

Through the medium of
FAO Representative in Bangladesh

**INTEGRATED RESOURCE DEVELOPMENT
OF THE SUNDARBANS RESERVED FOREST
BANGLADESH**

APPENDICES

ANNEX

**INTEGRATED RESOURCE MANAGEMENT PLAN
OF THE SUNDARBANS RESERVED FOREST**

VOLUME I

PROJECT DOCUMENT



UNITED NATIONS DEVELOPMENT PROGRAMME



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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**INTEGRATED RESOURCE DEVELOPMENT OF THE
SUNDARBANS RESERVED FOREST**

BANGLADESH

APPENDICES

OF THE

INTEGRATED RESOURCE MANAGEMENT PLAN

FOR THE SUNDARBANS RESERVED FOREST

VOLUME 2

PROJECT B6D/94/056



UNITED NATIONS DEVELOPMENT PROGRAMME



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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APPENDIX A1: PROJECT OBJECTIVES, OUTPUTS AND ACTIVITIES AS PER THE ORIGINAL PROJECT DOCUMENT

FAO/UNDP PROJECT BGD/84/056 Integrated Resource Development of the Sundarbans Reserved Forest IMMEDIATE OBJECTIVES, OUTPUTS AND ACTIVITIES OF THE PROJECT

The immediate objective of the project, and the activities required to produce intended outputs are as follows:

1.0 Objective

A system for monitoring the Sundarbans ecosystem, which specifically focuses on the spatial and temporal changes and the effect of different treatments on the long run sustainable management of the system;

1.1 Output 1

A status report compiling and collating all available information on the ecology of Sundarbans;

1.1.1 Activity 1

Review of all available information, published or unpublished and identification of the gaps in data;

1.1.2 Activity 2

Establish monitoring stations to measure climatic, adaptive and vegetational parameters in representative locations in the Sundarbans;

1.1.3 Activity 3

Measure the parameters and incorporate them in the database in an easily retrievable form, and prepare a report on the status of the Sundarbans ecosystem;

1.2 Output 2

A soil-cum-vegetation map of the Sundarbans depicting the spatial variation in species composition and associations;

1.2.1 Activity 1

Adopting appropriate sampling techniques, identify the important plant communities and associations;

1.2.2 Activity 2

Collect information on vegetation and soil characteristics, including seasonal changes in salinity, moisture availability and other chemical and physical characteristics of soil;

1.2.3 Activity 3

Map the distribution of vegetation in relation to soil properties, and analyze the correlation if any;

1.3 Output 3

A report based on the analyses of data collected during the project period indicating changes if any in the important parameters, and indicating further studies if any required;

1.3.1 Activity 1

Adopting suitable sampling techniques, establish permanent and semi-permanent sample plots;

1.3.2 Activity 2

Collect at regular intervals information on climatic, edaphic, vegetational and animal population characteristics, including frequency, diameter, class distribution and status of regeneration of important species;

1.3.3 Activity 3

Introduce different management practices in selected sample plots, varying the intensity of harvesting and other allied activities;

1.3.4 Activity 4

Collect the data on important response parameters especially changes in species composition, canal area, density, regeneration, etc. and analyze and determine the effect of different treatments;

2.0 Objective

A plan for integrated resources management designed to enhance the supply of wood and non-wood products, to conserve and manage aquatic and terrestrial wildlife resources, to study the potential for mobilizing and assisting people in participating in income and employment generating activities in the area, with particular focus on disadvantaged groups and to develop the tourism and recreational potential, and to enhance the protective role of forests against cyclones, soil erosion and tidal surges;

2.1 Output 1

A management plan covering a period of 10 years detailing the allocation of areas for different uses, the nature and intensity of management and the prescriptions that may be implemented in different areas;

2.1.1 Activity 1

Collection of all available information pertaining to the status and management of resources, and in particular historical information;

2.1.2 Activity 2

Undertake a socio-economic study, assessing the existing situation with focus on obtaining background information on the existing groups operating in the area on various activities such as fisheries, wood extraction, nypa palm collection, etc. and make policy recommendations for possibility of enhanced activities (focusing particularly on the disadvantaged sections) without disturbing the ecosystem;

2.1.3 Activity 3

Mapping of salient biophysical and vegetational characteristics that have a direct bearing on allocation of area for different uses;

2.1.4 Activity 4

Based on the biophysical and other characteristics identify the zones which will be managed for different objectives, namely protection, production of wood and non-wood products and tourism and recreation;

2.1.5 Activity 5

Undertake a survey of wood and non-wood resources in the area identified for inclusion in the production zone and prescribe practices to be adopted for enhancing output;

2.1.6 Activity 6

Undertake specific studies on the production of Nypa palm and its products, honey and wax and examine the technical and socio-economic feasibility for enhancing their output and improve techniques of processing; Establish linkages with the International Beekeeping Society, in order to obtain latest information on bee keeping technology;

2.1.7 Activity 7

Identification of the recreational values of the area included under the tourism zone, and propose measures for realizing their full potential;

2.1.8 Activity 8

Identification of ecologically sensitive areas specifically examining the problems of soil erosion, tidal waves and cyclonic storms;

2.1.9 Activity 9

Assessment of the role of vegetation, in particular trees in minimizing the impact of natural calamities and draw up a set of prescriptions to enhance the protective role of forests;

2.1.10 Activity 10

Compilation, collation and analysis of the above information and preparation of a comprehensive management plan including detailed management maps;

2.2 Output 2

Status report on the fishery and wildlife resources, including the pattern of distribution of important species, their population structure, habitat requirements and factors that influence their population;

2.2.1 Activity 1

Compile and collate existing data on important aquatic and terrestrial wildlife resources, focusing specific attention on the most common species;

2.2.2 Activity 2

Undertake studies on important species, specifically examining their distribution, population and habitat requirements and prepare a distribution map; maintain linkages with the IUCN to ensure better ways and means of conserving and protecting wildlife and the overall balance in the ecosystem;

2.3 Output 3

Information on the present system of fisheries resources utilization and the social benefits therefrom in terms of nutrition, income and employment accruing to the local population and measures to improve the contribution on a long run sustainable basis;

2.3.1 Activity 1

Monitor the level of utilization of fishery resources and prepare a map showing the spatial distribution of the intensity of use;

2.3.2 Activity 2

Undertake a socio-economic survey in the area to determine the significance of the fishery resources to the local economy;

2.3.3 Activity 3

Assess the present methods for exploiting fishery resources, particularly focusing on the techniques and examine the feasibility of improving them taking into account local resources and capabilities;

2.4 Output 4

Wildlife management plans aimed at protecting important wildlife species and improving their habitat;

2.4.1 Activity 1

Assessment of the habitat requirements of important wildlife species;

2.4.2 Activity 2

Undertake studies on approaches to enhance habitat conditions, especially in the case of endangered species;

2.4.3 Activity 3

Examine the feasibility of controlled breeding and farming of species like spotted deer and crocodile;

2.4.4 Activity 4

Based on the activities 2.4.1 to 2.4.3 draw up a strategy for improved management of the wildlife sanctuaries, ensuring continuity of habitat and providing corridors for movement wherever necessary;

3.0 Objective

The institutional framework will be enhanced to facilitate the integrated management of the Sundarbans through interdepartmental coordination, augmenting the capability of the staff and providing improved physical facilities;

3.1 Output 1

A workable mechanism for coordination of management and research activities;

3.1.1 Activity 1

Establishment of an inter-ministerial coordination committee specifying its functions, responsibilities and modalities of functioning;

3.1.2 Activity 2

Establishment of a multi-disciplinary research advisory committee to provide guidance in undertaking ecological/socio-economic studies;

3.2 Output 2

A nucleus of well trained and motivated staff capable of implementing integrated multiple use management;

3.2.1 Activity 1

Identify and prepare manpower and training requirements to implement present and future management objectives taking into account existing constraints and established government transfer policies;

3.2.2 Activity 2

Provide training to professional, technical and vocational manpower at all levels in the management of the Sundarbans;

3.2.3 Activity 3

Propose deployment and job description for different categories of personnel required for effective integrated management;

3.3 Output 3

A functional communication system consisting of boats, launches and wireless sets with necessary support services for maintenance and repairs;

3.3.1 Activity 1

Procure a fleet of seven boats and two launches within 6 months of the commencement of the project;

3.3.2 Activity 2

Establish an operational maintenance and repair centre for boats and launches;

3.3.3 Activity 3

Install a system for ensuring regular supply of operational fuel and fresh water;

3.3.4 Activity 4

Install a wireless communication network;

APPENDIX A2: REFERENCES CITED IN THE PROJECT'S REPORTS BY CONSULTANTS

REFERENCES CITED IN THE PROJECT'S REPORTS BY CONSULTANTS

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FIELD DOCUMENTS

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National Counterpart

Tourism assistance and TOAB

APPENDIX A5: GAZETTEER OF LOCATIONS IN THE SUNDARBANS RESERVED FOREST, BANGLADESH

NAME	LATITUDES	LONGITUDES
Adachai Coupe Office	22°18'N	89°30.2'E
Adasain		
Adasain Khal		
Adhnia Khal		
Adhnia		
Alakhia Khal		
Alibanda		
Alibanda Khal		
Alibandah		
Amurbunia Patrol Post	22°22'N	89°44'E
Andarmanik Khal		
Andhara Khal		
Andhra		
Andharmanik Khal		
Urubonia		
Andharmanik Patrol Post	22°05'N	89°23'E
Angrakona Khal		
Arahibani Khal		
Araibeki River		
Arajani Khal		
Arhaibanki Khal		
Ariabanki Khal		
Arkudali Khal		
Armal Khal		
Arpangashia River		
Arpangasia River		
Aruabindi		
Aruabindi Khal		
Arwaber		
Arwaber Khal		
Ariaboni		
Arua boyar		
Atapata Khal		
Atharabanki		
Atharabanki Khal		
Aura Sipsah River		
Sibsa		
Ayarabecki(knm)		
Badrason Khal		
Badumtala Khal		
Badamtala		
Baibulla Khal		
Baidyamari Patrol Post	22°23'N	89°39'E
Bainkari Khal		
Bainshanta Khal		
Bais Khali Khal		
Baisingh Khal		
Bal		
Bal River		
Baleshwar River		
Balijhoki Khal		
Bandar Gang		
Banga Khal		
Baniakhali Forest Station	22°27'N	89°22'E
Bara Ambaria Khal		
Bara Dabur Khal		

Bara Dudhmukhi Khal		
Bara Lakshmi Khal		
Bara Sela Khal		
Bara Seola		
Bara Seola		
Bara Siala Gang		
Bara Siala Khal		
Baradagra Khal		
Barapanga River		
Namud Samudha		
Batwar Gang		
Bazbaza Khal		
Bazbaza Patrol Camp		
Bazbaza Patrol Post	22°16'N	89°21'E
Bekhi Khal		
Belmari Khal		
Beri Khal		
Kamarbhola		
Betmar		
Betmar Gang		
Bhadra Gang		
Bhadra River		
Manki		
Bhati		
Bhangra River		
Bangra		
Bhatbasundar Khal		
Bhatmara Khal		
Bheda Khal		
Bhola		
Bhola Gang		
Bhola River		
Bhola Patrol Post	22°14'N	89°47'E
Bhomakhali Khal		
Bishaghari Khal		
Bishanbari Khal		
Bogi Forest Station	22°12'N	89°50'E
Bogi Khal		
Bogidonia Khal		
Bagidonia		
Bojboja Khal		
Bajbaja		
Bajboja		
Buri Gang		
Behari Khal		
Burigoalini Forest Station & Range Office	22°15'N	89°14'E
Cassikhata Khal		
Chachan Khal		
Chalibadarpur Khal		
Chalki		
Chalki Gang		
Chalki River		
Chamta Khal		
Chandbaria Khal		
Chandesar Khal		
Chandeshware Patrol Post	21°56'N	89°52'E
Chandmea Khal		
Chandrmoni Khal		
Chandpai Forest Station & Range Office	22°22'N	89°38'E
Chapara Khal		
Chapra		

Chapatala Khal		
Chapura Khal		
Char Khal		
Charkhali Khal		
Char Megna Khal		
Char Nangli Khal		
Charka Khal		
Charkhali Patrol Post	22°07'N	89°53'E
Charputia		
Charputia Khal		
Bara Choura		
Chatta Bania Khal		
Chaudosar Khal		
Chaur Gang		
Chaylabogi Coupe Office	22°14'N	89°32'E
Cheila Bogi		
Cheilabogi Khal		
Chhabatola Khal		
Chhata Choura Khal		
Chhota Ambaria Khal		
Chhota Dabur Khal		
Chhota Dudmukhi Khal		
Chhota Kokomari Khal		
Chhota Lakshmi Khal		
Chhota Sela Khal		
Chhota Seola		
Chhota Siala		
Chhota Siala Khal		
Chintamuni Khal		
Choncha Khal		
Chonua Patrol Post	22°22'N	89°46'E
Chora Betmora Khal		
Chora Betmar		
Chori Khal		
Chotta Bari Khal		
Chotta Kalidah Khal		
Chotta Katka Khal		
Chotta Phulbaria Khal		
Chunar River		
Chunkuri		
Chunkuri Bird Sanctuary		
Chunkuri Gang		
Churkuni		
Chunkuri Khal		
Churkuni		
Chunkuri Patrol post	22°12'N	89°09'E
Chunkuri Petrol Camp		
Dakshin Mandarbaria Khal		
Dalchi Khal		
Daichi		
Dania Khal		
Dasher Bharani Patrol Post	22°17'N	89°47'E
Dhabar Khal		
Dhebor		
Dhaburi Khal		
Dhana Khali Khal		
Dhandakhali		
Dhangmari		
Dhangmari Coupe Office	22°26'N	89°34'E
Dhangmari Forest Station	22°26'N	89°35'E
Dhangmari Khal		

Dhanshagor Forest Station	22°20'N	89°45'E
Dhapa Khal		
Dhobeki River		
Dhundai		
Dingamari Khal		
Dobanki Khal		
Dora Khal		
Bara Sundra		
Dorsingh Khal		
Dubla		
Dubla Barani		
Dubla Jelepalli Patrol Post	21°46'N	89°36'E
Dubla Khal		
Dudmukhi Coupe Office	22°05'N	89°45'E
Dudmukhi Gang		
Dumuria Khal		
Dumuria Patrol Post	22°09'N	89°52'E
Dwarikabari Gang		
Esamati Khal		
Faringhi Gang		
Gabtala Khal		
Gandar Khal		
Gandar Shalki Khal		
Gandarkhali		
Gandarkhali Khal		
Gandar Khal		
Gawakhali Khal		
Gengwa Barani		
Gera Khal		
Jera		
Gewakhali		
Gewakhali Coupe Office	22°09'N	89°25'E
Ghamta Khal		
Gholakhali		
Ghusianagara		
Ghusianagara Khal		
Ghusaingaria		
Ghutar Khal		
Gobkhali Khal		
Godipatal Khal		
Gogari Khal		
Gogarikhali Khal		
Gogasi Khal		
Gogra Khal		
Gugra		
Golakhali Khal		
Gubdi Khal		
Gulbagsa Khal		
Gulshakhali Patrol Post	22°23'N	89°45'E
Guri Bharani Khal		
Gurulibai Khal		
Hadda Patrol Post	22°26'N	89°24'E
Haddora Coupe Office	22°22'N	89°29'E
Hadura Khal		
Hathdora		
Hatdura		
Hagaldori Khal		
Hanif Khal		
Hansraj Gang		
Harantana		
Harantana		

Harantana Khal		
Harbaria Khal		
Hardi Khal		
Hadda Khal		
Harikhali Khal		
Harinbhanga River		
Harintana Coupe Office	22°08'N	89°43'E
Harmuria Khal		
Hatdura		
Hayatkhalı Patrol Post	22°22'N	89°21'E
Hilchar Khal		
Hilker Gang		
Hilsamari Khal		
Hilsamari Khal		
Hirkhali Khal		
Hobintala Khal		
Hoho Khal		
Hoiadanga Khal		
Hossain Khali Khal		
Jrah Khal		
Jrahkhali Khal		
Jafa		
Jafa Gang		
Jhaba		
Jafa Khal		
Taldup Khal		
Jaimuni Khal		
Joymoni		
Jajhabhanga Khal		
Jajnabbhanga		
Jalbunia		
Jalokathi Khal		
Jamuna River		
Jamuna River		
Jana Khali Khal		
Jewdhara Forest Station	22°25'N	89°43'E
Jhabhabia Khal		
Jhapjhapia		
Jhapsi Khal		
Jhawa Khal		
Jhawakhali		
Jhinbaria Khal		
Jongra Patrol post	22°22'N	89°36'E
Joymoni		
Joymoni Coupe Office	22°24'N	89°24'E
Jungra		
Jungra Khal		
Jungra		
Jungra Khal		
Kachi Katta Khal		
Kadamtala Forest Station	22°14'N	89°10'E
Kadamtali Khal		
Kaga		
Kaga Dunia Khal		
Jalbunia		
Kaga Gang		
Kaga Khal		
Kagabaga		
Kagaboda Khal		
Kagabada		
Kagaboga Khal		

Kailashganj Patrol Post	22°29'N	89°30'E
Kalabogi Forest Station	22°24'N	89°28'E
Kalabogi Forest Station		
Kalabogi Khal		
Kalabagi		
Kalabogi		
Kalagachi		
Kalagachia Coupe Office	22°12'N	89°13'E
Kalagachia Khal		
Kalamala		
Kalamala Khal		
Kalamaola		
Kalamia Khal		
Kalar Khal		
Kali Khal		
Kalida Khal		
Kalidah		
Kalifat Khal		
Kalindri		
Kalindri River		
Kalindi		
Kalir Khal		
Kalisar Khal		
Kanduri Khal		
Kankramari		
Kapra Khal		
Karamjal Khal		
Karanja		
Karanga Khal		
Karikhali Khal		
Kashiana Petrol Camp		
Kasiatana Khal		
Kassiabad Forest Station	22°21'N	89°19'E
Kata Khal		
Katakhali Patrol Post	22°24'N	89°40'E
Kateshwar Patrol Post	22°12'N	89°16'E
Katharmar Khal		
Katka		
Katka Khal		
Katka Wildlife Sanctuary	21°51'N	89°46'E
Keorabunia Barani		
Keorabunia Khal		
Keoratala Barani		
Keoratala Khal		
Khajri Khal		
Khajur Bari Khal		
Khajurbari Khal		
Khajurbaria Khal		
Khajuria		
Khar Khal		
Kharma Khali Khal		
Kharma Khal		
Khashitana Patrol Post	22°12'N	89°21'E
Khasitana Khal		
Khatkhera Khal		
Khesonkhali Khal		
Khol Megna Khal		
Kia Khal		
Kobadak Forest Station	22°13'N	89°34'E
Kochi Khal		
Kochikhali Wildlife Sanctuary	21°53'N	89°50'E

Kochua Khal		
Koikhali Forest Station	22°12'N	89°04'E
Koira Gang		
Koyra		
Kokomari		
Kokomari		
Kokomari Khal		
Kolatalakhali Khal		
Kalatalla Khal		
Kolkibari Khal		
Kolomteji Patrol Post	22°22'N	89°45.7'E
Kolu Khal		
Kopanchi Gang		
Koronjal Patrol Post	22°25'N	89°36'E
Koyra Khal		
Koyra Patrol Post	22°23'N	89°22'E
Koyra River		
Kukmani Khal		
Kukuria Khal		
Kukuri		
Kukurmani Khal		
Kokumari		
Kumarkhali Khal		
Kunchphadra Khal		
Kundi Khal		
Kunga River		
Marjata		
Kunki Khal		
Kurlidaini Khal		
Kusumkhali Khal		
Kutah Khal		
Ladodi Khal		
Laudubi		
Lathimara Khal		
Lau Koikhali		
Laudob Patrol Post	22°29'N	89°31'E
Lokhi Khal		
Lakshmikhali Khal		
Machua Khal		
Machua Khal		
Madar Doania Khal		
Madar Gang		
Madet Khal		
Magerkhora Khal		
Magua Khal		
Megna		
Maithbhanga Khal		
Majhabhanga Khal		
Majhlootdunia Khal		
Majfool Dunia Khal		
Malancha		
Malancha		
Malancha River		
Malancha River		
Mandarbari Khal		
Mandarbaria		
Mandarbaria Jelepalli Patrol Post	21°41'N	89°16'E
Mandarbaria Khal		
Manikdiar Khal		
Mankidoania		
Mankiduania Khal		

Mankidoani		
Mara Bhadra Gang		
Mara Bholā		
Mara Bholā Khal		
Mara Bogi Patrol Post	22°12'N	89°51'E
Mara Kaga Khal		
Mara Passar Khal		
Mardat Gang		
Morsai		
Margang Patrol post	22°13'N	89°07'E
Marmia Khal		
Mathabhanga Barani		
Mathurakhali Khal		
Chand Khal		
Matiardoni Khal		
Matlo Khal		
Maua Khal		
Mauakhali Khal		
Megna Khal		
Megnadoania Khal		
Megua		
Mehar Ali Khal		
Meia Khal		
Menasharber Khal		
Meth Khal		
Methkhali Khal		
Meur Khal		
Milgasi Khal		
Milta Khal		
Mirgamari		
Mirgamari Khal		
Mirmania Khal		
Mochashingedali Khal		
Mochura Khal		
Moisadali Khal		
Moma Khal		
Momur Khal		
Mora Bholā Coupe Office	22°09'N	89°45'E
Mrigamari Coupe Office	22°20'N	89°41'E
Mula Gang		
Muia Khal		
Mulakhali Khal		
Munshiganj Patrol Post	22°16'N	89°11'E
Muthrudoania Khal		
Nalbonia Khal		
Nalbunia Khal		
Nalian Forest Station & Range Office	22°27'N	89°26'E
Nanda Bholā Khal		
Nandobhola		
Nandabala Patrol Post	22°20'N	89°38'E
Nandobhola		
Nangli		
Nangli Khal		
Nangli Patrol Post	22°19'N	89°45'E
Neshan Khali		
Netodoania Khal		
Netodonia		
Nilbaria Khal		
Nilkamal Khal		
Nilkamol Wildlife Sanctuary	21°50'N	89°26'E
Nimua Khal		

Nishanbari Khal		
Nishankhali Khal		
Notabenk Khal		
Paikudi Khal		
Pajrapura Khal		
Pakartulla Khal		
Pangasia Khal		
Panirghat Patrol Post	22°13'N	89°48'E
Pankasia Khal		
Paratoni Khal		
Pashakhali Khal		
Passar Island		
Passar River		
Passur		
Pusur		
Patakata		
Patakata Khal		
Patakata Patrol Post	22°01'N	89°43'E
Pathuria Gang		
Dudmukhi		
Patka Khal		
Patkusata Khal		
Phulbaria Khal		
Phultala Khal		
Podabati Khal		
Porakata Barani		
Poshkhali Khal		
Puspakathi		
Puspakathi Khal		
Putia		
Putia Khal		
Raimangal		
Raimangal River		
Raja Khal		
Rangabaria Khal		
Rangabari		
Relar Khal		
Sakachi Khal		
Salarabatatona Khal		
Satrabatatana		
Saluar Khal Patrol Post	22°09'N	89°53'E
Sanp Khal		
Sapla Khal		
Sarkabana Khal		
Saruat Khal		
Satbaria Khal		
Sejkhali		
Sejkhali Dhona Khal		
Sejkhali Dhone		
Sejkhali Khal		
Sela Gang		
Selankhali Khal		
Shai Khal		
Shakbaria Khal		
Shakbaria Patrol Post	22°18'N	89°19'E
Shalki Khal		
Shapia Patrol Post	22°04'N	89°50'E
Sharani Khal		
Saroni		
Sharankhola Forest Station & Range Office	22°12'N	89°48'E
Sharbotkhali Patrol Post	22°28'N	89°28'E

Shekertek		
Shekertek River		
Shirari		
Sibsha Patrol Post	22°22'N	89°27'E
Sikri Khal		
Singratala Khal		
Sipsah River		
Sibsa		
Slane Khali		
Slane Khali Khal		
Sona Khal		
Shonakhali Khal		
Sonamokhi Khal		
Sonamukhi		
Subdi Khal		
Sunakhali Khal		
Suna Khal		
Sundarkota Khal		
Sinjia Khal		
Sundra Khal		
Supara Khal		
Supati Khal		
Supoti		
Supoti Forest Station	22°02'N	89°49'E
Surokhali Khal		
Sutarkhali		
Sutarkhali Forest station	22°30'N	89°29'E
Sutarkhali River		
Taka Khal		
Takoa Khal		
Talpatti Khal		
Talpattia Khal		
Tambulbunia Coupe Office	22°13'N	89°42'E
Tambulbunia		
Tapamari Khal		
Telkamara Khal		
Telkumara		
Terabaka Patrol Post	22°12'N	89°49'E
Tetulbania Khal		
Tafalbania		
Tiger Point		
Tiger Point		
Tik Khal		
Tintukra		
Titalbaria Khal		
Tohol Pari Petrol Camp		
Tonakhali Khal		
Ulua Khal		

APPENDIX A6: THE FOREST ACT, 1927

(ACT No. XVI OF 1927)

(As modified up to December, 1989)

Alimuzzaman Choudhury M.A.LL.B.
Advocate
Supreme Court, Dhaka

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THE FOREST ACT, 1927

(ACT No. XVI of 1927)

(21 September, 1927)

An Act to consolidate the law relating to forests, the transit of forest-produce and the duty leviable on timber and other forest produce.

Whereas it is expedient to consolidate the law relating to forests, the transit of forest-produce and the duty leviable on timber and other forest-produce; It is hereby enacted as follows:

CHAPTER I - PRELIMINARY**1. Short title and extent**

- (1) This Act may be called the (a) Forest Act, 1927.
- (2) It extends to the whole of Bangladesh. (b)
- (3) * * * * * (c)

2. Interpretation clause

In this Act, unless there is anything repugnant in the subject or context,-

- (1) "cattle" includes elephants, camels, buffaloes, horses, mares, geldings, ponies, colts, fillies, mules, asses, pigs, rams, ewes, sheep, lambs, goats and kids.
- (2) "Forest-officer" means any person whom the (d) Government or any officer empowered by the Government in this behalf, may appoint to carry out all or any of the purposes of this Act or to do anything required by this Act or any rule made thereunder to be done by a Forest-officer.
- (3) "forest offence" means an offence punishable under this Act or under any rule made thereunder,
- (4) "forest-produce" includes-
 - (a) the following whether found in, or bought from, a forest or not, that is to say: timber, charcoal, caoutchouc, catechu, wood oil, resin, natural varnish, bark, lac, mahua flower, mahua seeds (kuth), and myrbolams, and,
 - (b) the following when found in, or bought from, a forest, that is to say:
 - (i) trees and leaves, flowers and fruits and all other parts or produce not hereinbefore mentioned, of trees,
 - (ii) plants not being trees(including grass, creepers, reeds and moss), and all parts or produce of such plants,
 - (iii) wild animals and skins, tusks, horns, bones, silk, cocoons, honey, and wax, and all other parts of produce of animals, and
 - (iv) peat, surface soil, rock, and minerals (including limestone, laterite, mineral oils, and all products of mines or quarries),
- (4A) "owner" includes a Court of Wards in respect of property under the superintendence or charge of such court,

(a) The word Indian was omitted by A.O. of 1949.
 (b) Amended by the Act 53 of 1974.
 (c) Sub-Section (3) omitted by the Act 53 of 1974.
 (d) The word provincial has been omitted by Act 53 of 1974 in all such places.

- (5) "river" includes any stream, canal, creek or other channels, natural or artificial,
- (6) "timber" includes trees when they have fallen or have been felled, and all wood whether cut up or fashioned or hollowed out for any purpose or not, and
- (7) "tree" includes palms, bamboos, stumps, brush-wood and canes.

Commentaries- Though in the Forest Act Special provisions have been made for reserved, protected and village forests, but other forests are not beyond its scope (1) In this section the definition of forest is comprehensive (2) and any forest produce includes timber (3). The definition of river is also comprehensive (4). The property of private owners does not come within the definition of forest produce (5). In the light of the section 41, the words forest produce and timber cannot have limited meaning (6) The Forest officer is a Public servant (7).

CHAPTER II - OF RESERVED FORESTS

3. Power to reserve forests

The Government may constitute any forest-land or waste land or any land suitable for afforestation which is the property of Government, or over which the Government has proprietary rights, or to the whole or any part of the forest-produce of which the Government is entitled, a reserved forest in the manner hereinafter provided.

Commentaries- If the land is a part of the permanently settled land, it is a private property it would not be legal to declare it as a reserved forest (8). Only forests and waste land may be reserved (9). Waste land in the occupation of Bhumidar may be reserved (10).

4. Notification by Government

- (1) Whenever it has been decided to constitute any land a reserved forest, the Government shall issue a notification in the official Gazette:
 - (a) declaring that it has been decided to constitute such land a reserved forest,
 - (b) specifying, as nearly as possible, the situation and limits of such land, and
 - (c) appointing an officer (hereinafter called "the Forest Settlement Officer") to inquire into and determine the existence, nature and extent of any rights alleged to exist in favour of any person in or over any land comprised within such limits, or in or over any forest-produce and to deal with the same as provided in this Chapter.

Explanation- For the purpose of clause (b) it shall be sufficient to describe the limits of the forest by roads, rivers, ridges or other well-known or readily intelligible boundaries.

- (2) The officer appointed under clause (c) of sub-section (1) shall ordinarily be a person not holding any forest-office except that of Forest Settlement-Officer,
- (3) Nothing in this section shall prevent the Government from appointing any number of officers not exceeding three, not more than one of whom shall be a person holding any

1. AIR 1960 Mp 152=1960 Jab LJ 321 DB
 2. AIR 1953 Nag 51
 3. AIR 1957 Him Pra 1; PLD 1965 Lah 391
 4. PLD 1964 Dacca 744
 5. 1962 (1) CrLJ 832
 6. AIR 1963 Orissa 24; AIR 1969 Tripura 82
 7. (1886) 10 Bomb 124; 1963(1) Cr. L. J. 558
 8. AIR 1923 Cal 377 (DB).
 9. (1905) 29 Bomb 48.
 10. AIR 1963 Sc 1019=2 SCA 163=(1963) Sup 1 SCR 912.

forest-office except as aforesaid, to perform the duties of a Forest Settlement-officer under this Act.

Commentaries- The notification under section 4 is in expression of the Government's desire to constitute a reserved forest (11). It would be illegal to constitute a reserved forest of land regarding which rent has been paid (12). Any application under section 1434 of E.B.S.A. & T. Act would not be maintainable if the forest already stood reserved (13). The effect of the notification is that after the notification no new right would be created (14). The purpose of this section is to hold enquiry before constituting a reserved forest (15). Forest officer has got no power to lease out any part of a reserved forest which power lies with the Government (16).

5. Bar of accrual of forest-rights

After the issue of a notification under section 4, no right shall be acquired in over the land comprised in such notification, except by succession or under a grant or contract in writing made or entered into by or on behalf of the Government or some person in whom such right was vested when the notification was issued, and no fresh clearing for cultivation or for any other purpose shall be made in such land except in accordance with such rules as may be made by the Government in this behalf.

Commentaries- Cutting and taking away trees is clearance, intention immaterial (17). Admitting cutting of trees, offence proved (18).

6. Proclamation by Forest Settlement-officer

When a notification has been issued under section 4, the Forest Settlement officer shall publish in the Bangli (Amended by Act 53 of 1974) in every town and village in the neighbourhood of the land comprised therein, a proclamation-

- (a) specifying, as nearly as possible, the situation and limits of the proposed forest;
- (b) explaining the consequence which, as hereinafter provided, will ensue on the reservation of such forest,
- (c) fixing a period of not less than three months and not more than four months from the date of such proclamation, and requiring every person claiming any right mentioned in section 4 or section 5, within such period either to present to the Forest Settlement officer a written notice specifying or to appear before him and state, the nature of such right and the amount and particulars of the compensation (if any) claimed in respect thereof.

Commentaries- If any claim is dismissed by the forest Settlement officer under section 6(c) and the appeal therefrom under section 17, and if the claimant does not prefer any revision therefrom, no civil court would give the claimant land or compensation (19). The description of land in section 3 should also be in Sections 6, 7 and 9(20).

7. Inquiry by Forest Settlement-officer

The Forest Settlement officer shall take down in writing all statements made under section 6, and shall at some convenient place enquire into all claims duly preferred under that section, and the existence of any rights mentioned in section 4 or section 5 and not claimed under section 6 so far as the same may be ascertainable from the records of Government and the evidence of any persons likely to be acquainted with the same.

-
11. AIR 1951 Pat 380.
 12. Haji Hafizuddin Sikder-vs Prov.E.Pak. 12 PLR 724; All W.R.Hc 532
 13. D.F.O.-VS-R.Saha 1986 BCR AD 317
 14. AIR 1947 Pat 264=24 Cr. LJ 992; 1901 Pun LR (crl) 178
 15. (1905) 29 Bomb 480 (DB)
 16. AIR 1958 manipur 31
 17. 1961 (I) Cri L. J 593=1963 All W. R(Hc) 462.
 18. 1964 (2) Cr. L. J. 496 (Tripura)
 19. AIR 1942 Cal 371(DB)
 20. AIR 1923 Cal 377(DB)

8. Powers of Forest Settlement-officer

For the purpose of such inquiry, the Forest Settlement-officer may exercise the following powers, that is to say:

- (a) power to enter, by himself or any officer authorised by him for the purpose, upon any land and to survey, demarcate and make a map of the same and
- (b) the powers of a Civil Court in the trial of suits.

Commentaries-All rights which have not been raised before the Forest Settlement officer, would be extinguished after publication the notification under section 20.(21).

9. Extinction of rights

Rights in respect of which no claim has been preferred under section 6, and of the existence of which no knowledge has been acquired by inquiry under section 7, shall be extinguished, unless, before the notification under section 20 is published, the person claiming them satisfies the forest settlement officer that he had sufficient cause for not preferring such claim within the period fixed under section 6.

10. Treatment of claims relating to practice of shifting cultivation

- (1) In the case of a claim relating to the practice of shifting cultivation, the Forest Settlement Officer shall record a statement setting forth the particulars of the claim and of any local rule or order under which the practice is allowed or regulated and submit the statement to the Government, together with his opinion as to whether the practice should be permitted or prohibited wholly or in part.
- (2) On receipt of the statement and opinion, the Government may make an order permitting or prohibiting the practice wholly or in part.
- (3) If such practice is permitted wholly or in part, the Forest Settlement-officer may arrange for its exercise-
 - (a) by altering the limits of the land under settlement so as to exclude land of sufficient extent, of a suitable kind, and in a locality reasonably convenient for the purposes of the claimants, or
 - (b) by causing certain portions of the land under settlement to be separately demarcated and giving permission to the claimants to practice shifting cultivation therein under such conditions as he may prescribe,
- (4) All arrangements made under sub-section (3) shall be subject to the previous sanction of the Government.
- (5) The practice of shifting cultivation shall in all cases be deemed a privilege to control, restriction and abolition by the Government.

11. Power to acquire land over which right is claimed

- (1) In the case of a claim to a right in or over any land, other than a right-of-way or right of pasture, or a right to a forest-produce or a water-course, the Forest officer shall pass an order admitting or rejecting the same in whole or in part,
- (2) If such claim is admitted in whole or in part, the Forest Settlement officer shall either-

- (i) exclude such land from the limits of the proposed forest ; or,
 - (ii) come to an agreement with the owner thereof for the surrender of his rights ; or
 - (iii) proceed to acquire such land in the manner provided by the Acquisition and Requisition of Immovable Property Ordinance, 1982 (Act II of 1982) (21A)
- (3) For the purpose of so acquiring such land-
- (a) the Forest Settlement Officer shall be deemed to be a Collector proceeding under the Acquisition and Requisition of Immovable Property Ordinance 1982 (Act II of 1982). (21B)
 - (b) the claimant shall be deemed to be a person interested and appearing before him in pursuance of a notice given under section 9 of that Act;
 - (c) the provisions of the proceeding sections of that Act shall be deemed to have been complied with; and
 - (d) the collector, with the consent of the claimant, or the Court, with the consent of both parties, may award compensation in land, or partly in land and partly in money, or wholly in money.

Commentaries: A person who has received other land in lieu of forest land, would be guilty of fraud if he also applied for release of his forest land (22).

12. Order on claims to rights of pasture or to forest produce

In the case of a claim to rights of pasture or to forest produce, the Forest Settlement officer shall pass an order admitting or rejecting the same in whole or in part.

13. Record to be made by Forest Settlement officer

The Forest Settlement-officer, when passing any order under section 12 shall record, so far as may be practicable,-

- (a) the name, father's name, caste, residence and occupation of the person claiming the right, and
- (b) the designation, position and area of all fields or groups of fields (if any) and the designation and position of all buildings (if any) in respect of which the exercise of such right is claimed.

14. Record where he admits claim

If the Forest Settlement-officer admits in whole or in part any claim under section 12, he shall also record the extent to which the claim is so admitted, specifying the number and description of the cattle which the claimant is from time to time entitled to graze in the forest, the season during which such pasture is permitted, the quantity of timber and other forest-produce which he is from time to time authorised to take or receive, and such other particulars as the case may require. He shall also record whether timber or other forest-produce obtained by the exercise of the rights claimed may be sold or bartered.

15. Exercise of rights admitted

- (1) After making such record the Forest Settlement-officer shall, to the best of his ability, and having due regard to the maintenance of the reserved forest in respect of which the claim is made, pass such orders as will ensure the continued exercise of rights so admitted.

- (2) For this purpose the Forest Settlement-officer may-
- (a) set out some other forest-tract of sufficient, and in a locality reasonably convenient, for the purposes of such claimants, and record an order conferring upon them a right of pasture or to forest-produce(as the case may be) to the extent so admitted, or
 - (b) so alter the limits of the proposed forest as to exclude forest-land of sufficient extent, and a locality reasonably convenient, for the purposes of the claimants, or
 - (c) record an order, continuing to such claimants a right of pasture or to forest-produce, as the case may be, to the extent so admitted, at such seasons, within such portions of the proposed forest, and under such rules, as may be made in this behalf by the Government.

Commentaries-The Governments' right to revision under section 15 is limited to Section 15 only (23).

16. Commutation of rights

In case the Forest Settlement-officer finds it impossible, having due regard to the maintenance of the reserved forest, to make such settlement under section 15 as shall ensure the continued exercise of the said rights to the extent so admitted, he shall, subject to such rules as the Government may make in this behalf, commute such rights, by the payment to such persons of a sum of money in lieu thereof or by the grant of land, or in such other manner as he thinks fit.

17. Appeal from order passed under section 11, section 12, section 15 or section 16

Any person who has made a claim under this Act, or any Forest officer or other person generally or specially empowered by the Government in this behalf, may, within three months from the date of the order passed on such claim by the Forest Settlement-officer under section 11, section 12, section 15 or section 16, present an appeal from such order to the Divisional Commissioner concerned.

Commentaries-The collector himself shall hear the appeal as a persona designata and not the Assistant Collector (24).

18. Appeal under section 17

- (1) Every appeal under section 17 shall be made by a petition in writing, and may be delivered to the Forest Settlement-officer, who shall forward it without delay to the Divisional Commissioner to hear the same.
- (2) An appeal shall be heard by the Divisional Commissioner in the manner prescribed for the time being for the hearing of appeals in matters relating to land development-tax.
- (3) The order passed on the appeal by the Divisional Commissioner shall, subject only to revision by the Government, be final.

Commentaries-If any claim is dismissed by the Forest Settlement-officer under section 6(c) and the appeal therefrom under section 17, and if the claimant does not prefer any revision therefrom, no civil court would give the claimant land or compensation (25). A revision from any order passed under section 17 will lie under section 22 and not under section 18(4).(26). Govt's power of revision is limited to section 15 and section 18 (27).

23. AIR 1968 All 396-1968 A1 L.J. 234 (F.B.).
 24. AIR 1967 All 472-1967 All LJ 41.
 25. AIR 1942 Cal 371(DB).
 26. ILR (1967) I All 477.
 27. AIR 1968 All 396=1968 All LJ 234.

19. Pleadings

The Government, or any person who has made a claim under this Act, may appoint any person to appear, plead and act on its or his behalf before the Forest Settlement-officer, or the Divisional Commissioner in the course of any inquiry or appeal under this Act.

20. Notification declaring forest reserved

(1) When the following events have occurred, namely :-

- (a) the period fixed under section 6 for preferring claims has elapsed and all claims, if any, made under that section or section 9 have been disposed of by the Forest Settlement-officer,
- (b) if any such claims have been made, the period limited by section 17 for appealing from the orders passed on such claims has elapsed, and all appeals (if any) presented within such period have been disposed of by the Divisional Commissioner and
- (c) all lands (if any) to be included in the proposed forest, which the Forest Settlement-officer has, under section 11, elected to acquire under the Acquisition and Requisition of Immovable Property Ordinance 1982 (Act II of 1982) have become vested in the Government under section 11 of that Ordinance.

The Government shall publish a notification in the official Gazette, specifying definitely, according to boundary marks erected or otherwise, the limits of the forest-which is to be reserved and declaring the same to be reserved from a date fixed by the notification.

(2) From the date so fixed such forest shall be deemed to be a reserved forest.

Commentaries-The notification under section 20 terminates all private rights upon forests and waste land from the date of its publication (28), but those would not be treated as reserved unless the notification under section 20 is published (29). No oral evidence about the notification would be admissible about notification without actual notification (30). The forest would vest only from the date of the publication of the notification (31). The powers of the forest officer about compensation are limited (32).

21. Publication of such notification in neighbourhood of forest

The Forest-officer shall, before the date fixed by such notification, cause it to be published in every town and village in the neighbourhood of the forest.

22. Power to revise arrangement made under section 15 or section 18

The Government may, within five years from the publication of any notification under section 20 revise any arrangement made under section 15 or section 18, and may for this purpose rescind or modify any order made under section 15 or section 18, and direct that any one of the proceedings specified in section 15 be taken in lieu of any other of such proceedings, or that the rights admitted under section 12 to be commuted under section 16.

Commentaries-The proceedings of reservation of forests are like judicial proceedings (33). Court's powers of revision are limited to section 15 and 18 (34).

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- 28. AIR 1942 Cal 371 (DB).
 - 29. AIR 1947 Pat 264-47 Cri L.J. 992.
 - 30. (1966) 32 Cut L.T.299; (1969) 35 cut L.T.343.
AIR 1951 Pat 380.
 - 31. AIR 1946 Pat 51-48 Cri L.J. 148.
 - 32. AIR 1967 Sc 166-1966 Supp ScR 158.
 - 33. I.L.R 1962 1 All 11=1961 All W. R. Hc. 532.
 - 34. AIR 1968 All 396-1968 All L.J. 234.

23. No right acquired over reserved forest except, as here provided

No right of any description shall be acquired in or over a reserved forest except by succession or under a grant or contract in writing made by or on behalf of the Government or some person in whom such right was vested when the notification under Section 20 was issued.

24. Rights not to be alienated without sanction

- (1) Notwithstanding anything contained in section 23, no right continued under clause (c) of sub-section (2) of section 15 shall be alienated by way of grant, sale, lease, mortgage or otherwise, without the sanction of the Government;

Provided that, when any such right is appendant to any land or house, it may be sold or otherwise alienated with such land or house.

- (2) No timber or other forest-produce obtained in exercise of any such right shall be sold or bartered except to such extent as may have been admitted in the order recorded under section 14.

25. Power to stop ways and water courses in reserved forests

The Forest-officer may, with the previous sanction of the Government or of any officer duly authorised by it in this behalf, stop any public or private way or water-course in a reserved forest, provided that a substitute for the way or water-course so stopped, which the Government deems to be reasonably convenient, already exists, or has been provided or constructed by the Forest officer in lieu thereof.

Commentaries-Existence of a public pathway is a precondition of this section. This is an extraordinary power and to be applied with discretion (35). It is a rule that in the reserved forests only the forest officials would move, but if members of the public are allowed to use the road in lieu of some fees, that would not be violative of the rights guaranteed under the constitution (36).

26. Acts prohibited in such Forests : (36a)

- (1) Any person who, in a reserved forest-
- (a) kindles, keeps or carries any fire except at such seasons as the Forest-officer may notify in this behalf ;
 - (b) trespasses or pastures cattle, or permits cattle to trespass ;
 - (c) causes any damages by negligence in felling any tree or cutting or dragging any timber;
 - (d) quarries stone, burns lime or charcoal, or collects, subjects to any manufacturing process, or removes, any forest produce other than timber; or who enters a reserved forest with fire arms without prior permission from the Divisional Forest-officer concerned, shall be punishable with imprisonment for a term which may extend to six months and shall also be liable to fine which may extend to two thousand taka, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.
- (1A) Any person who-
- (a) makes any fresh clearing prohibited by section 5 ; or
 - (b) removes any timber from a reserved forest ; or

- (c) sets fire to a reserved forest, or, in contravention of any rules made by the Government in this behalf, kindles any fire, or leaves any fire burning, in such manner as to endanger such a forest ;

or who, in a reserved forest-

- (d) fells, girdles, lops, taps or burns any tree or strips off the bark or leaves from, or otherwise damages, the same ;
 (e) clears or breaks up any land for cultivation or any other purpose ;
 (f) in contravention of any rules made in this behalf by the Government, hunts, shoots, fishes, poisons water or sets traps or snares ; or
 (g) establishes saw-pits or saw benches or converts trees into timber without lawful authority: shall be punishable with imprisonment for a term which may extend to five years and shall not be less than six months, and shall also be liable to fine which may extend to fifty thousand taka and shall not be less than five thousand taka, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

- (2) Nothing in this section shall be deemed to prohibit-

- (a) any act done by permission in writing of the Forest-officer or under any rule made by the Government, or
 (b) the exercise of any right continued under clause (c) of sub-section (2) of section 15, or created by grant or contract in writing made by or on behalf of the Government under section 23.

- (3) Whenever fire is caused wilfully or by gross negligence in a reserved forest, the Government may (not withstanding that any penalty has been inflicted under this section) direct that in such forest or any portion there of the existence of all rights of pasture or to forest-produce shall be suspended for such period as it thinks fit.

Commentaries-Where an offence is committed under this section, no order to confiscate the forest produce, which is Government property, is necessary or can be passed. The forest officer is only to take charge of the property till disposal of the case (37). A case under section 26 is a summons case. There can be no order as to further enquiry (38). The immediate effect of the notification under section 38 is to apply all the provisions of the act as are applicable to the reserved forests (39).

No power in appellate Court to award compensation-Appellate Court awarding compensation in addition to fine imposed by trial court-Amounts to enhancement of sentence and is without jurisdiction under section 423.Cr.P.C.(40).

Where gazette Notification under section 20 is not produced nor publication thereof under section 21 is proved oral evidence would not be sufficient to prove the guilt under section 26. Offence of removing forest produce and assaulting foresters proved-Leniency in sentence cannot be shown. (41).

For a person being held guilty under clause (a) there should be a notification under section 4.

Clearing-Cutting away and removal of trees from land constitute clearing-Purpose of such clearing is immaterial.

A person is said to set fire to a thing if he puts match to it or sets it on fire directly and not if it catches fire as an indirect consequence of his act (42).

37. (1882) 4 All 417.
 38. 1900 Pun Re (Cr) No. 19 P 43.
 39. AIR 46 Pat 51=48 Cr. LJ 148=24 Pat 477.
 40. 1961 Cr.L.J 593=1960 All LJ 590.
 41. (1969) 10 Orissa J.D. 152.
 42. AIR 1916 Lah 70=17 Cr LJ 458.

In this case of cattle trespassing in Government reserved forest, unless duly licensed, the master cannot be criminally liable for acts of his grazier in taking his cattle into such forest unless he permits the cattle so to graze by some overt acts or by some negligent omission (43).

One who takes away timber from a reserved forest is criminally liable for committing an offence under Section 26, does not depend upon the presence or absence of the owner at the time, but depends upon the whole circumstances (44).

A person felling a number of trees in a forest is guilty of as many offences as the number of trees felled by him (45).

There is no provision either in the Act or in the rules framed thereunder to award compensation for damages in respect of protected forest. So an order for Compensation for the damage to the protected forest is illegal(46).

In cases under Forest Act it is the duty of the prosecution to establish that some timbers had been felled and removed from the Government forest, and that the timbers in possession of the accused corresponded to the logs illegally removed from the Government Forest. The failure of the accused to explain satisfactorily does not relieve the prosecution of the burden to prove that the logs constituted Government property and had been illegally removed (47).

In the absence of proof of a notification under Section 20, by the production of a copy therefore, a conviction for the offences falling under Section 26 (1) (f) and (h) of the Forest Act, cannot be sustained (48).

Persons accused of an offence under Section 26 (g) happened to be only servants and so fine was reduced (49).

Where accused and his predecessors have been cultivating forest land for many years past conviction under Section 26 (h) is not sustainable (50).

Where a person has been cultivating possession of forest land even prior to the notification under Section 20 of the forest Act he cannot be convicted under Section 26 (1)(a) or (h) of the Act because, the land was already cleared and broken up and there is no clearing and breaking up after the notification. Section 26 (1) (a) and (h) cannot mean cultivating the land which had already been cleared or broken up (51).

Even if a hunter who does not enter the forest and kill an animal within a reserved forest from outside is guilty under the section (52).

The word 'shoots' cannot be so widely interpreted as to mean going for shooting. It means discharging a firearm or other weapon (53).

Person carrying loaded gun through Government reserved forest-Intention to shoot game is not presumed and there can be no conviction under S. 26 (1) (i) of the Act (54).

Shooting a tiger in reserved forest without license to protect his property is an offence under this clause (55).

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43. AIR 1938 Nag 365=39 Cri LJ 700=ILR 1939 Nag 228 ; AIR 1937 Nag 169=38 Cri LJ 566=ILR 1937 Nag 356.
 44. 11 Cr LJ 41.
 45. AIR 1918 All 351=19 Cr L.J. 181 (DB)
 46. 5 Cr L.J. 9
 47. 1954 Orissa 16=1953 Cri L.J. 1895.
 48. AIR 1951 Pat 380; 2 Guj LR 45.
 49. AIR 1946 Pat 51=48 Cri LJ. 148.
 50. AIR 1929 Nag 190=31 Cr LJ 708.
 51. AIR 1952 All 33=1952 Cri LJ 230.
 52. AIR 1935 Nag 23=40 All 38; 11 Cri L.J.486.
 53. AIR 1931 Sindh 156=32 Cri LJ 1140=25 Sindh LR 217.
 54. AIR 1933 All 630=34 Cri L.J. 1050.
 55. AIR 1918 Bomb 150=19 Cri L.J. 810=1 L R 42 Bomb 406.

27. Power to declare forest no longer reserved

- (1) The Government may, by notification in the official Gazette, direct that, from a date fixed by such notification, any forest or any portion thereof reserved under this Act shall cease to be a reserved forest.
- (2) From the date so fixed, such forest or portion shall cease to be reserved, but the rights (if any) which have been extinguished therein shall not revive in consequence of such cessation.

Commentaries—Order of appellate authority excluding certain land from the purview of notification under section 4, the same cannot be revised under section 22 or section 18 (4). Person affected not heard—order is without jurisdiction (56).

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

DIRECTORATE OF FISHERIES

**APPENDIX A7: EAST BENGAL PROTECTION AND CONSERVATION OF
FISH ACT, 1950**

GOVERNMENT OF EAST PAKISTAN
FOOD AND AGRICULTURE (AGRICULTURE) DEPARTMENT
 Fishery Branch

No. 3/60/XIV, dated the 16th April, 1960

From Q. M. RAHMAN, Esq, Secretary to the Government of East Pakistan.

TO.....

Sub: Strict enforcement of provisions of the East Bengal Protection and Conservation of Fish Act, 1950.

Ref: This Department Circular No. Fish 3M-145/59/963 (17), dated 28th October, 1959.

The undersigned is directed to say that it is reported that the provisions of the East Bengal Protection and Conservation of Fish Act, 1950 and Rules made thereunder are not being enforced as strictly as they should be. In consequence, large-scale destruction of fish fry and immature fish is still taking place. This is resulting in scarcity of fish and aggravation of the food position, for fish is an important item of food and nourishment for this Province.

2. It is therefore, essentially necessary that the fish laws and rules are properly enforced.
3. The powers and functions of various classes of officers, and restrictions applicable under the Act, are described district wise in the enclosed statement. It is hoped that it will be helpful to those whose duty it is to see to the enforcement of these provisions.
4. It is requested that necessary instructions in this behalf be issued to all concerned.
5. A copy is being forwarded to the Home(Police) Department of this Government with a request that they issue necessary instructions to Police officers.

Q. M. RAHMAN,
Secretary to the Government of East Pakistan.

No. 3/60/XIV, dated the.....April, 1960.

Copy with a copies of the statement forwarded to the Home(Police) Department in continuation of Memo. No. 1008, dated 23rd November, 1959, with the request that necessary instructions be issued to all Police Officers concerned.

S. A. A. HAIDAR,
Section Officer.

No. 3/60/XIV, dated the.....April, 1960.

Copy with copies of the statement forwarded to-

- (1) Director of Fisheries, East Pakistan,
- (2) Chief Conservator of Forests, East Pakistan, with the request that necessary instructions be issued to their officers concerned.

S. A. A. HAIDAR,
Section Officer.

No.....

Copy with copies of the statement forwarded to Commissioners of Divisions for information.

S. A. A. HAIDAR
Section Officer.

Provisions of Rules framed and Notifications issued under the East Bengal Protection and Conservation of Fish Act, 1950.

- I. All Fishery Officers of and above the rank of Fishery Overseas and Fish Culture Assistants employed in the Directorate of Fisheries are empowered to detect breaches of the Provisions of the Act and to make search and investigation (vide notification No. 678-Fish, dated 30th May, 1959).
- II. Following officers are empowered to arrest without warrant under the Act-
- (1) All Magistrates;
 - (2) All Police Officers not below the rank of Sub-Inspectors of Police or Officers incharge of Police-stations;
 - (3) All Forest Officers not below the rank of Deputy Ranger employed in the Sundarbans Forest Division;
 - (4) All Officers of the Directorate of Fisheries not below the rank of Fishery Overseer (vide notification No. 678-Fish, dated 3rd July, 1950).
- III. Following punishment are prescribed for breaches of the Act and Rules-
- (1) Simple imprisonment up to one month, or fine upto Rs.100, or both;
 - (2) If the offence is committed for the second and subsequent time, simple imprisonment upto two months, or fine upto Rs.200, or both (vide section 5 of the Act).
- IV. Restrictions applied under the Act are described in the accompanying statement, district-wise.

