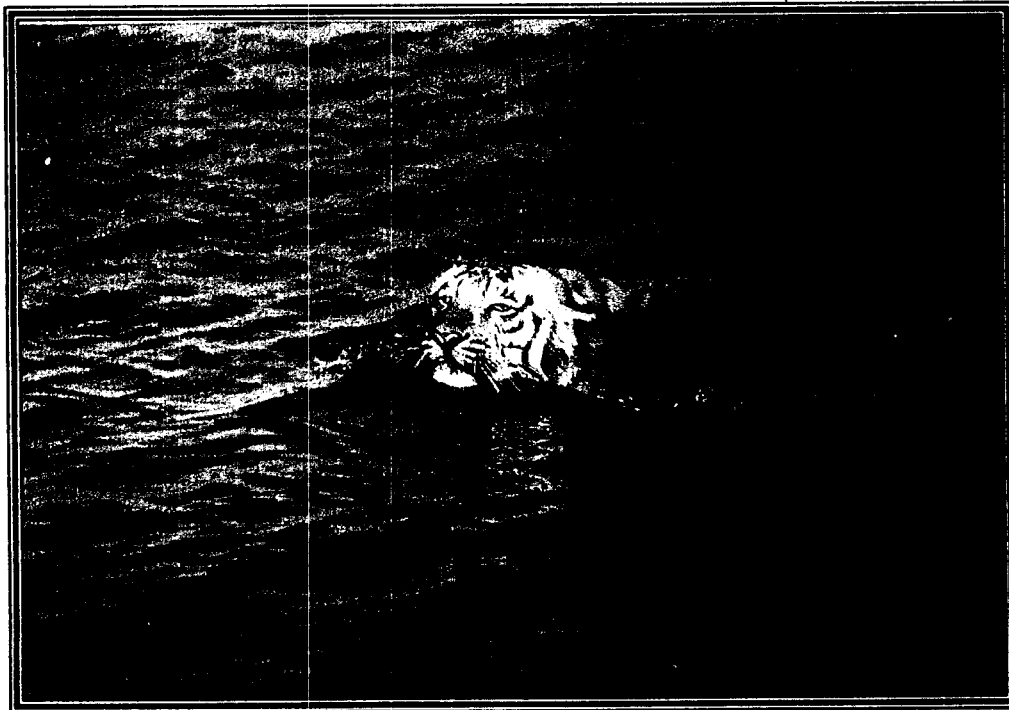


PERIODIC REPORTING EXCECISE (SECTION II)

STATE OF CONSERVATION OF SPECIFIC WORLD HERITAGE PROPERTIES



STATE PARTY:

INDIA

PROPERTY NAME:

SUNDARBAN NATIONAL PARK

**PERIODIC REPORTING EXERCISE
ON THE APPLICATION OF THE WORLD HERITAGE
CONVENTION**

SECTION II

State of Conservation of specific World heritage properties

State Party: INDIA
Property Name: SUNDARBAN NATIONAL PARK

PERIODIC REPORTING FOR WELL PLANNED HERITAGE PRESERVATION

Background

The twenty-ninth General Conference of UNESCO, held in 1997, decided to activate Article 29 of the World Heritage Convention concerning the submission of periodic reports on the state of implementation of the World Heritage Convention (Section I) and the State of Conservation of World Heritage properties (Section II). The national authorities are invited to report on Section I, while Section II shall be prepared for each property inscribed on the World Heritage list by the person(s) directly in charge of the property's management.

The periodic reports prepared by the States Parties will serve a three-fold purpose:

- to assess the current state of all World Heritage related issues in a State Party,
- to held focus the Committee's as well as the State Party's future activities and funds,
- to strengthen sub-regional and regional co-operation between States Parties.

The Periodic Reporting Questionnaire

In 1998, at its twenty-second session, the World Heritage Committee approved *Explanatory Notes*, designed to be read in conjunction with the *Periodic reporting Format*, in order to outline the information expected to flow from the periodic reporting exercise. To facilitate the preparation of the report, a *Questionnaire* was developed that the States Parties are encouraged to use. It closely follows the subjects referred to in the *Explanatory Notes*, but in contrast to the latter splits the subjects up into short questions to be answered in a few sentences or paragraphs. A second type of question requires the indication of YES or NO by circling or underlining the appropriate answer. All questions are clearly identified with a little number in the right hand column of the *Questionnaire*. To make the reporting results meaningful every one of these questions has to be answered. If no answer is possible, the reasons should be given. If the available space is not sufficient for the answer, the response should be continued on a separate sheet of paper, clearly indicating the number of the question the text refers to (e.g. 006).

Benefits for the States Parties

The *Questionnaire* was developed in such a way as to allow to extract and compile or compare relevant information from different States Parties or properties, facilitating the process of preparing the regional synthesis report to be presented to the World Heritage Committee. The YES / NO questions make it possible to evaluate the reports quantitatively, but only the details that should be supplied in the related 'open question' make the answers meaningful and can be the basis for concerted actions to preserve a State Party's most valuable heritage for its transmission to future generations.

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

The information collected in this way will help the State Parties to assess their own strengths and weaknesses concerning the implementation of the World Heritage Convention, putting them in a position to (re)define policies and to request assistance in order to finance projects and / or training. On the other hand it allows the World Heritage Committee to collect information needed to devise *Regional Action Plans*, give well-informed advice to States Parties and to focus funds as well as attention on the region(s), States Parties and / or properties that need the collective support of the international community.

The preparation process of the regional periodic report will furthermore enhance regional co-operation through information meetings as well as through the better availability of regularly up-dated information on activities as well as contact addresses etc. The identification of the State Party's strengths makes it possible to exchange experiences and look for solutions to problems (e.g. of site conservation) within the region.

Conclusion

Periodic Reporting is a participatory exercise, aiming to collect information on World Heritage related issues on a national as well as on the property level. The individual State Party reports will be collated into a regional synthesis report to be presented to the World heritage Committee. This information will enhance co-operation between the committee and the States Parties and allow to focus funds and activities more efficiently, allowing the States Parties to protect their most valuable heritage more effectively for transmission to future generations.

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

PERIODIC REPORTING ON THE APPLICATION OF THE WORLD HERITAGE CONVENTION

(FORMAT)

SECTION II: STATE OF CONSERVATION OF SPECIFIC WORLD HERITAGE PROPERTIES

EXECUTIVE SUMMARY

II.1 Introduction

- a. State Party
- b. Name of World Heritage property
- c. Geographical co-ordinates to the nearest second
- d. Date of inscription on the World Heritage List
- e. Organization(s) or entity(ies) responsible for the preparation of the report
- f. Date of report
- g. Signature on behalf of State Party

II.2. Statement of significance

II.3. Statement of authenticity/integrity

II.4. Management

II.5. Factors affecting the property

II.6. Monitoring

II.7. Conclusions and recommended action

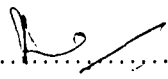
- a. Main conclusions regarding the state of the World Heritage values of the property (see items II.2. and II.3. above)
- b. Main conclusions regarding the management and factors affecting the property (see Items II.4. and II.5. above)
- c. Proposed future action/actions
- d. Responsible implementing agency/agencies
- e. Timeframe for implementation
- f. Needs for international assistance.

II.8. Assessment of the Periodic reporting exercise for Section II

II.9. Documentation attached

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.1. Introduction

a.	Country (and State Party if different): INDIA	001
b.	Name of World Heritage property: SUNDARBAN NATIONAL PARK	002
c.	<p>In order to locate the property precisely, please attach a topographic map showing scale, orientation, projection, datum, site name, date and graticule. The map should be an original print and not be trimmed. The site boundaries should be shown on the map. In addition they can be submitted in a detailed description, indicating topographic and other legally defined national, regional, or international boundaries followed by the site boundaries.</p> <p>The State Parties are encouraged to submit the geographic information in digital form so that it can be integrated into a Geographic Information System (GIS).</p> <p>On this questionnaire indicate the geographical co-ordinates to the nearest second (in the case of large sites, towns, areas etc., give at least 3 sets of geographical co-ordinates):</p> <p>Centre point: 88 55' 04.69 E 21 46' 32.98 N</p> <p>North-West corner: 88 43' 40.87 E 21 55' 44.12 N</p> <p>South-East corner: 89 05' 37.19 E 21 37' 26.91 N</p> <p>(South-West corner -- 88 42' 57.78 E & 21 34' 23.19N, North- East corner -- 88 57' 29.33E & 21 53' 01.48 N, Extreme North Point -- 21 55' 44.12 N, Extreme South Point 21 32' 40.63 N, Extreme East Point -- 89 06' 11.59 E, Extreme West Point -- 88 41' 26.39 E)</p>	003
d.	<p>Give the date of inscription on the World Heritage List and subsequent extension (if applicable):</p> <p style="text-align: center;">11/12/1987</p>	004
e.	<p>Organization(s) or entity(ies) responsible for the preparation of this report. Organization(s) / entity(ies):</p> <p>Person(s) responsible: Pradeep Vyas, IFS Address: Conservator of Forests & Field Director, Sundarban Tiger Reserve City and post code: P. O. CANNING, District – 24 Parganas (South), West Bengal – 743329, INDIA. Telephone: 0091-3218-55280 Fax: 0091- 3218-56159 E-mail: suntiger@cal2.vsnl.net.in Report edited by : Director, Sundarban Biosphere Reserve.</p>	005
f.	<p>Date of preparation of the report:</p> <p style="text-align: center;">01.07.2002</p> <p>Date of submission of the edited report : 15-01-2003.</p>	006
g.	<p>Signature on behalf of the State Party</p> <p>Signature: </p> <p>Name: (A.K. Raha, IFS)</p> <p>Function: Director, Sundarban Biosphere Reserve.</p>	007

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.2. Statement of significance

<p>At the time of inscribing a property on the World Heritage List, the World Heritage Committee indicates its outstanding universal value(s), or World Heritage value(s), by deciding on the criteria for which the property deserved to be included on the World Heritage List. Circle the criteria retained for the inscription:</p>	008
<p>Cultural criteria: i - ii - iii - iv - v - vi</p>	
<p>Natural criteria: i - <u>ii</u> - iii - <u>iv</u></p>	
<p>Were new criteria added by re-nominating and/or extending the property after the original inscription? YES / <u>NO</u></p>	009
<p>If YES, please explain: Not applicable</p>	010

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.2. Continued

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (c.g. 006).

<p>Please quote observations concerning the property made by the Advisory Body(ies) during the evaluation of the nomination:</p> <p>DECISION OF THE WORLD HERITAGE COMMITTEE:</p> <p>11th Session</p> <p>The Committee expressed the wish that the revised management plan be adopted as soon as possible and requested the Indian authorities to monitor projects that might have adverse effects on the park. The Committee recommended that research work aimed at the management of the tiger populations needed to be encouraged.</p>	011
<p>Quote the decisions and observations / recommendations, if appropriate, made by the World Heritage Committee at the time of inscription and extension (if applicable):</p> <p>World heritage Nomination-IUCN TECHNICAL NOMINATION (452-Sundarban India) -6. Recommendation.</p> <p>Result of the field review of the nominated sites are not yet available but the following provisional suggestions were made for consideration by the bureau:</p> <ol style="list-style-type: none"> 1. The Sundarban National Park be inscribed on the World Heritage list. Future inclusion of the Reserves on the Bangladesh side to on International Sundarban Mangrove Reserve World Heritage Site should be encouraged. 2. The Management Plan for the existing Tiger Reserve was compiled in 1973 and is in urgent need to revision. 3. Threats to the viability of the Park due to diversion of water from upstream sources should be monitored. 	012
<p>Identify the actions taken as follow-up to these observations and/or decisions:</p> <ol style="list-style-type: none"> 1) Sundarban-Bangladesh has been inscribed as 'World Heritage Site' in the year 1997. A UNDP Project document on 'Bio-diversity Conservation in Sundarban—A Two Country Approach' involving India and Bangladesh is under preparation. It is expected that this project may provide forum for exchange of views of both sides on the management of Sundarbans and lessons learnt—which will be helpful in bio-diversity conservation in Sundarbans. 2) The revised Management Plan of 'Sundarban Tiger Reserve', which includes the Sundarban National Park, has been prepared and approved by Chief Wildlife Warden and MOEF, Govt. of India for the period from 2000-2001 to 2009-2010. 3) There is no artificial diversion of water from upstream sources in recent times and the reduced flow of sweet water into Sundarbans as a whole is due to geological reasons which dates back to 16th century. As such, no immediate perceptive threat to the WIIS is foreseen. 	013

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.2. Continued

<p>Please propose a statement of significance by providing a description of the World Heritage value(s) for which the property was inscribed on the World Heritage List. This description should reflect the criterion (criteria) on the basis of which the Committee inscribed the property on the World Heritage List and it should also detail what the property represents, what makes it outstanding, what the specific values are that distinguish the property as well as what its relationship with its setting is, etc.:</p>	<p>014</p>
<p>STATEMENT OF SIGNIFICANCE:</p>	
<ul style="list-style-type: none"> • The ‘Sundarbans’ represents the only Mangrove Tiger land in the World. The Tiger (<u>Panthera tigris</u>) within this Mangrove Ecosystem occupies the apex of the ecosystem. The Sundarban tigers are capable of leading an almost amphibious life unlike other habitat & perhaps lost the extreme territoriality owing to the obliteration of urination marks by the tidal waves. Apart from the long stretch swimming it has adapted to changed food habits & its food includes fish, crab and water monitor lizards. It’s propensity for man-eating within the forest areas and its straying in the villages has provided it a unique mysterious status. It is also the single largest tiger population known to world. • The Sundarbans are highly rich in Bio-diversity. Among floral diversity, a total of 84 Mangrove species & its associates have been recorded. Among faunal diversity a total of 1586 specie has been recorded, which includes 481 vertebrate species, 1 Hemi-Chordate, 1104 Invertebrate & 106 Protozoan. 	
<p style="padding-left: 40px;">Some of the highly endangered fauna of Sundarbans are Salt-water Crocodile (<u>Crocodilus porasus</u>), Fishing Cat (<u>Felis viverrina</u>), Gangetic Dolphin (<u>Pratanista gangotica</u>), Salvator Lizard (<u>Varanus salvator</u>), Olive Ridley Turtle (<u>Lipidochelys olivacea</u>), River Terrapin (<u>Batagur baska</u>), Green Turtle (<u>Chenoria myrdus</u>) etc.</p>	
<ul style="list-style-type: none"> • Sundarban is the largest single mangrove of the World with 9630 Km.² of which 4263 Km.² is under forest cover. The easy availability of organic matter from mangrove flora has made it the nursery for the fish, shrimps and other aquatic life in the estuarine and coastal waters.. • Sundarban protects the metropolis Kolkata (Calcutta) from the frequent gales originating from Bay of Bengal. The physical presence of these mangrove forests acts as a windshield that bears the thrashing of the powerful cyclones and helps to deflect it away from the human habitation. 	

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.2. Continued

	<p>For the extension of a property or the inclusion of additional criteria a re-submission of the property may be considered. This might be regarded as necessary in order to recognize cultural values of a natural World Heritage property, or vice-versa, become desirable following the substantive revision of the criteria by the World Heritage Committee or due to better identification or knowledge of specific outstanding universal values of the property. Should a re-nomination of the property be considered? YES / <u>NO</u></p> <p>If YES, please explain: Not applicable</p>	<p>015</p> <p>016</p>
	<p>Are the borders of the World Heritage property and its buffer zone (still) adequate to ensure the protection and conservation of the property's World Heritage values: <u>YES</u> / NO</p> <p>The entire Sunderbans R.F. is part of the Sunderbans Biosphere Reserve which has been recognized by UNESCO as a Global Biosphere Reserve in November, 2001. The WHS, Sundarban National Park, is situated in the core of the Sundarban R.F., and is surrounded on western, northern & north-east sides by three wildlife sanctuaries and R.F. which act as buffer zone with ample cushion against any biotic pressure from habitation. Bay of Bengal runs along the southern boundary of the WHS, thus eliminating any possible biotic pressure along the southern boundary. Along the south eastern boundary runs the R.F. of Bangladesh Sundarban.</p> <p>If NO, please explain why not, and indicate what changes should be made to the boundaries of the property and / or its buffer zone (please indicate these changes also on a map to be attached to this report):</p> <p style="text-align: center;">Not applicable</p>	<p>017</p> <p>018</p>
	<p>Is the State Party actively considering a revision of the property boundaries or the buffer zone? YES / <u>NO</u></p> <p>If YES, indicate what is being done to that end:</p> <p style="text-align: center;">Not applicable</p>	<p>019</p> <p>020</p>

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.3. Statement of authenticity / integrity

	<p>Have the World Heritage values identified above been maintained since the property's inscription? YES / NO</p> <p>If NO, please describe the changes and name the causes: Not applicable</p>	<p>021</p> <p>022</p>
	<p>What was the evaluation of the authenticity / integrity of the property at the time of inscription? (Please quote from the ICOMOS / IUCN evaluation):</p> <p style="text-align: center;">“WORLD HERITAGE NOMINATION—IUCN TECHNICAL EVALUATION 452 <u>SUNDARBANS</u> (India)</p> <p>3. <u>INTEGRITY:</u></p> <p>The Sundarbans National Park exists within the Sundarbans Tiger Reserve, which acts as a buffer zone around the core area. The total area has a management plan (1973) but it is urgently in need of updating. Forest exploitation within the park is not allowed but seasonal permits are granted for collection of honey and palms. Local people may also fish in the tidal waters but require a permit for firewood collection. There has been a remarkable improvement of the biota in the Park over the past 12 years, which is reflected, in the steady size of the tiger population, which has risen from 181 in 1976 to 264 in 1983.</p> <p>Concern has been expressed about recent indications of deterioration in the flora of the Sundarbans including localised dieback of certain species. There is some evidence that these changes may be due to increasing salinity resulting from the upstream diversion of up to 40% of the dry season flow of the Ganges River. Oil spills are another potential threat and could cause immense damage especially to aquatic fauna and seabed.</p> <p>4. <u>ADDITIONAL COMMENTS:</u></p> <p>The Sundarbans mangroves cover some 774,000 ha. of land and water (of which 417,000 ha. are in Bangladesh and 357,000 ha. are in India) and are a part of the World's largest delta. The name of the site as proposed by India is “Sundarbans” which is too general. The ideal name for the property would be “The Sundarbans Mangrove Reserves of India and Bangladesh” but as the Government of Bangladesh has not yet formally nominated the adjoining reserves, the most descriptive name would be the “Sundarbans National Park”, India.</p> <p>5. <u>EVALUATION:</u></p> <p>The Sundarbans is one of the largest remaining areas of mangrove vegetation in the World and is a unique and productive wildlife area. The forest and waterways support a wide range of fauna including a number of species threatened with extinction. The area qualifies for World Heritage listing under criterion IV – Habitats of Rare and Endangered Species. The Sundarbans is especially important for the Bengal Tiger as there is no other protected area with more than 100 individuals (Sundarbans National Park has 264). Together with the surrounding Tiger reserve the National Park is of sufficient size to maintain viable populations of the key species.</p> <p>The area also qualifies under criterion II as an outstanding example of significant on-going geological processes in terms of its exceptional portrayal of the natural processes of the effects of monsoonal rains, flooding, delta formation and plant colonisation”.</p>	<p>023</p>

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.3. continued

Have there been changes in the authenticity / integrity since inscription? YES / NO	024
If YES, please describe the changes to the authenticity / integrity and name the main causes?	025
<p>During December, 2001, the entire administrative set up of Sundarban R.F. has been restructured to bring the entire Sundarban R.F. of India under the control of supervision of Director, Sundarban Biosphere Reserve. As a result, the Sundarban R.F., including the National Park, Sanctuary and R.F., has been brought under uniform and compatible management policy, thus providing more effective buffering to the WHS and making the property more secured.</p>	
Are there (further) changes foreseeable to the authenticity / integrity of the property in the near future? YES / NO	026
If YES, please explain and indicate how these changes might affect the World Heritage values of the property:	027
Not applicable	

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Management

	How could the arrangements for the protection and the management of the property best be defined (more than one indication possible)?	028
	Legal (YES)	
	Contractual ()	
	Traditional ()	
	Participatory Management ()	

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

<p>Please describe and assess the implementation and effectiveness of these arrangements for the preservation of the values described under item II.2 at the national, provincial and/or municipal level:</p> <p>The legal protection provided to the property by the laws (032) is sufficient as all the laws under reference are reinforceable at all levels i.e. National, Provincial & Local. The Indian Forest Act, 1927 with its amendments, Forest Conservation Act 1980, Wildlife Protection Act, 1972 and Environment Protection Act 1986 are being implemented in a very effective manner. Rules & Regulation regarding environmental pollution are also being strictly enforced.</p>	029
<p>In general terms, can this legislative, contractual and/or traditional protection be considered sufficient? <u>YES</u> / NO</p>	030
<p>Please explain:</p> <p>The existing laws are sufficiently tough in respect of protection & conservation of the property. However as per the changed circumstances of illegal wildlife trade & some biotic pressure on natural resources, further amendments in the Indian Forest Act, 1927 & Wildlife (Protection) Act, 1972 are under process. With the existing infrastructure, Forest Deptt. is making best efforts to maintain integrity of the WHS. However, there is need for more resources, which is not available from existing funding sources, to further strengthen and modernize the protection machinery and for development of alternate livelihood option for the fringe population to eliminate the dependence of people on Sundarban R.F. for sustenance.</p>	031

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Continued

	<p>Provide a list and summaries of laws and regulations concerning cultural and natural properties protection and management (including extracts of relevant articles from the Constitution, Criminal Law, Law/Regulations on Land-use, Environment Law and Forestry Law, amongst others). Please also attach any documentation available concerning these points:</p> <ol style="list-style-type: none">1. The Constitution of India ensures the protection of Environment, Forest & wildlife. The relevant articles are: <p style="text-align: center;">Part IV – Directive Principles of State Policy – Article 48A” states that “ Protection and improvement of environment and safeguarding of forest and wild life – The States shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country</p><p style="text-align: center;">Part IVA – Fundamental Duties – Article 51A (g) – To protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures.</p>2. Indian Forest Act, 1927.3. Indian Forest (West Bengal Amendment) Act, 1988.4. Wildlife (Protection) Act, 1972 with its 1991 amendment.5. Forest (Conservation) Act, 1980 with 1988 amendment.6. The Environment (Protection) Act, 19867. Coastal Regulatory Zone Rules.8. Rules & regulations of Environment Deptt. Regarding environmental pollution.9. Fisheries Act of West Bengal Govt.	032
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

