

Acknowledgement

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Dr. Zabta Khan Shinwari

LIST OF ABBREVIATIONS

AA	Action Aid
ADHR	Association for the Development of Human Resources
AKRSP	Aga Khan Rural Support
AMA	American Management Association
AWP	Annual Work Plan
BDC	Biodiversity Conservation
CBO	Community-based organisations
CCC	Child Care Centres
CF	Community Facilitators
CFM	Community Forest Management
CO	Community organisation
DOE	Department of Environment
ERNP	Environmental Rehabilitation in NWFP and Punjab
ESMA	Extension Services Management Academy
EU	European Union
FG	Forest Guard
FHW	Female Health worker
FMC	Forest Management Centre
FOO	Forest Owners Organisation
FSP	Forestry Sector Project
FTRs	Field Trip Reports
FYM	Farmyard Manure
GEF	Global Environmental Facility
GIS	Geographical Information System
GPS	Geographical Positioning System
HJP	Himalayan Jungle Project
HNS	Health, Nutrition and Sanitation
HRDI	Human Resource Development Institute
IIED	International Institute for Environment and Development
IUCN-P	International Union for the Conservation of Nature, Pakistan
IPDM	Integrated Pest Disease Management
KWU	Kohistan Wildlife Unit
KZR	Kudos Zeal Renewal (HRD and Management Consultants)
LOI	Letter of Intent
LFM	Logical Framework Matrix
LOU	Letter of Understanding
LRM	Livestock and Rangeland Management
LUMS	Lahore University of Management Sciences
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
NGFM	Nursery growers farmers meeting
MPR	Monthly Progress Report
NGO	Non-governmental Organisation
NRCP	Natural Resource Conservation Project
NRM	Natural Resource Management
NTFP	Non-timber forest products
NWFP	North West Frontier Province

OWP	Overall Work Plan
PC-1	Planning Commission 1
PCDP	Palas Conservation and Development Project
PD	Project Director
PFI	Pakistan Forest Institute
PFM	Participatory Forest Management
PHED	Public Health and Engineering Department
PHP	Project for Horticulture Promotion
PIM	Pakistan Institute of Management
PM&E	Project Monitoring and Evaluation
PMU	Project Management Unit
PPI	Productive Physical Infrastructure
PPM	Programme and Projects Manager (BirdLife staff)
PRA	Participatory Rural Appraisal
PRB	Project Review Board
PSC	Project Steering Committee
RHU	Rural Health Centre
RO	Range Officer
SA	Sustainable Agriculture
SS	Site Supervisors
SDC	Swiss Agency for Development and Cooperation
SDPI	Sustainable Development Policy Institute
SLR	Single Lens Reflex
SNPO	Swiss NGO Programme Office
SRSC	Sarhad Rural Support Corporation
SWR	Steel wire rope
TNA	Training Needs Assessment
TOP	Terms of Partnership
TOR	Terms of Reference
VCF	Village Conservation Fund
VDPCP	Village Development and Conservation Plan
VVWs	Village Veterinary Workers
WP	Work Plan
WPA	World Pheasant Association
WWF	Worldwide Fund for Nature
YPO	Yearly Plan of Operation

Executive Summary

The natural resource base in the Hindu Kush-Himalayas is deteriorating more rapidly than many other global regions, but receives lesser attention internationally than the other ecosystems. However, it is time to realize that the traditional knowledge and management systems are as important as the need to introduce modern innovative approaches to sustainable development and management of natural resources in order to sustain the livelihood of traditional societies in Palas. The entire Palas valley is adorned with the tremendous non timber forest products and plays a pivotal role in the overall economy of Palas at micro and macro level. Though the traditional means of NTFPs trade are well established but the scope of NTFPs promotion is gigantic and can revolutionize the lives of people living in the Palas. HJP though was a start but there are a lot of areas where PCDP has to work in order to sustain biodiversity of Palas. The current consultancy will assist PCDP to provide an overall framework for the promotion of NTFP's at Palas.

The consultants initiated their activities by reviewing documents, papers and publications developed by HJP and PCDP. Likewise, to have a closer look at the affair, field investigations in a few villages were made. For this purpose, information on socio-economic and landuse practices were collected as planned.

As the thrust of the consultancy was to explore the options for sustainable commercial practices regarding NTFPs, efforts were made to know about the goods sold in the area, purchased from outside and the income from/expense on such goods. Data pertaining to past development initiatives undertaken by the villagers and problems regarding NTFPs were collected. As NTFPs include a variety of other uses also, therefore information on fodder plants, fruit trees, fuelwood trees/shrubs and wild vegetables were also collected both from the wild as well as from the habitation.

Nursery raising, minimizing collection and post-harvest losses, training of collectors, and promotion of linkages among collectors, growers, market and industry, are the major activities needed for the sustainable promotion of medicinal plants. Towards this end, it is felt to hire the services of a Botanist.

Honey is one of the major NTFP with a great potential for commercial production. To collect some basic information about honey, review of the past initiatives by HJP and PCDP, and honey bee types in NWFP and Palas were collected. Practices regarding collection of honey, marketing and role of women were reviewed. It was observed that collection, packing of honey, and marketing were needed to be improved. Likewise there is a need to set trials for improved breed of honey bees.

Wild Fruits and Nuts especially walnut (*Juglans regia*) is the major commercial NTFPs of the Palas. In this regard, species available in the Palas, collection and processing of walnut and marketing was studied in detail. Likewise, other wild and cultivated fruits were also part of study. Introduction of grafted walnuts and training in pruning and grafting are needed. There is a profound need for improving marketing links.

By virtue of its location, Palas produces a lot of Morels (*Morchella esculenta*). Detailed investigations were made and all technical data was reviewed. For the sustainable commercial production, collection, issues pertaining to the collection, drying, were part of observation and review. Likewise, marketing, processing, grading, packing and by-products were also studied to provide recommendations for the sustainable commercial production as well as improving practices regarding collection of Morchella. While work on Morchella was on, price of Morchella and its variation at local market was explored in order to provide maximum economic safety to the collectors. As Morchella has an international market, its marketing, major world-level sources, export, regulations, prices at international markets and variations along various levels of marketing chain were explored. Community-based problems were also part of study and on the basis of such investigations, future recommendation were made that emphasize training in the collection and better marketing links with the assistance of PCDP.

To know about the overall business at Palas level and to ascertain the future strategies for the sustainable commercial production of NTFP's, a detailed market survey was made. Following are the major findings of the survey:

- Over 25 NTFPs with an annual business of 13.2 millions rupees was recorded and, Morel, Sassuria, Podophylum and Viola were the important commercial NTFPs.
- **Non commercial NTFPs:** Almost all the vegetables derived from the forests, different fodder, fruit and firewood yielding plants
- **Commercial NTFPs:** Honey and *Bonium persicum* are important NTFPs in this category

Collection mechanism, methodologies and marketing of NTFPs are outdated. Though NTFPs are the backbone of Palas economy, neither HJP nor PCDP, has any major initiative in this regard.