District	Provision	Restrictions	Period of application
(1) Dacca	(a) Erection of fixed engines	(1) River Padma from its confluence with river Jamuna.	Throughout the year.
		(2) River Padma	Vide notification No 2501, dated 24-3-1955.
		(3) River Jamuna	
		(4) Buriganga	
		(5) Sitalakha (Iakshya)	
		(6) Meghna	
		(7) River Bansi	
	(b) Construction of bundh, weirs, dams and embankments	(1) River Kaliganga	Vide notification No 277, dated 13th January
		(2) River Dhaleshwari	
		(3) River Ichamati	
(c) Offering, exposing or possessing for sale or barter-	Everywhere in the district (Katla, Ruhu, Mrigai, Kalbaus and Ghunia).	Vide notification No. 6580 dated 3rd July, 1950.	
(i) Carps below 9 inches		(1) July-December	
(ii) Hilsa below 9 inches		(2) November-April	
(iii) Pungas, Silond, Bhola, Aor below 12 inches		(3) February-June	
(2) Mymensingh	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955	(1) River Bramhaputra	
		(2) River Banar	
		(3) River Sutia	
		(4) River Khiru	

		(5) River Kachamatia	
		(6) River Kangsha	
		(7) Kumarkhali Khal	
		(8) River Lauhajang	
		(9) River Kharia	
		(10) River Fatjani (Fatikjani).	
		(11) River Bansi	
(2)Mymensingh - conold		(12) River Nanglai	
		(13) Duldia Nadi	
		(14) Bainyajan Nadi	
		(15) Karagaon Khal (Adda Nadi).	
		(16) Kajlar Khal	
		(17) Kata Khal	
		(18) Nasunda Khal	
		(19) Suijani Nadi	
		(20) Kanibari Nadi	
		(21) Chitar Khal	
		(22) Sulabari Khal	
		(23) Dumarkander Khal	
		(24) Roa beel	
		(25) Bara Haor	
		(26) River Kaliganga	
		(27) River Dhaleshwari	
		(28) River Ichamati	
		(29) River Murki	
		(30) River Jhenai	
		(31) Mara Nadi	
	(32) Mogra River		
	(33) Saidaha River		
	(34) Golia River		
	(b) Construction of bunds, weirs, dams and embankments.	(1) Duldia Nadi	Throughout the year
	Vide notification No. 277, dated 13th January, 1953 for items up to 13.	(2) Bainyajar Nadi	
	Vide notification No. 6497, dated 20th May, 1952 for items from 14 to 25.	(3) Karagaon Khal	
		(4) Kajlar Khal	
		(5) Kata Khal	

		(6) Nasunda Khal	
		(7) Suaigani Nadi	
		(8) Kanibari Nadi	
		(9) Chitrar Khal	
		(10) Sulabaria Khal	
		(11) Dumra Kandra Khal	
		(12) Roa Beel	
		(13) Bara Haor	
	(c) Catching or causing to be caught or destroy fry of Shoal, Gazar and Taki moving in clusters or the parent fish while guarding.	Entire district	May to August
	Vide notification No. 6972, dated 4th June, 1952.		
	(d) Offering, exposing or possessing for sale or barter-		
	(i) Carps below 9 inches	(Catta, Ruhu, Mrigal, Kalbaus and Ghunia)	July to December
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November to April
	(iii) Punges, Silond, Bhola, Aor below 12 inches.		February to June.
		(14) River Bramhaputra	
		(15) River Banar	
		(16) River Sutia	
		(17) River Khiru	
		(18) River Katchamatia	
		(19) River Kangsha	
		(20) River Kumar Khal	
		(21) River Laujang	
		(22) River Kharia	
		(23) River Fatjani	
		(24) River Bansi	
		(25) River Nanglai	
(3) Faridpur	(a) Erection of fixed engine	(1) River Madhumati	Throughout the year.
		(2) River Arial Khan	
		(3) River Kumar	
		(4) River Gangaprasad	
		(5) River Chatra	
		(6) River Bhubaneswari	
		(7) River Kirtinasha	
		(8) River Chandana	
		(9) River Padma	

District	Prohibition	Rivers/Canals	Period of operation
	(b) Construction of bunds, dams, weirs and embankments.	(1) River Arial Khan	
	Vide notification No. 6497, dated 20th May, 1952..	(2) River Madhumati	
	(c) Catching or destroying fry of Shoal, Gazar and Taki moving in clusters or parent fish while guarding.	Rivers, Canals, Khals, beels or any sheet of water in the district	May-August
	Vide Notification No.6972, dated 4th June, 1952.		
(3) Faridpur-concl'd.	(d) Offering, exposing or possessing for barter or sale.	Rivers, Canals, Khals, beels or any sheet of water in the district.	
	(i) Carps below 9 inches	(Ruhu, Catla, Mrigal, Ghunia)	July-December
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June
(4) Bakerganj	(a) Erection of fixed Engines Vide notification No. 2501, dated 24th March, 1955.	(1) Bishkali River	Throughout the year.
		(2) Lohalia River	
		(3) Tea Khali River	
		(4) Andharmanik River	
		(5) Nilganj River	
		(6) Sonatali River	
		(7) Baliatola River	
		(8) Beghai River	
		(9) Kukua River	
		(10) Golkhali River	
		(11) Gulish Khali River	
		(12) Amtoli Don	
		(13) Patuakhali River	
		(14) Rajganj River	
		(15) Awtiapur River	
		(16) Dhulia River	
		(17) Karkhana River	
		(18) Kacha River	
		(19) Baleswar River	
		(20) Kawkhali River	
		(21) Swarupkathi River	
		(22) Maliganj River	
		(23) Ganeshpur River	
		(24) Ilisha River	

District	Provision	Specific area	Period of application
		(25) Madras Don	
		(26) Joyer Don	
		(27) Kalijira River	
		(28) Barisal River	
		(29) Ujirpur River	
		(30) Torki River	
		(31) Hijla River	
		(32) Safipur River	
		(33) Nayabhangani River	
		(34) Arial Khan River	
		(35) Jontee River	
		(36) Mastata River	
		(37) Khajuria River	
		(38) Metendiganj River	
(39) Kalabadur River			
(40) Bakarganj River			
		(41) Angaria River	
		(42) Pandab River	
		(43) Bish Kali Don	
		(44) Gabkhar Khal	
		(45) Rajapur River	
		(46) Dhansiddi River	
		(47) Pona Don	
	(b) Offering exposing or possessing for barter or sale-	Everywhere in the district. Vide notification No. 6580, dated 3rd July, 1950.	
	(1) Carps below 9 inches..	(Katla, Ruhu, Mrigal, Kalbaus and Ghunia.)	(i) July-December
	(ii) Hilsa below 9 inches		(ii) November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		(iii) February-June
(5) Tippera	(a) Erection of fixed engine Vide notification No. 2501, dated 24th March, 1955.	(1) Gumti Nadi	Throughout the year.
		(2) Titas	
		(3) Khini	
		(4) Rasulpur Khal	
		(5) Buriganga	
		(6) Kamthana Nadi	
		(7) Sidlai Khal	
		(8) Laribagh Khal	
		(9) Pugli Nadi	

District	Prohibitions	Specific areas	Period of application
		(10) Kalatia Nadi	
	(b) Catching or destroyng fry of Shoals, Gazar and Taki while moving in clusters or the parent fish while guarding.	Canals, khals, beels, rivers or any sheet of water in the district, vide notification No. 6972, dated 4th June, 1952.	May-August
	(c) Offering, exposing or possesing for sale or barter-		
	(i) Carps (Katla, Ruhu, Mrigal, Kalbaus and Ghunia) below 9 inches.		(i) July-December.
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	(ii) November-April.
	(iii) Pungas, Silond, Bholo, Aor below 12 inches.		(iii) February-June.
(6) Noakhali	(a) Erection of fixed engine	(1) Kalidas Khal (2) Gazaria Khal (3) Dakatia river (4) Dadpur Khal (5) River Salonia (6) Kuhia Khal	Throughout the year.
		(7) Azim Bhuyan Khal (8) Boalia Khal (9) Ghatia Khal (10) Barachara (11) Selonia Khal (12) Sasankhali Khal (13) Rahmat Khali Canal (14) Koralia Khal (15) Noakhali Khal	Vide notification No. 2501, dated 24th March, 1955.
(6) Noakhali-concd.	(b) Construction of bunds, weirs, dams and embankments.	(1) Kalidas Khal (2) Gazaria Khal (3) River Dakatia (4) Dadpur Khal (5) Selonia Khal	Throughout the year.
	Vide notification No. 6497, dated 20th May, 1952.	(6) Kuhia Khal	
		(7) Azim Bhuiyan Khal (8) Boalia Khal (9) Ghatia Khal (10) Barachara (11) Selonia Khal (12) Sasankhali Khal	

District	Prohibition	Localities	Period of Prohibition	
(8) Sylhet - conclud	(c) Catching or causing to be caught carp fishes	(1) River Kushiara from Fenchuganj Rly. bridge up to village Lamagangapur.	April-June	
		(2) River Kushiara from its junction with Lulo canal up to village Kakkordi.		
		(3) Lulo canal from its junction with Kushiara up to Hakaloki Haor.		
		(4) Karchar Dala from village Karacha to Makalkandi.		
		(5) Chairer Khal from village Halainagar to Makalkandi.	Vide notification No. 3281, dated 27th March, 1951.	
		(6) Bahushiar Dala from Bahushaha to Moker Haor.		
		(7) Fatepur Khal.		
		(8) River Surma.		
		(9) River Peain		
		(10) River Garakhal		
		(11) River Katagonj.		
(8) Sylhet - contd.	(d) Offering, exposing or possessing for sale or barter-	Everywhere in the district.		
	(1) Carps below 9 inches.	(Katia, Ruhu, Mrigal, Kalbaus and Ghunia)	July - December	
	(2) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November - April	
	(3) Pangas, Silond, Bholo, Aor below 12 inches.		February - June	
(9) Kushtia	(a) Erection of fixed engines	(1) River Chandana		
	Vide notification No. 2501, dated 24th March, 1955.	(2) River Kaligonga	Throughout the year.	
		(3) River Gorai		
(10) Jessore	(a) Erection of fixed engine vide notification No. 2501, dated 24th March, 1955.	(1) Kumar Nadi	Throughout the year.	
		(2) Bhairab River		
		(3) Shaheb Khata Khal		
		(4) Bhadra Khal		
		(5) Dhopakata Khal		
		(6) Chapri Khal		
		(7) Bakri Khal		
		(8) Chara Khali		
	(10) Jessore-Contd.			(9) Alam Khali
			(10) Biseswar Khal	
			(11) Betakhali Khal	
		(12) Dakopa Khal	July - December	

District	Prohibition	Specific Area	Period of Prohibition
		(13) Kumarkhi (14) Mongolpaita Khal of the Chitra. (15) Nabaganga (16) Betbery Khal (17) Chaprar Khal (18) Dwripur Khal (19) Fatki Khal (20) Barasia Khal (21) Beril Khal (22) Bhatpara Khal (23) Ramsagor Khal (24) River Madhumati (25) Halifa Canal (26) Satra Khal (27) Dhopadaha Khal (28) Patna Khal	
(10) Jessore - Contd.	(b) Catching or causing to be caught carps (Ruhu, Katla, Mrigal, Kalbaus and Ghunia) up to 9 inches in length.	(1) Raghobpur Khal	July - December
		(2) Enayetpur Khal (3) Khudra Khal (4) Kalidas Khal (5) Mongolpaita Khal (6) Ghorakhali Khal (7) Gobra Khal (8) Bagdanga Khal (9) Shaheb Katakhal Khal (10) Bhadra Khali Khal (11) Dhopaghat Khal (12) Chapri Khal (13) Backry Khal (14) Alamkhal's Doha (15) Dairapur Khal (16) Kashinathpur Haor (17) Barasia Khal (18) Alikdia Khal	
(10) Jessore- Concl'd.		(19) Serajdia Khal (20) Bhatpara Khal	July - December

District	Description	Canals and Rivers	Period of application
		(21) Beroil Khal	
		(22) Dhopadaha Khal	
		(23) Chatra Khal	
		(24) Bordia Khal	
		(25) Patna Khal	
		(26) Babupur Khal	
	(c) Offering, exposing or possessing for sale or barter-	Everywhere in the district.	
	(i) Carps (Katta, Ruhu, Mrigal, Kalbaus and Ghunia) below 9 inches		July - December
	(ii) Hilsa below 9 inches		November - April
	(iii) Pungas, Silond, Bhoia, Aor below 12 inches.		February - June
	Vide notification No. 6580, dated 3rd July, 1950.		
(11) Khuina	(a) Erection of fixed engines	(1) River Madhumati	October - March
	Vide notification No. 2501, dated 24th March, 1955.		
	(b) Construction of bunds, dams, weirs or embankments.		
	Vide notification No. 6497, dated 20th May, 1952.		
	(c) Catching or causing to be caught carps (Ruhu, Mrigal, Kalbaus and Ghunia) of any size.	(1) The canal known as Dalbasania and Ghazaria Khal.	
	Vide notification No. 15135, dated 24th December		
	(d) Offering, exposing or possessing for sale or barter-		
	(i) Carps below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	July-December
	(ii) Hilsa below 9 inches		November-April
(iii) Pungas, Silond, Bhoia, Aor below 12 inches.	February-June		
(12) Pabna	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955.	(1) Canal Badal	Throughout the year.
		(2) River Karatoa	
		(3) River Ichamati	
	(b) Construction of bunds, weirs, dams, etc., vide notification No. 6497, dated 20th May, 1952.	(1) Canal Badai	Throughout the year.
	(c) Catching or causing to be caught carps (Ruhu, Mrigal, Kalbaus and Ghunia) of any size, vide notification No. 15135, dated 24th December, 1952.	(2) River Ichamati	1st May to 31st July
	(3) River Jamuna	1st April to 31st July.	

District	Provisions	Specific area	Period of operation	
	(d) Catching or causing to be caught carps mentioned in item (c) up to six inches. vide notification No. 15135, dated 24th December, 1952	(1) River Jamuna from village Kalmi down to village Nagarbari.	1st June to 31st August.	
		(2) River Padma within Iswardi P.S.	15th June to 15th August.	
		(3) Hooria Sagar	1st June to 31st August	
		(4) Katakhal		
		(5) Prodonga Jola	1st June to September	
(13) Rangpur	(a) Erection of fixed engine, videnotification No. 2501, dated 24th March, 1955	(1) River Ghat	Throughout the year.	
		(2) River Manash		
		(3) River Maraghat		
		(4) River Alai		
		(5) River Haldia		
		(6) River Karatoa		
		(7) River Jamuneswari		
	(b) Catching or causing to be caught carps, viz., Ruhu, Katla, Mrigal, Kalbaus or Ghunia of any size,	(1) River Haldia	1st May to 31st July.	
		vide notification No. 15135, dated 24th December, 1952.	(2) River Jamuna	15th May to 15th July.
			(3) River Bramhaputra	April to July.
	(4) River Teesta	15th May to 15th July.		
	(5) River Bengali	May to July		
(13) Rangpur-Concld	(c) Catching or causing to be caught carps mentioned at (b) up to six inches. Vide notification No. 15135, dated 24th December, 1952.	(1) River Haldia from village Gopinathpur up to Maliandaha Ghat.	1st August to 15th August.	
	(d) Catching or destroying fry of Shoal, Gazar and Taki moving in clusters and the parent fish while guarding (No. 6978, dated 4th June, 1952)	(2) Rivers, canals, Khals, Beels in the 4 district.	May-August	
	(e) Offer, expose or possess for sale or barter-	Everywhere in the district.	July - December	
	(i) Carps below 9 inches			
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November-April	
	(iii) Pungas, Silond, Bhola, Aor below 12 inches		February-June	
(14) Dinajpur	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955.	(1) River Jamuna	Throughout the year.	
		(2) Ashular Beel		
		(3) River Karatoa		
	(b) Offer, expose or possess for sale or barter-	Everywhere in the district.		

Division	Prohibition	Applicable area	Period of application
	(i) Carps below 9 inches		July-December
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June
(15) Bogra	(a) Catching or causing to be caught carps (Ruhu, Katla, Mrigal, Kalbaus and Ghunia) of any size.	(1) River Jamuna	1st April to 31st July.
		(2) Daguria Khal	April-June
		(3) Belai Khal	
		(4) River Bengali	
	(b) Catching or causing to be caught carps mentioned at (a) up to six inches. (a and b) vide notification No. 15135, dated 24th December, 1952.	(1) River Karatoa	June-August.
		(2) River Jamuna	June-July
		(3) River Bengali	
		(4) Daguria Khal	July-August
		(5) Belai Khal	
	(c) Offer, expose or possess for sale or barter-	Everywhere in the district.	
(i) Carps, Ruhu, Katla, Mrigal, Kalbaus, Ghunia below 9 inches.	July-December		
(ii) Hilsa below 9 inches	February-June		
(iii) Pungas, Silond, Bhola, Aor below 12 inches.			
Vide notification No. 6580, dated 3rd July, 1950.			
(16) Rajshahi	(a) Erection of fixed engines	(1) Shibnadi	Throughout the year.
		(2) River Kaledanga	
	Vide notification No. 2501, dated 24th March, 1955.	(3) Saloid Beel	
		(4) Marichar Dara Khal	
(b) Catching or causing to be caught any carps (Ruhu, Katla, Ghunia, Mrigal and Kalbaus) up to six inches.	(1) River Baral from its origin in river Padma up to Arani Railway Station bridge.	16th July to 15th August.	
Vide notification No. 15135, dated 24th December, 1952.			
(c) Offer, expose or possess for sale or barter-	Everywhere in the district.		
(i) Carps below 9 inches		July-December	
(ii) Hilsa below 9 inches		November-April	
(iii) Pungas, Silond, Bhola, Aor up to 12 inches.		February-June	
Vide notification No. 6580, dated 3rd July, 1950.			

GOVERNMENT OF EAST BENGAL

LEGISLATIVE DEPARTMENT

East Bengal Act XVIII of 1950

THE EAST BENGAL PROTECTION AND CONSERVATION OF FISH ACT, 1950

(Passed by the Assembly on the 3rd March, 1950)

(Assent of the Governor-General was first published in the Dacca Gazette, Extraordinary" of the 18th May, 1950)

An Act to provide for the protection and conservation of fish in East Bengal.

Whereas it is expedient to provide for the protection and conservation of fishes in East Bengal;

It is hereby enacted as follows:

1. Short title, extent and commencement.-

- (1) This act may be called the East Bengal Protection and Conservation of Fish Act, 1950.
- (2) It extends to the whole of East Bengal.
- (3) It shall come into force on such date as the Provincial Government may, by notification in the Official Gazette, appoint.

2. Definitions.- In this act, there is anything repugnant in the subject or context,-

- (1) "fish" includes a shell fish and a fish at all stages in its life history;
- (2) "Fishery-Officer" means any person whom the Provincial Government or any officer empowered by the Provincial Government in this behalf may appoint to carry out all or any of the purposes of this Act or to do anything required by this Act or any rule made thereunder to be done by such officer :

Provided that no police-Officer shall be so empowered;

- (3) "fixed engine" means any net, cage, trap or other contrivance for catching fish, fixed in the earth or made stationary in any other way; and
- (4) "private water" means a piece of water-
 - (a) which is primarily used for domestic purposes, and
 - (b) which is the exclusive property of any person, or in which any person has for the time being any exclusive right of fishery whether as owner or lessee, or any other capacity but does not include any river, canal, khal, beel or any piece of water which ordinarily has direct communication with any river, canal, khal or beel.

3.(1) The Provincial Government may make rules for the purposes hereinafter in this section mentioned.

- (2) The Provincial Government may, by notification, apply such rules or any of them to any water or waters, provided that such rules shall apply to any private water except with the consent in writing of the owner thereof and of all persons having for the time being any right of fishery therein.
- (3) Such rules may-

(a) prohibit or regulate all or any of the following matters, that is to say,-

- (i) the erection and use of fixed engines,
- (ii) the construction, temporary or permanent, of weirs, dams, bunds embankments and other structures;

(b) prohibit the destruction of, or any attempt to destroy, fishes by explosives, gun, bow and arrow in inland water or within coastal territorial waters;

- (c) prohibit the destruction of, or any attempt to destroy, fishes by the poisoning of water or the depletion of fisheries by pollution, by trade effluents or otherwise;
- (d) prescribe the seasons during which the killing or catching of fishes of any prescribed species shall be prohibited;
- (e) prescribe a minimum size below which no fish any prescribed species, shall be killed or sold; and
- (f) prohibit all fishing in all waters or in any specified waters for a specified period:

Provided that the Provincial Government may for the purpose of pisciculture permit the catching of fishes in any closed season or in any prohibited water or below the prescribed minimum size and disposal thereof subject to the condition of the licence issued for the purpose.

(4) In making any rule under this section Provincial Government may provide for-

- (a) the seizure, removal and forfeiture of any fixed engine or any other contrivance erected or used for fishing in contravention of the rules:

Provided that no fishing net shall be seized or forfeited unless the offence has been committed more than once; and

- (b) the forfeiture of any fishes taken by means of any such fixed engine or any other contrivance.

(5) The power to make rules is subject to the condition of previous publication; and the date to be specified under clause (3) of section 24 of the Bengal General Clauses Act, 1899, shall not be less than two months from the date on which the draft of the proposed rules was published.

(6) All such rules shall be published in the Official Gazette and shall, unless some later date is appointed, come into force on the date of such publication.

4. **Power to prohibit sale of fish.**-The Provincial Government may, by notification, prohibit for a specified period the offering or exposing or possession for sale or barter of fishes below the the prescribed size of any prescribed species throughout the province of East Bengal or any part thereof.

5. **Arrest without warrant for offence under the Act.**-

- (1) Any person, specially empowered by the Provincial Government in this behalf, may arrest without warrant any person committing a breach of any rule under section 3 or any prohibition notified under section 4-

- (a) if the name and address of the person or unknown to him, and
- (b) if the person declines to give his name and address or if there is reason to doubt the accuracy of the name and address, if given.

- (2) A person arrested under this section may be detained until his name and address have been correctly ascertained :

Provided that no person so arrested shall be detained longer than may be necessary for bringing him before a Magistrate or to the nearest police station according to the provision of the Code of Criminal Procedure, 1898 (Act V of 1898).

- (3) Notwithstanding anything contained in the Code of Criminal Procedure, 1898 (Act of 1898), it will be lawful for the officer-in-charge of a police-station to detain a person produced before him under the preceding sub-section till he is produced before the Magistrate.

- (4) All Fishery Officers empowered by the Provincial Government shall have the same powers of search and investigation in respect of an offence under this Act as a police officer of the rank of sub-inspector.

7. Cognizance of offences.-

- (1) No court inferior to that of a Magistrate of the second class shall try any offence under this Act.
- (2) No court shall take cognizance of any offence under this Act, except on the complaint of a fishery officer or of a police officer not below the rank of Sub-inspector or of any other person or class of persons authorised by the Provincial Government in this behalf.

8. Officers to be deemed public servants.- All persons empowered to perform any functions under this Act (Act XIV of 1860) shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.

9. Indemnity-No suit, prosecution or other legal proceeding shall lie against any person empowered to perform any function under this Act for anything which is in good faith done or intended to be done under this Act.

10. Repeal of Act IV of 1897.-The Indian Fisheries Act, 1897 (Act of 1897) in its application to East Bengal is hereby repealed.

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF
Fisheries Branch
NOTIFICATION

Dacca.-No.6580 Fish.-3rd July 1950.-In exercise of the power conferred by section 4 of the East Bengal Protection and Conservation of Fishes Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to prohibit throughout the province of East Bengal the offering or exposing or possession for sale or barter of fishes of the species and sizes mentioned in column 2 of the Schedule below at any time during the periods specified in column 3 of the Schedule.-

Schedule

Serial No.	Species of fish and size	Period
1.	Carp (i.e., Katta, Ruhu, Mrigal, Kalbaus and Ghunia) below nine inches in length.	Between July and December
2.	Hilsa (popularly known as Jatka in some parts of the province) below nine inches in length.	Between November and April in any year.
3.	Pungas	Between February and June in any year.
4.	Silond	
5.	Bhola	
6.	Aor	

It shall not apply to the catching, sale, transfer or possession of any fish for the purposes of or in connection with pisciculture.

By order of the Governor
M. A. MAJID,
Joint Secretary

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF
Fisheries Branch

NOTIFICATION

Dacca.-No. 6581.-3rd July 1950.-In exercise of the power conferred by sub-section (1) of section 6 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to empower the persons mentioned below, to arrest without warrant in accordance with the provisions of the said section, any person committing a breach of any rule under section 3 or any prohibition notified under section 4 of the said Act, namely:-

- (1) All Magistrates.
- (2) All police Officers not below the rank of Sub-Inspector of Police or Officer-in-charge of a police station.
- (3) All Forest Officers not below the rank of Deputy Ranger employed in the Sundarbans Forest Division.
- (4) All Officers of the Directorate of Fisheries not below the rank of Fishery Overseer.

By order of the Governor

M. A. MAJID
Joint Secretary

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF

Fisheries Branch

NOTIFICATION

No. 3281-Fish.-the 27th March 1951.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following rule:-

Rule

No person shall catch or cause to be caught carp fishes (i.e., Ruhu, Mrigal, Katta, Kalbaus and Ghunia) during the period from the 1st April to the 30th June in any year in the places mentioned in the schedule below:

Schedule

- (1) River Kushiara from the Fenchuganj Railway bridge up to village Lama Gangapur, police-station Fenchuganj, district Sylhet.
- (2) River Kushiara from its junction with Lula canal up to village Kakordi, police-station Beanibazar, district Sylhet.
- (3) Lula canal from its junction with Kushiara river up to its junction with Hakaluki haor, police-station Fenchuganj, district Sylhet.
- (4) Karchar Dala (flowing from the river Kalni also known as Beramohana) from village Halanagar up to Makalkandi haor, police station Baniachang, district Sylhet.
- (5) Chairer khal (flowing from the river Kalni also known as Beramohana) from village Halanagar up to Makalkandi haor, police-station Baniachang, district Sylhet.
- (6) Bahushiar Dala (flowing from Bibiana) from village Bahusha up to Mokar haor, police-station Nabiganj, district Sylhet.
- (7) Fatepur Khal (flowing from the river Shaka Kushiara) from village Fatepur up to Ghardair beel, police-station Ajmiriganj, district Sylhet.
- (8) River Surma from its junction with Madhabpur khal at the eastern border of village Madhabpur to its junction with Chengar khal at the southern boundary of the village Parkal, police-station Chattak district Sylhet.
- (9) River Surma from village Karirgaon up to the Chattak Thanaghat, police-station Chattak, district Sylhet.
- (10) River Surma its junction with Poinda river at the southern border of the Poinda village up to its junction with Rakiti river, police-station Sunamganj, district Sylhet.
- (11) River Peain from its junction with Surma river up to village Pedar, police-station Chattak, district Sylhet.
- (12) River Garakhal from its junction with Surma river up to village Pedar, police-station Chattak, district Sylhet.
- (13) River Kataganj from its junction with river Peain up to its junction with Dala at Dhalarmukh, police-station Chattak, district Sylhet.

By order of the Governor,
S. G. KABIR,
Joint Secretary.

GOVERNMENT OF EAST BENGAL**DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF****Fisheries Branch****NOTIFICATION**

No. 12889 Fish.-27th December 1951.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following Rule:

Rule

No person shall catch or cause to be caught carp fishes (i.e. Ruhu, Katla, Mrigal, Kalbaus and Ghunia) during the period from 15th March to the 30th June in any year in places mentioned in the Schedule below:

Schedule

- (1) River Halda from its mouth in the river Karnafully near Kalurghat bridge up to Sadarghat ferry, police-stations Pachlaish, Hathazari and Raozan, district Chittagong.

The undemoted channels flowing from the river Halda, within the jurisdiction of Hathazari and Raozan police-stations, district Chittagong-

1. Krishnakali.
2. Khondakia Khal.
3. Katakhal.
4. Madari Khal.
5. Kumira Khal.
6. Fragabali Khal.
7. Fatikka Khal.
8. Khandarali Khal.
9. Chengkhali Khal.
10. Baizzakhali Khal.
11. Daccakhali Khal.
12. Mogdair Khal.
13. Kagutia Khal.
14. Sonai Khal.

By order of the Governor
S. G. KABIR,
Joint Secretary to the
Government of East Bengal.

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF

Fisheries Branch

NOTIFICATION

No. 6497 Fish.-20th May 1952.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following rule:-

Rule

No person shall construct bunds, weirs, dams and embankment or any other structure, whether temporary or permanent in, on, across or over the rivers, canals, khals, or beels, mentioned in column 2 of the Schedule below, provided that this prohibition shall not apply to such constructions made for irrigation or drainage purposes by or at the instance of the Irrigation Engineers of the Government of East Bengal-

Schedule

1.	River Madhumati flowing through the districts of Jessore, Faridpur and Khulna.
2.	River Arial Khal flowing through the district of Faridpur.
3.	River Brahmaputra flowing through the district of Mymensingh.
4.	River Banar falling in the district of Mymensingh.
5.	River Sutia falling in the district of Mymensingh.
6.	River Khiru falling in the district of Mymensingh.
7.	River Kacha Matia also known as Narsunda falling in the district of Mymensingh.
8.	River Kangsha falling in the district of Mymensingh.
9.	Kumarkhali Khal falling in the district of Mymensingh.
10.	River Lauhajang falling in the district of Mymensingh.
11.	River Kharia falling in the district of Mymensingh.
12.	River Fatjani locally known as Fatikjani falling in the district of Mymensingh.
13.	River Bansi falling in the district of Mymensingh.
14.	River Nanglai falling in the district of Mymensingh.
15.	Canal Badai falling in the district of Pabna.
16.	River Karesh Nadi, Darakhai Nadi, Khafna Nadi and Jalu Nadi falling in the district of Sylhet.
17.	Kalidas Khal falling in the district of Noakhali.
18.	Gajaria Khal falling in the district of Noakhali.
19.	River Dakatia falling in the district of Noakhali.
20.	Dadpur Khal falling in the district of Noakhali.
21.	River Selonia falling in the district of Noakhali.

Serial No.	Description of the rivers
22.	Kuhia Khal falling in the district of Noakhali.
23.	Azim Bhuyan Khal falling in the district of Noakhali.
24.	Boalia Khal falling in the district of Noakhali.
25.	Ghatia Khal falling in the district of Noakhali.
26.	Bara Chara falling in the district of Noakhali.
27.	Selonia Khal falling in the district of Noakhali.
28.	Sasankhali Khal falling in the district of Noakhali.

By order of the Governor
S. G. KABIR
Joint Secretary to the
Government of East Bengal.

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF

Fisheries Branch

NOTIFICATION

No. 6972 Fish.-4th June 1952. -In exercise of the powers conferred by section 3 of the (East Bengal Act XVIII of 1950), the Governor is pleased to make the following Rule:

Rule

No person shall catch or cause to be caught or destroy fry of shoal, gazar and taki moving in clusters and/or the parent fish while guarding them in the rivers, canals, khals, beels or any sheet of water which ordinarily has direct communication with any river, canal, khals or beels in the districts of Faridpur, Rangpur, Mymensingh and Tippera during the period from 1st May to 31st August, in any year:

Provided that the prohibition shall not extend to the catching or destruction of the fry and the parent fish of the species named above for purposes of carp culture.

By order of the Governor
S. G. KABIR,
Joint Secretary to the
Government of East Bengal.

GOVERNMENT OF BANGLADESH**DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF****Fisheries Branch****NOTIFICATION**

No 15017 Fish.-23rd December 1952.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following Rule:-

Rule

No person shall catch or cause to be caught or destroy fry of shoal, gazar and taki, moving in clusters and/or the parent fish while guarding them in the rivers, canals, beels or any sheet of water which ordinarily has direct communication with any river, canal, khal or beel in the district of Sylhet, during the period from 1st May to 31st August in any year.

Provided that the prohibition shall not extend to the catching or destruction of the fry and the parent fish of the species named above for purposes of carp culture.

By order of the Governor,

S. G. KABIR,
Joint Secretary to the
Government of East Bengal.

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF

Fisheries Branch

NOTIFICATION

No. 15135-24th December 1952.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), and in supersession of the Rule issued under notification No. 10158 Fish. dated the 9th October 1950, the Governor is pleased to make the following Rules:

Rules

1. No person shall catch or cause to be caught carps, namely, Ruhu, Katla, Mrigal, Kalbaus and Ghunia of any size, in any of the waters mentioned in column 2 of Schedule I below, during the periods specified in column 3 thereof.
2. No person shall catch or cause to be caught carps of the species named in paragraph 1, up to six inches in length, in any of the waters mentioned in column 2 of Schedule II below, during the periods specified in column 3 thereof.
3. No person shall catch or cause to be caught, in any of the waters mentioned in column 2 of Schedule III below:-
 - (i) Carps, of any size, of the species named in paragraph 1, during the period specified in column 3 of that Schedule;
 - (ii) Carps, up to six inches in length, of the species named in paragraph 1 during the period specified in column 4 of that Schedule.

Schedule I

Serial No.	Name of the place	Period	Period
1.	River Bengali (lower portion of which is locally known as Fuljore) from the northern extremity of village Chaknandan, police-station Sariakandi, district Bogra, up to the southern extremity of village Simalbari, police-station Sherpur, district Bogra.	From 1st April to 30th June in any year.	
2.	River Karatoa (locally known as Fuljore) from the northern border of Pabna district up to river Baral, bounded on the north by the eastern extremity of village Chandaikona, police-station Raiganj, district Pabna, and on the south by the southern extremity of village Dombaria, police-station Shahzadpur, district Pabna.	From 1st May to 31st July in any year.	

Serial No.	Name of the place	Period	Period
3.	River Ichamati from the northern border of Pabna district up to river Karatoa, bounded on the north by the northern extremity of village Brahmagacha and on the south by the southern extremity of village Nalka, police-station Raiganj, district Pabna.	Ditto	..
4.	River Tista from Tista Railway Bridge near Kaunia Railway junction up to Chilmari, police-station Chilmari, district Rangpur.	From 15th May to 15th July in any year.	
5.	River Jumna falling in the districts of Rangpur, Bogra and Pabna.	From 1st April to 31st July in any year.	
6.	River Bramhaputra falling in the district of Rangpur.	From 1st July to 31st July in any year.	
7.	The canal known as Delbasania and Ghazaria Khal from its mouth at Patimari river up to Pachadighi at Badekarpara in Bagerhat subdivision, district Khulna.	From 1st October to 31st March in any year.	

Schedule II

Serial No.	Name of the place	Period	Period
1.	River Karatoa in the district of Bogra, bounded on the north by village Boalmari, police-station Shibganj, and on the south by village Simalbari, police-station Sherpur.	From 1st June to 31st August in any year.	..
2.	River Jumna from village Kabulia down to village Pakuria within Sariakandi police-station in the district of Bogra, bounded on the north by the northern extremity of Kabulia village and on the south by the southern extremity of Pakuria village.	From 1st June to 31st July in any year.	**
3.	River Bengali from the northern border of Bogra district down to the village Chhagaldhara within Sariakandi police-station in the district of Bogra, bounded on the north by the southern extremity of Malandaghat and on the south by the southern extremity of village Chhagaldhara.	Ditto	
4.	River Jumna from village Kalmi within phulchari police-station in the district of Rangpur down to village Nagarbari, within Bera police-station in the district of Pabna.	From 1st June to 31st August in any year.	

Serial No.	Name of the place	Period	Period
5.	River Padma from Goalundo with Goalundo police-station, in the district of Faridpur to Saraghat, within Ishurdi police-station in the district of Pabna.	From 15th June to 15th August in any year.	
6.	Hoorā Sagar in the district of Pabna from its origin from river Jumna in Serajganj police-station up to Sadhuganj Steamar station in Bera police-station.	From 1st June to 31st August in any year.	
7.	Katakhalī in the district of Pabna from its origin from river Jumna near Serajganj Civil Court up to its end in Hoorā Sagar in Serajganj police-station.	Ditto	
8.	Prodonga Jola from its origin in beel Gerka in police-station Santhia, district Pabna, up to beel Gazna including beel Gerka and beel Matia, the latter falling under police-station Sojanagar, district Pabna.		

Schedule III

Serial No.	Name of the place	Period	Period
1.	Gaguria Khal from its origin from river Jumna up to river Bengali bounded on the east by the eastern boundary of village Simulbari and on the west by the northern extremity of village Sariakandi, police-station Sariakandi, district Bogra.	From 1st April to 30th June in any year.	From 1st July to 31st July in any year.
2.	Belai Khal between rivers Jamna and Bengali bounded on the east by the eastern boundary of village Pakuria and on the west by the northern boundary of village Chhagaldhara, police-station Sariakandi, district Bogra.	Ditto	Ditto
3.	River Bengali from Maliandaha, police-station Shaghata, district Rangpur, up to the border of Bogra district.	Ditto	Ditto
4.	River Haldia from village Gopinathpur up to Maliandaha Ghat, police-station Shaghata district Rangpur.	Ditto	Ditto
5.	River Baral from its origin in the river Padma up to the Railway bridge near Arani Railway Station in the district of Rajshahi.	From 15th May to 15th July in any year.	From 16th July to 15th August in any year.

By order of the Governor,
S. G. KABIR
Joint Secretary to the
Government of East Bengal

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF

Fisheries Branch

NOTIFICATION

No. 277 Fish.-13th January 1953.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following Rule:

Rule

No person shall construct bunds, weirs, dams and embankments or any other structure, whether temporary or permanent in, on, across or over the rivers, canals, khal or beels mentioned in column 2 of the Schedule below, provided that this prohibition shall not apply to such constructions made for irrigation or drainage purposes by or at the instance of the Engineers of the East Bengal.

Schedule

Description of the river, canal, etc.

Falling in the district of Mymensingh

Serial No.

- | | |
|-----|-----------------------------------|
| 1. | Duldia Nadi |
| 2. | Bainyajar Nadi. |
| 3. | Karagaon Khal.(Adda Nadi). |
| 4. | Kajlar Khal. |
| 5. | Kata Khal. |
| 6. | Suaijani Nadi. |
| 7. | Kanibari Nadi. |
| 8. | Chitrar Khal. |
| 9. | Sulabari Khal. |
| 10. | Dumra Kanda Khal. |
| 11. | Roa beel. |
| 12. | Bara Haor. |
| | Falling in the district of Dacca. |
| 13. | River Kaliganga. |
| 14. | River Dhaleshwari. |
| 15. | River Ishamati. |

By order of the Governor,
S. G. KABIR
Joint Secretary to the
Government of East Bengal.

GOVERNMENT OF EAST BENGAL

DEPARTMENT OF AGRICULTURE, CO-OPERATION AND RELIEF

Fisheries Branch

NOTIFICATION

No. 14356 Fish.-19th November 1953.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following Rule:-

Rule

No person shall catch or cause to be caught carps, namely Ruhu, Katta, Mrigal, Kalbaus and Ghunia up to nine inches in length, in any of the waters mentioned in column 2 of schedule below during the periods specified in column 3 thereof.

Provided that the prohibition shall not extended to the catching of fish of the species named above for the purpose of pisciculture.

Schedule

Serial No.	Name of the place	Period
1.	Raghabpur Khal connected with river Chitra in police-station Bagherpara, district Jessore.	From 1st July to 31st December in any year.
2.	Kudra Khal connected with river Chitra in police-station Bagherpara, district Jessore.	Ditto
3.	Enayetpur Khal connected with river Chitra in police-station Kotwali, district Jessore.	Ditto
4.	Kalidas Khal connected with river Chitra in police-station Salikha, district Jessore.	Ditto
5.	Mangalpoita Khal connected with river Chitra in police-station Kaliganj, district Jessore.	Ditto
6.	Ghorkhali Khal connected with river Chitra in police-station Narail, district Jessore.	Ditto
7.	Bagdanga Khal connected with river Chitra in police-station Narail, district Jessore.	Ditto
8.	Shahebkata Khali Khal connected with river Chitra in police-station Narail, district Jessore.	Ditto
9.	Bhadra Khali Khal connected with river Nabaganga in police-station Harinakunda, district Jessore.	Ditto
10.	Dhopaghat Khal connected with river Nabaganga in police-station Harinakunda, district Jessore.	Ditto
11.	Dhopaghat Khal connected with river Nabaganga in police-station Jhenidah, district Jessore.	Ditto
12.	Chapri Khal connected with river Nabaganga in police-station Jhenidah, district Jessore.	Ditto
13.	Backry Khal connected with river Nabaganga in police-station Jhenidah, district Jessore.	From 1st July to 31st December in any year.

Serial No.	Name of the place	Parted
14.	Alamkhali's Doha connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
15.	Dariapur Khal connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
16.	Kashinathpur Haor connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
17.	Barasia Khal connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
18.	Alikdia's khal connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
19.	Serajdia's Khal connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
20.	Bhatpara Khal connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
21.	Beroil Khal connected with river Nabaganga in police-station Magura, district Jessore.	Ditto
22.	Dhopadaha Khal connected with river Nabaganga in police-station Lohagara, district Jessore.	Ditto
23.	Chhatra Khal connected with river Nabaganga in police-station Lohagara, district Jessore.	Ditto
24.	Bordia Khal connected with river Nabaganga in police-station Lohagara, district Jessore.	Ditto
25.	Patna Khal connected with river Nabaganga in police-station Kalia, district Jessore.	Ditto
26.	Babupur Khal connected with river Nabaganga in police-station Kalia, district Jessore.	Ditto

By order of the Governor,
S. G. KABIR,
Joint Secretary to the
Government of East Bengal.

GOVERNMENT OF EAST BENGAL

DIRECTORATE OF FISHERIES

Fisheries Branch

NOTIFICATION

No. 2501 Fish.-24th March 1955.-In exercise of the powers conferred by section 3 of the East Bengal Protection and Conservation of Fish Act, 1950 (East Bengal Act XVIII of 1950), the Governor is pleased to make the following rule :

Rule

1. No person shall erect or use fixed engines, that is, any kind of net fixed to the earth by means of wooden, bamboo or iron structure or kathas in the water areas mentioned in the schedule annexed to these rules.
2. Any fixed engine erected or used in contravention of this rule or any fish caught by means of such engine may be seized, removed and forfeited.
3. Provided that no fishing net shall be forfeited unless the offence has been committed more than once.

Schedule

Sl No	Description of the river
1	River Madhumati flowing through the districts of Jessore, Faridpur and Khulna.
2	River Arial Khan flowing through the district of Faridpur.
3	River Bramhaputra flowing through the district of Mymensingh.
4	River Banar falling in the district of Mymensingh.
5	River Sutia falling in the district of Mymensingh.
6	River Khiru falling in the district of Mymensingh.
7	River Kacha matia also known as Narsunda falling in the district of Mymensingh.
8	River Kangsha falling in the district of Mymensingh.
9	Kumerkhali Khal falling in the district of Mymensingh.
10	River Lauhajang falling in the district of Mymensingh.
11	River Kharia falling in the district of Mymensingh.
12.	River Fatjani locally known as Fatikjani falling in the district of Mymensingh.
13.	River Bansi falling in the district of Mymensingh.
14.	River Nanglai falling in the district of Mymensingh.
15.	Canal Badal falling in the district of Pabna.
16.	River Karesh Nadi, Darakhai Nadi, Khafna Nadi and Jalu Nadi falling in the district of Sylhet.
17.	Kalidas Khal falling in the district of Noakhali.
18.	Gazaria Khal falling in the district of Noakhali.
19.	River Dakatia falling in the district of Noakhali.
20.	Dadpur Khal falling in the district of Noakhali.
21.	River Selonia falling in the district of Noakhali.
22.	Kuhia Khal falling in the district of Noakhali.

Sl No	Description of the river
23.	Azim Bhuiyan Khal falling in the district of Noakhali.
24.	Boalia Khal falling in the district Noakhali.
25.	Ghatia Khal falling in the district of Noakhali.
26.	Bara Chara falling in the district of Noakhali.
27.	Selsonia Khal falling in the district of Noakhali.
28.	Sasankhali Khal falling in the district of Noakhli.
29.	Duldia Nadi falling in the district of Mymensingh.
30.	Bainyajan Nadi falling in the district of Mymensingh.
31.	Karagaon Khal (Adda Nadi)falling in the district of Mymensingh.
32.	Kajlar Khal falling in the district of Mymensingh.
33.	Katakhal falling in the district of Mymensingh.
34.	Narsunda Nadi falling in the district of Mymensingh.
35.	Suaijani Nadi falling in the district of Mymensingh.
36.	Kanibari Nadi falling in the district of Mymensingh.
37.	Chittar Khal falling in the district of Mymensingh.
38.	Sulabari Khal falling in the district of Mymensingh.
39.	Dumrakandar Khal falling in the district of Mymensingh.
40.	Roa Beel falling in the district of Mymensingh.
41.	Bara Haor falling in the district of Mymensingh.
42.	River Kaliganga falling in the district of Mymensingh
43.	River Dhaleswari falling in the district of Mymensingh.
44.	River Ichamati falling in the district of Mymensingh.
45.	River Padma in the district of Faridpur, and Dacca from its confluence with Jamuna downwards.
46.	River Kumar flowing through the district of Faridpur.
47.	River Ganga Prasad flowing through the district of Faridpur.
48.	River Chandana flowing through the district of Faridpur and Kushtia.
49.	River Chatra flowing through the district of Faridpur.
50.	Kumar Nadi in the district of Jessore.
51.	Bhairab river in the district of Jessore.
52.	Shahebkata Khal in the district of Jessore.
53.	Bhadra Khal in the district of Jessore.
54.	Dhopakata Khal in the district of Jessore.
55.	Chaprikhal in the district of Jessore.
56.	Bakri Khal in the district of Jessore.
57.	Charakhali in the district of Jessore.
58.	Alamkhali in the district of Jessore.

THE BANGLADESH GAZETTE

EXTRAORDINARY

PUBLISHED BY AUTHORITY

THURSDAY, OCTOBER 17, 1985

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FISHERIES AND LIVESTOCK

NOTIFICATION

Dhaka, the 16th October, 1985

No. S.R.O. 442-L/85.- In exercise of the powers conferred by Section 3 of the Protection and Conservation of Fish Act, 1950 (E.B.Act XVIII of 1950), the Government is pleased to make the following rules, the same having been previously published as required by sub-section (5) of that section, namely :-

THE PROTECTION AND CONSERVATION OF FISH RULES, 1985

1. **Short title.-** These rules may be called The protection and Conservation of Fish Rules, 1985.
2. **Definitions.-**
 - (1) In these rules, unless there is anything repugnant in the subject or context,-
 - (a) "form" means the form annexed to these rules; and
 - (b) "Schedule" means a Schedule annexed to these rules.
 - (2) The words or expression erected or used in these rules but have not been defined shall have the same meaning a assigned to them in the Act under whih these rules are made.
3. **Erection of fixed engines prohibited.**
 - (1) No person shall erect or use fixed engines in the rivers, canals, khals and beels.
 - (2) Any fixed engine erected or used in contravention of sub-rule (1) and any fish caught by means of such engine may be seized, removed and forfeited.
4. **Construction of bunds, etc., prohibited for certain purpose.-** No person shall construct bunds, weirs, dams and embankments or any other structure, whether temporary or permanent, in, on, across or over the rivers, canals, khals or beels for any purpose other than irrigation, flood control or drainage.
5. **Destruction of fishes by explosives, etc., prohibited.-** No person shall destroy or make any attempt to destroy any fish by explosives, gun, bow and arrow in inland waters or within coastal territorial waters.
6. **Destruction of fish by poisoning prohibited.-** No person shall destroy or make any attempt to destroy any fish by poisoning of water or the depletion of fisheries by pollution, by trade effluents or otherwise in inland waters.
7. **Catching and destruction of certain fish during certain period pohibited.-** No person shall, during the period from 1st day of April to 31st day of August each year, catch or cause to be caught or destroy fry of Shol, Gazar and Taki moving in clusters or the parent fish while guarding them in the rivers, canals, khals, beels or any other sheet of water which ordinarily has direct communication with any river, canal, khal or beel.

Provided that the prohibition shall not extend to the catching or destruction of the fry and the parent fish of the species named above for the purpose of carp culture.

8. Catching of carp fishes prohibited in certain waters

- (1) No person shall catch or cause to be caught carp fishes, that is Rui, Catla, Mrigal, Kalbaus and Ghunia of any size in the waters of the rivers, khals, etc., specified in the First Schedule during the period mentioned in the said Schedule unless he has a licence therefor issued by a component officer in this behalf :

Provided that no licence for catching of the abovenamed carp fish shall be allowed for purpose other than pisciculture.

- (2) A licence issued under sub-rule (1) shall be issued in the form shown and shall be subject to the conditions as are specified on the face of the licence.
- (3) There shall be collected a licence fee of tk. 100 for each licence issued under this rule.

9. Sale of fish prohibited.- No person shall catch, carry, transport, offer, expose or possess fish of the species and sizes mentioned in columns 2 and 3 of the Second Schedule at any time during the period mentioned in column 4 thereof :

Provided that the prohibition shall not apply to the catching, carrying, sale, transport or possession of any fish for the purposes of, or in connection with, pisciculture.

10. Disposal of forfeited fish.- Any fish forfeited for a breach of any of these rules shall be disposed of by auction and the auction money thereof shall be deposited in such Head of Account of the Government as it may direct.

11. Prohibition on catching, carrying, transporting, offering, exposing or possessing of frogs.- Notwithstanding anything contained in these rules, the Government may, by notification in the official Gazette, prohibit the catching, carrying, transporting, offering, exposing or possessing of any frog dead or alive during such period in such area and with such exceptions as may be specified therein.

FIRST SCHEDULE

[see rule 8(1)]

Serial No.	Name of the place	Period
1.	River Kushiara from the Fenchuganj Railway bridge up to village Lama Gangapur, Upazila Fenchuganj, District Sylhet.	From 1st April to 30th June in any year
2.	River Kushiara from its junction with Lula canal up to village Kakordi, Upazila Beanibazar, District Sylhet.	Ditto
3.	Lula canal from its junction with Kushiara river up to its junction with Hakaluki haor, Upazila Fenchuganj, District Sylhet.	Ditto
4.	Karchar Dala (flowing from the river Kalni also known as Beramohana) from village Karacha to Makalchandi haor, Upazila Baniachang, District Habigonj.	Ditto
5.	Chairer Khal (flowing from the river Kalni also known as Beramohana) from village Halalnagar up to Makalkandi haor, Upazila Baniachong, District Habigonj.	Ditto
6.	Bahushiar Dala (flowing from Bibiana) from village Bahusha up to Mocar Haor, Upazila Nabiganj, District Habiganj.	Ditto
7.	Fatepur Khal (flowing from the river Shaka Kushiara) from village Fatepur up to Ghardiari Beel, Upazila Ajmirigonj, District Habigonj.	Ditto

Serial No.	Name of the place	Period
8.	River Surma from its junction with Madhabpur Khal to its junction with Chengar Khal at the southern boundary of the village Parkal, Upazila Chhatak, District Sunamgonj.	Ditto
9.	River Surma from village Karirgaon up to the Chhatak Thanaghat, Upazila Chhatak, District Sunamgonj.	Ditto
10.	River Surma from its junction with Poinda river at the southern border of the Poinda village up to its junction with Rakiti River, Upazila Sunamgonj, District Sunamgonj.	Ditto
11.	River Peain from its junction with Surma river up to village Pedar, Upazila Chhatak, District Sunamgonj.	Ditto
12.	River Garakhali from its junction with river Peain up to its junction with Kurdhara, Upazila Chhatak, District Sunamgonj.	Ditto
13.	River Kataganj from its junction with river Peain up to its junction with Dala Dhalarmukh, Upazila Chhatak, Sunamgonj.	Ditto
14.	River Halda from its mouth in the river Karnafully near Kalurghat bridge up to Sadarghat ferry, Upazila Panchalaish, Hathazari and Raozan, District Chittagong.	Ditto
15.	The undernoted channels flowing from the River Halda, within the jurisdiction of Hathahazari and Raozan Upazilas, District Chittagong.	Ditto
	(1) Krisnakali	
	(2) Khondakia Khal	
	(3) Katakhal	
	(4) Madan Khal	
	(5) Kumira Khal	
	(6) Fragabalia Khal	
	(7) Fatikka Khal	
	(8) Khandarali Khal	
	(9) Baizzakhali Khal.	
	(10) Daccakhali Khal.	
	(11) Mogdair Khal.	
	(12) Kagutia Khal.	
	(13) Sonai Khal	
16.	River Bengali (lower portion of which is locally known as Fuljore) from the northern extremity of village Chaknadan, Upazila Sariakandi, District Bogra, up to the southern extremity of village Simalbari , Upazila Sherpur , District Bogra.	From 1st April to 30th June in any year.
17.	River Karatoa (locally known as Fuljore) from the border of Serajganj District up to river Barai, bounded on the north by the eastern extremity of village4 Chandaikona, Upazila Raiganj, District Serajgonj and on the south by the southern extremity of village Dombaria, Upazila Shahzadpur, District Serajgonj.	From 1st May to 31st July in any year.

Serial No.	Name of the place	Period
18.	River Ichamati from the border of Serajonj District up to river Karatoa bounded on the north by the northern extremity of village Brahmagacha and on the south by the southern extremity of village Nalka, Upazila Raiganj, District Serajonj.	Ditto
19.	River Tista from Tista Railway bridge near Kaunia Railway junction up to Chilmari, Upazila Chilmari, District Kurigram.	From 15th May to 15th July in any year.
20.	River Jumna falling in the districts of Bogra, Gaibandha, Pabna and Serjgonj.	From 1st April to 31st July in any year.
21.	River Bramhaputra falling in the District of Kurigram.	Ditto
22.	The canal known as Delbasania and Ghazaria Khal from its mouth at Putimari river up to Bachadighi at Badekarpara in Bagerhat District.	From 1st October to 31st March in any year.
23.	Gaguria Khal from its origin from river Jumna up to river Bengali bounded on the east by the eastern boundary of village Simulbari and on the west by the northern extremity of village Sariakandi, Upazila Sariakandi, District Bogra.	From 1st April to 30th June in any year.
24.	Belai Khal between rivers Jamuna and Bengali bounded on the east by the eastern boundary of village Pakuria and on the west by the northern boundary of village Chhgaldhara, Upazila Sariakandi, District Bogra.	Ditto
25.	River Bengali from Maliandaha, Upazila Shaghata, District Gaibandha up to the border of Bogra District.	From 1st May to 31st July in any year.
26.	River Haldia from village Gopinathpur up to Maliandaha Ghat, Upazila Shaghata, District Gaibandaha.	Ditto
27.	River Baral from its origin in the river Padma up to the Railway bridge near Arani Railway Station in the District of Natore.	From 15th May to 31st July in any year.

The licence is issued subject to the following conditions :

- (a) The licence is non-transferable.
- (b) The licence shall comply with and ensure that catch is made in conformity with the provisions of the "Protection and Conservation of Fish Act, 1950 " and the rules made thereunder.
- (c) The licence is liable to cancellation at any time for violation of any of the conditions stipulated therein.
- (d) Any other condition, if any.

By order of the President

ZAHIRUL HOQ
Deputy Secretary.

Printed by Khandaker Obaidul Muktader, Deputy Controller, Bangladesh Government Press, Dhaka.

Published by Md Abdul Matin Sirker, Deputy Controller, Bangladesh Forms and Publications Office, Tejgaon, Dhaka.

THE BANGLADESH GAZETTE

Extraordinary

Published by Authority

WEDNESDAY, JANUARY 15, 1986

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF LAW AND JUSTICE

NOTIFICATION

Dhaka, the 15th January, 1986

No. 19 Pub.- The following Ordinance made by the President of the People's Republic of Bangladesh, on the 12th January 1986, is hereby published for general information:-

THE TANKS IMPROVEMENT (AMENDMENT) ORDINANCE, 1986

Ordinance No. III of 1986

AN
ORDINANCE

further to amend the Tanks Improvement Act, 1939

WHEREAS it is expedient further to amend the Tanks Improvement Act, 1939 (Ben, Act XV of 1939), for the purposes hereinafter appearing;

NOW, THEREFORE, in pursuance of the Proclamation of the 24th March, 1982 and in exercise of all powers enabling him in that behalf, the President is pleased to make and promulgate the following Ordinance :

1. **Short title.**- This ordinance may be called the Tanks Improvement (Amendment) Ordinance, 1986.
2. **Amendment of section 2, Ben. Act XV of 1939.**- In the Tank Improvement Act, 1939 (Ben. Act XV of 1939), hereinafter referred to as the said Act, in section 2(2), for the words " Magistrate-in-charge of a subdivision of a district" the words " Upazila Nirbahi Officer" shall be substituted.
3. **Amendment of sections 8 and 9, Ben. Act XV of 1939.**- In the said Act, in sections 8 and 9, for the words "six and a quarter", wherever occurring, the word "fifteen" shall be substituted.
4. **Amendment of section 17, Ben. Act XV of 1939.**- In the said Act, in section 17, for the words " six and one quarter", wherever occurring, the word "fifteen" shall be substituted.
5. **Amendment of section 18, Ben. Act XV of 1939.**- In the said Act, in section 18(4), for the words " six and a quarter" the word "fifteen" shall be substituted.
6. **Amendment of section 35, Ben. Act XV of 1939.**- In the said Act, in section 35, for the words "one hundred Taka" the words " five hundred taka" shall be substituted.

DHAKA
The 12th January, 1986.

H.M ERSHAD, ndc, psc
LIEUTENANT GENERAL
President
MD.ABUL BASHAR BHUIYAN
Deputy Secretary,
Ministry of Law and Justice.

Printed by Khandaker Obaidul Muktader, Deputy Controller, Bangladesh Government Press Dhaka

Published by Md Rabiul Hossain, Deputy Controller, Bangladesh Forms and Publications Office, Tejgaon, Dhaka.

THE BANGLADESH GAZETTE

EXTRA ORDINARY

Published by Authority

THURSDAY, NOVEMBER 4, 1987

GOVERNMENT OF PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FISHERIES AND LIVESTOCK

NOTIFICATION

Dhaka, the 4th November, 1987

No. S. R. O. 269-L/87.- In exercise of the powers conferred by Section 3 of the Protection and Conservation of Fish Act, 1950 (E.B. Act XVIII of 1950), the Government is pleased to make the following rules, the same having been previously published as required by sub-section (5) of that section, namely:-

THE PROTECTION AND CONSERVATION OF FISH RULES, 1985

the following new rules will be included after the Rule-11 of the above mentioned Rules :

12. Prohibition on use fishing nets and regulation of mesh thereof, etc.-
- (1) Notwithstanding anything contained in these rules, the Government may, by notification in the Official Gazette.-
 - (a) prohibit the use and methods of operation of any kind of fishing net;
 - (b) regulate the size of the mesh of any fishing net.
 - (2) The period for which and the water in which the prohibition shall remain in force may be specified in the notification issued under sub-rule (1)
 - (3) Any fishing net used or operated in contravention of sub-rules or (2), and any fish caught in the process of such contravention may be seized and forfeited.

By order of the President

ZAHIRUL HUQ
Deputy Secretary

Printed by Mohammad Siddiqur Rahman, Deputy Controller, Bangladesh Government Press, Dhaka.
Published by Khandker Mahfuzal Karim, Deputy Controller, Bangladesh Forms and Publications office, Tejgaon, Dhaka.

THE BANGLADESH GAZETTE

EXTRAORDINARY

PUBLISHED BY AUTHORITY

MONDAY, JANUARY 25, 1988

GOVERNMENT OF PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FISHERIES AND LIVESTOCK

FISHERIES SECTION-3

NOTIFICATION

Dhaka, 25th January, 1988

No. S.R.O 24-L/88- In exercise of the powers conferred by Govt. under Rule-12 of Protection and Conservation of Fish rules-1985. Govt. is pleased to prohibit for the purpose of fishing the use of following category of nets having a mesh size diameter or length of 4.5 cm or even less:

Type of Net	Name of Fishing Net	
	Name currently in use	
Gill Net	Current Jal	1. Current Jal 2. Gapamel current jal 3. Fandi(Trap net) jal 4. Fash jal 5. Kapa jal 6. Badha jal 7. Kathi jal

By order of the President

ZAHIRUL HUQ
Deputy Secretary

Printed by Md Siddiqur Rahman, Deputy Controller, Bangladesh Government Press, Dhaka.

Published by Khandaker Mahfuzal Karim, Deputy Controller, Bangladesh Forms and Publications Office, Tejgaon, Dhaka.

THE BANGLADESH GAZETTE, EXTRA, OCTOBER 17, 1985

SECOND SCHEDULE

[see rule 9]

Serial No.	Species of Fish	Size	Period
1.	Carp, i.e., Catla, Rui, Mrigal, Kalbaush and Ghunia	Below 23 (twenty three) centimetre in length.	Between July December each year.
2.	Hiisha (popularly known as Jatka in some parts of Bangladesh).	Ditto	Between November and April each year.
3.	Pungas	Ditto	Ditto
4.	Silond	Below 30 (thirty) centimetre in length.	Between February and June each year.
5.	Bhola	Ditto	Ditto
6.	Aor	Ditto	Ditto

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THE BANGLADESH GAZETTE, EXTRA, OCTOBER 17, 1985

FORM OF LICENCE

[see rule 8(2)]

Licence for Catching Carps in Prohibited Waters.

1. Licence No. _____ Date: _____

2. Issued to: (Name in full)

(a) Father's Name :

(b) Permnet address :

(c) Present address :

3. Method of Catching :

4. Type and number of gear to be used :

5. Area of catching :

6. Species and size to be caught :

7. Catch to be landed at :

8. Licence fee paid : Tk....., Vide M.R.No.....

Date.....

9. Validity of the licence : from..... to.....

10. Date of issue.....

(Signature of issuing Officer)
with seal.

