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7th International Conference on

Biodiversity Conservation and Ecosystem Management

July 26-27, 2018 Melbourne, Australia

Keynote Forum

Day 1

7th International Conference on

BIODIVERSITY CONSERVATION AND ECOSYSTEM MANAGEMENT

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Ricky M Bates

Pennsylvania State University, USA

Strengthening indigenous informal seed systems in Southeast Asia

Seed is a fundamental agriculture input and access to locally adapted, quality seed is an essential component of sustainable crop production. In much of the developing world, informal seed systems, such as farmer-to-farmer exchanges and farmer self-saved seed, are critical components of resource poor farming systems. Indeed, planted seed from this informal system comprise the majority of planted acreage in many regions of the world. This local seed production and distribution facilitates maintenance of crop biodiversity by preserving in situ locally adapted varieties and by broadening the genetic base of production with multiple varieties adapted to specific production systems and micro-climates. These informal seed systems are also critical for seed and food security during periods of instability or natural disaster, including changing environmental conditions. A rich diversity of underutilized species functions within informal seed systems in Southeast Asia and represents a valuable resource for the development and improvement of crop species. Current efforts to conserve, improve and disseminate indigenous species are failing or insufficient. To optimize these informal seed systems, research has been conducted to better understand their germplasm characteristics, distribution pathways and gatekeepers and to improve local stakeholder access to seed information and value chains. Research and extension projects to conserve and promote neglected and underutilized species within these informal seed systems have resulted in: (1) surveys of key indigenous crops and collection of local crop knowledge, (2) training and development of regional community-based seed banking enterprises, (3) seed quality conferences including seed exchange activities and (4) improved human and institutional capacity, strategically focused on entrepreneurial women.

Biography

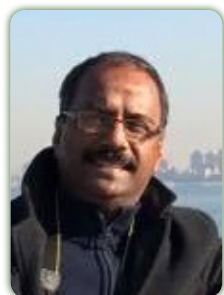
Ricky M Bates is a Professor of Horticulture in the Department of Plant Science at Penn State University and holds BS and MS in Horticulture from West Virginia University and a PhD in Horticulture from Virginia Tech. Throughout his career he has aspired to use horticultural science as a tool to increase the profitability of horticulture enterprises, protect and restore the environment and alleviate poverty in developing parts of the world. His research, teaching and outreach programs have emphasized sustainable, scalable solutions to problems affecting horticulture value chain development and low-input food production systems. His work in Southeast Asia focuses on human and institutional capacity building involving implementation of innovative, field-based approaches, grounded in appropriate technology, entrepreneurship and market engagement.

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Salim Momtaz

University of Newcastle, Australia

Vulnerability of women's livelihoods and their coping mechanisms in the face of climate change in coastal regions of Bangladesh

Bangladesh is frequently cited as a country that is most vulnerable to climate change. In Bangladesh, most of the adverse effects of climate change occur in the form of extreme weather events, such as cyclone, flood, drought, salinity ingress, river bank erosion and tidal surge, leading to large scale damage to crops, employment, livelihoods and the national well-being. Although it is generally stated that women are relatively more vulnerable than men in the context of climate change, few studies have been conducted to closely examine this statement, especially in Bangladesh. The present study, investigates the structure of women's livelihoods, livelihood vulnerabilities and coping capacity in the context of climate variability and change in a disaster vulnerable coastal area of Bangladesh. Utilizing the concepts of Sustainable Livelihood Framework (SLF) and Disaster Crunch Model (DCM), this study allows for a greater understanding of these issues on the ground. The results show that the distribution of five livelihood capitals (human, natural, financial, social and physical) of women are heavily influenced by several climatic events, such as cyclones that periodically affect the region. Women also face several vulnerabilities in their livelihoods, including income, household assets, health, food security, education, water sources, sanitation and transportation systems, because of ongoing climate change impacts. The results indicate that it is extremely important to instigate strategies to help build the adaptive capacity of women to reduce the burden created by their livelihood vulnerability.

Biography

Salim Momtaz is an Associate Professor and Director of Graduate Studies, School of Environmental and Life Sciences at the University of Newcastle, Australia. He teaches in the area of sustainable resource management. He has received his BSc and MSc degrees in Geography from the University of Dhaka, Bangladesh. He has obtained a PhD in Sustainable Development from the University of London under a Commonwealth Scholarship. His research interests are environmental and natural resource management, climate change, sustainable urban planning.