Following are, however, the key areas of activities that have to be followed by PCDP for the sustainable promotion of NTFP's:

- There is a need to develop village inventories
- Enlistment of NTFPS per village
- Documentation of collection techniques of medicinal plants/ NTFPS

- Lists for various usages of plant resources
- Profound features of the local economy and social life.
- There is a need to execute joint planning for the promotion of NTFPs
- Problems of the villagers have to be addressed under Village Development Plan where promotion of NTFPs is to be part of the future activities
- Development of specie-wise conservation, management and development plan
- Capacity building programmed starting from village level up to Kuz and Bar Palas
- Marketing strategy with the emphasis on conservation as a central pyramid
- Gradual shifting of responsibilities from PCDP to local community

Currently, the stage of commercial processing seems to be too far away. However, there is a need to take a start. Though livestock, butter, ghee and many other products are technically not included in NTFP's, but these have a pivotal role especially in case of Palas.

There is strong need to build community institutions for the sustainable execution of programme. Likewise, marketing, linkages, and promotion of Palas products are the areas where PCDP has to exert energies for the sustainable uplift of livelihood in Palas.

Annex-I CHECKLIST OF THE PLANTS OF PALAS VALLEY

PTERIDOPHYTA

1. *Adiantum capillus-veneris* L. 900 m, **Vulnerable Species of Pakistan**
2. *Adiantum venustum* Don 1500-2000 m, **Vulnerable Species of Pakistan**
3. *Asplenium adiantum-nigrum* L. 1500-2000 m
4. *Asplenium ceterarch* L. 900-1500 m
5. *Asplenium dalhousiae* Hook. f. 900-2000 m
6. *Asplenium trichomanes* L. 1500-2200 m
7. *Athyrium attenuatum* (Clarke) Tagawa 2500-3000 m
8. *Athyrium schimperi* Moug. ex Fee 2000-3000 m
9. *Botrychium lunaria* (L.) Sw. 2700-3500 m
10. *Dryopteris komorovii* Koss.
11. *Dryopteris odontoloma* (Moore) O. Ktze.
12. *Dryopteris ramosa* (Hope) C. Chr. 1500-3000 m
13. *Dryopteris stewartii* Fras.-Jenk. 2000-3200 m
14. *Equisetum rammosissimum* Desf. 900 m
15. *Osmunda claytoniana* L. 2400-3000 m
16. *Polystichum lonchitis* (L.) Roth 2700-3500 m
17. *Polystichum thomsonii* (Hook.) Bedd. 2000-3000 m
18. *Pteridium aquilinum* (L.) Kuhn 1800-3200 m
19. *Selaginella sanguinolenta* (L.) Spring

GYMNOSPERMAE CUPERESSACEAE

20. *Juniperus communis* L. var. *saxatilis* Pallas 2700-4500 m
21. *Juniperus semiglobosa*. Regel 2800-3500 m
22. *Juniperus squamata* Buch. Ham. ex D. Don 2800 4500 m

EPHEDRACEAE

23. *Ephedra ciliata* Fisch. & Mey. ex Mey.
24. *Ephedra gerardiana* Wall. ex Stapf. 2400-4000 m, **Vulnerable Species of Pakistan**

PINACEAE

25. *Abies pindrow* Royle 2200-3500 m
26. *Abies spectabilis* (D. Don) Spach 2800-4000 m
27. *Cedrus deodara* Roxb. ex D. Don 1800-2500 m
28. *Picea smithiana* (Wall.) Boiss. 2400-3200 m
29. *Pinus wallichiana* A. B. Jackson 1800- 3300 m

TAXACEAE

30. *Taxus wallichiana* Zucc. 2200-3000 m, **Vulnerable Species of Pakistan**

ANGIOSPERMAE DICOTYLEDONEAE

ACANTHACEAE

31. *Dicliptera bupleuroides* Nees
32. *Strobilanthes urticifolius* Wall. ex Kuntz. 2000-3500 m

ACERACEAE

33. *Acer caesium* Wall. ex Brandis 2000-3000 m
34. *Acer cappadocicum* Gled. 2000-3000 m
35. *Acer pentapomica* J. L. Stewart 900- 2200 m

AMARANTHACEAE

36. *Achyranthes bidentata* Blume 1200-2000 m
37. *Amaranthus hybridus* L. up to 2600 m
38. *Amaranthus spinosus* L.

ANACARDIACEAE

39. *Pistacia chinensis* Bunge ssp. *integerrima* (J..L. Stewart) Rech. f. 500-2200 m
40. *Pistacia khinjuk* Stocks 1000-2500 m, **Vulnerable Species of Pakistan**

APOCYNACEAE

41. *Nerium indicum* Miller upto 1200 m

BALSAMINACEAE

42. *Impatiens brachycentra* Kar. & Kir. 1500-3000 m
43. *Impatiens edgeworthii* Hook. f. 1800-3000 m
44. *Impatiens flemingii* Hook. f. 1500-3200 m
45. *Impatiens grandulifera* Royal 1600-4000 m
46. *Impatiens sulcata* Wall. 1800-4000 m
47. *Impatiens thomsonii* Hook. f. 1800-3200 m

BERBERIDACEAE

48. *Berberis aitchisonii* Wend. 2400-3500 m
49. *Berberis brandisiana* Ahrendt. 2400-4000 m

50. *Epimedium elatum* Morr. & Decne. 2000-3300. m

BETULACEAE

51. *Betula utilis* D. Don 2500-4000 m

BORAGINACEAE

52. *Arnebia benthamii* (Wall. ex D. Don) I. M. Johnston 2700-3900 m
53. *Cynoglossum lanceolatum* Forssk. Up to 2500 m
54. *Hackelia macrophylla* (Brand) I. M. J. 1800-2800 m
55. *Hackelia uncinata* (Royle ex Benth.) C. Fisch. 2400-3500 m
56. *Lindelofia anchusoides* (Lindl.) Lehm. 1500-3500 m
57. *Lindelofia longiflora* (Benth.) Baill.; Pakistan, Kashmir to C-Nepal. 2000-4000m
58. *Mattiastrum howardii* Kazmi 2500-3500 m
59. *Myosotis alpestris* F.W. Schmidt ssp. *asiatica* Vestergren ex Hulten 2800-4500 m
60. *Onosma hispida* Wall. ex G. Don 1000-3500 m
61. *Pseudomertensia flavescens* Rubina Rafiq **Endemic to Palas.** 2400-3000 m
62. *Pseudomertensia moltkioides* (Royle) Kazmi 2500-3600 m
63. *Pseudomertensia sericophylla* (Riedl) Y. Nasir **Endemic to Pakistan.** 2400-2800 m
64. *Pseudomertensia trollii* (Melchior) Stewart & Kazmi 2400-3700 m

BRASSICACEAE

65. *Arcyosperma primulifolium* (Thoms.) O. E. Schultz. 2700-3400 m
66. *Arabidopsis himalaica* (Edgew.) O. E. Schulz 2400-3000 m
67. *Arabis amplexicaulis* Edgew. 2200- 3000 m
68. *Barbarea intermedia* Boreau 2700-3300 m
69. *Barbarea vulgaris* R. Br. 2700-3390 m
70. *Capsella bursa-pastoris* (L.) Medikus up to 3500 m
71. *Cardamine impatiens* L. 2200-3000 m
72. *Cardamine macrophylla* Willd. 2200-3000 m
73. *Chorispora sabulosa* Camb. 2800-.4500 m
74. *Draba trinervis* O. E. Schulz. 3000-4500 m
75. *Erysimum melicentae* Dunn 2200-3500m
76. *Lepidium capitatum* Hook. f. Above 3500. m
77. *Sisymbrium brassiciforme* C. A. Mey. 2500-3000 m
78. *Thlaspi kotschyianum* Boiss. & Hohen. 1500-3000 m

