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## Distribution and indigenous use pattern of *Quercus* species in Malam Jabba Valley Swat

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### Abstract

The People of Swat valley, particularly of Malam Jabba is culturally inherited to use the *Quercus* spp. as their favorite fuel wood. Extensive field studies were conducted during March 2012 to February 2014, throughout Malam Jabba valley, Swat. Voucher specimens were collected from various localities along with pertinent phenological information. Total of 41 families of indigenous people of the area, particularly elderly and educated people were interviewed and questionnaires were adopted for this purpose. Two species of the genus *Quercus* (Fagaceae) were identified i.e. *Q. dilatatta* Royle and *Q. incana* Roxb, found in small fragmented habitats, mostly in community owned marginal lands. Population size of *Q. dilatatta* was 2750 individuals, and *Q. incana* was 2813 individuals. According to the obtained data, total of consumed fuel wood is 84585 tons in which 18.49% is *Quercus* in the valley per annum (9.65kg per head per day). Both the species are exposed to the threatened habitat due to agricultural land extension, unsustainable cutting for timber, fuel wood and fodder purposes. Unfortunately, there is no forest demarcation and fuel wood production for the valley. It is therefore suggested that alternate fuel sources should be extended to the study area on urgent basis, in order to overcome the problem of fuel wood and maintain the diversity of *Quercus* spp. in the valley.

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## Introduction

Pakistan has a peculiar geographical position in the world. It is enriched with great, diversity of flora. More than 5,600 species have been documented till now in the Flora of Pakistan, (Nasir and Ali, 1971-95, Shah and Baig, 2001). Rare taxa need special attention for conservation and protection as they face high risk to be extinct because of small population (Vischi, *et al.*, 2004, Behera, *et al.* 2005). It is important that preservation and conservation of rare species should be timely done to save them from extinction (Vischi, *et al.*, 2004). Because of rapid growth in human population, cities expansion, habitat degradation and fragmentation, the natural flora has been rapidly decreasing (Western, 2001). Among the valuable forest plants, *Quercus* L. (Oak) is one of the important woody genus of about 600 species distributed worldwide in a wide range of habitats. It is distributed in Northern Hemisphere in temperate and subtropical region (Yilmaz, *et al.* 2011). In Pakistan, it is found in Himalayas Mountain particularly in Dir, Chitral, Swat, Hazara, Tirah, Kurram Agency, Murree Hills and Azad Kashmir (Nasir and Ali, 1972). In Swat, specially Malam Jabba is the well-known area for distribution of *Quercus* spp.

Malam Jabba Swat is surrounded by Shangla District in the North-East, Buner District in the South-West while in the West linked by Main road and Swat River. The Latitude of area is 35°-20' to 35°-45' N and Longitudes 72°-12' to 73°-32' E (Abdur Rashid *et al.*, 2011). The valley is located at the altitude of 12000m with 3200 m highest peak of Shagar Sar which occupies the southern rich floristic belt of Hindu Kush mountain range (Abdur Rashid *et al.*, 2011). Total population of the area is 40000 people i.e. 200 individuals/Sq. Km (Census Report 1998).

Six species of *Quercus* are reported in Pakistan (Nasir, 1976). Five were reported from Swat (Ahmad *et al.*, 2008- 2010) in which two species *Q. dilatata* and *Q. incana* were found in Malam Jabba, which was typical continental type climate (Wahab *et al.*, 2008). The *Q. dilatata* was found in moist climate (Khan *et*

*al.*, 2011). *Quercus glauca* is considered as locally extinct (Ahmad *et al.*, 2008). Local people still depend on the subject species for its use as fuel wood (Khan, 2011). The acorns (seeds) are used for urinary tract disorders in various preparations (Ali *et al.*, 2004). Leaves are stored and used as fodder during winter season (Mustafa *et al.*, 2010). According to Alamgir (2004), the branches of *Q. dilatata* and *Q. incana* are used as a fence around the cultivated fields. Unwise use, habitat destruction and human population pressure (Samantha & Borges, 2000) are the threats, faced by these two species in its major habitats in the subject area.

