	2	2038.9.24	2040.7.23
6	Anjali Maiya Shrestha[3]	Assistant lecturer	3	2040.8.1	2043.8.20
7	Devendra Mananda Bajracharya[4]	Assistant lecturer	2 years	2041	2042
8	Baidya Nath Upadhyaya (Asst. Research Officer)	Assistant lecturer	3 years	2033.12.21	2036.10.1
9	Shova Devi Shrestha	Assistant lecturer	3 years	2033.10.15	2036.8.24
10	Mohan Siwakoti[5]	Reader	4 years	2060.9.18	2064.9.11
11	Mahesh Adhikari[1]	Associate Professor	1 year	2066.11.9	2067.3.30
12	Keshab Shrestha, Ph.D.[1] (Asst. Research Officer)	Professor	34	2035.5.7	2069
13	Nirmala Pradhan, Ph.D.	Professor	32	2040.7.23	To date
14	Dharma Raj Dangol	Professor	3	2069.6.5	To date

1= Retired; 2= Left the country for Canada; 3= Tri-Chandra Multiple Campus; 4= Amrit Science Campus; 5= Central Department of Botany; 6= Passed away; 7=POSITION OF BOTANISTS DURING THEIR SERVICE PERIOD AT NHM

Contributions to plant research

Research projects

Zoologists and botanists of this museum also developed and conducted research projects in different parts of Nepal (table 2). These research projects were supported by Pro-Natura Fund Japan, IOST, RONAST, WWF, and IUCN. Some of the projects were jointly carried out with international scientists (Appendix 1).

TABLE 2. Completed and on-going key research projects.

Year	Researchers	Report/Project titles	Reports submitted to
1982	Hagiwara, H and Bhandary, H R	Myxomycetes from central Nepal. Reports on the cryptogamic study in Nepal.	Miscellaneous publication of the National Science Museum, Tokyo
1985	Wilson, E; Walisiewicz, M; Harvey, S; Gay, H and Shrestha, K	The Report of the Oxford University expedition to Nepal.	Oxford University
1996	Singh, S C; Shrestha, K and Bhandary, H R	A study of some rare, endangered and endemic plants of central Nepal (Draft report)	NHM-TU
1997	Singh, S C and H.R. Bhandary	Establishment of computerized data base in the Natural History Museum (Draft report).	NHM-TU
1998	Karki, J B; Shrestha, K and Khanal, B	Study on potential of biodiversity conservation of Badimalika region of Achham, Bajura, Bajhang and Kalikot districts of Nepal.	Nepal Biodiversity Action Plan, Kathmandu
1998	Shrestha, K; Khanal, B and Karki; J B	Inventory of biodiversity in Badimalika and Rama-Roshan region, west Nepal.	National Biodiversity Action Plan, Kathmandu
2000	Pradhan, N; Shrestha, K; Shah, K B; Shrestha, P K and Khanal, B	Study on the biodiversity of Swayambhu area	IOST-TU
2000	Shrestha, P K and Pradhan, N	A general survey of invertebrate (except Lepidoptera) in Royal Bardia National Park, Nepal.	World Wildlife Fund (WWF) Nepal Program, Kathmandu, Nepal
2001	Khanal, B; Shrestha, P K and Shrestha, K	Study of insect fauna of tropical region of Nepal and their conservation measures (Final Report).	Pro-Natura Fund, Japan/NCSJ, 134+Maps+photographs
2001	Shrestha, K; Khanal, B and Shrestha, P K	Insect fauna and their conservation in tropical Nepal.	Pro-Natura Fund, Japan10:145-159.

