



# STATUS TERUMBU KARANG TERKINI DAN EKOSISTEM TERKAIT

Suharsono

Pusat Penelitian Oseanografi – LIPI.

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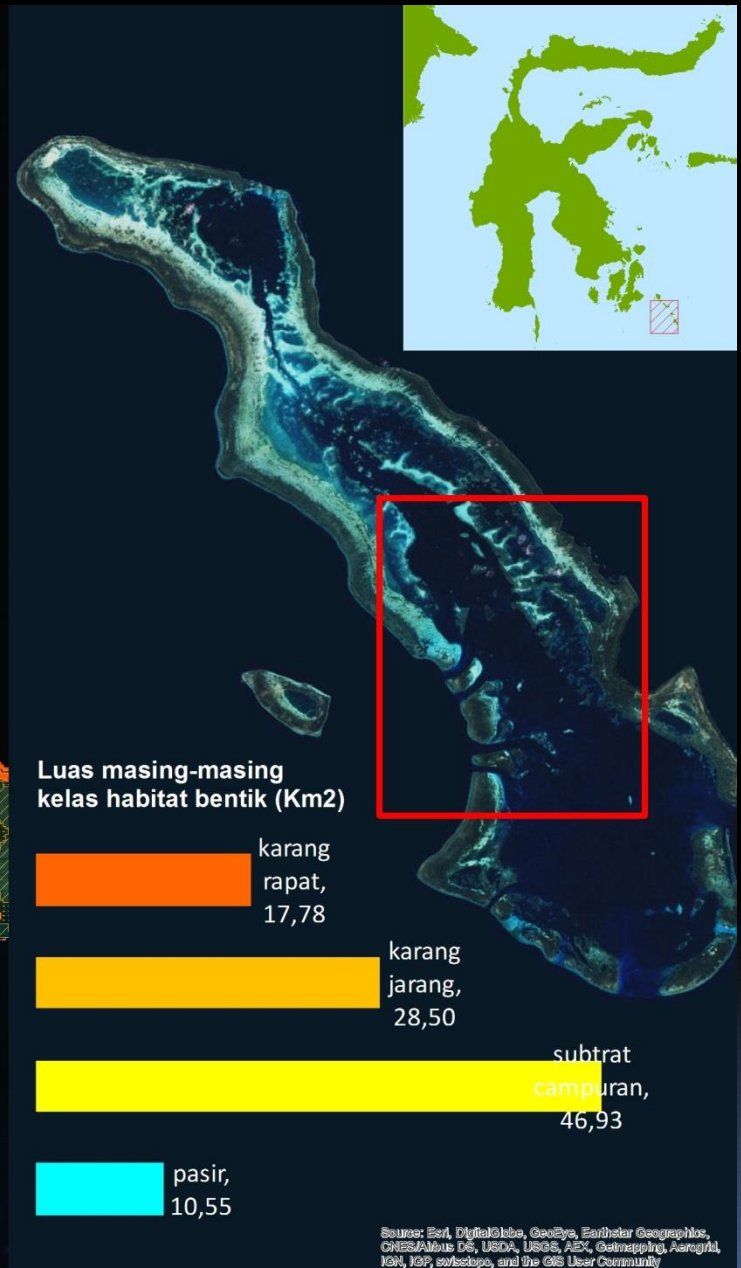
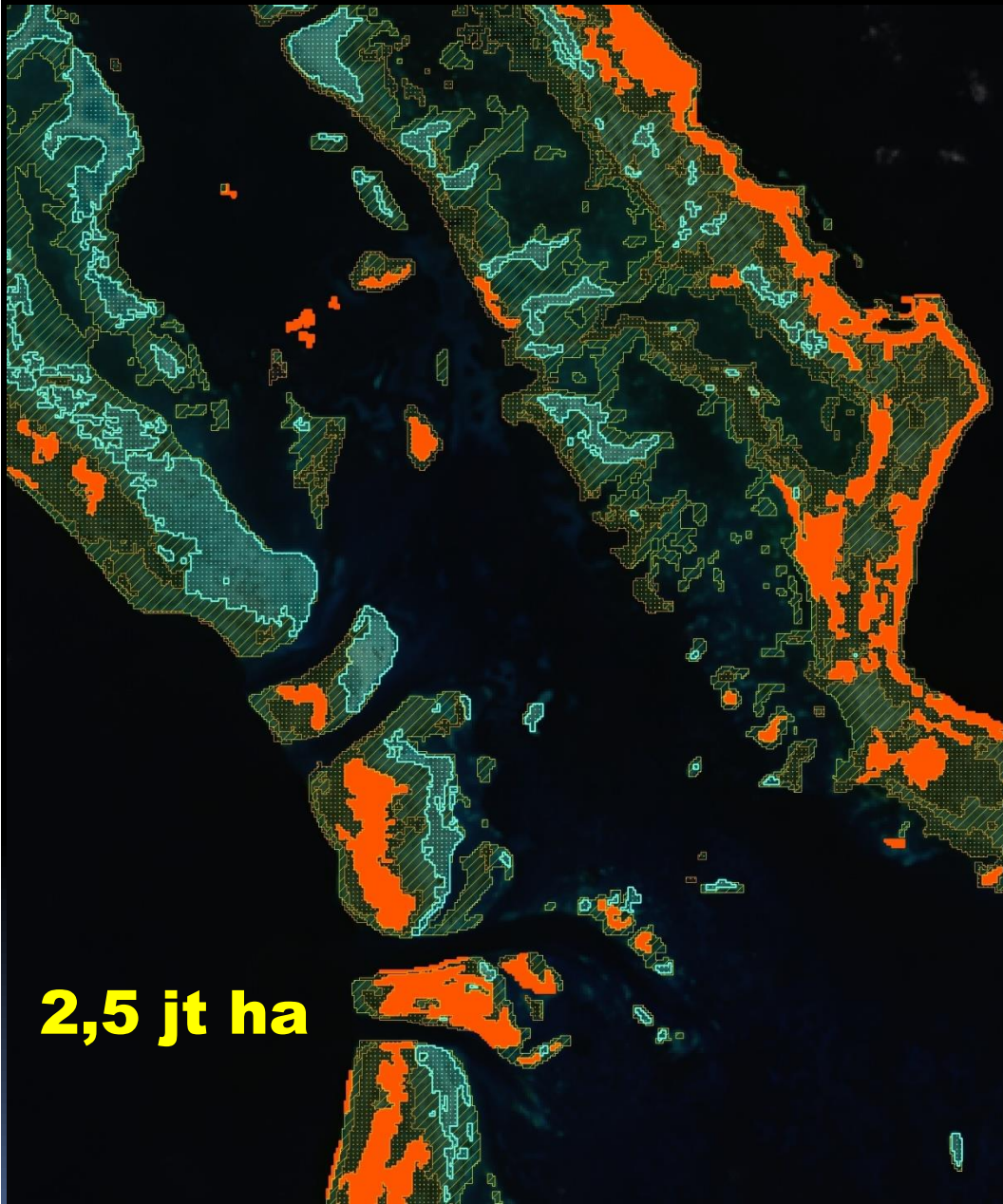
Email : shar@indo.net.id



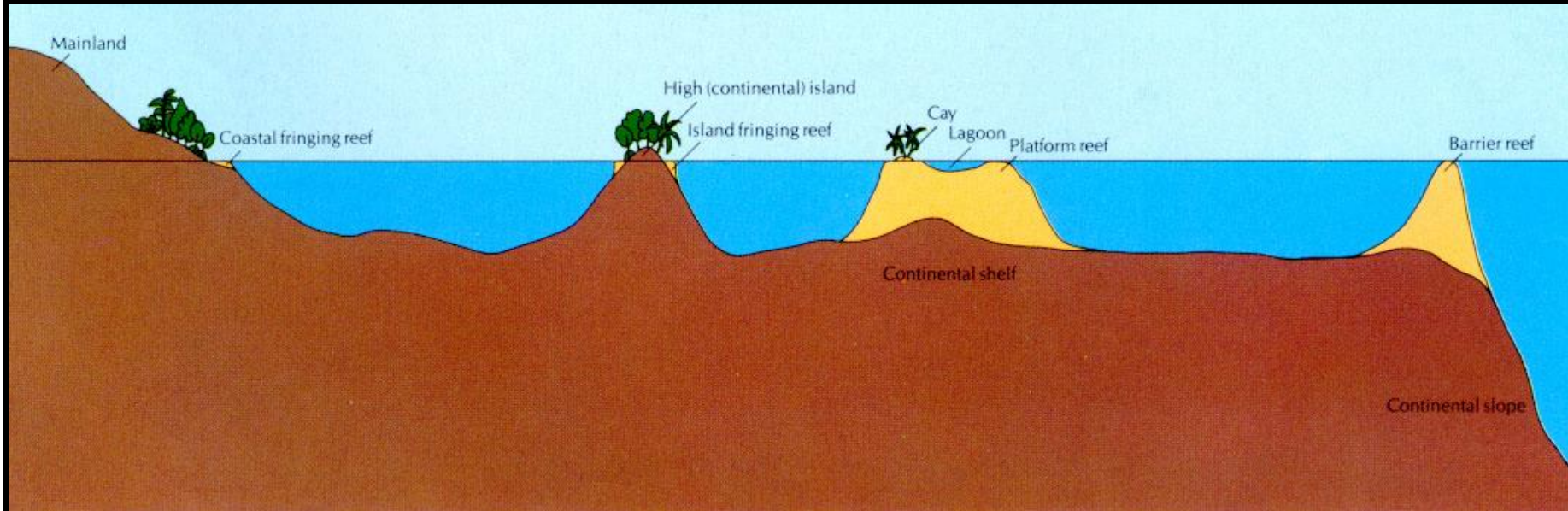


# Indonesian Sea statistic

- Total land area : 5.0 juta km<sup>2</sup>
- Total Sea area : 3.1 juta km<sup>2</sup>
- Nusantara sea : 2.8 juta km<sup>2</sup>
- Teritorial sea (12 mil) : 0.3 juta km<sup>2</sup>
- Continen shelf : 1.5 juta km<sup>2</sup>
- Eeconomic Exclusive zone : 2.7 juta km<sup>2</sup>
- Number of Island : 18,110 Island
- Total shoreline : 108.920 km
- Length: west – east : 5.100 km  
North - south : 1.888 km
- Total Coral Reefs : 2.500.000 ha



# Coral reefs type in Indonesia



- a. Fringing reef / Karang tepi (70%).
- b. Barrier reef / Karang penghalang (20%).
- c. Atoll / Atol (2.5%)
- d. Patch reef / Gosong karang (7.5%).

