

Using GIS to Investigate and Manage Sand and Gold Mining

Tanjung Puting National Park,
Central Kalimantan, Indonesia

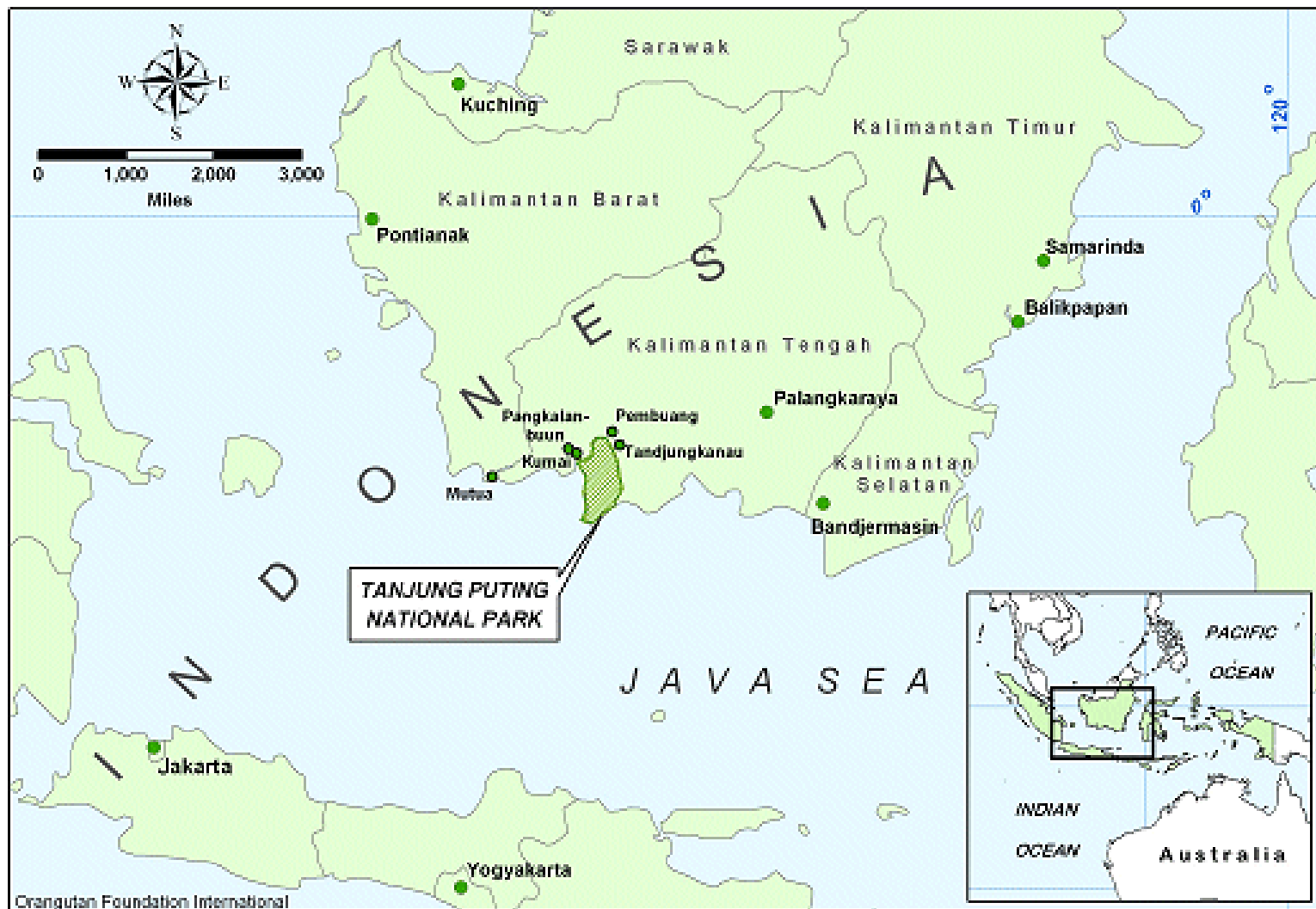
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International Development (USAID)

GIS software and training funded by ESRI ECP
Conservation Grant



Tanjung Puting National Park, Kalimantan Indonesia



Tanjung Puting National Park

- Game Reserve est. 1922
- National Park est. 1984
- 4,000 km² (~1 million acres)
- Low-lying swamp forest

