BOTANICAL TRENDS

An Official Newsletter
of
The Department of Botany and Research Centre,
Scott Christian College (Autonomous)
Nagercoil - 629 003, Tamil Nadu

December | Issue : 34 | 2009

Perspectives of Ethno-medicine

Most of the world's population depends on the indigenous knowledge to meet their medicinal needs. Studies on Ethno-medicine are helpful in assessing the health and hygiene of the local communities, the various diseases that generally affect them, as well as prescribing specific drugs for specific diseases. An attempt to enhance the present day knowledge of ethno-medicine has been attempted in this article.

Oxalis corniculata L.

Family	:	Oxalidaceae
Eng	:	Yellow sorrel
Hin	:	Amrul sak
Tam	:	Puliyarai
Mal	:	Puliyarel

Indian sorrel is a small, hairy, annual herb. It has numerous branches which shoot out from the roots and creep to a length of 12 to 30 cm. The stem of the plant is very delicate and hairy. It has pale green compound leaves, with delicate, very thin and smooth leaflets. It has yellow flowers and cylindrical fruits containing many tiny seeds.

The herb is an indigenous one. The flowers are sour due to a high content of oxalic acid and potassium oxalate. The herb is rich in vitamin B_1, iron, calcium, nicotinic acid, panthothenic acid, pyridoxine, protein, etc.

The leaves are useful in relieving symptoms of fever and scurvy. The leaves are also beneficial in treating mild cases of dysentery and jaundice. The juice of the whole plant mixed with onion is applied to remove warts and other skin disorders. The juice of the leaves is mixed with an equal quantity of castor oil and heated to remove the watery content. Massaging the scalp with this oil before going to bed, will induce good sleep and also provide coolness to the eyes.

As the Indian sorrel contains high concentration of oxalic acid, its use should be avoided by persons suffering from gout, rheumatism and calculi or stone in the urinary tract.

Solanum xanthocarpum Schrad. & Wendl.

Family	:	Solanaceae
Eng	:	Yellow-berried nightshade
Hin	:	Remgani
Tam	:	Kantankattiri
Mal	:	Kantakarichunta

Kantankattiri, also known as Indian solanum, is a prickly, diffuse bright green, perennial, undershrub. The leaves are ovate and the flowers are either blue or bluish purple in extra axillary cymes. Fruits are drooping berries, glabrous, globular in shape, yellow or volute, surrounded by a persistent calyx. Seeds are many, small, reniform, smooth and yellowish brown in colour.

Kantankattiri is an indigenous plant. It occurs throughout India and commonly found in waste lands, roadsides and in open scrublands.

The fruit of the plant constitutes the drug. It yields carpesterol, glucoside-alkaloids and solanocarpine. It also yields glucoside-alkaloids, solamine-s on hydrolysis.

The root forms one of the important medicinal ingredients used by the Ayurveda physicians, who use it to treat several common ailments. The drug is bitter in taste and a mild purgative. Experiments have shown that the fruits and shoots of the plant posses antibacterial properties. The herb can be used to treat stomach disorders, respiratory disorders, dropsy and diseases connected with gum. The drug from the plant is also useful in treating several other diseases like chest pain, fever, muscular pains, enlargement of liver and spleen, and stone in urinary bladder. The herb can be used in the form of confection, decoction or juice. The decoction is taken

in doses of 15ml to 60ml. The juice is taken in doses ranging from 2ml to 8ml. Tender leaves and fruits are cooked and eaten as a vegetable.

Madhuca indica J.F. Gmel.

Family : Sapotaceae
Eng : Butter tree
Hin : Mahuva
Tam : Illuppai
Mal : Eluppa

Madhuca, the butter tree, is a large deciduous tree with a dense, spreading crown with dark grayish green leaves, clustered near the ends of branches. The flowers are fleshy and pale yellow, in dense clusters near the ends of branches. Fruits are ovoid berries, yellow when ripe with brown and shiny seeds.

The tree is an indigenous one and is common in sub-mountainous regions of the Himalayas a chief constituent of the forests in some places.

The bark, leaves, flowers and seeds constitute the drug. The genus name which has been made the trade name, madhuca, is based on the Sanskrit name of the tree.

Madhuca is useful in arresting secretions or bleeding, because of its tannin content. The flowers of the tree are effective in treating bronchitis and cough which should be given in doses of 30 gm with 250 ml of milk. The decoction of the bark can be given internally for rheumatic diseases and diabetes mellitus with beneficial results. A lotion made by mixing 4 ml of the liquid extract of the bark with 300 ml of water makes an excellent gargle for bleeding and spongy gums and chronic tonsillitis. The leaves of the tree are effective in the treatment of eczema and skin disorders.

Melia azadirachta L.

Family : Meliaceae
Eng : Margosa tree, Neem tree
Hin : Nimba
Tam : Vepa
Mal : Vepa

Margosa is a very common tree in India. It is a large deciduous tree. The tree has small, white flowers in auxillary panicles and pale green to yellow fruits with a seed in each.

The margosa tree has played a key role in Ayurvedic medicine and agriculture since time immemorial. It is indigenous and occurs naturally in the Peninsula, but is cultivated all over India. It is also common in Indonesia, Sri Lanka, Pakistan, Japan and tropical regions of Australia and Africa.

The seeds contain substantial amount of essential oil known as margosa or neem oil. The bitter constituents separated from this oil are nimbin, nimbinin and nimbidin. The main active constituent of these is nimbidin which contains sulphur.

Neem tree is generally considered to be an air purifier since all parts of the tree possess medicinal properties. The leaves, applied externally, are very useful in treating common skin diseases. An ointment prepared from neem leaves is also very effective in healing ulcers and wounds. Cleaning the teeth regularly with a neem twig prevents gum disorders.

It firms up loose teeth, relieves toothache and bad odour and protects the mouth from various infections. Neem is a powerful insecticide that kills soil nematodes and other plant parasites, and is also a mosquito repellant. Neem juice is an important ingredient in tooth pastes and contraceptives.

Myristica fragrans Houtt.

Family : Myristicaceae
Eng : Nutmeg tree
Hin : Japatri
Tam : Jadipattri
Mal : Jadikai

Nutmeg is a lofty evergreen tree with slender branches and coriaceous dark green leaves. It is a dioecious species with male flowers in racemes and pistillate flowers in small often solitary, axillary cymes. Fruit with a simple seed is almost completely covered by a scarlet, moderately fleshy arillode which is dried and used as a spice.

Nutmeg is grown in Indonesia, Malaysia, Sri Lanka and the West Indies. Nutmeg contains an essential oil and saponin. The dry leaves of the tree yield an essential oil which contains myristicin.

Nutmeg has been used in the preparation of various medicines since ancient times. Even today it is used in several important and widely used pharmaceutical preparations. About

5 to 15 gm of nutmeg powder, mixed with a table spoon of fresh goose-berry juice taken thrice daily, helps to relieve indigestion, hiccups, morning sickness, insomnia and depression. Nutmeg is used in the treatment of eczema. Nutmeg should be taken in small doses since even a teaspoon of nutmeg can produce toxic symptoms such as burning in the stomach, nausea, vomiting, restlessness and giddiness with hallucinations.

Allium cepa L.

Family : Liliaceae
Eng : Onion
Tam : Venkayam
Mal : Cuvannulli

The onion is a biennial herb, usually grown as an annual with aromatic fleshy underground bulb. Leaves are long, linear and hollow arising from a very reduced stem. Flowers are white in globular umbels.

Onion is believed to have originated in Central Asia. It has been used as a herbal remedy from time immemorial. The physicians of ancient Egypt prescribed onions in treating various diseases. It has a high food value, moderate protein content and rich in calcium and riboflavin. Onions contain an essential oil and organic sulphides. The odour in onion is due to organic sulphur compounds and is produced only when the tissues are cut or injured by enzyme action on a water-soluble amino acid. Heat or freeze drying prevents the enzyme action. Cooking produces a different odour, flavour and pungency. Onions have great therapeutic value. They are stimulants and a mild counter-irritant and have diuretic properties also. It has been used as a herbal remedy for centuries in treating colds, coughs, bronchitis and influenza. It is one of the safest preventive medicines against common cold during winter. Onions are noted for their easily assimilable iron content. They are, therefore, beneficial in treating anemia. It assists the functioning of the heart by correcting thrombosis besides reducing blood cholesterol.

Rauwolfia serpentina (L.) Benth. ex Kurz.

Family : Apocynaceae
Eng : Serpentine
Hin : Sarpagandha
Tam : Sarpaganthi
Mal : Sarpaganthi

Rauwolfia is an erect herb with a smooth stem. Rootstock is thick and woody with bisexual flowers in terminal or axillary umbellate cymes.

Rauwolfia is an indigenous species. The roots contain several alkaloids, the more important being the two chemical classes known as the ajmaline and the serpentine group.

The chief use of the drug is as a sedative and hypnotic, and for reducing blood pressure. It is more suitable for cases of mild anxiety or patients of chronic mental illness. The drug has a tranquillizing effect. Root is also considered as anthelmintic and an antidote to snake venom.

Achyranthes aspera L.

Family : Amarantaceae
Eng : Prickly chaff flower
Hin : Chirchira
Tam : Naaiuruvi, Chirukadaladi
Mal : Kadaladi

Rough chaff is an erect and stiff annual herb. It has numerous branches and covered with short, stiff and slightly rough hair. The flowers are small and face downwards in racemes.

Rough chaff is used to treat asthma. The method prescribed in Ayurveda is as follows: The leaves of the plant should be plucked in pitch darkness with no light on the plant at the time of plucking. This is because the presence of light destroys the curative effect of the leaves. After plucking, 25 gm of the leaves are ground with 2 gm of black pepper. Six pills are made out of the paste which are dried in a dark room the same night. The asthma patient has to take one pill with water on the 9th night of the second half of the lunar month and continue to follow the procedure for 6 days up to new moon day.

The ash of the herb, mixed with honey, is used for coughs. It is specific for treating spleen enlargement. The powder of the plant is used in 25 gm doses daily with a little beaten curd. This brings good results in 3 or 4 weeks.

Dr. R. Girijakumari,
Prof. & Head,
Dept. of Botany,
Sree Ayyappa College for Women,
Chunkankadai.

Some common medicinal plants of families Rutaceae and Meliaceae

Family : Rutaceae

Name : **Aegle marmelos** (L.) Corrêa
Tamil name : Kooovalam, vilvam
English name : Holy fruit tree, Bael tree
Uses : Fruit and Bark are used to treat diarrrhoea, dysentery, constipation. Leaf is used to treat diabetes, inflammations, deafness and asthmatic complaints

Name : **Atalantia monophylla** DC.
Tamil name : Kattunaranthi
English name : Wild bitter lime
Uses : Fruit is used to treat paralysis and rheumatism.

Name : **Citrus aurantifolia** (Christm.) Swingle
Tamil name : Yelumichai
English name : Mexican lime
Uses : Leaf, stem, root and fruit are used to treat fever, jaundice, abdominal ulcer, gonorrhoea, measles, cough, toothache, worms, scurvy, hypertension, as a carminative and flavouring agent.

Name : **Citrus aurantium** L.
Tamil name : Naranthi
English name : Bitter orange, sour orange
Uses : Juice, root and oil are used to treat cough, sore throat, stomachache, worms, malaria, typhoid fever and as a carminative.

Name : **Citrus acida** Pers.
Tamil name : Elulmichai, Chernarakam
English name : Acid lime, Bera gamut orange
Uses : Fruit juice is used to treat rheumatism, influenza, cough, bronchitis, to calm and tone the nervous system, relieve tension and insomnia.

Name : **Citrus limon** (L.) Burm.f.
Tamil name : Periya elumichai
English name : Lemon
Uses : Fruit, leaf, bark and root are used as an antipyretic, to treat cold, stomachache, worms, vomitting, cough and bronchitis.

Name : **Citrus medica** L.
Tamil name : Kidarangai
English name : Citron
Uses : Fruit is used to treat hyperdipsia, asthma, liver disorders and flatulence.

Name : **Citrus paradisii** Macfad.
Tamil name : Sathukudi
English name : Sweet lime
Uses : Skin, seed and fruit are used to treat diabetes, malaria and as an astringent, emollient and demulcent.

Name : **Citrus reticulata** Blanco
Tamil name : Kamala orange
English name : Orange
Uses : Fruit is used to treat vomiting, worms, diarrhoea, dyspepsia, liver disorders and anorexia, allergic reactions and indigestion.

Name : **Citrus sinensis** (L.) Osbeck
Tamil name : Sathukudi
English name : Sweet orange
Uses : Twig, stem, bark and fruit are used to treat dysentery, fever, headache, worms, toothache and as an antiscorbutic.

Name : **Clausena anisata** (Willd.) Hook.f. ex Benth.
Tamil name : None
English name : Clausena
Uses : Leaf, root and bark are used to treat cough, cold, abdominal pain, asthma, bronchitis, dysentery, arthritis, lumbago, malaria, worms, toothache and as a laxative.

Name : **Feronia limonia** (L.) Swingle
Tamil name : Vilaampazham
English name : Elephant apple
Uses : Ripe fruit is used as a cardiac tonic.

Name : **Limonia acidissima** L.
Tamil name : Vilankai
English name : Elephant apple
Uses : Fruit is used to treat diarrhea and dysentery.

Name : **Murraya koenigii** (L.) Spreng.
Tamil name : Karivepilai
English name : Curry leaf tree
Uses : Leaf is used for culinary purposes. It is also used to treat diabetes, vomitting, dysentery, stomach problems and blood pressure. Bark and root are used to treat dysentery, fever, diarrhoea, herpes pain and as a stimulant.

Name : **Murraya paniculata** (L.) Jack
Tamil name : Kaattukarivepilai
English name : China pox
Uses : Leaf is used to treat any kind of fever.

Name : **Naringi crenulata** Nicolson
Tamil name : Kattuelumichai
English name : Wild lime
Uses : Root extract is used to treat intestinal pain.

Name : **Ruta angustifolia** Pers.
Tamil name : Arubatham pachilai
English name : Garden rue
Uses : Leaf is used to treat rheumatic pains, hysteria and worms.

Name : **Toddalia asiatica** (L.) Lam.
Tamil name : Milakaranai, kaatumilagu
English name : Forest pepper
Uses : Root is ground with lemon juice and applied to get relief from itching and skin allergies. Leaf extract is used to treat headache and stomachache.

Name : **Zanthoxylum alatum** Roxb.
Tamil name : Tumpunaluu
English name : Toothache tree, Winged Prickly Ash
Uses : Bark and fruit are used to treat diarrhoea, worms, cough, asthma, paralysis, diabetes and wounds.

Name : **Ruta graveolens L.**
Tamil name : Aruvadam pachilai
English name : Rue, common rue, herb of Grace
Uses : In European folk medicine, rue is said to relieve gas and colic pains, improve appetite and digestion and promote the onset of menstruation and uterine contractions. For this reason the refined oil of rue has been cited by the Roman historian Pliny the Elder and the gynecologist Soranus, as a potent abortifacient (inducing abortion). Rue contains pilocarpine which is used in horses to induce abortion and is a traditional abortifacient among Hispanic people in New Mexico.

Name : **Chloroxylon swietenia** DC.
Tamil name : Aaimaram or porasu, Mammarai, Porinja maram
English name : Ceylon Satinwood, East Indian Satinwood, Buruta
Uses : Ceylon Satinwood is used in folk medicine in Chhattisgarh. In case of a problematic wound, the dried leaves of Ceylon Satinwood are applied on wound in order to increase healing process.

Family : Meliaceae

Name : **Amoora rohituka** (Roxb.) Wight & Arn.
Tamil name : Malampuluvan, Semmaram
English name : Rohituka tree
Uses : Bark is used to treat spleen, liver disorders and abdominal complaints. Seed-oil is used in rheumatism.

Name : **Carapa granatum** (J. Koenig) Alston
Tamil name : Kandalangay
English name : None
Uses : Bark is used to treat dysentery and other abdominal problems, ringworms, boils, rheumatic pains, as a purgative and antipyretic.

Name : **Melia azadirachta** L.
Tamil name : Vembu
English name : Neem, Margosa
Uses : Bark is used to treat leprosy, skin diseases and intermittent fever. Leaf and flower are used to remove burning sensation, to treat tuberculosis and worms. Seed-oil is used to treat tumours, constipation, diabetes, ring worm and scabies.

Name : **Melia azedarach** L.
Tamil name : Kaattu vembu
English name : Chinaberry tree, Persian lilac, Pride of India, Bead tree, Lilac tree
Uses : Bark and fruit extract is used to kill parasitic roundworms. In Manipur, leaves and flowers are used as poultice in nervous headache. Leaves, bark and fruit are insect repellant. Seed-oil is used in rheumatism. Wood-extract is used to treat asthma.

Name : **Naregamia alata** Wight & Arn.
Tamil name : Nilavilathi
English name : Goanese Ipecac
Uses : Plant is used to treat cough and asthma.

Name : **Cipadessa baccifera** (Roth) Miq.
Tamil name : Puilipaan cheddi
English name : Ranabili
Uses : Juice of the root is given in cases of indigestion. It is also used to treat cough and cold. A paste of bark is pressed against the teeth for about 15 minutes to relieve bleeding and swelling of gums.

Name : **Soymida febrifuga** A. Juss.
Tamil name : Shemmaram
English name : Indian red wood
Uses : Bark is used to treat intermittent fever, diarrhoea, dysentery and enemata.

Name : **Toona ciliata** M. Roem
Tamil name : Santhanavembu
English name : Red cedar
Uses : Bark is used to treat chronic dysentery of infants and ulcers.

Name : **Khaya ivorensis** A. Chev.
Tamil name : Maruthu
English name : African mahogany
Uses : Stem, root and bark are used to treat Malaria, Jaundice, as an anthelmintic, emetic and also to treat skin diseases, anaemia and arthritis.

J. Lensha Mabel,
Ph.D. Scholar

DIARY OF EVENTS

The 2nd meeting of the PG Association was held on Friday, the 11th September, 2009 at 1.30 pm in the PG laboratory. Mr. Feroz Khan, Senior Research Fellow, DAE-BRNS fellowship, Department of Zoology, Scott Christian College spoke on "Research and opportunities".

The 3rd meeting of the PG Association was held on Thursday, the 1st October, 2009 at 1.30 pm in the PG laboratory. Miss. Leena, Lecturer, Department of Zoology, Scott Christian College spoke on "Study habits".

Editor : **A.E. Dulip Daniels**

THASOR PRESS, NAGERCOIL. FOR PRIVATE CIRCULATION ONLY

BOTANICAL TRENDS

An Official Newsletter
of
The Department of Botany and Research Centre,
Scott Christian College (Autonomous)
Nagercoil - 629 003, Tamil Nadu

March | Issue : 35 | 2010

Tour report

A total of ninety five students comprising III B.Sc., I M.Sc., II M.Sc. and M.Phil. headed by Dr. Regini Balasingh and a team of staff members viz., Drs. C. Kingstone, J. Edwin James, R. Asir Selin Kumar, Sobitha Bai, B. Christudhas Williams and Mr. J. Lohi Dhas went on a study tour from 1.2.2010 to 5.2.2010.

We started our journey from the college premises exactly at 4.30 pm in two luxury coaches. By 6.15 pm we reached Tirunelveli and had tea. At 8.45 pm we reached Sathur where we had supper and the journey continued. At 1.45 am we reached Salem and refreshed ourselves with a cup of hot tea. We reached Bangalore at 6.45 am and accommodated ourselves in Indian Residency, a well maintained hotel on the 2nd. We quickly got ready, had our breakfast and went straight to Lal Bagh. We went around the botanical garden when Dr. Kingstone named a number of plants, both indigenous and exotic which enhanced our knowledge of taxonomy. We also visited the rose garden, glass house, cacti house, Japanese garden, Horticulture division, seed testing laboratory etc. It was indeed a wonderful experience. We had our lunch there and stayed on till 3.30 pm. Later, we moved on to the Visvesvaraya Industrial and Technological Museum of Science where we were able to see the Engine Hall, Electrotechnique Hall, Space science, Fun science, Science for children etc. By 5.00 pm we moved out to do a little shopping and reached our hotel by 7.30 pm to have supper.

On 3rd morning we started our journey by 9.00 am to Mysore. We reached Mysore at 12.00 noon. After lunch we spent about two hours in the Mysore Zoological Park where we watched animals, birds and reptiles. At 3.00 pm we reached Tippu Sultan's palace and spent about an hour there. We did a quick shopping and went to Brindavan Gardens and it was almost 6.00 pm by then. There we did boating, watched the Dancing fountains etc. and reached the Palm Garden Residency at 9.00 pm where we had supper and accommodation that night.

Early next morning, we started off to Mudumalai Wildlife Sanctuary and reached there around 7.00 am where we saw some elephants and spotted deer. Later that day we moved on to Ootacamund and reached the Botanical Garden around 1.00 pm. Once again our knowledge on plant taxonomy was enriched by Dr. Kingstone's expertise. Again we did a quick shopping, had lunch by 2.30 pm and started our journey back home. We reached Mettupalayam around 6.00 pm and had tea. We continued our journey till 8.30 pm and stopped again for supper. By 9.30 pm we resumed our journey back and reached the college campus at 7.00 am on the 5th morning. The tour was indeed full of joy and packed with new experiences w[illegible]ill remain green in our memories.

A. Kingslin,
Secretary

FAMILY: **FRULLANIACEAE**

The family Frullaniaceae belongs to the leafy liverworts and has a Pan-tropical distribution. In India it is represented by the genus *Frullania* with ca 50 species. Four common species found in Peninsular India are described and illustrated here. The following is the description of the family.

Plants dark green to reddish brown. Stems branched, of *Frullania*-type. Leaves incubous, entire at margin; lobules helmet-shaped. Underleaves mostly roughly triangular, toothed, transversely to obliquely inserted.

Frullania Raddi

Bracts and bracteoles 1 - 3-whorled, asymmetrically 2-lobed. Perianth 3 - 6-keeled. Capsules ovoid, 4-valved.

Key to the species

1 a. Leaf lobules with a piliferous beak ——— **1. F. acutiloba**

b. Leaf lobules without a piliferous beak ——— 2

2 a. Leaf lobules campanulate, constricted at mouth ——— **2. F. campanulata**

b. Leaf lobules saccate to widely cucullate, obliquely truncate at mouth ——— 3

3 a. Leaf lobules parallel to stem; underleaves obcuneate or roughly reniform, 1- or 2- toothed; perianth 5-, rarely 6-plicate ——— **4. F. muscicola**

b. Leaf lobules distinctly oblique with vertex directed towards stem; underleaves ovate-oblong, entire; perianth 3-plicate ——— **3. F. inflexa**

1. Frullania acutiloba Mitt., J. Proc. Linn. Soc., Bot. 5: 120. 1861; R.S. Chopra, J. Indian Bot. Soc. 22: 249. 1943; Kachroo, Bull. Bot. Surv. India 12: 230. 1970; S. Hatt., J. Jap. Bot. 54: 22. 1979; Udar & V. Nath, Int. Quart. J. Pl. Sci. Res. 6: 73. 1979; S. Hatt., J. Hattori Bot. Lab. 47: 103. 1980; V. Nath & A.K. Asthana, J. Hattori Bot. Lab. 85: 72, f. 5 (1 - 15). 1998; Bapna & Kachroo, Hepatic. India 2: 165. 2000; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 59. 2004; M.C. Nair & al., Bryophyt. Wayanad: 62. 2005. - Type: India (Tamil Nadu), Nilgiris, *Perrottet s.n.* (PC).

Plants dioicous, 10 - 15 mm long, dark green to brown. Leaves imbricate, oblique to wide-spreading, 0.3 - 0.4 x 0.25 - 0.35 mm, ovate to cordate, concave, incurved and obtuse at apex; cells 15 - 20 x 15 - 18 mm, irregularly rounded-quadrate, faintly trigonous with distinct, intermediate, nodular thickenings on walls; oil bodies 4 - 6 per cell, 3.8 - 5.3 x 2 - 3.1 mm, ovoid or globose, faintly granular, bluish green; lobules ca 0.3 x 0.3 mm, explanate to galeate with a piliferous rostrum; apical portion of rostrum acuminate to acute with a row of 3 - 4 cells, getting downwards far beyond ventral margin of leaf lobes like a hook; vertex rotundate, touching base of underleaf with a wide truncate mouth; stylus 2 - 4-celled, filiform, hyaline. Underleaves 0.3 - 0.6 x 0.3 - 0.5 mm, with a narrow sinus, triangular to ovate, acuminate to acute at apex, 1- or 2-toothed at margin, often connivent, transversely inserted. Female inflorescences terminal on stem or leading branches; bracts entire; bracteoles 1- or 2-toothed. Perianth exserted, obovate, 3-keeled; keels sharp, angular, irregularly blunt-toothed.

Habitat: Corticolous, on *Syzygium aromaticum* (L.) Merr. & Perry (clove) (*Myrtaceae*) in clove plantations; corticolous, on *Pterospermum reticulatum* Wight & Arn. (*Sterculiaceae*), in degraded forests; corticolous on *Terminalia paniculata* Roth (*Combretaceae*), in moist deciduous forests, 150 - 460 m.

Distr.: Indonesia, Sri Lanka and India: Kerala and Tamil Nadu (W. Ghats of Kanyakumari, Madurai, Nilgiri and Tirunelveli).

Specimens examined : Tamil Nadu, Kanyakumari Dist., W.Ghats, Maramalai, 450 m, 7.9.1996, *A.E.D. Daniels* 111; 6.4.1999, *A.E.D. Daniels* 436; Klamalai, ca 150 - 450 m, 18.10.1999, *A.E.D. Daniels* 765; Tirunelveli Dist., Narakkad, ca 450 m, 22.5.1997, *A.E.D. Daniels* 267, 269, 270; Kannikatti road, 350 - 460 m, 30.7.1999, *A.E.D. Daniels* 583, 606.

2. Frullania campanulata Sande Lac., Ned. Kruidk. Arch. 3: 422. 1854; R.S. Chopra, Proc. Indian Acad. Sci. B7: 248. 1938 & J. Indian Bot. Soc. 22: 249. 1943; Kachroo, Bull. Bot. Surv. India 12: 230. 1970; S. Hatt., J. Hattori Bot. Lab. 39: 281. 1975; Udar & V. Nath, Int. Quart. J. Pl. Sci. Res. 6: 73. 1979; V. Nath & A.K. Asthana, J. Hattori Bot. Lab. 85: 77, f. 7(16 - 29). 1998; Bapna & Kachroo, Hepatic. India 2: 167. 2000; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 59. 2004. - Type: Java (L).

Plants 10 - 20 mm long, olive green to brown. Leaves pinnate, 0.3 - 0.41 x 0.3 - 0.38 mm, ovate or obovate, entire at margin; marginal cells 13 - 15 x 14 - 15 mm; median ones 18 - 20 x 17 - 20 mm; basal ones 28 - 30 x 14 - 15 mm; oil bodies 3 - 5 per cell, 3.1 - 4 x 2.1 - 3 mm, globose or ovoid, faintly granular; lobules parallel to stem, sometimes obliquely oriented, 0.18 - 0.27 x 0.11 - 0.18 mm, campanulate, longer than broad, rounded at vertex, constricted at mouth; stylus 3- or 4-celled. Underleaves 0.2 - 0.23 x 0.1 - 0.18 mm, angular on either side, 2-lobed; lobes triangular, subacute at apex, entire or 1- or 2- toothed at margin. Sex organs and sporophyte not seen.

Habitat: Corticolous on *Pterospermum reticulatum* Wight & Arn. (*Sterculiaceae*), in degraded forests and on *Terminalia paniculata* Roth (*Combretaceae*), in moist deciduous forests, ca 450 m.

Distr.: Indonesia and India: Tamil Nadu (W. Ghats of Kanyakumari, Madurai and Nilgiri).

Specimens examined: Tamil Nadu, Kanyakumari Dist., W.Ghats, Maramalai, ca 420 m, 6.4.1999, *A.E.D. Daniels* 437; Klamalai, ca 450 m, 18.10.1999, *A.E.D. Daniels* 772.

3. Frullania inflexa Mitt., J. Proc. Linn. Soc., Bot. 5: 120. 1861; R.S. Chopra, J. Indian Bot. Soc. 22: 249. 1943; Kachroo, Bull. Bot. Surv. India 12: 230. 1970; V. Nath & A.K. Asthana, J. Hattori Bot. Lab. 85: 68, f. 3. 1998; Bapna & Kachroo, Hepatic. India 2: 187. 2000. - Type: India, Sikkim, 11,000 ft., *J.D. Hooker s.n.* (BM). *F. delavayi* Steph., Hedwigia 33: 157. 1894; Kachroo, Bull. Bot. Surv. India 12: 229. 1970.

