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Happy New Year 2017

Dear Academy Members,

At the onset of dawn of the year 2017, the Academy now enters another new year with new hopes and resolutions. We just concluded one National Conference with gala award ceremony at Chandigarh. It has been a great success because of great supports by it's members, specifically sitting at far distance places. You have clearly demonstrated that distance and non-communication barriers could be easily broken when there is willingness to support. As a result, Academy has passed ten state chapters who shall be bringing different Environmental issues at vortex of National movement. From new year, nation shall be witnessing synchronized Environmental activities with help of state chapters. I call upon more members, to be part of vigorous Environmental initiatives and be leaders by himself/ herself of their region.

I congratulate it's all members for supporting the Academy with their valuable contributions. I also congratulate all awardees whose works have been acknowledged with different categories of awards. Soon, provisions shall be launched where youngsters shall be motivated and recognized.

Please accept heartiest best wishes on my own behalf and on behalf of the Academy on this new year. May you all enjoy best health, happiness and prosperity every moment of new year and always!!

I keenly wait for your valuable suggestions and criticisms. Do write to me.

Best Regards,

Prof. Ajay Gupta
General Secretary, NESA

All Quite on the Western Front-A Plight for the Return of the Passerines

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India is a megabiodiverse nation rich in biodiversity with highly diverse and fragile ecosystems spread across the length and breadth of the nation. Like any other developing country, India has to withstand the burden of a huge population and cater to the growing needs for continuous and rapid economic development in terms of building extensive modern infrastructure across the nation; expanding areas under cultivation for the purpose of achieving food self-sufficiency, self-sustainability and food security as well as establishing large and small industries to transform the nation into a major manufacturing and production hub and generate employment. No doubt these economic factors are extremely important and certainly cannot be ignored at any point of time. However, the economics of the nation has been pushing the ecological sustainability due to unplanned

growth of industries indiscriminately without proper environmental impact assessments or by reducing the significance of such surveys to make way for rapid economic growth. Unplanned and illegal expansion of urbanisation is yet another blow to the environmental sensitivity of the nation. Urban India has been growing and expanding rapidly much beyond our expectations. Unless this growth is properly monitored and replaced with sustainable green growth following a comprehensive national policy of conservation; we may be well moving towards long term problems of perennial pollution as is being currently experienced by a over industrialized China.



The rapid growth of the real estate business in urban India with heavy

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Global Melliferous Flora and Challenges of the Apiculture Industry

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Bees represents one of the most important natural pollinators of wild flowering plants and hence contribute a vital ecosystem service. Bees are essential for the balance of the ecosystem and environment, as

getting food from the flowers encourage plants their ability to fertilize and reproduce while become important for the apicultural activity that generates additional income for families of rural communities in various countries across the globe. There are a large number of plant species with good potential for honey production (approximately 40,000 species). However, it is estimated that around 90% of the world's commercial honey production comes from only a few species (about 150 species), *i.e.* only a selective group of plant species are common to beekeeping; indicating a high dependence on a few nectar-producing species and abundant pollen. Bees not only generate beeswax and honey; but they also serve as natural pollinators for several crop species important for global agriculture. Hence, bees are regarded as “keystone species”. Some of the native bees have names that reflect how they build nests like the leafcutter bees, mason bees, miner bees, carpenter bees, digger bees; while others are named for specific bee behavior like bumble bees, sweat bees and cuckoo bees. Some bees are named for their host plants from which they procure nectar and produce honey like squash bees, sunflower bees, blueberry bees etc. However, several studies have reported that bees take advantage of the nectar of the flowers of trees, shrubs, climbers and annuals that are distributed in the different types of vegetation, from the recently disturbed areas to the more



conserved forests. For example, in countries where beekeeping (apiculture) is practiced there are partial or global listings of melliferous flora representing a list with 3,000 plant species for Valencia in Spain, of which only 200 have high commercial apicultural value. In Bangladesh, it is noted that there is a wide diversity of honey bees, but only 10 species are important for industrial apiculture. The honey produced in the Sunderban regions by species exclusively dependent on the mangrove vegetation is one of the best known honey produced in the region.