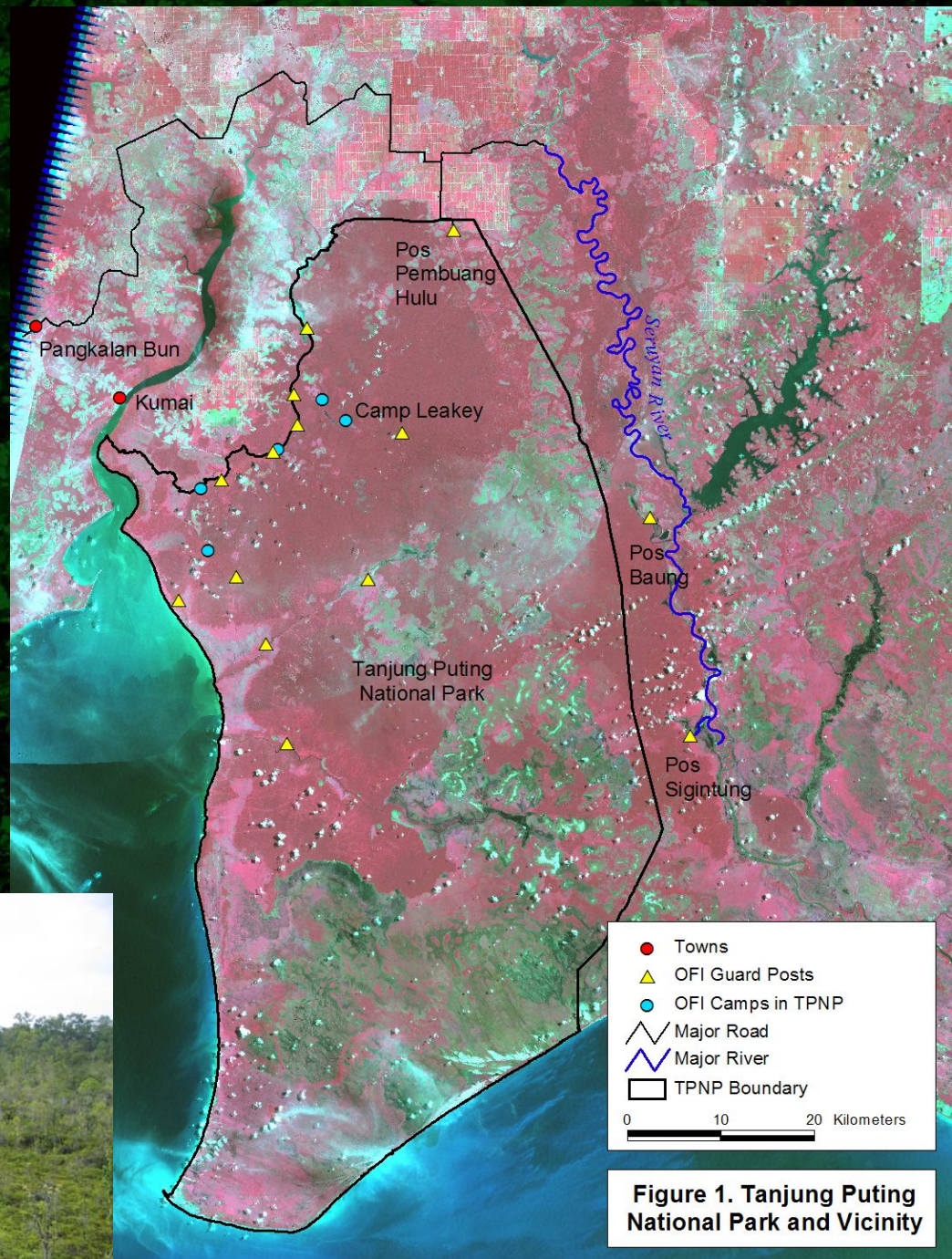
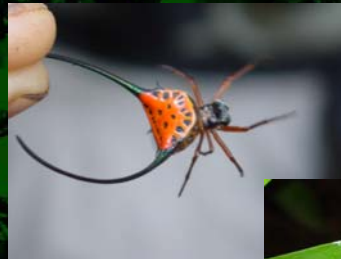
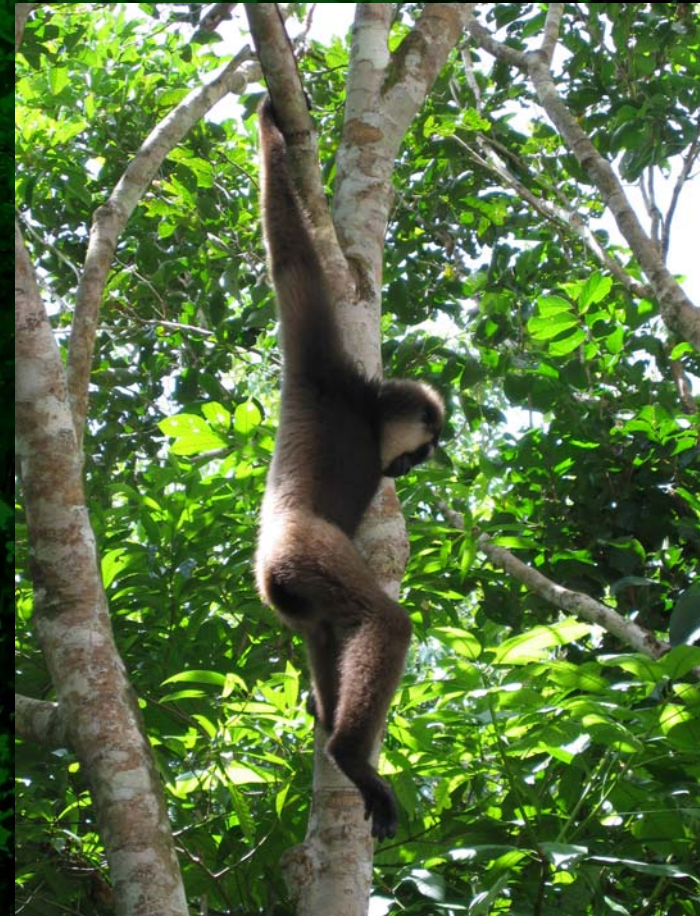


