



Landscape HCV Mapping

A case study from West Kalimantan, Indonesia

Gary Paoli & Philip Wells

*A*aemeter
CONSULTING

Outline

- I. Landscape concept in HCV
- III. Case Study landscape HCV 3 mapping
- III. Linking the MU and the landscape 'scales'

Document	Landscape	Forest	Conservation	Threat
Guidance Documents				
HCV Report Peer Review Guidance	18	8	5	15
Good Practice Guidelines for HCV assessments	74	189	112	99
Practitioners Guide to managing HCVF in Indonesia	35	265	640	65
HCV Global Toolkit Pt 1	15	274	80	17
HCV Global Toolkit Pt 2	31	557	100	64
Ratio		0.577	0.963	0.771
Toolkits				
HCV Global Toolkit Pt 3	65	371	66	62
Revised HCV Toolkit for Indonesia	136	364	85	13
HCV Toolkit for Vietnam Ver 1	40	493	147	53
HCV Toolkit for PNG	19	889	125	70
HCVF Support Document for Canada	114	544	162	26
Ratio		0.172	0.743	3.384
HCV Assessment Reports				
Teso Nilo landscape by ProForest	75	434	154	74
SLJ Unit 2 logging concession by TNC	21	400	153	47
PT Putra Indotropical by Daemeter	69	461	77	15
Pulau Muda pulp plantation by SmartWood	103	737	133	70
Ratio		0.129	0.574	1.883

Use of term
“Landscape”
in HCV

Landscape Concept in HCV

“The *landscape* describes an area in its totality, including physical, ecological and geographical elements, both natural and man made, their spatial arrangements and potential modes of interaction”

“The *landscape* defines the boundary of an analytical realm for understanding how a particular configuration of topography, vegetation, geology, land use and human settlement affect the presence, status and long term management potential of an HCV in an assessment area.

“The *landscape* is the area delimited by a shape file defining the area over which a client or donor has contracted an organization to map HCVs. When that area is larger than a MU but smaller than a planet, it gets called *Landscape HCV Mapping*”

Landscape Concept in HCV

Shapefile definition of the AOI → arbitrary

Placing MU in socio-spatio-temporal context

- describing “landscape context” or “landscape setting”
- dominant cultures and socio-economic condition
- linkages of HCV 1.2 & 1.3 species to habitat outside the MU
- downstream impacts of operations on aquatic habitat & water quality

Understand functional ecological and social relationships among landscape elements to ensure we “get it right”

Understand functional ecological and social relationships among landscape elements to ensure we “get it right”



Delimitation defies global definition because ...

landscape boundaries vary among sites, among HCVs within a site, and even among dimensions of the same HCV at the same site. Eg, HCV 1.3 & HCV 5

Elements of a landscape concept that Gets it Right

How decide a boundary?
Required data?
Required approach?
For which HCVs?

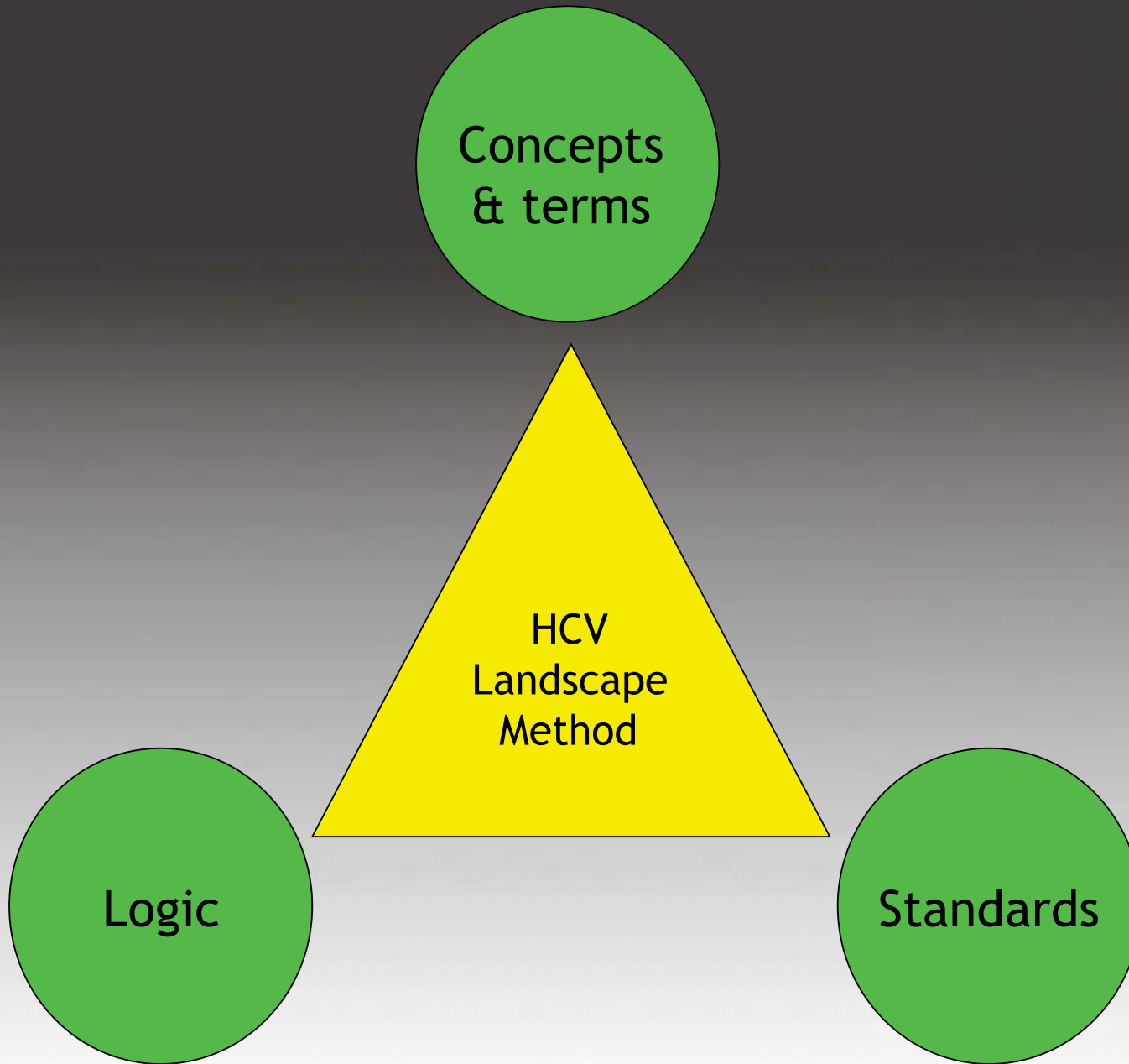
Concepts
& terms

Landscape & boundaries
Spatial extent
Spatial resolution
Spatial 'scale'
Geographic accuracy

Logic

Standards

Data quality
Transparent methods
Transparent reporting
Limitations of maps
Clarify purpose



