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Editorial



Biodiversity is the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems. It also refers to the number or abundance of different species living within a particular region. Various factors such as temperature, altitude, soil etc effects the biodiversity of a region and thus it varies globally.

Every species has a role to play in maintaining equilibrium in nature which is termed as ecological balance. Any disturbance in this balance will have adverse effects and lead to calamities such as floods, drought, climate change etc. The maintenance of a healthy biodiversity is linked to the well-being and survival of human beings as well.

In recent years, the loss of biodiversity and extinction of species caused due to human activities such as hunting, exploitation of wildlife for personal gains and habitat destruction is becoming a source of major concern. Habitat destruction because of overpopulation, urbanization, pollution and deforestation is one of the main causes of biodiversity loss. It is therefore the need of the hour to spread awareness about the importance of conservation so as to preserve our rich biodiversity for future generations.

The state of Nagaland is blessed with rich biodiversity and various species of flora and fauna thrives in its forests. The present issue focuses on the biodiversity of Nagaland, the observance of Wildlife Week and other initiatives in the state which were conducted with the aim of spreading awareness about the importance of conservation.

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BIODIVERSITY OF NAGALAND

(Dr. Ramesh K Aima IFS)

The unique geographical location with a range of physiographic terrain, varied altitudinal and climatic conditions, bestows the state with rich floral and faunal biological diversity. Another significant reason contributing to the biological richness of Nagaland is the fact that it lies in the zone between Indian, Indo-Malayan, and Indo-chinese regions. This unique location of the state also makes it a biogeographic gateway for plant migration. The overall effect of the above factors has resulted in diverse and luxuriant vegetation throughout the state. According to the well accepted vegetation classification of Champion & Seth, Nagaland has seven major types of forests.

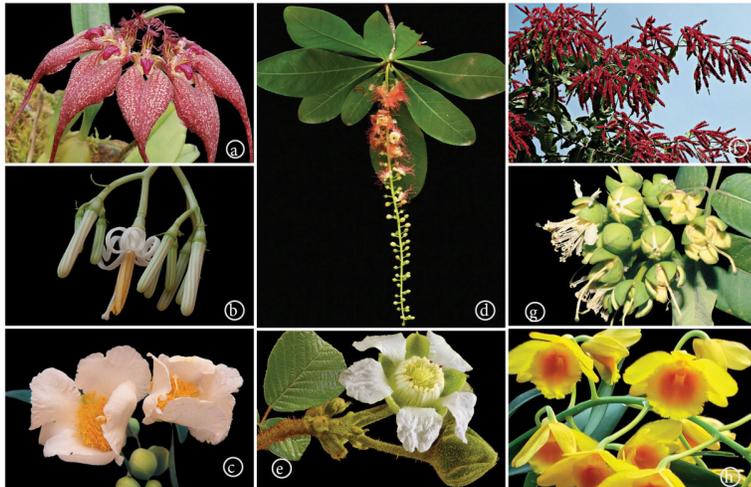
The first kind of the forest is seen in Namsa-Tizit area and is termed as “Tropical Wet-Evergreen Forest”. The floral diversity of this comprises of multi-storied forest mainly comprising of species like *Artocarpus chaplasi*, *Artocarpus lakoocha*, *Ailanthus integrifolia*, *Dillenia indica*, *Dipterocarpus macrocarpus*, *Shorea assamica*, *Mesua ferrea*, *Alstonia scholaris*, *Pongamia pinnata*, *Michelia sp.*,

Phoebe sp., *Sapium baccatum* etc besides different species of orchids, Bamboos, Ferns, Pteridophytes, Bryophytes and other lower plants.

All along the foothills of Nagaland-Assam border, in Mokokchung, Wokha, Niuland, and Longleng districts occurs what is termed as the “Tropical Semi-Evergreen Forests”. In addition to most of the species of Tropical wet evergreen forests, other species found in these areas are *Tetrameles nudiflora*, *Lagerstroemia parviflora*, *Stereospermum chelonoides*, *Bombax ceiba*, *Albizia procera*, *Altingia excelsa*, *Morus laevigata*, *Callicarpa arborea*, *Ficus sp.*, *Aquilaria agallocha*, *Canarium resiniferum*, *Spondias mangifera*, *Garcinia sp.*, besides various Lianas and climbers.

The third type of forests called “Tropical Moist Deciduous Forest” is found in areas adjoining rivers Doyang, Dikhu, and areas of Dimapur and Peren districts. The plant species *Tetrameles nudiflora*, *Morus laevigata*, *Lagerstroemia parviflora*, *Albizia procera*, *Albizia lebbeck*, *Albizia chinensis*, *Bombax ceiba*, *Canarium bengalense*, *Holarrhena antidysenterica*, *Elaeocarpus lanceifolius* and *Spondias mangifera* etc., are most prevalent.