Plants monoicous, 1 - 2 cm long, dark reddish brown. Stems branched, wide-spreading. Leaves loosely imbricate, wide-spreading, 0.33 - 0.45 x 0.27 - 0.35 mm, ovate, entire at margin, faintly recurved, rounded at apex; apical cells 10 - 20 x 10 - 18 mm, rounded-quadrate, thick-walled; median ones 20 - 30 x 10 - 16 mm, rounded-quadrate to elongate, trigonous with intermediate nodular thickenings; basal ones 30 - 48 x 16 - 23 mm, elongate, trigonous with intermediate nodular thickenings; lobules saccate, 0.15 - 0.17 x 0.06 - 0.08 mm, obliquely oriented, partly covering stem with rounded vertex directed towards stem and narrow mouth, stalked. Underleaves distant, 0.16 - 0.18 x 0.12 - 0.14 mm, ovate-oblong, 2-lobed, subacute at apex, entire at margin. Male inflorescences on lateral branches. Female bracts 0.9 - 0.98 x 0.33 - 0.53 mm, irregularly toothed; bracteoles ca 0.53 x 0.3 mm, 2-lobed, acuminate at apex. Perianth ca 1.2 x 0.68 mm, obovate, rostrate, 3-plicate, smooth. Sporogonium seen immature.

Habitat: Corticolous, in evergreen forests, ca 1250 m.

Distr.: China, Japan, Nepal and India: Karnataka, Sikkim and Tamil Nadu (W. Ghats of Kanyakumari).

Specimens examined: Tamil Nadu, Kanyakumari Dist., W.Ghats, Muthukuzhivayal, ca 1250 m, 26.1.2001, *A.E.D. Daniels* 1394.

4. Frullania muscicola Steph., Hedwigia 33: 146. 1894; R.S. Chopra, J. Indian Bot. Soc. 22: 249. 1943; Kachroo, Bull. Bot. Surv. India 12: 229. 1970; S. Hatt. & Thaithong, J. Jap. Bot. 53: 130. 1978 & J. Hattori Bot. Lab. 44: 186. 1978; Udar & V. Nath, Int. Quart. J. Pl. Sci. Res. 6: 74. 1979; V. Nath & A.K. Asthana, J. Hattori Bot. Lab. 85: 75, f. 7(1 - 15). 1998; Bapna & Kachroo, Hepatic. India 2: 175. 2000; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 59. 2004; M.C. Nair & al., Bryophyt. Wayanad: 63. 2005. - Type: China, Yunnan, Mount. Ma cul chen, *Delavay s.n.* (G).

Plants dioicous, 10 - 20 mm long, deep green to brown. Leaves 0.5 - 0.7 x 0.3 - 0.5 mm, ovate to elliptic, entire at margin; cells 10 - 32 x 8 - 26 mm; oil bodies 2 - 4 per cell, 1 - 8.1 x 1.1 - 4.1 mm, globose to elongate-ovoid, faintly granular; lobules strongly saccate, rarely cucullate or explanate. Underleaves transversely to obliquely inserted, 0.3 - 0.4 x 0.2 - 0.3 mm, obcuneate, angular on either side, 1- or 2-toothed at margin, 2-lobed; lobes acute to subacute at apex. Sex organs and sporophyte not seen.

Habitat: Corticolous, in moist deciduous forests, ca 450 m.

Distr.: China, Japan, Korea and India: Kerala and Tamil Nadu (W. Ghats of Kanyakumari, Madurai and Nilgiri).

Specimens examined: Tamil Nadu, Kanyakumari Dist., W.Ghats, Klamalai, ca 450 m, 18.10.1999, *A.E.D. Daniels* 730, 773.

K.C. Kariyappa & J.L. Mabel,
Research scholars

DIARY OF EVENTS

On 18.12.2009 the PG association celebrated Christmas. Dr. P. Samraj, retired Scientist, was the guest.

On the same day the UG association also celebrated Christmas. Our Principal Dr. S. Chellakumar Rose was the guest.

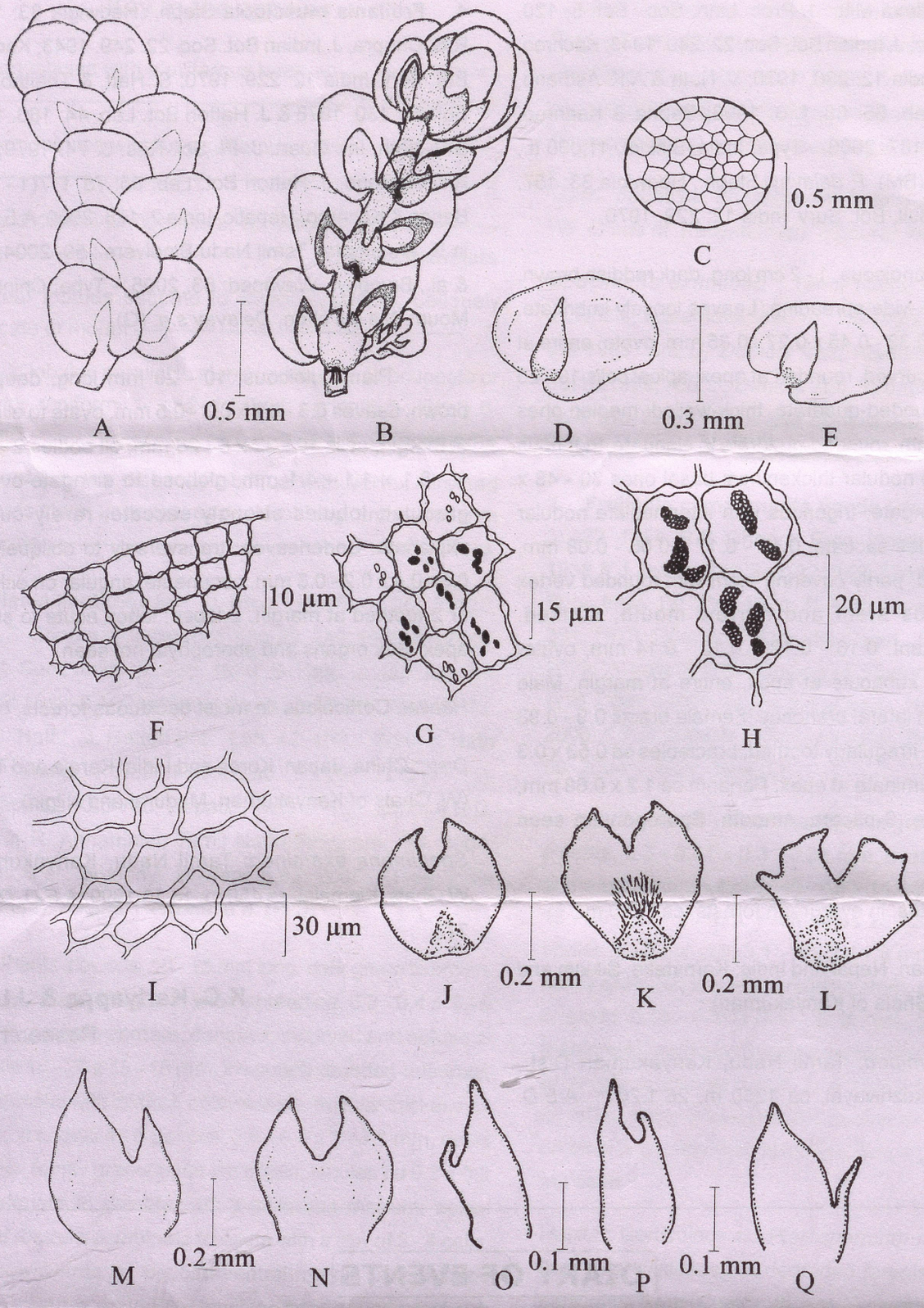


Fig. 1. (A - Q) **Frullania acutiloba** Mitt.

A. Plant dorsal view B. Plant venteral view C. Cross section of stem
D & E. Leaves with lobule F. Leaf marginal cells G & H. Leaf median cells with oil bodies I. Leaf basal cells J - L. Underleaves M & N. Female bracts
O - Q. Female bracteoles

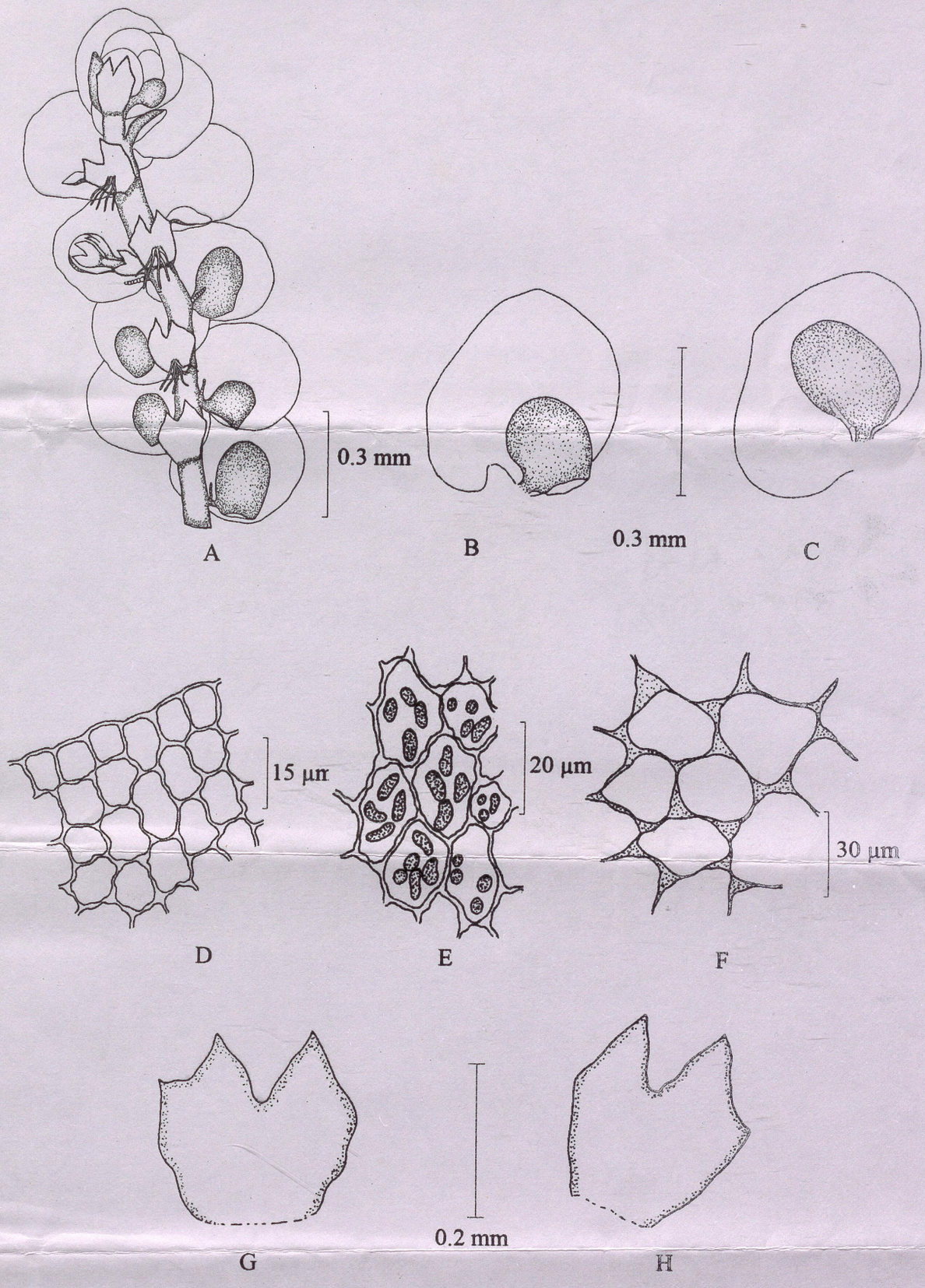


Fig. 2. (A - G) **Frullania campanulata** Sande Lac.
A. Plant B & C. Leaves D. Leaf marginal cells E. Leaf median cells with oil bodies
F. Leaf basal cells G & H. Underleaves

THASOR PRESS, NAGERCOIL.

Editor : **A.E. Dulip Daniels**

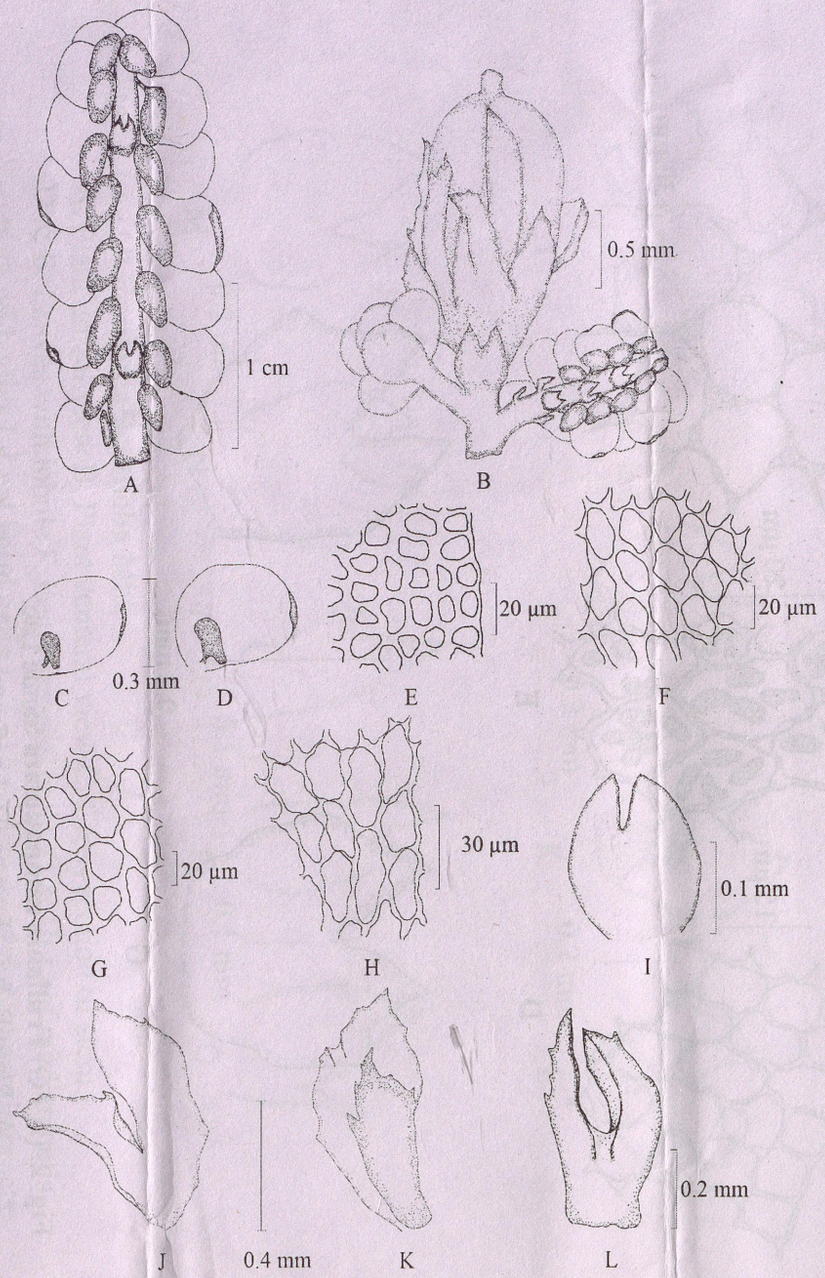


Fig. 3. (A - L). **Frullania inflexa** Mitt.
A. Plant B. A portion with perianth C & D. Leaves with lobule E. Leaf marginal cells F & G. Leaf median cells H. Leaf basal cells I. Underleaf J & K. Female bract L. Female bracteole

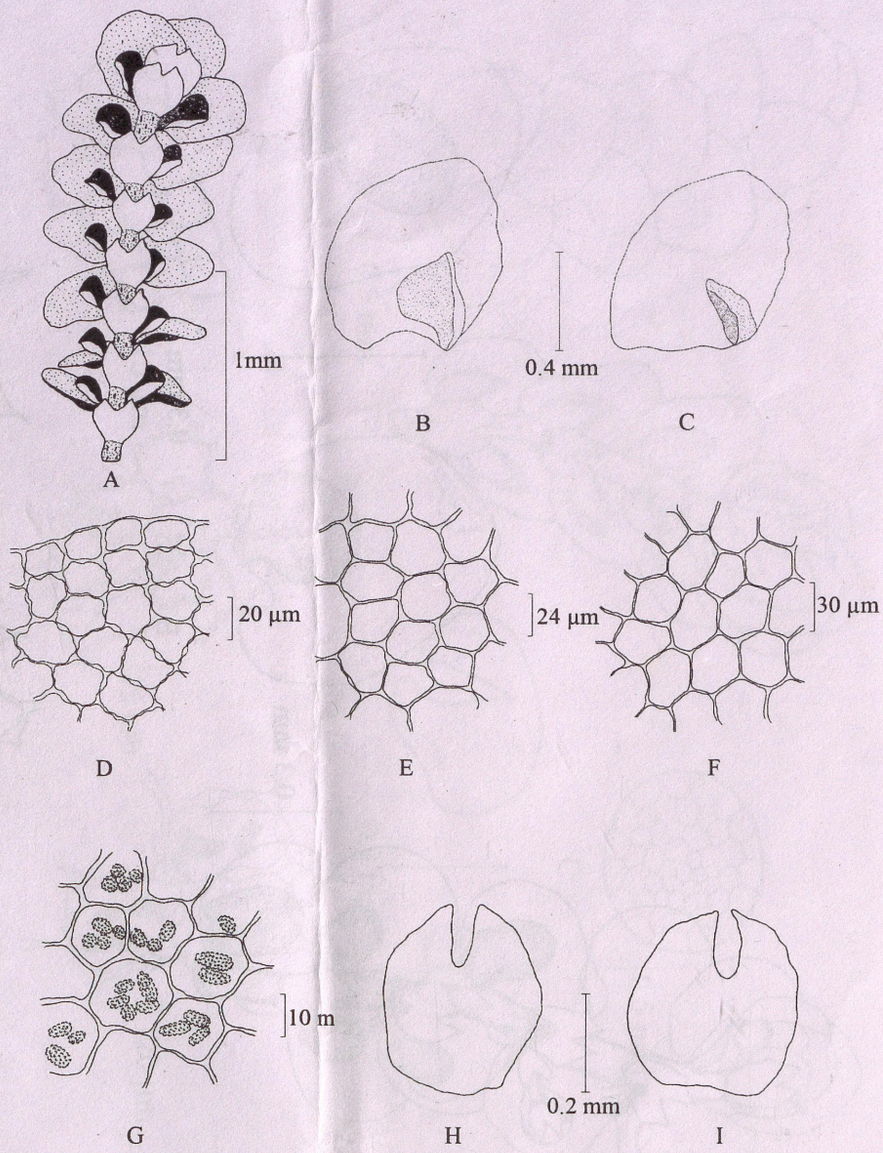


Fig. 4. (A - I). **Frullania muscicola** Steph.
A. Portion of plant B & C. Leaves with lobule D. Leaf marginal cells E. Leaf median cells F. Leaf basal cells G. Leaf cells with oil bodies H & I. Underleaves.

FOR PRIVATE CIRCULATION ONLY

साकोन समाचार
SACON NEWS
Vol. 7(1): May 2010

HONOURABLE MINISTER AT SACON

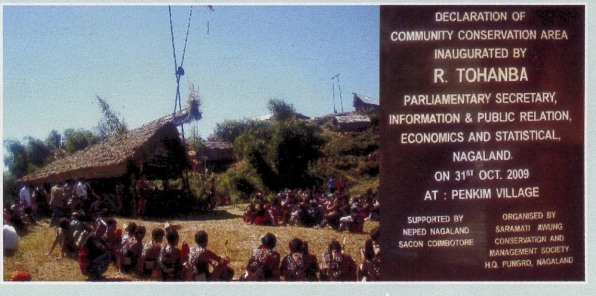
The Honourable Minister for Environment and Forests, Government of India and the President, SACON Society, Shri Jairam Ramesh visited our Centre on 22nd November 2009. The Director and Scientists of SACON briefed the research works undertaken at SACON to the Honourable Minister. The Honourable Minister appreciated the studies undertaken by SACON. Shri Jairam Ramesh urged SACON to initiate research projects in the Eastern Ghats, a relatively ignored centre of biodiversity. A tree plantation programme was launched at SACON Campus on that day. Contact: salimali@vsnl.com



BIODIVERSITY CONSERVATION

Saramati Community Conservation Area declared

Eighteen villages belonging to *Yimchunger* tribe of Kiphire district, Nagaland declared a stretch of primary forests owned by them as Saramati Community Conservation Area (CCA) on 31st October 2009. The declaration was made by the Apex Body, Saramati Awung Conservation and Management Society (SACMS). Shri R. Tohanba, Honourable Parliamentary Secretary, Information, Public Relation, Economics and Statistics, Government of Nagaland, inaugurated the CCA at a colourful function at Penkim village, Pungro and offered government's full support to such activities in the state. The President of Apex Body of SACMS Shri T. Y. Among requested for programmes promoting alternative livelihood for sustaining and strengthening conservation efforts initiated by the local communities. Over 800 people, villagers and committee members, government officials, church communities and officials from NEPED and SACON attended the function.

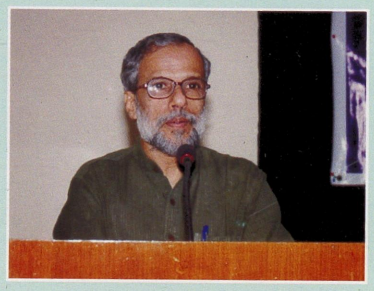


This CCA is an outcome of a joint effort of the Nagaland Empowerment of People through Economic Development (NEPED), Kohima and Sálim Ali Centre for Ornithology and Natural History (SACON), Coimbatore with financial support from Sir Dorabji Tata Trust (SDTT), Mumbai.
Contact: bhupathy.s@gmail.com (SACON) & veengo@yahoo.com (NEPED)

IN-HOUSE PROGRAMMES

Sálim Ali Birth Anniversary Celebrations

The 113th birth anniversary of Dr. Sálim Ali was organized on 13th March 2010 at CASFOS (Central Academy for State Forest Service), Coimbatore. Prof. Rajan Gurukkal, Distinguished Social Scientist and Historian (Vice Chancellor of Mahatma Gandhi University, Kottayam) delivered the Sálim Ali memorial lecture of the year. Prof. Gurukkal spoke on, "Science & Ideology". Dr. Krishna Kumar (Director, Institute of Forest Genetics and Tree Breeding), Mr. Jose Mathew (Principal, CASFOS), Mr. S. Chidambararaj, (Chief Manager, State Bank of India) and Dr. P. A. Azeez (Director, SACON) spoke on the importance of biodiversity conservation and need for public participation and collaborative research.



The Sálim Ali Trophy for Nature Awareness and prizes for the year (2009-2010) for the winners of SACON's annual nature competitions were distributed during this function. In all, 128 students and six teachers from 28 schools received prizes. The Kadhiri Mills Hr. Sec. School, Coimbatore was awarded the Sálim Ali Trophy for the year 2009-10 for the outstanding nature awareness programme undertaken by them. The State Bank of India (GCT Branch), Coimbatore extended financial support for organising this function.



Contact: salimali@vsnl.com

Ravi Sankaran Memorial Seminar

In remembrance of Late Dr. Ravi Sankaran (former Director, SACON), it has been decided by SACON to conduct a seminar on 'Wildlife and Conservation' every year. The first memorial seminar was organised at SACON on 18th January 2010, which was attended by eminent scientists, staff and research scholars of SACON. Drs. Ajith Kumar (World Conservation Society); Sanjay Molur (Zoo Outreach Organisation); P. A. Subramanian (Zoological Survey of India); E.J. James & Mathew K. Sebastian (Karunya University) and P. Pramod (SACON) made presentations on the occasion.



Earlier on the day, a brief remembrance meeting was organised at SACON, which was attended by colleagues, friends and family members including Mrs. Ravi Sankaran, and Mr Sankaran, father of late Dr. Ravi Sankaran. Contact: salimali@vsnl.com

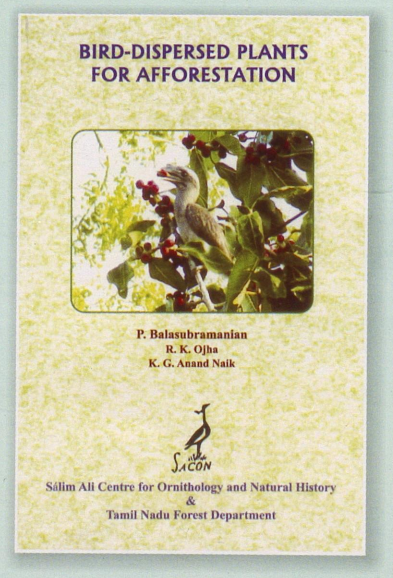
SYMPOSIA / WORKSHOPS / CONFERENCES

World Wetlands Day

Ms. N. Sheeba, UGC Research Fellow of SACON delivered a talk explaining the benefits of wetlands and their wise use to the people in the World Wetlands Day meeting organised on 2nd February 2010 by the Divisional Forest Office, Guntur at the Uppalapadu Bird Protected Habitat, Andhra Pradesh. The theme of the function was 'Caring for wetlands: an answer to climate change'. The meeting was chaired by the Uppalapadu Village President. Members of the Jilla Parishath, School teachers and students and Forest Department staff attended the function. Prizes were distributed to students who won essay writing and drawing competitions. Contact: nsheebu@gmail.com



Under Release



Contact: balusacon@yahoo.com



UNEP - EPLC Programme

The 3rd orientation programme of UNEP- Eco Peace Leadership Centre was organised during 26 - 28 October 2009 in Seoul, South Korea. In all, 50 participants from developing countries of the Asia - Pacific Region attended this programme that focussed on "Green growth". Ms. Dhanya R, Ph.D. Scholar of SACON attended the programme and made a presentation, "Sensitive indicator species in an urban ecosystem – a study plan on House Sparrow *Passer domesticus*". A poster highlighting SACON's activities in general was also displayed in the programme.
Contact: chippysparrow@gmail.com

Orientation Programme on EIA

An Orientation Programme, EIA Processes and Procedures is being organised by SACON on 29-30 June, 2010. The programme aims at providing input to the researchers, officials from government, non-government and corporate sectors pertaining to issues related to Environmental Impact Assessment.
Contact: anjaneia@gmail.com, salimali@vsnl.com

World House Sparrow Day

Dr. P. Balasubramanian, Principal Scientist SACON delivered a lecture on 'Conservation of Sparrows' on the World House Sparrow Day celebrated on 20th March 2010 at the Tamil Nadu Agricultural University, Coimbatore. The programme was jointly organized by OSAI (NGO), and Tamil Nadu Agricultural University. A stage show was also organised on "how to attract sparrows to home". The function was attended by over 200 participants, mostly students.
Contact: balusacon@yahoo.com





FIELD NOTES

Indian Sand Boas

Of the 276 species of snakes reported from India, sand boas are represented by three species; Red sand boa *Gongylophis* conicus, Common Sand Boa *Eryx johnii* and Whitaker's Boa *Eryx whitakeri*, which are known as Earth or Double-headed snakes. The former two species are common and widespread, and locally (in Tamil) known as *Iruthalai paambhu, Podaiyan, Koozhai paambhu, Monnai paambhu* and *Mann paambhu*. All sand boas are non-venomous, but several superstitions are attached to them such as they posses two heads and use one of them alternately every six months, and their bite / lick would cause leprosy in humans, all of these are unfounded.



The belief that these snakes have two heads is due to their blunt tail, which is a spectacular adaptation to deceive their predators; the tail gets blunter with age. Indian boas are associated largely with agro-ecosystem and scrub forests and feed largely on rodents, which are major grain thieves, offering great service to farmers. Unlike many snakes, boas give birth to about 8-10 young ones at a time.

In recent months, several reports on illegal collection of sand boas, especially the red ones have appeared in many dailies causing concern among Forest and Wildlife Managers and Conservationists. It appears that snakes are collected by luring rural folks with a price of Rs. 1 lakh or more per snake, "if the snake measures over 5 feet or weighs 5kg or so". None of the Indian sand boas grow over 3.5 feet. The size and weight specifications could be a ploy to get more specimens at a lower price or information on them. It may be possible that the smugglers need only smaller snakes. Locations having larger snakes may be targeted as potential future collection sites as well. It is likely that smaller snakes are in the international pet trade; the juvenile Red Sand Boas are colourful, mild in nature and do not bite even under provocation. All Indian snakes are protected by the Indian Wildlife Protection Act 1972, and collection or keeping snakes without permission is illegal. Any offence is punishable up to six years of imprisonment and fine. Contact: bhupathy.s@gmail.com

UNIVERSITY DEPARTMENTS

Following students of SACON have been awarded M.Phil Degree by the Bharathiar University, Coimbatore during November 2009 – April 2010.

- Amirthalingam, K. Studies on the flora of Minchigully valley, Sathyamangalam Forest Division, Southern Eastern Ghats, India. M.Phil. in Botany.
  Research Supervisor:Dr.P. Balasubramanian.

- Balakumar, P. Avian Influenza in the context of diminishing ecological resources. M.Phil.in Environmental Sciences.
  Research Supervisor: Dr.P.A. Azeez.