<p>Describe the administrative and management arrangements that are in place for the property concerned, making special mention of the institutions and organizations that have management authority over the property as well as of the arrangements that are in place for the co-ordination of their actions:</p> <p>The Directorate of Forest, Government of West Bengal is the organization responsible for the management of all the forest property including the WHS. The principal Chief Conservator of Forests, Wildlife & Bio-Diversity & ex-officio Chief Wildlife Warden, West Bengal is the senior most executive officer heading the property. The Chief Conservator of Forests (South) & Director, Sundarban Biosphere Reserve is the next senior officer related to the management of the property at the supervisory level.</p> <p>The Conservator of Forests & Field Director, Sundarban Tiger Reserve, is directly responsible for the management of property at the field level. He is assisted by one Deputy Field Director & Assistant Field director. Territorially, the property is divided between two Ranges, each under charge of one Range Officer who report to the Divisional Forest Officer / Field Director.</p> <p>Forestry being a concurrent list subject of Indian constitution, Government of India monitors all major management aspects including the Management Plan. As the Sundarban National Park (WHS) is the part of Project Tiger and Biosphere Reserve, Ministry of Environment & Forests, Govt. of India monitors and allocates fund for its management.</p>	033
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Continued

<p>Please indicate under which level of authority the property is managed:</p> <p>Local (Yes) Regional (Yes) National (Yes) Other (Please describe):</p> <p style="text-align: center;">At local level Conservator of Forests & Field Director, Sundarban Tiger Reserve is the authority for management. At Regional level, Principal Chief Conservator of Forests, Wildlife & Bio-diversity & Chief Conservator of Forests (South) & Director, Sundarban Biosphere Reserve are the authorities involved in management at policy making & supervisory level. At National level the Government of India, Ministry of Environment & Forests is involved in management of the project.</p>	034
<p>Please provide the full name, address and phone/fax/e-mail of the entity(ies) directly responsible for the management (conservation, preservation, visitor management) of the property:</p> <p style="padding-left: 40px;">Pradeep Vyas, IFS Conservator of Forests & Field Director Sundarban Tiger Reserve P. O. Canning, District 24 Parganas (South) West Bengal – 743329, INDIA. Telephone: 0091-3218-55280 Fax: 0091- 3218-56159 E-mail: suntiger@cal2.vsnl.net.in</p>	035
<p>Is it necessary to revise the administrative and management arrangements for the property? YES / <u>NO</u></p>	036
<p>If YES, explain why this is the case:</p> <p style="text-align: center;">Not applicable</p>	037

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Continued

<p>Is there a management plan for the property? <u>YES</u> / NO</p>	038
<p>IF YES, please summarize, indicating if the plan is being implemented and since when:</p> <p>The earliest official efforts to preserve & manage the forests of Sundarbans including the present Sundarban National Park, the World Heritage Site dates back to 1876 when the forests were declared as Protected Forests following the efforts of Mr. A.L. Home, DCF, Dr. Schlich & Sir Richard temple (Ist Working Plan of 24 Parganas Division). The Working Plan is the vital document & incorporates the spatial, quantitative & qualitative information of the forest and also deals with the strategies for the systematic management of the forest. The area of World Heritage Site comprising an area of 1330.12 Sq. Km. was declared the "Sundarban National Park" vide department of Forests, Government of West Bengal Notification No. 2867-For, dated 04-05-1984. The current Management Plan of Sundarban Tiger Reserve, which includes the WHS as a core area, is approved for the period 2000-01 to 2009-10.</p> <p>The main focus of the plan is on conservation. In the Sundarban National Park, which is the WHS also, only "Protective Management" is being implemented to ensure the total conservation of the site. No rights, concessions, unauthorized entry or tourism is allowed within the WHS.</p>	039
<p>Please report on legal and administrative actions that are foreseen for the future, to preserve the values described under item II.2 (e.g. passing of legislation, adjusting administrative and management arrangements, implementing or drawing up of a (new) management plan, etc.):</p> <p>During the year 2001, with an object to provide better buffering & synergy, restructuring of administration has been done & Sundarban Tiger Reserve & adjoining R.F. of 24 Parganas (south) Division has been brought under the administrative control of Chief Conservator of Forests (South) & Director, Sundarban Biosphere Reserve. Thus, the WHS is now located in the core of Sundarban Biosphere Reserve.</p>	040

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Continued

	<p>Please provide detailed information, particularly in cases where changes have occurred since the inscription of the property, on the following matters:</p> <ul style="list-style-type: none"> • <u>Conservation</u> Make reference to all major interventions at the property and describe its present state of conservation: <p>As the Sundarban National Park, which was inscribed as WHS in the year 1987 has the status of "National Park" as well as that of "Core Area & Primitive Zone" so it has received the highest possible protection. Unification of the entire R.F. of Sundarban under the management of Director, Sundarban Biosphere Reserve has provided the project additional management security.</p> 	041
	<ul style="list-style-type: none"> • <u>Ownership</u> Make reference to all significant changes in ownership of the property and describe the present state of ownership: Since the nomination / inscription, no change has taken place in the ownership of property. It was & still under the ownership of the West Bengal Forest Department. 	042
	<p>Please, give a detailed description of the staffing of the site:</p>	043

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Continued		
	Is the staffing level sufficient for adequate management of the property? <u>YES</u> / <u>NO</u>	044
	If NO, what should be done to improve the situation? The area of Sundarban Tiger Reserve is 2585 Sq Km, which includes the Sundarban National Park/ World Heritage Site of 1330 Sq. Km. The area is prone to the biotic pressure of poaching of wildlife/ timber, unauthorized fishing, sea pirates & smuggling by armed international miscreants at India- Bangladesh border. The highly inaccessible terrain & Bay of Bengal gales makes it even more difficult to patrol. There is extreme shortage in the ranks of Forest Guard. Apart from filling up the large no. of vacancies of Forest Guard, there is need of further increasing the strength of this rank by about another 100 FG so that all the field camps can be manned properly in an effective manner. Today there may not be a significant external pressure on the Sundarban National Park (WHS) but it is very high in the buffer zone & with the rapid increase in population, poverty and unemployment, it is possible that the biotic pressure may ultimately affect Sundarban National Park (WHS) also.	045
	Does the staff need additional training? <u>YES</u> / <u>NO</u>	046
	If YES, what are the training needs for your staff? The training needs of the staff are : <ol style="list-style-type: none"> 1. Computer training. 2. GIS 3. Crime Investigations. 4. Arms training. 5. Eco-tourism & Interpretation. 6. Participatory Management & PRA. 7. Wildlife Management. 8. Coastal Area Management. 9. Relevant Laws & their effective implementation. 10. Biodiversity Conservation. 11. Study of management of similar type of WHS within & outside India. 	047

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. Continued

Describe the funding and financial situation of the property, indication sources, level and regularity of financing:	048
<p>The present availability of the funds is for short of actual requirement with regard to the eco-development activities. The Funds for the Sundarban Biosphere Reserve, which includes WHIS, are primarily from Government of West Bengal & from the Ministry of Environment & Forests, Government of India. The fund flow is more or less regular though there is a much higher need for funding Projects on "Alternate Livelihood development" and "eco-tourism" for the millions people living in the fringes of Sundarban R.F.</p>	
Is the available funding sufficient for adequate management of the property? YES/ <u>NO</u>	049
If NOT, describe the financial resources that would be required for the management of the property:	050
<p>There is a need for much higher additional funding in the following activities: (i) strengthening of vigilance mechanism, (ii) reducing pressure on ... Sundarban R.F. (iii) eco-development activities and (iv) eco-tourism.</p>	
Indicate International Assistance from which the property has benefited:	051
<ul style="list-style-type: none"> • World Heritage Fund: NIL 	
<ul style="list-style-type: none"> • UNESCO International Campaign: NIL 	052
<ul style="list-style-type: none"> • National and/or regional projects of UNDP, the World Bank or other agencies: A project document has been prepared, with UNDP fund support, for collaborative management of the WHS in India and Bangladesh Sundarbans. However, the Project Document is awaiting fund support for implementation of the collaborative Project. 	053
<ul style="list-style-type: none"> • Bilateral co-operation: UNDP Project proposal. 	054
<ul style="list-style-type: none"> • Other assistance: NIL 	055

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.4. continued

	<p>Describe the IT (computer) equipment of the site and/or management office and assess its effectiveness:</p> <p>There is no office within the site but the computers are effectively used in the office of the Director, Sundarbans Biosphere Reserve and Conservator of Forests & Field Director, Sundarban Tiger Reserve.</p> <p>Are you using (multiple indications are possible):</p> <p>PC (YES)</p> <p>Apple (NO)</p> <p>Mainframe (NO)</p> <p>Please, give the number of available computers: FIVE in the office of Field Director / Sundarban Tiger Reserve & FIVE in the office of the Director, Sundarban Biosphere Reserve.</p> <p>Does an operational access to the Internet exist? <u>YES</u> / NO</p>	<p>056</p> <p>057</p> <p>058</p> <p>059</p>
	<p>Is e-mail used for daily correspondence? <u>YES</u> / NO</p>	<p>060</p>
	<p>Is there a Geographical Information System (GIS) for the site? <u>YES</u> / NO</p> <p>If YES, what software do you have and how is the GIS used? There is a full-fledged GIS Cell in the office of Director, Sundarban Biosphere Reserve with GIS software like Arc Info, ERDAS, Easi Pace & TNT Mips. Arc View & Arc Pad in Sundarban Tiger Reserve & the GIS Cell in the office of Conservator of Forests, Working Plan & GIS, are also used for the preparation of Management Plan & other related issues of the property.</p>	<p>061</p> <p>062</p>
	<p>List scientific studies and research programme that have been conducted concerning the site:</p> <ul style="list-style-type: none"> The following scientific studies and research programme have been conducted or are proposed (1) use of R.S. & GIS for monitoring changes in habitat and species composition over the years. (2) Restocking regions the estuarine and coastal regions with highly endangered species like crocodiles and Olive Ridley Turtle, after artificial hatching of the eggs. (3) water quality and salinity change monitoring in parts of Sundarban R.F. 	<p>063</p>

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<ul style="list-style-type: none"> • A proposal has been submitted to Govt. of India, Ministry of Environment & Forests for studies on Tiger Ecology through GPS-based Radio collar. • The Zoological survey of India & Botanical Survey of India & many other organizations & Universities are engaged in research related to Sundarban. Copies of available research list are attached. A bibliography on research studies is enclosed. 	
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II.4. Continued

	<p>Describe financial and human resource inputs for the research programmes and or facilities:</p> <ul style="list-style-type: none"> • The post of Research officer of Sundarban Tiger reserve is vacant since 1997. • The financial inputs for management oriented & collaborative research is very small. 	064																										
	<p>Describe how the information / results are disseminated?</p> <ul style="list-style-type: none"> • Meeting of Adv. Committee on Research of S.B.R. • Seminars/Workshops on Sundarbans. 	065																										
	<p>Are there any visitor statistics for the site? <u>YES</u> / NO</p>	066																										
	<p>If YES, please summaries the statistics and attach to this report:</p> <p>Visitors / tourists are not allowed to visit the WHS. However, the tourists visiting Sundarban Tiger Reserve are furnished below :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>YEAR</th> <th>Number of Visitors</th> </tr> </thead> <tbody> <tr><td>1990-91</td><td>22049</td></tr> <tr><td>1991-92</td><td>24489</td></tr> <tr><td>1992-93</td><td>25824</td></tr> <tr><td>1993-94</td><td>23437</td></tr> <tr><td>1994-95</td><td>41818</td></tr> <tr><td>1995-96</td><td>45354</td></tr> <tr><td>1996-97</td><td>35515</td></tr> <tr><td>1997-98</td><td>33127</td></tr> <tr><td>1998-99</td><td>28901</td></tr> <tr><td>1999-2000</td><td>31879</td></tr> <tr><td>2000-2001</td><td>24805</td></tr> <tr><td>2001-2002</td><td>34011</td></tr> </tbody> </table>	YEAR	Number of Visitors	1990-91	22049	1991-92	24489	1992-93	25824	1993-94	23437	1994-95	41818	1995-96	45354	1996-97	35515	1997-98	33127	1998-99	28901	1999-2000	31879	2000-2001	24805	2001-2002	34011	067
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	<p>What visitor facilities do you have at the property?</p> <ul style="list-style-type: none"> • There is no tourism within the WHS, as the property has been kept outside the "Tourism Zone" to provide strict protection to this wonderful natural landscape. All the tourist are confined to the adjoining buffer zone of similar values to ensure the integrity of the WHS. • The buffer Zone of Sundarban Biosphere Reserve, which is also the buffer of Sundarban National Park (WHS) and has the status of Wildlife Sanctuary & that of Reserve forest, provides following facilities to the visitors. – <ol style="list-style-type: none"> 1. Mangrove Interpretation Centers at Sajnekhali & Bhagabatpur. 2. Five Watch Towers with cage path. 3. A tourist lodge at Sajnekhali. 4. A large number of private launches. 	068
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II.4. Continued

	<p>What visitor facilities are you in need of?</p> <ul style="list-style-type: none"> • Improvement of mangrove Interpretation center to highlight WHS values. • WHS monument. • Planning eco-tourism, involving the local people, 	069
	<p>Is a public use plan (tourism / visitor management plan) in existence for the property? <u>YES</u> / NO</p>	070
	<p>If YES, please summarize, if NO, explain if one is needed:</p> <p>The tourism plan is the part of management plan of Sundarban Tiger Reserve. It gives the details of Tourism management in the Sundarban Tiger Reserve. This Plan spells out the tourism zone, objects of tourism activities, do's & don't for the tourists & guidelines for the tour operators. There are the details of tourist spots, tourist circuits & the fee charged from the visitors.</p>	071
	<p>Indicate how the property's World Heritage values are communicated to residents, visitors and the public (please attach examples of leaflets, videos, posters etc. and print-outs and/or the address of a web-page):</p> <p>There are modest level efforts to communicate the values of WHS to the visitors by way of Sundarban Tiger Reserve leaflets & recently launched Web site.</p>	072
	<p>Are there educational programmes concerning the property aimed at schools?</p>	073

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p style="text-align: right;">YES / <u>NO</u></p> <p>If YES, please describe:</p> <p style="text-align: center;">Not applicable</p>	074
	<p>What role does World Heritage inscription play for the site concerning the visitor number, the research programmes and/or the awareness building activities?</p> <p style="text-align: center;">The WHS inscription does not play any significant role in number of visitors, Research Programmes or awareness building.</p>	075

II.5. Factors affecting the property

	<p>Please comment on the degree to which the property is threatened by particular problems and risks, such as development pressure, environmental pressure, natural disasters and preparedness, visitor / tourism pressure, number of inhabitants. Also mention all other issues that you see as problematic.</p> <p style="text-align: center;"><u>MAJOR PROBLEMS & CONSERVATION STRATEGIES FOR SUNDARBAN RESERVED FOREST INCLUDING W.H.S.</u></p> <p style="text-align: center;">1. <u>Illicit Felling, Poaching of Wild life and illegal Fishing</u></p> <p>Nature has taken care of the area up to some extent to protect Sundarban by way of difficult terrain, Islands subjected to tidal effects & man-eating tigers.</p> <p>The large population living around the Sundarban Tiger Reserve depends heavily on the natural resources especially on fishing to earn their livelihood. A large number of the people are involved in poaching of wildlife and illegal felling of trees. The International border with Bangladesh also provides a convenient escape route. Though the buffer around the Sundarban National Park (WHS) absorbs the major pressure but the increasing population, poverty and employment are the factors which encourages more and more people to get involve in these illegal practices. Following are some of the steps taken to strengthen the protection:-</p> <p style="text-align: center;"><u>STRATEGIES FOR CONSERVATION :</u></p> <ul style="list-style-type: none"> • Infrastructure development and strengthening of vigilance. • To combat the poaching & illicit felling, "On-land" & "On-water" camps has been established in the area. • There is a good R.T. network. • The staff is equipped with Fire Arms i.e., 0.315 Rifles, DBBL, SBBL & Pump Action Guns. • Earlier "Accommodation Boats" with " Mechanized Boats" were the main floating camps but since last few years some new camps has been established at Chamta, Dobaki, Haldi, Katuajhuri (Under Construction) etc. There camps are giving good results. A new 	076
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p>camp at Bagmara is under consideration subject to availability of sweet water.</p> <ul style="list-style-type: none">• A network of Watch Towers with some of these camps also helps in protection.• Two Police Camp at Bagna & at Pakhiralaya are being used as a strike force, which is very effective.• Special patrolling are organised with "Mobile Squads" from Canning, Rampura & Saznekhali.• A total of 7 Speed Boats procured has been found to be very effective in protection & other emergencies.• A good network of informers has been established in & around Sundarban Tiger Reserve. A large number of Tiger Skins has been seized in special under cover operations. <p><u>PARTICIPATORY MANAGEMENT APPROACH</u></p> <p>People around the forests are integral part of the ecosystem, their activities being fundamental for its long term conservation and compatible uses of the resources. To cater people's need it is required to extract sustainable surplus to reduce the interference on the eco- system. To involve the local people Participatory Management is being practiced in Sundarban Biosphere Reserve. A total of 23 Forest Protection Committee's</p>	
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II.5. *Continued*

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

(FPC) and 14 Eco-Development Committee's (EDC) have been formed in the fringe areas of Sundarban Biosphere Reserve. To reduce the dependence of people & also as a goodwill gesture some eco-development activities are being taken in these EDC & FPC's, some of which are Irrigation Channels, Ponds, Pisciculture, Crab Culture, Deep Tube Wells, Solar Lights, Brick Paths, Jetties, Medical camps, Vocational trainings with inputs etc.

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con.

This problem of Poaching, Fishing and that of illicit felling of trees is External, Current, Cumulative and is Human induced. The Scale of Threat is high and Priority of Threat is also very high. The Present ability to control is very high subject to the measures suggested. The problem is more concentrated in the undeclared buffer of World Heritage Site.

11.5. *Continued*

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

2. MAN – TIGER CONFLICTS & STRAYING

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con.

This problem is not in the Sundarban National Park (WHS) but in the buffer area of WHS.

Sundarban Reserved Forest provides characteristic type of habitat suitable for animals inhabiting vast tidal swamp area. Because of their intimate association with the estuarine environment, sizeable portion of aquatic and semi-aquatic animal communities are inter-related with the animals inhabiting the land areas. The uniqueness of the habitat is said to have contributed to certain behavioral traits, which are the characteristic of Sundarban tigers only.

The man-tiger conflict, unless resolved properly, may become threat to conservation of tiger in Sundarban as a whole .

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

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con.

II.5. Continued

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p>To control Tiger straying incidences some of the strategies has been adopted by the management, which is giving good results, some of which are: -</p> <ul style="list-style-type: none"> • The Research Assistant of the Sundarban Tiger Reserve is one of the most experienced person in India to use the Immobilisation Technique on the strayed tigers. A good number of tigers has been immobilised & released back in the forest thus saved. However it has been realized that the reaction time in such cases is very short so a batch of 16 selected staff has been trained & permitted to use the Tranquillising Guns in case of emergencies. New Tranquillising equipments are being procured & use of speedboats is being encouraged to reduce the reaction time. • The use of "Chitta Garan" & " Nylon Net " fencing has been found very effective. A plan is being drawn to cover all the sensitive area to be covered with these fences. • Meetings with villagers & EDC/FPC are necessary to bring about the right awareness & their involvement. • A Proactive management strategy has been adopted to tackle this problem by way of monitoring the movement of such tigers and there after trapping them in cage. Once they are trapped they are released back deep in the core area so that they can not reach back to the human habitation • Research is needed to study the behaviour if tiger. <p>The problem of "Tiger Straying" is Internal, Current, Non-cumulative and Natural. The Scale of Threat and Priority are very high. Present ability to control is good but being a natural problem at a striking speed it is not always possible to save the tiger or man all the time. The problem is in the undeclared buffer of World Heritage Site.</p> <p>3. <u>LARGE SCALE TIGER PRAWN (Peanacus monodon) SEEDS COLLECTION.</u></p> <p>This problem is not in the Sundarban National Park (WHS) but in the buffer area of WHS.</p> <p>From the very beginning of human settlement, fishing is the most important secondary occupation in the Sundarbans. Tiger prawn seeds collection, however, started only from the late eighties of this century with the introduction of highly profitable scientific brackish water prawn culture with direct or indirect support of multinational companies. Before that period fish and prawn culture in 'Bheries' were dependent on the natural sources. In that traditional farming fingerlings of fishes and prawn seeds used to take entry in bheries with the influx of river water during high tide of new or full moon session. At that period tiger prawn seed stocking (concentration) was not more than five per square mtr. With increasing export value of tiger prawn the seed stocking density increased at a very high speed beyond its natural carrying capacity and at present this density is 8-10 times higher than the traditional farming. Natural resource of tiger prawn seed was not sufficient to fulfill the demand of this part growing trade and to meet up the demand collection of tiger prawn seeds from river started from the late eighties.</p>	<p>076 con.</p>
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II.5. Continued

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p>After invading the surrounding area, from 1993 tiger prawn seed collectors started to trespass into the Sundarban Tiger Reserve area inch by inch and from 1994 it became almost a common practice.</p> <p>Area involved & season - Tiger prawn seed collectors invaded almost all the surrounding riverine system of STR except the portion nearer to sea. However they have been driven out, but for small portion of Jhilla inside the STR, the main affected parts were Jhilla and Dattar river. With the availability of tiger prawn seeds the number of seeds collectors naturally fluctuates. Diurnal rhythm varies with the tidal system, as this collection is made mostly during high tide and attains the highest peak during new moon or full-moon session. Seasonally the number of collectors goes down to its bottom during the winter (Nov.-Jan.) and attains the peak on and around the rainy season. However, heavy shower minimises the number of collectors as some seeds mortality factors prevail during the period. It is expected that approximately 5000-8000 people are involved in this tiger prawn seed collection.</p> <p>OTHER AQUATIC FAUNA DESTROYED:</p> <p>During the six months period (Dec.'96 to May'97) 28 samples were collected from different parts of Sundarban Tiger Reserve. In those samples it was recorded that fingerlings of 16 fish species, 4 species of prawn seeds other than seeds, 3 species of crabs, 4 other crustaceans species were present. It has been calculated that with every single tiger prawn seed, 46.7 other prawn seeds, 4.1 fingerlings of fishes and 0.3 other aquatic fauna get trapped and most of them do not survive later on.</p> <p>EFFECT ON ECOSYSTEM:</p> <p>This practice not only diminishing the tiger prawn population but also a large number of fingerlings and seeds of other prawn and fish species get trapped and vanishes from the nature. Naturally it will affect negatively those animals (big fish species and even crocodiles) who take these small creatures as food. Step by step the food chain of this ecosystem will break up and its deleterious effect may be more harmful than we think today.</p> <p>Removal of these fish fingerlings and prawn seeds at a large number will increase the planktonic population, natural food of those fingerlings. This fast growing plankton may change the aquatic environment, which may lead to the extension of some present species and inclusion of some new species with a permanent change in the ecosystem. A considerable number of seed collectors use to drag their nets along the bank side on foot. This practice plays against the settling down of seedlings on the mudflat. As this practice, decreasing fish and prawn population of the region, fishermen will face difficulty to catch sufficient harvest. It may compel them to trespass deep into the forest (core area or WHS) creating another problem for the management.</p> <p>The efforts to control the problem has given very limited results due to high profitability, lack of proper alternative to the poor people and due to involvement of large number of men, women and children in the collection of tiger prawn seeds.</p> <p>The problem is External, Current, Cumulative and Human induced. The Scale of Threat and Priority of Threat are very high. The Present ability to control the problem is limited. The problem is in the undeclared buffer of World Heritage Site and currently not in the World Heritage Site.</p>	<p>076 con.</p>
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II.5. Continued

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p style="text-align: center;"><u>4. Low availability of Sweet Water</u></p> <p>Due to tectonic shift to the region, sometimes in the 16th century, Sundarban became more tilted towards the east, resulting its shift of major flow of river Ganga from the Hooghly river in the west to Padma river in the east (flowing through Bangladesh). As a result, there has been increased salinity in the western part of Sundarban during the last few centuries.</p> <p>The Sundari tree is greatly influenced by the salinity & other factors. Though no conclusive studies are available but this is general perception that this tree is disappearing from the western part of Indian Sundarban. In some cases the top drying has also been seen. This continues to be problem; a research is needed into this aspect.</p>	076 con.
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.5. continued

	<p>Is there an emergency plan and / or risk preparedness plan for the property in existence? 077 <u>YES</u> / NO</p> <p>If YES, please summaries the plan and provide a copy: 078</p> <p style="text-align: center;">Though there exist no “Emergency Plan” as such but there is well organized system to monitor the risk & take quick decisions to counter act. As the management of these natural resources of Sundarban are more than a centaury old, 079 this has established a well organized network or Range offices, Beat Offices, Camps & Floating stations – all equipped with reasonable manpower, Radio-transmission sets, Firearms & other field equipments necessary to tackle the emergencies. In case of major emergencies RT messages are sent to Field Director/Dy. Field Director/Asstt. Field Director, who provides necessary instructions & reinforcement in the form of additional Forest Staff, Speedboats, Police force etc.</p> <p>If NO, describe what is being done and by whom to counteract the dangers that threaten or may threaten the property:</p> <p style="text-align: center;">Not applicable</p>	
	<p>Indicate areas where improvement would be desirable and/or towards which the State Party is working: 080</p> <ul style="list-style-type: none"> • Strengthening of Protection Force by way of filling of vacancies & creating Special Forest Protection Force. • Creating necessary infrastructure & communication facility so that the field staff can perform the duties in an effective manner. • By providing enhanced fund to meet the operating cost. • Modernization of visitor facilities & development of eco-tourism / awareness function. • Alternate livelihood development for the people living in the fringes of the Sundarban Reserved Forest. 	

