

Quarterly Report of Study

Role in Ecosystem

Pteridophytes including ferns and its allies, were principal component of terrestrial ecosystem as a great evolutionary and ecological significance. Adaptation of ferns in the area depends on sensitivity and preference for temperature, humidity, soil type, moisture, pH, and light levels.

Location Details

This expedition was aimed to assess the diversity of ferns and ethno-botany uses as well. The study area was conducted in western region including National Park (Jigme Dorji National Park) of the country. The western region was covered to submit on the work done as a first quarter report. With the time constrain, I am speeding up the survey work for rest of the region (East, North and South). It is located at 27°49' 09.4" Northing and 89° 43' 49.3" Easting. Altitude ranges from 1200 to 7000 m above sea level corresponding to vegetation types of warm broad leaved forest to alpine meadows. It is located at 27°31'53.8" Northing and 89°53'64.6" Easting with altitude ranging from 1445 to 3868 m covering different vegetation types.

Method and Methodology

To meet the objective set, transect methods was applied to find out the diversity list of ferns. Visited the community (local people) for ethno botany usage and carried out interview to see how many people are making best uses of the fern species.

The most challenging task was identification as it grows in no bound of altitude. Same species in high altitude grows in different form at different stages and alternatively at lower elevation where same species gives different form in same species. It changes in different ways due to elevation and ecological factors.

Time Scale

As per the itinerary, expedition was scheduled from 30th April to mid of July in first quarter. Accordingly, field work was carried out and data were collected with specimens' collection for identification and to make herbarium specimen. The specimen collected are under process in National Herbarium using Dryer and tools used for mounting. Complete herbarium specimen will be available in next report.

Location

The study area in Western region (Punakha and Wangdiphodrang) was different and comparatively result was different in diversity and local people usage of ferns as well. It was very much sure that the growth of fern diversity in fire burnt area has very lesser. One of the transect line has come across the fire burnt area where no ferns are found. GPS coordinates and ecology factors were recorded for further exploration and also for re-visiting to enumerate in future. It will be convenient to evaluate the abundance and other findings. Species richness was high at low elevations, declining monotonically towards high elevations which shows that this perception was the result of an overemphasis on a few studies showing such monotonic declines.

Data Analysis

Analysis of data was done using SPSS 16, where in the correlations of ferns to environmental factors were analysed, means of different sites were compared and description of the species itself was done from descriptive statistics. People living nearby study area are benefiting in providing food, fiber and it has important values in many culture and aesthetic view. In addition to the classical latitudinal richness gradient, patterns of species richness along elevational gradients have also received considerable attention. The most frequent pattern was a hump shaped curve with the highest richness at some intermediate point of the gradient.

Table below shows Terrestrial Diversity ferns from study area

Family	Genus	Species	Altitude	Northing	Easting
Athyriaceae	<i>Diplazium</i>	<i>esculentum</i>	2152	27°41'93.7"	89°45'09.0"
Gleicheniaceae	<i>Diplopterygium</i>	<i>giganteum</i>	2324	27°41'63.6"	89°44'97.6"
Dennstaedtiaceae	<i>Pteridium</i>	<i>aquilinum</i>	1797	27°43'78.3"	89°44'69.9"
Dennstaedtiaceae	<i>Dennstaedtia</i>	<i>appendiculata</i>	1951	27°43'30.1"	89°44'66.2"
Pteridaceae	<i>Pteris</i>	<i>aspericaulis</i>	1812	27°41'37.3"	89°45'39.1"
Osmundaceae	<i>Osmunda</i>	<i>japonica</i>	1565	27°39'94.0"	89°45'97.7"
Selaginella	<i>Selaginella</i>	<i>bryopteris</i>	1615	27°39'40.1"	89°45'30.1"
Dennstaedtiaceae	<i>Microlepia</i>	<i>spelunca</i>	1475	27°40'01.1"	89°46'11.6"
Gleicheniaceae	<i>Dicranopteris</i>	<i>splendida</i>	2023	27°41'35.2"	89°45'09.2"
Pteridaceae	<i>Nptholaena</i>	<i>marantae</i>	2405	27°32'58"	89°55'32"
Oleandraceae	<i>Oleandra</i>	<i>pistillaries</i>	1683	27°32'49.43"	89°54'30.67"
Lomariopsidaceae	<i>Nephrolepis</i>	<i>cordifolia</i>	2305	27°33'40"	89°55'30.53"
Pteridaceae	<i>Ptris</i>	<i>arisanensis</i>	2227	27°41'19.1"	89°45'02.8"
Aspleniaceae	<i>Drynaria</i>	<i>propinqua</i>	2152	27°41'93.7"	89°45'09.0"
Polypodiaceae	<i>Pyrrosia</i>	<i>boothii</i>	2079	27°41'03.1"	89°45'19.9"
Dennstaedtiaceae	<i>Microlepia</i>	<i>strigosa</i>	1475	27°40'01.1"	89°46'11.6"
Pteridaceae	<i>Notholaena</i>	<i>marantae</i>	1565	27°39'94.0"	89°45'97.7"
Sinopteridaceae	<i>Onychium</i>	<i>lusidium</i>	1690	27°39'17.1"	89°45'36.1"
Pteridaceae	<i>Pteris</i>	<i>cretica</i>	1931	27°39'47.8"	89°45'22.1"

Table below shows Epiphytic diversity in study area

Sl.No	Family	Genus	Species	Author
1	Aspleniaceae	<i>Asplenium</i>	<i>phyllitidia</i>	(D.Don)
2	Polypodiaceae	<i>Drynaria</i>	<i>propinque</i>	(Mett.)
3	Polypodiaceae	<i>Pyrrosia</i>	<i>boothii</i>	(Hook)
4	Polypodiaceae	<i>Vittaria</i>	<i>taeniophylla</i>	(Copel)
5	Polypodiaceae	<i>Vittaria</i>	<i>flexuosa</i>	(Fee)
6	Polypodiaceae	<i>Vittaria</i>	<i>sikkimensis</i>	(Kuhn)
7	Polypodiaceae	<i>Vittaria</i>	<i>reticulatum</i>	(D.Don)
8	Lycopodiales	<i>Huperzia</i>	<i>squarrosa</i>	(G.Forst)

Tools used for the field data collection



Wooden plant press used for herbarium specimen collection





Dennstaedtia appendiculata



Diplazium esculentum



Drynaria propinque



Diplazium esculentum



Pteris arisanensis



Dicranopteris taiwanensis



Osmunda japonica