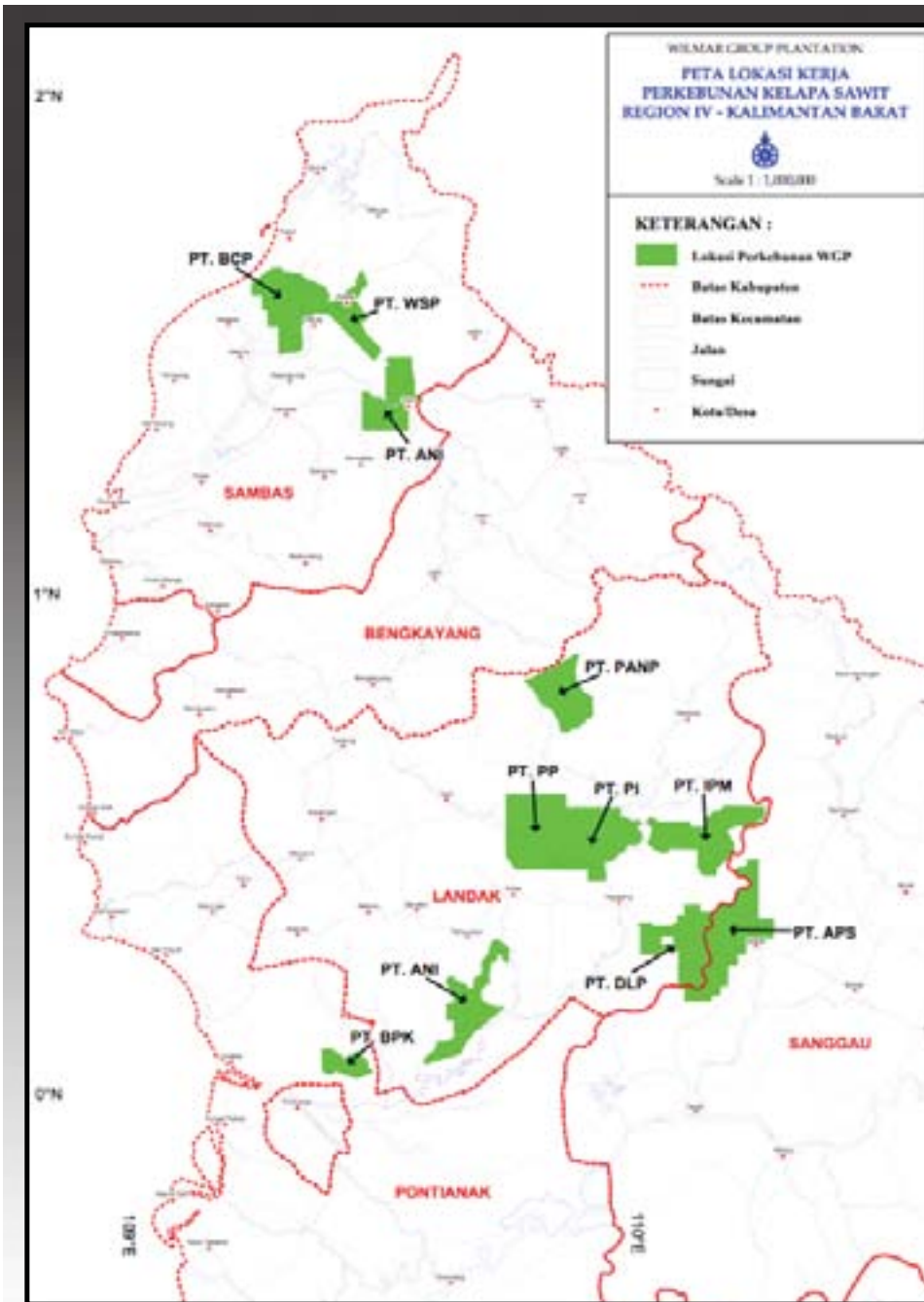
Outline

- I. Landscape Concept & terms HCV
- III. Case Study landscape HCV 3 mapping
- III. Linking the MU and the landscape 'scales'



Wilmar Group Plantations



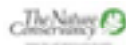


Wilmar Group
 oil palm
 licenses in West
 Kalimantan

PANDUAN IDENTIFIKASI
Kawasan Bernilai Konservasi Tinggi
Di Indonesia

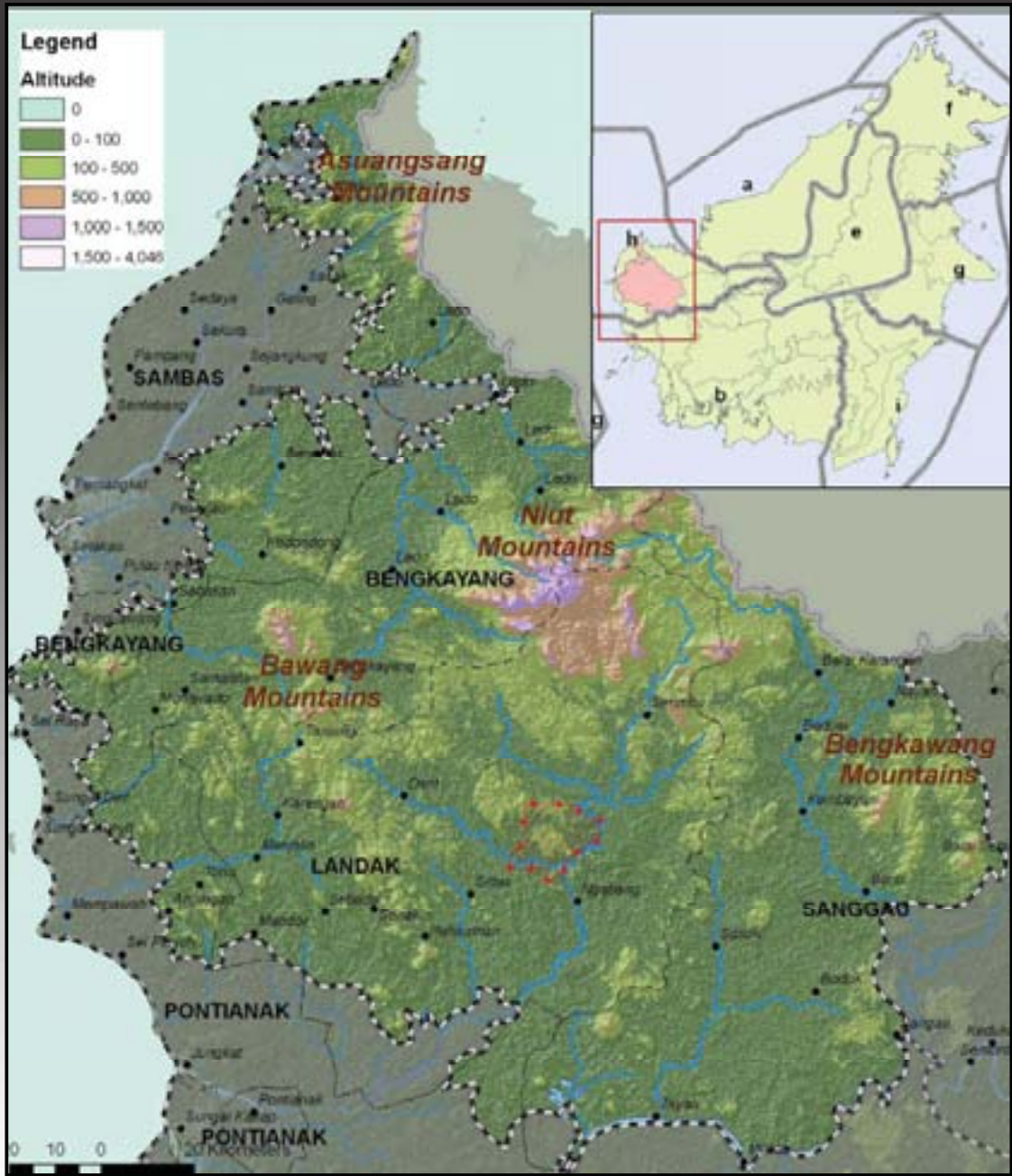
Oleh :
Konsorsium Revisi HCV Toolkit Indonesia

