Conservation and Sustainable Use of Tropical Peat Swamp Forests and Associated Wetland Ecosystems

LOAGAN BUNUT NATIONAL PARK

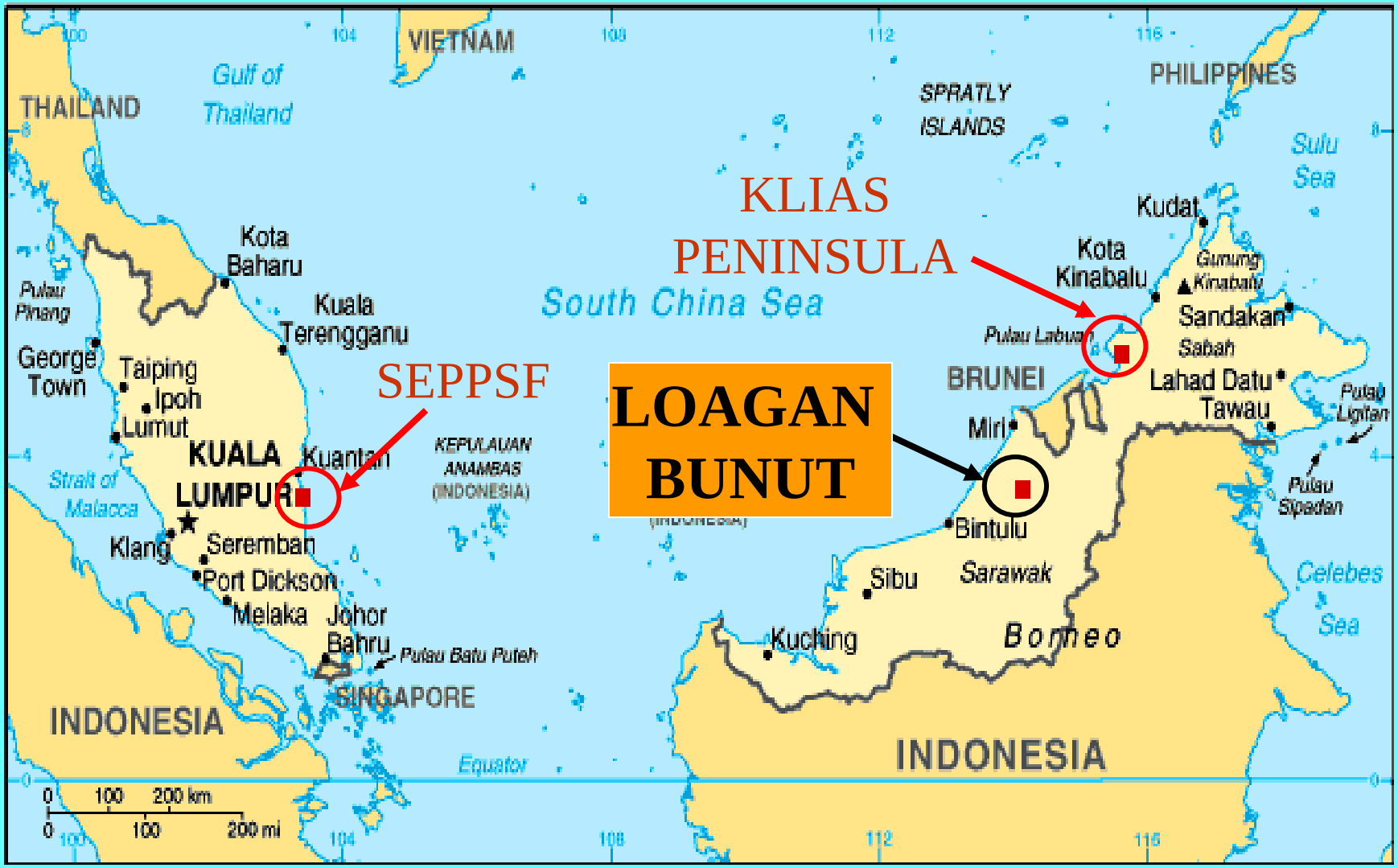
Alexander K Sayok
(Formerly National Expert)

Cherating, Kuantan, Pahang **10 July 2012**

Presentation Outline

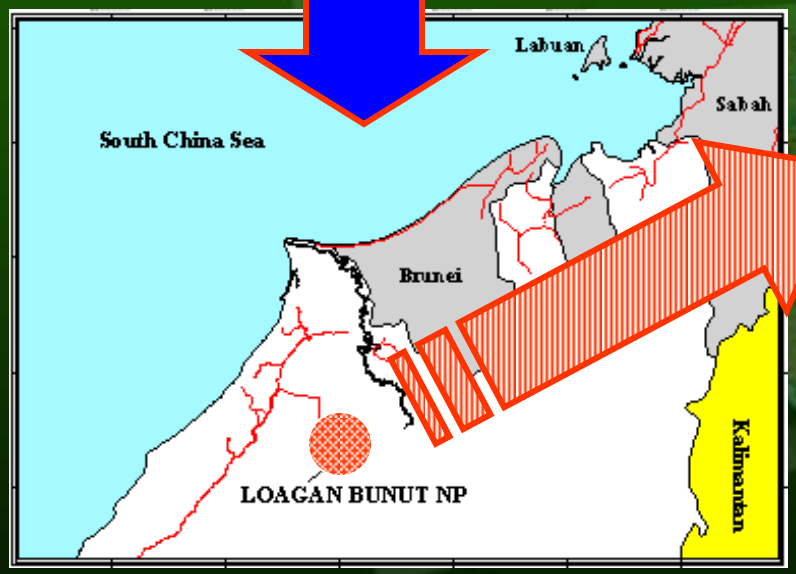
- Background on Loagan Bunut
- Issues and Threats to Loagan Bunut
- Strategies: Project Intervention
- Project Impacts