District	Prohibition	Specific area	Period of application
(1) Dacca	(a) Erection of fixed engine	(1) River Padma from its confluence with river Jamuna.	Throughout the year.
		(2) River Padma	Vide notification No 2501, dated 24-3-1955.
		(3) River Jamuna	
		(4) Buriganga	
		(5) Sitalakkha (Iakshya)	
		(6) Meghna	
		(7) River Bansi	
	(b) Construction of bundh, weirs, dams and embankments	(1) River Kaliganga	Vide notification No 277, dated 13th January
		(2) River Dhaleshwari	
		(3) River Ichamati	
	(c) Offering, exposing or possessing for sale or barter-	Everywhere in the district (Katla, Ruhu, Mrigal, Kalbaus and Ghunia).	Vide notification No. 6580 dated 3rd July, 1950.
	(i) Carps below 9 inches		(1) July-December
	(ii) Hilsa below 9 inches		(2) November-April
(iii) Pungas, Silond, Bhola, Aor below 12 inches	(3) February-June		
(2) Mymensingh	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955	(1) River Bramhaputra	
		(2) River Banar	
		(3) River Sutia	
		(4) River Khiru	
		(5) River Kachamatia	
		(6) River Kangsha	
		(7) Kumarkhali Khal	
		(8) River Lauhajang	
		(9) River Kharia	
		(10) River Fatjani (Fatikjani).	
		(11) River Bansi	
(2) Mymensingh- conclud		(12) River Nanglai	
		(13) Duldia Nadi	
		(14) Bainyajan Nadi	
		(15) Karagaon Khal (Adda Nadi).	
		(16) Kajlar Khal	

District	Prohibition	Specific area	Period of application
		(17) Kata Khal	
		(18) Nasunda Khal	
		(19) Suajani Nadi	
		(20) Kanibari Nadi	
		(21) Chitar Khal	
		(22) Sulabari Khal	
		(23) Dumarkander Khal	
		(24) Roa beel	
		(25) Bara Haor	
		(26) River Kaliganga	
		(27) River Dhaleshwari	
		(28) River Ichamati	
		(29) River Murki	
		(30) River Jhenai	
		(31) Mara Nadi	
		(32) Mogra River	
		(33) Saldaha River	
		(34) Golia River	
	(b) Construction of bunds, weirs, dams and embankments.	(1) Duldia Nadi	Throughout the year
	Vide notification No. 277, dated 13th January, 1953 for items up to 13.	(2) Bainyajar Nadi	
	Vide notification No. 6497, dated 20th May, 1952 for items from 14 to 25.	(3) Karagaon Khal	
		(4) Kajlar Khal	
		(5) Kata Khal	
		(6) Nasunda Khal	
		(7) Suaigani Nadi	
		(8) Kanibari Nadi	
		(9) Chitrar Khal	
		(10) Sulabaria Khal	
		(11) Dumra Kandra Khal	
		(12) Roa Beel	
		(13) Bara Haor	

District	Prohibition	Specific area	Period of application
	(c) Catching or causing to be caught or destroy fry of Shoal, Gazar and Taki moving in clusters or the parent fish while guarding. Vide notification No. 6972, dated 4th June, 1952.	Entire district	May to August
	(d) Offering, exposing or possessing for sale or barter-		
	(i) Carps below 9 inches	(Catla, Ruhu, Mrigal, Kalbaus and Ghunia)	July to December
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November to April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February to June.
		(14) River Bramhaputra	
		(15) River Banar	
		(16) River Sutia	
		(17) River Khiru	
		(18) River Katchamatia	
		(19) River Kangsha	
		(20) River Kumar Khal	
		(21) River Laujang	
		(22) River Kharia	
		(23) River Fatjani	
		(24) River Bansi	
		(25) River Nanglai	
(3) Faridpur	(a) Erection of fixed engine	(1) River Madhumati	Throughout the year.
		(2) River Arial Khan	
		(3) River Kumar	
		(4) River Gangaprasad	
		(5) River Chatra	
		(6) River Bhubaneswari	
		(7) River Kirtinasha	
		(8) River Chandana	
		(9) River Padma	
	(b) Construction of bunds, dams, weirs and embankments.	(1) River Arial Khan	
	Vide notification No. 6497, dated 20th May, 1952..	(2) River Madhumati	

District	Prohibition	Specific area	Period of application
	(c) Catching or destroying fry of Shoal, Gazar and Tiki moving in clusters or parent fish while guarding.	Rivers, Canals, Khals, beels or any sheet of water in the district	May-August
	Vide Notification No.6972, dated 4th June, 1952.		
(3) Faridpur-concld.	(d) Offering, exposing or possessing for barter or sale.	Rivers, Canals, Khals, beels or any sheet of water in the district.	
	(i) Carps below 9 inches	(Ruhu, Catla, Mrigal, Ghunia)	July-December
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June
(4) Bakerganj	(a) Erection of fixed Engines	(1) Bishkali River	Throughout the year.
	Vide notification No. 2501, dated 24th March, 1955	(2) Lohalia River	
		(3) Tea Khali River	
		(4) Andharmanik River	
		(5) Nilganj River	
		(6) Sonatali River	
		(7) Baliatola River	
		(8) Beghai River	
		(9) Kukua River	
		(10) Golkhali River	
		(11) Gulish Khali River	
		(12) Amtoli Don	
		(13) Patuakhali River	
		(14) Rajganj River	
		(15) Awtiapur River	
		(16) Dhulia River	
		(17) Karkhana River	
		(18) Kacha River	
		(19) Baleswar River	
		(20) Kawkhali River	
		(21) Swarupkathi River	
		(22) Maliganj River	
		(23) Ganeshpur River	
		(24) Ilsha River	

District	Prohibition	Specific area	Period of application	
		(25) Madras Don		
		(26) Joyer Don		
		(27) Kalijira River		
		(28) Barisal River		
		(29) Ujirpur River		
		(30) Torki River		
		(31) Hijla River		
		(32) Safipur River		
		(33) Nayabhangani River		
		(34) Arial Khan River		
		(35) Jontee River		
		(36) Mastata River		
		(37) Khajuria River		
		(38) Metendiganj River		
		(39) Kalabadur River		
		(40) Bakarganj River		
		(41) Angaria River		
		(42) Pandab River		
		(43) Bish Kali Don		
		(44) Gabkhar Khal		
(45) Rajapur River				
(46) Dhansiddi River				
(47) Pona Don				
(b) Offering exposing or possessing for barter or sale-	Everywhere in the district. Vide notification No. 6580, dated 3rd July, 1950.			
(1) Carps below 9 inches..	(Katla, Ruhu, Mrigal, Kalbaus and Ghunia.)	(i) July-December		
(ii) Hilsa below 9 inches		(ii) November-April		
(iii) Pungas, Silond, Bhola, Aor below 12 inches.		(iii) February-June		
(5) Tippera	(a) Erection of fixed engine	(1) Gumti Nadi	Throughout the year.	
	Vide notification No. 2501, dated 24th March, 1955.	(2) Titas		
		(3) Khini		
		(4) Rasulpur Khal		
		(5) Buriganga		
		(6) Kamthana Nadi		

District	Prohibition	Specific area	Period of application
		(7) Sidlai Khal	
		(8) Laribagh Khal	
		(9) Pugli Nadi	
		(10) Kalatia Nadi	
	(b) Catching or destroyinig fry of Shoals, Gazar and Taki while moving in clusters or the parent fish while guarding.	Canals, khals, beels, rivers or any sheet of water in the district, vide notification No. 6972, dated 4th June, 1952.	May-August
	(c) Offering, exposing or possesing for sale or barter-		
	(i) Carps (Katla, Ruhu, Mrigal, Kalbaus and Ghunia) below 9 inches.		(i) July-December.
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	(ii) November-April.
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		(iii)February-June.
(6) Noakhali	(a) Erection of fixed engine	(1) Kalidas Khal	Throughout the year.
		(2) Gazaria Khal	
		(3) Dakatia river	
		(4) Dadpur Khal	
		(5) River Salonia	
		(6) Kuhia Khal	
		(7) Azim Bhuyan Khal	Vide notification No. 2501, dated 24th March, 1955.
		(8) Boalia Khal	
		(9) Ghatia Khal	
		(10) Barachara	
		(11) Seloniam Khal	
		(12) Sasankhali Khal	
		(13) Rahmat Khali Canal	
		(14) Koralia Khal	
		(15) Noakhali Khal	
(6) Noakhali-concl'd.	(b) Construction of bunds, weirs, dams and embankments.	(1) Kalidas Khal	Throughout the year.
		(2) Gazaria Khal	
		(3) River Dakatia	
		(4) Dadpur Khal	
		(5) Seloniam Khal	
	Vide notification No. 6497, dated 20th May, 1952.	(6) Kuhia Khal	

District	Prohibition	Specific area	Period of application
		(7) Azim Bhuiyan Khal	
		(8) Boalia Khal	
		(9) Ghatia Khal	
		(10) Barachara	
		(11) Selonia Khal	
		(12) Sasankhali Khal	
	(c) Offering, exposing or possessing for sale or barter-		
	(i) Carps below 9 inches	Vide Notification No. 6580, dated 3rd July, 1950.	July-December
	(ii) Hilsa below 9 inches		November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June
(7) Chittagong	(a) Catching and causing to be caught carp fishes (Ruhu, Katla, Mrigal, Kalbaus and Ghunia)	(1) River Halda	15th March to 30th June.
		(2) Krishnakhali Channel.	
		(3) Khondakia Khal	
		(4) Katakhal	
		(5) Madari Khal	
		(6) Fragabali Khal	
		(7) Fatikka Khal	
		(8) Khandar Khal	
		(9) Chengakhali Khal	
		(10) Baizzak Khali Khal	
		(11) Dacca Khali Khal	
		(12) Mogdair Khal	
		(13) Kagutia Khal	
		(14) Sonai Khal	
		(15) Kumira Khal	
			(b) Offering, exposing or possessing for sale or barter-
	(i) Carps below 9 inches	(Katla, Ruhu, Mrigal, Kalbaus and Ghunia)	July-December
	(ii) Hilsa below 9 inches		November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June.
(8) Sylhet	(a) Erection of fixed engine	(1) River Karesh	Throughout the year.

District	Prohibition	Specific area	Period of application
	Vide notification No. 2501, dated 24th March, 1955.	(2) Dara Khai Nadi	
		(3) Khafna Nadi	
		(4) Jalu Nadi	
	(b) Catching or destroying fry of Shoal, Gazar and Taki moving in clusters and the parent fish while guarding.	Rivers, canals, beels or any sheet of water which has direct communication with any river, canal, khal or beel.	May to August.
	Vide Notification No. 15107, dated 23rd December, 1952.		
	(c) Catching or causing to be caught carp fishes	(1) River Kushiara from Fenchuganj Rly. bridge up to village Lamagangapur.	April-June
		(2) River Kushiara from its junction with Lulo canal up to village Kakkordi.	
		(3) Lulo canal from its junction with Kushiara up to Hakaloki Haor.	
		(4) Karchar Dala from village Karacha to Makalkandi.	
		(5) Chairer Khal from village Halalnagar to Makalkandi.	Vide notification No. 3281, dated 27th March, 1951.
		(6) Bahushiar Dala from Bahushaha to Mekar Haor.	
		(7) Fatepur Khal.	
		(8) River Surma.	
		(9) River Peain	
		(10) River Garakhal	
		(11) River Katagonj.	
	(d) Offering, exposing or possessing for sale or barter-	Everywhere in the district.	
	(1) Carps below 9 inches.	(Katla, Ruhu, Mrigal, Kalbaus and Ghunia)	July - December
	(2) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November - April
	(3) Pangas, Silond, Bhola, Aor below 12 inches.		February - June
(9) Kushtia	(a) Erection of fixed engines	(1) River Chandana	
	Vide notification No. 2501, dated 24th March, 1955.	(2) River Kaligonga	Throughout the year.
		(3) River Gorai	

District	Prohibition	Specific area	Period of application
(10) Jessore	(a) Erection of fixed engine vide notification No. 2501, dated 24th March, 1955.	(1) Kumar Nadi	Throughout the year.
		(2) Bhairab River	
		(3) Shaheb Khata Khal	
		(4) Bhadra Khal	
		(5) Dhopakata Khal	
		(6) Chapri Khal	
		(7) Bakri Khal	
		(8) Chara Khali	
(10) Jessore-Contd.			
	(10) Biseswar Khal		
	(11) Betakhali Khal		
	(12) Dakopa Khal		
	(13) Kumarkhi		
	(14) Mongalpaita Khal of the Chitra.		
	(15) Nabaganga		
	(16) Betbery Khal		
	(17) Chaprar Khal		
	(18) Dwripur Khal		
	(19) Fatki Khal		
	(20) Barasia Khal		
	(21) Beril Khal		
	(22) Bhatpara Khal		
	(23) Ramsagor Khal		
	(24) River Madhumati		
	(25) Halifa Canal		
	(26) Satra Khal		
	(27) Dhopadaha Khal		
	(28) Patna Khal		
	(b) Catching or causing to be caught carps (Ruhu, Katla, Mrigal, Kalbaus and Ghunia) up to 9 inches in length.	(1) Raghampur Khal	July - December
		(2) Enayetpur Khal	
		(3) Khudra Khal	
		(4) Kalidas Khal	

District	Prohibition	Specific area	Period of application			
		(5) Mongolpaita Khal				
		(6) Ghorakhali Khal				
		(7) Gobra Khal				
		(8) Bagdanga Khal				
		(9) Shaheb Katakhal Khal				
		(10) Bhadra Khali Khal				
		(11) Dhopaghat Khal				
		(12) Chapri Khal				
		(13) Backry Khal				
		(14) Alamkhal's Doha				
		(15) Dairapur Khal				
		(16) Kashinathpur Haor				
		(17) Barasia Khal				
		(18) Alikdia Khal				
					(19) Serajdia Khal	July - December
					(20) Bhatpara Khal	
					(21) Beroil Khal	
					(22) Dhopadaha Khal	
(23) Chatra Khal						
(24) Bordia Khal						
(25) Patna Khal						
	(c) Offering, exposing or possessing for sale or barter-	Everywhere in the district.				
				(i) Carps (Katla, Ruhu, Mrigal, Kalbaus and Ghunia) below 9 inches		
				(ii) Hilsa below 9 inches		
				(iii) Pungas, Silond, Bhola, Aor below 12 inches.		
				Vide notification No. 6580, dated 3rd July, 1950.		
(11) Khulna	(a) Erection of fixed engines	(1) River Madhumati	October - March			
	Vide notification No. 2501, dated 24th March, 1955.					
	(b) Construction of bunds, dams, weirs or embankments.					

District	Prohibition	Specific area	Period of application
	Vide notification No. 6497, dated 20th May, 1952.		
	(c) Catching or causing to be caught carps (Ruhu, Mrigal, Kalbaus and Ghunia) of any size.	(1) The canal known as Dalbasania and Ghazaria Khal.	
	Vide notification No. 15135, dated 24th December		
	(d) Offering, exposing or possessing for sale or barter-		
	(i) Carps below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	July-December
	(ii) Hilsa below 9 inches		November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June
(12) Pabna	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955.	(1) Canal Badai	Throughout the year.
		(2) River Karatoa	
		(3) River Ichamati	
	(b) Construction of bunds, weirs, dams, etc., vide notification No. 6497, dated 20th May, 1952.	(1) Canal Badai	Throughout the year.
	(c) Catching or causing to be caught carps (Ruhu, Mrigal, Kalbaus and Ghunia) of any size.	(2) River Ichamati	1st May to 31st July
	vide notification No. 15135, dated 24th December, 1952.	(3) River Jamuna	1st April to 31st July.
	(d) Catching or causing to be caught carps mentioned in item (c) up to six inches. vide notification No. 15135, dated 24th December, 1952	(1) River Jamuna from village Kalmi down to village Nagarbari.	1st June to 31st August.
		(2) River Padma within Iswardi P.S.	15th June to 15th August.
		(3) Hoor Sagar	1st June to 31st August
		(4) Katakhal	
(5) Prodonga Jola		1st June to September	
(13) Rangpur	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955	(1) River Ghat	Throughout the year.
		(2) River Manash	
		(3) River Maraghat	
		(4) River Alai	
		(5) River Haldia	
		(6) River Karatoa	
		(7) River Jamuneswari	

District	Prohibition	Specific area	Period of application
	(b) Catching or causing to be caught carps, viz., Ruhu, Katla, Mrigal, Kalbaus or Ghunia of any size.	(1) River Haldia	1st May to 31st July.
	vide notification No. 15135, dated 24th December, 1952.	(2) River Jamuna	15th May to 15th July.
		(3) River Bramhaputra	April to July.
		(4) River Teesta	15th May to 15th July.
		(5) River Bengali	May to July
(13) Rangpur- Concld	(c) Catching or causing to be caught carps mentioned at (b) up to six inches.	(1) River Haldia from village Gopinathpur up to Maliandaha Ghat.	1st August to 15th August.
	Vide notification No. 15135, dated 24th December, 1952.		
	(d) Catching or destroying fry of Shoal, Gazar and Taki moving in clusters and the parent fish while guarding (No. 6978, dated 4th June, 1952)	(2) Rivers, canals, Khals, Beels in the 4 district.	May-August
	(e) Offer, expose or possess for sale or barter-	Everywhere in the district.	July - December
	(i) Carps below 9 inches		
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November-April
	(iii) Pungas, Silond, Bhola, Aor below 12 inches		February-June
(14) Dinajpur	(a) Erection of fixed engine, vide notification No. 2501, dated 24th March, 1955.	(1) River Jamuna	Throughout the year.
		(2) Ashular Beel	
		(3) River Karatoa	
	(b) Offer, expose or possess for sale or barter-	Everywhere in the district.	July-December
	(i) Carps below 9 inches		
	(ii) Hilsa below 9 inches	Vide notification No. 6580, dated 3rd July, 1950.	November-April
(iii) Pungas, Silond, Bhola, Aor below 12 inches.		February-June	
(15) Bogra	(a) Catching or causing to be caught carps (Ruhu, Katla, Mrigal, Kalbaus and Ghunia) of any size.	(1) River Jamuna	1st April to 31st July.
		(2) Daguria Khal	April-June
		(3) Belai Khal	
		(4) River Bengali	

District	Prohibition	Specific area	Period of application	
	(b) Catching or causing to be caught carps mentioned at (a) up to six inches. (a and b) vide notification No. 15135, dated 24th December, 1952.	(1) River Karatoa	June-August.	
		(2) River Jamuna	June-July	
		(3) River Bengali		
		(4) Daguria Khal	July-August	
		(5) Belai Khal		
	(c) Offer, expose or possess for sale or barter-	Everywhere in the district.		
	(i) Carps, Ruhu, Katla, Mrigal, Kalbaus, Ghunia below 9 inches.			July-December
	(ii) Hilsa below 9 inches			February-June
	(iii) Pungas, Silond, Bhola, Aor below 12 inches.			
	Vide notification No. 6580, dated 3rd July, 1950.			
(16)Rajshahi	(a) Erection of fixed engines	(1) Shibnadi	Throughout the year.	
		(2) River Kaledanga		
	Vide notification No. 2501, dated 24th March, 1955.	(3) Saloid Beel		
		(4) Marichar Dara Khal		
	(b) Catching or causing to be caught any carps (Ruhu, Katla, Ghunia, Mrigal and Kalbaus) up to six inches.	(1) River Baral from its origin in river Padma up to Arani Railway Station bridge.	16th July to 15th August.	
	Vide notification No. 15135, dated 24th December, 1952.			
	(c) Offer, expose or possess for sale or barter-	Everywhere in the district.		
	(i) Carps below 9 inches			July-December
	(ii) Hilsa below 9 inches			November-April
	(iii) Pungas, Silond, Bhola, Aor up to 12 inches.			February-June
Vide notification No. 6580, dated 3rd July, 1950.				

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

FOREST DIRECTORATE

**APPENDIX A8 BANGLADESH WILDLIFE (PRESERVATION)
(AMENDMENT) ACT, 1974**

**Deputy Controller
Bangladesh Government Press, Tejgaon, Dhaka
1984**

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[Published in the Bangladesh Gazette, Extraordinary, Part IIIA, dated the 28th March 1973]

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**MINISTRY OF LAW AND PARLIAMENTARY AFFAIRS****(Law Division)****NOTIFICATION**

No. 195-Pub.-28th March, 1973-The following Act made by the President, on the advise of the Prime Minister, of the People's Republic of Bangladesh on the 27th March, 1973, is hereby published for general information :-

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**MINISTRY OF LAW AND PARLIAMENTARY AFFAIRS****(Law Division)****President's Order No.23 of 1973****BANGLADESH WILD LIFE(PRESERVATION) (AMENDMENT) ACT, 1974**

WHEREAS it is expedient to provide for the preservation, conservation and management of Wild life of Bangladesh;

Now, therefore, in pursuance of paragraph 3 of the Fourth Schedule to the constitution of the People's Republic of Bangladesh, and in exercise of all powers enabling him in that behalf, the President is pleased to make the following order :-

1. (1) This Act may be called the Bangladesh Wild Life (Preservation) (Amendment) Act, 1974.
2. (2) It extends to the whole of Bangladesh.
3. (3) It shall come into force at once.

[Published in the Bangladesh Gazette, Extraordinary, Part III,
dated the 17th July 1973]

BANGLADESH PARLIAMENT

The following Acts of Parliament received the assent of the President on the 17th July, 1973 and are hereby published for general information:

Act no. XVII OF 1973

An Act to amend the Bangladesh Wild Life (Preservation) Order, 1973

Whereas it is expedient to amend the Bangladesh Wild Life(Preservation order, 1973(P.O. No 23 of 1973), for the purpose hereinafter appearing;

It is hereby enacted as follows:

1. **Short title and commencement-**

- (1) This act may be called the Bangladesh Wild Life(Preservation) (Amendment) Act, 1973.
- (2) It shall come into force at once and shall be deemed to have taken effect on the 27th day of March, 1973.

[Published in the Bangladesh Gazette, Extraordinary, part v, dated
the 12 February 1974]

Act No. XVII of 1974

An Act further to amend the Bangladesh Wild Life (Preservation) Order, 1973

Whereas it is expedient further to amend the Bangladesh Wildlife (Preservation) Order, 1973 (P.O. No. 23 of 1973), for the purpose hereinafter appearing;

It is hereby enacted as follows:

- 1. **Short title-** This act may be called the Bangladesh Wild Life (Preservation) (Amendment) Act, 1974.
- 2. In this act, unless there is anything repugnant in the subject or con text,-
 - (a) "capture" means the taking alive of any wild animal;
 - (b) "dealer", in relation to wild animals, trophies or meat means any person who, in course of trade or business carried on by him whether on his own behalf or on behalf of any other person,-
 - (i) sells, purchases or barter any wild animal, trophy or meat; or
 - (ii) cuts, carves, polishes, preserves, cleans, mounts or otherwise prepare any animal's trophy or meat; or,
 - (iii) manufactures any article from trophies or meat;
 - (c) "game reserve" means an area declared by the Government as such for the protection of wild life and increase in the population of import ant species wherein capturing of wild animals shall be unlawful;
 - (d) "Government" means the Government of the People's Republic of Bangladesh;
 - (e) "hunt" means-
 - (i) killing, capturing, poisoning, snaring and trapping of any wild animal and any attempt to do so; or
 - (ii) driving any wild animal for any of the purposes specified in sub-clause (i); or

- (iii) injuring or destroying or taking any part of the body of such wild animal or taking of nests or eggs of wild birds and reptiles;
- (f) "licence", "special licence", "permit" and "special permit" mean respectively, a licence, a special licence, a permit or a special permit granted or issued under this act or the rules made thereunder;
- (g) "meat" means fat, blood, flesh or any edible part of a wild animal, whether fresh or preserved;
- (h) "national park" means comparatively large areas of outstanding scenic and natural beauty with the primary object of protection and preservation of scenery, flora and fauna in the natural state to which access for public recreation and education and research may be allowed;
- (i) "offence" means an offence punishable under this act or under any rule made thereunder;
- (j) "officer" means any person appointed in this behalf to carry out all or any of the purposes of this Act or to do anything required by this Act or any rule made thereunder to be done by an officer, and includes a Forest officer as defined in clause (2) of section 2 of the Forest Act, 1927 (Act No. XVI of 1927), and such other persons as may be authorised by the Government, carry out such purpose or to do such thing as the Government may specify;
- (k) "prescribed" means prescribed by rules made under this Act ;
- (l) "private game reserve" means an area or private land set aside by the owner thereof for the same purpose as a game reserve and declarer as such under article 24;
- (m) "schedule" means a Schedule appended to this Act;
- (n) "trophy" means any dead wild animal or any horn, antler, tooth, tusk, bone, claw, hoof, skin, hair, feather, egg, shall or other durable part of a wild animal whether or not included in a manufactured or processed article ;
- (o) "wild animal" means any vertebrate creature, other than human beings and animals of usually domesticated species or fish, and includes the eggs of birds and reptiles; and
- (p) "wild life sanctuary" means an area closed to hunting, shooting or trapping of wild animals and declared a such under Article 23 by the Government as undisturbed breeding ground primarily for the protection of wild life inclusive of all natural resources, such as vegetation, soil and water.
3. (1) The Government may, for the purposes of this Act, appoint such officers and honorary officers to assist the officer as it considers necessary.
- (2) Except as otherwise prescribed, an honorary officer shall exercise all the powers of an officer for a period of three years unless his Appointment is earlier revoked.
4. (1) As soon as may be, after the coming into force of this Act, the Government shall constitute, by notification in the official gazette, a board to be called as the Bangladesh Wildlife Advisory Board, consisting of such members as the Government may deem necessary to appoint.
- (2) The Bangladesh Wild Life Advisory Board shall perform such functions as the Government may assign to it.
5. (1) The Wild Animals specified in the first schedule shall be known as "game animals" and shall not be hunted, killed or captured, save in accordance with the terms of a permit.
- (2) The wild animals specified in the Third Schedule to this Act shall be known as "Protected Animals" and shall not be hunted, killed or captured save as otherwise expressly provided in this Act.
6. (1) No person shall-
- (a) (i) hunt any wild animal by means of a set-gun, drop spear, deadfall trap, an explosive projectile bomb, grenade, electrical contrivances, a baited hook or any other trap whatsoever;
- (ii) hunt any game animal by means of an automatic weapon of a calibre used by the Bangladesh Army, Bangladesh Rifle or Police Force, a shot gun, rifle of 22 calibre or less, or a projectile containing any drug or any chemical substance having the property of anaesthetising, paralysing, stupefying or rendering a wild animal crippled whether partly or totally ;
- (b) (i) use any motor vehicle, motor driven vessel, watercraft of any type or aircraft or any other manually or mechanically propelled vehicle of any type to pursue

- any game animal, or to drive or stampede game animals for any purposes whatsoever;
- (ii) use or have in his possession any poison or like injurious substance for the purpose of hunting a game animal;
 - (iii) shoot any game animal from any aircraft, motor vehicle, rail trolley cart, boats or any kind of watercraft or any other conveyance;
 - (iv) hunt with the help of life decoys, call birds or any other artificial contrivances;
- (c) construct or use or have in his possession any pitfall, game pit, trench or similar excavation or any fence or enclosure, or set fire to any vegetation or any other contrivance for the purpose of hunting any game animal.
- (2) It shall not be an offence to use a motor vehicle or aircraft to drive any wild animal away from an aerodrome or airstrip when such action is necessary to ensure the safety of aircraft using that aerodrome.
 - (3) An officer may grant capture licence and allow employment of a method of hunting specified in clause(1)
7. No person shall possess or use Hawks for Hawking, or possess or user dogs for coursing, the game animals specified in the First Schedule except under a special licence.
8. (1) If, any place, any wild animal whether, protected or game animal or meat or trophy of such wild animal which is found dead or dying or which has been killed or caught or bred in captivity or kept in possession of anybody by any means otherwise than in accordance with the provisions of this Act shall be the property of the Government.
- (2) No person shall, by any means, acquire or keep in his possession or custody or control or transfer to any person by way of gift or sale, or destroy, or otherwise damage, such Government property without previous written permission from the authorised officer.
9. (1) Any person having the control, custody or possession of any wild animal or meat or trophy of any wild animal shall, within such period as the Government may by notification in the official gazette, specify declare to an officer the number and description of such wild animal, meat or trophy and the place where it is kept.
- (2) On receipt of such declaration, the officer shall enter upon the premises of such person in the prescribed manner and such person shall produce the declared wild animal, meat or trophy for inspection and verification before such officer; and if the declaration is found correct, the officer shall fix upon or put such mark of registration on such wild animal, meat or trophy as may be prescribed as lawful possession.
- (3) No person shall counterfeit exchange or in any way interfere with any mark of registration fixed or put on by the officer on any wild animal, meat or trophy.
- (4) The officer shall, on being satisfied that the requirements of clauses (1) and (2) have been fulfilled, issue, in the prescribed manner, a certificate of Lawful possession of such wild animal, meat or trophy.
- (5) The authorised officer may, pending legal action, seize any wild animal meat or trophy which has not been legally acquired or imported under this, Act.
10. Any person who-
- (a) fails to make a declaration under clause (1) of Article 9, or
 - (b) conceals in such declaration any material fact, or
 - (c) counterfeits, exchanges or in any way interferes with any mark of registration fixed or put on any wild animal, meat or trophy, for which Certificate of Lawful Possession has been issued, or alters or in any changes a certificate or ownership, shall be guilty of an offence.
11. (1) No person shall transfer by gift, sale or otherwise to any other person any wild animal, meat or trophy of any kind unless he is in possession of a certificate of Lawful Possession of respect thereof.
- (2) No person shall receive by gift, purchase or otherwise any wild animal trophy or meat unless receives at the same time a valid certificate, of Lawful Possession in respect thereof.

12. (1) No person shall import or attempt to import into Bangladesh any live wild animal of an endemic or exotic species, or any trophy or meat of a kind specified in the Second Schedule,-
- (i) except through a customs port of entry;
 - (ii) unless he produces to the Customs Officer satisfactory proof that such wild animal, trophy or meat has been lawfully exported from under this Act.
 - (iii) unless he produces an Import Permit issued by the Government under this Act.
- (2) It shall be the duty of a customs officer to detain any live wild animal or any trophy or meat of any kind specified in the Second Schedule until the documents required by clause (1) have been produced to him; and if those documents are not produced within a reasonable time, the wild animal, trophy or meat, shall be forfeited and disposed of in such manner as may be prescribed.
13. (1) No person shall export or attempt to export any wild animal, trophy or meat except those mentioned in the First Schedule,-
- (i) except through a customs port of exit;
 - (ii) unless he produces to the Customs Officer an Export permit issued by the Government under this Act.
- (2) An officer may issue, or refuse to issue without assigning any reason, an Export Permit to the owner having the Certificate of Lawful Possession of any Wild Animal, trophy or meat of any kind specified in the First Schedule and in case of Receipt of such Export Permit the owner of the wild animal, trophy or meat shall immediately surrender to the said officer the Certificate of Lawful Possession relating thereto.
14. (1) Nothing in this Act shall apply to any wild animal, trophy or meat in transit through Bangladesh:
- Provided that the wild animal, trophy or meat-
- (i) shall be accompanied by the necessary transit custom documents
 - (ii) shall be entered through a custom port of entry;
 - (iii) shall not be unloaded from the ship or motor vehicle or any carrier on which it is being carried, or in the case of air transport. It shall not leave the precincts of the airport at which it is landed or transhipped without being checked nor shall, except in the case of customs warehouse, remain in such precincts for more than 48 hours.
15. (1) No person shall, with a view to carrying on a profession, trade or business, buy, sell or otherwise deal in wild animals, trophies or meat or process or manufacture goods or articles from such trophies or meat unless he is in possession of a valid permit, hereinafter called a Dealer's permit, issued for the purpose by an officer authorised in this behalf.
- (2) An officer may grant, or refuse to grant without assigning any reason a Dealer's Permit to any person to deal in any wild animal, trophy or meat, or any class of wild animals, trophies or meat specified in such permit.
- (3) A Dealer's Permit shall be issued on payment of the prescribed fee and shall remain valid for a period of one year from the date of its issue unless earlier cancelled.
- (4) (i) The holder of a Dealer's Permit shall maintain such register or record of his dealings as may be prescribed and shall produce it for inspection at any reasonable time when called upon to do so.
- (ii) The officer may suspend or cancel Dealer's Permit at any time and if he suspends or cancels it, he shall record in writing the reason therefor.
- (5) Nothing in this Article shall be constituted to exempt the holder of a Dealer's Permit from complying with the Provisions of Articles 8,9,11,12 and 13.
16. An officer may stop any vehicle or vessel and may search without warrant any person, vessel, vehicle, animal, package, receptacle or covering or any suspected place to satisfy himself as to whether or not an offence against this Act has been Committed.

17. An officer may seize any wild animal together with any firearm net, trap, snare, bow arrow or any vehicle or vessel or anything whatsoever used or suspected to have been used in the commission of an offence against this Act.
18. Every person in possession of a wild animal or trophy specified in the Second Schedule shall produce his Certificate of Lawful Possession on a demand made by an officer.
19. Every purchaser of forest produce, persons serving under the Public Works Department, Chaukidars, Dafadars, Village Watchmen, Village Headman, Chairman and members of Union Panchayet, Kanungo and Tahsildar shall be bound, in the absence of a reasonable excuse, to give to an officer information in respect of any snaring trapping, netting unauthorised killing or any other offence against this act Committed within the limits of his jurisdiction, as soon as the commission of such offence comes to his knowledge.
20. Notwithstanding anything contained in this Act any property seized under Article 17 which is subject to speedy and natural decay the officer seizing such property may sell it and deal with the proceeds thereof in the same manner as he would have dealt with such property if it would not have been sold.
21. (1) Notwithstanding any other provisions of this Act, it shall not be an offence-
- (a) for any person to kill any wild animal by any means in defence of his own life or that of any other person;
 - (b) for the owner of any standing crops or his employee to kill by any means within the bounds of such crops, any wild animal causing material damage to such crops;
 - (c) for the owner of livestock or his employee to kill any wild animal causing damage to the livestock in any way within a reasonable distance of where that livestock is grazing or where it is enclosed for the night:
- Provided that paragraphs (b) and (c) shall not apply to any unlawful occupation of, or cultivation in, a national park, wild life sanctuary, or a reserved or protected forest or to the livestock illegally grazing or herded therein.
- (2) The killing under clause (1) of any wild animal specified in the First or Third Schedule shall be reported to the nearest officer immediately.
 - (3) The meat or trophy, or any protected or game animal killed under this Article shall be the property of the Government and shall be disposed of in such manner as may be prescribed.
22. When in any proceedings taken under this Act or in consequence of anything done under this Act a question arises as to whether any wild animal, trophy or meat is the property of the Government, such wild animal, trophy or meat shall be presumed to be the property of the Government until the contrary is proved provided that the burden of proving that the accused is in lawful possession, custody or control of such wild animal, meat or trophy shall lie on such person.
23. (1) The Government may, by notification in the official Gazette, declare any area to be wild life sanctuary.
- (2) No person shall-
- (i) enter or reside in any wild life sanctuary; or
 - (ii) cultivate any land in any wildlife sanctuary; or
 - (iii) damage or destroy any vegetation in any wild life sanctuary; or
 - (iv) hunt, kill or capture any wild animal in any wild life sanctuary or within one mile from the boundaries of a wild life sanctuary; or
 - (v) introduce any exotic species of animal into a wild life sanctuary; or
 - (vi) introduce any domestic animal or allow any domestic animal to stray into a wild life sanctuary; or
 - (vii) cause any fire in a wild life sanctuary; or
 - (viii) pollute water flowing in or through a wild life sanctuary.

Provided that Government may, for scientific purposes or for aesthetic enjoyment or betterment of scenery, relax all or any of the prohibitions specified above.

- (3) The Government may declare any area to be a national park where the following acts shall not be allowed, namely:-
- (i) hunting, killing or capturing any wild animal in a national park and within the radius of one mile outside its boundary;
 - (ii) firing any gun or doing any other act which may disturb any wild animal or doing any act which may interfere with the breeding places of any wild animal;
 - (iii) felling, tapping, burning or in any way damaging or destroying, taking, collecting or removing any plant or tree therefrom;
 - (iv) clearing or breaking up any land for cultivation, mining or for any other purpose;
 - (v) polluting water flowing in and through the national park.

Provided that the Government may, for scientific purposes or for betterment, of the national park or for aesthetic enjoyment of scenery or for any other exceptional reasons, relax all or any of the prohibitions specified above.

- (4) Construction of access roads rest houses and hotels and provision of amenities for the public shall be so planned as may not impair the primary object of the establishment of a national park.
 - (5) The Government may declare any area to be a game reserve and allow hunting and shooting of wild animals under a special permit wherein the maximum number of the wild animals to be killed and the area and the duration for which such permit shall remain valid shall be specified.
 - (6) Such alterations in the boundaries of wild life sanctuaries, national parks and game reserves may be affected as the Government may approve.
24. (1) Where the Government is satisfied that an area of private land has been dedicated by its owner to the same purposes as a game reserve, the Government, on an application of the owner, declare by notification in the official Gazette, such area to be a private game reserve.
- (2) The owner of such private game reserve shall within its boundary, exercise all the powers of an officer under this Act.
- (3) If the Government is satisfied that a private game reserve does not meet the requirements for being treated as such, the Government at any time declare, by notification in the official Gazette, that it has ceased to be a private game reserve from such date as may be specified in the notification.
25. Interference by any one in the discharge of the duties of an officer shall be an offence.
26. (i) If a person-
- (a) contravenes or attempts to contravene the provisions of Articles 5, 7, 9, 10, 11, 12, 13, 14, 15 and 23, shall be punished with imprisonment which may, subject to the minimum of six months, extend to one year and also with a fine which may, subject to the minimum of taka five hundred, extend to taka one thousand, and the hunting licence, gun licence under arms Act, 1878, shooting permit or special permit issued to such person shall be cancelled and the firearms, vehicles, vessels, watercraft, appliances or anything used in the commission of the offence including the wild animals meat or trophy found in his possession shall be confiscated.
 - (b) contravenes or attempts to contravene the provisions of Articles 6 and 25, he shall be punished with imprisonment which may, subject to the minimum of one year, extend to two years and also with a fine which may, subject to the minimum of one year, extend to two years and also with a fine which may, subject to the minimum of Taka one thousand, extend to taka two thousand and the hunting licence, gun licence under Arms Act, 1878, shooting permit or special permit issued to of such person shall be cancelled and the firearms, vehicles, vessels, watercraft, appliances or anything used in the commission of the offence including the wild animal, meat or trophy found in his possession shall be confiscated.
 - (c) contravenes or attempts to contravene the provisions of Articles 18 and 21, he shall be punished with a fine which may subject to the minimum of taka two hundred and fifty, extend to Taka five hundred.

- (2) Any person who contravenes any provision of this Act or any rule made thereunder for the contravention of which no specific penalty has been provided, shall be punishable with imprisonment for a term which may extend to Taka five hundred, or with both.
27. No court shall take cognizance of any offence under this Act except on the complaint of an officer.
28. Nothing contained in this act shall be deemed to prevent any person from being prosecuted under any other law for any act of commission or omission which constitutes an offence under this Act, or from being liable under any other law to any higher punishment or penalty than that provided by this Act.
29. When an offender is not known or cannot be found, any officer may, if he finds that offence has been committed, confiscate the property used in the commission of the offence.
30. The Government may, as and when considers it necessary, set up a Mobile Court for trying offences under this Act.
31. (1) Any officer not below the rank of Forester or Senior Wild Life Scout may, without orders from a Magistrate and without a warrant, arrest any person against whom a reasonable suspicion exists of his having been concerned in any offence under this Act.
- (2) Every officer making an arrest under this Article shall, without unnecessary delay and subject to the provision of this Act as to Release on bond, take or send the person arrested before the Magistrate having jurisdiction in the case or the officer-in-charge of the nearest police station.
32. Any officer not below the rank of Forest Ranger or Wild Life Supervisor who or whose subordinate has arrested any person under Article 31 may release such person on his executing a bond to appear, if and when so required, before the Magistrate having jurisdiction in the case or before the officer-in-charge of the nearest police-station.
33. Every officer shall be competent to take all lawful means to prevent the commission of any offence under this Act.
34. The offences under this Act shall be tried by a Magistrate of the First Class.
35. The District Magistrate or any Magistrate of the First Class specially empowered by the Government in this behalf may try an offence punishable under this Act summarily, under the Code of Criminal Procedure, 1898, subject to the provision of Chapter XXII of that Code.
36. (1) The Government may, by notification in the official Gazette, empower an officer-
- (a) to accept from any person against whom a reasonable suspicion exists that he has committed any offence under this Order a sum of money by way of compensation for the offence which such person is suspected to have committed; and
- (b) to release any property which has been seized and liable to confiscation, on payment of such value thereof as may be estimated by such officer;
- (c) to discharge in such cases as may be prescribed the suspected person if he is in custody or to release the seized property on payment of such sum of money, or such value as compensation to such offer as may be determined and to withdraw the proceedings against such person or property.
- (2) The sum of money accepted as compensation under sub-clause (a) of clause (1) shall not be less than Taka one thousand and shall not exceed Taka two thousand.
- (3) No officer shall have power to compound a second and subsequent offence committed by the same person or persons under this Order.
37. Any person in possession of arms under a licence issued under the Arms Act, 1878, and residing within 5 miles from the boundary of a wild life sanctuary, national park or game reserve shall, within such dates as the Government may by notification in the official Gazette direct, apply to the nearest office in the prescribed form for the registration of his name.

38. The Government may vest in any officer all or any of the following powers, namely:-
- (a) the power of a civil court to compel the attendance of witnesses and the production of documents and material objects;
 - (b) the power to issue a search-warrant under the Code of Criminal Procedure, 1898;
 - (c) the power to hold an inquiry into an offence under this Act and in the courts of such inquiry to receive and record evidence; and
 - (d) the power to prosecute a case before a Magistrate.
39. All officers under this Act shall be deemed to be public servants within the meaning of the section 21 of the Penal Code.
40. Under this Act, carrying of firearms up to the rank of Junior Wild Life Scout shall be treated as part of the uniform.
41. No suit, prosecution or other legal proceedings shall lie against any officer for anything done in good faith or intended to be done in pursuance of any provisions of this Act, or the rules made thereunder.
42. All police officers shall, upon request made by any person employed under this Act, assist him in the due discharge of his duties under this Act.
43. An officer may, in the course of his official duties, resort to the use of firearms in exercise of his right of private defence of persons and properties when the situation and circumstances are beyond the physical control of such officer.
44. The Government may, by notification in the official Gazette, delegate all or any of the powers conferred upon it under the provisions of this Act, to any officer subordinate to it.
45. Notwithstanding anything contained in this Act, the Government may, in the interest of scientific or any public purpose, allow, by notifications in the official Gazette, killing or capturing of any wild animal in such place and by such means as may be specified in the notification.
46. The Government, by notification in the official Gazette, in respect of any specified area-
- (i) add to or exclude from a Schedule any wild bird or animal subject to such conditions as may be prescribed;
 - (ii) alter the period during which any wild bird or animal specified in the First Schedule may be killed.
47. (1) The Government may by notification in the official Gazette, make rules for the purpose of carrying into effect the provisions of this Act.
- (2) In particular and without prejudice to the generality of the foregoing power, such rules may prescribe-
- (a) the powers and duties of the officers and other person authorised in this behalf;
 - (b) the form in which, and the terms and conditions on which, a licence or a permit or a special licence or a special permit may be granted.
 - (c) the fees to be charged for any licence or permit or a special licence or special permit;
 - (d) in the case of any species of wild animals, the number and the sex that may be killed under a licence;
 - (e) rewards to be given of the persons who render help in the detection of offences under this Act;
 - (f) the authorities by whom licences may be issued; and
 - (g) the management of wild life sanctuaries, national parks and game reserves.
48. The enactments mentioned in the table below are hereby repealed to the extent specified in the third column thereof.

TABLE

ENACTMENTS REPEALED		
Year No.	Short Title	Extent of repeal
Bengal Act		
1932 VIII	The Bengal Rhinoceros Preservation Act, 1932	The whole
1912 VIII	The Wild Birds and Animals Protection Act, 1912	Do
1879 VIThe	Elephant Preservation Act, 1879	Do

FIRST SCHEDULE

PART I

List of Crustaceans, Amphibians, Reptiles, Birds and Mammals of Bangladesh which are open for shooting and may be hunted on an ordinary game hunting permit.

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
CRUSTACEANS		
Crab		<i>Brachyura</i>
AMPHIBIANS		
RANIDAE		
Indian Bull Frog		<i>Rana tigrina</i>
Green Frog		<i>Rana hexadactyla</i>
Cricket Frog		<i>Rana(Lsic)limnocharis</i>
REPTILES		
CHELONIA		
Flap Shelled Spotted Turtle		<i>Lissemys punctata</i> <i>punctata</i>
Roofed Turtle		<i>Kachuga tecta tecta</i>
Clawtailed Turtle		<i>Testudo elongata</i>
BIRDS		
ANATIDAE		
Pintail		<i>Anas acuta</i>
Shoveller		<i>Anas clypeata</i>
Wigeon		<i>Anas penelope</i>
Gadwall		<i>Anas strepera</i>
Grey Leg Goose		<i>Anser anser</i>
Bar headed Goose		<i>Ansar indicus</i>
Baer's Pochard		<i>Aythya baeri</i>
Common Pochard		<i>Aythya ferina</i>
Lesser Whistling Teal		<i>Dendrocygna jabanica</i>
Rederested Pochard		<i>Netta rufina</i>
Brahminy Duck		<i>Tedorna ferruginea</i>
ARDEIDAE		
Pond Heron or Paddy Bird		<i>Ardeola grayii</i>
Cattle Egret		<i>Bubulcus ibis</i>
Little Egret		<i>Egretta garzetta</i>
CHARADRIDAE		
Pintail Snipe		<i>Callinago stenura</i>
Little ringed Plover		<i>Charedrius dubious</i>
Curlew		<i>Numenius arquata</i>
Eastern Golden Plover		<i>Pulvialis dominica</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Grey Plover		<i>Pulialis squatorola</i>
Common Sandpiper		<i>Tringa hypoleucos</i>
Greenshank		<i>Tringa neularia</i>
Green Sandpiper		<i>Tringa ochropus</i>
Marsh Sandpiper		<i>Tringa stagnatilis</i>
Greyheaded Lapwing		<i>Venellus cinereus</i>
PODICIPEDIDAE		
Little Grebe		<i>Podiceps ruficollis</i>
THRESKIORNITHIDAE		
Spoon Bill		<i>Platalea leucordia</i>
MAMMALS		
CARNIVORA		
Fox		<i>Vulpes bengalensis</i>
LAGOMORPHA		
Rufous tailed Hare		<i>Lepus nigricollis</i>
ARTIODACTYLA		
Wild Boar		<i>Sus scrofa</i>

FIRST SCHEDULE

PART II

List of Mammals, Reptiles and Birds of Bangladesh for the hunting of which a special permit is required

Name of Animals	Season when hunting is permitted	Localities where hunting is permitted
Mammals, Reptiles, and Birds population, increase of which threatens the balance of nature of a particular locality or becomes a threat to public life (as in cases of man-eating tiger, rogue elephants, etc.).	As declared by the Chief Wild Life Warden from time to time.	In places as declared by the Chief Wild Life Warden.

SECOND SCHEDULE

Wild animals, trophies or meat for the possession, transfer or import of which a certificate of lawful possession is required.

- (1) Any live protected animal or game animal.
- (2) Any trophy or meat derived from a protected animal.
- (3) Horns and tusks, etc, of deer, sambar, bison, gayal, gaur and elephants.
- (4) Skins of bear, otter, tiger, leopard, jungle cat, lizard, deer, samba pangolin, crocodile and python.

THIRD SCHEDULE

Protected animals i.e animals which shall not be hunted, killed or captured.

- (1) All reptiles, birds and Mammals when immature or not fully grown (except poisonous snakes, rats, mouse, fruit bats, pipistrelles, etc, which endanger public life).
- (2) All female game animals when-
 - (a) pregnant.
 - (b) in a condition that indicates they are suckling or feeding young.
 - (c) accompanied by their immature offspring.
- (3) All females of animals as per part II of the first Schedule (except when declared as in case of a man-eating tigress, rouge elephant, etc.)
- (4) All individuals of the following species or sub-species of reptiles:

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
CHELONIA		
Hamilton's Terrapin		<i>Dominia hamiltoni</i>
Bengal eyed Terrapin		<i>Morenia ecallata</i>
Three keeled land Tortoise		<i>Malanochelys tricarinata</i>
Black Mud Turtle/Bostami Turtle		<i>Trionyx nigricans</i>
Ganges Soft-shell Turtle		<i>Trionyx gangeticus</i>
Peacock Soft-shell Turtle		<i>Trionyx hurum</i>
SQUAMATA		
Hocknosed Sea Snake		<i>Enhydrina schistosa</i>
Rock Python		<i>Python molurus</i>
Reticulated Python		<i>Python reticulatus</i>
Diad's Worm Snake		<i>Typhlina diardi</i>
Merton's Tokay/Wall lizard		<i>Gecko gecko azheri</i>
Bangal, Grey lizard		<i>Varanus bengalensis</i>
Yellow, Common lizard		<i>Varanus flaviscens</i>
Ring Monitor Bird		<i>Varanus salvator</i>
Black lizard		<i>Varanus nebulosus</i>
CROCODYLIA		
Gharial		<i>Gavialis gangeticus</i>
Estuarine Crocodile		<i>Crocodylus porosus</i>
Muggur/Marsh Crocodile		<i>Crocodylus palustris</i>

5. All individuals of the following species of **BIRDS**:

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
ACCIPITRIDAE		
Shikra		<i>Accipiter badius</i>
Crested Goshawk		<i>Accipiter trivirgatus</i>
Imperial Eagle		<i>Aquila heliaca</i>
Lesser Spotted Eagle		<i>Aquila pomarina</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Tawny Eagle		<i>Aquila rapax</i>
Blyth's Baza		<i>Aviceda jerdoni</i>
White-eyed Buzzard Eagle		<i>Butastur teesa</i>
Short toed Eagle		<i>Circaetus gallicus</i>
Marsh Harrier		<i>Circus aeruginosus</i>
Pale Harrier		<i>Circus macrourus</i>
Pied Harrier		<i>Circus melanoleucos</i>
Montagu's Harrier		<i>Circus pygargus</i>
Eastern Marsh Harrier		<i>Circus spilonotus</i>
Black Winged Kite		<i>Elanus caeruleus</i>
Larger Falcon		<i>Falco biarmicus</i>
Shahree Falcon		<i>Falco perigrinator</i>
Eastern Peregrine Falcon		<i>Falco peregrinus</i>
Oriental Hobby		<i>Falco severus</i>
Kestrel		<i>Falco vespertinus</i>
White Backed Vulture		<i>Gyps bengalensis</i>
White Bellied Sea-Eagle		<i>Haliaeetus leucogaster</i>
Pallas's Fishing Eagle		<i>Haliaeetus leucoryphus</i>
Brahminy Kite		<i>Haliaster indus</i>
Booted Hawk Eagle		<i>Hieraaetus pennatus</i>
Grey Headed Fishing Eagle		<i>Ichthyophaga ichthyaetus</i>
Black Eagle		<i>Ictinaetus malayensis</i>
Rufous Bellied Hawk Eagle		<i>Hieraaetus kienerii</i>
White Legged Falconet		<i>Macrohiera melanoleucos</i>
Pariah Kite		<i>Milvus migrans</i>
Osprey		<i>Pandion haliaetus</i>
Indian Honey Buzzard		<i>Pernis ptilorhynchus</i>
Crested Serpent Eagle		<i>Spilornis cheela</i>
Changeable Hawk Eagle/		<i>Spizaetus cirrhatus</i>
BengaliCrested Hawk Eagle		
Black or king Vulture		<i>Sarcogyps calvus</i>
ALAUDIDAE		
Eastern Skylark		<i>Aluda guigula</i>
Humes Short-toed Lark		<i>Calandrella acutirostris</i>
Ashy Crowned Finch Lark		<i>Eremopterix grisea</i>
Red Winged Bush Lark		<i>Mirafra erythroptera</i>
Singing Winged Bush Lark		<i>Mirafria assamica</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
ALCEDINIDAE		
Common Kingfisher		<i>Alcedo atthis</i>
Blyth's Kingfisher		<i>Alcedo hercules</i>
Blue-eared Kingfisher		<i>Alcedo meninting</i>
Three toed Kingfisher		<i>Ceyx erithacus</i>
Greater Pied Kingfisher		<i>Ceryle lugubris</i>
Lesser pied Kingfisher		<i>Ceryle rudis</i>
Ruddy Kingfisher		<i>Halcyon coromandra</i>
White Collared Kingfisher		<i>Halcyon chloris</i>
Black Capped Kingfisher		<i>Halcyon pileata</i>
Brown Winged Kingfisher		<i>Pelargopsis amauropter</i>
White Breasted Kingfisher		<i>Halcyon smymensis</i>
Storkbilled Kingfisher		<i>Pelargopsis capensis</i>
ANATIDAE		
Common Teal		<i>Anas crecca</i>
Spotbill or Grey Duck		<i>Anas poecilorhyncha</i>
Mallard		<i>Anas platyrhynchos</i>
Blue Winged Teal/ Garganey		<i>Anas querguedula</i>
Forest Bean Goose		<i>Anser faballs</i>
Tufted Duck		<i>Aythya fuligola</i>
White Winged Wood Duck		<i>Cairina scutalata</i>
Large Whistling Teal		<i>Dendrocygna bicolor</i>
Cotton Teal		<i>Nattapus coromendelianus</i>
Pink Headed Duck		<i>Rhodonessa caryophyllace</i>
Mukta or Comb Duck		<i>Sarkidiornis molanotos</i>
Shel Duck		<i>Tadorna tadorna</i>
APODIDAE		
House Swift		<i>Apus affinis</i>
Alpine Swift		<i>Apus melba</i>
White Throated Spine		
Tailed Swift		<i>Chaetura candakuta</i>
Edible Nest Swift		<i>Collocalia innominata</i>
Palm Swift		<i>Cypsiurus parvus</i>
Crested Swift		<i>Hemiprocne longipennis</i>
ARDEIDAE		
Grey Heron		<i>Ardea cinerea</i>
Giant White Billed Heron		<i>Ardea imperialis</i>
Purple Heron		<i>Ardea purpurea</i>
Chinese Pond Heron		<i>Ardeola bacehus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Little Green Heron		<i>Ardeola (S sic) striatus</i>
Black Bittern		<i>Ixobrychus flavicollis</i>
Indian Reef Heron		<i>Egretta gularis</i>
Smaller Egret		<i>Egretta intermedia</i>
Tiger Bittern		<i>Corsachius melanocephalus</i>
Large Egret		<i>Egretta alba</i>
Chest Nut Bittern		<i>Ixobrychus cinnamomeus</i>
Yellow Bittern		<i>Ixobrychus sinensis</i>
Night Heron		<i>Nycticorax nycticorax</i>
ARTAMIDAE		
Ashy Swallow Shrike		<i>Artamus fuscus</i>
BUCEROTIDAE		
Rufous Nicked Hornbill		<i>Aceros nipalensis</i>
Pied Hornbill		<i>Anthracoceros malabaricus</i>
Great Hornbill		<i>Buceros bicornis</i>
Wreathed Hornbill		<i>Rhyliceps undulatus</i>
BURHINIDAE		
Stone Curlew		<i>Burhimus oedicephalus</i>
Great Stone Curlew		<i>Esacus magnirostris</i>
Small Indian Pratincole		<i>Glareola lactea</i>
CAMPEPHAGIDAE		
Smaller Cuckoo Shrike		<i>Coracina melaschistos</i>
Large Cuckoo Shrike		<i>C. novaehollandiae</i>
Pied flycatcher Shrike		<i>Hemipus picatus</i>
Small Minivet		<i>Pericrocotus cinnamomeus</i>
Scarlet Minivet		<i>Pericrocotus flammeus</i>
Yellow Throated Minivet		<i>Pericrocotus solaris</i>
Common Wood Shrike		<i>Tephrodornis pondicerianus</i>
Large Wood Shrike		<i>Tephrodornis virgatus</i>
CAPITONIDAE		
Blue Throated Barbet		<i>Megalaima asiatica</i>
Blue Eared Barbet		<i>Megalaima australis</i>
Crimson Breasted Barbet		<i>Megalaima haemacephala</i>
Lineated Barbet		<i>Megalaima lineata</i>
CAPRIMULGIDAE		
Franklin's Night Jar		<i>Caprimulgus affinis</i>
Jungle Night Jar		<i>Caprimulgus indicus</i>
Long tailed Night Jar		<i>Caprimulgus macrurus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
CHARADRIIDAE		
Turnstone		<i>Arenaria interpres</i>
Sanderling		<i>Calidris alba</i>
Dunlin		<i>Calidris alpina</i>
Little Stint		<i>Calidris minuta</i>
Long Tailed Stint		<i>Calidris subminuta</i>
Temminck's Stint		<i>Calidris temminckii</i>
Eastern Knot		<i>Calidris tenuirostris</i>
Curlew Sand Piper		<i>Calidris testacea</i>
Great Snipe		<i>Capella media</i>
Jack Snipe		<i>Gallinago minima</i>
Solitary Snipe		<i>Gallinago solitaria</i>
Chinese Kentish Plover		<i>Charadrius alexandrinus</i>
Large Sand Plover		<i>Charadrius leschenaultii</i>
Lesser Sand Plover		<i>Charadrius mongolus</i>
Long Billed Ringed Plover		<i>Charadrius placidus</i>
Spoon Billed Sand Piper		<i>Eurynorhynchus pygmeus</i>
Broad Billed Sand Piper		<i>Limicola falcinellus</i>
Black Tailed Godwit		<i>Limosa limosa</i>
Snipe Billed Godwit		<i>Limnodromus semipalmatus</i>
Ruff and Reeve		<i>Philomachus pygnax</i>
Avocet		<i>Recurvirostra avosetta</i>
Painted Snipe		<i>Rostratula bengalensis</i>
Wood Cock		<i>Scolopax rusticola</i>
Wood Sandpiper		<i>Tringa glareola</i>
Armstrongs Sandpiper/		<i>Tringa guttifer</i>
Spotted green shank		
Terek Sandpiper		<i>Tringa terek</i>
Spotted Red Shank		<i>Tringa totanus</i>
Red Wattled Lapwing		<i>Vanellus indicus</i>
White tailed Lapwing		<i>Vanellus leucurus</i>
Spur Winged Lapwing		<i>Vanellus spinosus</i>
Lapwing		<i>Vanellus vanellus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
CICONIDAE		
Open Billed Stork		<i>Anas-tomus oscitans</i>
Eastern White Stork		<i>Ciconia ciconia</i>
White Naked Stork		<i>Ciconia episcopus</i>
Black Stork		<i>Ciconia nigra</i>
Painted Stork		<i>Ibis leucocephalus</i>
Greater Adjutant		<i>Leptoptilos dubius</i>
Lesser Adjutant		<i>Leptoptilos javanicus</i>
Black Naked Stork		<i>Ephippiorhynchus asiaticus</i>
COLUMBIDAE		
Emareld Dove		<i>Chalcophaps indica</i>
Blue Rock Pigeon		<i>Columba livia</i>
Purple Wood Pigeon		<i>Columba punicea</i>
Green Imperial Pigeon		<i>Ducula aenea</i>
Bar-tailed Cuckoo Dove		<i>Macropygia unchall</i>
Mountain Imperial Pigeon		<i>Ducula badia</i>
Spotted Dove		<i>Sterptopelia chinensis</i>
Rufous Turtle Dove		<i>Sterptopelia orientalis</i>
Red Turtle Dove		<i>Sterptoptelia tranquebarica</i>
Orange-breasted Pigeon		<i>Treron bicincta</i>
Orange-breasted Pigeon		<i>Treron curvirostra</i>
Yellow Footed Pigeon		<i>Treron phoenicoptera</i>
Grey Fronted Pigeon		<i>Treron pompadora</i>
CORACIIDAE		
Indian Roller		<i>Coracias bengalensis</i>
Broad Billed Roller/		<i>Eurystomus orientalis</i>
Blue Jay		
CORVIDAE		
Jungle Crow		<i>Corvus macrorhynchus</i>
Grey Tree-pie		<i>Dendrocitta formosae</i>
Rufous Tree-pie		<i>Dendrocitta vagabunda</i>
Green Magpie		<i>Cissa chinensis</i>
Red Billed Green Magpie		<i>Cissa erythrorhyncha</i>
CUCULIDAE		
Plaintive Cuckoo		<i>Cacomantis merulinus</i>
Banded Bay-Cuckoo		<i>Cacomantis sonneratii</i>
Crow-Pheasant		<i>Centropus sinensis</i>
Pied Crested Cuckoo		<i>Clamator jacobinus</i>
Cuckoo		<i>Cuculus canorus</i>
Hodgson's Hawk Cuckoo		<i>Cuculus fugax</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Indian Cuckoo		<i>Cuculus micropterus</i>
Small Cuckoo		<i>Cuculus(Psic)poliocephalus</i>
Common Hawk Cuckoo		<i>Cuculus varius</i>
Koel		<i>Eudynamus scolopacea</i>
Large Green Billed		<i>Rhopodytes tristis</i>
Malkoha		
Drongo-Cuckoo		<i>Surniculus lugubris</i>
Sirkeer Cuckoo		<i>Taccocua leschenaultii</i>
DICAEIDAE		
Yellow-vented Flower Pecker		<i>Dicaeum chrysorrheum</i>
Tickell's vented Flower Pecker		<i>Dicaeum erythrorhynchos</i>
Plaincoloured Flower Pecker		<i>Dicaeum concolor</i>
Scarletbacked Flower Pecker		<i>Dicaeum cruentatum</i>
Orange Belied Flower Pecker		<i>Dicaeum trigonostigma</i>
DICRURIDAE		
Black Drongo		<i>Dicrurus adsimilis</i>
Bronzed Drongo		<i>Dicrurus aeneus</i>
Lesser Racket Tailed		<i>Dicrurus remifer</i>
Crow Billed Drongo		<i>Dicrurus annectans</i>
White Billed Drongo		<i>Dicrurus coenlescens</i>
Hair-crested Drongo		<i>Docrurus hottentotus</i>
Ashy Drongo		<i>Dicrurus leucophaeus</i>
Greater Racket Tailed Drongo		<i>Dicrurus paradiseus</i>
EMBERIZIDAE		
Deccan Crested Bunting		<i>Melophus lathami</i>
Black-faced Bunting		<i>Emberiza spodocephala</i>
Yellow Breasted Bunting		<i>Emberiza aureola</i>
ESTRILDIDAE		
Red Munia		<i>Estrilda emandava</i>
White Throated Munia		<i>Lonchura malabarica</i>
Chest Nut Munia		<i>Lonchura punctulata</i>
Whitebacked Munia		<i>Lonchura striata</i>
Spotted Munia		<i>Lonchura punctulata</i>
EURYLAIMIDAE		
Gould's Broad Billed		<i>Serilophus lunatus</i>
FRINGILIDAE		

