

Conservation of Semenawi-Debebewi Bahri Protected Area of Eritrea: A Great Responsibility

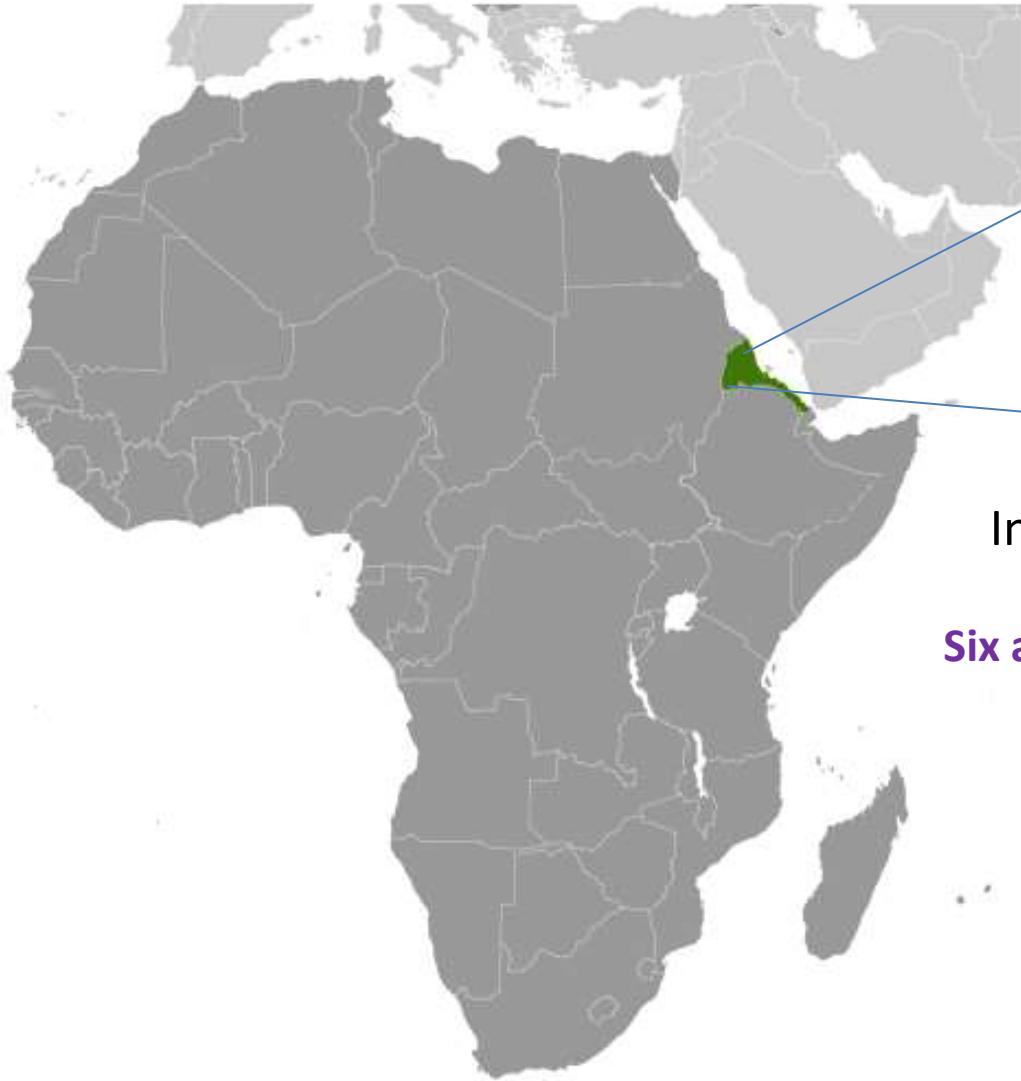
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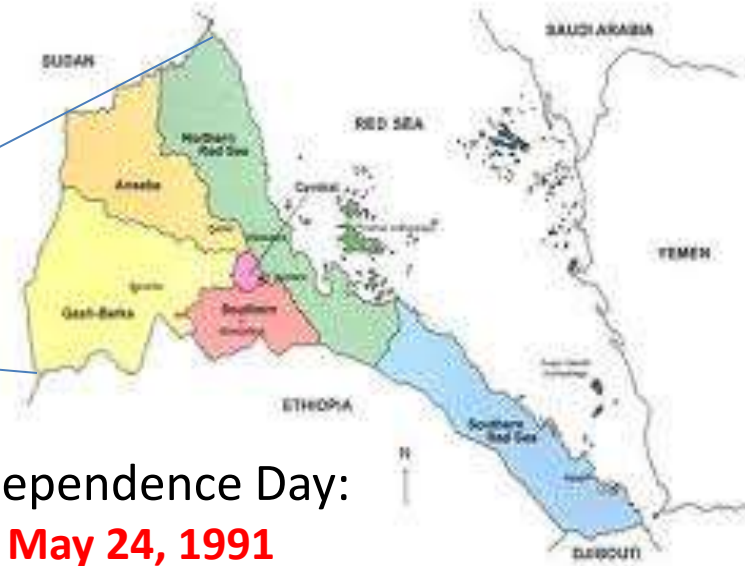
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- Methodology
- Problems threatening the Protected Area
- Conservation Strategies
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Geography of Eritrea



