



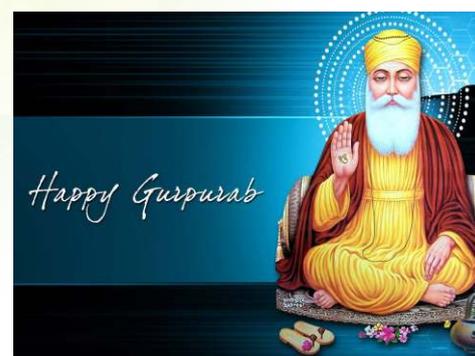
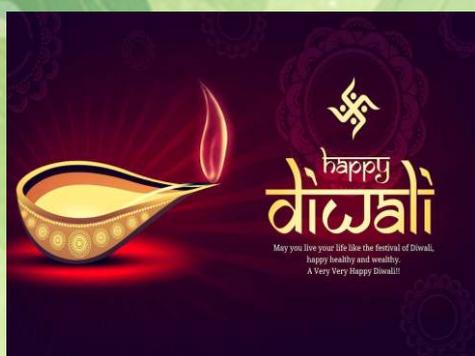
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# NESA

NATIONAL ENVIRONMENTAL SCIENCE ACADEMY

Vol. 21 Issue - 11 (MONTHLY)

November 2018



## National Conference on Chemistry for Human Health and Environment (CHHE)

Theme: *Designing Chemistry for a Sustainable Tomorrow*

Submit Abstract: [gcnc.chem.du@gmail.com](mailto:gcnc.chem.du@gmail.com)

15-16 December 2018

Venue: Conference Center, University of Delhi, Delhi-110007

### Conference Highlights

#### (Sub-themes)

- Earth Sciences
- Environmental Chemistry and Engineering
- Environmental Biotechnology
- Pollution Control Chemistry and Green Chemistry
- Environmental Toxicology and Mutagenicity
- Energy and Environment
- Applications of Environmental Chemistry
- Designing Chemistry for a Sustainable Tomorrow
- Plant Chemistry
- Agricultural Chemistry
- Environmental Design
- Environmental Hazards
- Environmental Biology
- Environmental Sciences
- Any relevant topic related to main theme



Green Chemistry  
Network Centre



Organized by:  
Green Chemistry  
Network Centre (GCNC),  
Department of Chemistry,  
University of Delhi,  
Royal Society of Chemistry (RSC)  
London North India Section

In collaboration with  
National Environmental  
Science Academy (NESA), Delhi

Organising Secretary: Dr. Kshipra Misra  
Former Addl. Director, DRDO, Delhi  
Vice President, NESA  
Contact No.: 9871372350  
E-mail: [infonesa88@gmail.com](mailto:infonesa88@gmail.com)

Convener: Prof. R. K. Sharma  
Co-ordinator, GCNC  
Department of Chemistry  
University of Delhi, Delhi-110007.  
Contact No.: 9958313101  
E-mail: [rksbarmagreenchem@hotmail.com](mailto:rksbarmagreenchem@hotmail.com)



Registration begins from 1<sup>st</sup> July 2018

Deadline for abstract Submission: 25th Nov. 2018

For more information: <http://greenchem.du.ac.in/>  
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## INTEGRATED HABITAT DEVELOPMENT