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Common Rosefinch		<i>Capodacus erythrinus</i>
GRUIDAE		
Demoiselle Crane		<i>Anthropoides virgo</i>
HELIORNDINIDAE		
Masked Finfoot		<i>Heliopais personata</i>
HIRUNDINIDAE		
House Martin		<i>Delichon nipalensis</i>
Striated Swallow		<i>Hirundo daurica</i>
Sand Martin		<i>Hirundo rustica</i>
Wire-tailed Swallow		<i>Hirundo smithii</i>
Larger straited swallow		<i>Hirundo striolata</i>
Plain Sand Martin		<i>Riparia paludicala</i>
Collard Sand Martin		<i>Riparia riparia</i>
IRENIDAE		
Common Lora		<i>Aegithina tiphia</i>
Gold Fronted Chloropsis		<i>Chloropsis aurifrons</i>
Blue Winged Chloropsis		<i>Chloropsis cochinchinensis</i>
Orange Bellied Chloropsis		<i>Chloropsis hardwickii</i>
Fairy Blue Bird		<i>Irena puella</i>
JACANIDAE		
Pheasant Tailed Jacana		<i>Hydrophasianus chirurgus</i>
Bronze Winged Jacana		<i>Metopidius indicus</i>
LANIIDAE		
Brown Shrike		<i>Lanius cristatus</i>
Black Headed Shrike		<i>Lanius schach</i>
Tibetan Shrike		<i>Lanius tephronotus</i>
Large Cuckoo Shrike		
LARIDAE		
Whiskered Tern		<i>Chlidonias hybrida</i>
White Winged Black Tern		<i>Chlidonias leucopterus</i>
Gull Billed Tern		<i>Gelochelidon nilotica</i>
Caspian Tern		<i>Hydroprogne caspia</i>
Brown Headed Gull		<i>Larus brunnicephalus</i>
Lesser Black Headed Gull		<i>Larus fucus</i>
Great Black Headed Gull		<i>Larus ichthyaetus</i>
Black Headed Gull		<i>Larus rudiundus</i>
Indian Skimmer		<i>Rhynchops albicollis</i>
Black Billed Tern		<i>Sterna acuticauda</i>
Large Crested Tern		<i>Sterna bergii</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Common Tern		<i>Sterna hirundo</i>
Little Tern		<i>Sterna aldibfrous</i>
Indian River Tern		<i>Sterna aurantia</i>
MEROPIDAE		
Chestnut Headed Bee-eater		<i>Merops leschenaulti</i>
Green Bee-eater		<i>Merops orientalis</i>
Blue Tailed Bee-eater		<i>Merops philippinus</i>
Blue Bearded Bee-eater		<i>Nyctyornis athertoni</i>
MOTACILLIDAE		
Chinese Tree Pipit		<i>Anthus hodgsoni</i>
Paddy Field Pipit		<i>Anthus novaeseelandiae</i>
Dark Pipit		<i>Anthus pelopus</i>
Pied or White Wagtail		<i>Motacilla alba</i>
Grey Wagtail		<i>Motacilla cinerea</i>
Yellow Headed Wagtail		<i>Motacilla citreola</i>
Yellow Wagtail		<i>Motacilla flava</i>
MUSCICAPIDAE		
Paddy field Warbler		<i>Acrocephalus agricola</i>
Blunt Winged Paddy Field Warbler		<i>Acrocephalus concinens</i>
Blyth's Reed Warbler		<i>Acrocephalus dumatorum</i>
Great Reed Warbler		<i>Acrocephalus stentorius</i>
Nepal Babbler		<i>Acrocephalus nepalensis</i>
Red Throated Tit Babbler		<i>Alcippe rufogularis</i>
Spotted Bush Warbler		<i>Bradypterus thoracicus</i>
Great Necked Laughing Thrush		<i>Carrulax monilligerus</i>
Blackgorgeted Laughing Thrush		<i>Garrulax pectoralis</i>
Bristled Grass Warbler		<i>Chaetornis striatus</i>
Yellow eyed Babbler		<i>Chrysomma sinense</i>
White Tailed Blue Robin		<i>Cinclidium lecurum</i>
Fantail Warbler		<i>Cisticola exilis</i>
Streaked Fantail Warbler		<i>Cisticola juncidis</i>
Magpie Robin		<i>Copsychus saularis</i>
Grey Headed Fly Catcher		<i>Culicapa ceylonensis</i>
Black Backed Forktail		<i>Enicurus immaculatus</i>
Leschenault's Forktail		<i>Enicurus leschenaulti</i>
Spotted Forktail		<i>Enicurus maculatus</i>
Slaty Backed Forktail		<i>Enicurus schistaceus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Blue Chat		<i>Erithacus brunneus</i>
Ruby Throat		<i>Erithacus calliope</i>
Siberian Blue Chat		<i>Erithacus cyane</i>
Himalayan Ruby Throat		<i>Erithacus pectoralis</i>
Blue Throat		<i>Erithacus svecius</i>
Delesserts Laughing Thrush		<i>Garrulax delesserti</i>
Yellow Throated Laughing Thrush		<i>Garrulax galbauns</i>
Crimson Winged Laughing Thrush		<i>Garrulax phoeniceus</i>
Rufous Necked Laughing Thrush		<i>Garrulax ruficollis</i>
Streaked Laughing Thrush		<i>Garrulax ruficollis</i>
Large Grass Warbler		<i>Graminicola bengalensis</i>
Booted Warbler		<i>Hippalais calligata</i>
Slender Billed Scimitar Babler		<i>Xiphirhyncus(Ssic) superciliaris</i>
Silver Eard Mesia		<i>Leiothrix argenteauris</i>
Pallas's Grass Hopper Warbler		<i>Locustella certhiola</i>
Temminck's Grass Hopper Warbler		<i>Locustella lanceolata</i>
Yellow Breasted Babbler		<i>Macronous gularis</i>
Straited Marsh Warbler		<i>Megaurus palustris</i>
Lesser Scaly Breasted		<i>Pnoepiga pusilla</i>
Wren Babbler		
Black Naped Flycatcher		<i>Hypothymis azurea</i>
Blue Rock Thrush		<i>Monticola solitarius</i>
Red Breasted Flycatcher		<i>Muscicapa parva</i>
Large Billed Blue Fly Catcher		<i>Muscicapa banyumas</i>
Brook's Fly Catcher		<i>Muscicapa polioegenys</i>
Blue Throated Fly Catcher		<i>Muscicapa rubeculoides</i>
White Browed BlueFlycatcher		<i>Muscicapa superciliaris</i>
Verditer Flycatcher		<i>Muscicapa thalassina</i>
Golden Headed Tailor bird		<i>Orthotomus cuculatus</i>
Tailor Bird		<i>Orthotomus sutorius</i>
Mangrove Whistler		<i>Pachycephala grisola</i>
Red Headed Parrot Bill		<i>Paradoxornis ruficeps</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Black Redstart		<i>Phoenicurus ochruros</i>
Daurian Redstart		<i>Phoenicurus aureoreus</i>
Thick Billed Warbler		<i>Acrocephalus adon</i>
Thicket's Leaf Warbler		<i>Phylloscopus affinis</i>
Black Browed Leaf Warbler		<i>Phylloscopus cantalor</i>
Smoky Willow Warbler		<i>Phylloscopus fulgiventor</i>
Dusky Leaf Warbler		<i>Phylloscopus fuscatus</i>
Yellow Browed Leaf Warbler		<i>Phylloscopus inornatus</i>
Large Billed Leaf Warbler		<i>Phylloscopus magnirostris</i>
Blyth's Leaf Warbler		<i>Phylloscopus reguloides</i>
Dull Green Leaf Warbler		<i>Phylloscopus trochilidies</i>
Rusty cheeked Scimitar Babbler		<i>Pomatorhinus erythrogeyns</i>
Large Scimitar Babbler		<i>Pomatorhinus hypoleucos</i>
Rufous Necked Scimitar Babbler		<i>Pomatobinus ruficollis</i>
Large Scimitar Babbler		<i>Pomatorhinus hypoleucos</i>
Rufous Necked Scimitar Babbler		<i>Pomatobinus ruficollis</i>
Long Tailed Grass Warbler		<i>Prinia burnesii</i>
Yellow Bellied Long Tailed Warbler		<i>Prinia flaviventris</i>
Streaked Longtailed Warbler		<i>Prinia gracilis</i>
Franklin's Longtailed Warbler		<i>Prinia hodgsonii</i>
Beavens Longtailed Warbler		<i>Prinia rufescens</i>
Ashy Longtailed Warbler		<i>Prinia socialis</i>
Tawny Flanked Longtailed		<i>Prinia subflava</i>
Jungle Longtailed Warbler		<i>Prinia sylvatica</i>
Chestnut Throated Shrike Babbler		<i>Pteruthius melanotis</i>
White Browed Fantail Flycatcher		<i>Rhipidura aureola</i>
Yellow Bellied Fantail Flycatcher		<i>Rhipidura hypoxantha</i>
Plumbeas Redstart		<i>Ryhacornis fuliginosus</i>
Long Billed Wren Babbler		<i>Rimator malacoptilus</i>
Pied Bush Chat		<i>Saxicola caprata</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Darkgrey Bush Chat		<i>Saxicola jerdoni</i>
Jerdon's Bush Chat		<i>Saxicola jerdoni</i>
Stone Chat		<i>Saxicola torquata</i>
Yellow-eyed Flycatcher Warbler		<i>Seicercus burkli</i>
Gold Headed Babbler		<i>Stachyris chrysaea</i>
Red-fronted Babbler		<i>Stachyris rufifrons</i>
Paradise Flycatcher		<i>Terpsiphone paradisi</i>
Abbot's Babbler		<i>Trichastoma abotti</i>
Red-capped Babbler		<i>Timalia pileata</i>
Striated Babbler		<i>Turdoides earlei</i>
Jungle Babbler		<i>Turodoides striatus</i>
Black Throated Thrush		<i>Turdus ruficollis</i>
Chestnut Headed Yuhina		<i>Yuhina castaniceps</i>
Yellow Napped Yuhina		<i>Yuhina flavicollis</i>
Black Chinnedyuhina		<i>Yuhina nigrimenta</i>
White Bellied Yuhina		<i>Yuhina xantholeuca</i>
Golden Mountain Thrush		<i>Zoothera dauma</i>
Orange Headed Ground		<i>Zoothera citrina</i>
NECTARINIDAE		
Mrs. Gould's Sunbird		<i>Aethopyga gouldiae</i>
Yellow Backed Sunbird		<i>Aethopyga siparaja</i>
Purple Rumped Sunbird		<i>Nectarinia zeylonica</i>
Little Spiderhunter		<i>Arachnothera longirostris</i>
Streaked Spiderhunter		<i>Arachnothera magna</i>
Van Haselts Sunbird		<i>Nectarinia sperata</i>
Purple Sunbird		<i>Nectarinia asiatica</i>
OTIDIDAE		
Bengal Florican		<i>Eupodotis bengalensis</i>
PARIDAE		
Grey Tit		<i>Parus majer</i>
PELECANIDAE		
Spotted Billed Pelican		<i>Pelecanus philippensis</i>
PHALACROCORACIDAE		
Darter or Snakebird		<i>Anhinga rufa</i>
Shag		<i>Phalacrocorax fuscicollis</i>
PHASIANIDAE		
White Cheeked Hill Partridge		<i>Arborophila atrogularis</i>
Rufus Throated Hill Partridge		<i>Arborophila rufogularis</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Bamboo Partridge		<i>Bambusicola fytchii</i>
Blue Breasted Quail		<i>Coturnix chinensis</i>
Rain Quail		<i>Coturnix coromandelica</i>
Assam Black Partridge		<i>Francolinus francolinus</i>
Swamp Partridge		<i>Francolinus gularis</i>
Red Jungle Fowl		<i>Gallus gallus</i>
Black Breasted Kalij		<i>Lophura laucomelana</i>
Common Pea Fowl		<i>Pavo cristatus</i>
Burmese Fowl		<i>Pavo muticus</i>
Peacock pheasant		<i>Polyplectron bicalcaratum</i>
PICIDAE		
Red Headed Bay Wood-pecker		<i>Blythipicus pyrrhotis</i>
Large Golden Beaked Wood-pecker		<i>Crysocolaptes lucidus</i>
Stripe Breasted Pied Wood-pecker		<i>Picoides atratus</i>
Grey-crowned Pigmy Wood-pecker		<i>Picidus canicapillus</i>
Yellow Fronted Pied Wood-pecker		<i>Picoides mahrattensis</i>
Fulvous Breasted Pied Wood-pecker		<i>Picoides macei</i>
Pigmy Wood-pecker		<i>Picoides nanus</i>
Lesser Golden Backed Wood-pecker		<i>Dinopium benghalense</i>
Golden Backed Three Toed Wood-pecker		<i>Dinopium javanese</i>
Yellow Fronted Rised Wood-pecker		<i>Dinopium marnathensis</i>
Pale Headed Wood-pecker		<i>Gecinulu grantia</i>
Heart Spotted Wood-pecker		<i>Hemicircus canente</i>
Rufous Bellied Wood-pecker		<i>Hypopicus hyperythrus</i>
Wryneck Wood-pecker		<i>Junx torquilla</i>
Rufous Wood-pecker		<i>Micropternus braeahyurus</i>
Great Slaty Headed Wood-pecker		<i>Mulleripicus pulverulentus</i>
Speckled Piculet		<i>Picumnus innominatus</i>
Black Naped Green Wood-pecker		<i>Picus canus</i>
Small Yellow-naped Wood-pecker		<i>Picus ehorolophus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Large Yellow-naped Wood-pecker		<i>Picus flavinucha</i>
Little Scaly Bellied Green Wood-pecker		<i>Picus myrmecophoneus</i>
Rufous Piculet		<i>Sasia ochracea</i>
PITTIDAE		
Indian Pitta		<i>Pitta brachyura</i>
Blue Pitta		<i>Pitta cyanea</i>
Blue Winged Pitta		<i>Pitta moluccensis</i>
Blue napped pitta		<i>Pitta nipalensis</i>
Green Breasted Pitta		<i>Pitta sordida</i>
PLOCEIDAE		
Black-throated Baya		<i>Ploceus bengalensis</i>
Streaked Baya		<i>Ploceus manyar</i>
Baya		<i>Ploceus philippinus</i>
PODARGIDAE		
Hodgson's Frogmouth		<i>Batrachostomus hodgsoni</i>
PSITTACIDAE		
Lorikeet		<i>Loriculus vernalis</i>
Red-breasted Parakeet		<i>Psittacula alexandari</i>
Blossom Headed Parakeet		<i>Psittacula cyanocephala</i>
Large Indian Parakeet		<i>Psittacula eupatria</i>
Slaty Headed Parakeet		<i>Psittacula finschii</i>
Rosering Parakeet		<i>Psittacula krameri</i>
Eastern Blossom Headed Parakeet		<i>Psittacula roseata</i>
PTEROCLIDAE		
Painted Sandgrouse		<i>Pterocles indicus</i>
PYCNONTIDAE		
White Throated Bulbul		<i>Criniger flavalus</i>
Brown Eared Bulbul		<i>Hypsipetes havalus</i>
Black Bulbul		<i>Hypsipetes madagascariensis</i>
Rufous Bellied Bulbul		<i>Hypsipetes meclellandi</i>
Olive Bulbul		<i>Hypsipetes viridescens</i>
Black Headed Bulbul		<i>Pycnonotus atriceps</i>
Redvented Bulbul		<i>Pycnonotus cafer</i>
Blyth's Bulbul		<i>Pycnonotus fiavescens</i>
Redwhiskered Bulbul		<i>Pycnonotus jocosus</i>
Black Headed Yellow Bulbul		<i>Pycnonotus melanicterus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Finch-billed Bulbul		<i>Spizixos canifrons</i>
RALLIDAE		
Brown Crake		<i>Amauornis akool</i>
Ruddy Crake		<i>Amauornis fusca</i>
White Breasted Waterhen		<i>Amauornis phoenicurus</i>
Elwe's Crake		<i>Amauornis bicolor</i>
Coot		<i>Falica atra</i>
Water Cock, Kora		<i>Gallicrex cinerea</i>
Moorhen		<i>Gallinula chloropus</i>
Purple Moorhen		<i>Porphyrio prohyrio</i>
Water Rail		<i>Rallus aquaticus</i>
SITTIDAE		
Chestnut Bellied Nuthatch		<i>Sitta eastanea</i>
Beautiful Nuthatch		<i>Sitta formosa</i>
Velvet Fronted Nuthatch		<i>Sitta frontalis</i>
STRIGIDAE		
Spotted Owlet		<i>Athena brama</i>
Short Eared Owl		<i>Asio flammeus</i>
Eagle Owl		<i>Bubo bubo</i>
Tawny Fish Owl		<i>Bubo flavipes</i>
Forest Eagle Owl		<i>Bubo nipalensis</i>
Brown Fish Owl		<i>Bubo zeylonensis</i>
Pigmy Owlet		<i>Glaucidium brodei</i>
Barred Owlet		<i>Glaucidium cuculoides</i>
Brown Hawk Owl		<i>Ninox scutulata</i>
Collard Scops Owl		<i>Otus bakkamoena</i>
Scops Owl		<i>Otus scops</i>
Spotted Scops Owl		<i>Otus spilocephalus</i>
Bay Owl		<i>Phodilus badius</i>
Barn Owl		<i>Tyto alba</i>
Grass Owl		<i>Tyto capensis</i>
STURNIDAE		
Jungle Myna		<i>Acridotheres fuscus</i>
Bank Myna		<i>Acridotheres ginginianus</i>
Short Crested Myna		<i>Acridotheres javanicus</i>
Common Myna		<i>Acridotneres tristis</i>
Glossy Starling		<i>Aplonis panayensis</i>
Crackle or Hill Myna		<i>Gracula religiosa</i>
Spotted Winged Stare		<i>Saroglossa spiloptera</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Pied Myna		<i>Sturnus contra</i>
Grey Headed Myna		<i>Sturnus malabaricus</i>
Brahminy Myna		<i>Sturnus pagodarum</i>
THRESKIORITHIDAE		
Glossy Ibis		<i>Plegadis falcinellus</i>
Black Ibis		<i>Pseudibis papillosa</i>
White Ibis		<i>Threskiornis acthiopica</i>
TROGONIDAE		
Red Headed Trogon		<i>Harpactes erythrocephalus</i>
TURNICIDAE		
Common Bustard Quail		<i>Turnix suscitator</i>
Little Bustard Quail		<i>Turnix sylvatica</i>
UPUPIDAE		
Hoopee		<i>Upupa epops</i>
ZOSTEROPIDAE		
White eye		<i>Zosterops palpebrosa</i>

6. All the individuals of the following species or sub-species of mammals;

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Binturong		<i>Arctictis binturong</i>
Wild Dog		<i>Cuon alpinus</i>
Hyeana		<i>Hyeana hyeana</i>
Clouded Leopard		<i>Felis nebulosa</i>
Fishing Cat		<i>Felis viverrina</i>
Golden Cat		<i>Felis temmincki</i>
Jungle Cat		<i>Felis chaus</i>
Marbled Cat		<i>Felis marmorata</i>
Leopard Cat		<i>Felis bengalensis</i>
Bengale Tiger		<i>Panthera tigris tigris</i>
Leopard		<i>Panthera pardus</i>
Small-toothed Palm Civet		<i>Arctogalidia trivargata</i>
Himalayan Palm Civet		<i>Paguma laryata</i>
Palm Civet		<i>Paradoxurus hermaphroditus</i>
Small Indian Civet		<i>Viverricula indica</i>
Common Mongoose		<i>Herpestes edwardsi</i>
Asiantic Black Bear		<i>Selenarctos thibetanus</i>
Sloth Bear		<i>Melursus ursinus</i>
Sun Bear		<i>Helarctos malayanus</i>
Hog Badger		<i>Arctonyx collaris</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
Claw less Otter		<i>Aonyx cinerea</i>
Common Otter		<i>Lutra lutra</i>
Smooth Indian Otter		<i>Lutra perspicillata</i>
Honey Badger		<i>Mellivora capansis</i>
PHOLIDOTA		
Indian Pangolia		<i>Manis crassicaudata</i>
Malayan Pangolin		<i>Manis javanica</i>
RODENTIA		
Brushtailed Porcupine		<i>Atherurus macrourus</i>
Indian Porcupine		<i>Hystrix indica</i>
Flyeng Squirrel		<i>Petaurista petaurista</i>
Pallasis Squirrel		<i>Callosciurus erythraeus</i>
Hoary Bellied Hymalayan Squirrel		<i>Callosciurus pygery-thrus</i>
Orange Bellied Himalayan Squirrel		<i>Dremomys lakriah</i>
Five-Striped Palm Squirrel		<i>Funambalus pennati</i>
Three striped Palm Squirrel		<i>Funambalus palmaram</i>
Malayan Giant Squirrel		<i>Ratufa bicolor</i>
Giant Flying Squirrel		<i>Petaurista elegans</i>
INSECTIVORA		
Pigmy Shrew		<i>Suncus etruscus</i>
Grey Musk Shrew		<i>Suncus murinus</i>
Kastren Mole		<i>Talpa micrura</i>
LAGOMORPHA		
Hispid Hare		<i>Caprolagus hispidus</i>
PRIMATE		
Hoolock		<i>Hylobates hoolock</i>
Assamese Macaque		<i>Macaca assamensis</i>
Crab-eating Macaque		<i>Macaca fascicularis</i>
Rhesus Macaque		<i>Macaca mulatta mulatta</i>
Pigtailed Macaque		<i>Macaca nemestrina</i>
Langur		<i>Presbytis entellus</i>
Capped Langur		<i>Presbytis pileatus</i>
Phayre's Leaf Monkey		<i>Presbytis phayrei</i>
Slow Loris		<i>Nycticebus coucang</i>
PROBOSCIDEA		
Asiatic Elephant		<i>Elephas maximus</i>
PERISSODACTYLA		
Lesser One Horned Rhinoceros		<i>Rhinoceros sondaicus</i>

ENGLISH NAME	FAMILY NAME	SCIENTIFIC NAME
ARTIODACTYLA		
Antelope		
Nilgai		<i>Boselaphus tragocamelus</i>
Banteng		<i>Bos banteng</i>
Gaur/Indian Bison		<i>Bos gaurus</i>
Gayal Bison		<i>Bos frontalis</i>
Wild Buffalo		<i>Babalus bubalis</i>
Serow		<i>Capricornis sumatraensis</i>
Swamp Deer		<i>Cervus duvaceli</i>
Sambar		<i>Cervus unicolor</i>
Spotted Deer		<i>Axis axis</i>
Hog Deer		<i>Axis porcinus</i>
Barking Deer		<i>Muntiacus muntjak</i>
CETACEA		
Common Dolphin		<i>Delphinus delphis</i>
Little Porpoise		<i>Neophocaena phocaenoides</i>
Gangetic Dolphin		<i>Plantanista gangetica</i>
Blus Whale		<i>Balaenoptera musculus</i>
Fin Whale		<i>Balaenoptera physalus</i>

DACCA
The 27th March, 1973.

ABU SAYEED CHOWDHRY
President of
the People's Republic of Bangladesh
JUSTICE M. H. RAHMAN
Secretary

[Published In the Bangladesh Gazette, Part I, dated the 15th November 1973]

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FORESTS, FISHERIES AND LIVESTOCK

NOTIFICATION

No. I/For-175/73 695-5th November 1973-in exercise of powers conferred by clause (1) of Article 9 of the Bangladesh Wild Life(Preservation) Order, 1973(P.O. No. 23 of 1973), the Government is pleased to specify the 31st January 1974, to be the date within which a person having the control, custody or possession of any wild animals or meat or trophy of any wild animal shall declare the number and description of such animal, meat or trophy and the place where it is kept to the Divisional Forest Officer of any Forest Division who is hereby authorised to receive such declaration.

By order of the President

NURUDDIN AHMAD

Secretary

[Published In the Bangladesh Gazette, Part I, dated the 10th January 1974]

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FORESTS, FISHERIES AND LIVESTOCK

Section I

No. I/For. 99/73/740-27th December 1973- In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wildlife (Preservation) Order, 1973 (P.O. No. 23 of 1973), the Government is pleased to authorise the Chief Conservator of Forests for the purpose of discharging functions under clause (3) of Article 6 and sub-clause (ii) of clause (1) and clause (2) of Article 13 of the said Order.

No. I/For. 99/73/741-27th December 1973-In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wild Life (Preservation) Order, 1973 (P.O. No. 23 of 1973), the Government is pleased to authorise all Forest Officers not below the rank of Deputy Conservator of Forests or Divisional Forest Officers for the purpose of discharging functions under clause (2) of Article 8, clause (4) of Article 9, clauses (1), (2) and (4) of Article 15, Article 20, clause (3) of Article 21 and Article 29 of the said Order, within their respective jurisdiction.

No. I/For. 99/73/742-27th December 1973-In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wild Life (Preservation) Order, 1973 (P.O. NO.23 of 1973), the Government is pleased to authorise all Forest Officers not below the rank of Forester for the purpose of discharging functions under clause(2) of Article 9 and Article 37 of the said Order, within their respective jurisdiction.

No. I/For. 99/73/743-27th December 1973-In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wild Life (Preservation) Order, 1973 (P.O. No. 23 of 1973), the Government is pleased to authorise the following officers for the purpose of discharging functions under clause (5) of Article 9, Articles 16, 17, 18 and clause (1) of Article 31 of the said Order, within their respective jurisdiction, namely

- (1) All Forest Officers not below the rank of Foresters; and
- (2) All Police Officers not below the rank of Sub-inspector.

No. I/For. 99/73/744-27th December 1973- In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wild Life (Preservation) Order, 1973 (P.O. No.23 of 1973), the Government is pleased to authorise the following for the purpose of discharging functions under clause (2) of Article 12 of the said Order, namely:

- (1) Chief Conservator of Forest; and
- (2) All Conservator of Forests within their respective jurisdiction.

No. I/For. 99/73/745-27th December 1973-In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wild Life (Preservation) Order, 1973 (P.O. No. 23 of 1973), the Government is pleased to authorise the following officers for the purpose of discharging functions under Article 27 of the said Order, namely :

- (1) All Forest Officers not below the rank of Deputy Conservator of Forests or Divisional Forest Officers; and
- (2) All Police Officers in-charge of the Police stations within their respective jurisdiction.

No. I/For. 99/73/746-27th December 1973-In exercise of the powers conferred by clause (j) of Article 2 of Bangladesh Wildlife (Preservation) Order, 1973 (P.O. No. 23 of 1973), the Government is pleased to authorise the following officers for the purpose of discharging functions under Article 23 of the said Order, namely:

- (1) All Magistrates;
- (2) All Police Officers ; and
- (3) All Forest Officers within their respective jurisdiction.

No. I/For. 99/77/747-27th December 1973-In exercise of the powers conferred by clause (j) of Article 2 of the Bangladesh Wildlife (Preservation) Order, 1973 (P.O. No.23 of 1973) , the Government is pleased to authorise all Forest Officers not below the rank of Assistant Conservator of Forests or Subdivisional Forest Officers for the purpose of discharging functions under Article 38 of the said Order, within their respective jurisdiction.

By order of the President
NURUDDIN AHMAD
Secretary

[Published in the Bangladesh Gazette, Part I, dated the 12th September 1974]

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FORESTS, FISHERIES AND LIVESTOCK

Section I

Dacca, the 28th August, 1974

No. I/For. 196/73/229-In exercise of the power conferred by Article 36(1) of the Bangladesh Wildlife (Preservation) Order, 1973 (P.O.No. 23 of 1973), the Government of Bangladesh is pleased to empower the Conservator of Forests (Wildlife) to discharge the functions under sub-clauses (a), (b) and (c) of clauses (1) of Article 36 of the said Order.

By order of the President
NURUDDIN AHMAD
Secretary

[Published in the Bangladesh Gazette Extraordinary, dated the 22st August 1975]

MINISTRY OF FORESTS, FISHERIES AND LIVESTOCK

Section 1

NOTIFICATION

Dacca, the 21st August 1975

No. S. R. O. 297-L/75- In exercise of the powers conferred by clause (1) Article 3 of the Bangladesh Wildlife (Preservation) Order, 1973 (P.O.No. 23 of 1973), the Bangladesh Government is pleased to empower the Chief Conservator of Forests as Chief Wildlife () for the purpose of discharging functions under clause (2) of Article 1 of the said order.

By order of the President

S.M.M AHMAD
Deputy Secretary

[Published in the Bangladesh Gazette Extraordinary, dated the 13th September 1975]

GOVERNMENT OF BANGLADESH OF THE PEOPLE'S REPUBLIC OF BANGLADESH

MINISTRY OF FORESTS, FISHERIES AND LIVESTOCK

Section 1

Dacca, the 13th September 1975

No. S.R.O. 324-L/75-In exercise of powers conferred by clause (I) Article 9 of the Bangladesh Wildlife (Preservation) Order, 1973 (P.O.No.23 of 1973), the Government is pleased to specify the 20th September 1975, to be the date within which a person having the control, custody or possession of lizard () skins of any variety shall declare the number and description of such skins and the place where it is kept to the Chief Conservator of Forests or the Divisional Forest Officers.

By order of the President

S.M.M. AHMAD

Deputy Secretary

B.G.P.-83/84-5303B-500-84

APPENDIX A9: LEGAL BOUNDARY DEFINITION OF THE SUNDARBANS RESERVED FOREST

FOREST AND LAND BASE COMPONENTS

Location, Area and Status

The Sundarbans Forest is located at the southern extremity of the Gangetic Delta bordering the Bay of Bengal. (Map-1). the forests extend about 50 miles within the boundary of the civil districts of Bagerhat, Khulna and Satkhira. The forests occupy the south-western corner of Bangladesh between longitudes 89°0'E and 89°55' and latitudes 21°30' and 22°30'N. In the west it is contiguous to the Indian Sundarbans. The forests are bounded on the east by the Baleswar river, which separates the forest from cultivated land and on the west by the International boundary with India, which follows the Harin-bhanga-Raimongol-Kalindi river system. It is bounded on the south by the Bay of Bengal and on the north by a complex of small rivers and streams which also separate the forest from cultivated land.

The total land area of the Sundarbans (as per ODA) is 4,01,632 ha. of which 3,95,614 ha is forest and 6,118 ha non-forest comprising of scrubs, grassland, bare ground, clearings and plantations. Mr A.M. Chowdhry in his working plan (1960-61 to 1979-80) has stated that total land is 5,77,052 ha. out of which 4,07,147 ha, is forest land 3,80,340 ha. productive forest 26807 ha. unproductive forest and 1,69,905 ha. water bodies. The forests have been divided into four Ranges. The summary of area by Range, Compartment and Block is included in the App. II.

Whole of the forest covered by this working plan is reserved forests.

Physical Features

Geology

The deltaic region of which the Sundarbans is a part appears to have been formed originally, together with the Bay of Bengal, by the subsidence of a earlier land surface below the sea level. The Delta now consists of alluvium.

Ref: Rahman, Zillur 1993. Working Plan of Sundarbans Division, Page 1.

A list of compartments with gross area including rivers and Khals, and land area is given in Appendix II.

State of boundaries

The boundaries of the forests are mostly natural ones formed by creeks rivers, estuaries and the sea. Artificial boundaries are of small extent. The length of boundaries covered by each of creeks and rivers, estuaries and the sea, and artificial lines are as follows-

Creeks and rivers	210 miles
Estuaries and the sea	47 miles
Artificial	2.8 miles

The distances have been calculated from the new set of maps (1" to ½ mile maps prepared for this working plans).

Position of the artificial boundary has not changed since the compilation of the last working plan. The artificial boundaries are as follows-

- (i) Between the Bhola river and the Bogi khal 2,530 yards demarcated by wooden pillars, and an artificial channel navigable by small boats at high tide.
- (ii) Around a small plot on the forest side of Chachan Gang, near Chandpai Revenue Station 1,375 yards demarcated by wooden boundary pillars.
- (iii) Between Dhaji Khal and Mirgang 829 yards demarcated by an artificial channel and wooden boundary pillars. (The channel has altered its course, slightly towards the forest side, and the pillars should be taken as the authentic boundary).
- (iv) Between the Kalindri river and Madargang, demarcating the small piece of reserve which forms the compound of Koikhali Revenue Station-281 yards, demarcated by two wooden boundary pillars.

Legal Position

The whole of the forest covered by this Working Plan is reserved forest and provisions of the Forest Act of 1927 are applicable in this area. The list of Notifications relating to reservations and disforestations are given in Appendix III. Transit rules, formula for measurement of boats and drift rules are given in Appendix IV, V and VI.

Rights and concessions

No right or concession in the Forest exists in favour of any person or community.

Ref. : Chowdhry, A. M. 1968. Working Plan of Sundarbans Forest Division for the period from 1960-61 to 1979-80, Vol I, Chapter I, Part I, Page 10.

[App VIII]

EXPLANATION OF AREA STATEMENT**Summary of the areas enclosed by the Forest boundaries of the Division**

The boundaries of the division will be found on the working circle map, and, in further detail, on the 2-inch stock maps and the 1-inch compartment maps. The following are the areas enclosed by the boundaries, as depicted on these maps:

Range	Civil Subdivision	Land	Char	Water		Total
				Small khals and creeks	Large khals, rivers and estuaries	
		Acres	Acres	Acres	Acres	Acres
Reserved Forests						
Sarankhola	Bagerhat	177,917	10,296	5,654	77,710	271,577
	Bagerhat	180,136	3,825	5,320	75,654	289,146
Chandpai	Khulna	22,516	1,099	596		
Khulna	Khulna	358,683	6,218	10,612	136,572	512,085
Satkhira	Satkhira	273,817	10,591	10,557	114,806	409,771
Basirhat	Basirhat	414,703	11,832	18,937	193,246	638,718
	Total	1,427,77	43,861	51,676	597,988	2,121,297
Protected Forests						
	Alipore	118,388	9,311	4,775	212,094	408,503
Namkhana	Diamond Harbour	36,421	26,467	1,047		
	Total	154,809	35,778	5,822	212,094	408,503
GRAND TOTAL		1,582.58	79,639	57,498	810,082	2,529,800

Note The area of large khals, rivers and estuaries, has not always been calculated separately for the civil subdivisions. The boundary between the Bagerhat and Khulna subdivisions is the eastern bank of the Passur river; consequently, the forests of Chandpai Range within the Khulna subdivision, consist of Dubla and Tinkona Islands in Compartment 45. The boundary between the Alipore and Diamond Harbour subdivisions is the midstream of the Thakuran river; the forests in the Diamond Harbour subdivision, consist of Compartment 75, Swan Island and another char of Compartment 72 in the Thakuran river; the remainder of Compartment 72, and Compartments Nos. 71, 73 and 74 comprise the forests of the Alipore subdivision.

Ref: Curtis, S. J. 1933. Working Plan for the Forests of the Sundarbans Division for the period from 1st April 1931 to 31 March 1951, Vol.II, Page 105.

FOREST DIVISION

Register of Reserved Forests-(continued)

Date of Entry	Description of Boundaries
15-07-1939	<p>Area</p> <p>1,470,368 acres = 2,297.45 square miles/5971.07 Km²</p> <p>Boundaries</p> <p>North From a wooden post No. 1 on the east bank of the Kalindri Gang situated at a point 684 feet north of an artificial channel joining the Kalindri Gang and the Jamuna or Madar river, a demarcated line with an embankment 843 feet long and bearing 72°-30' along the south boundary of lot no. 164, locally known as Koikhalibad, to a wooden post No.2 on the Jamuna river; thence southwards along the Jamuna river to its junction with the Golkhali Khal, and along this Khal to its junction with the Dhaji khal; thence the Dhaji khal to a wooden post marked No.3; thence an artificial channel with an embankment having a general bearing of 1°-30' for 2,400 feet to a wooden post No.4; thence an embankment being generally 62° for a distance of 88 feet to its junction with the Mirgang at wooden post No.5; thence the Mirgang, Churkuni khal, Dumkoli khal, Kadamtoli khal and Chaur Gang to its junction with the Arpangasia river; thence the Arpangasia river; the Singlagolkhali khal, the Sakbaria khal or Koira Gang, Moisdali khal, Harda khal, the Sipsa river, the Sutar khal, the Bhaddar Gang, Ladobi khal, the Dhangar khal, the Passur river, the Chachan Gang up to a small khal near Chandpai revenue station, demarcated by wooden posts No.6 to 21 and thence the Khurma khal to its junction with the Bhola Gang.</p> <p>East The Bhola Gang to a wooden post No. 22 on its eastern bank; thence an artificial line demarcated by posts Nos.22 to 26 forming part of the south boundary of lot No.6; thence the Bogi khal to its junction with the Haringhata or Baleswar river and thence the Haringhata river to the Bay of Bengal.</p> <p>South The Bay of Bengal from the Haringhata river to the Raimangal river.</p> <p>West The Raimangal river from the Bay of Bengal to its junction with the Kalindri Gang; and thence the Kalindri Gang to post no. 1.</p> <p style="text-align: right;">J. H. Kerr Secy. to the Govt. of Bengal.</p> <p>Vide Calcutta Gazette, dated the 10th February, 1915 Part 1 page 236.</p>

NOTIFICATION

March 4, 1915. **No. 1439 For. Khulna** The 8th February 1915 - With reference to the Notification, dated the 23rd January 1879, published under section 34 of the Indian Forest Act, 1878 (vii of 1878), at pages 71-81, Part 1 of the Calcutta Gazette of the 29th idem, as amended by the subsequent notifications noted in the margin, declaring the Sundarbans Forest in the Khulna district to be a reserved forest, it is hereby notified that the area and boundaries of that forest are as follows:

- (1) Dated the 14.4.1883
- (2) Dated the 18.7.1890
- (3) No. 1605 T.R. dt. the 22nd September 1910.

Area

1,470,368 acres=2,297.45 square miles/5971.07 Km²

Boundaries

- North** From a wooden post No.1 on the east bank of the Kalindri Gang situated at a point 684 feet north of an artificial channel joining the Kalindri gang and the Jamuna or Madar river, a demarcated line with an embankment 843 feet long and bearing 72°-30' along the south boundary of lot no. 164, locally known as Koikhalibad, to a wooden post No.2 on the Jamuna river; thence southwards along the Jamuna river to its junction with the Golkhali khal, and along this Khal to its junction with the Dhaji khal; thence the Dhaji khal to a wooden post marked No.3; thence an artificial channel with an embankment having a general bearing of 1°-30' for 2,400 feet to a wooden post No.4; thence an embankment being generally 62° for a distance of 88 feet to its junction with the Mirgang at wooden post No.5; thence the Mirgang, Churkuni khal, Dumkoli khal, Kadamtoli khal and Chaur Gang to its junction with the Arpangasia river; thence the Arpangasia river, the Singlagolkhali khal, the Sakbaria khal or Koira Gang, Moisdali khal, Harda khal, the Sipsa river, the Sutar khal, the Bhaddar Gang, Ladobi khal, the Dhangar khal, the Passur river, the Chachan Gang up to a small khal near Chandpai revenue station, demarcated by wooden posts No.6 to 21; and thence the Khurma khal to its junction with the Bhola Gang.
- East** The Bhola Gang to a wooden post no.22 on its eastern bank; thence an artificial line demarcated by posts Nos.22 to 26 forming part of the south boundary of lot No.6; thence the Bogi khal to its junction with the Haringghata or Baleswar river and thence the Haringhata river to the Bay of Bengal.
- South** The Bay of Bengal from the Haringhata river to the Raimangal river.
- West** The Raimangal river from the Bay of Bengal to its junction with the Kalindri Gang; and thence the Kalindri Gang to post No.1.

J. H. Kerr
Secy. to the Govt. of Bengal.

Vide Calcutta Gazette, dated the 10th February, 1915 Part I page 236.

[Articles 44,46 F D Code, 7th edn]

Form No. 1.

Forest Department

Register of Reserved Forests

NAME OF RESERVE Khulna Sundarbans.CIVIL DISTRICT or TERRITORY and REVENUE SUB-DIVISION in which situated Khulna District and Khulna Sadar, Bagerhat and Satkhira Subdivisions.NUMBER AND DATE OF GAZETTE NOTIFICATION declaring the area of a Reserved or State Forest 1439 For the 8th February 1915 (for a copy of the Notification, See page 3(a).

AREA STATEMENT

Particulars	Area in acres	Remarks
Reserved under Notification no. 1439 For the 8th February 1915	14,70,368	=2297.45 Sq miles /5971.02 km ² Forest area 1,703,58 Sq.miles= 1,090,291 Water area <u>593.87</u> = <u>380077</u> 2297.45 1,470,368
Addition after recalculation of the area as the time of preparing Revised Working Plan in 1930.	12,211	Found Share-72,437 acres in Satkhira Subdivisions Found Excess+40,185 acres in Bagerhat Found excess + <u>44463</u> acres in Khulna Sadar subdivisions 12,211
	14,82,579	

APPENDIX A10: DEFINITIONS OF IUCN PROTECTED AREAS

DEFINITIONS OF IUCN PROTECTED AREAS

Categories and management objectives of protected areas

1. **Scientific Reserve/Strict Nature Reserve** : to protect nature and maintain natural processes in an undisturbed state in order to have ecologically representative examples of the natural environment available for scientific study, environmental monitoring, education and for the maintenance of genetic resources in a dynamic and evolutionary state.
2. **National Park** : to protect natural and scenic areas of national or international significance for scientific, educational and recreational use.
3. **Natural Monument/Natural Landmark** : to protect and preserve nationally significant natural features because of their special interest or unique characteristic.
4. **Managed Nature Reserve/Wildlife Sanctuary** : to assure the natural conditions necessary to protect nationally significant species, groups of species, biotic communities, or physical features of the environment where these require specific human manipulation for their perpetuation.
5. **Protected Landscape or Seascape** : to maintain nationally significant natural landscapes which are characteristic of the harmonious interaction of man and land while providing opportunities for public enjoyment through recreation and tourism within the normal life style and economic activity of these areas.
6. **Resource Reserve** : to protect the natural resources of the area for future use and prevent or contain development activities that could affect the resource pending the establishment of objectives which are based upon appropriate knowledge and planning.
7. **Natural Biotic Area/Anthropological Reserve** : to allow the way of life of societies living in harmony with the environment to continue undisturbed by modern technology.
8. **Multiple-Use Management Area/Managed Resource Area** : to provide for the sustained production of water, timber, wildlife, pasture, and outdoor recreation, with the conservation of nature primarily oriented to the support of economic activities (although specific zones may also be designed within these areas to achieve specific conservation objectives).

Abridged from IUCN (1984). Categories and Criteria for Protected Areas in McNeely, J.A and Miller, K.R. (Eds), National Parks, Conservation and Development. The Role of Protected Areas in Sustaining Society. Smithsonian Institution Press, Washington. pp. 47-53

IUCN 1994 definition

CATEGORY VI Managed Resource Protected Area

Definition

Area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Objectives of management

- To protect and maintain the biological diversity and other natural values of the area in the long term.
- To promote sound management practices for sustainable production purposes.
- To protect the natural resource base from being alienated for other land-use purposes that would be detrimental to the area's biological diversity.
- To contribute to regional and national development.

Guidance for selection

The area should be at least two-thirds in a natural condition, although it may also contain limited areas of modified ecosystems; large commercial plantations would not be appropriate for inclusion.

They should be large enough to absorb sustainable resource uses without detriment to its overall long-term natural values.

Organisational responsibility

management should be undertaken by public bodies with an unambiguous remit for conservation and carried out in partnership with the local community; or management may be provided through local custom supported and advised by governmental or non-governmental agencies. Ownership may be by the national or other level of government, the community, private individuals, or a combination of both of these.

Equivalent Category in the 1978 system summarised above

This category does not correspond directly with any of those in the 1978 system, although it is likely to include some areas previously classified as "Resource Reserves", "Natural Biotic Areas/Anthropological Reserves" and "Multiple Use Management Areas/Managed Resource Areas".

APPENDIX A11: THE TIMBER EXTRACTION MORATORIUM

Government of Bangladesh
Office of the Chief Conservator of Forests
Bana Bhaban, Gulshan Road, Mohakhali
Dhaka-12

No- CCF(G)/IT-194/860

Date 26-10-89

To
The Conservator of Forests
Plantation Circle
Khulna

Sub: Regarding stoppage of felling and selling of timber from all type of forests under the control of Forest Directorate

Under directives from the Hon'ble Minister in charge of the M/O Environment & Forests, this is to inform you that all sorts of felling, logging, extraction and sale of timber from all forest under the control of Forest Directorate are temporarily kept in abeyance. However, this directive will not be applicable to BFIDC (Bangladesh Forest Industries Development Corporation). This is further to inform you that henceforth all seized timber should be supplied to BFIDC at Govt. fixed price in lieu of sale in auction.

signed
R. A. Chowdhry
26/10/94
C C F Bangladesh

No-CCF(Gen)/IT -194 dated 26-10-89

Copy forwarded for favour of information to the private secretary to the Honourable Minister, in charge of MOEF. He is requested to bring it to the kind notice of the Honourable Minister.

Additional Secretary in-charge, MOEF, Bangladesh Secretariate, Dhaka

This has got reference to this office No-CCF(Gen) T-194/75 Date 04-9-89

It is requested to approve this written order. In this connection he is further requested to kindly pass necessary orders for supplying seized timber, firewood etc. to chairman, BFIDC at Govt. fixed price.

signed
C C F
Bangladesh

Government of the People's Republic of Bangladesh
Ministry of Environment & Forests
Section- II

Notification No. Sha -2/MOEF - 192/90/580

Dated 11.9.90

Sub : Regarding imposition of restriction on tree felling

Government have been pleased to decide that in order to preserve Bio-diversity of the country there will be no felling of trees from the natural reserve forests upto the year 2000.

2. All concerned are directed to take necessary steps in this connection.

Signed
A Z M Hossain Khan
Joint Secretary(Administration)

Deputy Chief Conservator of Forests in-charge
Forest Directorate, Ban Bhaban
Mohakhali, Dhaka

Copy to:

P.S. to the Secretary, M/O E&Forest, Bangladesh Secretariate, Dhaka

No-ACCF(Gen)/IT-194/729

Dated 22.9.90

Copy forwarded for favour of information and necessary action to the following officers

1. Deputy Chief Conservator of Forests
2. All Conservator of Forests/Director
3. All Divisional Forest officers/Directors

Signed
Mohd Shafi
ACCF
for CCF Bangladesh

Government of the People's Republic of Bangladesh
Ministry of Environment & Forest
Section- III
Bangladesh Secretariate, Dhaka

Go No. MOEF(Sha -3)65/93/696

Dated 16.10.93

Sub : Regarding stoppage of felling of trees from Natural Reserve Forests upto the year 2000 to preserve Biodiversity.

All kinds of felling of trees from natural forests have been stopped upto the year 2000 to in order to preserve the Biodiversity of this country under G.O.No-Sha -2/MOEF-192/90/580 dated 11.9.90. This ban is still in force.

2. All concerned are directed to implement this order in toto and to take necessary action against the violators of the order.

Signed
Mohd. Serajul Islam
Deputy Secretary

Distribution :**a. For action**

1. Deputy Chief Conservator of Forests in-charge
2. All Deputy Chief Conservator of Forests
3. All Conservator of Forests
4. All Divisional Forest Officers

b. For information

1. Private Secretary to the Hon'ble Minister in-charge of the MOEF
2. Private Secretary to the Hon'ble State Minister in-charge of the MOEF
3. Private Secretary to the Secretary, MOEF

No. MOEF - (Sha-3)65/93/696(80)

Dated 16.10.93

Copy forwarded for favour of kind information & rendering necessary cooperation to: -

1. Inspector General of Police, Bangladesh, Dhaka
2. All Divisional Commissioners
3. All Deputy Inspector General of Police

Signed
M.A. N. Siddique
Senior Assistant Secretary

APPENDIX A12: FOREST CHARGES BY DATE OF APPROVAL

Forest Charges										
Forest product	Unit	Forest Charge by date of approval (Tk / unit)								
		Jul-73	Aug-80	Mar-82	Jan-86	Nov-89	Sep-90	Jan-92	93-94	Nov-94
A. Wood products										
Timber by species and girth class										
Sundri - < 2' girth	1 cft	2.00			8.00	Moratorium		25.00		25.00
- 2' - 3' girth	1 cft	3.00			15.00	"		40.00		40.00
- > 3' girth	1 cft	3.50			18.00	"		50.00		50.00
Passur - < 2' girth	1 cft	3.00			15.00	"		30.00		30.00
- 2' - 3' girth	1 cft	4.00			25.00	"		60.00		60.00
- > 3' girth	1 cft	4.00			30.00	"		80.00		80.00
Kankra - < 2' girth	1 cft	3.00			7.00	"		20.00		20.00
- 2' - 3' girth	1 cft	4.00			10.00	"		25.00		25.00
- > 3' girth	1 cft	4.00			12.00	"		35.00		35.00
Keora - < 2' girth	1 cft	2.00			7.00	"		15.00		15.00
- 2' - 3' girth	1 cft	3.50			10.00	"		20.00		20.00
- > 3' girth	1 cft	3.50			12.00	"		30.00		30.00
Baan - < 2' girth	1 cft	3.00			6.00	"		15.00		15.00
- 2' - 3' girth	1 cft	3.50			8.00	"		20.00		20.00
- > 3' girth	1 cft	4.00			8.00	"		30.00		30.00
Gewa - < 2' girth	1 cft	2.00			6.00	"		12.00		12.00
- 2' - 3' girth	1 cft	3.00			8.00	"		15.00		15.00
- > 3' girth	1 cft	3.50			9.00	"		20.00		20.00
Dhundul - < 2' girth	1 cft	3.00			7.00	"		30.00		30.00
- 2' - 3' girth	1 cft	4.00			9.00	"		40.00		40.00
- > 3' girth	1 cft	4.00			10.00	"		50.00		50.00
Others - < 2' girth	1 cft	3.00			6.00	"		12.00		12.00
- 2' - 3' girth	1 cft	3.00			8.00	"		15.00		15.00
- > 3' girth	1 cft	3.00			9.00	"		20.00		20.00
Gewa to KNM	1 cft	0.06			0.06		0.08	6.03	12.01	15.00
Sundri to KHBM	1 cft									3.00
Sundri for REB poles (net) 25' length	1 cft									154.25
Sundri for REB poles (net) 30 & 35' length	1 cft									162.25
Shingra to KHBM	1 cft									1.73
Goran firewood	100 mds	30.00	200.00		400.00	500.00				500.00
Selected Goran	100 mds	45.00	300.00		500.00	560.00				560.00
Sundri & Kankra	100 mds	20.00	180.00		500.00	600.00				600.00
Singra	100 mds	20.00	90.00							90.00
Keora, Dhundul & Passur	100 mds	15.00	140.00							140.00
Bhola, Jhr, Bhila and misc. fwd	100 mds	10.00	100.00		250.00	315.00				315.00
Gewa stump & branches	100 mds	12.00	100.00		200.00	300.00				300.00
Amur and Kripa	100 mds		140.00		300.00	440.00				440.00
Keora, Dhundul and Baen	100 mds	15.00			300.00	375.00				375.00
Jhana	100 mds				300.00	440.00				440.00
Brushwood (lop & top)	100 mds				300.00	440.00				440.00
Selected Goran	1 pc				1.00	1.25				1.25
B. Non wood products										
Fish - fresh iced (except Hisha & lobster)	1 md	3.00		15.00	30.00	85.00	50.00			50.00
Hisha	1 md	5.00		25.00	50.00	75.00	75.00			75.00
Dry fish	1 md	3.00		15.00	30.00	150.00	85.00			85.00
Lobster, shrimp and prawn	1 md			30.00	120.00	500.00	300.00			300.00
Gura chingri (small prawns)	1 md			15.00	45.00	60.00	60.00			50.00
Golpatte boat capacity < 500mds	100 mds	30.00			300.00	375.00	300.00			300.00
Golpatte / pon or less	1 pon				5.00	6.00				6.00
Honey	1 md	15.00			30.00	160.00	100.00			100.00
Unrefined wax	1 md	30.00			60.00	200.00	150.00			150.00
Refined wax	1 md	60.00			200.00	340.00	300.00			300.00
Oyster shells	100 mds	10.00			50.00	185.00	100.00			100.00
Nai and Matia grass	100 mds	10.00			20.00	30.00				30.00
Bet (cane)	100 mds	8.00			500.00	500.00				500.00
Sungress & all other grasses	100 mds	8.00			30.00	125.00	60.00			60.00
Hantal	100 mds	8.00			100.00	185.00				185.00
Hantal	1 pc	0.10			1.00	1.25				1.25
C. Hides & skins										
Tiger	1 pc				#####	Banned				Banned
Crocodile	1 pc				5000.00	-				-
Python	1 pc				2500.00	-				-
Other snakes	1 pc				5.00	-				-

APPENDIX A13: WOOD PROPERTIES OF SOME MANGROVE SPECIES

Species	Specific Gravity	Strength	Colour	Texture	Pre-treatment	Suitability for Transmission Poles	Remarks	Source
Sundri	166% compared to teak 0.96 (air dry volume)	Heavier and stronger than teak in almost all properties	Sapwood is pale reddish brown and heartwood is dark red to reddish brown	Even and fine textured. Grain is partially interlocked	Pre-treatment of chips prior to mechanical refining with NaOH and a mixture of Na ₂ SO ₄ and NaOH produces better pulp for making stronger hardboard than steam-cooked chips. Pre-treatment boards are less water resistant	Suitable as Transmission Pole after pressure treatment with oil-borne preservative conformity. Group-A Pole.	In machine test poor planing quality in hand tool test good planing quality in machine shaping quality in machine test fair shaping quality in hand tool test. Fair boring quality. Very poor turning quality.	Bulletin No. 10 Timber physics series, FRI, Ctg. Bangladesh May 1967 Bano Biggyan Patrika (fauna of forest science, Vol-17: No. 1 & 2, January and July 1968 FRI, Ctg. Bangladesh -do- Volume 12: No. 1 & 2 January and July 1983. -do- Volume 11: No. 1 & 2 January and July 1982
Passur	120% compared to teak 0.59 (air dry volume)	Heavier and stronger than teak in almost all properties but less stronger than kankra	Dark reddish brown	Uneven textured and nonlustrous		Suitable as transmission pole conform to group B	In machine test poor planing quality in handtool test, fair planing quality. Fair shaping quality in machine test. Fair shaping quality in handtool test. Good boring quality. Fair turning quality	Bulletin No. 11 timber physics series FRI, Ctg. Bangladesh June 1968 Bulletin No. 8 wood working series BFRI, Ctg. 1993.
Kankra	133% compared to teak 0.86 (air dry volume)	Heavier and stronger than teak in almost all properties	Light to dark brown	Even and fine textured		Suitable as transmission pole. Group - A	In machine test fair planing quality in handtool test, fair planing quality. Good shaping quality in machine test. Good boring quality. Fair turning quality.	Bulletin No. 11 Timber Physics series/BFRI, Ctg. June 1988 Bulletin No. 8. Wood working series/BFRI, Ctg. 1993.
Keora		- Medium dense and moderately strong timber - Keora of Bangladesh origin compares favourably with Indian Keora in all physical and mechanical properties. - Keora is comparatively weaker than Ctg. Teak in almost all properties.	Sapwood of grey colour and heartwood is light reddish brown.	Shallowly inter-locked grained in broad bands. Fine and even texture.	Hardboard made by steaming process is deficient in strength and water resistant properties		Use of sizing chemical can raise the board properties to the standard level.	Bano Biggyan Patrika Vol. 11: No. 1 and 2 Jan and July 1962 BFRI, Ctg. Bangladesh. Bulletin No. 7. Timber physics series BFRI, Ctg. June 1983

Species	Specific gravity	Strength	Colour	Texture	Finishing quality	Comments on Greenhouse tests for durability & graying	Remarks	Source
Baen	95% compared to teak (0.60)	Moderately strong and weaker than Teak & Sundri	- Sapwood is pale cream in colour on freshly cut surface turning of greyish brown with darker streaks subsequently. - Heartwood is yellowish to light brown.	Interlocked grained nonlustrous and coarse textured			- In machine test, poor planning quality. - In handtool test, poor planning quality. - Fair shaping quality in machine test. - Fair shaping quality in handtool test. - Fair boring quality. - Very poor turning quality.	Bulletin No. 10 Timber physics series BFRI, Ctg. May 1987 Bulletin No. 8 Wood working series BFRI, Ctg. 1993
Gewa	0.4 (air dry volume)	Soft and light	Whitish in colour	Straight grained Non-Septate, moderately long fibre. Less quantity of Parenchyma cells, open pores.	Suitable for newsprint		- In machine test, poor planning quality. - In handtool test, good planning quality. - Fair shaping quality in handwood test. - Poor shaping quality in handwood test. - Fair boring quality. - Fair morticing quality in machine test whereas poor morticing quality in handtool test. - Good turning property.	Bulletin No. 8 Wood working series BFRI, Ctg. 1993 Bulletin No. 9 Wood anatomy series BFRI, Ctg. 1990

APPENDIX A14: SITE DESCRIPTION OF PERMANENT SAMPLE PLOTS

Plot No : 1
 Map Reference : Photo no. 04-043, Map sheet 1h
 Date of Record : 22/02/87
 Junction of two khals, Bearing 170.30°, Distance 230 m. Witness tree - Sundri(78), bearing from plot centre post 10°, distance-185 cm respectively. The area is inundated in the high tide only. It is pure Sundri type. No mother tree for Gewa is left. Regeneration very poor. Tiger fern under growth. Illicit felling present. Recently both Sundri & Gewa are felled from the area. Deer tracks and Tiger pugmarks.

Plot No : 3
 Map Reference : Photo no. 04-040, Map sheet 1i
 Date of Record : 18/02/87
 From the left side of a gap, Bearing 48°, Distance 75 m. Witness tree - Sundri(144), bearing from plot centre post 59°, distance-142 cm. 1st half of the transect is inundated only during the rainy season but the 2nd half is inundated in the hightide throughout the year. 1st half of the transect is wet and last half of the transect is dry. It is pure Sundri stand. Regeneration adequate. Illicit felling present. K.N.M has taken Gewa from the area. Deer tracks.

Plot No : 4
 Map Reference : Photo no. 03-110, Map sheet 1i
 Date of Record : 24/02/87
 From a gap on the same bank of the plot, Bearing 57.30°, Distance 90 m. Witness tree - Amur (4), bearing from plot centre post 115°, distance-120 cm respectively. The area is inundated by high tide most of the time of the year. It is pure Sundri forest. Crop condition is very good. Regeneration very good. The area has been felled 7/8 years before. Deer tracks.

Plot No : 5
 Map Reference : Photo no. 03-110, Map sheet 1i
 Date of Record : 24/02/87
 Fork of a khal, Bearing 280°, Distance 100 m. Witness tree - Sundri(85), bearing from plot centre post 357°, distance-174 cm respectively. The area is inundated most of the time of the year. It is pure Sundri forest. Crop condition is very good. Regeneration adequate. Dead Sundri are noticed. The area needs felling. Deer tracks.

Plot No : 6
 Map Reference : Photo no. 03-110, Map sheet 1e
 Date of Record : 25/02/87
 From a gap on the left bank of a small stream, Bearing 97.5°, Distance 200 m. Witness tree - Sundri(101), bearing from plot centre post 314°, distance-265 cm respectively. The area is inundated by high tide. It is pure Sundri forest. Crop condition is well. Regeneration poor. Golpatta under growth. Dead Sundri are noticed. Felling has been done 6/7 years before. Deer tracks.