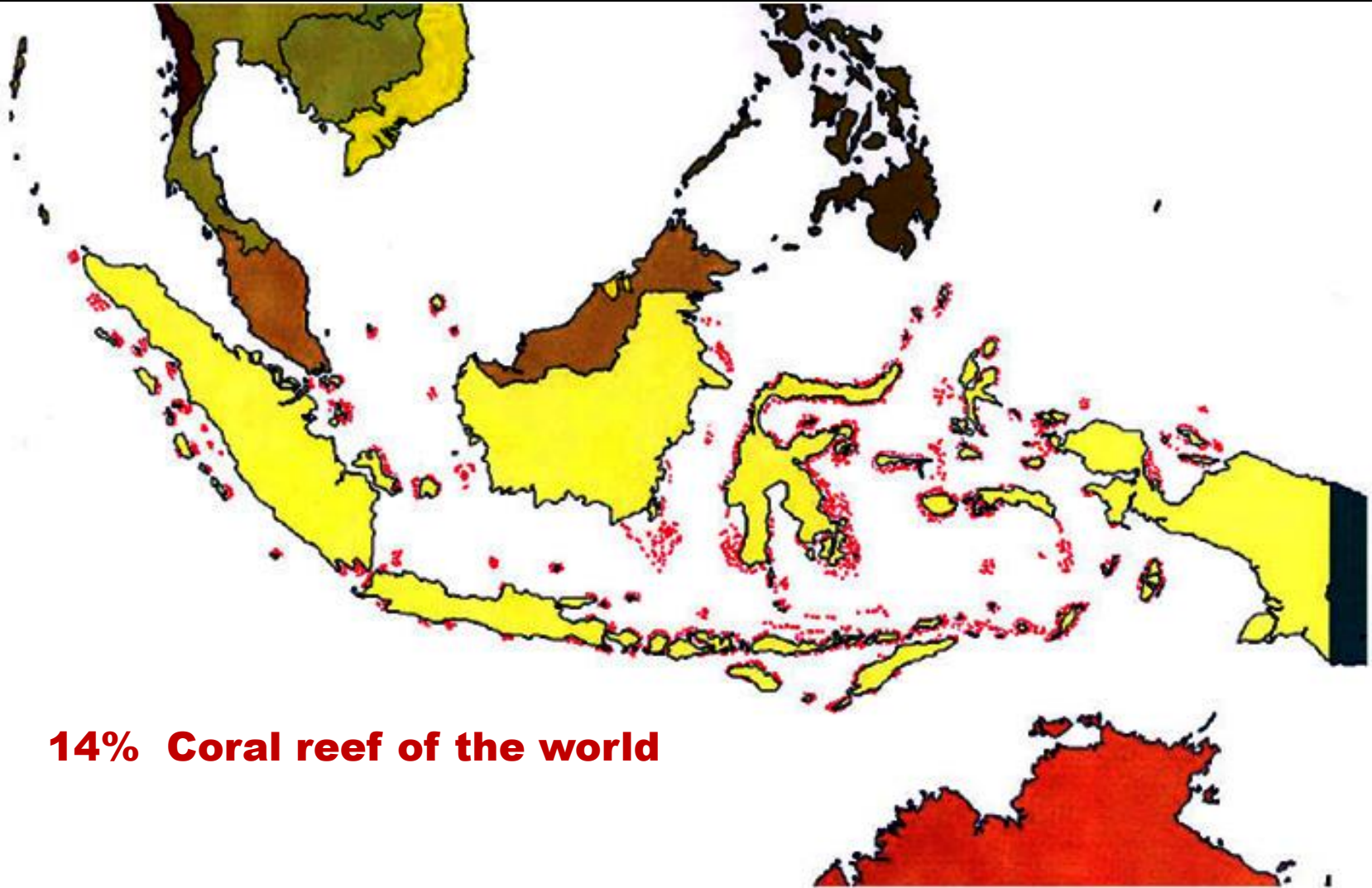
# Example Barrier reef and Atol



# Fringing reefs



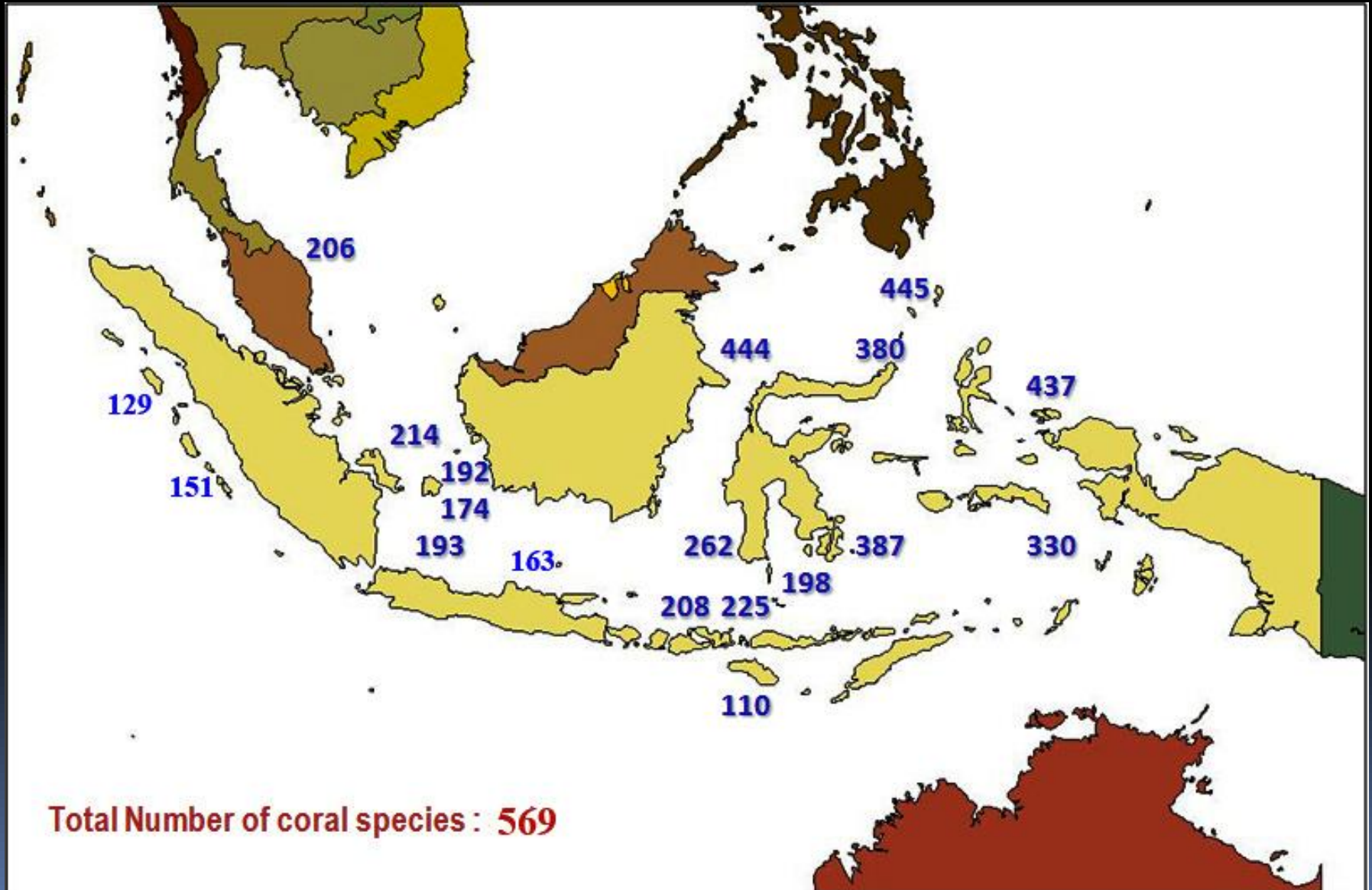
# Distribution of Coral reefs in Indonesia







# Distribution of Coral species in Indonesia



# Dominant Genus : Acropora, Montipora and Porites.



No.	Family Species
<b>XIII</b>	<b>TRACHYPHYLLIIDAE</b>
542	<i>Trachyphyllia geoffroyi</i>
<b>XIV</b>	<b>CARYOPHYLLIIDAE</b>
543	<i>Euphyllia ancora</i>
544	<i>E. cristata</i>
545	<i>E. divisa</i>
546	<i>E. glabrescens</i>
547	<i>E. paraancora</i>
548	<i>E. paradivisa</i>
549	<i>E. yaeyamaensis</i>
550	<i>Plerogyra discus</i>
551	<i>P. sinuosa</i>
552	<i>P. simplex</i>
553	<i>Physogyra lichtensteini</i>
554	<i>Catalaphyllia jardinei</i>
555	<i>Nemanzophyllia turbida</i>
556	<i>Heterocyathus aequicostatus</i>
<b>XV</b>	<b>DENDROPHYLLIIDAE</b>
557	<i>Turbinaria bifrons</i>
558	<i>T. frondens</i>
559	<i>T. heronensis</i>
560	<i>T. irregularis</i>
561	<i>T. mesenterina</i>
562	<i>T. patula</i>
563	<i>T. peltata</i>
564	<i>T. radicalis</i>
565	<i>T. reniformis</i>
566	<i>T. stellulata</i>
567	<i>Tubastrea faulkneri</i>
568	<i>T. micrantha</i>
569	<i>Heteropsammia cochlea</i>

No.	Family Species
NON SCLEREACTIONIAN	
<b>I</b>	<b>TUBIPORIDAE</b>
1	<i>Tubipora musica</i>
<b>II</b>	<b>HELIOPORIDAE</b>
2	<i>Heliopora coerulea</i>
<b>III</b>	<b>MILLEPORIDAE</b>
3	<i>Millepora dichotoma</i>
4	<i>M. platyphylla</i>
5	<i>M. tenella</i>
6	<i>M. exaesa</i>
<b>IV</b>	<b>STYLASTERIDAE</b>
7	<i>Distichopora</i> sp.
8	<i>Stylaster</i> sp.