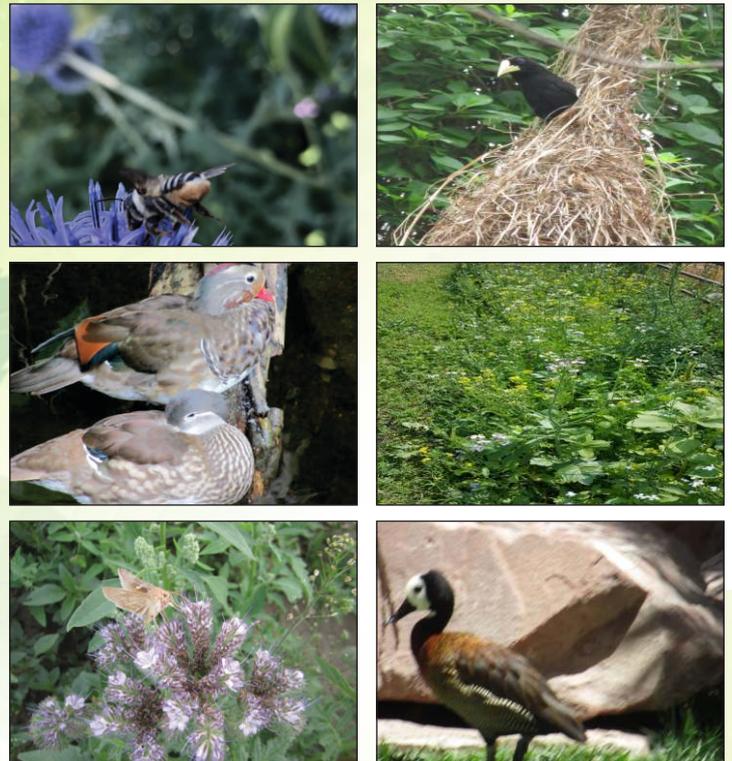
S. K. Basu

UFL, Lethbridge, AB Canada

Email: saikat.basu@alumni.uleth.ca

Integrated habitat development is a new concept in which ecosystem development is initiated using nature based measures and/or approaches; catering to multiple species from a sustainable, long term environmental perspective. This is an approach where small ecological habitats are being developed on already existing degraded ecosystem by using simple, economically efficient, low maintenance natural methods and/or approaches in developing complex ecosystem that can grow into a natural environment for local pollinator insects, fishes, amphibians, reptiles, terrestrial and aquatic birds, small mammals and local wildlife over a period of time. Such integrated habitat development could be initiated in unused farmlands, hard to access and unused areas of croplands and farming units, agronomically unsuitable areas, marginal or low quality agricultural lands, along the perimeter of agricultural and non-agriculturally suitable lands, orchards, gardens, lawns, forests, over exploited parts of local forests, woods and areas earmarked for social forestry, and under afforestation or revegetation programs following land disturbances (like landslides, earthquakes, newly land filled areas, added areas belong to cities and towns etc), unused rural and urban areas, gardens and lawns belonging to different municipalities and corporations, unused areas or open spaces of local golf gardens, around water bodies (like dug outs, pools, ponds, irrigation canals, roadside ditches, swamps, bogs, artificial and/or natural lakes and waterfalls, streams, rivulets etc), city and rural parks and gardens, city boulevards, reclamation sites, abandoned industrial and mining sites, power plants etc to mention only a handful.

Hence one could see that the potential of the integrated habitat development is huge and the opportunities with sky as the limit. For example, it is important to conserve freshwater aquatic



habitats to preserve the rich local biodiversity and thereby conserve natural ecosystem and environments associated with it. Such an endeavor is not technologically complex or is either a huge drain on economy and resources if planned and executed judiciously. Simple innovative, nature based approach without sophisticated technological expertise, labor, funding and creative awareness and love and passion for environment can be easily achieved by using a comprehensive multi-tier conservation project such as Multiple Tier Conservation Model (MTCM). A comprehensive but simply nature based integrated aquatic habitat development program can thus be successfully achieved under Multiple Tier Conservation Model (MTCM) that can provide a dynamic conservation program including bees, birds and fishes like Integrated Ecological Habitat Development for Bees, Birds and Fishes (IEHD-BBF). Such a dynamic and innovative model can provide an effective conservation umbrella to number of species (bees, birds and fishes) by transforming natural and/or artificial water body with simplistic nature based alternative by protecting multiple trophic levels within a freshwater ecosystem (both natural or artificial).