Plot No : 8
 Map Reference : Photo no. 04-008, Map sheet 1d
 Date of Record : 17/01/87
 Junction of two khals, Bearing 220°, Distance 165 m. Witness tree - Sundri (76), bearing from plot centre post 270°, distance - 160 cm respectively. Half of the plot area is inundated in the high tide & the other half is inundated during the rainy season. It is pure Sundri forest. Regeneration adequate. Tiger fern & Golpatta found under growth. Scattered Passur are found. The area was worked under Sundri W.C in the last year. Die-back. Deer tracks & Tiger Pugmarks.

Plot No : 9
 Map Reference : Photo no. 02-019, Map sheet 1d
 Date of Record : 19/01/87
 Junction of two khals, Bearing 263°, Distance 100 m. Witness tree - Gewa(20), bearing from plot centre post 263.5°, distance - 100 m respectively. The area is inundated only during the rainy season. It is pure Sundri Forest. Regeneration almost nil. Most of the Sundri are mature. Illicit felling of Sundri present. Small die-back. Deer tracks and Tiger pugmarks.

Plot No : 10
 Map Reference : Photo no. 02-019, Map sheet 1d
 Date of Record : 16/01/87

Junction of two khals, Bearing 60°, Distance 95 m. Witness tree - Sundri (128), bearing from plot centre post 42°, distance - 83 cm respectively. The area is inundated by high tide. It is Sundri forest. Sporadic Kankra, Passur, Baen & Amur are found. Regeneration very poor. Tiger fern under growth. Illicit felling of Sundri present. Die back of Sundri. Deer tracks and Tiger pugmarks.

Plot No : 11
 Map Reference : Photo no. 03-101, Map sheet 1d
 Date of Record : 11/02/87

Sharp bend of a stream (khal), Bearing 213°, Distance 200 m. Witness tree - Sundri (79), bearing from plot centre post 342°, distance-288 m respectively. Most of the period of the year the trees go under the water. It is Sundri forest. Condition of the crop is more or less good. Regeneration very poor. Singra, Bhola, Tigerfern, Kewa-Kanta, Golpatta undergrowth. Dead Sundri are noticed. Tiger Pugmarks & Deer tracks.

Plot No : 12
 Map Reference : Photo no. 03-101, Map sheet 1d
 Date of Record : 11/02/87

A Baen tree in the bend of a stream (khal), Bearing 198°, Distance 270 m. Witness tree - Kankra(1), bearing from plot centre post 14°, distance - 320 cm respectively. The area goes under water most of the time of the year. It is Sundri forest. The crop condition is very alarming. Young Sundri are nil. Whole area covered by Singra & Bhola. Tiger fern & Kewa-Kanta under growth. Die-back of most of the Sundri. Deer tracks and Tiger Pugmarks.

Plot No : 13
 Map Reference : Photo no. 04-006, Map sheet 1d
 Date of Record : 17/01/87

Junction of two khals & bend of a khal, Bearing 170° to plot & 50° to plot centre, Distance 165 m. Witness tree - Kankra (14), bearing from plot centre post 260°, distance-137 cm. The area is inundated in the high tide. It is a Sundri, Kankra & Passur forest. Regeneration very poor. The plot fell on a khal in the original bearing, so it is shifted to a new bearing. No under growth. Deer tracks.

Plot No : 14
 Map Reference : Photo no. 01-197, Map sheet 1e
 Date of Record : 01/01/87

Sharp bend of a small stream (khal), Bearing 96.5°, Distance 75 m. Witness tree - Sundri (20), bearing from plot centre post 260°, distance-259 cm. The area is inundated in the high tide. It is pure Sundri type. Sporadic Passur & Baen are found. Future of this forest is not good. Regeneration very poor. Most of the trees are mature. Young crops are absent. Tiger fern under growth. Perhaps felling has been done 4/5 years before. Deer tracks and Tiger Pugmarks.

Plot No : 16
 Map Reference : Photo no. 03-034, Map sheet 1i
 Date of Record : 18/02/87

Junction of a khal & river Bhola which is on the opposite side of the plot, Bearing 158°, Distance 235 m. Witness tree - Gewa (71), bearing from plot centre post 267° & 131 cm respectively. The area is inundated only during the rainy season. It is pure Sundri-Gewa forest. Stand condition moderate. Regeneration very poor. Sporadic Goran are found. Kewa-Kanta & Hantal under growth. Deer tracks.

Plot No : 17
 Map Reference : Photo no. 03-104, Map sheet 1h
 Date of Record : 12/05/86

Junction of two khals on the opposite bank of the plot, Bearing 28°, Distance 100 m. The area is not inundated yet by high tide. It is under quality class-1. The crop condition is not good. Dead Gewa & Sundri are also found. Regeneration very poor. Sapling stock is also poor. Last year K.N.M collected Gewa from this area. Die-back. Deer tracks.

Plot No : 18
 Map Reference : Photo no. 05-008, Map sheet 1h
 Date of Record : 22/02/87

From the right side of a gap, Bearing 77°, Distance 150 m. Witness tree - Sundri (49), bearing from plot centre post 61° & 111 cm respectively. The area is inundated during the rainy season. It is Sundri-Gewa forest. Regeneration adequate. Hantal & Kewa-Kanta are found. K.N.M felling is carried out here. Deer tracks.

Plot No : 19
 Map Reference : Photo no. 05-014, Map sheet 1i
 Date of Record : 14/02/87

Junction of a khal & river sheila which is on the other bank of the plot, Bearing 67°, Distance 135 m. Witness tree - Sundri (100), bearing 234°, distance - 359 cm. Whole area becomes very much dry. It is inundated only during the rainy season. It is Sundri-Gewa forest. No mother tree is left for Gewa, even they felled under size tree. Regeneration very poor. Goran found understorey. Gewa and Sundri has been felled recently from the area. Parasite attack. Deer tracks.

Plot No : 21
 Map Reference : Photo no. 05-005, Map sheet 1h
 Date of Record : 23/02/87

Bend of a small stream, Bearing 75.5°, Distance 135 m. Witness tree - Sundri (48), bearing from plot centre post 285°, distance - 195 cm respectively. The area is inundated in the high tide. It is Sundri-Gewa forest. Crop condition is well. Regeneration adequate. Tiger fern & Golpatta undergrowth. K.N.M felling has been carried out recently. Deer tracks & Tiger Pugmarks.

Plot No : 22
 Map Reference : Photo no. 03-108, Map sheet 1i
 Date of Record : 14/02/87

Junction of a Khal & river Sheila, Bearing 220°, Distance 120 m. Witness tree - Sundri (43), bearing from the plot centre post 197°, distance - 120 cm respectively. The area is inundated in the high tide throughout the year. It is Sundri-Gewa forest. Scattered Keora are found in the top canopy. Most of the Sundri & Gewa are young. Crop condition is very good. Regeneration adequate. Deer tracks.

Plot No : 23
 Map Reference : Photo no. 03-089, Map sheet 1d
 Date of Record : 30/04/86

Right side of a forest gap on the opposite bank of a khal, Bearing 338°, Distance 90 m. The forest flood does not inundated by high tide. It is under site class-1. Crop condition is moderate. Regeneration not satisfactory. Gewa survive well than Sundri. Canopy cover is almost equivalent in 4th quadrant. Scattered Passur are found. Outside the plot scattered Baen are found. Future of Gewa is good but not of Sundri.

Plot No : 24
 Map Reference : Photo no. 03-083, Map sheet 1e
 Date of Record : 22/01/87

Junction of a khal & Monkey river, Bearing 156°, Distance 165 m. Witness tree - Sundri (78), bearing from plot centre post 305° & distance-57 cm respectively. The area is inundated only during the rainy season. It is actually Gewa-Sundri Forest. Proportion of Gewa and Sundri are nearly same. Young Gewa are dominating the forest. Hantal is found. Regeneration adequate. It is under height class-2. Deer tracks and Tiger pugmarks.

Plot No : 25
 Map Reference : Photo no. 01-129, Map sheet 1d
 Date of Record : 03/01/87

Junction of two Khals, Bearing 71°, Distance 70 m. Witness tree - Khalshi (1), bearing from plot centre post 162°, distance-128 cm respectively. The area is inundated in the high tide. It is Sundri-Gewa forest. Passur and Baen are also found. Actually it is a mixed forest. Kankra and Sundri are also found. Tiger fern & Sundri lota under growth. Regeneration very poor. Most of the Sundri are coppice and promising in growth. It is an ideal plot for the growth rate of Sundri. It is actually under height class-3. Some dominated trees are under height class-2. Most of the Sundri are coppice. Mature stands are very few in the forest. Deer tracks.

Plot No : 26
 Map Reference : Photo no. 01-127, Map sheet 1e
 Date of Record : 03/01/87

Junction of two khals, Bearing 280°, Distance 135 m. Witness tree - Gewa (34), bearing from plot centre post 45 degree, distance-36 cm respectively. The area is inundated in the high tide. It is Sundri-Gewa forest. Baen, Kankra & Passur are also found. Actually it is a mixed forest. Regeneration very poor. Illicit felling of Sundri present. Deer tracks.

Plot No : 27
 Map Reference : Photo no. 01-145, Map sheet 1e
 Date of Record : 05/01/87

Junction of two khals, Bearing 84°, Distance 90 m. Witness tree - Sundri (66), bearing from plot centre post 225°, distance-116 cm respectively. The area is inundated in the high tide. It is pure Sundri-Gewa forest. Future of Sundri is very good. Regeneration adequate. Mature Sundri is absent. Tiger fern under growth. It is an ideal plot for the growth rate of Sundri. Deer tracks.

Plot No : 29
 Map Reference : Photo no. 04-008, Map sheet 1d
 Date of Record : 16/01/87

Sharp bend of a khal, Bearing 349°, Distance 105 m. Witness tree - Passur (14), bearing from plot centre post 255°, distance-48 cm respectively. The area is inundated only in the high tide. It is actually Sundri forest. Proportion of Gewa is less. Somewhere regeneration good & somewhere regeneration nil. Passur is found throughout the area. Hantal is found at vicinity not in the plot. Golpatta & Tigerfern are found. Very small stream passes through the last half of the transect. Very dense pneumatophore are found. Deer tracks and Tiger pugmarks.

Plot No : 30
 Map Reference : Photo no. 02-007, Map sheet 1d
 Date of Record : 19/01/87

Junction of a khal & river Sibsha, Bearing 47°, Distance 90 m. Witness tree - Sundri (38), bearing from plot centre post 330°, distance-107 cm. 1st half of the transect is inundated in the high tide & last half of the transect is inundated only during the rainy season. It is actually Sundri-Gewa forest. Gewa is replacing Sundri. Regeneration of Sundri adequate, but young Sundri is less here. Profuse young Gewa are found. Tiger fern under growth. Young Passur are also found. Most of the dominant Sundri are under height class-1, but young Sundri & Gewa are under height class-3. Felling of Sundri has been done last year. Severe die back of mature Sundri. Deer tracks and Tiger pugmarks.

Plot No : 31
 Map Reference : Photo no. 04-039, Map sheet 1i
 Date of Record : 15/02/87

Junction of two khals, Bearing 95°, Distance 100 m. Witness tree - Sundri(169), bearing 94°, distance-44 cm respectively. The 1st half of the transect is inundated in the high tide & the other half is inundated only in the rainy season. It is really Sundri-Gewa area but the Sundri is very young. Dead Sundri are noticed. Regeneration adequate. Hantal are found in the 1st half of the transect. Goran found understorey. Climber attack. Deer tracks.

Plot No : 32
 Map Reference : Photo no. 03-033, Map sheet 1i
 Date of Record : 15/02/87

Right side of a gap, Bearing 47°, Distance 110 m. Witness tree - Sundri (90), bearing from plot centre post 364°, distance-115 cm respectively. The area is inundated during the rainy season. It is Sundri-Gewa or Gewa-Sundri forest. The proportion is more or less the same. Regeneration adequate. Goran & Hantal found understorey. Climber attack. Deer tracks.

Plot No : 33
 Map Reference : Photo no. 05-012, Map sheet 1h
 Date of Record : 22/02/87

Junction of two khals which is on the opposite bank of the plot, Bearing 217.5°, Distance 90 m. Witness tree-Sundri(96), bearing from plot centre post 77°, distance-84 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Growth of both Gewa & Sundri are stunted. Goran found understorey. Hantal is also found. Regeneration adequate. Deer tracks.

Plot No : 34
 Map Reference : Photo no. 03-110, Map sheet 1i
 Date of Record : 25/02/87

From a gap on the opposite bank of the khal, Bearing 52°, Distance 75 m. Witness tree - Gewa(308), bearing from plot centre post 297°, distance-120 cm respectively. The area is inundated only during rainy season. It is Gewa-Sundri forest. No mother tree is left. Regeneration poor. Tiger fern under growth. Somewhere Goran is also found. At present this forest is actually under height class-3. Somewhere they have created gap due to indiscriminant felling. K.N.M extracted Gewa throughout the area 2/3 years before. Most of the Sundri topless due to die-back. Deer tracks.

Plot No : 35
 Map Reference : Photo no. 04-043, Map sheet 1h
 Date of Record : 21/02/87

Junction of a khal & river Bhola, Bearing 221° & then 91 degree, Distance 260 m. Witness tree - Sundri (22), bearing from the plot centre post 174°, distance-34 cm respectively. It is Gewa-Sundri area. Scattered Baen & Keora are found throughout the area. The area is covered with dense Bhola. Regeneration adequate. It is not a ideal place for permanent sample plot. Maximum illicit felling of both Gewa & Sundri are present. Illicit cutter's tracks are also noticed. Deer tracks.

Plot No : 36
 Map Reference : Photo no. 05-007, Map sheet 1h
 Date of Record : 11/05/86

Left side of a gap, Bearing 89.5°, Distance 100 m. It is not yet inundated by high tide. It is under quality class-1. But the crop condition is not good. Young regeneration not adequate but Sundri & Gewa saplings are profuse. Some Gewa are suffering from borer & fungal attack. Some have already died. Die-back of Sundri. Tiger pugmarks.

Plot No : 37
 Map Reference : Photo no. 05-005, Map sheet 1h
 Date of Record : 23/01/87

Left side of a gap, Bearing 51°, Distance 80 m. Witness tree - Gewa (206), bearing from plot centre post 366°, distance-74 cm respectively. The area is inundated only in the high tide. It is Gewa-Sundri forest. Both Gewa & Sundri are stunted in growth. Goran, Hantal, Tiger fern found under growth. Regeneration adequate. It is actually height class-3 forest. K.N.M felling has been carried out. Deer tracks are.

Plot No : 38
 Map Reference : Photo no. 04-047, Map sheet 1h
 Date of Record : 13/05/86

Sharp bend of the river Bhola. Starting Point from a Petrol Camp named Dhansagar Petrol Camp, Bearing 228°, distance 270 m. The area is inundated yet by the high tide. The crop condition is good. Profuse Gewa regeneration is present. Sundri seedlings are also present. Most of the mature Sundri have illegally removed. As per O.D.A, upper canopy is Keora but profuse Baen is also found in the upper canopy.

Plot No : 39
 Map Reference : Photo no. 02-007, Map sheet 1d
 Date of Record : 15/01/87

Junction of a khal & river Sibsha, Bearing 243.5°, Distance 110 m. Witness tree - Kankra (4), bearing from plot centre post 80°, distance-153 cm respectively. The area is inundated mainly during the rainy season, but near centre it is inundated in the high tide. It is Gewa-Sundri forest. Future of Gewa is good in this forest. The young Sundri are in good condition. Hantal & Kewa-Kanta are found throughout the area. Sporadic Passur are found. A patch of Kankra & Baen are found near the centre. Except for some dominated Sundri, the whole forest is under height class-3. Die-back of mature Sundri throughout the area. Climber attack. Deer tracks.

Plot No : 40
 Map Reference : Photo no. 02-007, Map sheet 1d
 Date of Record : 15/01/87

Junction of a khal & river Sibsha, Bearing 336.5° & 36°, Distance 135 m (85 m to 336.5° & then 50 m to 36°), Witness tree - Gewa(93), bearing from plot centre post 270°, distance-71 cm respectively. The area is inundated only during the rainy season. It is pure Gewa-Sundri forest. Future of the forest is very good. Regeneration both of Sundri & Gewa very good. Tiger fern under growth. The plot is not set on the starting bearing line, because it fell on a Khal. The plot is set on a bearing of 36° only. Die-back of most of the mature Sundri attacked. Climber attack. Deer tracks are noticed.

Plot No : 42
 Map Reference : Photo no 03-083, Map sheet 1e
 Date of Record : 22/01/87

Right corner of a gap, Bearing 1°, Distance 100 m. Witness tree - Gewa (174), bearing from plot centre post 354°, distance-79 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Sundri is dominated in height. It is really height class-3 forest. Regeneration adequate. Goran undergrowth in the 1st half of the plot. Deer tracks.

Plot No : 45
 Map Reference : Photo no. 01-151, Map sheet 1e
 Date of Record : 25/11/86

Junction of a khal & a river, Bearing 15°, Distance 92 m. Witness tree - (78), bearing from plot centre post 292°, distance-1.3 m. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Condition of Sundri is not good. Gewa regeneration adequate but Sundri regeneration very poor. Die-back. Deer tracks and Tiger pugmarks.

Plot No : 49
 Map Reference : Photo no. 03-067, Map sheet 1g
 Date of Record : 25/01/87

Junction of two khals, Bearing 356 degree, Distance 100 m. Witness tree - Gewa (55), bearing from plot centre post 30°, distance-281 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa forest. The plot is shifted in the same type from its original position, as the original position of the plot is at the extreme up of a khal which is not navigable all the time. Regeneration poor. Goran under growth. Illicit felling of Sundri present. Climber attack. Deer tracks.

Plot No : 50
 Map Reference : Photo no. 03-030, Map sheet 1i
 Date of Record : 15/02/87

Fork of a khal, Bearing 46°, Distance 150 m. Witness tree - Gewa(35), bearing from plot centre post 70°, distance-78 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa forest. Hantal & Kewa-Kanta are found throughout the area. Regeneration adequate. Most of the Sundri are young and coppice. Older trees are cut. It is now height class-2 forest. Illicit felling of Sundri present. Climber attack. Deer tracks and Tiger pugmarks.

Plot No : 51
 Map Reference : Photo no. 03-125, Map sheet 1j
 Date of Record : 26/01/87

Fork of a khal, Bearing 119°, Distance 60 m. Witness tree - Sundri(318), bearing from plot centre post 96°, distance-138 cm. The area is inundated only during the rainy season. It is Sundri-Gewa forest. Most of the Sundri are young or coppice. Goran found understorey. Sundri covers top canopy. Sundri is height class-2. Gewa is height class-3. Regeneration very poor. Deer tracks.

Plot No : 52
 Map Reference : Photo no. 03-024, Map sheet 1j
 Date of Record : 17/02/87

Bend of a khal, Bearing 321.5°, Distance 60 m. Witness tree - Sundri (36), bearing from plot centre post 255°, distance-86 cm respectively. Last half of the transect is inundated in the high tide throughout the year but 1st half is inundated only during the rainy season. It is Sundri-Gewa forest. Condition of the crop is good. Regeneration adequate. Goran is found in the 1st half of the transect. In the second half Hargoja is found. It is actually height class-2 forest. Deer tracks & Tiger pugmarks.

Plot No : 53
 Map Reference : Photo no. 03-025, Map sheet 1j
 Date of Record : 16/02/87

From a sharp bend of a narrow canal, Bearing 359°, Distance 100 m. Witness tree - Sundri(195), bearing from plot centre post 363°, distance-48 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa forest. Most of the Sundri are young coppice. Regeneration poor. Illicit felling of Sundri present. Deer tracks.

Plot No : 54
 Map Reference : Photo no. 01-191, Map sheet 1f
 Date of Record : 06/01/87

Junction of two khals, Bearing 260°, Distance 120 m. Witness tree - Gewa (62), bearing from plot centre post 58°, distance-128 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa type. Goran & sporadic Singra are found as understorey. Tiger fern under growth. Regeneration of Gewa adequate, but regeneration of Sundri very poor. Felling has been done 3/4 years before. Deer tracks and Tiger pugmarks.

Plot No : 55
 Map Reference : Photo no. 01-191, Map sheet 1f
 Date of Record : 02/01/87

Junction of two khals, Bearing 85°, Distance 80 m. Witness tree - Sundri (30), bearing from plot centre post 218°, distance-174 cm respectively. The area is inundated only during the rainy season. It is actually Gewa-Sundri forest. Top canopy is covered by Sundri. Gewa & Goran found understorey. The proportion of Gewa is higher than Sundri. Regeneration of Gewa very good. Deer tracks.

Plot No : 56
 Map Reference : Photo no. 01-191, Map sheet 1f
 Date of Record : 02/01/87

Left side of a gap, Bearing 263°, Distance 90 m. Witness tree - Sundri (38), bearing from plot centre post 342°, distance-170 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa forest. Goran & sporadic Singra found understorey. Proportion of Sundri is very high. Regeneration poor. It is actually height class-2 forest. Deer tracks.

Plot No : 60
 Map Reference : Photo no. 01-185, Map sheet 1f
 Date of Record : 29/12/86

From a gap by the side of two big Keora tree, Bearing 260°, Distance 108 cm. Witness tree - Sundri(237), bearing from plot centre post 260°, distance-108 cm respectively. The area is inundated only during the rainy season. It is actually Sundri forest. Sporadic Passur & Dhundal are found. Goran found understorey. Regeneration poor. Deer tracks and Tiger pugmarks.

Plot No : 63
 Map Reference : Photo no. 03-075, Map sheet 1f
 Date of Record : 24/01/87

Junction of two Khals, Bearing 231.5°, Distance 100 m. Witness tree - Gewa (154), bearing from plot centre post 277°, distance-53 cm respectively. The area is inundated only during the high tide of Rainy season. It is Gewa-Sundri forest. Sundri is stunted in growth. Regeneration poor. Goran found under growth or understorey but not dense. Sporadic Passur are found.

Plot No : 64
 Map Reference : Photo no. 03-075, Map sheet 1f
 Date of Record : 24/01/87

Junction of two khals, Bearing 53°, Distance 105 m. Witness tree - Sundri (55), bearing from plot centre post 252°, distance-106 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. The proportion of Gewa & Sundri are nearly same. Sundri is stunted in growth. Regeneration very poor. Goran found under growth or understorey but not dense. Hantal is found sporadically. Passur is also found sporadically. Deer tracks.

Plot No : 65
 Map Reference : Photo no. 03-026, Map sheet 1i
 Date of Record : 16/02/87

Left side of a gap which is opposite to a junction of two khals, Bearing 128°, Distance 90 m. Witness tree - Gewa (151), bearing from plot centre post 127°, distance-73 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Sundri is stunted in growth. Regeneration adequate. Hantal & Goran found understorey. Deer tracks and Tiger pugmarks.

Plot No : 66
 Map Reference : Photo no. 03-024, Map sheet 1j
 Date of Record : 16/02/87

Right side of a gap on the bank of Supoti Khal, Bearing 308.5°, Distance 165 m. Witness tree - Sundri (67), bearing from plot centre post 212°, distance-17 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Goran found understorey. Sundri is found stunted in growth. It is actually height class-3 forest. Regeneration adequate.

Plot No : 67
 Map Reference : Photo no. 03-017, Map sheet 1j
 Date of Record : 16/02/87

From a gap near the fork of a khal, Bearing 42°, Distance 250 m. Witness tree - Gewa (168), bearing from plot centre post 345°, distance-53 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Goran found understorey. Scattered Hantal are found. Regeneration adequate. Deer tracks.

Plot No : 68
 Map Reference : Photo no. 03-065, Map sheet 1g
 Date of Record : 25/01/87

Junction of two khals, Bearing 176°, Distance 75 m. Witness tree - Sundri (41), bearing from plot centre post 360°, distance-127 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Several coppice are found. Gewa regeneration good. Goran found understorey. Illicit felling of Sundri present. Most of the mature Sundri attacked by die-back. Deer tracks.

Plot No : 69
 Map Reference : Photo no. 05-025, Map sheet 1j
 Date of Record : 17/02/87

Junction of two khals, Bearing .5°, Distance 80 m. Witness tree - Gewa (127), bearing from plot centre post 190.5°, distance-41 cm respectively. The area is inundated only during the rainy season. It is Gewa-Sundri forest. Goran found understorey. Regeneration well. Climber attack. Deer tracks.

Plot No : 70
 Map Reference : Photo no. 01-155, Map sheet 1e
 Date of Record : 07/01/87

Right corner of a gap, Bearing 7.5°, Distance 150 m. Witness tree - Gewa (112), bearing from plot centre post 62°, distance-275 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa forest. But the future of Sundri is not good. Sundri regeneration very poor also. Goran found understorey. Regeneration of Gewa & Gofan are adequate. It is actually height class-3 forest except for some sporadic Sundri. Deer tracks & Tiger pugmarks.

Plot No : 73
 Map Reference : Photo no. 01-193, Map sheet 1e
 Date of Record : 01/01/87

From a gap which is 270 m from a khal, Bearing 255.5°, Distance 70 m. Witness tree - Gewa (133), bearing from plot centre post 306°, distance-113 cm respectively. The area is inundated only during the rainy season. It is actually Gewa forest. The future of Gewa is very good. Gewa regeneration adequate. Goran found understorey. Deer tracks and Tiger pugmarks.

Plot No : 74
 Map Reference : Photo no. 01-119 , Map sheet 1f
 Date of Record : 06/01/87

Fork of a khal, Bearing 304°, Distance 75 m. Witness tree - Sundri(177), bearing from plot centre post 258°, distance-177 cm respectively. The area is inundated only during the rainy season. It is Sundri-Gewa forest. Condition of Sundri is not good. Future of this forest is not well. Regeneration very poor. Goran found understorey. Deer tracks & Tiger pugmarks.

Plot No : 78
 Map Reference : Photo no. 01-009 , Map sheet 1a
 Date of Record : 02/12/86

Junction of two khals, Bearing 48.5°, Distance 160 m. Witness tree - Gewa (82), bearing from plot centre post 323°, distance-80 cm. The area is inundated only during the rainy season. It is Gewa-Goran forest. Goran is not prominent in the plot area but outside the plot Goran found understorey. Regeneration very poor. Deer tracks and Tiger pugmarks.

Plot No : 81
 Map Reference : Photo no. 01-047 , Map sheet 1b
 Date of Record : 30/12/86

From a gap, Bearing 117°, Distance 65 m. Witness tree- Gewa(112), bearing from plot centre post 207°, distance-135 cm respectively. The area is inundated only during the rainy season. It is Gewa-Goran forest. Sporadic Passur & Sundri are found. Future of Goran here is good. Regeneration adequate. Trees are small in size. Deer tracks and Tiger pugmarks.

Plot No : 89
 Map Reference : Photo no. 01-093 , Map sheet 1c
 Date of Record : 15/12/86

From the junction of a khal which is on the opposite side of the plot, Bearing 274° up to 93 m & 315 degree to the end, Distance 157 m. Witness tree - Gewa (280), bearing from plot centre post 295°, distance-177 cm. The area is inundated only during the rainy season. It is Gewa-Goran forest. Up to 90 m only Hantal, stunted Gewa, stunted Sundri & Goran are found. The plot is shifted to another bearing (mentioned in the data card) due to Hantal but the forest type is same. Regeneration adequate. Deer tracks.

Plot No : 91
 Map Reference : Photo no. 01-085 , Map sheet 1b
 Date of Record : 28/12/86

Junction of two khals, Bearing 205°, Distance 60 m. Witness tree - Gewa (542), bearing from plot centre post 70°, distance-55 cm respectively. It is Goran-Gewa or Gewa-Goran forest. Gewa are good in condition. The plot was originally in GOG4a type but I have shifted this plot in GOG3a type. In the original position of the plot there is plenty of Hantal & it was meaning less to set the plot there. Regeneration adequate. Deer tracks and Tiger pugmarks.

Plot No : 92
 Map Reference : Photo no. 01-085 , Map sheet 1b
 Date of Record : 30/12/86

Junction of two khals, Bearing 134°, Distance 75 m. Witness tree - Gewa (40), bearing from plot centre post 47°, distance-336 cm respectively. The area is inundated only during the rainy season. It is Goran-Gewa forest. The future of Gewa is very good here. Gewa regeneration well. Scattered Passur & Dhundal are found. Deer tracks and Tiger pugmarks.

Plot No : 94
 Map Reference : Photo no. 01-048 , Map sheet 1b
 Date of Record : 14/12/86

Junction of a khal & Malancha river on the opposite bank of the plot area, Bearing 53.5°, Distance 105 m. Witness tree - Gewa (20), bearing from plot centre post 238°, distance-410 cm. The area is inundated only during the rainy season. It is Goran Gewa forest. The forest is good by the side of the river. Regeneration adequate. Some portion found undergrowthless. Deer tracks and Tiger pugmarks.

Plot No : 95
 Map Reference : Photo no. 01-049 , Map sheet 1b
 Date of Record : 12/12/86

15 m away from the junction of two khals, Bearing 275.5°, Distance-75 m. Witness tree - Gewa (127), bearing from plot centre post 281°, distance-310 cm. The area is inundated only during the rainy season. It is Goran-Gewa forest. Scattered Passur, Dhundal & Amur are also found throughout the area. Right side of the plot centre are nearly vacant. Regeneration very poor, in some places nil. Deer tracks and Tiger pugmarks.

Plot No : 96
 Map Reference : Photo no. 01-048 , Map sheet 1b
 Date of Record : 07/12/86

Junction of a khal & river Malancha, Bearing 121°, Distance-120 m. Witness tree - Gewa (208), bearing from plot centre post 84°, distance 220 cm. It is Gewa-Goran forest. Somewhere Goran is prominent. Regeneration very poor. Most of the Gewa in the plot are of good sizes & good conditions. Deer tracks and Tiger pugmarks.

Plot No : 99
 Map Reference : Photo no. 01-048 , Map sheet 1b
 Date of Record : 27/12/86

Bend of a small stream, Bearing 129.5°, Distance 90 m. Witness tree - Gewa (47), bearing from plot centre post 155°, distance-103 cm. The area is inundated only during the rainy season. It is Goran-Gewa type. Sporadic Sundri, Passur & Dhundal are found throughout the area. As the original plot place is inaccessible, so it is shifted in the same type. Regeneration adequate. Condition of Gewa is very well here. Deer tracks and Tiger pugmarks.

Plot No : 103
 Map Reference : Photo no. 01-042 , Map sheet 1c
 Date of Record : 10/12/86

Junction of two khals, Bearing 262.30°, Distance 85 m. Witness tree - Gewa (95), bearing from plot centre post 172°, distance-195 cm. The area is inundated only during the rainy season. It is Goran-Gewa forest. Sporadic Dhundal & Passur are found. Regeneration very poor. Somewhere Goran is very dense and Gewa are sporadic there. Deer tracks.

Plot No : 104
 Map Reference : Photo no. 01-089 , Map sheet 1b
 Date of Record : 26/12/86

Junction of two khals, Bearing 111.30°, Distance 160 m. Witness tree - Sundri (39), bearing from plot centre post 253°, distance- 36 cm. The area is inundated only during the rainy season. It may be called Goran-Gewa type. But throughout the plot, Sundri are headless & stunted in growth. Sporadic Passur, Amur, Dhundal are found outside the plot. On the entrance 25 m wide Hantal is found. Regeneration not adequate. Deer tracks.

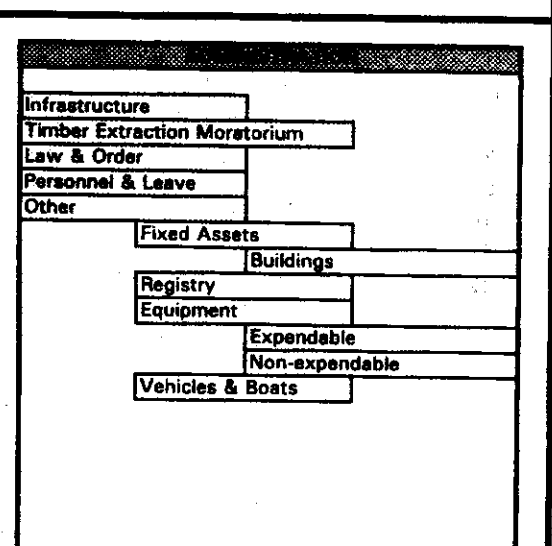
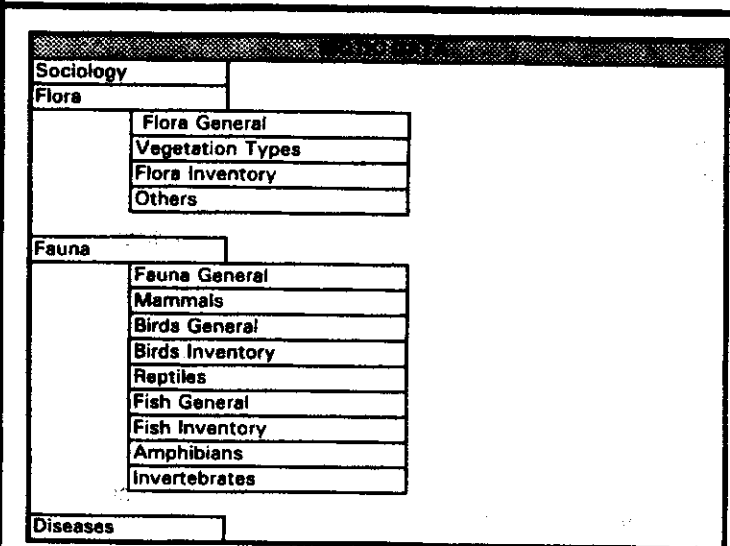
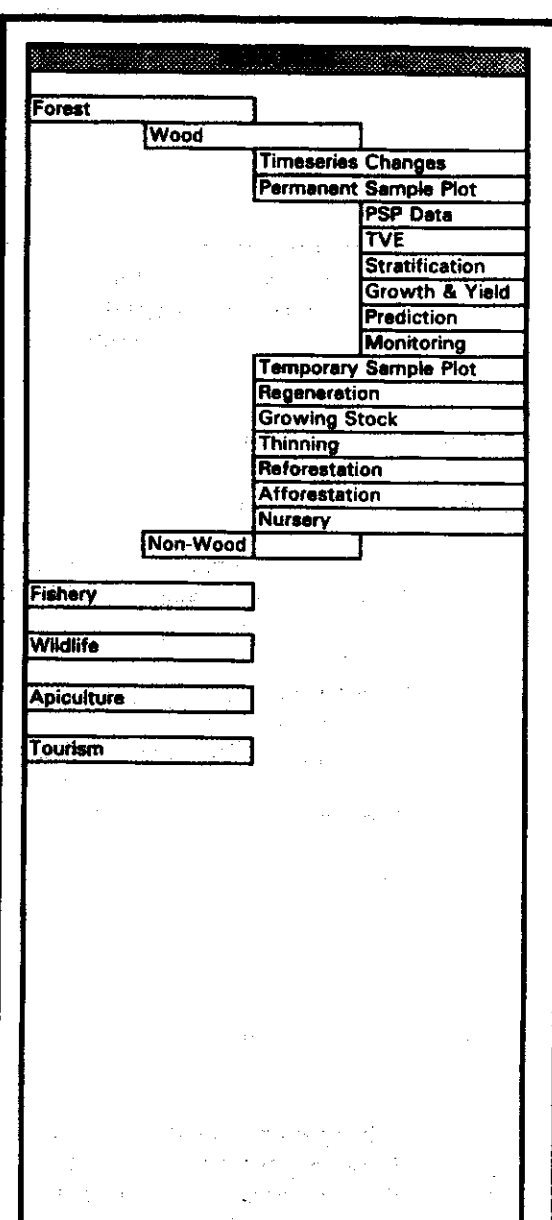
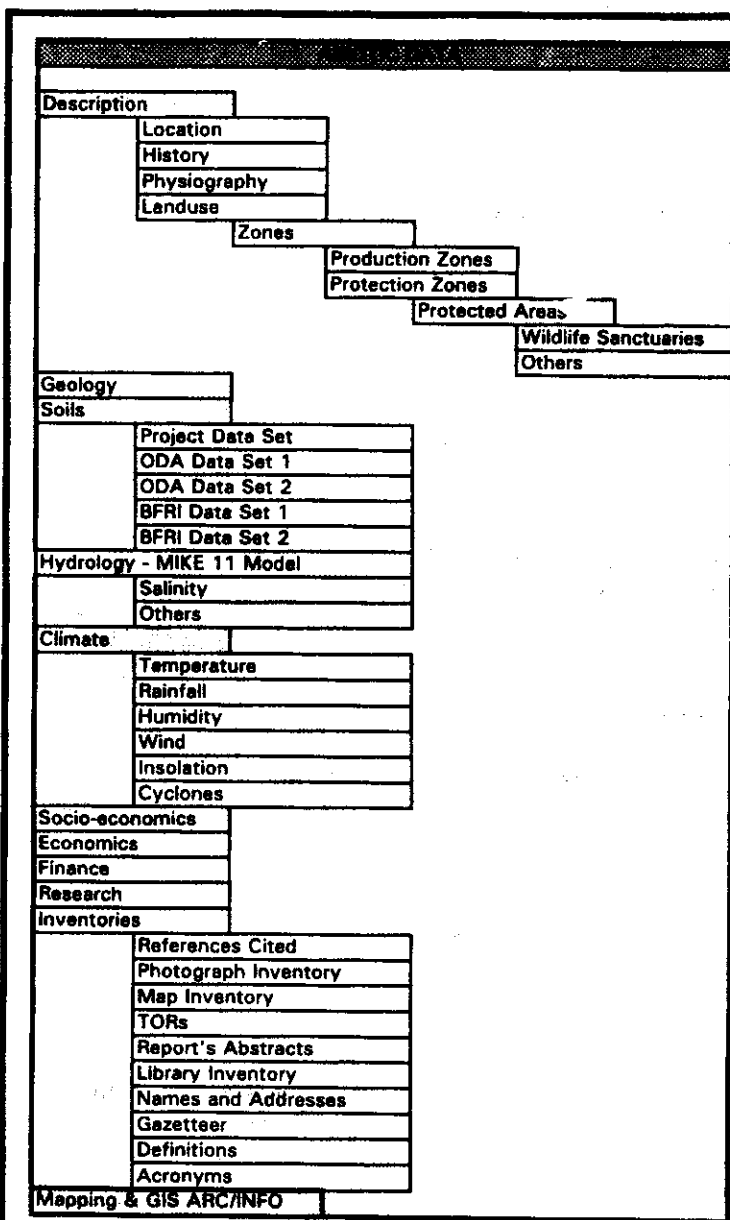
Plot No : 105
 Map Reference : Photo no. 01-015 , Map sheet 1b
 Date of Record : 25/12/86

Junction of two khals, Bearing 227.30°, Distance 100 m. Witness tree - Gewa (151), bearing from plot centre post 163°, distance- 233 cm respectively. The area is inundated only during the rainy season. It is Goran-Gewa forest. Scattered Dhundal are found. Right side of the centre scattered Gewa is found without understorey. Regeneration poor. Deer tracks.

Plot No : 119
 Map Reference : Photo no. 03-124 , Map sheet 1j
 Date of Record : 28/12/87

Junction of two khals, Bearing 310.30°, Distance 210 m. Witness tree - Gewa (4), bearing from plot centre post 68°, distance-150 cm respectively. The area is inundated only during the rainy season. It is Goran-Gewa forest. Most of them are young. Regeneration adequate. Future of Goran is very good.

APPENDIX A15: INTEGRATED DATABASE STRUCTURE OUTLINE



APPENDIX A16: DUTIES AND RESPONSIBILITIES OF SRF FOREST DEPARTMENT STAFF

DUTIES AND RESPONSIBILITIES OF SRF FOREST DEPARTMENT STAFF

DFO, Environment, Khulna

1. Conservation and maintenance of 3 wildlife sanctuary of Sundarbans;
2. Maintenance of biodiversity, soil quality, modulated water flows;
3. Planning and implementation of natural conservation activities;
4. Collecting environmental data and arranging periodic environmental surveys;
5. Monitoring the environmental effect of FD's forest operations.

Conservator of Forests, Administration and Wildlife

To work as a staff officer of the Chief Conservator of Forests and to look after the following:

1. All correspondences relating to appointment, promotion, confirmation of Gazetted and non-Gazetted staff, compilation of Gradation list and service records, transfer and posting of staff;
2. Control of revenue budget and expenditure of the department including revenue earning of the department;
3. General correspondence regarding sales of forest produce, forest land, complaints, schedule of rates and other miscellaneous correspondences;
4. Correction, modification and revision of Manuals and to keep them up to date;
5. Deal with disciplinary and appeal cases, and processing of pension and provident fund cases.
6. Correspondence and coordination of work in connection with wildlife management and protection under Wildlife Preservation Act;
7. Technical guidance to the concerned officials in connection with wildlife protection and propagation.
8. Any other duties assigned by the Chief Conservator of Forests.

Assistant Chief Conservator of Forests (General)

1. To act as drawing and disbursing Officers in respect of General Direction Division - preparation of budget and maintenance of accounts in respect of General Direction Division;
2. To be responsible for all correspondences relating to sale of forest produce and schedule of rates;
3. To be responsible for all correspondences regarding public complaints, paper cutting etc;
4. to be responsible for acquisition and de-requisition of land;
5. To be responsible for maintenance of Manual, Rules, Regulation, their correction, modification and revision;
6. To be responsible for tour note and tour diary of officer;
7. To be responsible for visit of Dignitaries;
8. To be responsible for preparation of periodical reports and returns;
9. to be responsible for Assembly Questions and other miscellaneous correspondences;
10. to be responsible for all correspondences relating to wildlife management;
11. To be responsible for rents and royalty in respect of mineral classified as Forest Produce;
12. To be responsible for reservation and de-reservation of forests;
13. To be responsible for review of pending cases;
14. Any other duty to be assigned by the CCF/DCCF/CF.

Divisional Forest Officer, Working Plans Division

1. To act as head of the Division and is responsible for overall administration of the Division;
2. To be responsible for preparation of management plans for different Forest Divisions;
3. To be responsible for field enumeration, survey and collection of data;

4. To be responsible for supervision and guidance to subordinate officers and staff including writing of their ACRs;
5. To be responsible for preparation of Budget Estimate and Revised Estimate for the Division;
6. To be responsible for completion of works within budget allocation and in time;
7. To be responsible for drawing and disbursing in respect of his office;
8. To be responsible for submission of monthly accounts to A.G and C.C.F.;
9. To be responsible for any other duties to be assigned by Chief Conservator of Forests/Deputy Chief Conservator of Forests.

Conservator of Forests

1. To be responsible for overall administration of the Circle;
2. To be responsible for completion of all works within the budget provision of the Circle and distribution of funds within his budget grant among the Divisions under him;
3. To be responsible for preparation of Budget and Revised Budget of his circle;
4. To be responsible for appointment, promotion, Disciplinary action, disposal of appeal cases, writing of A.C.Rs. of staff falling within his Administrative powers;
5. To be responsible for administration and ensuring execution of all functions in the Forest Divisions under him as per Acts, Ordinance, Rules and Regulations and Directives issued by the Government from time to time;
6. To be responsible for providing proper executive and operational guidance to the field staff of the Divisions under him and exercise control and supervision on the Divisional Forest Officers;
7. To be responsible for preparation of annual programme of works of his circle;
8. To be responsible for periodical and annual inspection of Division offices;
9. To be responsible for supervision of Revenue Collection in the Division under him;
10. To be responsible for proper execution of all development programmes within his circle;
11. To be responsible for Auditing of Divisional accounts and accord financial and technical sanctions within his powers;
12. To be responsible for drawing and disbursing in respective offices as well as submission of Accounts to the Accountant General;
13. to be responsible for transferring and posting of SDFOs/ACFs within the Circle;
14. To be responsible for inter-Divisional transferring of all transferable subordinate staff except the staff of his own office;
15. Any other responsibility assigned by the Chief Conservator of Forests.

Divisional Forest Officer

1. To be responsible for overall administration of the Forest Division under him;
2. To be responsible for drawing and disbursing of fund within the Division;
3. To be responsible for collection of revenue of the Forest Division under him;
4. To be responsible for annual auction and sale of Forest produce of the Division under him;
5. To be responsible for proper functioning and discipline of the Division under him;
6. To be responsible for appointment of employees of the Division falling within his powers and dealing with all matters relating to the establishment including writing of A.C.R. of subordinate officers/staff;
7. To be responsible for transferring and posting of all subordinate staff within the Division except the staff of his own office;
8. To be responsible for preparation of annual budget and revised budget of the Division;
9. To be responsible for exercise of powers given under various Acts and Rules thereunder;
10. To be responsible for raising plantation and nursery within his jurisdiction;
11. To be responsible for Annual and periodical inspection of Range and Beat offices under him;
12. To be responsible for execution of all development programmes within the jurisdiction of his Division;
13. To act as Principal Accounting Officer of his Division;
14. To be responsible for compilation of all timber forms of his Division;
15. To be responsible for construction of buildings and roads within his Division;
16. Any other responsibility assigned by the CCF/CF.

APPENDIX A17: FINANCE - REQUIREMENTS FOR THE OPSUNIT

The Operational Unit (OPSUNIT) - Requirements														
It is assumed that the Operational Unit will build on the existing infrastructure of the IRMP and that the facilities provided by the Project will be available for the OPSUNIT. The cost of these items have been included but have been totalled under a separate sub-heading so that the total figure can be reduced if it is agreed that the BGD 84/056 equipment can continue with the OPSUNIT.														
The OPSUNIT will comprise a number of functional sections which will have specific tasks and hence equipment and personnel requirement. These will be coordinated and consolidated by the HQ and Administration office in Khulna. Certain sections will require only part time use of resources and man power, so that these can be aggregated by the OPSUNIT to achieve an optimization of resources and manpower.														
This tentative investment profile is presented first by the different sections in terms of numbers required by year. This is then consolidated into a total OPSUNIT requirement which then has unit prices ascribed. This then is used to derive the total investment required by year. Price contingencies are fixed at the current level of inflation of 3.98% as quoted by the Bangladesh Bank in June 1994. Physical contingencies have been chosen at 4%.														
It should be noted that the some of the key positions such as a hydrologist and GIS cartographer on the present project as local consultants have been incorporated as full time members of staff in the OPSUNIT.														
Assumptions														
1	Fuel, lubricants, servicing + spares		5% of initial capital cost /year for vehicle and boats											
2			20% for microlight/speedboats							5% for launches				
3	Special factor (inflation) 4% for each year after year 1													
4	Experts are	16000 \$/month												
5	Long term expert 12-1	13000 \$/month												
6	Official duty travel													
7	Mission costs - back stopping													
8	General Operating expenses													
9	Supplies and materials													
10	Equipment													
11	Each speed boat has 2 2.5 engines		20% are replaced each year											
12	Fellowships and overseas training are at \$		3000 per month											
Section 1: TSP/PSP Continuous Survey Team														
REF		Unit	Number required by year of purchase/acquisition											
1.00	CAPITAL INVESTMENT		1	2	3	4	5	6	7	8	9	10	Total	
1.02	Transport													
	Vehicles	Station wagon	No.	0				0					0	
		Pick Up	No.	1				1					2	
		Saloon	No.	0				0					0	
	Boats	Launches	No.	2									2	
		Speed boats	No.	4				4					8	
		Outboard engines	No.	10	2	2	2	2	2	2	2	2	28	
1.03	Data collection & processing													
		Computers	No.	3				3					6	
		Software	\$ '000	5	5	5	5	5	5	5	5	5	50	
		Digitiser	No.	1									1	
1.05	Field and lab equipment													
		Mensuration equipment	\$ '000	30	10	5	5	5	15	5	5	5	90	
		Laboratory equipment	\$ '000	20				10					30	
1.07	International Consultants													
		Inventory	mn mt	6	3	2	2	1	3	1	1	1	21	
		Systems	mn mt	2	4	2	1	1	2	1	1	1	16	
		Sampling	mn mt	1					1				2	
		Unspecified	mn mth		2	2	2	2	2	1	1	1	14	
1.11	Training													
		Fellowship	mn mt	12									12	
		Overseas training	mn mth		6	6	6						18	
2.00	OPERATION AND MAINTENANCE													
	Fuel, lubricants, servicing and spare parts													
		Vehicles	\$'000s	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	15	
		Launch	\$'000s	26	26	26	26	26	26	26	26	26	260	
		Speedboats	\$'000s	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	24	
3.00	STAFF AND SALARIES		Unit	Number required by year of purchase/acquisition										
				1	2	3	4	5	6	7	8	9	10	Total

APPENDIX A17: FINANCE - REQUIREMENTS FOR THE OPSUNIT

		Unit	Number required by year of purchase/acquisition										Total
3.00 STAFF AND SALARIES			1	2	3	4	5	6	7	8	9	10	Total
	Chief Operational Unit	No.	1	1	1	1	1	1	1	1	1	1	1
	Admin. officer	No.	1	1	1	1	1	1	1	1	1	1	1
	Secretarial officer	No.	1	1	1	1	1	1	1	1	1	1	1
	Computer operator	No.	1	1	1	1	1	1	1	1	1	1	1
	Computer programmer	No.	1	1	1	1	1	1	1	1	1	1	1
	Data Entry Clerk	No.	1	1	1	1	1	1	1	1	1	1	1
	Launch captains	No.	1	1	1	1	1	1	1	1	1	1	1
	Launch 1st mate	No.	1	1	1	1	1	1	1	1	1	1	1
	Engineers	No.	1	1	1	1	1	1	1	1	1	1	1
	Launch labourers	No.	2	2	2	2	2	2	2	2	2	2	2
	Speedboat drivers	No.	3	3	3	3	3	3	3	3	3	3	3
	Drivers	No.	7	7	7	7	7	7	7	7	7	7	7
	MLSS	No.	5	5	5	5	5	5	5	5	5	5	5
	Overheads												0
Total Capital Requirements													
		Unit	Number required by year of purchase/acquisition										Total
1.00 Capital Investment			1	2	3	4	5	6	7	8	9	10	Total
1.01	Buildings												
1.02	Transport												
	Vehicles												
	Station wagon	No.	2	0	0	0	0	2	0	0	0	0	4
	Pick up	No.	3	0	0	0	1	2	0	0	0	0	6
	Saloon	No.	2	0	0	0	0	2	0	0	0	0	4
	Boats												
	Launches	No.	5	0	0	0	0	0	0	0	0	0	5
	Speed boats	No.	11	0	0	0	8	3	0	0	0	0	22
	Outboard engines	No.	28	6	6	6	6	6	6	6	6	6	77
	Microflight	No.	1	0	0	0	1	0	0	0	0	0	2
1.03	Data collection & processing												
	LARST	No.	1	0	0	0	0	0	0	0	0	0	1
	Computers	No.	19	0	0	0	3	0	0	0	0	0	22
	Software	\$'000s	24	5	5	5	5	5	5	5	5	5	69
	Microbrian	\$'000s	20	0	0	0	0	0	0	0	0	0	20
	Digitiser	No.	3	0	0	0	0	0	0	0	0	0	3
	Read/write optical dis	\$'000s	5	0	0	0	0	0	0	0	0	0	5
	Exabyte tape cartridge	No.	5	0	0	0	0	0	0	0	0	0	5
	Plotter	\$'000s	18	0	0	0	18	0	0	0	0	0	36
	Scanner	\$'000s	8	0	0	0	0	0	0	0	0	0	8
	Image processing software	\$'000s	25	0	0	0	0	0	0	0	0	0	25
1.04	SPOT coverage												
	Multispectral	\$'000s	25	0	0	0	0	25	0	0	0	0	50
	Panchromatic	\$'000s	36	0	0	0	0	36	0	0	0	0	72
1.05	Field & Lab equipment												
	Mensuration equipment	\$'000s	30	10	5	5	5	15	5	5	5	5	90
	Laboratory equipment	\$'000s	26	0	0	0	10	0	0	0	0	0	36
	Field equipment	\$'000s	115	0	0	0	0	0	0	0	0	0	115
1.06	Office equipment												
	Printers	No.	3	0	0	0	0	0	0	0	0	0	3
	Typewriter	No.	2	0	0	0	0	0	0	0	0	0	2
	Photocopiers	No.	3	0	0	0	0	0	0	0	0	0	3
	Air conditioners	No.	10	0	0	0	0	0	0	0	0	0	10
	Furniture												
	Desks	No.	30	0	0	0	0	0	0	0	0	0	30
	Chairs	No.	90	0	0	0	0	0	0	0	0	0	90
	Filing cabinets	No.	30	0	0	0	0	0	0	0	0	0	30
	Mapholders	\$'000s	5	0	0	0	0	0	0	0	0	0	60
	Light table etc.	\$'000s	5	0	0	0	0	0	0	0	0	0	0
	Others	\$'000s	20	0	0	20	0	0	20	0	0	0	60

APPENDIX A17: FINANCE - REQUIREMENTS FOR THE OPSUNIT

1.07	International Consultants	Unit	Number required by year of purchase/acquisition										Total	
			1	2	3	4	5	6	7	8	9	10		
	Inventory	mn mt	6	3	2	2	1	3	1	1	1	1	1	21
	Systems	mn mt	2	4	2	1	1	2	1	1	1	1	1	18
	Sampling	mn mt	1	0	0	0	0	1	0	0	0	0	0	2
	GIS Specialist	mn mt	4	4	2	2	2	2	2	2	2	2	2	24
	Image Processing	mn mt	2	6	4	2	2	2	2	2	2	2	2	26
	Fisheries biologist	mn mt	6	3	3	0	0	2	0	0	0	0	0	18
	Fish harv & mark	mn mt	6	0	2	0	0	2	0	0	0	0	0	10
	Integrated mgmt	mn mt	6	4	2	2	2	4	1	0	0	0	2	23
	Economist	mn mt	6	0	0	0	0	4	0	0	0	0	4	14
	Wildlife	mn mt	3	0	0	0	0	3	0	0	0	0	0	6
	Tourism	mn mt	4	0	0	0	0	4	0	0	0	0	0	8
	Ecologist	mn mt	6	0	0	0	0	0	0	0	0	0	0	6
	Silviculturist	mn mt	6	2	2	0	0	4	0	0	0	0	0	14
	Statistician?	mn mt	4	0	0	0	0	4	0	0	0	0	0	8
	Unspecified	mn mt	2	4	2	2	2	4	3	1	1	1	5	26
	Total	mn mt	64	30	21	11	10	41	10	7	9	17	220	
1.08	National Consultants													
	Entomologist	mn mt	2	1	1	1	1	1	0	0	0	0	0	7
	Botanist	mn mt	2	1	1	1	1	1	0	0	0	0	0	7
1.09	International Contracts													
	Surface Water Modelling	\$'000s	20	20	20	20	20	20	20	20	20	20	20	200
1.10	National Contracts													
	Socio-economic surveys	No.	1	0	0	0	1	0	0	0	0	0	1	3
	Market surveys	No.	1	1	1	1	1	1	1	1	1	1	1	10
1.11	Training													
	Fellowship	mn mt	48	24	24	0	0	0	0	0	0	0	0	96
	Overseas training	mn mt	9	27	12	18	0	0	6	0	0	0	6	78

APPENDIX A17: FINANCE - REQUIREMENTS FOR THE OPSUNIT

Total Capital Investment in US \$'000s			Unit	Investment required by Year (\$'000s)										Total
		Price	1	2	3	4	5	6	7	8	9	10	Total	
1.00	Capital Investment													
1.01	Buildings													
1.02	Transport													
	Vehicles													
	Station wagon	50	100	0	0	0	0	100	0	0	0	0	200	
	Pick up	30	90	0	0	0	30	60	0	0	0	0	180	
	Saloon	30	60	0	0	0	0	60	0	0	0	0	120	
	Boats													
	Launches	260	1300	0	0	0	0	0	0	0	0	0	1300	
	Speed boats	3	33	0	0	0	24	9	0	0	0	0	66	
	Outboard engines	5	138	28	28	28	28	28	28	28	28	28	385	
	Microlight	50	50	0	0	0	50	0	0	0	0	0	100	
	sub-total		1771	28	28	28	132	257	28	28	28	28	2351	
1.03	Data collection & processing													
	LARST	117	117	0	0	0	0	0	0	0	0	0	117	
	Computers	4	76	0	0	0	12	0	0	0	0	0	88	
	Software		24	5	5	5	5	5	5	5	5	5	69	
	Microbrian		20	0	0	0	0	0	0	0	0	0	20	
	Digitiser	4	12	0	0	0	0	0	0	0	0	0	12	
	Read/write optical disc		5	0	0	0	0	0	0	0	0	0	5	
	Exabyte tape cartridge		5	0	0	0	0	0	0	0	0	0	5	
	Plotter		18	0	0	0	18	0	0	0	0	0	36	
	Scanner		8	0	0	0	0	0	0	0	0	0	8	
	Image processing software		25	0	0	0	0	0	0	0	0	0	25	
	sub-total		310	5	5	5	35	5	5	5	5	5	385	
1.04	Satellite imagery													
	Multispectral		25	0	0	0	0	25	0	0	0	0	50	
	Panchromatic		36	0	0	0	0	36	0	0	0	0	72	
	sub-total		61	0	0	0	0	61	0	0	0	0	122	
1.05	Field & Lab equipment													
	Mensuration equipment		30	10	5	5	5	15	5	5	5	5	90	
	Laboratory equipment		26	0	0	0	10	0	0	0	0	0	36	
	Field equipment		115	0	0	0	0	0	0	0	0	0	115	
	sub-total		171	10	5	5	15	15	5	5	5	5	241	
1.06	Office equipment													
	Printers	2	6	0	0	0	0	0	0	0	0	0	6	
	Typewriter	0.5	1	0	0	0	0	0	0	0	0	0	1	
	Photocopiers	1	3	0	0	0	0	0	0	0	0	0	3	
	Air conditioners	1	10	0	0	0	0	0	0	0	0	0	10	
	Furniture													
	Desks	0.1	3	0	0	0	0	0	0	0	0	0	3	
	Chairs	0.05	5	0	0	0	0	0	0	0	0	0	5	
	Filing cabinets	0.1	3	0	0	0	0	0	0	0	0	0	3	
	Mapholders		5	0	0	0	0	0	0	0	0	0	5	
	Light table etc.		5	0	0	0	0	0	0	0	0	0	5	
	Others		20	0	0	20	0	0	20	0	0	0	60	
	sub-total		61	0	0	20	0	0	20	0	0	0	101	
1.07	International Consultants													
	Inventory	16	96	48	32	32	16	48	16	16	16	16	336	
	Systems	16	32	64	32	16	16	32	16	16	16	16	256	
	Sampling	16	16	0	0	0	0	16	0	0	0	0	32	
	GIS Specialist	16	64	64	32	32	32	32	32	32	32	32	384	
	Image Processing	16	32	96	64	32	32	32	32	32	32	32	416	
	Fisheries biologist	16	96	48	48	0	0	32	0	0	32	0	256	
	Fish harv & mark	16	96	0	32	0	0	32	0	0	0	0	160	
	Integrated mgmt	16	96	64	32	32	32	64	16	0	0	32	368	
	Economist	16	96	0	0	0	0	64	0	0	0	64	224	
	Wildlife	16	48	0	0	0	0	48	0	0	0	0	96	
	Tourism	16	64	0	0	0	0	64	0	0	0	0	128	
	Ecologist	16	96	0	0	0	0	0	0	0	0	0	96	
	Silviculturist	16	96	32	32	0	0	64	0	0	0	0	224	
	Statistician?	16	64	0	0	0	0	64	0	0	0	0	128	
	Unspecified	16	32	64	32	32	32	64	48	16	16	80	416	
	sub-total		1024	480	336	176	160	656	160	112	144	272	3520	

