Editors note.....

Dear All,

The months of July, August and September witness the first shower of rain, Ganesh Chaturthi and *Pitrupaksh*/ *Shraddhpaksh*. India is a land of festivities, jam-packed ceremonies, merriment and other collective activities. In India, cultural and ritual beliefs about biodiversity have an inherent value that merits protection. Contemplating this, *guide.net* brings articles that are pertinent to social and cultural aspects with biodiversity at core, and accentuates the significance of wetlands and their conservation.

Road kill is a major reason of frog transience in many parts of the world as they vacillate while crossing the road. An article on first showers of rain peeps into the relevancy of pulsating fauna during monsoon. Likewise, articles on *Capparis decidua* and Plant Growth Promoting Rhizobacteria (PGPR) highlight the significance and sustainable utilization of these species in the Kachchh region. Ecological management approach to control the invasion of *Prosopis juliflora*, application of Plant Growth Promoting Rhizobacteria (PGPR) to combat salinity in the Kachchh region are other articles affirming the exigency to save our mother earth.

Let us all pledge and join hands to save our mother earth with collective efforts.

We appreciate your continual interest in *guide.net* and surmise that you would relish reading it.

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Biodiversity Conservation

First shower of monsoon 2014 near the Institute - Haripar Road

One of our scientists approached me asking an article for our newsletter, *guide.net*, due to be released at the end of fourth quarter of this year.

Immediately, I neither had an article in hand nor something to write about. However, I was reminded of nature's response to life on earth while it gets wet during the first few showers of rain. Anyone taking a morning walk after monsoon's first few showers would notice quiet life turning on alive. The first to take jump in showers are the insects, amphibians and reptiles. Many avian species are the happiest lot as they get a variety of food to eat and incidentally the same period coincides with their breeding activities. So is the case with amphibians like frogs, toads and other reptiles. It is a win-win situation all around.

"Jivo Jivasya Bhojanam" as said in Sanskrit means one life is food for other and is scientifically referred as food chain.So the life goes on the way designed by nature: the survival of fittest or else adapt to survive in the pathway of evolution. But a few are not destined to live the God's way of living. That is mainly because of manmade interventions. In this case, it is a road and the vehicles plying over. The small life forms cannot manoeuvre skipping the traffic (they are not created and designed for that activity), they being busy with the processes of life sustenance (gathering food). So are the speeding men on their vehicles to keep their time. Who cares for a few creatures if they get crushed!

Haripar is a village connected to Mundra main road near Gujarat Institute of Desert Ecology, Bhuj. I sometime take a walk on this road, about 1.25 km segment. Small creatures more often transact along or across the road after first wash of soil with rain, supporting vibrant life. What I often see on this road is many accidents of small animals crossing the road by speeding vehicles. I thought of taking snaps of these creatures not knowing that these would be a part of this article one day. I wish to share these photos with you just to ponder whether we can devise some mechanism to save rest of them to live a full life cycle in their habitat. We




should not forget that one life supports the other in a food web system. Chopping one brings a halt to the other life form and the chain reaction goes on. The caution is for linear development layout design for road, rail, canal, powerline to take ecological consideration in account while planning.

Save nature's bounty to save our own survival!

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Capparis decidua (Kerdo) - An important medicinal plant of arid region

In India, there are thousands of medicinal plants used in various traditional systems which possess enormous potential of offering direct therapeutic effect individually or in combination. Medicinal plants have also become a growing part of modern medicine. More than 70% of the drugs listed in Ayurvedic and traditional literatures like 'Charaka Samhita' and 'Sushruta Samhita' are of herbal origin. In this connection, uses of various parts of *Capparis decidua* in traditional medicine of local inhabitants are given below including plant description and distribution.

Taxonomical classification

Division: Phanerogamae
Class: Dicotyledonae
Subclass: Polypetalae
Family: Capparidaceae
Genus: *Capparis*
Species: *decidua*

Occurrence and distribution

It is of common occurrence in dry places in Sind, Baluchistan, Western Rajputana, Deccan Peninsula, Egypt, Socotra, Arabia, Tropical Africa, Central India, Punjab, Gujarat, South India and Pakistan. On most occasions, *Capparis decidua* is found to be growing with *Zizyphus mauritiana*

Habit and Habitat

C. decidua is a widely spreading, densely branched, glabrous, shrub or occasionally a small tree of up to 5 m height. It grows abundantly in dry, arid and exposed habitats like wastelands, ditches, drying ponds, cultivated lands, road sides and surrounding plains of hills as it is tolerant to prolonged drought due to its excellent adaptation to arid conditions. It shows tap root system. Initially, a single primary root develops which gives rise to secondary branches. After a year, numerous secondary roots develop but primary root continues to dominate. In case of mature plants, the roots can penetrate up to 04 m.

The plant is much branched; each branch is slender, smooth, terete and spinous. Mature branches are leafless as leaves are present only on young shoots. Small, sharp, straight, light brown spines occur in pair at each node of twig. Most twigs and branches are glossy and dark green in colour, but with age, bark develops which is whitish gray.

Uses

Bark: Asthma, cough, inflammations, piles, ulcers, vomiting
Flowers: Astringent, kidney diseases.

Roots: Antidote, lung and chest diseases, root bark in the form of powder or infusion is used in rheumatism, gout, dropsy, intermittent fever

Stem: Green stem paste used to cure boils, young branch paste used in eruptions and swelling
Wood: Skin diseases.
Fruits: traditionally to cure various ailments, its buds are edible and in pickles since long time, cardiac troubles and biliousness.
Leaves: Tender branches and leaves of the plant relieve toothache when chewed.

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Multifunctional PGPR: are they better candidates to support agriculture in saline environment?

Globally, salinity is considered to be a severe abiotic stress, which affects crop growth and productivity. Saline soils have become a key concern for crop growth because salt turns agriculturally beneficial lands into sterile areas by inhibiting photosynthesis, protein synthesis and lipid metabolism in plants. As reported by United Nations Environment Program, about 50% of the croplands in the whole world are affected by high saline conditions. Around 60% of salt affected soils are sodic and saline sodic in nature. Due to this factor, loss in production of crops amounting to 2,500 - 5,000 km^2 is encountered every year. Salinisation of soils in agricultural area is reducing the area by about 1-2% each year with worst scenario being faced in arid/ semi-arid regions. Research in agriculture arena has been focused on recuperating yield. Nevertheless, over usage and deterioration in soil fertility due to many factors has surmounted its positive effects. In this condition, application of ecologically compatible and environmentally friendly techniques to alleviate saline soil in agriculture perspectives is of great concern. To ward off this problem, application of beneficial microorganisms such as Plant Growth Promoting Rhizobacteria (PGPR) is an important substitute for agricultural practice.

Microorganisms in many cases have been found beneficial in several areas. One such beneficial group for agriculture is PGPR, which is a special group of beneficial bacteria that inhabits the plant root zone and is one of the best alternatives to solve such soil stresses. In addition, PGPR with multifunctional PGPR traits are of greater importance when found to produce such as Indole acetic acid (IAA), nitrogen fixation capacity, phosphate solubilizing nature, production of phytohormones (Auxins, Gibberellins, Abscissic acid, etc.), siderophores, organic acids, antimicrobial nature against plant pathogens. All these factors authorize PGPR to a play vital function in safeguarding the quality of the soil and act as a better biofertilizer (*Azospirillum* sp., *Alcaligenes* sp., *Klebsiella* sp., *Enterobacter* sp., *Acetobacter* sp., *Rhizobium* sp., *Bradyrhizobium* sp., *Azotobacter* sp., *Pseudomonas* sp., *Bacillus* sp., etc.) In recent years research on PGPR has fascinated and attracted scientists. If succeeded, outcome of this research could yield a sustainable and practically feasible agriculture even in stressed environments like deserts, acidic soils, alkaline, saline soils. Further, application of PGPR strains as individual candidates or as consortium with multifunctional characteristics might act synergistically and may end up in many ways positively for the fertility of the soil matrix. Further, realizing and understanding the plant-microbe interaction will surely pave way to bring more benefits for the betterment of soil health, enhancement of plant growth and its stress tolerance levels.

Conversely, the degree of achievement in utilizing the real benefits of these organisms is likely to reduce when it is taken from the actual laboratory to controlled conditions (greenhouses) and would further

reduce during on site field experiments. Hence, real time studies for exploration of detailed information on various strategies adopted for screening and selection of a better candidate for agricultural usage should be strengthened, which is the need of the hour to promote success at field levels. Also taking such immensely potential strains for application directly by the stakeholders (agriculturalists) will still take these efforts to the next level for sustainable agriculture.