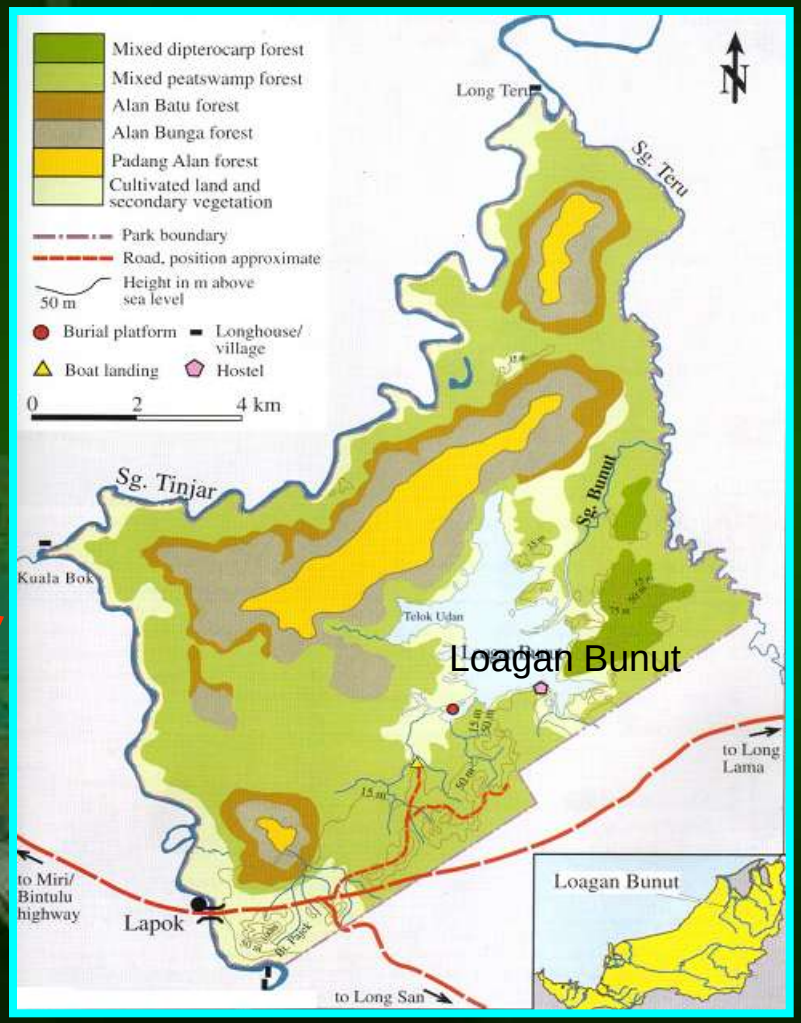
LOCATION


VIETNAM
THAILAND
Gulf of Thailand
SPRATLY ISLANDS
PHILIPPINES
Sulu Sea
KLIAS PENINSULA
South China Sea
Kota Baharu
Kuala Terengganu
Pulau Pinang
George Town
Taiping
Ipoh
Lumut
SEPPSF
KUALA LUMPUR
Kuantan
KEPULAUAN ANAMBAS (INDONESIA)
LOAGAN BUNUT
Strait of Malacca
Klang
Seremban
Port Dickson
Melaka
Johor Bahru
Pulau Batu Puteh
SINGAPORE
INDONESIA
Equator
Kudat
Kota Kinabalu
Gunung Kinabalu
Sandakan
Sabah
Pulau Labuan
BRUNEI
Lahad Datu
Tawau
Pulau Ligitan
Miri
Pulau Sipadan
Bintulu
Sibu
Sarawak
Celebes Sea
Kuching
Borneo
INDONESIA
0 100 200 km
0 100 200 mi

Location of Loagan Bunut

-LBNP was gazetted in July 1990
-10,736 ha
  -80% PSF,10% MDF,10% others (gardens, settlement, road, etc)
-640 ha Lake is located in the middle of LBNP