APPENDIX A17: FINANCE - REQUIREMENTS FOR THE OPSUNIT

Summary of Operational Unit Funding by year														
Cost by year US \$'000s														
CAPITAL INVESTMENT		1	2	3	4	5	6	7	8	9	10	Total		
1.01	Buildings													
1.02	Transport	1771	28	28	28	132	257	28	28	28	28	2351		
1.03	Data collection & processing	310	5	5	5	35	5	5	5	5	5	385		
1.04	SPOT Coverage	61	0	0	0	0	61	0	0	0	0	122		
1.05	Field and Lab Equipment	171	10	5	5	15	15	5	5	5	5	241		
1.06	Office Equipment	61	0	0	20	0	0	20	0	0	0	101		
1.07	International Consultants	1024	480	336	176	160	656	160	112	144	272	3520		
1.08	National Consultants	13	5	5	5	13	5	5	5	5	13	74		
1.09	International Contracts	20	20	20	20	20	20	20	20	20	20	200		
1.10	National Contracts	13	5	5	5	13	5	5	5	5	13	74		
1.11	Training	171	153	108	54	0	0	18	0	0	18	522		
Sub - total		3614	706	512	318	388	1024	266	180	212	374	7590		
OPERATION AND MAINTENANCE COSTS														
2.01	Rent and Utilities	12	12	12	12	12	12	12	12	12	12	120		
2.02	Fuel, lubricants, servicing and spare parts	84	84	84	84	84	84	84	84	84	84	827		
sub-total		96	96	96	96	96	96	96	96	96	96	947		
SALARY COSTS														
		436	436	436	436	436	436	436	436	436	436	4360		
TOTAL		4146	1238	1044	850	920	1556	798	712	744	906	12896		
CONTINGENCIES														
4.01	Price	3.98%	165	100	130	144	198	410	251	261	313	432	2404	
4.02	Physical	4%	172	54	47	40	45	79	42	39	42	54	613	
GRAND TOTAL			4484	1392	1220	1033	1162	2045	1090	1011	1099	1391	15913	
Total Capital Cost for 5 year programme				5536										
Annual recurrent costs				2661										
Contingencies				1094										
Total				9291										



APPENDIX A17: FINANCE OPTION 1

Finance - Option 1													
Assumptions													
1.00	The costs shown here are taken to be the extra costs incurred over and above the costs already met out of the revenue budget and the FRMP. The equipment provided under BGD/84/056 is assumed to be available for use in the SRF. The costs given here are the extra investments and the increased operation and maintenance costs required to develop Option 1.												
2.00	Each speed boat	2.5 engines	which are replaced at		20%		per year						
Option 1 - Investment Programme													
Total Capital Requirements													
		Unit	Number required by year of purchase/acquisition										
1.00	Capital Investment		1	2	3	4	5	6	7	8	9	10	Total
1.01	Buildings												
	Forest stations per	No.	11	11	11	11	11	0	0	0	0	0	55
	Forest stations tem	No.	4	4	4	4	4	0	0	0	0	0	20
	Wildlife sanctuaries	No.	5	0	0	0	0	0	0	0	0	0	5
	Nature conservation	No.	0	1	0	0	0	0	0	0	0	0	1
1.02	Transport												
	Vehicle	Station wagon	No.	4	0	0	0	0	4	0	0	0	8
		Pick up	No.	5	0	0	0	2	3	0	0	0	10
		Saloon	No.	2	0	0	0	0	2	0	0	0	4
	Boats	Launches	No.	3	3	3	0	0	0	0	0	0	9
		Survey vessels	No.	2	2	1	0	0	0	0	0	0	5
		Accommodation bo	No.	10	10	5	0	0	0	0	0	0	25
		Speed boats	No.	15	0	0	0	10	5	0	0	0	30
		Outboard engines	No.	38	8	8	8	8	8	8	8	8	105
		Microlight	No.	1	0	0	0	1	0	0	0	0	2
1.03	Data collection & processing												
	LARST	No.	1	0	0	0	0	0	0	0	0	0	1
	Computers	No.	19	0	0	0	3	0	0	0	0	0	22
	Software	\$'000s	24	5	5	5	5	5	5	5	5	5	69
	Microbrian	\$'000s	20	0	0	0	0	0	0	0	0	0	20
	Digitiser	No.	3	0	0	0	0	0	0	0	0	0	3
	Read/write optical d	\$'000s	5	0	0	0	0	0	0	0	0	0	5
	Exabyte tape cartrid	No.	5	0	0	0	0	0	0	0	0	0	5
	Plotter	\$'000s	18	0	0	0	18	0	0	0	0	0	36
	Scanner	\$'000s	8	0	0	0	0	0	0	0	0	0	8
	Image processing software	\$'000s	25	0	0	0	0	0	0	0	0	0	25
1.04	Satellite imagery												
	Multispectral	\$'000s	25	0	0	0	0	25	0	0	0	0	50
	Panchromatic	\$'000s	36	0	0	0	0	36	0	0	0	0	72
1.05	Field & Lab equipment												
	Mensuration equipment	\$'000s	30	10	5	5	5	15	5	5	5	5	90
	Laboratory equipment	\$'000s	26	0	0	0	10	0	0	0	0	0	36
	Field equipment	\$'000s	150	0	0	0	0	0	0	0	0	0	150
	Generators	No.	12	0	0	0	0	12	0	0	0	0	24
	Radio system	\$'000s	150	0	0	0	0	0	0	0	0	0	150
	Armaments	\$'000s	200	0	0	0	0	0	0	0	0	0	200
1.06	Office equipment												
	Computers	No.	10	0	0	0	0	5	0	0	0	0	15
	Printers	No.	8	0	0	0	0	0	0	0	0	0	8
	Typewriter	No.	2	0	0	0	0	0	0	0	0	0	2
	Photocopiers	No.	5	0	0	0	0	0	0	0	0	0	5
	Air conditioners	No.	10	0	0	0	0	0	0	0	0	0	10
	Furnit	Desks	No.	60	0	0	0	0	0	0	0	0	60
		Chairs	No.	150	0	0	0	0	0	0	0	0	150
		Filing cabinets	No.	60	0	0	0	0	0	0	0	0	60
		Mapholders	\$'000s	15	0	0	0	0	0	0	0	0	15
		Light table etc.	\$'000s	5	0	0	0	0	0	0	0	0	5
		Others	\$'000s	60	0	0	20	0	0	20	0	0	100

APPENDIX A17: FINANCE OPTION 1

		Unit	Number required by year of purchase/acquisition										Total
			1	2	3	4	5	6	7	8	9	10	
1.07	International Consultants												
	Inventory	mn mth	6	3	2	2	1	3	1	1	1	1	21
	Systems analyst	mn mth	2	4	2	1	1	2	1	1	1	1	16
	Sampling	mn mth	1	0	0	0	0	1	0	0	0	0	2
	GIS Specialist	mn mth	4	4	2	2	2	2	2	2	2	2	24
	Image Processing	mn mth	2	6	4	2	2	2	2	2	2	2	26
	Fisheries biologist	mn mth	6	3	3	0	0	2	0	0	2	0	16
	Fish harv & mark	mn mth	6	0	2	0	0	2	0	0	0	0	10
	Integrated mgmt	mn mth	6	4	2	2	2	4	1	0	0	2	23
	Economist	mn mth	6	0	0	0	0	4	0	0	0	4	14
	Wildlife	mn mth	3	0	0	0	0	3	0	0	0	0	6
	Tourism	mn mth	4	0	0	0	0	4	0	0	0	0	8
	Ecologist	mn mth	6	0	0	0	0	0	0	0	0	0	6
	Silviculturist	mn mth	6	2	2	0	0	4	0	0	0	0	14
	Statistician	mn mth	4	0	0	0	0	4	0	0	0	0	8
	Unspecified	mn mth	2	4	2	2	2	4	3	1	1	5	26
	subtotal	mn mth	64	30	21	11	10	41	10	7	9	17	220
1.08	National Consultants												
	Entomologist	mn mth	2	1	1	1	1	1	0	0	0	0	7
	Botanist	mn mth	2	1	1	1	1	1	0	0	0	0	7
1.09	International Contracts												
	Surface Water Modelling	\$'000s	20	20	20	20	20	20	20	20	20	20	200
1.10	National Contracts												
	Socio-economic surveys	No.	1	0	0	0	1	0	0	0	0	1	3
	Market surveys	No.	1	1	1	1	1	1	1	1	1	1	10
1.11	Training												
	Fellowship	mn mth	96	48	48	0	0	0	0	0	0	0	96
	Overseas training	mn mth	18	54	24	36	0	0	12	0	0	12	78
	Local - in service	\$'000s	20	20	20	20	20	20					

APPENDIX A17: FINANCE OPTION 1

Total Capital Investment in US \$'000s													
		Unit	Investment required by Year (\$'000s)										
		Price	1	2	3	4	5	6	7	8	9	10	Total
1.00	Capital investment												
1.01	Buildings												
	Forest stations per	26	275	275	275	275	275	0	0	0	0	0	1375
	Forest stations tem	10	40	40	40	40	40	0	0	0	0	0	200
	Wildlife sanctuaries	25	125	0	0	0	0	0	0	0	0	0	125
	Nature conservation	15	0	15	0	0	0	0	0	0	0	0	15
	subtotal		440	330	315	315	315	0	0	0	0	0	1715
1.02	Transport												
	Vehicle												
	Station wagon	50	200	0	0	0	0	200	0	0	0	0	400
	Pick up	30	150	0	0	0	60	90	0	0	0	0	300
	Saloon	30	60	0	0	0	0	60	0	0	0	0	120
	Boats												
	Launches	260	780	780	780	0	0	0	0	0	0	0	2340
	Survey vessels	260	520	520	260	0	0	0	0	0	0	0	1300
	Accommodation bo	25	250	250	175	0	0	0	0	0	0	0	625
	Speed boats	5	75	0	0	0	50	25	0	0	0	0	150
	Outboard engines	5	187.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	525
	Microlight	50	50	0	0	0	50	0	0	0	0	0	100
	subtotal		2273	1588	1203	37.5	197.5	412.5	37.5	37.5	37.5	37.5	5860
1.03	Data collection & processing												
	LARST	117	117	0	0	0	0	0	0	0	0	0	117
	Computers	4	76	0	0	0	12	0	0	0	0	0	88
	Software		24	5	5	5	5	5	5	5	5	5	69
	Microbrian		20	0	0	0	0	0	0	0	0	0	20
	Digitiser	4	12	0	0	0	0	0	0	0	0	0	12
	Read/write optical disc		5	0	0	0	0	0	0	0	0	0	5
	Exabyte tape cartridge		5	0	0	0	0	0	0	0	0	0	5
	Plotter		18	0	0	0	18	0	0	0	0	0	36
	Scanner		8	0	0	0	0	0	0	0	0	0	8
	Image processing software		25	0	0	0	0	0	0	0	0	0	25
	subtotal		310	5	5	5	35	5	5	5	5	5	385
1.04	Satellite imagery												
	Multispectral		25	0	0	0	0	25	0	0	0	0	50
	Panchromatic		36	0	0	0	0	36	0	0	0	0	72
	subtotal		61	0	0	0	0	61	0	0	0	0	122
1.05	Field & Lab equipment												
	Mensuration equipment		30	10	5	5	5	15	5	5	5	5	90
	Laboratory equipment		26	0	0	0	10	0	0	0	0	0	36
	Field equipment		150	0	0	0	0	0	0	0	0	0	150
	Generators	1.5	18	0	0	0	0	18	0	0	0	0	36
	Radio system		150	0	0	0	0	0	0	0	0	0	150
	Armaments		200	0	0	0	0	0	0	0	0	0	200
	subtotal		574	10	5	5	15	33	5	5	5	5	662
1.06	Office equipment												
	Computers	4	40	0	0	0	0	20	0	0	0	0	60
	Printers	2	16	0	0	0	0	0	0	0	0	0	16
	Typewriter	0.5	1	0	0	0	0	0	0	0	0	0	1
	Photocopiers	1	5	0	0	0	0	0	0	0	0	0	5
	Air conditioners	1	10	0	0	0	0	0	0	0	0	0	10
	Furnit												
	Desks	0.1	6	0	0	0	0	0	0	0	0	0	6
	Chairs	0.05	8	0	0	0	0	0	0	0	0	0	8
	Filing cabinets	0.1	6	0	0	0	0	0	0	0	0	0	6
	Mapholders		15	0	0	0	0	0	0	0	0	0	15
	Light table etc.		5	0	0	0	0	0	0	0	0	0	5
	Others		60	0	0	20	0	0	20	0	0	0	100
	subtotal		172	0	0	20	0	20	20	0	0	0	232

APPENDIX A17: FINANCE OPTION 1

	Unit Price	Investment required by Year (\$'000s)										Total		
		1	2	3	4	5	6	7	8	9	10			
1.07 International Consultants														
Inventory	16	96	48	32	32	16	48	16	16	16	16	16	16	336
Systems	16	32	64	32	16	16	32	16	16	16	16	16	16	256
Sampling	16	16	0	0	0	0	16	0	0	0	0	0	0	32
GIS Specialist	16	64	64	32	32	32	32	32	32	32	32	32	32	384
Image Processing	16	32	96	64	32	32	32	32	32	32	32	32	32	416
Fisheries biologist	16	96	48	48	0	0	32	0	0	0	32	0	0	256
Fish harv & mark	16	96	0	32	0	0	32	0	0	0	0	0	0	160
Integrated mgmt	16	96	64	32	32	32	64	16	0	0	0	32	32	368
Economist	18	96	0	0	0	0	64	0	0	0	0	64	64	224
Wildlife	16	48	0	0	0	0	48	0	0	0	0	0	0	96
Tourism	16	64	0	0	0	0	64	0	0	0	0	0	0	128
Ecologist	16	96	0	0	0	0	0	0	0	0	0	0	0	96
Silviculturist	16	96	3	32	0	0	64	0	0	0	0	0	0	224
Statistician	16	64	0	0	0	0	64	0	0	0	0	0	0	128
Unspecified	16	32	64	32	32	32	64	48	16	16	16	80	80	416
		subtotal	1024	480	336	176	160	656	160	112	144	272	272	3520
1.08 National Consultants														
Entomologist	1.2	2	1	1	1	1	1	0	0	0	0	0	0	8
Botanist	1.2	2	1	1	1	1	1	0	0	0	0	0	0	8
		subtotal	5	2	2	2	2	2	0	0	0	0	0	17
1.09 International Contracts														
Surface Water M			20	20	20	20	20	20	20	20	20	20	20	200
		subtotal	20	20	20	20	20	20	20	20	20	20	20	200
1.10 National Contracts														
Socio-economic surveys	8	8	0	0	0	8	0	0	0	0	0	8	8	24
Market surveys	5	5	5	5	5	5	5	5	5	5	5	5	5	50
		subtotal	13	5	5	5	13	5	5	5	5	13	13	74
1.11 Training														
Fellowship	3	288	144	144	0	0	0	0	0	0	0	0	0	576
Overseas training	3	54	162	72	108	0	0	36	0	0	0	36	36	468
Local in service		20	20	20	20	20	20	0	0	0	0	0	0	120
		subtotal	362	326	236	128	20	20	36	0	0	36	36	1164

APPENDIX A17: FINANCE OPTION 1

		Investment required by Year (\$'000s)											
		1	2	3	4	5	6	7	8	9	10	Total	
Capital Cost Summary													
1.01	Buildings	363	328	239	132	25	26	43	8	9	46	1219	
1.02	Transport	2273	1588	1203	38	198	413	38	38	38	38	5860	
1.03	Data collection & processing	310	5	5	5	35	5	5	5	5	5	385	
1.04	Satellite imagery	61	0	0	0	0	61	0	0	0	0	122	
1.05	Field & Lab equipment	574	10	5	5	15	33	5	5	5	5	662	
1.06	Office equipment	172	0	0	20	0	20	20	0	0	0	231.5	
1.07	International Consultants	1024	480	336	176	160	656	160	112	144	272	3520	
1.08	National Consultants	5	2	2	2	2	2	0	0	0	0	17	
1.09	International Contracts	20	20	20	20	20	20	20	20	20	20	200	
1.10	National Contracts	13	5	5	5	13	5	5	5	5	13	74	
1.11	Training	362	328	236	128	20	20	36	0	0	36	1164	
Total Capital Costs		5176	2764	2011	531	488	1261	332	193	226	435	13454	
Operation and Maintenance Costs													
2.00 OPERATION AND MAINTENANCE													
2.01	Buildings (including utilities)	18	35	47	53	54	56	58	58	59	61	498	
2.02	Transport	114	193	253	253	253	253	253	253	253	253	2332	
Total Operating and Maintenance Costs		132	228	300	306	307	309	311	311	312	314	2830	
Staff and Salaries													
			monthly	Year									
			pay	cost									
			Taka										
3.00	No.	Grade		\$									
	1	DFO	6025	4567	3178								
	1	ADFO	5300	4018	2795								
	10	ACF	4320	3275	22785								
	8	FR	4003	3035	16890								
	2	Computer Prog	4003	3035	4223								
	3	GIS Cartog	4003	3035	6334								
	14	Launch Capt	3390	2570	25031								
	14	" 1st mate	2725	2066	20121								
	14	Engineers	2478	1878	18297								
		Total extra wages bill	120	120	120	120	120	120	120	120	120	1197	
		Total	5427	3111	2470	957	915	1689	762	623	657	868	17480
4.00 CONTINGENCIES													
4.01	Price	3.98%	216	253	307	162	197	446	239	228	276	414	2739
4.02	Physical	4%	226	135	111	45	44	85	40	34	37	51	809
		subtotal	442	387	418	206	242	531	279	263	314	466	3548
Grand Total Option 1			5869	3498	2888	1163	1157	2220	1042	886	971	1334	21028

APPENDIX A17: FINANCE OPTION 1

Section 3 : Summary of Total Costs OPTION 1												
Investment required by year (\$'000s)												
		1	2	3	4	5	6	7	8	9	10	Total
CAPITAL INVESTMENT												
1.01	Buildings	363	328	239	132	25	26	43	8	9	46	1219
1.02	Transport	2273	1588	1203	38	198	413	38	38	38	38	5860
1.03	Data collection & processing	310	5	5	5	35	5	5	5	5	5	385
1.04	SPOT Coverage	61	0	0	0	0	61	0	0	0	0	122
1.05	Field and Lab Equipment	574	10	5	5	15	33	5	5	5	5	662
1.06	Office Equipment	172	0	0	20	0	20	20	0	0	0	232
1.07	International Consultants	1024	480	336	176	160	656	160	112	144	272	3520
1.08	National Consultants	5	2	2	2	2	2	0	0	0	0	17
1.09	International Contracts	20	20	20	20	20	20	20	20	20	20	200
1.10	National Contracts	13	5	5	5	13	5	5	5	5	13	74
1.11	Training	362	26	236	128	20	20	36	0	0	36	1164
	sub-total	5176	2764	2051	531	488	1261	332	193	226	435	13454
2.00 OPERATION AND MAINTENANCE COSTS												
2.00	Buildings (including utilities)	18	35	47	53	54	56	58	58	59	61	498
2.01	Rent and Utilities	0	0	0	0	0	0	0	0	0	0	0
2.02	Fuel, lubricants, servicing and spare	114	193	253	253	253	253	253	253	253	253	2332
	sub-total	132	228	300	306	307	309	311	311	312	314	2830
3.00	SALARY COSTS	120	120	120	120	120	120	120	120	120	120	1197
	sub-total	120	120	120	120	120	120	120	120	120	120	1197
TOTAL		5427	3111	2470	957	915	1689	762	623	657	868	17480
4.00 CONTINGENCIES												
4.01	Price	3.98%	216	253	307	162	197	446	239	228	276	2739
4.02	Physical	4%	226	135	111	45	44	85	40	34	37	809
	subtotal		442	387	418	206	242	531	279	263	314	3548
Grand Total Option 1		5869	3498	2888	1163	1157	2220	1042	886	971	1334	21028

APPENDIX A17: FINANCE - OPTION 2

		1.5	18	0	0	0	0	18	0	0	0	0	36	
Generators														
Radio system		\$'000s	150	0	0	0	0	0	0	0	0	0	150	
Armaments		\$'000s	200	0	0	0	0	0	0	0	0	0	200	
subtotal			403	0	0	0	0	18	0	0	0	0	421	
1.06 Office equipment														
Computers		4	40	0	0	0	0	20	0	0	0	0	60	
Printers		2	10	0	0	0	0	0	0	0	0	0	10	
Typewriter		0.5	1	0	0	0	0	0	0	0	0	0	1	
Photocopiers		1	2	0	0	0	0	0	0	0	0	0	2	
Air conditioners		1	5	0	0	0	0	0	0	0	0	0	5	
Furniture		0.1	3	0	0	0	0	0	0	0	0	0	3	
Desks		0.05	3	0	0	0	0	0	0	0	0	0	3	
Chairs		0.1	3	0	0	0	0	0	0	0	0	0	3	
Filing cabinets		\$'000s	10	0	0	0	0	0	0	0	0	0	10	
Map holders		\$'000s	40	0	0	10	0	0	10	0	0	0	60	
Others														
subtotal			117	0	0	10	0	20	10	0	0	0	157	
2.00 OPERATION AND MAINTENANCE														
2.01 Buildings (including utilities)			1	28	41	55	69	69	69	69	69	69	550	
2.02 Transport			68	121	181	181	181	181	181	181	181	181	1633	
3.00 NEW STAFF & SALARIES														
		monthly	Year											
		pay	Allowan	cost										
		Taka	\$											
No.	Grade													
1	DFO	6025	4567	3178										
1	ADFO	5300	4018	2795										
3	ACF	4320	3275	6835										
2	FR	4003	3035	4223										
0	Computer Prog	4003	3035	0										
0	GIS Cartog	4003	3035	0										
3	Launch Capt	3390	2570	5364										
3	* 1st mate	2725	2068	4312										
3	Engineers	2478	1878	3921										
subtotal			31	31	31	31	31	31	31	31	31	31	306	
Section 2: OPSUNIT SUMMARY COSTING														
Investment required by year (\$'000s)														
CAPITAL INVESTMENT			1	2	3	4	5	6	7	8	9	10	Total	
1.01 Buildings														
1.02 Transport			1771	28	28	28	132	257	28	28	28	28	2351	
1.03 Data collection & processing			310	5	5	5	35	5	5	5	5	5	385	
1.04 SPOT Coverage			61	0	0	0	0	61	0	0	0	0	122	
1.05 Field and Lab Equipment			171	10	5	5	15	15	5	5	5	5	241	
1.06 Office Equipment			61	0	0	20	0	0	20	0	0	0	101	
1.07 International Consultants			1024	480	336	176	160	656	160	112	144	272	3520	
1.08 National Consultants			13	5	5	5	13	5	5	5	5	13	74	
1.09 International Contracts			20	20	20	20	20	20	20	20	20	20	200	
1.10 National Contracts			13	5	5	5	13	5	5	5	5	13	74	
1.11 Training			171	153	108	54	0	0	18	0	0	18	522	
Sub - total			3614	706	512	318	388	1024	266	180	212	374	7590	
OPERATION AND MAINTENANCE COSTS														
2.01 Rent and Utilities			12	12	12	12	12	12	12	12	12	12	120	
2.02 Fuel, lubricants, servicing and spare parts			84	84	84	84	84	84	84	84	84	84	827	
sub-total			96	96	96	96	96	96	96	96	96	96	947	
SALARY COSTS			436	436	436	436	436	436	436	436	436	436	4360	
TOTAL			4146	1238	1044	850	920	1556	798	712	744	906	12896	
Section 3 : Summary of Total Costs OPTION 2														
Investment required by year (\$'000s)														
CAPITAL INVESTMENT			1	2	3	4	5	6	7	8	9	10	Total	
1.01 Buildings			440	330	315	315	315	0	0	0	0	0	1715	
1.02 Transport			3136	1083	1218	53	267	467	53	53	53	53	6431	
1.03 Data collection & processing			310	5	5	5	35	5	5	5	5	5	385	
1.04 SPOT Coverage			61	0	0	0	0	61	0	0	0	0	122	
1.05 Field and Lab Equipment			574	10	5	5	15	33	5	5	5	5	662	
1.06 Office Equipment			178	0	0	30	0	20	30	0	0	0	258	

APPENDIX A17: FINANCE - OPTION 2

1.07	International Consultants		1024	480	336	176	160	656	160	112	144	272	3520
1.08	National Consultants		13	5	5	5	13	5	5	5	5	13	74
1.09	International Contracts		20	20	20	20	20	20	20	20	20	20	200
1.10	National Contracts		13	5	5	5	13	5	5	5	5	13	74
1.11	Training		171	153	108	54	0	0	18	0	0	18	522
		sub-total	5939	2091	2017	668	838	1272	301	205	237	399	13963
2.00	OPERATION AND MAINTENANCE COSTS												
2.00	Buildings (including utilities)		14	28	41	55	69	69	69	69	69	69	550
2.01	Rent and Utilities		12	12	12	12	12	12	12	12	12	12	120
2.02	Fuel, lubricants, servicing and spare parts		152	205	265	265	265	265	265	265	265	265	2474
		sub-total	178	245	318	332	345	345	345	345	345	345	3144
3.00	SALARY COSTS	sub-total	467	467	467	467	467	467	467	467	467	467	4666
TOTAL			6584	2802	2801	1466	1649	2083	1112	1016	1048	1210	21773
-4.00	CONTINGENCIES												
4.01	Price	3.98%	262	227	348	248	355	550	349	373	441	578	3731
4.02	Physical	4%	274	121	126	69	80	105	58	56	60	72	1020
		subtotal	536	349	474	316	436	655	408	428	501	649	4752
Grand Total Option 2			7120	3150	3275	1782	2085	2739	1520	1445	1549	1860	26525

APPENDIX A17: FINANCE - SUMMARY OF OPTIONS 1 AND 2

Section 1 : Summary of Options 1 and 2 - Total Costs OPTION 1													
Investment required by year (\$'000s)													
	1	2	3	4	5	6	7	8	9	10	Total	Local	Foreign
CAPITAL INVESTMENT													
1.01 Buildings	363	328	239	132	25	28	43	8	9	46	1219	914	305
1.02 Transport	2273	1588	1203	38	198	413	38	38	38	38	5860	1465	4395
1.03 Data collection & processing	310	5	5	5	35	5	5	5	5	5	385	0	385
1.04 SPOT Coverage	61	0	0	0	0	61	0	0	0	0	122	0	122
1.05 Field and Lab Equipment	574	10	5	5	15	33	5	5	5	5	662	0	662
1.06 Office Equipment	172	0	0	20	0	20	20	0	0	0	232	68	174
1.07 International Consultants	1024	480	336	176	160	656	160	112	144	272	3520	0	3520
1.08 National Consultants	5	2	2	2	2	2	0	0	0	0	17	17	0
1.09 International Contracts	20	20	20	20	20	20	20	20	20	20	200	0	200
1.10 National Contracts	13	5	5	5	13	5	5	5	5	13	74	74	0
1.11 Training	362	326	236	128	20	20	36	0	0	36	1164	291	873
sub-total	5176	2764	2051	531	488	1261	332	193	226	435	13454	2819	10635
2.00 OPERATION AND MAINTENANCE COSTS													
2.00 Buildings (including utilities)	18	35	47	53	54	58	58	58	59	61	498	498	0
2.01 Rent and Utilities	0	0	0	0	0	0	0	0	0	0	0	0	0
2.02 Fuel, lubricants, servicing and spare par	114	193	253	253	253	253	253	253	253	253	2332	583	1749
sub-total	132	228	300	306	307	309	311	311	312	314	2830	1081	1749
3.00 SALARY COSTS													
sub-total	120	120	120	120	120	120	120	120	120	120	1197	1197	0
TOTAL	5427	3111	2470	957	915	1689	762	623	657	868	17480	5096	12384
4.00 CONTINGENCIES													
4.01 Price 3.98%	218	253	307	162	197	448	239	228	276	414	2739		
4.02 Physical 4%	226	135	111	45	44	85	40	34	37	51	809		
subtotal	442	387	418	206	242	531	279	263	314	468	3548		
Grand Total Option 1	6869	3498	2688	1163	1157	2220	1042	886	971	1334	21028	6131	14897
Total local costs are estimated at	6131												
Total foreign costs are estimated at	14897												
Section 2: OPSUNIT SUMMARY COSTING													
Investment required by year (\$'000s)													
	1	2	3	4	5	6	7	8	9	10	Total	Local	Foreign
CAPITAL INVESTMENT													
1.01 Buildings												0	0
1.02 Transport	1771	28	28	28	132	257	28	28	28	28	2351	588	1763
1.03 Data collection & processing	310	5	5	5	35	5	5	5	5	5	385	0	385
1.04 SPOT Coverage	61	0	0	0	0	61	0	0	0	0	122	0	122
1.05 Field and Lab Equipment	171	10	5	5	15	15	5	5	5	5	241	0	241
1.06 Office Equipment	61	0	0	20	0	0	20	0	0	0	101	25	75
1.07 International Consultants	1024	480	336	176	160	656	160	112	144	272	3520	0	3520
1.08 National Consultants	13	5	5	5	13	5	5	5	5	13	74	74	0
1.09 International Contracts	20	20	20	20	20	20	20	20	20	20	200	0	200
1.10 National Contracts	13	5	5	5	13	5	5	5	5	13	74	74	0
1.11 Training	171	153	108	54	0	0	18	0	0	18	522	131	392
Sub - total	3614	706	512	318	388	1024	266	180	212	374	7590	891	6698
OPERATION AND MAINTENANCE COSTS													
2.01 Rent and Utilities	12	12	12	12	12	12	12	12	12	12	120	120	0
2.02 Fuel, lubricants, servicing and spare par	84	84	84	84	84	84	84	84	84	84	827	207	620
sub-total	96	96	96	96	96	96	96	96	96	96	947	327	620
SALARY COSTS													
sub-total	438	436	436	436	436	436	436	436	436	436	4360	4360	0
TOTAL	4146	1238	1044	850	920	1556	798	712	744	906	12896	5578	7318
4.00 CONTINGENCIES													
4.01 Price 3.98%	165	100	130	144	198	410	251	261	313	432	2404		
4.02 Physical 4%	172	54	47	40	45	79	42	39	42	54	613		
subtotal	337	154	177	183	243	489	293	300	355	486	3016		
Grand Total: OPSUNIT	4484	1392	1220	1033	1162	2045	1090	1011	1099	1391	16913	6883	9030
Total local costs are estimated at	6883												
Total foreign costs are estimated at	9030												
Section 3 : Summary of Total Costs OPTION 2													
Investment required by year (\$'000s)													
	1	2	3	4	5	6	7	8	9	10	Total	Local	Foreign
CAPITAL INVESTMENT													
1.01 Buildings	440	330	315	315	315	0	0	0	0	0	1715	1286	429
1.02 Transport	3136	1083	1218	53	267	467	53	53	53	53	6431	1608	4823
1.03 Data collection & processing	310	5	5	5	35	5	5	5	5	5	385	0	385
1.04 SPOT Coverage	61	0	0	0	0	61	0	0	0	0	122	0	122
1.05 Field and Lab Equipment	574	10	5	5	15	33	5	5	5	5	662	0	662
1.06 Office Equipment	178	0	0	30	0	20	30	0	0	0	258	64	193
1.07 International Consultants	1024	480	336	176	160	656	160	112	144	272	3520	0	3520
1.08 National Consultants	13	5	5	5	13	5	5	5	5	13	74	74	0
1.09 International Contracts	20	20	20	20	20	20	20	20	20	20	200	0	200
1.10 National Contracts	13	5	5	5	13	5	5	5	5	13	74	74	0
1.11 Training	171	153	108	54	0	0	18	0	0	18	522	131	392
sub-total	5939	2091	2017	668	838	1272	301	205	237	399	13963	3237	10726
2.00 OPERATION AND MAINTENANCE COSTS													
2.00 Buildings (including utilities)	14	28	41	55	69	69	69	69	69	69	550	550	0
2.01 Rent and Utilities	12	12	12	12	12	12	12	12	12	12	120	120	0
2.02 Fuel, lubricants, servicing and spare par	152	205	265	265	265	265	265	265	265	265	2474	619	1856
sub-total	178	245	318	332	345	345	345	345	345	345	3144	1289	1856

APPENDIX A17 - Finance Wildlife Management Project

1. Feasibility Study Consultants						
	Wildlife specialist	1	1.5	24	24	0
	Economist	1	1.5	24	24	0
	Vet	1	1.5	24	24	0
2. Counterpart staff		3	4.5	9	0	9
						2000
3. Extra international travel				6	6	0
	subtotal			87	78	9
4. Contingencies				3	3	0
	Total			90	81	9
F. Bangladesh Game Industries						
Duration 2 months						
		No.	M/mnt	Cost		
1. Feasibility Study Consultants						
	Economist	1	2	32	32	0
2. Counterpart staff		1	2.0	4	0	4
	subtotal			36	32	4
3. Contingencies				1	1	0
	Total			37	33	4
Grand Total Wildlife Management Project				2206	1439	767

APPENDIX A17 - Finance Tourism Development Project

Tourism Development Project						Tourism Development Project - Summary of Costs			
Assumptions:									
International Consultants cost			16000	US \$ per month		Project Design Study			
Overseas training			3000	US \$ per month					
Operation + maintenance			5% of capital cost / annum			Consultants			
Local consultants cost			2500	US \$ per month		International		288	
A. First Phase Implementation - Project Design						National		8	
Duration	5 years					Travel		55	
	No.	M/mnt	Cost			Infrastructure		70	
					Costs	Operation + maintenance		4	
					Foreign	Local staff		35	
					Local	Contingencies		37	
International Consultants						subtotal		459	
Tourism specialist	1	4	64	64	0	TOTAL		496	
Economist	1	4	64	64	0	Foreign exchange component		427	
Eng/Architect	1	4	64	64	0	Local costs		69	
Marketing expert	1	4	64	64	0	Construction and Implementation			
Transport expert	1	1	16	16	0	Infrastructure	Jungle lodges	500	
Legal adviser	1	1	16	16	0	Cruise Ships		1000	
National Consultants						Buildings		75	
Legal adviser	1	1	3	0	3	Transport		290	
Engineer	1	2	5	0	5	Equipment		200	
Local staff						Consultants	International	816	
Managers	6	4	24	0	24	National		8	
Technicians	3	4	6	0	6	International Auditors		250	
Drivers	2	4	3	0	3	Training		600	
Boat driver	2	4	2	0	2	Local Staff		940	
Transport						Operations + maintenance		91	
Station Wagon	1		50	50	0	subtotal		4770	
Speed boat	1		5	0	5	Contingencies		562	
Outboard engines	3		15	15	0	TOTAL		5331	
International travel						Foreign exchange component		2970	
Air fares	4		30	30	0	Local costs		2362	
subsistence	4		25	25	0	Foreign ex	Local	GRAND TOTAL	
Operation + maintenance			4	3	1	3397	2431	5828	
sub total			459	411	48				
Contingencies			37	16	21				
Total			496	427	69				
B. Second Phase - Construction									
Infrastructure									
lodges	3		500	150	350				
Office	1		25	8	18				
Staff quarters	25		50	10	40				
cruise ships	2		1000	500	500				
Launch	1		260	130	130	500 Sin wgn + speed boat from project design stage will be kept from implementation			
Speed boats	1		5	0	5				
Outboard engines	5		25	25	0				
Equipment			200	100	100	furniture + computers etc			
Training									
managers	5	10	150	150	0				
guides	15	10	450	450	0				
Staffing						Annual Cost \$			
managers	5		300	0	300	12000			
guides	15		450	0	450	6000			
drivers	2		40	0	40	4000			
launch capt	1		40	0	40	8000			
1st mate	1		30	0	30	6000			
engineer	1		30	0	30	6000			
cook	1		10	0	10	2000			
speed boat driver	4		40	0	40	2000			
International consultants						Spread over 5 years			
Tourism specialist	1	24	384	384	0	Management advice			
Economist	1	24	384	384	0	Monitoring + evaluation			
Legal adviser	1	3	48	48	0	To oversee auctioning of			
National consultants						Lease Agreements			
Legal adviser	1	3	8	0	8				
International Contract Auditors	5	50	250	250	0				
Operations + Maintenance			91	68	23				
subtotal			4770	2657	2113				
Contingencies			562	313	249				
TOTAL			5331	2970	2362				
GRAND TOTAL			5828	3397	2431				

APPENDIX A18: LIST OF PLANTS OF THE SUNDARBANS RESERVED FOREST

SCIENTIFIC NAME	FAMILY NAME	OTHER NAME
<i>C.candelleana</i>		Math.goran
<i>Acanthus ilicifolius</i>	Acanthaceae	Hargoza
<i>Cerbera manghas(c.odollam)</i>	Apocynaceae	Dagor,Dacor,Dabur
<i>Hoya sp.</i>	Asclepiadaceae	Agacha
<i>Sarcolobus globosus</i>	Asclepiadaceae	Bowali lota
<i>Avicennia alba and/or A.marina</i>	Avicenniaceae	Sadda baen
<i>Avicennia officinalis</i>	Avicenniaceae	Baen
<i>Barringtonia racemosa</i>	Barringtoniaceae	Kumb,Kumba,Kumbi
<i>Stenochlaena palustris</i>	Blechnaceae	Dheki lota
<i>Salacia chinensis</i>	Celastraceae	Choyt barai
<i>Lumnitzera racemosa</i>	Combretaceae	Kripa,Kirpa
<i>Blumea sp.</i>	Compositae	Bari a gash,Bon gash
<i>B.parviflora</i>	Condolena	Bhatelati
<i>Cyperus javanicus</i>	Cyperaceae	Kucha,Kusha,Malia
<i>Diospyros peregrina(D.embryopteris)</i>	Ebenaceae	Gab
<i>Drypetes sp.</i>	Euphorbiaceae	Acher
<i>Excoecaria agollocha(Sapium indicum)</i>	Euphorbiaceae	Gewa
<i>Excoecaria indica</i>	Euphorbiaceae	Batla,Batul, Uрмаi
<i>Flueggia virosa</i>	Euphorbiaceae	Sitka,Sitki
<i>Mallotus repandus</i>	Euphorbiaceae	Bon notoy
<i>Flagellaria indica</i>	Flagellariaceae	Abethi
<i>Eriochloa procera</i>	Gramineae	Nol gash
<i>Imperatacylindrica(Saccharum cylindricum)</i>	Gramineae	Ullu
<i>Myriostachya wightiana</i>	Gramineae	Dhanshi
<i>Phragmites karka</i>	Gramineae	Nol khagra
<i>Soceharum spontaneum (Schumanianthus dichotoma)</i>	Gramineae	Skun grass,Murta
<i>Typha eliphantina</i>	Gramineae	Hogla
<i>Leea ? acquata</i>	Leeaceae	
<i>Caesalpinia crista</i>	Leguminosae	Kutum katta
<i>Cynometra ramiflora</i>	Leguminosae	Shingra
<i>Dalbergia candenatensis</i>	Leguminosae	Chandalota
<i>Dalbergia spinosa</i>	Leguminosae	Chandra katta
<i>Derris trifoliata(D.uliginosa)</i>	Leguminosae	Gila lota,Gowale lota, Kali lota
<i>Intsia bijuga(Afzelia bijuga)</i>	Leguminosae	Bhaela,Bharal

<i>Mucuna gigantea</i>	Leguminosae	Doyal
<i>Pongamia pinnata</i>	Leguminosae	Karanj, Karanja
<i>Dendrophthoe falcata</i>	Loranthaceae	Poragassa
<i>Viscum monoicum</i>	Loranthaceae	Shamu lota
<i>Hibiscus tiliaceus</i>	Malvaceae	Bhola
<i>Amoora cucullata</i>	Meliaceae	Amur
<i>Xylocarpus granatum</i> (<i>Carapa obovata</i>)	Meliaceae	Dhundul
<i>Xylocarpus mekongensis</i> (<i>Carapa molluccensis</i>)	Meliaceae	Passur
<i>Ficus sp</i> (<i>F.Retusa</i>)	Moraceae	Jir
<i>Aegiceras coyniculatum</i> (<i>A.majus</i>)	Myrsinaceae	Khalisha, Kulshi, Khalshi
<i>Eugenia fruticosa</i>	Myrtaceae	Ban Jam, Jam gach, Jam
<i>Nypa fruticans</i>	Palmae	Golpatta
<i>Phoenix paludosa</i>	Palmae	Hantai
<i>Pandanus foetidus</i>	Pandanaceae	Kewa-Kanta
<i>Aegialitis rotundifolia</i>	Plumbaginaceae	Dhalchaka
<i>Acrostichum aureum</i>	Pteridiaceae	Hoda, Hodo, Tiger fern
<i>B.sexangula</i>	Rhizophoraceae	Bakul Kankra
<i>Bruguiera gymnorrhiza</i>	Rhizophoraceae	Kankra
<i>Kandelia candel</i> (<i>candellia rheedi</i>)	Rhizophoraceae	Gura, Gurae, Gural, Guria
<i>Rhizophora mucronata</i>	Rhizophoraceae	Garjan, Jhanna
<i>Ceriops decandra</i> (<i>c.roxburghuana</i>)	Rhizophoraceae	Goran
<i>Ixora sp.</i>	Rubiaceae	Bon bakul
<i>Petunga roxburghii</i>	Rubiaceae	Narikili
<i>Lepisanthes rubiginosa</i>	Sapindaceae	Bon lichu
<i>Sonneratia apetala</i>	Sonneratiaceae	Keora
<i>Sonneratiacaseolaris</i> (<i>S.acida</i>)	Sonneratiaceae	Choyla, Ora, Soyla
<i>Heritiera fomes</i> (<i>H.minor</i>)	Sterculiaceae	Sundri
<i>Tamarix indica</i>	Tamaricaceae	Jhao, Nonajhao
<i>Thunbergiasp.</i>	Thunbergiaceae	Jermani lota
<i>Brownlowisa tersa</i> (<i>B.lanceolata</i>)	Tiliaceae	Sundri lota
<i>Clerodendrum inerme</i>	Verbenaceae	Sitka, Sitki
<i>Premnacorymbosa</i>	Verbenaceae	Serpoli, Setpoli
<i>Tetrastigma bracteolatum</i>	Vitidiaceae	Golgoti lota

APPENDIX A19: USES OF DIFFERENT PLANT SPECIES OF THE SRF : WOOD PRODUCTS AND NWFPs

(after Shiva, 1984)

Scientific & Common names of plants	Wood Products				Non-Wood Forest Products									
	Timber	Pulp (for paper)	Match	Paper pulp	Bark	Tannin & Dyes (%)	Medicinal	State of Government of S.	Uses & Parts	Fishes & Aquaculture	Cher- food	Honey	Microorganisms	Others
<i>Acanthus ilicifolius</i> (Hargoza)							Whole plant. Leaves - expectorant used for neurologia & rheumatism. Roots in asthma, paralysis, leucorrhoea & debility							Sand binder. Powdered lvs- food for fish + prawn
<i>Acrostichum aureum</i> (Hoda, Hodo, Fern)					Young Fronds	Yes	Yes Rhizome Old fronds		Fern's dried Fronds for brooms.					
<i>Aegialitis rotundifolia</i> (Dhalchaka)		Yes				Yes Bark - 11% Tannins								
<i>Aegiceras corniculatum</i> (<i>A. majus</i>) (Khalisha, Khulisha)	Huts const, tool handles, stakes for oyster beds.	Yes				Yes Twigs, leaves Bark - 14%	Yes Leaves					White very good from flowers.		Bark & fruit are fish poison.
<i>Amoora cucullata</i> (Amur)	Red, Hard House pots, house boats, toys, hookas.	Yes				Yes	Yes Leaves							
<i>Avicennia alba</i> (Syn. <i>A. officinalis</i> Var.: <i>Alba</i>) (Sada baen)	Very hard, walling (Cabinet, paving block).	Cal vai low. Good for Fish smoking.			Leaves & fruits.	Yes	Yes Fruits					Yes		Leaf fodder
<i>A. marina</i> (White baen)	Very hard, heavy, wood for boats, house pillars.	Yes		Yes		Yes Bark - 12.5%	Yes Whole plant Abortifacient							Thin shoots web of fish traps.
<i>A. officinalis</i> (Baen)	Brittle cheap doors Cabinets Crescolated paving blocks	Yes		Yes	Kernel and gum	Yes 5-6% in Bark	Yes Fruits (green) & bark.					Yes		Wood ash for clearing water & paint adhesive Leaf fodder.

Scientific & Common names of plants	Wood Products					Non-Wood Forest Products										
	Timber	Fuel (oil value)	Matches	Paper/pulp	Edible	Tannin & Dye (%)	Medicinal	Fatty oil	Essential oil	Fibres						
										Ferns & Palms	Grasses & Sedges	Charcoal	Honey	Miscellaneous	Others	
<i>Blumea sp.</i> (Bari a phash)							Yes		Yes							
<i>Barringtonia racemosa</i> (Kumb, Kumbi)					Tendu leaves, starch from seeds	Bark Tannin - 18%	Seed Kernel for jaundice, colic & ophthalmia. Bark vermifuge & insecticidal. Roots cooling. Fruits for cough, asthma & diarrhoea									Seeds & bark used as fish poison.
<i>Brownlowia tosa</i> (<i>B. lanceolata</i>) (Sundri lota)																Good soil binder & acts as sink for particulate pollutants.
<i>Bruguiera gymnorhiza</i> (Kankra)	Hard, rough strong. For heavy Cons. durable in furniture, posts, beams etc. Tool handle & Railway sleepers	Good 5169		for Rayon Bioting and corrugating papers	Yes Bark, fruits, pith, seeds.	Good Bark Tannin - 25-72% Stem & leaves - Tannin - 7.3% Black dye	Bark for Diarrhoea			Yes	Yes					Bark Alkline extract used for ion exchange resins. Tannin Formaldehyde for Plywood Adhesive. Leaves, Radicle Fish Food. Solid Tan for mud drilling & softening boiler water
<i>B. parviflora</i>	Not durable Mining. Poles, fish traps & stakes.	Inferior			Germinating embryos.	Bark - 9.6% Leaves - 12%	Fruit, Roots and leaves embryo.									Leaves & Radicle fish food.
<i>B. saxangula</i>	Hard, Durable. Heavy for const.	Yes			Yes Embryo	Yes Bark - 7.2-36%	Yes Fruit, roots & leaves.									
<i>Caesalpinia crista</i> (Kutum katta)						Tan from fruits Wood has dye	Roots, leaves, fruits, seeds & bark.	Yes Cosmetics								Fruits as fish poison.
<i>Cerbera manghas</i> (Dacor, Dabor, Daburi)							Bark purgative				Yes					Fruits narcotic, poisonous employed for killing stray dogs & to stupefy fish. Seeds yield an illuminant oil.

Scientific & Common names of plants	Wood Products					Non-Wood Forest Products							
	Timber	Fuel (for fuel)	Matches	Paper/pulp	Bark	Tannin & Dyes (%)	Medicinal	Essential oil	Floral		Others		
									Ferns & Palms	Grasses & Sedges		Chew-stem	Honey
<i>Eriochloa procer</i> (Nol gash)										Yes		Good fodder	
<i>Excoecaria agallocha</i> (<i>Sapium indicum</i>) (Gewa)	Light, Yell. White less durable cheap furniture, packing case toys, bedsteads, fishing nets carpentry.	4767 Yes	2nd quality	Yes News print		Tannin from Bark - 10-12%	Yes Latex from whole plant, decoction of leaves, roots & bark.				Yes	Poor honey	Wood for Power Alcohol making. Latex to kill fish. Leaves - poisonous to stock.
<i>Ficus sp.</i> (<i>F. retusa</i>) (Jiti)	Furniture	Yes				Barks, roots & leaves.							Leaf Fodder
<i>Flagellaria indica</i> (Abetaa)						Whole plants							Stems - basketry split stems used for tying purpose.
<i>Flueggea virosa</i> (Syn. <i>F. microcarpa</i> , <i>Securinega virosa</i>) (Sika Siki)	Agricultural implements, walking sticks, tent pegs, chains & fishing traps.	Good			Fruit	Bark - 8.9% used to dye matting black.	Roots - analgesic and aphrodisiac properties. Leaves useful.						Plants ornamental. Branches for thatching.
<i>Hentiera fomes</i> (<i>H. minor</i>) (Sundri)	Dark red, V good. Heavy, durable white Ant & Marine Borer Resistant. Electric poles, boats, oars, masts, felices, spokes, posts, tools, bridges, beams etc.	Yes		Good	Leaves, Fruits, seed in Scarcity	Yes from leaves & barks. Leaves - 9.7-11.7% Bark - 8-12.4%	Gum from bark.						Bark Gum for Adhesives. Leaf fodder.
<i>Hibiscus liliaceus</i> (Bhola)	Durable Tool Handles, planking, fishing nets, cabinet/fancy work.	Yes				Leaves, mucilage of bark, roots, seeds, flowers.					Yes		Fencing Leaf fodder. Useful fibre from bark.
<i>Hoya sp.</i> (Agasha)						Leaves for rheumatism Juice as diuretic.							

Scientific & Common names of plants	Wood Products							Non-Wood Forest Products									
	Timber	Fuel (cal value)	Matches	Paper pulp	Essible	Tannin & Dyes (%)	Medicinal	Fatty oil	Essential oil	Ferns & Palms	Fibres	Grasses & Sedges	Char-coal	Honey	Miscellaneous	Others	
<i>Imperata cylindrica</i> (Ulu, Ooloo)				Yes			Rhizome, roots, seeds.					Yes Soil binder used for ropes, mats, brushes, baskets & plates & packing material.					Fodder, good source of VIT A & C. stuffing material.
<i>Intsia bijuga</i> (<i>Arzelia bijuga</i>) (Bhaela, Bharal)	Good quality, beams, girdles, carpentry.																
<i>Ipomea pes-caprae</i> (Chihagakuri)					Leaves - vegetable		Plant juice antiseptic, used in piles etc. Leaf juice diuretic & purgative. Seed astringent, stomachic, tonic etc.	Yes 0.05%									Plant sand binder, fodder.
<i>Ixora undulata</i> (Bon bakul)							Anticancer & diuretic.										
<i>Kandelia candel</i> (<i>Candelia rheedii</i>) (Gura, gurae, gural)		Good				Yes Tannin & Dye Bark - 15-17%	Yes for diabetes.					Good					Green Manure
<i>Leea aequata</i> (Kaka jangha)							Whole plant, antitubercular, Tubers & Stern astringent. Leaves & twigs anticeptic (poultice).	Yes inhibits pathogen growth 0.15%									
<i>Lepisanthes rubiginosa</i> (Bon lichu)	House building				Fruits												
<i>Lumnitzera racemosa</i> (Kirpa, knipa)	Durable, Frag. piles, Attractive for cabinet works.	5454			Leaves	Bark - 15-19% Leaves & wood - low	Yes Fluid from stem.										
<i>Mucuna gigantea</i> (Doyal)							Bark & seeds.	Yes									Poisonous to pigs.

Scientific & Common names of plants	Wood Products					Non-Wood Forest Products						
	Timber	Fuel (or value)	Matches	Paper pulp	Edible	Tann & Dyes (%)	Medicinal	Fatty oil	Fibres		Miscellaneous	
									Ferns & Palms	Grasses & Sedges		Char-coal
<i>Myriostachya wightiana</i> (Dhanshi)												Soil binder & coloniser.
<i>Nypa fruticans</i> (Golpatta)		Yes			Sugar & Vinegar from SAP. Young seeds	Yes Young penduncles & immature seeds.	Yes Leaves, young shoots, roots.			Thatching, mats, baskets, Shingles, Cigarette wrapper, etc.		Gasoline Ethanol, Ivory like seed for Buttons Leaves & mesocarp of fruit - fibre
<i>Oryza coarctata</i>					Grain like rice with soft chalky texture.							Adapted to saline swamps
<i>Pandanus foetidus</i> (Kewa katta)				Low yield	Stem pith & fruit - edible.		Fruits	Yes (Foul smell)	Yes			Hedge plant
<i>Peltura roxburghii</i> (Marikuli)	For box & rough furniture.											
<i>Phoenix paludosa</i> (Hantal)										Thatching Rafters, poles, wall-making		Stem-walking sticks
<i>Phragmites karka</i> (Nol kagra)				Reed-paper			Roots		Yes	Yes		Useful roads, hooka pipe, cordage fibre, fodder.
<i>Pongamia pinnata</i> (Karsnj, Karanja)	Rafter, wheel, furniture, ploughs, veneering.	Seed oil in diesel engine.				Dyeing	seed oil, leaves, roots, flowers, bark.	Yes			Yes	Host for lac insect, fish poison, fodder.
<i>Premna corymbosa</i> (Syn. <i>P. obtusifolia</i>) (Serpoi, Setpoi)	Paddies, knife handles, cabinet and for turning & fret work.				Leaves	Roots has yellow dye & tannin.	Roots - Laxative, stomachic, cordial, used in fevers, Antibiotic. Leaves - Carminative, glactagogue, given in flatulence, colic.	Yes in roots				Fodder

Scientific & Common Name(s) of species	Wood Products					Non-Wood Forest Products						
	Timber	Fuel (or other use)	Miscel.	Paper pulp	Edible	Tann & Dye (%)	Medicinal	Jelly or Essences	Fruit		Others	
									Green	Chalk-stain		
<i>Rhizophora mucronata</i> (<i>R. conjugata</i>) (Garjan, Jhama)	Good for heavy construction Railway lines, particle board, bridges, tool handles.	Good 4888		Yes	Young shoots & Fruit as Veg & for making wine.	Bark Tannin - 25-35% For Fish Nets & sails Barks - very rich % for softening of water & ion exchange resins.	Bark			Excellent	Yes (Poisonous)	Gum for Drilling Mud, Preserve of Nets & Sails, Plywood Adhesive, Spent Bark as Briquettes, Ash-fertiliser.
<i>Saccharum spontaneum</i> (Shun grass)				For wrapping, writing, printing, grease proof							Yes Used as hay, ropes, hatchling.	Grass-fodder in scarcity, used for hybridization.
<i>Sesecia chinensis</i> (Choyt barai)					Fruits		Roots in diabetes & menstrual troubles.					
<i>Sarcocobus globosus</i> (Bowall lota)					Fruits		Leaves - Rheumatism & Dengue fever.					Fruits made into a conserve. Seeds poisonous, used to kill dogs & wild animals.
<i>Sonneratia apetala</i> (Keora)	Light Red-Brown Mod. Hard, Heavy Planks, Furniture, Boat parts, Teachest.	4801			Sour unripe fruits & leaves.	Yes Stem bark - 11-16.6% Twig bark - 14% Fruits - 9.6-10% Leaves - 8% Dye	Yes				Yes Very good	Fruit pectin as plywood adhesives. Pneumatophores as fish floats & pith for lining & Art. flowers.
<i>Sonneratia caseolaris</i> (<i>S. acida</i>) (Choyla, Ora, Soya)	Piles, bridges, boat, ship, do or, furniture, musical instrument.			Kraft paper	Fruits Jelly, vinegar.	Stem bark - 9-17% Twig bark - 11-11.9%	Fruit Pericarp as vermifuge.				Yes	Pneumatophores as fish floats, pith, cork.

Scientific & Common names of plants	Wood Products				Non-Wood Forest Products							
	Timber	Fuel (oil value)	Medicinal	Edible	Tannin & Dyes (%)	Medicinal	Fatty oil	Essential oil	Resin & Gums	Grasses & Sedges	Stems	Others
<i>Stenochlaena palustris</i> (Deki lota : a fern)				Young shoots.		Decoction of fronds - febrifuge						Rhizomes used as cordage for binding fish traps and as anchor ropes, also used for caulking boats & for making baskets.
<i>Tamarix indica</i> (Jhao, Nona jhao)		Yes			Bark - 15.3% Galls - 40-50%. Galls have dye also.							
<i>Tetrastigma bracteolatum</i> (Golgoti lota)				Fruits								
<i>Thunbergia sp.</i> (Jermani lota, Nul lata)		Yes				Leaves Potassium rich.						Ornamental foliage & flowers fed to rabbits.
<i>Typha elephantina</i> (Hogla)				Young shoots, rhizome, pollen		Rhizomes used in dysentery, gonorrhoea & measles spike floss & down of fruits to wounds.				Yes Thatching, screen, ropes, mats .stuffing material, coarse textiles, carpet, fishing nets.		Down of fruits mixed with mortar as a binder. Fodder for elephants.
<i>Viscum monicum</i> SHAMU LOTA BANDA PARGATCHA						Powerful narcotic, leaves parasitizing nux-vomica tree Properties similar to nux-vomica, substitute for strychnine & brucine.						
<i>Xylocarpus granatum</i> DHUNDUL	Knotty, Hollow interlocked. Boat, Furniture, Houseposts, Pencil, Spokes.			Yes	Yes from Bark 25%	Bark	Hair oil & for burning.					Bark is used for toughening fish nets.

Scientific & Common names of plants	Wood Products				Non-Wood Forest Products										
	Timber	Fuel (or value)	Matches	Paper pulp	Essible	Tannin & Dyes (%)	Medicinal	Fatty oil	Essential oil	Ferrous	Permy & Prunins	Grassins & Starches	Charcoal	Honey	Miscellaneous Others
<i>Xylocarpus mekongensis</i> (Syn. <i>Carepa moluccensis</i>) PASSUR	Deep Red, Strong, Durable. 1st class cabinet wood for parquet. Lasts in Sea				Fruits	Yes 24%								Yes	

Source : C.S.I.R (19 ...?)