JAKARTA - Juni 2008

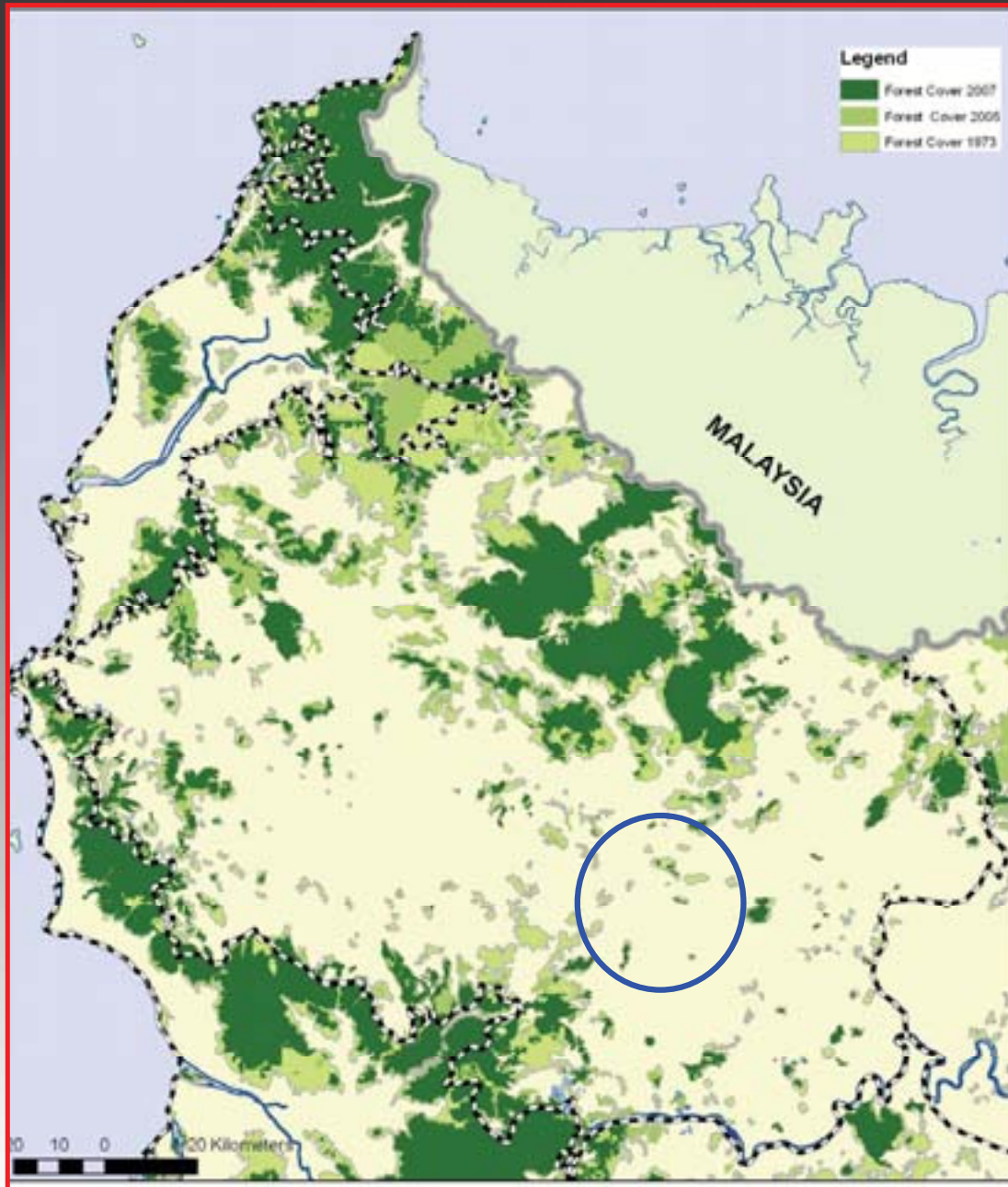


Revised HCV
Toolkit for
Indonesia

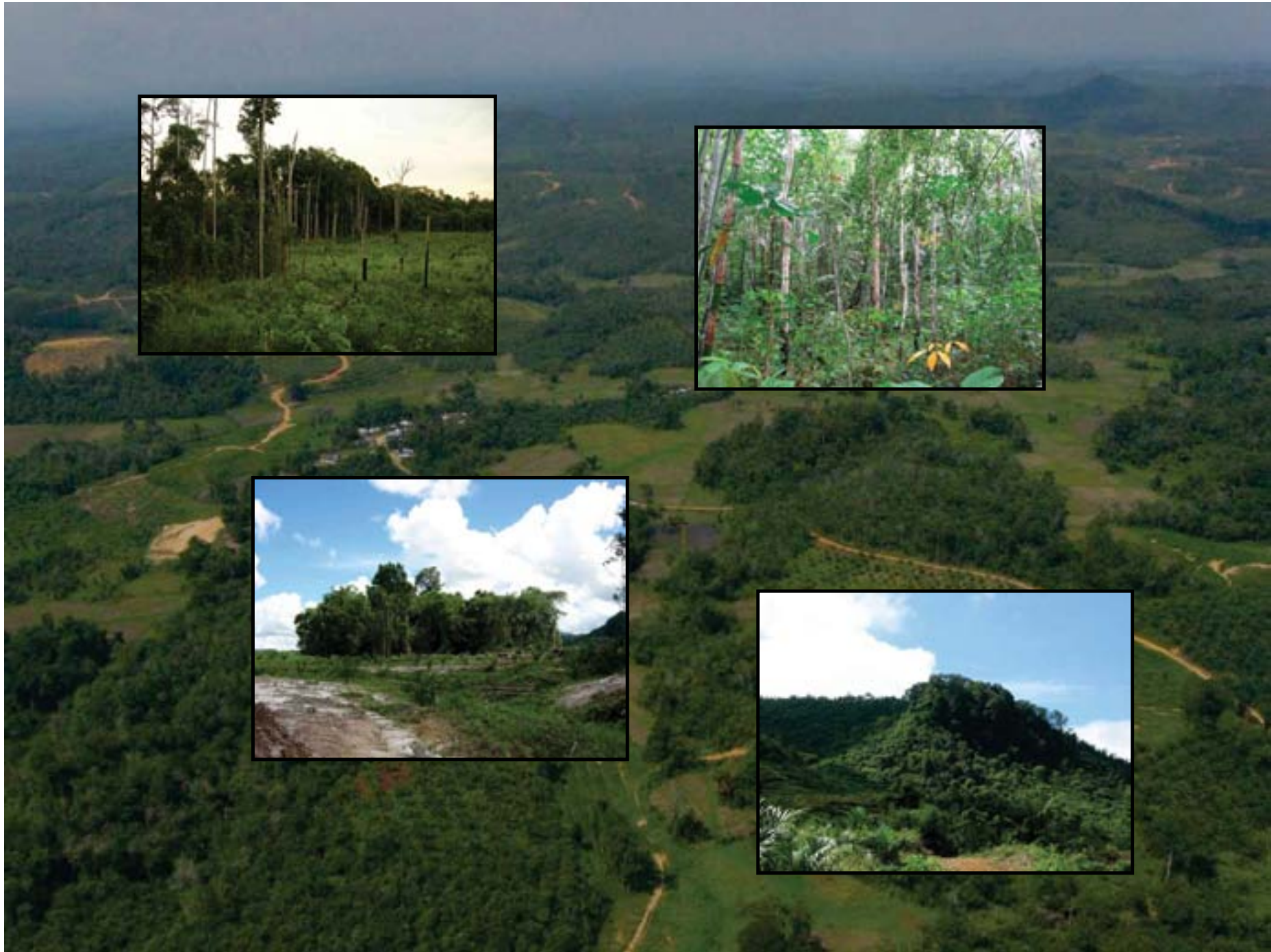
6 HCV
13 sub-HCVs

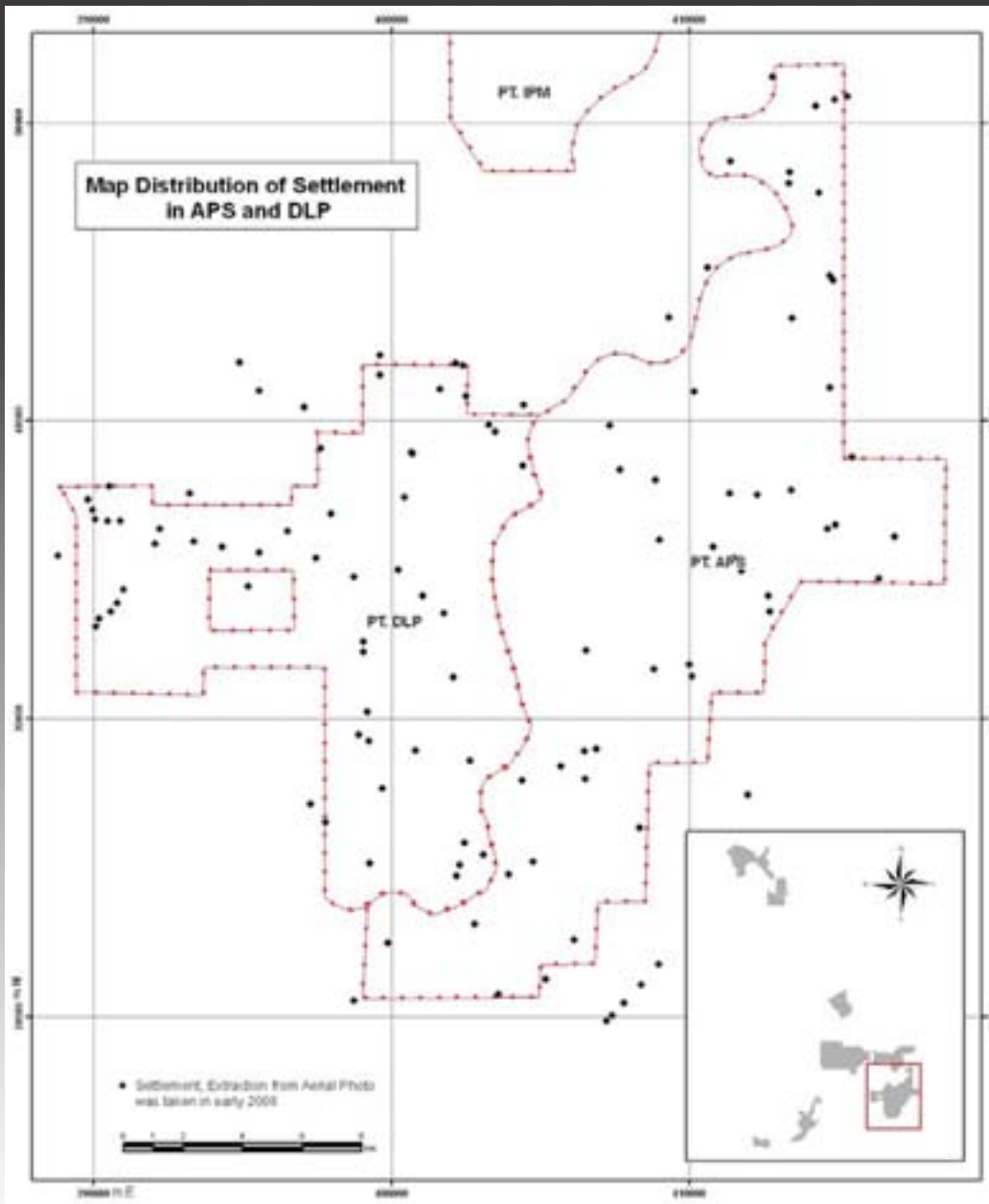


Building a Landscape Description



Forest Cover





Social landscape

Watersheds
Rivers
Soils
Geology
Infrastructure
Land use/Spatial plans
Oil palm licenses

HCV 3 - Rare or Endangered Ecosystems

- Very weak definition & criteria
- Weak consensus on ecosystem types & definition
- Does not account for geographic variation in rarity etc
- No clear method for determining HCV 3 status
- Data resources patchy & unequal quality