2001	Shrestha, K; Khanal, B and Karki, J B	Floral diversity in Badimalika and Rama-Roshan region, mid-west Nepal.	DNPWC
2003	Shrestha, K; Adhikari, B; Allen, M; Courage, A; Hall, H; Khanal, B; Koirala, S; Kunwar, R; Malicky, H; Pariya, B; Pradhan, N; Shah, K; Shakya, S; Sharma, S; Shaw, A; Shrestha, K; Shrestha, P K; Smith, C and Zimmerman, B	Babai river valley fish and biodiversity survey: Higher plants. In: S. Oliver (ed.), *Babai River Valley Fish and Biodiversity Survey: Royal Bardia National Park, Nepal.*	ZSL Conservation Report, Zoological Society of London, pp. 39-48.
2004	Pradhan, N	Bryoflora of Chitwan, central Nepal Final report on study of the biodiversity of tropical region of Nepal (Chitwan district). pp. 48-61.	Pro-Natura Fund, Japan
2004	Shrestha, K; Shrestha, P K; Khanal, B and Shakya. S	Study of the biodiversity of the tropical region of Nepal (mid-term report).	Pro-Natura Fund, Japan
2004	Shrestha, K; Shrestha, P K; Khanal, B; Pradhan, N and Shakya, S	Study of the biodiversity of tropical region of Nepal (Chitwan district) (Final report).	Pro-Natura Fund, Japan submitted by CENEED/ NHM-TU
2005	Shrestha, K; Shrestha, P K; Khanal, B; Pradhan, N and Shakya, S	Study on the species diversity in the Chitwan district of central Nepal.	Pro-Natura Fund, Annual report, 14:175-192
2008	Shrestha-Vaidya, G;Shrestha, K and Wallander, H	Evaluation of the antimicrobial activity of *Lantana camara* Linn. against pathogenic fungi and bacteria.	NAST, Khumaltar, and Microbial Ecology Lab, Lund University, Sweden
2043	Shrestha, K	Study of the natural environment of Dang	RONAST
2015	Dangol, D R	Establishment of plant genetic resources in NHM 2014 July-2015 Feb.	LIBIRD & Bioversity International

2015-2016	Joshi, N; Shrestha, R; Basnet, R; Dangol, D R and Pradhan, N	Revision of flora of Phulchowki and Godawari.	DPR
2015-2017	Dangol, D R; Pradhan, N; Shrestha, R; Joshi, N and Basnet, R (2015-2017)	Swayambhu Flora Project.	IOST and DPR

Ph.D. research

Two botanists Keshab Shrestha and Nirmala Pradhan completed their Doctor of Philosophy after joining NHM. Keshab Shrestha did his Ph.D. research on physioecological study of algae from Kyoto University of Japan in 1993 and Nirmala Pradhan did her Ph.D. on bryoflora of terai and churia hills of lowland Nepal from Tribhuvan University of Nepal in 2010 (table 3).

TABLE 3. Botanists of Natural History Museum with their Ph.D. thesis research and degree awarding universities and completion year.

SN	Researcher	Thesis Research	University	Completion year
1	Keshab Shrestha	Physioecological study on fresh water chlorophyte *Gonium pectorale* isolated from Tibet (China), Nepal and the Ryukyu Islands (Japan)	Kyoto University, Japan	1993
2	Dharma Raj Dangol[1]	Agrestal weeds of Nepal: Identification, distribution, ecology and agricultural importance	Vienna University, Austria	1998
3	Nirmala Pradhan	Bryophytes of Lowland Nepal: Tarai and Churia Hills	Tribhuvan University, Nepal	2010

[1]Ph.D. before joining Natural History Museum.

Thesis supervised by botanists of NHM

Faculty members of NHM supervised M.Sc. and Ph.D. dissertations (table 4). Prof Keshab Shrestha had supervised two Ph.D. students, one from Tribhuvan University and another from Nepal Academy of Science and Technology. Dharma Raj Dangol also supervised one MSc. student from School of Environmental Science and Management (SchEM) affiliated with Pokhara University,

TABLE 4. Botanists of Natural History Museum as supervisors of M.Sc. and Ph.D. dissertations.