Regional Administration of Eritrea



Independence Day:

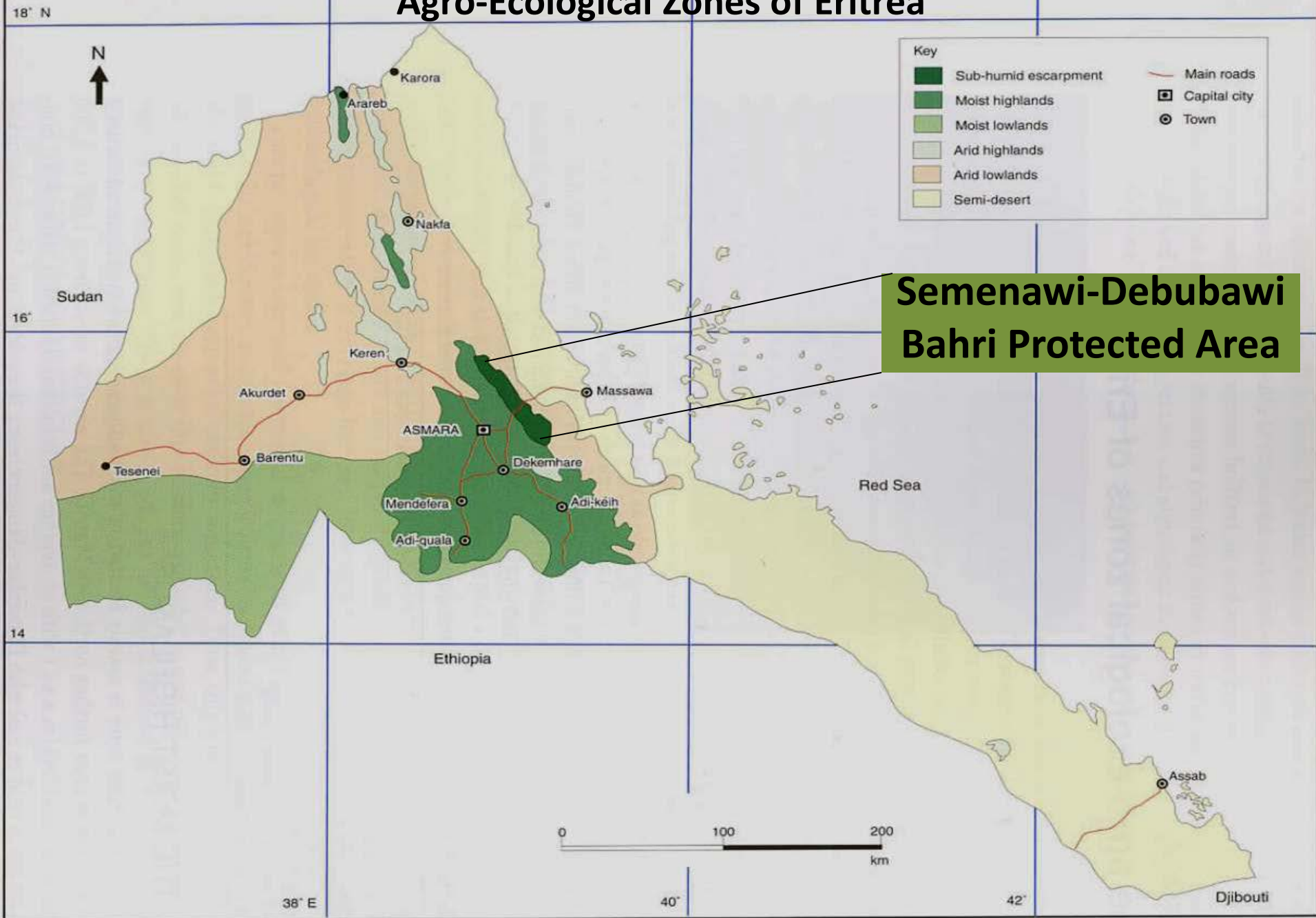
May 24, 1991

Six administrative regions

Arid to semi-arid climate

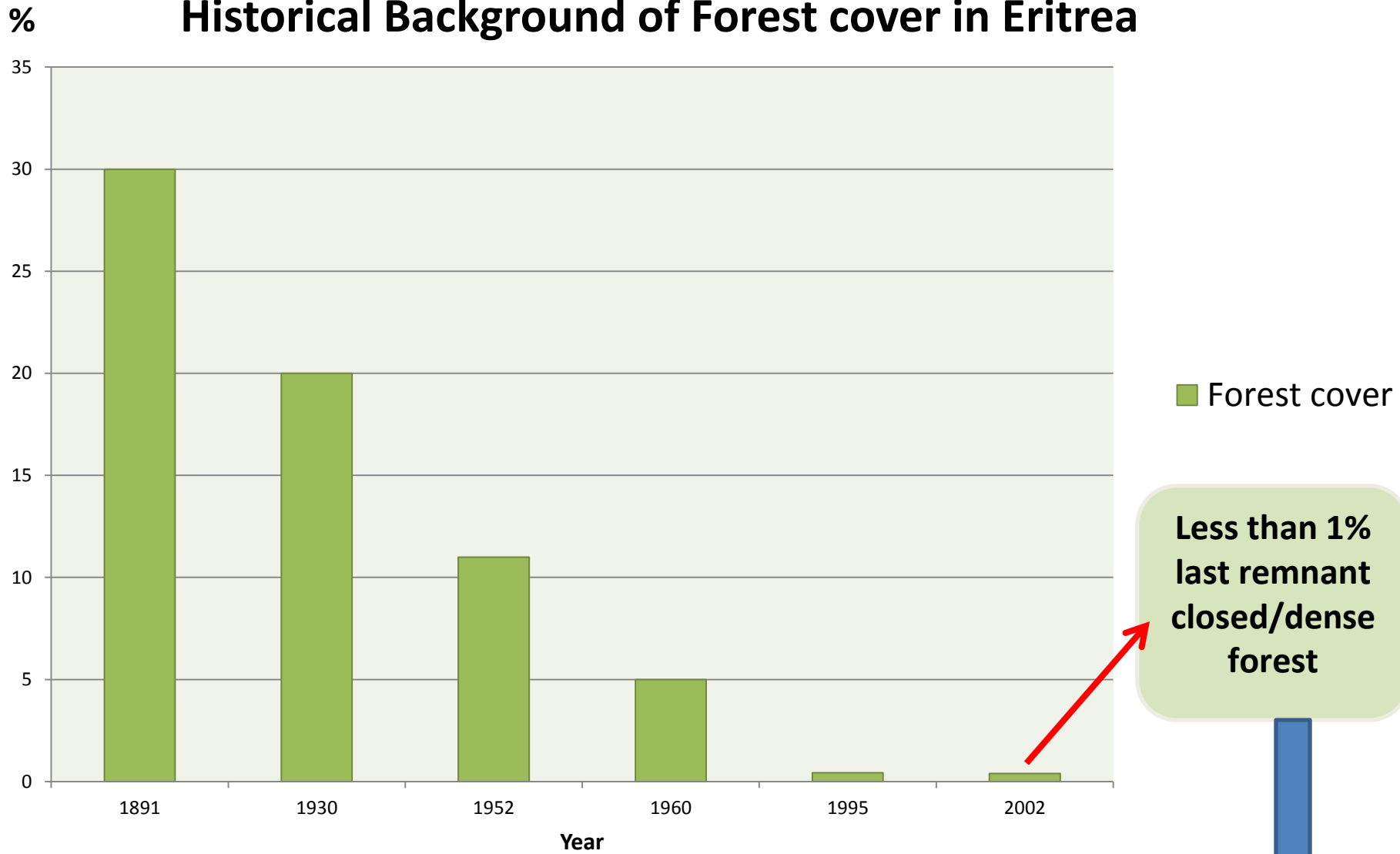
- Average Annual Temperature: 10 °C to 36 °C
- Average Annual Rainfall: 100mm to 900mm

Agro-Ecological Zones of Eritrea



Map Source: Ministry of Agriculture

Historical Background of Forest cover in Eritrea



■ Forest cover

**Less than 1%
last remnant
closed/dense
forest**

**Semenawi-Debubawi
Bahri Protected Area**

Objectives

- To analyze the main problems threatening the protected area
- To examine the strategies undertaken to preserve the protected area