Figure 1. Tanjung Puting National Park and Vicinity

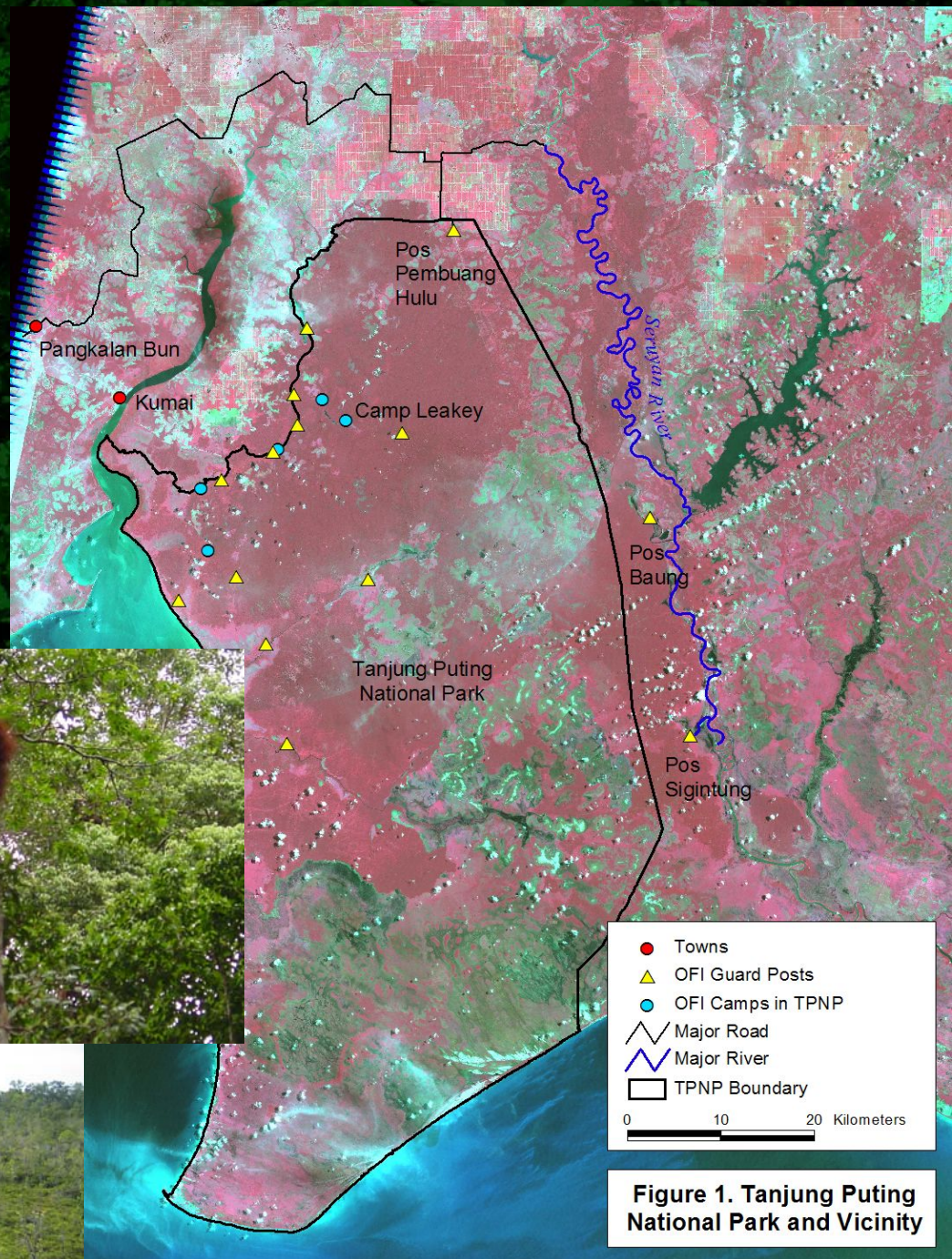
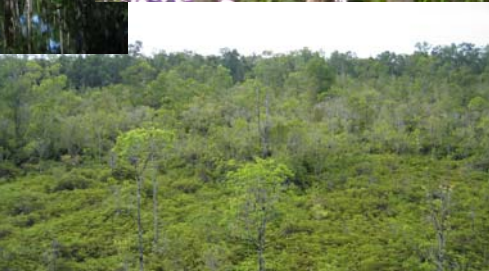
Globally Important Conservation Area

- Biodiversity “hotspot” of global importance
- 13 primate species
- > 100 mammals
- > 200 birds
- > 1500 plant species



Critical Orangutan Habitat

- 10% of world's remaining orangutan population
- Orangutans are 90% arboreal, they cannot survive without forest
- Borneo's forests are disappearing fast



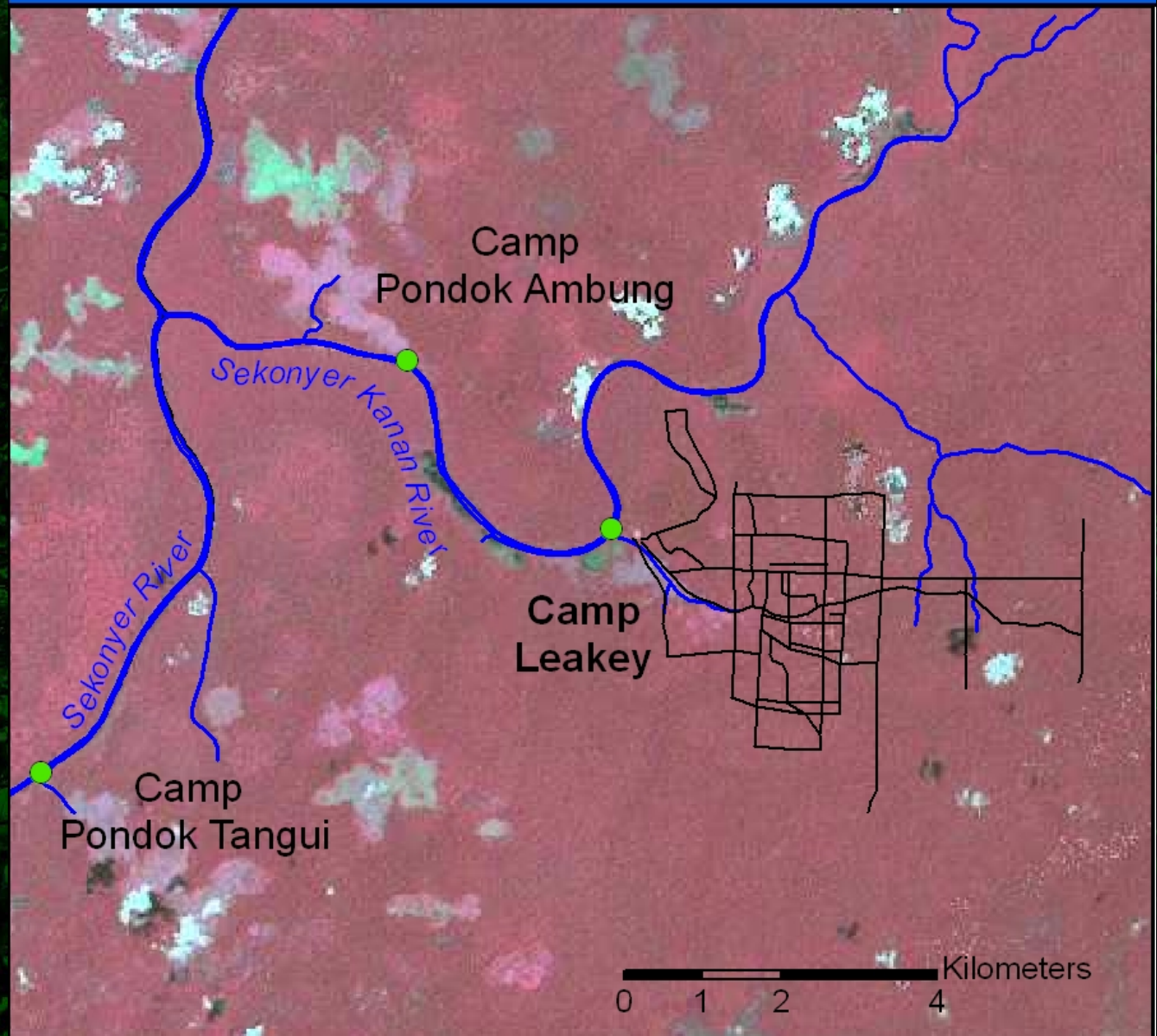
Orangutan Conservation

- Dr. Biruté Mary Galdikas began orangutan research at Camp Leakey in 1971
- Orangutan Foundation International (OFI) est. 1986
- Focus on park protection & orangutan conservation