- Kamalakannan, M. Diurnal activity of the Indian Rock Python, *Python molurus molurus* Linn. (1758) in Keoladeo National Park, Bharatpur, Rajasthan, India. M.Phil. in Zoology.
  Research Supervisor: Dr. S. Bhupathy.

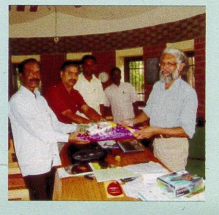
Ravi Sankaran Fellowship

The Ravi Sankaran Fellowship Program offered by the Inlaks Shivdasani Foundation has been set up in memory of the late Dr. Ravi Sankaran, former Director of SACON and a very innovative and committed wildlife conservationist.
For more details: www.ravisankaran.org.
Contact: salimali@vsnl.com

APPOINTMENTS / FAREWELL

Appointments

Dr. P.A. Azeez, Sr. Principal Scientist took charge as Director of SACON on 1st December 2009. Dr. Azeez, an alumnus of the Jawaharlal Nehru University (JNU), Delhi joined SACON as Principal Scientist heading the Division of Environmental Impact Assessment since September 1994. Dr. Azeez also served as Director In-charge of SACON from August 2006 - June 2008 and during February - November 2009.



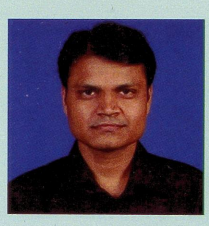
Dr. Shomita Mukherjee joined SACON as a Principal Scientist in the Division of Conservation Biology on 1st March 2010. Dr. Shomita, an alumnus of the Wildlife Institute of India, Dehra Dun has worked on carnivores. Earlier she worked with Wildlife Trust of India, New Delhi; Tiger Watch, Ranthambore; Nature Conservation Foundation, Mysore and National Centre for Biological Sciences, Bangalore. Dr. Shomita is interested in molecular ecology and conservation genetics.



Dr. Honnavalli Nagaraj Kumara joined SACON as a Scientist in the Division of Conservation Biology on 1st March 2010. Dr. Kumara has done his Doctoral work at the University of Mysore. He was with the National Institute of Advanced Studies, Bangalore as Research Associate from 2005. Dr. Kumara's research interest lies in biodiversity conservation.



Dr. B. Anjan Kumar Prusty joined SACON as a Scientist in the Division of Environmental Impact Assessment on 22nd March 2010. An alumnus of SACON, Dr. Prusty worked as a Junior Scientist (Environment) at the Gujarat Institute of Desert Ecology from July 2008 to March 2010. Dr. Prusty is interested in studies related to environmental assessment, biogeochemistry and ecological management.



Contact: salimali@vsnl.com

Farewell

Mr. P Karuppiah, former Deputy Director, Local Fund Audit, Dept. of Finance, Government of Tamil Nadu was appointed as Finance Officer on contract for a period of three years i.e. January 2007 to December 2009 in the place of Mrs Jayashree Muralidharan, Senior Finance Officer who was on Extraordinary Leave for the period. Mr Karuppiah was given a warm farewell by the staff of SACON on 31st December 2009. Mrs Muralidharan resumed duties as Senior Finance Officer on 1st January 2010.

Contact: saconadmin@gmail.com

IMPLEMENTATION OF THE OFFICIAL LANGUAGE

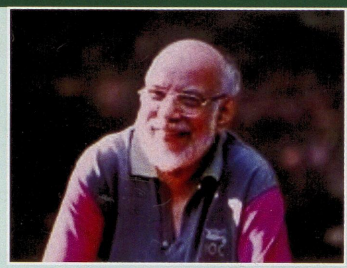
सलीम अली पक्षि–विज्ञान एवं प्राकृतिक विज्ञान केंद्र की स्वागतकर्ता श्रीमती एम. जयगीता ने नगर राजभाषा कार्यान्वयन समिति, कोयंबत्तूर द्वारा वार्षिक हिंदी सप्ताह आयोजन के दौरान हस्तलिपि प्रतियोगिता में शामिल होकर दूसरा स्थान हासिल किया है । श्रीमती गीता ने दि. 1 दिसंबर, 2009 को



Ms. M. Jayageetha, Receptionist of SACON participated in the Hindi handwriting competition organised by Town Official Language Implementation Committee (TOLIC), Coimbatore during the Annual Hindi week celebrations. Ms. Geetha stood second in the competition and received the award from TOLIC, Coimbatore on 1st December 2009.

Contact: saconadmin@gmail.com

REMEMBERING S. A. HUSSAIN



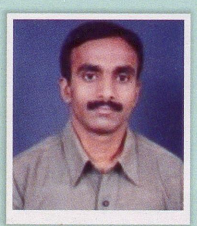
Mr. S. A. Hussain, one of the leading biodiversity conservationists of India passed away on 31st December 2009. Mr. Hussian worked at the Bombay Natural History Society (BNHS) in various capacities from 1969 to 1990, from Research Assistant to Principal Scientist. A close associate of Dr. Sálim Ali, Mr. Hussain studied various endangered species such as the Narcondam Hornbill, Himalayan Honeyguide and Black-necked Crane. He led multi-disciplinary research projects on bird migration and fragile coastal wetlands of the Vedaranyam Swamps for several years. In appreciation of the work of Mr. Hussain, a frog species was named after him (Hussain's Giant Night Frog *Nyctibatrachus hussaini*) by the Kuvempu University, Karnataka. Mr. Hussain was a member of SACON Society for more than a decade. SACON lost one of its well wishers who always stood with it during its growth. A condolence meeting was organised in SACON on 31st December 2009. The scientific staff fondly remembered their close association with Mr Hussain.

Contact: salimali@vsnl.com, balusacon@yahoo.com

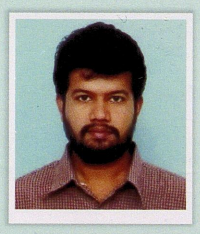
SACON ALUMNI



Name	:	**Dr. V. Gokula** (Research Guide: Dr. Lalitha Vijayan)
Funding	:	MoEF, Govt of India
Ph.D. Thesis	:	Bird communities in the thorn and dry\ deciduous forests of Mudamalai Wildlife Sanctuary, South India. (1998)
Present Position & Contact	:	Asst. Professor, Dept of Zoology, National College, Trichy - 621 001, Tamil Nadu, India
Phone / Email	:	9443578753, gokulae@yahoo.com



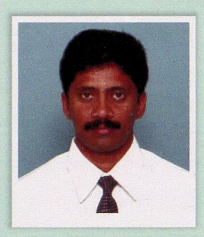
Name	:	**Dr. G. Umapathy** (Research Guide: Dr. Ajith Kumar)
Funding	:	MoEF, Govt of India
Ph.D. Thesis	:	Impacts of Habitat Fragmentation on the Arboreal Mammals in the wet evergreen forests of the Anamalai Hills,Western Ghats, South India. (1999)
Present Position & Contact	:	Scientist, Laboratory for theConservation of Endangered Species Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad- 500 007, India
Phone / Email	:	040-23447422, guma@ccmb.res.in 9866174797



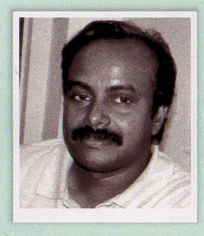
Name	:	**Dr. P.R. Arun** (Research Guide: Dr. V.S. Vijayan)
Funding	:	MoEF, Govt of India
Ph.D. Thesis	:	Seasonality and abundance of insects with special reference to Lepidoptera in a moist deciduous forest at Siruvani. (2000)
Present Position	:	Enviro Rights (NGO), H2/16, Godrej Hillside Colony, Pirojshanagar, Vikhroli (West), Mumbai - 400 079, India
Phone / Email	:	9869992123, envirorights@gmail.com



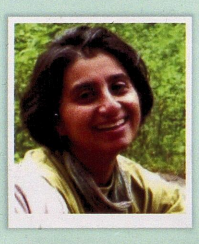
Name	:	**Dr. Maya V. Mahajan** (Research Guide: Dr. P.A. Azeez)
Funding	:	MoEF, Govt. of India
Ph.D. Thesis	:	A study of the ecology of select species of weeds in different vegetation types of Nilgiri Biosphere Reserve. (2000)
Present Position & Contact	:	Associate Manager, SPG Marine Ecology Centre, H2/16, Godrej Hillside Colony, Pirojshanagar, Vikhroli (West), Mumbai - 400 079, India
Phone / Email	:	maya.arun@gmail.com



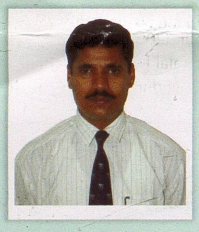
Name : **Dr. A. Rajasekaran**
(Research Guide: Dr. S.N. Prasad)
Funding : MoEF, Govt of India
Ph.D. Thesis : Ecology and utilization of medicinal plants with special reference to select tribal groups in the Nilgiri Biosphere Reserve. (2000)
Present Position & Contact : Scientist, Himalayan Forest Research Institute, Conifer Campus, Panthaghati, Shimla- 171 009, Himachal Pradesh, India
Phone / Email : 0177 2622112 (R); Mobile: 94180 02805, rajsekaran@yahoo.com; a.rajsekaran@gmail.com



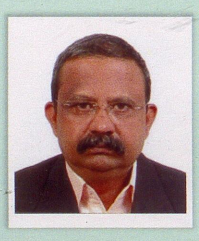
Name : **Dr. A. Prabhakar**
(Research Guide: Dr Ajith Kumar)
Funding : MoEF, Govt of India
Ph.D. Thesis : Impacts of rainforest fragmentation on small mammal community in Anamalai Wildlife Sanctuary, South India. (2000)
Present Position & Contact : 1509 Chelsea Downs Dr., Conyers, GA - 30013, USA
Phone / Email : 678-793-9596, annamalai.prabhakar@gmail.com



Name : **Dr. Divya C. Mudappa**
(Research Guide: Dr. Ajith Kumar)
Funding : US Fish and Wildlife Service
Ph.D. Thesis : Ecology of the brown palm civet Paradoxurus jerdoni in the tropical rainforests of the Western Ghats, India. (2001)
Present Position & Contact : Scientist, Nature Conservation Foundation, 3076/5, IV Cross, Gokulam Park, Mysore – 570 002, Karnataka, India
Phone / Email : divya@ncf-india.org



Name : **Dr. K. Sivakumar**
(Research Guide: Dr. Ravi Sankaran)
Funding : MoEF, Govt of India
Ph.D. Thesis : A study on the breeding biology of the Nicobar Megapode Megapodius nicobariensis. (2001)
Present Position & Contact : Scientist, Department of Endangered Species Management, Wildlife Institute of India P.O. Box. 18, Chandrabani, Dehradun - 248 001, India
Phone / Email : Tel:+ 0135-2640112, Extn:217 Fax: 0135-2640117 ksivakumar@wii.gov.in



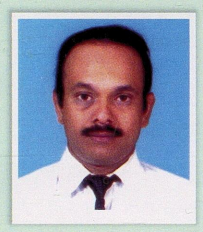
Name : **Dr. R. Krishnamani**
(Research Guide: Dr. Ajith Kumar)
Funding : Chicago Zoological Society, National Geographic Society, International Primatological Society, Primate Conservation, Inc. and Wildlife Conservation Society (formerly New York Zoological Society).
Ph.D. Thesis : Phyto-ecology of the lion-tailed macaque (Macaca silenus) habitats in southern India. (2002)
Present Position & Contact : Director (Research), COLLEEN, Plot 21, Classic village, Pannimadai BPO, Coimbatore- 641 017, Tamil Nadu, India
Phone / Email : rkmani@rainforest-initiative.org.



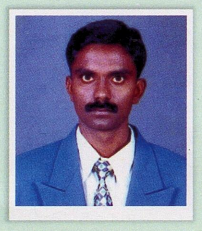
Name : **Dr. (Sr.) T. Nirmala**
(Research Guide: Dr. Lalitha Vijayan)
Funding : University Grants Commission (Faculty Improvement Programme)
Ph.D. Thesis : Bird communities in the Anaikatty Hills. (2002)
Present Position & Contact : Reader and Head of the Dept., PG Dept of Zoology, Jayaraj Anna Packiam College for Women, Periyakulam, Theni district, Tamil Nadu, India
Phone / Email : Mobile: 9894724949; sisternimmy@yahoo.co.in



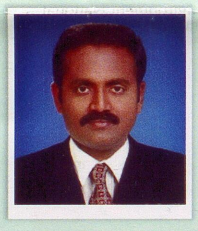
Name : **Dr. B. Maheshwaran**
(Research Guide: Dr. P. Balasubramanian)
Funding : MoEF, Govt of India
Ph.D. Thesis : Habitat utilization by Malabar Grey Hornbill in Mudumalai Wildlife Sanctuary, Western Ghats. (2003)
Present Position & Contact : US Environmental Systems, Casablanca American School, Casablanca 20150, Morocco
Phone / Email : balaramanmaheswaran@gmail.com



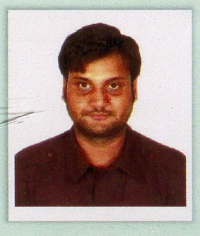
Name : **Dr. R. Mohanraj**
(Research Guide: Dr. P. A. Azeez)
Funding : SACON
Ph.D. Thesis : Air pollution in Coimbatore with emphasize on respirable suspended particulate matter in its health implications. (2004)
Present Position & Contact : Senior Lecturer, Department of Environmental Management, Bharathidasan University, Tiruchirappalli – 620024, India
Phone / Email : 9487158054, mohan.bdu@gmail.com



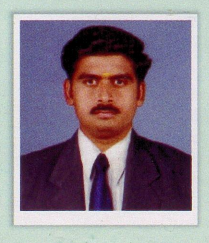
Name : **Dr. A.M.A. Nixon**
(Research Guide: Dr. S. Bhupathy)
Funding : MoEF, Biosphere Reserve Programme
Ph.D. Thesis : Population and resource utilization by reptiles in Upper Nilgiris, Nilgiri Biosphere Reserve, Western Ghats, India. (2005)
Present Position & Contact : Field Officer, Wildlife Trust of India, B-13, Sector 6, Noida- 201301, Uttar Pradesh, New Delhi, India
Phone / Email : nixonarmstrong@gmail.com



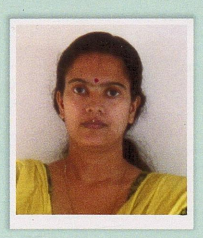
Name : **Dr. R. Eswaran**
(Research Guide: Dr. P. Pramod)
Funding : SACON R&D
Ph.D. Thesis : Ecological studies on insect communities of Anaikatty hills. (2006)
Present Position & Contact : Asst. Professor, Dept. of Zoology, The Madura College, Madurai-11, Tamil Nadu, India
Phone / Email : 9486085728, eswarinsects@gmail.com



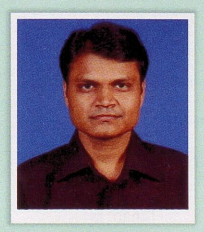
Name : **Dr. Debanik Mukherjee**
(Research Guide: Dr. S. Bhupathy)
Funding : SACON R&D
Ph.D. Thesis : Resource utilization patterns of reptiles in the tropical dry mixed deciduous forest of Anaikatty Hills, Western Ghats. (2007)
Present Position & Contact : Field Biologist, Biodiversity Parks Programme, Centre for Environmental Management of Degraded Ecosystems, School of Environmental Studies, University of Delhi, Delhi – 110007, India
Phone / Email : 9868763574, tomistoma@gmail.com



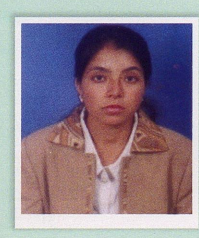
Name : **Dr. S. Somasundaram**
(Research Guide: Dr. Lalitha Vijayan)
Funding : MoEF, Govt of India
Ph.D. Thesis : Status and ecology of the Nilgiri Wood pigeon in the Western Ghats. (2007)
Present Position & Contact : Project Coordinator, Gujarat Institute of Desert Ecology (GUIDE) PO Box No. 83, Opp. Changleshwar Temple, Mundra Road, Bhuj - 370 001, Kachchh, Gujarat, India
Phone / Email : 9016727042, 9442735368, nssomasundaram@gmail.com



Name : **Dr. Uma J. Vinod**
(Research Guide: Dr. Lalitha Vijayan)
Funding : MoEF, Govt of India
Ph.D. Thesis : Status and ecology of the Nilgiri Pipit in the Western Ghats. (2007)
Present Position & Contact : Pathakkal House, Thathamangalam post, Palakkad- 678 102, Kerala, India
Phone / Email : umajvinod@gmail.com



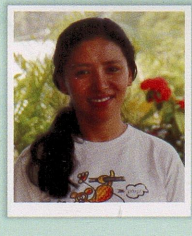
Name : **Dr. B. Anjan Kumar Prusty**
(Research Guide: Dr. P. A. Azeez)
Funding : SACON R&D and CSIR
Ph.D. Thesis : Distribution of select nutrients and metals in the soils of a wetland-terrestrial ecosystem complex: A case study of Keoladeo National Park, Bharatpur, India. (2008)
Present Position & Contact : Scientist, EIA Division, SACON, Anaikatty, Coimbatore- 641 108, Tamil Nadu, India
Phone / Email : 0422-2657199. anjaneia@gmail.com



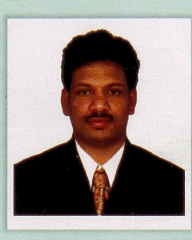
Name : **Dr. Basundhara Chettri**
(Research Guide: Dr. S. Bhupathy)
Funding : NHPC-MoEF- Delhi University
Ph.D. Thesis : Distribution and resource use patterns of reptiles along the Teesta Valley, Eastern Himalayas, Sikkim, India. (2008)
Present Position & Contact : Assistant Professor, Department of Zoology, Sikkim Government College, Tadong – 737102, Gangtok, Sikkim, India
Phone / Email : 094345-52502, basundharac@gmail.com



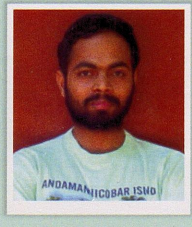
Name : **Dr. R. Jayakumar**
(Research Guide: Dr. S. Muralidharan)
Funding : SACON R&D
Ph.D. Thesis : Heavy metal contamination in the fishes of inland wetlands of India. (2008)
Present Position & Contact : Senior Fellow, Environment National Power Training Institute, Sector 33, Faridabad – 121003, Hariyana, India
Phone / Email : rjkumar@yahoo.com



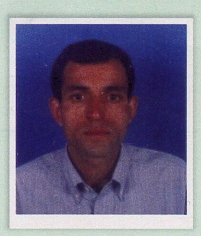
Name : **Dr. Joya Thapa (Research Guides: Drs. S. Bhupathy & Ajith Kumar)**
Funding : NHPC-MoEF- Delhi University
Ph.D. Thesis : Communities of small mammals and small carnivores in the Teesta Basin, Sikkim Himalaya, India. (2008)
Present Position & Contact : C/o JB Thapa, Lower Dumerram, Darjeeling (District), West Bengal – 734203
Phone / Email : joyathapa@gmail.com



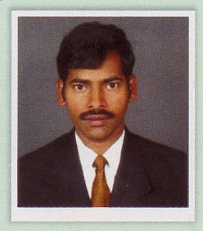
Name : **Dr. K.S. Anoop Das**
(Research Guide: Dr Lalitha Vijayan)
Funding : SACON
Ph.D. Thesis : Bird community structure along an altitudinal gradient in Silent Valley National Park, Western Ghats, India. (2008)
Present Position & Contact : Lecturer, Dept of Zoology, MES College, Mampad College, Malappuram- 676542, Kerala, India
Phone / Email : anoopsacon@gmail.com



Name : **Dr. P. Balakrishnan**
(Research Guide: Dr.V.S.Vijayan)
Funding : MoEF, Govt of India
Ph.D. Thesis : Status, distribution and ecology of the Grey-headed Bulbul Pycnonotus priocephalus in the Western Ghats, India. (2008)
Present Position & Contact : Ecologist, Wildlife Research and Conservation Trust, Peroth House Palakkalvetta -679327, Tuvvur, Malappuram, Kerala, India
Phone/ Email : 04931-286391, baluperoth@gmail.com



Name : **Dr. Bhoj Kumar Acharya**
(Research Guide: Dr Lalitha Vijayan)
Funding : NHPC- MoEF – Delhi University
Ph.D. Thesis : Bird communities and their distribution pattern along the elevation gradient of Teesta Valley, Sikkim. (2008)
Present Position & Contact : Assistant Professor, Department of Zoology, Sikkim Government College, Tadong – 737102, Gangtok, Sikkim, India
Phone / Email : 9475009134, acharya2skm@gmail.com



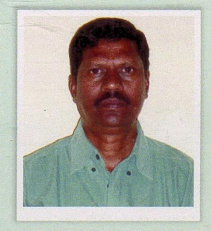
Name : **Dr. V. Dhananjayan**
(Research Guide: Dr. S. Muralidharan)
Funding : SACON
Ph.D. Thesis : Levels of organic contaminants and select biomarkers in the birds of Gujarat and Tamil Nadu, India. (2009)
Present Position & Contact : Research Associate, Division of Industrial Hygeine, Regional occupational Health Centre, ICMR, Kanomangala, Bangalore, India
Phone / Email : 9620703843, dhananjayan_v@yahoo.com



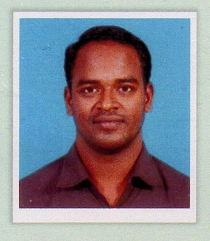
Name : **Dr. N. Ezhilarasi**
(Research Guide: Dr. Lalitha Vijayan)
Funding : MoEF, Govt of India
Ph.D. Thesis : Status and ecology of the Andaman Crake. (2009)
Present Position & Contact : Lecturer, Nirmala College, Race course, Coimbatore, Tamil Nadu, India
Phone / Email : ezhilarasinatarajan@gmail.com



Name : **Dr. M. Baladhandapani**
(Research Guide: Dr. P. A. Azeez)
Funding : Veerapandi CEPT Ltd., Tirupur
Ph.D. Thesis : Techno economic assessment of physio-chemical and anerobic treatment of textile waste water from the textile industrial clusters in Tirupur. (2009)
Present Position & Contact : Senior Environmental Manager, National Textile Limited, Gundur, Andhra Pradesh, India
Phone / Email : baalukm2003@yahoo.com

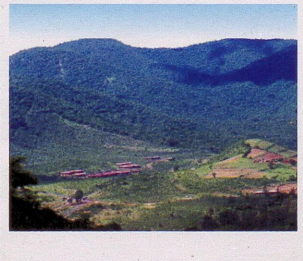


Name : **Dr. M. Gunasekaran**
(Research Guide: Dr. P. Balasubramanian)
Funding : Self Funding
Ph.D. Thesis : Study on ecology, distribution and conservation of Sthalavrikshas (Temple trees) in Tamil Nadu, South India. (2009)
Present Position & Contact : Consultant Horticulturist, Arulagham, 58, Nadar Street2, Coimbatore - 641 001, Tamil Nadu, India
Phone / Email : gunasekaranmc@yahoo.co.in



Name : **Dr. Manchi Shirish, S. (Research Guide: Drs. Ravi Sankaran & P. Pramod)**
Funding : Dept. of Environment & Forests, A&N Islands, India
Ph.D. Thesis : Breeding ecology of the Edible-nest Swiftlet Aerodramus fuciphagus and the Glossy Swiftlet Collocalia esculenta in the Andaman Islands, India. (2009)
Present Position & Contact : Scientist, SACON, Anaikatty, Coimbatore – 641 108, Tamil Nadu, India
Phone / Email : 0422-2657199, ediblenest@gmail.com

Compiled by R.Dhanya & S. Bhupathy



DISTINGUISHED GUESTS

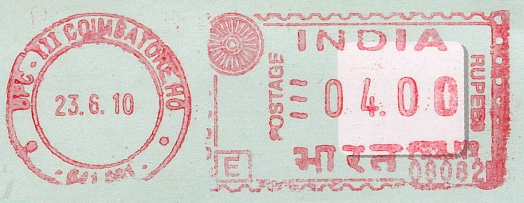
Following distinguished guests visited SACON and interacted with the scientists and researchers during November 2009 –April 2010.

04.11.2009	:	Dr. P. Jeganathan, Coordinator, Conservation Education Programme, NCF, Valparai, Tamil Nadu.
20.11.2009	:	Prof. Madhav Gadgil, Agharkar Research Institute, Pune.
22.11.2009	:	Shri Jairam Ramesh, Honourable Minister for Environment & Forests, Govt. of India.
18.12.2009	:	Dr. Shomita Mukherjee, National Centre for Biological Science, Bangalore.
18.01.2010	:	Dr. Ajith Kumar, Wildlife Conservation Society- India, Bangalore.
18.01.2010	:	Dr. P.A. Subramanian, Zoological Survey of India, Pune.
18.01.2010	:	Dr. Sanjay Molur, Zoo Outreach Organisation, Coimbatore.
18.01.2010	:	Prof. E.J. James & Dr. Mathew Sebastian, Karunya University, Coimbatore.
18.02.2010	:	Prof. Lea Ho Zoo, Eco Peace Leadership Centre, Kangwon University, Seoul, Republic of Korea.
11.03.2010	:	Dr. Chris Bowden, Royal Society for Protection of Birds, United Kingdom.
29.03.2010	:	Prof. M.V.N. Murthy, Institute of Mathematical Sciences, Chennai.
15.04.2010	:	Prof. Rajan Gurukkal, Vice Chancellor, M.G. University, Kottayam, Kerala.
19.04.2010	:	Mr. R. Arumugam, Consultant, Wildlife Trust of India, New Delhi.
29.04.2010	:	Prof. Jakka Parthasarathy, Director (Retired), Tribal Research Centre, Nilgiris.



Contact: salimali@vsnl.com

Book Post



सलिम अली पक्षिविज्ञान एवं प्रकृति विज्ञान केन्द्र
Sálim Ali Centre for Ornithology and Natural History
अनैकट्टी, कोयम्बटूर – 641108
Anaikatty (Post), Coimbatore – 641 108
तमिलनाडू, इंडिया
Tamil Nadu, INDIA.
Tele : +91-422-2657101,102,131 & 199
Fax : +91-422-2657088
Email : salimali@vsnl.com
Website : www.sacon.org

To

Dr N V Joshi
Centre for Ecological Sciences
Indian Institute of Science
Bangalore – 560 012

Editor: Dr. S. Bhupathy
Editorial Board: Dr. Lalitha Vijayan, R. Dhanya & R. Jayakumar
Layout & Design: A. Srinivasan
The views expressed in this newsletter are not necessarily those of the Editors or of the Sálim Ali Centre for Ornithology & Natural History

Published in May 2010

Printed & Published by the Director, Sálim Ali Centre for Ornithology and Natural History, Anaikatty, Coimbatore – 641 108.

Design@Printing - Kalaikathir © 0422-2223454

BOTANICAL TRENDS

An Official Newsletter
of
The Department of Botany and Research Centre,
Scott Christian College (Autonomous)
Nagercoil - 629 003, Tamil Nadu

March | Issue : 39 | 2011

Kalakkad-Mundanthurai study trip report

We the post graduate students of the Department of Botany were taken on a study trip to Klakkad-Mundanthurai Tiger Reserve on 14 and 15 February, 2011. As part of our curriculum we are to visit a neighbouring wildlife sanctuary. Drs. Geetha Jansi Rani and A.E. Dulip Daniels accompanied us. A total of 34 of us started off from the college campus on the 14th at 8.30 a.m. in two vans. We reached the destination at about 11.00 a.m. and had our breakfast. A little later we went to study the first vegetation type ie., riparian forests for which we had to ferry across the Karaiyar reservoir. We were taught the importance of riparian forests and their species composition. Then we had a great time at the Vanathirtham falls. We returned for lunch at about 2.30 p.m. After lunch we rested in our dormitories. At about 4.00 p.m. we gathered for tea and went on foot into the jungles to study the species composition of dry deciduous forests when we spotted common langurs, nilgiri langurs, rhesus macauques and chitals. When we returned it was dark. We had supper at about 8.00 p.m. and once again went out into the jungles by van to sight nocturnal animals. We were provided with a spotlight by the forest department and we were able to spot a number of sambars, wild boars and hare. At about 10.30 p.m. we returned to our dormitories. The next morning after breakfast at about 8.00 a.m. we again went out to study the species composition of moist deciduous forests and evergreen forests for which we had to once again ferry across the Karaiyar reservoir. It was a long trek for nearly five hours. It was indeed thrilling and exciting. We returned for lunch at about 3.30 p.m. After tea at about 4.30 p.m. we started our journey back to Nagercoil and reached the destination at about 7.00 p.m. The trip was very informative and enjoyable as well.

Secretary,
Chinchu V. Jalaj
Class II M. Sc.

Ginger - a medicine and a spice

Zingiber officinale Rosc.
Zingiberaceae

Eng	:	Ginger
Mal	:	Ingi
Tam	:	Ingi
San	:	Ardrakam
Hin	:	Adarak

Ginger is an important rhizomatous cash crop. It is a herbaceous, perennial crop belonging to the family *Zingiberaceae*. It is cultivated for its rhizome, which is pungent in taste but aromatic. Rhizomes of ginger are used both as a medicine and as a spice. It is cultivated on commercial scale in India and is exported to other countries.