BUDDLEJACEAE

79. *Buddleja asiatica* Lour. 500-2000 m

CAMPANULACEAE

80. *Asyneuma thomsonii* (Hook. f. & Thoms.) 1800-3200 m
81. *Campanula aristata* Wall. 2400-4500 m.
82. *Campanula latifolia* L. 2200-2800 m.
83. *Campanula pallida* Wall. 600-4500 m.
84. *Codonopsis clematidea* (Schrenk) Clarke 2500-3800 m
85. *Codonopsis ovata* Benth. 3000-4200 m

CANNABINACEAE

86. *Cannabis sativa* L. up to 2500 m

CAPPARIDACEAE

87. *Cleome viscosa* L. up to 1500 m

CAPRIFOLIACEAE

88. *Abelia triflora* R. Br. 1500-4200 m
89. *Lonicera asperifolia* (Decne.) Hook. f. & Thoms. 3000-4000 m
90. *Lonicera caucasica* ssp *govani* (Wall. ex DC.) Hara 2000-4000 m
91. *Lonicera heterophylla* Decne. 3500-4300 m
92. *Lonicera microphylla* Willd. ex Roem.
93. *Lonicera myrtillus* Hook. f. & Thoms. 2500-4000 m (fr. red)
94. *Lonicera obovata* Royle ex Hook. f. & Thoms. 2500- 4000 m
95. *Lonicera.purpurascens* (Decne.) Walp. 3500-4000 m
96. *Lonicera quinquelocularis* Hardw. 800-3000 m
97. *Lonicera semenovii* Regel 3000-4000 m
98. *Lonicera webbiana* Wall. ex DC. 2000-3500 m
99. *Viburnum cotinifolium* D. Don 900-3500 m
100. *Viburnum grandiflorum* Wall. ex DC.1500 -3000 m

CARYOPHYLLACEAE

101. *Arenaria serpyllifolia* L.
102. *Arenaria griffithii* Boiss. 2400-4000 m
103. *Cerastium glomeratum* Thuill. 700-3000 m
104. *Cucubalus baccifer* L. 2400-3500 m
105. *Dianthus anatolicus* Boiss. 1500-3500 m
106. *Dianthus angulatus* Royle 900.3500 m
107. *Gypsophila cerastioides* D. Don 2000-4000 m

108. *Gypsophila floribunda* (Kar & Kir) Turcz. ex Ledeb. 1600-2600 m
109. *Minuartia kashmirica* (Edgew.) Mattf. 2400-3800 m
110. *Pseudostellaria heterantha* (Maxim.) Pax var. *himalaica* Ohwi 2700 m
111. *Sagina saginoides* (L.) Karst. 1800-4500 m
112. *Silene gonosperma* (Rupr.) Bocquet ssp. *himalayens* (Rohrb.) Bocquet 3000-5000 m
113. *Silene viscosa* (L.) Pers. 1000-3800 m
114. *Silene vulgaris* (Moench) Garcke 1500-3000 m
115. *Stellaria media* (L.) Cyr.
116. *Stellaria monosperma* Buch.Ham. ex D. Don 1800-3600 m

CELASTRACEAE

117. *Euonymus fimbriatus* Wall. 2400-3000 m
118. *Enonymus hamiltonianus* Wall. 2000-3000 m
119. *Maytenus royleanus* (Wall. ex Lawson) Cuf. 900-1500 m

CHENOPODIACEAE

120. *Chenopodium album* L. Up to 4000 m
121. *Chenopodium ambrosioides* L. Up to 2600 m.
122. *Chenopodium foliosum* (Moench) Asch. 2500-3800 m

COMPOSITAE (ASTERACEAE)

123. *Aainslaea aptera* DC. 1600-3500 m
124. *Achillea millefolium* L. 1800-4000 m, **Vulnerable Species of Pakistan**
125. *Anaphalis margaritacea* (L.) Benth. 1800-3500 m
126. *Anaphalis nubigena* DC. 2800-4000 m
127. *Anaphalis triplinervis* (Sims) CBC. 1800-3500 m
128. *Anthemis cotula* L.; Europe, W Asia, Pakistan to Kashmir. up to .1800 m
129. *Arctium lappa* L. 2000-4000 m
130. *Artemisia brevifolia* Wall. ex DC. 1500-4200 m
131. *Artemisia incisa* Pamp. 2700-3800 m
132. *Artemisia japonica* Thunb. 1800-3000 m
133. *Artemisia roxburghiana* Wall. ex Bess.
134. *Artemisia santolinifolia* Turcz. ex Krasch. 2000-4000 m
135. *Artemisia scoparia* Waldst. & Kit. up to 4000 m
136. *Aster falconeri* 2800-4000- m
137. *Aster flaccidus* Bunge 3200- 4300 m
138. *Aster thomsonii* Clarke 3000-4000 m
139. *Bidens bipinnata* L.
140. *Brachyactis pubescens* (DC.) Aitch. & Clarke 3000-4000 m
141. *Carduus edelbergii* Rech. f. 2700-4000 m
142. *Carpesium nepalense* Less. 1800-3500 m
143. *Cirsium falconeri* (Hook.f.) Petrak 2700-3500 m

144. *Conyza bonariensis* (L.) Cronq. 1000-2900 m
145. *Conyza canadensis* (L.) Cronquist up to 2500 m
146. *Cremanthodium arnicoides* (DC. ex Royle) R. Good above 3000 m
147. *Doronicum roylei* DC 1800-3000 m
148. *Dubyaea oligocephala* (Sch.-Bip.) Stebbins 2700-3500 m
149. *Echinops echinatus* Roxb. 900-2000 m.
150. *Erigeron bellidioides* Benth. 1200-3500 m
151. *Erigeron multiradiatus* Benth. 2500-4500 m
152. *Gnaphalium affine* D. Don 1200-4500 m
153. *Gnaphalium stewartii* Clarke 2800- 4500 m
154. *Hieracium vulgatum* Fries 1800-4000 m
155. *Hyalochaete modesta* (Boiss.) Dittrich & Rech. f. up to 1200 m
156. *Inula royleana* Clarke 2700-4000 m, **Rare specie of North Pakistan**
157. *Jurinea ceratocarpa* (Decne) Clarke var. *depressa* Clarke ex. Hk. f above 3000 m
158. *Jurinea dolomiaea* Boiss. 3200-4300 m
159. *Lactuca dissecta* D. Don 900-3000 m
160. *Lactuca lassertiana* (DC.) C. B. Clarke 2700-4500 m
161. *Leontopodium himalayanum* DC. 2700-4500 m
162. *Leontopodium ochroleucum* Beauv. 3000-5000 m
163. *Myriactis wallichii* Less. 1200-3500 m
164. *Prenanthes brunoniana* Wall. ex DC. 2000-3800 m
165. *Saussurea atkinsonii* C. B. Clarke 3000-4300 m
166. *Saussurea costus* (Falc.) Lipsch 2000-3300 m, **Enlisted under CITIES**
167. *Saussurea candolleana* (Wall. ex) DC. 2400-4000 m
168. *Saussurea heteromalla* (D. Don) Hand.-Mazz. 900-4000 m
169. *Scorzonera virgata* DC. 2500-4200 m
170. *Senecio chrysanthernoides* DC. 1400-4000 m
171. *Solidago virga aurea* L. 2000-3500 m
172. *Tanacetum dolichophyllum* (Kitam.) Kitam. 3000-4300 m
173. *Tanacetum senecionis* (Jacq. ex Sesser) DC 3000-4000 m
174. *Taraxacum officinale* auct. ?
175. *Youngia japonica* (L.) DC. Common up to 3000 m

CONVOLVULACEAE

176. *Convolvulus arvensis* L.