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Species, Religious Conviction, Pollution

Role of plants in Hindu religious rituals

As per the Hindu religious mythology, the 16 days of September (Bhadarva) month starting from 09th to 25th September 2014 are considered as *Pitrupaksh* or *Shraddhpaksh*, which is dedicated to the forefathers. Offerings are made during this time to pay homage to forefathers and gratify their souls. It is believed that it is during this 16 days period that one's forefathers come down to earth to bless their kin. *Tarpan*, *Shraddha* and *Pinddaan* are performed to please them. Performing these rituals is also important because it helps one's forefathers cross over to their fated realms.For ritual activities during this period, 04 important wild plants and birds are used *viz*., i) dDarbha/ Kush grass (*Desmostachya bipinnata*), ii) Pipal (*Ficus religiosa*), iii) Tulsi (*Occimum sanctum*), and iv) Crow *(Corvus splendens*).

While performing *Shraddha* ritual, the male member (usually the eldest son of the family) after taking bath wears a ring made of kush grass. The kush grass is symbol of benevolence and it is presumed that it invokes the ancestors. The word *Kushal buddhi* is believed to be derived from *kush*. *Pinddaan*, the ritual of offering rice, sesame seeds and balls made of barley flour is also performed. Blessings of Lord Vishnu are then invoked using kush / darbha grass. This grass species is known for its unhindered growth and similarly helps to remove obstacles in one's life. Food that is specially prepared for the event is offered in memory of one's ancestors. A crow, which is considered the messenger of *Yama* eating the food, is considered as an auspicious sign. Subsequently, Brahmin priests are offered food after which the family members have their meal. The pipal tree and tulsi are watered during these days.

Reading Holy Scriptures such as *Garuda Purana*, *Agni Purana* and the stories of *Nachiketa* and *Ganga Avatar-am* during this period are considered propitious. It is considered that during *Pitrupaksha*, certain things should be avoided. This isn't a good time for new beginnings. Avoid starting anything new, even something seemingly as insignificant as buying and wearing new clothes, washing hair, cutting hair and even shaving are proscribed during the period, especially on the last day, i.e. *Mahalaya Amavasya*.

As per astroyogi.com astrologers, getting married, celebrating the birth of a new born, settling down in a new home, starting a new business and other such important events should be postponed or advanced during *Pitrupaksha*. Consuming non-vegetarian food, and even onion and garlic are forbidden. It is believed that only when a person performs the rituals with earnestness and no malice at heart, his efforts bear fruits. Thus, it is important to clear one's mind of all negative thoughts and pay reverence to one's ancestors with utmost sincerity and respect. It is also important to refrain from pleasurable activities for the ritual to be successful.

The crow, once known to be found everywhere, is now-a-days not commonly reported at many urban and rural areas for performing these rituals. As such crow is not liked by many but its role as a scavenger is very important in maintaining environment since it helps in removing left out food and dead animals/ rodents.

D. bipinnata is commonly known as sacrificial grass, since it is used in *Yagnas* and religious rites. Its roots are used in the Indian traditional system of medicine as cooling, sweet, astringent, diuretic and galactogouge and also useful in dysentery, diarrhoea, urinary calculi, dysuria, other diseases of bladder and skin diseases. Its culms are said to be possess diuretic and stimulant properties. In the Kokan they are prescribed in compound decoctions with more active drugs for the cure of dysentery, menorrhagia, etc. However, the religious usage of this grass is only known to the Brahmins who perform *Karmkand*.

The peepal tree provides maximum oxygen as compared to all other plants. The tree is also considered as a good source of brain tonic and perhaps being worshiped due to this reason. The tulsi is well known for its antibacterial/ pathogen properties and also used to cure cancer.

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એક પવિત્ર વૃક્ષ-કલ્પવૃક્ષ

દેવતાઓના સુખ-સમૃદ્ધિ બે વસ્તુના કારણે છે. એક 'કામધેનુ' અને બીજું 'કલ્પતરુ'. આ બંને વસ્તુ એવી ગણાય છે કે એની પાસે જે ઈચ્છા કરીએ એ મળે. ધન માગો તો ધન મળે. આ વસ્તુમાંથી એક 'કલ્પતરુ' એટલે 'કલ્પવૃક્ષ' એ ઈન્દ્રના બગીચાનું ઝાડ ગણાય છે.

કલ્પવૃક્ષનો અર્થ:

'કલ્પવૃક્ષ' નામ એવું છે કે જેના ચાર જુદા જુદા અર્થ નીકળે છે. કલ્પવૃક્ષનો અર્થ એવો થઈ શકે કે, 'કલ્પ સુધી જીવતું રહેનાર વૃક્ષ.' 'કલ્પ' બ્રહ્માના એક દિવસને કહે છે. એ દિવસ ચારસો બત્રીસ કરોડ વર્ષનો હોય છે. એટલે કલ્પવૃક્ષ એવા ઝાડને કહી શકાય જે હજારો વર્ષ સુધી જીવતું રહે. 'કલ્પવૃક્ષ' નો બીજો અર્થ થાય છે નાશ ન પામે એવું અમર વૃક્ષ! કલ્પવૃક્ષ એટલે 'કાલ્પનિક વૃક્ષ' એવો અર્થપણ હોઈ શકે!

કલ્પવૃક્ષનું જન્મ સ્થળ:

કલ્પવૃક્ષ ગરમ પ્રદેશ આફ્રિકાનું ઝાડ છે એ ત્યાં ઉત્તર સુદાનથી માંડીને દક્ષિણમાં ટ્રાન્સવાલના પ્રદેશો સુધીના પટ્ટામાં જોવા મળે છે. કલ્પવૃક્ષને સહુથી પહેલા આફ્રિકાના સેનેડાલમાં ઈ.સ. ૧૭૫૪માં ફ્રાન્સના વનસ્પતિ વિજ્ઞાની માઈકલ અડસને જોયું હતું.

કલ્પવૃક્ષ વિષે કહેવાતી કહેવતો.....

એક મહાઋષિની તપશ્ચર્યાનું પરિણામ છે. પુરાણોમાં એવી એક કથા છે કે દેવતાઓની માતા અદિતિએ પોતાના પતિ કશ્યપ ઋષિને ખૂબ આનંદમાં જોઈને વિનંતી કરી કે હે નાથ! સદા ઘરેણાથી સાજ શણગાર કરેલી યુવાન સૌભાગ્યલક્ષ્મી બની રહું અને ધર્મ તથા પતિના રસ્તે ચાલતી રહું એવું કંઈક કરો કે હું ઈચ્છા કરું કે તરત નૃત્ય-સંગીત શરૂ થઈ જાય, મને કદી શોક અથવા રોગ ન થાય! પત્નીની આ માગણી પૂરી કરવા માટે કશ્યપ ઋષિએ કલ્પવૃક્ષની સ્થાપના કરી, જેમાંથી હંમેશા મનોહર સુગંધ આવ્યા કરે, એ ઝાડમાં ખાસ એવી શક્તિ મૂકી કે એની પાસે જે માગો એ મળે!

બીજી એક પુરાણકથા એવી છે કે ઈન્દ્રના બગીચામાં શોભતા કલ્પવૃક્ષને પૃથ્વી પર લાવવામાં શ્રીકૃષ્ણ ભગવાનની પત્ની સત્યભામાની હઠ કારણરૂપ

છે. સત્યભામાએ શા માટે કલ્પવૃક્ષને પૃથ્વી પર લાવવાની હઠ કરી એની બે જુદી જુદી કથાઓ છે. પરંતુ બંનેમાં મૂળ વાત એ જ છે કે સત્યભામાએ કૃષ્ણ ભગવાનને ખૂબ હઠ કરીને કહ્યું કે, 'કલ્પવૃક્ષ' અમરાવતીથી દ્વારાવતી લઈ આવો. એટલે કલ્પવૃક્ષ પૃથ્વી પર આવ્યું.

કલ્પવૃક્ષ ભારતમાં:

ભારતમાં રાજસ્થાનમાં ઘણા કલ્પવૃક્ષ જોવા મળે છે. રાજસ્થાન ટોંક, જોધપુર, ભીલવાડા, બાંસવાડા અને ઝાલાવાડમાં એકાદ-બે કલ્પવૃક્ષ જોવા મળે છે. ભારતમાં કલ્પવૃક્ષ રાજસ્થાન, ઉત્તર પ્રદેશના લખનઉ અને ઈટાવા, તામિલનાડુમાં કોઈમ્બતુર, આંધ્રપ્રદેશના ગોવળકાંડામાં, મધ્યપ્રદેશના માન્ડુમાં, મહારાષ્ટ્રના ઔરંગાબાદમાં એકલ દોકલ જોવા મળે છે. આ ઉપરાંત ગુજરાતમાં પણ વડોદરા, આંણદ સહિત કચ્છમાં પણ એકલ દોકલ કલ્પવૃક્ષ જોવા મળે છે.