Climate and Soil

Ginger can be cultivated as a sole or mixed crop. It flourishes in hot and humid climate. The crop is grown on all kinds of soils provided adequate facilities are available.

Agrotechniques - Land preparation

The field should be thoroughly ploughed. Fine seedbed is required for ginger cultivation. The land should be divided into suitable beds and raised to 15 - 20 cm with a spacing of 30 cm between the beds.

Propagation - Seed rhizomes

Ginger is always propagated by portions of its rhizomes known as seed rhizomes. Rhizomes are cut into small pieces of 2.5 - 5 cm, weighing 20 - 50 gm, each having at least one are two good buds (eyes).

Methods of planting

Methods of planting have significant impact on yield in ginger. Furrow system of planting was found to be a good method for getting higher rhizome yield. A spacing of 25 - 30 x 20 cm is optimum for a good yield.

Seed treatment

Healthy seed ginger should be treated by dipping with a combined solution of Manozeb (Dithane M-45) 0.25%, Carbendazim (Bavistin 50 WP) 0.1% and Choloripyrephos in 1 ml/litre of water for 60 minutes and dried to prevent seed rhizomes from soft-rot and maggots.

Manures and fertilizers

Ginger requires a heavy supply of manure for a good yield. The manure doses vary from place to place depending on the soil type and also the variety. At the time of land preparation or planting, well decomposed Farm Yard Manure (FYM) or compost at a rate of 25 - 30 t/ha is to be applied. The beds are to be earthed up twice after planting at 45 and 90 days. Rhizomes produced with heavy doses of nitrogenous fertilizers have a lower storage life. For organic ginger 16 tones of FYM with 350 kg of groundnut cake, 170 kg of neem cake, 250 kg of rock phosphate, 1 ton wood ash and 20 kg of biofertilizers per hectare along with mulch while planting has been found optimum.

Weed control

Weed is a serious problem in ginger fields because they are usually grown in high rainfall areas. Weeding should be done at least 60 - 75 days after planting and has a significant impact on the yield. Hand weeding (monthly and bimonthly) and burning of plots before planting (local method) were found to be effective in controlling weeds in ginger.

Harvesting

The crop is harvested in stages depending upon the prevailing demand. However, shrivelling, yellowing and withering of leaves, accompanied by drying of aerial stems indicate maturity. Harvesting of ginger after 9 months of planting would be the best time for getting the highest yield of rhizomes. Ginger is usually planted in Kanyakumari District during February - March. The average yield of green rhizomes varies between 150 and 250 q/ha.

Processing (curing of ginger)

Ginger is marketed both in peeled and unpeeled condition. In peeled ginger, the epidermis of the fresh rhizome is scraped off carefully and then dried in the sun for 7 - 10 days. As the essential oil is contained in the epidermal cells, excessive or careless scraping results in the loss of the oil and depreciates the quality of the ginger.

White polished ginger rhizomes are prepared by soaking it in water for a day and later in a thick milk of lime (1 kg slaked lime in 12 litres of water). This is dried in the sun. This treatment imparts a smooth finish to the final product.

Storage of seed rhizomes

The seed rhizomes are to be stored from the time of harvest. *ie.*, December - January to the time of sowing *ie.*, February - March (120 - 150 days). It is susceptible to many soil borne fungi, insects and termites. Well developed and disease free rhizomes are selected as seed. These may be treated with 0.25 % solution of Cerason (155 g in 145 litres of water) for 30 minutes as a control measure against soft-rot and the treated rhizomes are placed under shade to remove excess moisture and stored in pits. The pits are dug up to about one metre depth in a cool place, protected from sun light. A layer of sand or saw dust is spread at the bottom of the pit and seed rhizomes are filled in. The pit is left either uncovered or covered with a wooden plank leaving some space between the seed rhizome and the plank. The cover is then plastered with mud. A small hole is made in the plank through which a hollow tube is inserted for aeration of the rhizome.

Medicinal plants are potential renewable bio-resources. As they are the important sources of life support systems of medicines like Ayurveda, they have to be well preserved and used sustainably for the well being of the species. Attempts are to be made for the wide cultivation of the medicinal plants and maintenance of their natural habitats and this increases their propagation. India's own agenda in biodiversity conservation should be better if engaged creatively in the revitalization of the traditional resources and technologies and to use their fruits for the benefit of the world. Since ginger is also used in a number of ways in local medicines, care should be taken on the conservation and propagation of ginger.

References

1. Gamble, J.S & C.E.C. Fischer 1967. *Flora of the Presidency of Madras*. III. Botanical Survey of India.
2. Henry, A.N. & M.S. Swaminathan 1981. Observations on the vegetation of Kanyakumari district, Tamil Nadu. *Bull. Bot. Surv. India* 23: 135 - 139.
3. Nayar. T.S., R. Beegam, N. Mohanan & G. Rajkumar 2006. *A handbook of flowering plants of Kerala*. Tropical Botanical Garden and Research Institute, Palode, Thiruvananthapuram, Kerala.

Dr. R. Girija Kumari
Head, Dept. of Botany.

Conservation and propagation of Passion Fruit

Passion fruit, *Passiflora edulis* Sims., (*Passifloraceae*) is found growing wild in many parts of the Western Ghats. The juice of passion fruit with an excellent flavour is quite delicious, nutritious and liked for its blending quality. The physico-chemical properties of ripe fruits are given in Table 1. The juice is extensively used in confectionary and preparation of cakes, pies and ice-cream. It is a rich source of vitamin A and contains fair amounts of sodium, magnesium, sulphur and chlorides. The plant with attractive flowers and a dark green dense canopy is also grown as an ornamental.

Table 1. Physico-chemical properties of ripe fruit

Properties	Hybrid (*kaveri)*	Variety*(purple)*
Fruit weight (gm)	85 - 110	25 - 35
No. of fruits/kg	8 - 9	25 - 40
pH of the juice	2.69 - 2.78	2.83 - 3.25
Juice content (ml/fruit)	36.50 - 68.50	10.00 - 15.00
Acidity (%)	5.45 - 6.12	4.33 - 5.02
Ascorbic acid (mg/100gm)	20.12 - 22.35	22.56 - 35.62
Reducing sugar (%)	4.71 - 5.05	4.29 - 6.04
Total sugar (%)	5.33 - 6.40	5.28 - 6.68
Non-reducing sugar (%)	0.97 - 1.35	0.55 - 1.08
Tss (^{0} Brix)	13.40 - 15.50	13.50 - 14.70

Climate and soil

Passion fruit prefers tropical to sub-tropical climate and grows well up to an altitude of 2000 m with an annual rainfall of 1000 - 2500 mm. The crop requires an optimum temperature of 20 to 30 ^{0}C and below 15^{0}C it restricts vegetative growth and flowering. It can grow in light sandy soil with a pH of 5.5 - 7 provided there is good drainage.

Varieties

There are two varieties. One is purple, *Passiflora edulis* Sims. which is more productive and suited for higher elevations, more prolific varieties though, bear larger fruits are poor in juice content and flavour, higher in acidity and carotenoid pigments. The other one is the yellow type, *Passiflora edulis* var. *jlavicarpa* which performs well in plains and has a field tolerance to wilt, brown leaf-spot, thrips and nematodes where as the purple is susceptible. Kaveri, a hybrid between purple and yellow is high yielding, and tolerates wilt, brown leaf-spot and nematodes.

Cultural practices - Propagation and planting

Passion fruit is propagated through seeds, cuttings and graftings on resistant rootstocks. Seedlings or grafted plants are more vigorous than cuttings. Propagation by seed should be avoided as it induces variability. For cuttings, select mature vines and prepare 30 - 35 cm long stem pieces with minimum three nodes. Raise the cuttings in nursery beds/ polythene bags with suitable potting media. It takes one month for rooting and can be transplanted to main field after three months. Provide a spacing of 3 m between plants and 2 m between rows. Pits of 45 cm x 45 cm x 45 cm are to be dug out one month before planting and fill the pits with top soil and farm yard manure at the rate of 10 - 15 kg/pit. The best time for planting is during the monsoon. Seasonal vegetables could be grown as intercrops during the first year of planting passion fruit.

Training and pruning

Training is quite important in regulating yield, as it has to support considerable weight for five years. Weak and faulty construction of trellis may result in sagging and facilitate leader formation (branching). Two leaders are to be directed on either side of the wire in opposite directions which in turn develop laterals. These laterals need to be trained downwards hanging from the wire to form the fruiting area of the vine.

Systematic pruning is also important as the crop bears fruits only on current season's growth. Pruning should be done after harvesting the crop by cutting back the laterals to the nearest active bud as otherwise with increase in age of laterals, the basal buds become dormant or sterile.

Manuring

Application of 25 - 30 tonnes/ha FYM or 11 - 12 tonnes of well rotten compost/ha is to be applied to meet the nutritional requirement of passion fruit. If there is a prolonged dry spell, it needs to be irrigated at fortnightly intervals to get an optimum yield.

Plant protection

Major insect pests are fruit fly, mealy bugs and aphids. Use of biopesticides or neem formulations are advisable. Among the diseases, brown spot, root rot and wilt are serious ones. Use tolerant variety like *Kaveri* to resist these diseases. Proper drainage of water is necessary to keep root rot under control.

Harvest

It starts yielding from the 10th month after planting and bearing fruits reach an optimum by 16 - 19 months. There are two main periods of fruiting from August to December and March to May. Fruits take 80 - 85 days to attain maturity. Slightly purple coloured fruits along with a small portion of the stem/pedicel should be plucked. Average yield of purple variety is 8 - 10 t/ha and that of the hybrid *Kaveri* is 16 - 20 t/ha. The fruits should be disposed off quickly to prevent weight-loss and their appearance from getting marred. Storing in polythene helps to prevent deterioration to some extent.

Post harvest management

Various products prepared from passion fruit include nectar, jam, squash, carbonated drink and juice concentrate. To enhance the flavour of the final product passion fruit juice is often mixed with juices of pineapple, mango or ginger. The nectar is used as such, whereas squash and blended squash are diluted in a 1:3 ratio at the time of serving. These products have a great demand in both domestic and export markets.

Nature has given plenty of plant resources for man in order to meet his needs such as food, clothing, medicine, industrial products etc. Plants bring about economy to the country at large and it is a fact that the wealth of any country depends upon the plant resources. So the urgent need of the day is to safeguard all the precious flora found on the earth. Therefore we have been forced to change our perspective towards natural resources mainly economically important and medicinal plants. Today most of these plants are facing threats of extinction in various ways and we have the responsibility to foster them. We can cultivate some important house hold medicinal and economically important plants and protect them from this danger.

References

1. Akerale, 1991. *Global importance of medicinal plants, conservation of medicinal plants.* Cambridge University Press, Cambridge, UK.
2. Castetter, E.F. 1935. *Uncultivated native plants used as source of food.* Ethnobiological studies in the American Southwest-1. University, New Mexico.
3. Gaur, R.D, 1977. Wild edible fruits of Garhwal Hills. *Himalaya* 1: 66 - 30.

Dr. R. Girija Kumari
Head, Dept. of Botany
Sree Ayyappa College for women
Chunkankadai, Kanyakumari Dist.

Bryophytes of Muthukuzhivayal

Muthukuzhivayal is a plateau situated at about 1200 m in Kanyakumari District adjacent to Upper Kodaiyar. It has extensive areas of grassy swards dotted with dense Evergreen forests that contain endemic trees like *Elaeocarpus venustus* Bedd. (*Elaeocarpaceae*), *Syzygium rama-varmae* (Bourd.) Chithra (*Myrtaceae*) and *Garcinia travancorica* Bedd. (*Clusiaceae*). Swamps and Myristica swamps are also common. It gets both monsoon rains and so moist almost throughout the year. Twenty two species of bryophytes are reported here. They grow on different habitats as terricolous, saxicolous, rupicolous and corticolous forms. Of these 15 are mosses and 7 are liverworts.

CLASS: MUSCI

Plants differentiated into rhizoid-like, stem-like and leaf-like portions.

Key to the orders

1a. Peristome teeth vertically striolate ——— **1. Dicranales**

b. Peristome teeth not vertically striolate ——— 2

2a. Sporophytes immersed within leaves ——— **3. Isobryales**

b. Sporophytes exserted ——— 3

3a. Leaves bordered ——— 4

b. Leaves not bordered ——— **5. Hypnobryales**

4a. Leaves distichous, asymmetric, amphigastriate ——— **4. Hookeriales**

b. Leaves not distichous, symmetric, not amphigastriate ——— **2. Eubryales**

1. ORDER: DICRANALES

Plants yellow-green to green. Leaves 3- or more-ranked; cells smooth. Peristome teeth dicranate, rarely entire.

FAMILY: DICRANACEAE

Stems branched or not. Leaves lanceolate, semisheathing at base, long-acuminate and canaliculate to tubular at apex; cells quadrate to rhomboid above, rectangular at base; alar region differentiated or not. Costa percurrent or excurrent. Setae long, cygneous or not. Capsules ovoid or cylindric, sometimes strumulose. Peristome teeth 16, dicranate to middle, not filiform, vertically to obliquely striolate, papillose at tip. Operculum conic, rostrate.

Key to the genera

1a. Leaves with a distinct hyaline border of narrow, elongate cells ——— **2. Leucoloma**

b. Leaves without a distinct border of narrow, elongate cells. ——— **1. Campylopus**

1. **Campylopus** Brid.

Plants caespitose. Leaves with a distinct alar region; cells rhomboid and incrassate above, rectangular and thin-walled at base. Costa broad with stereides on dorsal side. Seta cygneous to arcuate. Capsules furrowed when dry. Peristome dicranate, vertically striolate.

Campylopus latinervis (Griff.) A. Jaeger, Ber. Senckenberg. Naturf. Ges.: 426. 1872; Gangulee, Moss. E. India 1(2): 287, f. 133. 1971; J.-P. Frahm, J. Hattori Bot. Lab. 71: 140. 1992; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 51. 2004; J. Lal, Checklist Indian Moss.: 39. 2005; *Dicranum latinervis* Mitt., J. Proc. Linn. Soc., Bot. 1 (Suppl.): 17. 1859. - Types: India, Sikkim, *J.D. Hooker* 23, 26, 80, 87b; Nilgris, *G. Thomson,* 90; Ceylon, *Gardner s.n.* (BM).

Plants ca 2 cm high, caespitose, comose, pale green. Stems reddish brown. Leaves erectopatent, flexuose when dry, 2 - 4 x 0.3 - 0.75 mm, lanceolate at base, canaliculate to tubular at apex, inflexed at margin, faintlyserrulate at apex; apical and median cells 4 - 40 x 3 - 28 µm, rhomboid, incrassate, usually bordered by a row of thin-walled, rectangular ones; basal ones 12 - 16 x 8 - 10 µm, rectangular; alar region distinct, faintly swollen, hyaline, cells 20 - 60 x 16 - 30 µm; costa without stereides on dorsal side in cross section. Sporophyte not seen.

Habitat: Corticolous, in evergreen forests, ca 1250 m.
Distr.: Nepal, Sri Lanka and India: Eastern Himalaya and W. Ghats of Tamil Nadu (Kanyakumari and Nilgiri).
Specimens examined: Tamil Nadu, Kanyakumari Dist., W. Ghats, Muthukuzhivayal, ca 1250 m, 26.1.2001, *A.E.D. Daniels* 1323.

2. **Leucoloma** Brid., nom. cons.

Plants pale green to dark green. Stems branched or not, without a central strand. Leaves dense, erectopatent to erect, sometimes homomallus, flexuose when dry, ovate-lanceolate with a distinct border of narrow, elongate, hyaline cells; cells papillate, indistinct; costa excurrent. Setae erect. Capsules erect, cylindric. Peristome teeth dicranate.

Key to the species

1a. Leaves falcate; alar region orange-brown
——————————— **1. L. amoene-virens**

b. Leaves falcato-secund; alar region hyaline at periphery, red-brown near costa ——————— **2. L. taylorii**

1. Leucoloma amoene-virens Mitt., J. Proc. Linn. Soc., Bot. 1(Suppl.): 13. 1859; Dixon, Rec. Bot. Surv. India 6(3): 75. 1914; Bruehl, Rec. Bot. Surv. India 13(1): 28. 1931; Gangulee, Moss. E. India 1(2): 409, f. 192. 1971; Wadhwa, M.V.M. Patrika 6: 75. 1971; R.S. Chopra, Tax. Indian Moss.: 86. 1975; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 51. 2004; J. Lal, Checklist Indian Moss.: 85. 2005. - Types: India, Madras, *Wight s.n.* (CAL, BM); Khasia, *Griffith s.n.* (CAL, BM). *Dicranum amoene-virens* (Mitt.) Müll.Hal., Linnaea 36: 11. 1869.

Plants 0.5 - 3.5 cm high, caespitose, pale green to brownish green. Stems branched or not, dark brown. Leaves dense, falcate, erectopatent, flexuose when dry, 3 - 4.5 x 0.8 - 1 mm, lanceolate, carinate, semisheathing at base, subulate and faintly toothed at apex; apical and median cells 6 - 8 x 4 - 7 µm, rounded-quadrate, incrassate, papillate; basal ones 20 - 32 x 6 - 8 µm, elongate, epapillate; marginal hyaline cells 90 - 120 x 2 - 3 µm, 4-rowed; alar region distinct, swollen, orange-brown; cells 40 - 52 x 20 - 22 µm; costa excurrent into a subulate apex. Sporophyte not seen.

Habitat: Corticolous on *Elaeocarpus venustus* Bedd. (*Elaeocarpaceae*), an endemic, tree species, in evergreen forests, ca 1250 m.
Distr.: Sri Lanka and India: Meghalaya and W. Ghats of Tamil Nadu (Kanyakumari, Nilgiri and Tirunelveli).
Specimens examined: Tamil Nadu, Kanyakumari Dist., W. Ghats, Muthukuzhivayal, ca 1250 m, 26.1.2001, *A.E.D. Daniels* 1311.

2. Leucoloma taylorii (Schwägr.) Mitt., J. Proc. Linn. Soc., Bot. 1 (Suppl.): 13. 1859; Bruehl, Rec. Bot. Surv. India 13(1): 28. 1931; Gangulee, Moss. E. India 1(2): 407, f. 191. 1971; R.S. Chopra, Tax. Indian Moss.: 87. 1975; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 51. 2004; J. Lal, Checklist Indian Moss.: 85. 2005. *Syrrhopodon taylorii* Schwägr., Sp. Musc. Frond. 2 (Suppl.): 115. 1824. - Type: Nepal, *Taylor s.n.* (BM, GH, FH).

Plants 3 - 5 mm high, caespitose, pale green. Stems branched or not, dark brown. Leaves dense, erectopatent, falcato-secund, flexuose when dry, 2 - 3.5 x 0.4 - 0.6 mm, lanceolate, carinate, semisheathing at base, canaliculate, subulate and toothed at apex; apical cells 5 - 10 x 4 - 8 µm, quadrate, incrassate, papillate; median ones 6 - 18 x 5 - 10 µm, rectangular, incrassate, papillate; basal ones 20 - 40 x 6 - 10 µm, rectangular, incrassate, epapillate; cells near costa 10 - 30 x 8 - 15 µm, those near margin 20 - 60 x 8 - 10 µm; marginal hyaline cells

60 - 120 x 3 - 5 µm, 4-rowed; alar region distinct, swollen, hyaline at periphery, red-brown near costa; cells 20 - 60 x 10 - 17 µm; costa excurrent into a subulate apex. Sporophyte not seen. Gemmae at apex, abundant, ca 40 x 20 µm, elongate-ovoid.

Habitat: Corticolous on *Elaeocarpus venustus* Bedd. (*Elaeocarpaceae*), an endemic, tree species, in evergreen forests, ca 1250 m.

Distr.: Malay Archipelago, Myanmar, Nepal and India: W. Ghats of Tamil Nadu (Tirunelveli).

Specimens examined: Tamil Nadu, Kanyakumari Dist., W. Ghats, Muthukuzhivayal, ca 1250 m, 26.1.2001, *A.E.D. Daniels* 1313.

2. ORDER: **EUBRYALES**

Plants acrocarpic or pleurocarpic, medium to large. Stems branched or not. Leaves variable. Peristome teeth of bryoid type *i.e.*, metacranoid; endostome with a basal membrane; processes lanceolate, keeled, slit or perforate, with well-developed or rudimentary cilia; exostome striolate dorsally.

FAMILY: **RHIZOGONIACEAE**

Plants medium to robust, lax or caespitose. Stems tomentose below, with a central strand. Leaves uniform, spreading, linear, flat, toothed, thickened at margin; cells irregularly rounded-hexagonal, thick-walled, smooth; costa excurrent, spinose on back, with begleiter and median deuter cells and 2 stereide patches. Sporophytes lateral from base. Capsules inclined to horizontal, ovoid-cylindric. Peristome teeth bryoid.

Pyrrhobryum Mitt.

Plants robust, caespitose, brownish to reddish below. Leaves linear-lanceolate, spinose at margin; cells thick-walled, rounded-quadrate to elongate, smooth; costa excurrent, toothed on back above. Peristome teeth bryoid, with a basal membrane and smooth or nodulose cilia.

Pyrrhobryum spiniforme (L. ex Hedw.) Mitt., J. Linn. Soc., Bot. 10: 174. 1868; M.C. Nair & al., Bryophyt. Wayanad: 133. 2005. *Hypnum spiniforme* L. ex Hedw., Sp. Musc. Frond.: 236. 1801. - Type: West Indies, Jamaica, *Sloane s.n.* (BM). *Rhizogonium spiniforme* (L. ex Hedw.) Bruch in C. Krauss, Flora 29: 134. 1846; Dixon, Rec. Bot. Surv. India 6(3): 80. 1914; Bruehl, Rec. Bot. Surv. India 13(1): 55. 1931; Dixon, J. Bombay Nat. Hist. Soc. 39: 780. 1937; Foreau, J. Madras Univ. 2: 250. 1930 & J. Bombay Nat. Hist. Soc. 58: 27. 1961; Gangulee, Moss. E. India 2(4): 1068, f. 520. 1974; R.S. Chopra, Tax. Indian Moss.: 236. 1975; A.E.D. Daniels in R. Annamalai, Tamil Nadu Biodivers.: 57. 2004; J. Lal, Checklist Indian Moss.: 118. 2005. *Mnium spiniforme* (Hedw.) Müll.Hal., Syn. Musc. Frond.: 1: 175. 1848.

Plants robust, 2 - 4 cm high, densely caespitose, brown-green. Stems erect, branched from base, tomentose below, brown. Leaves lax, evenly spread out, erect-spreading, flexuose, carinate, flat, with paired spines at margin, incurved at apex when dry, 5 - 8 x 2 - 3 mm, linear, gradually acuminate; cells thick-walled, 10 - 20 x 9 - 15 µm, rounded-quadrate to elongate, smooth; costa single, shortly excurrent. Sporophytes lateral from plant base. Setae 4 - 5 cm high, erect, flexuose, brown. Capsule inclined to horizontal, 2 - 3 x 0.8 - 1 mm, ovoid-cylindric, faintly furrowed when dry, brown. Peristome teeth 2-rowed, 0.9 - 1.1 x 0.12 - 0.14 mm; exostome hyaline, yellowish brown at base, papillose at apex; endostome papillose, with a basal membrane 1/2 as high and 1 - 3, short, nodulose cilia. Spores 17 - 28 µm, globose, densely papillose, green.

Habitat: Corticolous on *Elaeocarpus venustus* Bedd. (*Elaeocarpaceae*), an endemic tree in evergreen forests, ca 1250 m.

Distr.: Cosmopolitan. India: Himalaya, NE. India and W. Ghats of Kerala and Tamil Nadu (Kanyakumari and Madurai).

Specimens examined: Tamil Nadu, Kanyakumari Dist., W. Ghats, Muthukuzhivayal, ca 1250 m, 26.1.2001, *A.E.D. Daniels* 1307.

..... *to be continued*

DIARY OF EVENTS

The Post-graduate students went on a study trip to Kalakkad - Mundanthurai Tiger Reserve on 14 and 15 February, 2011. Drs. Geetha Jansi Rani and A.E. Dulip Daniels accompanied them.

Editor : **A.E. Dulip Daniels**

THASOR PRESS, NAGERCOIL. FOR PRIVATE CIRCULATION ONLY

CIKS

CIKS NEWS

The CIKS quarterly newsletter

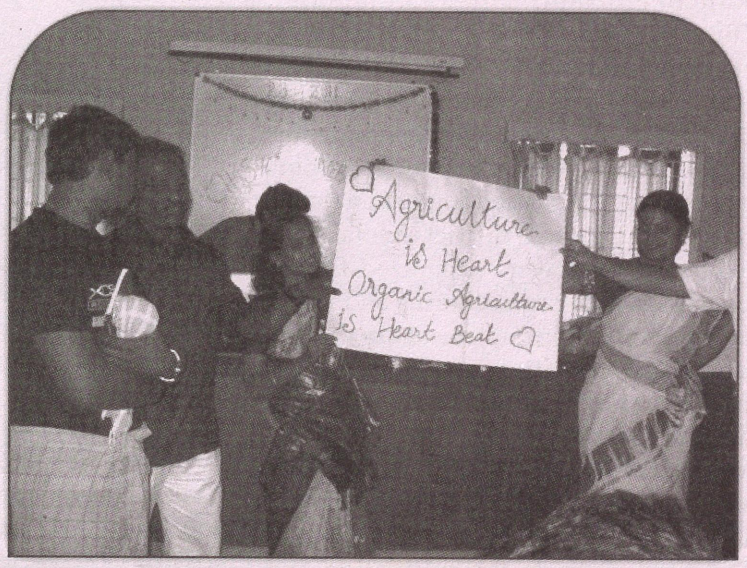
April 2011 Vol. 12 No. 2

For more CIKS news updates, visit www.ciks.org



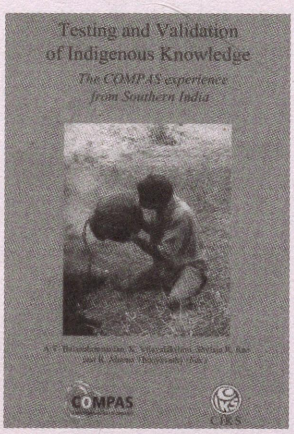
SIXTEENTH FOUNDATION DAY OF CIKS

On 23rd January, all team members of CIKS from various offices gathered for a day long celebration of the sixteenth foundation day of CIKS at the organic research farm at Sukkankollai village in Kancheepuram district. In the forenoon there was a presentation by Director, A. V. Balasubramanian giving reflections about what CIKS set out to do sixteen years back and some of the strengths and limitations of the work. This was followed by a session wherein every single team member of CIKS shared their reflections about CIKS in their perception. The day included cultural programmes that were presented by various team members including some games that were organized. The day concluded with prize distribution for various events.



Cultural event on the theme of importance of organic agriculture by CIKS staff members

Testing and Validation of Indigenous Knowledge



For More Details See Page - 4

NEW PROJECT

TECHNOLOGY TRANSFER, CREDIT COUNSELING AND MARKET ADVOCACY THROUGH FARMERS CLUBS IN NAGAPATTINAM DISTRICT

A pilot project for technology transfer, credit counseling and marketing advocacy through farmers club has been sanctioned by the National Bank for Agriculture and Rural Development (NABARD). This project is for a period of one year. The objective of this project is to empower farmers on technology transfer, credit and marketing aspects. It will develop selected farmers as trainers who would in turn train other farmers.



PROJECT WATCH

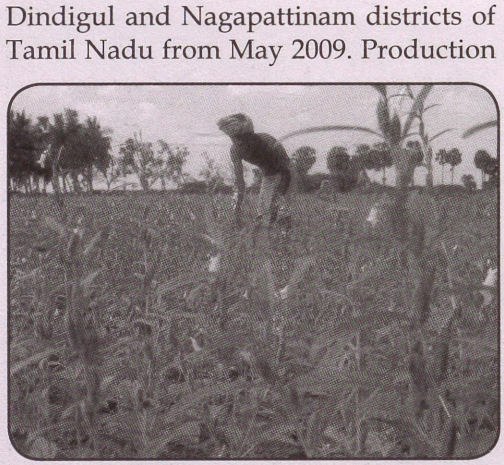
A round-up of our activities

Biodiversity Conservation, Reduction of POPs and Livelihoods for Farmers in Tamil Nadu – A Sustainable Triangle

This project supported by UNDP - GEF (United Nations Development Programme – Global Environment Facility) is being implemented in Kancheepuram, Thiruvannamalai, Dindigul and Nagapattinam districts from November 2008. Beneficiaries have been provided with nine training programmes on value addition. Under the component of POP reduction, 14 training programmes have been conducted for the farmers of Dindigul district. A total of six exposure visits were organized for the beneficiaries to organic farms and fields, input production units and processing units. Conservation of 12 traditional paddy varieties is in progress in 69.48 acres in 15 coastal villages of Sirkazhi and Vedharanyam taluks. Seeds of traditional vegetable varieties have been distributed to the farmers of Nagapattinam and Dindigul districts for cultivation and conservation.