SN	Faculty members of NHM	Name of the Ph.D. and M.Sc. students names and their titles of dissertations	Year of Completion
1	Keshab Shrestha	Ila Shrestha[1], Ph.D. in Botany Ethnobotany of Tamang Community in Langtang National Park and Buffer Zone, Central Nepal, with Application of Geographic Information System and Remote System	2010
		Geeta Shrestha-Vaidya[2], Ph.D. in Botany Influence of mycorrhizal fungi in stabilizing soils subjected to Erosion in Nepal	2010
2	Dharma Raj Dangol	Saraswati Bhurtyal[3], M.Sc. in Environmental Management Assessing Organic Vegetable Production and Market System of Smallholder Farmers around Pokhara: A Case Study of Bhadaure Tamagi VDC of Kaski District of Nepal	2013

[1]Patan Multiple Campus, Tribhuvan University, Patan, Lalitpur

[2]Nepal Academy of Science and Technology, Khumaltar, Lalitpur

[3]School of Environmental Science and Management, Pokhara University, Nayabaneshwar, Kathmandu

Collections of plant specimens

Natural History Museum houses botanical specimens of algae, fungi and mushrooms, lichens, bryophytes, pteridophytes, gymnosperms, and angiosperms made by the plant collectors, botanists of NHM and obtained from other institutions (table 5). It has also deposited historical herbaria made by three plant collectors of Nepal (Shrestha & Dahal, 2010). All the specimens are preserved well following dry and wet preservation methods. It has some collection of insectivorous plants, healing plants, wild food plants and four species of *Cordyceps*. It also has artefact in its collections contributed by different ethnic groups of Nepal and Japan.

TABLE 5. Plant collections, preservation types and collectors.

SN	Groups of botanical specimens	Preservation types	Plant collectors	
			NHM botanists	Non-NHM botanists
1	Algae	Dry preservation	---	Gift from Japan
2	Fungi	Wet preservation	Shailesh Chandra Singh, Hemanta Ram Bhandhary	Hari Prasad Aryal
3	Lichens	Dry preservation	---	---
4	Bryophytes	Dry & wet preservations	Nirmala Pradhan	---
5	Pteridophytes	Herbarium and wet preservation	Keshab Shrestha, Nirmala Pradhan	---
6	Gymnosperms	Herbarium, dry and wet preservation	Mohan Siwakoti	---
7	Angiosperms	Herbarium, dry and wet preservation	Keshab Shrestha, Nirmala Pradhan, Hemant Ram Bhandary, Anjali Maiya Shrestha, Dharma Raj Dangol	Purusottam Shrestha, Ila Shrestha

Contributions to scientific literature

A list of 171 publications of botanists working in Natural History Museum were grouped into abstracts (5), books and booklets (12), edited book chapters (10), journal papers (105), popular articles (74), proceeding papers (19) and research reports (19) (Appendix 1).

SC Singh wrote papers in co-authorship with all NHM botanists, whereas some botanists published individually or in co-authorship with zoologists or botanists of other institutions (table 6 and 7).

A total of 29 papers were single authored whereas, 86 papers double or multi-authored papers (table 7). In case of double or multi-authored papers, lead authored papers (35) by the botanists were fewer in number to co-authored papers (51). Of the total papers (53), published by Keshab Shrestha, 11 papers were single authored, 10 papers lead authored and 32 papers co-authored (table7).

TABLE 6. Authorship analysis of double or multi-authored journal papers.

Lead authors (double or multiple)	SCS	KS	NP	HRB	SDS	BNU	AMS	MS	DRD	NZ[1]	NNW[2]
Shailesh Chandra Singh (SCS)	x	√	√	√		√				√	√
Keshab Shrestha (KS)		X								√	√
Nirmala Pradhan (NP)			X								√
Hemanta Ram Bhandary (HRB)				x							√
Shova Devi Shrestha (SDS)					x						
Baidya Nath Upadhyaya (BNU)						x					
Anjali Maiya Shrestha (AMS)							x				
Mohan Siwakoti (MS)								x			√
Dharma Raj Dangol (DRD)									x		√
NHM Zoologists (NZ)										x	
Non-NHM writers (NNW)											x

TABLE 7. Authorship analysis of refereed journal papers.

