



Newsletter

Pakistan Forest Institute, Peshawar



Chief Patron: Syed Said Badshah Bukhari
Director General

Vol.3, Issue No.2
April- June, 2011

Editor: Tanvir Ahmad Qureshi
Extension Specialist

NEWS OF FOREST EDUCATION DIVISION

HAKIM SHAH
Director, Forest Education

The Forest Education Division, PFI in addition to regular educational activities also celebrated Earth Day, International Biodiversity Day and Environment Day, 2011 during April-June, 2011 as given below:

EARTH DAY

Every year 22nd April is observed as Earth Day to inspire awareness and appreciation of Earth's natural environment. To celebrate this event a function was arranged at PFI with the collaboration of the Environment Protection Agency, Khyber Pakhtunkhwa.

The chief guest of the occasion was Mr. Wajid Ali Khan, Hon'ble Minister of Environment, Khyber Pakhtunkhwa. The key guest speakers of the program were Dr. Bashir Khan D.G. EPA, Professor Dr. Shafique-ur-Rehman, Department of Environmental Sciences, University of Peshawar and Professor Dr. Noor Jehan, Chairperson, Environmental Sciences Department. In their speeches, the guest speakers highlighted the significance of the day. The students of Zarif Memorial School Peshawar presented a tableau about the importance of Earth Day. The students of PFI participated in a speech competition on the occasion.

The Minister of Environment in his speech, emphasized that all stake holders should play their role in the maintenance of a clean and green earth. He awarded prizes and certificates to the winners and participant students. In his concluding



The Minister of Environment and distinguished speakers

address Syed Said Badshah Bukhari, DG PFI thanked the Hon'ble minister, guest speakers and participants of the program for gracing the occasion and appreciated the efforts of the organizers of the program.



Mr. Wajid Ali Khan, Hon'ble Minister of Environment, Khyber Pakhtunkhwa, addressing the gathering



The audience of the occasion



The Chief Guest awarding certificate to a winner of the speech contest

INTERNATIONAL BIODIVERSITY DAY

The United Nations proclaimed May 22 as the International Day for Biological Diversity to increase understanding and awareness on biodiversity issues. This year's theme was Forest Biodiversity. On this occasion, the Forest Education Division, PFI arranged a speech competition on the topic of Forest Biodiversity: Need for survival.

The students of PFI and Islamia College University Peshawar participated in the competition. Islamia College University won the first prize while the 2nd and the 3rd prizes were won by PFI students.

The students of PFI Forest Model School presented a tableau on the significance of conservation of biodiversity. Moreover, a poster competition was also held and the posters were displayed at the entrance of PFI auditorium.

Syed Said Badshah Bukhari DG PFI was the chief guest of the occasion. In his speech, he highlighted the importance of the day and emphasized that we should all make concerted efforts for conserving precious biological diversity for the present and future generations. He awarded prizes and certificates to the winners and participants of the speech and poster competition.



Director General PFI awarding prize to winner of the speech contest



Director Forest Education PFI inspecting the poster competition

ENVIRONMENT DAY, June 5, 2011

World Environment Day is a day that stimulates awareness on the environment and enhances political attention and public action. It is celebrated every year on 5th June.

To highlight the importance of World Environment Day, the Forest Education Division PFI arranged a speech competition among its students. The chief guest of the occasion was Mr. Iqbal Swati, Ex-CCF, Khyber Pakhtunkhwa. He gave away prizes to the winners of the competition.

In his speech, he highlighted the importance of observing the day and urged upon the young foresters to take the lead in preserving the environment. In their addresses, the DG PFI and the Director Forest Education Division thanked the chief guest for gracing the occasion and congratulated the winners of the speech competition.

Later on, Mr. Iqbal Swati, Ex-CCF Khyber Pakhtunkhwa delivered a special lecture on Forest Management to the students of M.Sc and B.Sc forestry (2009-11) session.



The Chief Guest awarding prize to a winner of the speech competition



Students with Chief Guest and DG, PFI on Environment Day

FOREST MANAGEMENT TOUR

The Forest Management study tour of M.Sc and B.Sc Forestry (2009-2011) session was conducted to Gilgit-Baltistan from June 12-25, 2011 under the supervision of Mr. Asif Jah, APOF and Mr. Zakir Hussain, AS.

Main places visited on this tour were Chilas, Gilgit, Naltar valley, Astore Valley, the Deosai plains and the Kaghan valley. The field visits of students were conducted to all the forest types found in these areas such as the Dry Temperate Forests, Moist Temperate Forests, Sub-Alpine and Alpine zones, as well as to two national parks namely the Khunjerab National Park and the Deosai Plains National Park.