Sustainable Livelihoods through Organic Farming in Tamil Nadu

This project supported by Jamsetji Tata Trust (JTT), Mumbai is in progress in Kancheepuram, Ramanathapuram, Dindigul and Nagapattinam districts of Tamil Nadu from May 2009. Production of certified and truthfully labeled seeds of paddy varieties, groundnut, sesame, black gram, sunhemp and vegetables are in progress in 200 acres. A total of 763.54 acres are being supported through input support and crop loan schemes. Under this support scheme, crops like paddy varieties, oil seeds, cotton, chilli, banana, maize, flower crops etc., have been cultivated in 525.74 acres. Demonstration fields with various organic farming and allied technologies are in place in all the four districts. Two community kitchen gardens and 83 demo kitchen gardens contribute to conserve the traditional vegetable varieties in the project areas. Commercial production of vermicompost is in progress in three community vermicompost units in Kancheepuram and Dindigul districts. Microenterprises established by the beneficiaries are progressing well. Beneficiaries are provided with 17 short term and nine Trainers' Training sessions on various organic farming technologies. Eight exposure visits were also organized. Construction of a biopesticide unit in Kattuemaneshwaram village of Ramanathapuram district has been completed and production would be started shortly.



Organic Sesame Field in Kalathupatty Village of Dindigul District

Introduction of Organic Farming in Alangadu Village

Our centre is involved in the promotion of organic farming in Alangadu village of Nagapattinam district from January 2009. Black gram has been cultivated in 24.65 acres by 24 farmers. Beneficiaries are also involved in the cultivation of fodder grass organically. On 13th January, an on farm training on pest and diseases and their management measures was conducted for the beneficiaries following Farmers' Field School (FFS) method. On 18th January, a training programme on paper bag production



Traditional Pumpkin Variety Conserved in Ramanathapuram District

was conducted for the members of five women SHGs. A nursery of tree saplings named *"Poonsolai"* and a community kitchen garden are being maintained by the Samba women SHG. Production is in full swing at the community vermicompost unit. The women SHG members are involved in the preparation of handicrafts using palm fronds. They were also participated in the handicrafts exhibition *"Thulir"* held in Chennai on 16th February.

Strengthening Sustainable Agriculture for Improving Rural Livelihoods: A Project with Focus on Dryland Agriculture

This project supported by Ford Foundation and HIVOS is in progress in Thiruvannamalai and Dindigul districts. The project activities are in progress in 1345.81 acres in 15 villages of Javvadhu hills of Thiruvannamalai district and Sendhurai block of Dindigul district. Sangam meetings were conducted. Crops like niger, horse gram, maize, little millet, black gram and groundnut cultivated in 590 acres have been harvested. Organic kitchen gardens are being maintained by the beneficiaries. Beneficiaries are also involved in the production of vermicompost. Efforts are on to erect

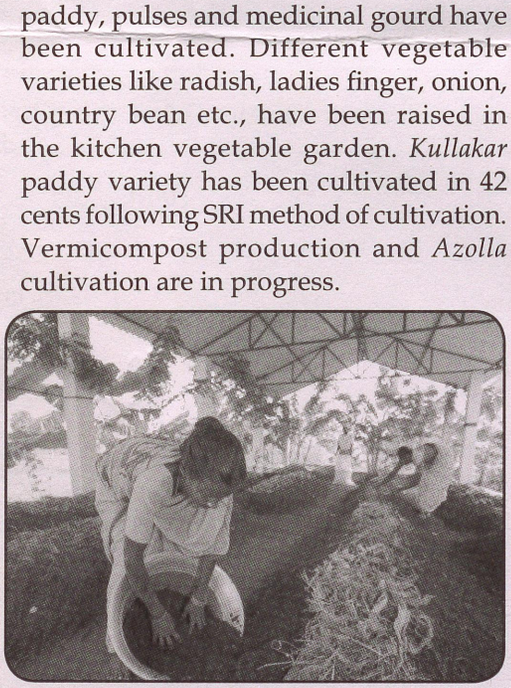
the millet processing machinery in Javvadhu hills. In Dindigul district, fields under organic certification programme have been inspected by Mr. Arumugam from Tamil Nadu Organic Certification Department.

Programme for Supporting Sustainable Organic Farming in Nagapattinam District of Tamil Nadu

This project supported by the National Bank for Agriculture and Rural Development (NABARD) is in progress in Sirkazhi taluk of Nagapattinam district. A total of nine farmers of Agani, Allivilagam, Elayankudi and Murugamangalam villages have been involved in the production of organic seeds of paddy, black gram and green gram in 12 acres. An organic input shop named 'Akshaya' has been inaugurated in Agani village on 21st January. Loan has been provided for the members of the women self help groups in Allivilagam and Aadhamangalam villages for the purchase of milch cows and goats. On 19th March, we have participated in "Safe Food Organic Mela" organized in Chennai and made a display of our products. Three beneficiaries and two staff members participated in a two day training on "Market Linkages for Organic Products" organized by ICCOA in Bangalore on 3rd and 4th March.

Work in Progress at Sukkankollai

In our experimental farm at Sukkankollai, crops like brinjal, groundnut, water melon, paddy, pulses and medicinal gourd have been cultivated. Different vegetable varieties like radish, ladies finger, onion, country bean etc., have been raised in the kitchen vegetable garden. *Kullakar* paddy variety has been cultivated in 42 cents following SRI method of cultivation. Vermicompost production and *Azolla* cultivation are in progress.



Harvesting of Vermicompost

NEWSROOM

Happenings and more.

Meeting on Seeds

On 27th and 28th January, the Restoration of Rainfed Agriculture (RRA) Network of India organized a meeting in Ahmedabad on the theme of Seeds for Rainfed Areas. The meeting was attended by RRA members from various parts of India and special invitees with expertise on seeds drawn from the State Agricultural Universities, Indian Council of Agricultural Research and the seed industry. The members discussed coordinated activities to be undertaken for the coming years and a Coordination Committee was formed to take the activities forward for which A. V. Balasubramanian of CIKS would be Convener. On behalf of CIKS, A. V. Balasubramanian and K. Vijaya lakshmi attended the meeting.

Visit of DST Expert Committee

An Expert committee of the Department of Science and Technology (DST) visited our Centre on 8th and 9th February to make an assessment of progress under the Core Support Programme. The team included Dr. Sunil Agarwal of DST, Dr. Sudha Nair (MSSRF), Dr. Khare (IIT, Delhi), Dr. Bagyaraj (Retd.UAS, Bangalore) and Dr. Baldev Singh (Retd. ICAR). On 8th February, they made a trip to CIKS farm and training centre at Sukkankollai and visited the experiments and work in progress, met our technical staff and presentations were made about work supported by the DST. On 9th February, the team came to the CIKS office at Chennai and presentations were made about proposals for future work after reviewing the current performance.

Visit of Women Farmers from Andhra Pradesh

A group of 45 women farmers from Farmer Training Centre in Anakkapalli district, Vijayawaada taluk of Krishna district and Eluru taluk of West Godavari district of Andhra Pradesh visited our project area in Sirkazhi taluk of Nagapattinam district in three groups consisting of each 15 members on 9th - 11th February, 8th – 9th and 20th – 22nd March vise versa. They were taken to visit community biopesticide and vermicompost units, value addition unit in Pagasalai village, organic demonstration farm in Ilayamadhukoodam village, seed processing unit in Thiruvengadu etc. Demonstrations of biopesticide preparation, vermicomposting, various other organic farming technologies and preparation of value added product – rice *appalam* were done. They also had detailed discussions with our farmers, members of the organic farmers sangams and women self help groups.

Exhibition and Food Festival on Safe Food

On 19th March, the Safe Food Alliance (SFA) organized an exhibition on Organic and Safe Foods at Chennai at the Tolkapiyar Poonga. CIKS participated in the exhibition and a stall was set up by the Sirkazhi team of CIKS along with the members of the Sirkazhi Organic Farmers Association (SOFA). On display, were a large amount of educational and training material and there were also several traditional varieties of paddy and products made from them. The event was attended among others by Subhashini Sridhar, K. Vijayalakshmi and A. V. Balasubramanian of CIKS besides various other members in the team.

TALK TO US

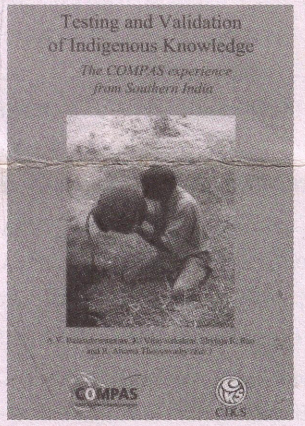
Send your feed back, comments and suggestions to info@ciks.org

BOOKSTORE

New Publications, Audiovisuals and Educational Materials

Testing and Validation of Indigenous Knowledge - The COMPAS Experience from Southern India

Editors: A.V. Balasubramanian, K. Vijaya lakshmi, Shylaja R. Rao and R. Abarna Thooyavathy. March 2011.



This publication provides an overview of efforts undertaken by the COMPAS partners towards testing and validation of indigenous knowledge of health and agriculture. It encompasses varied themes including local health traditions, ethnoveterinary traditions, bone setting practices, treatment for Malaria, characterization of indigenous seed varieties, disease resistance, seed treatment and methodology for rapid assessment of traditional agricultural practices. The results have been rich and fascinating and this publication is to share the results of this pilot work with a larger readership.

Price : Rs. 200/-

For copies, send a demand draft or money order favouring 'Centre for Indian Knowledge Systems' to the below address. Add 30% of the total cost towards postage. We do not accept Cheques / VPP.

VISITOR'S BOOK

Who's been dropping in at CIKS

On 6th January, Dr. N. Sukumar from Rensselaer Polytechnic, New York, USA visited our Chennai office.

On 6th January, Mr. Raffaele Teodonno, Project Manager, ICEI, Kandy, Sri Lanka visited us.

On 22nd January, Mr. P. Gomathinayagam, Farmer leader from Puliangudi and Mr. Sither, Organic Farmer from Thanjavur visited us.

On 2nd February, Ms. Shalaka Joshi from UNITUS, New York, USA visited us.

On 12th February, Mr. P. Ravikumar, Advocate, Bangalore involved in promoting sustainable agriculture visited us.

On 17th February, Mr. Joss Brooks from Pichandikulam Forest Consultants (PFC), Auroville visited us.

On 21st February, Mr. Rajasekharan, Assistant Editor, Rural India and Environment, Economic Times, New Delhi visited us.

On 24th March, Mr. Ambika Prasad Mohanty from Reliance Foundation, Mumbai visited our farm and learnt the seed conservation practices.

On 25th March, Ms. Akila Balu from Chennai and Mr. Arun of Tiruvannamalai Learning Centre, Tiruvannamalai district visited us.

Editorial Team : *Dr. K. Vijayalakshmi & R. Abarna* ***Design & Layout :*** *R.Anand & S. Ramesh*

Book-Post

To

Dr. N.V.Joshi,
Centre for Ecological Sciences,
Indian Insitute of Science,
Maleshwaram, Bangalore 560 012



CIKS
30, Gandhi Mandapam Road, Kotturpuram
Chennai - 600 085. INDIA
Phone : 91-044-2447 1087 / 5862
E-mail : info@ciks.org / ciksorg@gmail.com
Website : www.ciks.org

CIKS

CIKS NEWS

The CIKS quarterly newsletter

April 2012 Vol. 13 No. 2

For more CIKS news updates, visit www.ciks.org



FARMERS' FIELD SCHOOL

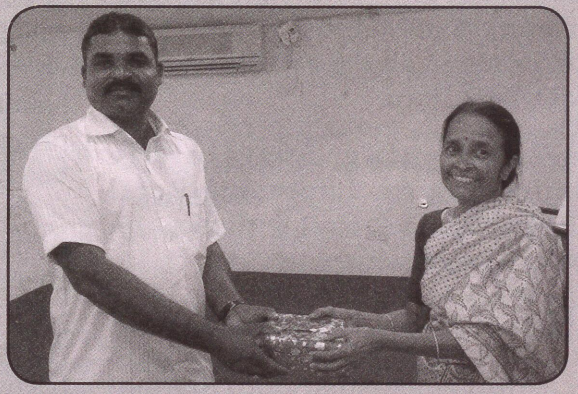
A Farmers' Field School (FFS) programme was implemented by CIKS in Kancheepuram district under the programme of Agricultural Technology Management Agency (ATMA) for a period of three months from January – March 2012. Under this programme, a total of 53 farmers including 35 women farmers have been selected from Kayarambedu and Moolakazhani villages. A total of six training programmes have been conducted for each village. The participants were trained on various topics like, introduction to System of Rice Intensification (SRI) method of paddy cultivation, seed selection and nursery raising, preparation of main field and transplanting, nutrient management, weed management, pest and disease management etc. Various demonstrations were also done. This three month programme was concluded on 23rd March. A valedictory function was organized and the chief guests of the occasion were, Mr. P. Selvaraj, Assistant Agriculture Director and Mr. K. Vivekananthar, Assistant Agriculture Officer, Kattankulathur circle of Kancheepuram district. During this event farmers shared their experience about this programme and the knowledge gained by them. Publications and organic inputs were distributed to farmers.



Participants of the onfarm training on organic cultivation technologies

CIKS TURNS SEVENTEEN

On 23rd January, all team members of CIKS from various offices gathered for a day long celebration for the Seventeenth Foundation Day of CIKS at Mahabalipuram. All members shared their impressions about working with CIKS and way forward. Members also gave their suggestions for improvement in various technical and administrative areas. This was followed by several lively cultural programmes. This gave an opportunity for all the staff to display their skills and also spend a relaxed day away from work and recharge their batteries.



Our senior staff distributing prize to a winner



PROJECT WATCH

A round-up of our activities

Sustainable Livelihoods through Organic Farming in Tamil Nadu

This project supported by Jamsetji Tata Trust (JTT), Mumbai is in progress in Kancheepuram, Ramanathapuram, Dindigul and Nagapattinam districts. Organic seed production is in progress in 88.67 acres. Under the input support and crop loan schemes, 725.41 acres are being supported. Demonstration fields are in place in 17.2 acres in all the four districts. A total of 143 organic kitchen gardens are being maintained in all the four districts. Vermicompost production is in full swing in 38 demonstration units and in four community units. A total of 28 microenterprises established under this project are progressing well and records for the same are being maintained by the beneficiaries. A total of 15 short term and four Trainers' Training sessions and six exposure visits were organised for the beneficiaries. Under the component on capacity building of NGOs, five training programmes, three exposure visits and three veterinary camps were organized for SKETCH (NGO in Ramanathapuram district) and *Pasumai* (NGO in Nagapattinam district). External inspections were conducted in all the four districts by IMO, Bengaluru.

Strengthening Sustainable Agriculture for Improving Rural Livelihoods: A Project with focus on Dryland Agriculture

This project supported by Ford Foundation and HIVOS is in progress in Thiruvannamalai and Dindigul districts. Entire land under this project is registered with Tamil Nadu Organic Certification Department (TNOCD). Sangam meetings were conducted. Crops like groundnut, maize, sorghum, black gram, horse gram, cotton, niger (*Pei ellu*) and varieties of millets cultivated in 1017.4 acres in both the districts during the previous season were harvested. Organic kitchen gardens are being maintained in both the districts. Beneficiaries are also involved in the production of vermicompost. Five training programmes on various organic farming technologies were conducted for the beneficiaries. In Dindigul district, external inspection was conducted by TNOCD. Construction of a millet processing unit in Javadhi hills has been completed and regular processing is in progress.

Eco-Friendly Management Strategies to Reduce Rat Damage in Agricultural Crops

This project supported by the Department of Science and Technology is being implemented in the Sirkazhi taluk of Nagapattinam district. Under this project, four experiments on eco-friendly rat management methods were conducted in the field. Mass campaigns on "Non-chemical rat management methods" were conducted in Kondal and Nemmeli Panchayats. As a part of this programme, rat control activity was taken up in 173.5 acres in five villages with the help of *irula* tribal group. A training programme on "Non-chemical methods of rat management" was conducted in Kondal village. An awareness programme on 'Eco-friendly rat management measures" was conducted in Poomphuhar College. An awareness programme on "Conservation of predators – snakes for rat management" was conducted for a diverse group of people.

Creating Livelihoods through Organic Farming – A Model

This project is in progress in Sirkazhi taluk of Nagapattinam district with the support of NABARD. Crops like paddy and groundnut cultivated during samba season have been harvested. A total of 36 farmers are involved in the cultivation of black gram, green gram and cotton. Six individual vermicompost units have been set up in Pagasalai and Ilayamadhukoodam villages. An awareness programme on 'Importance of tree planting in villages' was conducted in Pagasalai village. An orientation programme on organic kitchen gardening was held in Aadhamangalam village. A women Self Help Group (SHG) named Sri Krishna Women SHG has been formed in the Uluthukuppai village. Five members of this group were trained on value addition and now they are involved in the production of value added products.

Technology Transfer, Credit Counseling and Market Advocacy through Farmers Clubs

This pilot project is being implemented in Nagapattinam district with the support of NABARD. Under this project, a total of 42 training programmes were conducted for the sub-trainees on integrated pest management methods, Agro Eco System Analysis (AESA), organic cultivation, seed production, poultry farming etc. A refresher training programme was conducted for the



master trainees on 27th January. A group of 40 farmers from nine farmers' clubs were taken to visit the veterinary science exhibition held in Trichy on 25th February and in Thanjavur on 3rd March.

Development and Field Testing of Bio Pesticidal Oils Formulated as Soaps

This project supported by the Department of Science and Technology is in progress in Nagapattinam district. Under this project *Spodoptera* and *Aphids* are being reared in our insect rearing laboratory in Sirkazhi. Bioassays have been conducted on *Spodoptera litura* and *Aphids* using Neem oil soap solution at different concentrations. Project staff visited soap making units in Auroville to get to know about the procedures involved in soap preparation. A procedure for the preparation of neem oil soap has been evolved and preliminary trials have also been conducted.

A Project on Developing Integrated Sustainable Community Farm

This project is being implemented in Thirukadaiyur in Nagapattinam district with the financial support from the Churches Council for Child and Youth Care (CCCYC), Bengaluru. A total of 10 cows have been purchased. Poultry farming has been started in the farm. Production and use of vermicompost and biopesticides are in progress. Saplings of *Pongamia* and neem have been planted. As a part of the extension work in the nearby villages, an orientation meeting was conducted for the SHG formed in the Valayasozhagan village followed by a workshop on organic farming. On 21st February, an external inspection was conducted by IMO, Bengaluru. Three capacity building training programmes were conducted for the project staff. On 22nd February and 18th March, Research Director Dr. K. Vijayalakshmi and Director A. V. Balasubramanian visited the farm and reviewed the work in progress

NEWSROOM

Happenings and more.

Strengthening of SHGs on Value Addition

As a part of our effort on strengthening of women SHGs, a training programme on "Post harvest technology and value addition of grains and fruits" was organized for the members of women SHGs on 19th January. A total of 66 women beneficiaries from Allivilagam, Aadhamangalam, Manalagaram, Nemmeli, Pagasalai, Uluthukkuppai and Thathakudi villages participated in this training programme. The participants were trained on topics like, harvesting of paddy, milling, storage, preservation and value addition of fruits, paddy, millets etc. Mrs. S. Sulochana, Mr. S. Kumaranvel, Scientists and Mr. R. Paranthaman, Technical Assistant from Indian Institute of Crop Processing Technology (IICPT), Thanjavur and Mrs. N. Sangeetha, Assistant Professor from Pondicherry University served as resource persons.

Training on Organic Vegetable Gardening

An orientation programme on "Organic vegetable gardening" was conducted for the teachers at the Sabanayagam Muthaliyar Higher Secondary School in Sirkazhi on 20th January. This training programme was coordinated by the technical staff of CIKS. Teachers from five schools participated in this training programme. They were trained on the importance of raising organic vegetable gardens in schools, importance of nutritional security and balanced diet and technologies involved in organic vegetable gardening. Demonstrations of bed preparation, raising nursery, companion planting and biopesticide preparation have also been done.

Presentation and Discussion on Food Security Bill

On 8th February, Mrs. B. Poongkhulali, Advocate, Madras High Court and Ms. Akila Ramalingam, faculty of the National Law School of India University, Bengaluru made a presentation at the CIKS office at Chennai regarding the Food Security Bill that has been recently introduced in the Parliament. They outlined the major features of the Bill and also discussed certain responses and critiques regarding the bill particularly with respect to the responses of the Tamil Nadu government which already has a Public Distribution System in place for a long time. The meeting was attended by the CIKS technical staff, Programme Directors and the Programme Coordinator.

Visit to Gandhigram

A. V. Balasubramanian and K. Vijayalakshmi visited Gandhi gram on 24th March, 2012. K. Vijayalakshmi attended a meeting of the Lakshmi Seva Sangh. A. V. Balasubramanian visited various technical and production units of the Khadi and Village Industries to acquaint himself on their activities. They both had discussions with Mr. M. R. Rajagopalan, President and Shri K. Shivakumar, Secretary of the Gandhigram Trust.

Participation in Agri Exhibition

To promote the sales of the five women SHGs involved in the production of organic inputs, value added products, handicraft etc., in Nagapattinam district under the guidance of CIKS, a proposal was submitted to the Micro Credit Innovations Department (MCID) of NABARD during February 2012 to participate in the Dinamalar Agri Exhibition. Since the proposal was sanctioned, we have participated in the Dinamalar Agri Exhibition held in Trichy between 23rd and 26th March. Six women SHG members participated in this programme. They displayed their products and made a very good sale.

International Student Intern

Ms. Sarah Lakshmi Sax, who is a student at the University of British Columbia at Canada, spent a period of three months between January and March 2012 as a student volunteer working with CIKS. During the period she was involved in the survey of literature, preparing reports relating to the issue of seeds and seed industry as well as a preliminary survey regarding community seed banks promoted by NGOs.

ORGANIC FACTS !!!

More Nutritious Organic Food

It has been proved very authentically that organic production has a very positive effect on the nutritional value of food products. Organic foods contain lower levels of nitrates, antibiotics, pesticide residues and veterinary drug residues. They have a more balanced protein profile and also contain more minerals and vitamins. It has also been proved that organic plant based foods contain higher amount of secondary plant compounds like phytochemicals. Organic fruits and vegetables contain 40% more antioxidants and higher levels of beneficial minerals like iron and zinc. In the case of organic milk antioxidants level was up to 90%.

Crops and plants that are generally cultivated organically are not "pushed" or "forced" to grow like the ones in conventional agriculture. Though they are growth is a little slower they produce higher quality products since they are given more time to synthesize their vital components. Organic tomatoes exhibit higher concentrations of Flavonoid substances. The way organic food is handled and cultivated (crop variety, time of harvest, post harvest handling etc.) contribute to higher nutritional quality of the food.

Processed organic foods avoid artificial additives which have negative health impacts. For example, aspartame is a widely used artificial sweetener which is strongly linked to migraines, blurred vision and several other nervous disorders. These are completely forbidden in organic foods.

To sum up when we talk of organic food it is not a luxury but it is the way food is supposed to be.

VISITOR'S BOOK

Who's been dropping in at CIKS

- *On 7th and 8th January, three representatives from the NABHA Foundation, Punjab visited our Sukkankollai farm to get trained on Organic farming certification and Internal Control Systems (ICS).*
- *On 28th January, a group of seven members from KNH, Germany, Thyssenkrupp, Germany and the Church Council for Child and Youth Care (CCCYC), Bengaluru visited our Sukkankollai farm.*
- *On 31st January, a group of 15 farmers from the Khammam district of Andhra Pradesh visited our organic experimental farm in Sukkankollai.*
- *On 18th February, Dr. N. Sukumar and Dr. Sunanda of Shiv Nadar University, Greater Noida, Uttar Pradesh visited our Centre.*
- *On 25th February, Mr. [illegible] Rajendran, Manager Indian Overseas Bank, Erode visited our experimental farm at Sukkankollai.*
- *On 28th February, Mr. C. Baluji of Nachiyar Organic Garden, Pollachi visited us at Chennai.*
- *On 28th February, a group of 17 farmers from Pilupu NGO, Andhra Pradesh visited our organic experimental farm in Sukkankollai to get to know about various organic farming technologies.*
- *On 13th March, a team of four technical persons consisting of Mr. Chandankeri and his colleagues from TIDE, Bengaluru visited our Chennai office.*

Editorial Team : *Dr. K. Vijayalakshmi & R. Abarna* ***Design & Layout :*** *R.Anand & S. Ramesh*

Book-Post

To

Dr. N.V.Joshi,
Centre for Ecological Sciences,
Indian Insitute of Science,
Maleshwaram, Bangalore 560 01



CIKS
30, Gandhi Mandapam Road, Kotturpuram
Chennai - 600 085. INDIA
Phone : 91-044-2447 1087 / 5862
E-mail : info@ciks.org / ciksorg@gmail.com
Website : www.ciks.org

The Bakke Case:

THE MYTH OF REVERSE RACISM REVISITED

Paper by the International Committee Against Racism

25¢

THE BAKKE CASE:

THE MYTH OF REVERSE RACISM REVISITED

INTRODUCTION

In 1973, Alan Bakke, a 34-year-old white male engineer, applied for admission to the University of California Medical School at Davis. After being denied admission in two consecutive years, Bakke filed a suit against the University charging "reverse discrimination," i.e., that Bakke was being discriminated against as a white person. Bakke also asked that the University's affirmative action program be declared illegal. Bakke won his case in the California district court and the California Supreme Court. The case is now before the U.S. Supreme Court, and a decision will be made sometime during the first six months of 1978.

Bakke's suit claimed "lower qualified" minority students were admitted into Davis ahead of him. He based this claim on his higher scores on the Medical College Admission Test (MCAT) and his higher undergraduate Grade Point Average (GPA). The school admitted 100 students into each class. In practice, the school had a quota for 16 minority students per class. In the two years prior to its establishment of the affirmative action program, a total of three minority students had been admitted to Davis.[1]

Bakke's suit represents the culmination of a campaign that has been waged for at least seven years. The goal of this campaign is to convince a large number of white individuals, particularly students and workers, that whites as a group are suffering "reverse discrimination," and therefore, that minorities are the source of recent cutbacks in social services and hospitals, higher levels of unemployment and inflation, tens of thousands of layoffs in industries like steel, and the general deterioration in the U.S. standard of living. "By focusing attention on mythical privileges minorities are supposed to be enjoying, the press and university officials hope to pit whites against minorities and men against women and thus prevent them from uniting to fight the cutbacks."[2] At the same time, the power structure wants to convince minorities to rely on "their own kind" (i.e., minority politicians and businessmen) instead of their brothers and sisters in the U.S. rank and file to fight racism and worsening conditions.

This campaign began with the "discoveries" of a few racist scientists in the early 1970's of the genetic or cultural inferiority of black and other minority people. Shockley, Jensen, Herrnstein, Moynihan, and Banfield treated us to the spectacle of neo-racist eugenics, "pathological cultures of poverty, and laments about the declining quality

[1] National Lawyers Guild Clearinghouse Newsletter (February 1977), Volume 1, No. 1, page two.

[2] International Committee Against Racism, The Myth of Reverse Racism, Brooklyn, New York, page 4.

of academic institutions caused by minority admissions. Simultaneously, they began to propagate the racist idea that whites were being discriminated against by the institution of affirmative action programs. Jensen, for example, described how compensatory education was ripping off (white) taxpayers. Thus, these scientists deliberately played on racism within white people to turn them against minorities.

The eugenicists were given wide publicity by some of the most "respected" educational and scientific journals (e.g., Harvard Educational Review, Atlantic Monthly). The major media publicized the dredged-up, discredited ideas of Terman, Burt and Brigham as a "new controversy."

The next step in this campaign was the policy reports of big business dominated commissions.[3] Both the Carnegie Commission and the Committee on Economic Development called for higher tuition, de-emphasis on higher education, and increasing emphasis on vocational training and community colleges. The point was to further increase the elitist nature of colleges and universities in the U.S. and to drive out the minority and working class students who had recently gained admission and to channel them into separate apartheid-type community colleges. In 1975 another commission report chimed in with the conclusion that the federal government was doing too much to bring about affirmative action in faculty hiring -- it should leave the problem to the colleges.[4]

Earlier, the Carnegie Commission sponsored a study by Richard Lester which had subtly intimated that affirmative action hiring could bring down academic standards and undermine quality in higher education.[5] Thus it was made to seem that the best interests of "quality" and "meritocracy" in U.S. universities necessitated cutbacks that took a form discriminatory against minorities and women.

It was not too many months after the CED and Carnegie Commission Reports that university administrators began implementing the called-for cutbacks in earnest. Private college and university tuitions were already beginning to rise out of sight. Most state colleges and universities increased tuition; the vaunted N.Y. city colleges and universities -- supposedly a "model" for progressive education -- were the scene of the total dismantling of free tuition and open admissions in 1975.