APPENDIX A20: LIST OF MEDICINAL PLANTS OF THE SUNDARBANS AND THEIR USES

(based on Nasker and Bakshi, 1987)

Scientific Name	Known Medicinal Uses
<i>Tamarix dioica</i>	Bark used as a tonic and for skin diseases
<i>T. gallica</i>	Galls and twigs used as astringent and for dysentery
<i>Hibiscus tiliaceus</i>	Roots used in preparation of embrocations
<i>Thespesia lampus</i>	Roots and fruits used to cure venereal diseases
<i>T. populneoides</i>	Bark used to cure dysentery and skin diseases
<i>Xylocarpus moluccensis</i>	Bark used as febrifuge for dysentery and diarrhoea
<i>Derris indica</i>	Powder of seed used for bronchitis and whooping cough
<i>D. trifoliata</i>	Entire plant used as antispasmodic and stimulant
<i>Caesalpinia nuga</i>	Roots have diuretic properties and used in treatment for kidney stones
<i>Ceriops tagal</i>	Root decoction used as substitute for quinine
<i>Lumnitzera racemosa</i>	Stem decoction used for herpes and itching
<i>Barringtonia acutangula</i>	Bark has wide medicinal application in rural areas
<i>B. racemosa</i>	Fruit use in remedies for coughs, asthma, jaundice and ophthalmia
<i>Ammannia baccifera</i>	Entire plant makes strong purgative
<i>Trianthema portulacastrum</i>	Entire plant used for heart disease and anaemia
<i>Launea sermentosa</i>	Entire plant used as saporific, diuretic, and aperient
<i>Cerbera odollam</i>	Bark and nuts used has purgative and narcotic effects
<i>Holarrhena antidysenterica</i>	Antiperiodic, used in treatment of malaria and dysentery
<i>Ipomoea pes-carpea</i>	Leaves used as astringent and laxative and for treatment of rheumatism
<i>Acanthus ilicifolius</i>	Used in treatment of asthma, dyspepsia, and rheumatism
<i>Premna corymbosa</i>	Used for curing piles and tumors
<i>Viscum monoicum</i>	Powerful narcotic
<i>Rhizophora apiculata</i>	Root decoction used to relieve high blood pressure
<i>Causarina equisetifolia</i>	Bark is astringent and used to cure diarrhoea and dysentery

APPENDIX A21: A LIST OF MAMMALS OF THE SRF, BGD/84/056, KHULNA

SCIENTIFIC NAME	ORDER	OTHER NAME
<i>Suncus murinus</i>	Insectivora	Grey musk shrew
<i>Coelops frithi</i>	Chiroptera	Tailless leaf-nosed bat
<i>Cynopterus sphinx</i>	Chiroptera	Greater short-nosed fruit bat
<i>Hipposideros bicolor</i>	Chiroptera	Bicolor leaf-nosed bat
<i>Megaderma lyra</i>	Chiroptera	Greater false vampire Bat
<i>Pipistrellus coromandra</i>	Chiroptera	Pipistrelle
<i>Pipistrellus mimus</i>	Chiroptera	Pygmy pipistrelle
<i>Pteropus giganteus</i>	Chiroptera	Flying fox
<i>Rhinopome hardwickei</i>	Chiroptera	Lesser rat-tailed bat
<i>Scotophilus heathi</i>	Chiroptera	Greater yellow bat
<i>Scotophilus luteus</i>	Chiroptera	Bengal yellow bat
<i>Scotophilus temminki</i>	Chiroptera	Lesser yellow bat
<i>Taphozous longimanus</i>	Chiroptera	Long-winged tomb bat
<i>Macaca mulatta</i>	Primates	Rhesus macaque
<i>Canis aureus</i>	Carnivoras	Jackal
<i>Felis bengalensis</i>	Carnivora	Leopard cat
<i>Felis chaus</i>	Carnivora	Jungle cat
<i>Felis viverrina</i>	Carnivora	Fishing cat
<i>Aonyx cinerea</i>	Carnivora	Clawless otter
<i>Lutra perspicillata</i>	Carnivora	Smooth otter
<i>Panthera tigris</i>	Carnivora	Bengal tiger
<i>Herpestes edwardsi</i>	Carnivora	Mongoose
<i>Paradoxurus hermaphroditus</i>	Carnivora	Palm civet
<i>Viverra zibetha</i>	Carnivora	Large Indian civet
<i>Vulpes bengalensis</i>	Carnivora	Bengal fox
<i>Axis axis</i>	Artiodactyla	Spotted deer
<i>Muntiacus muntjak</i>	Artiodactyla	Barking deer
<i>Sus scrofa</i>	Artiodactyla	Wild boar
<i>Bandicota bengalensis</i>	Rodentia	Lesser bandicoot rat
<i>Bandicota indica</i>	Rodentia	Bandicoot rat
<i>Callosiurus pygerythus</i>	Rodentia	Himalayan squirrel
<i>Funumbulus pennanti</i>	Rodentia	Five-striped palm squirrel

SCIENTIFIC NAME	ORDER	OTHER NAME
<i>Hystrix hodgsoni</i>	Rodentia	Crestless Malay porcupine
<i>Mus booduga</i>	Rodentia	Field mouse
<i>Mus cervicolor</i>	Rodentia	Fawn-coloured mouse
<i>Rattus rattus</i>	Rodentia	Roof rat
<i>Vandeleuria oleracea</i>	Rodentia	Long-tailed tree mouse
<i>Delphinus delphis</i>	Cetacea	Common dolphin
<i>Neophocaena phocaenoides</i>	Cetacea	Little porpoise
<i>Orcaella brevirostris</i>	Cetacea	Irrawaddy dolphin
<i>Platanista gangetica</i>	Cetacea	Gangetic dolphin
<i>Stenella malayana</i>	Cetacea	Malay dolphin
<i>Sotelea plumbea</i>	Cetacea	Plumbeous dolphin

**APPENDIX A22: A LIST OF THE BIRDS OF THE SUNDARBANS
RESERVED FOREST**

Family - Podicipedidae
Podiceps ruficollis

Little Grebe

Family - Pelecanidae
Pelecanus philippensis
Pelecanus onocrotalus

Spot-billed Pelican
White/Rosy Pelican

Family - Phalacrocoracidae
Phalacrocorax carbo
Phalacrocorax niger
Anhinga rufa

Large Cormorant
Little Cormorant
Darter

Family - Ardeidae
Ardea goliath
Ardea cinerea
Ardea purpurea
Ardea imperialis
Butorides striatus
Ardeoal grayii
Pubulcus ibis
Egretta alba
Egretta intermedia
Egretta garzetta
Nycticorax nycticorax
Ixobrychus cinnamomeus
Ixobrychus sinensis
Dupetor flavicollis
Gorsachius melanopterus

Giant Heron
Grey Heron
Purple Heron
Great White-bellied Heron
Little Green Heron
Pond Heron
Cattle Egret
Large Egret
Intermediate Egret
Little Egret
Night Heron
Chestnut Bittern
Yellow Bittern
Black Bittern
Tiger Bittern

Family - Ciconiidae
Ibis leucocephalus
Anastomus oscitans
Ciconia ciconia
Ciconia episcopus
Leptoptilos javanicus
Leptoptilos dubius
Xenorhynchus oscitans

Painted Stork
Open-bill Stork
White Stork
White-necked Stork
Leeser Adjutant
Greater Adjutant
Black-necked Stork

Family - Threskiornithidae
Threkiornis melanocephala
Platelea leucordia

White Ibis
Spoonbill

Family - Anatidae
Anser indicus
Anser anser
Anser fabalis
Dendrocygna javanica
Anas penelope
Anas crecca
Anas clypeata
Anas acuta
Anas platyrhynchos
Anas strepera
Anas querquedula
Aythya fuligula
Aythya nyroca

Bar-headed Goose
Grey Lag Goose
Pin-footed Goose
Leeser Whistling Teal
Wigeon
Common Teal
Shoveller
Pintail
Mallard
Gadwall
Garganey
Tufted Duck
White-eyed Pochard

Aythya ferina
Tedoma ferruginea
Nettapus coromandelianus
Netta rufina

Family - Pandionidae
Pandion haliaetus

Family - Accipitridae

Elanus caeruleus
Milvus migrans
Haliaeetus indus
Accipter badius
Accipter nisus
Accipter triviagatus
Butaster teesa
Pernis ptilorhynchus
Spizaetus limnetus
Buteo rufinus
Buteo buteo
Heiraaetus pennatus
Aquila rapax
Aquila clanga
Aquila pomarina
Ictinaetus malayensis
Haliaeetus leueogaster
Haliaeetus leucoryphus
Ichthyophaga ichhyaetus
Ichthyophaga nana
Gyps bengalensis
Gyps fulvus
Circus macrourus
Circus melanoleucos
Circus aeruginosus
Spilornis cheela

Family - Falconidae

Falco peregrinus
Falco chiquera
Falco Serverus
Falco tinnuneulus

Family - Phesianidae

Francolinus gularis
Gallus gallus

Family - Rallidae

Rallus aquaticus
Amourornis fuscus
Amourornis phoenicurus
Gallixrex cinerea
Gallinula chloropus
Fulica atra
Porphyrio porphyrio
Haliopais personata

Family - Jacanidae

Metapidius indicus
Hydrophasianus chirurgus

Common Pochard
 Brahminy Duch
 Cotton Teal
 Red-breasted Pochard

Osprey

Black-winged Kite
 Pariah Kite
 Brahminy Kite
 Shikra
 Sprraw Hawk
 Crested Goshwk
 White-eyed Buzzard
 Honey Buzzard
 Changeable Hawk
 Long-legged Buzzard
 Buzzard
 Booted Hawk Eagle
 Tawny Eagle
 Greater Spoted Eagle
 Lesser Spotted Eagle
 Black Eagle
 White-bellied Sea
 Pallas's Fishing Eagle
 Grey-headed Fishing Eagle
 Himalayan Grey-headed Fishing Eagle
 White-backed Vulture
 Griffon Vulture
 Pale Harrier
 Pied Harrier
 Marsh Harrier
 Crested Serpent Eagle

Shaheen Faleon
 Red-headed Merlin
 Oriental Hobby
 European Kestrel

Swamp Partridge
 Red Jungle Fowl

Water Rail
 Ruddy Crake
 White-breasted Water Hen
 Water Cock
 Moorhen
 Coot
 Purple Moorhen
 Masked Finfoot

Bronze-winged Jacana
 Pheasant-lailed Jacana

Family - Haematopodidae
Haematopus ostralegus

Oystercatcher

Family - Charadriidae

Vanellus cinereus
Vanellus spinosus
Vanellus indicus
Vanellus malabaricus
Pluvialis squatorola
Pluvialis dominica
Charadrius placidus
Charadrius mongolus
Charadrius leschenaulti
Charadrius alexandrinus
Charadrius dubius
Charadrius hiaticula
Numenius phaeopus
Nemeneus arquata
Limosa limosa
Tringa glareola
Tringa erythropus
Tringa terek
Tringa totanus
Tringa ochropus
Tringa hypoleucos
Tringa stagnatilis
Limnodromus semipalmetus
Arenaria interpres
Capella gallinago
Capella stenura
Calidris alpinus
Calidris minutus
Calidris temmincki
Calidris tenuirostris
Calidris alfa
Calidris testaceus
Philomachus pygnae
Stercorarius parasiticus

Grey-headed Lapwing
Spur-winged Lapwing
Red-wattled Lapwing
Yellow-wattled Lapwing
Grey Plover
Eastern Golden Plover
Long-billed Ringed Plover
Mongolian Plover
Large Sand Plover
Kentish Plover
Little Ringed Plover
Ringed Plover
Eastern Whimbrel
Curlew
Black-tailed Godwit
Wood Sandpiper
Spotted Redshank
Terek Sandpiper
Common Redshank
Green Sandpiper
Common Sandpiper
Marsh Sandpiper
Asian Dowitcher
Turnstone
Fantail Snipe
Pintail Snipe
Dunlin
Little Stint
Temminck's Stint
Eastern Knot
Sanderling
Curlew Sandpiper
Ruff and Reeve
Parasitic Skua

Family - Rostratulidae
Rostratula bengalensis

Painted Snipe

Family - Recurvirostridae
Haemantopus haemantopus
Recurvirostra avosetta

Black-winged Stilt
Avocet

Family - Burhinidae
Burhinus oedipnemus

Thick Knee

Family - Glareolidae
Glareola lactea

Small Pratincl

Family - Laridae
Larus argentatus
Larus burnniciphalus
Larus ridibundus
Larus ichthyaeus
Chlidonias hybrida
Gelochelidon nilotica
Sterna bergii
Sterna acuticauda

Herring Gull
Brown-headed Gull
Black-headed Gull
Great Black-headed Gull
Whiskered Tern
Gull-billed Tern
Large-crested Tern
White-winged Black Tern

Sterna bengalensis
Sterna albifrons
Sterna aurentia
Sterna dougallii
Sterna hirundo
Sterna fuscata
Sterna summatrana
Hydroprogne caspia
Gygis alba
Rynchops albigollis

Family - Columbidae

Treron phoenicoptera
Treron curvirostra
Treron pompadora
Ducula aenea
Columba livia
Streptopelia decaocto
Streptopelia tranquibarica
Streptopelia chinensis
Streptopelia orientalis
Chaleophaps indica

Family - Psittacidae

Psittacula krameri
Psittacula finschi
Psittacula roseata

Family - Cuculidae

Clamator coromandus
Clamator jacobinus
Cuculus micropterus
Cuculus varius
Cacomantis merulinus
Cacomantis sonneratii
Cacomantis querulus
Eudynamys scolopaea
Phopodytis tristis
Contropus sinensis
Contropus toulou

Family - Strigidae

Tyto alba
Otus scops
Otus bakkameona
Bubo nipalensis
Bubo zeylonensis
Bubo bubo
Bubo flavipes
Anthena brama
Ninox scutulata
Asio flammeus

Family - Caprimulgidae

Caprimulgus indicus
Caprimulgus macrurus
Caprimulgus affinis

Family - Apodidae

Cypsiurus parvus

Lesser Crested Tern
 Little Tern
 River Tern
 Rosy Tern
 Common Tern
 Sooty Tern
 Eastern Blacknaped Tern
 Caspian Tern
 Occan White Tern
 Indian Skimmer

Yellow-footed Green Pigeon
 Thick-billed Green Pigeon
 Grey-fronted Green Pigeon
 Green Imperial Pigeon
 Blue Rock Pigeon
 Ring Dove
 Red Turtle Dove
 Spotted Dove
 Rufous Turtle Dove
 Emerald Dove

Rose-ringed Parakeet
 Slay-headed Parakeet
 Bolossom-headed Parakeet

Red-winged Crested Cuckoo
 Pied Crested Cuckoo
 Indian Cuckoo
 Brain Fever Bird
 Plaintive cuckoo
 Banded Bay Cuckoo
 Banded bay cuckoo
 Koel
 Large green-billed Molkoha
 Crow Pheasant
 Lesser Coucal

Barn Owl
 Scops Owl
 Collard Scops Owl
 Forest Eagle Owl
 Brown Fish Owl
 Great Hron Owl
 Tawny Fish Owl
 Spotted Owlet
 Brown Hawk Owl
 Short-eared Owl

Jungle Nightjar
 Long-tailed Nightjar
 Franklin's Nightjar

Palm Swift

Family - Alcedinidae

Ceryle rudis
Alcedo athis
Pelargopsis amauroptera
Pelargopsis capensis
Halcyon cormandra
Halcyon smyrnensis
Halcyon pileata
Halcyon chloris

Lesser Pied Kingfisher
 Common Kingfisher
 Brown-winged Kingfisher
 Stork-billed Kingfisher
 Ruddy Kingfisher
 White-breasted Kingfisher
 Black-capped Kingfisher
 White-collared Kingfisher

Family - Meropidae

Perops Orientalis

Green Bee-eater

Family - Coraciidae

Coracias bengalensis

Roller

Family - Upupidae

Upupa epos

Hoopoe

Family - Capitonidae

Megalaima lineata
Megalaima haemacephala

Lineated Barbet
 Coppersmith Barbet

Family - Picidae

Junx torquilla
Picus flavinucha
Picus myrmecophoneus
Dinopium benghalense
Picooides macie
Picooides mahrattensis
Picooides nanus
Chrysocaptes lucidus
Micropternus brachyurus

Wryneck
 Large Yellow naped Woodpecker
 Little Scaly bellied Green Woodpecker
 Lesser Goldenbacked Woodpecker
 Fulvousbreasted Pied Woodpecker
 Yellow-fronted Pied Woodpecker
 Pigmy Woodpecker
 Larger Goldenbacked Woodpecker
 Rufous Woodpecker

Family - Alaudidae

Mirafra assamica
Alauda gulgula

Asian Bush Lark
 Eastern Skylark

Family - Hirundinidae

Riparia poludicola
Hirundo rustica
Hirundo daurica
Hirundo smithi
Delichon nipalensis

Plain Sand Marlin
 Common Swallow
 Redrumped/Striated Swallow
 Wire/Long-tailed Swallow
 House Martin

Family - Laniidae

Lanius vittatus
Lanius schach
Lanius cristatus

Baybacked Shrike
 Backheaded Shrike
 Brown Shrike

Family - Oriolidae

Oriolus xanthornus

Backheaded oriole

Family - Dicruridae

Dicrurus adsimilis
Dicrurus leucophaeus
Dicrurus aeneus
Dicrurus hottentotus
Dicrurus paradiseus

Black Drongo
 Ashy Drongo
 Bronzed Drongo
 Hair Crested Drongo
 Greater Racket tailed Drongo

Family - Artamidae

Artamus fuscus

Ashy Swallow Drongo

Family - Sturnidae

Aplonis panayensis

Glassy Starling

Sturnus malabaricus

Greyheaded Starling

Sturnus vulgaricus

Starling

Sturnus contra

Pied Myna

Acrodothères tristis

Common Myna

Acrodothères fuscus

Jungle Myna

Acrodothères ginginianus

Bank Myna

Family - Corvidae

Dendrocitta vagabunda

Rufous Tree-Pie

Corvus splendens

House Crow

Corvus macrorhynchos

Jungle Crow

Family - Campephagidae

Tephrodornis pondicerianus

Common Wood Shrike

Coracina melaschistos

Small Grey Cuckoo Shrike

Coracina novaehollandiae

Large Cuckoo Shrike

Coracina melanoptera

Blackheaded Cuckoo Shrike

Pericrocotus cinnamomeus

Small Minivet

Pericrocotus flammeus

Scarlet Minivet

Pericrocotus erythropygius

White Bellied Minivet

Family - Irenidae

Aegithina tiphia

Common Iora

Chloropsis aurifrons

Goldfronted Chloropsis

Chloropsis cochinchinensis

Bluewinged Chloropsis

Chloropsis hardwickii

Orangebellied Chloropsis

Family - Pycnonotidae

Pycnonotus jocosus

Redwhiskered Bulbul

Pycnonotus cafer

Redvented Bulbul

Pycnonotus melanicterus

Blackheaded Yellow Bulbul

Family - Muscicapidae

Trichastoma aabotti

Abbot's Babbler

Pellorneum palustri

Marsh Spotted Bablar

Pellorneum ruficeps

Spotted Babblar

Turtoides striatus

Jungle Babblar

Aleipe poioicphela

Quaker Babblar

Muscicapa parva

Redbreasted Flycatcher

Muscicapa rubeculoides

Bluethroated Flycatcher

Muscicapa thalassina

Verditer Flycatcher

Rhipidura albicollis

Blacknaped Flycatcher

Culicicapa ceylonensis

Greyheaded Flycatcher

Monarcha azurea

Blacknaped Flycatcher

Cisticola juncidis

Streaked Fantail Warbler

Cisticola axillis

Fantail Warbler

Prinia hodgsoni

Franklin Wren Warbler

Prinia subflava

Plain Longtail Warbler

Prinia socialis

Ashy Wren Warbler

Orthotomus sutoris

Tailor Bird

Acrocephalus agricola

Paddy Field Warbler

Acrocephalus orientalis

Eastern Great Reed Warbler

Acrocephalus stentorius

Great Reed Warbler

Acrocephalus dumetorum

Blyth's Reed Warbler

Terpsiphone paradisi

Paradise Flycatcher

Bradypterus luteoventris

Brown Bush Warbler

Phylloscopus affinis
Phylloscopus fuscatus
Erithaeus svecicus
Copsychus saularis
C.S. erimelas
Phoenicurus ochruros
Suxicola caprata
Suxicoloides fulicata
Monticola solitarius
Zoothera citrina
Pachycephala cinerea
Pachycephala grisola

Family - Paridae
Parus major

Family - Sittidae
Sitta castanea
Sitta frontalis

Family - Motacillidae
Anthus novaeseelandiae
Anthus hodgsoni
Motacilla flava
Motacilla citreola
Motacilla alba
Motacilla madaraspatensis
Motacilla cinerea

Family - Dicaeidae
Dicaeum erythrorhynchos
Dicaeum cruentatum
Dicaeum agile
Dicaeum trigonostigma

Family - Certhiidae
Certhia himalayana

Family - Nectariniidae
Nectarinea zeylonica
Nectarinea asiatica

Family - Zosteropidae
Zosterops palpebrosa

Family - Ploceidae
Passer domesticus
Ploceus rutilans
Ploceus philippinus
Ploceus manyar
Lonchura malabarica
Lonchura striata
Lonchura punctulata

Family - Fringilidae
Melophus lathami

Tickl's Leaf Warbler
 Dusky Leaf Warbler
 Bluethroat
 Magpie Robin
 Magpie Robin
 Black redstart
 Pied Bush Chat
 Robin
 Blue Rock Thrush
 Orangeheaded Thrush
 Mangrove Whistler
 Mangrove Whistler

Grey Tit

Chestnutbellied Nuthatch
 Velvetfronted Nuthatch

Paddyfield Pipit
 Indian Tree Pipit
 Yellow Wagtail
 Yellowheaded Wagtail
 Pied Wagtail
 Large Pied Wagtail
 Grey Wagtail

Tickell's Flowerpecker
 Scarletbacked Flowerpecker
 Thickbilled Flowerpecker
 Orangebellied Flowerpecker

Tree Creeper

Purplerumped Sunbird
 Purple Sunbird

White-eye

House Sparrow
 Common Tree Sparrow
 Baya
 Streaked Weaver Bird
 Whitethroated Munia
 Whitebacked Munia
 Spotted Munia

Crested Bunting

APPENDIX A23: A LIST OF FISHES AND CRUSTACEANS OF THE SUNDARBANS RESERVED FOREST

Provisional checklist of the fishes and crustaceans of the SRF. Phylogentic family sequence corresponds to that of Nelson (1976).
Nomenclature follows that of Talwar and Jhingran (1991)

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES	
CHONDRICHTHYES	LAMNIFORMES	CARCHARINIDAE (Requiem sharks)	<i>Carcharhinus melanopterus</i> (Quoy & Gaimard)	blacktip reef shark	
			<i>Scoliodon laticaudus</i> (Muller & Henle)	spadenose shark	
	RAJIFORMES	SPHYRNIDAE (Hammerheads)	<i>Eusphyrus blochii</i> (Cuvier)		hammerhead shark
			<i>Rhynchobatus djiddensis</i> (Forsskal)		
		DASYATIDAE (Whiptail stingrays)	<i>Dasyatis zugei</i> (Muller & Henle)		pale-edged ray
			<i>Himantura fluviatilis</i> (Hamilton-Buchanan)		Gangetic stingray
			<i>Himantura imbricata</i> (Block & Schneider)		scaly stingray
			<i>Himantura uarnak</i> (Forsskal)		leopard stingray
			<i>Escuolosa thoracata</i> (Valenciennes)		white sardine
			<i>Sardinella femibrata</i> (Valenciennes)		fringscale sardine
OSTEICHTHYES	CLUPEIFORMES	CLUPEIDAE (Herrings and shads)	<i>Sardinella gibbosa</i> (Bleeker)	goldstripe sardine	
			<i>Sardinella melanura</i> (Cuvier)		
			<i>Gudusia chapra</i> (Hamilton-Buchanan)	Indian river shad	
			<i>Hilsa ilisha</i> (Hamilton-Buchanan)	hilsa	
			<i>Hilsa kelee</i> (Cuvier)	kelee shad	
			<i>Hilsa toli</i> (Valenciennes)	tolli shad	
			<i>Ilisha megaloptera</i> (Swainson)	bigeye ilisha	
			<i>Ilisha megaloptera</i> (Schneider)	Indian ilisha	
			<i>Anodontostoma chacunda</i> (Hamilton-Buchanan)	chacunda gizzard shad	
			<i>Racunda russelliana</i> (Gray)	raconda	
		DUSSUMIERIDAE	<i>Dussumieria acuta</i> (Valenciennes)	Indian ilisha	

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES		
		ENGRAULIDAE (Anchovies)	<i>Coilia dussumieri</i> (Valenciennes)	goldspotted grenadier anchovy		
			<i>Coilia neglecta</i> (Whitehead)	neglected grenadier anchovy		
			<i>Coilia ramcarati</i> (Hamilton-Buchanan)	tapetail anchovy		
			<i>Setipinna phasa</i> (Hamilton-Buchanan)	Gangetic hairfin anchovy		
			<i>Setipinna taty</i> (Valenciennes)	scaly hairfin anchovy		
			<i>Thryssa dussumieri</i> (Valenciennes)	Dussumier's thryssa		
			<i>Thryssa hamiltonii</i> (Gray)	Hamilton's thryssa		
			CHIROCENTRIDAE (Chirocentrids)	<i>Chirocentrus dorab</i> (Forsskal)		
				<i>Chirocentrus nudus</i> (Swainson)		
				<i>Elops machinata</i> (Forsskal)	tenpounder	
			ELOPIFORMES	ELOPIDAE (Tenpounders)	<i>Congresox talabon</i> (Cuvier)	yellow pike-conger
					<i>Muraenesox cinereus</i> (Forsskal)	daggertooth pike-conger
			ANGUILLIFORMES	MURAENOSOCIDAE (pike congers)	<i>Mystus guilo</i> (Hamilton-Buchanan)	long-whiskered catfish
					<i>Silonia silondia</i> (Hamilton-Buchanan)	silondia
					<i>Pangasius pangasius</i> (Hamilton-Buchanan)	fatty catfish
<i>Arius arius</i> (Hamilton-Buchanan)	threadfin sea catfish					
<i>Arius caelatus</i> (Valenciennes)	engraved catfish					
<i>Arius gagora</i> (Hamilton-Buchanan)	gagora catfish					
<i>Arius maculatus</i> (Thunberg)	spotted catfish					
<i>Arius sora</i> (Hamilton-Buchanan)	sora sea catfish					
<i>Arius thalassinus</i> (Ruppell)	giant sea catfish					
<i>Plotosus canius</i> (Hamilton-Buchanan)	canine eeltail catfish					
MYCTOPHIFORMES	PLOTOSIDAE (Eeltail catfishes)	<i>Plotosus lineatus</i> (Thunberg)	striped eeltail catfish			
		<i>Saurida tumbil</i> (Bloch)	lizard fish			
AULOPIFORMES	HARPADONTIDAE (Bombay-ducks)	<i>Harpadon nehereus</i> (Hamilton-Buchanan)	Bombayduck			

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
BATRACHOIDIFORMES	BATRACHOIDIDAE (Toadfishes)		<i>Batrachthys grunniens</i> (Linnaeus)	Gangetic toadfish
			<i>Hemiramphus georgii</i> (Valenciennes)	George's halfbeak
CYPRINODONTIFORMES	HEMIRAMPHIDAE (Halfbeaks)		<i>Zenarchopterus ectunio</i> (Hamilton-Buchanan)	ectunio halfbeak
			<i>Fistularia villosa</i> (Klunzinger)	rough flutemouth
SYNGNATHIFORMES	FISTULARIDAE (Flutemouths)		<i>Hippocampus kuda</i> (Bleeker)	-
			<i>Monopterusuchia</i> (Hamilton-Buchanan)	cuchia/Gangetic mudeel
SCORPAENIFORMES	SYNGNATHIDAE	SYNBRANCHIDAE	<i>Pterois russellii</i> (Bennett)	Russel's firefish
			<i>Pterois miles</i> (Bennett)	Mile's firefish
			<i>Grammolites scaber</i> (Linnaeus)	rough flathead
			<i>Rogadius asper</i> (Cuvier)	thorny flathead
			<i>Lates calcarifer</i> (Bloch)	barramundi
			<i>Chanda nama</i> (Hamilton-Buchanan)	elongate glassy perchlet
			<i>Pseudambassis baculis</i> (Hamilton-Buchanan)	Himalayan glassy perchlet
			<i>Pseudambassis ranga</i> (Hamilton-Buchanan)	Indian glassy perchlet
			<i>Cephalopholis miniatus</i> (Forsskal)	-
			<i>Epinephelus fasciature</i> (Forsskal)	-
PERCIFORMES	SERRANIDAE (Groupers)	TERAPONIDAE (Tigerperches)	<i>Epinephelus tauvina</i> (Forsskal)	greasy rockcod
			<i>Terapon jarbua</i> (Forsskal)	jarbua terapon
			<i>Terapon theraps</i> (Cuvier)	banded grunter
			<i>Apogon novemfasciatus</i> (Cuvier)	nine-band cardinalfish
			<i>Apogon septemstriatus</i> (Günther)	seven-band cardinalfish
			<i>Sillaginopsis panijus</i> (Hamilton-Buchanan)	Gangetic sillago
			<i>Sillago sihama</i> (Forsskal)	silver sillago
			<i>Alectis indica</i> (Ruppell)	threadfin trevally
			<i>Alepes djedaba</i> (Forsskal)	djedaba crevalle

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
			<i>Alepes melanoptera</i> (Swainson)	blackfin crevalle
			<i>Atropus atropus</i> (Bloch)	kuweh trevally
			<i>Megalaspis cordyla</i> (Linnaeus)	torpedo scad
			<i>Scomberoides commersonianus</i> (Lacepede)	talang queenfish
			<i>Carangoides malabaricus</i> (Bloch)	malabar cavalla
			<i>Selar boops</i> (Valenciennes)	oxeye scad
			<i>Selar crumenophthalmus</i> (Bloch)	bigeye scad
		FORMIONIDAE (Pomfrets)	<i>Formio niger</i> (Bloch)	block ponfret
		MENIDAE (Moon fishes)	<i>Mene maculata</i> (Bloch)	moonfish
		LEIognathidae (Ponyfishes)	<i>Gazza minuta</i> (Bloch)	toothed ponyfish
			<i>Leignathus bidus</i> (Valenciennes)	orange-fin ponyfish
			<i>Leignathus equulus</i> (Forsk.)	common ponyfish
			<i>Leignathus fasciatus</i> (Lacepede)	striped ponyfish
			<i>Secutor ruconivus</i> (Hamilton-Buchanan)	deep pugnose ponyfish
			<i>Secutor insidiator</i> (Bloch)	pugnose ponyfish
		LUTJANIDAE (Snappers)	<i>Lutjanus johni</i> (Bloch)	John's snapper
			<i>Lutjanus sanguineus</i> (Cuvier)	blood snapper
			<i>Pinjalo pinjalo</i> (Bleeker)	pinjalo snapper
		NEMIPteridae (Threadfin bream)	<i>Nemipterus japonicus</i> (Bloch)	Japanese threadfin bream
			<i>Nemipterus nematophorus</i> (Bleeker)	double whip threadfin bream
		LOBOTIDAE (Tripletails)	<i>Lobotes surinamensis</i> (Bloch)	tripletail
		GERREIDAE (Silver-biddies)	<i>Gerres filamentosus</i> (Cuvier)	whiptail silver-biddy
			<i>Pentapiron longimanus</i> (Cantor)	longfin silver-biddy
		HAEMULIDAE (Grunters)	<i>Pomadasy argenteus</i> (Forsk.)	silver grunt
			<i>Pomadasy maculatus</i> (Bloch)	spotted grunt

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
			<i>Pomadasyss hasta</i> (Bloch)	white grunt
	LETHRINIDAE		<i>Lethrinus ornatus</i> (Valenciennes)	ornate emperor
	SPARIDAE (Seabreams)		<i>Acanthopagarus latus</i> (Houttuyn)	yellow seabream
			<i>Argyrops spinifer</i> (Forsskal)	longspine seabream
	SCIAENIDAE (Croakers)		<i>Atrabuca nibe</i> (Jordan & Thompson)	blackmouth croaker
			<i>Dentrophysa russelli</i> (Cuvier)	goatee croaker
			<i>Johnius arentatus</i> (Cuvier)	silver jewfish
			<i>Johnius dussumieri</i> (Cuvier)	black jewfish
			<i>Macropsinosa cuja</i> (Hamilton-Buchanan)	cuja bola
			<i>Otolithes ruber</i> (Schneid.)	Tiger - toothed croaker
			<i>Pama pama</i> (Hamilton-Buchanan)	pama
			<i>Panna microdon</i> (Bleeker)	panna croaker
			<i>Pennahia macrophaimus</i> (Bleeker)	bigeye croaker
			<i>Protonibea diacanthus</i> (Lacepede)	spotted croaker
			<i>Pterolithus maculatus</i> (Cuvier)	blotched tiger-toothed croaker
	MULLIDAE (Goatfishes)		<i>Upeneus sulphureus</i> (Cuvier)	sunrise goatfish
			<i>Parupeneus heptacanthus</i> (Lacepede)	
	TOXOTIDAE (Archerfishes)		<i>Toxotes jaculator</i> (Pallas)	banded archerfish
	DREPANIDAE (Sicklefishes)		<i>Drepane longimana</i> (Schneider)	sicklefish
			<i>Depane punctatus</i> (Linnaeus)	spotted sicklefish
			<i>Ephippus orbis</i> (Bloch)	spadefish
	SCATOPHAGIDAE (Scats)		<i>Scatophagus argus</i> (Linnaeus)	spotted scat
	MUGILIDAE (Mullet)		<i>Liza persia</i> (Hamilton-Buchanan)	goldspot mullet
			<i>Liza subviridis</i> (Valenciennes)	greenback mullet
			<i>Liza tade</i> (Forsskal)	tade mullet

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
			<i>Mugil cephalus</i> (Linnaeus)	flathead mullet
			<i>Rhinomugil corsula</i> (Hamilton-Bochanan)	yellowtail mullet
			<i>Valamugil speigleri</i> (Bleeker)	Speigler's mullet
		SPHYRAENIDAE (Barracudas)	<i>Sphyraena barracuda</i> (Walbaum)	barracuda
			<i>Spyraena putnami</i> (Jordan & Seale)	sawtooth barracuda
		POLYNEMIDAE (Threadfins)	<i>Eleutheronema tetradactylum</i> (Shaw)	fourfinger threadfin
			<i>Polynemus paradiseus</i> (Linnaeus)	paradise threadfin
			<i>Polydactylus indicus</i> (Shaw)	Indian threadfin
			<i>Polydactylus sexfilis</i> (Cuvier)	golden threadfin
			<i>Polydactylus sextarius</i> (Bloch)	blackspot threadfin
		URNOSCOPIIDAE (Stargazers)	<i>Uranoscopus guttatus</i> (Cuvier)	-
			<i>Ichtyoscopus inermis</i> (Cuvier)	-
		ELEOTRIDAE (Sleepers)	<i>Butis melanostigma</i> (Bleeker)	blackspot sleeper
			<i>Eleotris fusca</i> (Schneider)	dusky sleeper
		GOBIIDAE (Gobies)	<i>Brachygobius nurus</i> (Hamilton-Buchanan)	bumblebee goby
			<i>Glossogobius giurus</i> (Hamilton-Buchanan)	tank goby
			<i>Pogonogobius planiformis</i> (Day)	-
			<i>Stigmatogobius sadanundio</i> (Hamilton-Buchanan)	-
			<i>Apocryptes bato</i> (Hamilton-Buchanan)	-
			<i>Boleophthalmus boddarti</i> (Pallas)	-
			<i>Parapocryptes batoides</i> (Day)	-
			<i>Pseudapocryptes lanceolatus</i> (Bloch & Schneider)	-
			<i>Scarteleos viridis</i> (Hamilton-Buchanan)	-
			<i>Periophthalmodon schlosseri</i> (Pallas)	-
			<i>Periophthalmus koelreuteri</i> (Pallas)	-

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
		GOBIOIDIDAE (Eellike gobies)	<i>Odontamblyopus rubicandus</i> (Hamilton-Buchanan)	rubicundus eelgoby
		TRYPAUCHENIDAE (Burrowing gobies)	<i>Trypauchen vagina</i> (Bloch & Schneider)	burrowing goby
		KURTIDAE (Nursefishes)	<i>Kurtus indicus</i> (Bloch)	Indian humphead
		TRICHIURIDAE (Ribbonfishes)	<i>Eupleurogammus muticus</i> (Gray)	-
			<i>Lepturacanthus savale</i> (Cuvier)	-
			<i>Trichiurus lepturus</i> (Linnaeus)	-
		SCOMBRIDAE (Mackerels)	<i>Euthynnus affinis</i> (Cantor)	-
			<i>Rastrelliger brachysoma</i> (Bleeker)	-
			<i>Rastrelliger kanagurta</i> (Cuvier)	-
			<i>Sarda orientalis</i> (Temminck & Schlegel)	-
			<i>Scomberomorus guttatus</i> (Bloch & Schneider)	spotted Spanish mackerel
		STROMATEIDAE (Pomfrets)	<i>Pampus argenteus</i> (Euphrasen)	silver pomfret
			<i>Pampus chinensis</i> (Euphrasen)	Chinese pomfret
		PSETTODIDAE (Flatfishes)	<i>Psettodes crumei</i> (Schneider)	halibut
		BOTHIDAE (Lefteye flounders)	<i>Pseudorhombus arius</i> (Hamilton-Buchanan)	largetooth flounder
			<i>Pseudorhombus elevatus</i> (Ogilby)	deep flounder
			<i>Pseudorhombus malayanus</i> (Bleeker)	Malay flounder
		SOLEIDAE (Soles)	<i>Synaptura pan</i> (Hamilton-Buchanan)	-
			<i>Synaptura orientalis</i> (Bloch & Schneider)	oriental sole
			<i>Zebreas altipinnis</i> (Alcock)	zebra sole
		CYNOGLOSSIDAE (Tonguesoles)	<i>Cynoglossus bilineatus</i> (Lacepede)	fourlined tonguesole
			<i>Cynoglossus cynoglossus</i> (Hamilton-Buchanan)	Gangetic tonguesole
			<i>Cynoglossus lingua</i> (Hamilton-Buchanan)	long tonguesole
			<i>Cynoglossus versicolor</i> (Alcock)	-
			<i>Paraplagusia bilineata</i> (Bloch)	fingerlip tonguesole

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
	TETRAODONTIFORMES	BALISTIDAE (Triggerfishes)	<i>Abalistes stellans</i>	starred triggerfish
		TETRAODONTIDAE (Pufferfishes)	<i>Arothron stellatus</i> (Bloch & Schneider) <i>Chelododon fluviatilis</i> (Hamilton-Buchanan) <i>Chelonodon patoca</i> (Hamilton-Buchanan) <i>Tetraodon cutcutia</i> (Hamilton-Buchanan)	star blaasop green pufferfish Gangetic pufferfish ocellated pufferfish
CRUSTACEA	DECAPODA	PENAEIDAE (Shrimps)	<i>Penaeus indicus</i> (H. Milne Edwards)	Indian/white shrimp
			<i>Penaeus monodon</i> (Fabricius)	tiger shrimp
			<i>Penaeus merguensis</i> (de Man)	banana shrimp
			<i>Penaeus semisulcatus</i> (de Man)	green tiger shrimp
			<i>Metapenaeus brevicornis</i> (H. Milne Edwards)	-
			<i>Metapenaeus affinis</i> (H. Milne Edwards)	-
			<i>Metapenaeus lysianassa</i> (de Man)	-
			<i>Metapenaeus monoceros</i> (Fabricius)	sand prawn
			<i>Metapenaeus spinulatas</i> (Kubo)	-
			<i>Parapenaeopsis sculptilis</i> (Heller)	-
			<i>Parapenaeopsis uncta</i> (Alcock)	-
			<i>Parapenaeopsis hardwickii</i> (Miers)	-
			<i>Parapenaeopsis stylifera</i> (Heller)	-
			<i>Solenocera subnuda</i>	-
SOLENERIDAE				
	SERGESTIDAE	PALAEMONIDAE (Prawns)	<i>Acetes indicus</i> (H. Milne Edwards)	-
			<i>Palaemon styliferus</i> (H. Milne Edwards)	-
			<i>Macrobrachium birmanicus</i> (Schenkel)	-
			<i>Macrobrachium lamarrei</i> (H. Milne Edwards)	-
			<i>Macrobrachium mirabilis</i> (Kemp)	-
			<i>Macrobrachium rosenbergii</i> (de Man)	giant freshwater prawn

CLASS	ORDER	FAMILY	SCIENTIFIC NAMES	COMMON NAMES
			<i>Macrobrachium rudis</i> (Heller)	-
			<i>Macrobrachium villosimanus</i> (Tiwari)	-
		ALPHEIDAE	<i>Alpheus euprosyne</i> (de Man)	-
		PORTUNIDAE (Portunid crabs)	<i>Scylla serrata</i> (Forsskal)	mud crab
		GRAPSIDAE	<i>Sesarma mederi</i>	-
			<i>Metaplex elegans</i>	-
			<i>Metaplex crenulata</i>	-
		OCYPODIDAE (Fiddler crabs)	<i>Macrophthalmus brevis</i>	-
			<i>Uca dussumieri</i>	-
			<i>Uca forcipata</i>	-
		SCYLLARIDAE (Squat lobsters)	<i>Thenus orientalis</i> (Lund)	oriental squat lobster

APPENDIX A24: LIST OF MOLLUSC SPECIES

GENUS	SPECIES	FORM	ALTERNATIVE NOMENCLATURE	AUTHOR
Terrestrial				
<i>Achatina</i>	<i>fulica</i>			Bowdich
<i>Pythia</i>	<i>plicata</i>			(Gray 1825)
Fresh Water				
<i>Bellamya</i>	<i>bengalensis</i>			(Lamarck 1822)
<i>Indoplanorbis</i>	<i>exustus</i>		Planorbis indicus	(Deshayes 1834)
<i>Lamellidens</i>	<i>marginalis</i>			(Lamarck 1819)
<i>Lymnaea</i>	<i>acuminata</i>	patula		Lamarck 1822
<i>Lymnaea</i>	<i>acuminata</i>	typica		Lamarck 1822
<i>Pila</i>	<i>globossa</i>			Swainson 1822
<i>Pila</i>	<i>globossa</i>	incrassatula		Nevil 1877
<i>Pila</i>	<i>scutata</i>			Mousson 1848
<i>Thiara</i>	<i>tuberculata</i>		Melanoides	(Mueller 1774)
Brackish				
<i>Cassidula</i>	<i>multiplicata</i>			Martens 1865
<i>Cerithidea</i>	<i>alata</i>		Cerithideopsilla	(Phillips 1849)
<i>Cerithidea</i>	<i>obtusa</i>			(Lamarck 1822)
<i>Cymia</i>	<i>tissoti</i>			(Petit 1852)
<i>Ellobium</i>	<i>gangetica</i>			(Benson 1855)
<i>Littoraria</i>	<i>melanostoma</i>		Palustorina	(Gray 1839)
<i>Neritina</i>	<i>cornucopia</i>		Dostia	(Benson 1836)
<i>Neritina</i>	<i>smithii</i>			(Wood 1828)
<i>Neritina</i>	<i>violacea</i>		Dostia	(Gamelin 1791)
<i>Nerita</i>	<i>articulata</i>			Gould 1847
<i>Ostera</i>				
<i>Polymesoda</i>	<i>bengalensis</i>		Gelonia	(Lamarck 1818)
<i>Telescopium</i>	<i>telescopium</i>			(Linnaeus 1758)
Marine				
<i>Pugilina</i>	<i>cochlidium</i>			(Linnaeus 1758)

APPENDIX A25: A LIST OF THE LOCAL NAMES OF THE FISHES AND CRUSTACEANS OF THE SUNDARBANS RESERVED FOREST

LOCAL NAMES	SCIENTIFIC NAMES
FISHES	
Baila	Gobiidae
Bairagi	<i>Polynemus paradiseus</i> (Polynemidae)
Borguni	Teraponidae
Bata	Mugilidae
Bhangan	Mugilidae
Bhetki	<i>Lates calcarifer</i> (Centropomidae)
Bishtara	<i>Scatophagus argus</i> (Scatophagidae)
Bol	Serranidae
Bongshi	<i>Fistularia villosa</i> (Fistularidae)
Bora choka	<i>Selar crumenophthalmus</i> (Carangidae)
Budh baila	<i>Eleotris fusca</i> (Uranoscopidae)
Champa	Scombridae
Chanchanda	<i>Mene maculata</i> (Menidae)
Chandana	Clupeidae
Chandana ilish	<i>Hilsa toli</i> (Clupeidae)
Chapa kori	<i>Scomberoides commersonianus</i> (Carangidae)
Chapila	<i>Gudusia chapra</i> (Clupeidae)
Chaukka	Clupeidae
Chewa	Gobiidae
Chiring	Gobiidae
Choikka	Lutjanidae/Lethrinidae
Choka poa	<i>Pennahia macrophthalmus</i> (Sciaenidae)
Dahuk	Gobiidae (Periophthalminae)
Darkuta	Sphyraenidae
Dato poa	<i>Otolithes ruber</i> (Sciaenidae)
Dora mouni	Carangidae
Duidea	<i>Apogon novemfasciatus</i> (Apogonidae)
Ek thuitta	Hemiramphidae
Elope	<i>Elops machnata</i> (Elopidae)
Faska	<i>Reconda russelliana</i> (Clupeidae)
Fatra	<i>Reconda russelliana</i> (Clupeidae)
Foli chanda	<i>Pampas argenteus</i> (Stromateidae)
Garta ilish	<i>Hilsa kelee</i> (Clupeidae)
Ghora	Syngnathidae
Gogla	<i>Apogon septemstriatus</i> (Apogonidae)
Gugu	Teraponidae
Guila	<i>Mystus gulio</i> (Bagridae)
Guti datina	<i>Pomadasys maculatus</i> (Haemulidae)
Guti poa	<i>Pterolithus maculatus</i> (Sciaenidae)
Hal chanda	<i>Formio niger</i> (Formionidae)

LOCAL NAMES	SCIENTIFIC NAMES
Halibut	<i>Psettodes erumei</i> (Psettodidae)
Hatir kan	<i>Ephippus orbis</i> (Drepanidae)
Hundra	Sillaginidae
Ilish	<i>Hilsa ilisha</i> (Clupeidae)
Ischidi	<i>Escualosa thoracata</i> (Clupeidae)
Jarki	<i>Pentaprion longimanus</i> (Gerreidae)
Juti	<i>Kurtus indicus</i> (Kurtidae)
Kachi kholla	<i>Sicamugil cascasia</i> (Mugilidae)
Kala chanda	<i>Formio niger</i> (Forminidae)
Kala hangar	<i>Scoliodon laticaydus</i> (Carcharhinidae)
Kala poa	Sciaenidae
Kala tailla	<i>Polynemus sextarius</i> (Polynemidae)
Kalo baila	<i>Butis melanostigma</i> (Eletridae)
Kamila	Muraenesocidae
Kata	Ariidae
Kata chanda	<i>Pseudambassis baculis</i> (Ambassidae)
Kata nurbaila	<i>Rogadius asper</i> (Platycephalidae)
Kata pata	Soleidae
Kawya	<i>Megalaspis cordyla</i> (Carangidae)
Khaon magur	Plotosidae
Kholla	Mugilidae
Koiputi	<i>Anodontostoma chacunda</i> (clupeidae)
Koral	Centropomidae/Mugilidae
Korati chala	Chirocentridae
Kuchia	<i>Monopterusuchia</i> (Synbranchidae)
Kukur jiv	Cynoglossidae
Kuli	Eleotridae
Lal chanda	<i>Pseudambassis ranga</i> (Ambassidae)
Lal chewa	<i>Odontamblyopus rubicandus</i> (Gobioididae)
Lal datina	<i>Argyrops spinifer</i> (Spandae)
La kkha	<i>Polydactylus indicus</i> (Polynemidae)
Lotia	<i>Harpodon nehereus</i> (Harpodontidae)
Sada chewa	<i>Trypauchan vagina</i> (Trypauchanidae)
Sada potka	<i>Chelonodon patoca</i> (Tetraodontidae)
Sadia datina	<i>Pomadayss hasta</i> (Haemulidae)
Sagor koi	<i>Lobotes surinamensis</i> (Lobotidae)
Sagor magur	Plotosidae
Sagor potka	<i>Abalistes stellaris</i> (Balistidae)
Saplapata	Dasyatidae
Serbati	Psettodiadae/Bothidae/Soleidae
Shillong	<i>Silonia silondia</i> (Schilbeidae)
Sonabam	<i>Nemipterus nematophorus</i> (Nemipteridae)
Sona tailla	<i>Polydactylus sexfilis</i> (Polynemidae)
Sonali bata	Mullidae
Sonali salar	<i>Selar boops</i> (Carangidae)

LOCAL NAMES	SCIENTIFIC NAMES
Suri	Trichiuridae
Taka chanda	Leiognathidae/Gerreidae
Takia	Clupeidae
Tailla	Polynemidae
Taposi	<i>Polynemus paradiseus</i> (Polynemidae)
Tarial	Polynemidae
Thutte hangar	<i>Scoliodon laticaudus</i> (Carcharhinidae)
Tiktiki	<i>Saurida tumbil</i> (Synodontidae)
Til poa	<i>Protonibea diacanthus</i> (Sciaenidae)
Tular dandi	<i>Sillaginopsis panijus</i> (Sillaginidae)
CRUSTACEANS	
Bagda	<i>Penaeus monodon</i> (penaeidae)
Chaga	<i>Penaeus indicus</i> (Penaeidae)
Chama	Penaeidae/Solenocerae
Dimua icha	<i>Macrobrachium villosimanus</i> (Palaemonidae)
Godda	Penaeidae (Parapenaeopsis)/Alpheidae
Golda	<i>Macrobrachium rosenbergii</i> (Palaemonidae)
Gura icha	Palaemonidae/Sergestidae
Gusha	Penaeidae (Metapenaeus)
Horinna	<i>Metapenaeus affinis</i> (Penaeidae)
Kokrol	Portunidae/Grapsidae/Ocypodidae
Khorkhora	<i>Metapenaeus affinis</i> (Penaeidae)
Kucha	<i>Macrobrachium rudis</i> (Palaemonidae)
Loilla	<i>Metapenaeus monoceos</i> (Penaeidae)
Lotia icha	Sergestidae/Palaemonidae
Nazari icha	<i>Macrobrachium birmanicus</i> (Palaemonidae)
Ruda	Penaeidae (Parapenaeopsis)
Sada icha	<i>Penaeus indicus</i> (Penaeidae)
Schiul icha	<i>Macrobrachium birmanicus</i> (Palaemonidae)
Supa	Solenoceridae
Thenga icha	<i>Macrobrachium lamarrei</i> (Palaemonidae)

**APPENDIX A26: LIST OF AMPHIBIANS AND REPTILES IN THE
SUNDARBANS RESERVED FOREST**

FAMILY	SCIENTIFIC NAME	COMMON NAME
AMPHIBIA	<i>Bufo melanostictus</i>	Toad
	<i>Rhacophorus maculatus</i>	Tree frog
	<i>Rana cyanophlyctia</i>	Frog
	<i>R. limnocharis</i>	
	<i>R. tigrina</i>	
	<i>R. hexadactyla</i>	Green Frog
	<i>R. Temporalis</i>	Gach Bang
	<i>Microhyla ornata</i>	
REPTILIA		
CROCODILIA	<i>Crocodylus palustris</i>	Mugger (no longer found)
	<i>C. porosus</i>	Estuarine crocodile
	<i>Gavialis gangeticus</i>	Gavial (no longer found)
SQUAMATA	<i>Hemidactylus flaviviridis</i>	Wall gecko
	<i>Eublepharis fasciolatus</i>	Leopard gecko
	<i>Gekko gekko</i>	Tokay
	<i>Mabuya dissimilis</i>	Five-lined skunk
	<i>Calotes versicolor</i>	
	<i>Chamaeleon zeylanicus</i>	Indian chameleon
	<i>Varanus bengalensis</i>	Bengal monitor
	<i>V. salvator</i>	Yellow monitor
	<i>V. flavescens</i>	Ruddy sub-nosed monitor
	<i>Naja naja</i>	Cobra
	<i>Typhlops porractus</i>	Blind snake
	<i>T. acutus</i>	Blind snake
	<i>Ahaetulla ahaeulla</i>	Whip snake
	<i>A. cyanochloris</i>	
	<i>Python molurus</i>	Rock python
	<i>Natrix stolata</i>	Keel back
	<i>Enhydris enbydris</i>	
	<i>Fordonia leucoblia</i>	
	<i>Bungards lividus</i>	Krait
	<i>Acrochordus</i>	Wart snake
	<i>Hydrophis obscurus</i>	
	<i>H. nigrocinctus</i>	
	<i>Microcephalophis cantoris</i>	Sea snake
<i>Engydrina achistoss</i>	Beaked deep sea snake	
<i>Ptyas mucosus</i>	Rat snake	

FAMILY	SCIENTIFIC NAME	COMMON NAME
	<i>Spalerosophis diadema</i>	
	<i>Vipera russelli</i>	Russell's viper
	<i>Pligodon arnensis</i>	Kukri snake
	<i>Oligodon dorsalis</i>	
	<i>Dryophis mycterigans</i>	Tree snake
	<i>Lycondon aulicus</i>	Common wolf snake
	<i>Eryx conicus</i>	Russell's sand boa
	<i>Psammophts candouarus</i>	
TESTUDINATE	<i>Pelochelys bironi</i>	Coast shell turtle
	<i>Morenia petersi</i>	Bengal terrapin
	<i>Batagur baska</i>	River terrapin
	<i>Lepidochelys olivaca</i>	Ridley turtle
	<i>Cheonia mydas</i>	Green turtle
	<i>Trionyx hurun</i>	Peacock soft-shell turtle
	<i>T. gagicus</i>	Ganges soft-shell turtle
	<i>Lissemys punctata</i>	India flap-shell turtle
	<i>Kachuga tecta</i>	India roofed turtle
	<i>K. smithi</i>	
	<i>K. kachuga</i>	

Source : Hendrichs 1975, Mukherjee 1975

APPENDIX A27: LIST OF INSECTS IN THE SUNDARBANS RESERVED FOREST BGD/84/056, KHULNA, BANGLADESH

ORDER	FAMILY	SPECIES	HOST PLANT
Coleoptera	Anobiidae	Unidentified two morphotypes	Dead Gewa and TD Sundri
Coleoptera	Bostrychidae	<i>Rhizopertha dominica</i>	Sundri stump
Coleoptera	Buprestidae	Unidentified morphotype	Gewa
Coleoptera	Carabidae	Two morphotypes	Dying Gewa, dead Goran, Dead Gewa
Coleoptera	Cerambycidae	<i>Aegosoma bowringi</i> Gahan	Top dying Sundri, Dead Gewa
Coleoptera	Cerambycidae	<i>Aegosoma sulcipenne</i> White	Dead Gewa, dead Sundri
Coleoptera	Cerambycidae	<i>Caraphia cribrata</i> Gahan	Host unknown
Coleoptera	Curculionidae	<i>Calandra linearis</i>	Dhundul seed
Coleoptera	Curculionidae	<i>Chelothippia</i> sp	Gewa
Coleoptera	Curculionidae	<i>Dinobaris</i> sp	Gewa
Coleoptera	Curculionidae	<i>Kobuzo crassius</i>	Gewa
Coleoptera	Curculionidae	Unidentified one morphotype	Dead Gewa
Coleoptera	Elatridae	Unidentified 3 morphotypes	Dead and live Gewa and Sundri
Coleoptera	Limnidae	Unidentified 2 morphotypes	TD Sundri
Coleoptera	Limnidae	<i>X. incurvatus</i> Chev	Dead Gewa
Coleoptera	Limnidae	<i>Xystocera globosa</i> Oliv	Sundri
Coleoptera	Mycetophagidae	Unidentified morphotype	Dead Sundri
Coleoptera	Scarabaeidae	Unidentified morphotype	Dead Gewa
Coleoptera	Scolytidae	Unknown	Dead Gewa
Coleoptera	Trogositidae	<i>Trogositita rhyzophagoides</i>	Stump of Sundri

ORDER	FAMILY	SPECIES	HOST PLANT
Diptera	Asilidae	Unidentified	
Diptera	Calliphoridae		
Diptera	Ceratopogonidae	<i>Culicoides sp</i>	
Diptera	Culicidae	<i>A. barbrostris</i>	
Diptera	Culicidae	<i>Anopheles kochi</i>	
Diptera	Culicidae	<i>Armigeres sp</i>	
Diptera	Culicidae	<i>C. quinquefasciatus</i>	
Diptera	Culicidae	<i>C. vishnui</i>	
Diptera	Culicidae	<i>Culex gelidus</i>	
Diptera	Culicidae	<i>Mansonia uniformis</i>	
Diptera	Dolichopodidae		
Diptera	Muscidae	<i>Stomoxys sp</i>	
Diptera	Sarcophagidae		
Diptera	Tabanidae	Unidentified, four morphotypes	
Diptera	Tipulidae		
Homoptera	Coccidae	<i>Ceroplastes rubens</i> Maskel	Sundr saplings
Homoptera	Coccidae	<i>Icerya aegyptiaca</i> (Doglas)	Gewa seedlings
Homoptera	Coccidae	<i>Icerya sp</i>	Goran sapling (stem and leaf)
Homoptera	Flattidae	Unidentified morphotype	Leaf of Bhola
Hymenoptera	Aphelinidae	Unidentified	
Hymenoptera	Aulacidae	Unidentified	
Hymenoptera	Braconidae	Unknown	

ORDER	FAMILY	SPECIES	HOST PLANT
Hymenoptera	Chalcidae	Unknown	
Hymenoptera	Chrysididae	Unidentified	
Hymenoptera	Diapriidae	Unidentified morphotype	
Hymenoptera	Encyrtidae	Unidentified	
Hymenoptera	Eulophidae	<i>Testrasticus sp</i>	
Hymenoptera	Eumenidae	<i>R. flavolineatum</i>	Unknown
Hymenoptera	Eumenidae	<i>R. metallicum</i>	Unknown
Hymenoptera	Eumenidae	<i>Rynchium haemorrhoidalis</i>	Unknown
Hymenoptera	Evanidae	<i>Evania sp</i>	
Hymenoptera	Evanidae	<i>Pristaulacus beelsoni</i>	
Hymenoptera	Gasteruptidae	Unknown	
Hymenoptera	Ichneumonidae	Unidentified seven morphotypes	
Hymenoptera	Megalyridae	Unknown morphotype	
Hymenoptera	Myrmidae	Unidentified	
Hymenoptera	Nyssoridae	Unidentified	
Hymenoptera	Platygastridae	Unknown	
Hymenoptera	Pompilidae	Unidentified	
Hymenoptera	Sphecidae	<i>Sceliphron violaceum</i>	
Hymenoptera	Stephanidae	Unidentified	
Hymenoptera	Vespidae	Unidentified	Unknown
Hymenoptera	Vespidae	<i>Vespa structor</i> Smith	Unknown
Lepidoptera	Danaidae	<i>Delias eucharis</i>	

ORDER	FAMILY	SPECIES	HOST PLANT
Lepidoptera	Danaidae	<i>Euploea core</i>	
Lepidoptera	Lycaenidae	<i>Nacaduva pavana</i>	Unknown
Lepidoptera	Lymantriidae	Unidentified	Dead gewa, TD Sundri
Lepidoptera	Noctuidae	<i>Thosea sinensis</i>	Unknown
Lepidoptera	Nymphalidae	<i>Neptis sp</i>	Unknown
Lepidoptera	Pieridae	<i>Catopsilia pomona</i>	
Lepidoptera	Pieridae	<i>Eurema hecabe</i>	
Lepidoptera	Pieridae	<i>Leptosia nina nina</i>	
Lepidoptera	Psychidae	Unidentified morphotype	Sundri
Odonata	Libellulidae	<i>Crocothemis s. servilia</i>	
Odonata	Libellulidae	<i>Diplacodes trivialis</i>	
Orthoptera	Tettigoniidae	Unidentified morphotype	Dead Gewa

**APPENDIX A28: MAPS FOR THE INTEGRATED DEVELOPMENT OF THE
SUNDARBANS RESERVED FOREST, BANGLADESH, 1995**

**VOLUME 3 LIST OF MAPS - APPENDIX A28 VOLUME 3 LIST OF MAPS enclosed
TEXT MAPS IN volume 1**

NUMBER	DESCRIPTION
1	MAP OF SOUTH ASIA REGION showing location of Bangladesh and the Sundarbans
2	L O C A T I O N
3	BASE MAP 1: 250 000 - MAIN COVERAGE -Land/water boundary -Rivers -Study Area boundary and 10 km Border Area
4	AERIAL PHOTO INDEX 1 : 500 -locations of the centre point of the photographs.
5	FOREST DEPARTMENT OFFICES deployment 1: 200 000 -Range offices -Forest stations -Other permanent stations and structures
6	COMPARTMENTS 1 : 200 000 - Compartment boundaries
7	BLOCK BOUNDARIES 1 : 200 000 -Range boundaries and their names
8	NAVIGABLE CHANNELS 1: 1 000 000 -River depths
9	PROTECTED AREAS existing and proposed 1: 550 000 -Wildlife Sanctuary -Other protected areas
10	PERMANENT SAMPLE PLOTS (PSPs) 1 : 200 000 -PSP locations -Schematic plan of river network selected for modelling
11	SOILS MAP 1 : 200 000 -Location of soil sampling sites
	SOUTH-WEST REGIONAL HYDRAULIC MODEL - (SWRHM maps)
12	Hydrometric Stations
13	Cross-section Locations
14	Catchment Delineations
15	Maximum salinity, monsoon spring tide - September 1994
16	Minimum salinity, monsoon spring tide - September 1994
17	Maximum salinity, monsoon neap tide - September 1994
18	Minimum salinity, monsoon neap tide - September 1994
19	Maximum salinity, dry season spring tide - February 1995
20	Maximum salinity, dry season spring tide - February 1995
21	Maximum salinity, dry season neap tide - February 1995
22	Minimum salinity, dry season neap tide - February 1995
23	Change in maximum salinity, monsoon - dry season

M

24	Salinity Duration (>15ppt Condition) : SRF
25	Salinity Duration (<15ppt Condition) : SRF
26	Maximum salinity, Gorai Inflow- 200 cumecs
27	Minimum salinity, Gorai Inflow - 200 cumecs
28	Impact of Gorai inflow on maximum dry season salinity
29	Maximum flood depth - monsoon spring 1994
30	Maximum flood depth, flood 1988
31	Maximum flood depth, Cyclone 1988
32	Future water pollution study locations Future morphological study locations
33	Digital Elevation Model of the entire Sundarbans Reserved Forest
34	SUNDRI TOP-DYING areas 1: 500 000 - Severely affected Sundri top-dying - Location of Permanent Sample Plots
35 (1-15)	VEGETATION AND FOREST TYPES ODA data 1 : 50 000 (15 maps) - Vegetation types with density and height class data
36	ZONES - SRF 1 : 550 000 - Protection - Production - Tourism
37	10KM BORDER ZONE : COMMUNITIES (cyclone shelter data) 1: 500 000 - Centres of population

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APPENDIX A29: PHOTOGRAPH INVENTORY, BGD/84/056**Roy S Larsen, Harvesting and Transportation Consultant**

- 1 Top-dying area with Affected Foliage. Marked last year. Just harvested.
- 2 High Stumps. Cut-away buttress roots.
- 3 Rope holes. Pulling log with & without sled.
- 4 Gewa - Small diameters. - Low stumps.
- 5 Illicit cutting. Mother tree.
- 6 KNM - Debarked pulpwood. - Bark with wood.
- 7 Jhools & Dabbas leaving Sundarbans.
Shingra woodcutter : -expired permit, -wrong species, -wrong place.
- 8 Goran - Overcutting, - Dead stumps.
- 9 Golpatta - after harvest, - extra wood.
- 10 Wind and Water Erosion.
- 11 Keora -illicit cutting, - nice timber.