CORYLACEAE

177. *Corylus Jacquemontii* Decne. 2400-2700 m

CRASSULACEAE

178. *Rhodiola heterodonta* (Hook. f & Thoms.) Boriss. above 3800 m
179. *Rhodiola quadrifida* (Pallas). Fisch. & Mey. 3000-4500 m

180. *Rosularia adenotricha* (Wall. ex Edgew.) Jansson 1200-2700 m
181. *Sedum ewersii* Ledeb. 2300-4000 m

CUSCUTACEAE

182. *Cuscuta reflexa* Roxb. up to 3300 m

DATISCAEAE

183. *Datisca cannabina* L. 1600-2400 m

DIPSACACEAE

184. *Dipsacus inermis* Wall. 1400-4000 m
185. *Scabiosa speciosa* Royle 2500-4300 m

EBENACEAE

186. *Diospyros lotus* L.

ERICACEAE

187. *Cassiope fastigiata* (Wall.) D. Don 2800-4500 m
188. *Gaultheria trichophylla* Royle 2700-4500 m
189. *Rhododendron anthopogon* D. Don var. *hypananthum* (Balf. f) Hara 3000-4800 m
190. *Rhododendron collettianum* Aitch. & Hemsl. 2700-3500 m, **Rare specie of North Pakistan**

EUPHORBIACEAE

191. *Euphorbia helioscopia* L. up to 2000 m
192. *Euphorbia indica* Lam. up to 1500 m
193. *Euphorbia wallichii* Hook. f. 2500-3500 m

FAGACEAE

194. *Quercus baloot* Griffith 900-2200 m
195. *Quercus floribunda* Lindl. ex A. Camus (*Q. dilatata*) 2000-2900 m

FUMARIACEAE

196. *Corydalis govaniiana* Wall. 2400-4500 m
197. *Corydalis rutifolia* (Smith) DC. 1800-3500 m
198. *Corydalis stewartii* Fedde 2400-4000 m
199. *Fumaria indica* (Hausk.) Pugsley up to 2500 m

GENTIANACEAE

- 200. *Gentianodes argentia* (Royle ex D. Don) Omer 1600-4500 m
- 201. *Gentianodes cachemirica* (Decne.) Omer 3000-4000 m, **Vulnerable Species of Pakistan**
- 202. *Gentianodes marginata* (G. Don) Omer 2700-4500 m
- 203. *Gentianodes intermedia* (Clarke) Omer 2700-3500 m
- 204. *Jaeschkea oligosperma* (Griseb.) Knobi. 2700-4300 m
- 205. *Lomatogonium caeruleum* (Royle) H. Sm. ex B. L. Burt 2400-4000 m
- 206. *Lomatogonium carinthiacum* (Wulfen) Reichb. 3000-4500 m
- 207. *Qaiseriana catinata* (Griseb.) Omer 300-4300 m
- 208. *Swertia petio1ata* D. Don 2700-4000 m
- 209. *Swertia speciosa* D. Don 3000-4000 m

GERANIACEAE

- 210. *Geranium himalayense* Klotzsch. 2500-4300 m
- 211. *Geranium nepalense* Sweet 1500-4000 m
- 212. *Geranium pratense* L. 2200-3500 m
- 213. *Geranium rubifolium* Lindl. 2500-3000 m
- 214. *Geranium sibiricum* L. 2000-4000 m
- 215. *Geranium wallichianum* D. Don 2000-4200 m, **Vulnerable Species of Pakistan**

GROSSULARIACEAE

- 216. *Ribes alpestre* Decne. 2700-4000 m
- 217. *Ribes himalense* Decne. 2400-4000 m
- 218. *Ribes orientale* L. 2200-4000 m
- 219. *Ribes villosum* Wall. 2500-4000 m

HAMAMELIDACEAE

- 220. *Parrotiqpsis jacquemontiana* (Decne.) Rehder 1500-2500 m

HIPPOCASTANACEAE

- 221. *Aesculus indica* (Colebr. ex Cambess.) Hook. 1600-2700 m

HYPERICACEAE

- 222. *Hypericum oblongifolium* Choisy 600-2200 m
- 223. *Hypericum perfotatum* L. 1200-3000 m

ILLECEBRACEAE

224. *Herniaria cachemiriana* J. Gay 1000-2000 m

JUGLANDACEAE

225. *Juglans regia* L. 1000-2800 m, **Vulnerable Species of Pakistan**

LABIATAE

226. *Ajuga bracteosa* Wall. ex Benth.

227. *Ajuga parviflora* Benth. up to 1500 m

228. *Clinopodium umbrosum* (M.B.) Koch up to 3500 m

229. *Clinopodium vulgare* L. 2400-3500 m

230. *Dracocephalum nutans* L. 2700-4500 m

231. *Isodon rugosus* (Wall. ex Benth.) Codd 900-3000 m

232. *Lamium album* L. up to 3500 m

233. *Leonurus cardiaca* L. 2200-3600 m

234. *Melissa flava* Wall. ex Benth. 1500-2500 m

235. *Mentha royleana* Benth. 1000 -3800 m

236. *Micremeria biflora* (Buch.-flain.ex D. Don) Benth. up to 2500 m

237. *Nepeta cataria* L. 3000-3500 m

238. *Nepeta clarkei* Hook. f. 3000-4000 m

239. *Nepeta connata* Royle ex Benth. 2500-3800 m

240. *Nepeta erecta* (Benth.) Benth. 2000-3800 m

241. *Nepeta govaniiana* (Wall. ex Benth.) Benth. 2200-3800 m

242. *Nepeta laevigata* (D. Don) Hand.- Mazz. Above 2000 m

243. *Nepeta leucolaena* Benth. ex Hook. f. 2700-4000 m

244. *Nepeta podostachys* Benth 2200-3800 m

245. *Nepeta raphanorhizas* Benth. 1500-3000 m

246. *Origanum vulgare* L. up to 4000 m

247. *Phlomis bracteosa* Royle ex Benth. 2400- 4000 m

248. *Phlomis spectabilis* Falc. ex. Benth. up to 3700 m

249. *Prunella vulgaris* L. 1200-3800 m

250. *Salvia hians* Royle ex Benth. 2500-4000 m

251. *Salvia nubicola* Wall. ex Sweet 2200-3600 m

252. *Stachys emodi* Hedge 2000-4000 m

253. *Scutellaria edelbergii* Rech. f. 2200-3400 m

254. *Thymus linearis* Benth. 2500-3500 m, **Rare Species of Pakistan**

LORANTHACEAE

255. *Korthalsella opuntia* (Thunb.) Merrill up to 2400 m

MALVACEAE

- 256. *Hibiscus trionum* L. up to 2000 m
- 257. *Malva parviflora* L. up to 2400 m
- 258. *Lavatera kashmiriana* Cambess. 500-3600 m
- 259. *Sida cordata* (Burm. F.) Borss.

MELIACEAE

- 260. *Melia.azedarach* L. **Introduced**

MIMOSACEAE

- 261. *Acacia modesta* Wall. up to 1200 m

MORACEAE

- 262. *Ficus palmata* Forssk.ssp. *virgata* (Roxb.) Browicz. up to 2500 m
- 263. *Morus nigra* L. **Introduced**

MORINACEAE

- 264. *Morina coulteriana* Royle Above 2500 m

MYRSINACEAE

- 265. *Myrsine africana* L. 900-2000 m

NYCTAGINACEAE

- 266. *Boerhaavia procumbens* Banks ex Roxb.