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.5. continued

	<p>Give an indication if the impact of the factors affecting the property is increasing or decreasing:</p> <ul style="list-style-type: none">● Increased efforts are there to reduce the effect of fishing, poaching of wildlife & timber but the shortage of fund is a limiting factor. Moreover, with the increasing population & poverty of the fringe people, there is need for multi-pronged strategy to gear up the pace to reduce these impact.● The human induced impact is a great potential threat to WHS in future due to increase in population & lack of adequate employment opportunities.	081
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p>What actions have been effectively taken, or are planned for the future, to address the factors affecting the property?</p> <ul style="list-style-type: none">• Field Based & Floating camps have been established to ensure the effective protection to the property.• All such camps has been equipped with watercrafts, Speed Boats, Radio-transmission Sets, Fire Arms & other necessary equipments.• Strict laws are under enforcement to prevent any biotic interference of any kind to the property.• Eco-development works have been initiated in the nearby villages to create the goodwill among poor people & to reduce their dependence on the natural resources of the property. However, the task is enormous as compared to the present level of intervention and target.	082
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.6. Monitoring

<p>If applicable, give details (e.g. dates, results, indicators chosen) of any previous periodic or reactive monitoring of the property:</p> <ul style="list-style-type: none"> • Use of RS / GIS in the GIS cell of Sundarban Biosphere Reserve for annual monitoring of the Sundarban Reserved Forest has been initiated from 1999. • The Sundarban National Park (WHS) is one of the World's largest mangrove forest & only Mangrove Tiger land. Tiger is at the apex of an Ecological Pyramid hence its health indicates about the health of the ecosystem. In Sundarban Tiger Reserve monitoring of the tiger protection is done by the biannual census of the tiger population. • The crime data (Offence Records) available for each of the Forest Block are also used as a monitoring system to monitor the degree of threat to the property as well as the effectiveness of management system to counter these threats. 	083
<p>Is there a formal monitoring system established for the site? <u>YES</u> / NO</p>	084
<p>If YES, please give details of its organization:</p> <ul style="list-style-type: none"> • RS / GIS cell has been established in Sundarban Biosphere Reserve. • The Estimation of Tiger Population (Tiger Census) is done by the Field Director, Sundarban Tiger Reserve with the active involvement of Non-Government organizations, Zoological Survey of India, Press & Media etc. This is a biannual, 7 days long transparent exercise. • For the recording of offences related to the property, there is a well organized Forest department set up & all the offence cases are booked in the "Offence register". 	085
<p>If not already in place, is the establishment of a formal monitoring system planned? YES / <u>NO</u></p>	086
<p>If YES, please outline the functioning of that system, taking into consideration the key indicators you will be asked to define below (see 089 / 090):</p> <p style="text-align: center;">Not Applicable</p>	087

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.6. continued

	<p>Are there any indicators established for monitoring the state of conservation of the property? <u>YES / NO</u></p> <p>If YES, please provide up-to-date information with respect to each of the key indicators established and/or used. Care should be taken to ensure that this information is as accurate and reliable as possible, for example by carrying out observations in the same way, using similar equipment and methods at the same time of the year and day. Name and describe the key indicators for measuring the state of conservation of this property:</p> <p>Remote Sensing and GIS cell of Sundarban Biosphere Reserve is monitoring the changes in the vegetation .. siltation /erosion levels and density of mangrove forest in the W.H.S. Such monitoring, using satellite imageries, is being done every year and on time-real basis.</p> <p>Tiger is at the top of the Ecological Pyramid, hence also an indicator of the health of an ecosystem. In Sundarban, tiger census (Estimation of tiger population) is done biannually to monitor the health of the ecosystem.</p> <p>If NO, indicators have been identified and / or used so far, please define key indicators for future use in monitoring:</p> <p style="text-align: center;">Not Applicable</p>	<p>088</p> <p>089</p> <p>090</p>
	<p>Indicate which partners, if any, are involved or will be involved in the regular monitoring exercise:</p> <p>Director, Sundarban Biosphere Reserve, Field Director, Sundarban Tiger Reserve, Conservator of Forests, Working Plan GIS and renowned NGOs are involved in the monitoring exercise.</p> <p>Identify the administrative provisions for organizing the regular monitoring of the property:</p> <p>Wildlife wing of West Bengal Forest Department organizes the regular monitoring of the property, under the guidance of Chief Wildlife Warden, West Bengal.</p>	<p>091</p> <p>092</p>

II.6. continued

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p>Describe what improvement the State Party foresees or would consider desirable in improving the monitoring system:</p> <ol style="list-style-type: none">1) There is a need to update and strengthen the RS/GIS cell of Sundarban Biosphere Reserve.2) The method adopted to estimate tiger population is not full proof, though the best-known method. There is need for research to improve the method.3) Initiating GPS-based Radio Collaring Project to study to tiger ecology.	093
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

<p>In specific cases, the World Heritage Committee and/or its Bureau may have already examined the state of conservation of the property and made recommendations to the State Party, either at the time of inscription or afterwards. In such cases the State Party is requested to report on the actions that have been taken in response to the observations or decisions made by the Bureau or Committee. Give details, if applicable:</p> <p>“World heritage Nomination-IUCN TECHNICAL NOMINATION (452-Sundarban-India)-6. Recommendation.”</p> <p>Result of the field review of the nominated sites are not yet available but the following provisional suggestions were made for consideration by the bureau:</p> <ol style="list-style-type: none">1. The Sundarban National Park be inscribed on the World Heritage list. Future inclusion of the Reserves on the Bangladesh side to on International Sundarban Mangrove Reserve World Heritage Site should be encouraged.2. The Management Plan for the existing Tiger Reserve was compiled in 1973 and is in urgent need to revision.3. Threats to the viability of the Park due to diversion of water from upstream sources should be monitored. <p>Action Known/ taken for point 1 : Sundarban in Bangla Desh inscribed as World heritage Site in the year 1997.</p> <p>Action taken / Known for point 2 : The Management Plan for Sundarban Tiger Reserve, which includes Sundarban National Park (WHS) has already been updated and is valid from 2000 to 2010.</p> <p>Action Taken/ known for point 3 : No action is known.</p>	094
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.7. Conclusions and recommended actions

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

<p>Please summarize the main conclusions regarding the state of the World Heritage values of the property (see items II.2. and II.3. above):</p> <p>The Sundarban National Park (WHS) was inscribed as WHS on 11/12/1987 on natural criteria ii & iv. There has not been any change on these criteria since inscription. It is the only mangrove tiger land in the world and has great biodiversity. It is one of the biodiversity / wildlife hotspots of India and habitat of rare and endangered species. It is also an outstanding example of significant on-going geological process in terms of portrayal of natural process of the effects of monsoon rains, flooding, delta formation and plant colonisation. The status of its area and authenticity / integrity has remained unchanged since inscription due to its National Park status as per existing laws. There are no immediate potential threats to its integrity. It has adequate undeclared buffer. The management plan of the Sundarban National Park (WHS) has been updated and is valid up to 2010. However, in order to ensure future security of the WHS, there is an urgent need to :-</p> <ol style="list-style-type: none">1) Draw up a joint programme with Bangladesh for conservation of the WHS of the two countries, treating it as a single ecosystem.2) Initiate eco-development measures, on a much larger scale, in the fringe area of Sundarban R.F. through alternate livelihood development.3) Develop eco-tourism for awareness of local, national & international community.	095
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.7. continued

<p>Please summarize the main conclusions regarding the management and factors affecting the property (see items II.4. and II.5. above):</p>	096
<p>The Sundarban National Park (WHS) is legally protected and the existing legislative provisions are among the toughest and sufficient to provide it protection. The area is under protection since 1876. Administratively, it is under the Forest Directorate of Government of West Bengal in the Union of India. The Field Director is the Officer directly responsible for the management of area at field level. The Government of India is actively related to the management of area for it's being part of Project Tiger and Biosphere Reserve. The ownership of property belongs to the Government. Though there is large number of staff but to provide sufficient protection there is need for additional staff. The funds are mainly provided by the Government and there is at present no external funding available for the area. Computers, e-mail & GIS facilities are actively used. The current Management Plan has been prepared with the use of Remote Sensing data & GIS Software's. There is not substantial in-house research but many Government & Non -government organizations are engaged in research activities in Sundarban. There is need to improve the coordination among such bodies. Sundarban provides treasure of opportunities for eco-tourism. The potential for nature education and eco-tourism is yet to be fully realized for the want of infrastructure and funding.</p> <p>Poaching, illegal felling of trees, excessive fishing, Collection of Tiger Prawn larvae, increase in salinity of water, straying of tigers in villages and killing of human beings by tigers are some of the serious problems associated with the buffer zone of the property. The property has a well defined monitoring system by way of annual monitoring of WHS habitat through satellite imageries in our GIS cell, biannual "Tiger Census" and "Recording of Offences" There is need of improvement of protection measures by way of increase in staff and related infrastructure including annual maintenance expenses, specially for watercrafts, research specially related to the tiger behaviour i.e. straying, human killing, feeding and reproductive biology. The use of Radio-telemetry and similar advance techniques is urgently needed. There is also great need for develop alternate livelihood options for the fringe population to prevent future pressure on the WHS.</p>	

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

II.7. continued

	<p>Give an overview over proposed future action / actions:</p> <p>The future strategies linked to the property are further strengthening of protection status by way of intensification of patrolling, improved firearms, involvement of local people through Forest Protection Committee and Eco-development Committees and eco-development measures to reduce the dependence of the fringe population on the natural resources. To check cross-border miscreants activities, the co-ordination with other law enforcing agencies is being improved.</p> <p>The planned Nature Education, sufficient publicity of World Heritage Site values to make people aware of it and co-operate in its conservation are the future actions. The improvement of infrastructure to promote eco-tourism is also being planned. The collaborative research activities related to the Sundarban need to be enhanced. The current effort of conserving biodiversity of Indian & Bangladesh Sundarbans, through two-country approach, also need to be taken to its logical conclusion.</p>	097
	<p>Name the agency responsible for implementation of these actions (if different from 005):</p> <p style="text-align: center;">As in 005</p>	098
	<p>Give a timeframe for the implementation of the actions described above:</p> <p>The actions described above are already in the process of implementation. Many of the activities are subjected to the availability of funds.</p>	099
	<p>Indicate for which of the planned activities International Assistance from the World Heritage Fund may be needed (if any):</p> <ul style="list-style-type: none"> • Funding the collaborative Project, involving Indian & Bangladesh, for conservation of WHS of two countries. The Project report has been prepared with UNDP fund. • For the improvement of infrastructure for the “Protective Management”. • For the Eco-development activities in FPC & EDC to improve conservation of the property. • For the desired publicity of World Heritage Site & it’s values to get more 	100

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	co-operation of people for the conservation of World heritage Site. <ul style="list-style-type: none"> • For the Research activities related to the endangered fauna & Flora specially the flagship species tiger. This specially involves the radio-telemetric studies. 	
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II.7. continued

	Are there any contacts with management units of other properties within or outside your country? YES / <u>NO</u>	101
	If YES, please explain: Not applicable	102
	Please indicate which experience made during the periodic reporting exercise and/or during the on-going conservation /protection efforts of the property could be shared with other States Parties dealing with similar problems or issues: The overall management of property due to its unique features of largest mangrove, High biodiversity values and involvement of people is worth sharing with most of the properties having similar problems. The Bangladesh Sundarban having similar problems offer great opportunities for exchange of mutual skills and experiences. The experience of Mangrove Management can be shared with any other property associated with mangrove conservation.	103

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

	<p>Provide the name(s) and address(es) of organization(s) or specialist(s) who could be contacted for this purpose:</p> <p>Agency / Organization:</p> <ul style="list-style-type: none">• UNDP• Forest department BANGLA DESH.• Other State Parties with similar conditions. <p>Other details not known.</p> <p>Person responsible:</p> <p>Address:</p> <p>City and post code:</p> <p>Telephone:</p> <p>Fax:</p> <p>e-mail:</p>	104
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II.8. Assessment of the Periodic Reporting exercise for Section II

	<p>Was sufficient and adequate information made available to the responsible authorities and individuals during the preparation phase of the Periodic Reporting exercise (information given, meetings etc.)?</p> <p>Yes, as far as possible.</p>	105
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If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

<p>Was the questionnaire clear and did it help to comply with the reporting requirements of the State Party?</p> <p style="text-align: center;">YES</p>	<p>106</p>
<p>What are the perceived benefits and lessons learnt of the exercise?</p> <ul style="list-style-type: none"> ● To evaluate the values and management of property in holistic manner. ● The workshop prior to writing the report has given a clear idea about the necessity and utility of the periodic exercise. 	<p>107</p>
<p>Please describe the expected outcome of the Periodic Reporting exercise and the desired follow-up by the World Heritage Committee:</p> <ul style="list-style-type: none"> ● Assurance to the World Community about the conservation of World Heritage Site Property values. ● More involvement of property managers in the WHS related activities and exchange of information/skills. ● International funding for the better conservation of property and training needs. ● More focus of property managers on WHS values. 	<p>108</p>

II.9. Documentation attached

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

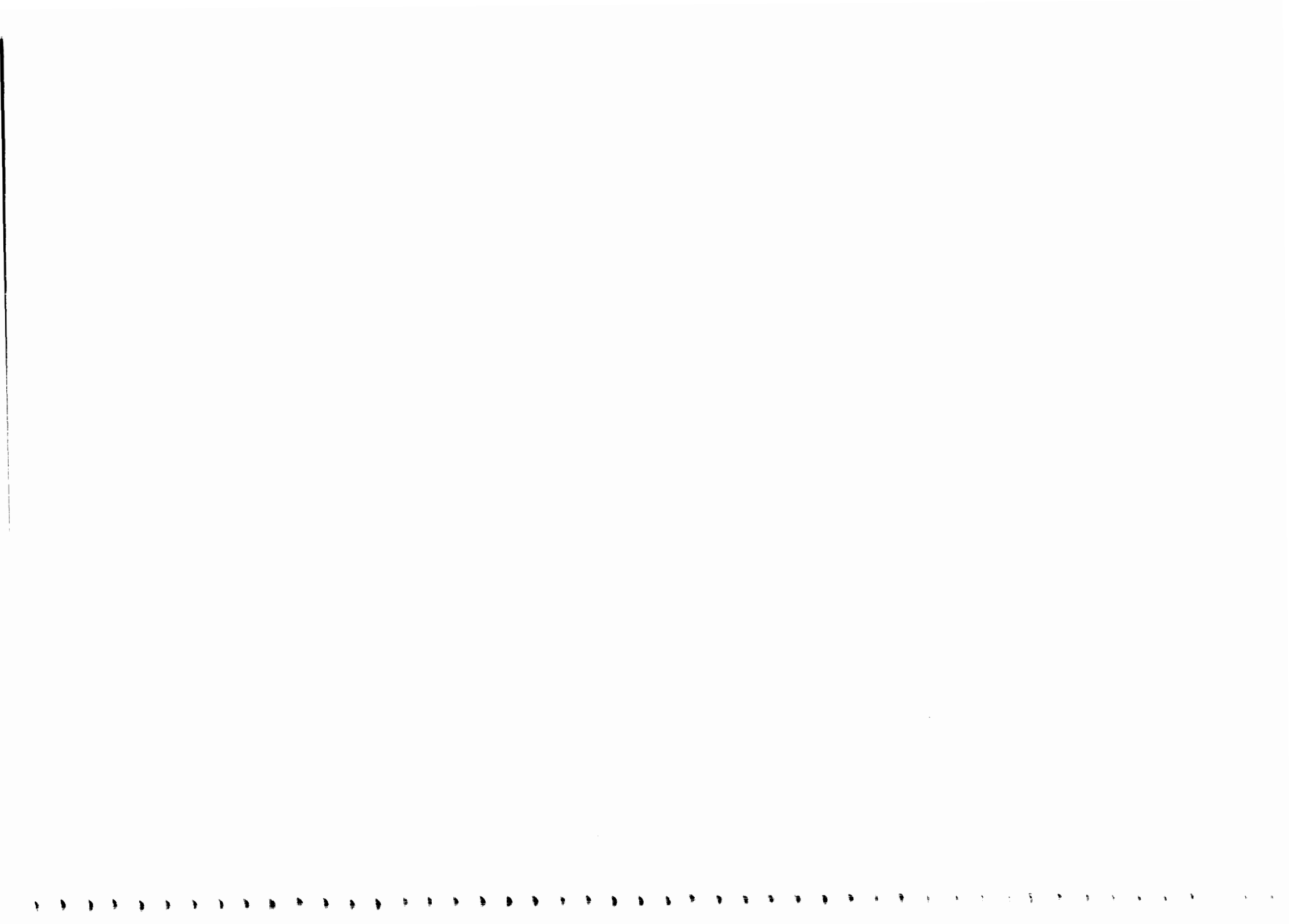
The State Party is invited to supply the materials listed below. Please check those items that were attached.

1. (•) Maps and plans showing the general location of the property, its boundary and buffer zone as well as the necessary detail of the property itself (see question 003 for specifications)
2. (•) Photo of general view (aerial view) of the property
3. (•) Illustrations of the state of conservation of the site (photographs, slides and, if available, film/videos)
4. (•) Details of the important aspects of the property (landscapes, animal and vegetable species, monuments etc.)
5. (•) Photos illustrating the main threats to the site and its surroundings
6. (•) Extracts of relevant laws and regulations concerning the protection of cultural and natural heritage at national, provincial and municipal levels
7. (•) Copies of the management plan of the site as well as extracts and/or copies of other plans relating to the site (e.g. emergency plan, use plan, etc.) (e-copy)
8. (•) Indicative bibliography

If the space on the Questionnaire is not sufficient, please continue on a separate page, clearly labeling the answer with the corresponding number of the question (e.g. 006).

MAPS

- CLASSIFIED MAP OF DISTRICT 24 PARGANA (SOUTH).
- CLASSIFIED IMAGERY OF SUNDARBAMN TIGER RESERVE.





THE INDIAN FOREST ACT, 1927
(Act No. 16 of 1927)

[21st 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 Indian Forest Act, 1927.

(2) It extends to the whole of India except the territories which, immediately before the 1st November, 1956, were comprised in Part B States.

(3) It applies to the territories which, immediately before the 1st November, 1956, were comprised in the States of Bihar, Bombay, Coorg, Delhi, Madhya Pradesh, Orissa, Punjab, Uttar Pradesh and West Bengal; but the Government of any State may by notification in the Official Gazette bring this Act into force in the whole or any specified part of that State to which this Act extends and where it is not in force.

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 State Government or any officer empowered by ***the State 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" include—

(a) the following whether found in or brought from, a forest or not, that is to say :—

timber, charcoal, caoutchouc, catechu, wood-oil, resin, natural varnish, bark lac, mahua flowers, mahua seeds, kuth and myrabolams, and

(b) the following when found in, or brought from a forest, that is to say:—

Indian Forest Act, 1927

- (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 or produce of animals, and
- (iv) peat, surface soil, rock, and minerals (including lime-stone, 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;

(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, skumps, brush-wood and canes.

CHAPTER II
OF RESERVED FORESTS

3. Power to reserve forests.— The State Government may constitute any forest-land or waste-land 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.

4. Notification by States Government.— (1) Whenever it has been decided to constitute any land a reserved forest, the State 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.

Indian Forest Act, 1927

(3) Nothing in this section shall prevent the State Government from appointing any number of officers not exceeding three, not more than one of whom shall be a person holding any forest-office except as aforesaid, to perform the duties of a Forest Settlement-officer under this Act.

