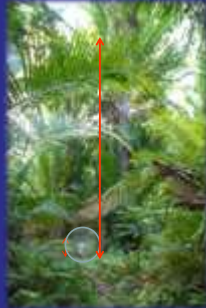


DISTRIBUTION OF SAGO PALM (*Metroxylon spp*) & ITS SPATIAL DISTRIBUTION PREDICTION AT PULAU SERAM, MALUKU PROVINCE

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INTRODUCTION

Indonesia : the world largest habitat (1.1 million Ha)
Low utilization : 15-20% (Suryana, 2007)

Sago : multi function :

Starch :
Staple Food,
Raw material of Industries
Bioenergi (1 kg \approx 0.56 l ethanol)



INTRODUCTION

Distribution Sago in Maluku:

Mulyono & Suwardi : 30.1 thousand Ha,
Ruhendi : 800 thousand Ha,
Louhenapessy : 26 thousand Ha

For the sake of utilization : *need accurate information*

Urgently needed : *Distribution map*
Natural Habitat distribution

Objectives

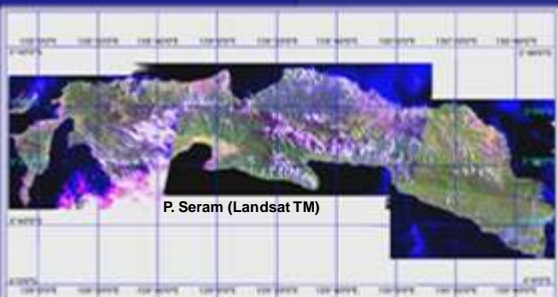


Develop spatial distribution of sago palm in Seram Islands

Develop spatial distribution model of sago palm in Seram Island

METHOD

Location : Seram island

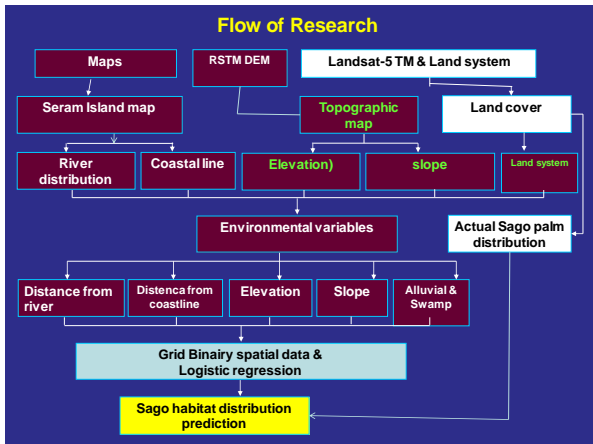


Period : Februari – Desember 2009

METHOD

Data & Software:

- Secondary Data :
 1. Map : Topographic Map (Bakosurtanal) , Landsystem (Bakosurtanal) Soil map (LPT)
 2. Digital data : Landsat TM & DEM ASTER
- Software : Erdas Imagine, Arciew & ArcGIS



Logistic Regression Model

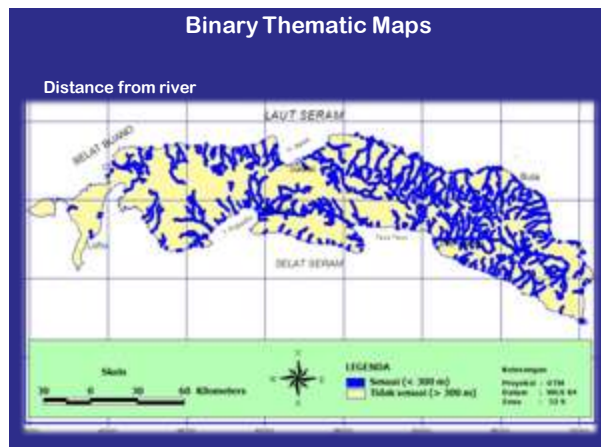
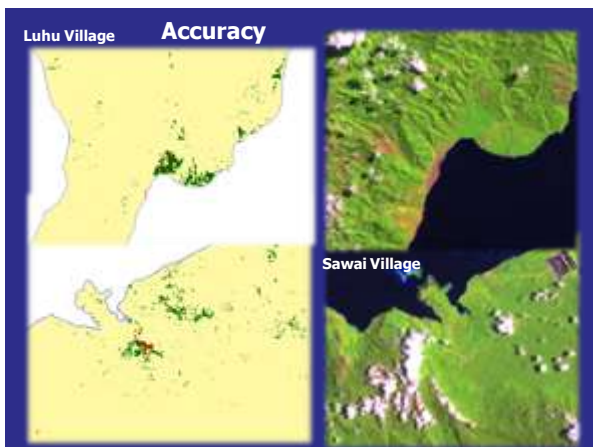
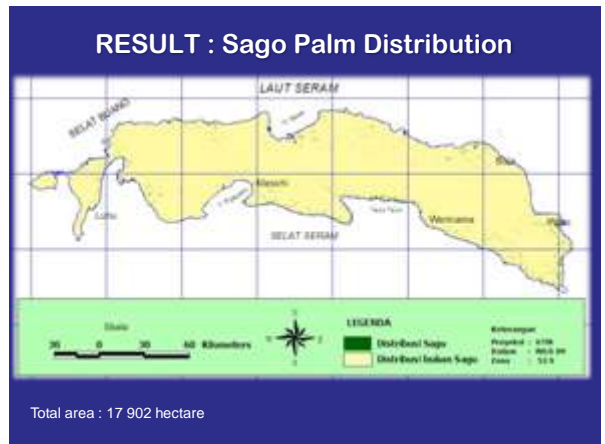
$$P = \frac{\text{Exp} (a + b\text{Elev} + c\text{Slp} + d\text{Rd_distJP} + \text{Coast_distEriv_distPS} + f\text{AI_soil})}{1 + (a + b\text{Elev} + c\text{Slp} + d\text{Rd_distJP} + \text{Coast_distEriv_distPS} + f\text{AI_soil})}$$