HCV 3 - Rare or Endangered Ecosystems

1. Definition

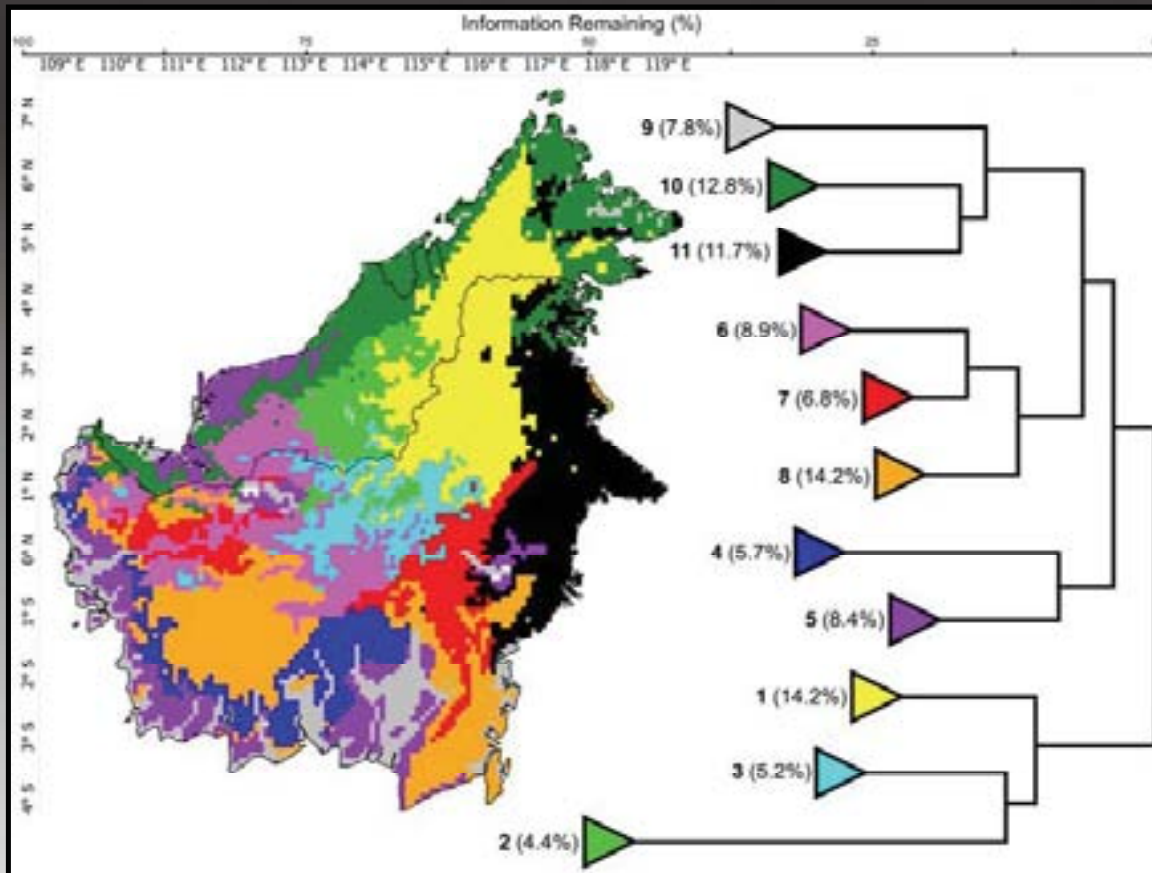
An ecosystem that has experienced >50% decline in extent compared to 'oldest' historical distribution is ENDANGERED

An ecosystem predicted to experience >75% decline in future extent given current land use plans that permit conversion of natural areas is ENDANGERED

An ecosystem with total extent <5% of the combined area of all natural ecosystems within a Physiographic Region is RARE

HCV 3 - Rare or Endangered Ecosystems

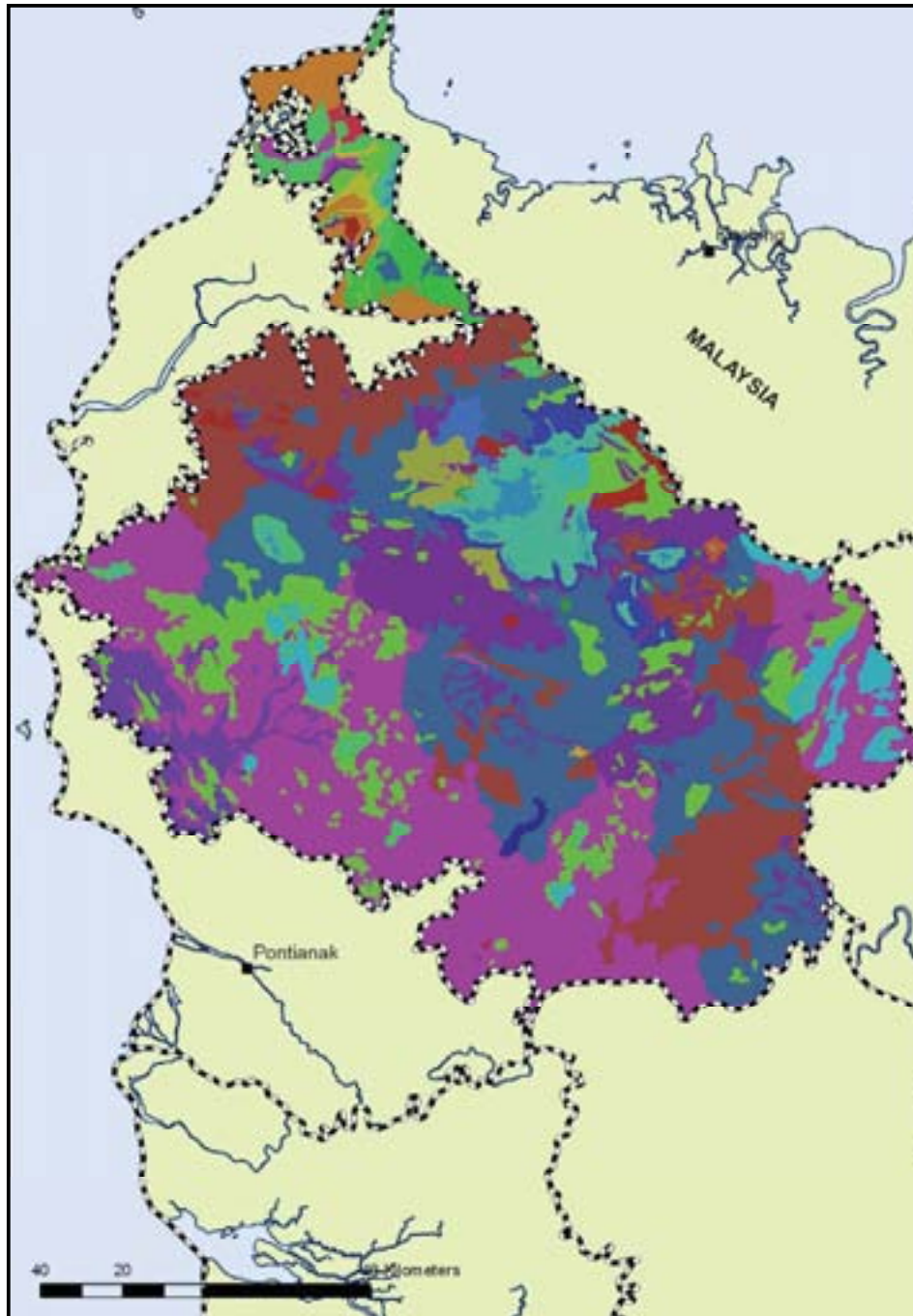
2. Ecosystem definitions & Data resources



