BCPP CAMP News

BCPP Organisers: WWF, India , World Resources Institute, USAID; **Local Coordinator,** Salim Ali Centre for Ornithology and Natural History *SACON* ; **C.A.M.P.Organisers :** Zoo Outreach Organisation, CBSG, India ; **Endangered Species Project Coordinator,** Ajith Kumar; **CAMP Coordinators** : Sally Walker and Sanjay Molur
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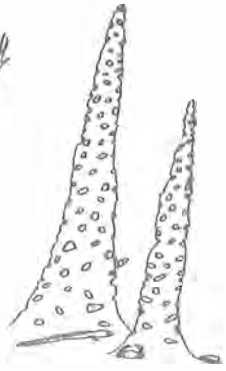


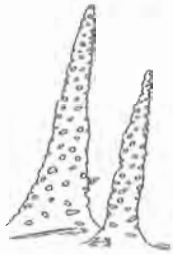
Five down -- two to go

BCPP CAMP Workshop Species Status Output to DATE

Status for	Plants	Soil inverts	Amphibs	Reptiles	Mangrove ecosystem spp. Plants	Algae	Inverts	Fish	Mammals	Fish
CRITICAL	34	18	10	34	12	2	1	0	August	September
ENDANGERED	19	24	42	54	42	12	1	1		
VULNERABLE	16	15	41	80	3	0	3	4		
LRnt	5	15	60	96	1	8	17	40		
LRlc	1	14	13	73	1	1	15	2		
DD	2	9	40	133	0	0	0	0		
NE	0	1	4	26	1	0	1	2		
Total # considered	77	96	210	495	60	23	41	52	400 odd	600 odd
Total# assessed	77	95	206	469	59	23	40	52		

Total species assessed to date - 1021

Mangrove ecosystem CAMP




A Conservation Assessment and Management Plan Workshop for species of the Indian Mangrove Ecosystem was conducted last July 21 - 25, 1997 at the National Institute for Oceanography, Goa. Compared to other workshops the confirmation rate for this workshop was very high and it was only our inability to provide travel allowance which prevented many persons from coming. Even so, a great many participants travelled to the workshop at the expense of their own institution and even on their own.

From the outset of the workshop it was clear that mangrove scientists are a particularly enthusiastic, even passionate gro ip of specialists who are almost "in love" with the man,rove ecosystem. Most of the very well known specialists were present, some who have seen nearly every mangrove forest in the country.

Credit for the creative idea of holding a Mangrove ecosystem CAMP goes to Dr. A. G. Untawale, Dy. Director of the National Institute of Oceanography. Untawale and many of his colleagues at NIO have been studying mangroves intensively for many years and have a vast store of knowledge about these fragile forests.

The workshop began with a simple but meaningful Inaugural with In-house dignitaries, including Mr. DeSa, Director of NIO who gave his blessings to the workshop. Dr. Untawale gave an overview of mangrove conservation in India. Ajith Kumar, Coordinator of the Endangered Species Subgroup of the BCPP spoke about the background of BCPP and the subgroup. Sally Walker conveyed the good wishes of the Dr. U. S. Seal, Chairman, CBSG, SSC, IUCN and Dr. David Brackett, Chairman, Species Survival Commission.

Sanjay Molur gave a presentation on the revised IUCN Red List categories and then led the group through an assessment of a mangrove plants. Almost immediately there were questions and comments about the criteria and the definitions of various concepts in them as applied to mangroves.

Working groups were formed, with two groups to assess Mangrove plants, one group to assess species of algae common to mangroves, one group for mangrove dwelling invertebrates and one for fishes which spent part of their life cycle in mangroves. The groups worked literally from 9:00 am to 8:00 pm and after. In the end the group had assessed 176 species – 60 mangrove plants, 23 species of algae, 41 invertebrates and 52 fishes. The various groups also discussed special issues in their subject area.

Plants group

The mangrove deliberated on the consolidation of assessment data of various biotic components of mangrove ecosystem and link these with the abiotic factors or to evolve a holistic approach for evaluation of this fragile ecosystem. The group was unanimous in their opinion that the components of this unit should not be evaluated in isolation of the system as a whole. Dr. Untawale depicted the mangrove ecosystem, based on a food chain concept while highlighting some inherent lacunae in such projection. After discussion a three dimensional distribution of faunal component within the mangrove ecosystems was accepted with detritus determining the basis of the model. Various members briefed the groups on the dynamics of their group of organisms in making the various components work. A synthesis of all the schemes proposed was taken to create a model depicting interrelations of various components in the mangrove ecosystem which was made into a poster which is printed at the end of this summary. Further, an All India Coordinated Project be launched under the auspices of Mangrove Society of India to understand the process in the field situation.