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Mini N Vijayan

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Two golden grains from the treasure trove of rich Indian traditions

This research paper is an outcome in part of studying plant biodiversity in some cultural practices of a specific community; the Kerala Brahmin community, who got settled in Indian Peninsula centuries ago. Literature in this regard is sparse and genuine efforts for documentation were not much. With this background, studies are in progress to understand, enlist, document and preserve the plant biodiversity related to the customary practices of the said community. The author herself being a member of the community, her own experiences and a book written in vernacular language; 'Antherjanangalude aacharanushtanangal' (Customary rituals and religious rites observed by women of Brahmin community, 2002) by Late Smt. Cheruvakkara Parvathy Antherjanam and discussions with the elders in the community have formed the basis of this research. The golden grains mentioned here are two tropical grass species locally known in vernacular language as Navara and Chama. Navara is an exclusive and ancient variety of rice, *Oryza sativa* and *Chama*, *Panicum sumatrense*, popularly called as Little millet. Navara rice has been in cultivation in the state of Kerala (India) for about 2500 years since the time of Susruta, the Indian pioneer in medicine and surgery. Both these grains are intricately linked to the socio-cultural aspects of the community and have great therapeutic value. Lifestyle changes combined with erratic climate have adversely affected the cultivation of Navara and Chama. A study of the cultural aspects and a review of the high nutritional and therapeutic values are stated in this paper which are aimed at creating awareness with reference to the agricultural crops in question. The study proclaims the need to preserve locale specific ancient traditions which are both eco-friendly and sustainable for conserving biodiversity and combating climate change issues. Most significantly the research paper enlightens the role of cultural ethos in safe guarding the plant biodiversity of a region.

Biography

Mini N Vijayan is an Associate Professor from the Department of Botany, Carmel College of Arts, Science & Commerce for Women, Goa, India. She has a Doctorate degree in Plant Anatomy and a Postgraduate Diploma in Ecology and Environment. She is passionate about biodiversity concerns and is presently documenting plant diversity in cultural practices of a specific indigenous community of Indian Peninsula.

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Day 2

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Solomonov Nikita Gavrilovich

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Yakutia as the territory of the crane most diversity in the northern part of Asia-Pacific region

Asia-Pacific region occupies the great part of northeastern Eurasia and North America. Two crane species, Whooping crane *Grus americana* and Sandhill crane *G. canadensis*, inhabit north America including USA, Canada and Mexico. Seven cranes, common crane species: *G. grus*, Sandhill crane, Hooded crane *G. monarcha*, White-naped crane *G. vipio*, Siberian crane *G. leucogeranus*, Red-crowned crane *Grus japonensis*, Demoiselle cranes *Anthropoides virgo* inhabit Russia. Republic Sakha (Yakutia) territory includes six crane species, 4 nesting (Common, Hooded, Siberian and Sandhill cranes) and two vagrant species. Demoiselle crane appears regularly in the Middle Lena River, Vilui River and Upper Yana River Valleys. The first appearance of White-naped crane was reported in 2014, when a pair of birds was registered in Upper Yana River Valley in 2014. Case of vagrant Brolga *Antigone rubicunda* was described in 90s XIX century by the Moscow State University Museum data. The bird was killed in 80s near Yakutsk city (Central Yakutia). But the information was no confirmed for the whole XX and early XI centuries and later this species was excluded from Yakutia ornithological fauna list due to a possible error in the labeling. Nevertheless, Republic Sakha (Yakutia), situated in the north-eastern part of Siberia and is the largest subject of Russia Federation, occupying more than 18% of Russia (3.1 million of km²), is the territory of the crane most diversity in the northern part of Asia-Pacific region.

Biography

Solomonov Nikita Gavrilovich is the Research Professor, Doctor of Biology, Corresponding Member of Russian Academy for Science, honored Scientist of Russia, honored worker of science of the Republic Sakha (Yakutia). He has conducted research to identify regional features for population ecology of mass mammal species in Central Yakutia, the number dynamics of the most endangered species. Under his leadership, the *Red Data Book of Yakutia* was prepared and published in 1987. Together with foreign partners, he conducted research on ecology and migrations of unique birds of North, Siberian crane and spectacled eider. He is author of more than 280 publications, including seven monographs. He is a Member of Scientific Councils, Commissions and Editorial Boards of academic journals.