Due to over and uncontrolled deforestation and exploitation of forest majority of valuable plants have become in threatened and rare (Al-Yemeniet *al.*, 2010, Sher H *et al.*, 2011). So according to the application of *Quercus* Spp. The research area is divided into two circles i.e. Mangarkot Patwar, having a population of 13,683 and Kishawra Patwar circle having population of 14,346 individuals respectively (Sher H *et al.*, 2011). Malam Jabba valley comprises of the villages, Kishawra, Palgata, Landai Shah, TorThoot, Speni Oba, Badar Dam, Malam, Khamba, Koo, Kasoono, BalaKot, Asharai and Shaltalo.

The study was conducted to present a systematic schedule for the future of *Quercus* spp.. The main objectives are to investigate the present distributional pattern and population size of *Quercus* spp., to search alternative ways for the dependence of these plants and suggest measurement for their conservation. The current research study is therefore selected to disclose the present condition of *Quercus* plant communities and their important for the area and native people.

## Materials and methods

### Field Trip

For finding out the distributional pattern of *Q. dilatata* and *Q. incana*, transect walks were arranged in the valley, starting from the lowest altitudinal point (1228m) up to its highest altitudinal point (2250m).

**Plant Collection**

Plant specimens of *Q. dilatata* and *Q. incana* and the species associated with them were collected from every habitat in study area, its occurrence along with extensive field notes including habit, habitat, life form, phenological status, abundance, GPS value and altitude etc, were recorded.

**Identification of Plants**

In each smaller valley local educated and elderly inhabitants were interviewed regarding the local names and various indigenous uses of *Q. dilatata* and *Q. incana*. During the interviews, semi-structured questionnaire were followed as per modification from Croom (1983) and Lipp (1989). The locals were interviewed of the previous as compared to the existing population size of the *Q. dilatata* and *Q. incana*; their dependency and future needs were also addressed. Audio visual recording devices were used to record the complete interviews for future reference.

Population size was found out by counting the mature individuals. Identification was carried out with the help of Flora of Pakistan (Nasir & Ali, 1970-1979; Nasir & Ali, 1980-1989; Ali & Nasir, 1989-1992; Ali & Qaiser, 1993-2009) and Flora Iranica (Rechinger, 1957-2001) and other pertinent literature

**Results and discussion**

Total of eleven localities were thoroughly investigated for the occurrence and distribution of *Quercus* species. It was found that the *Q. dilatata* is distributed in eight patches while *Q. incana* is distributed in ten patches (table 1). The population size of *Q. dilatata* was 2750. Among which the number of juvenile were 2264 and 486 were mature trees. It occupies area of 3.830 km<sup>2</sup> (table 1). Among the 11 localities *Q. dilatata* are distributed in 5 localities. The number of patches of occurrence of *Q. dilatata* was 8 in these localities. In these patches the numbers of cut trees *Q. dilatata* were 987.

**Table 1.** Total number of trees of *Q. dilatata* and *Q. incana* in the study area.

S. No.	Locality No	Covered area (km <sup>2</sup> )	No of mature trees		No of juvenile		No of cut trees	
			<i>Q. dilatata</i>	<i>Q. incana</i>	<i>Q. dilatata</i>	<i>Q. incana</i>	<i>Q. dilatata</i>	<i>Q. incana</i>
1	Shenkud road	0.042	30.00	00.00	440.00	00.00	67.00	-----
2	Lodia	0.021	09.00	00.00	100.00	00.00	45.00	00.00
3	Bung	0.291	105.00	00.00	1000.00	00.00	477.00	00.00
4	Palgata1	0.019	250.00	00.00	20.00	00.00	55.00	00.00
5	kwalakareen	0.081	15.00	00.00	90.00	00.00	70.00	00.00
6	Palgata 2	0.012	40.00	00.00	150.00	00.00	90.00	00.00
7	Khumba 1	0.065	11.00	00.00	174.00	00.00	78.00	00.00
8	Khamba 2	0.028	26.00	00.00	290.00	00.00	105.00	00.00
9	Noucha	0.019	00.00	30.00	00.00	200.00	00.00	10.00
10	Kasoona 1	0.024	00.00	60.00	00.00	340.00	00.00	223.00
11	Kasoona 2	0.029	00.00	25.00	00.00	225.00	00.00	78.00
12	Kassono 3	0.034	00.00	66.00	00.00	134.00	00.00	90.00
13	Koo 1	0.015	00.00	11.00	00.00	39.00	00.00	90.00
14	Koo 2	0.039	00.00	70.00	00.00	400.00	00.00	315.00
15	Spene Oba	0.026	00.00	40.00	00.00	258.00	00.00	213.00
16	Koo 3	0.058	00.00	15.00	00.00	250.00	00.00	115.00
17	Pandi	0.025	00.00	81.00	00.00	200.00	00.00	216.00
18	Qalapati	0.061	00.00	20.00	00.00	355.00	00.00	218.00
	Total	0.472	486.00	418.00	2264.00	2401.00	987.00	1568.00

