

Ethnobotany of Ghalegay, District Swat, Pakistan

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Abstract: Ethnobotanical study of plants revealed that the local community of Ghalegay, District Swat, invariably uses 126 species of 59 families for various purposes. Based on their traditional local uses, fifty-seven species (45.2%) were classified as medicinal, forty-seven as fire wood (37.3%), forty-five as forage (35.7%), twenty-eight as honey bee species (22.2%), twenty-seven as vegetable species (21.4%), 25 as edible fruits (14 wild and 11 cultivated), thirteen as timber wood (10.3%), twelve as ornamental (9.5%), eleven as furniture wood, ten as shelter and thatch makers (7.9%), ten as fencing (7.9%), five as poisonous (4%), four as religious superstitious species, three species used in making hand sticks and wooden tools (2.4%), three as utensil cleaner species (2.4%), three as evil repellent and one as fish poisoning species. The area is in plant resources and traditional knowledge but it needs ecological management for its sustainability.

Key words: Ethnobotany; Medicinal plants; Ghalegay; Pakistan

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1 Introduction

The socio-economic uplift of remote areas partly depend upon plant resources. The inhabitants of Ghalegay besides serving in government agencies earn livelihood from forest resources and agriculture. There is an everlasting obligate dependence of mankind on plants. It therefore becomes important to see into the sustainable utilization of plant resources for future improvement. Forests are source of maintaining genetic diversity of bioresources. Ethnobotanical knowledge has been based on the local wisdom and confidence of man on traditional utilization of plants. Therefore, this trustworthy knowledge is has become basis for many novel medicinal and commercial preparations. Parmer and Sharma (1992) reported that wild apricot (*Prunus* sp.) is eaten fresh, used for preparing an alcoholic drink, edible kernel contains 48.6% oil which is employed in cooking and burning lamps and as a hair oil. Smith (1993) reported 132 plant species with their traditional uses. Motler (1994) reported insecticidal, antibacterial and antifungal activities of *Aconis calamus*. Ahmad and Holdsworth (1995) provided information on the ethnopharmacognosy of 31 medicinal pla-

nts. Bajpai *et al.* (1995) reported 51 plants used to treat a various ailments in rural areas of Varanasi, India. Bukenya and Carasco (1995) documented forty-one species of *Solanum* utilized as food, medicinal and ornamental plants in Uganda. Bhattacharya (1995) reported eight species of plants used for treating renal diseases. Chapman *et al.* (1995) reported the uses of 103 plants and animals from Great Victoria Desert. Grosvenor *et al.* (1995) recorded that out of 114 plant species, 50% were used to combat fever, 33% for treating diarrhoea and 31% for curing other gastrointestinal disorders. Johns *et al.* (1995) listed 45 species used as remedies for gastrointestinal problems. Kaufmann and Elvin (1995) investigated that eight plants were used for treating tooth ach. Manandhar (1995) reported 48 species with anthelmintic activity. Ravindra *et al.* (1995) listed various traditional uses of forest plants by the tribal of Bihar India. Yesilada *et al.* (1995) reported 256 remedies prepared from 124 plant and three animal species in folk medicine in Taurus mountains in South Anatolia.

Some ethnobotanical investigations have also been done in various parts of Pakistan. Haq and Hussain

(1993) listed 53 wild and 17 cultivated plants of local medicinal uses. Sadaqat (1995) described medicinal uses of ten cucurbitaceous plants. Hussain *et al.* (1995) documented the ethnobotany of 125 plants of Dabargai Hills, Swat. The medicinal uses of some plants of Margala Hills is reported by Shinwari and Khan (1999). Khan *et al.* (2003) described traditional uses of plants of Bunir District. Recently Sher *et al.* (2004, 2005) and Begum *et al.* (2005) have provided some information on the ethnobotany and conservation of medicinal plants in Swat.

The review shows that plants are traditionally used by mankind for many obvious needs. However, meagre information exists on the ethnobotany of plants of Ghalegay, District Swat. Ghalegy Hills lie between 34.44°N latitude and 73.4°E longitude in District Swat. The average altitude of the valley bed at village Ghalegay is 950 m that rises up to 3000 m up hills. The climate of the area is mild in summers with sub tropical touch at lower altitude and severe winter cold in temperate and sub alpine regions. The present study reports the local uses of some plants of village Ghalegay. The findings might help the resource managers in their future studies undertaken for the conservation of plant resources and development of this area.