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Aluri Jacob Solomon Raju

Andhra University, India

Butterfly-flower interactions and biodiversity in the changing environments

Butterflies occupy a vital position in the ecosystem and are useful as indicators of environmental change. Their occurrence depends on the climatic dicta, the presence of suitable caterpillar foods and appropriate adult nectar sources or other food, suitable arenas for flight and courtship. They require a continuous supply of food sources, especially nectar sources from a number of plant species. In this context, floral morphological and nectar characteristics are important for visitation by butterflies. Nectar plays an important role in the nutrition of adult butterflies. Nectar is a highly enriched food resource consisting of carbohydrates, amino acids, lipids, antioxidants, alkaloids, proteins, vitamins, salts, etc. But, all these nutrient chemicals are not found in a single floral nectar source and hence flower-visiting butterflies should pay visits to different floral nectars to acquire all the required nutrients. The butterfly interactions with the flowers of certain plant species will be detailed. Plant species which facilitate foraging by butterflies show certain floral traits adapted for butterfly foraging activity and in the process both get benefited. With accelerated deforestation and changing ecology and subsequent change in the environment, the butterflies appear to be struggling to get the required levels of quality nectar for survival during their adult life. The summer season is very crucial for butterflies since a few plants bloom during this period. The butterflies appear to be malnourished during adult life due to lack of enough nectar sources throughout the year due to changes in land use and climate.

Biography

Aluri Jacob Solomon Raju is a Professor of Environmental Sciences, Andhra University, Visakhapatnam, India. He has published more than 400 research papers, participated and presented scores of research papers at more than 50 national and more than 30 International conferences held in India and abroad. He visited USA, Canada, UK, Brazil, Paraguay, Italy, Mexico, Spain, China, Hong Kong, Thailand, Malaysia, Ethiopia and Tanzania. In recognition of his superior record of scholarship, he was awarded Distinguished Achievement Award by the University of Akron, Ohio, USA. He is also the recipient of Best Research Award and Dr. Sarvepalli Radhakrishnan Best Academician Award of Andhra University, Loyola Environmental Award from Loyola College, Chennai and Andhra Pradesh Scientist Award from Andhra Pradesh Council of Science & Technology, Govt. of Andhra Pradesh. Recently, he received State Level Best Teacher Award from the Government of Andhra Pradesh. He completed major research projects on the Eastern Ghats Forests funded by ICAR, UGC, DST, CSIR, DBT and MoEF. He is the Expert member of the Ministry of Environment and Forests, Govt. of India. He has also published ten books on various subjects published by national and international publishers. Thirty Ph.Ds and eight M.Phils were awarded under his guidance. He is the Chief Editor of Advances in Pollen Spore Research Journal and Journal of Palynology.

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Geetha Annavi

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MHC genes in Malayan tapir (*Tapirus indicus*): The implication in ex situ conservation

Statement of the Problem: Malayan tapir (*Tapirus indicus*) comes from family Tapiridae and presently facing high risk of extinction due to multiple factors including loss of habitat and human disturbance. Currently, Malayan tapir is listed as Endangered on the IUCN Red List, which calls for more serious conservation efforts for this mammal. Mating with relatives in captivity becomes common when the number of individuals decreases. As this happens, inbreeding depression and the reduction of population fitness will cause major threats to the viability of successive generation. Therefore, successful mating, fertilization and genetic diversity are vital to ensure the viability of the population. Major Histocompatibility Complex (MHC) is a set of highly polymorphic genes in vertebrates with hundreds of different alleles at some loci. Some of the functions related to MHC region include immune response, olfaction and reproduction. One of the mechanism MHC genes polymorphism is maintained is by disassortative mating selection by kin recognition that contributes to inbreeding avoidance. The objective of this study is to characterize the MHC genes of *Tapirus indicus*.

Methodology & Theoretical Orientation: gDNA was isolated from whole blood samples from seven individuals. Next, primers targeting MHC Class II loci were designed from closely related species on consensus region and amplified using PCR. Phylogenetic analysis of each MHC loci was performed on consensus alignment against sequences from other closely related species.

Findings: In exon 2, we found at least two alleles that encode for DR α and DQ α domains, while three alleles are found encoding DR β and DQ β domains. Evidence of selection was observed at DRB loci and exhibit possibility of trans-species polymorphism when aligned with closely related species.

Conclusion & Significance: This preliminary study in Malayan tapir will serve as a basis for further studies of MHC variability, mate choice and pathogen resistance which aims to increase the population size of Malayan tapir in Malaysia through ex situ conservation by improving its survival rate and reproduction success in long term.

Biography

Geetha Annavi has her expertise in population genetics, molecular and behavioral ecology and conservation biology, particularly of wild animals (i.e., mammals) and terrestrial ecosystems. Currently, her research is focused on the endangered Malayan tapir (*Tapirus indicus*) both in captive and wild in Peninsular Malaysia. She is investigating the genetic, ecology and behavior aspects of this animal to protect them from extinct further in the wild. She is also interested to develop an effective *ex situ* captive breeding model to maximize the number of healthy progeny that are produced in captivity and a successful reintroduction program of these captive born tapirs into wild.

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