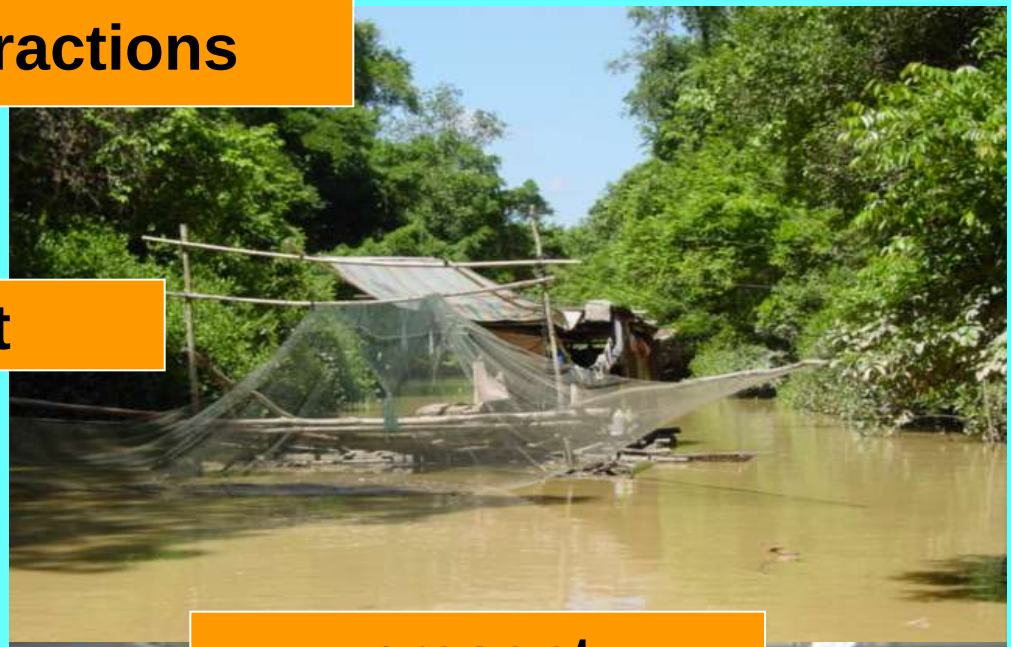
Location Of Project Site

Scenic view

Drought –
560-ha mudcrust

Cultural attractions

past

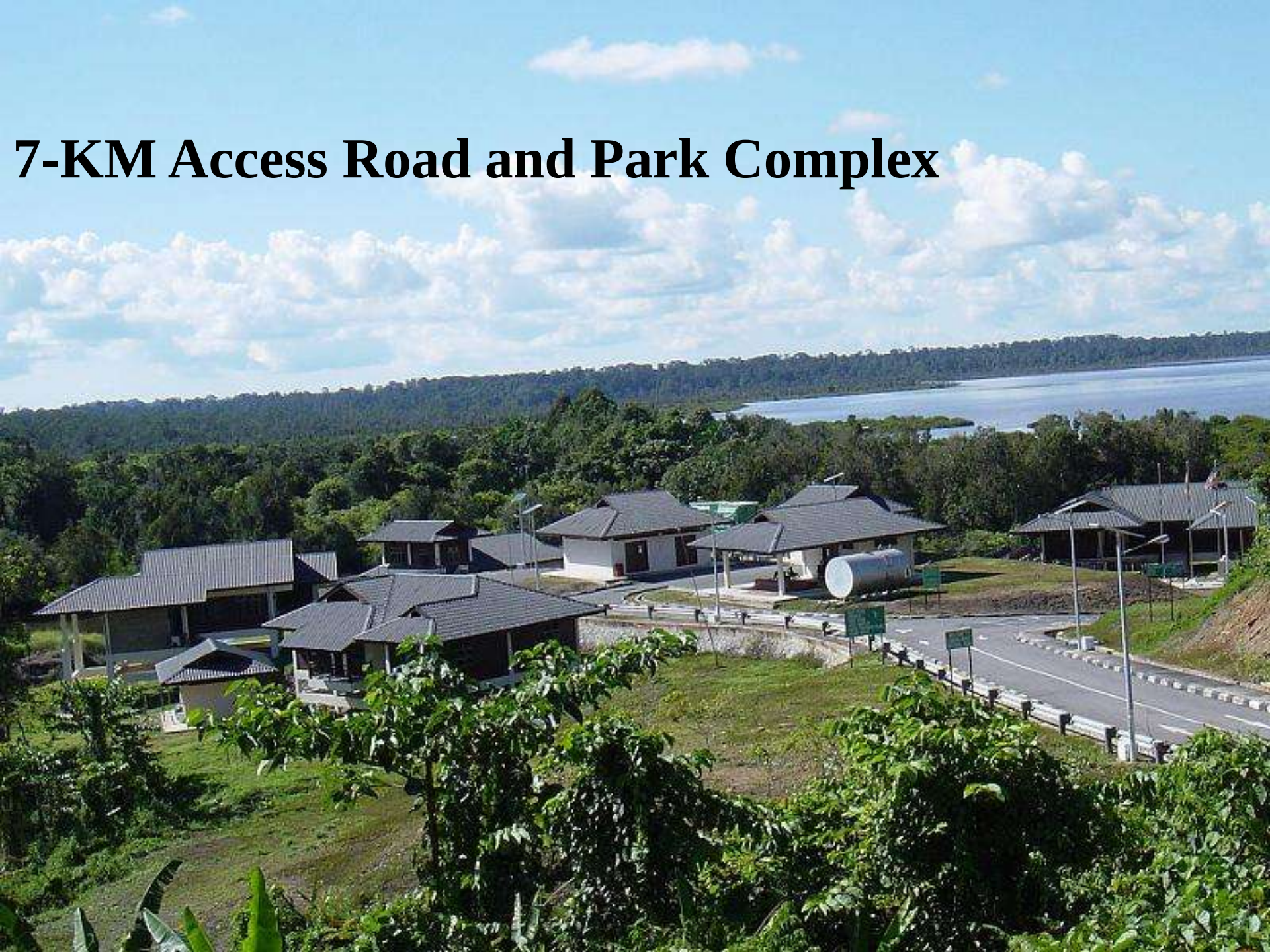


present

Private Resort

Private Lodges

7-KM Access Road and Park Complex



STUDIES IN LOAGAN BUNUT

Rich Biodiversity

~25,000 flying foxes

-sambar deer, wild boar, barking deer, mouse-deer, monkeys

-20 sp amphibians, 30 sp reptiles

-187 sp. of birds, 36 sp. bats

-70 sp of fish

-231 sp. moths and butterflies

Threats & Issues

- Water moderately polluted- low DO, high nutrient &TSS, unpleasant odour, algal growth
- Sediment accumulation 40mm/yr (100 times) since 1980s, 350 ton/day
- Fast water level fluctuation
- Vast land use development upstream
- Decrease in Fish Catch per unit effort
- Decrease in fish species, Dominance of Biawan