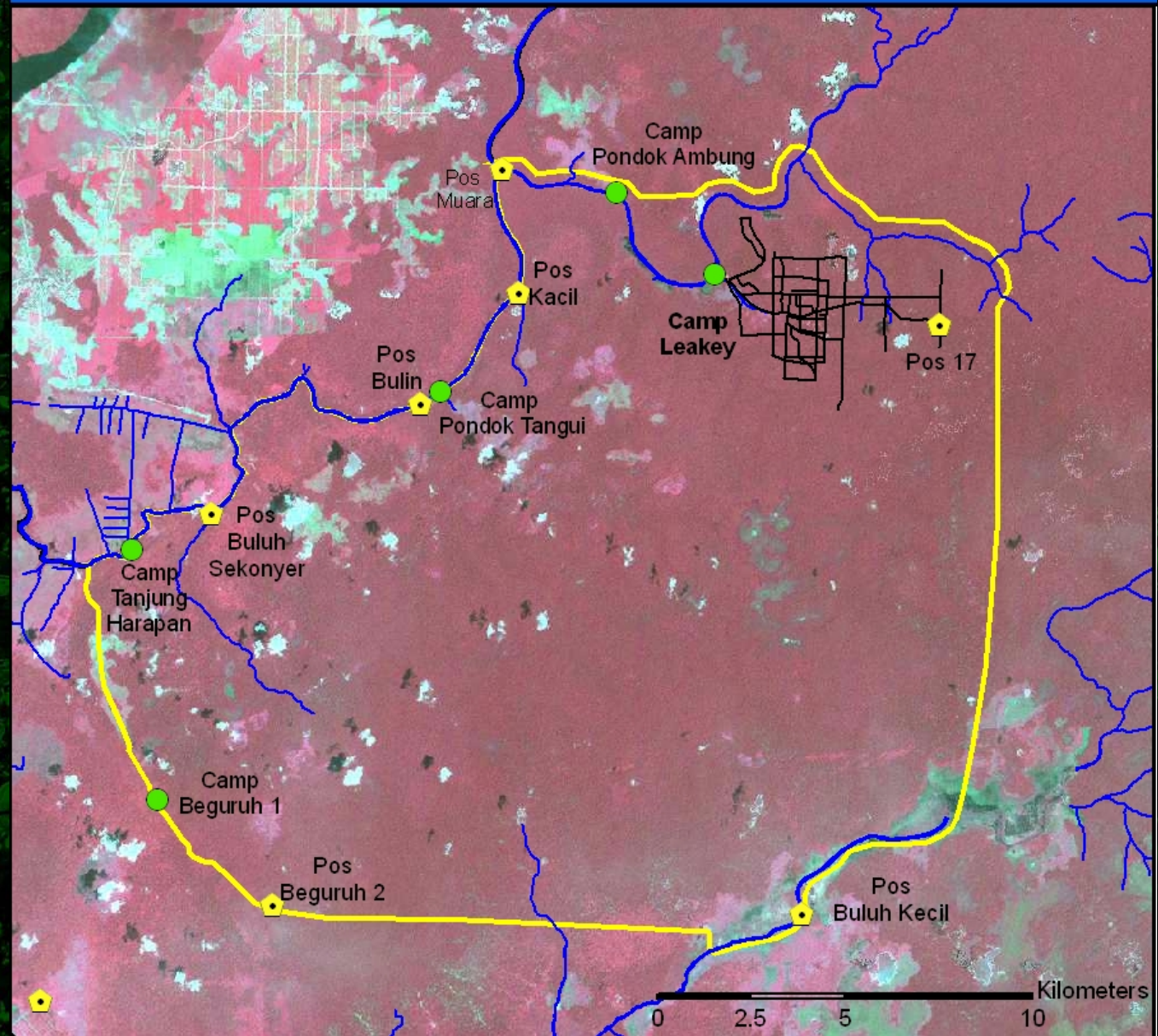
Camp Leakey Research Study Area

- Dr. Galdikas' research on orangutan behavior in the 1970's centered on Camp Leakey
- In the 1980's, other research camps were built along the Sekonyer River