Another type of forests termed as “Sub-Tropical Broad Leaved Forest” is seen in hilly areas between 500m and 1800m all over the State. Some of the species found in these areas are *Alstonia scholaris*, *Albizia procera*, *Amoora wallichii*, *Mansonia dipikae*, *Bauhinia purpurea*, *Terminalia myriocarpa*, *Duabanga grandiflora*, *Artocarpus lakoocha*, *Artocarpus chaplasi*, *Morus laevigata*, *Garcinia sp.*



a) *Bulbophyllum rothschildianum* b) *Marlea bignoniaefolia*
 c) *Mesua ferrea* d) *Barringtonia acutangula* e) *Rubus ellipticus*
 f) *Terminalia myriocarpa* g) *Duabanga grandiflora*
 h) *Dendrobium densiflorum*

Stereospermum chelonoides, *Juglans regia*, *Canarium resiniferum*, *Phoebe lanceolata*, *Prunus nepaulensis*, *Spondias mangifera*, *Spondias axillaris*, *Elaeocarpus lanceifolius*, *Schima wallichii*, *Ficus sp.*, *Magnolia rubra*, *Gmelina arborea*, *Betula alnoides*, *Mangifera sylvatica*, various Bamboos, Canes bananas, orchids, ferns, Pteridophytes, Bryophytes and other lower plants.

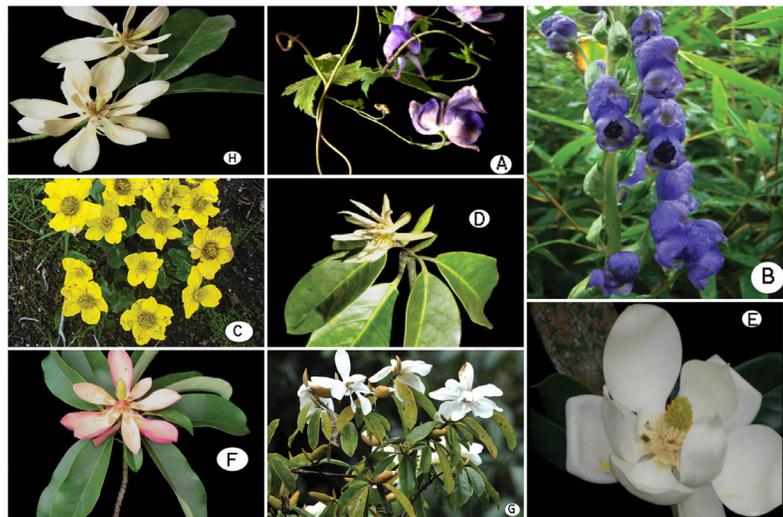
Forests found in elevations between 1500m and 2500m are found in Phek, Kiphire and Tuensang districts. These are called “Sub-Tropical Pine Forests” The most prominent species found in these areas are Pines like *Pinus kesiya* along with *Alnus nepalensis*, *Bauhinia purpurea*, *Quercus sp.*, *Schima wallichii*, *Prunus sp.*, *Betula alnoides*, *Taxus baccata*, *Cephalotaxus griffithii*, *Rhododendron sp.*, *Exbucklandia populnea*, *Ilex excelsa*, *Schima khasiana* along with *Rubus sp.*, *Hydrangea sp.*, and various species of *Polygonum*.

On the higher reaches of tall mountain ranges, above 2200m, in Japfu range in Kohima district, Saramati range in Kiphire district, Yakor and Hillipong ranges in Tuensang district and Aghunato range of Zunheboto district occurs what is called as “Mountain Wet Temperate Forests.” The most predominant plant species that occur here are *Cryptomeria japonica*, *Ilex excelsa*, *Schima khasiana*, *Magnolia campbellii*, *Exbucklandia populnea*, *Phoebe lanceolata*, *Toona ciliata*, *Quercus sp.*, *Lithocarpus sp.*, *Acer sp.*, Birch sp., *Juniperus sp.*, and *Rhododendrons*.

At high sub-alpine and alpine regions of Japfu and Saramati ranges occur what is termed as “Sub-Alpine Forests.” Vegetation in these regions comprises mostly of few annuals like Primulas, Anemone sp., Aconotum sp.,

Potentilla sp., etc., and short duration grasses as herbs. Tree flora is represented by short shrubs of *Tsuga sp.*, *Juniperus sp.*, and *Rhododendrons*.