SN	NHM Botanists	Single authored	Double or multi-authored papers		Total
			Lead author	Co-author	
2	Keshab Shrestha	11	10	32	53
3	Nirmala Pradhan	7	9	3	18
4	Hemant Ram Bhandary	2	4	7	13
9	Dharma Raj Dangol	1	3	7	11
1	Shailesh Chandra Singh	1	7	1	9
8	Mohan Siwakoti	4	2		6
6	Baidya Nath Upadhyaya	2		1	3
5	Shova Devi Shrestha	1			1
7	Anjali Maiya Shrestha	1			1
	Total	29	35	51	115

Botanists of NHM published their scientific findings jointly with colleagues or other researchers of the university and research organizations (Appendix 1).

A total of 105 research articles in 29 scientific journals of six countries were published by

botanists of NHM (table 8). Of the 29 journals, 17 were from Nepal, 5 were from Japan, each 2 were from France, India and USA, and one article published from China has been tabulated in table 8. Altogether the highest numbers of papers were published from Nepal in the *Journal of Natural History Museum* (54 papers), *Scientific World* (8 papers), *Journal of Institute of Science and Technology* (5 papers), and *Our Nature* (4 papers). Of the total 90, 15 papers were published in international journals and only six papers were first authored by botanists of NHM (Keshab Shrestha: 2, Nirmala Pradhan: 2, Sailesh Chandra Singh: 1 and Mohan Siwakoti: 1). Rest of the international papers were co-authored with Japanese and Nepalese researchers (Appendix 1).

TABLE 8. Alphabetical list of scientific journals/bulletins, name of the countries and number of papers published.

SN	Name of the journals or bulletins	Countries	Total number of papers
1	Bamboo Journal	Japan	1
2	Banko Jankari	Nepal	1
3	Botanica Orientalis	Nepal	2
4	Bulletin of Japanese Society of Microbial Ecology	Japan	4
5	Bulletin of Pure and Applied Sciences	India	1
6	Cryptogamie Bryologie	France	1
7	Geobios	India	1
8	Himalayan Biodiversity	Nepal	2
9	International Journal of Applied Sciences and Biotechnology	Nepal	1
10	International Journal of Environment	Nepal	1
11	Japanese Journal of Limnology	Japan	1
12	Journal of Ethnobiology and Ethnomedicine	USA	1
13	Journal of Institute of Science and Technology	Nepal	5
14	Journal of Japanese Botany	Japan	1
15	Journal of Natural History Museum	Nepal	54
16	Journal of Phycology	Japan	1
17	Journal of Science (Trichandra College Science Association)	Nepal	1
18	Museum	France	1

19	Nepal Journal of Plant Sciences	Nepal	2
20	Nepal Journal of Science and Technology	Nepal	3
21	Nepalese Journal of Agricultural Sciences	Nepal	1
22	Nepalese Journal of Biosciences	Nepal	2
23	Our Nature	Nepal	4
24	Plant Resources	Nepal	1
25	Restoration Ecology	USA	1
26	Scientific World	Nepal	8
27	The Journal of Agriculture and Environment	Nepal	1
28	The Wildlife	Nepal	1
29	Wetland Science	China	1
	Total	**6**	**105**

Contributions to botany education/training after November 2012

The botanists of Natural History Museum have contributed to curriculum development of new programs of the Institute of Science and Technology (B. Sc. in Tea Technology and Management) and Faculty of Education (M. Ed. in Biology). They delivered lectures on bryophytes in the Central Department of Botany, Tribhuvan University or "plant taxonomy" and "ethnobiology" in the Sanothimi Campus of Faculty of Education. Sometimes, botanists of the museum also helped to the postgraduate students of Central Department of Botany, Tribhuvan University in identification of bryophytes collected by them (PK Jha, 2013, Personal Communication). They delivered their lectures on special topics like in the CITES awareness programs, International Biodiversity Day (May 22), Environmental Day (June 5) and other events (table 9). They also delivered their lectures on the plant taxonomy, plant and bryophyte collection and ethnobiology. Introduction of NHM and agro-ecotourism in the seminars upon the demand of the students of Bachelor and Master Degrees was also managed.