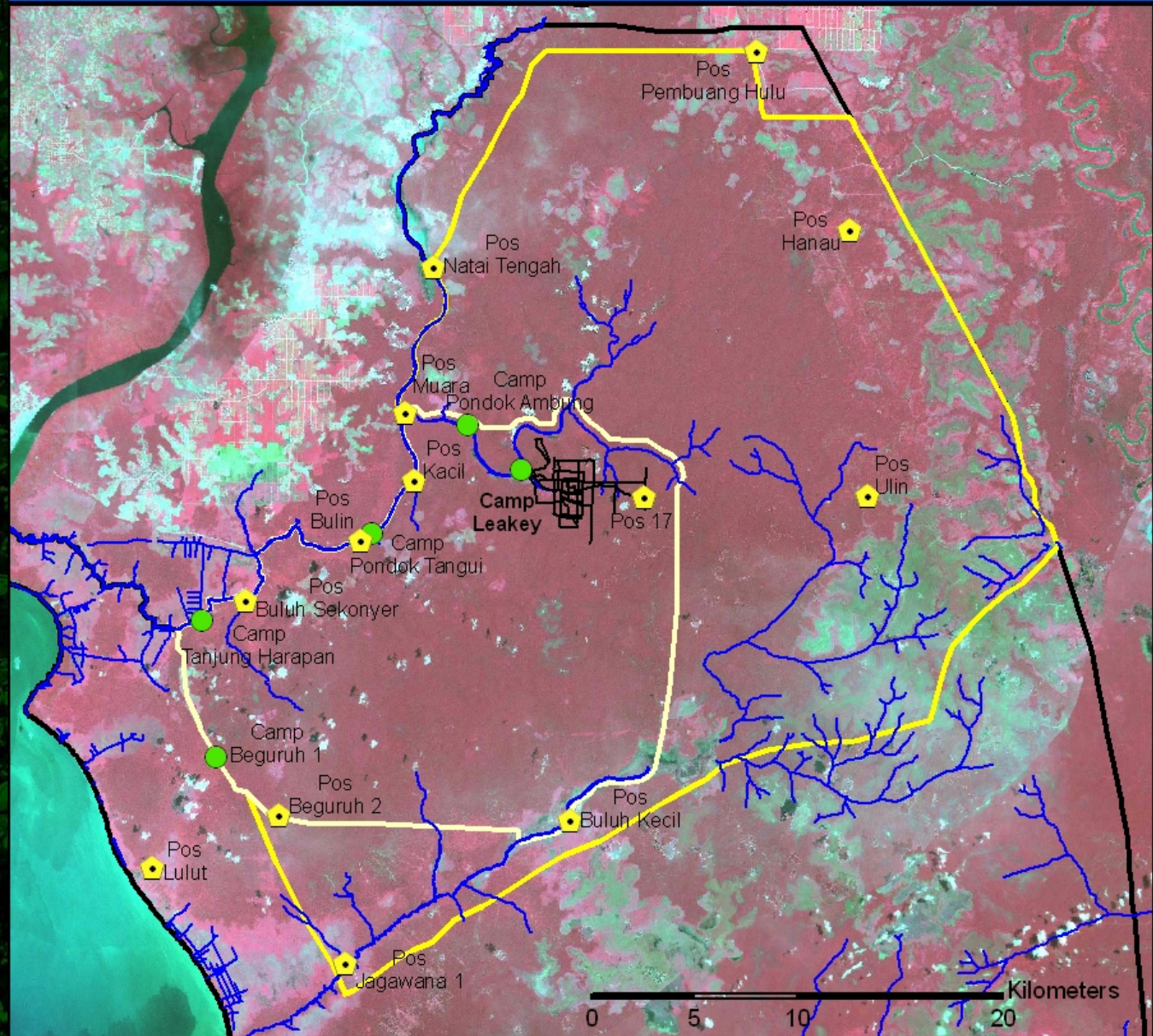
OFI Conservation Area 2003

- By the end of 2003 OFI was operating 5 camps and 7 guard posts covering an area of 370 km²



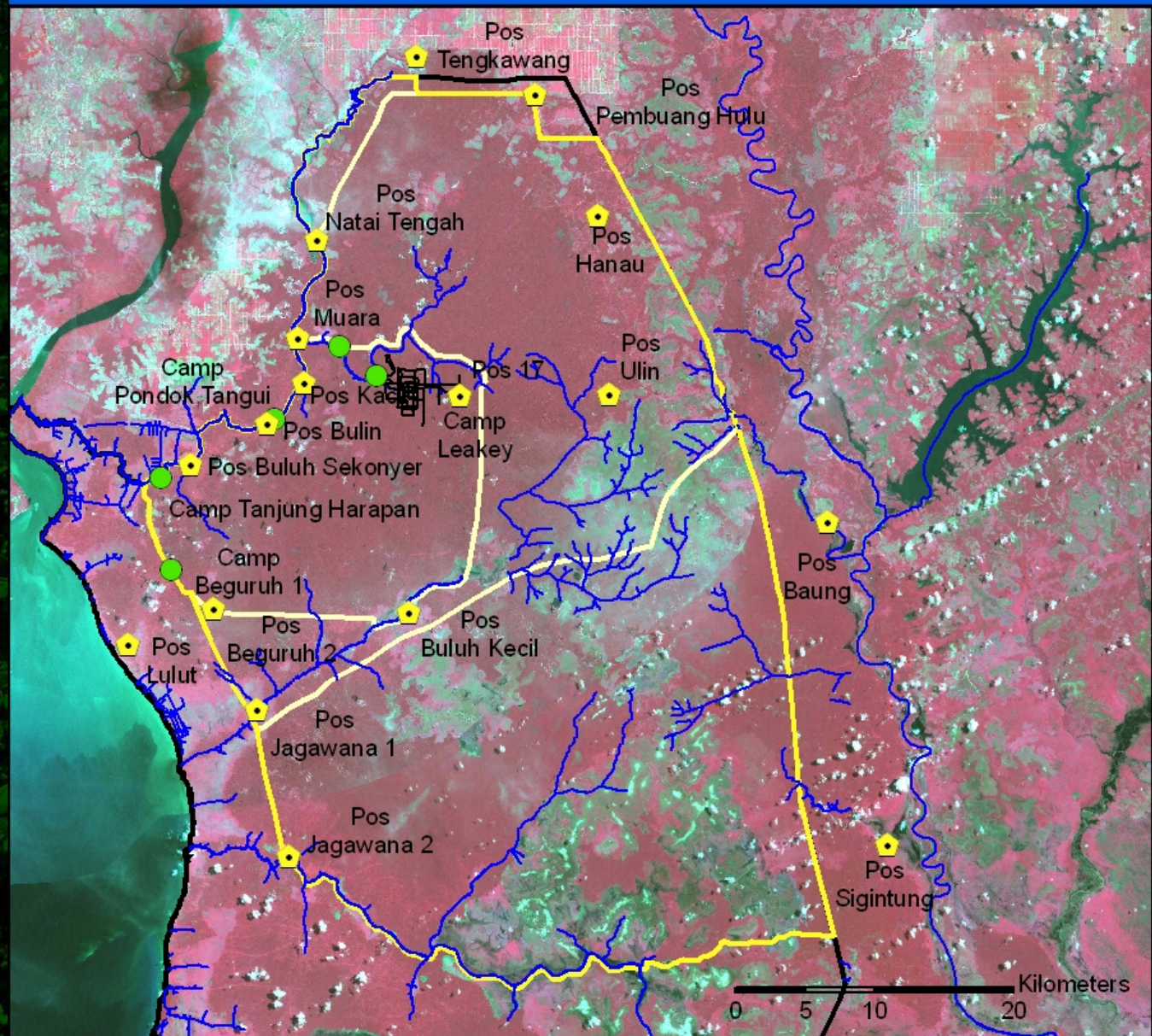
OFI - USAID Conservation Area 2005

- OFI's USAID Conservation & Development Grant began in 2003
- Conservation monitoring was expanded to the north and east sides of the park



OFI - USAID Conservation Area 2007

- OFI is now working to expand conservation to more than 2000 km² of the park
- There are many complex issues along the current management border which is 200 km
- Cooperation with the National Parks Service, NGOs, government and communities is important
- GIS is supporting OFI's rapid assessment of border issues



Mining Conservation Issue:

- Direct forest loss

Contamination of the river ecosystem



Objectives:

1. Map mining activities along the park border
2. Assess amount of land already damaged by mining
3. Assess immediate risk to the park

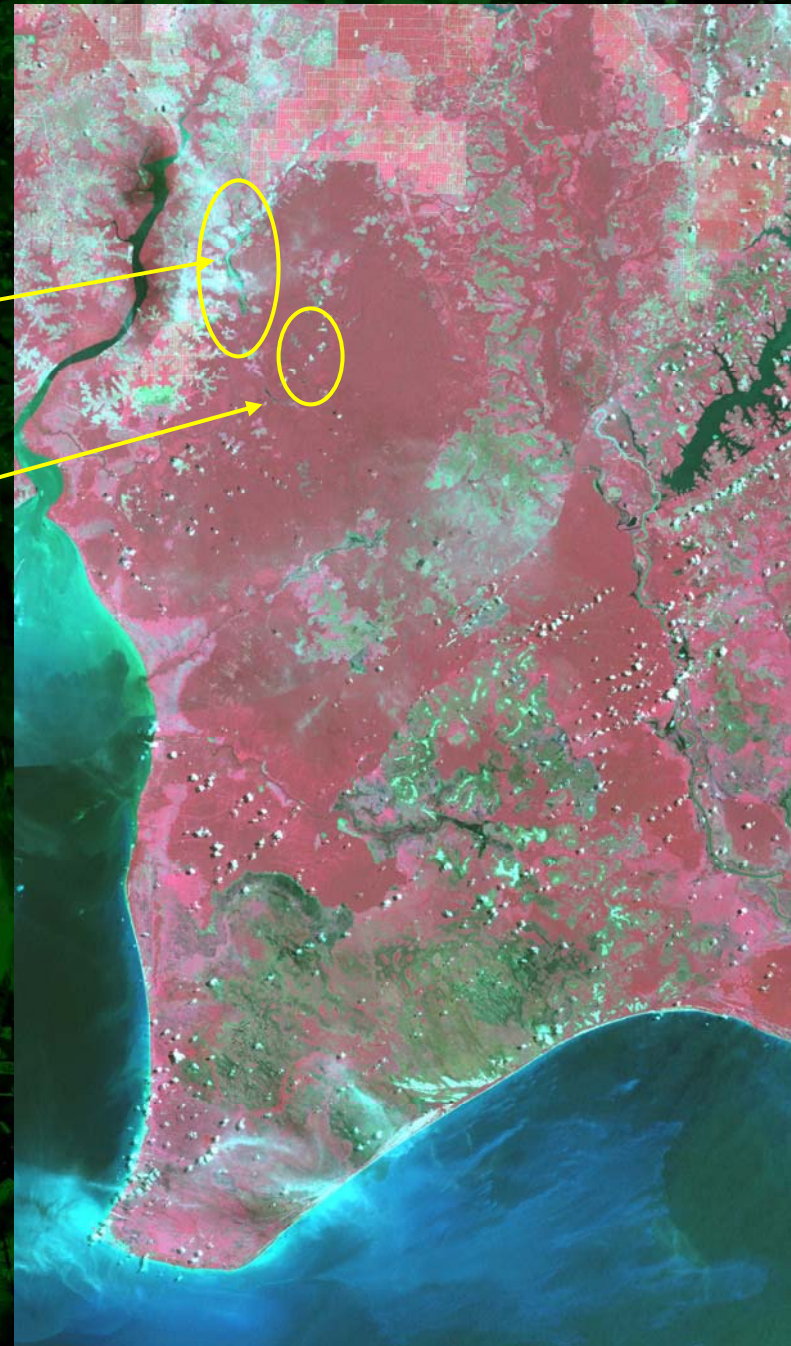


Methods:

1. Remote sensing analysis to delineate mining polygons
2. GPS field work
3. GIS mapping and area calculations

Results of the Field Work

- 1. Aspai – Tengawang Area
(outside the park)
- 2. Natai Tengah Area
(inside the park)



Aspai – Tengkwang Area

- Aspai mining started in 1980
- 1000 residents
- Illegal gold mining
- In September 2005 'boom' in sand mining started