Nagaland is also considered as a sanctuary of ancient angiosperms. A number of phylogenetically primitive plant families such as *Magnoliaceae*, *Digeneriaceae*, *Himantandraceae*, *Eupomataceae*, *Winteraceae*, *Trochodendraceae*, *Tetracentraceae* and *Lardizabalaceae* grow in the state and further eastwards but do not occur in other parts of India. Based on the distribution of primitive angiosperms in South-East Asia Takhtajan (1969) considered the area-East Himalaya to Fiji region as the ‘Cradle of flowering plants’ where angiosperms have diversified. Some of the primitive species found in Nagaland are:



A) *Aconitum elwesii* B) *Aconitum nagaram* C) *Caltha palustris*
 D) *Illicium griffithii* E) *Magnolia campbellii* F) *Magnolia insignis*
 G) *Michelia doltsopa* H) *Michelia oblonga*

Magnolia griffithii, *Magnolia.gustavii*, *Magnolia.hodgsonii*, *Magnolia.hookeri*, *Magnolia.insignis*, *Holboellia latifolia*, *Parvattia brunoniana*, *Altingia excelsa*, *Exbucklandia populnea*, *Corylopsis himalayana*, *Houttuynia cordata*, *Chloranthus officinalis*, *Myrica esculenta*, *Betula alnoides* and *Alnus nepalensis*.

FRIENDS OF AMUR FALCON CAMPAIGN

The Amur falcon (*Falco amurensis*) is a small raptor of the falcon family. It breeds in South Eastern Siberia and Northern China/Mongolia before migrating in large flocks across India and over the Arabian Sea to South Africa. These birds are insectivorous and feed on termites thus playing a significant role in the agriculture and ecology of their breeding areas.

During the month of October, these migratory birds congregate in large numbers in Nagaland at Pangti and surrounding villages (Wokha District), Yaongyimchen (Longleng District), Intangki National Park (Peren District), Niuland, New Socünoma and Medziphema (Dimapur District) and Changtongya (Mokokchung District) where they roost and rest during their 22,000 km flight to South Africa.



Amur Falcons roosting over the Doyang Reservoir in Wokha District, Nagaland

Photo Source: <http://www.aagaman.in/domestic-destinations/north-east-india/nagaland/>

In the past, thousands of these birds were hunted for meat and sale in markets of Nagaland. Since these birds are very docile and roost in low branches of trees, it can be easily shot by hunters and this practice continued for years.

In the year 2012, images of the captured birds led to an international outcry from conservation organizations, agencies and individuals across the world to stop the massacre of these migratory raptors.

Conservation agencies like Birdlife International, Bombay Natural History Society, and Raptor Research and Conservation Foundation came forward to jointly fund a concerted effort to stop the massacre of these migratory raptors. The Nagaland Wildlife and Biodiversity Conservation Trust also partnered with the Government and local communities

to launch the “Friends of the Amur Falcon Campaign” to establish the falcons as a source of pride in the community.

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Awareness programmes were also organized and school children and teachers were educated about the fascinating journey of the Amur Falcons and the importance of their conservation. The Nagaland Pollution Control Board which is the State Nodal Agency for the National Green Corps Programme in Nagaland also lent a hand to the conservation campaign by providing t-shirts and banners to Eco Clubs to be used during awareness programmes. Children also took part in activities such as marathon race sporting t-shirts with slogans in order to convey the message of conservation.



The “Save Amur Falcon” Marathon organized at Pangti Village

Due to concerted efforts from individuals, organizations and the government, in 2013, the village councils of Pangti, Ashaa and Sungro signed a declaration making hunting of Amur falcons illegal and punishable. Experts were also invited to work with local governments and local communities to find solutions for the conservation crisis. Regular ground patrols were set up at the targeted falcon roosts in

the forests, along with frequent checks at the local markets.

Through all these mass efforts, the massacre of the Amur Falcons has come to a stop and the state of Nagaland is now a safe place for these birds to rest on their annual journey. On November 7, 2013, three Amur falcons were satellite-tagged with solar-powered transmitters in Nagaland as part of collaboration between scientists from the Wildlife Institute of India, Ministry of Environment and Forests, Convention on Migratory Species, United Nations Environment Programme, Environment Agency-Abu Dhabi, and the Nagaland Forest Department. The birds were one male named “Naga” and two females named “Wokha” and “Pangti”, after the state of Nagaland, the district where they roost and the village that contributed hugely towards the falcons’ conservation, respectively. “Naga” and “Pangti” returned to the Doyang roosting site in Nagaland in 2014, after completing their return journey to Mongolia/Northern China from Southern Africa.