The population size of *Q. incana* was 2819 among which 2401 were juvenile and 418 were mature trees. It occupies area of 7.861 km<sup>2</sup> (table 1). Among the 11 localities *Q. incana* are distributed in 6 localities. The number of patches of occurrence of *Q. incana* was 10 in these localities. In these patches the number of cut

trees *Q. incana* were 1568. All woody species (trees and shrubs) are usually used as fuel wood by the locals (Singh *et al.* 2010). The range of fuel wood burns depends upon the, availability, quality and the population of people (Singh and Singh, 1992). It was found that 83426386 kg of fuel wood is burnt per

year in study area. And in which the amount of *Q. dilatata* and *Q. incana* burnt annually is 15191513 kg.

*Q. dilatata* and *Q. incana* has been exploited for many years. Especially during the last few years it has been cut ruthlessly by locals. This is because of population explosion, demand for more food, more fuel wood and timber which in turn built pressure upon the forest in general and *Q. dilatata* and *Q. incana* in particular. Even the forest was cut for easy cash by locals and smugglers due to lenient attitude or with the connivance of the forest department.

Fuel wood is a major problem in the valley and with the increase in population, its rate of utilization has also increased. Unsustainable use of *Q. dilatata* & *Q. incana* species for fuel wood purposes has devastated its population in the wild and resulted in scarce availability of fuel wood. Similarly, it also resulted in the unemployment of the families associated with its collection; loading and unloading as fuel wood. The deforestation of this is further deteriorated because it is a common property. Land resource ownerships in some areas are not yet decided. And hence the use pattern of the resource is not defined. Therefore the people fulfill their requirements by illegal means and over exploited the resource (*Quercus*).

Our data showed that deforestation was of great concern in Swat, specifically in Malam Jabba valley, where forest was continuously lost, by fragmentation and degradation of natural habitats by the residents for food and agriculture, roads, schools and hospitals and other public facilities. This might have resulted threats to many native species of plants and animals to be extinct. This not only negatively affected forests but also has adverse effect upon the economy of people who are involved with loading and unloading of forest wood particularly with *Q. dilatata* and *Q. incana*. Large scale deforestation of *Q. incana* and *Q. dilatata* has resulted in fearing to disappear from the valley besides causing a change in local weather. This resulted less than normal availability of water for irrigation. Total annual income of the people has been

reduced. Furthermore, many people were compelled to migrate along with their livestock from the area because of the resource scarcity, unemployment and resulted poverty in the study area. Addressing the issue and proposing alternate measures to fuel wood would help in conserving the present population of *Q. dilatata* and *Q. incana* and uplifting the living standard of a common man in the valley. Here is a great possibility of its extinction locally if such deforestation is continued.

At the end of study we obtained complete map of areas where there was *Q. dilatata* and *Q. incana*. Total numbers of *Q. dilatata* and *Q. incana* trees were found out by counting. Threats that *Q. dilatata* and *Q. incana* are facing was recognized. Measures for its conservation & protection were suggested. The complete map of the study area was obtained and its indigenous use was identified at the end of study

#### *Distribution of Q. incana and Q. dilatata*

In the study area patches of *Q. dilatata* & *Q. incana* were observed and their pictures were taken. Latitude and longitude were noted in the *Q. dilatata* & *Q. incana* distributed major patches. Measurement was made at the edges of patches. CSG irregular polygon calculators were used to measure the covered area of all the patches. Following patches were found in study area at different localities.

#### *Kwalakareen*

It is situated at 1291m altitude and consists of two patches. The first patches of juvenile. The numbers of cut trees were 70 at this locality. Juvenile were 90 and mature trees were 15. The second patch was named as Sheenkad road. The trees at this place were widely spaced. The numbers of cut trees were 67 at this locality. Juvenile were 440 and mature trees were 30. *Q. dilatata* that were associated with *P. roxburgii* and with major shrub like *Myrsine africana*, *Desmodium podocarpum*, *Punica granata*, *Xanthoxylum armatum*, *Napeta catarea* L., *Sarcococca saligna*, *Buddlejia crispa*, *Andrachne condifolia* etc in both the patches. Longitudes and latitude was determined.