Enrollment began to decline, and percentages of minorities admitted to undergraduate and graduate schools first stabilized and then decreased. For example, medical college enrollment of minorities reached a peak in 1974 at 10%; that proportion has now declined to 9%.

As the cutbacks were put into effect with a fervor, the media coverage of "reverse discrimination" cases increased. This reflected the need for the press to go beyond arguments about "quality" and "meri-

[3] Ibid., pages 24-27.

[4] Carnegie Council on Policy Studies in Higher Education, Making Affirmative Action Work in Higher Education (Jossey-Bass, 272 pages).

[5] Carnegie Commission on Higher Education, Antibias Regulation of Universities, Faculty Problems, and Their Solutions (McGraw-Hill, 1974),

tocracy," which were mainly aimed at intellectuals and professionals, to arguments about how "reverse racism" takes school positions and jobs away from white students and white workers. Naturally, these arguments about "quality" were not abandoned, because they provided "legal" and "moral" justifications for the "reverse racism" arguments. Beginning with the media's coverage of the DeFunis case in 1973-74, this barrage of "reverse racism" arguments has built to a crescendo.

It is important to stop and examine the essence of this argument. Maybe it is best articulated by the California Supreme Court in its opinion on the Bakke case in September, 1976: "...(T)here are more forceful policy reasons against preferential admissions based on race. The divisive effect of such preferences needs no explication and raises serious doubts whether the advantages obtained by the few preferred are worth the inevitable cost to racial harmony."[6] In other words, gains for minorities equal losses for whites, and affirmative action creates natural antagonism in a society where racism must be accepted as a fact of live. This is the myth of reverse racism in a nutshell. Minorities are receiving special advantages at the expense of whites, and programs designed to end discrimination are doomed to fail because of genetic racism or because "you can't legislate morality."

Thus, the campaign around the myth of reverse racism and meritocracy has been carefully orchestrated by the racist U.S. power structure. First, the ideological groundwork is laid by "scholars" from some of the leading universities, particularly Harvard.[7] These scholars are funded with government money. Then commissions dominated by big business and government bureaucrats propose wide-ranging cutbacks. The media, owned by the same poeple who own the banks and corporations, adds its plug. As the cutbacks are implemented by willing administrators, the media campaigns increase. And today, the courts are becoming the focus for the power structure's drastic increase of racism and the assault on the living standards of U.S. rank and file, both white and minority. Beginning with decisions that require that "intent to discriminate" be shown before segregation will be declared illegal (in

[6] Bakke v. Regents, 553 p. 2d 1152 (1976).

[7] Harvard has had no less than six major genetic or cultural racists on its faculty in the past five years -- Patrick Moynihan, E.O. Wilson, Banfield, Nerrnstein, Bernard Davis, and Nathan Glazer. E.O. Wilson is the founder of the new pseudo-science of Sociobiology. Bernard Davis, of the Harvard Medical School faculty, wrote an article saying that minority admissions lowers standards of the medical profession and endangers patients. Nathan Glazer is the author of Affirmative Discrimination.

the areas of busing and housing),[8] through a number of lower federal and state court cases holding quotas in education and employment illegal,[9] the power structure is moving to have the Supreme Court legalize segregation in employment, higher education, housing, schools, and all areas of life.

This pamphlet will expose the lies involved in Bakke's charge of reverse racism, and in the myth of reverse racism as a whole. It will demonstrate the collusion of the government, the University of California, the courts, the media and big business in helping to build the Bakke case as its main weapon today in the myth of reverse racism campaign. But we in INCAR want to go beyond discussing these issues. On the campuses, we're interested in building a mass, multi-racial, anti-racist movement which will take on the Bakke case, and its twin on the international level, U.S. investment and involvement in South African racist oppression. Whether it's segregation here or apartheid there, INCAR is out to erase racism from the face of the earth.

BAKKE'S CASE

We begin with some basic facts behind Allan Bakke's court case. Many of these facts will be new to the reader because, in contrast to the campaign to promote the ideology of "reverse racism," there has been no major campaign to publicize these facts by any major media organ.

During 1973-1974, Bakke applied to a total of 13 medical schools. He was unable to get into any of these schools. Some of these schools had no genuine affirmative action programs. (One school admitted no minority applicants, and three admitted fewer than 5%.)[10] Obviously, the fact these schools lacked affirmative action programs didn't help Bakke get in.

Bakke mentioned in his suit that the 16 minority studnets admitted into U.C. Davis had lower grades than he. He "forgot" to indicate, however, that 36 white students (almost one-half the total of 84) admitted by U.C. Davis also had lower GPA's than he. Bakke did not challenge the "constitutionality" of this admissions procedure.

Like most state universities, the University of California at Davis maintained close relationships with state legislators and politicians, ostensibly to guarantee its funding for each year. "Maintaining relationships" always carries a price, however, and the medical school relationships were no exception in this regard. Each year, the medical school admitted approximately five applicants to its first year class who

[8] See Washington v. Davis, 426 U.S. 229 (1976); Arlington Heights v. MHDC 45 U.S. 4073 (1977); in addition busing cases for the cities of Indianapolis and Dallas have continued this standard.

[9] See Lige v. Montclair 367 A. 2d. 833 (1976); Weber v. Kaiser 415 F. Supp. 761 (1976); Bakke; and Cramer V. Commonwealth of Va. (1977).

[10] New York Times (September 12, 1977).

were sons, daughters, or other relatives of state legislators, corporate bigwigs, and other influential people.[12] Neither Bakke nor the University referred to this as a quota.

We should finally mention that when he applied for admission, Bakke was 33 years old. Few medical schools accept applicants over 30. U.C. told Bakke that an applicant over 30 would have to be highly qualified to be accepted. Yet Bakke did not challenge his denial on the basis of age discrimination. He was only interested in the racial question.

We now turn to the role of the University of California. We begin with Bakke's application. After Bakke was denied admission at U.C. Davis, he sent a letter of protest to George Lowrey, Dean of the Medical School, saying he was going to sue the school for having a quota for minority students. The Assistant Dean at the Medical School, Peter Storandt, then sent a letter to Bakke which advised him, in part, to reapply for admission for the next academic year, and to do some research into the legality of minority admission policies. Storandt mentioned the DeFunis case, an earlier "reverse discrimination" suit, and then referred Bakke to two medical school faculty at other schools, both of whom were also lawyers.[13]

Bakke then met with Storandt and worked out a plan of how to sue U.C. Davis for its minority admissions program. Bakke even asked Storandt whether he (Storandt) would prefer that Davis not be sued -- Storandt had been "concerned and helpful" according to Bakke, and he didn't want to go against Storandt's wishes. Bakke received a letter from Storandt which advised him, in essence, to sue Davis unless he got in. Storandt referred Bakke to some more "useful" material in the Journal on Medical Education on minority academic performance. Article III of the U.S. Constitution is supposed to guarantee that a legal case that does not represent an actual controversy or the opposition of adverse interests will not be decided in the courts. In other words, if there is collusion between the two sides in the case, the courts are supposed to refuse to hear the case. We will discuss this question further in the section on the courts.

When Bakke first filed suit, in June, 1974, the University responded by filing a cross-complaint, calling for the court to immediately reach the issue of whether the minority admissions program was valid. The effect of this legal move was to allow Bakke to get through his case without having to prove that he would not have been denied by U.C. Davis even if they didn't have a minority admissions program.

[12] This information is based on an article in the East Bay Voice by Tim Nesbitt, which was in turn based on the testimony of Peter Storandt, admissions officer, and the research of George Sutherland, ex-medical student.

[13] All information in this paragraph and the next two is taken from the official clerk's transcript of the trial court proceedings in the Bakke case, as set out in the annotated chronology of the National Lawyers' Guild Minority Admissions Summer Project, Handbook on Affirmative Action (Detroit, Mich., 1977), pp. 21-23.

will document the trends in graduate school education since the late 60's.

Admissions

The Bakke case and other similar cases have implied that large numbers of "less qualified" minority students are being admitted to graduate schools ahead of whites. We will examine the questions of qualifications in the section on testing. The following table shows the present percentage of minorities in law and medical schools compared to their percentage in the national population.

TABLE I

	Composition by Race of Total Number of U.S. Medical Students			Composition by Race of Total Number of Law School Students		
Year	1970-71	1975-76	1976-77	1969-70	1975-76	1976-77
Blacks	N/A	N/A	N/A	3.1%	4.3%	4.6%
Hispanic	N/A	N/A	N/A	.6	1.9	2.0
Asian	N/A	N/A	N/A	N/A	.9	1.1
Native Amer	N/A	N/A	N/A	.1	.2	.2
Total Minority	2.8%	10%	8.9%	4.2	7.4	8.1
Total White	97.2	90	91.9	95.7	92.6	91.9
	Composition by Race of Total U.S. Population			Composition by Race of Total U.S. Population		
Total Minority	17*	18*	18.5*	17*	18*	18.5*
Total White	83*	82*	81.5*	83*	82*	81.5*

* Approximations based on the Statistical Abstract of the United States.

SOURCES: New York Times (September 25, 1977); Law Schools and Bar Admissions Requirements, American Bar Association (1977).

Clearly, minorities are getting no "special deal" in affirmative action. After six or seven years of programs supposedly designed to integrate graduate schools, the minority percentage of law and medical schools does not even closely approximate their percentage in the national population. And in medical schools, the percentage of first year peaked in 1975 and has declined sine then. The increases in minority law school admissions have been very slow since 1972. Thus, although the years since 1976 have seen some increases in the minority percentages of undergraduate and graduate school populations, the increases do not represent a breakthrough from previous patterns of segregation.

The most glaring example of the decline in minority first year medical school admissions is in the New York City medical schools. In absolute numbers, there were fewer minority students enrolled in the 1976 entering class at New York City's seven medical schools than there were in 1971.

TABLE 2

Minorities Represented in First Year of Medical Schools

	U.S.	New York City
1969	501	36
1970	808	56
1971	1,063	79
1972	1,172	69
1973	1,301	66
1974	1,473	80
1975	1,391	99
1976	1,400	75

SOURCE: Health Policy Advisory Council, The Myth of Reverse Discrimination: Declining Minority Enrollment in New York City's Medical Schools (New York, New York, 1976) p. 10.

In a state where minority people constituted 17.6% of the population, only 6.9% of first year medical students were minorities in 1976; this is also far less than the paltry 12% target set by the Association of American Medical Colleges in 1970 to achieve "equal representation." This target, like affirmative action programs in all areas of education, was a clear attempt to defuse the anger of the anti-racist ghetto rebellions of the 1960's. Of course, given the even grosser underrepresentation of minorities in the composition of the medical and legal professions (because of the discriminatory effects of the bar exam, medical boards, and other obstacles), the only way to really guarantee integration of these fields would have been -- and still is -- through acceptance of a greater percentage of minorities than their percentage of the general population. Because of these obstacles, even the five-year period of 1971-76 when the minority percentage of the medical student population was greater than 6% could make no significant dent in the segregated nature of the medical profession. This is clear from the fact that while the physician/population ratio for the U.S. in 1975 was 1:700, for blacks it was 1:3,800; for Native Americans, 1:20,000; and for Chicanos, 1:30,000. Thus, even the AAMC goal was very inadequate.

In addition, minority representation in most professional areas has been consistently been quite low. The following table tells some of the story.

TABLE 3

EMPLOYMENT STATISTICS 1940 - 1970

Occupation (Male)	White	(%)	Blacks	(%)	Other Races	(%)
1940						
Civil Engineers	80,008	(99.8)	95	(0.1)	68	(0.1)
Electrical Engineers	52,991	(99.8)	79	(0.1)	33	(0.1)
Architects	19,793	(99.5)	80	(0.4)	26	(0.1)
Lawyers & Judges	172,329	(99.4)	1,013	(0.6)	14	(0.0)
Physicians/Surgeons	153,388	(97.7)	3,395	(2.2)	258	(0.2)
Dentists	67,470	(97.7)	1,463	(2.1)	141	(0.2)
1970						
Civil Engineers	166,636	(95.27)	2,266	(1.30)	7,690	(4.43)
Electr. Engineers	270,377	(95.30)	3,843	(1.37)	9,339	(3.33)
Architects	51,541	(93.79)	1,120	(2.06)	2,250	(4.15)
Lawyers & Judges	258,839	(97.39)	3,309	(1.25)	3,573	(1.36)
Physicians/Surgeons	239,839	(91.26)	5,216	(2.04)	17,072	(6.70)
Dentists	86,252	(95.09)	2,218	(2.46)	2,204	(2.45)

In addition, the ratios of black and latin lawyers to the black, latin and other minority populations continues to be far less than the ratio of all lawyers to the total U.S. population.

On the other hand, while affirmative action has not benefitted minorities anywhere near as much as legend has it, whites have made substantial gains during the period of institution of affirmative action. In our previous pamphlet, THE MYTH OF REVERSE RACISM, we showed how 65% of students admitted under the New York City Open Admissions program, supposedly a boondoggle for minorities, were white. We showed that 79% of 1974 New York Cith high school graduates were in college the next fall, compared to a national of 47.5%, showing how open admissions helped all New York City students. In addition, between 1968 and 1976, bachelor degrees awarded to whites in the U.S. rose 45%. The fight against racism and for special admissions programs opened the door to reforms which initially benefitted everyone. Conversely, when open admissions was thrown out by the state at the height of the 1976-76 racist cutbacks, free tuition went the same way in a matter of weeks. Racist cuts at predominately minority community colleges paved the way for drastic cutbacks that hurt everyone in predominately white city universities. This is the logic of racism in U.S. society. There were no clearer examples than these in the field of higher education of how racism and racist attacks eventually victimize all of us who are not part of the power structure.

A similar pattern emerged in medical and law school admissions. Between 1968 and 1974, fully 4,900 new medical school slots were created.

White students received 77% of them.[19] In addition, between the period 1968 and 1976, the number of first year medical slots held by whites increased by 49%.[20] The law school increases were even more marked. Between 1969 and 1976, 86.6% of new slots created (42,474 out of 49,065) went to whites, and there was a 64.9% increase in first year slots held by whites (from 65,453 to 107,927).

Once again, the idea of minority privileges in graduate school being won "at the expense of whites" is exposed as a monumental myth. In fact, the opposite is true -- the fight for special admissions programs and affirmative action has paved the way for expanded access for all students.[21]

TESTING

As was pointed out previously, much of Bakke's case rests on the premise that his higher test scores and grade point average indicate that he has a greater ability to become a good doctor than the 16 minority students admitted to U.C. Davis. In this section, we will analyze data dealing with different standardized exams -- the SAT, the LSAT, and the MCAT. We are going to look at two different aspects of these exams -- race/class bias inherent in the questions themselves, and correlation of tests and grade point average with various factors, including ability in a profession and parental income. For a full examination of the discriminatory history of standardized exams, see the INCAR paper "I.Q. Tests as Instruments of Oppression."

In the U.S. today, most colleges and universities require the Scholastic Aptitude Test (SAT) as one criteria for admission. A 1973-74 study of 647,031 students done by the Educational Testing Service (ETS), the authors of the test, showed a direct correlation between test score and parental income. The mean income for groups with a score in a range of 50 points (e.g. 750-800) followed a steady downward trend as the group scores decreased. Also, the mean score for seven identifiable income groups increases as income becomes larger. A 1972-73 ETS study of 650,797 high school students revealed the same pattern.

What is perhaps most remarkable about both these studies is the precision of the correlation. The increments between each average mean income (in the 1973-74 study) are relatively equal. An ETS spokesman indicated that a similar pattern would be found for the LSAT, which uses a similar test format.[22]

An interesting question for ETS would be whether there is a factor that correlates better than family income with SAT scores.

The dissenting opinion of California Court Justice Tobriner in the Bakke case cites no less than five studies which show no correlation

19 Newsweek, (September 26, 1977).
20 New York Times, (September 12, 1977).
21 This was true also at Davis. Before the special admissions program, the school had 80 slots; when the special admissions program of 16 slots was created, the school also added four more slots for a total of 100.
22 Paper of Asian American Law Student Special Admissions Research Project at Boalt Hall.

between MCAT socres or undergraduate G.P.A. and performance as a doctor.[23] One, a 1964 study done by Dr. Price, found no correlation between undergraduate or medical school grade point average and physician performance. It looked at four typed of doctors: full-time medical faculty, specialists, urban general practitioners, and rural general practitioners.

In addition, as we stated previously, the American Association of Medical Colleges, which devises the MCAT, stated on November 4, 1976, that the tests they had used prior to that date (including the one given to Bakke and his contemporaries), contained a section which was admittedly racially biased against blacks, other minorities, and rural people.[24] Dr. Cooper, president of AAMC stated benificently that, "It may not be necessary to know what a Haydn symphony is" to be a good doctor. That section has been removed, but it is indicative of the gross built-in racism of the standardized test format that even those like the AAMC, who hold these tests so sacred would admit its bias.

Analysis of the LSAT

In the following sections, we will discuss three of the eight sections of the LSAT. Since the Educational Testing SErvice does not make actual LSAT exams available, it is necessary to examine simulated aw School Admissions tests in order to pinpoint the cultural bias of the test. We will use Barron's How to Prepare for the LSAT so that we can look at individual sections of the test. This book presents simulated practice exams "to help the student check.... progress and increase...confidence so that he will be both academically and psychologically prepared for the examination." Given the following, however, no preparatory book could overcome the biases of the exame.

A. Error recognition. The error recogniztion section consists of a number of single sentences. Some of the sentences are "unacceptable in standard written English because they contain errors. There are three types of errors: poor diction, verbosity, incorrect grammar. The sentence may also contain no error. Therefore, there are four possible answers."

Frequently, the ability to find the correct answer will rest upon knowledge of the meaning of a single word. For example, Item 23, p. 535: "The term is reserved for gaucheries such as complimenting the hostess on her cooking skill when the meal had been catered, etc." For a person who does not know the meaning of the word "gaucheries," an impulse would be to guess that there is a diction error (that the unknown word is incorrectly used). Distracted by the unfamiliar word, many may not notice the reduncancy of "such as" and "etc." (The correct answer is verbosity.) Knowing the answers to some of the questions in this section, then, may depend on the size of one's vocabulary, even though it is not argued that vocabulary size is relevant to the ability

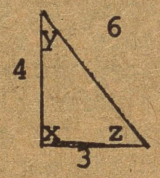
[23] Opinion of Justice Tobriner, Bakke case, p. 40.

[24] New York Times, (November 5, 1976)

to practice law. The bias of this section is in favor of those whose cultural background has stressed reading, especially the reading of English literature. Conversely, those whose cultural backgrounds have stressed the building of other skills, including the poor and those from racial and cultural minorities, will tend to be hurt by this section.

B. Quantitative Comparison. The section entitled "Quantitative Comparison" frequently tests knowledge of mathematical formulas. While some of this is relatively basic, questions designed to test knowledge of formulas not used in law school or in the profession may reflect educational discrimination in mathematics preparation more than law school potential. For example, the following problem appears in the sample LSAT:

203. Which is greater?



x y + z

The triangle appears to be a right triangle. If it were, x would exactly equal y + z. If a person is aware, however, of the formula for finding the length of the hypotenuse of a right triangle (that the square on it is equal to the sum of the squares on the other two sides) it becomes apparent that the figure is not a right triangle ($3^2 + 4^2 \neq 6^2$). From this one could deduce the correct answer, that x is greater than y + z.

Similarly, the following problem requires knowledge of the formulas for the area and circumference of a circle. One is asked to decide which is greater, "the area of a circle with a circumference of 10" of "Twice the area of a circle that has a circumference of 5." How either of these formulas is related to the practice of law is hard to see.

C. Business Judgment. Perhaps the most blatantly biased section on the LSAT is the one entitled "Business Judgment" or "Practical Judgment." A long passage is given to the reader which invariably involves the operation of a business. This includes long and complicated descriptions of company production, equipment, transactions, profits, cost/benefit analysis and other aspects of a business operation. The student is then given a series of items, each of which describes a goal, factor, or assumption involved in the company operations. The student is asked to characterize each item as either a major objective, a major factor, a minor factor, a major assumption, or an unimportant issue.

A person with some knowledge of business operations or corporate economics will have an advantage on this section because familiarity with general business problems will make the long complex passages less intimidating. A person from a family in which family members are involved in business, for example, would be more likely to do well in this section than others. Needless to say, few minority families have members involved in large business operations. The clearest area of discrimination of this section, however, is along class lines since few poor people run big businesses. Since racial minorities tend both to be poorer and to be more often excluded from the running of businesses, this section clearly discriminates along racial lines.

To the above we wish to add two other factors. Because students are met with a battery of standardized tests from the time they are in Kindergarten, initial performance is frequently reinforced. Confidence is developed or lost by repeated exposure to success or failure. Elementary school teachers and test administrators are often aware that repeated failures make even bright students into poor test-takers. In addition, educational background also helps determine preparation for standardized tests. Many private schools, for example, spend a good deal of time on preparation. Public schools, on the other hand, give relatively little preparation for standardized tests, particularly for students who may not be considered "college material."[25]

Thus, it can be seen that (1) the MCAT does not correlate with physician performance; (2) ETS has done no study on the LSAT attempting to correlate it with lawyer performance; (3) there is an identifiable difference in scores on LSAT, SAT, and MCAT between whites, blacks, and latins; (4) these differences can be traced to parental income which is disproportionately lower in minority families; (5) questions on standardized tests are deliberately rigged to differentiate between groups of people in a race and class way, thus reinforcing discrimination previously created by the power structure.

It is now clear why the University of California, even before the Bakke case has been decided, has used Bakke as a pretext to return to an admissions system more reliant on SAT scores. It is also clear why, for example, Rutgers-Newark Law School, supposedly one of the most "progressive minority-oriented" U.S. institutions has recently contemplated greater reliance on LSAT scores for classes to be admitted in the future. What may not be so clear is reports by ETS on the continuing rise of undergraduate GPA and LSAT scores of minority students admitted to law school. The average of these scores of minority students has increased so much that it is now higher than the average of all law students enrolled 15 years ago. For example, at Georgetown University the average first year minority student in 1977 entering class had a 590 compared to 460 in 1973. The average first year white student in 1977 averaged 685. At Rutgers-Newark, the average first year minority student in the 1975 entering class had a 500, compared to 450 in 1970. The average first year white student in 1977 had a 650, compared to 600 in 1970.[26] In summary, according to ETS, "the quality, in terms of LSAT scores and undergraduate grades of first year law students is much higher today than it was 10 to 15 years ago.[27]

Some fall into the trap of saying that minority students higher LSAT scores than all law students 15 years ago proves their qualifications — such a statement accepts the validity of the tests as indicators. What the large increase in scores of minority students over the past five to eight years really indicates is the increasing tendency of graduate institutions to bring in minority students from elite backgrounds, few though there may be.[28] There are those few because much of the college expansion forced out of the power structure in the 60's was used by the power structure to guarantee the slow development of a minority elite. "What was civil rights all about? It was about people getting into the mainstream of life," said a

[25] This analysis of the LSAT was taken from an INCAR pamphlet written at Rutgers Law School. A similar analysis is found in "Trial by Numbers: The LSAT and Cultural Bias", Guild Practitioner, Volume 34, No. 2, spring '77, p.33.

black law student recently.[29] In other words, one aspect of civil rights was about a few black, latin and other minority people advancing into positions of business and governmental power. Such a view coincides rather nicely with that of a power elite increasingly in need of a minority middle management group to buy off rebellion against racism, unemployment, and economic cutbacks. Therefore, the move towards admitting a few minority students from upper income brackets will probably survive whatever the U.S. Supreme Court decision in the Bakke case is.

To sum up, those few working class students who were admitted to the graduate schools in the late 60's and early 70's have now been all but eliminated. The small number of minority studnets admitted has already been cut back and will continue to be cut, regardless of Bakke. The Bakke case will only accelerate a process that began three to four years ago.

RETENTION

As we pointed out in THE MYTH OF REVERSE RACISM, minorities face tremendous obstacles to pursuing higher education in the United States. Racial discrimination has confronted most minorities for all their lives. In graduate school, particularly law and medical school, competition fostered by elitism is frequently fierce. In spite of this, the most recent study by the Association of American Law Schools showed that 70% of minority students in the survey who began the 1970-71 school year and were traced through their law school careers, eventually graduated in 1973 or were expected graduate one year later. And lest anyone think the percentage was higher because different standards were used or a raft of compensatory programs was offered, the study indicates that the exact opposite was true.[30]

At particular institutions, there is a marked difference in termination rates. At Rutgers University Law School in Newark, minority retention has been relatively high. This school admits between 20% and 25% minorities into each class and has a relatively comprehensive Minority Student Program which offers tutoring, and a grading policy which used to take into account the rigors of first year competition and initial acquaintance with the legal system by disregarding failures obtained in the first semester by any student.[31]

[26] These figures are approximate, but show general rising trend in test scores.

[27] New York Times, (February 24, 1977).

[28] At least one New Jersey college shows a similar trend. (Rutgers)

[29] New York Times, (October 25, 1977).

[30] No more than 18% of the schools surveyed offered special programs for minorities (e.g. tutoring) in the second year. In the third year, the figure was 6%. Finally, standards were "uniform" in almost 100% of the institutions. AALS Bar Examination Study Project, (1973).

[31] This grading system was abolished by the faculty in Fall, 1976.

On the other hand, Wayne State Law School, which in 1976-77 had a minority population of 13.3%, and which established a very rigid standard of grade point average after the first year, has terminated minorities at a grossly disproportionate rate since the beginning of affirmative action there. For example, in 1975-76, 62.5% of first year minority students were either flunked out or put on probation, as compared to 8% of non-minority students. The standards required students to maintain an average of 1.67 (C-) at the end of each year. An average between 1.67 and 2.00 required probation. In addition, WSU has a policy that a C- grade be given to a mandatory 5-10% of the class and D grades be given to a mandatory 5-10%.[32] In other words, WSU Law School has a guaranteed policy of racism. The Michigan Trial Lawyers Association said these statistics constituted a "prima facie case" of racial discrimination by Wayne State Law School. These racist terminations were met by mass protests, a sit-in, and a suit by some of the terminated students.

It is interesting to note that, at Wayne State, there is a vast difference between the percentage of first year minority students terminated or on probation, and second and third year minority students. Those minority students who get past the first year have a much smaller attrition rate in their later years. This supports the idea that, while law school is a difficult adjustment experience even for those who come out of elite academic settings, (a la "Paper Chase"), the first year of law school for many minority and other working class students can be terrifying. One year of experience with the competition, elitism, and mystical gobbledygook that qualifies as "jurisprudence" is invaluable for dealing with it, especially for minority students.

THE ROLE OF THE COURTS, THE MEDIA, AND THE GOVERNMENT

It is important to re-emphasize this quote from the majority opinion of the California Supreme Court on Bakke: "The divisive effect of such preferences needs no explication, and raises serious doubts whether the advantages obtained by the few preferred are worth the inevitable cost to racial harmony."[33] In other words, minority people and whites have no common interest in affirmative action and will inevitably fight each other over fewer and fewer jobs and university slots. In addition, the cause of racism within society is pinpointed as affirmative action programs themselves and implicitly, integration of educational institutions.

One interesting point about the courts is that they frequently have methods available to them which can enable them to decide when they want to make a decision critical to U.S. institutional racism. The U.S. Supreme Court had the DeFunis case, similar to Bakke, before it in 1974, yet it used a legal technique, mootness, to put off the decision. A similar legal technique, "lack of controversy," was available to the California Supreme Court and the U.S. Supreme Courts.[34] Yet, they have

[32] All statistics compiled by WSU INCAR, using administration's own figures.

[33] Bakke v. Regents, 553 p. 2d 1152 (1976).

[34] We will not go into the specifics of these legal doctrines here, except to say that in general the courts have created these doctrines in order to have available to them means of putting off major decisions.

both refused to invoke this doctrine feeling now that the time is ripe to go after special admissions and affirmative action.

Similarly, super-liberal Justic Douglas wrote a very confused dissenting opinion in DeFunis which called for the abolition of the LSAT and at the same time attacked affirmative action. Needless to say, Douglas' attacks on affirmative action have been used extensively since then by lower courts (including the California Court in Bakke) to justify decisions against affirmative action. At the same time, not another word has been said about the racist LSAT. Thus, Douglas and other court liberals (like the California court majority) and the New Jersey Supreme Court, which outlawed employment quotas in the Lige case, have led the way in dismantling past affirmative action programs and paved the way for further racist attacks on quotas.

Jimmy Carter's administration is aiding the courts in their drive to bolster institutional racism. In its brief to the court, the government has come out in support of "goals," a vague concept, which has been proven historically to be an excuse for non-enforcement of affirmative action.[35] In doing so, it has implicitly rejected quotas as a solution to the problem of institutional racism. It has aided the cause of those who call quotas "reverse discrimination." Taken in the context of its do-nothing attitude towards black unemployment (13% officially -- more than twice that of whites), it is nothing more than the racist policy of "benign neglect" put forward by the culture of poverty theorist Daniel Patrick Moynihan during the Nixon administration years.