In Mexico, beekeeping is of great ecological and socio-economic importance and is considered one of the main honey producing countries, occupying the third place as an exporting and producing country, after China and Argentina. The Yucatan peninsular region of Mexico has 2350 local plant species, with around 1,000 species having apicultural value. If honey bee populations are low, the pollination needs of many crops is often be filled by native/local/indigenous bees. Native bees can serve as major pollinators of local agricultural crops and often honey more efficiently. There is a close relationship between the floral phenology of the plants in the different types of vegetation and the vigorous state of the bee colonies. However, the problem of this relationship occurs at certain periods of the year during which there are breaches of scarcity or absence of flowers (food), which limits the production and maintenance of bee populations, reducing their productivity potential. In view of this situation, a viable proposal would be the search for models of incorporation of floral elements, previously identified for nutritional quality and appropriate to sustain the populations of bees during the annual cycle, providing an improvement in the botanical assemblies in the environs of the apiaries to help to increase their productivity. The bee populations have been showing steady decline around the globe including US and Canada. Such declines have been caused by a number of factors like poor nutrition, environmental stress, pesticide pollution, infectious pathogens etc. Beekeepers have been trying to reduce

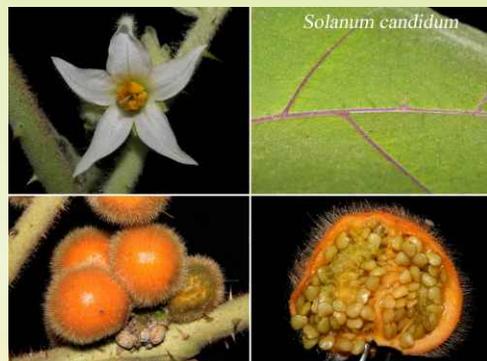
pesticide application adjoining bee hives and providing quality pollinator mix to enhance food supplies for their bees. Artificial bee food is also provided for enhancing honey production. Planting flowers with quality pollen and nectar can help to provide nutrition of the bees throughout their production season. Better nutrition and health, can help bees to fight against several pathogens, diseases and environmental stress.

Potential uses of *Solanum* in the indigenous Mayan culture of Mexico

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The Solanaceae members (nightshade family) is globally represented by 2,300 species and 96 genera; occurring in tropical and subtropical Mexico, Central and South America with secondary centers of origin in

Australia and Africa; and about 25 species occur in SE Asia. *Solanum* is a genus with 1,000 species and most diverse within the family. This genus includes important edible species such as potato (*Solanum tuberosum*), tomato (*S. lycopersicum*), eggplant (*S. melongena*) to name only a handful. Also, some of its species are used in traditional medicine, for example in the Yucatan Peninsula, Mexico, of the 21 registered species of *Solanum*; 15 have medicinal properties; the remaining species are nutritional or ornamental or are simply of environmental value. However, two species, *S. hirtum* (distribution from Mexico to Colombia, Venezuela and Trinidad and Tobago) and

S. candidum (distribution from Mexico to Central America and South America and South America, is similar to *S. lasiocarpum* of SE Asia; and closely related to *S. ferox* from India and New Guinea). These are the two most common species in the Yucatan



Peninsula, Mexico and have the vernacular name x'put balan (in local Mayan language) or tomatillo (in Spanish). The fruits of both species contain phytochemicals with rich antiseptic properties useful in the treatment of inflammation or sore throat, hemorrhoids, mumps, skin disinflammation. Additionally, the fruits of these two species is used to make jams that maintain therapeutic properties of the fruit; serving as an excellent medicinal-food resource for the rural communities of the Yucatan Peninsula of Mexico. These communities tend to avoid modern medicines and are more comfortable with traditional medicinal practices; and hence use home remedies based on local plants. These local species are generally considered weeds and their conservation is not a priority. Similar species grow in India (e.g., *S. ferox*), and it might be interesting to consider evaluating various non-commercial and non-agricultural, indigenous weed species of *Solanum* in India as new potential alternative medicinal-food sources.

Table: Uses of *Solanum* species in Yucatan Peninsula, Mexico. 0) absent, 1) present.