Developing suitable Pollinator Mixes could be an effective and environment based, cost friendly approach in establishing such ecological units like Pollinator or Bee Sanctuaries. This could be achieved by developing suitable mixes comprising of native wildflowers and wild grasses, annual and/or perennial legumes, Brassica members, warm season and cool season forage grasses, salt or acidity tolerant grass species etc for different agro-climatic or ecological regions based on parameters like their adaptability to specific regions, germination and viability, rapid emergence, quick and successful establishment, competition with local weeds, ability to regenerate, reproduce and continue flowering across different seasons to attract pollinator insects; and other farmer friendly insects to such newly established Bee or Pollinator Sanctuaries. The use of multiple species of plants representing a wide diversity of plant families could contribute towards positive soil health and help in preventing soil erosion, increase the biodiversity of soil flora and fauna, enhance soil nutrient level,



help in better aeration and hydration of the soil by active root biomass and also help in soil remediation by removing toxic chemicals from the soil and produce a rich, organic layer sustaining plant growth and the habitat over the years.

When integrated with freshwater aquatic ecosystem development, local or indigenous fish species could be introduced in accompanying water bodies to further enhance and expand natural ecosystems and environments. Pollinator Sanctuaries established adjacent or around water body thus could slowly integrate over years and develop into a complex ecosystem that will attract pollinator insects (honey bees, indigenous or native bees, moths, butterflies, beetles, flies), non-pollinator insects as well as small birds feeding on such insects and terrestrial birds enjoying nesting, foraging and breeding in such naturally protected integrated habitats. Over time such aquatic

habitats rich with both terrestrial and aquatic plants, algae and fungi, aquatic insects, crustaceans, insect and amphibian larvae as well as fishes will also attract aquatic and semi-aquatic birds to such ecological niches rich in biodiversity. In due course of time such land-water integrated artificial or natural habitats will also attract local amphibians and reptiles as well as smaller mammals further providing protection to the local biodiversity. This could successfully transform into multi-layered food chains and complex food webs for the multitude of species surviving in these new ecosystems over and above bees, birds and fishes via the Integrated Ecological Habitat Development for Bees, Birds and Fishes (IEHD-BBF) program.

**Acknowledgement:** GNLM, Myanmar & Sikkim Express (India).  
**Photo credit:** S. K. Basu

## ILLEGAL WILDLIFE TRADE

S. K. Basu

UFL, Lethbridge AB Canada  
email: saikat.basu@alumni.uleth.ca

Illegal wildlife trade has turned into a serious concern around the globe. The trafficking of live wildlife as pets in addition to different wildlife body parts and organs such as fur, hair, skin, pelt, scale, skull, teeth, bones, limbs, feathers, talons, claws, horn, ivory, skeletons, bone dust, reproductive organs, wildlife meat, eyes, gall bladders, pancreas, bile, urine, faeces, vomit, blood, animal trophies are being ruthlessly exploited from our natural ecosystems and environment for multi-million dollar under ground wildlife markets. Some of the largest illegal wildlife trade markets are operating in some countries of Asia, Africa and Latin America. Within Asia, parts of South East Asia, Hong Kong and China are some of the largest global trade centres of illegal wildlife as pets as well as in commercial exploitation in the form of trade and commerce using different wildlife body parts and organs.

It is important to note that many of these underground illegal, wildlife black markets are operating in open view of the respective national governments. There are huge secret investments and profit-sharing in such endeavour and as such they also have strong social, economic and political support under the table. Without active government and political support, it is impossible that such markets are operating regularly throughout the year with enormous end profits endangering local and regional biodiversity as well resulting in rapid destruction of major and minor forest resources. I white diversity of species is being impacted including invertebrates (Arthropoda, Mollusks,



Echinoderms and Coelenterates) and vertebrates (fishes, reptiles, amphibians, birds and mammals) alike. Several rare beetles, moths, butterflies, worms, crustaceans, snails, slugs, squids, octopus etc with either with food, pharmaceutical, traditional medicinal as well as ornamental values are being harvested in unprecedented large numbers from their sensitive habitats in high numbers impacting regeneration.