5. **Bar of accrual of forest rights.**— After the issue of a notification under section 4 no right shall be acquired in or 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 clearings for cultivation or for other purpose shall be made in such land except in accordance with such rules as may be made by the State Government in this behalf.

6. **Proclamation by Forest Settlement officer.**— When a notification has been issued under section 4, the Forest Settlement-officer shall publish in the local vernacular 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 consequences which, as hereinafter provided will ensure on the reservation of such forest; and
- (c) fixing a period of not less than three 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.

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 inquire 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.

Notes.— Where a notification under section 4 declaring the land as reserved forest is issued and a claim under section 6 is preferred then the Forest Settlement Officer is bound to enquire into all the claims and these claims cannot be rejected simply on the ground that the same were not stamped : Rep. in U.P. Legal Aid and Advice Board, AIR 1991 All 281.

8. **Powers of Forest Settlement officers.**— For the purpose of such inquiry, the Forest Settlement officer may exercise the following powers, that is to say,

Indian Forest Act, 1927

- (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.

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 State 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 State 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 State Government.

(5) The practice of shifting cultivation shall in all cases be deemed a privilege subject to control, restriction and abolition by the State 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 forest-produce or a watercourse, the Forest Settlement-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

Indian Forest Act, 1927

- (iii) proceed to acquire such land in the manner provided by the Land Acquisition Act, 1894 (1 of 1894).
- (3) For the purpose of so acquiring such land—
 - (a) the Forest Settlement officer shall be deemed to be a Collector proceeding under the Land Acquisition Act, 1894 (1 of 1894).
 - (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 preceding 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.

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 rights 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 not 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 the 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, having 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 the rights so admitted.

- (2) For this purpose the Forest Settlement-officer may—
 - (a) set out some other forest tract of sufficient extent, 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 in 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 State Government.

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 State 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 State 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 such officer of the Revenue Department, of rank not lower than that of a Collector, as the State Government may, by notification in the Official Gazette, appoint to hear appeals from such order:

Provided that the State Government may establish a Court (hereinafter called the Forest Court) composed of three persons to be appointed by the State Government, and when the Forest Court has been so established, all such appeals shall be presented to it.

18. Appeal under section 17.— (1) Every appeal under section 17 shall be made by petition in writing, and may be delivered to the Forest Settlement-officer, who shall forward it without delay to the authority competent to hear the same.

(2) If the appeal be to an officer appointed under section 17, it shall be heard in the manner prescribed for the time being for the hearing of appeals in matters relating to land-revenue.

(3) If the appeal be to the Forest Court the Court shall fix a day and a convenient place in the neighbourhood of the proposed forest for hearing the appeal, and shall give notice thereof to the parties, and shall hear such appeal accordingly.

(4) The order passed on the appeal by such officer or Court or by the majority of the members of such Court as the case may be, shall, subject only to revision by the State Government, be final.

19. **Pleaders.**— The State 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 appellate officer or Court, in the course of any inquiry or appeal under this Act.

20. **Notification declaring forest reserved.**— 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) passed on such claims has elapsed, and all appeals (if any) presented within such period have been disposed of by the appellate officer or Court; 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 Land Acquisition Act, 1894 (1 of 1894), have become vested in the Government under section 16 of that Act,

the State 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.

21. **Publication of translation of such notification in neighbourhood of forest.**— The Forest-officer shall, before the date fixed by such notification, cause a translation thereof into the local vernacular 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 State 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 be commuted under section 16.

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 State 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 State 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 State Government deems to be reasonably convenient, already exists, or has been provided or constructed by the Forest-officer in lieu thereof.

26. Acts prohibited in such forests.— (1) Any person who—

- (a) makes any fresh clearing prohibited by section 5, or
- (b) sets fire to a reserved forest, or in contravention, of any rules made by the State Government in this behalf, kindles any fire, or leave any fire burning, in such manner as to endanger such a forest:
or who, in a reserved forest—
- (c) kindles, keeps or carries any fire except at such seasons as the Forest-officer may notify in this behalf :
- (d) trespasses or pastures cattle, or permits cattle to trespass ;
- (e) causes any damage by negligence in felling any tree or cutting or dragging any timber;
- (f) fells, girdles, lops, or burns any tree or strips off the bark or leaves from, or otherwise damages, the same :
- (g) quarries stone, burns lime or charcoal, or collects, subjects to any manufacturing process, or removes, any forest-produce;
- (h) clears or breaks up any land for cultivation or any other purpose;
- (i) in contravention of any rules made in this behalf by the State Government hunts, shoots fishes, poisons water or sets traps or snares; or
- (j) in any area in which the Elephants' Preservation Act, 1879, (6 of 1879) is not in force, kills or catches elephants in contravention of any rules so made

shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

CHAPTER IX
Penalties and Procedure

52. Seizure of property liable to confiscation.— (1) When there is reason to believe that a forest-offence has been committed in respect of any forest-produce, such produce, together with all tools, boats, carts or cattle used in committing any such offence, may be seized by any Forest-officer or Police-officer.

(2) Every officer seizing any property under this section shall place on such property a mark indicating that the same has been so seized, and shall, as soon as may be, make a report of such seizure to the Magistrate having jurisdiction to try the offence on account of which the seizure has been made;

Provided that, when the forest-produce with respect to which such offence is believed to have been committed is the property of Government, and the offender is unknown, it shall be sufficient if the officer makes, as soon as may be, a report of the circumstances to his official superior.

Notes.— When a forest offence has been committed and the Forest officer confiscates the property or directs criminal prosecution and proper guidelines have been given in exercising the discretion, then such discretion is not *ultra vires* Article 14 : *Sarat Kumar Mala v State of Orissa*, AIR 1992 Orissa 128.

53. Power to release property seized under section 52.— Any Forest-officer of a rank not inferior to that of a Ranger who, or whose subordinate, has seized any tools, boats, carts or cattle under section 52, may release the same on the execution by the owner thereof a bond for the production of the property so released, if and when so required, before the Magistrate having jurisdiction to try the offence on account of which the seizure has been made.

54. Procedure thereupon.— Upon the receipt of any such report, the Magistrate shall, with all convenient despatch, take such measures as may be necessary for the arrest and trial of the offender and the disposal of the property according to law.

55. Forest produce, tools, etc., when liable to confiscation.— (1) All timber or forest-produce which is not the property of Government and in respect of which a forest-offence has been committed, and all tools, boats, carts and cattle used in committing any forest-offence shall be liable to confiscation.

(2) Such confiscation may be in addition to any other punishment prescribed for such offence.

56. Disposal on conclusion of trial for forest offence, of produce in respect of which it was committed.— When the trial of any forest-offence is concluded, any forest-produce in respect of which such offence has been committed shall, if it is the property of Government or has been confiscated, be taken charge of by a Forest-officer, and, in any other case, may be disposed of in such manner as the Court may direct:

57. Procedure when offender not known or cannot be found.— When the offender is not known or cannot be found the Magistrate may, if he finds that an offence has been committed, order the property in respect of which the offence has been committed to be confiscated and taken charge of by the Forest-officer, or to be made over to the person whom the Magistrate deems to be entitled to the same:

Provided that no such order shall be made until the expiration of one month from the date of seizing such property, or without hearing the person, if any, claiming any right thereto, and the evidence, if any, which he may produce in support of his claim.

58. Procedure as to perishable property seized under section 52.— The Magistrate may, notwithstanding anything, hereinbefore contained, direct the sale of any property seized under section 52 and subject to speedy and natural decay, and may deal with the proceeds as he would have dealt with such property if it had not been sold.

59. Appeal from orders under section 55, section 56 or section 57.— The officer who made the seizure under section 52, or any of his official superiors, or any person claiming to be interested in the property so seized may, within one month from the date of any order passed under section 55, section 56, or section

57, appeal therefrom to the Court to which orders made by such Magistrate are ordinarily appealable, and the order passed on such appeal shall be final.

60. **Property when to vest in Government.**— When an order for the confiscation of any property has been passed under section 55 or section 57, as the case may be, and the period limited by section 59 for an appeal from such order has elapsed, and no such appeal has been preferred, or when, on such an appeal being preferred, the Appellate Court confirms such order in respect of the whole or a portion of such property or such portion thereof, as the case may be, shall vest in the Government free from all encumbrances.

61. **Saving of power to release property seized.**— Nothing herein before contained shall be deemed to prevent any officer empowered in this behalf by the State Government from directing at any time the immediate release of any property seized under section 52.

62. **Punishment for wrongful seizure.**— Any Forest-officer or Police-officer who vexatiously and unnecessarily seizes any property on pretence of seizing property liable to confiscation under this Act shall be punishable with imprisonment for a term which may extend to six months or with fine which may extend to five hundred rupees, or with both.

63. **Penalty for counterfeiting or defacing marks on trees and timber and for altering boundary-marks.**— Whoever, with intent to cause damage or injury to the public or to any person, or to cause wrongful gain as defined in the Indian Penal Code—

- (a) knowingly counterfeits upon any timber or standing tree a mark used by Forest-officers to indicate that such timber or tree is the property of the Government or of some person, or that it may lawfully be cut or removed by some person; or
- (b) alters, defaces or obliterates any such mark placed on a tree or on timber by or under the authority of a Forest officer; or
- (c) alters, moves, destroys or defaces any boundary-mark of any forest or waste-land to which the provisions of this Act are applied.

shall be punishable with imprisonment for a term which may extend to two years, or with fine, or with both.

64. **Power to arrest without warrant.**— (1) Any Forest-officer or Police-officer 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 forest-offence punishable with imprisonment for one month or upwards.

(2) Every officer making an arrest under this section shall, without unnecessary delay and subject to the provisions of this Act as to release on bond, take or send the person arrested before the magistrate having jurisdiction in the case, or to the officer in charge of the nearest police station.

Indian Forest Act, 1927

(3) Nothing in this section shall be deemed to authorise such arrest for any act which is an offence under Chapter IV unless such act has been prohibited under clause (c) of section 30.

65. Power to release on a bond a person arrested.— Any Forest-officer of a rank not inferior to that of a Ranger, who, or whose subordinate, has arrested any person under the provisions of section 64, 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.

66. Power to prevent commission of offence.— Every Forest-officer and Police-officer shall prevent, and may interfere for the purpose of preventing, the commission of any forest-offence.

67. Power to try offences summarily.— The District Magistrate or any magistrate of the first class specially empowered in this behalf by the State Government may try summarily, under the Code of Criminal Procedure, 1898, any forest-offence punishable with imprisonment for a term not exceeding six months, or fine not exceeding five hundred rupees, or both.

68. Power to compound offence.— (1) The State Government may, by notification in the Official Gazette, empower a Forest officer—

- (a) to accept from any person against whom a reasonable suspicion exists that he has committed any forest-offence, other than an offence specified in section 62 or section 63, a sum of money by way of compensation for the offence which such person is suspected to have committed, and
- (b) when any property has been seized as liable to confiscation, to release the same on payment of the value thereof as estimated by such officer.

(3) A Forest-officer shall not be empowered under this section unless he is a Forest officer of a rank not inferior to that of a Ranger and is in receipt of a monthly salary amounting to at least one hundred rupees, and the sum of money accepted as compensation under clause (a) of sub-section (1) shall in no case exceed the sum of fifty rupees.

69. Presumption that forest-produce belongs to Government.— When in any proceedings taken under this Act, or in consequence of anything done under this Act, a question arises as to whether any forest produce is the property of the Government, such produce shall be presumed to be the property of the Government until the contrary is proved.

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National Parks

35. Declaration of National Parks

- (1) Whenever it appears to the State Government that an area, whether within a sanctuary or not, is, by reason of its ecological, faunal, floral, geomorphological, or zoological association or importance, needed to be constituted as a National Park for the purpose of protecting, propagating or developing wildlife therein or its environment, it may, by notification, declare its intention to constitute such area as a National Park.

[Provided that where any part of the territorial waters is proposed to be included in such National Park, the provisions of section 26A shall, as far as may be, apply in relation to the declaration of a National Park as they apply in relation to the declaration of a sanctuary.]²

- (2) The notification referred to in sub-section (1) shall define the limits of the area which is intended to be declared as a National Park.
- (3) Where any area is intended to be declared as a National Park, the provisions of [section 19 to 26A, (both inclusive), except clause (c) of sub-section (2) of Section 24.]³ shall as far as may be, apply to the investigation and determination of claims, and extinguishment of rights, in relation to any land in such areas as they apply to the said matters in relation to any land in a Sanctuary.
- (4) When the following events have occurred, namely

¹ sub section (3) of sec 34 Ins. by Act 44 of 1991

² Proviso to sec. 35(1) Ins. by Act 44 of 1991 (w.e.f. 2-1-1991)

³ [section 19 to 26A (both inclusive, except clause (c) of sub-section (2) of Section 24) subs by 44 of 1991.

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- (a) The period of preferring claims has elapsed, and all claims, if any, made in relation to any land in an area intended to be declared as a National Park, have been disposed of by the State Government, and
- (b) all rights in respect of lands proposed to be included in the National Park have become vested in the State Government,

the State Government shall publish a notification specifying the limits of the area which shall be comprised within the National Park and declare that the said area shall be a National Park on and from such date as may be specified in the notification.

- (5) No alteration of the boundaries of a National Park shall be made except on a resolution passed by the Legislature of the State.
- (6) No person shall destroy, exploit, or remove any wildlife from a National Park or destroy or damage the habitat of any wild animal or deprive any wild animal of its habitat within such National Park except under and in accordance with a permit granted by the Chief Wildlife Warden and no such permit shall be granted unless the State Government, being satisfied that such destruction, exploitation, or removal of wildlife from the National Park is necessary for the improvement and better management of wildlife therein, authorises the issue of such permit.
- (7) No grazing of any [livestock]¹ shall be permitted in a National Park and no [livestock]¹ shall be allowed to enter therein except where such [livestock]¹ is used as a vehicle by a person authorised to enter such National Park.
- (8) The provisions of sections 27 and 28, sections 30 to 32 (both inclusive), and clauses (a), (b) and (c) of [section 33, section 33A]² and section 34 shall, as far as may be, apply in relation to a National Park as they apply in relation to a sanctuary.

¹ Word [cattle] was subs. by word [livestock] by Act 44 of 1991

² In Subs. (8) of Sec. 33 for the words [section 33] words [sec 33, sec 33A] subs. vide Act 44 of 1991.

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CHAPTER VI

Prevention and detection of offences

50. Power of entry, search, arrest and detention

- (1) Notwithstanding anything contained in any other law for the time being in force, the Director or any other officer authorised by him in this behalf or the Chief Wildlife Warden or the authorised officer or any forest officer or any police officer not below the rank of a sub-inspector, may, if he has reasonable grounds for believing that any person has committed an offence against this Act,-
- (a) require any such person to produce for inspection any captive animal, wild animal, animal article, meat, [trophy, uncured trophy, specified plant or part or derivative thereof]¹ in his control, custody or possession or any licence, permit or any other document granted to him or required to be kept by him under the provisions of this Act;
 - (b) stop any vehicle or vessel in order to conduct search or inquiry or enter upon and search any premises, land, vehicle or vessel in the occupation of such person, and open and search any baggage or other things in his possession;
 - [(c) seize any captive animal, wild animal, animal article, meat, trophy or uncured trophy, or any specified plant or part or derivative thereof, in respect of which an offence against this Act appears to have been committed, in the possession of any person together with any trap, tool, vehicle, vessel or weapon used for committing any such offence and, unless he is satisfied that such person will appear and answer any charge which may be preferred against him, arrest him without warrant, and detain him.

Provided that where a fisherman, residing within ten kilometers of a sanctuary or National Park, inadvertently enters on a boat, not used for commercial fishing, in the territorial waters in that sanctuary or National Park, a fishing tackle or net on such boat shall not be seized.]²

¹ After the words ["trophy, uncured trophy"] words [specified plant or part or derivative thereof] Ins by Act 44 of 1991.

² ["(c) seize any captive animal, wild animal, animal article, meat, trophy or uncured trophy in the possession of any person and appearing to him to be Government property, together with any trap, tool vehicle, vessel or weapon used for committing any such offence, and unless he is satisfied that such person will appear and answer any charge which may be preferred against him, arrest him without warrant, and detain him] omitted and present clause (C) subs. by Act 44 of 1991.

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- (2) [****]¹
- (3) It shall be lawful for any of the officers referred to in sub-section (1) to stop and detain any person, whom he sees doing any act for which a licence or permit is required under the provisions of this Act, for the purposes of requiring such person to produce the licence or permit and if such person fails to produce the licence or permit, as the case may be, he may be arrested without warrant, unless he furnishes his name and address, and otherwise satisfies the officer arresting him that he will duly answer any summons or other proceedings which may be taken against him.
- [(3A) Any officer of a rank not inferior to that of an Assistant Director of Wildlife Preservation or Wildlife Warden, who, or whose subordinate, has seized any captive animal or wild animal under clause (c) of sub-section (1) may give the same for custody on the execution by any person of a bond for the production of such animal if and when so required, before the magistrate having jurisdiction to try the offence on account of which the seizure has been made.]²
- (4) Any person detained, or things seized under the foregoing power, shall forthwith be taken before a Magistrate to be dealt with according to law.
- (5) Any person who, without reasonable cause, fails to produce anything, which he is required to produce under this section, shall be guilty of an offence against this Act.
- (6) (a) Where any [meat or uncured trophy, specified plant or part or derivative thereof]³ is seized under the provisions of this section, the Assistant Director of Wildlife Preservation or any officer of a gazetted rank authorised by him in this behalf or the Chief Wildlife Warden or the authorised officer may arrange for the

¹ (2) [Any officer of a rank not inferior to that of an Assistant Director of Wildlife Preservation or Wildlife Warden, who, or whose subordinate, has seized any trap, tool, vehicle, vessel or weapon under clause (c) of sub-section (1), may release the same, on the execution by the owner thereof of a bond for the production of the property so release, if and when so required, before the Magistrate having jurisdiction to try the offence on account of which the seizure has been made.] Omitted by Act 44 of 1991.

² Sub sec.3(A) Ins by Act 44 of 1991

³ after the words ["meat or uncured trophy"] in sec. 50 (6) the words [specified plant or part or derivative thereof] subs.by Act 44 of 1991.

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sale of the same and deal with the proceeds of such sale in such manner as may be prescribed.

- (b) Where it is proved that the [meat, uncured trophy, specified plant, or part or derivative thereof] seized under the provisions of this section is not Government property, the proceeds of the sale shall be returned to the owner.
- (7) Whenever any person is approached by any of the officers referred to in sub-section (1) for assistance in the prevention or detection of an offence against this Act, or in apprehending persons charged with the violation of this Act, or for seizure in accordance with clause (c) of sub-section (1), it shall be the duty of such person or persons to render such assistance.
- [(8) Notwithstanding anything contained in any other law for the time being in force, any officer not below the rank of an Assistant Director of Wildlife Preservation or Wildlife Warden shall have the powers, for the purposes of making investigation into any offence against any provision of this Act,-
- (a) to issue a search warrant;
 - (b) to enforce the attendance of witness;
 - (c) to compel the discovery and production of documents and material objects; and
 - (d) to receive and record evidence.
- (9) Any evidence recorded under clause (d) of sub-section (8) shall be admissible in any subsequent trial before a Magistrate provided that it has been taken in the presence of the accused person.]¹

51. Penalties

- (1) Any person who [contravenes any provision of this Act (except Chapter VA)]² [and section 38J]³ or any rule or order made thereunder or who commits a breach of any of the conditions of any licence or permit granted under this Act, shall be guilty of an offence against this Act, and shall, on conviction, be punishable with imprisonment for a term which

¹ In sec. 50, Sub. Sec. (8) and sub. sec. 9 Ins. by Act 44 of 1991

² After the words ["contravenes any provision of this Act"] the words [except chapter VA] subs. by Act 28 of 1986

³ [And section (38J) subs. By Act 44 of 1991

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may extend to [three years]¹ or with fine which may extend to [twenty five thousand rupees]² or with both.

Provided that where the offence committed is in relation to any wild animal specified in Schedule I or Part II of Schedule II, or meat of any such animal or animal article, trophy or uncured trophy derived from such animal or where offence [relate to hunting in or altering the boundaries of]⁵ a sanctuary or a National Park, such offence shall be punishable with imprisonment for a term which shall not be less than [one year]⁵ but may extend to six years and also with fine which shall not be less than [five thousand rupees.]³

[Provided further that in the case of a second or subsequent offence of the nature mentioned in this sub-section, the term of imprisonment may extend to six years and shall not be less than two years and the amount of fine shall not be less than ten thousand rupees.]⁴

[(1A) Any person who contravenes any provisions of Chapter VA, shall be punishable with imprisonment for a term which shall not be less than one year but which may extend to seven years and also with fine which shall not be less than five thousand rupees.]⁵

[(1B) Any person who contravenes the provisions of section 38J shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to two thousand rupees, or with both.

Provided that in the case of a second or subsequent offence the term of imprisonment may extend to one year or the fine may extend to five thousand rupees;]⁶

(2) When any person is convicted of an offence against this Act, the court trying the offence may order that any captive animal, wild animal, animal article, trophy, [uncured trophy, meat, ivory imported into India or an article made from such ivory, any specified plant and or part or derivative thereof]⁷ in respect of which the offence has been committed, and any trap, tool, vehicle, vessel or weapon used in the commission of the said

¹ Subs. by Act 44 of 1991.

² Subs. by Act 44 of 1991.

³ see 51 (1) the words [or altering the boundaries of] ["one year"] and [five thousand rupees] in the first proviso subs. by Act 44 of 1991

⁴ second provision subs. By Act 44 of 1991

⁵ sec. 51(1A) Ins by Act 28 of 1986

⁶ sec. 51 (1B) Ins. by Act 44 of 1991

⁷ In sub sec. (2) after the words [uncured trophy or meat] the words [uncured trophy, meat, ivory imported into India or an article made from such ivory, any specified plant and or part or derivative thereof] subs. by Act 44 of 1991.

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offence be forfeited to the State Government and that any licence or permit, held by such person under the provisions of this Act, be cancelled.

- (3) Such cancellation of licence or permit or such forfeiture shall be in addition to any other punishment that may be awarded for such offence.
- (4) Where any person is convicted of an offence against this Act, the Court may direct that the licence, if any, granted to such person under the Arms Act, 1959 (54 of 1959) for possession of any arm with which an offence against this Act has been committed, shall be cancelled, and that such person shall not be eligible for a licence under the Arms Act, 1959, for a period of five years from the date of conviction.
- [(5) Nothing contained in section 360 of the Code of Criminal Procedure, 1973 or in Probation of Offenders Act, 1958 shall apply to a person convicted of an offence with respect to hunting in a sanctuary or a National Park or of an offence against any provision of Chapter VA unless such person is under eighteen years of age.]¹

52. Attempts and abatement

Whoever attempts to contravene, or abets the contravention of, any of the provisions of this Act or of any rule or order made thereunder shall be deemed to have contravened that provision or rule or order, as the case may be.