TABLE 9. Key educational events, topics covered, participant's organizations and level with numbers (2012 December-2015 December).

Event, Date and venue	Topics covered	Participants' organizations	Level (Nr.)[1]
Seminar 23.12.2012 NHM	Plant research	Patan Multiple Campus, Tribhuvan University	BSc Env Sci & Botany (S:21, T:2)
Seminar 18.01.2013 NHM	Bryophytes Plant taxonomy	Sanothimi Campus, Tribhuvan University	MSc Edu (Biology) (S:10, T:4)
Seminar 16.02.2013 NHM	Ethnobiology research methods	Golden Gate International College, Tribhuvan University (affiliation)	MSc Env Sci (S:24, T:1)
Seminar 6.05.2014	Bryophyte collection Plant collection, identification, nomenclature and cclassification	Patan Multiple Campus, Tribhuvan University	BSc Env Sci (S:24, T:3)
Seminar 21. 05.2013 NHM	NHM and agroecotourism	National College, Kathmandu University (affiliation)	B DevS (S:50,T:1)
International Biodiversity Day 22.05.2013 ICIMOD, Godawari	Plant taxonomy	Padma High School, Kitini High School and Padma Kanya High School	School children of 7-10 Grades (S:30, T:3)
Workshop 25.05.2013 Taudaha	Plant collection techniques	Community Children of Art School, Chakupat	Grade 1-9 (S: 20, T: 2; P:5)
Class 4.07. 2013 Rabibhawan	Agrotourism in Nepal	Nepal Academy of Tourism and Hotel Management (NATHM)	Master Students (S:24, T=2)
Seminar 11.08.2013 NHM	Plant collection and herbarium preparation	Tri-Chandra Multiple Campus, Tribhuvan University	B. Sc. students (S:22, T=1)

Seminar 7.09.2013 Kirtipur	Introducing Natural History Museum	Mangal Higher Secondary School	8th grade students (S:51, T=3)
Class and field 13.09.2013 Ilam	Weed diversity (Theory); weed collection and identification (practical)	Mahendra Ratna Multiple Campus, Ilam Namsaling Community Development Center, Ilam	BSc Horticulture & Floriculture Management (S: 29, T:2)
Training 21.09.2013 Kirtipur	Proposal development	NHM, Mangal Higher Secondary School,Kirtipur	8th grade students (S:21, T=1)
Training workshop 1-3.10.2013 NHM	Training on environmental education	NHM, IAAS, Schools	Staff, students, school teachers (St:5, S=5, T=10)
Training 15-17.11.2013 ECCA office	Training for understanding climate change	Rotaract, ECCA Counselors, NHM	Staff, students, and school teacher 1 (St=2, S: , T=1)
Seminar 29.12.2013 NHM	Natural History Museum	Tri-Chandra Multiple Campus, Tribhuvan University	B.Sc. Botany students and teacher (S:31, T=1)
Seminar 2.02.2014 NHM	Wetland research findings	NHM, IAAS, CDES, Golden Gate International College	NHM staff, student researchers, Dean, Research division chief of UGC
Seminar 10.03.2014 NHM	Seminar series: botanical research methods	Students of Patan Multiple Campus, Ascol & Tri-Chandra Multiple Campus	Students and teachers (S:18, T=3)
Seminar 3.12.2014 NHM	Plant genetic resources education	NHM, Schools, Colleges	NHM staff, school teachers, College students (St=12, IoST=2,T=9, CENEED=1,IAAS=1)
Seminar 11.12. 2014 NHM	Seminar on research findings	Different campuses of IOST	Researchers, NHM participants (St=10, T=14, S=1)

Seminar 30.12.2014 NHM	Learning from volunteering in NHM by Salina Maharjan	NHM, Sanothimi Campus	NHM staff, teachers and students of Sanothimi Campus
Training 29.01.2015 Kirtipur	Herbarium preparation	Mangal Higher Secondary School	Students and teachers (S:52, T=5)