We come now to the institution which has aided the myth of reverse racism campaign more than any other -- the press, and in particular, the liberal press. Many people think the U.S. press, being fair and open-minded, has given covereage to Bakke types in order to encourage free debate or expose the rise of racism. Others say that, on the whole, the liberal press supports affirmative action, so why complain. However, in the recent period, a raft of articles favorable to Bakke and proponents of "reverse discrimination" theories have appeared. In this way, the media has helped to institute the myth of reverse racism in a ma's way.

The New York Times of April 3, 1977, entitled, "White, Male, and Rejected," paints us all a sad portrait about how poor Bakke couldn't become a doctor even though he was more than "qualified." ABC Network in its program on Racial Equality mainly interviewed white police and prison guards involved in suits against local government officials to show how whites resent affirmative action. No doubt ABC didn't care that it was interviewing some of the most racist and reactionary people in U.S. society to make its point. With one exception, ABC presented affirmative action as purely black against white issue (i.e. whites interviewed opposed it and blacks interviewed favored it). Where were the 40% of U.S. whites that favor affirmative action, according to a recent New York Times poll?[36] Interviewing these folks would not have served ABC's divisive intent.

[35] Goals were used by federal agencies prior to the Civil Rights Act of 1964. Even the consensus of law review writers is that "goals" were a wholly ineffective method of fighting racial discrimination.

[36] New York Times, (November 24, 1977).

Newsweek, in its September 26, 1977 issue, presented a blatantly racist cover depicting a white college student and a black college student both pulling at a gigantic diploma which was in between them. The message was obvious: NO COMMON INTEREST HERE. Most recently, there is a New York Times article (November 24, 1977), entitled, "White Males Fight Back on Minority Job Programs," lauding the efforts of those white males who have decided to "fight City Hall" by filing reverse discrimination suits. Naturally, one of the white males in question was passed over by "women who had lower qualifications and less experience." The Times never explained what those qualifications were. In this article, the Times gives publicity to one despicable federal bureaucrat who Carter didn't like well enough to appoint. This racist is quoted as saying that the Karter Klan has put a sign on the administration door saying "NO WHITE MALES NEED APPLY." The Times publicizing of their poll showing that a significant minority of whites haven't falled for the "reverse racism" line cannot counterbalance the effects of articles like this one, which are far more prevalent. In this way, the media serves the needs of the power elite.

JOBS, THE NEXT MAJOR ATTACK BEYOND BAKKE

Just so there is no doubt about the even more deadly aim of the myth of reverse racism campaign, the next major affirmative action/"reverse discrimination" case that will come up before the U.S. Supreme Court will involve employment. There are two key lower federal court cases, one from Virginia involving a white applicant for sociology professorship claiming reverse sexual discrimination, and another from Louisiana, involving a white steel worker claiming reverse racial discrimination.[37] The November 24, 1977 New York Times article referred to previously, "White Males Fight Back on Minority Job Programs," cited numerous other employment cases that will eventually reach the Supreme Court.

According to liberals in the power elite, affirmative action in employment, retention, and hiring has a sounder legal basis than affirmative action in education -- Title VII of the 1964 Civil Rights Act. However, a number of statistics both show the fallacy of that argument and the lie of reverse racism.

Obviously, the unemployment rate at least partially reflects the rate of hiring and firing of minorities and whites in the U.S. economy. Black unemployment recently reached its highest rate since World War II -- 14.7%, during one month in 1977. The average for 1977 as a whole was a black unemployment rate of 13.9%. This rate more than doubled the white unemployment rate, and showed a tendence to rise during the first part of 1977, even whil the white and overall unemployment rate went down.

[37] See Weber v. Kaiser and Cramer v. Commonwealth of Virginia.

A particular example of the atrocious effect of racist unemployment was the rate among minority youth in New York City -- 86%. In other words, six out of every seven minority teenagers couldn't find jobs. (The unemployment rate for New York City white youth was at 74%, no doubt now an "acceptable" level of unemployment for New York City youth, reflecting the economy's continuing climb toward "full employment.")

Another indication of the effect of massive cutbacks and layoffs in the U.S. is what occurred during the New York City fiscal "crisis" of 1975-76. During that period, the workforce was chopped by 60,000 workers, or 20% of the workforce. Recently, it has been revealed that these huge cutbacks did not affect employment of managers and administrators in New York City. Only the workers were laid off. This tremendous attack hit all workers, both those laid off and those remaining, who were left to do more work in the same time for the same pay. But the disproportionate effect of these layoffs was even clearer -- 50% of the city's Hispanic workers were laid off; 33% of the city's black workers; and 20% of the city's white workers. What did the Civil Rights Act of 1964 do for these victims of the city's racist attacks? Nothing. As a matter of fact, the courts upheld these attacks. (See Acha v. Beame 531 F.2d 638 2nd Cir. 1976).

Another example of continuing discriminatory patterns is the percent distribution of workers in occupations by race. For example, 34.2% of employed blacks were white collar workers in 1975, while 51.7% of white workers were employed there. In the same year, 37.4% of black employed were blue collar workers, compared to 32.4% of white employed. Finally, in the service industries, by far the lowest paying, 25.8% of blacks employed in 1975 were service workers, and 12.3% of whites employed in 1975 were service workers. Thus, the lower paying the job, the more likely it is for the the average black worker to have the job than the average white worker. In addition, a previous table has documented the extremely small percentage of minorities in various professional jobs.

The courts, after a period of five to ten years of decisions generally favorable to affirmative action programs (within certain well-defined limits)[38] have in the last two years taken a sharp turn against affirmative action programs. In addition to the California Bakke decision, and numerous Supreme Court cases establishing the requirement of intent to discriminate, the liberal New Jersey Supreme Court has explicitly declared employment quotas illegal, despite the fact that it did not disturb a lower court finding that the blatantly racist employment test used by the City of Montclair, New Jersey, to determine hiring and promotion of firemen was discriminatory.[39] In other words, racist tests can again be used with impunity! The New Jersey Supreme Court twice cited Nathan Glazer's racist book, Affirmative Discrimination, and clearly adhered to his concept

[38] These "favorable" decisions have usually had the effect of blaming and penalizing white workers for the companies' past racism (see, for example Franks v. Bowman). The few decisions which attempted to penalize the company and enjoin it from taking out their losses on white workers were overturned by higher courts.

[39] The test used was the Wonderlic Personnel Test, the same one used by Duke Power in the Supreme Court case that established the "effect" as the legal determinant of whether a practice was discriminatory.

of meritocracy: "equality of opportunity in employment will become more realistic when co-equality of opportunity in education exists. [40] Lowering the standards for the Montclair Police and Fire Department is not the solution." Thus, the New Jersey court joins enthusiastically in the racist campaign around the issues of "quality," "merit," and "high standards," all smokescreens for the endorsement of the re-institutionalization of discredited racist tests.

CONCLUSION

We have shown how the Bakke case itself is a fraud, a calculated collusion between the University of California and Bakke, which promotes the idea of "reverse racism." We have shown how the Bakke case fits into a national campaign involving the universities, the government, the courts, big business, and the media to promote the same idea. Finally, we have shown how the whole idea of "reverse racism" is, in reality, a lie, proven to be so by the government and universities' own statistics. This campaign is critical to the power elite in its attempt to further divide rank and file minorities from rank and file whites, creating the basis for a mass racist movement which scapegoats minorities for the continuing economic deterioration in the U.S.; at the same time the campaign lays the foundation for a new black and latin elite, which will give the illusion that minorities can "make it" in a racist system and also aid the suppression of minority rebellions (one example already is Maynard Jackson, mayor of Atlanta, who fired almost 1,000 mostly black sanitation workers in a recent strike and replaced them with scabs). The question remains: why is this happening now?

The "American Century" is no more. For the past ten years, the position of the United States in the world community, economically, politically, and militarily, has suffered an extensive decline. The U.S. defeat in Vietnam and the vast amounts of money spent on it are major contributing factors of this decline. In the same period, other industrialized countries have advanced at U.S. expense — the Soviet Union, West Germany, and Japan. While the U.S. spent money for the war in Vietnam, these countries invested in factory modernization and other capital improvement.

This increasing rivalry between the U.S. and other countries, chiefly the Soviet Union, has also contributed to the sharp decline in the U.S. standard of living, culminating with the largest recession since the 1930's (in 1974-75). Huge unemployment, tremendous cutbacks in services, frequent soaring inflaction have all characterized the U.S. economy in the past four years. More recently, tremendous disaffection with politicians, with the economy, and with big business, and with U.S.

[40] Nathan Glazer is one of numerous Harvard professors like Herrnstein and Moynihan, who has been in the forefront of academic racism and neo-racism. He regards "lower class" blacks as having a "pathological culture."

institutions in general have been evident even in the power elite's own "public opinion" polls, while the economic outlook fails to improve. One major effect of the increasing rivalry between the U.S. and the Soviet Union is the increasing danger of open and direct military conflict. With both countries supplying arms to adversaries in many parts of the globe (Somalia and Ethiopia, Israel and Syria, Ian Smith - Muzorewa and black nationalist guerillas in Rhodesia/Zimbawe), the danger of war becomes greater despite various "peace" moves on both sides. (The same "peace" moves were made just before World War II). This war will quite possible be waged by the U.S. in defense of blatantly racist regimes.

Thus, those who hold fundamental power in the U.S. -- the corporate elite, the bankers, the politicians, certain segments of academia, and the media -- are increasing the use of their most powerful weapon in taking out <u>their</u> economic losses on the rank and file: <u>racism</u>. In the process, they are attempting to ensure that any mass, multi-racial, anti-racist movement that begins to press for radical reforms, and begins to draw together large sections of the working class and others (students, farmers, intellectuals), will be met by a right-wing racist movement, calling for sacrifices in the "national interest," and using violence to promote racism and segregation, and crush an increasingly militant labor movement. To complement this approach, the new minority elite will attempt to buy off all rebellions against racism, and convince black soldiers to fight in South Africa or Rhodesia.

We, the rank and file, must answer with the International Committee Against Racism -- an international, multi-racial, anti-racist organization that fights racism in the U.S. and Canada, apartheid in South Africa, and points out the inextricable connection between the two.

Because the auto companies that make super-profits from racist apartheid in South Africa are the same ones that profit from racially-segregated "skilled" and "unskilled" job categories in the U.S. auto plants, we need an anti-racist movement that actively fights the barriers -- racial and national -- that are created to prevent us from achieving the power of the united, multi-racial, international rank and file. These same companies place their individual directors on governing boards of universities that enforce racist cutbacks on affirmative action.

INCAR's program for radical reform includes 30 hours work for 40 hours pay, U.S. out of South Africa, stop uncritical teaching of theories of genetic or cultural inferiority, and amnesty for all immigrants and no racist deportations. To achieve this program requires a body blow against U.S. racism. Waging this struggle will put the rank and fill on the offensive to win the things we need for a decent, integrated and fulfilling lives. Our failure to unite will pave the way for fascism and imperialist war. Join us in this life and death struggle.

PRINCIPLES OF INCAR



THESE PRINCIPLES WE REGARD AS VITAL IF THE FIGHT TO ELIMINATE RACISM FROM OUR SOCIETY IS TO BE SUCCESSFUL. RACISM, INCLUDING ALL FORMS OF SEGREGATION, MUST BE ELIMINATED FOR ANY SOCIAL PROGRESS TO TAKE PLACE.

The International Committee Against Racism is founded on three basic principles:

1) We are a multiracial organization precisely because racism and neo-racism victimize all racial and cultural groups in that they allow our standard of living and our opportunities for growth and development to be diminished while at the same time effectively dismantling our ability to unite in a mass way to protest, resist, or otherwise oppose such developments. Multiracial unity is essential to success in our fight to improve our living conditions and to expand the very nature of our human lives.

2) We are a mass rank-and-file organization, drawing our strength from ordinary people because the fight against racism mut be waged and led by the people who are its constant victims. We are not organized as a small group with a few leaders who spend all their time calling press conferences. Nor are we a coalition, composed simply of representatives from other organizations. INCAR is a membership organization, willing to work with other organizations, that primarily seeks to involve millions of grassroots people directly in the struggle against racism.

3) We are an action-oriented organization, committed to opposing racist ideas and practices in all their forms, by deeds as well as words. We take part in direct action and protests, as well as educational activities, in our efforts to combat racism. We seek not only to educate and alert people to the dangers, costs, and political consequences of racism, but furthermore to mobilize people to effectively combat it.

send for INCAR literature

1. Stop Deportations: (English) 25c ($12/75
2. Stop Deportations: (Spanish) 25c ($12/75)
3. What Has INCAR Done? (Revised) (Spanish) (English) 25c
4. The Myth of Reverse Racism 50c
5. The Bakke Case: The Myth of Reverse Racism Revisited 25c
6. The Road Not Taken (The true history of the "Roots" of American racism) 50c
7. Statement Against Sociobiology ..... $1/50 (1 copy free)
8. I.Q. Tests as Instruments of Oppression ..... $1/50 (1 copy free)
9. INCAR and the Struggle Against Racism 50c

New upcoming pamphlets: On the Job: South Africa; Sociobiology; and High School INCAR.

INCAR
Box 904
Brooklyn, New York 11202

JOIN INTERNATIONAL COMMITTEE AGAINST RACISM

(Please circle): I would like to join INCAR:

Professional $10
Worker ..... $ 5
College Student $2
High School/Unemployed $1

Send INCAR ARROW 1 year—$5.00

pamphlets

1 2 3 4 5 6 7 8 9

NAME .....

ADDRESS .....

CITY ..... STATE ..... ZIP .....

Union and Local, or School ..... Unemployed .....

Enclosed is $ _____

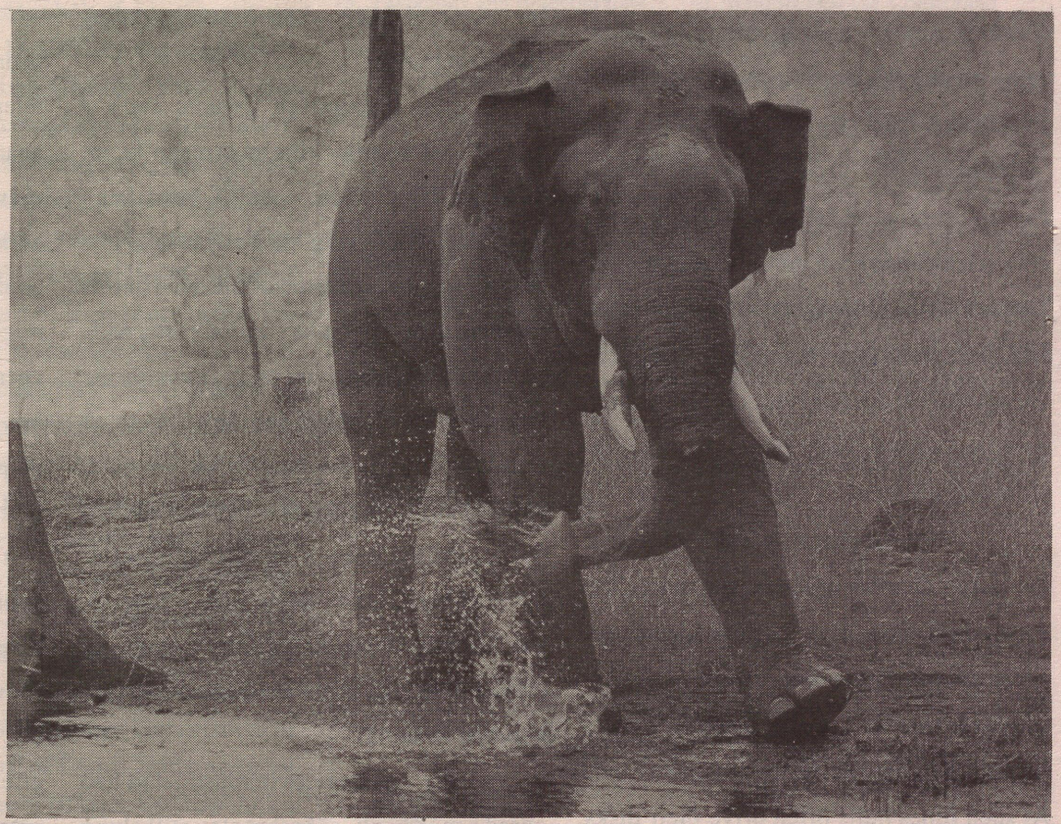
Sacon News

A Quarterly Newsletter published by Salim Ali Centre for Ornithology and Natural History, Coimbatore.
Vol. 2 No. 1

MUSTH

M Krishnan

I have not visited an elephant forest in the past four years, but right from my college days till 1990, for six decades, I have taken every opportunity that offered to observe elephants all over India. By 1962, I thought I knew as much about wild elephants as anyone did, probably more by close, risky personal experience: opportunities for closer and more extensive study came only thereafter, and now I know how little I know! A deflating realization, but one somewhat mitigated by the thought that others are no better off.



Lone bull in musth

To appreciate the limitations of our knowledge of elephantine lives, the phenomenon of musth may be considered. We know its overt manifestations, a recurrent periodic swelling of the temporal glands on either side roughly about midway between eye and ear, and the exudation of a dark secretion from the glands to stain the area around its pores and the cheeks below.

Many have written summarily about it from observations and hear-say reports of musth in captive bulls. I do not know of any record of musth in cow elephants except for the century -old mention by G.P. Sanderson of musth in two "newly caught females in the prime of life, and in very full condition", and my own records of musth in pregnant wild cows, one documented with photographs.

Accounts of the condition in captive bulls agree in terming it a manifestation of sexual excitement, of the bulls being in rut, and being unpredictably aggressive, so that the animals are securely chained up to prevent their rampaging around and killing people,

and fed opiates and limited rations till they are through with musth.

Now, among elephants it is not the bull being in rut, but the cow being in heat that determines mating and breeding. Bulls in musth do mate with receptive cows, but so do bulls which are not in musth. Further, in the wild (I have studied the phenomenon only in wild elephants) musth seems to induce reactions quite different from the blind rage of some heavily-chained captive bulls. During the early phase of the onset the animal is agitated, and may be aggressive : it may wander about excitedly and may enter an elephant camp which holds a cow in season, and attack and injure the captive bulls in the camp. Some 'elephantologists' (to coin a convenient term) have told me that on getting into musth, bulls always leave their herds and go roving around. This is not true. Throughout the period of its affliction, a bull may stay with its herd, even though there is no receptive cow in it, and the cows then are noticeably gentle and considerate towards the bull.

With the progress of the condition, the musth fluid runs down and stains the cheeks, and often the pores of the glands get occluded, preventing the outflow of the secretion so that the growing pressure causes the animal intense irritation and discomfort. At such times bulls often drive their tusks deep into earth banks, or gore the clayey bottoms of forest pools, the force of the action serving to unblock the pores and enable the fluid to ooze out again. At this stage bulls often wander about aimlessly, as if sleep-walking, ignoring all things in their path and not even feeding. During the final phase of musth, they may still be somnambulistic, or alert and even aggressive.

It is not true that bulls in musth are invariably dangerous and given to attacking men. Where men have encroached into their immemorial homes (as in practically all forests now holding elephants) and built artifacts and settlements blocking established trek routes, and cultivated crops, elephants turn crop-raiders and are hostile to men, but it is not as if only the bulls attack men- cows also kill people on occasion. Elephants that have been wounded are singularly prone to attack chance-met men. But even when wounded they may ignore human intruders into their vicinity when dazed by being deeply in musth.

My illustration depicts such a tusker. This was much the most magnificent tusker I have seen - and I have seen hundreds. Traversing the Periyar lake in a motor boat, I saw the top of the head of this tusker in the water, as he swam across a wide bay (some 200 m at that point) towards the farther bank. Keeping our distance, so as not to alarm this lone swimmer, we followed. Only when he climbed on to the bank, turned round, and began to drink and squirt water over his head,did I realize what a superlative specimen of the highest 'caste' of elephants he was as per indigenous lore (the koomeriah-bund).

He was heavily in musth, and had gored a mud bank- adherent clay still clung in bits to his tusks in spite of the long swim and strong surface current. He kept spraying jets of water over his face for a while, to ease the irritation of his pent-up musth glands with a cold lavage. He was past 50 years, to judge by his hollow temples and small, pink laced, tattered ears-the tip of his trunk and another on a foreleg. He turned away, and started on a long walk along the lake's margin, about 50 m from it, just striding along, indifferent to the things around him.

I was dead set on a picture of him in profile, to display the high-held head and the straight line of the back to the tail, the small ears, the heavy limbs and the massive barrel- the perfection of his build. I had the boat taken far ahead of him and close to the bank, and ignoring the voluble protests of the boatmen, jumped out clutching my ponderous, custom-built camera, and went up the bank to get a closer view of that tusker as he went past.

Realizing that he would be quite near by then, I had the wits to change the telephoto for the normal lens. As he came nearer, he turned towards me when about 30 m away, and came straight for me. I was sitting huddled on the bare bank,and kept still- the boat was too far away and if I rose and ran he might be provoked to attack. Luckily, he veered away when nearer still, and I got my picture as he strode past-- the picture of perfect koomeriah in a sharp profile, reproduced many times to illustrate my text and, enlarged to a big size, to hang in exhibitions. I am not offering that picture here, but one taken a little earlier which shows the bullet wounds and the clay on the tusks more clearly. But even when grievously wounded by hated man, that grand old bull ignored me, sitting almost in his path, too far gone in musth to care.

All this was long, long ago, on 10 April 1960,to be precise, when I knew so much more about wild elephants than I do now. About this time, in another reach of the Western Ghats, a foreign photographer sitting immobile by his tripod to get a close picture of a tusker in musth, was charged and literally rubbed into the earth.

FROM THE DIRECTOR'S DESK

The release of the second volume of SACON News coincides with laying the foundation stone for our building complex at Anaikatty, 24 km from Coimbatore towards Silent Valley. It is gratifying for the SACON family that the foundation stone is being laid by Mr Kamal Nath, Honourable Minister for Environment & Forests, Government of India and the function is graced by the presence of His Excellency Mr R Venkataraman, former President of India. In this context, it is only appropriate to give a picture of SACON, its origin and future programmes.

Sometime in 1978, Mr J C Daniel, the then Curator of the Bombay Natural History Society (BNHS) mooted an idea of establishing a 'School of Ornithology' under the aegis of the BNHS, to advance the cause of ornithology. It was discussed at several fora for years before the concept took the form of Institute of Ornithology and Natural History. In 1983, at the centenary celebrations of the BNHS, Mrs Indira Gandhi, then Prime Minister of India, indicated support for establishing an Institute of Ornithology. Later, in April 1987 at a gathering in Vigyan Bhavan the then Prime Minister Rajiv Gandhi declared that the Government of India would set up a Centre for Ornithology and Natural History. The protracted discussions between BNHS and the Ministry of Environment & Forests, Government of India continued for another three years and the Centre got materialised in June 1990 as an autonomous organization funded by the Ministry of Environment & Forests, Government of India. Unfortunately, Dr Sálim Ali could not enjoy the birth of the Centre which he very much dreamt of, as he passed away in 1987. It was appropriately decided to dedicate the Centre to perpetuate the legacy of the grand old man and the Centre was named "Sálim Ali Centre for Ornithology and Natural History (SACON)". The administration of SACON has been vested on a Governing Council in which the Secretary and the Finance Adviser to the Ministry of Environment & Forests, Government of India, and the Secretary, Department of Environment & Forests, Government of Tamil Nadu are also members. The Chairman is a nominee of BNHS. SACON has a national mandate with the following objectives:

1. to develop an institution of excellence in the fields of ornithology and natural history
2. to study India's biological diversity so as to promote its conservation and sustainable use
3. to study the ecology of Indian avifauna with special reference to its conservation
4. to foster development of professional ornithological and natural history research in India by developing and conducting courses in M.Sc, M.Phil and Ph.D and short-term orientation courses
5. to confer honorary awards and other distinctions to persons who have rendered outstanding services in the fields of ornithology and natural history, and
6. to diffuse information on biodiversity for the benefit of the entire community.

To fulfil the above basic objectives of SACON, the following 16 divisions are envisaged.

1. Avian Ecology
2. Conservation Biology
3. Ecotoxicology
4. Environmental Impact Assessment
5. Extension Education
6. Modelling & Simulation
7. Terrestrial Ecology
8. Wetland Ecology
9. Library and Information Services
10. Animal Behaviour
11. Applied Ornithology
12. Bird Migration
13. Grassland Ecology
14. Physiology and Genetics
15. Taxonomy and Biogeography
16. Wildlife Disease, Control and Management

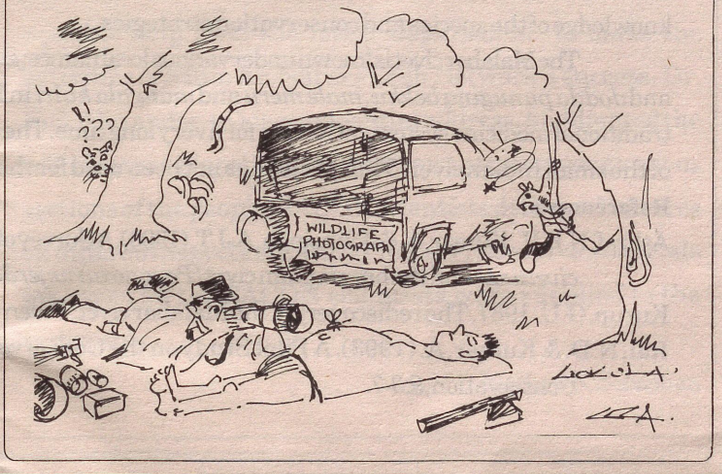
To begin with, the first nine divisions have already been set up. Thrust areas have been identified for each division and altogether 19 research projects are under various stages of execution. Each division will be handled by a Principal Scientist and two Scientists. At present we have 26 permanent and 22 project staff making the total strength to 48.

SACON will begin courses of M.Sc and M.Phil as soon as we shift to our permanent campus. It is our ambition to see that SACON grows into a Deemed University in course of time justifying the legacy of late Dr Sálim Ali.

The task is challenging. But we are confident. The spirit of Dr. Sálim Ali guides us.

V.S. Vijayan

ECOTOON



RED ALERT

THE MALABAR CIVET (*VIVERRA CIVETTINA*)



The Malabar civet is one of the most critically endangered species in India, and is the only civet in Schedule I of the Indian Wildlife Protection Act (1971; amended 1991). Not sighted by the scientific community for the last half a century and declared 'possibly extinct' by the IUCN in 1978, the species was rediscovered when two skins of recently killed animals were obtained in 1987 from northern Kerala (Kurup 1987). Two short-term studies on the species have since been completed. Ashraf et al (1993) surveyed the areas from where the skins were obtained and identified very small relic populations mostly confined to private cashew and rubber plantations. Rai & Kumar (1993), conducted a short term study of the ecology of the species in Nilambur area, from where the only population known to exist at that time had been reported. They also conducted a survey of the species in northern Kerala, and north and south Canara districts of Karnataka. Based on indirect evidences and carefully collected local information, they concluded that the primary habitat of the species is most probably the lowland riparian forests, most of which has been lost and what remains has been severely fragmented. They concluded that the Malabar civet presently occurs only as relic populations in the lowland forest fragments and private lands (cashew and rubber plantations), along the foot hills of the Western Ghats in Kerala and Karnataka. The existing population is highly fragmented, occurs in a very low density and is under hunting pressure in many places. Although estimates are neither available nor possible at this stage, the total population is unlikely to be more than 500 animals, and very likely to be less than 250. The in situ conservation of the Malabar civet, even as a short-term, measure, is thus far from certain under our current state of knowledge of the species and conservation strategies.

The Malabar civet is known under various local names; *jawad* in Kerala (also as *kannan chandu* and *male meru* in some places) and *dodda punugina bekku*, *male meru* and *mangala kutri* in Karnataka. The civet-musk of the Malabar civet had been used in traditional medicine systems of Kerala for a very long time. The civet-musk of this species is considered to be more potent than that of the small Indian civet. The species has not been used for the last few decades as it has become extremely rare.

References :

Ashraf, N.K.V., Kumar, A. & Johnsingh, A.J.T. (1993). A Survey of two endemic civets of the Western Ghats : the Malabar civet (*Viverra civettina*) and the brown palm civet (*Paradoxurus jerdoni*). *Oryx* 27 (2) : 109-114.

Kurup, G.U. 1987. The rediscovery of the Malabar civet, *Viverra megaspila civettina* Blyth in India. *Cheetal*, 28(2) : 1-4.

Rai, N.D. & Kumar, A. (1993). A Pilot Study on the Conservation of the Malabar civet (*Viverra civettinaI)*. Small Carnivore Conservation, *9:3-7*.

Ajith Kumar

STATUS AND DISTRIBUTION OF THE RIVER TERRAPIN, *BATAGUR BASKA*, IN THE SUNDARBANS OF INDIA

India has one of the richest assemblage of turtles in the world, with 26 species of freshwater and land species. Among them, the River Terrapin, *Batagur baska* and Asian Giant Softshell Turtle, *Pelochelys bibroni* are restricted to brackish water. River Terrapin is one of the larger hardshell turtles growing up to 60 cm in shell length. The shell is brown and heavily buttressed. This species could be identified by the presence of four claws in both fore and hind limbs. Males develop colour during breeding season; black head and yellow iris. It is predominantly herbivorous feeding on fallen fruits and leaves of mangrove vegetation. In India, it nests during February and March. The clutch size varies from 20 to 40 eggs which hatch within 60 days after laying.