The satellite tags have provided valuable information about the Amur falcons, including the distance travelled, the route and number of days taken. In 2016, a total of 5 Satellite Tracking solar-powered PTT Amur Falcons were tagged and released from Nagaland.

In 2014, awards were given in recognition of the Amur Falcon conservation such as the Royal Bank Scotland Earth Heroes Award 2014 to Pangti Village Council and Balipara Foundation Award 2014 to Forest Department & Pangti Village Council as well as the Governor’s Commendation Certificate.

The campaign for awareness for conservation of the Amur Falcons in their fascinating journey through Nagaland continues which has become a big draw for eco-tourism centred around the congregation of the Amur Falcons at the roosting sites.

Source:

1. <http://www.thebetterindia.com>.
2. The Morung Express, November 24, 2016

Sighting of Amur Falcons at New Socünoma Village

The sightings of the Amur Falcons were first reported by Ms. Neitsinuo from New Socünoma Village on 30th October 2017 that the Amur Falcons have arrived in her village on the 29th October 2017.

Following this report, a team from Nagaland Pollution Control Board which is also the State Nodal Agency for the National Green Corps Programme visited the area on November 1, 2017. The team along with Mr. Zhabu Seyie, Head teacher of the Govt. Middle School and Mr. Salew Seyie, Village Council Chairman, New Socünoma observed the Amur Falcons which were seen around the village and at Medziphema Town area as well.

The school Eco Club and villagers were actively involved in the protection of the migratory birds, and other wildlife. Banners were also put up in strategic locations to spread awareness. Besides the Amur Falcons, one can also sight flocks of other water birds such as Egrets and Herons. Other birds such as Bulbuls and Munia can also be sighted. The area is well connected and can be easily toured via



Eco Club members and teachers of Govt. Middle School, New Socünoma Village

the following routes: Chumukedima – Jornapani (NH 29) – Chathe – New Socünoma – Medziphema (NH 29); and Medziphema (NH 29) – New Socünoma – Chathe – Jornapani (NH 29).

A press release regarding the sighting of these birds was also published in the local dailies along with a list of Dos and Don’ts for visitors to follow with a view to spread awareness and promote Eco-Tourism.

EVENTS

Eco Club GMS Trongar A and GMS Nyenching observes Wildlife Week



Wildlife Week 2017 was celebrated under the theme “Listen to the young voices” on Friday by Government Middle School Trongar ‘A’ Eco Club and Government Primary School Nyenching, Longleng. During the programme, Eco-Club teacher in-charge highlighted the importance of preservation and conservation of flora and fauna and encouraged the students to spread the awareness on wildlife protection and conservation.

Wildlife Week cum Human Animal Conflict awareness at Kiphire



The Wildlife Division Kiphire celebrated Wildlife Week cum Human Animal Conflict awareness programme on 6th October 2017 at the Hopongkyu Memorial Hall with Dr. Tinojungshi Chang, ADC, Kiphire gracing the occasion as chief guest. The event was attended by Eco Club members of the school and NGOs.

A quiz competition and painting competition was organized on the theme of “Forest and Wildlife” among the students varying from class VII to class X where almost 100 students participated. Participants

were also asked to write a small essay on the “personal contribution in the wildlife conservation”. In the end, cash prizes and “Certificate of Appreciation” were distributed to the winners of the quiz and painting competitions. Eight students were also given consolations prizes as encouragement for participations. All the other participants were also given the “Certificate of Participation” by the DFO.

Securing the future, start young: Kohima District



Kohima Forest Division in collaboration with Silviculture Division organized a student special Wildlife Week on October 4 under the theme ‘Securing the future, start Young’ at the Forest Office Complex Conference Hall, Kohima.

Rongsenlemla Imchen, DFO Kohima moderated the programme which was attended by Forest Officials and student from three schools namely Minister Hill Baptist Higher Secondary School (MHBHSS), Fernwood Higher Secondary School and Stella Higher Secondary School. Meyipokym Aier, APCCF (Territorial) shared his experience with the students while Dr Kenei Miachieo, CF (STC) interacted with the student and encouraging them to work towards Wildlife Conservation. A power point presentation on wildlife found in Nagaland was presented by Khelen Singh WPO and Megdeline, Biologist sensitized the students on conservation efforts undertaken at the Tragopan Breeding Centre Kohima.

Essay competition on the topic “Role of students in Conservation and protection of Wildlife and Forests” was conducted where students of the three schools participated. The winner of the essay competition were, 1st prize – Thejavineo Class IX (C) of MHBHSS, 2nd prize – Telewe-u Class X

(A) MHBHSS, 3rd prize Kelengunuo Class IX (A) Fernwood School. Lhinghoikim Touthang, DCF Silviculture Division conducted the quiz competition as well as proposed the vote of thanks.