Local Species	States from Yucatan Peninsula, Mexico			Traditional Uses
	Campeche	Quintana Roo	Yucatán	
<i>Solanum adhaerens</i> Willd. ex Roem. & Schult.	1	0	0	Ambiental value
<i>Solanum americanum</i> Mill.	1	1	1	Medicinal
<i>Solanum asperum</i> Rich.	0	1	0	Medicinal and alimentary
<i>Solanum campechiense</i> L.	1	1	1	Medicinal
<i>Solanum candidum</i> Lindl.	1	0	1	Medicinal
<i>Solanum chiapense</i> K.E. Roe.	0	1	0	Alimentary
<i>Solanum dasyanthum</i> Brandegee.	1	1	1	Medicinal and alimentary
<i>Solanum diphyllum</i> L.	1	1	1	Medicinal
<i>Solanum donianum</i> Walp.	1	1	1	Medicinal
<i>Solanum erianthum</i> D. Don.	1	1	1	Medicinal
<i>Solanum hirtum</i> Vahl.	1	1	1	Medicinal
<i>Solanum hispidum</i> Pers	1	0	0	Medicinal
<i>Solanum lanceifolium</i> Jacq.	1	1	1	Ornamental
<i>Solanum nudum</i> Dunal.	1	1	1	Medicinal
<i>Solanum rudepannum</i> Dunal.	1	1	1	Alimenticia
<i>Solanum schlechtendalianum</i> Walp.		1	1	Medicinal
<i>Solanum sideroxyloides</i> Schltdl.	1	1	1	
<i>Solanum tampicense</i> Dunal.	1		1	Alimentary
<i>Solanum torvum</i> Sw.	1	1	1	Medicinal and alimentary
<i>Solanum tridynamum</i> Dunal.		1	1	Medicinal
<i>Solanum umbellatum</i> Mill.	1	1	1	Fodder and medicinal

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domestic and foreign investments has been rapidly changing the dynamics of city growth patterns across the nation. Each and every available vacant space inside cities are being rapidly transformed into high value properties; as a consequence, the cities are being overcrowded with heavy concrete structures with very

little open space and greenery to compensate for the environmental damage due to rapid and unplanned urbanization vanishing at an astonishing speed. Ground water is being used unrestricted for construction purpose as well as for irrigation reducing the water tables drastically. The last remaining green corners of the cities and towns in India are rapidly losing their green cover to make ways for infrastructure like new motorable roads, highways, inter-city railway networks, and more high risers to accommodate the population rush towards municipal and corporation areas for better living standards, better employment and higher income as well as better education, training and job experience opportunities. The biggest casualty of this economic rat race is the ecology of the nation and the best experience that contemporary India has encountered has been the rising levels of air pollution in the national capital and other metro cities; the deplorable conditions of the cities impacted by flash floods and cyclonic storms or often due to infrastructural melt down as a result of poor maintenance or natural calamities. The biggest change that one has been noticing is the vanishing of several species of indigenous as well as migratory birds that used to frequent the towns and cities even in the recent past.



The common species of indigenous birds that use to charm our city life through their majestic presence, spectrum of color, plumage, courtship, calls and cries are slowly exiting this city theater. Several such common species are difficult to spot in the modern city environment like the sparrows, tailor birds, sun birds, bee eaters, magpie robins, rufous tree pie, coucals, cuckoos, drongos, fly catchers, different species of mynahs, parakeets, woodpeckers, doves, wild pigeons, munia, barbets, orioles, babblers, kingfishers and raptors to mention only a handful. The city environment is now dominated by crows, feral pigeons and some species of mynahs that have successfully adapted to the changing city environment. All species of vultures have been decimated across the entire Indian subcontinent.

Lack of open spaces, green zones, wetland areas, lack of nesting, foraging and breeding opportunities together with rising levels of air pollution are impacting the city bird population. Birds are sensitive ecological indicators and are an important tool in assessing the quality of the urban environment. Rapid loss of various species across Indian towns and cities are an indirect reflection of the deteriorating quality of the current city environment across the nation. Urban greening projects are absolutely important for enriching



our city air quality and an important step towards helping our passerine friends to return back to the cities, towns, municipalities and corporation areas. Cities cannot grow indefinitely and there needs to be structured plans to restrict city growth within the range of possible carrying capacities. Every free and available space

To,

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within the urban environment needs to be dedicated to green cover in the form of urban forests, city parks and gardens, wetland recreation areas and green zones artificially developed by using suitable native and indigenous species of herbs, shrubs and trees.

Roadside pathways, highways, dividers, city avenues, unused or abandoned industrial localities, housing complexes, adjacent spaces along railway tracks, roadways and any other available and unused land should be brought under green cover for increasing the ecological sensitivity and sustainability of urban localities. Such open green spaces will automatically attract birds for nesting, foraging and breeding and their numbers are certainly to rise over time. Not only birds but beneficial insects, pollinators and other city based wildlife like small mammals, reptiles and amphibians are to benefit from such urban greening projects across the nation. Else our urban habitats run the risk of observing a *Silent Spring* in the not so distant future; when there will be no chirping of our passerine friends in the morning or in the afternoon; and maybe we live to see a day when there will be *All Quite on the Western Front*.

Photo credit: Saurav Ghosh, Kolkata, West Bengal;
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