Significance of the research

- To protect Eritrea's last remnant of evergreen tropical forest

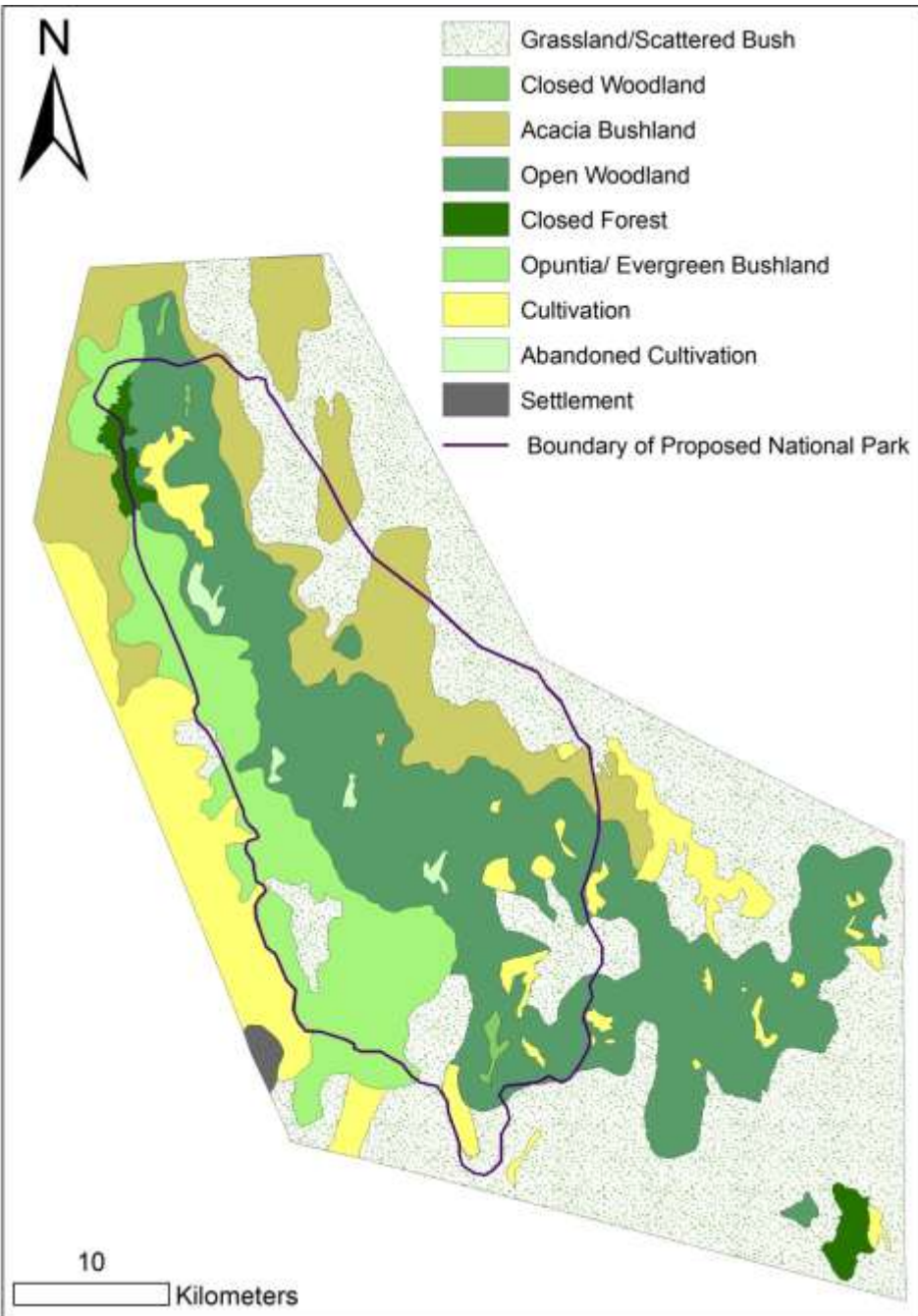


Methodology

- Extraction of tree planting data
- SWOT Analysis through:
 - questionnaire survey
(n= 15 experts, n= 64 reforestation participants, n= 36 students of Green club)
 - focal group discussion and
 - field observations



Semenawi Debubawi Bahri Protected Area



Location: Eastern Escarpment

N. East of Asmara (capital)

Altitude: 500 – 2500 m above sea level

Area: 100,000 ha

Two rainy seasons: 1000 - 1400 mm annually

Canopy cover: 20-80%

High rates of plant growth & regeneration

Natural Vegetation: Dense and open forest (*Olea africana*, *Juniperus procera*, *Carissa edulis*, *Terminalia brownii*, *Dondonaea viscosa*...etc):

Wildlife: Greater kudu, Bush buck, Vervet monkey, Duiker, Leopard, Baboon, Klispringer

Problems threatening the Protected Area

1. Framing and Livestock grazing
2. Tree cutting for firewood and construction
(traditional house construction)
3. Ineffective and Loose controlling and patrolling system
4. Delay in implementation of legal and policy issues

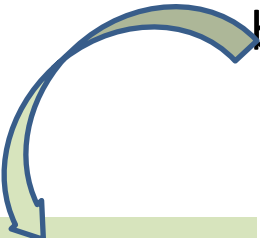


Conservation Strategies

1st Phase

(2004-2006)

1. Relocating farmers from core areas
2. Moving all hamlets and small settlements from core areas
3. Restriction in number of grazing animals
4. Banning commercial agricultural activities



Eucalyptus
Acacia
Agave sisalana
Azandrachta indica
Dondonia augustifolia

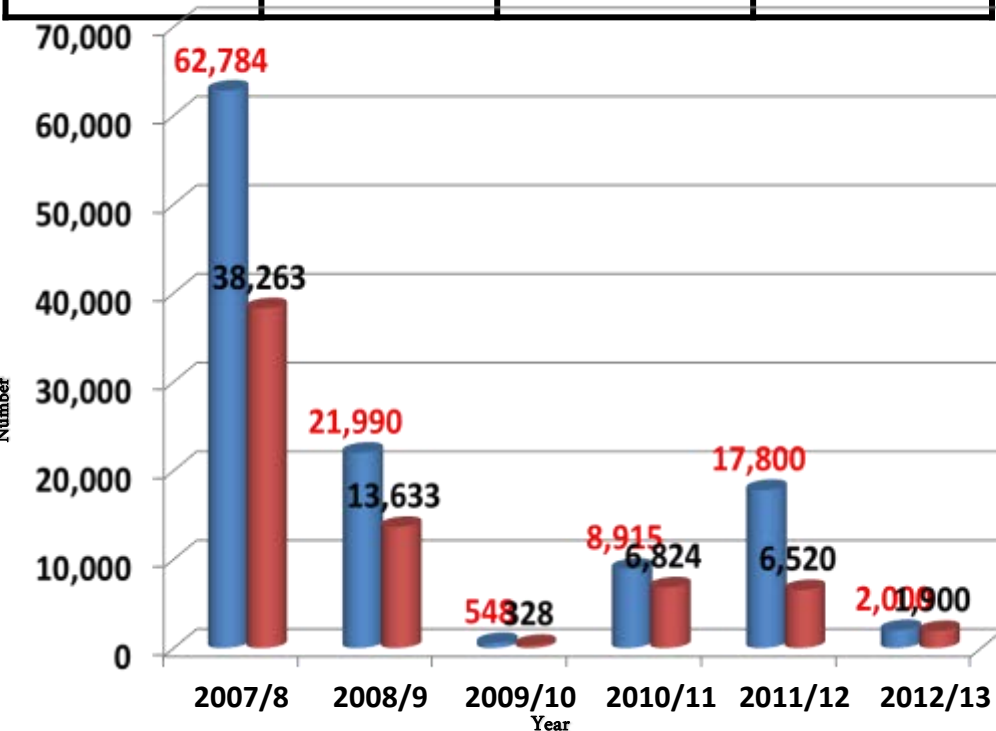
2nd Phase

(2006-present)