Jumlah Famili/ suku : 15  
 Jumlah Genus/ Marga : 84  
 Jumlah species/jenis : 569

# Endemic Species

*Acropora suharsonoi*

*Indophyllia macassarensis*

*Acropora desalwii*

*Isopora togianensis*





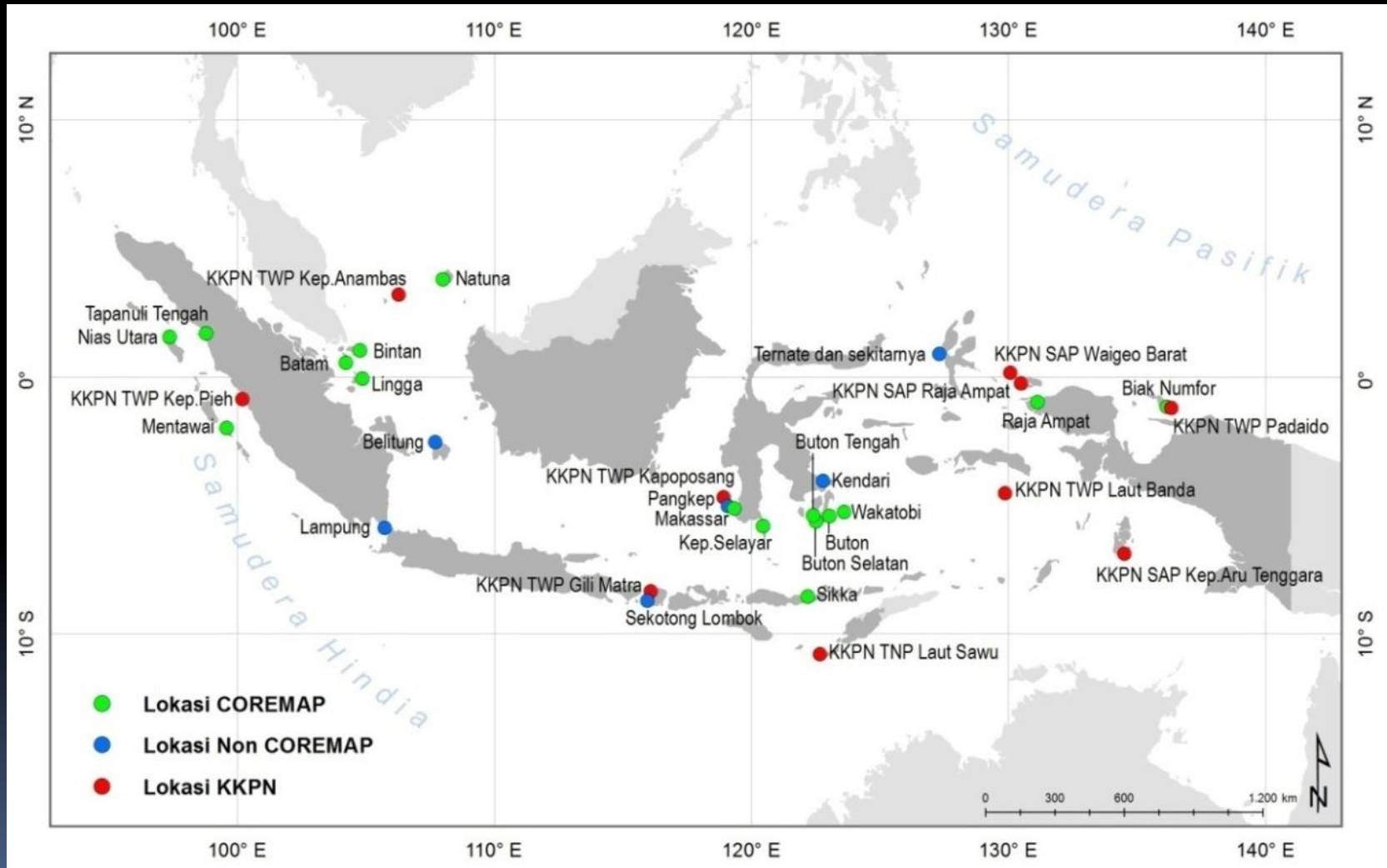
# **Status Kondisi terumbu karang**

# Quality control of monitoring

- Standardized Method
- Certification of Human resources.
- Standardized analysis.
  - \* coral reefs
  - \* Fishes.
  - \* Seagrasses.
  - \* Mega benthic.
  - \* Mangrove.



# Locations for Monitoring activities



# Monitoring program 31 Location ( 22 location for 2018)



● Monitored by LIPI (12 locations)

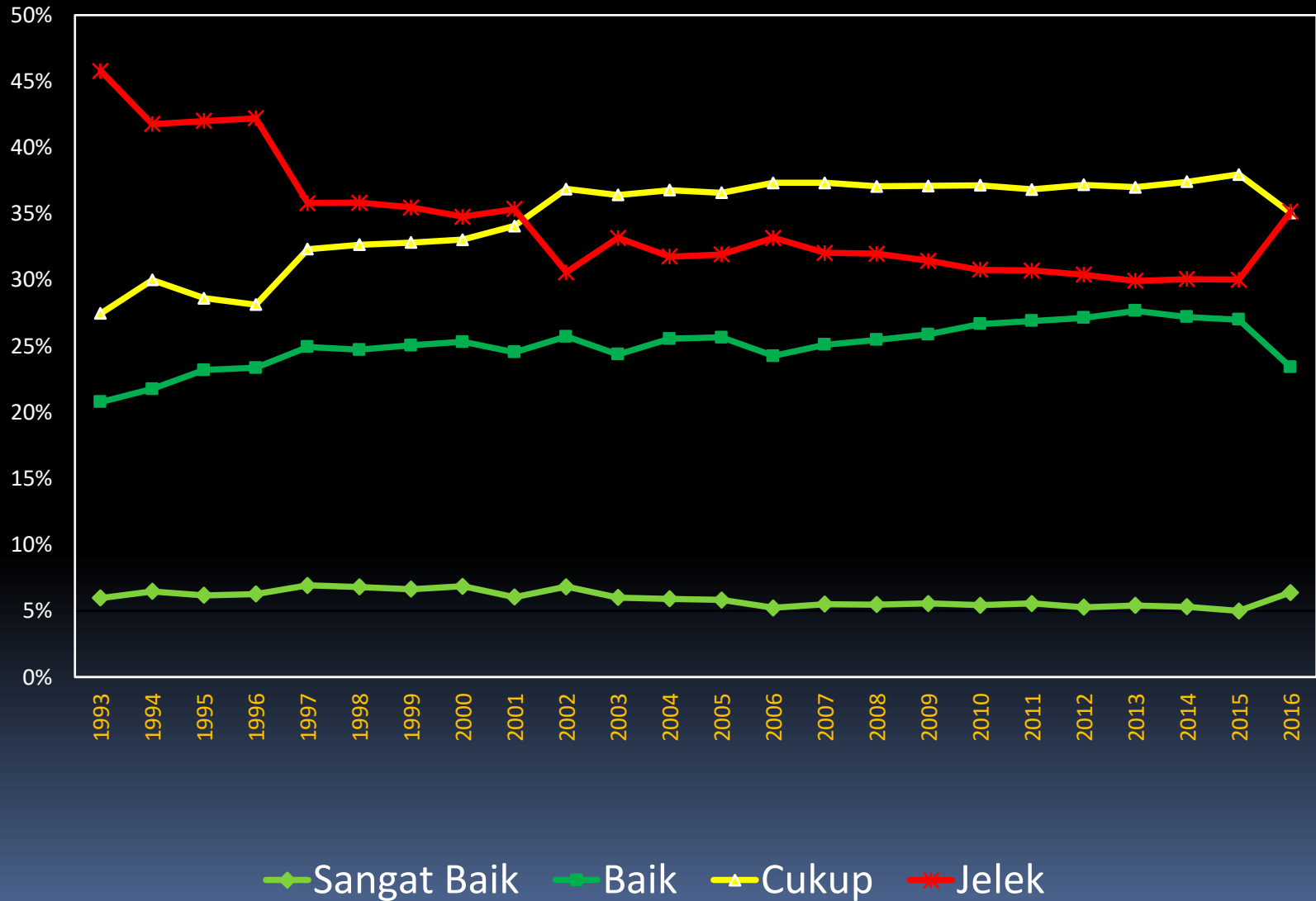
● Monitored by universities (10 locations)