OLEACEAE

- 267. *Fraxinus raibocarpa* Rgl. 1000-3000 m, **Rare specie of North Pakistan**
- 268. *Fraxinus xanthoxyloides* (Wall. ex G. Don) DC. 900-2000 m
- 269. *Jasminum humile* L. 1500-3000 m
- 270. *Jasminum leptophyllum* Rubina Rafiq **Endemic to Palas (Pakistan)** 1500-2000 m
- 271. *Jasminum officinale* L. 1200-2500 m
- 272. *Olea ferruginea* Royle. 500-2500 m
- 273. *Syringa emodi* Wall. ex Royle 2300-2800 m

ONAGRACEAE

- 274. *Circaea alpina* L. 2000-4000 m

- 275. *Circaea cordata* Royle 1800-3300 m
- 276. *Epilobium angustifolium* L. 2700-4000 m
- 277. *Epilobium hirsutum* L. 900-2200 m
- 278. *Epilobium royleanum* Hausskn. 1800-4000 m

OROBANCHACEAE

- 279. *Orobanche alba* Stephen ex Wild. 2200-3500 m

OXALIDACEAE

- 280. *Oxalis corniculata* L.

PAEONIACEAE

- 281. *Paeonia emodi* Wall. ex Royle 2200-3000 m, **Vulnerable Species of Pakistan**

PAPAVERACEAE

- 282. *Meconopsis aculeata* Royle 2400-4000 m, **Rare specie of Kashmir**

PAPILIONACEAE (FABACEAE)

- 283. *Astragalus candolleanus* Royle ex Benth. 2500-4000
- 284. *Astragalus frigidus* (L.) A. Gray 3000-4500 m
- 285. *Astragalus grahamianus* Royle ex Benth. 2000-3000 m
- 286. *Astragalus maddenianus* Benth. ex Hooker 3000-4000 m
- 287. *Astragalus subumbellatus* Kl. 1500-3000 m
- 288. *Caragana brevispina* Royle ex Benth. 1500-1800 m
- 289. *Cicer macranthum* M. Pop. 2700-4000 m
- 290. *Dalbergia sissoo* Roxb.
- 291. *Desmodium elegans* DC. 1200-3000 m
- 292. *Indigofera heterantha* Wall. ex Brand. 600-3300 m
- 293. *Lathyrus humilis* (Ser.) Fisch. ex Spreng. 2500-3800 m
- 294. *Lathyrus laevigatus* (Waldst. & Kit.) Gren. 2000-3000 m
- 295. *Lathyrus pratensis* L. 2200-3000 m
- 296. *Lespedeza juncea* (L. f.) Pers. 600-2500 m
- 297. *Lotus corniculatus* L. 1500-4000 m
- 298. *Medicago lupulina* L. 1000-4000 m
- 299. *Oxytropis lapponica* (Wahi.) Gay 3000-4300 m
- 300. *Trigonella gracilis* Benth. 1500-3000 m
- 301. *Trifolium pratense* L. 1500-3500 m
- 302. *Trifolium repens* L. 1500-3500 m
- 303. *Vicia sativa* L.

PARNASIACEAE

304. *Parnasia nubico1a* Wall. ex Royle 2400- 4200 m

PHILADELPHACEAE

305. *Deutzia staminea* R. Br. 1600-3000 m

PHYTOLACCACEAE

306. *Phytolacca acinosa* Roxb. 1500-3000 m

PLANTAGINACEAE

307. *Plantago lanceolata* L. up to 3000 m

308. *Plantago major* L. up to 4200 m, **Rare Species of Pakistan**

PODOPHYLLACEAE

309. *Podophyllum hexandrum* Royle 2400- 4500 m

POLEMONIACEAE

310. *Polemoniurn coeruleum* L. ssp *himalayanum* (Baker) Hara 2400-3700 m

POLYGONACEAE

311. *Aconogonum alpina* (All.) Schur 1500-3000 m

312. *Aconogonum rumicifolium* (Royle ex Bab.) Hara 2700-4300 m

313. *Bistorta affinis* (D. Don) Green 2500-4500 m

314. *Bistorta amplexicaulis* (D. Don) Green 1800-4500 m, **Endanger Species of Pakistan**

315. *Fallopia convolvulus* (L.) Holub 1200-3000 m

316. *Oxyria digyna* (L.) Hill 2500-5000 m

317. *Persicaria barbata* (L.) Hara up to 2000 m

318. *Persicaria hydropiper* (L.) Spach up to 4000 m

319. *Persicaria longiseta* (De Bruyn) Kitagawa

320. *Persicaria nepalensis* (Meisn.) H. Gross 1000-4000 m

321. *Polygonum aviculare* L.; Temperate and sub-tropical regions. 1200-4000 m

322. *Polygonum paronychioides* C. A. Mey. ex.Hohen. 2700-4300 m

323. *Rheum webbianum* Royle 2400-4300 m, **Vulnerable Species of Pakistan**

324. *Rumex acetosa* L. 2100-4300 m

325. *Rumex dentatus* L. up to 2000 m

326. *Rumex hastatus* D. Don 1000-2700 m

327. *Rumex nepalensis* Sprengel 1200-4300 m

PRIMULACEAE

- 328. *Androsace foliosa* Decne. ex Duby 2300-3300 m
- 329. *Androsace mucronifolia* Watt. 3300-4300 m
- 330. *Androsace rotundifolia* Hardw. 1500-3600 m
- 331. *Cortusa brotheri* Pax ex Lipsky 3000-4600 m
- 332. *Primula elliptica* Royle 3300-4000 m
- 333. *Primula denticulata* Smith 1500-4500 m
- 334. *Primula macrophylla* D. Don 3200-4500 m
- 335. *Primula reptans* Hook. f. ex Watt 3500-5000 m
- 336. *Primula rosea* Royle 2700-4000 m

PUNICACEAE

- 337. *Punica granatum* L. 700-2700 m

RANUNCULACEAE

- 338. *Aconitum heterophyllum* Wall. ex Royle 2500-4000 m, **Vulnerable Species of Pakistan**
- 339. *Aconitum laeve* Royle 2700-4000 m
- 340. *Aconitum violaceum* Jacq. 3500-4500m
- 341. *Actaea spicata* L. 2000-3300 m
- 342. *Anemone rupicola* Cart. 3000-4300 m
- 343. *Anemone vitifolia* Buch.-Ham. ex DC. 2500-3500 m
- 344. *Aquilegia fragrans* Benth. 2700- 3800 m
- 345. *Aquilegia nivalis* Falc. ex Jackson 3000-4000 m, **Rare specie of North Pakistan**
- 346. *Aquilegia pubiflora* Wall. ex Royle 2400-3200 m
- 347. *Callianthemum pimpinelloides* (D. Don ex Royle) Hk. f. & Thoms. 2800-4000 m
- 348. *Caltha alba* Jacq. ex Cart. 2500-4300 m
- 349. *Clematis connata* DC. 1500-2800 m
- 350. *Clematis montana* Buch.-Ham. ex DC. 2000-3000 m
- 351. *Delphinium cashmerianum* Royle 3000-4500 m
- 352. *Delphinium denudatum* Wall. ex Hook. f. & Thoms. 2500 m
- 353. ***Delphinium palasianum* Rubina Rafiq** (Palas & Gilgit.) 2000-2700 m, **Endanger Species of Pakistan**
- 354. ***Delphinium swatense*** R. A. Quraishy & M. N. Chaudhry 1500-2400 m, **Endanger Species of Pakistan**
- 355. *Delphinium tenuipes* Tamura 2500 m, **Rare specie of North Pakistan**
- 356. *Ranunculus glacialisformis* Hand.-Mazz. 3090 m
- 357. *Ranunculus hirtellus* Royle 2800-4000 m
- 358. *Ranunculus laetus* Wall. ex D. Don 1800-2700 m
- 359. *Ranunculus munroanus* Drumm. ex Dunn 1400-4300 m