અમારા સર્વે દરમ્યાન કચ્છમાં લખપત તાલુકામાં દયાપર ગામ નજીક આવેલ કમલેશ્વર મહાદેવ મંદિરની સામે એક વિશાળ કલ્પવૃક્ષ જોવા મળેલ છે, જે 300 વર્ષ જુનુ માનવામાં આવેલ છે. જેની ઉંચાઈ આશરે 12 મીટર તથા તેના થડનો ઘેરવો આશરે 5 મીટર છે. ભચાઉ તાલુકાના મનફરા ગામથી ચોબારી જતા વચ્ચે એકલનગર ગામના પીરવાળા ગાર્ડનમાં 150 વર્ષ જુનુ કલ્પવૃક્ષ જોવા મળેલ છે. જેની ઉંચાઈ આશરે 18 મીટર તથા તેના થડનો ઘેરાવો આશરે 3 મીટર છે. આ ઉપરાંત કચ્છમાં મુન્દ્રા તાલુકાના પત્રી ગામમાં ગજુભાઈ જાડેજાના ખેતર પર 200 વર્ષ જુનુ કલ્પવૃક્ષ જોવા મળેલ છે. જેની ઉંચાઈ આશરે 15 મીટર તથા તેના થડનો ઘેરાવો આશરે 6 મીટર છે.

કલ્પવૃક્ષ વિશે....

હાલમાં વનસ્પતિ જગતમાં કોઈ પણ વૃક્ષ કલ્પવૃક્ષ જેટલી વિશાળતા, લાંબા આયુષ્ય, ઘટાદાર ઝાડીઓ અને પૂજનીયતામાં એની તોલે નથી આવી શકતું. સંસ્કૃતમાં એને સુરતરૂ અથવા દેવદ્રુમના નામે ઓળખવામાં આવે છે જ્યારે અંગ્રેજીમાં બાઓબાબ અથવા મંકી બ્રેડ ટ્રીના નામે ઓળખવામાં આવે છે. વનસ્પતિની દુનિયામાં એને અડન સોનિયા ટિજ્ઝેટા તરીકે ઓળખવામાં આવે છે. કલ્પવૃક્ષના થડમાં વલયો ન હોવાને કારણે એની ઉંમર કેટલી છે એ જાણી શકાયું નથી. પણ આ વૃક્ષ ખૂબ લાંબી ઉંમર ધરાવતું હોય છે. કેટલાક કલ્પવૃક્ષ તો પાંચ હજાર વર્ષની ઉંમર પણ ધરાવે છે. કલ્પવૃક્ષના થડ પહોળાઈમાં ખૂબ વિશાળ હોય છે પણ ઊંચાઈમાં ૩૦ મીટર સુધી જ ઊંચા થઈ શકે છે. આન્ધ્રપ્રદેશમાં આવેલા એક કલ્પવૃક્ષના થડની ગોળાઈ ૪૦ ફૂટ છે જ્યારે આફ્રિકા ખંડના તાન્ઝાનિયા દેશના એક કલ્પવૃક્ષની ગોળાઈ ૧૩૦ ફૂટ છે. આફ્રિકામાં કેટલાક કલ્પવૃક્ષના થડ જ્યારે અંદરથી ખોખલા થઈ જાય છે તો એને કોતરીને અંદર ઘર કે રેસ્ટોરેન્ટ બનાવી શકાય એટલા વિશાળ હોય છે. વિશાળ થડ હોવાને કારણે કલ્પવૃક્ષ જોવામાં ખૂબ અટપટું લાગે છે. એની ડાળીઓ મોટી અને કોઈ આકાર વગર જેમ તેમ ફેલાયેલી હોય છે. એની ઉપર આવતા પાન ઘેરા લીલા રંગના હોય છે. શિયાળો શરૂ થતાં જ પાંદડા ખરી જાય છે અને વરસાદ શરૂ થતાં નવા પાંદડા સીધા હોય છે પણ ચાર-પાંચ વર્ષમાં એ એકબીજામાં વીંટળાઈને ઝૂંડ બનાવી લે છે. નવા પાંદડા સાથે જામફળના આકારની કળી પણ ખીલે છે, જેમાંથી ૧-૧૮ સે. મી. પહોળા ફૂલ ખીલે છે. આ ફૂલ સુગંધ વગરના હોય છે. આ ફૂલનું પરાગનયન ચામાચીડિયા અને પક્ષીઓ દ્વારા થતું હોય છે. એક ફૂલમાં નર અને માદા સાથે જોવા મળે છે.

જો 'કલ્પવૃક્ષ' મૂળ આફ્રિકાનું વતની હોય તો એ આપણા દેશમાં કેવી રીતે અને ક્યારે આવ્યું હોય? કહેવાય છે કે આ ઝાડ આફ્રિકાથી આવ્યું છે અને આફ્રિકાના જંગલોને એક જમાનામાં સ્વર્ગ પણ કહેતા હતા. ત્યાંથી એને શ્રીકૃષ્ણ ભારત વર્ષમાં લાવ્યા છે! દ્વારકા શહેરની આસપાસના દરિયાઈ ચાંચિયા શ્રીકૃષ્ણના પૌત્ર અનિરુદ્ધનું અપહરણ કરીને ઉપાડી ગયા હતા અને દૂરદેશના રાજા વાણાસૂરને ત્યાં ગુલામ બનાવીને વેચી દે છે. ત્યાં અનિરુદ્ધ રાજાની કુંવરી ઓખાના પ્રેમમાં પડે છે. આ વાતની રાજાને ખબર પડતાં રાજાએ અનિરુદ્ધને કેદમાં નાખી દીધો હતો. શ્રીકૃષ્ણએ અનિરુદ્ધને છોડાવવા વાણાસૂરના દેશ પર ચઢાઈ કરી હતી. એને હરાવીને અનિરુદ્ધ તથા ઓખાનાં લગ્ન કરાવ્યા હતા. ત્યાંથી જીતના માલ તરીકે અથવા દહેજ તરીકે 'ટેબલ્ડી' એટલે કે કલ્પવૃક્ષ પણ દ્વારકા લઈ આવ્યા હતા.

કલ્પવૃક્ષનો ઉપયોગ:

કલ્પવૃક્ષ પૂરેપૂરું ઉપયોગમાં આવે છે. એની મોટી ડાળીઓ અને થડના ખોખામાં પાણી ભેગું થાય છે, જે પશુપક્ષીઓના કામમાં આવે છે. આ ઝાડ ખૂબ વિશાળ હોવાથી મધમાખીઓને મધપૂડા બાંધવામાં સરળતા રહે છે. પશુઓ માટે આ પાંદડામાંથી ચારો બનાવી શકાય છે. તાવ, ગુર્દા અને સંધરણી જેવા રોગોમાં આ ઝાડનો ભાગો કામમાં આવે છે. દુકાળમાં આ ઝાડ વરદાન સાબિત થાય છે, કારણ કે લોકો એનાથી પેટ ભરે છે. કલ્પવૃક્ષનું થડ ખૂબ જ પોચું હોય છે એટલે એમાંથી ઈમારતી લાકડું તો નથી બની શકતું પણ થડનો માવો બનાવીને રસ્સી અને પગલૂંછણિયા બનાવવામાં આવે છે. એની છાલથી ચામડું રંગવામાં આવે છે. કલ્પવૃક્ષના થડમાંથી પાણીની ટાંકી બનાવી શકાય છે, કારણ કે એનાથી પાણી ઠંડુ અને સ્વચ્છ રહે છે.

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Ganesh festival and Environmental Consequences

Immersion of the idol of God Ganesh is a regular religious ceremony being followed in India during Ganesh festival/ pooja. Besides being a regular religious festival, it has its own environmental consequences which often deteriorate the water quality of the water body. The idols of Lord Ganesh during this festival are often made from non-biodegradable materials *viz*., plastic, cement, plaster of Paris and are painted with toxic dyes. Plaster of Paris, insoluble in water, comprises of chemicals such as gypsum, sulphur, phosphorous and magnesium. Similarly, paints contain heavy metals such as chromium, cadmium, lead and mercury. Thus, this article presents an overview of the environmental pollution consequences of the idol immersion of Lord Ganesh. It is high time that environmentalists devise means to reduce the pollution arising out this festival without affecting the religious sentiments of people.