53. Punishment for wrongful seizure

If any person, exercising powers under this Act, vexatiously and unnecessarily seizes the property of any other person on the pretence of seizing it for the reasons mentioned in section 50, he shall, on conviction, be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both.

54. Power to compound offences

- (1) [The Central Government may, by notification, empower the Director of Wildlife Preservation or any other officer and the State Government]² by notification, empower the Chief Wildlife Warden or any officer of a rank not inferior to that of a Deputy Conservator of Forests.-

¹ Ins. by Act 44 of 1991.

² In Sec. 54(1) for the words "The State Government" [The Central Government may, by notification, empower the Director of Wildlife Preservation or any other officer and the State Government] subs. by Act 44 of 1991.

LIST

- **MANGROVE & ASSOCIATE PLANT SPECIES OF INDIAN SUNDARBAN.**
- **MAJOR MAMMALS OF SUNDARBAN.**
- **REPTILES OF SUNDARBAN.**
- **BIRDS OF SUNDARBAN .**
- **FISH OF SUNDARBAN.**
- **SOME AQUATIC FAUNA OF SUNDARBAN.**
- **RARE & ENDANGERED SPECIES OF SUNDARBAN.**

Mangroves and Mangrove Associated Plant Species of the Indian Sundarbans

Family Names	Genus under the Mangroves family	Species under the Genus, collected from the Sundarbans Mangals, India	Habitats	Aerial/Air rooting pattern of the mangrove specs.	Germination/ seedling development of the spcs	Remarks
1	2	3	4	5	6	7
1. Rhizophoraceae (The tree and most dominant mangrove family in Indian Sundarbanbs; under this family only 4 genera and 9 major mangrove species were collected and identified from Indian Sundarbans	*1. Rhizophora	1. R. mucronata (Medium tree)	3,4	Prop/stilt roots	Viviparous Germ.	++ +
	*2. Bruguiera	2. R. apiculata (Medium tree)	3,4	Prop/stilt roots	Viviparous Germ	+
		3. B. gymnorrhiza (Medium tree)	3,4	Broom like roots	Viviparous Germ	++ +
		4. B. Sexangula (Small tree)	3,4	Knee + Broom	Viviparous Germ.	++
	*3. Ceriops	5. B. cylindrica (Medium tree)	3,4	Knee + Broom	Viviparous Germ	++
		6. B. parviflora (Small tree)	3	Stilt root+Broom	Viviparous Germ.	+
		7. C. tagai (Small tree)	4,5	Fused Stilt Roots	Viviparous Germ.	++
	*4. Kandelia	8. C. decandra (Shrub)	4,5	Fused Stilt Roots	Viviparous Germ	++ +
		9. K. candel (Small tree)	3	Stilt Roots	Viviparous Germ	+
		2. Avicenniaceae (The 2nd important mangrove family)	*5. Avicennia	10. A. officinalis (Medium tree)	3,4	Pneumatophore + Stilt Roots
	11. A. alba (Medium tree)		2,3	Pneumatophore	Cryptoviviparous	++
	12. A. marina (Small tree)		2,3	Pneumatophore	Cryptoviviparous	++ ++
3. Sonneratiaceae (The 3rd important mangrove family)	*6. Sonneratia		13. S. apetala (Tall tree)	3,4	Pneumatophore	Incipient Vivip
		14. S. caseolaris (Medium tree)	3	Pneumatophore	Non-viviparous	+
		15. S. griffithii (Medium tree)	2,3	Pneumatophore	Non-viviparous	++
4. Meliaceae (The 4th important mangrove family)	*7. Xylocarpus	16. X. granatum (Medium tree)	3,4	Root Buttress	Non-viviparous	++ +
	*8. Aglaia	17. X. mekongensis (Medium tree)	3,4	Root Buttress	Non-viviparous	++
18. A. cucullata (Small tree)		4	Pneumatophore	Non-viviparous	+	
5. Myrsinaceae	*9. Aegiceras	19. A. corniculatum (Shrub)	3,4	No-aerial roots	Incipient Vivip	++ +
6. Aegialitiaceae	*10. Aegialitis	20. A. rotundifolia (Shrub)	4,5	No Air Root	Incipient Vivip	++ +
7. Sterculiaceae	*11. Heritiera	21. H. fomes (Small tree)	4,5	Blunt end peg like	Incipient Vivip	++
8. Combretaceae	*12. Lumnitzera	22. L. racemosa (Small tree)	4	Looping aerial	Non-viviparous	++
9. Rubiaceae	*13. Scyphiphora	23. S. hydrophyllacea (Shrub)	3,4	Wavy aerial root	Non-viviparous	+
	+14. Hydrophyllax	24. H. maritima (Herb)	2	No aerial roots	Non-viviparous	+
10. Tiliaceae	=15. Brownlowia	25. B. lanceolata (Small tree)	5	No aerial roots	Non-viviparous	+

1	2	3	4	5	6	7
11. Arecaceae	*16. <i>Nypa</i>	26. <i>N. fruticans</i> (Palm)	3	No aerial roots	Incipient Vivip.	++
	*17. Phoenix	27. <i>P. paludosa</i> (Palm)	5,6	Pneumatoliths	Incipient Vivip.	++
12. Euphorbiaceae	*18. Excoecaria	28. <i>E. agallocha</i> (Medium tree)	4,5	Gall on trunk	No-viviparous	++
						++
13. Asclepiadaceae	+19. <i>Sarcolobus</i>	29. <i>S. globosus</i> (Twining Shrub)	2,3	No aerial roots	No-viviparous	++
(Mostly Halophytic herbs and twiners; mangrove associates)		30. <i>S. carinatus</i> (Twining Shrub)	2,3	No aerial roots	No-viviparous	++
	=20. <i>Petatropis</i>	31. <i>P. capensis</i> (Twining Shrub)	5,6	No aerial roots	No-viviparous	++
	=21. <i>Tylophora</i>	32. <i>T. tenuis</i> (Twining Shrub)	6>	No aerial roots	No-viviparous	+
	=22. <i>Finlaysonia</i>	33. <i>F. obovata</i> (Twining Shrub)	6>	No aerial roots	No-viviparous	+
	=23. <i>Hoya</i>	34. <i>H. parasitica</i> (Shrub)	Eph	No aerial roots	No-viviparous	+
14. Acanthaceae (Mangroves Associates)	+24. <i>Acanthus</i>	35. <i>A. illicifolius</i> (Shrub)	4,5	Stilt roots	Incipient Vivip.	++
						++
		36. <i>A. volubilis</i> (Shrub)	4,5	Stilt roots	Incipient Vivip.	+
15. Papilionaceae (Mangrove legumes; associated back Mangroves)	+25. <i>Cynometra</i>	37. <i>C. ramiflora</i> (Shrub)	4	Stilt roots	No-viviparous	+
	+26. <i>Derris</i>	38. <i>D. indica</i> (Small tree)	6>	Stilt roots	No-viviparous	++
		39. <i>D. scandens</i> (Twining Shrub)	5	Stilt roots	No-viviparous	++
		40. <i>D. trifoliata</i> (Twining Shrub)	5	Stilt roots	No-viviparous	++
	+27. <i>Dalbergia</i>	41. <i>D. spinosa</i> (Small tree)	4	Stilt roots	No-viviparous	+
16. Caesalpinaceae (Back Mangroves)	=28. <i>Caesalpinia</i>	42. <i>C. crista</i> (Shrub)	6>	Stilt roots	No-viviparous	++
		43. <i>C. bonduc</i> (Shrub)	6>	Stilt roots	No-viviparous	++
17. Tamaricaceae (Back Mangroves)	+29. <i>Tamarix</i>	44. <i>T. dioica</i> (Shrub)	6	Stilt roots	No-viviparous	++
		45. <i>T. gallica</i> (Shrub)	6	Stilt roots	No-viviparous	++
18. Verbinaceae (Back Mangroves)	+30. <i>Clerodendrum</i>	46. <i>C. inerme</i> (Shrub)	6	Stilt roots	No-viviparous	++
	=31. <i>Premna</i>	47. <i>P. corymbosa</i> (Shrub)	6	Stilt roots	No-viviparous	++
19. Malvaceae (Mostly the back Mangrove plants or Mangrove associates)	=32. <i>Thespesia</i>	48. <i>T. populnea</i> (Small tree)	6>	No aerial roots	No-viviparous	++
		49. <i>T. populneoides</i> (Small tree)	6>	No aerial roots	No-viviparous	+
		50. <i>T. lampusa</i> (Shrub)	6>	No aerial roots	No-viviparous	+
	=33. <i>Hibiscus</i>	51. <i>H. tortuosus</i> (Shrub)	5	No aerial roots	No-viviparous	++
		52. <i>H. thibaceous</i> (Shrub)	5,6	No aerial roots	No-viviparous	++
20. Sapotaceae	=34. <i>Manilkara</i>	53. <i>M. hexandra</i> (Medium tree)	6>	No aerial roots	No-viviparous	+

1	2	3	4	5	6	7
21. Chenopodiaceae (Halophytic herbs of the river flats)	+35. Suaeda	54. S. nudiflora (Herb)	2,3	No aerial roots	Non-viviparous	++ +
		55. S. maritima (Herb)	2,3	No aerial roots	Non-viviparous	++
	+36. Salicornia	56. S. brachiata (Herb)	2	No aerial roots	Non-viviparous	++
22. Aizoaceae	+37. Sesuvium	57. S. portulacastrum (Herb)	2	No aerial roots	Non-viviparous	++
23. Boraginaceae	+38. Heliotropium	58. H. curassavicum (Herb)	4,5	No aerial roots	Non-viviparous	++
24. Ruppiaceae	+39. Ruppia	59. R. maritima (Herb)	Sub	No aerial roots	Non-viviparous	++
25. Convolvulaceae	=40. Ipomoea	60. I. pes-caprae (Herb)	6>	No aerial roots	Non-viviparous	++ +
26. Araceae	+41. Cryptocoryne	61. C. ciliata (Herb)	2	No aerial roots	Non-viviparous	+
27. Amaryllidaceae	+42. Crinum	62. C. delixum (Herb)	2	No aerial roots	Non-viviparous	++
28. Loranthaceae (Epiphytic on mangroves)	+43. Viscum	63. V. orientale (Shrub)	Eph	No aerial roots	Non-viviparous	++
	+44. Dendrophoe	64. D. falcata (Shrub)	Eph	No aerial roots	Non-viviparous	++
29. Lauraceae	+45. Cassytha	65. C. filiformis (Shrub)	Eph	No aerial roots	Non-viviparous	+
30. Cuscutaceae	+46. Cuscuta	66. C. reflexa (Herb)	Eph	No aerial roots	Non-viviparous	++
31. Poaceae (Most important Pioneer Grass spe- cies in the silted up saline soil of Sundarbans)	+47. Porteresia	67. P. coarctata (Grass)	1,2	No aerial roots	Non-viviparous	++ ++
	+48. Myriostachya	68. M. wigtiana (Grass)	1,2	No aerial roots	Non-viviparous	++
	=49. Phragmites	69. P. kakra (Grass)	2,3	No aerial roots	Non-viviparous	+
	=50. Aeluropus	70. A. lagopoides (Grass)	5,6	No aerial roots	Non-viviparous	+
	+51. Hemarthria	71. H. compressa (Grass)	2,3	No aerial roots	Non-viviparous	+
32. Bignoniaceae	=52. Dolichandrone	72. D. spathacea (Small tree)	6>	No aerial roots	Non-viviparous	+
33. Barringtoniaceae (Back Mangroves)	=53. Barringtonia	73. B. acutangula (Medium tree)	6	No aerial roots	Non-viviparous	+
		74. B. racemosa (Medium tree)	6	No aerial roots	Non-viviparous	++
34. Capparidaceae (Sand Dune Flora)	=54. Capparis	75. C. zeylanical (Shrub)	6>	No aerial roots	Non-viviparous	++
	=55. Crataeva	76. C. roxburghii (Shrub)	6>	No aerial roots	Non-viviparous	++
35. Opuntiaceae	=56. Opuntia	77. O. dillenii (Shrub)	6>	No aerial roots	Non-viviparous	++
36. Cyperaceae	=57. Scirpus	78. S. littoralis (Sedge)	3- 6	No aerial roots	Non-viviparous	++ +
37. Pandanaceae	=58. Pandanus	79. P. tectorius (Shrub)	5,6	Stilt Roots	Non-viviparous	+
		80. P. odoratissima (Shrub)	5,6	Stilt Roots	Non-viviparous	+
		81. P. foetidus (Shrub)	5,6	Stilt Roots	Non-viviparous	+

1	2	3	4	5	6	7
38. Rutaceae	+59. Atalantia	82. A. correa (Shrub)	5,6	No aerial roots	Non-viviparous	+
39. Pteridaceae	+60. Acrostichum	83. A. aurium (Fern)	5,6	Fern-rhizomes	Non-viviparous	++
Family = 39	Genera = 60	Species = 83				

Symbols used : "++++" = denote - most dominant; "+++" = denote - common; "++" = denote - occasional; "+" = denote - rare. Asterisk (*) - Showing True Mangrove Genera; Plus (+) - Mangrove Associate; Parallel (=) - showing Back Mangals. 1= Less Consolidate River Flat Grass Lands; 2= Well Consolidate Silted Up River Flat Forest Lands; 3= Formative River Slope Land; 4= Less Mature Flat Forest Fore Land; 5= Mature Forest Land-Beyond the Normal High Tide Level; 6= Most Degreded Forest Land-Beyond the Spring High Tidal Reaches, Back Mangals; 6>= Back Mangals; Sub= Submerged; Eph= Epiphytic.

LIST OF MAJOR MAMMALS OF THE SUNDARBANS

A. Recorded from reserved forests

Sl.No. : Name	Scientific Name
01. The Tiger	<u>Panthera tigris tigris</u> (Linn.)
02. The Fishing Cat	<u>Felis viverrina</u> Bennett
03. The Rhesus Macaque	<u>Macaca mulatta</u> (Zim.)
04. The Assamese Macaque	<u>Macaca assamensis</u> (McClelland)
05. The Axix Deer or Chital	<u>Axix axix</u> (Erxleben)
06. The Indian Wild Bear	<u>Sus scrofa</u> Linnaeus
07. The Little Indian Porpoise	<u>Neomeris phocaenoides</u> (Cuvier)
08. The Gangetic Dolphin	<u>Platanista gangetica</u> (Lebeck)

Note: In the past the Javan Rhinoceros (Rhinoceros sondaicus Desmarest), the Swamp Deer (Cervus duvaucelli Cuvier) the Wild Buffalo (Bubalus bubalis Linnaeus) existed till the beginning of the century in the Sundarbans. Barking Deer or the Muntjac (Muntiacus muntjac Zimmermann) also occur in the area rarely.

B. Recorded from Reclaimed Area

01. The House Shrew	<u>Suncus marinus</u> Linnaeus
02. The Common Jungle Cat	<u>Felis chaus</u> Gouldenstaedt.
03. The Leopard Cat	<u>Felis bengalensis</u> Kerr
04. The Jackal	<u>Canis aureus</u> Linn.
05. The Indian Fox	<u>Vulpes bengalensis</u> Shaw
06. The Large Indian Civet	<u>Viverricula indica</u> Desmarest
07. The Common Grey Mongoose	<u>Herpestes edwardsi</u> Geoffroy
08. The Five-striped Squirrel	<u>Funumbulus pennanti</u> Wroughton
09. The Field Mouse	<u>Mus booduga</u> (Gray)
10. The Mole Rat	<u>Bandicota indica</u> (Bechstein)
11. The Common Rat	<u>Rattus rattus</u> Linnaeus
12. The House Mouse	<u>Mus musculus</u> Linnaeus
13. The Indian Flying Fox	<u>Pteropus giganteus</u> (Brunnich)
14. The Short-nosed Fruit Bat	<u>Cynopterus sphinx</u> Vahl
15. The Lesser Yellow Bat	<u>Scotophilus temmincki</u> (Horsfield)
16. The Indian False Vampire	<u>Megaderma iya</u> Geoffroy
17. The Lesser Rat-tailed Bat	<u>Rhinopoma hardwickli</u> Gray
18. The Bicoloured Leaf-nosed Bat	<u>Hipposideros bicolor</u> Temminck
19. The Pigmy Pipistrelle	<u>Pipistrellus mimus</u> Wroughton

REPTILES OCCURRING IN SUNDARBANS

(a) Aquatic species :-

Order : CHELONIA, Turtles, Tortioses, Terrapins.

1. Batagur baska (Gray) - Common Batagur, river Terrapin
2. Geomyda tricannata (Blyth) - Three Keeled Terrapin
3. Kachuga kachuga (Gray)
4. Kachuga tecta (Tentbridge)
5. Geochemys hamilton (Gray) - Terrapin
6. Morenia occlata (Dumcril & Bibron) - Bengal Eyed Terrapin
7. Trionyx gangeticus Cuvier
8. Trionyx hurum Gray
9. Lissemys punctata (Bonnaterre) - Pond Turtle
10. Pelochelys bibroni (Owen) - Coast soft shell
11. Chitra sindica (Gray)
12. Lepidochelys olivacea (Eschscholtz) - Ridley Turtle
13. Chelonja mydas - Green Turtle
14. Eretmochelys imbriata - Hawksbill Turtle

Order : SQUAMATA

Sub-Order : OPHIDIA, Snakes.

15. Xenochrophis piscator (Schneider) - Common Checkered Keelback (F.N.)
16. Enhydryis enhydryis (Schneider) - Hurriah (F.W.)
17. Cerberus rhynchops (Schwider) - Dog - faced Water Snake
18. Acrochordus granulatus (Schneider) Wart Snake
19. Gerardia prevostiara (Eydow & Gervias)
20. Braescutata viperina (Schmidt) - Sea-snake
21. Enhyrina schistosa (Dandin) - Sea-snake
22. Hydrophis obscurus (Dandin) - Sea-snake
23. Hydrophis nigrocinctus (Dandin) - Sea-snake
24. Hydrophiscaeruleus (Show) - Sea-snake
25. Microcephalophis gracilis (Show) - Sea-snake
26. Microcephalophis cantoris Gunther - Sea-snake
27. Crocodylus porosus (Schneider) - Estuarine Crocodile

Order : CROCODILIA, Crocodile, Alligators, Gavials

(b) TERRESTRIAL SPECIES

Order : SQUAMAIA

28. *Gekko gekko* (Linnaeus) - Tokay
29. *Hemidactylus frinatas* (Schelgal) - Mouse Gecko
30. *Hemidactylus flow : nridis* Rupell House Gecko
31. *Hemidactylus brook*: Gray House Gecko
32. *Calotes versicolor* (Dandin) - Garden Lizard
33. *Chamaeleon zeylaricus* Laurerti - Chamaeleon
34. *Mabuya carinata* (Schneider)
35. *Riopa punctata* (Dundin)
36. *Varanus salavator* (Laurenti) - Water Monitor, (Salvator Lizard)
37. *Varanus flaveseens* (Gray) - Monitor Lizard

RARE AND ENDANGERED FAUNA

Sub-Order : OPHIDIA, Snakes

38. *Typhlops porrectus* (Stoliczka) - Blind Snake
39. *typhlops braminus* (Daudin) - Common Blind snake
40. *Python molurus* (Linnaeus) - Indian Python
41. *Eryxconicus* (schneider) - Russell's Sand Boa
42. *Elaphe helena* (Dandin) - Trinket Snake
43. *Ptyas mucosus* (Linnaeus) - Rat Snake
44. *Oligodon arnensis* Show - Kukri Snake
45. *Ahactulla nasutus* (Laccpexa) - Greenwhip snake
46. *Ahactulla myctarijano* (Linnaeus) - Bronze - back
47. *Lycodin aulious* (Linnaeus) - Wolf snake
48. *amphiesma stolata* (Linnaeus) - Striped Keelback
49. *Atretium schistosum* (Dandin) - Oliveraceous Keelback
50. *Derdreluphis ahactulla* (Linnaeus) - Bronze-back
51. *Dendrelaphis trisitis* (Dandin) - Common Indian Bronze-back
52. *Bungarus cacmleus* (Schneider) - Common Krait
53. *Bungarus fasciatus* (Schneider) - Banded Krait
54. *Naja naja* (Linnaeus) - Indian Cobra
55. *Ophiophagus hannah* - (Cantor) king Cobra
56. *Vipera russelli* Show - Rusell's viper
57. *Trimeresurus erythrinus* (Cantor) - Pit Viper

CHECK LIST OF BIRDS FOUND IN SUNDARBANS (LOCAL & MIGRATORY)

<u>Common Name(New)</u>	<u>Scientific Name</u>
Indian Shag	<i>Phalarocorax fuscicollis</i>
Little Cormorant	<i>Phalacrocorax niger</i>
Giant Heron	<i>Ardea goliath</i>
Grey Heron	<i>Ardea cinerea</i>
Purple Heron	<i>Ardea purpurea</i>
Little GreenHeron	<i>Ardeola striatus</i>
Pond Heron	<i>Ardeola grayii</i>
Cattle Egret	<i>Bubulcus ibis</i>
Large Egret	<i>Ardea alba</i>
Smaller Egret	<i>Egretta interinedia</i>
Little Egret	<i>Egretta garzetta</i>
Night Heron	<i>Nycticorax nycticorax</i>
Little Bittem	<i>Ixobrychus minutus</i>
Chestnut Bittem	<i>Ixobrychus cinnamomeus</i>
Yellow Bittem	<i>Ixobrychus sinensis</i>
Black Bittem	<i>Ixobrychus flavicoflis</i>
Openbill Stork	<i>Anastomus oscitans</i>
Lesser Adjutant	<i>Leptoptilos javanicus</i>
White Ibis	<i>Threskiornis aethiopica</i>
Lesser Whistling	Teal <i>Dendrocygna javanica</i>
Gadwall	<i>Anas strepera</i>
Cotton Teal	<i>Nettapus coronandelianus</i>
Honey Buzzard	<i>Pernis ptylorhyncus</i>
Pariah Kite	<i>Milvus niigrans</i>
Large Indian Kite	<i>Milvus niigrans</i>
Brahniiny Kite	<i>Haliastur indus</i>
Shikra	<i>Accipiter badius</i>
Whitebefflied Sea Eagle	<i>Haliaeetus leucogaster</i>
Indian WhitebackedVulture	<i>Gyps bengalensis</i>
Pied Harrier	<i>Circus nielanoleucos</i>
Short-toed Eagle	<i>Circactus gailicus</i>
Crested Serpent Eagle	<i>Spiloniis checla</i>
Osprey	<i>Pandion haliactus</i>
Redheaded Merlin	<i>Faleo chicquera</i>
Red Junglefowl	<i>Gallus gallus</i>
Banded Crane	<i>Rallina curizonoides</i>
Whitebreasted Waterhen	<i>Amauronis phoenicurus</i>
Bronzewinged Jacana	<i>Metopidius indicus</i>
Redwattled Lapwing	<i>Vanellus indicus</i>
Golden Plover	<i>Pluviabs apricaria</i>
Eastem Golden Plover	<i>Pluvialis dominica</i>