Field Forest Officers conducted the field visits and briefed the students about



Briefing about Wildlife Management in private forests by Dr. Mayoore

the management practices being implemented in the areas. At Gilgit, Mr. Ismail Zafar, Conservator Gilgit-Baltistan region gave a detailed briefing about Forests, Wildlife and Park Management in Gilgit-Baltistan.

The students visited the Aga Khan Rural Support Program (AKRSP) office in Gilgit where they were briefed by Mr. Muzafar-ud-din, Manager AKRSP about various social, economic and environmental projects run by the AKRSP.



Briefing at AKRSP office, Gilgit

A visit to Karakoram International University (KIU), Gilgit was undertaken on 15-6-2011. Dr. Najma Najm, Vice Chancellor KIU delivered a very informative lecture on the importance of forests and role of foresters in the prevailing situation of wide scale deforestation and desertification.



The Vice Chancellor of KIU speaking to the students



Mr. Tehmasip SDFO delivering lecture to the students in Kaghan

EXAMINATIONS

2nd term (A) examination of M.Sc and B.Sc forestry (2009-11) session and 1st term (A) examination of M.Sc and B.Sc forestry (2010-12) session were held during April/May 2011. Result is awaited.

EXCURSION TOURS

One day excursion tour of M.Sc forestry (2010-12) session was held on 1-6-2011. The students visited private plant nurseries near Tarnab farms outside Peshawar where they were briefed about the techniques of raising plant nurseries.

Similarly, a one day excursion tour of B.Sc forestry (2010-12) session was arranged on 6-6-2011. The students visited NTFP Directorate of Khyber Pakhtunkhwa Forest Department where the Director and his staff briefed the students about various activities of the directorate in the fields of apiculture, medicinal plants, mushroom culture, etc. Later on the students were shown private plant nurseries near Tarnab farms outside Peshawar.

IMPORTANCE OF FRESHWATER WETLANDS FOR MIGRATORY BIRDS

Dr. Muhammad Nawaz Rajpar
Lecturer in Forestry

Bird migration is the regular seasonal journey each year undertaken by many bird species from country to country and region to region to their breeding grounds. Birds are the most conspicuous and significant components of freshwater wetland ecosystem; their presence or absence may indicate the ecological conditions of the particular freshwater wetland area. Migratory birds are of great ecological and economic value to Pakistan and other countries. They contribute to biological diversity and provide tremendous enjoyment to millions of people who study, watch, feed and hunt them.

Migratory birds such as bee-eaters, bitterns, cranes, curlews, ducks, egrets, frigate, herons, jacanas, kingfishers, plovers, raptors, shanks, sanderlings, sandpipers, shrikes, buntings, snipes, stilts, terns, wagtails, warblers and whimbrels journey each year from different countries to wetland areas of Pakistan between October to March. Wetland areas of Pakistan provide places for millions of migratory birds to feed, loaf, roost, breed, and get shelter from predators and harsh weather. These wetlands provide food for birds in the form of plants, vertebrates, and invertebrates. Some bird species forage for food in soils (snipes, sandpipers, waterhens, watercocks and lapwing), some find food in the water column (duck, gulls, pelicans and geese), and some feed on the vertebrates and invertebrates that live inside the water (grebes, darters and

cormorants) and some feed on emergent plants (swampheens, coots and moorhens).

The rapid loss of freshwater wetlands due to conversion into fishing ponds and agricultural fields and degradation due to water pollution had caused serious threats to migratory birds throughout the world. Freshwater wetlands are facing an overwhelming pressure from rapid development and urbanization. Anthropogenic activities have altered the freshwater wetland habitats in a variety of ways that consequently cause great threats to migratory bird species around the world.



Information on the migratory birds in freshwater wetlands of Pakistan is lacking. Conversely, long-term population trends of migratory birds have not been examined in freshwater wetlands. In fact, very little is known on the ecological roles of migratory birds in relation to freshwater wetland habitat and their disturbances. There is urgent need to monitor migratory bird community parameters in freshwater wetlands of Pakistan to understand what would happen to the migratory birds when their habitat is altered? would their population be increased or decreased? or would they move to other less suitable areas due to disturbance that affects their reproduction rate?

USE OF ANATOMICAL TOOLS IN WOOD IDENTIFICATION

G. M. Nasir, *Logging Officer*

Wood is a natural material that because of its plus advantages, like easy to harvest, easy to work, having attractive figure etc., is used for so many wood and wood based products. Specific woods are used for a certain type of product due to possessing wood properties required for that product. Therefore, it is important to ensure about the kind of wood before its utilization for any purpose.

In the field, a wood species can be identified by studying its taxonomic characteristics. But when only the wood is on hand, identification of the species can be done on the basis of its wood characteristics and structural features. Some of the wood species can be guessed on the basis of their general and physical properties such as color, odor, taste, weight etc. But most of the species are almost similar in physical properties.