- Encroachment

Possibility of complete dissapearance??

<u>Hydrology</u>

-Difference in maximum discharge and baseflow increased

-Increased fluctuation in water levels

<u>Sediment</u>

-increase in sediment due to increase in frequency of inflow

Lake - 2,800 ton/yr ~ 280 truck (10 ton lorry)

-Build up of 63mm/year (higher at northwest)

Bunut River– 1,121 ton/yr

-mostly near to Sg Teru confluence

(elevated 2 m within 30 years)

Bunan River – 20 to 30 ton/yr

Conservation Targets
1. Peat Swamp Forest (7,986 ha) – 73.98%

Stresses:

- **Clearance & arrested succession**
- **Harvesting, resource competition & defected succession**
- **Isolation, loss of recruitment potential**
- **Peat soils & hydrological change**

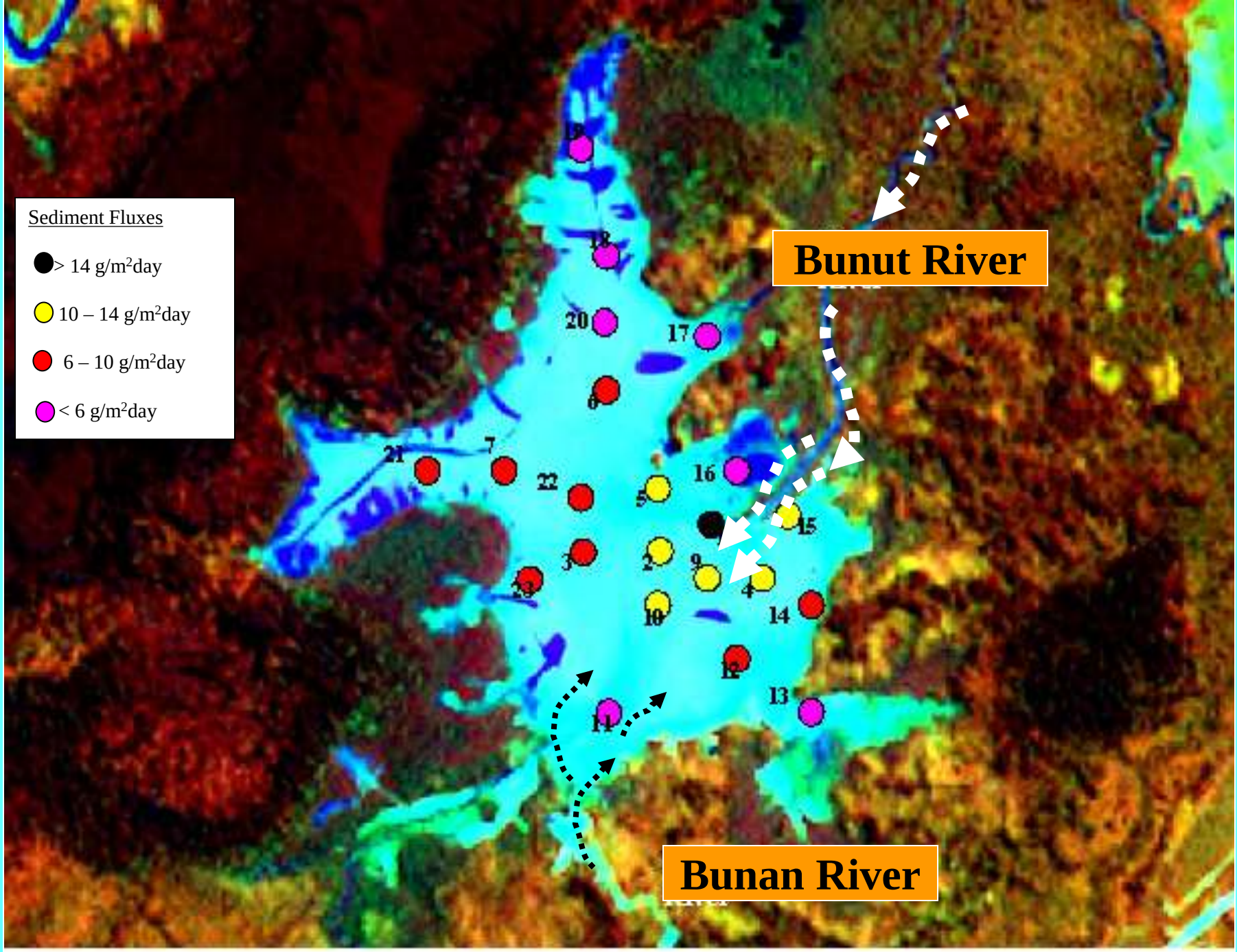
Conservation Targets
2. Riverine and Lake Areas (1,110 ha) - 10.29%