Changes in concentration of some chemical pollutants after idol immersion

Chemical Pollutants	Mean Conc. in water	Conc. before Immersion of idols	Conc. after Immersion of Idols
Calcium	25.14	43.77	68.4*
Magnesium	7.785	6.590	10.02*
Molybdatenum	0.090	0.149	0.534*
Silicon	3.537	2.954	3.826**
Arsenic	0.124	0.121	0.497
Iron	0.212	0.125	0.22**
Lead	0.289	0.351	0.45**
Mercury	0.689	0.553	0.778**

*Threshold Limit Value (TLV): *TLV=0.01; **TLV=0.05*
TLV is the permissible Level of a toxic pollutant to which a healthy person is exposed during 08 hrs day without any adverse effect.
Source:
http://www.slideshare.net/gunwant_joshi/environmental-impact-of-ganesh-festival

Impact of idol immersion on aquatic environment

Material	Impact
Plaster of Paris	Increases dissolved solids, contributes metals and sludge
Decoration materials *viz*. clothes, polish, paint, cosmetic items	Increase Suspended Particulate Matters (SPM), trace metals (zinc, lead, iron, chromium, arsenic, mercury, etc.), metalloids and various organic and inorganic matter, oil and grease, etc.
Flowers, oily substances	Increase floating suspended matter, organic contamination, oil and grease and various organic and inorganic matter
Bamboo sticks, beauty articles	Float in water or settle at the river bottom inhibiting river flow
Polythene bags / plastic items	Increase suspended matter, settled matter and hazardous material to water and choke the aquatic life
Eatables, food items, etc.	Increase oil and grease, organics to water body

Recommendations

- Eco friendly-idols should be established as they get dissolved in water in less than 10 hrs
- Permanent idols made of brass or stone should be preferred
- Small painted idol made of unbaked clay should be used, if idol immersion is performed
- Idol should be immersed in a tub or a water tank
- Flowers should be collected and compost should be made
- Usage of thermocole and plastic in decorations should be avoided

- Within 24 hours of the immersion of idols, the left over material (near rivers, lakes, beaches, etc.) should be collected by the local bodies and disposed off
- At the immersion sites, burning of solid wastes should not be allowed
- People should be encouraged to go for smaller size idols
- The Mud or Clay May be used in the Gardens or the Pots without any bad effect to the Environment.

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Environmental Issues

Wetlands: the Nature's Own Refineries

Wetland is an area consisting of soil, water, fauna, flora and other abiotic components where the soil is covered by water or saturated with moisture such as marsh, swamp or bog. Sherwood et al. *(*1995) defined wetland as a place where the water surface is near the ground surface for long enough each year to maintain saturated soil conditions, along with the related vegetation. According to the Ramsar Convention (1971), wetland is 'land inundated with temporary or permanent water that is usually slow moving or stationary, shallow, fresh brackish or saline where the inundation determine the type and productivity of soils and plant and animals communities'. Environmentalists have referred to wetlands as nature's kidneys. Wetland can be categorized into natural wetland and constructed wetland.

The value of a wetland is a measure of its importance to society. Wetland functions are valued to various degrees by society, but there is no precise relationship between wetland functions and the value of wetlands to society, and the values can be difficult to determine objectively. A wetland's value can be weighed directly or relative to other uses that could be made of the site; thus, the location of a wetland determines its value to the society.

Wetlands are transitional environments. In a spatial context, they lie between dry land and open water - at the coast, around inland lakes and rivers, or as mires draped across the landscape. In an ecological context, wetlands are intermediate between terrestrial and aquatic ecosystems. Since, wetlands were neither considered as true terrestrial ecosystem nor true aquatic ecosystem, not many researchers were interested in wetland ecosystems. However, there has been an explosive growth of knowledge about a radical change of attitude toward wetlands since 1950s.

Wetlands have been recognized as providing many benefits including water supply and control (recharge of groundwater aquifers, drinking water, irrigation, flood control, water quality and wastewater treatment), mining (peat, sand, gravel), use of plants (staple food plants, grazing land, timber, paper production, roofing, agriculture, horticulture, fertilizers, fodder), wildlife (breeding grounds for waterfowl, conservation of flora and fauna), fish and invertebrates (shrimps, crabs, oysters, clams, mussels), integrated systems and aquaculture (fish cultivation combined with rice production), erosion control, gene pools and diversity, energy (hydroelectric, solar energy, heat pumps, gas, solid and liquid fuel), education and training, recreation and reclamation.

Natural wetland is naturally occurring (e.g. swamp, marshes, bog, and pond) and is usually characterized by their plant type, water and geographic condition. Natural wetlands are characterized by extreme variability in functional components, making it virtually impossible to predict responses to wastewater application and to translate results from one geographical area to another. Although significant improvement in the quality of wastewater is generally observed as a result of flow through natural wetlands, the extent of their treatment capability is largely unknown. While most of the natural wetland systems were not designed for wastewater treatment, studies have led to both a greater understanding of the potential of natural wetland ecosystems for pollutant assimilation and the design of new natural water treatment systems. Natural wetlands have long been used for discharge of treated wastewater effluents-primarily as a disposal measure, but also as a means of reducing nitrogen and phosphorus concentrations in the effluent.

Constructed wetland is an engineer-made equivalent of natural wetlands, and designed to reproduce and intensify the wastewater treatment processes that occ-

ur in natural wetlands. They were first introduced to treat wastewater by Siedel in 1952 in Germany. Basically, constructed wetland treatment systems consist of 04 major components *viz*., soil or gravel, water or shallow pond, aquatic plant or macrophytes, and microorganisms. Constructed wetland is a good option to treat the polluted water and restore the ecosystem health.

Wetlands are arguably one of the most important ecological structures in existence. Several animals and plants are dependent on wetlands. They serve as breeding grounds for migratory birds and resident amphibians, permanent homes for fish species, create social interaction amongst mammals that congregate there for water and an escape from the heat of the sun for countless reptiles, amphibians and mammals. Rarely is there a wetland seen without its inhabitants fighting for the resources wetlands provide. Wetlands are seen as the cornerstone of wildlife populations.

Wetlands are known for providing a number of functions and values. While not all wetlands provide all functions and values, most wetlands provide several of them. Under appropriate circumstances, constructed wetlands may provide water quality improvement, flood storage and the desynchronization of storm rainfall and surface runoff, cycling of nutrients and other materials, habitat for fish- and wildlife, passive recreation such as bird watching and photography, active recreation, education and research, and aesthetics and enhancing landscape merits.

Wetlands also serve as a reservoir for runoff water during heavy rain periods. These wetland reservoirs can typically hold more water than it appears, allowing for a reduction in the amount of flooding. These reservoirs also filter the water that is brought through the wetland. Before reaching the water table below, wetlands are able to filter sediments, nutrients and toxic chemicals. The great diversity in plants, each one varying in its physiological capabilities, prevent nutrient and toxic chemical build up from disturbing the natural cycle of the wetland. Plants and animals are not the only ones who can benefit from wetlands. Lakes and ponds serve as excellent areas for fishing and canoeing, while smaller wetlands are prime bird watching spots and provide prime scenery for nature walks and biking trails.

Significance of wetland plants

Wetlands are of extreme significance to scores of species, many of which are endangered. Wetlands also act as a filter for pollution and excess sediment. This is important because rainwater runoff is normally laden with dangerous pesticides and other pollutants. By going through a wetland prior to reaching open water, this is filtered out and often, excess sediment naturally builds up in the wetland instead of in rivers or other water bodies. Wetland plants (mangroves) serve many functions, including: soaking up water that would otherwise cause rivers and lakes to flood; slowing the flow of water; lessening the effects of coastal erosion; Filtering excess nutrients, sediment, and pollutants out of water; providing protection, breeding grounds, and food for fish and aquatic wildlife and nesting areas for migratory birds; and supplying unique and staple food crops for humans.

Components of Wetlands

Abiotic components

Wetland soils are organic and mineral, capable of absorption of pollutants. Soils are made up of sand, silt and clay in different combinations, and 'mud' actually refers to a mixture of silt and clay, both of which are rich in organic matter. The amount of dissolved oxygen in mangrove water is generally lower than that of the open sea. This low content may be depressed further in areas of organic pollution creating an anoxic zone in the water column. Salinity of the mangrove swamps range from 0.5 to 35 ppt.

Biotic components

Wetlands are habitats for many rare and indigenous species, many of which represent unique natural communities.

The wetlands are declining day-by-day because of the introduction of intensive agriculture, the degradation of floodplains, the draining of the fens, the mining of lowland bogs for peat, the erosion of coastal wetlands and saltmarsh, and climate change. The wetlands need to be conserved and maintained because wetlands provide essential ecosystem functions and services, including regulation of water quality, sustainable control and mitigation of flooding, greenhouse gas reduction, essential habitats for plants and animals, and cultural and recreational facilities.

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Risk and hazards in mines

Underground fire is a kind of hazard in mining activity. They occur by the combustible materials that are available in the mines. Open flames are liable for spontaneous combustions. Factors such as electricity, friction, blasting, explosions and other similar miscella-

neous things are the most common factors which cause the mine fire.

Mine Explosions

Mine explosions are generally regarded as a serious and constant hazard in underground coal mining operations. They are caused by ignitions of firedamp (firedamp explosions). Or coal dust (coal dust explosions) or both (mixed explosions). They are sudden combustion processes of great intensity which are accompanied bay release of large quantities of heat energy and in which the original gas or solid substance is converted into gaseous products.

Water Inundations

The normal influx can be attributed to several sources such as stream bed seepage, general surface seepage and barrier pillar seepage. For a given mine, it varies within a certain range depending on the amount and intensity of rainfall, intersection of faults and fissures, bay mine workings, and the condition of strata as affected by the progress of extraction. The amount of water pumped out of mines may be up to 20 or more times the ROM Output.