For example, all the conifers such as Chir, Kail, Deodar, Pedal etc. are similar in general appearance of wood. Similarly many hardwoods are brownish or likewise in color. In such cases, correct identification of the wood species just on the basis of physical properties is not possible.

This problem can be solved by studying the structure of wood as each wood has its definite structure by nature which helps in its exact identification. Two types of features are studied to observe the structure of a wood. Macroscopic features visible with the help of a hand lens of 10X power and the microscopic features. Most of the wood species can be identified just by studying their macroscopic features that is why generally the identification keys have been developed on the basis of these features. Important macroscopic features for wood identification are: growth rings or the annual rings that appear as circular lines on the cross surface of wood. These may be distinct, moderately distinct or indistinct with the naked eye. Within a growth ring, the wood is of two types, the earlywood (formed earlier in spring season) and the latewood formed later in summer season. In case of softwoods, transition from earlywood to latewood may be abrupt as in Chir or gradual as in Kail etc.

Resin Canals, are the tube-like structures in which resin is produced. In cross section of wood, these appear as small dots or spots. Resin canals play an important role in identification of softwoods. These may be minute invisible to the naked eye as in Spruce or very large in size as in Chir, scanty or numerous, occur singly, in groups or in tangential series as in Deodar. Resin canals may be absent as in Fir. Vessels that conduct water, are present in hardwoods only and absent in softwoods. These can be observed as small pores on the cross surface and as grooves on longitudinal surface of wood.

Vessels may be small, medium or large in diameter, scanty or numerous, occur singly, in radial rows, groups, clusters or in any other specific arrangement. These may be empty or filled with tyloses or deposits. When all the vessels within a growth ring are of equal size, the wood is said to be diffuse porous e.g. Eucalyptus, Willow etc. When the early-wood vessels are larger in size than the latewood vessels, the wood is called ring porous e.g. Mulberry, Ash etc. When the larger and smaller vessels are mixed within a growth ring, the wood is known as semi-ring porous e.g. Shisham, Poplar etc.

Axial or longitudinal parenchyma, responsible for conduction and storage of prepared food material, is also studied only in hardwoods. In cross section, the cells can be observed in different arrangements forming specific patterns in different species. Sometimes the axial parenchyma is associated with vessels called para tracheal parenchyma, forms complete or incomplete sheath or eye-like structures around the vessels or bands joining the vessels in tangential direction. When the axial parenchyma has no association with vessels, it is called apotracheal parenchyma, forms tangential lines or bands or diffused singly or in groups in the fibrous tissue.

Wood rays that are composed of transverse parenchyma, studied both in hard and softwoods. In cross section of wood, these can be observed as ribbon-like aggregates radiating from pith to bark at right angle of the growth rings. These may be closely spaced or apart and straight or wavy in outline. Wood rays may be fine, medium, broad or extremely broad on the basis of their size in width.

By using these anatomical tools and collection of observations about distinguished features, most of the wood species particularly of commercial value, can be easily identified. However, if there is any uncertainty, then microscopic features are also studied for confirmation.

ROLE OF TREES FOR THE IMPROVEMENT OF ENVIRONMENT

Muhammad Shabir Mughal
Forest Botanist

Pakistan is a unique combination of coastland, alluvial plains, deserts and low and high mountains with a geographical area of 87.98 million ha. Pakistan is forest poor country as bulk of the area lies under arid and semi-arid zone. However, diverse climatic and edaphic conditions favour in the distribution of a wide variety of flora and fauna. The goods and services which forest provides are manifold; timber, firewood, food, fodder, fruits, flowers, medicines, fibers, gum, resins, tannin, dyes and many more. In addition, forests influence rainfall, humidity, temperature, flood control, prevent silting, and supply clean water, tourism, habitat for wildlife, recreation, job opportunities and above all healthy environment.

The land use pattern of Pakistan is categorized in-to cultivated area 20.54 million ha (23.84%), not available for cultivation 22.84 m ha (25.96%), cultivable but due to some reasons considered waste land 11.46 million ha (13.03%), forests 4.72

m ha (5.36%), and unclassified area 28.42 million ha (32.30%).

Mostly the farmers remain active in cultivation of agricultural crops; wheat, rice, cotton and sugar to feed the ever-increasing population of human being and livestock. It is universally recognized that the trees on farmlands are an important source of firewood and timber to supplement the production of state forests. Their role becomes all the more important in tracts where percentage of forests is very low. With increasing population several wilderness areas are being converted into agriculture land, which is disturbing the natural ecosystem.