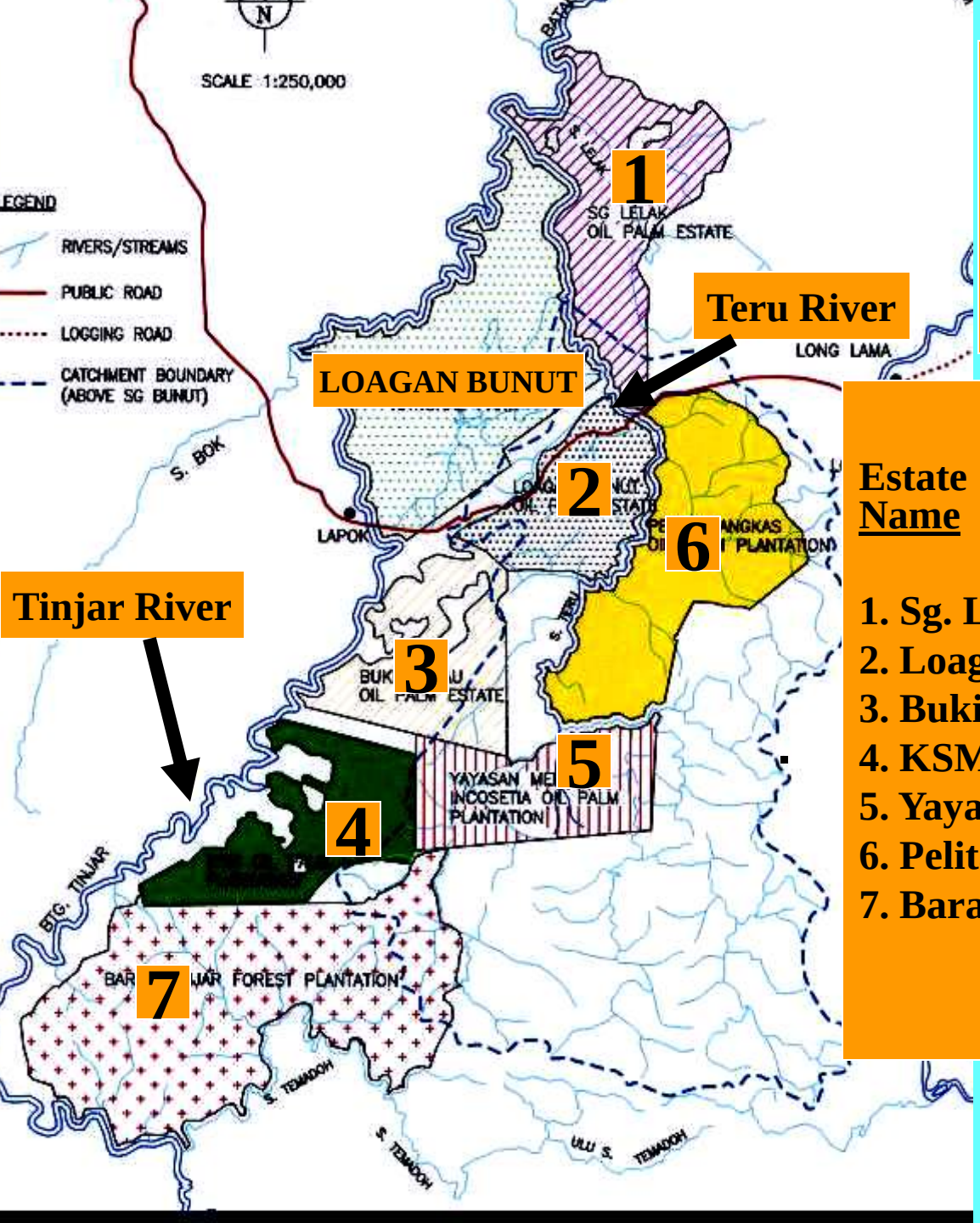
Stresses:

- **Siltation**
- **Eutrophication**
- **Hydrological change**
- **Resource depletion – fisheries**

Lake: 0 – 0.3 m
Eutrophication

Exposed *Cyperus* grass bed


Sediment Fluxes
> 14 g/m2day
10 – 14 g/m2day
6 – 10 g/m2day
< 6 g/m2day
Bunut River
Bunan River
19
18
20
17
6
21
7
22
5
16
15
3
2
9
4
23
10
14
12
13
11