Total cover area of both the patches were found 0.05090098458448 km<sup>2</sup>.

#### Palgata

At altitude 1308m, locality Palgata, two patches were observed. One with mature trees of *Q. dilatata* while the other with juveniles, the numbers of cut trees was 55 at this locality. Juvenile were 20 and mature trees were 250. The second patch was named as Palgata 2. The numbers of cut trees were 90 at this locality. Juvenile were 150 and mature trees were 40 associated with major shrub like *Myrsine africana*, *Desmodium podocarpum*, *Punica granata*, *Xanthoxylum armatum*, *Napeta catarea* L., *Sarcococca saligina*, *Buddlejia crispa*, *Andrachne condifolia* etc.. Longitude and latitude were also determined. Total cover area of both the patches were found 0.014218729481527sqkm.

#### Khamba

At altitude 1521m two patches of *Q. dilatata* were observed. These patches were named Kmb 1 Kmb 2 for convenience. Trees of These patches were widely spaced from each other. *Q. dilatata* was present in the edges of maize cultivated land. Total number of cut trees in khamba1 was 78. The mature trees were 11. The numbers of juvenile were 174. while Total number of cut trees in Khamba 2 was 105. The mature trees were 26 and the numbers of juvenile were 290. The associated species were found similar to Kwalakareen. Total areas that *Q. dilatata* was occupying were found 0.035054147431537 km<sup>2</sup>.

#### Bung

At altitude 1268m locality Bung two patches of *Q. dilatata* were noted. Most of the trees were juvenile. These patches were named Bung and Lodia. The trees were widely spaced from each other. Total number of cut trees in Bung was 477. The mature trees were 105. The numbers of juvenile were 1000. While total number of cut trees in Lodia was 45. The mature trees were 09 and the numbers of juvenile were 100.

The Bung was the largest patch of *Q. dilatata*, associated with *P. wallichiana* (the second largest stand) and *P. roxburghii* and with major shrub like *Myrsine africana*, *Desmodium podocarpum*, *Punica granata*, *Xanthoxylum armatum*, *Napeta catarea* L., *Sarcococca saligina*, *Buddlejia crispa*, *Andrachne condifolia* *Berberis lycium* *Indigofera heterantha* *vr geradina* *Artimasia absenthium* L. *Cotoneaster numinularia* *Cotynusco gajyria* etc. Patches were photographed. Longitude and latitude were determined. Total area that *Q. dilatata* was occupying was found 0.2938975564389379 km<sup>2</sup>.

#### Noucha

This was a transition zone where the *Q. incana* growth start and *Q. dilatata* growth stop at altitude 1564m. At altitude 1080m, no *Q. incana* was observed, below this angle while no *Q. dilatata* were seen above this line. Thus a natural line is drawn between the two species of *Q. incana* and *Q. dilatata*. It this patch *Q. incana* was associated with. *P. wallichiana*, The dominant shrubs, *Berberis*, *Indigofera*, *Napata cataria*, *Buddlejia crispa*, *Andrachne condifolia*. Total numbers of cut trees were 10. The mature trees were 30. The numbers of juvenile were 200. Longitude and latitude were also determined. Total area that *Q. incana* occupying was found 0.01949313784158 km<sup>2</sup>

#### Spene Oba

At altitude 1080m. Juvenile *Q. incana* associated with *Pinus wallichiana*, *Indigofera* and maize crop. Much of the land was barren. Tree of *Q. incana* were counted. Total numbers of cut trees were 213. The mature trees were 40. The number of juvenile was 258. Longitude and latitude were determined. Total area that *Q. incana* was occupying were found 0.002699729366345242 km<sup>2</sup>.

#### Qala pate

At altitude 2137m at place Qala pate, in the forest of *Pinus wallichiana* small scattered *Q. incana* patches were seen the habitat is being destroyed by different anthropogenic activities. However *Q. incana*, *Pinus*

*wellichiana* and *Indigofera* grow in the destroyed habitat, surrounded by field of maize crop. Total number of cut trees was 218. The mature trees were 20. The numbers of juvenile were 355. Longitude and latitude was determined. Total area that *Q. incana* was occupying were found 0.00615699833545733 km<sup>2</sup>.