Wildlife Week observed in Dimapur District



The Wildlife Division, Dimapur with the rest of the world observed the Wildlife Day on March 3 with the theme – ‘Listen to the young voices.’ The programme was held at Pherima ‘A’ village and was attended by representatives of village councils, GBs, youths, students, officials and staff of the wildlife wing.

The officials of the Wildlife Wing enlightened the gathering about the threat to wildlife, its importance and their role in maintaining ecological balance and how to safeguard it from extinction. They also urged the village elders and teachers to inculcate into young minds, the love, affection and appreciation for wildlife. The officials also explained the implication of Wildlife Protection Act, 1972 and other similar Act of the state government to the gatherings. The representatives of the Village informed the department that all forms of hunting and poaching has been banned in their village jurisdiction and assured of renewed support, cooperation and coordination with the department in effectively tackling the wildlife crimes.

Nagaland Zoological Park celebrates Wildlife Week by sensitizing visitors on conservation



Nagaland Zoological Park (NZP), Rangapahar

celebrated Wildlife Week on October 7 in the zoo premises with the theme, ‘Listening to the Young Voices’. The day long programme started with free entry for all visitors to the zoo. Visitors were provided refreshments and sensitized about wildlife conservation by the officers and staff of the zoo through wildlife talks and interactions. They were also encouraged to share their views on conservation.

Wildlife week celebrated in Tuensang, Kiphire



The Tuensang Division Forest Department organized the celebration of wildlife week 2017 programme under the theme, “Wildlife and Nature” on October 7 at Hakushang School, Tuensang. Around 170 students from four schools attended the program along with the teacher incharge and Forest Officials.

Mon Forest Div celebrates Wildlife Week



The Mon Forest Division, Department of Environment Forests & Climate Change in collaboration with Kiphire Wildlife Division celebrated the Wildlife Week 2017 on October 7 at United Christian Higher Secondary School (UCHSS) at Naginimora, Mon. Speaking on the occasion, Tongkem Range Forest Officer Naginimora Forest Range highlighted the equal importance of all living creatures and the need the preserve the same. Humpong, Range Forest Officer (Retired) also spoke about preservation of wildlife.

Motorcycles rally to arouse awareness



A conservation Rally was organised in commemoration of Wildlife Week (October 2 to 8), by the Department of Environment, Forest and Climate Change, Government of Nagaland and Nagaland Motorcycle Club on October 6. The rally started off from Dimapur and culminated at Kohima War Cemetery with 23 bikers where a short programme was held.

Awareness Campaign on “Save Amur Falcons” at Peren District



The Department of Environment, Forest & Climate Change Peren Forest Division in collaboration with Wild Life Division Dimapur held a campaign on ‘Save Amur Falcon’ under the theme ‘Listening to our own voices’ on November 20 at Jalukie. The programme was attended by all sections of the society, which includes pastors, village council chairmen, VDB Secretaries, Gaonboras, representative from different organisation in the district.

UNEP award certificate of appreciation to Hakhezhe Village for protecting Amur Falcon



Hakhezhe Village under Nuiland in Dimapur was awarded a certificate of appreciation by the United Nations Environment Programme (UNEP), C/o Environment Agency Abu Dhabi, United Arab Emirates (UAE) and the convention of Migratory Species Office, Abu Dhabi UAE, in recognition of their commitment to provide refuge and safe passage to all Amur Falcons during their annual migration through Nagaland.

According to a press release in the local dailies, Dr. Suresh Kumar from Wildlife Institute of India, Dehradun handed over the certificate to the leaders and villagers of Hakhizhe Village, Dimapur during a brief programme held at Hakhize Village, commemorating one year of the tagging of the bird “Hakhizhe.” SP Tripathy IFS PCCF & Chief Wildlife Warden, K Caroline Angami IFS, Wildlife Warden, Dimapur and Bokato Sema Forest Ranger Niuland Range were present in the programme.

Awareness Programme on Amur Falcons Conducted at Wokha



An awareness programme on Amur Falcon was organised by Wokha Forest Division on November 3, at DC Conference Hall, Wokha with SP Tripathi, IFS, PCCF & Chief Wildlife Warden as the chief guest. According to a press release published in local dailies, the District Administration, Lotha Hoho, Amur Falcon Roosting Area Union (AFRAU), Natural Nagas and village council representatives and VDB secretaries of 12 villages (Pangti, Okotso, Wokha, New Wokha, Longsa, Longsachung, Aree Old, Area New, Riphyim Old, Riphyim New, Changsu Old and Changsu New) attended the programme.

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