Ecosystem maps

- disagreement
 - too coarse
 - incomplete coverage

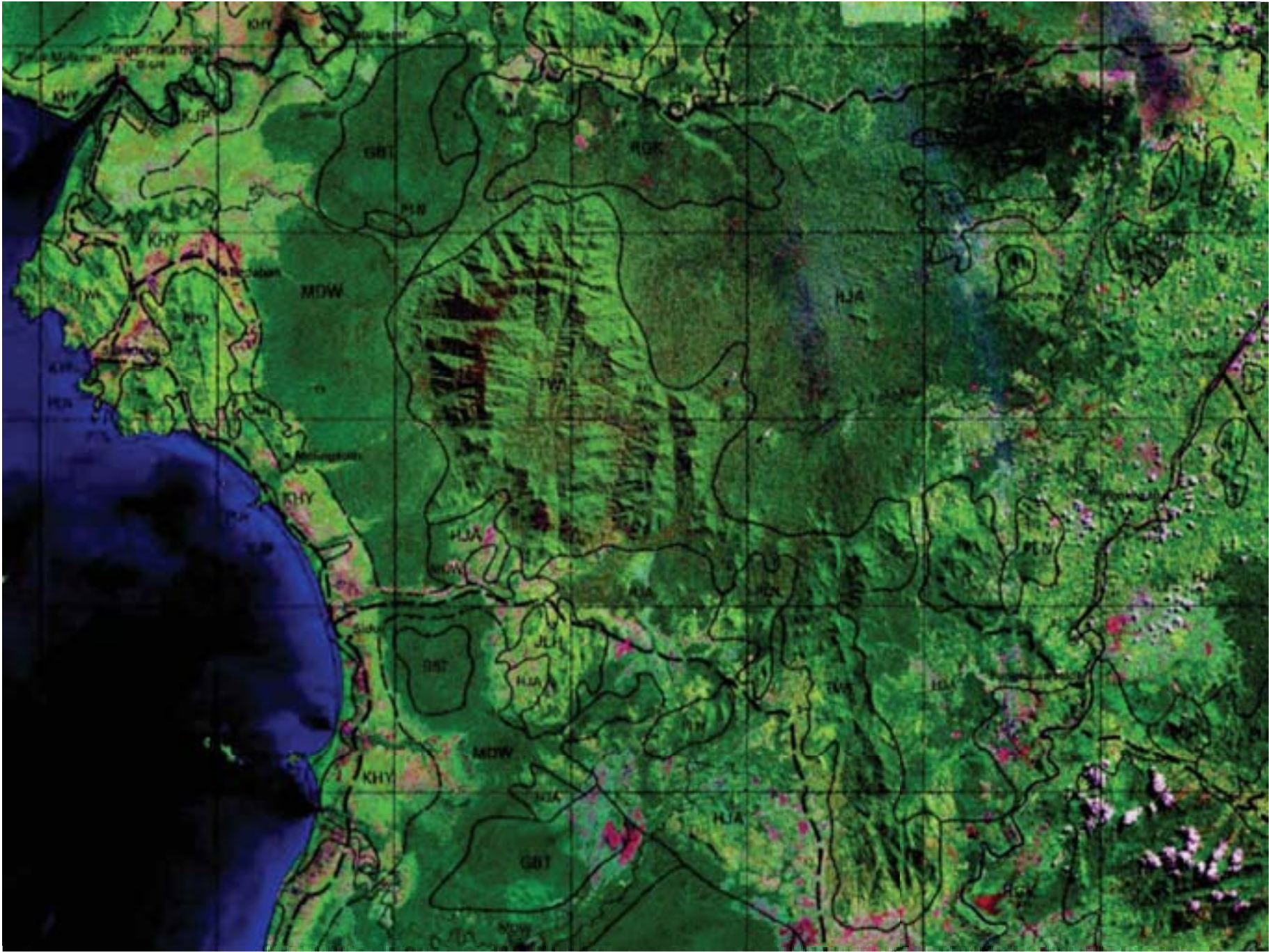
Niels Raes et al. *in review*



RePPProT Land System Class

Ecosystem Proxy

geology
soils
drainage
terrain form
rainfall
vegetation



HCV 3 - Rare or Endangered Ecosystems

2. Ecosystem definition & Data resources

Use modified form of RePPPProT as a national ecosystem ecosystem proxy (48 on Kalimantan, 36 Sumatra)

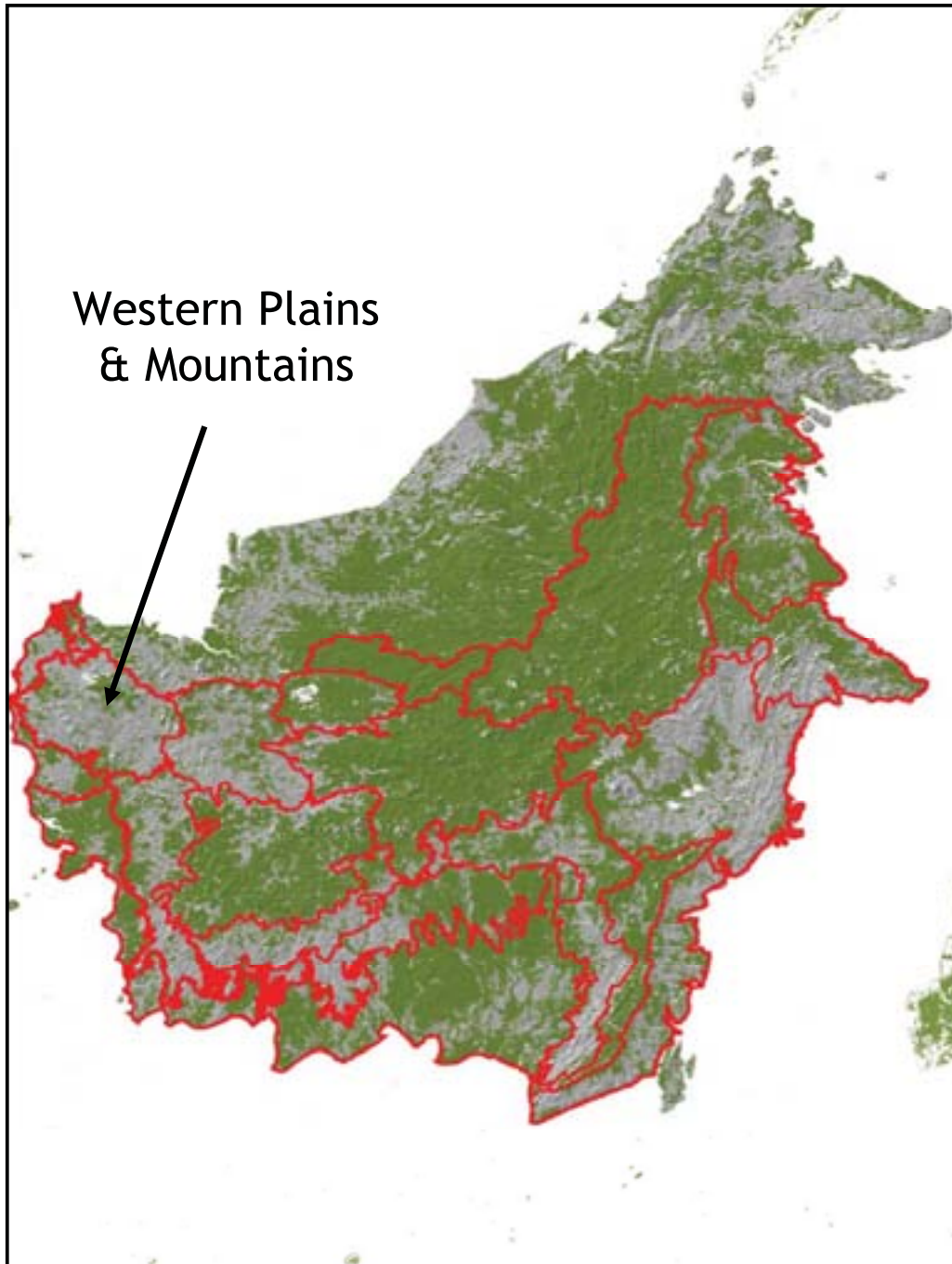
Imperfect...but good spatial resolution (125 m), works very well as first approximation (espec in lowlands, eg riparian swamps and alluvium areas otherwise hard to map), complete coverage nationwide.