- 360. *Ranunculus stewartii* H Riedl. 3000-4500 m
- 361. *Thalictrum cultratum* Wall. 2400-4200 m
- 362. *Thalictrum elegans* Wall. ex Royle 3000-4200 m
- 363. *Trolis acaulis* Lindl. 3000-4000 m

RHAMNACEAE

- 364. *Rhamnella gilgitica* Mans.& Melch. **Endemic to Pakistan** 1000-2500 m,
Vulnerable Species of Pakistan
- 365. *Rhamnus purpurea* Edgew. 2400-3200 m
- 366. *Sageretia thea* var. *brandrethiana* (Aitch.) Qaiser & Nazim 900-2000 m
- 367. *Ziziphus jujuba* Mill. 900-2000 m
- 368. *Ziziphus oxyphylla* Edgew. 900-2400 m

ROSACEAE

- 369. *Agrimonia pilosa* Ledeb. 1000-3000 m
- 370. *Alchemilla trollii* Rothm. 3000-4100 m
- 371. *Cotoneaster bacillaris* Wall. ex Lindl. 1800-3000 m
- 372. *Cotoneaster nummularia* Fisch & Meyer 900-3000 m
- 373. *Cotoneaster roseus* Edgew. 1600-3000 m
- 374. *Crataegus songarica* C. Koch 1500-2700m
- 375. *Filipendula vestita* (Wall. ex G. Don) Maxim. 2100-3300 m
- 376. *Fragaria nubicola* Lindl. ex Lacaita 1800-3300 m
- 377. *Geum elatum* G. Don 2700-4300 m
- 378. *Geum roylei* Bolle 1800-3600 m
- 379. *Potentilla cathaclinis* Lehm. 3000-4300 m
- 380. *Potentilla indica* (Andr.) Wolf
- 381. *Potentilla monanthes* Wall. ex Lehm. 2700-4500 m
- 382. *Prunus cornuta* (Wall. ex Royle) Steud. 2300-3200 m
- 383. *Prunus jaquemontii* Hook. f. 1200-2500 m
- 384. *Rosa brunonii* Lindl. 900-2500 m
- 385. *Rosa macrophylla* Lindl. 2300-4200 m
- 386. *Rosa webbiana* Wall. 1800-3600 m
- 387. *Rubus ellipticus* Smith. 900-2000 m
- 388. *Rubus irritans* Forcke 2400-4300 m
- 389. *Rubus niveus* Thunb. 900-3000 m
- 390. *Sibbaldia cuneata* Kunze 2400-4500 m
- 391. *Sorbaria tomentosa* (Lindl.) Rehder 1200-3200 m
- 392. *Sorbus lanata* (D. Don) S. Schatier 2300-3200 m
- 393. *Sorbus tianschanica* Rupr. 2500-3800 m
- 394. *Spiraea bella* Sims 2400-4000 m
- 395. *Spiraea hazarica* Parker 2700 m
- 396. *Spiraea vacciniifolia* D. Don 1200-2500 m

RUBIACEAE

- 397. *Galium aparine* L. up to 3600 m
- 398. *Galium asperifolium* Wall. 1500-3000 m
- 399. *Galium aspetuloides* Edgew. 2000-3000 m
- 400. *Galium elegans* Wall. ex Roxb. 1400-3000 m
- 401. *Rubia wallichiana* Decne. 1500-3200 m

RUTACEAE

- 402. *Boenninghausenia albiflora* (Hook) Reichenb. ex Meissn. up to 3300 m
- 403. *Dictamnus albus* L. 1800-3000 m
- 404. *Skimmea anquetilia* N. P. Taylor & Airy Shaw. 2400-4000 m

SALICACEAE

- 405. *Populus caspica* Bornm. 900-3000 m
- 406. *Populus ciliata* Wall. ex Royle 2000-3300 m
- 407. *Salix acmophylla* Boiss. 900-2000m
- 408. *Salix daphnoides* Vill. 2400-4000 m
- 409. *Salix denticulata* Ander. 1800-3700 m
- 410. *Salix disperma* Roxb. ex D. Don 1500-3500 m
- 411. *Salix flabellaris* Anders 3300-4300 m
- 412. *Salix karelinii* Turcz. 2000-4300 m
- 413. *Salix lindleyana* Wall. ex Andr. 3500-5000 m

SAMBUCACEAE

- 414. *Sambucus wightiana* Wall. ex Wight & Arh. 2400-4000m

SAXIFRAGACEAE:

- 415. *Bergenia ciliata* (Haw.) Sternb. 900-2800 m, **Endanger Species of Pakistan**
- 416. *Bergenia stracheyi* (HK. f. & Thoms.) Engl. 2700-4000 m
- 417. *Saxifraga asarifolia* Sternb. 3000-4500 m
- 418. *Saxifraga stenophylla* Royle 3800-4500 m

SCROPHULARIACEAE

- 419. *Euphrasia himalaica* Wettst. 2500-4000 m
- 420. *Kickxia incana* (Wall.) Pennell up to 2000 m
- 421. *Leptorhabdos parviflora* (Benth.) Benth. 1500-3300 m
- 422. *Mimulus nepalensis* Benth. 900-2000 m
- 423. *Pedicularis bicornuta* Kl. 2400-4500 m
- 424. *Pedicularis oederi* Vahl above 3300 m

- 425. *Pedicularis pectinata* Wall. ex Benth. 2300-4300 m
- 426. *Pedicularis punctata* Decne. 2500-4500 m
- 427. *Pedicularis tenuirostris* Benth. 2300-3700 m
- 428. *Scrophularia scabiosifolia* Benth. 700-3600 m
- 429. *Verbascum thapsus* L. 900-4000 m
- 430. *Veronica anagalis-aquatica* L. up to 3000 m
- 431. *Veronica beccabunga* L. up to 3500 m
- 432. *Veronica lanosa* Royle ex Benth. 2400-3600 m
- 433. *Wulfenia amherstiana* Benth. 1500-3000 m

SOLANACEAE

- 434. *Atropa acuminata* Royle 1500-3000 m
- 435. *Solanum nigrum* L.
- 436. *Solanum surattens* Burm. F. up to 1500 m

STAPHYLEACEAE

- 437. *Staphylea emodi* Wall. ex Brandis 2100-2700 m

TAMARICACEAE

- 438. *Myricaria germanica* (L.) Desv. 1500-2700 m

THYMELIACEAE

- 439. *Wikstroemia canescens* Meissn. 1800-2700 m
- 440. *Daphne mucronata* Royle 1500-2700 m

