



David Sylvester Kacholi (Autor)
**Effects of Habitat Fragmentation on Biodiversity of Uluguru
Mountain Forests in Morogoro Region, Tanzania**

David Sylvester Kacholi

**EFFECTS OF HABITAT FRAGMENTATION ON
BIODIVERSITY OF ULUGURU MOUNTAIN
FORESTS IN MOROGORO REGION, TANZANIA**



Cuvillier Verlag Göttingen
Internationaler wissenschaftlicher Fachverlag

<https://cuvillier.de/de/shop/publications/6333>

Copyright:

Cuvillier Verlag, Inhaberin Annette Jentsch-Cuvillier, Nonnenstieg 8, 37075 Göttingen, Germany
Telefon: +49 (0)551 54724-0, E-Mail: info@cuvillier.de, Website: <https://cuvillier.de>



Table of Contents

Declarations i

Acknowledgement ii

Dedication iii

Summary iv

Table of Contents vii

List of Tables xii

List of Figures xiv

CHAPTER ONE 1

General Introduction 1

1.1 Background Information 1

1.2 Problem Justification 2

1.3 Literature Review 3

1.3.1 Definition of Fragmentation 3

1.3.2 Causes of Fragmentation 3

1.3.3 Impacts of Fragmentation to Natural Habitats 4

1.3.4 Ecological Consequences of Fragmentation 6

1.3.5 Status of Biodiversity in the Tropical Forests 8

1.4 Objectives of the Study 9

1.5 Significance of the Study 9

1.6 Description of the Study Area 10

1.6.1 Physical Profile 10

1.6.2 Climate Profile 11

1.6.3 Population size and growth 12

1.6.4 Socio-economic profile and land use 12



1.6.5 Biodiversity Profile.....	13
1.6.6 Site selection.....	13
1.7 Scope of the Thesis	14
CHAPTER TWO	16
Floristic Composition, Diversity and Structure of Uluguru Forests in Morogoro, Tanzania.	16
2.1 Introduction.....	16
2.2 Material and Methods	18
2.2.1 Data Collection	18
2.2.2 Data Analysis.....	18
2.3 Results.....	20
2.3.1 Overall floristic composition	20
2.3.2 Floristic patterns at family level within forests.....	21
2.3.3 Floristic patterns at the species level within forests.....	26
2.3.4 Species richness and diversity	31
2.3.5 Species accumulation curves	32
2.3.7 Species compositional similarity	34
2.3.8 Influence of geographical distance on forest floristic similarities	35
2.3.9 Structural composition of the forests	39
2.4 Discussion.....	43
2.4.1 Floristic composition at family and species level	43
2.4.2 Species richness and diversity	45
2.4.3 Association between forest size, species richness, diversity and forest structure.....	46
2.4.4 Floristic similarity among the studied forests	47
2.4.5 Influence of geographical distance on floristic similarity.....	47
2.4.6 Structural composition of the forests	48
2.5 Conclusion	50



CHAPTER THREE	52
Understory Composition, Diversity and Natural Regeneration Status of Uluguru Forests in Morogoro - Tanzania.....	52
3.1 Introduction.....	52
3.2 Materials and Methods.....	53
3.2.1 Data Collection	53
3.2.2 Data Analysis.....	54
3.3 Results.....	55
3.3.1 Species richness and diversity	55
3.3.2 Understory composition and structure of the forests	55
3.3.3 Comparison between understory and overstory layers	61
3.3.4 Species accumulation curves	62
3.3.5 Regeneration status	64
3.4 Discussion.....	65
3.4.1 Species richness and diversity	65
3.4.2 Understory composition and structure	67
3.4.3 Regeneration status	68
3.5 Conclusion	69
CHAPTER FOUR.....	70
Species richness, diversity and stand density disparity along edge-interior gradients in Uluguru forests in Morogoro – Tanzania.....	70
4.1 Introduction.....	70
4.2 Material and Methods	72
4.2.1 Data collection	72
4.2.2 Data Analysis.....	72
4.3 Results.....	73
4.3.1 Overall description.....	73
4.3.2 Species richness as influenced by edge-interior gradient	73
4.3.3 Species diversity as influenced by edge-interior gradient	74
4.3.4 Species richness and forest area.....	77
4.3.5 Stand density.....	80



4.3.6 Relationship between tree size hierarchy and stem density 80

4.4 Discussion 83

4.4.1 Species richness, diversity and stem density 83

4.4.2 Species richness and forest size 85

4.4.3 Size hierarchy and stem density 86

4.5 Conclusion 86

CHAPTER FIVE 88

Indigenous tree use, use values and human population impacts on forest size, species richness and tree density in Uluguru forests, Morogoro..... 88

5.1 Introduction..... 88

5.2 Materials and Methods..... 89

5.2.1 Study sites and Socio-economic profile..... 89

5.2.2 Data collection 89

5.2.3 Data analysis 90

5.3 Results..... 91

5.3.1 Tree use and use values 91

5.3.2 Human population, forest size, tree density and species richness..... 95

5.4 Discussion..... 97

5.4.1 Tree uses and use values 97

5.4.2 Effects of human population on forest size, stand density and species richness 103

5.5 Conclusion 104

CHAPTER SIX..... 105

General Discussion and Conclusion 105

6.1 General Discussion 105

6.1.1 Species richness, diversity and structural composition..... 105

6.1.2 Influence of geographical distance on floristic similarity..... 107

6.1.3 Natural regeneration and stand structure 108

6.1.4 Floristic variation in edge-interior gradient 109

6.1.5 Uses of tree species and human population impacts..... 111

6.1.6 Community involvement in forest management 113



6.1.7 Suggestions for future research.....	114
6.2 General Conclusion.....	115
REFERENCES	117
Appendix 1.....	137
Appendix 2.....	142
Appendix 3.....	145
Appendix 4.....	147
Curriculum Vitae	150