ASSESSMENT OF GREEN COVER AREA OF THE MARGALLA HILLS NATIONAL PARK, ISLAMABAD: THE IMPACTS OF DEFORESTATION



A thesis submitted to Bahria University, Islamabad in partial fulfillment of the requirement for the degree of BS in Environmental Sciences

By

FATIMA KHALID HUDA KAMAL

TAHIRA AFZAL

Department of Earth and Environmental Sciences Bahria University, Islamabad

2018

ABSTRACT

Wood products are better than the most of the artificially made material products such as plastics when evaluating with environmental concerns but our world forests cannot be compromised for these products. As the increasing demand of wood product leads to deforestation and causes threat to the human health and the wildlife. Due to increased demand the more rapid tree cutting started even without the permits. The current study estimates the percentage of wood cutting in Margalla Hills National Park, Islamabad. Scale and aftermath of wood harvesting is a major area of concern. The wood consumption by the villagers of Margalla Hills National Park, role of authorities and communities to safeguard Margalla Hills National Park and its effects are also studied by incorporating villagers and the forest guards' point of view through questionnaire and interviews respectively. Fuelwood is vital element for most of the villagers for survival due to low income. Public Participation is essential for a Sustainable Forest management as to help in decision making. Number of plants (Sheesham, Phulai, Chir pine tree) and animals (Barking deer, Rhesus monkey, Gray goral sheep) species and individuals are decreasing in Margalla Hills National Park. The green cover of Margalla Hills National Park is reduced at high percentage due to deforestation and different land use pattern. High level of deforestation needs to be monitored and taken as responsibility of government and public to protect the forests.

CONTENTS

ABSTRACT	i
ACKNOWLEDGEMENT	ii
ABBREVIATIONS	iii
FIGURES	ix
TABLES	iv

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND	1
1.2 MAIN IMPACTS	2
1.2.1 Socio-economic Impacts	2
1.2.2 Environmental Impacts	2
1.2.3 Governance Impacts	3
1.2.3.1 Asia problems	4
1.2.3.2 Ranking scales	4
1.2.3.3 Environmental investigation	4
1.3 INTERNATIONAL STATUS OF DEFORESTATION CAUSED BY ILLEGA	L
LOGGING AND TRADE	5
1.4 DEFORESTATION CAUSED BY ILLEGAL LOGGING IN PAKISTAN	
ISLAMABAD MHNP	5
1.5 ESTIMATED COST OF ILLEGAL LOGGING IN PAKISTAN	6
1.6 CASES OF INTERNATIONAL DEFORESTATION	7
1.6.1 Indonesia	7
1.6.2 Bangladesh	7
1.6.3 Australia	8
1.6.4 India	8

V

1.6.5 Peninsular Malaysia	9
1.7 RELATION OF PAKISTAN WITH OTHER COUNTRIES IN TERMS OF DEFORESTATION	10
1.7.1 Afghanistan	10
1.8 DEFORESTATION IN PAKISTAN	10
1.8.1 Forest Status in Pakistan	10
1.8.2 Concerns of deforestation in past and present	
1.8.3 Understanding Forest failure Management in Pakistan	
1.8.4 Monitoring forest cover of Margalla Hills	
1.8.5 Fuel wood storage houses in Islamabad	
1.8.6 Myths and realities of deforestation in northwest Pakistan	13
1.8.7 Deforestation and forest management in swat Pakistan	14
1.8.8 Fighting deforestation in Swat	14
1.9 ROLE OF MEDIA	15
1.10 NGO CAMPAIGNS AND WORKS IN PAKISTAN	16
1.10.1 WWF held tree campaign along with Islamabad United	16
1.10.2 The Billion Tree Tsunami	16
1.11 G8 ACTION PROGRAMME ON FORESTS	17
1.12 OBJECTIVES	19
1.13 SCOPE OF THE STUDY	19
CHAPTER 2	
MATERIALS AND METHODS	
2.1 EXPERIMENTAL DESIGN	20
2.2 STUDY AREA	22
2.2.1 Background	22
2.2.2 Methodology	22

2.2.3 Image acquisition	23
2.2.4 Pre-processing	23
2.2.5 Classification	24
2.3 ENCAPSULATION OF BIODIVERSITY	28
2.3.1 Margalla Hills	28
2.3.1.1 Mammals	28
2.3.1.2 Reptiles	29
2.3.1.3 Birds	29
2.3.1.4 Amphibians	31
2.3.1.5 Fish (non-native species)	31
2.3.1.6 Trees species	32
2.3.1.7 Shrubs species	32
2.3.1.8 Herb species	32

CHAPTER 3

RESULTS AND DISCUSSIONS

3.1 VILLAGERS PARTICULARS	33
3.2 VILLAGERS RESPONSES	33
3.3 FOREST GUARDS PARTICULARS	45
3.4 FOREST GUARDS RESPONSES	45
3.5 FUELWOOD	50
3.6 ILLEGAL CUTTING AND CORRUPTION	51
3.7 CHANGES IN TEMPERATURE AND BIODIVERSITY	51
3.8 PROBLEMS MENTIONED BY FOREST GUARDS	51
3.9 MHNP COMPARISON 2009-2016	54
3.9.1 Forest	54
3.9.2 Cropland	54
3.9.3 Grassland	54

	CHAPTER 4	
3.9.6 Other Land		55
3.9.5 Settlements		55
3.9.4 Wetland		55

58

59

60

63

CONCLUSIONS AND RECOMMENDATIONS
4.1 CONCLUSIONS
4.2 RECOMMENDATIONS
REFERENCES
ANNEXURE

viii