Aspai – Tengkwang Area

MAP MINING AREA IN TPNP BORDERS

P.T PUTRA SANDINDO RAYA

DANAU KAWA

HAMPALAM

TEBING TINGGI

GEDUNG SINTUK

ASPAI

DANAU RASAU

KETERANGAN

- CAMP MINING
- △ SEKONYER RIVER
- COMPANY AREA
- TRADITIONAL MINING AREA
- TPNP BORDERS



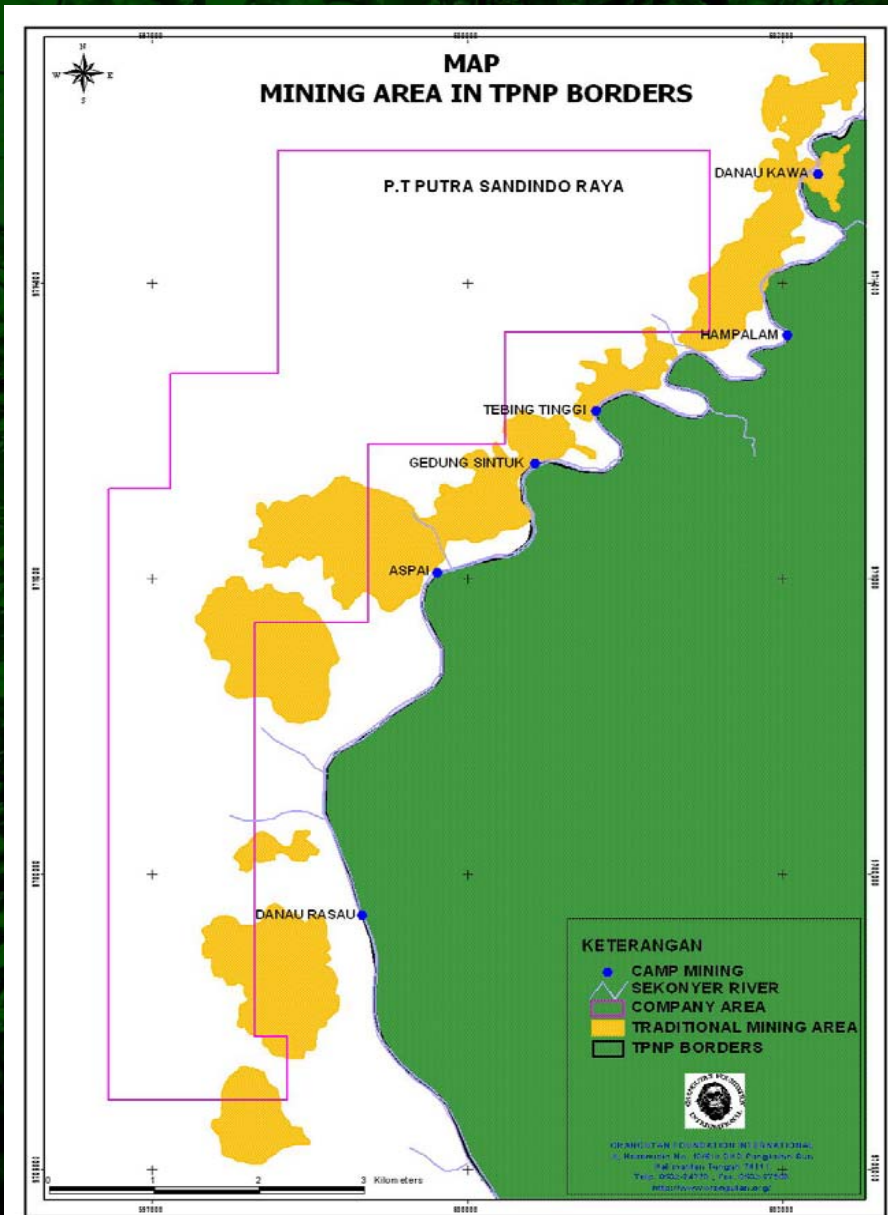
KEMENTERIAN KONSERVASI ALAM DAN KEHUTANAN
Jalan Tasik Chini, 45600 Tasik Chini, Pahang
Tel: 094-247191, Fax: 094-271125
http://www.kkma.gov.my

GIS mapping documented illegal mining activities surrounding the park



Aerial survey showed large areas damaged by mining

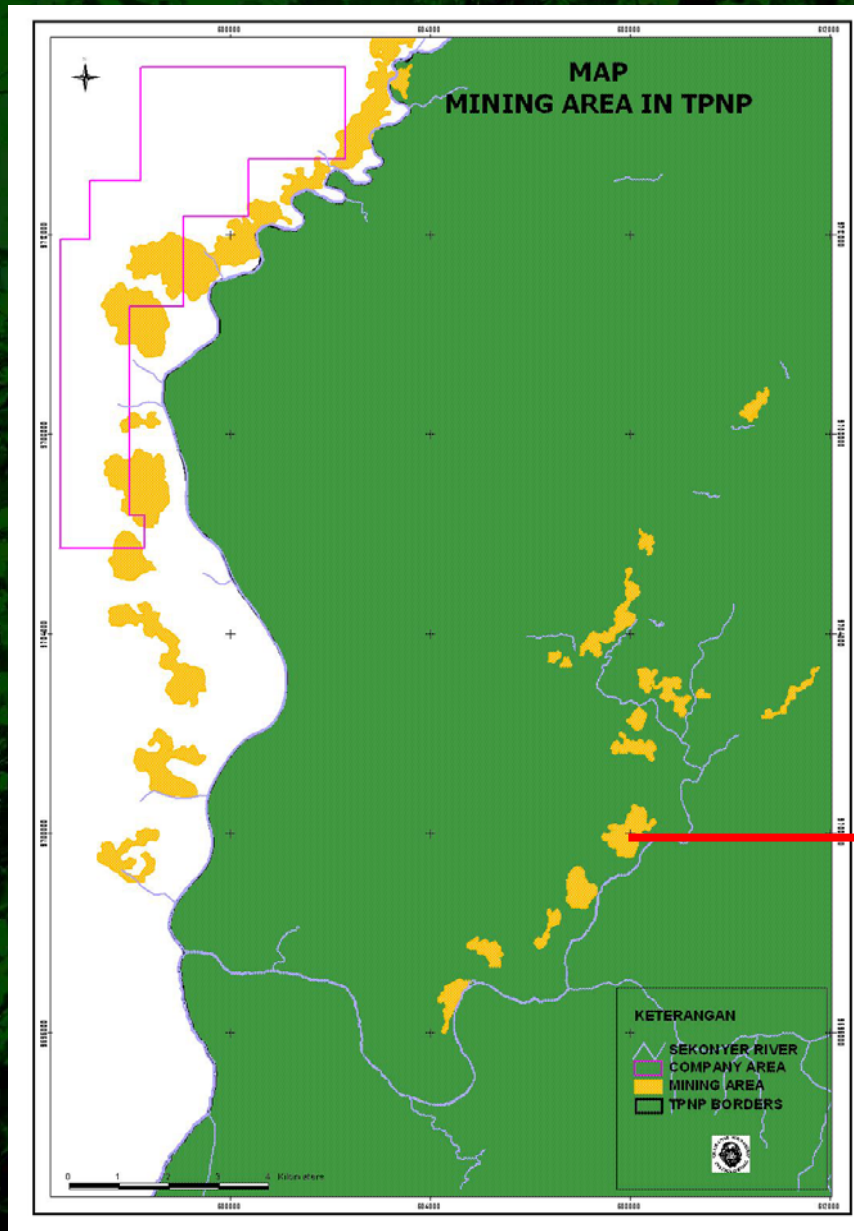
Aspai – Tengkwang Area



Mapping provided a tool to communicate with provincial government, legislature, other NGOs and the mining community