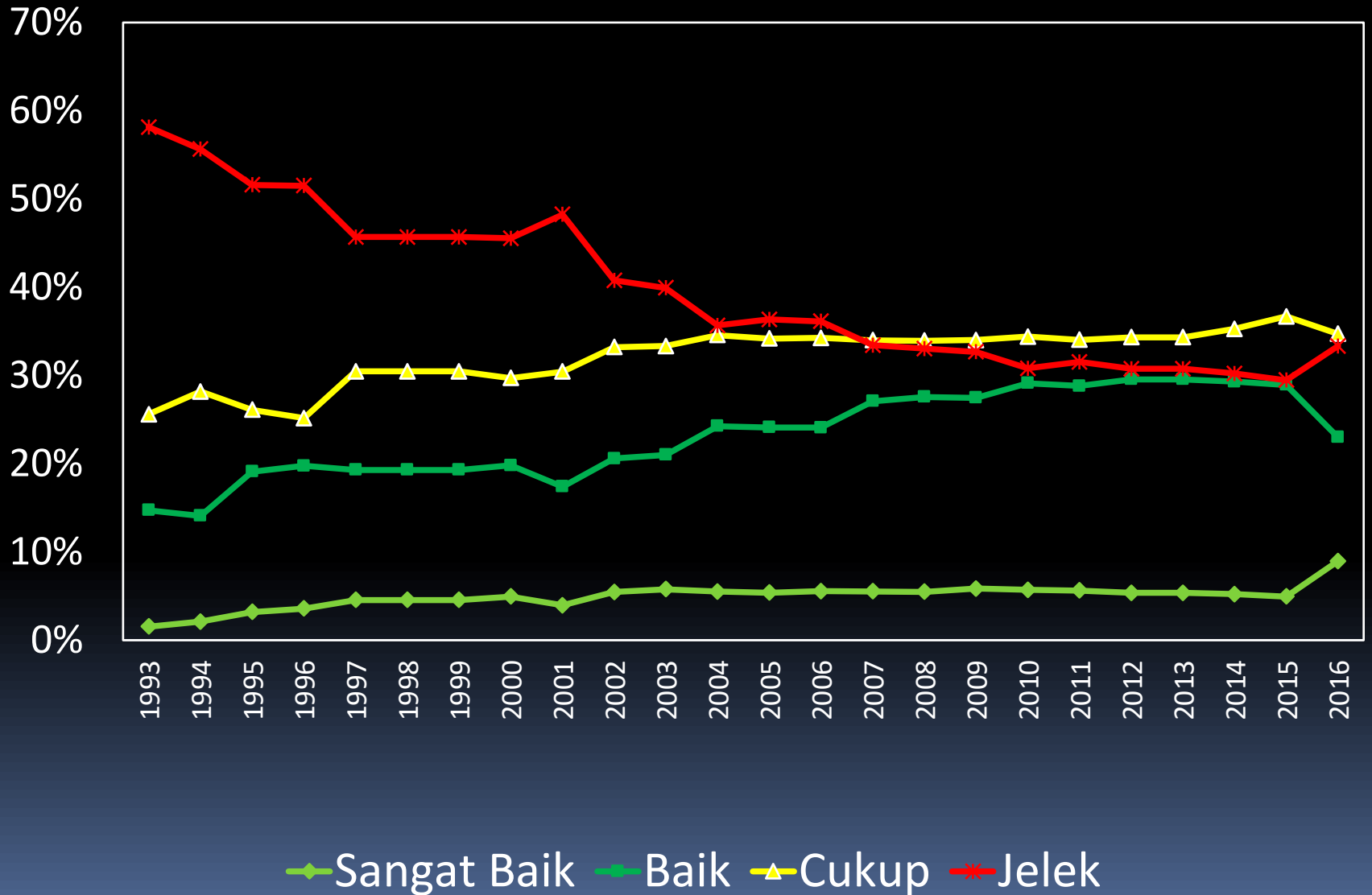
# Status Condition of Indonesian Coral reefs 2016

No.	Lokasi (1064)	Status			
		Excelent	Good	Fair	Poor
	INDONESIA	6.39%	23.40%	35.06%	35.15%
1	Western Indonesia	8.97%	22.99%	34.71%	33.33%
2	Central Indonesia	4.91%	24.57%	33.42%	37.10%
3	Eastern Indonesia.	4.05%	22.07%	38.74%	35.14%

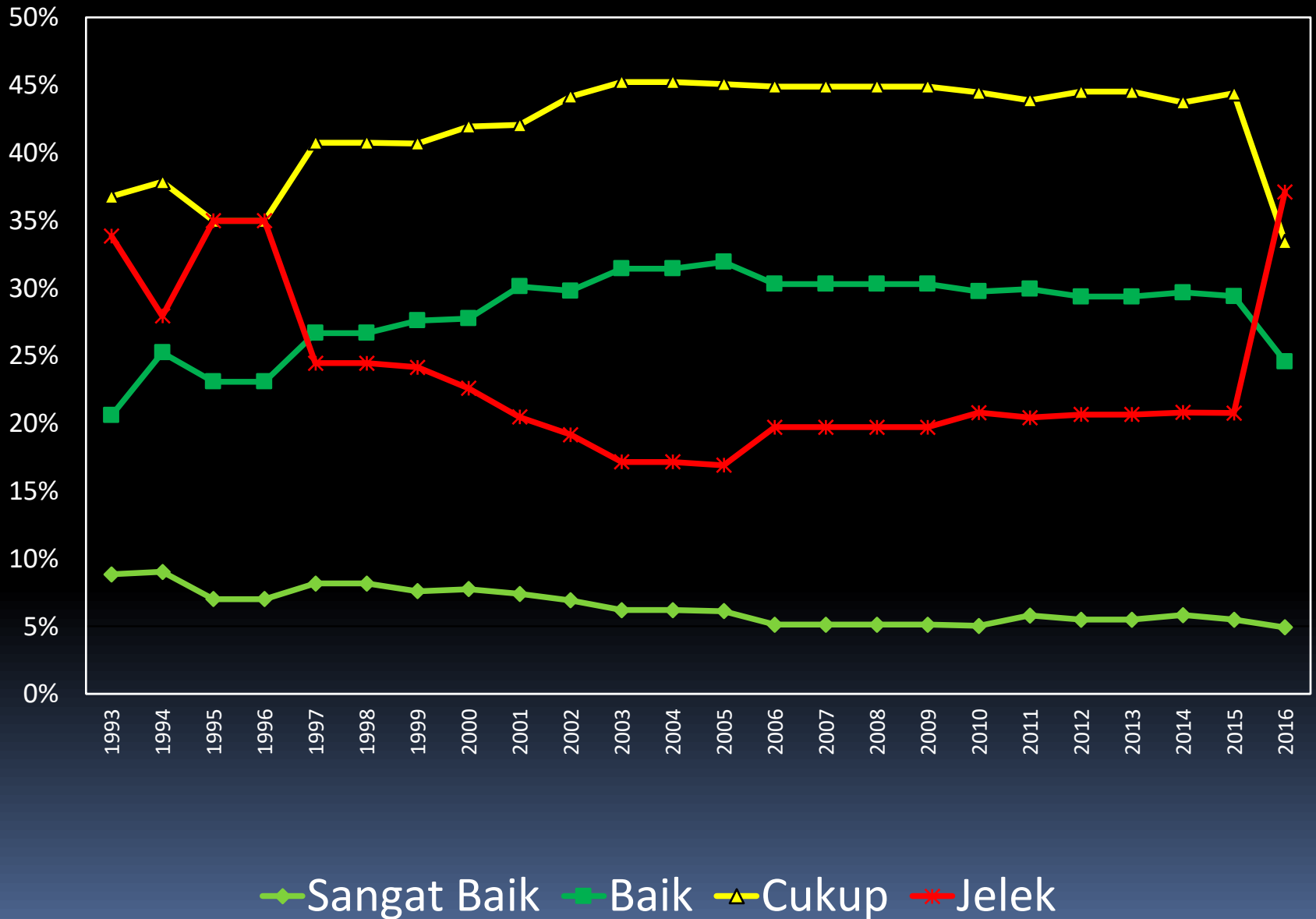
# Status Indonesian Coral reefs 1993 -2016



