ONLY NEWS PAPER PUBLISHED IN INDIA FOR SCIENTIFIC COMMUNITIES

NESA

NATIONAL ENVIRONMENTAL SCIENCE ACADEMY

Vol. 20 Issue - 09 (MONTHLY) September 2017

ABSTRACTS INVITED

National Conference on

IMPACT OF ENVIRONMENTAL CHANGES ON INDIAN ECOSYSTEMS

and XXIX Annual Conference of National Environmental Science Academy

Joinlty organised by:

NATIONAL ENVIRONMENTAL SCIENCE ACADEMY (NESA)

&

Department of Environmental Sciences & Limnology & University Institute of Technology, Barkatullah University, Bhopal, Madhya Pradesh

on 23-24 December, 2017 at Barkatullah University, Bhopal, Madhya Pradesh

Abstract Submission Deadline 05.12.2017

Last date of Registration 15.12.2017

CONFERENCE THEMES & SUB THEMES

❖ Changing Environment and Indian Biodiversity ❖ Changing Environment and Indian Forestry ❖ Changing Environment and Indian Crops ❖ Changing Environment and Indian Water Bodies ❖ Changing Environment and Indian Climates ❖ Changing Environment and Indian Food Security ❖ Changing Environment and Indian Soil & Microflora ❖ Changing Environment and Health ❖ Changing Environment and Seed Production ❖ Changing Environment and Marine Flora & Fauna

E-mail: ieie2017nesa@gmail.com • Website : www.nesa-india.org

NESA Award 2017 Notification No. 2

APPLICATIONS ARE INVITED

FOR THE AWARDS 2017

LAST DATE EXTENDED UPTO 30th SEPTEMBER 2017

FELLOWSHIP AWARD

FELLOWSHIP is the highest award given by this Academy. The recipients shall get Citation, Certificate, Memento and a Gold plated medal, and can suffix F.N.E.S.A. after their names.

BEST SCIENTIST AWARD

The recipient shall get Citation, Certificate, Memento and a Gold plated medal.

EMINENT SCIENTIST OF THE YEAR

The recipient shall get Citation, Certificate, Memento and a Gold plated medal.

SCIENTIST OF THE YEAR AWARD

The recipients shall get Citation, Certificate, Memento and a Gold plated medal.

ENVIRONMENTALIST OF THE YEAR AWARD

The recipients shall get Citation, Certificate, Memento and a Gold plated medal.

JR. SCIENTIST OF THE YEAR AWARD

The recipients shall get Citation, Certificate, Memento and a Gold plated medal. Applicants should not be more than **35 years on 31-12-2017.**

PRESCRIBED APPLICATION FORMS

Separate application form should be used for separate awards. The forms are non-transferable and can be obtained by sending a bank draft of Rs. 1000-00/$40 only (per form), drawn in favour of NATIONAL ENVIRONMENTAL SCIENCE ACADEMY payable at NEW DELHI.

GENERAL SECRETARY

NATIONAL ENVIRONMENTAL SCIENCE ACADEMY

206, Raj Tower-1, Alaknanda Community Centre, NEW DELHI-110019 (INDIA) Tel.: 011-2602 3614

E-mail: nesapub@yahoo.co.in; nesapublications@gmail.com • Website: www.nesa-india.org

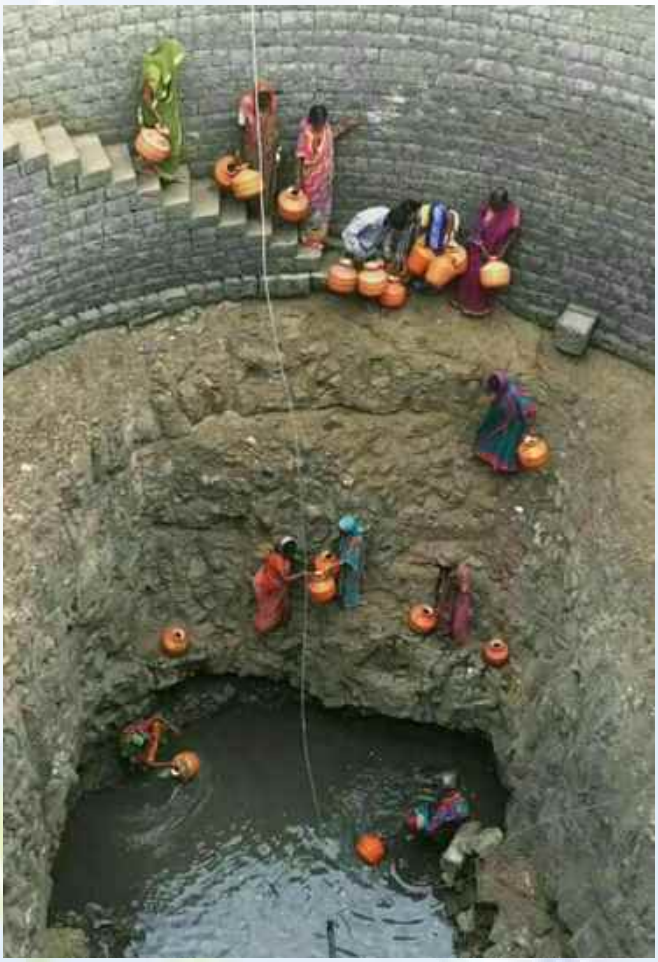
WATER: Use and Overexploitation of Surface and Ground Water