Common Name (New)Scientific Name

Blackcapped Kingfisher	Halcyon pileata
Whitecollared Kingfisher	Halcyon chloris
Bluctailed Bee-cater	Merops philippinus
Green Bee-cater	Merops orientalis
Hoopoe	Upupa epops
Crimsonbreasted Barbet	Megalaima haemacephala
Wryneck	Jymx torquilia
Little Scalybolloied Green Woodpecker	Picus myrmecophonus
Small Yellownaped Woodpecker	Picus chlorolophus
Lesser Goldenbacked Woodpecker	Dinopium benghalense,
Indian Goldenbacked Threetoed Woodpecker	Dinopium javanense
Fulvousbreasted Pied Woodpecker	Picoides macei
Yellowfronted Pied Woodpecker	Picoides nu-ihattensis
Pigmy Woodpecker	Picoides nanus
Larger Goldenbacked Woodpecker	Cluysocolaptes lucidus
Indian Pitta	Pitta brachyura
Bluewinged Pitta	Pitta megarhyncha
Pale Crag Martin	Hirundo obsoleta
Swallow	Hirundo rustica
Striated Swallow	Hirundo daurica
Blackheaded Shrike	Lanius schach
Brown Shrike	Lanius cristatus
Blackheaded Oriole	Oriolus xanthornus
Black Drongo	Dicrurus adshnilis
Bronzed Drongo	Dicrurus aeneus
Hairerested Drongo	Dicrurus hottentottus
Ashy Swallow-Shrike	Artamus fuseus
Greyheaded Myna	Sturnus malabaricus
Pied Myna	Stumus contra
Conymn Myna	Acridotheres tristis
Jungle Myna	Acridotheres fuseus
Indian Treepic	Dendrocitta vagabunda
House Crow	Corvus splendens
Jungle Crow	Corvus niacrorhynchos
Common Wood Shrike	Tephrodorflis pondicerianus
Large Cuckoo-Shrike	Coraema novaehollandiae
Smaller Grey Cuckoo-Shrike	Coracina nielashistos
Blackheaded Cuckoo-Shrike	Coracina melanoptera
Small Minivet	Pericrocotus cinnamomeus
Common Iora	Aegithina tiphia
Goldenfronted Chloropsis	Chloropsis aurifrons
Redwhiskered Bulbul	Pycnonotus jocosus
Redyented Bulbul	Pycnonotus cafer
Slatyheaded Sciniiter Babbler	Pomatorhinus horsfieldi
Yellowbreasted Babbler	Macronous gularis
Redeapped Babbler	Timfla pileata
Striated Babbler	Turdoides earlei
Jungle Babbler	Turdoides striatus

Common Name (New)Scientific Name

Redbreasted Flycatcher	Muscicapa parva
Whitethroated Fantail Flycatcher	Rhipidura albicollis
Paradise Flycatcher	Terpsiphone paradisi
Mangrove Whistler	Pachycephala grisola
Plain Wren-Warbler	Prinia subflava
Ashy Wren-Warbler	Prinia socialis
Yellowbellied Wren Warbler	Prinia flaviventris
Tailorbird	Orthotomus sutorius
Blyth's Reed Warbler	Acrocephalus duniatorum
Chiffchaff	Phylloscopus collybita
Dusky Leaf Warbler	Phylloscopus fuscatus
Yellowbrowed Leaf Warbler	Phylloscopus inornatus
Pallas's Leaf Warbler	Phylloscopus proregulus
Largebilled Leaf warbler	Phylloscopus magnirostris
Greenish Leaf Warbler	Phylloscopus trochiloides
Magpie-Robin	Copsychus saularis
Shama	Copsychus malabaricus
Indian Robin	Saxicoloides fifficata
Forest Wagtail	Motacifia indica
Yellow Wagtail	Motacilla flava
Grey Wagtail	Motacilla cinerea
Pied Wagtail	Motacilla alba
Tickelrs Flowerpecker	Dicaeum erythrorhynchos
Scarietbacked Flowerpecker	Dicaeum cruentatum
Purplerumped Sunbird	Nectarinia zeylonica
Loten' Sunbird	Nectarinia lotenia
Purple Sunhird	Nectarinia asiatica
White-Eye	Zosterops palpebrosa
House Sparrow	Passer domesticus
Baya	Ploccus philippinus
Spotted Munia	Lonchura punctulata

LIST OF FISHES OCCURRING IN THE SUNDARBANS

1. Order : Lamniformes :

(a) Family : Orectolobidae (Characterised by long tail) e.g.

Chilosevillium spp. (whale shark)

Stogostoma spp. (tiger shark)

(It grows upto 5.5 m. in length and is edible. It is reported to damage nets in which it becomes entangled).

Rhincodon spp. (Largest known tiger shark, it grows upto

15.2.m. in length, plankton feeder and harmless to man).

(b) Sphymidae (Hammer headed-shark)

e.g. Sphyma spp. (Mugus-fish, commonest species of the Bay of Bengal).

(c) Family : Carcharhinidae (Sharks)

e.g. Scoliodon sorrakoowal (Kamat, Yellow dog shark)

Carcharhinus gangeticus (Hanger, voracious and attacks man).

2. Order : Rajiformes (Dorsolaterally flattened fishes).

(a) Family : Pristidae (Saw fish)

e.g. Pristis caspidates (Pointed Saw fish, dangerous to other fish and destructive to fishing nets).

Pristis microdon (Commonest saw fish of Bay of Bengal).

(b) Family : rhinobatidae (Guitar fish)

E.g. Rhynchobatus djiddensis

(c) Family : Dasyatidae

e.g. Dasyatis sephora (Shankar)

Teleosts :

The endoskeleton consists of true-bones. The skin is normally covered with overlapping scales; the scales show various modifications and in some groups they may even be absent. The gills are covered by a bony operculum and have only one external opening on each side.

Common teleosts of Sundarbans

- Clupeiformes
1. Sardinella finbriata (khaira)
 2. S. longiceps
 3. Hilsa ilisha (Hilsa)
 4. Hilsa toli (Chandans-Hilsa)
 5. Gudusia chapra (Chapila)
 6. Setipinna breviceps (Phansa)
 7. S. phapsa (Phansa)
 8. S. taty (")
 9. S. panijus (")
 10. Coilia dussumieri (Phansa)
 11. C. ramkarati (Phansa)

12. Chirocentrus dorab (Khanda)

Scopeliformes: 1. Harpodon hehereus (Lotia)

Cat fishes 1. Mystry galio (Numa tangra)
2. Plotosus anguillaries (Magur)
3. Plotosus canis (Kan-magur)

Henirhanphidae: 1. Hemirhanphus georgi (Half-beak Kantla)

Belonidae: 1. Strongylura annulatus (Full-beak Kantla)

Mugiliformes: 1. Mugli cephalus (Largest and maximum comes from West coast)

2. M. parsia (Most common in the Sundarbans)

3. M. speigleri (Bhangan, the most tasteful fish)

4. M. tade (Bhangan)

5. Liza corsula (Corsula)

Polyhemiscomes: (Marine and estuarine fishes with two separate dorsal

fin)

e.g 1. Polyhemus padiscus (Tapsee)

2. Eleutherohema tetradactylus (Guchhia)

3. Polydactylus heptadactylus (Tapsee)

4. P. indicus (occasionally caught in West Bengal)

Others

1. Pangasius pangasius (Pungus)

2. Lates calcarifer (Bhetki)

3. Scatophagus argus (Pura)

4. Chondropites chinensis (White pomfret)

5. Stromateus argentus (grey pomfret)

6. Electris fusca

7. Cynoglossus spp. (Tonge fish)

8. Mastocambelus arnetus (Baam)

9. M. pancalus (Pangkal)

10. Macrogathus aculeatus (Goichi)

11. Muraenesox cinereus (Tola-bam)

12. M. talaboroides (Bam)

13. Pisodonophis hijala (Bam)

14. Gymnothorax favagineus

15. Epinephelus diacanthus (Kai-bhol)

16. Pomadasys maculatus (")

17. Sillago sihama (Bele)

18. Decapterus russelli

19. Pama pama (Chanda)

20. Trichiurus spp. (Tape fish)

21. Leiognathus spp.

22. Tetrodon cutcutia (Tepa)

LIST OF AQUATIC FAUNA

Categories of Fauna Sl.No. Scientific Name

Molluscs

01	<u> Neritina violacea</u> (Gmelin)
02	<u> Nerita lineata</u> (")
03	<u> Littorina subintermedia</u>
04	<u> Litterina melanostoma</u> (Gray)
05	<u> Litterina seabra</u>
06	<u> Assiminea beddomiana</u>
07	<u> Litterina delicatula</u>
08	<u> Assiminea brevicula</u>
09	<u> Assiminea francesiae</u>
10	<u> Assiminea microsculpta</u>
11	<u> Assiminea theobaldiana</u>
12	<u> Assiminea woodmasobiana</u>
13	<u> Iravadia ornata</u>
14	<u> Gangetia miliacea</u>
15	<u> Stenothyra soluta</u>
16	<u> Stenothyra woodmasoniana</u>
17	<u> Telescopium telescopium</u>
18	<u> Certithidea cingulata</u>
19	<u> Certithidea obtusa</u>
20	<u> Naosarius orissaensis</u>
21	<u> Ringicula coeca</u>
22	<u> Auricula translucens</u>
23	<u> Ellobium (Auriculina)</u>
24	<u> Pythia pilicata</u>
25	<u> Oncidium verruculatum</u>
26	<u> Crasostrea gryphoides</u>
27	<u> Bactronophorus thoracites</u>
28	<u> Dicyathifer manni</u>
29	<u> Nausitora lanceolata</u>
30	<u> Nausitora sajnekhatisensis</u>
31	<u> Bankia companellata</u>
32	<u> Bankia roonwali</u>
33	<u> Martesia striata</u>
34	<u> Ostrea species</u>
35	<u> Gyrena bengalensis</u>
36	<u> Cerithium telescopium</u>
37	<u> Ostrem gryphoides</u>
38	<u> Sapia officinalis</u>
39	<u> Diotocardia or Aspidobranchi</u>
40	<u> Cellana radiata</u>

Categories of FaunaSl.No. Scientific NameMolluscs

41	<u>Celiana cermica</u>
42	<u>Halicles varic</u>
43	<u>Trochus niloticus</u>
44	<u>Trubo marmoratus</u>
45	<u>Nerites spp.</u>
46	<u>Coenobita rugosa</u>
47	Fresh water onall
48	<u>Cerithium obeliscus</u>
49	<u>Potamides cingulatus</u>
50	<u>P. palustris</u>
51	<u>Vermetus. spp.</u>
52	<u>Siliquano spp.</u>
53	<u>Tuumilella suplicate</u>
54	<u>Strombus spp.</u>
55	<u>Lambs (armed) spp.</u>
56	<u>Tibia spp.</u>
57	<u>Natica melanstoma</u>
58	<u>N. mammilla</u>
59	<u>Inathina rescole</u>
60	<u>Wentle traps (Epilomium spp.)</u>
61	<u>Cowries</u>
62	<u>Cyprace monete</u>
63	<u>C. ocellata</u>
64	<u>C. tigris</u>
65	<u>C. mauritano</u>
66	<u>C. caput serpentis</u>
67	<u>Tonna elearia</u>
68	<u>Tonna plmum</u>
69	<u>Tonna perdix</u>
70	<u>Xancus pyrum</u>
71	<u>Cynoclonta spp.</u>
72	<u>Melongona spp.</u>
73	<u>Mitra esiscopalis</u>
74	<u>Bebylomia spirate</u>
75	<u>B. Zeylanice</u>
76	<u>Neptune antique</u>
77	<u>Nassarius papillosus</u>
78	<u>N. monila</u>
79	<u>Thals bufo pice</u>
80	<u>Rapasa bulbosa</u>
81	<u>Mures tenuispine</u>
82	<u>Mole indica</u>
83	<u>Voluta lapponice</u>

<u>Categories of Fauna</u>	<u>Sl.No.</u>	<u>Scientific Name</u>
<u>Molluscs</u>	84	<u>Oliva gibbosa</u>
	85	<u>O. ispidule</u>
	86	<u>O. cliva</u>
	87	<u>Ancilla cinnamomee</u>
	88	<u>Harpa ventricosa</u>
	89	<u>Conus monile</u>
	90	<u>Ostrea virgineana</u>
	91	<u>Ostrea crenulifera</u>
	92	<u>Pinn leieoler</u>
	93	<u>P. asropespurce</u>
	94	<u>Cardita becolore</u>
	95	<u>Cryptudon vesiuile</u>
	96	<u>Villorite cochinensis</u>
	97	<u>Meretrix ovum</u>
	98	<u>Bactroncophonus thoracites</u>
	99	<u>Nausitora durlopei</u>
	100	<u>Bankie rochi</u>
	101	<u>B. campanellata</u>
102	<u>B. carinate</u>	
103	<u>B. nordi</u>	
104	<u>Teles copium</u>	
105	<u>Tyrazus palustris</u>	
106	<u>Ennee bicolor</u>	
107	<u>Helix spp.</u>	
108	<u>Manine spp.</u>	
109	<u>Opis thaporus spp.</u>	
110	<u>Plerocylus spp.</u>	
111	<u>Amphi dromus spp.</u>	
<u>Crustaceans (Crabs)</u>	01	<u>Leander styliferus</u>
	02	<u>L. teanipos</u>
	03	<u>Palaemon mirabilis</u>
	04	<u>Penaeus indicus</u>
	05	<u>P. indicus</u>
	06	<u>Penaeus indicus</u>
	07	<u>P. semisul catus</u>
	08	<u>P. canaliculatus</u>
	09	<u>Metapenaeus monoceros</u>
	10	<u>M. brevicornis</u>

11	<u>M. lysianassa</u>
12	<u>Paraponeus</u>
13	<u>Parapeopsis sculptilis</u>
14	<u>Scylla serrate</u>
15	<u>Cyrybdis oruciate</u>
16	<u>C. annulate</u>
17	<u>C. bimaculate</u>

Crustaceans (Crabs)

18	<u>C. rpstrate</u>
19	<u>Matuta vector</u>
20	<u>Aibunea symniste</u>
21	<u>Emerita emerite</u>
22	<u>Llyoplax</u>
23	<u>Macrophthalmus</u>
24	<u>M. tomertos</u>
25	<u>Olypoda ceratoph thalmai</u>
26	<u>Uca annulipes</u>
27	<u>Uca marionis nitide</u>
28	<u>U. trinoularis</u>
29	<u>Puxidognathus fluviatilis</u>
30	<u>Ptychognathus dentate</u>
31	<u>Sesarma odwardsi</u>
32	<u>S. ouarata</u>
33	<u>S. tetragonum</u>
34	<u>S. taeniolata</u>
35	<u>Sesarma oidens</u>
36	<u>S. oceanica</u>
37	<u>Varuna litterate</u>
38	<u>Metopaciapsus massar</u>
39	<u>Metaplex dentipes</u>
40	<u>M. distincte</u>
41	<u>M. crenulate</u>
42	<u>M. intermedia</u>
43	<u>Clisto caeioma merguieso</u>
44	<u>Bircus latro</u>
45	<u>Macrobrachium dayanus</u>
46	<u>Macrobrachium spp</u>
47	<u>Neosarmantium spp</u>

LIST OF RARE AND ENDANGERED SPECIES

<u>Sl. No.:</u>	<u>N a m e</u>	<u>Scientific Name</u>	<u>Remarks</u>
1.	The Tiger	<u>Panthera tigris tigris</u> Linn	
2.	The Estuarine Crocodile	<u>Crocodilus porosus</u>	
3.	The Water Monitor or Salvator Lizard	<u>Varanus salvator</u>	
4.	Olive Ridley	<u>Lepidochelys olivacea</u>	Marine Turtle
5.	Estuarine Hard- shelled River Terrapin	<u>Batagur baska</u>	Found near Bagna
6.	Gangetic Dolphin	<u>Platinista gangetica</u>	

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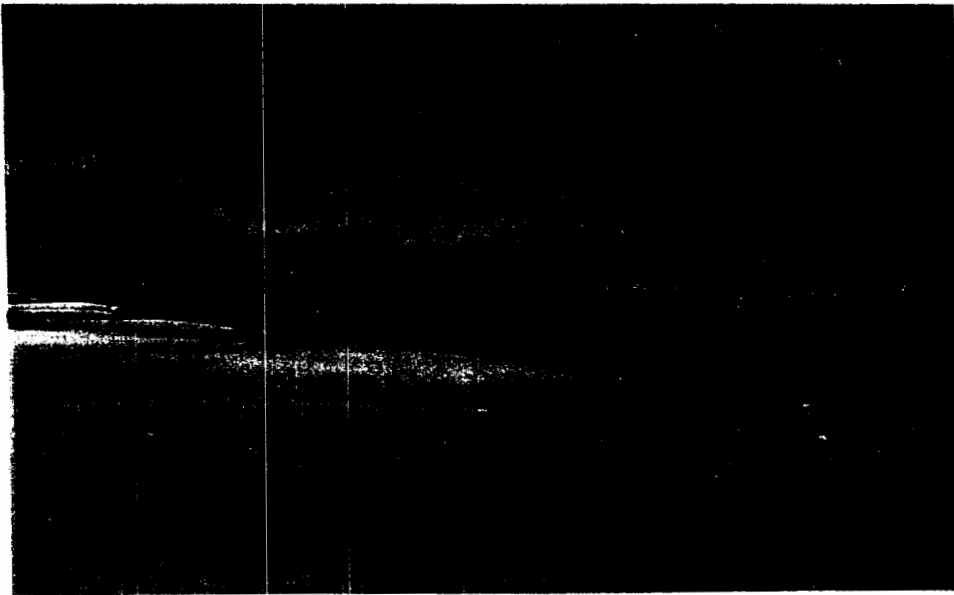
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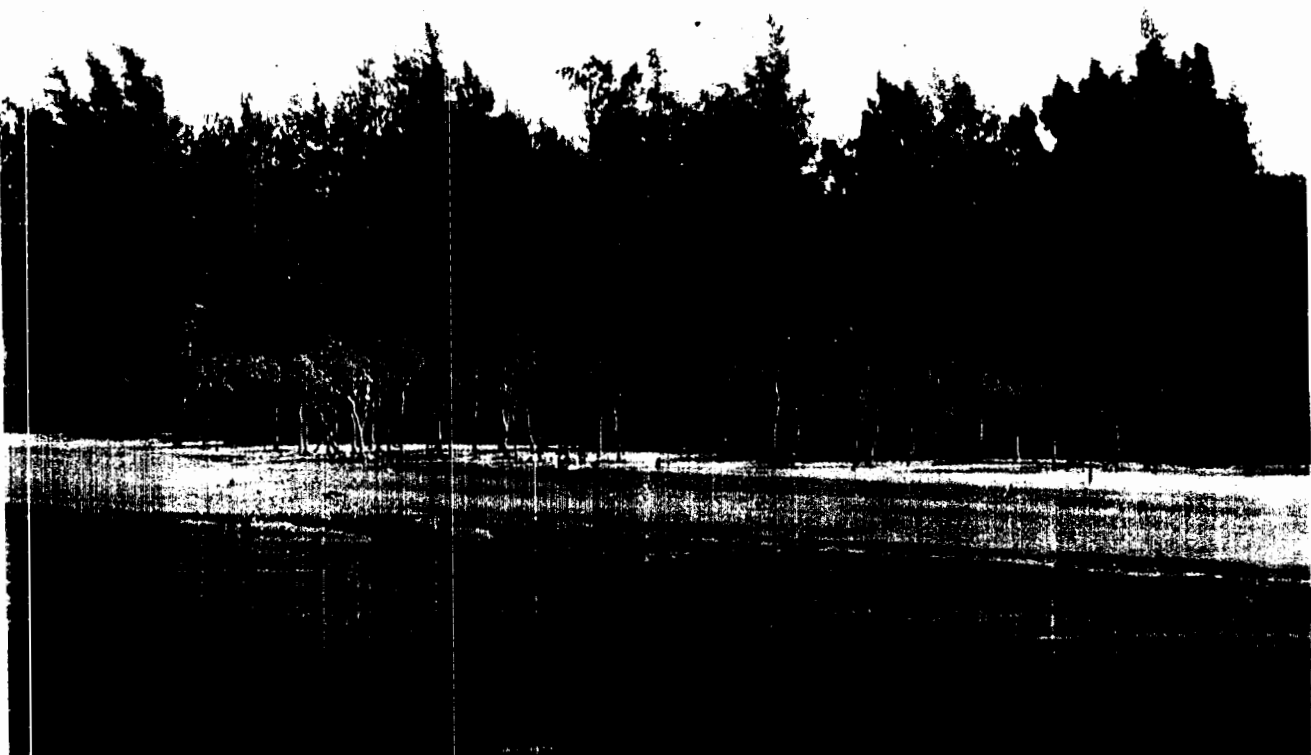
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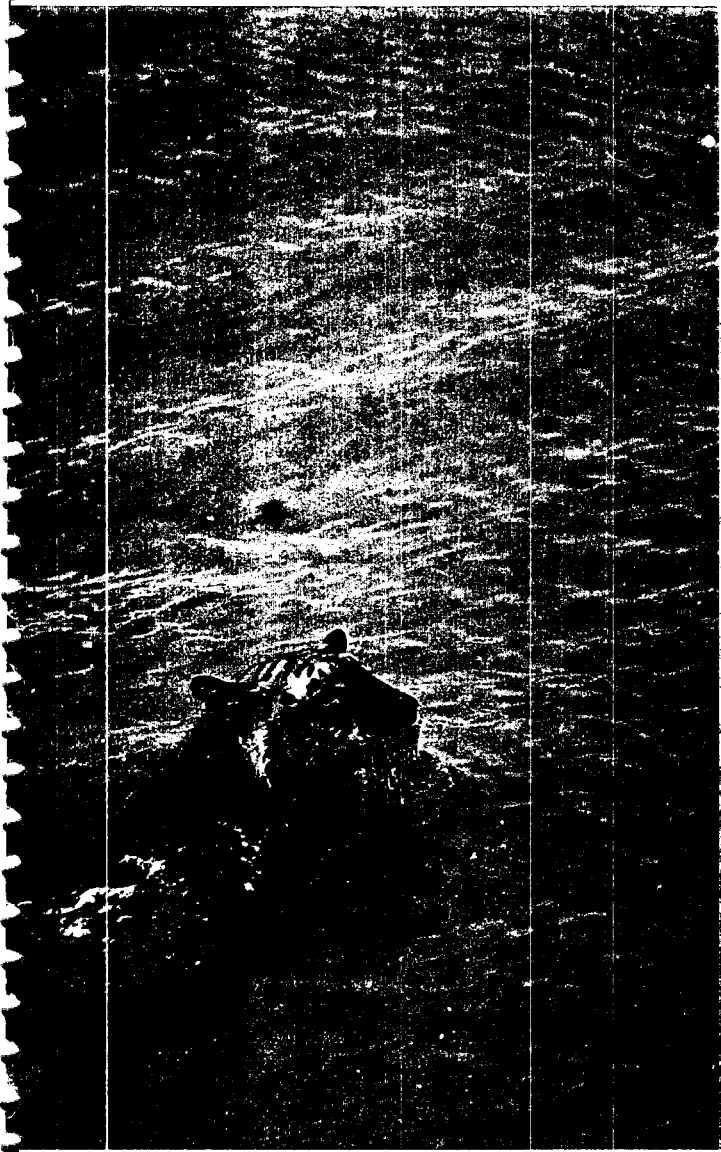
A Glimpse of Sundarban Forests