2 Materials and Methods

The information about the local traditional uses of plants were gathered by interviewing 250 elderly and knowledgeable persons from the area (Hussain *et al.*, 1995) through an open ended questionnaire. Scientific nomenclature is from that of Flora of Pakistan (Nasir and Ali, 1971-1995; Ali and Qaiser, 1995-2004). The identification of plants was confirmed at National Herbarium, National Agriculture Research Centre, Islamabad. The study was conducted during summer (1996-97).

3 Results and Discussion

One hundred and twenty-six species of 59 families had various local traditional uses in the investigated area (Table 1). The major bulk of plants i.e. fifty-seven (45.2%) species including *Artemisia scoparia*, *Berberis lycium*, *Canabis sativa*, *Diospyrus lotus*,

Prunus armeniaca, *Taraxacum officinale*, *Berberis lycium*, *Alium sativum*, *Rosa moschata*, *Plantago major*, *Punica granatum*, *Solanum nigrum*, *Myrtus communis* and *Ziziphus sativa* are used in the local health care system. They are mostly used as single drugs or in combination of two or more plants. Similarly a plant might be used for curing a single disease or more than two different ailments. Medicinal plants are mostly collected by women, children and shepherds for personal use and for selling to local drug dealers. *An-drachne cordifolia* is used to cure various diseases in livestock.

People living in and around Ghalegay mostly depend on the adjacent forests for their fire wood requirement. They collect almost whole plant or their parts (stems and branches) for their domestic needs from 47 species used as fire wood. *Pinus wallichiana*, *Pinus roxburghii*, *Acacia modesta*, *Olea ferruginea*, *Quercus baloot*, *Q. dilatata*, *Platanus orientalis*, *Ailanthus altissima*, *Morus alba*, *M. nigra* and *Prunus armeniaca* were among the tree species; while *Dodonaea viscosa*, *Indigofera gerardiana*, *Plectranthus rugosus* and *Cotoneaster microphylla* were some of the shrubby fire wood plants. *Olea ferruginea*, *Quercus dilatata*, *Q. baloot*, *Acacia modesta*, *Zizyphus sativa*, *Z. jujuba* and *Dodonaea viscosa* were preferred species as they produce less smoke, emit better flame with high heat value. Due to continuous over exploitation and deforestation such species have become endangered. Hussain *et al.* (1995) and Beg and Khan (1980, 1984) have also stated that oak forests in Swat have declined due to deforestation. Some of these fire wood plants also serve as medicinal, furniture and timber wood plants.

Forty-five species (35.7%), including grasses and some shrubs served as fodder plants. Similarly, Hussain *et al.* (1995) also reported many plants from other parts of Swat, including some plants recorded in the present study, used as fodder. The local community depends on livestock for milk, meat and wool. Young animals are sold for earning money. The area is freely grazed without any ecological management. This has led to over grazing and deterioration of the habitat

that has not only promoted erosion of soil but also hampered regeneration of economically important plants. Edible fruits and seeds were obtained from 25 species including 14 wild and 11 cultivated species. *Ficus palmata*, *Diospyrus lotus*, *D. kaki*, *Prunus armenica*, *P. domestica*, *Pyrus malus* and *Vitis vinifera* are commonly marketed fruits that earn livelihood for the local people. There are many varieties of these fruits in the area. Some of the same fruit plants are found cultivated and wild in other parts of Swat (Hussain *et al.*, 1995; Khan *et al.*, 2003; Sher *et al.*, 2004; Begum *et al.*, 2005) with similar uses.

Honey-bees visit twenty-eight species (22.2%) for collecting nectar and pollen. *Acacia modesta*, *Adhatoda vasica*, *Plectranthes rugosus*, *Dicliptera roxburghiana*, *Rosa moschata*, *Helianthus annuus*, *Ziziphus sativa*, and *Z. jujuba* were the common plants frequently visited by bees. Swat is famous for apiculture as locals have been using honey as daily food item and as medicine since ages. Apiculture has attained a status of common cottage industry that markets the packed honey under different brand names to rest of the country. The prices of honey vary from Rs. 100 kg to 200 kg (= US \$ 2 - 4) depending upon the species of plant and honeybee. The honey from *Acacia modesta* and *Ziziphus* sp. collected by *Apis feroria* is considered to be the best and costly than honey collected by *Apis indica* and *A. mellifera* and from other plants. Honey collected by *Apis dorsata* is the cheapest.