Vinod Kumar
FSDO, DEST, Shimla-1
Email: vinod_env@rediffmail.com; weknowthe21@gmail.com

With two thirds of the earth's surface covered by water and the human body consisting of 75 percent of it, it is evidently clear that water is one of the prime elements responsible for life on earth. Freshwater is one of the planet's most valuable resources being an essential life-sustaining element which cannot be substituted.

Area of the country as % of World Area	2.4%
Population as % of World Population	17.1%
Water as % of World Water	4%
Rank in per capita availability	132
Rank in water quality	122
Average annual rainfall	1160 mm (wold average 1110 mm)
Range of distribution	150-11690 mm
Range Rainy Days	5-150 days, mostly during 15 days in 100 hrs
Range PET	1500-3500 mm
Per capita water availability (2010)	1588 m^3

India is a Greek and Latin term for 'the country of the River Indus', with Indus probably coming from the Sanskrit word Sindhu. Seven major rivers (Indus, Brahmaputra, Narmada, Tapi, Godavari, Krishna and Mahanadi) along with their numerous tributaries make up the river system of India. The river systems provide irrigation, potable water, cheap transportation, electricity, as well as provide livelihoods for a large number of people all over the country. Average water yield per unit area of the Himalayan Rivers is almost double that of the south peninsular rivers system, indicating the importance of snow and glacier melt contribution from the high mountains. Apart from the water available in the various rivers of the country, the groundwater is also an important source of water for drinking, irrigation, industrial uses, etc. The surface water and groundwater resources of the country play a major role in agriculture, hydropower generation, livestock production, industrial activities, forestry, fisheries, navigation, recreational activities, etc. The annual utilizable surface water and groundwater resources of India are estimated as 690 km^3 and 396 km^3 per year, respectively. The per capita availability of surface water in the years 1991, 2001 and 2010 were 2309m^3, 1902 m^3 and 1588 m^3 respectively. However, it has been projected that per capita surface water availability is likely to be reduced to 1401 m^3 and 1191 m^3 by the years 2025 and 2050, respectively. India receives annual precipitation of about 4000 km^3 including snowfall. Out of this, monsoon rainfall is of the order of 3000 km^3. The rainfall in India shows very high spatial and temporal variability and paradox of the situation is that Mousinram near Cherrapunji, which receives the highest rainfall in the world, also suffers from a shortage of water during the non-rainy season, almost every year. Presently more than 45% of annual rainfall, including snowfall in the country, is wasted by natural runoff to sea.



Ground water has been the mainstay for meeting the domestic needs of more than 80% of rural and 50% of urban population, besides fulfilling the irrigation needs of around 50% of irrigated agriculture. The annual potential natural groundwater recharge from rainfall in India is about 342.43 km^3, which is 8.56% of total annual rainfall of the country. The annual potential groundwater recharge augmentation from canal irrigation system is about 89.46 km^3. Thus, total replenishable groundwater resource of the country is assessed as 431.89 km^3.

We are witnessing a steadily worsening situation of rapidly decreasing freshwater resource availability which threatens 1.1 billion people around the globe lacking sufficient access to safe drinking water (UN 2006). Water scarcity endangers food production putting food security at risk. Depletion of fresh water takes place whenever the replenishment capacity is exceeded by extensive withdrawals. Increase in global water use in recent years has been based on groundwater (Villholth and Giordano 2007). The overexploitation of surface water bodies and groundwater for the soaring agricultural production for ever growing population, industrial use, increased domestic use due to improved living standards and current environmental issues like Climate Change, Water Pollution and Global Warming, is leading to low flows in the rivers, declining of the groundwater resources, and salt water intrusion in aquifers of the coastal areas. Incentives to use more water-saving irrigation techniques should be given as encouragement. The newer generation growing up with the technology like computers, gadgets and living in the concrete jungles are more disconnected with nature which is a core concern.