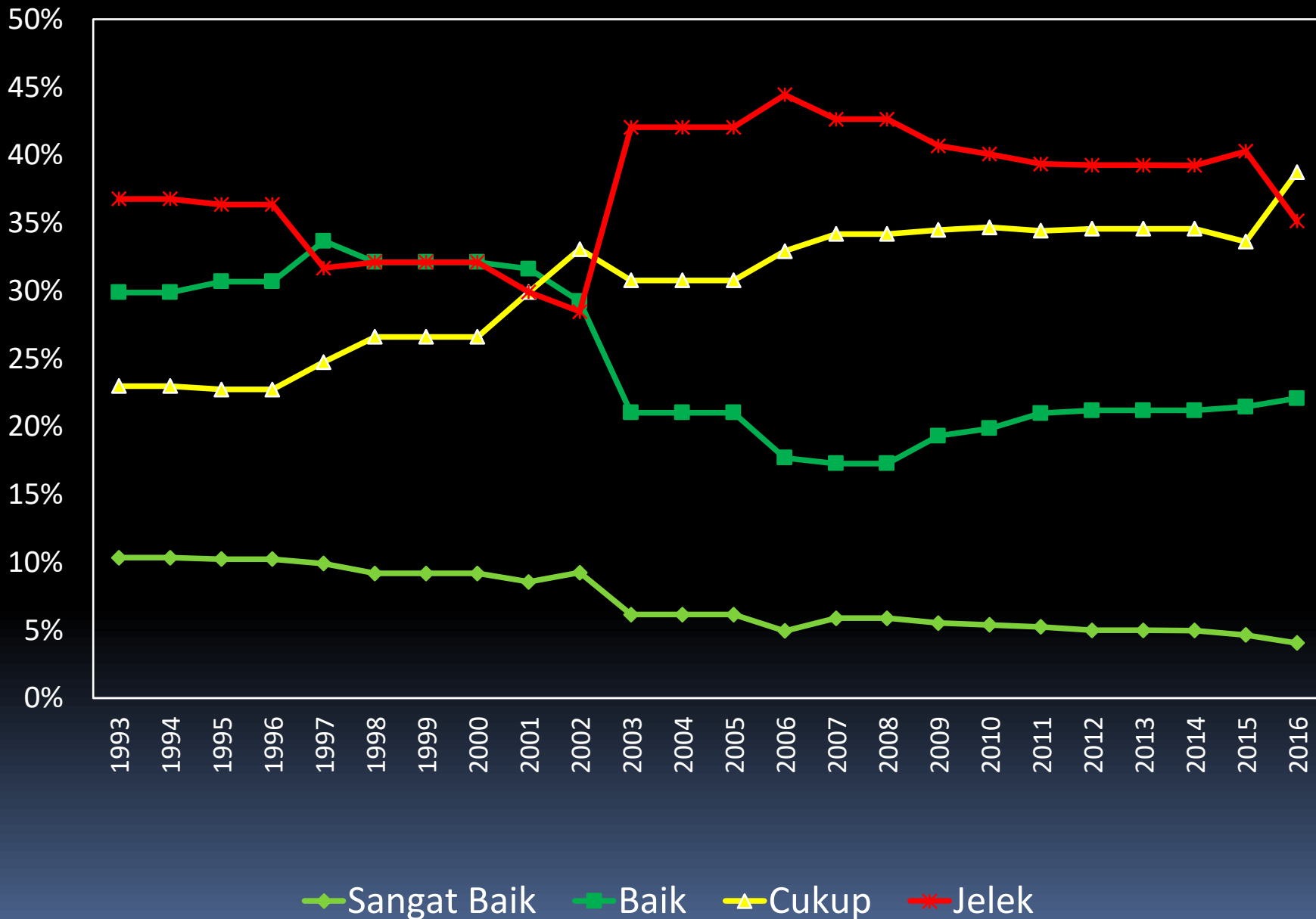
# WESTERN INDONESIA



# CENTRAL INDONESIA

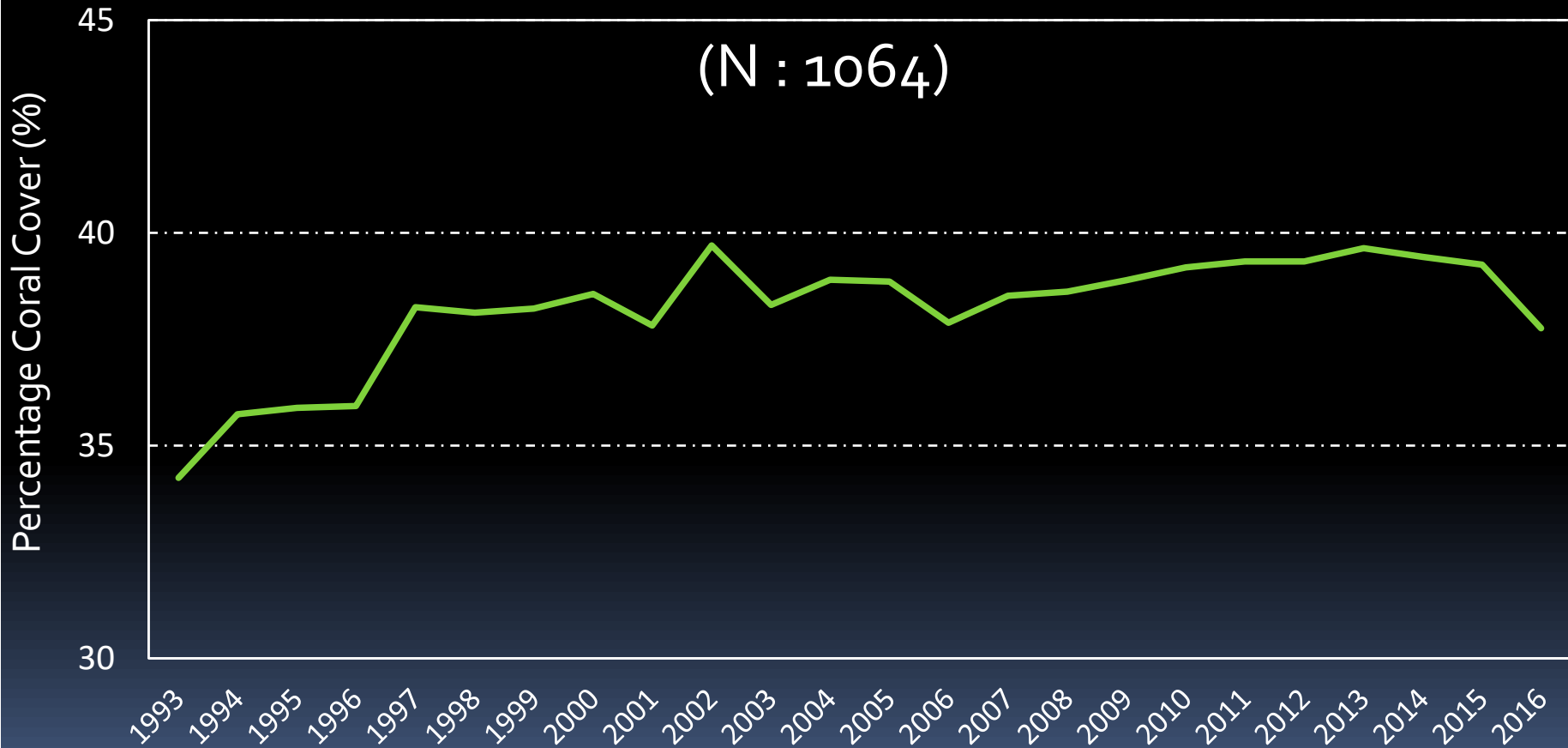


# EASTERN INDONESIA





# Trend Indonesian Coral Reef 1993 - 2016

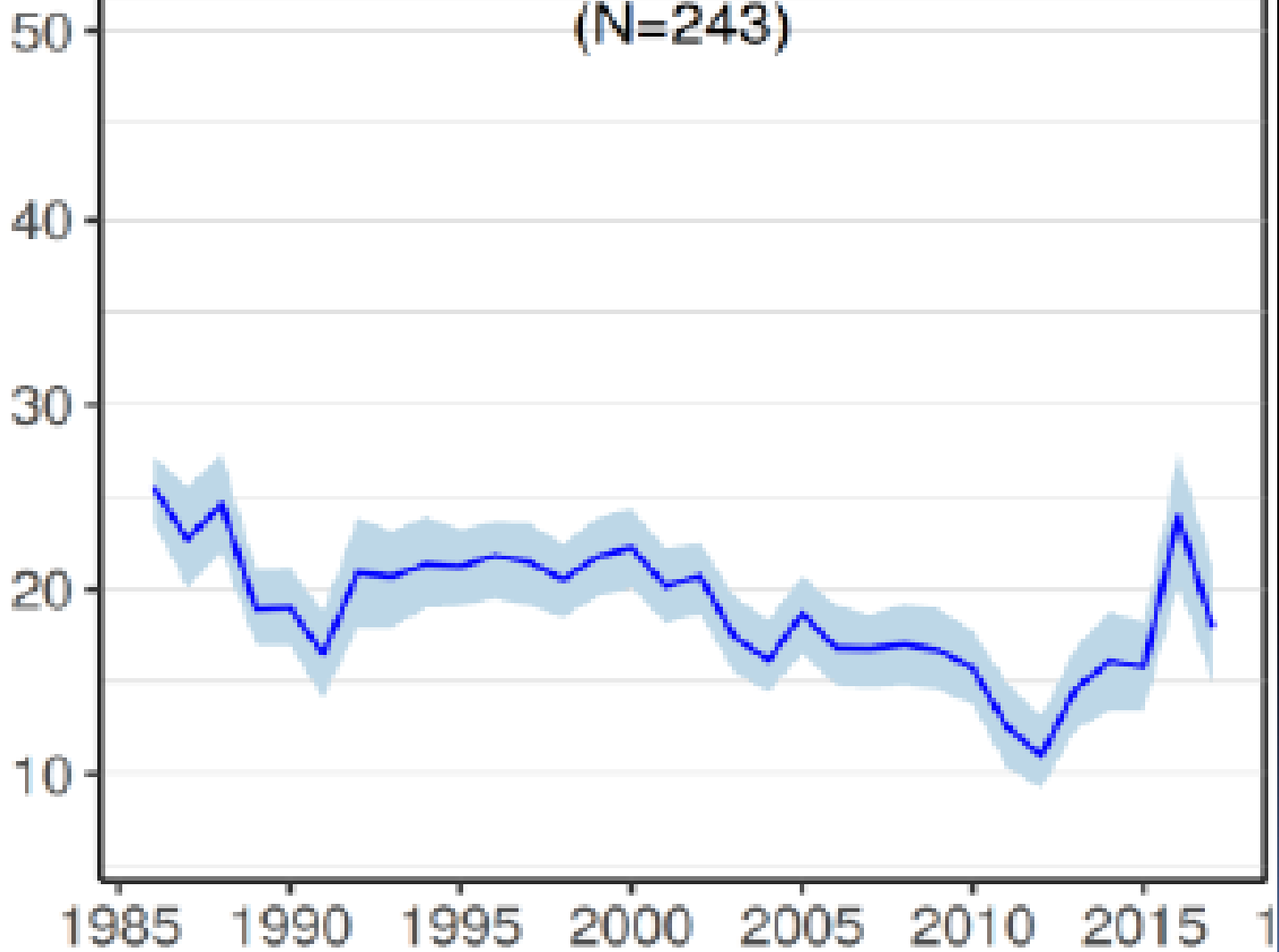




# Great Barrier Reef


(N=243)

Coral cover (%)