ULMACEAE

- 441. *Celtis caucasica* Willd. 900-2200 m
- 442. *Celtis tetrandra* Roxb. 900-2000 m
- 443. *Ulmus wallichiana* Planchon 2400-2800 m, **Endanger specie of Pakistan**
- 444. *Ulmus villosa* Brandis ex Gamble 1000-1800 m, **Rare Himalayan specie**

UMBELLIFERAE (APIACEAE)

- 445. *Aegopodium alpestre* Ledeb. 1800-2700 m
- 446. *Angelica glauca* Edgew. 2000-4000 m
- 447. *Anthriscus nemorosa* (M. Bieb.) Spreng. 2400-3500 m
- 448. *Bunium persicum* (Boiss.) Fedtsch. 1000-2000 m, **Vulnerable Species of Pakistan**
- 449. *Bupleurum gracillimum* Kl. 2700-4500 m
- 450. *Bupleurum longicaulis* Wall. ex DC. 2800-4300 m
- 451. *Bupleurum subuniflorum* Boiss. & Heldr. 1000-2000 m

- 452. *Bupleurum tenue* Such-Ham. ex Don 1000-2500 m
- 453. *Bupleurum thomsonii* C. B. Clarke 2700-4500 m
- 454. *Chaerophyllum reflexum* Lindl. 1500-3000 m
- 455. *Chaerophyllum villosum* Wall. ex DC. 2200-4000 m
- 456. *Conium maculatum* L. 1500-2400 m
- 457. *Cortia depresia* (D. Don) Norman Above 3500 m
- 458. *Heracleum candicans* Wall. ex DC. 2200-3800 m
- 459. *Pimpinella diversifolia* (Wall.) DC. 2000-3200 m
- 460. *Pleurospermum candollei* (DC.) Clarke above 3500 m
- 461. *Scaligeria aitchisonii* Wolff 1800-3000 m.
- 462. *Selinum papyraceum* 2700-4200 m
- 463. *Selinum vaginatum* (Edgew.) Clarke 2900-4200 m
- 464. *Seseli libanotis* (L.) Koch 1800-4000 m
- 465. *Torilis leptophylla* (L.) Reichb. f. up to 1500 m
- 466. *Trachydium roylei* Lindl. 2500-4500 m
- 467. *Vicatia wolffiana* (Wolff ex Fedde) Norman above 3000 m

URTICACEAE

- 468. *Debregeasia salicifolia* (D. Don) Rendle 900-2400 m
- 469. *Urtica dioica* L. 900-3500 m

VALERIANACEAE

- 470. *Valeriana himalayana* Grub. Above 3400 m, **Endanger Species of Pakistan**
- 471. *Valeriana jatamansi* Jones 1400-3400 m, **Endanger Species of Pakistan**
- 472. *Valeriana pyrolifolia* Decne. 2400-4500 m
- 473. *Valeriana stracheyi* Clarke 1200-2800 m

VERBENACEAE

- 474. *Verbena officinalis* L.

VIOLACEAE

- 475. *Viola betonicifolia* Smith 900-2200 m, **Vulnerable Species of Pakistan**
- 476. *Viola biflora* L. 2500-3500 m, **Vulnerable Species of Pakistan**
- 477. *Viola canescens* Wall. ex Roxb. 1500-3300 m, **Vulnerable Species of Pakistan**
- 478. *Viola fedtschenkoana* W. Becker 2500-3800 m
- 479. *Viola kashmiriana* N. Becker 2400-3500 m
- 480. *Viola pilosa* Blume 1200-3000 m

VITACEAE

- 481. *Cissus carnos*a (L.) Lamk.
- 482. *Vitis jaquemontii* Parker 900-2400 m
- 483. *Vitis parviflora* Roxb. 1200-2000 m

MONOCOTYLEDONEAE

ALLIACEAE

- 484. *Allium humile* Kunth 3000-4500 m
- 485. *Allium roylei* Stearn 2000 m
- 486. *Allium victorialis* L. 2500-3600 m

ARACEAE

- 487. *Arisaema jaqiiemontii* Blume 2400-3500 m

ARALIACEAE

- 488. *Hedera nepalensis* K. Koch 1500-3000 m

COLCHICACEAE

- 489. *Colchicum luteum* Baker 900-2700 m, **Endanger Species of Pakistan**

COMMELINACEAE

- 490. *Commelina benghalensis* L. 900-1800 m

CYPERACEAE

- 491. *Carex cardiolepis* Nees 2000 - 3300 m
- 492. *Carex cruenta*. Nees 2400 -5000 m
- 493. *Carex hirtella* Drejer 2000 - 4000 m
- 494. *Carex infuscata* Nees 2500 - 4000 m
- 495. *Carex kashmirensis* C. B. Clarke 2200-3600 m
- 496. *Carex nivalis* Boott 3500-4500 m
- 497. *Carex nubigena* D. Don 2000-3500 m
- 498. *Carex pseudobicolor* Boeck 3500-4500 m
- 499. *Carex psychrophilla* Nees 2000-4000 m
- 500. *Carex setosa* Boott 2400-4000 m
- 501. *Cyperus compressus* L.
- 502. *Fimbristylis bisumbellata* (Forssk.) Bubani
- 503. *Fimbristylis dichotoma* (L.) Vahl 900-1500 m
- 504. *Kobresia capillifolia* (Decne.) Clarke 3300-5000 m
- 505. *Kobresia nitens* C. B. Clarke 3000-5000 m

506. *Kobresia royleana* (Nees) Boeck 3500-4600 m

DIOSCOREACEAE

507. *Dioscorea deltoidea* Wall. ex Kunth 2200-2700 m, **Vulnerable Species of Pakistan**

IRIDACEAE

508. *Iris hookeriana* R. C. Foster 2700-3300 m

JUNCACEAE

509. *Juncus articulatus* L. 2000-3000 m

510. *Juncus compressus* Jacq. var. *pseudogerardii* Jafri 2000-3000 m

511. *Juncus himalensis* Klotzsch 2700-4300 m

512. *Juncus membranaceus* Royle ex D. Don 2000-4300 m

513. *Juncus aphaelatus* Decne. above 3000 m

514. *Luzula spicata* (L.) DC. 3000-4500 m

LILIACEAE

515. *Asparagus filicinus* Buch.-Ham ex D. Don 2200-3000 m

516. *Asparagus gracilis* Royle 900-1600 m

517. *Gagea pseudoreticulata* Vved 900-2500 m

518. *Gagea elegans* Wall. ex D. Don 2400-4000 m

519. *Lilium polyphyllum* D. Don 2200-3300 m

520. *Polygonatum geminiflorum* Decne. 2400-3800 m

521. *Polygonatum multiflorum* (L.) All. 1500-2700 m, **Vulnerable Species of Pakistan**

522. *Polygonatum verticillatum* (L.) Ali 1500-3700 m

523. *Smilax vaginata* Decne. 2400-3000 m

ORCHIDACEAE

524. *Cephalanthera longifolia* (L.) Fritsch.