Ever-increasing population pressure led to the widening of inequalities, forcing the poor to depend more heavily on natural resources. Lack of facilities, such as inadequate electric and natural gas supply in the remote plains and hilly rural areas, has resulted in the exploitation of fuel wood at an unsustainable rate. The effect of deforestation on biodiversity is critical since whole forest ecosystems are destroyed. The disappearance of trees and shrub means that the associated flora and fauna, dependent on the forest, are also lost. Deforestation is having particularly grave effects on Balochistan's juniper forests, the riverine areas of the Indus basin and the coastal mangroves. Overgrazing results in the loss of topsoil and water and wind erosion, leaving the soil vulnerable to loss of nutrients and desertification. Soil erosion has seriously affected agricultural output, reducing agricultural acreage and grazing areas. It has also led to the siltation of dams, canals, and watercourses, which are the lifeline of agricultural production in the country. The storage capacity of the dams has decreased and the desolating of water channels is draining an already impoverished economy. Construction of new dams is prime importance for sustain supply of water for increasing the agriculture production. If we have not coupe the situation timely, will be water deficient country. Continuous surface irrigation has raised the water table in the Indus basin, as a result of which large tracts of agricultural land, particularly in Sindh and southern Punjab, are being lost to salinity and water logging. For the amelioration of waterlogged and saline area. Pakistan Forest Institute, Peshawar and respective Forest Department may be consulted as there are certain plants which help in rehabilitation of such soils. Natural forests, which are rich in biodiversity, can also be affected as a result of this water logging, through clear felling to make more land available for agriculture.

For improvement of the forest area, organized tree planting in state forest, farmland, along roadsides, railway tracks

and wastelands is necessary for sustainable use of natural resources. A traditional farmer wants quick returns from his inputs; therefore, only fast growing species having good commercial value should be planted. Planting should also be done in the universities, colleges, schools and other private institutions for aesthetic and learning point of view in the shape of botanical gardens.

To neglect the planted stock is just like leaving a newborn baby in the jungle. Planting of seedlings and after care is an integral part of the whole program and we must give due attention to the needs of the plants. During early stages, plants should be watered and protected from biotic factors through fence or shelter around the young plants.

In this connection, tree planting campaign (twice in a year "spring" and "monsoon") can get a big boost if the public develops proper understanding of the significance of the trees and role played by them in our daily life. The electronic and print media and extension wings of Forest Department, along with public leaders, are the best agencies for creating awareness among general public for motivation and making people tree minded. If maximum population takes active part in this campaign no doubt we can improve the tree cover area for economic balance of the country and make environment healthy to reduce global warming. So let us plant at least one tree per person to make the country pollution free, and a Green Pakistan.

BIOLOGICAL DIVERSITY AND ITS CONSERVATION

**Mian Muhammad Shafiq
Deputy Conservator Wildlife**

Biological Diversity of Biodiversity is defined as "the variability among other aquatic ecosystems and the ecological complexes of which they are part". This includes diversity within species, between species and ecosystems.

Biodiversity is divided into three hierarchical levels.

- i. Genetic diversity is the sum total of genetic information contained in the genes of individual organism.
- ii. Species diversity refers to the variety of living organism on earth.
- iii. Ecosystem diversity relates to the variety of habitat, biotic communities and ecological processes in the biosphere.

The Convention on Biological Diversity

The future of life on earth captured worldwide attention at the earth summit in Rio de-Janeiro in 1992, when 155 nation states and the European Union signed the Convention on Biological Diversity (CBD).

This act signaled their intention to form a global alliance to protect habitats, species and genes.

The CBD was signed by Pakistan in 1992 and ratified by the cabinet in 1994. Article 6 of the convention calls for parties to:

- a. Develop national strategies, plans or programme for the conservation and sustainable use of biological diversity.
- b. Integrated as far as possible and as appropriate, the conservation and sustainable use of biological diversity.

Pakistan has a National Conservation Strategy adopted as national policy. Provincial level conservation strategies are in place in the Khyber Pakhtunkhwa and Balochistan provinces and Gilgit Baltistan.

Pakistan has been involved in many aspects of biodiversity conservation including national parks planning, endangered species protection and recovery and plant and animal propagation and breeding.

Causes of Biodiversity loss

Direct causes:

- i. Degradation of habitat
- ii. Over exploitation of plants and animal species
- iii. Deforestation
- iv. Soil erosion
- v. Agricultural intensification
- vi. Indiscriminate hunting or trapping
- vii. Pollution
- viii. Invasion by introduced species
- ix. Climatic changes

Indirect causes:

- i. The unsustainable high rate of human population growth and consumption
- ii. Economic systems that final value the environment and its resources
- iii. Deficiencies in knowledge and its application
- iv. Inappropriate legal and instructional system that promote unsustainable exploitation