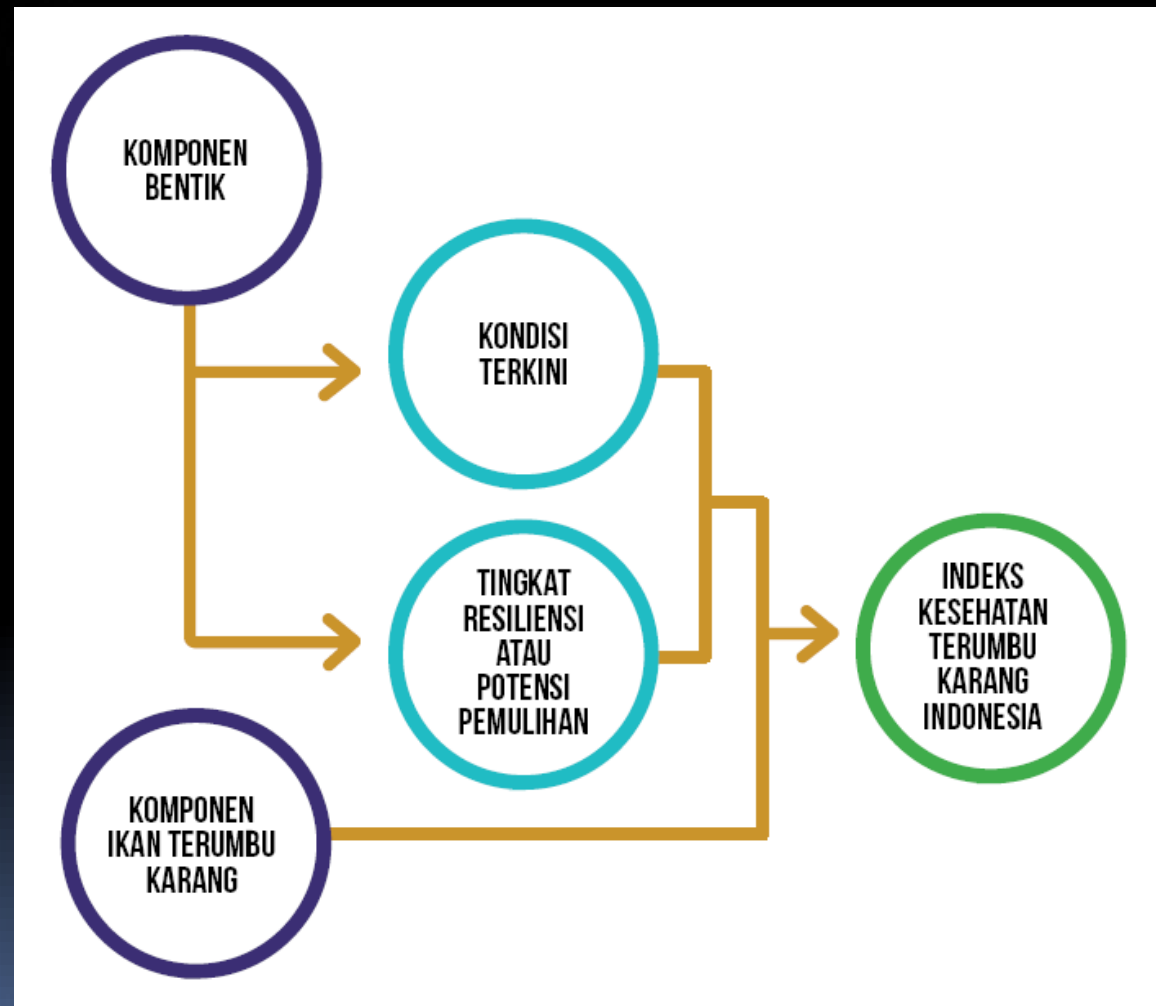


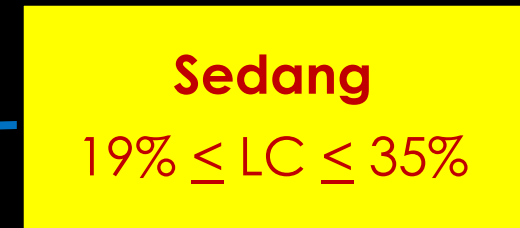


# Development of Reef health index

- Not Just single parameter and more accurate to show the condition of coral reefs.
  - Not only for management proposed.
  - Simple and Scientifically justified.
  - Easy to understand by decision maker.
- 

## KONSEP





TINGKAT  
RESILIENSI  
ATAU  
POTENSI  
PEMULIHAN

Rendah



$FS \geq 3\%$

∪



$R > 60\%$

∩  
 $LC \leq 5\%$

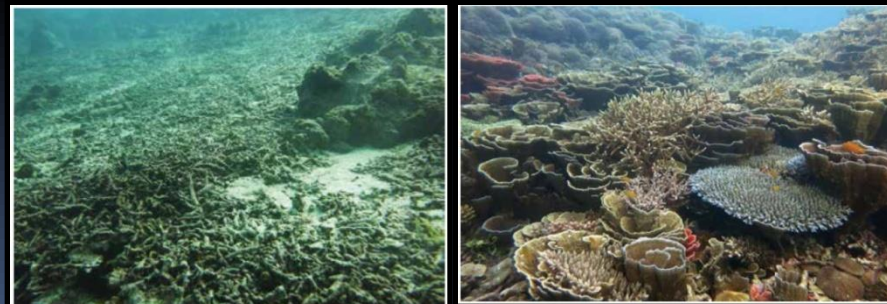
TINGKAT  
RESILIENSI  
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PEMULIHAN

Rendah



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∪

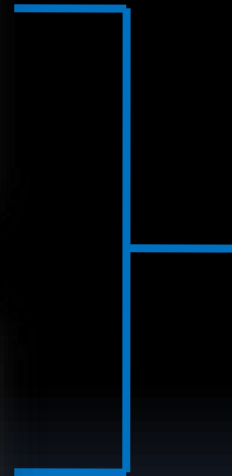


$R > 60\%$

∩  
 $LC \leq 5\%$

**KONDISI  
 TERKINI**

**TINGKAT  
 RESILIENSI  
 ATAU  
 POTENSI  
 PEMULIHAN**



TUTUPAN KARANG HIDUP	POTENSI PEMULIHAN	KATEGORI BENTIK	NILAI KOMPONEN BENTIK
Tinggi	Tinggi	Karang sehat dengan potensi pemulihan yang tinggi bila terjadi gangguan	6
Tinggi	Rendah	Karang sehat tetapi bila terjadi gangguan akan sulit untuk pulih seperti kondisi semula	4
Sedang	Tinggi	Karang dalam kondisi cukup dan mungkin dalam proses pemulihan dari gangguan	5
Sedang	Rendah	Karang dalam kondisi cukup tetapi beresiko mengalami penurunan	2
Rendah	Tinggi	Tutupan karang rendah, namun berpotensi untuk membaik kondisinya	3
Rendah	Rendah	Tutupan karang rendah, dan sulit untuk membaik kondisinya.	1





Merupakan ikan target yang termasuk dalam 7 famili:

1. Scaridae,
2. Siganidae,
3. Acanthuridae,
4. Serranidae,
5. Lutjanidae,
6. Lethrinidae ,
7. Haemulidae



KOMPONEN  
IKAN TERUMBU  
KARANG



**Rendah**

Biomassa < 970 kg/ha

**Sedang**

$970 \text{ kg/ha} \leq \text{Biomassa} \leq 1940 \text{ kg/ha}$

**Tinggi**

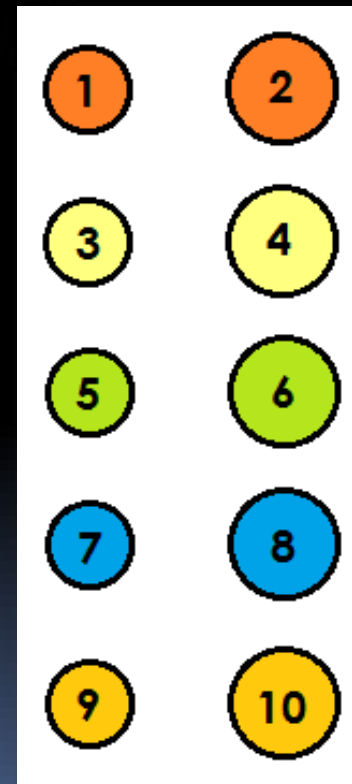
Biomassa > 1940 kg/ha

# Coral reefs health Index

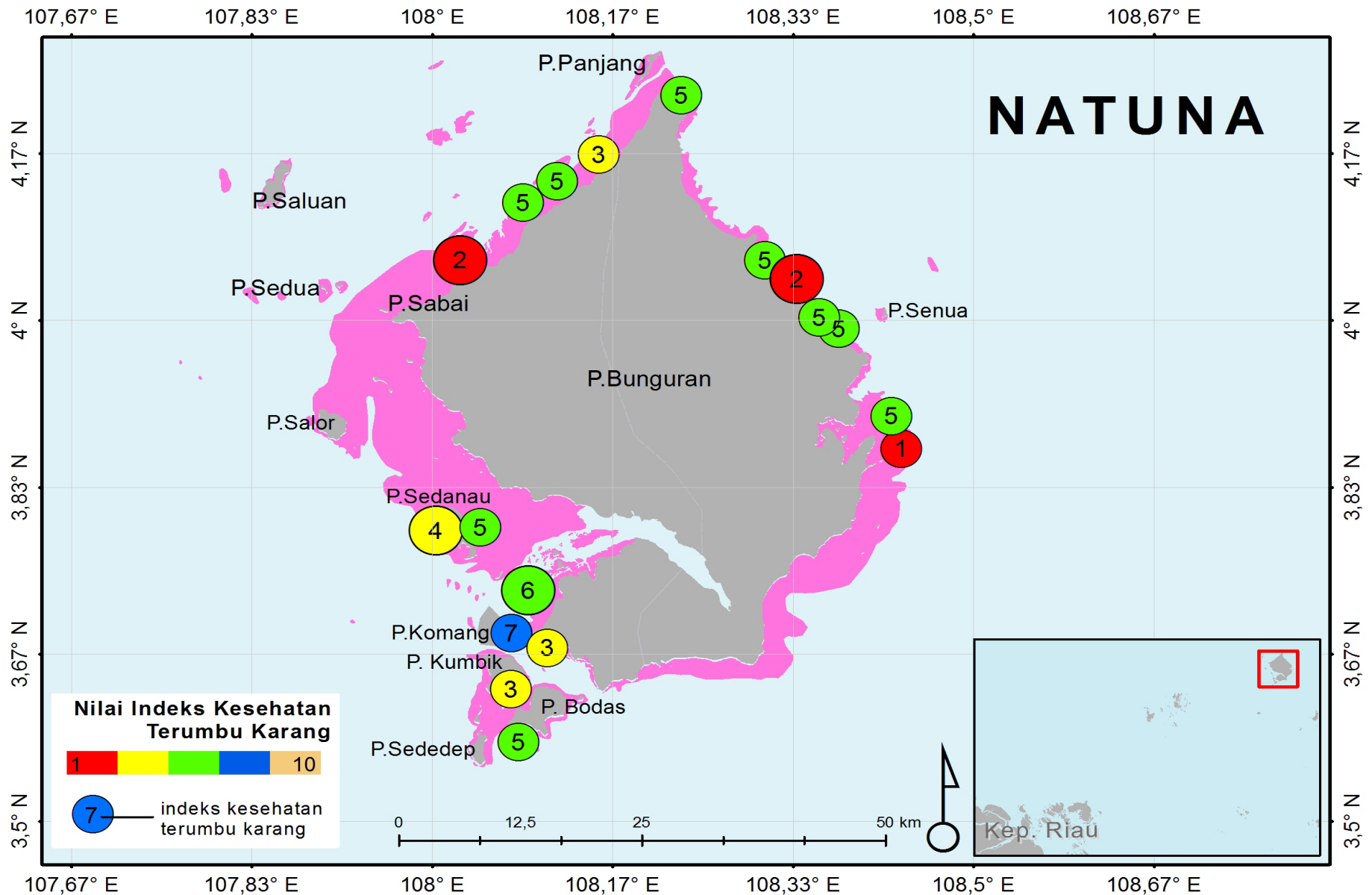
- Percentage of live coral cover.
- Rubble.
- Targeted Fish biomass.
- Fleshy seaweed.
- Resilience potential

no	Live coral cov	P. Recovey	Fish Biomas	index
1	high	high	high	10
2	fair	High	high	9
3	high	high	Fair	8
4	high	low	High	8
5	fair	high	Fair	7
6	Low	high	High	7
7	High	high	low	6
8	high	low	Fair	6
9	fair	low	High	6
10	fair	high	Low	5
11	low	high	Fair	5
12	low	low	High	5
13	high	low	Low	4
14	Fair	low	fair	4
15	low	high	Low	3
16	low	low	Fair	3
17	fair	low	Low	2
18	low	low	Low	1