Marine Algae

This group pointed out that of the 624 species of marine macro-algae occuring along the Indian coast line, in India 48 marine algal species are reported from the mangrove swamps. The group assessed 23 of these belonging to 3 major groups, Chlorophyta - green algae; Phaeophyta - brown algae and Rhodophyta - red algae. Mangrove regions in the tropics have been observed to harbor number of economically and commercially important algae which are used for food, dyes, bioactive substances. The group pointed out that current research was insufficient to work out ecological significance of algae in mangrove ecosystem. The association of the algae and fauna in mangrove area has yet to be studied. Problems faced by the group were paucity of data and presence of some of the species on the open coast as well in mangrove area. These problems may have affected the quality of the assessment, thus, the group felt that more systematic study is required to project correct picture of marine algae in the mangrove swamps.

Fish group

The fish group found much difficulty in assessing some fish species, primarily because of the lack of population studies of the type required by conservation. However based on the finfish catch data, loss of mangrove habitat due to human activities, and over-exploitation of the stocks during sea-

sons, and other information it may be inferred that the distribution and abundance of some finfish species were altered in the natural habitat. While many of the species show declining trend there is no specific data on each species. Data exists for the groups only which in some cases indicate reduction of catch. Population monitoring and the life history studies should be given due importance for the future. Although the available data did not indicate decline sufficiently to assign a threatened category, the personal perception of individual workers (researchers and fishermen, including one fisherman who is also a field biologist) have shown decline to some extent. The general decline of many species may also be due to over-expolitation

The group felt that there should be regulation on the capture of juveniles fish in the mangrove areas as these areas serve as a major nursery for many species. One species was assessed as Endangered) under IUCN.

Invertebrate Group

About 500 species of invertebrates have been reported from Indian mangroves out of which little more than 50% are insects and 20% are zooplankton species amongst the remaining 45% molluscs and crustaceans are dominated in number of species followed by polychaetes. Majority of insect fauna reported so far are visitors. The group concentrated mainly on the assessement of resident animals which, almost exclusively spent their adult life in the mangals as well as several economically import shell fishes where enough data was available.

This Report, taken from the Drafts of the working groups, hardly does justice to the deliberations of this knowledgeable and enthusiastic groups of specialists. When the Drafts have been edited and the Report is brought out, another and better rendition will be given.

Group photograph of the Indian Mangrove Ecosystem CAMP taken in the compound of NIO

The Mangrove Plants Group, concentrating on West Coast

The Invertebrate Group

Conservation Assessment and Management Plan Workshop for the Biodiversity Conservation Prioritisation Project Indian Mangrove Ecosystem

Draft

Summary Species List

***West* Coast**

Gujarat, Maharastra, Goa, Karnataka, Kerala and Laccadive island

Acanthus ilicifolius L.	EN
Acrostichum aureum L.	LR-lc
Aegiceras corniculatum (L.) Blanco	EN
Aeluropus lagopoides (L.) Trin	EN
Arthrocnemum indicum (Willd.) Moq.	VU
Avicennia alba BL.	CR
Avicennia officinalis L.	EN
Avicennia marina (Forsk.) Vierh. var. *acutissima* Stapf & Mold.	EN
Avicennia marina var. *resinifera* (Forst.) Bakh.	CR
Bruguiera cylindrica (L.) Bl.	EN
Bruguiera gymnorrhiza (L.) Savigny	CR
Bruguiera parviflora (Roxb.) Wt. & Arn. ex. Griff.	CR
Cenchrus ciliaris L.	EN
Cerbera manghas L.	EN
Ceriops tagal (Perr.) Robin.	EN
Ceriops decandra (Griff.) Ding Hou	EN
Clerodendrum inerme Gaertn.	EN
Derris heterophylla (Willd.) Back. & Bakh.	EN
Derris trifoliata Lour.	EN
Excoecaria agallocha L.	VU
Heritiera littoralis Dryn.	EN
Kandelia candel (L.) Druce	EN
Lumnitzera racemosa Willd.	EN
Porteresia coarctata (Roxb.) Tateoka	VU
Rhizophora mucronata Poir.	EN
Rhizophora apiculata Bl.	EN
Salicornia brachiata Roxb.	LR-nt
Sesuvium portulacastrum L.	EN
Sonneratia apetala Buch.-Ham.	EN
Sonneratia alba J. Sm.	EN
Sonneratia caseolaris (L.) Engl.	EN
Sporobolus virginicus (L.) Kunth	EN
Suaeda maritima (L.) Dumort	EN
Suaeda monoica Forsk. ex Gmel.	EN
Urochondra setulosa (Trin.) Hubb.	EN
Xylocarpus granatum Koen.	EN