1. Establishment of Enclosures in adjacent areas
2. Launching National Greening Campaign
“Working for Greening Eritrea”
 - a) reforestation programs inside protected area
 - b) tree planting in adjacent areas by: individuals, school-based Green clubs, religious institutions, community, government and no-government organizations.

Tree Planting by Individuals

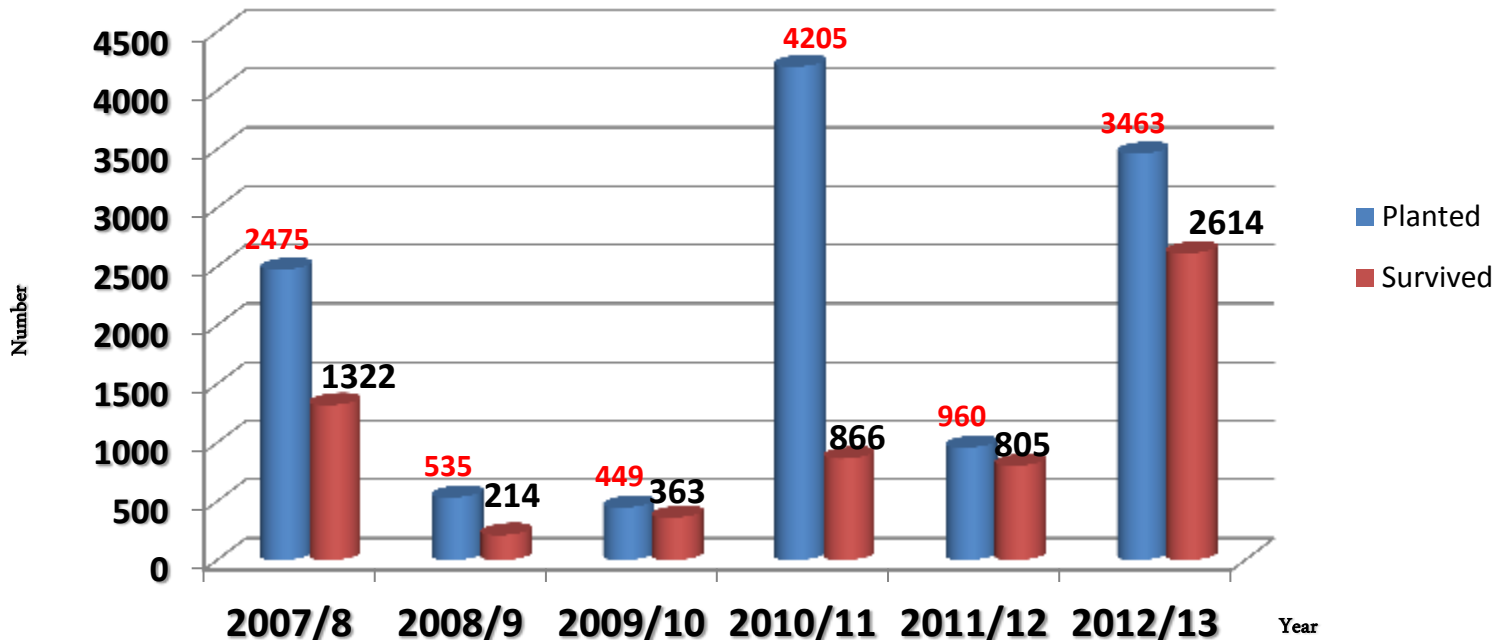
Year	Planted	Survived	Survival Rate (%)
2007/8	62,784	38,263	57
2008/9	21,990	13,633	62
2009/10	548	328	60
2010/11	8,915	6,824	86
2011/12	17,800	6,520	37
2012/13	2,000	1,900	95