Acknowledgement: CWC,Web

Pollinator Mix: A Sustainable Solution for Creating Sustainable Bee Habitats

S. K. Basu
UFL, Lethbridge AB Canada • saikat.basu@alumni.uleth.ca

The global decline of bee populations is an alarming fact both for the future of agriculture as well as for the stability of different natural ecosystems. Several factors have been attributed to the rapid decline of bee populations around the planet; however, the most important among them are highlighted as the extensive, indiscriminate over application of pesticides by farmers in agricultural fields wiping out native bees in significant members, different parasitic disease impacting bee colonies and negatively affecting bee populations drastically, lack of food and nutrition for local bee populations beyond the agricultural seasons depriving them of rich food resources, industrial air pollution, global warming, climate change etc. In short, the global bee populations, particularly the native bees are facing serious threats of survival in the not so distant future.

Decline of bee populations could have serious detrimental impact on agriculture and environment as a vast majority of the crops that regulates our food security and stability of the economy are dependent on the bees for the purpose of pollination. As a matter of fact not just bees, other pollinators like moths, butterflies and several species of pollinator beetles, pollinator snails and slugs, bats and humming birds are all being threatened by over exploitation, rapid environmental pollution, depletion of forests, habitat fragmentation, unrestricted forest fires and other anthropogenic factors jeopardizing the future of agriculture.

It is therefore important to establish strict conservation measures for the protection of bees and other insect pollinators to save the future of agriculture as well as the stability of fragile ecosystems. Restricting over application of harmful pesticides in the agricultural fields and better control of bee parasites for preventing drastic colony collapses are important steps to secure the future of bees around the globe. Protecting the natural environment and local ecosystems are also essential for conserving native bee species successfully.

Another important step for successful conservation of bees includes the establishment of suitable bee sanctuaries by using a wide diversity of wild flowers and suitable forage crops for

establishing ideal bee habitats. Such ideal plant mixtures including either different early, mid or late flowering native wildflower species as well as annual or perennial forage crops are known as Pollinator Mix or Bee Mix technically. Different wildflower and annual or perennial forage mixtures for attracting native insect pollinators (including native bees, honey bees, moths, butterflies, some species of pollinator flies and beetles) or wildflower mixes for attracting native birds are now commercially available.

However, it is also important to note that since complete agronomic packages are not yet available for several wildflower species; hence, they always do not do quite well under normal field conditions throughout the growing season. Hence wildflowers with annual/perennial forages constitute one of the best available Pollinator Mix or Bee Mix for establishing ideal bee habitats or bee sanctuaries. Adding pollinator friendly annual or perennial legumes and some grasses to the wildflower mixes not only add to the species diversity of the plants in the Pollinator Mix or Bee Mix; but they also help in fixing nitrogen to the soil. Grasses, particularly salt tolerant grasses added to the wildflowers and legumes (such as clovers, sweet clovers, trefoils, sainfoin, vetches, dray and faba beans) in the Pollinator Mix or Bee Mix can also help in reclamation of the soil as well as can help creating small habitats for both smaller birds and mammals as well as larger ground nesting birds at suitable habitats.

Pollinator Mix o Bee Mix can be used in non-agronomically suitable lands, acidity or salinity impacted soil, abandoned farms and cropland areas, hard to access parts of existing croplands or at the perimeter of farm boundaries, along irrigation canals, wetland areas, ditches, in city parks and gardens, kitchen gardens, private and public lawns, boulevards etc to attract diverse species of bees; and to facilitate foraging and collection of nectar across different seasons by technically prolonging the forging periods. If the Pollinator Mix or Bee Mix will have both wildflowers as well as annual or perennial forages with overlapping flowering regimes to extend the foraging period.

Acknowledgement: Performance Seed, Lethbridge, AB Canada

Photo credits: S. K. Basu

To,

Vol. 20 Issue - 09 (Monthly) September 2017

From
NATIONAL ENVIRONMENTAL SCIENCE ACADEMY
206 Raj Tower -1, Alaknanda Community Centre,
New Delhi -110019. **Ph.: 011-2602 3614**
E-mails: nesapublications@gmail.com; nesapub@yahoo.co.in