ISt=Staff, S= students, T: teachers, P: parents

Natural History Museum, the only of its kind in Nepal has good plant collections useful to different institutions for teaching and research. So, development and implementation plans, programs and projects in different districts of Nepal are needed to enrich specimens of both lower and higher plants. Only two botanists of NHM worked or have been working for more than 30 years. One had resigned 4 years before. Most of the employees worked for shorter period only. Collaborative research projects conducted by the botanists are few in numbers. Therefore, exploration of the potential of tangible national and international interactions for encouragement of networking, uni or multidisciplinary research work and online databases by means of new botanists are needed. This museum also has expertise in botanical research and training. So, more educational and training programs useful to academic and research organizations of Nepal and abroad can be developed to expand its horizon. Further, well experienced botanists of NHM can also play a pivotal role in designing credit courses and training programs for providing quality education and generating income for academic excellence. Lastly, Tribhuvan University, especially Institute of Science and Technology, needs to develop policy to utilize human resources and facilities currently present in Natural History Museum effectively in strengthening education and research capacity of institutions, faculty members, researchers and students of different departments, campuses and affiliated colleges of IOST.

ACKNOWLEDGEMENTS

Author is thankful to Prof. Dr. Bhaiya Khanal and Prof. Dr. Nirmala Pradhan of Natural History Museum for their helpful suggestions to improve the manuscript and NHM staffs (Krishna Bahadur Shrestha, Keshav Lal Shrestha, and Devendra Maharjan) for their help in collecting information for this article.

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TU Today (2015) Natural History Museum. Tribhuvan University, Kirtipur, Kathmandu, Nepal; pp 31–32.

Appendix 1. Publications authored by botanists of Natural History Museum, Tribhuvan University, Nepal.

Abstracts (5)

Bhandary, H R; Shrestha, P (1982) Ethnobotanical explorations on the poisonous plants of Kathmandu valley. Abstracts: Science and Technology Congress, NCST, Kathmandu, Nepal.

Pradhan, N; Joshi, S D (2002) Tropical bryoflora of Nepal. *In* Srivastava, R; Nath,V; Wahal, D; Asthana, A K; Saxena, N K (eds) Abstracts: of 72, World Conference of Bryology. January 23–30, 2002, Lucknow, India: WCB 2002. National Botanical Research Institute, Lucknow, India.

Shrestha, I; Shrestha, K (2007) Medicinal and aromatic plants of Langtang National Park, Nepal. *National Seminar on Sustainable Use of Biological Resources with the Special Theme: Medicinal and Aromatic Plants* (April 22-23, 2007, Baishak 9-10, 2064, Pokhara, Nepal) Abstracts: 40–41. Ecological Society, Kathamndu, Institute of Forestry, Pokhara and PN Campus, Pokhara.

Shrestha-Vaidya, G; Shrestha, K; Wallander, H (2007) Evaluation of antimicrobial activity of Kande jhar (*Lantana camara* Linn.) against pathogenic fungi and bacteria. *National Seminar on Sustainable Use of Biological Resources with the Special Theme: Medicinal and Aromatic Plants* (April 22-23, 2007, Baisak 9-10, 2064, Pokhara, Nepal) Abstracts: 47–48. Ecological Society, Kathamndu, Institute of Forestry, Pokhara and PN Campus, Pokhara.

Siwakoti, M (2007) Wetlands conservation and sustainable livelihoods in Nepal. *National Seminar on Sustainable Use of Biological Resources with the special theme: Medicinal and Aromatic Plants* (April 22-23, 2007, Baisak 9-10, 2064, Pokhara, Nepal) Abstracts: 7–8. Ecological Society, Kathamndu, Institute of Forestry, Pokhara and PN Campus, Pokhara.

Books and booklets (12)

Pradhan, N (2000) *Materials for a checklist of bryophytes of Nepal–a catalogue of bryophyte specimens collected from Nepal*. The Natural History Museum, London, UK; 79 pp.

Shrestha, K (1979) *Nepali names for plants*. Natural History Museum, Institute of Science, Tribhuvan University, Swayambhu, Kathmandu, Nepal; 38 pp.

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