Sea Grasses - West Coast

Halophilla beccarii	EN

***East* Coast**

W. Bengal, Orissa, Andhra Pradesh., Tamil Nadu and Andaman & Nicobar Islands

Acanthus ebracteatus Vahl.	CR
Acathus ilicifolius L.	EN
Acanthus volubilis Wall.	CR
Acrostichum aureum L.	LR-lc
Aegialitis rotundifolia Roxb.	EN
Aegiceras corniculatum (L.) Blanco	EN
Aeluropus lagopoides (L.) Trin.	EN
Aglaia cucullata (Roxb.) Pelleg.	EN
Arthrocnemum indicum (Willd) Moq.	VU
Avicennia alba Bl.	CR
Avicennia officinalis L.	EN
Avicennia marina (Forsk.) vierh. var. *acutissima* Stapf & Mold.	EN
Brownlowia tersa (L.) Kostm.	EN
Bruguiera cylindrica (L.) Bl.	EN
Bruguiera gymnorrhiza (L.) Savigny	CR
Bruguiera parviflora (Roxb.) Wt. & Arn. ex Griff.	CR
Bruguiera sexangula (Lour.) Poir.	CR
Cenchrus ciliaris L.	EN
Cerbera manghas L.	EN
Ceriops decandra (Griff.) Ding Hou	EN
Ceriops tagal (Perr.) Robin.	EN
Clerodendrum inerme Gaertn.	EN
Cynometra ramiflora L.	EN
Derris heterophylla (Willd.) Back. & Bakh.	EN
Derris trifoliata Lour.	EN
Excoecaria agallocha L.	VU
Finlaysonia obovata Wall.	CR
Heritiera fomes Buch. -Ham.	EN
Heritiera kanikensis Majum. & Banerjee	CR
Heritiera littoralis Dryn.	EN
Kandelia candel (L.) Druce	EN
Lumnitzera littorea (Jack.) Voigt.	CR
Lumnitzera racemosa Willd.	EN
Myriostachya wightiana (Nees ex Steud) Hook.f.	EN
Nypa fruiticans Wurumb.	EN
Phoenix paludosa Roxb.	EN
Porteresia coarctata (Roxb.) Tateoka	VU
Rhizophora annamalayana	NE
Rhizophora apiculata Bl.	EN
Rhizophora lamarckii Mont.	CR
Rhizophora mucronata Poir.	EN
Rhizophora stylosa Griff.	CR
Salicornia brachiata Roxb.	LR-nt
Scyphiphora hydrophyllacea Gaertn.f.	EN
Sesuvium portulacastrum L.	EN
Sonneratia alba J. Sm.	EN
Sonneratia apetala Buch. -Ham.	EN
Sonneratia caseolaris (L.) Engl.	EN
Sonneratia griffithii Kurz	CR
Sporobolus virginicus (L.) Kunth.	EN
Suaeda nudiflora (Willd.) Moq.	EN
Suaeda maritima (L.) Dumort	EN
Suaeda monoica (Forsk.) ex Gmel	EN
Tamarix troupii Hole	EN
Xylocarpus granatum Koen.	EN
Xylocarpus mekongensis (Prain) Pierre	EN
Xylocarpus moluccensis (Lamk.) Roem.	EN