- Sg Teru watershed
- -54,300 ha;
  -alienated 19,000 ha under 7 plantations

Estate Name	Gross Area (hectares)	Area within Sg Teru (hectares)
1. Sg. Lelak	3,734	813
2. Loagan Bunut	4,190	3,484
3. Bukit Limau	4,827	109
4. KSM	5,000	250
5. Yayasan Melaka	5,000	4,691
6. Pelita Tangkas	8,000	8,000
7. Baram Tinjar	15,105	1,850
Total	38,441	19,197

2007/12/13

Helostoma temminckii

Osphronemus goramy

Notopterus borneensis

Oxyleotris marmorata

Conservation Targets
3. Mixed Dipterocarp Forests (1,698 ha) - 15.73%

Stresses:

- Altered forest structure
- Clearance & arrested succession
- Isolation, loss of recruitment potential
- Harvesting, resource competition & deflected succession
- Nutrient change
- Soil damage

Sources of Stresses across all systems

- **Commercial logging** **(1960's – 2,953 HPG=36.07% HPG LBNP/27.37% LBNP)**
- **Land development & operations**
- **Local community settlement and cultivation**
- **Non-timber forest product (NTFP) collection**
- **Park management & development activities**
- **Recreational, research & education use**

STRATEGIES (SUMMARY)

- **At a Landscape level**
  - **To ensure a sufficiently large area of ecotypes similar to those present within the park are protected in the surrounding region. This is to ensure effective 'biological corridors' are secured and managed to link park to similar ecotypes in surrounding region.**

STRATEGIES (SUMMARY)

- **At the local level**
  - **To minimize extent of land clearance and disturbance in remaining natural areas adjacent to and surrounding the park;**
  - **To control quality of water in Sg Teru catchments and minimize soil and nutrient loss from land-use practices;**
  - **To ensure hydrology in Sg Teru is not altered.**

STRATEGIES (SUMMARY)

- **At park site**
  - **Boundary –survey/establish, & map;**
  - **To enforce relevant ordinance;**
  - **To establish mechanisms to regulate sustainable resource use;**
  - **To establish adaptive management systems;**
  - **To promote and develop appropriate visitor recreation opportunities.**

Strategies proposed to address Conservation management objectives for LBNP

1. Acquire resources for effective and efficient management
2. Develop local community recognition and ownership of Park ideals
3. Promote environmental quality management in the Teru Catchment
4. Develop Standard Operating Practices
5. Promote alternative income sources
6. Mark and maintain Park boundary
7. Promote biodiversity conservation objectives
8. Promote sustainable use of NTFPs with the local community
9. Practice Reduced Impact Logging in surrounding forests
10. Ecological Restoration Plans
11. Park patrolling and law enforcement
12. Survey, mapping and marking
13. Best practice planning, design and maintenance
14. Visitor Use Management Strategy

PROJECT IMPACTS

1. Wetlands Management Committee as SPSC

Sarawak already has State WMC chaired by State Secretary and during its meeting in October 2002, it was agreed that WMC also as SPSC to supervise project implementation.

INTEGRATED MANAGEMENT PLANS AND IMPLEMENTATION

LBNP Management Plan **- 59 management actions, most for state implementation to address threats to conservation of park ecosystems such as sedimentation and pollution.**

- IMP as a major reference for decision-making on land use and other development in surrounding areas.

Addressing Native Customary Right :

- **Support and participation of local communities, Berawan as original inhabitants, are prerequisites to conservation and sustainability of park.**
- **Project assisted management in resolving NCR of original Berawan in Long Teru shifted to park after longhouse destroyed in 1998. Contention over status hampered efforts to promote co-management of park.**
- **Under WMC, meetings and consultations led to involvement of SAG who granted recognition on Rumah Loagan Bunut, provided rights and obligations to conservation and wise use in park be formulated.**
- **Project helped develop document identifying "*Dos and Don'ts*" in consultation with communities.**

Community Fishery Regulation

-Project facilitated intensive consultations with Berawan community to revive their traditional fish harvesting regulations as a way of preventing any further decline in fish population.

-State Government had endorsed the revised regulations.

LBNP Special Park Committee

- Parks & Nature Reserves Ordinance & Wildlife Protection Ordinance regarding locals' traditional rights & privileges, SPC is to allow participation in management of park.
- Committee provides platform for collaboration in managing protected area & serves as mechanism where benefits can be channeled to locals.

-Project initiated this committee in 2003, with appointment of committees in 2004. (Members consisted all stakeholders incl. park management, local leaders, government agencies, NGOs & reps of nearby estates)

Addressing Lake Pollution

- Pollution was main threat to its sustainability - discharge of untreated wastewater discussed with all stakeholders.

- Under IMP implementation, Project introduced ecological sanitation (ECOSAN) to treat greywater before discharging to lake. System diverts greywater from park facilities into biofilter system with impermeable lining to prevent leakages into groundwater.

- ECOSAN was effective as no foul odour detected from canteen verandah and no green algae near drain outlets.

-State & M of NRE installed trapping device for wastes from quarters & conference room along with water supply.