Working hypothesis under revision.

HCV 3 - Rare or Endangered Ecosystems

3. Contextualizing Rarity and Endangered Status

Analysis of past, present and future extent is conducted within the Physiographic Region(s) where assessment area occurs



Physiographic
Regions

HCV 3 - Rare or Endangered Ecosystems

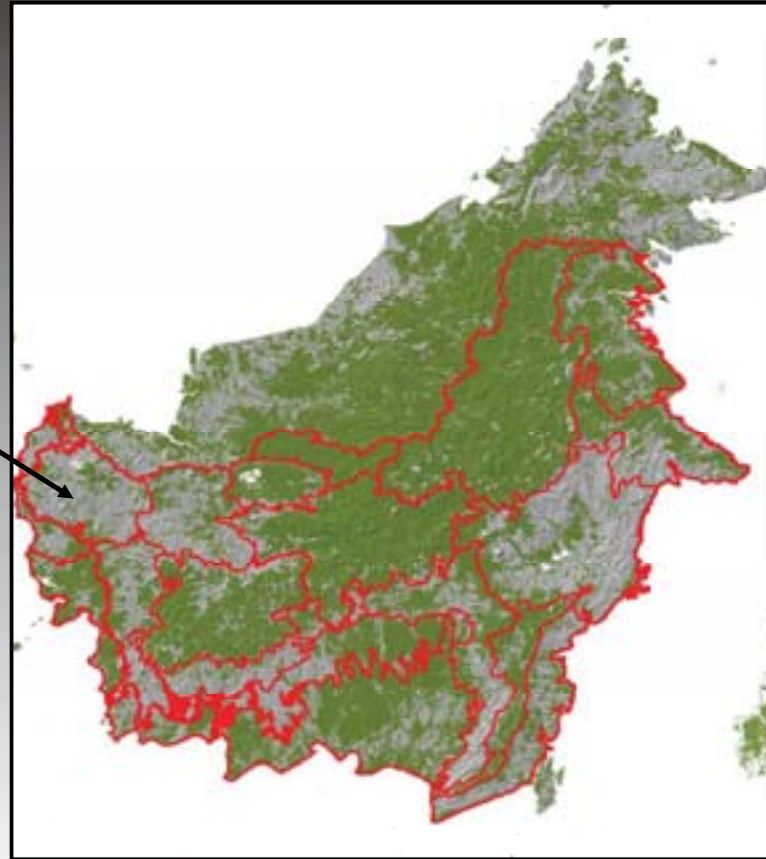
4. Systematic method for determining rarity

- a. Map past, present & future expected forest cover in the PR where assessment area is found.
- b. Overlay with RePPProT map of ecosystem proxies and determine past, present & future expected extent of ecosystems
- c. Determine decline of extent today and expected future
- d. Compare to thresholds defined above
- e. Map distribution of HCV 3 areas that meet criteria *