Where :

- P = Probability sago palm occurrence
- a = intercept
- b,c,d,e,f = constant of regression
- Elev = Elevation (m asl)
- Slp = slope
- Coast_dist = Distance from coastline
- Rive_dist = Distance from River
- AI = Alluvial & swamp

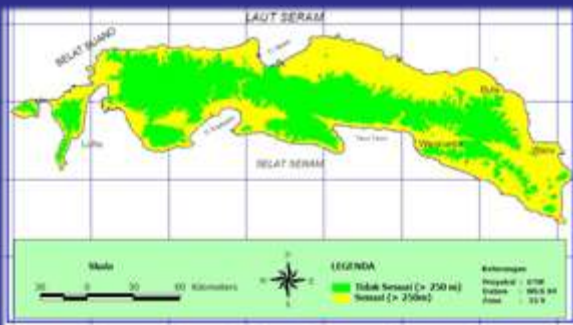
Spatial knowledge : Defining Binary data

No	Parameter	Asumption	Criteria
1.	Elevation	Sago palm in Seram Island usually distributes at low elevation (under 250 m asl)	Elevation >250 = 0 Elevation <250 = 1
2.	Slope	In general, natural habitat of Sago palm distribute on flat area to slight slope (5%)	Slope > 5% = 0 Slope < 5% = 1
3.	Distance from coastline	Formation of sago palm situated after mangrove and nypha vegetation. It is about 300 meter from coast line.	Coastline distance < 300 = 0 Coastline distance > 300 = 1
4.	Distance from river	Sago palm distributes surround river/riverine areas. It is distribute about 1000 m to terestriam from the river. .	River distance >1000 m = 0 River distance <1000 m = 1
5.	Alluvial soil & Swamp	Sago palm prefer to distribute at inundated soil (swamp) & alluvial soil.	Non alluvial /swamp = 0 Alluvial = 1

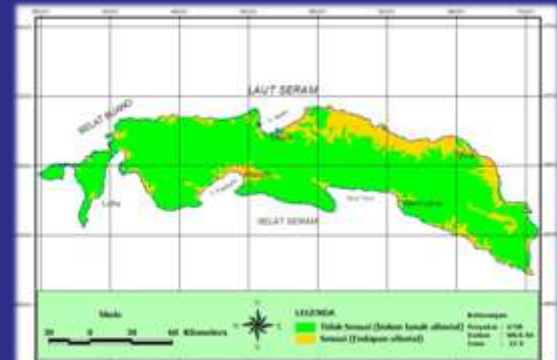


Binary Thematic Maps

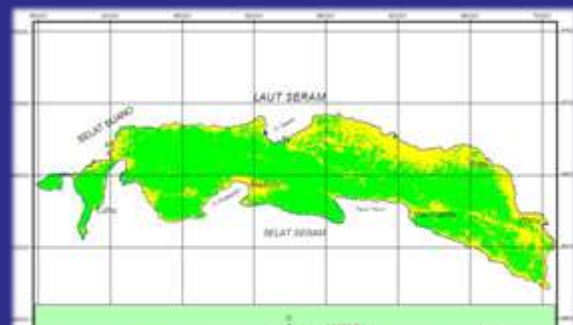
Elevation:



Binary Thematic Maps



Binary Thematic Maps



Sample area



Habitat Suitability Model :

$$P = \frac{\text{Exp}^{(-3.697+(3.385[\text{Elev}])-(0.640[\text{Slp}])+(0.396[\text{Cdist}])+(0.357[\text{Rdist}])-(0.150[\text{Al}]))}}{1 + \text{Exp}^{(-3.697+(3.385[\text{Elev}])-(0.640[\text{Slp}])+(0.396[\text{Cdist}])+(0.357[\text{Rdist}])-(0.150[\text{Al}]))}}$$

- Where :
- P = Probability sago palm occurrence
 - a = intercept
 - b,c,d,e,f = constant of regression
 - Elev = Elevation (m asl)
 - Slp = slope
 - C_dist = Distance from coastline
 - R_dist = Distance from River
 - Al = Alluvial & swamp

Habitat Prediction



Probability	Producer Accuracy	User Accuracy	Overall Accuracy
0	88.5	83.4	76.25
1	22.5	30.8	

Conclusion

1. Based on Landsat 5 TM, area of sago palm in Seram Island was estimated of about 17 902 hectare.
2. Spatial model of habitat suitability for sago palm can be developed by employing spatial data of slope, distance from river, distance from coastline and elevation. Soil type was not significance

Habitat Type