Natai Tengah Area

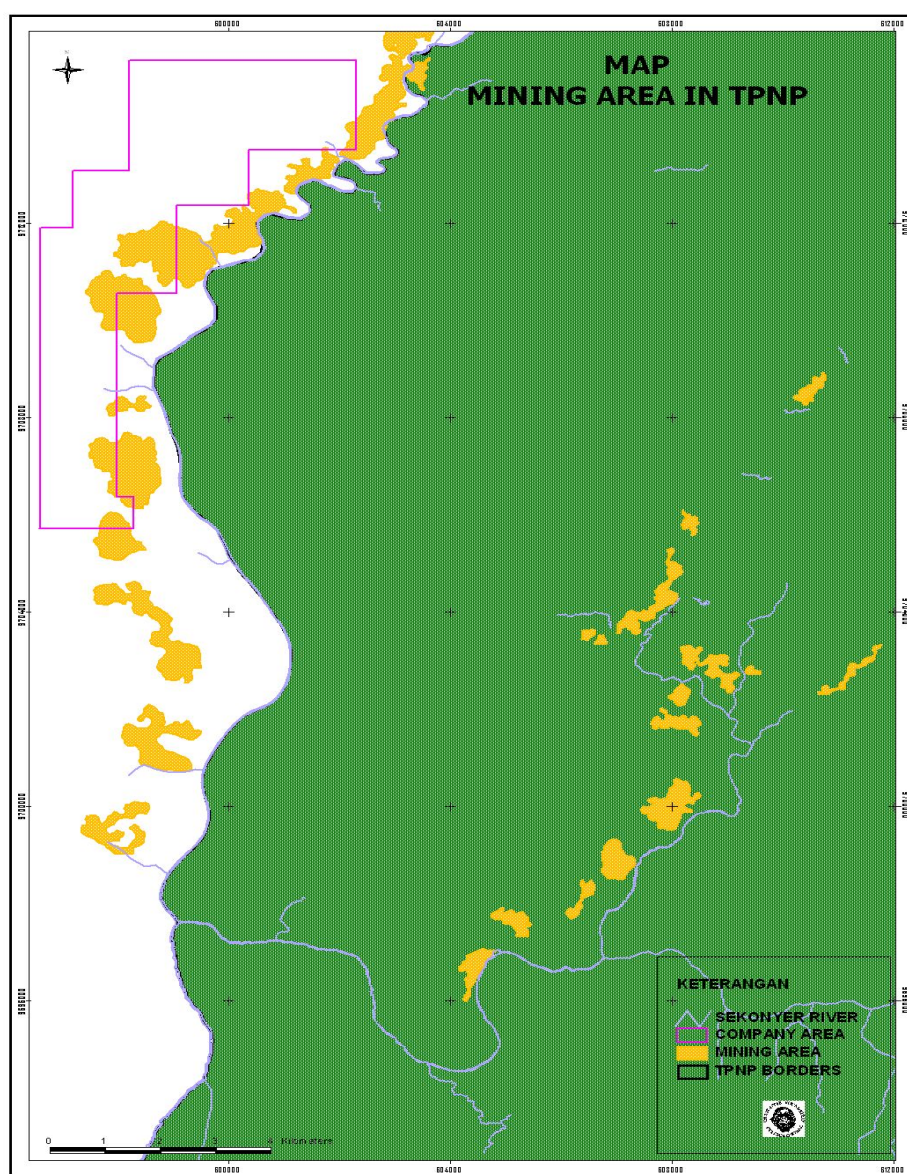


GIS mapping documented areas of illegal mining inside the park (now inactive)



Large areas of old illegal mining inside the park

Natai Tengah Area



Field visits confirmed mining remains inactive in the park

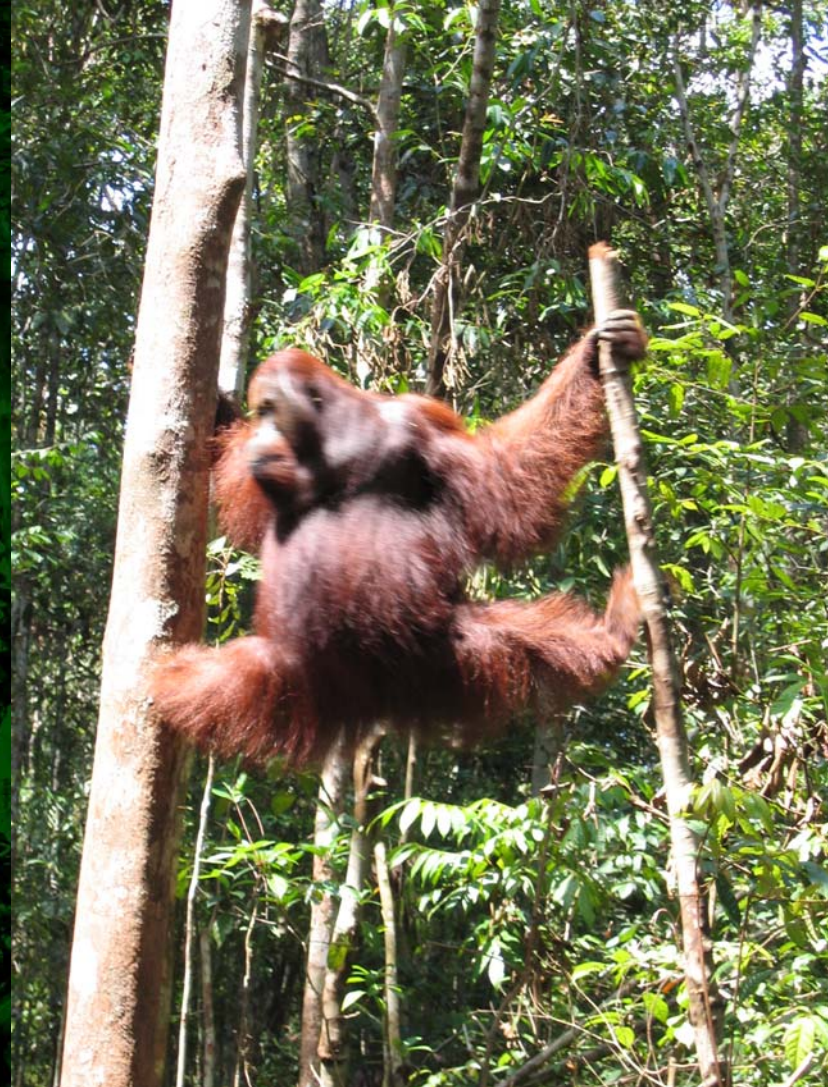
These sites, as well as river and canal access to these sites will be regularly monitored

Summary

- GPS and GIS were essential for OFI's rapid assessment to this new threat to Tanjung Puting National Park
- Maps provided a way to quickly and effectively communicate this issue in community and government meetings
- Provided information to help OFI determine next steps for management

Future Management of Mining

- Close canals and monitor river access into the park
- Continue field monitoring to assess changes in mining along the Sekonyer River
- Survey mining areas to quantify number of workers and amount of sand removed
- Meet with local stakeholders and lead discussions on managing this resource



Thank You

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