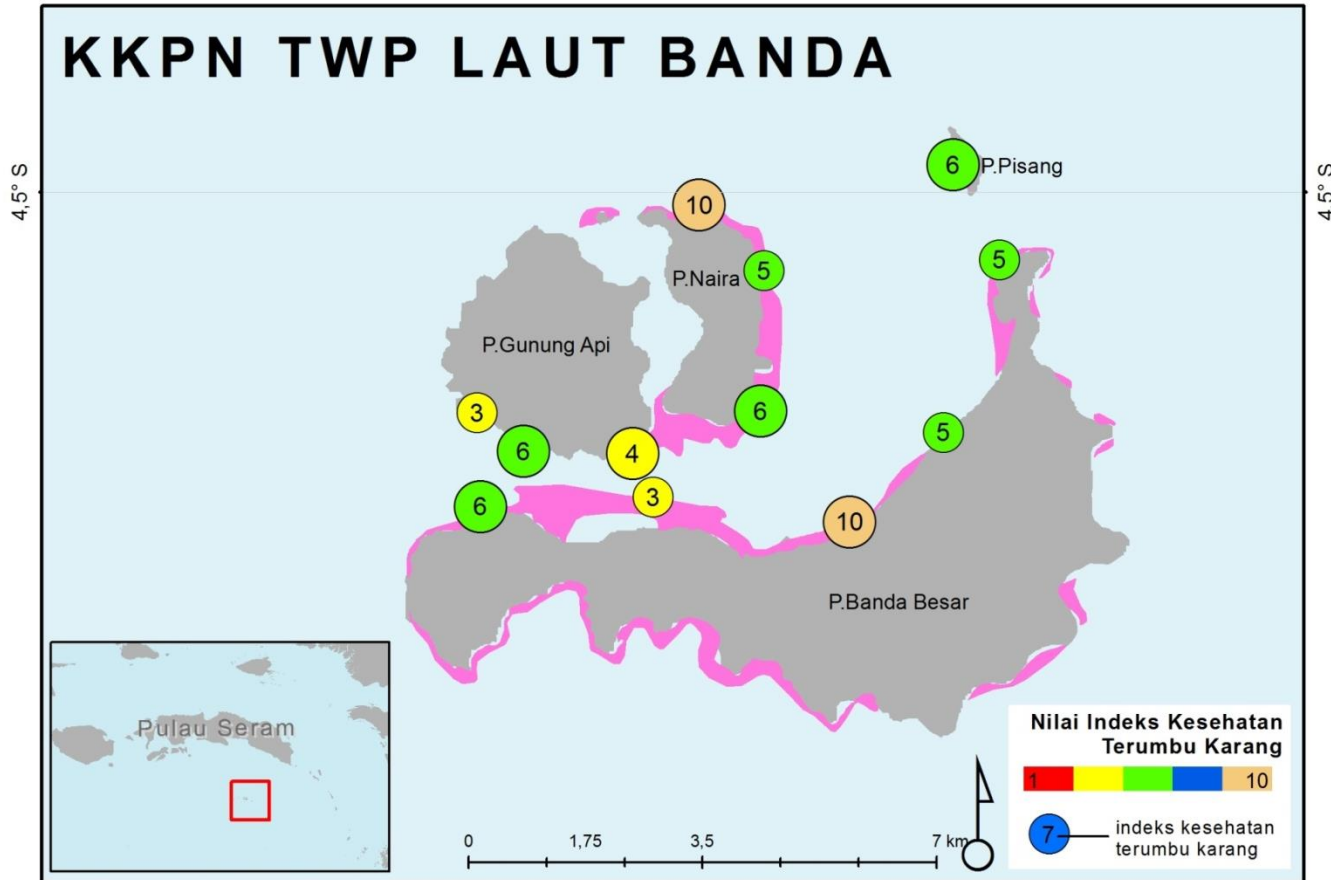
Nilai indeks kesehatan terumbu karang: 1-10