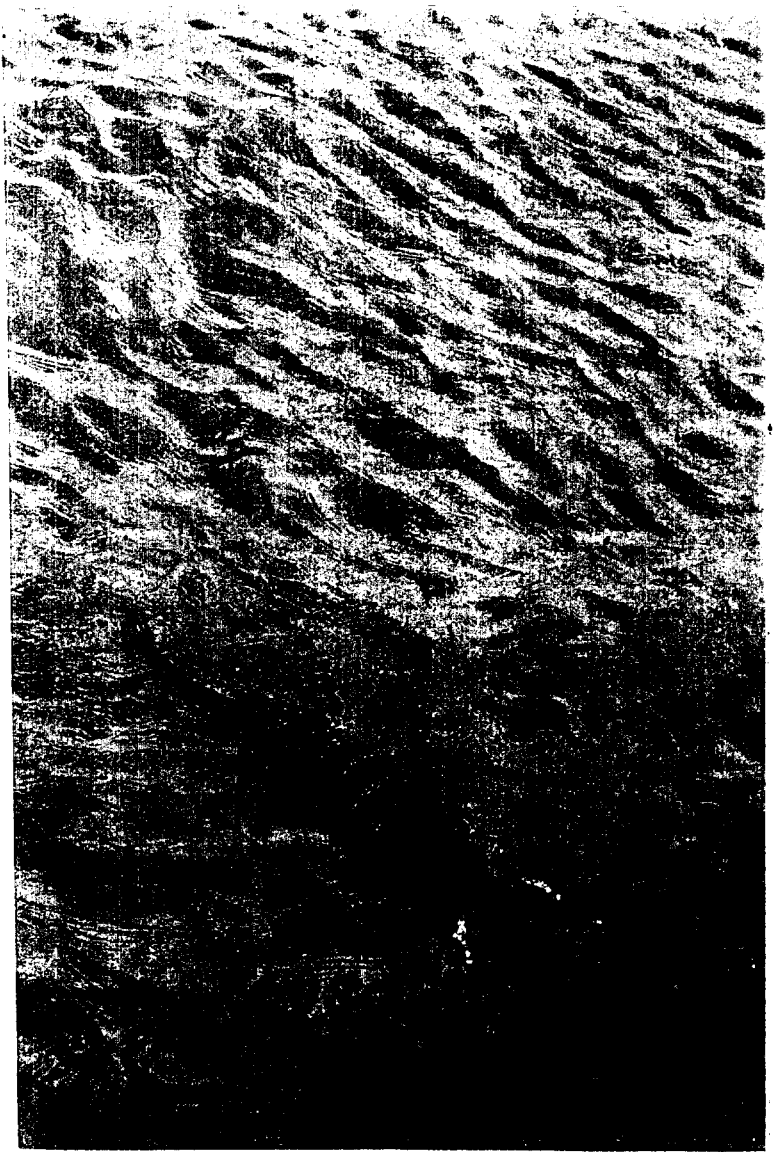
Baghmara sea beach of Sundarban Tiger Reserve



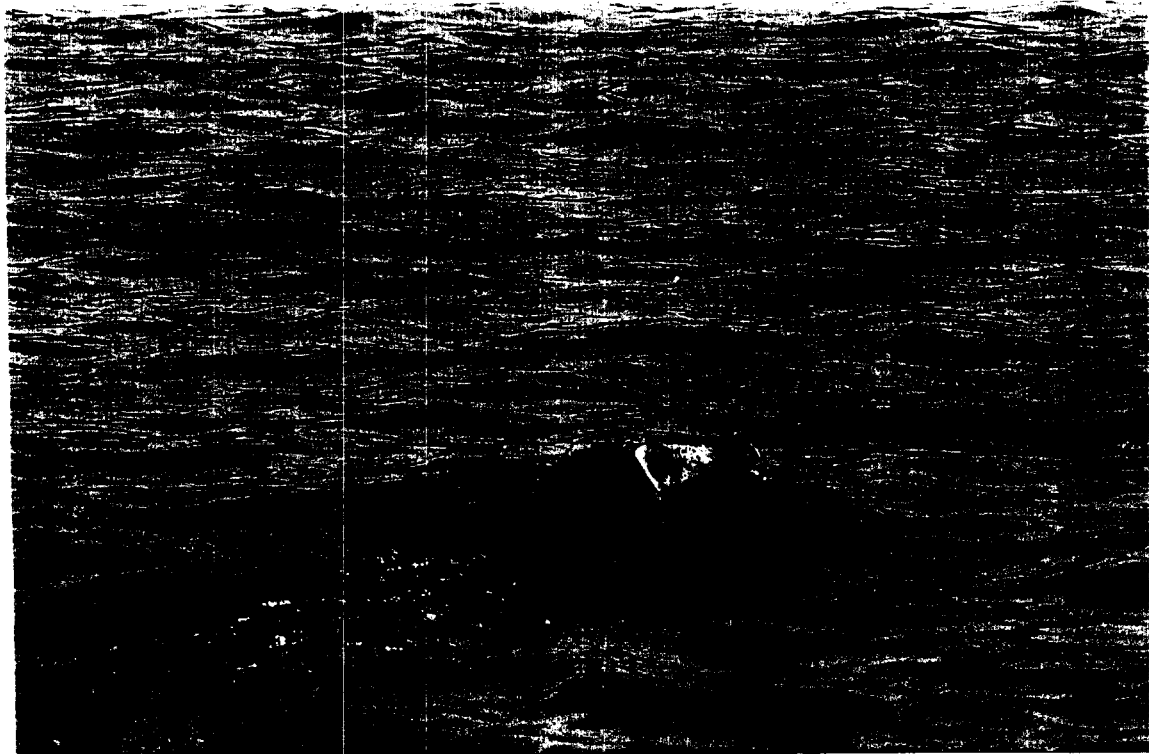
Golpata (*Nypa fruticans*) in Chhanta Block of Sundarbans



Tiger (*Panthera tigris*) is adapted to amphibious life
Sundarban Tiger Reserve



Water Monitor Lizard (*Varanus Salvator*) in Gona River
Sundarban National Park

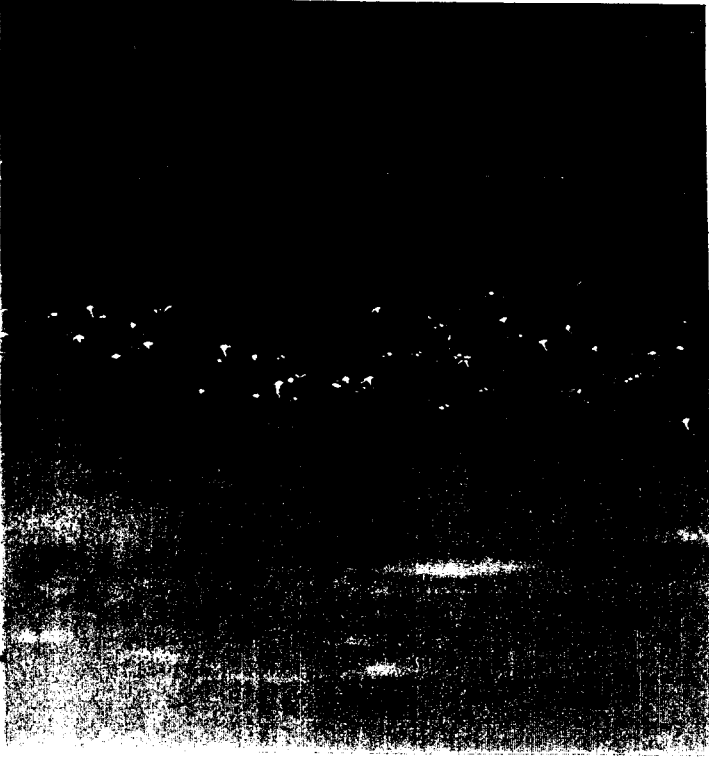


Wild Boar (*Sus scrofa*) crossing a creek of Sundarban Tiger Reserve

An Estuarine Crocodile (*Crocodilus porosus*) on the creek-bank, Sundarbans



Birds in coastal zone of Baghmara, Sundarban Tiger Reserve



'Pit Viper' on a mangrove plant, Sundarbans



A 'Herony' in Jhilla forest, Sundarbans



Fishing Cat (*Felis viverrina*) on a mangrove tree, Sundarbans



Spotted Deer (*Axis axis*) & Rhesus macaque (*Macaca mulatta*) in joint foraging, Sundarban Tiger Reserve

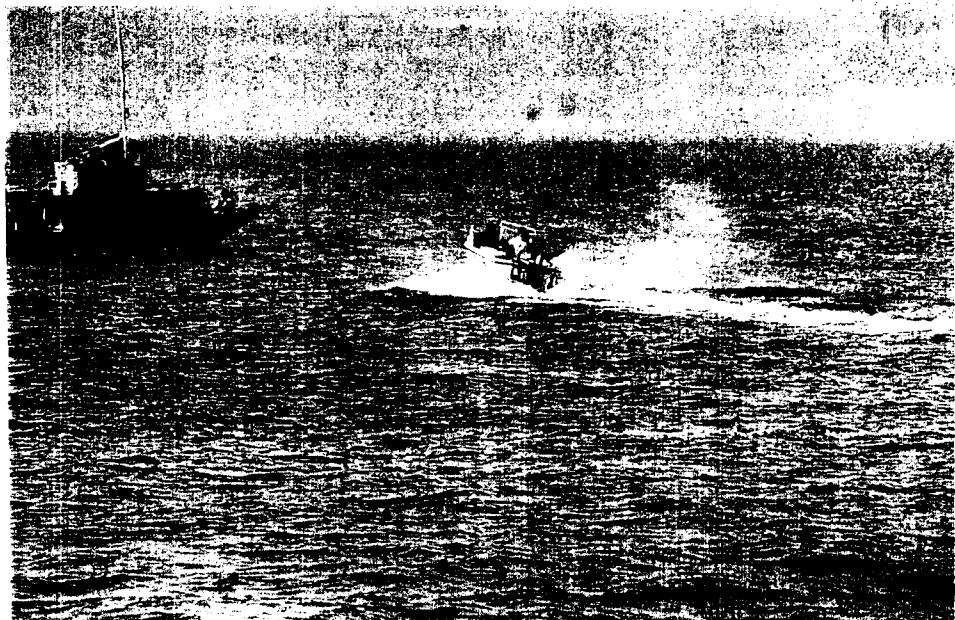




Staff on patrolling over sea-coast areas of Sundarban Tiger Reserve



Staff on patrolling over sanctuary areas of Sundarbans



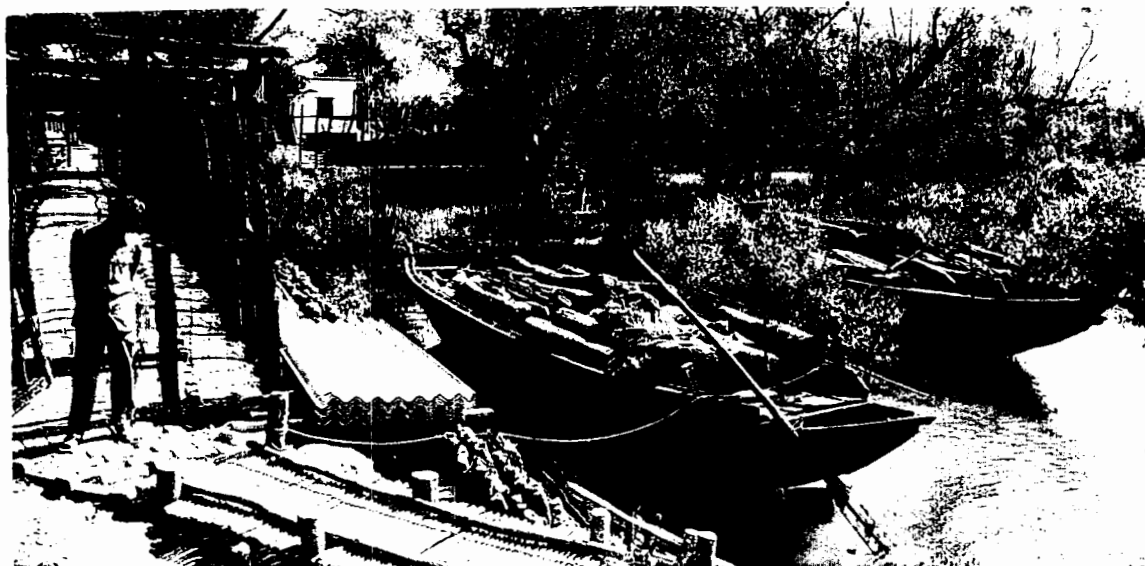
Speedy patrolling over sea-coast areas, Sundarbans



Tiger Prawn (*Penaeus monodon*) collection in the fringe area of Bagna Range of STR



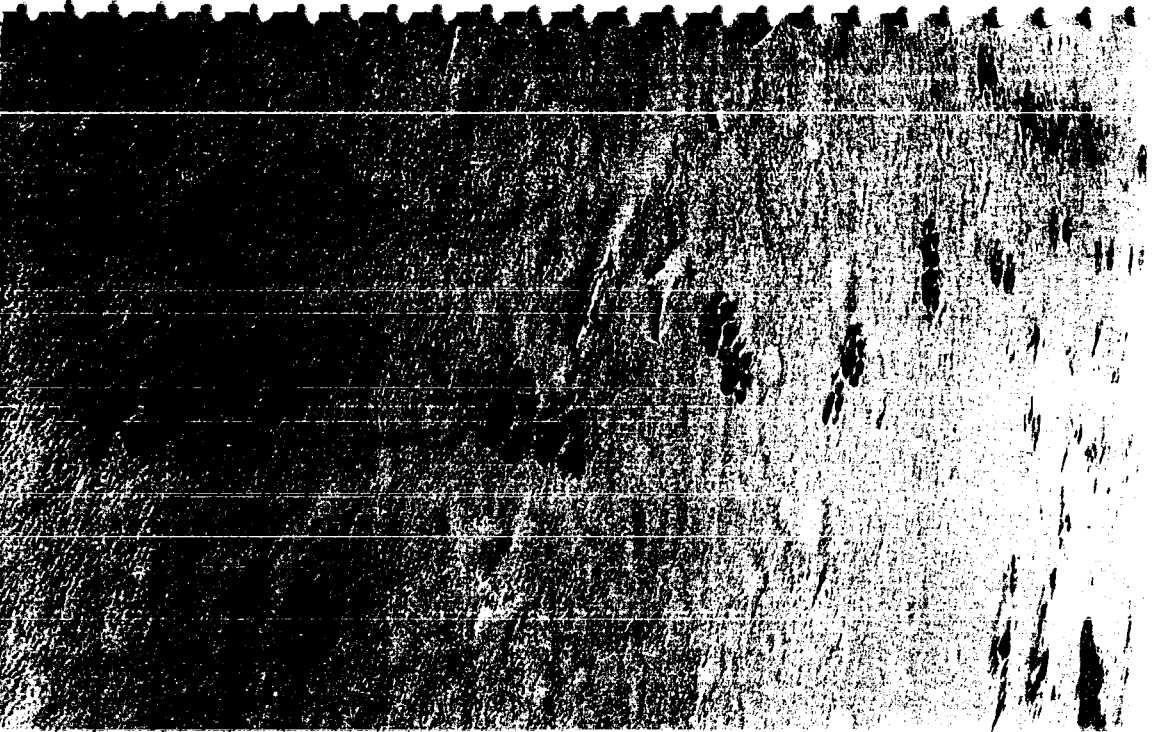
Seizure of animal trap, shooting box, fishing nets etc. by staff of Sundarban Tiger Reserve



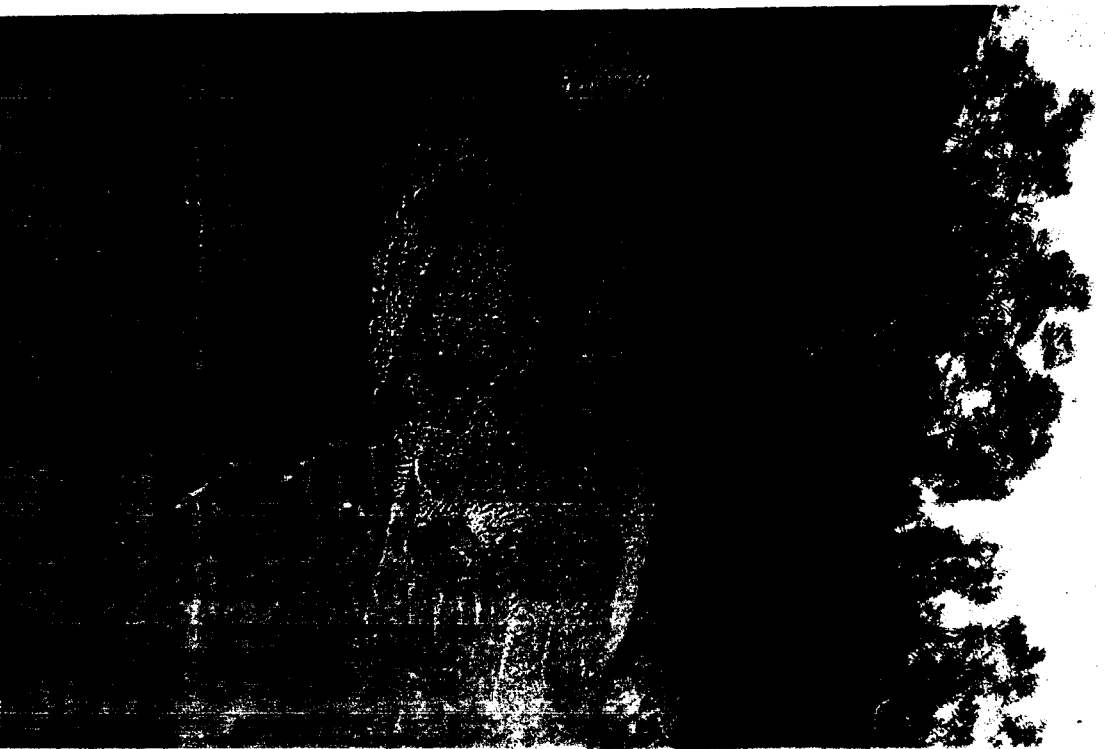
Seizure of motor-boats with timber in Sundarban Tiger Reserve



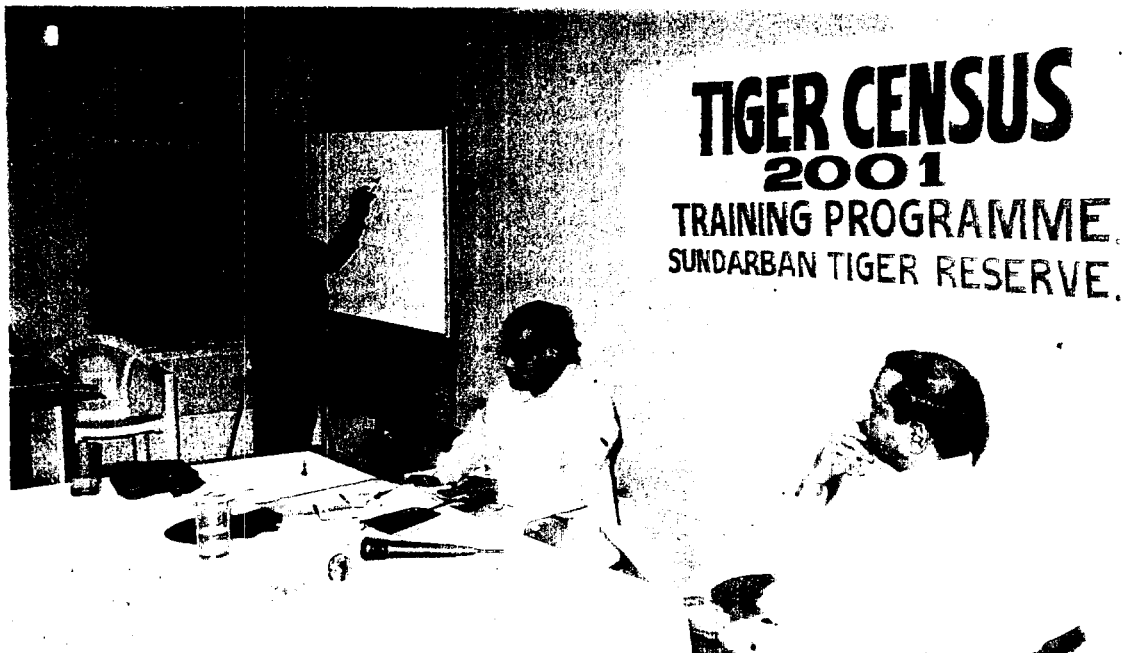
Typical mangrove forests along a creek of Sundarban Tiger Reserve



Tiger Pugmarks on sea-beach, Sundarbans



Tiger Pugmarks on creek-bank, Sundarbans



TIGER CENSUS 2001 TRAINING PROGRAMME SUNDARBAN TIGER RESERVE.