- Modified concept (biogas) was installed at Rh. Loagan Bunut near Sg. Bunan, upstream of the lake.

- Medical Dept also installed pipe at each household to channel kitchen wastewater to filtering device.

Addressing Lake Sedimentation

- most critical discussed by inter-agency Management Plan Core Team (MPCT) during IMP formulation. Also highlighted to NREB and WMC. Loagan Bunut Scientific Expedition in 2004 (LBSE04) reported:

An alarming rate of sedimentation in lake due to erosion, from land development activities in upstream areas, beyond jurisdiction of park. The sediment flux can cause main inlet and outlet of the lake be silted very quickly, leading to alteration of entire ecosystem of Loagan Bunut.

Among others, Project had joined NREB in inspections, reviewed EIA status of plantation upstream, and co-organised training workshops on hydrology and soil conservation for plantation managers.

Situation has yet to improve and therefore more concerted efforts by SFC and NREB required to address the matter.

THANK YOU

FOR YOUR PARTICIPATION

Working with local community and stakeholders

Special Park Committee

Formation of Rakan Loagan

Fishery Management Committee

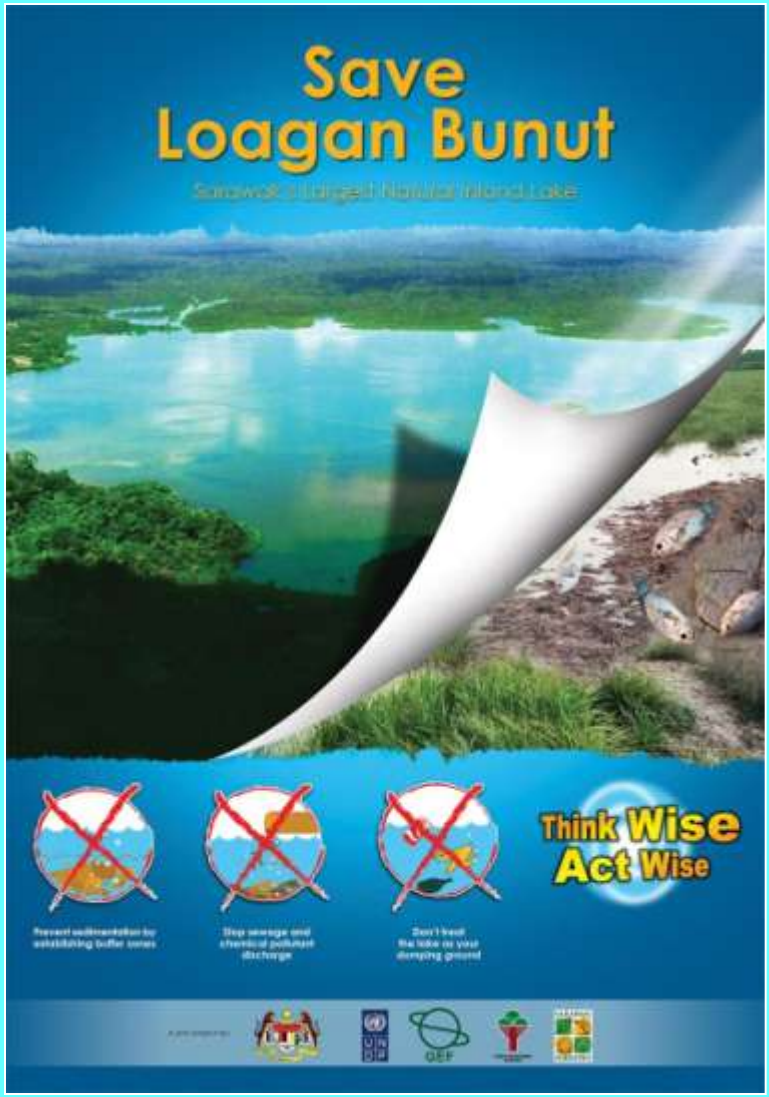
Working with stakeholders

Dialogue on land issues and local

Environmental and Awareness Programs

Articles in the form of posters, pamphlets, books are circulated to enhance the awareness on PSF

Poster & Brochure



Poster

Brochure (front & back)

PERIKSAAN

Perikshaan ini di-tujukan kepada orang2 yang di-bawah jagaan Tua Kampong Kajan Sigah, Long Teru, Tinjar.

1. Barang siapa yang di-dapati memukat di- Loagan Bunut dan di-Sungai Bunan apabila tanda di-Long Sot sudah keluar atau air di-tengah Loagan Bunut lima kaki dalam nya lagi salu kering, orang itu ada lah di-anggap melanggar aturan atau adat.

2. Barang siapa yang di-dapati memukat di-Loagan Bunut dan di- Sungai Bunan walau pun air besar atau masok, apabila tanda yang di-Long Sot belum masap atau air di-tengah Loagan Bunut belum sampai lima kaki dalam nya orang itu ada lah di-anggap melanggar aturan atau adat.

3. Barang siapa di-dalam rumah panjang membenar orang asing mengail, menjala, memukat atau sa-bagai nya di-Loagan Bunut dan kawasan sa-keliling nya akan barang asing itu pergi sendiri dengan tidak bermufakat terlebih dahulu dengan Tua kampong, komiti yang memegang adat Loagan Bunut atau komiti2 rumah panjang orang itu ada lah di-anggap melanggar aturan atau adat.