An inrush or irruption of water is a sudden inflow of large quantities of water into mine workings causing their inundation. It may take place from the surface, overlying strata, or water-logged workings in the same mine or neighboring mines.

Inundations of mine workings are dangerous as they are sometimes unpredictable in their occurrence and often result in loss of life and property. In hot deep mines, an inrush of water may create such adverse humidity condition that it may become almost impossible to erect a dam.

Mine Gases (Gasification)

The technology of underground coal gasification has been technically proven to work at numerous locations and different depths ranging from several hundred meters up to 1.4 km of depth. So far, the economics look promising with costs competitive to natural gas markets and possibly also coal markets. Furthermore, a combination with gas-to-liquids technology would enable the production of fairly cheap synthetic diesel. These possibilities together with the potential to unlock vast new coal seams unavailable *via* conventional mining make UCG an important technology that could substantially extend the era of cheap energy. There are justified concerns over groundwater contamination that needs continuous attention of both companies and regulators. Finally, the technology does not solve the issue of carbon dioxide emissions as it provides only a marginal improvement over standard coal mining, unless implemented together with carbon capture and storage technologies.

Noise

Exposure to noise levels exceeding those determined to be safe can result in noise-induced hearing loss. Exposure to high noise levels may also interfere with communication and may result in nervous fatigue with an increased risk of occupational injury. Coalmines have confined spaces where workers are exposed to noise from all types of machinery and equipment used for drilling, cutting, loading and transporting coal and rock, for transporting supplies and material, and for moving volumes of mine air.

Vibration

Whole-body vibration is felt when the body is supported on a surface that is vibrating, such as in transport or when working near vibrating industrial machinery; or hand-transmitted vibration, which enters the body through the hands and is caused by various processes in which vibrating tools or work pieces are grasped or pushed by the hands or fingers. This whole body vibration causes many health related problems to mine workers.

Chemical Hazards

A chemical substance is a compound or mixture which may be present in the workplace in the form of a liquid, solid (including particles) or gas (vapor). These substances may present a hazard as the result of contact with the body or absorption into the body. Absorption can occur through the skin, by ingestion or by inhalation. Chemicals can have acute (short-term) and/or chronic (long-term) health effects.

Ratansi Chaudhary, (ratansi1104@gmail.com), GUIDE

Pros and Cons of invasive species- An example from *Prosopis juliflora*

Exotic plant species have been artificially introduced worldwide due to their economic, environmental and/or aesthetic values. At times, these species may become invasive by spreading away from the point of introduction and reaching densities that replace native plant species, thus reducing biodiversity and impacting habitat quality.

Amongst the invasive plant species, *Prosopis juliflora* was introduced in India from the United States during 1877 in the state of Andhra Pradesh. In Gujarat, the species was first planted in Morbi during 1930s and known as "*Morbi baval*" later on popularly known as "*Gando Baval*". *Prosopis juliflora* is a fast growing, hardy and drought-resistant tree, with remarkable coppicing ability. It is suitable for the afforestation of

arid and semi-arid lands, and grows well even in saline and rocky areas. Its ability to grow in dry places is attributed to the size and density of its crown, extensive lateral root system, and stout tap-roots, which penetrate the soil to a depth of 20 m or more. The species originated in an area of northern South America, extending from Peru through Central America into Mexico.

In the beginning of its introduction in Gujarat, people happily accepted it because it helps in minimizing desertification, controlling soil erosion, improves soil fertility and reduces soil salinity. In addition, this species has many economic value as its wood is used as a source of fuel, timber, charcoal and gum; pods and leaves used as a source of fodder; flowers used as a source of honey. But now a days, this species has become a noxious invasive weed as it creates many negative effects such as it replaces native biodiversity by releasing allelochemicals; its pods if consumed, cause damage to the teeth, constipation, facial contortions to cattle, horses, sheep and goats; its sharp thorns cause wounds to goats and cattle, its invasion into wetlands reduces their value for watering and dry-season grazing, and its invasion into Banni grassland reduces the grassland area and its productivity.

Thus, perceptions of *P. juliflora* by local communities are strongly influenced by how the beneficial effects of the species weigh against the less favored and costly characteristics and impacts of the same species. Complete eradication of *P. juliflora* is difficult as it will be a costly process and many people depend on *Prosopis juliflora* as their source of income by selling wood, charcoal; collecting pods, leaves as a source of fodder for livestock and extracting honey. Therefore, an appropriate management programme is a prerequisite to use this invasive species in a sustainable manner for better livelihood options.

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GUIDE

Views and Ideas

Higgs Boson: the God particle or the Hymn of creation demystified!

There have been important milestones in the scientific pursuit of the mankind like the day when man first stepped on the moon or when the atom was discovered. One such day, which the generations from now will remember was the fourth day of July 2012 when the discovery of the so called God particle “The Higgs Boson” was announced at CERN, which is the European Council for Nuclear Research. The discovery has been called monumental because it appears to confirm the existence of Higgs Field which is pivotal to the standard model and other theories within particle physics. The Higgs Boson is named after Peter Higgs, one of the six physicists who, in 1964, proposed the mechanism that suggested the existence of such a particle. The search of this Higgs Boson takes us into the most important question “How universe was created and how it works”.

To dwell deeper into unveiling this mystery we need to know the ancient Indian scriptures of “Vedanta” where such questions had not only been answered but experienced by the seers, thousands of years from now. And we may reach a culmination point where our modern scientific approach and the ancient Vedic knowledge reach their epitomes and answer these unending mysteries. Then again, the intriguing possibility that the Higgs boson is responsible for all the mass in the universe rather captures the imagination too. Or perhaps we're simply excited to learn more about our world, and we know that if the Higgs boson does exist, we'll unravel the mystery a little more.

In order to truly understand what the Higgs boson is, however, we need to examine one of the most prominent theories describing the way the cosmos works: the **standard model**. The model comes to us by way of **particle physics**, a field filled with physicists dedicated to reducing our complicated universe to its most basic building blocks. It's a challenge we've been tackling for centuries, and we've made a lot of progress. First we discovered atoms, then protons,

neutrons and electrons, and finally quarks and leptons. But the universe doesn't only contain matter; it also contains forces that act upon that matter. The standard model has given us more insight into the types of matter and forces than perhaps any other theory we have. When any particle passes through the Higgs field it slows down and this is what gives them mass. Without gaining mass, particles would have continued to fly through the universe at the speed of light, never clumping together to form you, me, the black holes or anything. So the entire universe is made up of this Higgs field.

We now know that the atom consists of a minute nucleus, with tiny, sub-atomic particles called electrons orbiting the nucleus. The nucleus itself contains other sub-atomic particles of matter called proton and neutrons, themselves made up of even smaller entities called quarks. The full list of the elementary particles of matter is described by the 'Standard Model of Particle Physics', the modern theory of the structure of the atom and the forces that hold it together. The Higgs particle doesn't live inside the nucleus, it is a 'messenger particle' predicted by the Standard Model; while all other particles predicted by the model have been detected in experiments in particle accelerators, the Higgs has remained outstanding until now. Not only that, the Higgs is also of central importance in our understanding of the atom. According to the Standard Model, particles acquire mass as a result of their interaction with the Higgs - or to be specific, their interaction with a certain type of quantum field named the Higgs field. The Higgs particle is simply the 'messenger particle' associated with this field. Most physicists dislike the name, but it is somewhat apt since the field associated with the Higgs particle is thought to endow all other particles with mass. Another reason is that the particle has become something of a Holy Grail in particle physics because it has proved remarkably hard to find over five decades. The discovery of the Higgs boson is an important confirmation that our view of the fundamental structure of matter is on the right track. The search for this so called God particle has led to the construction of one of the world's most expensive and complex experimental facilities to date, the large Hadron collider, able to create the Higgs Boson and other particles for observation and study.

Vedanta says that this whole universe is made up of one consciousness and the creation is a play and display of this one consciousness. The vedic Rishis in harmony with the modern scientists said the same i.e. to first explore the elements. 'Brahma' the ultimate tatva like the other elements viz. air, water, fire, earth and space to be able to understand the mystery of this universe. Like the so called God particle there is the 'Brahma' principle and when we go subtler and subtler dissecting our various layers of existence from this physical body to mind then intellect and ego and even more subtler is the 'Mahatatva' the moolprakruti which is the primordial energy and transcending this is the 'Brahma Tatva' which sustains the whole creation. The infinite which is never born or will never die. The modern day quantum physicists call it as as dark energy or dark matter and it is the same as told in 'Rigveda'.

This mystic and mysterious Hym of Creation describes the existence of the dark energy or the space. Vedanta describes three types of space; i) where all matter exists called the 'Bhootaakash', ii) the intermediate space where the thoughts and emotions exist called the 'Chittaakash', and iii) the space of pure consciousness or energy the 'Chidaaakash'. And here and there this pure energy appears to have consolidated as matter; so what appears to be matter is really no matter; one has to go beyond these three spaces to know the 'Brahma' that is what everything and everybody is made up of. This sounds familiar with the Higgs Boson. This concept has been coming from our ancient scriptures. And with the discovery of the Higgs Boson we are able to understand this mystic Hym of Creation written thousands of years back from now!

