

CONTENTS

CHAPTER I. INTRODUCTION	01
1.1. ALPINE AND SUB-ALPINE ZONE IN EAST SIKKIM	03
1.2. VEGETATION STRUCTURE IN SIKKIM	04
1.3. CONSERVATION OF BIODIVERSITY	05
CHAPTER II. STUDY AREA	09
2.1. THE LOCATION AND SIZE OF THE STUDY AREA	09
2.2. LEGISLATION	10
2.3. BOUNDARY AND DEMARCATION OF THE SANCTUARY	10
2.3. SIGNIFICANCE OF THE STUDY AREA	11
2.4. HISTORICAL SIGNIFICANCE OF THE STUDY AREA	12
2.5. TOPOGRAPHY / MOUNTAIN PASS	14
2.6. GLACIERS	15
2.7. LAKES AND SPRINGS	15
2.9. FAUNAL RESOURCE OF THE STUDY AREA	17
2.10. VEGETATIONAL STRUCTURE OF STUDY AREA	19
2.10.1 TEMPERATE FOREST	20
2.10.2. TEMPERATE COLD FOREST	21
2.10.3. TEMPERATE CONIFER/SUB-ALPINE FOREST	21
2.10.4. ALPINE VEGETATION / SCRUB	22
CHAPTER III. CLIMATE	25
3.1 TEMPERATURE	25
3.2. PRECIPITATIONS	26
3.3. RELATIVE HUMIDITY	27
3.4. SUNSHINE / BRIGHTNESS	28
CHAPTER IV. THE PRESENT WORK	29
4.1. PREVIOUS FLORISTIC WORKS	29
4.2 IMPORTANCE OF THE PRESENT WORK	30
CHAPTER V. MATERIALS AND METHODS	33
5.1. THE FIELD WORKS	33
5.2. PROCESSING OF SPECIMENS	34
5.3. IDENTIFICATION AND DEPOSITION OF SPECIMENS	35
5.4 METHODS OF ENUMERATION	36
CHAPTER VI. ENUMERATION	37
6.1 CHRONICLES OF LITERATURE USED IN THE REFERENCE	37
6.2 ABBREVIATION USED IN ENUMERATION	39
6.3. DETERMINATION OF ECOLOGICAL STATUS	41
6.4. PTERIDOPHYTES	43
6.5. GYMNOSPERMS	53
6.6. ANGIOSPERMS	56
6.6.1. ENUMERATION OF ANGIOSPERMIC FLORA	58
6.6.1. A MAGNOLIOPSIDA	58
6.6.1. B LILIOPSIDA	364
CHAPTER-VII. DISCUSSION	441
7.1 ANALYSIS OF THE FLORA	441
7.1.1 NUMERICAL DISTRIBUTION OF TAXA	442
7.1.2. COMPARISON OF FLORA OF PWS WITH OTHER FLORAS	448
7.1.3. COMPARISON & AFFINITIES OF PWS WITH NVNP.....	455
7.1.3. HABIT GROUPS	456
7.13/I. HERBS	457
7.13/II. SHRUBS	458

7.1.3/ III. CLIMBERS	459
7.1.3/ IV. TREES	460
7.1.4. DISTRIBUTION OF FLORISTIC ELEMENTS	462
7.1.5. PHYTOGEOGRAPHY OF PWS	464
7.1.6. FLORISTIC ELEMENTS OF THE WETLANDS	469
7.1.7. PECULIAR ADAPTATION OF ALPINE PLANTS IN PWS	470
7.2. EMDEMIC FLORA OF PWS	471
7.3. EXOTICS	478
7.4. RARE AND THREATENED PLANTS OF PWS	479
7.5. ECONOMIC ASSESSMENT	480
7.5.1. MEDICINAL PLANTS RESOURCES	480
7.5.2. ORNAMENTAL PLANTS OF THE SANCTUARY	481
7.5.3. WILD EDIBLE SPECIES OF PWS	483
7.5.4. IMPORTANT TIMBER YIELDING PLANTS OF PWS	485
7.5.5. IMPORTANT DYE YIELDING PLANTS	485
7.5.6. FODDER PLANTS OF PWS	486
7.5.7. NTFP RESOURCE OF PWS	488
7.6. ETHNOBOTANICAL OBSERVATION	490
7.6.1. ETHNOMEDICINAL PLANTS	490
7.6.2. POISONOUS PLANTS OF PWS	493
7.6.3. PLANTS OF OTHER ASSORTED USE	494
7.7. IMPORTANCE OF THE FLORA	495
7.8. NEW RECORDS OF DISTRIBUTION	495
7.9. REDISCOVERY OF PLANTS	496
7.10. THREATS TO FLORA AND CONSERVATION MEASURES	497
7.11. CONSERVATION STATUS	500
7.11.1. UNSUSTAINABLE NTFP EXTRACTION	501
7.11.2. TREE-FELLING	501
7.11.3. FISHING PRACTICES	501
7.11.4. POACHING	502
7.11.5. COLLECTION OF ORNAMENTAL PLANTS	502
7.11.6. FUEL-WOOD COLLECTION	502
7.11.7. OVERGRAZING BY DOMESTIC LIVESTOCK	502
7.11.8. CUSTOMS, TRADITION, AND SUBSISTENCE	502
7.11.9. FOREST AND GRASSLAND FIRES	502
7.11.10. LACK OF INFORMATION AND AWARENESS	503
7.11.11. MILITARY OPERATIONS	503
7.12. PROPOSED METHODS OF CONSERVATION	503
CONCLUSION	507
SUMMARY	511
PUBLICATIONS & RESEARCH EXPERIENCE	515
REFERENCES	517
ANNEXURES	
ANNEXURE	A