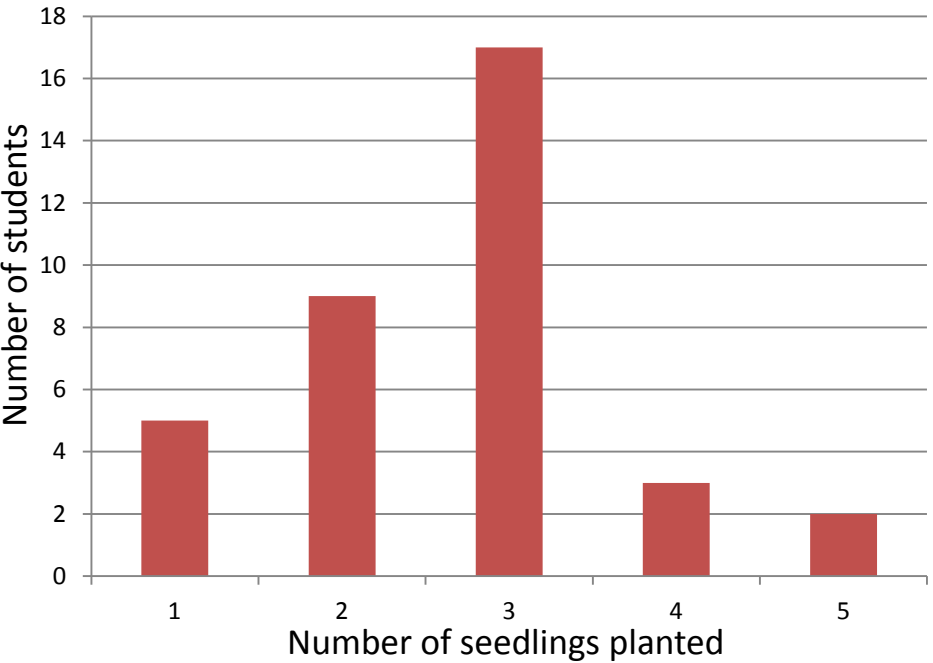
- Tree planting by Individual is decreasing because most of the people are involved in community reforestation programs.

Tree Planting by School-based Green Clubs

Year	Planted	Survived	Survival Rate (%)
2007/8	2475	1322	53
2008/9	535	214	40
2009/10	449	363	81
2010/11	4205	866	21
2011/12	960	805	83
2012/13	3,463	2,614	76



Green Club of Middle School



n=36
96 seedlings planted (2010)
73 survived (76%)

- Encouraging results attained
- Competition among schools is expanding
- Students' role in raising environmental awareness is expected to influence the community