* to serve as general reference for future assessment

HCV 3 - Rare or Endangered Ecosystems

Western Plains
& Mountains



Forest Cover



Past

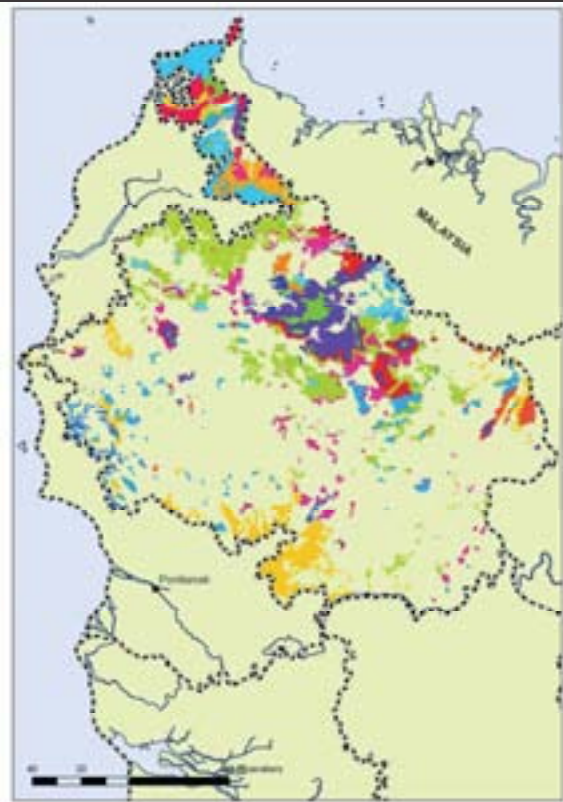


Present

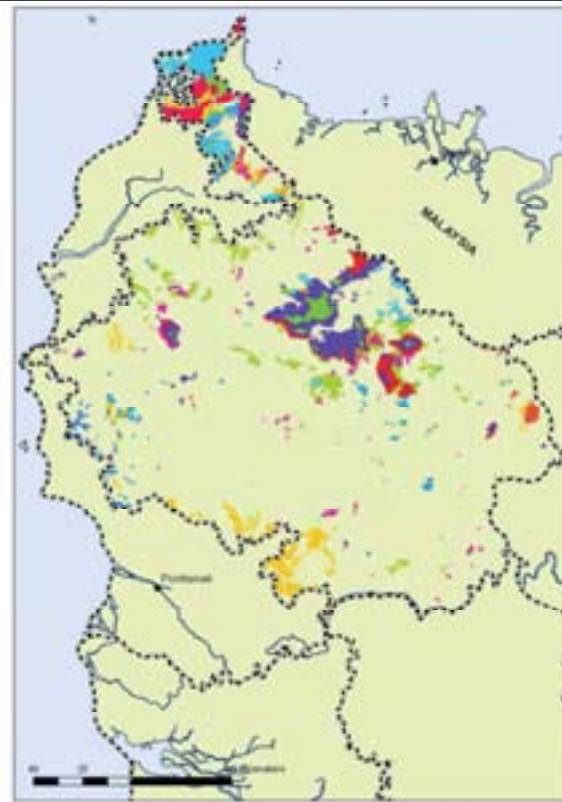


Future
expected

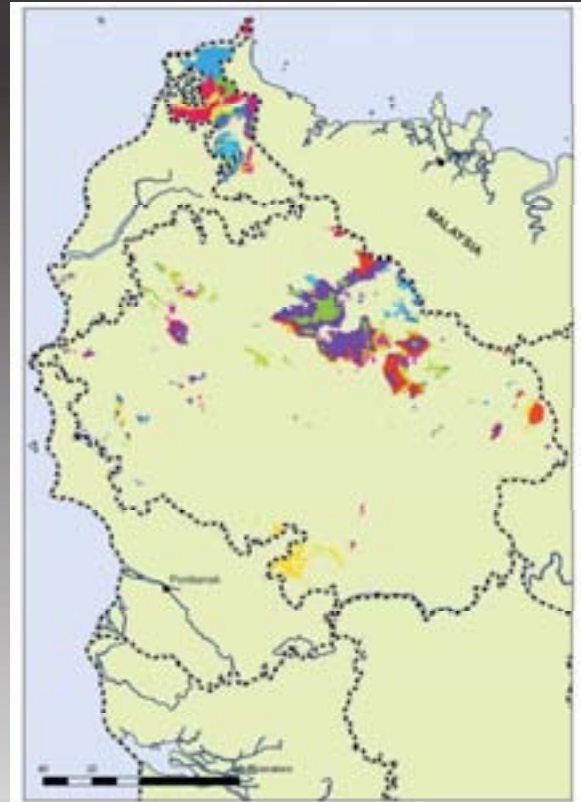
Ecosystem Distribution



Past

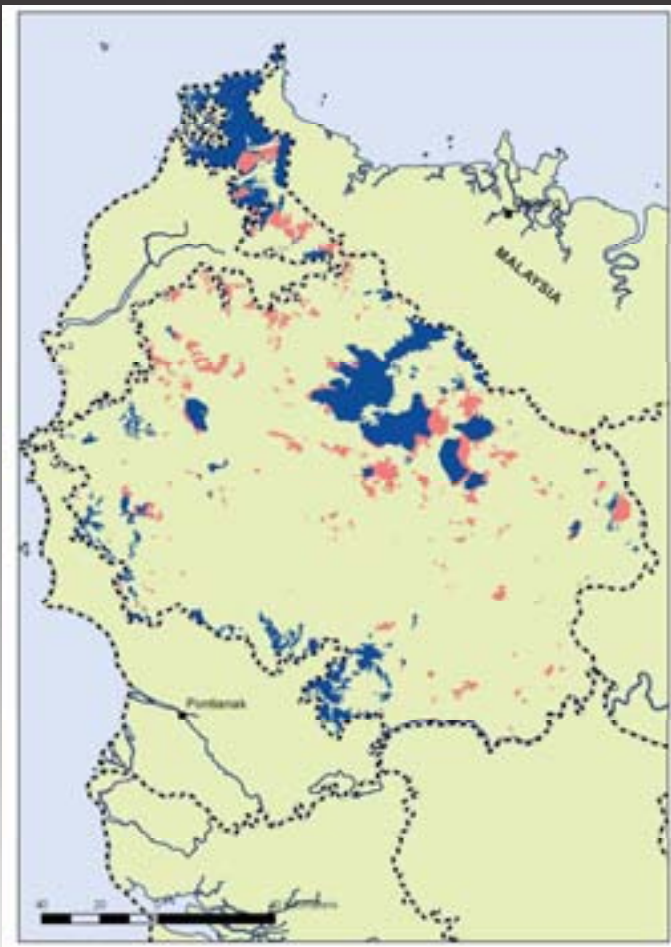


Present

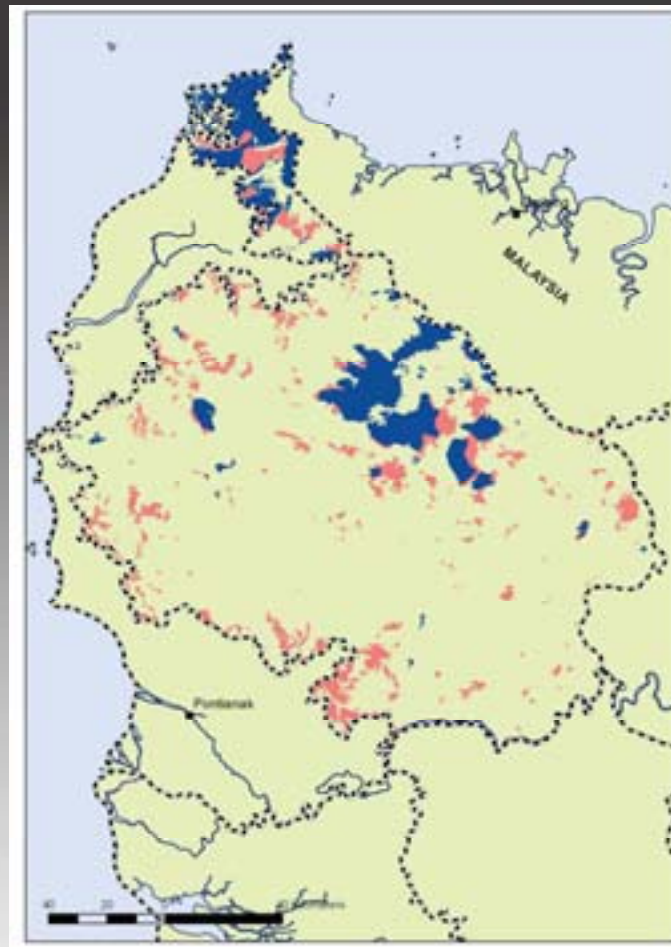


Future
expected

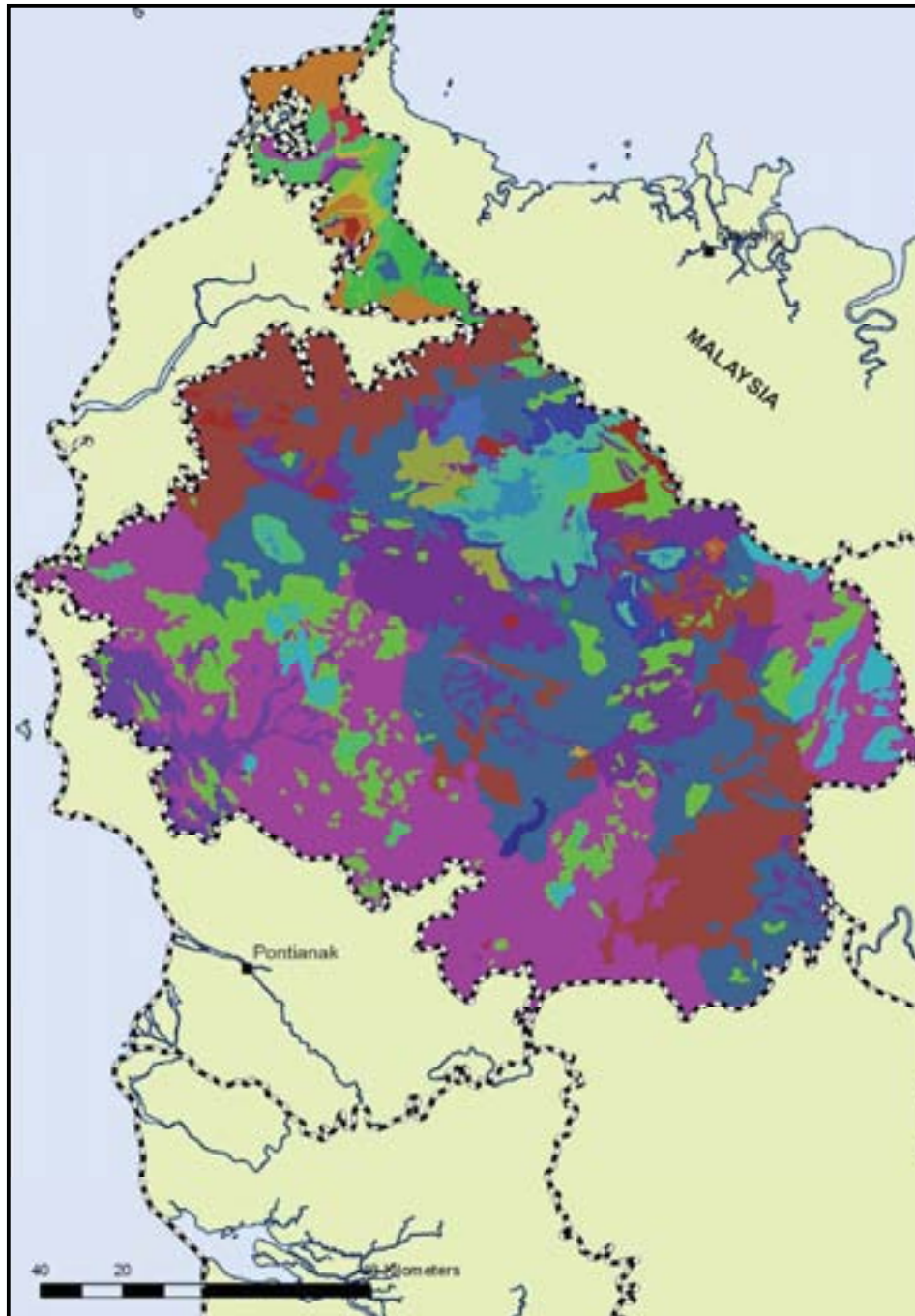
Rare & Endangered Ecosystems



Current (>50% ↓)



Plus Future (>75% ↓)



RePPProT Land System Class

Outline

- I. Landscape Concept & terms HCV
- III. Case Study landscape HCV 3 mapping
- III. Linking the MU and the landscape 'scales'