#### *Pandi*

At altitude 2088m, *Q. incana* was observed under the canopy of huge *Pinus wallichiana* trees as under shrubs. Total number of cut trees in this place was 216. The mature trees were 81. The numbers of juvenile were 200. Longitude and latitude was determined. Total areas that *Q. incana* was occupying were found 0.02578294748 km<sup>2</sup>.

#### *Kasoona*

At Locality Kasoona 3 patches of *Q. incana* were noted. These were named as Kasoona 1, Kasoona 2, and Kasoona 3. At altitude 1986m-2217m-2021m respectively. It was noted that juvenile vegetation of *Q. incana*. *Pinus wallichiana* are the main vegetation, it was also noticed that the land were bulldozed for roads and agricultural land which are apparent threats to the habitat. *Berberis* and *Indigofera* was shrub associated with the *Q. incana* species.

Total number of cut trees in kasoona1 was 223. The mature trees were 25. The numbers of juvenile were 340. At kassona2, total number of cut trees was 78. The mature trees were 25. The numbers of juvenile were 225. In kasoona3 total number of cut trees was 90. The mature trees were 66. The numbers of juvenile were 134. Longitude and latitude of the three patches was also determined. Total area that *Q. incana* was occupying was found 0.307084688957303 km<sup>2</sup>.

#### *Koo*

At altitude 2230m-2229m-2250m three patches of *Q. incana* were seen. These were called as koo1, koo2, and koo3. Major forest was *Pinus wallichiana* in which *Q. incana* form secondary dominant

vegetation. In koo1 total cut trees of *Q. incana* 90. The mature trees were 11. The numbers of juvenile were 39. In koo 2 total number of cut trees was 315. The mature trees were 70. The numbers of juvenile were 400. In koo3 total number of cut trees was 115. The mature trees were 15. The numbers of juvenile were 250. the associated species were similar to that of Noucha. Longitude and latitude was also determined. Total areas that *Q. incana* was occupying were found 0.0113194625236879 km<sup>2</sup>.

Total population of both the species i.e. (*Q. dilatata* & *Q. incana*) in the study area were found 5563 individual. The population size of *Q. dilatata* was 2750 while that of *Q. incana* was 2608 individual (table1).

#### *Indigenous application of Q. dilatata and Q. incana*

The major use of *Q. dilatata* and *Q. incana* is as fuel wood (Bean, 1981). 42846kg of *Q. dilatata* and *Q. incana* is burnt each day by resident of the valley. Charcoal is obtained from it (Bean, 1981). Its woods are more energetic, mainly used for heating oven and hence burn in fewer amounts compares to other wood. Thus save money also. Its Wood is used for boat building and construction (Wilson, 1917). The wood of *Q. dilatata* and *Q. incana* is used in construction carpentry, agricultural implements (Plough) and is as fuel wood, the leaves are valuable as fodder (Khan *et al.*, 2010 b). The branches species are as a fence around cultivated fields and a good source of tannin and charcoal Alamgir (2004).

A mulch of the leaves repels slugs, grubs etc, it is advised that the fresh leaves should not be used because it can inhibit plant growth. Oak galls are produced by activities of different insects' larva on trees of *Quercus* species, after the pupation, the galls can be used as rich source of tannins and also can be used as dyestuff (Grieve, 1984). Young shoots of *Q. dilatata* and *Q. incana* was pruned and feed to the cattle during, the winter season. It's used in all farming instrument. Entire plough are made of its wood. Its wood has high resistance to cleavability. It

has been used in water mill turbine. (Khan *et al.* 2010 b).

#### *Medicinal use*

Local people were using the acorn of the subject species of *Quercus* in the inflammation of urinary tract diseases (Ali *et al.*, 2004). It can also used to stop bleeding when applied externally, for this purpose the bark or leaves are boiled and then applied to swollen tissues and wounds that are bleeding. It is proven good as astringent and anti-diarrheal (Gorunovic and Lukic 2001). The bark of stem is used for to clean foul sores also. The powdered seeds are used for the treatment of, menorrhagia, diarrhea and gastrointestinal hypertrophy. The powdered seed cup is astringent (Duke and Ayensu, 1985). In Pakistan local used it as astringent and diuretic, and for the treatment of indigestion, diarrhea and asthma. It is also antibacterial (Gulluce *et al.*, 2004; Andresek *et al.*, 2004), antioxidant (Al-Mustafa and Al-Thunibat, 2008; Chevolleau *et al.*, 1993, McCune & Johns, 2002) and gastro protective effect (Gharzouli *et al.*, 1999). The galls produced on the plant are astringent and effective for the treatment of hemorrhages, chronic diarrhea, dysentery etc. (Grieve, 1984). The galls are also effective when applied to the wounds or inflammation with infections (Umachigi *et al.*, 2008). The galls of *Q. infectoria* are of great pharmacologically value. It has been deciphered to be, anti tremorine, antidiabetic, astringent, local anesthetic, antipyretic and anti-parkinsonian (Hwang *et al.*, 2000; Dar *et al.*, 1976; Dar and Ikram, 1979).