4. Barang siapa yang di-dapati pakai motor mudik Sungai Bunut dan Loagan Bunut melainkan daripada orang yang kena kemusahan atau hal dan orang yang buat datang lah nyalahan apabila tanda yang di-Long Bunut sudah keluar, orang itu ada lah di-anggap melanggar aturan atau adat.

5. Barang siapa yang di-dapati pergi pindah nyahanbau ka-hulu atau ka-hilir memakai palantek orang lain dan bukan palantek nya sendiri orang itu ada lah di- anggap melanggar aturan atau adat.

6. Barang siapa di-dalam rumah panjang di-dapati menangkap ikan di- Loagan Bunut memakai pukat atau selambau orang asing (orang yang tidak berhak) orang itu ada lah di-anggap melanggar aturan atau adat.

7. Barang siapa yang di-dapati menebok kayu di-suka selambau nya orang itu ada lah di-anggap melanggar aturan atau adat.

8. Barang siapa yang di-dapati pergi menjala, memukat dan berburu di-batang Sungai Bunut dan Sungai Bunan terlebih dahulu daripada orang ramai, apabila air di-Loagan Bunut sudah habis atau sudah kering dengan tidak bermufakat dengan Tua Kampong atau komiti yang memegang adat Loagan Bunut atau komiti2 rumah panjang orang itu ada lah di-anggap melanggar aturan atau adat.

9. Barang siapa di-dapati menangkap atau mengumpul ikan dan ikan yang di- tangkap atau di-gempos nya itu tidak habis di-makan atau di-peliharo nya, ikan itu di-buang nya sahaja orang itu di-anggap melanggar aturan atau adat.

10. Dari Long Bunut sampai di- Long Sot tidak di- benar tempat memasang pukat walau pun air besar bagaimana.

11. Ada pun hukuman yang di-kenakan atas kesalahan2 bagai pasal 1-10 akan mengikut pertimbangan Tua Kampong atau komiti yang memegang adat Loagan Bunutkita atau komiti2 rumah panjang.

Bertarikh di-Long Teru pada hari ini 17 haribulan May, 1969.

Najaubgel
(Kajan Sigah)
Tua Kampong,
Long Teru, Tinjar.

Salinan,
Pegawai Daerah, Baram
Penghulu Belan Lejau, Tinjar.

(Gumbang Lawai)
Komiti yang memegang adat
Loagan Bunut.

State Wetland Committee cum Project Steering Committee was formed as a advisory body to the implementation of the project. Chaired by State Secretary of Sarawak and attended by relevant ministries and government departments.

The amended traditional fishing regulation known as *Peraturan Berawan Loagan Bunut Menangkap Ikan, 2006* launched by The Second Minister of Planning and Resource Management in conjunction with World Wetland Day Celebration in 2007

Loagan Bunut Integrated Management Plan (IMP) launched by
The Honorable Chief Minister of Sarawak
on 22nd November 2007

Symbolic ceremony: The Loagan Bunut Integrated Management Plan (IMP) handed over to Sarawak Forestry Corporation for full force Implementation inconjuction with World Wetland Day Celebration on 2nd February 2008 at Hillary Jungang Long House at Tinjar

The State adopted Loagan Bunut Integrated Managament Plan (IMP) as guideline to manage and monitor the park

G.4
(Pind. 1/86)

MEMORANDUM RASMI

DARIPADA: Setiausaha Tetap, Kementerian Perancangan dan Pengurusan Sumber	**KEPADA:** Pengarah Hutan Sarawak
PERKARA: Sila lihat di bawah	**SALINAN KPD:** KPPS/R/2 Vol. 3
RUJ. KAMI: /KPPS/H/4-13/28/(2) **TARIKH:** 18 -3 .08	**RUJ.TUAN:** **TARIKH:**

CADANGAN MENERIMAPAKAI PELAN PENGURUSAN BERSEPADU SEBAGAI PANDUAN BAGI MENGURUS DAN MEMANTAU TAMAN NEGARA LOAGAN BUNUT

Saya dengan hormatnya merujuk kepada perkara di atas.

2. Sukacita dimaklumkan bahawa pada 21 Februari 2008, Kerajaan Negeri telah meluluskan agar Pelan Pengurusan Bersepadu Taman Negara Loagan Bunut diterimapakai sebagai panduan dalam merancang, mengurus dan memantau aktiviti dalam taman negara tersebut.

Sekian, terima kasih.

"BERSATU BERUSAHA BERBAKTI"

(HAJI ADANA BIN HAJI JED)
b.p Setiausaha Tetap,
Kementerian Perancangan dan Pengurusan Sumber

Yang Dato' DF

Untuk tindakan dan tindakan Yang Dato

24/3 19/3

IBU PEJABAT PENGARAH HUTAN
DI TERIMA
19 MAR 2008
PADA

Inter-agency Meeting on Implementation and Monitoring of Loagan Bunut Integrated Management Plan was held on 22nd April 2008, Imperial Hotel Miri