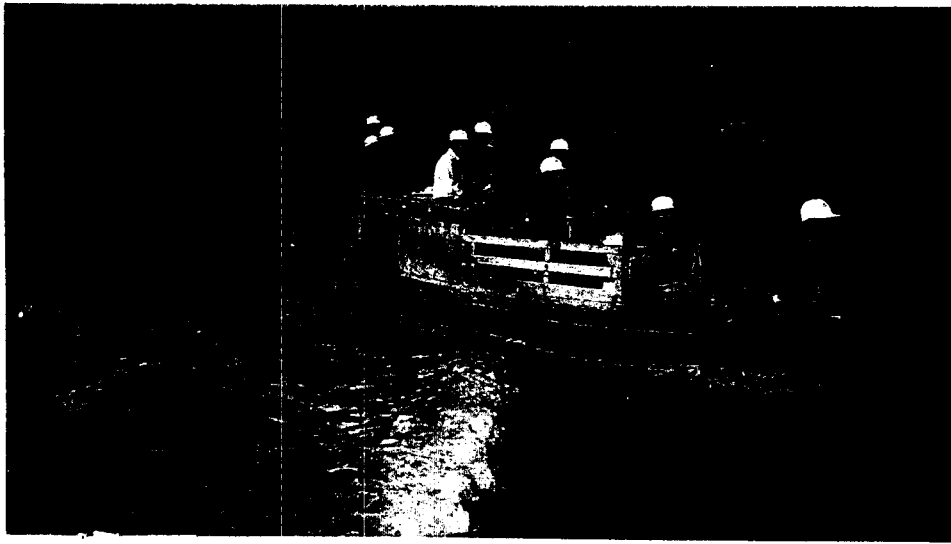
First-phase training programme for biennial Tiger Census Operation



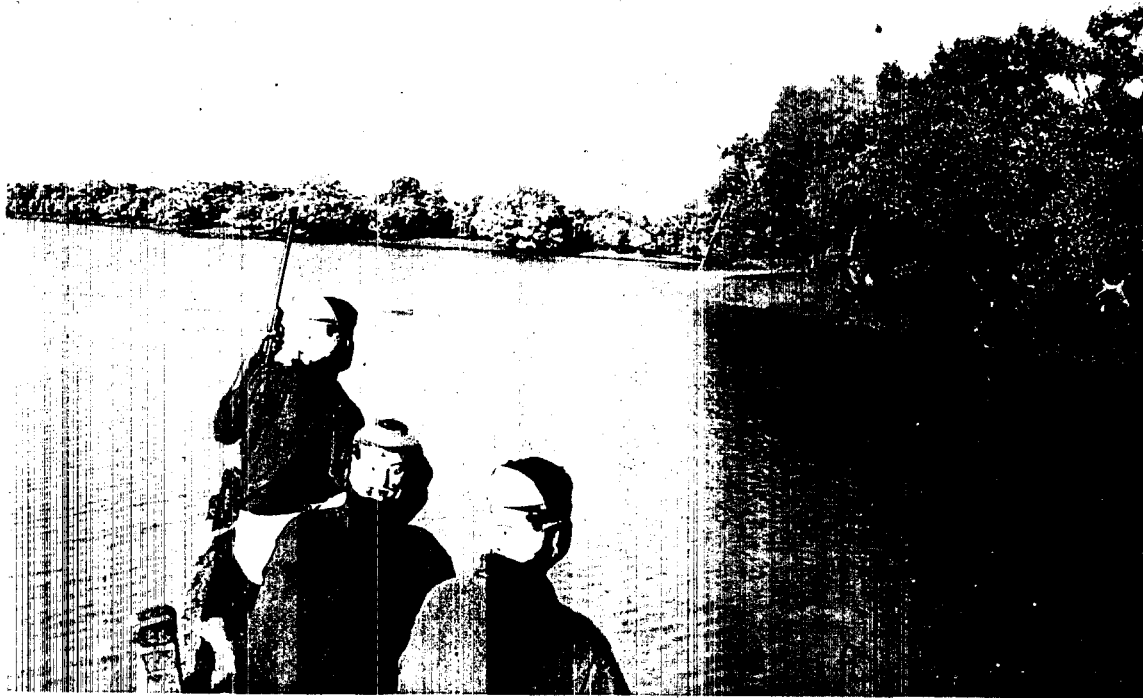
Second-phase elaborate training programme for NGOs & Staff



Pre-census briefing to 23-teams (NGO & Staff) for Tiger Census



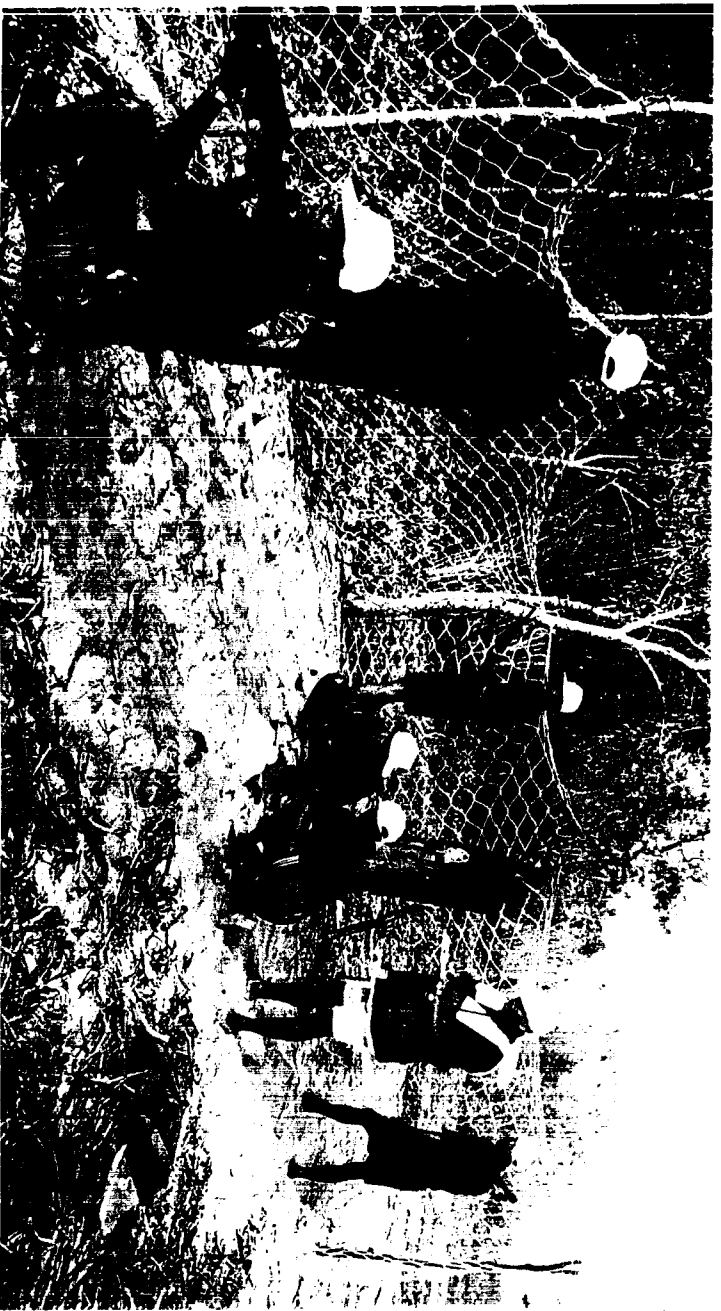
Field Director/STR with a Tiger-Census team,
proceeding to 'Core Area' of Sundarban Tiger Reserve



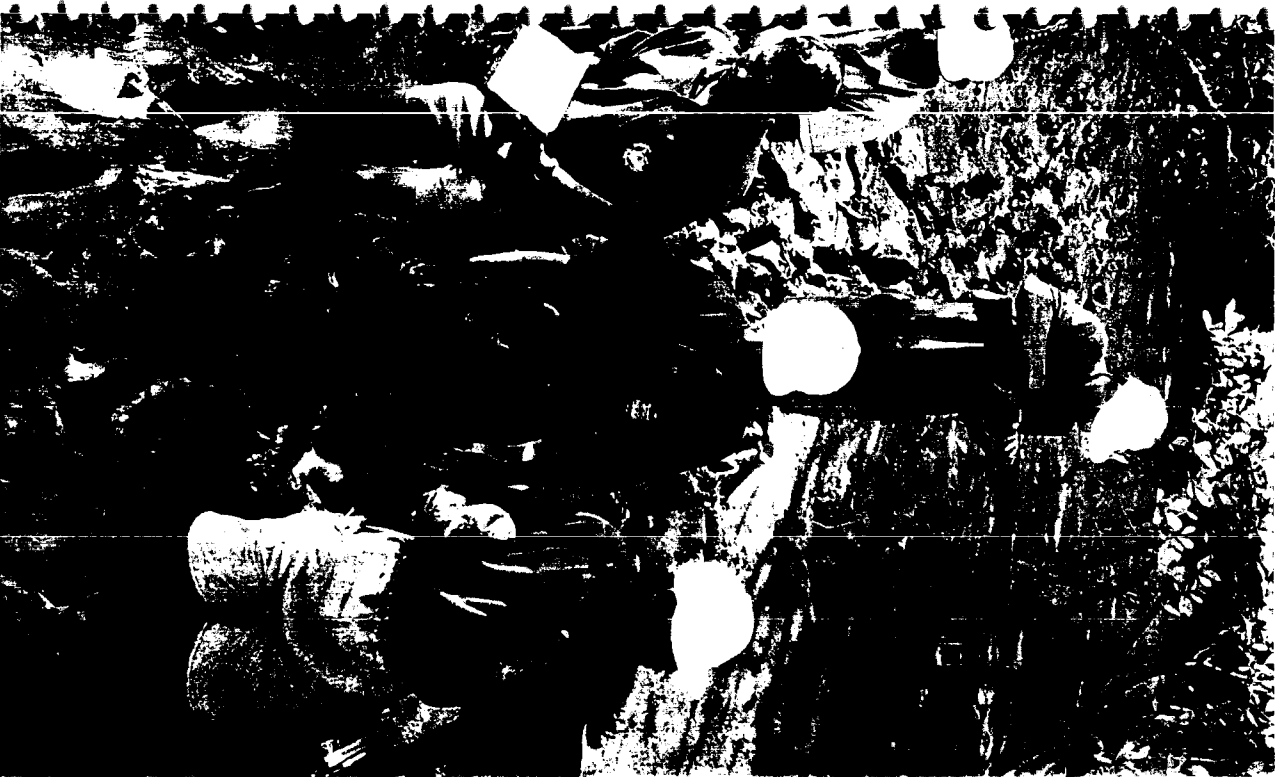
A census team prior to entering a creek, wearing 'mask' to avoid tiger attack from behind



A Census Team with NGO's at late lunch after finishing the field work



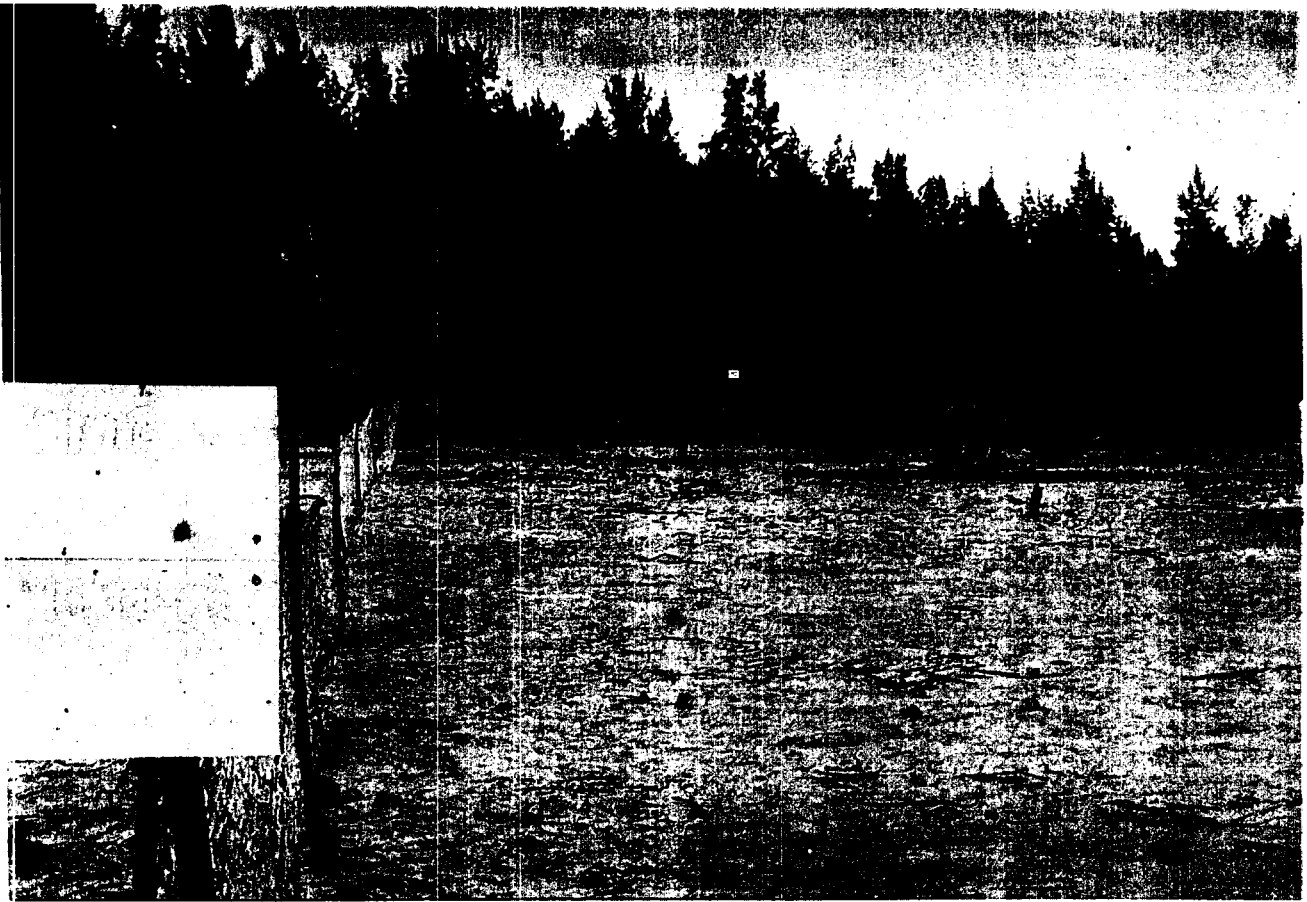
Tiger census field works being carried out by a team in Sundarban Tiger Reserve



A plaster-cast being taken out from the difficult terrains of Sundarban Tiger Reserve



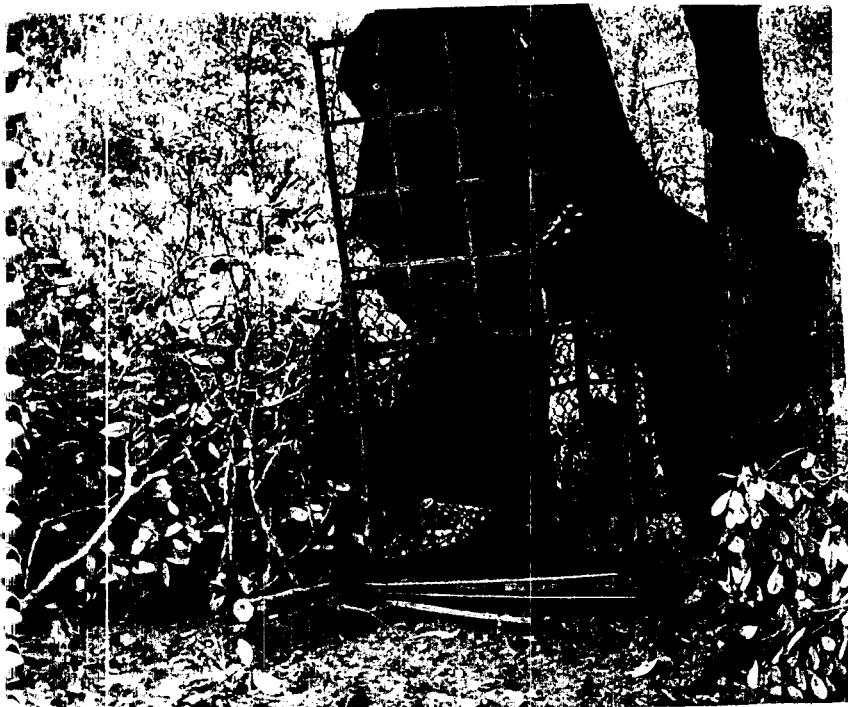
Laboratory works for the Tiger Census Operation in Sundarban Tiger Reserve



In site protection measures for sea-turtle eggs from predation by Wild Boar & Monitor Lizard at Baghmara sea-beach, Sundarbans



Beat Officer & Staff marking a nesting pit of Olive Ridley Sea Turtle at 'Mechua' sea-beach of Sundarban Tiger Reserve



Strayed Tiger, captured near forest fringe, is being released in 'Core Area' of Sundarban Tiger Reserve



Relaxed rescued Tiger in 'Trap Cage' prior to its release in wildlife



Goran-stick fencing along forest boundaries in the risk zone of tiger straying in Sajnekhali Wildlife Sanctuary



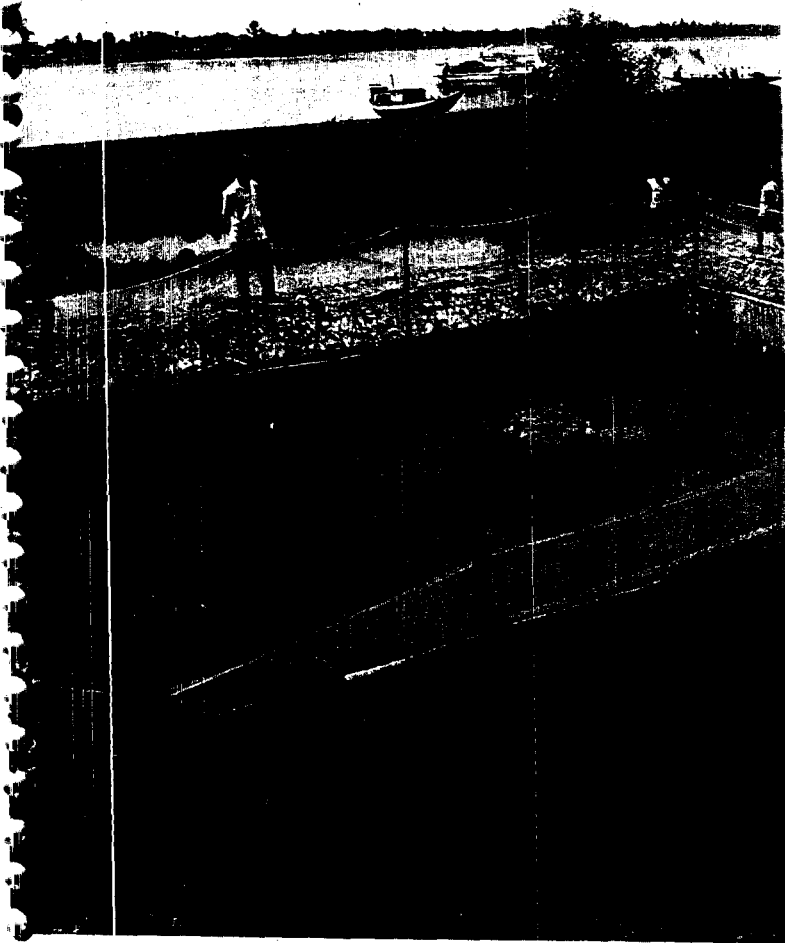
A combination of 'Nylon Net' & 'Goran Fencing' in high risk zone of tiger straying



Brick road with avenue plantation in remote fringe village;
created by Sundarban Tiger Reserve to Eco-develop the area



Agro-irrigation channel being dug up by Sundarban Tiger Reserve

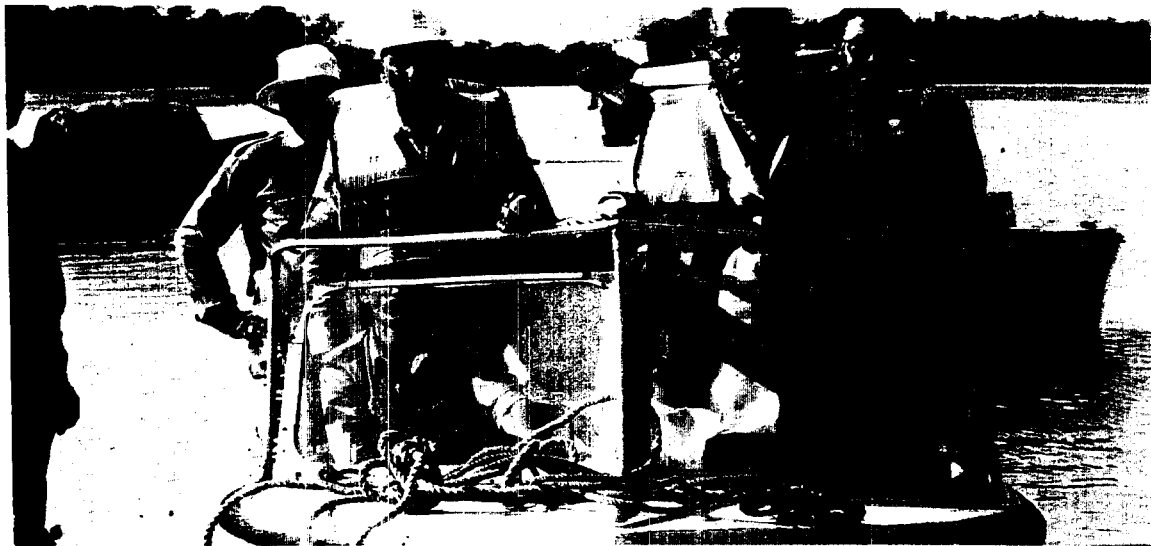


"Crab fattening demonstration farm" by Sundarban Tiger Reserve to impart training to FPC members

Fringe-villagers being involved in micro planning as participatory management practices in STR



Indira Gandhi National Forest Academy Probationers with Director on "Management Tour" In Sundarban Tiger Reserve



Minister in-Charge, Forests, West Bengal, accompanied by FD/STR, during his tour over Sundarbans



Minister in-Charge, Forests, WB's visit to the sea-face zone of Sundarban National Park (WHS)



Director & Probationers from Indira Gandhi National Forest Academy on educational trip in one of the Forest Protection Committee of Sundarban Tiger Reserve