525. *Cypripedium cordigerum* D. Don 2400- 3800 m, **Rare specie of Pakistan**

526. *Epipactis helleborine* (L.) Crantz 2300-3800 m

527. *Epipactis veratrifolia* Boiss. & Hohen. 1000-2400 m

528. *Goodyera repens* (L.) R. Br. 2400-3800 m

529. *Hermium pugioniforme* Lindl. ex Hook. f. 3600-5000 m, **Rare specie of Pakistan**

530. *Habenaria aitchisonii* Reichb. f. ex Aitch. 2000-2400 m

531. *Spiranthes sinensis* (Pers.) Ames 1500-2400 m

532. *Zeuxine strateumatica* (L.) Schl. 900-1500 m

POACEAE

533. *Agrostis gigantea* Roth 1500-3000 m
534. *Agrostis munroanus* Aitch & Hemsl. 1200-4300 m
535. *Agrostis pilosula* Trin. 1400-3700 m
536. *Agrostis stolonifera* L. 1500-4000 m
537. *Alopecurus himalaicus* Hook. f. 3000-4000 m
538. *Apluda mutica* L. 300-2000 m
539. *Aristida adscensionis* L.
540. *Aristida cyanantha* Nees ex Steud. 1000-2000 m
541. *Arthraxone lancifolius* (Trin.) Hochst. 600-2500 m
542. *Arthraxone prionodes* (Steud.) Dandy 600-2500 m
543. *Bothriochloa bladonii* (Retz.) S.T. Blake
544. *Bothriochloa ischaemum* (L.) Keng.
545. *Brachypodium sylvaticum* (Huds.) P. Beauv. 1000-3000 m
546. *Bromus pectinatus* Thunb 500-3500 m
547. *Calamagrostis pseudophragmites* (Hall. F.) Koel 1700-3000 m
548. *Capillipedium parviflorum* (R. Br.) Stapf 600-2400 m
549. *Chrysopogon gryllus* ssp. *echinulatus* (Nees) 2400-3000 m
550. *Chrysopogon serrulatus* Trin.
551. *Cymbopogon jawarancusa* (Jones) Schullt. Up to 2000 m
552. *Cynodon dactylon* (L.) Pers.
553. *Danthonia achneideri* Pilger 2600-4500 m
554. *Dactylis glomerata* L. 1700-4000 m
555. *Dichanthium annulatum* (Forssk.) Staph
556. *Digitaria ciliaris* (Retz.) Koe1.
557. *Digitaria setigera* Roth. ex Roem & Schult.
558. *Digitaria stricta* Roth. ex Roem. & Schult.
559. *Duthia bromoides* Hack 3000-4500 m
560. *Echinochloa crus-gali* (L.) P. Beauv.
561. *Elymus himalayanus* (Nevski) Tzvelev 2700-3800 m
562. *Elymus longe-aristatus* ssp. *canaliculatus* (Nevski) Tzvelev 3000-5000 m
563. *Elymus semicostatus* (Nees ex Steud.) Meld. 1000-4000 m
564. *Eulaliopsis binata* (Retz) C. E. Hubbard
565. *Festuca hartmanni* (Markgr.-Dannenb.) Alexeev 3000-5000 m
566. *Festuca valesiaca* Schleich. ex Gaud. 2700-4500 m
567. *Helictotrichon pratense* (L.) Pilger 2700-4300 m
568. *Helictotrichon virescens* (Nees ex Steud.) Henr. 2000-4000 m
569. *Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult.
570. *Hierochloa laxa* R. Br. ex Hook. f. 3000-5000 m
571. *Imperata cylindrica* (L.) Raeuschel
572. *Mnesithea laevis* (Retz.) Kunth 600-2400m
573. *Oplismenus undulatifolius* (Ard.) Roem. & Schult. 1500-2500 m
574. *Pennisetum lanatum* Klotzsch 1500-3500 m
575. *Pennisetum orientale* L. C. Rich. up to 2000 m
576. *Phacelurus speciosus* (Steud.) C. E. Hubbard 1200-3000 m

- 577. *Phleum alpinum* L. 2000-4300 m
- 578. *Phleum himalaicum* Mez 600-3000 m
- 579. *Phragmites karka* (Retz.) Trin. ex Steud.
- 580. *Piptatherum gracilis* Mez 2300-4300 m
- 581. *Piptatherum munroi* (Stapf) Mez 600-3000 m
- 582. *Poa alpina* L. 2700-5509 m
- 583. *Poa annua* L.
- 584. *Poa nemoralis* 1300-4000 m
- 585. *Poa pratensis* L. 1500-4700 m-
- 586. *Poa sterilis* M. Bieb. 1300-4700 m
- 587. *Poa supina* Schrad. 1700-4300 m
- 588. *Saccharum rufipilum* Steud. 1500-2500 m
- 589. *Setaria pumila* (Poir.)Roem. & Schult.
- 590. *Setaria verticillata* (L.) P. Beauv.
- 591. *Stipa sibirica* (L.) Lamk.
- 592. *Themeda anathera* (Nees ex Steud.) 500-2500 m
- 593. *Tripogon purpurascens* Duth. 1000-2500 m
- 594. *Trisetum spicatum* (L.) Richt. 3000-6000 m
- 595. *Trisetum aeneum* (Hook. f) R. R. Stewart 2500-3800 m

TRILLIDIACEAE

- 596. *Trillidium govanianum* (D,Don) Kunth 2400-3000 m

Annex-II References to the Literature review

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ANNEX-III PCDP documents and reports used in the development of report

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- * **HJP/PCDP Inception Period: Second Interim Report.** Progress report for the period 1 July 1994 to 31 December 1994. HJP, Islamabad: March 1995.
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- * **Community Management of Natural Resources. The Himalayan Jungle Project, Pakistan. A Brief Appraisal of Achievements and Prospects for a Palas Conservation and Development Project.** Report to the Commission of the European Communities. Stephen Bass, IIED, London: July 1994.
- * **HJP/PCDP Inception Year 1994/1995.** Project proposal to the Commission of the European Communities. HJP, Islamabad: January 1994.
- * **Revised HJP Phase II (PCDP) Project Concept.** HJP, Islamabad: October 1993. (Approved by Government of NWFP, October 1993, and by Government of Pakistan, January 1994).

GENERAL HJP PROJECT DOCUMENTS

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- * **HJP Project Closing Report.** Final progress report to WWF International for the period 18 April 1991 to 30 June 1994. HJP, Islamabad: February 1995.
- * **Bar Palas Agreement.** Landmark agreement signed between HJP and people of Bar Palas, June 1993. HJP, Islamabad, June 1993.

- * **HJP Year 2 Report.** Progress report for the period 1 March 1992 to 31 May 1993, including selected media coverage. HJP, Islamabad: July 1993.
- * **HJP Project Review Brief.** HJP, Islamabad: February 1993.
- * **HJP Year 1 Report.** Progress report for the period 18 February 1991 to 29 February 1992. HJP, Islamabad: March 1992.
- * **Terms of Reference - HJP Project Management Committee.** October 1991.
- * **Agreement between Government of Pakistan and ICBP on the implementation of the Himalayan Jungle Project.** Provides for smooth implementation of the project and various fiscal privileges. Signed October 1991.
- * **Pakistan's Himalayan Jungle Project PC-1.** Planning Commission format for HJP Phase I (1991-1994), approved by Government of Pakistan, October 1990.

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- * Woods, C. (1994) **The small mammals of the Palas Valley.** University of Florida, USA.

- * Bean, N.J., et al. (1994) **Survey of Western Tragopan *Tragopan melanocephalus* in the Palas Valley, NWFP - Spring 1994. Including an annotated checklist of all faunal groups recorded.** HJP, Islamabad.
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- * **GOPP Workshop on the Forest Management Component of the Himalayan Jungle Project.** October 1994. HJP, Islamabad (in prep.)
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- * **Bar Palas flood rehabilitation programme: foot-bridges and irrigation channels.** (Project proposal for TVO). HJP, Islamabad: March 1993.
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