No species is therefore secure whether edible or ornamental fishes, reptiles and amphibians. If they do not have any related industrial, pharmaceutical or medicinal use or known good value is being exploited to be used as pets. The target species when collected in large numbers also include by catches; that are being wasted or destroyed indiscriminately pushing numerous species towards extinction. The unimaginable high demand for live wildlife such as colourful talking birds, small primates, wild ornamental fishes, amphibians and reptiles as well as rare flowering plants like orchids, bromeliads etc are all being out for sale.

Huge number of young, juvenile and aged specimens die during their inter-continental transportation with little regard for the

comfort of these helpless and defenceless innocent animals. Malnutrition, communicable diseases and serious injuries have been reported from several batches of such animals recovered by government and non government agencies at the international border, ports, railway stations, airports and freeway transit points. Several of these species recovered succumb to the stress, diseases and injuries even when they are recovered to be released into their natural habitats. The loss is monumental and extremely alarming.

Not only resident birds but even migratory birds passing over different countries are now being harvested and over exploited by both professional and amateur hunters, poachers, bird traders and trappers. Several species of river and marine dolphins, whales, sharks and fishes are being regularly exploited over turning bans and legal restrictions for food and industrial purposes. Ruthless commercial exploitation of flora and fauna around the globe has transformed into a lucrative industry that provide employments to millions and cater to unaccountably large number of irresponsible customers of live wildlife, animal trophies, wildlife body parts and organs.

Sadly many of the customers who like collecting such exotic species as pets do not have any necessary education, awareness, training or experience in handling or managing such species at all. The resultant consequences being rapid or painful deaths of many of these wildlife pets due to abject negligence, ignorance, carelessness, callousness and lack of training. The global loss on the wildlife due to the pet industry has been huge and devastating. Unless serious measures are taken to stop these animals from being shipped overseas and people consciously rejecting the trade and commerce on vulnerable wildlife species and completely boycotting them; very little can be expected to change in the distant future.

*Photo credit: S. K. Basu and P. Zandi*



प्लास्टिक रुपी बीमारी हटाएँ।  
पर्यावरण को स्वस्थ बनाएँ।  
हर परिवार को लेना होगा संकल्प  
प्लास्टिक का छोड़ना होगा विकल्प

## PLANTATION DRIVE BY THE ACADEMY

The Academy Members are requested that whenever they plant a tree on their birthday or any other event, please send us the photographs with report so we can publish the same in our newsletter. This will inspire and encourage many more life members of the Academy to participate in the "Green drive" of the Academy.

Members are also requested to preferably plant a medicinal plant which can benefit each and every one around us. Also they can form a committee in their RWA for plantation of tree on weekends.

**Dr. Shefali Gola**  
Editor, NESA E-newsletter

## APPEAL TO LIFE MEMBERS

NESA Life Members are requested to submit short articles for the NESA e-Newsletter that are consistent with NESA's objectives to improve environment. The articles should focus on topics related to environment and facilitate communication and discussion among researchers, academicians and students. The articles for October edition can be submitted to [nesapublications@gmail.com](mailto:nesapublications@gmail.com) before **25th November, 2018**.

**Dr. Shefali Gola**  
Editor, NESA E-newsletter

To, \_\_\_\_\_  
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**NATIONAL ENVIRONMENTAL SCIENCE ACADEMY**

206 Raj Tower -1, Alaknanda Community Centre,

New Delhi -110019. Ph.: 011-2602 3614

E-mails: [nesapublications@gmail.com](mailto:nesapublications@gmail.com); [nesapub@yahoo.co.in](mailto:nesapub@yahoo.co.in)

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### INTERNATIONAL JOURNAL ON ENVIRONMENTAL SCIENCES

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### INTERNATIONAL JOURNAL ON BIOLOGICAL SCIENCES

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### INTERNATIONAL JOURNAL ON CHEMICAL SCIENCES

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For further details and **NOTES FOR AUTHORS**, please contact Academy at  
[nesapublications@gmail.com](mailto:nesapublications@gmail.com)  
[nesapub@yahoo.co.in](mailto:nesapub@yahoo.co.in)