Sea grasses - East Coast

Halophila beecari (Ascheri)	EN

Algae

Bostrychia tenella J. Ag.	EN
Caloglossa leprieurii (Mont.) J. Ag.	EN
Catnella impudica (Mont.) J.Ag	EN
Catnella rebens Batters	EN
Chaetomorpha linum (Mull.) Kuelz.	EN
Codium fragile (Surin) Harvey	EN
Colponenia sinuosa Derb.	LR-nt
Dichotomosiphon salina Untawale	CR
Dictyota indica Sonder	EN
Enteromorpho clathrata (Roth) J.Ag.	LR-lc
Enteromorpho intestinalis (L.) Link	LR-nt

Gracilaria verrucosa (Huds.) Papen.	EN
Hypnea musciformis (Wulf) lamour	LR-nt
Monostroma oxyspermum Doty	EN
Padine tetrabomatica Hanck	LR-nt
Rhizoclonium ciperium (Roth) Harvey	EN
Rhizoclonium kerneri Stock	LR-nt
Rhizodonium kochianum Kutz	LR-nt
Sargassum ilicifolium (Turn.) J.Ag.	LR-nt
Spatoglossum asperum J. Ag.	LR-nt
Ulva patengansis Salam & Khan	CR
Ulva reticulata Forsskal	EN
Varcheria prescottii	EN

Animals

Fish

Alecits indicus (Ruppell)	LR-nt
Ambassis commersoni (Cuvier)	LR-nt
Anodontostoma chacunda (Ham-Buch)	LR-nt
Anguilla bicolar McClellandi	LR-nt
Arius subrostratus Valenciennes	VU
Boleophthalmus boddari Cuvier	VU
Boleophthalmus dussumieri Cuv. & Val	VU
Boleophthalmus viridis Ham & Buch.	EN
Carangoides ciliarius Gunther	LR-nt
Caranx ignobilis (Forsskal)	LR-nt
Caranx sexfasciates Linneaus	LR-nt
Chanos chanos (Forsskal)	LR-nt
Dasyatis uarnak (Forsskal)	LR-nt
Elopes machnata (Forsskal)	VU
Epinephelus taurina (Forsskal)	LR-nt
Etroplus suratensis (Bloch)	LR-lc
Glassogobius giurus (Hamilton-Buchanan)	LR-nt
Hilsa kelee (Cuvier)	LR-nt
Lates calcarifer (Bloch)	LR-nt
Leiognathus splendens (Cuvier)	VU
Lethrenus nebulosus (Forsskal)	LR-nt
Liza dussumieri [=*L. subviridis* (Valenciennes)]	LR-nt
Liza macrolepis (Smith)	LR-nt
Liza parsia Hamilton - Buchanan	LR-nt
Lobotes surinamensis (Bloch)	LR-nt
Lutjanus argentimaculatus	LR-nt
Lutjanus fulviflammus (Forsskal)	LR-nt
Lutjanus johni Bleeker	LR-nt
Lutjanus sebae (Cuvier)	LR-nt
Lutjanus russelli (Bleeker)	LR-nt
Megalops cyprinoides (Broussonet)	LR-nt
Mugil cephalus Linnaeus	LR-nt
Muraena macrura (Bleeker)	LR-nt
Muraenesex cinereus (Forsskal)	LR-nt
Muraenichthys schultzei (Bleeker)	VU
Nematalosa nasus (Bloch)	LR-nt
Osteomugil cunensius (*Mugil cunensius*) (Valenciennes)	LR-nt
Otolithus ruber (Schneider)	LR-nt
Periopthalmus koelreuteri Bl & Schn	VU
Plotosus canius (Ham & Buch)	LR-nt
Polynemus indicus Shaw	LR-nt
Pomadasys hasta Bloch	LR-nt
Psammaperca waigaensis (Cuvier)	VU
Secutor ruconius Ham & Buch	VU
Sillago sihama (Forsskal)	LR-nt
Siganus canaliculatus (Linnaeus)	LR-nt
Siganus javus (Linneaus)	LR-nt
Sphyraena barracuda (Walbaum)	LR-nt
Tenualosa ilisha Ham – Buch.	LR-nt
Therapon jarbua (Forsskal)	LR-nt
Therapon puta Cuvier	LR-nt
Trypauchen vagina (Bloch & Schneider)	LR-nt

