Pakistan's situation

Pakistan being located on the confluence of the western end of the Indian sub-continent and the Iranian Plateau supports a varied and interesting mix of flora and fauna belonging to the Indo-Malayan and Palaeartic regions, and also having some forms originating from the Ethiopian region. Pakistan can be divided into five biogeographic provinces including Pamir-Karakoram Highlands, Himalayan Highlands, Anatolia-Iranian Desert, Indus-Ganges Monsoon Forest, and the Thar Desert. The climatic and topographical variations in the country encourage a wide variety of ecosystems and the plant

and animal life occurring in them. Due to harsh climate, a variety of plants are found in the country including those with high biomass production and resilience to harvesting (grasslands, reeds) to those with multiple uses but low resilience to harvesting (medicinal plants, fuelwood and pole collection in high hill forests). There are nine major ecological zones, and 19 of the 21 wetland types in Pakistan; about 6,000 plant species of which 5,000 are wild and 372 endemic (occurring only in Pakistan). Of the 18 mammalian orders recorded the world over 10 occur in Pakistan, one species and two sub-species are endemic; of 4,100 mammalian species 188 species have been reported from Pakistan. 666 birds species out of 6,500 in the world occur in the country - both resident and migratory. There are 174 reptilian species out of 6,500 found the world over. There are 14 amphibian species, 400 marine fish and 125 fresh water fish species. Insects and invertebrates are represented by 20,000 species of which 700 are marine. 31 species of mammals, 20 species of birds and 5 species of reptiles are endangered.

In 1971, the Government of Pakistan listed 31 species of mammals, birds and reptiles as being endangered in the country and it is without doubt that this number has increased over the years. A number of wild animals, such as, wild ass, tiger, cheetah, elephants and one-horned rhino have been hunted to extinction in recent and distant past. They now only exist in the engravings of Dravidian seals and pottery excavated from Mohenjo-Daro and Harappa dating back to the period of 3250 BC to 2750 BC and in the memoirs of Mughal Emperor Babar. It is estimated that about 25 percent of big mamal species, 15 percent of birds, 10 percent of reptiles, and 500 plants species will be candidates for the National List of Red Data Book, when developed. It should frighten us to know that according to past surveys, there were only 70 Marco Polo sheep, only 133 Blue Sheep and only 12 Suleman Markhor were left in their habitat in Pakistan. Tiger (*Panthera tigris*) and swamp deer (*Cervus duvauceli*) have become extinct in Pakistan in this century, lion (*Panthera leo*) during last century and the Indian One-horned rhinoceros (*Rhinoceros unicornis*) became extinct about 400 years ago. The internationally threatened and endangered species of mammals in Pakistan are listed below:

Leopard (*Panthera pardus*), Straight horned markhor (*Capra falconeri megaceros*), Hangul (*Cervus elaphus hanglu*), Indian wild Ass (*Equus hemionus khur*), Snow leopard (*Panthera uncia*), Balochistan bear (*Ursus thibetanus gedrosianus*), Indus river dolphin (*Platanista minor*) and Blue whale (*Balaehoptera musculus*)

The internationally threatened and endangered bird species in Pakistan are given below:

Dalmatian pelican (*Pelecanus crispus*), Marbled teal (*Marmaronetta angustirostris*), White headed duck (*Oxyura leucocephala*), Cheer pheasant (*Catreus wallichii*), Western tragopan (*Tragopan melanocephalus*), Great Indian bustard (*Ardeotis nigriceps*) and Houbara bustard (*Chlamydotis undulata*).

The internationally threatened and endangered reptile species in Pakistan are given below:

Green turtle (*Chelonia mydas*), Olive Ridley turtle (*Lepidochelys olivacea*), Muggar (*Crocodylus palustris*), Gharial (*Gavialis gangeticus*), Central Asian monitor (*Varanus griseus caspius*), Indian python (*Python molurus*) and Central Asian Cobra (*Naja oxiana*).