The River Terrapin has a wide distribution in South East Asia. In India, it has been reported from the estuaries of Ganges-Brahmaputra and Brahamani-Baitarani-Mahanadi rivers. Uncontrolled exploitation of turtles and its eggs have caused serious decline in population throughout its range. The present distribution of this turtle appears to be restricted to the estuaries of Ganges-Brahmaputra i.e. the Sunderbans. It is listed as endangered in the Wildlife Protection Act, 1971; amended in 1991 (Schedule I) and in the red data book of International Union for Conservation of Nature and Natural Resources (IUCN). It is also listed in the category IX of the IUCN Action Plan Rating of the Tortoise and Freshwater Turtle Specialists Group (TFTSG), suggesting highest priority for its conservation. The status of nesting beaches in and around the Sunderban Tiger Reserve (STR) and to determine the exploitation level or any other threat to the survival of the species were assessed recently under a project funded by the IUCN/SSC Turtle Recovery programme of the American Museum of Natural History, New York, U S A.

The Sundarbans is the largest mangrove swamp in the world covering an area of 7250 sq km out of which 2750 sq km falls in India, and the rest in Bangla Desh. The field survey was conducted during February-May, 1994, using a mechanised boat, criss-crossing the Sundarbans recording the species, dry sand availability during high tide and disturbance factors such as egg collection local inhabitants and fishing. Fish markets, zoos and collection centres adjacent to the Sudarbans were surveyed to asses the current exploitation level and the number in captivity.

Only three evidences (tracks) were obtained on the breeding of River Terrapin during 70 days of field work and, it was recorded only in the Mechua island, Bagmara block of STR. No turtle was found in the 17 markets surveyed. An estimated 25 adult turtles exist in village ponds. The present study clearly shows that the status of the River Terrapin is extremely 'rare'.

Continuous monitoring of Bagmara block of STR during February-March is suggested to asses the size of the breeding population. Pig proof fence may be experimented within Mechua island for enhancing the survival of nests and hatchlings. The habitat preference, distribution and movement patterns of the River Terrapin may be studied (with the help of satellite telemetry) for establishing conservation corridors connecting feeding and breeding grounds. As many as 10 villages in the north eastern part of STR have about 25 adult River Terrapins in captivity. A captive breeding programme using these captive population with the co-operation of the villages would be advisable.

S.Bhupathy

WORKSHOP ON CONSERVATION EDUCATION

A workshop was organised as part of the Sálim Ali Nature Club Network activities, on 25th October 1994 for school teachers who are incharge of nature clubs in their respective schools. 24 teachers participated.

Shri. G. Kumaravelu, IFS, Conservator of Forests (WL), Western Region inaugurated the workshop in a function presided over by Dr. K.C. Alexander, Director, Sugarcane Breeding Institute, Coimbatore. Shri. G. Kumaravelu assured all possible help from the forest department to make the activities of Sálim Ali Nature Club Network a success. Dr. K.C. Alexander, in his presidential address, highlighted the role of nature education in creating awareness among various sections of the people. SACON scientists delivered lectures on different aspects of natural history. Resource materials prepared by the SACON scientists were supplied to the participants.

Mathew K. Sebastian

ENVIRONMENTAL IMPACT ASSESSMENT

Towards the last quarter of the 20th century, considerable concern has arisen on the quality of environment in which we live. Population explosion followed by rapid economic growth and development has increased pressures on an acutely limited natural resource base. Consequently, our responsibility to ensure sustainable exploitation of natural resources and a safe and healthy environment has increased.

The need for an Environmental Impact Assessment (EIA)

Potential long-term socio-economic impacts of development projects need to be considered, because all development projects are primarily directed towards the betterment of society.

EIA is a valued method for integrating environmental considerations into decision making. It is now legally mandatory to have an Environmental Impact Assessment on the ecological, environmental and socio-economic milieu, prior to the execution of any major development programme.

An EIA involves establishing quantitative assays for selected parameters indicating the quality of the environment before, during and after the implementation of the proposed programme. Thus the Environmental Impact Statement arising from an EIA provides scientific information to decision makers and enables them to choose the best alternative.

Sálim Ali Centre for Ornithology & Natural History recognizes that natural communities are beyond the realm of human economics. Nevertheless it is committed to the preservation of environment without hampering the development process. SACON's Division of Environmental Impact Assessment has the capability and infrastructure to make rapid assessment of ecology and socio-economics of any area, and to interpolate and interpret the impacts of any given project on environment and to suggest mitigatory measures.

With its present scientific expertise and facilities SACON undertakes impact assessment of industries, mines, power plants, roads, hydel and hydroelectric projects. However, our specific areas of expertise is the impact assessment of major development projects on islands, forests, wetlands, watersheds and grasslands. To develop quidelines post priori analysis of existing projects and post-EIS audits are also undertaken.

The objectives of the division of Environmental Impact Assessment are

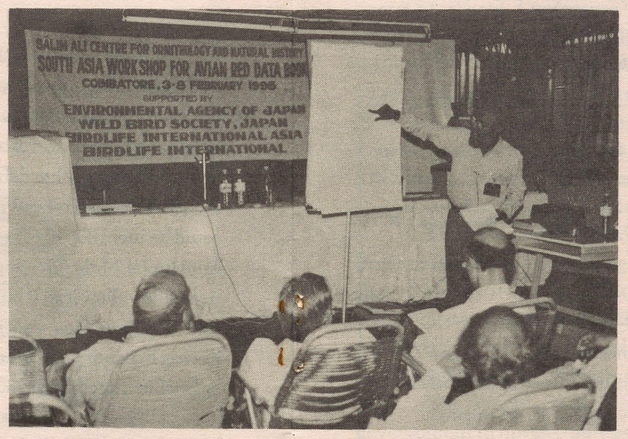
a) take up EIAs and prepare EIS
b) to provide necessary input while drawing up development programmes.
c) to provide advise and facilities to other educational and research organization
d) to maintain the centre as a referral laboratory in the matter of Environmental Issues
e) to take up long term research projects on EI related fields to develop guidelines for future.

Our EIA procedures include

a) study of the development projects
b) collection of baseline data on principal, physical and biological features such as topography, geology, drainage, meteorology, land use, air, water and soil quality, and fauna and flora depending upon the requirements of the project
c) prediction of the impacts of projects using laboratroy and field experiments and mathematical models
d) cause effect and cost benefit analysis
e) the preparation of EIS summarizing the findings and conclusions and management measures
f) post-EIS audit after the commencement of the project.

P.A. Azeez

SOUTH ASIA WORKSHOP ON THE RED DATA BOOK OF THE BIRDS OF ASIA



30% of the threatened birds of the world exist in Asia and the list is getting longer and longer every year. Therefore, there is an urgent need for collating available information on these species and also to generate data whenever required. Therefore, the Sálim Ali Centre for Ornithology and Natural History (SACON) in collaboration with the BirdLife International (BLI) and BirdLife International Asia Council organized a workshop to finalize the strategies for collecting these information and preparing a Red Data Book of the Birds of Asia from 3 to 8 February 1995 at SACON, Coimbatore. The workshop was a part of the Global Action Plan of the BLI to save the rare birds from extinction. These information are to be published as the Red Data Book of the Birds of Asia (Threatened Birds of Asia) in 1999 which would be the third of its kind, the first being of Africa (1985) and the next of the Americas (1992). The book would achieve the following:

1. identify and fully document all globally threatened species in the Asia region
2. identify the principal threats to the birds of Asia, and
3. indicate and prioritize action for all threatened species in terms of key sites, habitats, and appropriate management.

The project is to be implemented through regional and national initiatives involving maximum number of people. The present workshop was the first in the series which will be followed by that in South East Asia in October 1995..

The workshop was sponsored by the Environment Agency of Japan and the Wildbird Society of Japan. While the first part of the workshop (3 to 5 February) dealt with the rare birds of South Asia, the second part (6 to 8 February) was meant exclusively for the rare and threatened birds of India

The South Asia Workshop had 30 delegates, 14 from abroad comprising representatives from the neighbouring countries, namely Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka, and from BLI Secretariat and BLI Asia Council, and the rest from different parts of India.

The highlights of the proceedings of the workshop were the introduction by Dr N J Collar from BirdLife International on the new IUCN criteria for assigning threat status and category to the species, the learning exercises and the categorizing of species based on these. The major criteria depend on some crucial factors, namely the rate of decline, range (area of occurrence or occupancy), and population size.

Categories under high risk (threatened) are critical, endangered and vulnerable, and at low risk but requiring attention are grouped as 'near-threatened'. It was decided to collect detailed information on the species which are at high risk and to a limited extent on the near-threatened. The tentative lists for the South Asian Countries provided in the 'Birds to Watch-2' (1994) were deliberated upon country wise in small groups and modifications were made by adding or deleting species. Working plans were also finalized for each country.

The second part of the workshop was joined by another 35 ornithologists/conservationists. The whole process of introduction and other proceedings continued in the same way. The candidate list for India in 'Birds to Watch 2' comprised 71 threatened species, 1 data deficient and 99 near-threatened. The revised list has 103 threatened species and 110 near-threatened or candidates to be considered for threatened status.

Work plan for India was finalized which included periodic consultation and review meetings and finalization of the project in April 1997. Country was divided into 10 zones following the biogeographic zones and Dr A R Rahmani for three zones, namely Gangetic Plain, Semi-arid and Arid, Ms Usha Ganguli Lachungpa and Mr Pratap Singh for Eastern Himalayas, Mr Sanjeeva Pandey for Western Himalayas, Dr P C Bhattacharjee and Dr Goutam Narayan for Northeast India, Mr Asheesh Pittee and Dr S Subramanya for Deccan Peninsula, Dr Lalitha Vijayan for Western Ghats, Dr Ravi Sankaran for Islands and Mr V Santharam for Coasts were identified as the zonal co-ordinators, who in-turn would be assisted by various active ornithologists or bird-watchers in collating information on the species..

The final day's proceedings were on the major aspect of avian conservation through networking among the professional and amateur ornithologists. These include: (1) formulation of the Pan-Asian Ornithological Congress, was deliberated upon and the first Congress was decided to be organized in India by SACON co-sponsored by the Ministry of Environment and Forests, Government of India, BirdLife International, BirdLife International-Asia Council, Wildbird Society of Japan and other interested organizations. (2) organization of an Indian Ornithological Council was also discussed and a committee of five members, namely Mr. J C Daniel, Mr. B Vijayaraghavan, Mr S A Hussain, Dr A R Rahmani and Dr V S Vijayan, was formed to draft the Memorandum of Association and the rules and regulations.

The workshop provided an opportunity for the bird conservationists of India and the neighbouring countries to come together and involve in this prestigious project for saving the birds and the biodiversity.

Lalitha Vijayan

WHERE DO I GET FUNDS?

Where do I get funds? This is, perhaps, the question often asked by researchers in the field of conservation and natural history. We are, therefore, introducing a regular column in our newsletter on various agencies which fund activities related to conservation in India. Such activities include field research, conservation education and implementation of specific field programmes for conservation. One funding agency would be introduced in each issue of the newsletter. The funding area, type of funding, application dates and address would be given for each agency. Since most funding agencies have their own application forms and guidelines the applicant would have to obtain these directly from the agencies.

International Foundation for Science

Funding area	:	Applied biology, including forestry and environmental science, ecology.
Type of funding	:	Research grant excluding fellowships and travel, to young scientists (age : 40 years), upto US$12,000.
Mode of application and time	:	Standard application forms-any time of the year.

Address

International Foundation for Science
Grevturegatan 19m S-114 38
Stockholm
Sweden.

Ajith Kumar

AN INDEX TO THE MAPS AND SATELLITE IMAGERIES OF NILGIRI BIOSPHERE RESERVE

Several projects are being carried out in Nilgiri Biosphere Reserve (NBR), by SACON, and other institutions for which toposheets & satellite imageries are regularly used. I have been using these maps frequently, to delineate vegetation and to select sampling sites, during the course of my survey of the small carnivores in NBR. Therefore, I thought it would be easy for the interested people to pick up the relevant topo sheets and imageries if an index to the numbers of the maps and the areas they depict is available.

T.R.K. Yoganand

Topo sheets & Satellite imageries of the various localities of NBR

SNo	Topo and Imagery No.	Localities
1	58A01	Wyanad WS, Mysore division RF, Kakankote RF, Nagarhole NP.
2	58A02	Wyanad WS.
3	58A03	Nilambur Kovilakam RF.
4	58A05	Mysore division forests, AM gudi RF, Begur RF.
5	58A06	Mudumalai WS, Wyanad WS, Berambadi RF.
6	58A07	Nilgiris western slopes, Gudalur plateau, New Amarambalam RF.
7	58A08	New Amarambalam slopes, Silent valley NP, Upper Nilgiris.
8	58A09	Berambadi RF.
9	58A10	Mudumalai WS, Bandipur TR, Sigur RF.
10	58A11	Mukurthi NP, New Amarambalam RF.
11	58A12	Attapadi plateau, Siruvani hills, Upper Nilgiris plateau.
12	58A14	Moyar valley, Sigur plateau, Nilgiris eastern slopes RF.
13	58A15	Nilgiris south-eastern slopes, Eastern slopes RF.
14	58A16	Nilgiris south-eastern slopes, Thadagam RF.
15	58B09	Siruvani hills, Boluvampatti RF, Attapadi RF.
16	58B13	Boluvampatti RF.
17	57D04	Nagarhole NP, Kakankote RF.
18	58E02	Talamalai RF, Gudiyalattur RF, Mingikuli valley.
19	58E03	Nilgiris eastern slopes RF, Talamalai RF.

COURSES AVAILABLE IN ENVIRONMENTAL SCIENCES

We are introducing another feature in this issue for the benefit of our young graduates aspiring for further studies in environmental sciences. In this issue we are providing information about courses offered by two institutions. We will be covering the courses conducted by other institutions in the forthcoming issues.

Name of the course: **Training in Environment Education** (8 months).
Name and address of the Institution: Centre for Environment Education (CEE), Thaltej Tekra, Ahmedabad-380 054.

Eligibility: Post Graduate in any discipline

CEE advertises in the beginning of June in leading national newspapers.

For more details contact:

Programme Director (Training Programme in Environment Education)
CEE, Thaltej Tekra, Ahmedabad-380054.

Name of the course : **M. Sc (Wildlife Science)** (2 years).

Name and address of the institution: Centre for Wildlife & Ornithology
Aligarh Muslim University, Aligarh-202002

Eligibility: B.Sc. degree (10+2+3 stream) with Zoology and Botany as optional subjects and a minimum of 55% marks.

For more details contact:
Deputy Controller (Admissions)
PB No.52, Aligarh Muslim University, Aligarh-202002.

INTERNATIONAL CONFERENCES ON BIRD CONSERVATION

The XXI World Conference of the BirdLife International (BLI) (International Council for Bird Preservation till March 1993) organized by the Bayerische Akademie fur Naturschutz and Landschaftspflege (ANL) during 11-19 August 1994 at the Stadthalle, Rosenheim, Germany drew about 450 conservationists from 81 countries with different status and functions within BLI. SACON was invited as an associate member and I was fortunate to represent it by the full financial support of BLI.

The Conference was aimed at :1) to unite the BirdLife Partnership in pursuing an agreed joint programme based on shared global priorities, policies, and methods of achieving conservation objectives, and 2) advocate these to the general conservation community, decision-makers, government development agencies and with ornithologists.

The World Bank Vice President for sustainable development in his key-note address emphasized the need for integrated development through wise planning. 11 symposia were conducted on the environmental challenges and bird conservation throughout the world. A series of concurrent workshops were also held on the tools for action, global policies, and regional programmes for formulating guidelines for the future projects of BLI.

Deliberations on these resulted in the general agreement with the BLI displaying the unity and cohesion with its partners (52 countries), associates and others, in an attempt to protect birds and conserve biodiversity.

The first International Conference on waterfowl 'Anatidae 2000' held during 5-9 December 1994 at Strasbourg, France, was organized by the Ministry of Environment, Office National de la Chasse (ONC), France and the International Waterfowl and Wetlands Research Bureau (IWRB) to bring together Anatidae experts and conservationists from around the world to review and assess current research and management approaches and needs, and to identify priorities for the conservation, management and wise use of ducks, geese and swans.

The conference was attended by about 350 participants from 58 countries. I presented a paper on the 'Status and Conservation of the Andaman Teal' and co-chaired the final session on International Co-operation. My trip was sponsored by IWRB.

The conference noted with concern that 50 Anatidae taxa are identified as threatened while 10 of them including the Andaman Teal facing extinction. It also urged the implementation of Anatidae Action Plan which is drafted and reviewed. The global and regional programmes showed a promising trend not only for the conservation of waterfowl but the whole wetland ecosystems. The conference stressed its importance in facilitating international cooperation for the conservation of waterfowl.

Both the conferences had an exciting and educating field trip in the middle which offered more opportunities to have fruitful discussions and exchange of ideas.

Lalitha Vijayan

FORTHCOMING EVENTS

SACON

June 22-24

Wildlife Research Coordination Meeting: A meeting of wildlife researchers of Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu.

International

June 29-30

Brazil 95: Biodiversity and Environment. Linnean Society Meeting at Kew Botanic Gardens. Contact: Dr Daniela Zappi

July 9-14

Third International Flora Malesiana Symposium '95: Contact: R.J. Johns, The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AE.

August 6-12

20th IUFRO World Congress. Tampere, Finland. Prof. Risto Seppala, Finnish Forest Research Institute, Unioninkatu 40 A, 00170 Helsinki, Finland.

September 4-29

Environmental Assessment for development projects, short course for resource planners and project professionals, Australia. Contact: George Collect, Anutech (P) Ltd., Canberra ACT 0200, Australia. Fax: (616) 249 5875.



WORKSHOP ON THE MANAGEMENT AND RESTORATION OF GRASSLANDS FOR PEOPLE AND THE LESSER FLORICAN

The traditional utilization of grasslands in Saurashtra, Kutch, eastern Gujarat, western Madhya Pradesh and south eastern Rajasthan, a drought prone region, evolved (like many other areas) to cater to two basic needs; fodder and grazing. Every village, or group of villages set aside areas for fodder called *gouchar*, and protected it from grazing, where the grass was allowed to grow tall, to be subsequently harvested and stored. These protected grasslands, known as *Bheed, Vidi*, or *Rakhal* were crucial to rural economy, as the hay produced was used both during the lean summer months and to tide over drought periods.

Today, because of various factors protected fodder yielding grasslands are perhaps the most fragmented and patchily distributed of all habitat types in India. Concomitant to the loss of grassland habitat, particularly that of the *Bheed* or *Vidi*, has been the distressing decline of populations of many species of fauna that were specific to this habitat type. Perhaps, the worst affected has been the Lesser Florican *Sypheotides indica*. The Lesser Florican, once the most common and widely distributed of the resident Indian bustards, is now critically endangered. Its population has declined from an estimated 4500 birds in the early 1980s to about 2200 in 1994. An integrated conservation effort is urgently required if this species is to be saved from extinction.



Realizing the urgent need for the sustainable utilization and conservation of grassland resources, a workshop was organized by SACON in collaboration with the Gujarat Ecology Commission and the Forest Departments of Gujarat, Madhya Pradesh and Rajasthan. It was funded by Birdlife International at Baroda, Gujarat on 2 & 3 December, 1994 with the objective of:

a. formulating an action plan for the management and restoration of grasslands.

b. generating awareness as to why the grasslands and the Lesser Florican need to be conserved.

c. identifying action groups who will be able to make an inventory of protected grasslands in their districts and educate people on why grasslands need to be protected.

Ninety five people representing various interest groups participated in the workshop including the forest departments of Gujarat, Madhya Pradesh, and Rajasthan, the Gujarat Ecology Commission and the GEER Foundation, Gujarat Agricultural University, M.S. University- Baroda, World Wide Fund for Nature-India, Centre for Wildlife and Ornithology-Aligarh Muslim University, Centre for Environment Education, several NGOs, and owners of the grasslands. The salient features emerged out of the workshop are given below:

1. There is an urgent need for a National Grazing Policy to ensure the sustainable use of grasslands.

2. There must be total ban on the planting of trees particularly *Prosopis juliflora* in all the grasslands.

3. A need for greater participation of people in grassland management and utilization.

4. All non-reserved vidis larger than 100 hectares must be made into reserved vidis, where the management, protection and harvest should be entrusted to the Forest Department.

5. A study on the economics of developing and conserving grassland is urgently required.

6. Co-operative societies should be formed in each village which will manage grasslands in and around the villages. 'Wastelands' existing around the villages should be handed over to village grass co-operatives to be developed as fodder producing grasslands.

7. As many Floricans breed in agriculture fields and private grasslands, it was proposed to formulate a Florican Watch which will work towards the conservation of the Lesser Florican in private lands by motivating locals. The objectives of the Florican Watch are:

a) to identify areas important for the Lesser Florican, and make an inventory of protected grasslands in each district

b) to identify and motivate an individual at the village level in important Florican areas, who will protect the Lesser Florican around his village

c) to educate people on the conservation and sustainable use of grasslands.

R. Sankaran

THE CONSERVATION SCENARIO

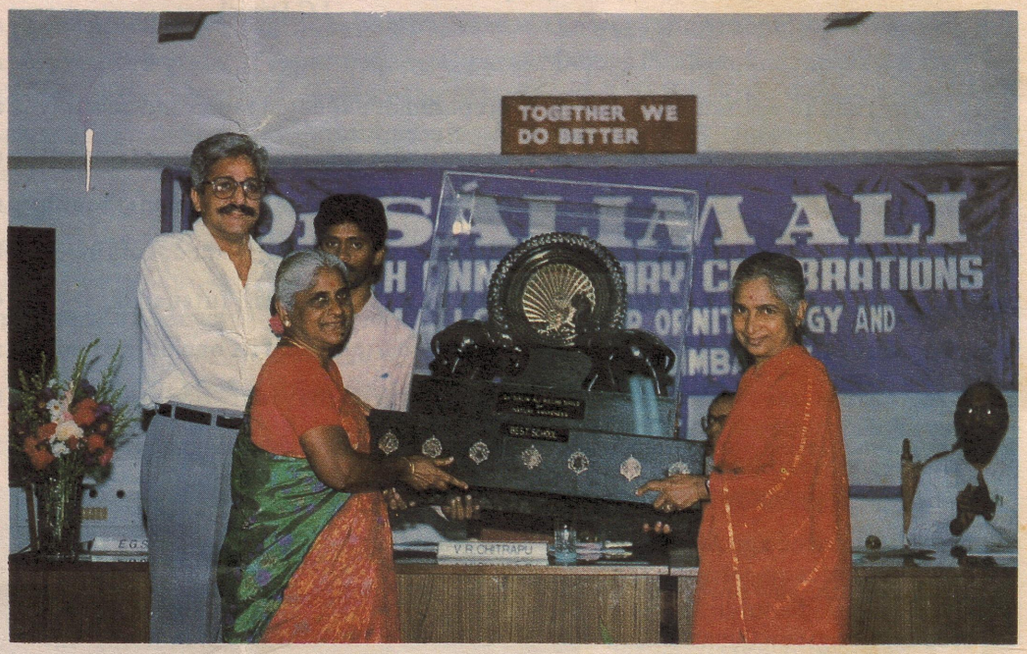
J.C.Daniel

The road to extinction is paved with good intentions and we have an abundance of good intentions as far as the conservation of our natural resources is concerned. From time to time the main thrust of endeavour keeps changing. Areas are named National Parks and Sanctuaries not on the basis of a study of the environmental parameters but because the area appears to be ideal for conservation, the problems facing the area are not given the attention they deserve. Single species conservation is given exclusive attention as for instance the tiger at the cost of the equally pressing conservation problems. Areas are declared as Biosphere Reserves without a thorough study of the viability of the area for the concept. Biodiversity becomes the abiding interest and 'Hot Spots' are identified on presumed biodiversity richness. However, the main problem of human impact on natural resources is usually realised only when it is too late to frame remedial measures. What is now required is an ecological audit of the Protected Areas. What has happened to their status? Basic data are usually available of the vegetation from the earlier forest working plans though they usually concentrated on the commercially valuable species. Vegetation status can provide a profile on expected fauna. Can a model be prepared of expected fauna and an audit of available species? Resource removal from protected areas by man though supposed to be extinguished, continues cryptically. Human intrusion into protected areas is itself one of the main causes for behaviour imbalance in species like the elephant, gaur and tiger which require undisturbed critical microhabitats. There is no area in protected areas which are not affected by human intrusion. Considering the human intrusion factor, it should be possible to calculate the habitat quality loss and the erosion of its ability to hold species. The loss is gradual but persistent.

Another aspect worth studying is the survival factor, the causes that permit one species to flourish and a sympatric species to disappear. A good pair to study is the Common Myna and the Jungle Myna. In fact the many species of Mynas are excellent examples for the study of resource partitioning. Common species have been consistently ignored by research institutions even though common species by their ability to survive in spite of habitat degradation provide the key to survival techniques. Another aspect that needs urgent consideration is the identification of indicator species whose presence or absence is a key to habitat status. Human impact has caused the disarray of the evolutionary process and it is necessary to locate the causes before remedies can be thought of. Time is running out and every institution that is interested in research, if it has the appropriate human resource should be offered the facilities and assistance to undertake research. It is a matter of grave concern that wildlife research is being compartmentalised to particular institutions irrespective of human resource availability in such organisation. It is hoped that it will be realised that persons who spent a decade or more studying the ecology of a species or a habitat would be able to give more pragmatic advise on its management requirements than a generalist who may be in a position of authority but who does not have the required information base. Policies keep changing with personalities and it is unfortunately an adverse effect factor in conservation. We have started losing species and viable habitats. Since independent India came into existence, the Siberian Crane seems to be the second species to disappear though one hopes, however forlorn that hope may be, that it will reappear. It is appalling to think that on a misty cold morning at Bharatpur one will no longer hear the ethereal bugling of the Siberian Crane.

98TH SÁLIM ALI BIRTH ANNIVERSARY CELEBRATIONS

Ninety eighth birth anniversary of Sálim Ali was celebrated on 12 November 1994. In a function presided over by Shri. V.R. Chitrapu, IFS, Chief Conservator of Forests (WL), Tamil Nadu, Prof. Madhav Gadgil, delivered the third Sálim Ali Memorial Lecture. In his interesting and thought provoking lecture entitled 'Birds, Bikes and Biodiversity' he highlighted the serious damage caused to nature due to the replacement of bio-diversity by artifacts.



Shri V.R. Chitrapu IFS handing over the Sálim Ali rolling trophy to PSGR Krishnammal School

In connection with the celebrations, competitions for school children were conducted on nature themes in painting, quiz (English & Tamil) essay writing (English & Tamil), and elocution (English & Tamil). More than 200 students from 24 schools participated enthusiastically. PSGR Krishnammal Higher Secondary School for Girls bagged the Sálim Ali Rolling Trophy, which was introduced for the first time. A nature photography competition was also introduced this year which elicited an overwhelming response. The first prize was bagged by Shri. E Srinivasan and the second prize by Shri. S Ashok. The prizes were sponsored by M/S Photocentre and India Arts Bureau, Coimbatore respectively. The prizes were given away by Shri. V.R. Chitrapu IFS.

Dr. E.G. Silas, Chairman, Governing Council, SACON welcomed the gathering which included academicians, forest officials, state and central government officials, teachers and students. Dr. V S Vijayan, Director, SACON proposed a vote of thanks.

SACON GOVERNING COUNCIL
Dr. E G Silas (Chairman)
Secretary, Ministry of Environment & Forests, Government of India (Shri. N R Krishnan IAS)
Joint Secretary & Finance Adviser, Ministry of Forests & Environment, Government of India (Shri. G S Rajamani)
Secretary, Department of Environment & Forests. Government of Tamil Nadu (Shri. V Manivannan, IAS)
Shri. J C Daniel, Bombay Natural History Society
Dr. J S Samant, Director, Bombay Natural History Society
Dr. A M Bhagavat, Honorary Secretary, Bombay Natural History Society
Dr. M R Almeida, Bombay Natural History Society
Dr. E K Bharucha, Director, Bharathi Vidyapeeth, Pune
Director, Wildlife Institute of India, Dehradun (Shri. S K Mukherjee)
Dr. M K Chandrashekharan, Madurai Kamaraj University
Vice Chancellor, Bharathiyar University (Dr. S Subramanian)
Chairman, Centre for Ecological Sciences, Bangalore (Prof. R Gadagkar)
Director, SACON (Member Secretary) (Dr. V S Vijayan)

Executive Editor: Mathew K Sebastian

Editorial Board
Lalitha Vijayan
Ajithkumar
P A Azeez
D F Singh

Type Setting: K K Rama Krishnan

Published by: V.S. Vijayan
Director, Salim Ali Centre for Ornithology & Natural History
Kalampalayam, Coimbatore-641010.

Printed by:
Kalaikathir Achchagam, Coimbatore. ©215454