There were twenty-seven (21.4%) species used as vegetables. They included chillies, tomato, potato, cucurbits, mustards, cabbages and spinach etc. cultivated for own use and for commercial purpose. The locals do have aesthetic sense as twelve species including *Adiantum venustum*, *Dryopteris*, *Rosa moschata*, *Helianthus annuus*, *Nerium oleander* and *Jasminum officinale* are used as ornamental plants. Some of these plants are also sold in the plant nurseries in other parts of Pakistan. The village has agriculture and livestock based economy. Fencing by plants protects crop fields from grazing animals. Nine species including *Berberis lycium*, *Otostegia limbata*, *Rosa moschata*, *Rubus*

fruticosus and *Ziziphus sativa* are used for making fences along field borders. Plants used for fencing are generally spiny or bushy. Ten species, including *Vitex negundo*, *Parrotiopsis jaquemontiana*, *Dodonaea viscosa*, *Myrsine africana* and *Cotoneaster microphylla* were the preferred species for making animal sheds and shelters and roof thatching. Most houses are built from mud and wood. Thirteen species including *Pinus wallichiana*, *P. roxburghii*, *Morus alba*, *M. laevigata*, *Populus nigra*, *Ailanthus altissima*, *Quercus dilatata*, *Q. baloot*, *Olea ferruginea*, *Juglans regia*, *Platanus orientalis* and *Melia azedarch* are used as timber wood species. Hussain *et al.* (1995), Khan *et al.* (2003), Sher *et al.* (2004) and Begum *et al.* (2005) also reported similar timber wood species from other parts of Swat and our findings agree with them. Some of these species also serve as furniture, fodder and fire wood plants in the area. *Pinus wallichiana* is the best quality and highly priced timber wood in Pakistan, being only second to that of *Cedrus deodara*. Eleven species of plants including *Pinus wallichiana*, *Morus alba*, *M. laevigata*, *Platanus orientalis*, *Melia azedarch* and *Populus nigra* are used for making furniture. Among them *Pinus wallichiana* and *Juglans regia* are highly priced. Furniture made from walnut wood is the best in quality and carved work. Nine species including *Salix acomophylla*, *Zanthoxylum alatum*, *Quercus dilatata* and *Q. baloot* are being used for making walking sticks and wooden and agricultural tools. Seven species including *Adatoda vasica*, *Daphne mucronata*, *Vitex negundo* and *Nerium oleander* were used as insect repellent and also considered poisonous to livestock and human beings. Fruit skeleton of *Luffa aegyptiaca*, shoots of *Equisetum arvense* and cob of *Zea mays* were used for washing domestic utensils.

The present study shows some similarities in plants and their use with plants of other parts of Swat as reported by other workers (Hussain *et al.*, 1995; Khan *et al.*, 2003; Sher *et al.*, 2004; Begum *et al.*, 2005). Few to compare are *Pinus roxburghii*, *P. wallichiana*, *Quercus dilatata*, *Q. baloot*, *Ailanthus altissima*, *Salix* sp., *Ziziphus sativa*, *Z. jujuba*,

Juglans regia, *Dodonaea viscosa*, *Adhatoda vasica*, *Ficus palmata*, *F. carica*, *Fragaria indica* and *F. vasica* etc. are present in the adjoining areas with almost similar uses. Likewise, there is similarity in fruit, fodder, fire wood and vegetable plants. Another good similarity is the naming of persons after plant names. For example, Anar Khan, Anar Gul are named after *Punica granatum*, which is locally called Anar. Inzer Gul means fig flower. Yasmin, Yasmin Gul or Chambe-li are the names of girls after *Jasminum* sp. The religious and suppositious plants are also the same in all over Swat such as *Ficus palmata* and *Olea ferruginea* etc. Some plants like *Prunus armeniaca*, *Acacia modesta*, *Morus* sp., *Olea ferruginea*, *Juglans regia* and *Ziziphus jujuba* etc. had multiple utilities including medicinal, timber, fuel wood, fodder, edible fruit and seed, shade plant and provide nesting facility to birds. Such species appear to be under severe biotic pressure. Deforestation and overgrazing has reduced their regeneration due to deteriorated habitat and mismanagement. The ecological problems also appear to be common through out the Swat with varying intensity. The over exploitation of plants for medicinal uses, forage, timber wood, furniture wood and fire wood etc is sever problem in the Swat district right from plains up to the snowbound peaks. The present study shows that the area is rich in plant resources and traditional knowledge that is primarily confined in elderly people. This traditional knowledge is gradually fading out because of modern health, education and communication facilities in the area. The area needs ecological management with the participation of local community for the future development and sustainable use of existing resources. This study also suggests to prepare a complete inventory of useful plants with traditional knowledge. It looks that with passage of time the traditional knowledge will vanish owing to shift from traditional health care system to modern medicine system. This will help in conservation of natural resources in the area.