Invertebrates

Atacira flaviluna – Moth	LR-lc
Attacus mcmulleni (Watson) – Moth	LR-lc
Bactronophorus thoracites (Gould) – Mollusca	LR-lc
Balanus amphitrite Darwin - Crustacea	LR-lc
Bankia campanellata Moll & Roch. - Mollusca	LR-lc
Bankia carinata (Gray) - Mollusca	LR-lc
Bankia rochi (Moll) - Mollusca	LR-lc
Cardisoma carnifex (Herbst) - Crab	CR
Crassostrea gryphoides (Schlotheium) – Mollusca	LR-nt
Dicyathifer manni (Wright) - Mollusca	LR-lc
Dotilla myctiroides (H. Milne Edwards) – Crab	LR-nt
Dicyathifer manni (Wright) - Mollusca	LR-lc
Dotilla myctiroides (H. Milne Edwards) – Crab	LR-nt
Gelonia erosa – Mollusca	EN
Gonodontis clelia – Moth	LR-lc
Lyrodus pedicellatus (Quatrefages) - Mollusca	LR-lc
Macrophthalmus convexus Stimpson - Crab	EN
Macrophthalmus depressus Ruppell – Crab	LR-nt
Martesia striata (Linnaeus) - Mollusca	LR-lc
Meretrix casta Chemnitz - Mollusca	LR-lc
Metapenaeus dopsoni (Miers, 1878)	LR-nt
Modiolus striatulus (Haniey) - Mollusca	LR-nt
Nausitora duntopei Wright - Mollusca	LR-lc
Nausitora hedleyi Schepman - Mollusca	LR-lc
Ocypode ceratophthalma (Pallus) Crab	LR-nt
Penaeus caniliculatus Oliver 1811	VU
Penaeus japonicus Bate, 1888	VU
Penaeus indicus H. Milne - Edward, 1837	LR-nt
Penaeus merguiensis de Man, 1888	LR-nt
Penaeus monodom Fabricius, 1798	LR-nt
Penaeus semisulcaetus de Mann	LR-nt
Perna viridis (Linnaeus) Mollusca	LR-nt
Pilodius nigrocrinitus Stimpson – Crab	EN
Polyura schreiber – (Godart) ssp. nov. Smiles, Butterfly	NE
Saccostrea cucullata (Born.) - Mollusca	LR-nt
Scylla serrata (Forsskal) - Crab	LR-nt
Sesarma taeniolata White - Crab	LR-lc
Sphaeroma terebrans Bate - Crustacea	LR-lc
Thalassina anomala (Herbst) Crustacea	LR-nt
Uca dussumieri (H. Milne Edwards) - Crab	LR-nt
Uca lactea (De Hann) - Crab	LR-nt
Uca tetragonon (Herbst) - Crab	EN
Uca vocans (Linnaeus) - Crab	LR-nt

List of Institutions represented

Centre for Advanced Study in Marine Biology, Annamalai Univ.
AVVM Sri Pushpam College, Poondi, Thanjavur
Bombay Natural History Society, Mumbai
Carmel College, Goa
Cent. Marine Fisheries Res. Inst., Mandapam Camp
Conservation of Nature Trust, Calicut
Central Agricultural Research Institute, Port Blair, Andamans
Centre for Earth Science Studies, Trivandrum
National Institute of Oceanogrphy, Goa
Fisheries College and Research Institution, Tuticorin, TNVASU
Forest Department, Panaji
Forest Department, Karnataka
Forest Department, Tamil Nadu
ICI India, R & T Centre
Karnataka Association for Advancement of Science, Bangalore
Ministry of Env. and Forests, Dept. of WL Preservation,N.Delhi
Regional Research Institute, CCRAS, Jaipur
Salim Ali Centre for Ornithology and Natural Hist., Coimbatore
Shivaji University, Kolhapur
Swaminathan Research Foundation, Chennai
University of Andhra Pradesh, Dept. of Envn. Science, Visak
World Wide Fund for Nature, New Delhi
Zoological Survey of India, Calcutta
Zoological Survey of India, Pune
Zoo Outreach Organisation/CBSG, India, Coimbatore

Status Summary of Species assesed in BCPP CAMP Workshop - Indian Mangrove Ecosystem

Mangrove	CR	EN	VU	LRnt	LRlc	DD	NE	Total
Mangal plants	12	42	3	1	1	0	1	60
Algae	2	12	0	8	1	0	0	23
Invertebrates	1	4	3	17	15	0	1	41
Fishes	0	1	9	40	2	0	0	52
Total	15	60	15	66	19	0	2	176

The Fish Group

The Algae Group

Mangrove ecosystem model