2011

Selam Elementary School, Afabet

Tree planting by Green Club

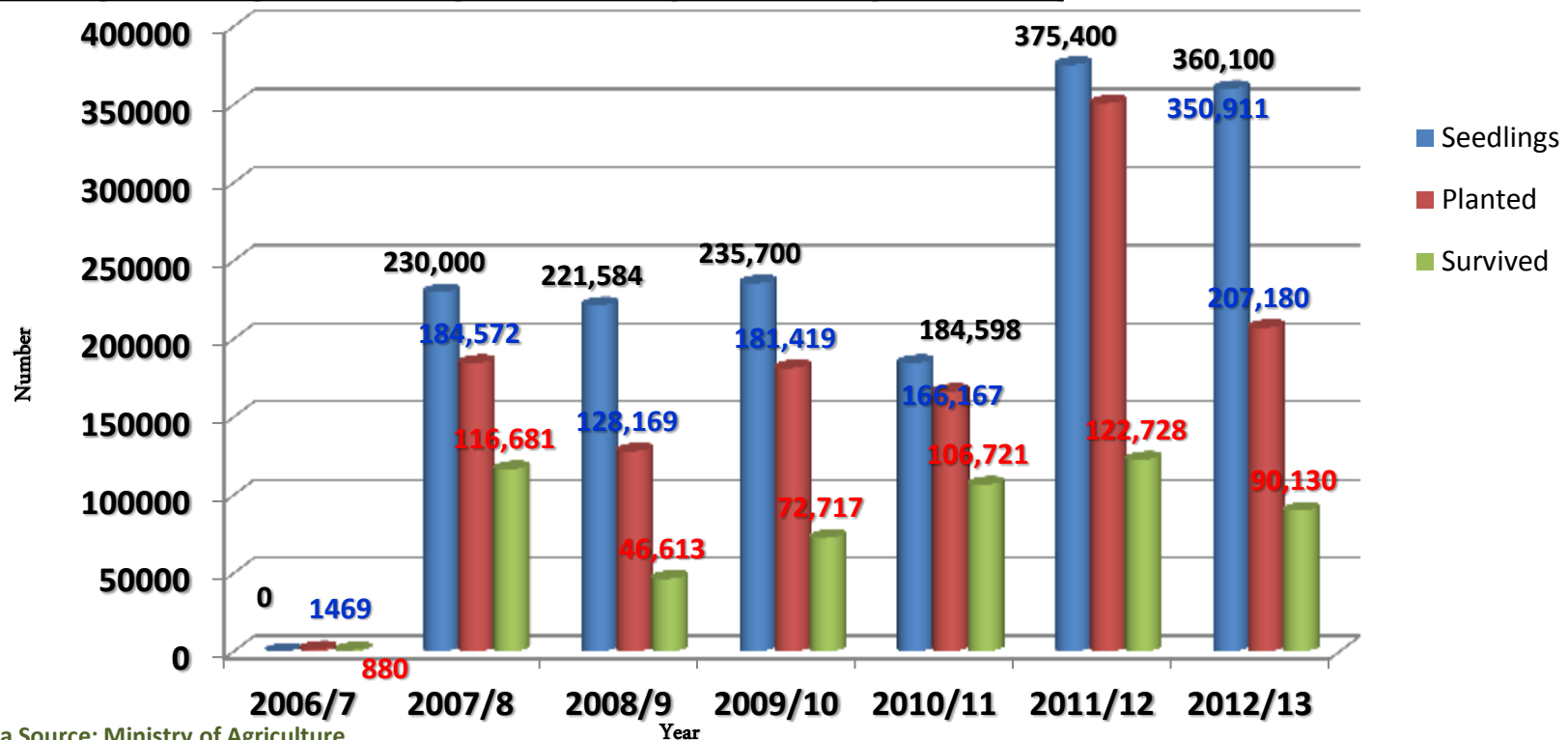
2013

2012

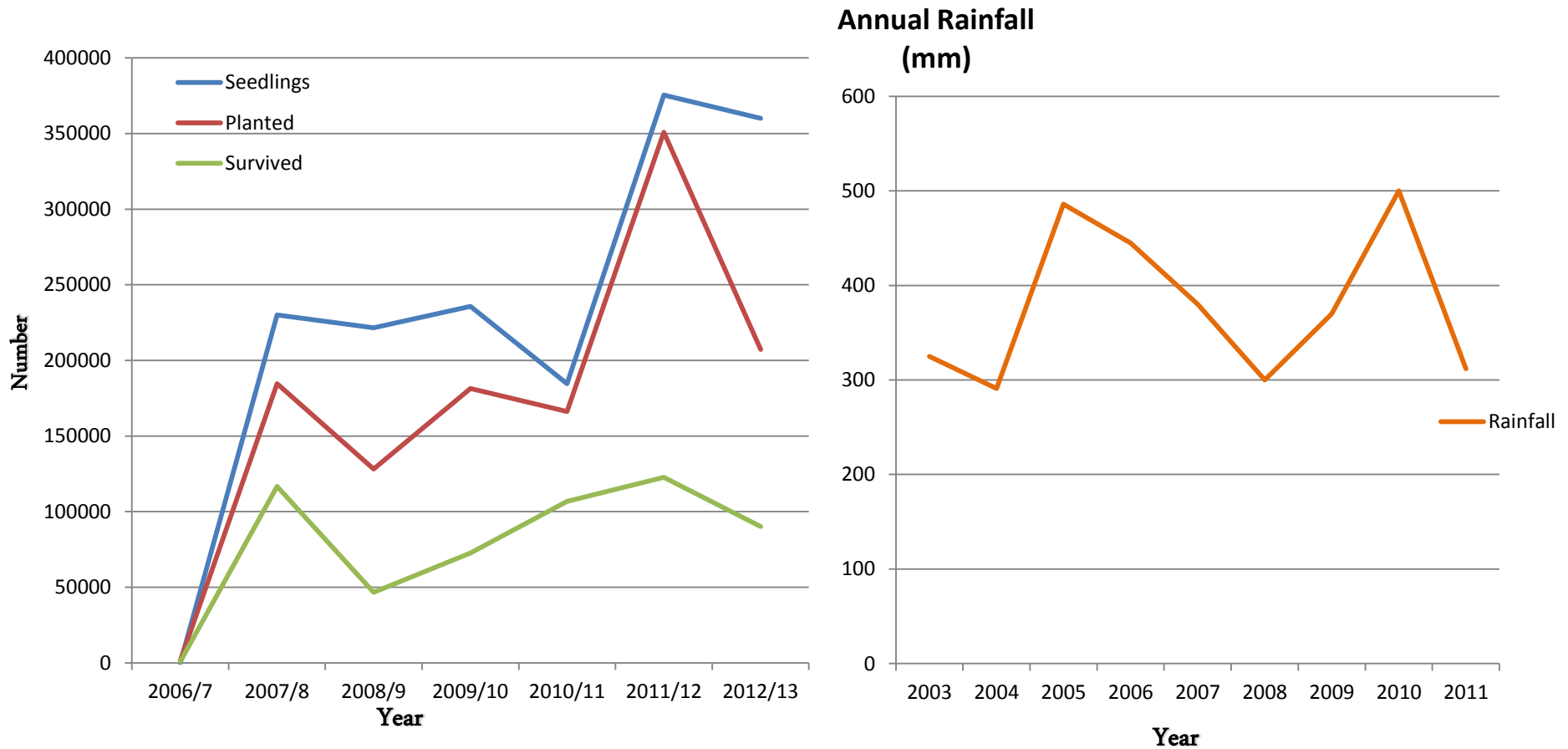


Overall Tree Planting at Regional level 2006/7-2012/13

Year	Seedling Nurseries	Seedlings prepared	Planted	Survived	Survival Rate (%)
2006/7	-	-	1469	880	59.9
2007/8	2	230,000	184,572	116,681	63.22
2008/9	4	221,584	128,169	46,613	36.37
2009/10	4	235,700	181,419	72,717	40.10
2010/11	3	184,598	166,167	106,721	64.23
2011/12	4	375,400	350,911	130,250	37.12
2012/13	4	360,100	207,180	90,130	43.5



Overall Tree Planting at Regional Level (Northern Red Sea Region) 2006-2012 and Average Annual Rainfall