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资讯

《中国植物志》英文版的最新进展

中国国土辽阔，气候多样，地貌复杂，孕育着多姿多态的植物多样性。一般认为，中国拥有三万多种高等植物，约占世界高等植物总数的八分之一，其中包括了大约 8000 种重要药用及经济植物和大约 7500 种树木与灌木 (Wu, 1990)。《中国植物志》(中文版) (*Flora Reipublicae Popularis Sinicae*) 是目前世界上最大、记载种类最多的一部巨著。全书 80 卷 126 册，5000 多万字，记载了我国 301 科 3408 属 31142 种维管束植物。该书是全国数十家科研教学单位的 312 位植物分类学专家及 167 位植物科学画家近半个世纪的艰辛编撰才得以最终完成 (Yang 等, 2005)。实际上，整个编研准备工作从 20 世纪 30 年代开始，先后延续了近 80 年，而从 1959 年正式启动至全部完成也历经 45 年之久 (陈心启等, 2004)。

《中国植物志》英文版 (即 *Flora of China*, FOC) 的编研工作，早在 1979 年中国植物学代表团在改革开放后首次访美时，时任《中国植物志》主编、副主编的俞德浚、吴征镒两位院士就曾向美国植物学家提出过开展国际合作的建议。直到 1988 年由主编吴征镒院士代表中国科学院与美国密苏里植物园主任 Peter Raven 院士签订了中美合作编写《中国植物志》英文版的协议，并成立了 *Flora of China* 联合编委会，于 1989 年正式启动了 FOC 的编研工作。FOC 是《中国植物志》的英文和修订版 (English and updated version)，并不是单纯的翻译。它是《中国植物志》走向国际的一个里程碑，同时也反映了世界对《中国植物志》的关注与重视。

《中国植物志》英文版是中美合作的重大项目，得到了中国科学院、国家科技部、国家自然科学基金委员会、美国国家科学基金会和美国斯塔尔基金会等机构的资助。中国科学院昆明植物研究所吴征镒院士和美国密苏里植物园 Peter Raven 院士任联合编委会主席。2001 年在昆明举行的联合编委会增补中国科学院植物研究所洪德元院士任联合编委会副主席，并调整了编委会的组成。《中国植物志》英文版的编研工作由来自中国、美国、英国、法国等全世界的专家共同合作完成，将记载逾 3 万种维管束植物，最终计划出版文字版 25 卷，图集 25 册。目前已出版第 17 卷、第 16 卷、第 15 卷、第 18 卷、第 4 卷、第 24 卷、第 8 卷、第 6 卷、第 9 卷、第 5 卷和第 14 卷。除第 14 卷外，其余各卷相应的图册即 *Flora of China Illustrations* 也已出版。第 22 卷 (禾本科) 将于今年 6 月正式出版。如将第 22 卷计算在内，截至 2006 年 6 月，所出版卷册中共计包含了 130 个科 (1 个特有科)，1583 个属 (79 个特有属)，15311 个种 (8047 个特有种，约占 52.6%)。据了解，目前 FOC 的编写任务已完成 85% 以上，全部卷册的编辑将于 2010 年完成。现将最新的统计结果列表如下：

《中国植物志》英文版 ‘*Flora of China*’ 及图册的出版进程

出版次序	卷册	出版年	本所图书馆馆藏	相应图册出版年	本所图书馆馆藏	主要内容
1	17	1994	无	1998	有	Verbenaceae 到 Solanaceae, 3 科, 136 属 (13 特有属), 1090 种 (518, 或 47.5% 为特有种)
2	16	1995	无	1999	有	Gentianaceae 到 Boraginaceae, 8 科, 179 属, 1268 种 (635, 或 50% 为特有种)
3	15	1996	无	2000	有	Myrsinaceae 到 Loganiaceae, 9 科, 65 属, 1079 种 (639, 或 59.2% 为特有种)
4	18	1998	无	2000	有	Scrophulariaceae 到 Gesneriaceae, 6 科, 141 属, 1203 种 (800, 或 66.5% 为特有种)
5	4	1999	有	2001	有	Cycadaceae 到 Fagaceae, 21 科 (1 特有科), 76 属 (7 特有属), 1081 种 (597, 或 55.2% 为特有种)

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