Endangered Ecosystems

at the MU level

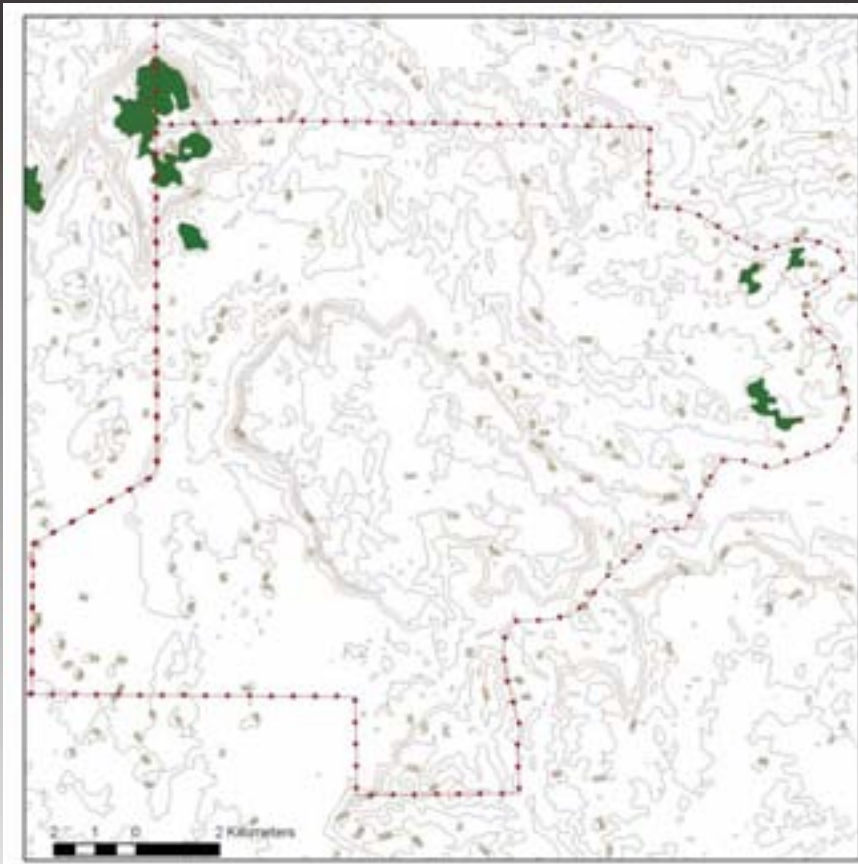
1. Is one or more RePPProT class identified as HCV 3 in landscape analysis present in the MU?

2. If yes, is there natural forest or other vegetation type present on that RePPProT class?

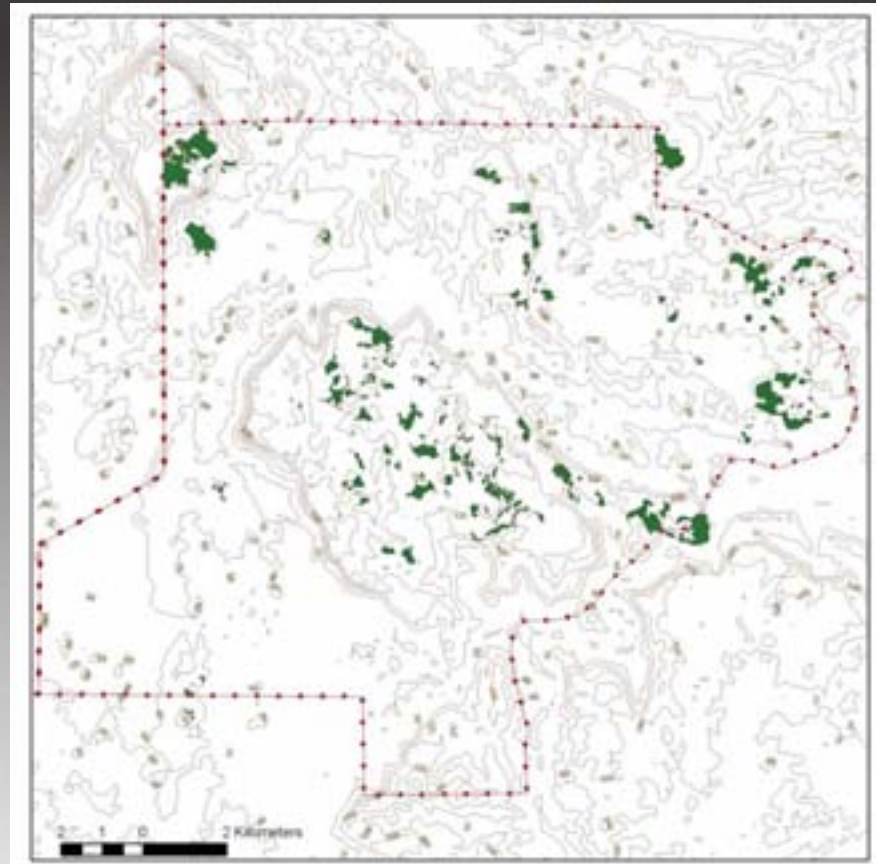
3. If yes, HCV 3 is present at the MU. Now map it to resolution required.

Is the spatial resolution of data used to determine rare or endangered ecosystems for the landscape sufficient to map HCV 3 within the MU?

Endangered Ecosystems



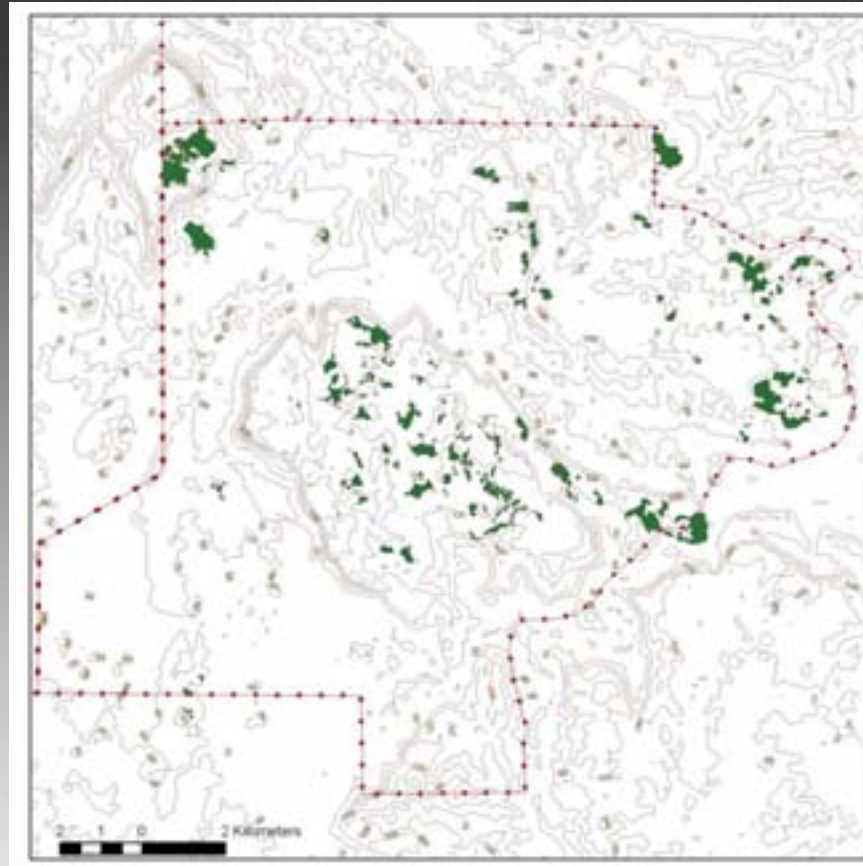
Landsat 7 (30 m)



Future (0.2 m)

Endangered Ecosystems

Landscape
(30 m)



MU
(0.2 m)



Conclusions

- Landscape HCV 3 method is systematic, clear and replicable, a minimum requirement for 'national method'. Can be a model for application outside Indonesia.
- Method is sound across large spatial extent, but the data may not be adequate for MU level.
- Properly viewed as a 2-step process. Landscape method highlights indicative HCV 3 areas, site level confirms their presence.
- **DO NOT ZOOM IN, CUT and PASTE !!**

Conclusions

- Landscape context is vital for understanding regional importance of remnant forest areas. Risk of overlooking small isolated fragments (ie *Getting It Wrong*).
- Provides science-based justification for HCV status, which can be vital for defending recommendations to 'MU focused' client
- Landscape context also highlights limitations and opportunities for management.