The Higgs particle closes one chapter, but opens another. This is because the Standard Model is known to be incomplete. The properties of the new particle should give great insights into new physics beyond the Standard Model. For example, evidence of more than one type of Higgs particle would be a strong hint of the existence of a whole new family of particles known as supersymmetric particles. The detection of these particles is an important test for unified field theories, theories that suggest that the four fundamental forces of nature once comprised a single force in the infant universe. Indeed, the next round of experiments should give us many important insights into the very early universe because the high-energy conditions resemble those that existed when our universe was very young. The scientists will never conclude this as the ultimate truth but leave a room for further research as this vedic hym which says the same, somebody will know or discover it or never know it!

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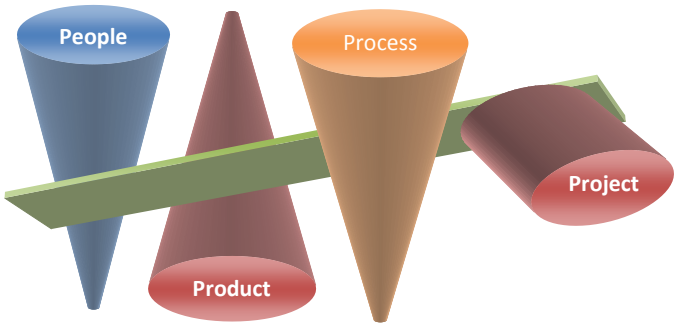
Project Management

A project is an endeavor to accomplish a definite objective through a distinctive set of interrelated odd jobs and the efficient utilization of resources with respect to time, quality, quantity, cost and risk. When we say that we need something in a stipulated time than we plan how to accomplish or achieve the target. Our approach towards a problem defines our capacity to solve matters in any field. Typical examples of Project management include; structuring of computer database and designing, conducting a symposium, designing a brochure, holding a college reunion party, conducting a forest trip, conducting a scientific study and many more.

It is widely recognized that Project management starts from early stages of the production demand to qualitative delivery in a time bound manner.

The first stage includes the identification of a problem or need; it requires proposals with a proposed solution. The middle stage requires planning various processes that is required to sort out the problem and the final stage includes the timely deliverance of the solution.



It is the people, either project manager or project team, not the procedures and techniques, which are critical to accomplish the essential objectives of a project. Time, quality, quantity, cost and risk are important pillars of success for any project. A disciplined and strategic approach requires more understanding of one's need. The process involves knowledge of particular task. A wide range of observatory is required for smooth progress for project completion.

The technological advancement and procedures are only tools for a project manager or a project team to accomplish a project. Time plays a vital role from identification of problem to delivery of the quality product. Here quality signifies a distinctive characteristic possessed by someone or something or the degree of excellence of something. Quantity refers to a specified or indefinite number of products to be delivered, while cost of any product require the payment of a specified sum of money before it can be acquired or the total money invested during the product generation. However, risk management accounts the involvement of resources to monitor and control the impact of unfortunate events or to maximize the realization of opportunities.

In short, project management refers to the skills of people who endeavor to accomplish a task in a perfect manner and within time.

Raushan Kumar Raman, (ramankt@gmail.com), GUIDE

Energy conservation: a practice to sustainable development

Energy is the most important part of any developmental process; it has a significant role in agriculture, infrastructure, transportation, industry, communication and every aspect of day-to-day life. As a result, it has become an integral part of our life.

The degree of establishment of industry and urbanisation increases the energy demand, whereas the energy supply is limited. With a rising demand-supply gap, India tries to accelerate its developmental processes and cope with increasing energy demands. That day is not far when all our non-renewable resources will be exhausted; forcing us to rely just on renewable sources and energy will be treated as most expensive element. Thus, energy conservation and energy efficiency measures play an important role. Some simple activities can save energy and money: don't ignore these simple but valuable information.

Unplug your chargers when you're not charging. Every house is full of little plastic power supplies to charge cell phones, digital cameras, cordless tools and other personal gadgets. Keep them unplugged until you need them.

Enable the 'sleep mode' feature on your computer, allowing it to use less power during periods of inactivity. Configure your computer to 'hibernate' automatically after 30 minutes or so of inactivity.

Use natural light and open the windows when possible.

Appliances with relatively high operating efficiencies should be used for proper utilization of power and to avoid power losses.

Don't forget to switch off when you leave a room or office.

Apart from these, significant energy conservation can be done by reducing the water consumption, arresting the leakages in water supply and leakages in taps.

Sudhanshu Charan Mohapatra, scm.101mohapatra@gmail.com, GUIDE

Hi! Are We Connected?

On Mark Zuckerberg's (yes, I am talking about the SOCIAL guy) 30th birthday, I realized he made the world "Oh, so sociable". Thanks to him; the new era of Facebook dawned and people from all around the world came out pouring the chronicles of their life on the great "Wall of Facebook".

Voila! We now live in a world where posting pictures on the Facebook wall is much cooler than torturing guests with old Photograph albums. And wait a minute, even the guests are not interested in looking at those albums; they have already commented on your latest pics and liked your updates on Facebook.

Congratulations! You are socially connected.

When I jumped into this bandwagon, I spent one whole day updating my profile and scratching my head thinking about what should be my first status update. The first status update on Facebook is like a red carpet welcome for an awards ceremony. Your first experience of writing on "The Wall". And whoa! What did I finally come up with…a status about the movie - *Kites.* The movie was a disaster and so was my first red carpet status update. The next step was to send "friends request" to people you know and people you don't know. I was surprised when some of my friends did remember me, even though I hadn't been in touch with them for years and while some preferred to be ignorant as if they never knew a 50 kg flesh and bone like me existed.

And then started the series of "Oh baby, you look gorgeous", "Awww honey muuuaaaahhhh", "I soooo miss you" (Oh yeah, when was the last time you called me). Sometimes it's pure overflow of emotions and at times it's just being diplomatically correct at the right place at the right time.

Gone are the times when we met friends and said "Long time yaar, what's happening in your life". Now sitting on my couch in Minneapolis, I know what my bestie in Ahmedabad is having for dinner tonight, another friend gorging on street food on the busy streets of chowpatty, and that geek IT friend having nightmares at new job. Peek-A-Boo I know what's cooking in your life, what makes you smile and what makes you fret. I don't really need an Ekta Kapoor serial to entertain me now. Facebook updates on Roz-mara-ki life and the latest MODIfied buzz is enough to keep me entertained.

Everyone wants to be connected to every other person. The idea was and is to be "Socially connected". No wonder we are connected socially 24*7, but emotionally, probably, a little disconnected.

I do appreciate the concept of "my life is an open book" but sometimes I wonder if cyber world is the platform for churning out every single moment of your life with random people with whom you hardly strike a chord. I often wonder – "Do I really know the people who are my acclaimed Facebook friends" or "do they know the real me". Frankly speaking nobody knows the real person nor do they have time to understand. Because we are so much in praise for the virtual Avatar that we hardly can sense the juggling life behind the sparkling smile. And at times, there are these cry-babies whose 24*7 sad status updates with half-finished lines, lots of question marks and dozens of sad smileys will make you wonder if the spirit of tragedy queen Meena Kumari and Dilip Kumar is still alive (pun intended).

Though instant chatting is cool for many, I miss the essence of the affection that was poured on paper with a pen. Yes I used to write letters and I still do. I know I sound like an old-fashioned ass but life was much more sorted, filled with the innocence of affection and friendship, back then. Birthdays was not about taking pictures and posting timely updates on Facebook but hanging out with friends and hogging on the Indian version of Chinese fried rice at the busy street and having chai at the nukkad. Chit-chatting on the road side after the tuitions where boys would happily gaze at the old-fashioned aunty ki fashionable jeans-clad daughters. And girls "Ohhh nooooo she is wearing the same t-shirt as mine". There was no "Oh Baby", "Muuahhhhhhh and honeysssssss"!!!!!! Just plain nicknames (short forms of the original name) and the ever-green "Bol Baka" and "Abey Yar". Reading scrapbooks and playing cupids; pairing up classmates are some golden fun moments each one of us has been through.

To keep in pace with this socially active world people changed their ways of life to be socially acceptable missing out the emotional quotient. In the race of being an active social member we end up being a completely different person. Think for a second you are not entirely the person your Facebook profile and updates boost off. Yes you are on Facebook, the way the world wants to see you or are you your real self? Are you connected to your own self? We are so much hooked to the virtual world that we hardly live the moments of the real world. Happiness is living the moment with a bunch of crazy people and cherishing the Lifebook rather than being hooked up with virtual world.

It's time to break up from the virtual avatar and hook up with your actual self and get connected EMOTIONALLY! Write a letter, send a card, call up a friend, gatecrash into your friend's apartment for a late night chat, enjoy the *dhaba da paratha* and live

the moment, cherish the moment rather than updating it.