Peter de Vere Moss, Consultant Tourism and Recreation

ANNOTATED LIST OF PHOTOGRAPHS : TOURISM AND RECREATION

BGD/84/056 KHULNA 1993 (Consultant P de Vere Moss : photograph album at Khulna project office; b&w copies appended with annotations)

All Photograph numbers are read from the top left hand corner across to the right and downwards, six per page, total 120 pix.

1. Flowering *Saccharum* sp. grass on the sand/forest ecotone - MANDABARIA compartment 54; 10/93.
2. The beach with a fishing boat
- MANDABARIA compartment 54; 10/93.
3. The clay foreshore with Keora, Gewa and Goran
- PUTNEY ISLAND; 10/93.
4. Keora woodland with Nipa palm and Oriza grass on the foreshore
- TINKONA ISLAND compartment 45; 10/93.
5. Nipa palm bank
- near NILKAMAL, compartment 44; 10/93
6. The foreshore, right bank of the Raimangal river
- compartment 55; 10/93.
7. Passur tree with pneumatophores
- clay pot culture site Raimangal river compartment 55; 10/93.
8. White-breasted Sea Eagle *Haliaeetus leucogaster*
- near Nilkamal Sundarbans South Wildlife Sanctuary. compartment 44 10/93.
9. Storm damaged Keora with exposed roots and pneumatophores on the river bank near NILKAMAL compartment 44; 10/93.
10. Soil sample being taken by soil scientist Dr M Bhuyian assisted by National Wildlife and Tourism Counterpart, Mr Tapan Kumar Dey near Nikamal compartment 44; 10/93.
11. Open Keora forest near Nilkamal.
- compartment 44; 10/93.
12. National Counterpart Mr Parvez Chowdhury, Executive Officer, BPC standing in Lama area Chittagong Hill Tracts; 11/93.
13. Weaver birds nests at Nikamal rest house; 10/93.
14. JELENAOKA sailing north from Mongla to Khulna on the Passur river
- just outside the SRF; 11/93.
15. KNM timber extraction houseboat near Koikhali;
- compartment 48; 10/93.
16. The BONO KHANYA moored near Dubla;
- compartment 45; 10/93.
17. A FD coupe - this is the style which might be emulated for JUNGLE CAMPS. See Section 9.7 Standards of Construction.
18. SHEKERTEK TEMPLE RUINS
- compartment 39; 10/93. There is a very urgent need to secure the remaining building from further degradation, graffiti and tree cutting. It is recommended that the Department of Archaeology be shown the site and funds sought to protect the fabric of the building and that the site be declared an "Area of Special Interest" as an historic monument of National importance. It would thus become a much sought-after site by international ecotourists. If it is not protected soon it will collapse in the same manner of the buildings at the larger site close to the Sibsa river upstream from the Sheker khal confluence. Apart from the historical interest of the ruins the two sites are also noteworthy for the emergent *Diospyros pergerinus* trees which have an upland origin which seem to thrive in this environment.
19. A FD coupe.
20. NILKAMAL MPHA REST HOUSE from the river, 10/93.
21. Spotted deer drinking. (T.K.D. 1992).
22. Goran boats near Dhangmari, 10/93.
23. Rice storage and packing factory north of Dhaka; 11/93.
24. The KHANIKA PICNIC SPOT JESSORE-KHULNA ROAD. 11/93
- this is a well kempt (Roads and Highways Department) site with a most pleasant park-like atmosphere. It is deserving of a little more attention, in particular it is recommended that the outer

- will be repaired and that consideration be given to introducing a small herd of spotted deer which should be allowed to free-range there. The area has a large sweet water man-made lake (tank), some attractive trees and a vegetable garden.
25. The path to the VIEWING TOWER (BISMOY) - at NILKAMAL.
- this is an expensive construction built to view wildlife, especially spotted deer and tiger, in mature Keora woodland. Unfortunately the trees have been thinned, there is no ground cover and artificial ponds have been dug, all adding to the unnatural appearance of the site. Whilst it may fulfil a function as a focal point for visitors to the rest house it has a somewhat stark look and a style which is not recommended for future wildlife viewing hides which should be lower level and more in keeping with the environment. It is recommended that the natural vegetation be allowed to grow around the tower and that some small trial plots be established to identify a suitable grass to seed in the area. No other human interference with the environment should be permitted.
 26. The VIEWING TOWER at Nilkamal.
 27. The FOREST DEPARTMENT RESEARCH STATION at DHANGMARI with FRI building in the foreground.
 28. The MONGLA PORT HARBOUR REST HOUSE AT NILKAMAL.
- this large concrete building occupies a 3 acre fenced site adjacent to a sweet water tank and the Bangladesh Navy base which was once the FD Station. The purpose of the rest house is to provide accommodation for ships' pilots who changeover here for the run to Mongla. There are 11 bedrooms and 18/22 beds, large dining room, lounge, verandas etc. The kitchen only has basic equipment and requires up-grading. The property is under-utilised for the purpose for which it is built and it is recommended that as soon as the Sundarbans Tourism Advisory Committee is formed negotiations are started to bring this very valuable property into mainline tourism, as commented upon in Section 9.7.
 29. The jetty at Dubla Forest Department Station, compartment 44, 11/93.
 30. The Jetty at Dubla FD.
 31. The sweet water tank at Dubla, 11/93.
 32. A farmer with his water buffalo south of Chalna on the Passur river, 10/93.
 33. Water vendors at the bus station KHULNA 12/93.
 34. Close up of the farmer and his buffalo.
 35. A "JELENAOKA" (fishing boat) at Khulna.
 36. Effigies of the Hindu God Krishna and his followers crafted for the Dubla Festival, compartment 45, 11/93.
- this is an annual event set to co-incide with the full moon in the last week of November and attracts up to 5000 attendants. It is a significant cultural event for fishermen and is organised by religious leaders and local businessmen. It is deserving of much further attention both from the socio-cultural and tourism points of view. Development and environmental impacts should be considered.
 37. Stump of a tree cut to "facilitate photography" at SHEKERTEK. This is an example of the kind of destructive activity at sites of environmental or historical value which, like graffiti and vandalism, must be guarded against; compartment 39.
 38. The MACHAN at Paramatimahar near Mirgamari Coupe, compartment 26 near Chandpai.
- this site is adjacent to an opening in forest of about 142 acres of reed (*Phragmites karka*, grasses and sedges; as an example of ecological processes which follow after fire, which is said to have caused the unusual habitat, it is worthy of special attention. This could be an area for long-term ecological studies which might be combined with the proposed re-introductions programme. See Section 4.6.
 39. Tea garden at Shrimongal, 11/93.
 40. The GOLF CLUB AT LAKKATURA TEA GARDEN, SYLHET, 11/93.
 41. A *Terminalia arjuna* which has been stripped of its bark for medicinal purposes on the roadside near Chittagong. 11/93.
 42. The gate to Adinath temple at Maheshkhali island near Cox's Bazar, 11/93.
 43. Seasonal FISHING CAMP near Dubla on the Passur river. Sites such as these should be specifically monitored for illicit off-takes of wildlife and their environmental impacts should be analysed.
 44. Fishing camp.
 45. Gewa/Sundri logs stacked for shipment at a KNM extraction base, 10/93.
 46. Goran firewood being transported to Khulna, on the Dhangmari Khal near Dhangmari, 10/93.
 47. A FD Keora nursery adjacent to the NAF RIVER, Teknaf Peninsula, 11/93. Very specific site requirements make this a difficult operation, essential to the FD's campaign to rehabilitate Keora areas damaged by shrimp farming activities and for much-needed afforestation action along the

- Naf river. Forestry management practices such as this are always a point of interest for ecotourists.
48. Goran firewood stacked near Khulna. 11/93.
 49. A small firewood carrier at night near Shrimongal railway station. (P.C. 11/93).
 50. A Manipuri weaver - Sylhet 11/93.
 51. A TEA GARDEN - SHRIMONGAL 11/93.
- the attractive and well-kempt orderly atmosphere of these places combined with opportunities to learn about production technology attracts tourists of all age and income groups. A must for ecotourists, study tours and agricultural holidays.
 52. The Forest Rest House at Lawachara near SHRIMONGAL.
- a site set deep in a Sal *Shorea robusta* forest with a very special atmosphere and good for birdwatchers and forest walkers. It is also close to tea estates and Baligaon Manipuri village where finely coloured materials are woven.
 53. Shrimongal tea estate. 11/03.
 54. The border river Piyan at JAF LONG north of Sylhet from where construction stone is collected. The river is crystal clear and flows from the hills of Shillong. Rod and line angling may be possible here and should be explored.
 55. The last eleven Sundri trees of the CHAKARIA SUNDARBANS on the road to Cox's Bazar at DULAHAJRA. This stark monument to mankind's destruction of a mangrove forest for shrimp production should be preserved through active FD intervention to prevent final loss of these trees. If it is technically possible to establish a rehabilitation programme this should be done firstly as a sound piece of land management but secondly this could become a significant tourist attraction. A first inexpensive step would be to build a professionally designed and written information notice on the side of the road, creating a picnic spot perhaps, to explain the significance of the trees and plans for the future. It is also a reminder of what could happen to the SRF if care is not taken to safeguard its future. See Section 9.1.
 56. JAF LONG. 11/93.
 57. The western edge of the Chittagong Hill Tracts from the main road. 11/93
 58. Hillside erosion in the midst of a Shrimongal tea estate. Loss of forest cover is very often responsible for this.
 59. The LONG BEACH between Inani and Cox's Bazar. The tar road which is currently being built along this spectacular sandy beach will expose the pristine nature of this wild coast to all the dangers of uncontrolled encroachment and development.
 60. The Bay of Bengal. A priceless tourist attraction. 11/93.
 61. The last Forest Department rest house at the southernmost tip of the Teknaf peninsula. 11/93.
 62. A Rakhaine house near Teknaf. 11/93 (P.C.).
 63. Old Ramu Bhuddist Kiang or prayer house. 11/93 (P.C.).
 64. A Rhakaine community at Teknaf. 11/93 (P.C.).
 65. A Bhuddist shrine.
 66. Bedding - Joshak and Lap. 11/93.
 67. Looking down on the land just south of Cox's Bazar. 11/93.
 68. A cyclone shelter near Himchuri, Teknaf on the western side.
- multiple-use of these shelters as schools and welfare halls is being considered and it is possible that some might be useable for school parties and for youth tourism assuming that basic facilities will be available.
 69. JAILAYADIA ISLAND, WHYKEONG, Teknaf. This island was the last remaining habitat of the crab-eating monkey and has been wholly taken over for shrimp farming and the monkey is no longer there. Like the Chakaria Sundarbans this is another example of loss of biodiversity which would be difficult, if not impossible, to reverse.
 70. An OXFAM waterpoint at a Rhohinga settlement at Teknaf. 11/93.
 71. Remnants of *Dipterocarpus terbinatus* forests by the road to Chanuti. These are beautiful trees and a great attraction for tourists. Their protection is of utmost importance. 11/93.
 72. A Rhohinga settlement. These are enormously destructive of soils and forest resources. 11/93.
 73. The Rupsa ferry ghat at KHULNA. 10/93.
 74. Fishing boat at Inani - Bay of Bengal. 11/93.
 75. The eastern foreshore at MAHESHKHALI ISLAND off Cox's Bazar.
 76. JELENAOKA at MAHESHKHALI. 11/93.
 77. Rohinga refugee camp - TEKNAF. 11/93.
 78. Result of a hand trawl catch - Teknaf, Bay of Bengal. 11/93.

79. Bedroom at the FD rest house - INANI BEACH, Teknaf Peninsula, Bay of Bengal. 11/93. This is an exceptionally well sited and constructed building which is a fine example of the Forest Department's capability in this respect.
80. The INANI REST HOUSE - Bay of Bengal. 11/93.
81. The beach at the end of the road, COX'S BAZAR. 11/93. This area of beach is much used by pedestrians and vehicles and therefore subject to considerable disturbance.
82. The view from FD rest house - Inani 11/93.
83. The beach at the end of the path from SHAIBAL BPC hotel, COX'S BAZAR 11/93.
84. A view of COX'S BAZAR from the hills behind to the east. 11/93.
85. A view of the Hill Tracts on the way to LAMA. 11/93.
86. A view across the NAF river towards MYANMAR 11/93.
87. The LONG BEACH, TEKNAF, BAY OF BENGAL, 11/93.
88. Bhuddist shrine. Teknaf, 1993.
89. The FRONT at COX'S BAZAR. 11/93. This small line of exposed shops is now becoming part of an area of uncontrolled development which has the prospect of not only diminishing aesthetic values but being an immediate source of pollution and a health hazard. Measures should be taken to plan and set standards for these industrious people who are an asset in many respects. Likewise the car park should be properly demarcated and controlled to lend some kind of feeling of orderliness and care for the end of the road environment which will undoubtedly be seen by all tourists.
90. Bhuddist shrine, Teknaf 1993.
91. En route to Jaflong, Sylhet 11/93.
92. View near Sylhet. 11/93.
93. *Borassus flavifera* stand by the main Dhaka-Chittagong road, 11/93.
94. View near Sylhet. 11/93.
95. The British War Cemetery, Comilla 11/93. This well kept site can be viewed conveniently during a visit from Dhaka to the Bhuddist archaeological sites at Mainamati which are very important to cultural and historical components of general interest and special interest tours.
96. The old style self-catering cottages at Cox's Bazar. More units properly equipped would be attractive to the en famille holidaymaker and good quality accommodation of this sort is often utilised by special interest ecotourists in preference to modern hotels.
97. Archaeological site at BAROBAZAR, near Jessore on the Jessore-Dhaka road 07/93. Undeveloped sites such as this exist in the neighbourhood and could be attractive to EARTHWATCH style tourists.
98. The 'hand of man' starting to make its impact in rural Bagerhat. Posters on the roadside. 10/93.
99. Archaeological site, Barobazar. 07/93.
100. Dredging en route to Bagerhat from Khuina. 10/93.
101. Boniblas zoo at the cantonment 12 kilometres from Khuina. This small collection is visited by several thousand people each year especially during public holidays and should be improved. FD wildlife researchers should examine some of the exhibits since they include some locally rare species such as hog deer and marsh crocodile. As is it should not be included on ecotourism itineraries.
102. A domesticated elephant walking along the main road near Shrimongal 11/93.
103. Khan Jahan Ali's Mausoleum at Bagerhat. 10/93.
104. The tank at Khan Jahan Ali's Mausoleum where a few marsh crocodiles are fed by visitors. These animals are part of the remnant population of this species which is said to be locally extinct having once been present in the Sundarbans. These animals are worthy of urgent attention for biodiversity conservation.
105. Shait Gumbad Mosque, Bagerhat. Built in 1440 AD it is the largest and most important of 12 archaeological sites in the Khuina district near Bagerhat. The site is worthy of much more attention and physical protection to its fabric.
106. Marsh crocodile being fed at Khan Jahan Ali's mausoleum tank 10/93. (P.C.).
107. Shait Gumbad Mosque, Bagerhat, 10/93.
108. Nalta Hassan's Mausoleum 53 kms north of Munshiganj. 07/93.
109. The MPHA rest house at Mongla. In need of total refurbishment.
110. The BPC residential hotel/youth inn at Bagerhat near Khan Jahan Ali's mausoleum.
111. The new museum at Shait Gumbad Mosque, Bagerhat, 10/93. This could become an important feature and it is hoped that the old rest house which seriously mars the front face of the mosque is removed as part of a cohesive development plan.
112. The residential hotel/youth inn at Bagerhat.

113. The recently restored PARJATAN MOTEL at Sylhet. This is a well sited and unusually well appointed property with fine views all around. If finished to the standard already set and made comfortable to international standards with commensurate management, this property could become an attractive holiday venue for the upper end of the market and could become part of the effort which will need to be made to divert local ex-patriates to spend their holidays in Bangladesh. It could be a valuable component of the NEE. It is recommended that the name be changed to "The Sylhet Hotel" for marketing and public perception purposes.
114. The BPC Sea View restaurant, Cox's Bazar. This well-built property is not being used at the moment and its siting between a 'Youth Hostel' and a run-down hostel, leaves a lot to be desired.
115. The waning moon at Dubla, 11/93.
116. Sunset from the veranda of the FD rest house at Cox's Bazar 11/93. Part of the southern view has been obscured by newer constructions nearer the beach.
117. Dr I Gusti Tantra, Officer-in-Charge, BGD/84/056, 12/93.
118. Mr Syed Salamat Ali, National Project Director, BGD/84/056 11/93.
119. The Orchid House, DHAKA BOTANIC GARDEN 11/93.
120. The View Point, DHAKA BOTANIC GARDEN, built by the Forest Department as a major contribution to visitor amenities. The spacious gardens are set in 75 acres of woodland and are attractive to all kinds of visitor and tourist.

(Note : P.C = Parvez Chowdhury
T.K.D = Tapan Kumar Dey)

APPENDIX A30: INVENTORY OF POTABLE WATER SOURCES IN THE SUNDARBANS

SL. NO.	STATION NAME	SOURCE			DISTANCE FROM SOURCE (Approx.)	REMARKS ON QUALITY
		POND	RAIN	TUBEWELL		
1	Adachai C.O.	Y			40.0 Km.	Not Good
2	Amurbunia P.P.	Y			Office Compound	Good
3	Andharmanik P.P.	Y			5.0 Km.	Not Good
4	Baidyamari P.P.	Y			Office Compound	Good
5	Baniakhali F.S.	Y			20.0 Km.	Good
6	Bazbaza P.C.			Y	10.0 Km.	Good
7	Bhola P.P.					
8	Bogi F.S.	Y			Office Compound	Not Good
9	Burigoalini F.S. & R.O.	Y			Office Compound	Sand Filtered
10	Chandeshware P.P.					
11	Chandpai F.S. & R.O.	Y			Office Compound	Sand Filtered
12	Charkhali P.P.	Y			2.0 Km.	
13	Chaylabogi C.O.	Y			50.0 Km.	Not Good
14	Chonua P.P.	Y			2.0 Km.	
15	Chunkuri P.P.	Y			0.5 Km.	Good
16	Dasher Bharani P.P.	Y			1.0 Km.	
17	Dhangmari C.O.	Y			4.0 Km.	Good
18	Dhangmari F.S.	Y			4.0 Km.	Good
19	Dhanshagor F.S.					
20	Dubla Jelepalli P.P.	Y			150.0 Ft.	
21	Dudmukhi C.O.	Y			8.0 Km.	
22	Dumuria P.P.	Y			2.0 Km.	
23	Gewakhali C.O.	Y			40.0 Km.	Not Good
24	Hayatkhali P.P.	Y			8.0 Km.	Not Good
25	Jewdhara F.S.	Y			Office Compound	Good
26	Jongra P.P.	Y			5.0 Km.	Good
27	Joymoni C.O.	Y			15.0 Km.	Not Good
28	Kadamtala F.S.	Y			1.0 Km.	Good
29	Kailashganj P.P.	Y			8.0 Km.	Not Good
30	Kalabogi F.S.	Y			35.0 Km.	Not Good
31	Kalagachia C.O.	Y			2.5 Km.	Good
32	Kassiabad F.S.	Y			Office Compound	Not Good
33	Katakhali P.P.	Y			5.0 Km.	Good
34	Kateshwar P.P.	Y			3.5 Km.	Good
35	Katka W.S.	Y			Office Compound	
36	Khashitana P.P.	Y			4.0 Km.	Not Good

SL. NO.	STATION NAME	SOURCE			DISTANCE FROM SOURCE (Approx.)	REMARKS ON QUALITY
		POND	RAIN	TUBEWELL		
37	Kobadak F.S.			Y	1.0 Km.	Good
38	Kochikhali W.S.	Y			6.0 Km.	
39	Koikhali F.S.	Y			1.0 Km.	Good
40	Kolomteji P.P.	Y			3.0 Km.	Good
41	Koronjal P.P.			Y	3.0 K m.	Good
42	Koyra P.P.	Y			8.0 Km.	Not Good
43	Laudob P.P.	Y			2.0 Km.	Good
44	Mandarbaria Jelepalli P.P.	Y			Office Compound	Good
45	Maragang P.P.	Y			1.0 Km.	Good
46	Mora Bhola C.O.	Y			6.0 Km.	
47	Mrigamari C.O.	Y			2.0 Km.	Sand Filtered
48	Munshiganj P.P.	Y			1.0 Km.	Good
49	Nalian F.S. & R.O.	Y			Office Compound	Not Good
50	Nilkamol W.S.	Y			Office Compound	Not Good
51	Panirghat P.P.	Y			1.0 Km.	Not Good
52	Patakata P.P.	Y			15.0 Km.	Not Good
53	Shakbaria P.P.	Y			10.0 Km.	Not Good
54	Shakbaria P.P. (Satkhira)	Y			0.5 Km.	Good
55	Shapla P.P.	Y			0.5 Km.	Not Good
56	Sharankhola F.S. & R.O.	Y			Office Compound	Not Good
57	Sharbotkhali P.P.	Y			8.0 Km.	Not Good
58	Sibsha P.P.	Y			10.0 Km.	Not Good
59	Supoti F.S.	Y			Office Compound	Not Good
60	Sutarkhali F.S.	Y			3.0 Km.	Not Good
61	Tambulunia C.O.	Y			6.0 Km.	Good
62	Terabaka P.P.	Y			0.5 Km.	Not Good
63	Tobol Pari P.C.					

NOTES :

- P.P. - Patrol Post
 P.C. - Patrol Camp
 F.S. - Forest Station
 C.O. - Coup Office
 R.O. - Range Office
 W.S. - Wildlife Sanctuary

APPENDIX A31: TREE VOLUME EQUATIONS AND VOLUME TABLE

BGD/84/056, KHULNA, BANGLADESH

SPECIES	MODEL NO	EQUATION TYPE	TREE VOLUME EQUATIONS	SOURCE
Sundri	2	$V = b1 + b2(D^{b3})$	$V = 0.00017809D^{2.3358}$	ex Leech 1995
Gewa	22	$V = b1 + b2D + b3D^2 + b4/D$ if $D \geq b5$ $V = 0$ $D < b5$	$V = 0.0004218D^2 - 0.001502 - 0.008738/D$ if $D \geq 5.0$ cm $V = 0$ if $D < 5.0$ cm for volume up to 5 cm overbark	ex Leech 1995
		$V = b1 + b2D + b3D^2 + b4/D$ if $D \geq b5$ $V = 0$ $D < b5$	$V = 0.0004218D^2 - 0.002032 - 0.2506/D$ if $D \geq 10.0$ cm $V = 0$ if $D < 10.0$ cm for volume up to 10 cm overbark	ex Leech 1995
Keora	13	$V = \exp(b1 + b2D + b3 \ln(D))$ if $D \leq b4$ $V = b5$ $D > b4$	$V = \exp(5.11582 \ln D - 0.07070D - 15.91040)$ if $D \leq 72$ cm $V = 2.407$ $D > 72$ cm	ex ODA 1985
Passur & Dhundal	13	$V = \exp(b1 + b2D + b3 \ln(D))$	$V = \exp(3.08019 \ln D - 0.03026D - 10.33020)$	ex ODA 1985
Kankra	13	$V = \exp(b1 + b2D + b3 \ln(D))$	$V = \exp(1.48179 \ln D + 0.02088D - 6.63463)$	ex ODA 1985
Baen & Jir	13	$V = \exp(b1 + b2D + b3 \ln(D))$	$V = \exp(2.91335 \ln D - 0.02254D - 10.2624)$	ex ODA 1985
Other Species	13	$V = \exp(b1 + b2D + b3 \ln(D))$ if $D \leq b4$ $V = b5$ $D > b4$	$V = \exp(3.28405 \ln D - 0.05561D - 10.8153)$ if $D \leq 59$ cm $V = 0.494$ $D > 59$ cm	ex ODA 1985

VOLUME TABLE

ESTIMATED TREE VOLUME OF DIFFERENT SPECIES FOR DIFFERENT DIAMETERS
(diameter in centimetre and volume in cubic meter)

Diameter	Sundri	Gewa	Keora	Passur/Dhunda	Kankra	Baen/Jir	Others
10.00	0.0385869	0.0398042	0.0079246	0.0290017	0.0491007	0.0228327	0.0221571
11.00	0.0482086	0.0487414	0.0120234	0.0377380	0.0577419	0.0294685	0.0286615
12.00	0.0590733	0.0585090	0.0174841	0.0478667	0.0670739	0.0371245	0.0360783
13.00	0.0712178	0.0691100	0.0245344	0.0594245	0.0771137	0.0458296	0.0443870
14.00	0.0846770	0.0805467	0.0333981	0.0724367	0.0878802	0.0556061	0.0535551
15.00	0.0994841	0.0928205	0.0442897	0.0869179	0.0993935	0.0664702	0.0635405
16.00	0.1156706	0.1059327	0.0574101	0.102830	0.1116757	0.0784324	0.0742929
17.00	0.1332668	0.1198842	0.0729420	0.1202978	0.1247501	0.0914980	0.0857554
18.00	0.1523018	0.1346758	0.0910471	0.1391802	0.1386412	0.1056678	0.0978661
19.00	0.1728034	0.1503079	0.1118630	0.1595005	0.1533749	0.1209378	0.1105591
20.00	0.1947984	0.1667811	0.1355015	0.1812323	0.1689785	0.1373005	0.1237656
22.00	0.2433719	0.2022520	0.1915544	0.2287966	0.2029097	0.1732549	0.1514375
24.00	0.2982201	0.2410907	0.2595389	0.2815542	0.2406765	0.2134021	0.1803146
26.00	0.3595293	0.2832987	0.3393360	0.3391192	0.2825400	0.2575698	0.2098404
28.00	0.4274755	0.3288771	0.4303995	0.4010549	0.3287812	0.3055500	0.2394876
30.00	0.5022262	0.3778267	0.5318007	0.4668880	0.3797015	0.3571064	0.2687704
32.00	0.5839408	0.4301481	0.6422877	0.5361213	0.4356234	0.4119809	0.2972535
34.00	0.6727721	0.4858418	0.7603516	0.6082437	0.4968912	0.4698990	0.3245565
36.00	0.7688665	0.5449081	0.8842971	0.6827402	0.5638723	0.5305744	0.3503563
38.00	0.8723647	0.6073473	1.0123112	0.7590987	0.6369582	0.5937135	0.3743870
40.00	0.9834024	0.6731596	1.1425279	0.8368166	0.7165657	0.6590189	0.3964381
42.00	1.1021107	0.7423452	1.2730874	0.9154062	0.8031382	0.7261924	0.4163512
44.00	1.2286164	0.8149042	1.4021868	0.9943988	0.8971469	0.7949380	0.4340168
46.00	1.3630421	0.8908368	1.5281231	1.0733482	0.9990929	0.8649638	0.4493693
48.00	1.5055071	0.9701432	1.6493274	1.1518331	1.1095083	0.9359843	0.4623827
50.00	1.6561271	1.0528232	1.7643909	1.2294589	1.2289579	1.0077219	0.4730658

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

This appendix presents some of the raw data that was collected from the surveys undertaken by MARC when undertaking the Socio- Economic survey and DDC when completing the Case study on Non Wood Resources. It also shows how some of the figures quoted in the main text of this report were derived.

1. Goran Harvesting

Table 1. Difference in Boat Loading Capacities as Estimated by the BLC and as Measured at Offloading

Boat details	Boat Number			
	1	2	3	Av.
Maundage of boat on BLC	243	259	500	334
Actual weight of load (mds)	346	580	727	551
BLC as% of actual weight	70.23	44.66	68.78	60.62

From these figures it is possible to calculate the cost of production by the actual maunds or by the number of maunds as estimated by the BLC. Obviously the cost will be greater per 'BLC' maund as the cost figures will be divided by a smaller a number. The costs expressed in 'BLC' maunds is a useful figure as it accommodates the under measuring, and can be used directly with the Forest Department's collected statistics

Table 2. Costs of Production and Costs per Maund (actual) and per Maund (BLC)

COSTS	Boat Number			Average Cost		Av Cost as % of total	Av.
	1	2	3	Tk per maund			
				BLC	actual		
A. Forest Charges Actually Paid							
BLC issue (once per year)	29.16	31.08	60				
Cost of permit	1215	1295	2500				
Extra fee for over loading		275	750				
sub-total charges	1244.2	1601.1	3310	6	4	7	
B. Cost of Production							
No. of days /trip approx	22	25	31				26
Labour Headman No.	1	1	1				1
labourer No.	4	4	4				4
Headman Tk/trip	1600	3940	4960				
labourer (total) Tk/trip	4775	5910	7440				
sub-total labour	6375	9850	12400	30	17	32	
Expenses							
Food Tk/trip		3800	2800				
Medicine Tk/trip		200	150				
sub-total expenses	1600	4000	2950	9	5	10	
C. Middlemen and Traders							
Money lender	3175	3460	4000				
traders	1600	1730					
sub-total	4775	5190	4000	16	9	16	
D. Unofficial Levies and Extortion							
	7163	8469	17040	32	20	36	
Total Costs	21157	29110	39700	93	55	100	
Total Sale price	23182	29000	40000	151	57	102	
Net Profit	2025	-110	300			2	

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

Table 3 Derived costs and prices per BLC maund

Item	Boat No. Tk/BLC md			
	1	2	3	Av.
Sales price	95	112	80	96
Cost of production	52	74	39	55
Cost of extortion	29	33	34	32
Forest charges	5	6	7	6
Total costs	87	112	79	93
Profit	8	0	1	3

Derivation of correct level of Royalty

From this it can be seen that the real level of royalty should be the sales price less the cost of production plus a modest profit for the contractor (currently about 3%)
The cost paid in extortion is the equivalent of theft of the country's assets.

This means from this limited survey the level of royalty should be around:-

96 - 55 + profit of say 30%

This gives a figure of 24 Tk/md or 2400 Tk/100 mds

or nearly 5 times the present level and still allows for the current system of finance and trade.

Numbers employed in the Goran Harvest

Derived productivity:-

Average No. of mds/manday

4.2 Actual mds/manday

2.6 BLC mds/manday

No. of Goran Boats Registered 1992/93 = 3646

Average annual Goran harvest 1608 thousand maunds by BLC measurement

Therefore the estimated total number of mandays = 626 thousand mandays

Assuming there are 140 days to the Goran season and that each makes

1.6 trips per season = 3 259 boats collecting Goran each with 5 people

16 295 people employed cutting Goran

The derived total sum of earnings (excluding the food and expenses) = 32 million taka/year

Assuming an agricultural minimum wage of 40.00 Tk/day 297 days/yr 2703 full time jobs

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

2. Golpatta Harvesting

Table 4. Boat Details

Boat details	Boat Number				
	1	2	3	4	Av
Maundage of boat on BLC	500	418	500	500	480
Actual weight of load	-	-	-	-	-
BLC as% of actual weight	-	-	-	-	-

Table 5. Costs of Production and Costs per Maund (BLC)

COSTS	Boat Number				Average		
	1	2	3	4	Average Cost per maund		
					BLC	% of tot	Av
A. Forest Charges Actually Paid							
BLC issue (once per year)	60	50.16	60	60			
Cost of permit	1500	1254	1500	1500			
Extra fee for over loading		650	600	600			
Late fine		1000		2000			
sub-total charges	1560	2954.2	2160	4160	6	5	
B. Cost of Production							
No. of days /trip approx	26	33	29	35			30.75
Labour Headman No.	1	1	1	1			6.25
labourer No.	8	4	5	4			
Headman Tk/trip		9487	10625	8571			
labourer (total) Tk/trip		8000	9000	10475			
sub-total labour	55000	17487	19625	19046	57	51	
Expenses							
Food Tk/trip		3425	5800	3000			
Medicine Tk/trip		200	200	200			
sub-total expenses	2000	3625	6000	3200	8	7	
C. Middlemen and Traders							
Money lender		4650	10000	4000			
traders			2000	400			
sub-total	0	4650	12000	4400	11	10	
D. Unofficial levies and extortion	15900	10333	16212	15190	30	27	
Total Costs	74460	39049	55997	45996	112	100	
Total Sale price	74400	38400	56000	46000	111		
Net Profit	-60	-649	3	4			

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

Table 5. Derived costs and Prices per BLC maund

Item	Boat Number Tk/BLC md				
	1	2	3	4	Av.
Sales price	149	92	112	92	111
Cost of production	114	62	75	53	76
Cost of extortion	32	25	32	30	30
Forest charges	3	7	4	8	6
Total costs	149	93	112	92	112
Profit	0	-2	0	0	0

Derivation of the correct level of royalty

From this it can be seen that the real level of royalty should be the sales price less the cost of production plus a modest profit for the contractor (currently zero). The cost paid in extortion is the equivalent of theft of the country's assets.

This means from this limited survey the level of royalty should be around:-

$$111 - 76 + \text{profit of say } 30\%$$

This gives a figure of 12 Tk/md or 1200 Tk/100 mds

or nearly 4 times the present level and still allows for the current system of finance and trade.

Numbers employed in the Golpatta harvest

Derived productivity:-

Average No. of mds/manday
2.5 BLC mds/manday

No. of Golpatta Boats Registered 1992/93 = 4478

Average annual Golpatta harvest 1882 thousand maunds by BLC measurement

Therefore the estimated total number of mandays = 754 thousand mandays

Assuming that each season each boat makes

1 trips per season = 3924.1 boats collecting Golpatta with 6.25 people
24526 people employed cutting Golpatta

The derived total sum of earnings (excluding the food and expenses) = 109 million taka/year

Assuming an agricultural minimum wage of 40.00 Tk/day 297 days/yr 9179 full time jobs

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

Derivation of the Economic Value of Shrimp Fry and Fish Production

1. Level of Shrimp Fry Royalty

Table 1. Price Paid at the Shrimp farms for Fry

Block	Area (ha)	Number	Price Tk/1000
K	423	6424500	1244
N	70	1026960	1475
G	259	1846500	1532
I	164	997400	1433
B	208	1330367	1348
O	265	2232671	1504

Source: Third Fisheries Project

Weighted average sales price to shrimp farm = 1365 Tk/1000

Table 2. Costs of Production (Tk/1000)

COSTS	Unit Cost (Tk/1000)	Remarks
A. Forest Charges	50	
B. Cost of Production		
Labour	400	Labour assumed at 100 fry per day per person (based on data collected during field trips:- range of fries collected = 10 to 400 fries/person/day)
Depreciation on nets	100	
Sub-total	500	
C. Cost of middlemen/traders		
Assume 30%	165	
D. Cost of transport		
from SRF to polders		
Assume 30%	215	
Total	930	

This should give a net profit of 435 Tk/1000 fry. Of course the shrimp fry collectors do not receive any of this as they are generally poor and exploited at all stages. This profit will be shared between divided between unofficial levies and the middlemen

Derivation of the correct level of Royalty

From this it can be seen that the correct level of royalty should be the sales price less the costs of production plus a modest profit for the fry collectors (say 30%)

This means that from this limited survey and data that the level of royalty should be:-

$$1365 \quad -500 \quad -150 \quad -165 \quad -215 = 335 \text{ Tk/1000}$$

This is the equivalent of nearly seven times the current level.

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

1. Level of Fish Royalty

Table 3. Costs of Fish Production per Kilogram by Boat Size

COSTS	UNITS	Boat size length in feet				
		27'	33'	36'	39'	42'
A. Capital Costs						
Capital cost	Taka	36000	38000	40000	42000	44000
Net type	Bent 1	35000				
	Pata			80000		
	Beri/sandu				200000	200000
	Kamar		15000			
sub-total Capital costs	Tk	71000	53000	120000	242000	244000
B. Production Costs						
Maintenance = 10% per trip		7100	5300	12000	24200	24400
Yearly depreciation	boat %	20	20	20	20	20
	boat Tk	7200	7600	8000	8400	8800
	net%	20	20	20	20	20
	net Tk	7000	3000	16000	40000	40000
Depreciation total	Tk/yr	14200	10600	24000	48400	48800
No. of trip/year	No/yr	7	7	7	7	7
Depreciation/trip	Tk/tip	2029	1514	3429	6914	6971
Other expenses	Tk/trip	13500	14250	15000	15750	16500
No. of fishermen/trip		4	5	8	15	15
Duration of trip	days	25	25	25	25	25
Wages 1	Tk/trip/per	1500	1500	1500	1500	1500
	2 catch sharing					
C. Total cost of production /trip						
Depreciation		2029	1514	3429	6914	6971
Maintenance		7100	5300	12000	24200	24400
Expenses		13500	14250	15000	15750	16500
wages		6000	7500	12000	22500	22500
Food		3200	4000	6400	12000	12000
sub-total		31829	32564	48829	81364	82371
D. Forest Charges						
Production	kg fish/trip	1800	2100	3000	5000	5200
Permits	50 Tk/md					
	1.339614 Tk/kg	2411	2813	4019	6698	6966
E. Middlemen and Traders						
Cost of finance (10% of capital)		7100	5300	12000	24200	24400
Production costs		41340	40677	64847	112262	113737
Cost of management 15%		6201	6102	9727	16839	17061
sub-total costs		47541	46779	74575	129102	130798
Middleman 5% of sales		3600	4200	6000	10000	10400
Trader 5% of sales		3600	4200	6000	10000	10400
sub-total finance & trading		20501	19802	33727	61039	62261
Total Costs and Official Fees		54741	55179	86575	149102	151598
Total Sales @Tk/kg						
	total sales	72000	84000	120000	200000	208000
Gross Profit		17259	28821	33425	50898	56402
Profit/kg		10	14	11	10	11

APPENDIX A32 - The Economic Value of Goran, Golpatta, Shrimp Fry and Fish Production

This gives an average profit of Tk 11/kg, but like the shrimp fry it is unlikely that the fishermen are likely to receive this. It is more likely to be divided by the financiers, pirates and dacoits, and unofficial levies. This is of course excluding any unofficial levies or fees.

Derivation of the correct level of Royalty

From this it can be seen that the correct level of royalty should be the sales price less the costs of production plus a modest profit for the fishermen (say 30%)

This means that from this limited survey and data that the level of royalty should be:-

$$40 \quad -28 \quad -8 = \quad 3.94 \text{ Tk/kg}$$

This is the equivalent of nearly three times the current level.

APPENDIX A33: ANALYSIS OF TIMBER AUCTIONS AND SALES OF TRANSMISSION POLES

The two methods that have been utilised by the Forest Department for selling timber from the Sundarbans Reserved Forest by auction are described in the main report (section 4.3.3.). The purpose of this appendix is to analyse the results of some of these auctions so that comparisons can be made and conclusions drawn regarding the efficacy of the methods of sale.

1. Standing Sales

This method was the main means of disposal of timber during the period 1975 to 1988 (and also prior to Independence). The areas scheduled for felling in the working plans or interim prescriptions were marked by the forest department following the relevant silvicultural rules. When marking the trees a record was kept of the number and species of trees by diameter classes and by whether they were classified as sound or defective. Unfortunately it was not possible to locate details of the revenue achieved for any individual standing auctions. In order to compare the two types of auction it was therefore necessary to analyse all the auction records for one complete financial year for which it was also able to ascertain the revenue obtained in total for the sales.

This was done for the Fiscal Year 1985-86. Table 1 presents the details of the standing sales by range, compartment and species.

This table was then converted into total standing volumes by using the mid diameter for each diameter class in metric and the relevant volume equation as shown in Table 2. The total standing volumes by diameter class, species and sound or defective stems are presented as Table 3.

Table 1. Volume Equations Used to Determine Standing Volume of 1985-86 Standing Auction Sales

Species	Equation	Source
Baen	$V = \exp(2.91335 \ln D - 0.02254D - 10.2624)$	ODA, 1985
Dhundal	$V = \exp(3.080119 \ln D - 0.03026D - 10.33020)$	ODA, 1985
Kankra	$V = \exp(1.48179 \ln D + 0.2088D - 6.63463)$	ODA, 1985
Keora	$V = \exp(5.11582 \ln D - 0.07070D - 15.91040)$ if $D > 72$ cm $V = 2.407$	ODA, 1985
Sundri	$V = 0.00017809D^{2.3358}$	Leech, 1995

The total volume sold by standing auction in 1985-86 came to 120 thousand m³ of which 98% was Sundri. This total volume was sold for Tk 291.5 million. This gives an average price of Tk 2422 / m³ or Tk 87 / cft.

This price was then inflated to 1994 figures to enable comparison with the auction figures by sale of felled timber at the depot. The inflation indices used were the Industrial Price Inflation Indices published by the Bangladesh Bank, 1994.

Table 3. Standing Volume of Timber Sold by Standing Auction by Species and Diameter Class in 1985-86 (m³)

Species	Sound Trees by Diameter Class							Total
	9 - 10"	10 - 12"	11 - 12"	> 12"	12 - 14"	14 - 16"	>16"	
Baen	0	0	0	1	35	16	81	133
Dhundal	6	0	0	2	0	0	0	8
Kankra	5	9	0	12	29	13	14	81
Keora	0	1	0	88	14	46	636	784
Sundri	2353	3148	16	157	23892	7814	1344	38722
Total	2364	3158	16	258	23969	7889	2075	39729

Species	Defective trees by Diameter Class											Total	Grand Total	
	7-8"	7-9"	8-10"	9-10"	9-11"	10-12"	11-12"	12-14"	>12"	14-16"	>16"			
Baen	0	0	0	0	0	1	0	0	20	2	76	100	233	
Dhundal	0	1	0	1	0	0	0	0	0	0	0	2	10	
Kankra	0	2	0	8	0	17	0	7	11	3	3	51	132	
Keora	0	1	0	0	0	5	0	14	353	48	437	857	1642	
Sundri	411	569	10802	9083	86	4568	1	14	1836	8	1868	302	7960	11832
Total	411	569	10802	9092	87	4570	1	14	1857	1	1921	161	8061	12033

Source: Derived from Tables 1 and 2

Please note that these figures do not correspond exactly with the figures of actual out turn as presented in Appendix VI. This is probably because the figures presented here were estimated using different equations. There were also likely to have been additional sales made by permit and for other purposes such as REB poles.

2. Depot Sales

Following the moratorium in 1988-89 the sale of timber from Forest Reserves ceased. In 1990 in order to harvest the Sundri timber that was degrading due to the top dying permission to fell Sundri timber was granted by Government Order. The timber was now harvested and extracted to the depot by the Forest Department where it was sold at auction. Table 4 presents the results of the Sundri Auctions since 1990-91 until 1993-94.

Table 4. Results of the Sundri Auctions from 1990-91 to 1993-94

Year	Cpt	Quantity Extracted (cft)	Quantity Sold (cft)	Revenue from sale (Tk)	Price (Tk/cft)	Price (Tk/m3)
1990-91	32	11144				
	36	201533	153755	27317300	178	4928
	37	114855	66549	10540900	158	4393
Sub total		327532	220304	37858200	172	4766
1991-92	32	542098	488621	89628355	183	5088
	36	44288	88468	12697100	144	3981
	37	125633	233166	35359100	152	4206
Sub total		712019	810255	137684555	170	4713
1992-93	32		5149	1151100	224	6200
	36	263247	261740	54447100	208	5770
	37	5510				
Sub total		268760	266890	55598200	208	5778
1993-94	39	262301	225431	59719000	265	7348
	20	305493	196858	32663700	166	4602
		567794	422290	92382700	219	6068
Total		1876104	1719739	323523655	188	5218

Source: Forest Department Records - Nalian Range Office

Please note that the last two columns in Table 4 are derived from the data in the rest of the table and the conversion factors listed in Appendix III.

3. Sales of Transmission Poles

During this period Sundri was also sold to REB through BFIDC. Table 5 presents the numbers of REB poles produced and also an estimate of the volume and the Royalty that would have been payable.

Table 5. The Number of Poles and Estimated Volume Supplied to BFIDC for the REB by Year

Length of Pole (ft)	No. of Poles by Year			
	1990-91	1991-92	1992-93	1993-94*
25	6778	10058	0	5531
30	2120	2237	0	1137
35	120	205	0	75
Total	9018	12500	0	6743
Volume (cft)	59479	81694	0	44998

Source: Forest Department - volume derived from minimum size specification

* Note that the 93 - 94 figures are incomplete. The target number of poles is 15 5000

The figures in Table 5. were then multiplied by the Royalty due (Appendix VIII) less the Forestry Departments marking costs to give an estimate for the net revenue that the Forest Department should have received for the REB poles. (The F D did not have the actual revenue figures available). Table 6. presents this estimated revenue.

Table 6. Estimated Revenue from REB Pole Production

Length of Pole (ft)	Net Rate Tk/cft	Revenue (Tk)			
		1990-91	1991-92	1992-93	1993-94*
25	154.25	6152519	9239247	0	5232784
30	162.25	2963962	3165019	0	1656819
35	162.25	214829	371398	0	139943
Total		9331310	12775664	0	7029546

The figures derived in this Appendix are further discussed in the Main Report section 3.1.5.

APPENDIX A34: SUNDARBANS DIVISION EXPENDITURE AND PAY SCALE

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FOREST DEPARTMENT - SUNDARBANS DIVISION EXPENDITURE AND PAY SCALE

Expenditure by Budget Head	Financial Year											
	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	
A. Buildings and Communications												
New constructions: Buildings		19870	14000									
Roads												
HQ houses	46 931	79 390	38 203	96 205	151 864	1444 484 99 000	437 010	674 450				
Rest houses		5 000				77 879	77 384	344 259	180 650	281 639	23 504	
Subordinate housing	29 219	81 075	161 797	71 795	155 711	277 637	500 951	524 291	519 350	218 361	206 496	
Road repairs	8 300	8 000	4 000	4 000	48 900	1 000		39 000	25 000	20 000	30 000	
Other repairs	15 165			17 500	21 025							
Sub total	84 450	208 500	218 000	189 500	377 500	1900 000	1015 345	1582 000	725 000	520 000	260 000	
B. Administrative Costs												
Salaries: Officers	88 040	79 975	191 925	175 329	214 038	237 758	207 652	267 300	234 713	312 000	343 282	
Staff	3814 111	4017 934	4655 828	8726 591	5747 998	9662 470	8829 338	11380 150	10740 087	14785 999	15589 418	
Allowances and honoraria	3139 779	3873 286	5959 073	5456 602	5599 671	6894 972	7355 804	10063 405	10424 600	8678 100	11506 402	
Contingencies:	254 135	115 228	353 845	449 705	305 998	312 029	221 020	402 400	477 000	386 900	394 650	
Other					340 984	400 000	385 000	510 000	500 000	443 000	409 996	
Sub total	7296 055	8088 423	11160 670	14808 227	15208 689	17507 229	16998 814	22623 255	22376 400	24605 999	28243 748	
C. Conservancy												
Stores and equipment	15 500	19 000	25 000	35 000	40 000	5 000	5 000	40 000	1 000	18 000	55 500	
Public works	14 600	291 472	14 000	17 000	21 025			40 000	40 000	30 000	9 700	
Other	2822 750	3085 127	7572 226	5620 750	5707 003	5231 812	4778 580	6014 000	5394 000	5583 994	5600 299	
Sub total	2852 850	3395 599	7611 226	5672 750	5768 028	5236 812	4783 580	6094 000	5435 000	5631 994	5665 499	
Grand Total	10233 365	11690 522	18988 896	20670 477	21354 217	24644 041	22797 739	30299 255	28536 400	30757 993	34169 247	

FOREST DEPARTMENT - SUNDARBANS DIVISION EXPENDITURE AND PAY SCALE

APP A 34 -

APPENDIX A34: SUNDARBANS DIVISION EXPENDITURE AND PAY SCALE

Forestry Department Pay Scale	Effective from	Jul-91		
		National Pay Scale (Tk./month)		
Title	Grade	Min	Max	Av
	1	10 000	10 000	10 000
CCF	2	8600	9500	9050
DCCF/CRO	3	7800	9000	8400
CF/DO	4	7100	8700	7900
DCF	5	6300	8050	7175
DCF/DFO/SRO	6	4800	7250	6025
S & FO	7	4100	6500	5300
ACF/RO/JRO/Accountant	8	3200	5440	4320
AO/FR/SFR	9	2850	5155	4003
FR/Foremen/DR	10	2300	4480	3390
Engine Driver	11	1725	3725	2725
Head Assistant	12	1550	3405	2478
Accountant	13	1475	3150	2313
Driver	14	1375	2870	2123
Driver/Speedboat Driver	15	1300	2615	1958
LDA/Typist/Driver	16	1200	2335	1768
Engine man/Fitter	17	1125	2170	1648
	18	1050	1915	1483
Forest Guard	19	975	1750	1363
Labourers	20	900	1530	1215

APPENDIX A35: DEFINITIONS DEFINITIONS ESPECIALLY AS APPLIED TO THE SRF

Afforestation	the planting of trees in unforested areas
Alluvium	material transported in suspension and deposited by rivers or floods on contact with slower or sluggish water
Basal Area	The area of the cross-section of a stem, usually of a tree at breast height. The formula for basal area in square metre used in this report is $\pi d^2/40000$ where d is a diameter in centimetre.
Block	A block is a land division by its definition, although in practice, the term is often loosely and variously applied. Its use is one of administrative convenience in identifying a particular land area of considerable size. Blocks are sometimes administrative management units or groups of units. Sometimes, the block is a designation of more geographic than organizational or operating entity. Where topography exerts considerable influence, a grouping of lands in a particular area or a drainage, might logically be designated as a block.
Bole	Merchantable part of the stem of a tree from the stump cross-section to the merchantable limit which may be defined as the crown point or a specified upper diameter
Breast Height (dbh)	The usual height for measuring girth, diameter and basal area of standing trees. In Europe, the United Kingdom and in many countries, it is 4 feet 3 inches (1.3 metres) above the ground level; in America, Myanmar (Burma), India, Pakistan, Bangladesh, South Africa, Malaya and in some other countries, it is 4 feet 6 inches.
Canopy	The cover of branches and foliage formed by tree crowns.
Compartment	Unit of area used in forestry management and in the SRF these areas were originally defined and mapped by Curtis, 1926/28 series. There are 55(58 with sub compartments) in the SRF.
Coupe	A felling area, usually one of an annual succession unless otherwise stated and is conventionally one of a felling series or working circle
Ecosystem	A self-sustaining area of land consisting of a community of organisms and their environment
Ecotourism	A form of tourism which achieves conservation objectives by ensuring that the attractions on which it is based benefit from tourists either directly or indirectly
Edaphic	Pertaining to soil
Felling cycle	The interval between successive main fellings in the same unit area usually under a selection system
Forest Type	A smallest homogeneous forest cover unit, bounded by a type line.
Forest Cover Map	A planimetric or topographic map on which all forest types are delineated.

Forest Management	Forest management is the process of manipulating the forest environment to produce a mixture of goods and services desired by the owners and the society. These goods and services, their relative importance and proportion change with time, socio-economic conditions, demand, legislation/traditions, land capacity, cooperation received from the users and a host of other factors. The forest manager, particularly of public forest lands has, therefore, to operate under the multiple-use concept, identify and evaluate the involved trade-offs and fully display them in a decision making process.
Growing Stock	The growing stock may be defined as the sum (by numbers or volume) of all the trees growing in the forest, or a specified part of it. The normal growing stock is the total volume of trees in a fully stocked forest with normal distribution of age classes for a given rotation. The trees present at both measurements and that are clearly identifiable.
Humus	The more or less decomposed organic matter of the soil.
Hydrology	The study of water resources.
Increment	Increment is the growth in height, diameter and volume of a tree in relation to time. Annual growth is known as Current Annual Increment (CAI). Growth is normally measured over a period of years and the average obtained by dividing the total growth by the number of years in the period is referred to as the Periodical Mean Annual Increment (PMAI). If the time to which growth is related is the age of the tree, then the average growth, obtained by dividing the total growth by the age, is known as Mean Annual Increment (MAI).
Ingrowth	In this report, ingrowth has been assumed as the trees that are < 5.0 cm dbhob at the first measurement but which are >= 5.0 at the fourth measurement. It is a measure showing the trees not present in the first measurement and are present in the fourth measurement.
Inventory	The dictionary definition of the word "Inventory" basically means a listing, an itemization of goods, materials or other stock in a business. Used in forestry, the term takes a broader meaning primarily because a tree is both a factory and a utilisable product with no clear distinction between the two. Indeed, the central problem of timber management is to make this distinction, to decide which trees should be reserved as growing stock (the factory) and which should be cut at a particular time (the product). For this reason, forest inventory means more than a mere enumeration of merchantable products. It includes information on the dynamics of the factory, on growth, quality, treatment needs and many other things that go beyond a listing of what there is at a given time.
Litter	The uppermost layer of the dead vegetable matter on a forest floor, freshly fallen or slightly decomposed and consisting chiefly of leaves, but also including bark fragments, twigs, etc.
Mallam	The addition of boards to the sides of a boat after it has its carrying capability assessed, so that additional resources can be removed without paying the Forest charge due. The term is generally to describe any situation where under recording or under payment of resources occurs.
Mangal	Community of mangrove trees (MacNae, 1968)

Mangrove	tropical trees restricted to intertidal and adjacent communities (Tomlinson, 1986); trees and bushes growing below the high-water level of spring tides (FAO, 1952); mangrove trees and bushes or mangrove forest (FAO, 1994)
Merchantable Height	The height of a tree measured from the stump to the point of branching.
Micro-fauna	The small members of the animal kingdom, particularly those found in the forest litter, humus and soil.
Moratorium	A temporary ban on a specified activity. In the case of the SRF this is applied to a ban on felling of most but not all timber species normally extracted in felling cycles
Non-wood forest products	All produce, real or potential including inorganic material and services other than timber, obtainable from all sources within a forest area.
Normal Yield	The yield from a normal forest.
Over-wood	The upper storey of any tree stand, where at least two distinct crown layers occur, either temporarily or permanently, e.g. seed bearers over regeneration.
Phenology	The periodical leafing, flowering and fruiting of plants.
Physiography	Descriptive physical geography
Pneumatophore	A spike-like projection of the roots of swamp trees, enabling the submerged roots to obtain oxygen.
Range	Each division or sub-division of a forest is divided into a number of subordinate units called ranges and beats, each under a Range Forest Officer or a Range Officer of the rank of a FR or sometimes, a senior DR. A range is a very important unit in the management and administration of a forest.
Range	The main unit of managed forest area formed by compartments and blocks. There are four ranges in the SRF.
Rotation	The British Commonwealth Forest Terminology 1953, also adopted in Bangladesh, defines rotation as the planned number of years (normally fixed by the working plan) between the formation or regeneration of a crop and its final felling. In the case of a selection forest, the average age at which a tree is considered mature or felling. The rotation is the predetermined period of years between the formation of stands and their final felling. Different kinds of rotation are recognized, such as (i) Physical Rotation, (ii) Silvicultural Rotation, (iii) The Rotation of the Maximum Volume, (iv) Technical Rotation, (v) Financial Rotation and (vi) Rotation of the Highest Income.
Sapling	A young tree more than 2m in height but less than 10cm in diameter at breast height.
Stand Table	A table showing the numerical distribution of the different species by diameter classes.
Stand	A stand is defined as an aggregation of trees or other growth occupying a specific area and sufficiently uniform in composition (species), age arrangement and condition as to be distinguishable from the forest or other growth on adjoining areas.

Standing Stock	Standing stock may be defined as the number of trees available in a piece of forest land at a specified time.
Stock Table	A table showing the volumetric distribution of different tree species by diameter classes.
Stocking	The number of trees per unit area.
Stratification	A classification of a group of forest types of similar characteristics.
Stratum	A group of forest types of similar characteristics.
Sustained Yield	The material that a forest can yield annually (or periodically) in perpetuity.
Unofficial Consumption	<p>For this report, trees present at the first measurement but which were not present at the fourth measurement in 1994/95. There are a number of reasons recorded in the data base:</p> <ul style="list-style-type: none"> • Mortality, trees that died between measurements, • Missing trees, trees not found at the fourth measurement, and, • Illegal felling, trees recorded as stumps at the fourth measurement.
Volume	<p>The volumes estimated by the project were computed as follows:</p> <ul style="list-style-type: none"> • The volumes quoted for Sundri <i>Heritiera fomes</i> and Gewa <i>Excoecaria agallocha</i> are based on over bark volumes between stump and merchantable height using equations developed by Leech, Karim and Sarker (in press, Leech 1995). • For other species volume estimates are based on the ODA equations and are volumes under bark.
Wild animal	Any animal <i>ferae naturae</i> and includes game animals but not domesticated animals
Wildlife	All plants and animals, which are normally wild by nature and not domesticated; some feral organisms could be included in special circumstances
Wood products	All timber produce, whether real or potential, from a forest area
Working Circle	A working circle is the whole or part of a management plan area which is subjected to the same treatment.
Yield	The volume or number of stems that can be removed annually or periodically, or the area over which felling may pass annually or periodically, consistent with the attainment of the objects of management.

APPENDIX A36: MONITORING and EVALUATION WORKPLAN SRF and BORDER ZONE

ITEM	INDICATOR	MEANS OF VERIFICATION	RISKS AND ASSUMPTIONS
Purpose: To monitor, evaluate and revise SRF and Border Zone conservation management			
Output 1: SRF and Border Zone management monitored	IMC(Khulna) quarterly reports	FD/CCF and NMC/CCF audit	Adequate institutional strengthening implemented and sustained
Activities: NMC monitors regular reports on achievement of annual workplan targets	IMC quarterly reports	FD/CCF and NMC/CCF audit	Good coordination with the OPSUNIT achieved on reporting
Output 2: SRF and Border Zone management evaluated			
Activities: DFOs and staff evaluate biodiversity conservation statuses in the SRF and Border Zones	DFO Environment's report on flora, fauna and habitats	Minutes of DFOs/IMC meetings; IUCN ecosystem audit	DFOs have institutional and technical capacity
Activity: DFOs and staff repeat IMCs 1998 selected baseline surveys and compare with original data on an annual basis	DFOs's periodic reports	Minutes of DFOs/IMC meetings	DFOs have institutional and technical capacity
Output 3: SRF and Border Zone management revised			
Activity: DFOs collaborates with IMC Khulna and revises the Workplan before December 1999	A revised Annual Operational Workplan	FD/CCF and NMC/CCF audit	Revised Annual Operational Workplan approved by FD/CCF