# Reef health Index



# KKPN TWP LAUT BANDA





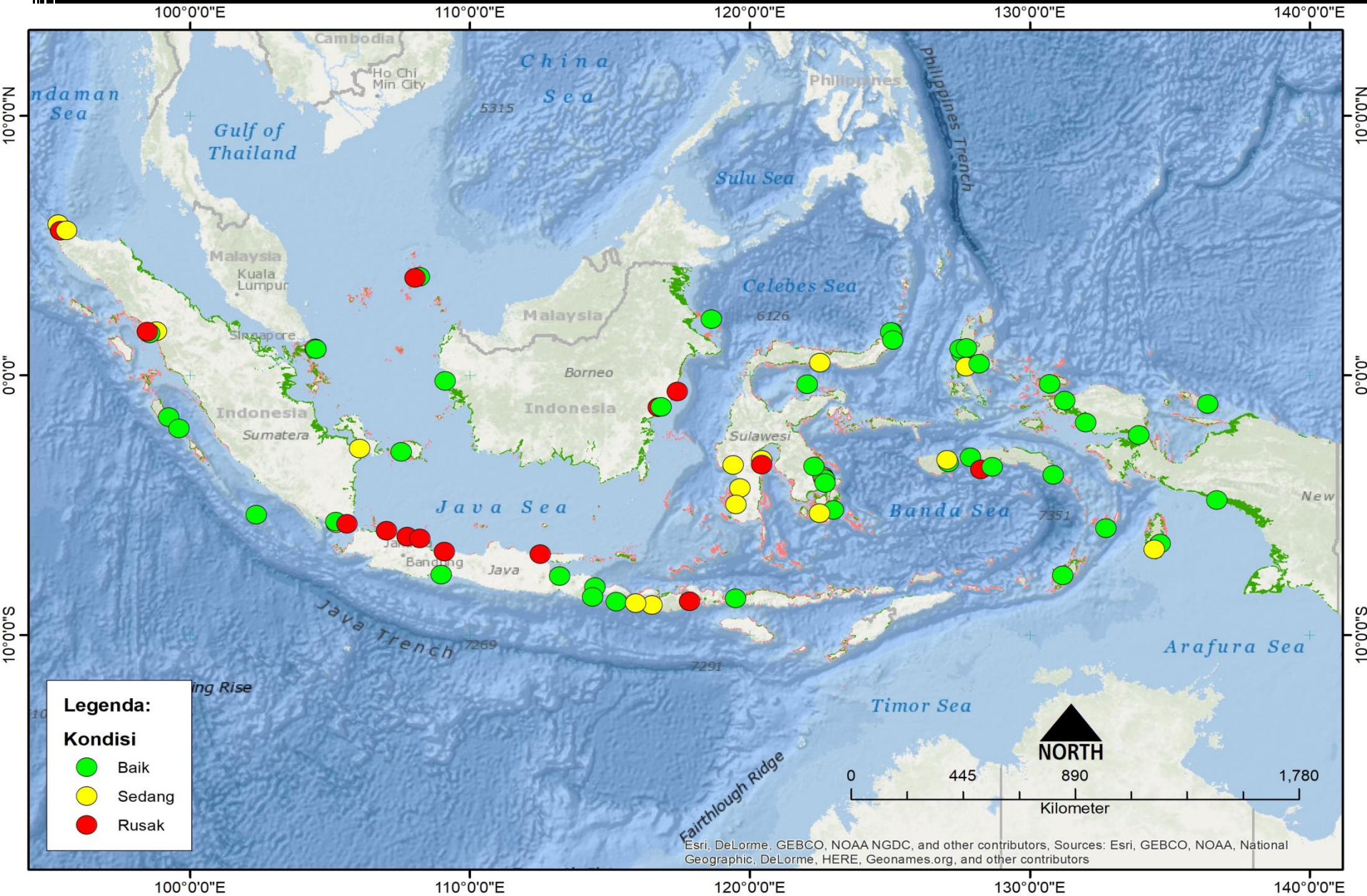
Ecosystem health Monitoring



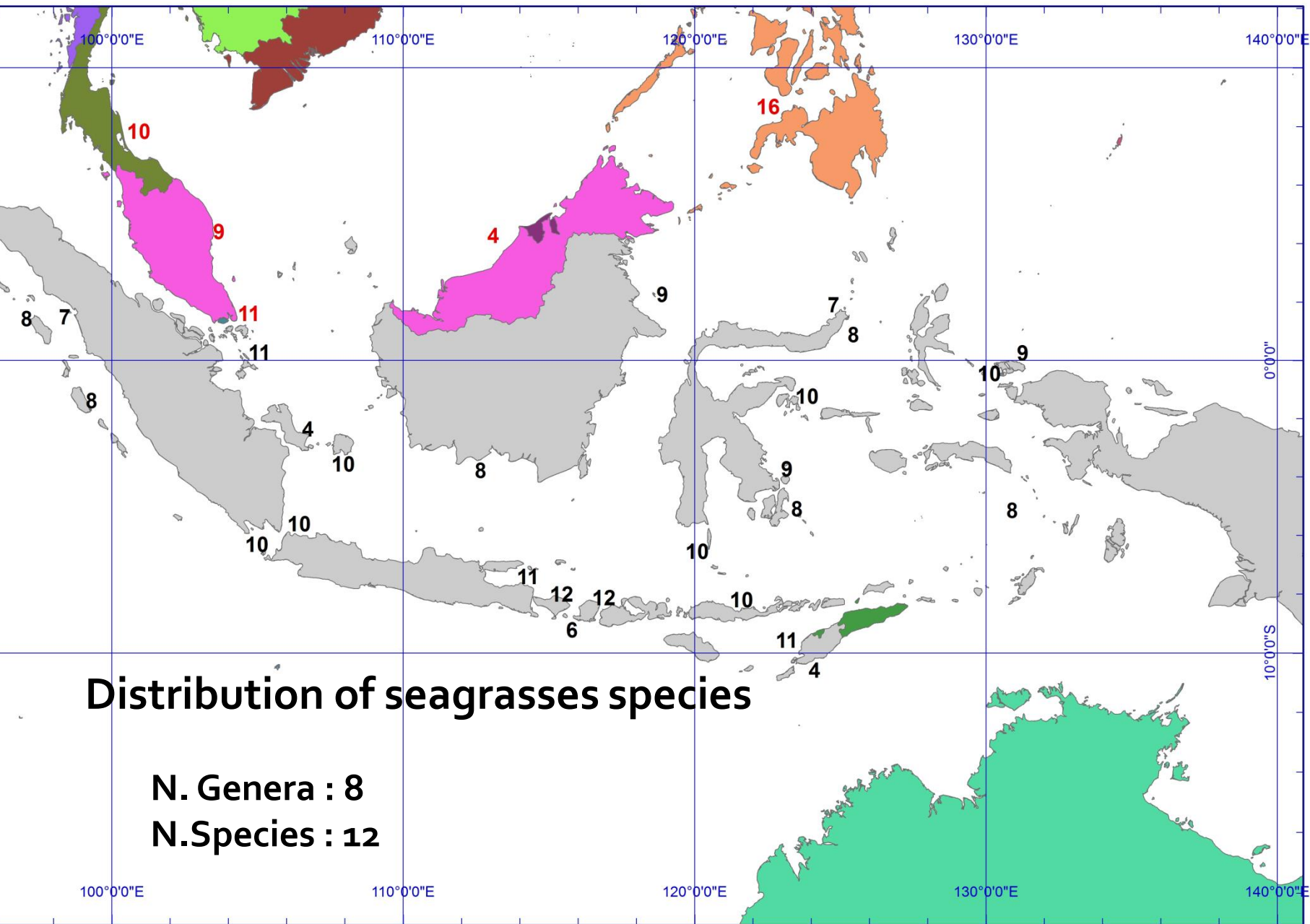
# The distribution of Mangrove in Indonesia



# The condition status of Mangrove in Indonesia

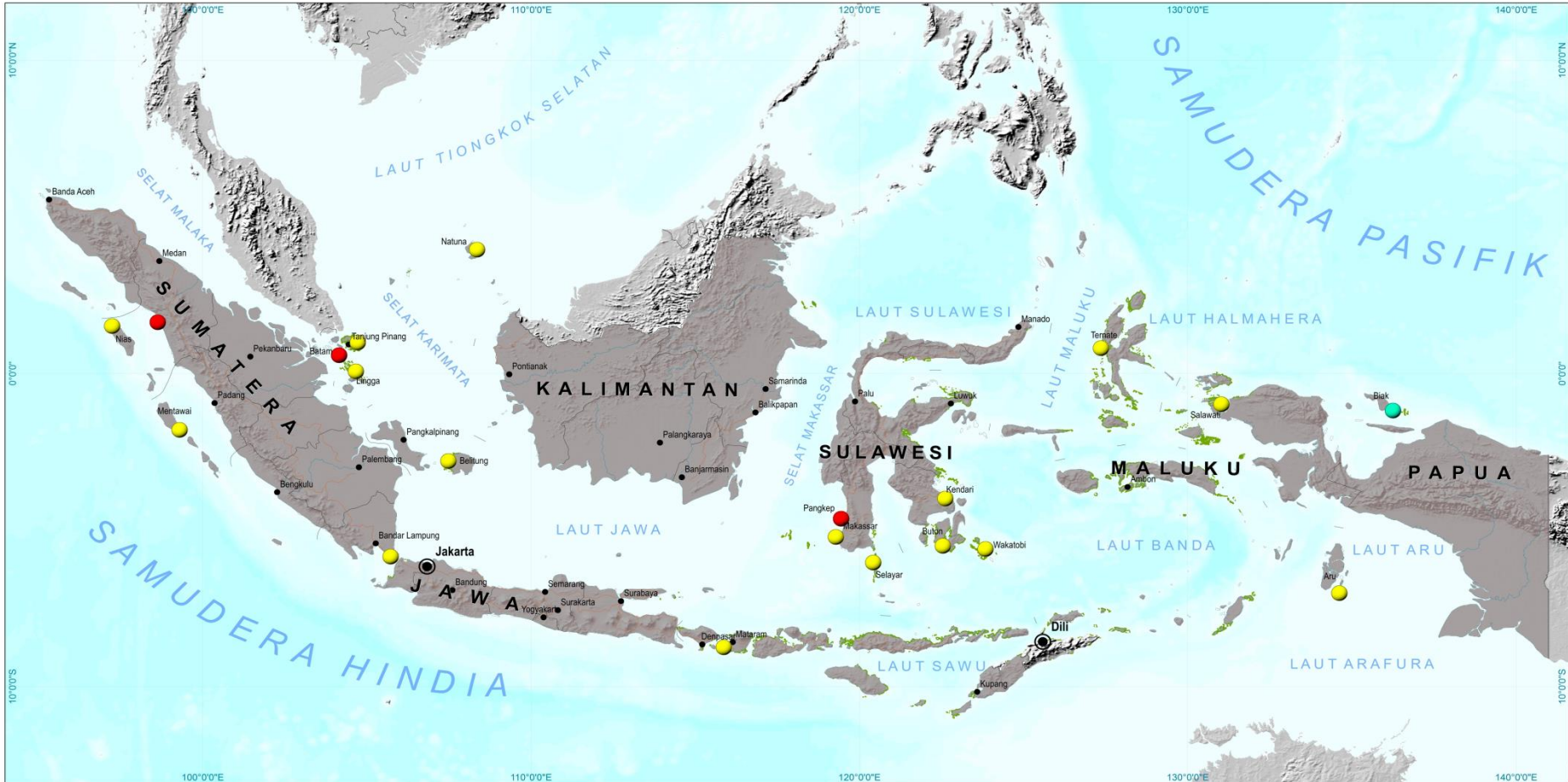






# The condition status of Sea grasses in Indonesia

## STATUS PADANG LAMUN INDONESIA 2017



### Legenda :

Status Padang Lamun :

- Miskin
- Kurang Sehat
- Sehat

Keterangan :

- Ibukota Negara
- Ibukota Propinsi
- Batas Negara
- Batas Propinsi
- Jalan Negara
- Sungai
- Lamun

Untuk mengetahui status padang lamun di Indonesia menggunakan beberapa sumber data, antara lain : RHM Coremap CTI P20 LIPI, Institusi terkait, Universitas, dan LSM.

Data yang dikumpulkan mulai tahun 2015 dan 2016. Kondisi lamun dikategorikan melalui Keputusan Menteri Negara Lingkungan Hidup nomor 200 tahun 2004 menjadi tiga, yaitu sehat (>60%), kurang sehat (30-59,9%) dan miskin (0-29,9%).

Secara umum persentase tutupan lamun di Indonesia yang dihitung dari 166 stasiun adalah 41,79% sehingga dikategorikan kondisi lamun kurang sehat. Proporsi kondisi padang lamun di Indonesia 2017, kategori sehat (5%), kurang sehat (80%) dan miskin (15%).

### Proporsi Kondisi Padang Lamun Indonesia Tahun 2017



Sumber data : RHM Coremap Tahun 2016 ( 20 Lokasi )



Dikeluarkan oleh



Pusat Penelitian Oseanografi  
Lembaga Ilmu Pengetahuan Indonesia

Datum ..... DGN-95/WGS-84  
Sistem Proyeksi ..... Transverse Mercator  
Sistem Koordinat ..... Geografi



Bekerjasama dengan



The Nature Conservancy





# Threatened Species

# Over exploitation exotic species

- Common property : tragedy of the common,
- Market driven : high value commodity resulted rapidly over exploitation or nearly extinct.
- Over exploitation economically important species : Destructive fishing technique.



# The most exploited marine resources in Indonesia

Name	No com	Species/ common	Price (US \$) per Kg	status
Sea weed	4	E. chotonii Glacilaria	2-3	Cultured Sustained
Fish	Food. Ornamen Luxury	Napoleon Shark Grouper	100 - 250	Wild/ R Wild
Echinoderm	34	H. scabra T. ananas	100 – 250	Wild/ R/C
Molucs	4	Haliotis T. Niloticus	2 – 20	Wild/ C
Crustacean	9	Peneus spp Panulirus spp	15 - 50	Wild/ R/ C
Corals	71	Blastomusa sp Cynarina	2 - 25	Wild/ R

# Echinoderm.

Number of species : 651.

Holothuria scabra : US \$ 270/kg

Holothuria vagabunda : US\$ 200/kg.

Holothuria edulis : US\$ 150/kg.

Eco imp : 60 species

Status : Overfishing.





# Overfishing





# Build up Networking through training activities



**RTRC MarBEST**

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[www.oceanografi.lipi.go.id](http://www.oceanografi.lipi.go.id)



**RTRC MarBEST**



# International and National training activities

- **Regional Training**
- Training on Crustacea Taxonomy.(2016)
- Training on Molecular Taxonomy. (2017)
- Training on Reef health monitoring (2018).
- **National training**
- Training on Condition status of coral reef and associated ecosystem.
- Training on GIS application.
- Training on Data base and information system.







## The Crustacean Taxonomy Training


Hosted by the UNESCO/IOC Regional Training and Research Center for Marine Biodiversity and Ecosystem Health

17-29 October 2015, Jakarta, Indonesia

Center

# Lembaga sertifikasi Profesi

- Coral reefs
- Fishes
- Megabenthic communities.
- Seagrasses
- Mangrove.
- Sertificate by BNSP (Badan Nasional Sertifikasi Profesi).
- Results : 35 assesor and 27 sertified.
- Target 2018 : 60 peoples sertified
- Development of 3 TUK colaboration with University.



Terima kasih  
Thank you  
Matur nuwun