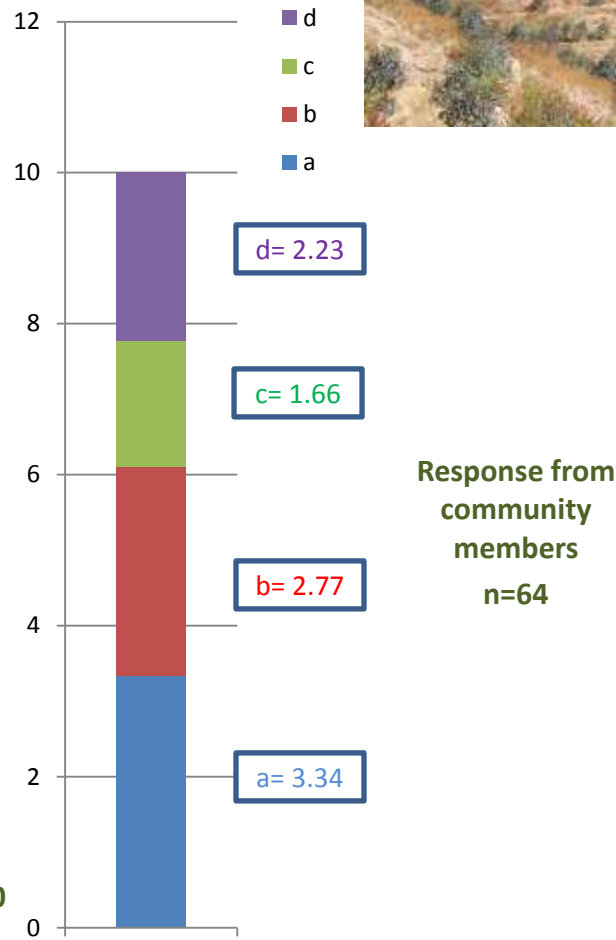
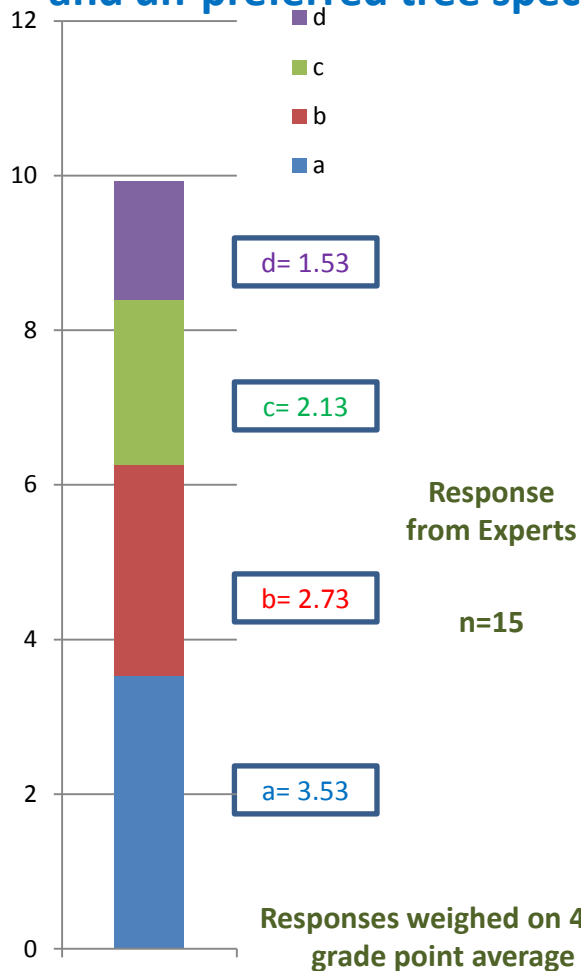


Data Source: Ministry of Agriculture

- Low survival rate following a low rainfall season:
- Low rainfall summer of 2009 followed by low survival rate in 2010

Factors for low and fluctuating rates of survival

- a. Irregular Rainfall
- b. Lack of adequate protection and follow-up
- c. Improper planting techniques
- d. Unsuitable reforestation sites and un-preferred tree species



SWOT Analysis of Protected Area Conservation Strategies

Strengths

- Government's commitment to the reforestation programs and protected area conservation
- Growing participation of local people, students and organizations

Weaknesses

- mismanagement of seedlings
- limited logistics and transport facilities
- low survival rate of planted seedlings
- limited number of tree nurseries
- limited financial budget
- limited alternatives of income sources for livelihoods
- continuous encroachment by pastoralists and farmers
- limited number of forestry and wildlife experts

Opportunities

- strong connection between community and Forestry & Wildlife Authority
- competitive atmosphere between Green clubs of schools
- improved public awareness on tree planting and protected area conservation
- construction of road from Asmara to Massawa via the protected area- a potential for ecotourism

Threats

- Irregularity of rainfall
- absence of protected area management unity/department
- increasing number of browsing animals
- declining land productivity
- weakening individual motivation to plant trees
- continuous deforestation
- biodiversity loss

Conclusions

- Desired **survival rates of seedlings** is not attained.
- **Fluctuating rainfall** amounts have been major influential factor.
- **School based green clubs** have shown encouraging results in terms of tree planting and raising environmental awareness.
- **Encroachment of protected area** has somewhat reduced due to reforestation programs and enclosure establishments in adjacent areas.



Recommendations

- **Monitoring and evaluation of conservation strategies should be regularly conducted.**
- **Patrolling protected area should be strengthened.**
- **Number of tree nurseries should be increased.**
- **On-site seedling production has to be introduced.**
- **Proper handling of seedlings should be practiced.**
- **Freely roaming grazing animals should be strictly controlled inside and outside protected area.**
- **School-based Green clubs should be encouraged and enhanced.**
- **Establishment of Semenawi-Debubawi Bahri National Park and protected area management board should be facilitated.**

Thank You!!