A number of mangrove tree species along Sindh and Balochistan coasts have also become extinct recently. These are *Rhizophora apiculata*, *Rhizophora mucronata*, *Bruigniera conjugata*, *Ceriops roxburghiana*, *Aegiceras corniculata* and *Sonnerotia cascolaaris*. Currently, Indus dolphin, black bear, Chir pheasant and other pet birds, green ibex, snow leopard, houbara bustard, turtle, etc., are facing extinction from hunting pressure. Even lizards, snakes and crocodiles are hunted for their skin and export. As yet, no exact number of plant species threatened, extinct or endangered is known. However, different genetic forms of various plant species with large range of natural distribution in Pakistan are endangered or have become extinct due to over exploitation, forest clearance and fragmentation and changes in ecological conditions. These include blue pine (*Pinus wallichiana*), jhand (*Prosopis cineraria*), bahan (*Populus euphratica*), juniper (*Juniperus excelsa*) etc. Some details have already been given about this state of affairs in Chapter 2. National Conservation Strategy of 1992 and Forestry Sector Master Plan of 1993 have analysed the current status of biological diversity and have suggested measures to conserve it.

A number of medicinal plant species are endangered because these are facing a very high risk of extinction in their habitat in near future. This has happened due to their excessive exploitation. The endangered species are given below:

Acacia catechu	(Khair/Katha)
Aconitum heterophyllum	(Atees)
Adiantum capillus	(Persoshan)
Atropa acuminata	(Anguri-shafa)
Dioscorea deltoidea	(Kanis)
Gloriosa superba	(Kurihari)
Mucuna pruriens	(Konch)
Onosma bracteatum	(Gao-zaban)
Polygonum amplexicaule	(Anjbar)

In case of the following species, though their populations are still large but due to excessive exploitation they are fastly depleting and are in a state of becoming endangered in future.

Colchicum luteum	(Suranja-talkh)
Ferula narthex	(Heeng)
Myrtus communis	(Hub-ul-ass)
Rheum emodi	(Revand-chini)

Some medicinal plants species have generally limited distribution in specific geo-graphical area. Their populations are decreasing in their localized habitats and will become vulnerable in near future.

Acorus calamus	(Bach)
Angelica glauca	(Chora)
Artimissia annua	(Tirkha)
Datura metel var. alba	(Kala-dahtura)
Ephedra neberodensis	(Asmania)
Glycyrrhiza glabra	(Mulathi)
Picrorhiza kurroa	(Kor)
Podophyllum hexandrum	(Ban-kakri)
Saussurea lappa	(Kuth-talkh)
Taxus baccata	(Barmi)
Valeriana wallichii	(Mushk-bala)
Viola serpens	(Banfsha)

A number of ecosystems of Pakistan are also threatened due to growing population, expanding economy and over-exploitation of forests. These include Himalayan moist temperate forests with its complement of faunal species e.g., Western Tragonpan pheasant (*Tragonpon melanocephalus*) and the Juniper forests of Balochistan, which is an important ecotone and has a different set of fauna and flora, not found elsewhere in Pakistan or the world. The mangrove forests of Sindh are threatened by

changes in the hydrology of the delta through upstream irrigation and river control schemes, pollution, over exploitation for charcoal production, tan bark, fodder and fuelwood. Heavy hunting of Houbara Bustard is a very important issue, which is currently debated in many fora in Pakistan. It is a winter migrant of Pakistan from former USSR, where it breeds in the Central Asian Republics, mainly in the Kyzyl Kum desert region south east of Aral Sea. However, there is some evidence that it breeds in Nog valley of Balochistan which should be preserved for the study of breeding biology and conservation of this species.

Trapping of hawks and falcons for their subsequent trading and export for falconry purposes is well established in some rural areas of Pakistan. It breeds in the former Central USSR and is often trapped during winter on its migratory routes to Pakistan. The conservation status of this bird is scarce becoming rare. High mountain pastures need also to be preserved, which are under heavy seasonal grazing pressure and are in state of depletion in many northern mountainous regions causing widespread erosion and habitat degradation. There is hardly any development activity in them on the part of provincial and regional forest departments, who are governmental agencies responsible for their management.