So are you getting connected to yourself and someone somewhere emotionally with a high five wass'up or pinging them on? ☺

Vidisha Kanan, (XXXXXXX)
KSKV Kachchh University Alumni

My experience at Gujarat Institute of Desert Ecology (GUIDE), Bhuj

My search for a topic for *guide.net* newsletter was over the moment I thought of writing about my experience at GUIDE. Though I am not very good at expressing my thoughts, I would like to share my experience of this breathtaking journey of 21 months at GUIDE. While I was writing this article, I felt a bit different than usual, I felt little odd as one more day was over and day of leaving is approaching fast, but change is the zing of life. At times, we need to change things in our lives to move forward.

The initial three months after joining GUIDE were the longest months in my life. Similar to others, I too was looking for aspirations and dreams at the work place. Few things works and few don't. "We don't remember days, we cherish moments" and I would like to share few beautiful moments.....

During the first few weeks I was busy learning and adopting myself to the new environment and colleagues. Laboratory set up was the first challenge for me and I managed it somehow with constant guidance of my Project Principal Investigator (PI), Dr. K. Karthikeyan. The next challenge was to learn about soil and analytical protocols. I being a microbiology student, it was little difficult. The biggest challenge was to learn all these procedures within a short span. One person who thought it was possible was my Project PI, who made me confident when I was feeling low, corrected my mistakes without losing patience, and taught me in a way that made the work more interesting. I finished each task in time through his and my colleagues support. I will never forget the kind of support GUIDE has rendered me during my ill health. Many thanks for that!

During my tenure at GUIDE, I had an opportunity to get trained in olecular Biology Techniques at National Environmental Engineering Research Institute (NEERI), Nagpur, with the support of Scientists of Environmental Genomics Division (especially Dr. Asifa Qureshi). It was an excellent learning experience at NEERI. I thoroughly enjoyed my stay there and learnt many techniques in a well organized work culture.

Another blissful moment was on 26th February 2014, when I presented my research work on 'Silver nanoparticles for dye decolorizing ability' in a National Symposium held at Central University of Gujarat. It fetched me a best oral presentation award, which was possible due to the constant support and encouragement by my colleagues. Every time when I felt it was impossible, my PI galvanized me with his encouraging words. It was a pleasant surprise when I received appreciation from GUIDE authorities including the Vice-Chairman, Sh. Vijayalaxmi Sheth.

I would like to thank each person with whom I had been in contact, either knowingly or unknowingly you all have played an important role in my career. At GUIDE, I enjoyed very exciting phase of life with a great learning experience. Time spent at GUIDE will be the most memorable one in my life. I really gained important personal and professional skills from my guide who also helped me in writing this article. At GUIDE, I experienced immense happiness when I saw people from different regional, cultural and linguistic backgrounds stay united. I wish GUIDE and its staff very happy moments in their lives. I once again thank you all for the support and patience.

I really feel lucky that I have something that makes saying good bye so difficult.

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Alumni GUIDE

In-House Facilities/ Programmes/ Accreditations

Digital herbarium - a reference centre for various disciplines of life science

Biodiversity conservation is the most emerging issue in the debate over sustainability of natural resources. Plants play a crucial role as they are the primary producers in any ecosystem. Thus, comprehensive taxonomical information on the plants while addressing the issue of biodiversity conservation is required. There are two major constraints in identification of plants: phenology and their perennial. It was also important to note that some plant species have very short life span. These factors also have strong relationships with seasonality, which amplifies unique characters for identification during certain period and season. Therefore, collections of plant specimens during various seasons that exhibit life cycle characteristics have become the key in preparing a herbarium.

In Gujarat, Maharaja Sayajirao University of Baroda, Vadodara and Sardar Patel University, Vallabh Vidyanagar, have good collection of angiospermic

floral specimens. They mainly focus on the flora of high rainfall areas of the state. Kachchh being a dryland desert bio-geographic zone, the plant species diversity is unique and well adapted to the harsh environmental conditions. While the district supports more than 987 angiosperms, there is no herbarium available on the flora of dryland areas of the state.

The herbarium helps students and researchers in species identi-fication and plays a vital role in interdiscipli-nary subjects. It also forms foundation of nomenclature, the basis for identification; functions as a repository for reference materials as well as for evolutionary and genomic studies. Molecular and morphological characters that allow us to reconstruct the history of life can also be obtained from herbarium specimens. Beyond its scientific importance, herbarium offers information about the diversity, agriculture, medicinal value, bio-security, forensics, control of invasive species, conservation biology, natural resources and land management. Herbarium is a reliable and verifiable record of our flora that also provides information on our natural heritage.

Since last decade, digital herbarium has gained momentum and popularity among plant taxonomists as well as other stakeholders. The main objectives of establishing a digital herbarium are to enhance specimen longevity and make it accessible to a wider range of audience. It may also be used to increase public awareness by making it available online. With the above view, preparation of herbarium, especially digital would be an ideal solution in the field of plant taxonomy.

Gujarat Institute of Desert Ecology (GUIDE), premier research and academic institute located in the Kachchh district headquarter is functioning over 19 years in the field of ecology and taxonomy. The institute has taken initiatives to develop a digital herbarium of Gujarat state plants. Till date around 2500 plants species are reported from Gujarat, of which around 900 are found in Kachchh district. Currently, floral specimens of Kachchh, Saurashtra and North Gujarat region are being collected and the herbarium is being prepared. Till date, the plant taxonomy team at GUIDE has collected around 1200 plant specimens from Kachchh district. The papered herbarium will be authenticated by the Botanical Survey of India, Govt. of India. Subsequently, the specimens will be digitized for herbarium preparation.

The development of digital herbarium is financially assisted by the Gujarat Biodiversity Board, Gandhinagar. Dr. Rohit Patel (Principal Investigator), Mr. Bhagirath Pardava, Mr. Piyush Vaghasiya and Dr. Jayesh Bhatt are actively involved in this project that would serve as a reference material for students and researchers, after its completion. Sh. R. V. Asari, Director and Dr. V. Vijay Kumar, Additional Director at GUIDE are supervising the project activities.

GUIDE has received Gujarat Pollution Control Board (GPCB) approval as Schedule-I Auditor

Training Programmes/ Nature Education Activities

- A training programme for men on Mangrove Plantation was conducted on 17th July 2014 at Modhwa village, Gujarat, as a part of the project activities under the mangrove restoration project. Around 25 local village people along with the village CBO members and other repre-sentative participated in the program. Importance of mangrove, site selection, nursery techniques, seed collection, different methods for plantation, post plantation care, etc. were covered through audio-visual presentation

- Another training programme for women on Mangrove Plantation was conducted on 24 July 2014 at Modhwa village, Gujarat. Around 24 women and 10 children participated in the program. Site selection, seed collection, nursery techniques, post plantation care, protection, importance of mangroves, mangrove distribution, need for mangrove plantation, etc. were explained through audio-visual presentation and film.

Awards and Honors

The Post-doctoral Fellowship to Women Candidates was instituted by UGC, New Delhi. This fellowship is awarded to the unemployed women candidates holding Ph.D. degree in their respective subject areas with an aim to accelerate the talented instincts of the women candidates to carry out the advanced studies and research in science, engineering and technology, humanities and social sciences. The fellowship supports innovative Science Communication efforts under the guidance of a Senior Science Communicator. The total duration of the fellowship is five years. Dr. G. Jayanthi is one of the recipients of the award for her project "Exploration of endophytic microorganisms for novel bioactive compounds from mangrove environment of Kachchh, Gujarat". Dr. Jayanthi has joined GUIDE and has implemented this said project through GUIDE for the duration 2014-2019.

Symposium/ Workshops/ Conferences

- Shechtman International Symposium was organized at Cancun, Mexico from 29th June 2014 to 04th July 2014 and hosted eleven different symposia. Shechtman International Symposium was named after Prof. Dan Shechtman (2011 Nobel Laureate in Chemistry) in appreciation of his work in the field of Quasi-crystals. In total, 24 papers were presented orally and 13 lectures were delivered in addition to simultaneous poster session. Dr. B. Anjan Kumar Prusty, Senior Scientist of GUIDE participated in the 1st International Symposium on Sustainable Mining Operations and also Chaired a Young Researcher Session. Dr. Prusty presented two papers entitled i) *Development paradigm and mining clusters in Western Kachchh, Gujarat, India: Need for sustainable mining and management of dry land ecosystems,* and ii) *The Kolar Gold Mines, India: present status and prospects for phytomining.* The research group of Massey University invited Dr. Prusty's team to visit their experimental sites through appropriate exchange programme that would supplement new initiatives in Kolar Gold Fields in India. Participation in the said symposium has opened up the avenues for joint venture research and development projects with Massey University in New Zealand, University of British Columbia in Canada, Federal University of Goiás in Brazil, and University of Mexico. The Department of Science and Technology (DST), New Delhi, sponsored the travel and related expenses.