#### *Use as a food*

The acorn are fried in charcoal and eaten, In spite of its production of heaviness in mood of some people (personally known to me).

#### *Threats to Q.dilatata and Q.incana*

*Q. dilatata* and *Q. incana* forest were cut when the valley of swat state emerged into Pakistan. The tenant start occupying the land for this purpose they started cuttings of more and more trees to clear the land for

agriculture purposes. In 1972 Bhutto land reform was the other unfortunate for the forest.

#### *Overgrazing*

The second reason for deforestation was uncontrolled over grazing; it has multiple effects upon modification of natural habitat, it is necessary to maintain diversity of species. In some pastures (Naithani *et al.* 1992, Negi *et al.* 1993, Saberwal 1996), but (Ram *et al.* 1989, Sundariyal and Joshi 1990, Singh 1991, Rawat and Uniyal 1993 and Kala 1998) have studied that only intermediate level of grazing maintains diversity of species. Factors other than grazing like, soil, snowfall and altitudes also have effect upon the structure and composition of habitat (Kala *et al.* 1995). Grazing do not allow the forest re establish in area and grazing is more than grazing capacity.

#### *Fuel wood sale*

Land owner cut the *Q. dilatata* and *Q. incana* for easy cash. Population of people increases, which in turn affect the forest cover. Hunger, poverty and unemployment are other factor responsible for deforestation of *Q. dilatata* and *Q. incana*.

#### *Effect of deforestation in common (Q. dilatata and Q. incana at particular) upon the local weather*

According to the inhabitants of the valley deforestation has affected the local climate (weather). The numbers of springs have reduced, some springs have become totally dried. The numbers of cattle have also been reduced. The economy of the people are badly stricken by less availability of water as most of the people are related with forming. These conditions have developed a stress and social conflict due to turn system of water. Snow fall occur less in the valley than ever before. Snow fall season is now late and the winter season is now not so cold than ever before. The winter season are stretching each year from the recent decade.

#### *Fauna of the study area*

According to the people of the valley, some animals like Leopard, hogs, black bear, monkey, wolf and

squirals disappeared from the valley. Other animals like porcupine, foxes, mongoose, hedgehog, rabbits and jackals, the population became reduced (Rahmatullah Qureshi and G.R. Bhatti 2010). Among birds pigeons, pheasants (monals, chaur, koklas, black and yellow) population became very much reduced (Muhammad Altaf, 2013). Black, sea and grey partridges are still abundant in the valley. Among reptiles alligators are no more seen in the valley.

#### Conservation and Protection

Protection and conservation is a major issue related with forest in particular the *Q. dilatata* and *Q. incana*. It has not yet been considered as forest by people and community. There is very little or not at all protection and conservation strategy for *Q. dilatata* & *Q. incana*. However, the following measures for protection and conservation, were suggested. Attention should be given to *Q. dilatata* & *Q. incana* in order to realize the importance of it.

Total ban should be implied upon the cutting of *Q. dilatata* & *Q. incana* without discrimination, whether it belongs to personal or common properties. People, who are related with *Q. dilatata* & *Q. incana* cutting, should provide other employment, so that they become able to earn their livelihood. Community should be motivated and should be taken into confidence. People should be educated to seek alternative to, *Q. dilatata* & *Q. incana* so that they become able to lead a prosperous life. Legislation and implementation is the need of time for protection and conservation. Grazing *Q. dilatata* & *Q. incana* should be controlled, in order to provide opportunity for rehabilitation of *Q. dilatata* & *Q. incana*. Forest department should be very active to control smuggling. Fire should also be controlled. Where there is need of force for protection conservation of *Q. dilatata* & *Q. incana* forest Government should not hesitate.

#### Abbreviation

GPS: Global Positioning Satellite System, N: North, E. East, Q: Quercus,

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