B. Anjan Kumar Prusty, (anjaneia@gmail.com), GUIDE

- Dr. Rohitkumar Patel attended a conference on "Status of endemic and threatened angiosperms of Gujarat" organized by the Dept. of Botany M. S. University of Baroda, Baroda, Gujarat, during 14th – 15th 2014.

Appointments

Dr. Rachna Chandra has joined as Senior Scientist in Terrestrial Ecology Division in GUIDE. She holds a doctoral degree in Environmental Sciences for her work on nutrients and trace metals in soils on a spatio-temporal scale with specific emphasis on metal hyperaccumulators. Dr. Chandra earlier worked as DST-INSPIRE Faculty in Tamil Nadu Agricultural University (TNAU), Coimbatore. She works on metal speciation and bioavailability, environmental impact assessment, wetland pollution, mine restoration, ecology and biodiversity, agro-chemical pollution, etc. She has around 23 research articles to her credit in journals of repute, 17 abstracts in national and international conferences, 09 chapters in books, 01 monograph, and 09 technical reports. She serves as Editorial Board Member and reviewer for journals.

Events in GUIDE

- Dr. Debbie Bartlett and Dr. Sara Milliken from Greenwich University, UK, visited GUIDE during 27th July to 02nd August 2014 in connection with UGC-UKERI project discussions.

- The Board of Governors (BoG) and Annual General Body Meeting (AGM) were held on 13th September 2014 at GUIDE campus.

- A team of 35 members from IIED, Aurangabad, visited GUIDE campus during 22nd to 27th September 2014 in connection with watershed exposure.

Forthcoming Events in GUIDE

National Symposium on Dryland Birds, Strategy for Conservation and Management, 09th – 10th January 2015. Venue: Court Hall, K.S.K.V. Kachchh University, Bhuj, Kachchh-370001, Gujarat, India. For further details please refer to the symposium brochure attached or mail at gajeranikunj@gmail.com / akroymahato@gmail.com.

Upcoming Conferences in India and Abroad

1. MECOS2: The International Symposium, 02nd – 05th December 2014, Kochi, India, http://mbai.org.in/mecos2
2. ICMBE 2015 : XIII International Conference on Marine Biology and Ecology, Dubai, UAE, 30th - 31st January 2015, https://www.waset.org/conference/2015/01/dubai/ICMBE
3. 05th Global World Watchers Conference, 31st January – 02nd February 2015, Porbandar, Gujarat, India, https://www.gbwc.org/
4. ICEEWM 2015 : XIII International Conference on Environmental, Energy and Waste Management, 07th - 08th February 2015, New Delhi, https://www.waset.org/conference/2015/02/new-delhi/ICEEWM
5. 05th International conference on climate change and sustainable management of natural resources, 09th – 11th February, 2015, Gwalior, Madhya Pradesh, World Ocean Science Congress, 05th - 08th February 2015, Cochi, India, http://wosce.org/
6. ttp://event.itmuniversity.ac.in/Academic-Events/TIMS/
7. 03rd UNCCD Scientific Conference, 09th – 12th March 2015. Mexico, http://www.agropolis.fr/pdf/actu/2015-annonce-conference-scientifique-unccd.pdf
8. Australian Rangeland Society 18th Biennial Conference Alice Springs Northern Territory, 12th – 16th April 2015, Alice Springs Northern Territory, http://www.territorynrm.org.au/wp-content/uploads/2014/05/ARS-Prelim-Brochure-2015-Elelectronic-Final.pdf10th International Conference on Ecosystems and Sustainable Development, 03rd – 05th June, 2015, València, Spain, http://www.wessex.ac.uk/15-conferences/ecosud-2015.html
9. International Conference on Coastal Cities and their Sustainable Future, 07th – 09th July 2015, UK, http://www.wessex.ac.uk/15-conferences/coastal-cities-2015.html
10. 05th International Conference on Environmental Pollution and Remediation, 15th – 17th July 2015, http://icepr.org/index.html
11. (IOCSEA2015): 2nd International Ornithological Congress of Southeast Asia, Khon Kaeu, Thailand, 20th – 23rd July 2015, http://www.sc.kku.ac.th/iocsea2015/index.html#
12. ICE Coastal Management, 09th - 11th September 2015, Netherlands, http://www.ice-coastalmanagement.com
13. EMAPi 2015: 13th International Conference on Ecology and Management of Alien Plant Invasions, 20th – 24th Sep 2015, Hawai'i Island, USA, http://www.emapi2015.hawaii-conference.com/

Gujarat Institute of Desert Ecology
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***Errata*:**

- Read *guide.net* for Guide.net for all the previous issues of this e-newsletter.
- Read the volumes for the years 2012, 2013 and 2014 as Volume 1, Volume 2 and Volume 3, respectively. Likewise, read the issues for first quarter, second quarter, third quarter and fourth quarter of each year as Issue 1, Issue 2, Issue 3 and Issue 4, respectively.

Disclaimer: Views expressed in this e-newsletter are solely of the authors

REGISTRATION FEES

Researcher/ Student : ₹ 500/-

Faculty/ others : ₹ 1000/-

IMPORTANT DATES

Abstract submission: 30th November 2014

Registration Deadline: 30th November 2014

Registration for post-conference field trip : 15th December 2014

VENUE

Court Hall
K.S.K.V. Kachchh University,
Bhuj, Kachchh, Gujarat

CONTACT US

Dr. Nikunj B. Gajera - Organizing Secretary
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REGISTRATION FORM

All participants should register to the symposium by filling information in format given below.

Category:
Faculty [ ], Student [ ], Other [ ]
Name:_____ **M/F:**_____
Address:_____

Phone No.:_____
***Email:**_____
I intend to attend [ ] the symposium and present [ ] the paper.
Title of the Abstract:_____

Fees (₹): _____
Cash [ ] / DD [ ]: DD No and Date:
All payments should be made through Cash / DD drawn in favor of **Director, Gujarat Institute of Desert Ecology,** payable at AXIS Bank, Madhapar, Tal.- Bhuj. Dist. Kachchh, Gujarat.
Date:_____ Place: _____
Signature of the Participant:_____

**Email address is a must for all future correspondence*

NATIONAL SYMPOSIUM ON DRYLAND BIRDS

"Strategy for Conservation and Management"

9th – 10th January, 2015

Organized by

Gujarat Institute of Desert Ecology (GUIDE)
P. B. # 83, Mundra Road, Bhuj,
Kachchh - 370001, Gujarat, India.

ABOUT US

Gujarat Institute of Desert Ecology (GUIDE) was established in May 1995 and functions as a pioneering dryland research institute to address the needs of community through its research agenda so as to achieve a synergy of science and community in the field of ecology and environment.

ABOUT SYMPOSIUM

The aim of this symposium is to bring researchers, professionals and amateur bird watchers together to discuss and exchange the experiences in the field of Ornithology in respect to drylands and delineate future strategies for the conservation of birds in dryland habitats with a special emphasis on Kachchh. This will be achieved through review of case studies, sharing of personal experiences, brain storming discussions and interactions that would enable to assess the lacunae in research, stakeholder contributions and policy decisions. Based on the above, the symposium will bring out a set of recommendations for better actions required for conservation of avifauna and its dryland habitats.

THEMES OF THE SYMPOSIUM

- Status of Dryland birds
- Major Issues and threats to birds in dryland
- Conservation and Management of dryland birds

PROGRAMME

Day 1:

- Registration
- Inaugural Session

Technical Sessions

TS-I: Dryland Scenario – Status and Distribution

- Historical background and current status of birds in dryland
- Ecology, diversity and distribution of birds in dryland habitats
- Status of migratory birds
- Threatened species of birds

TS-II: Ecosystem services of birds

- Role of birds in Different Ecosystems

TS-III: Issues and Threats to birds

- Natural and Anthropogenic factors
- Invasive species
- Ecotourism
- Lack of public awareness

TS-IV: Conservation and Management of birds

- Dryland habitats management
- Threatened species conservation
- Role of government and non-government organizations

TS- V: Speed Talk

Day 2:

Field Visit (optional)

1. Banni and Kala Dungar (Black Hill)
2. Chharidhandh and Dhinodhar Hill

ABSTRACT SUBMISSION

Extended abstracts are invited for oral presentation. The abstract should be of 1500 words, typed in MS Word and Times New Roman font (12). In the abstract, the presenter's name, registration category and email address should clearly be mentioned. The abstract should be arranged as Background, Objectives / Research Questions, Study Area, Methods & Data Analysis, Results, Conclusions, References with one table and one figure which should be emailed to the organizing secretaries at <gajeranikunj@gmail.com> and <akroymahato@gmail.com> latest by 30th November 2014.

The abstract must be accompanied by filled in registration form and fees. Information regarding acceptance of abstract and guidelines for the oral/Speed talk category presentation shall be conveyed via email by 5th December, 2014.