Epiphytic Ferns of Sri Lanka: An Unexplored element of Tropical Biodiversity

Ranil Rajapaksha
Department of Crop Science
Faculty of Agriculture
University of Peradeniya, Sri Lanka
Sri Lanka

Island (area- 65,000 km$^2$)
Population - 20 millions
One of the Global Biodiversity Hotspots
Pteridophyte flora of Sri Lanka

- About 360 taxa including 48 endemics
- Nearly 85% of taxa confined to the wet zone of Sri Lanka
- High degree of richness and endemism
- The island nature of the country along with its long-term biological isolation.
## Conservation Status

based on herbarium specimens and limited field works

<table>
<thead>
<tr>
<th>IUCN Categories</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critically endangered (possibly extinct) (CRp)</td>
<td>21</td>
</tr>
<tr>
<td>Critically endangered (CR)</td>
<td>40</td>
</tr>
<tr>
<td>Endangered (EN)</td>
<td>87</td>
</tr>
<tr>
<td>Vulnerable (VU)</td>
<td>71</td>
</tr>
<tr>
<td>Near Threatened (NT)</td>
<td>40</td>
</tr>
<tr>
<td>Least concern (LC)</td>
<td>63</td>
</tr>
<tr>
<td>Data deficient</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>334</strong></td>
</tr>
</tbody>
</table>

[National Redlist, 2012]
History of pteridological studies in Sri Lanka


History of pteridological studies in Sri Lanka

3. Local involvement - Prof. B.A. Abeywickrama (1956), Dr. P. Jayasekara, Prof. Tissa Herath, Dr. B. Fernando

Phyto-geographical affinities of Sri Lankan pteridophyte Flora

1. Himalayan flora in North East India
2. Malesian flora in South East Asia
3. African elements in East Africa, Madagascar, Mascarenes and Seychelles

[Fraser-Jenkins, 1984]
Epiphytic ferns of Sri Lanka

- Currant status
- Importance of study
- What sort of information that we can have
- Limitations
- Future research priorities
Epiphytic ferns of Sri Lanka

- About 25% of total number
  Aspleniaceae (28 spp),
  Polypodiaceae (46 spp.)
  Hymenophyllaceae (18 spp.)
  Davalliaceae (5 spp.)

- Basically confined to wet zone rain forests and roadside vegetation in Sri Lanka
The most preferable and common habitats for epiphytic ferns
Antrophyum plantagineum (Cav.) Kaulf
Vittaria scolopendrina (Bory) Bech.

Elaphoglossum ceylanicum
Kraina ex Sledge

Huperia phlegmaria (L.) Rothm.
Elaphoglossum commutatum (Mett. Ex Kuhn) Alderw.
Lepisorus nudus (Hook.) Ching
1. Discovery of new species

*Cyathea srilankensis* Ranil

*Cyathea sledgei* Ranil et al.
Prosaptia ceylanica Parris

Confined to the type specimen at Kew

Oreogrammitis sledgei Parris
2. New records to the island

Dicksonia antarctica Labill.

Cyathea australis (R. Brown) Domin
Pyrrosia piloselloides (L.) M.G.Price

India and South East Asia
Pyrrosia niphoboloides (Luerss.) M.G. Price

Endemic to Madagascar
3. Rediscovery of supposed to be extinct species

Island populations are subjected to higher risks of extinction than wider-spread mainland populations due to..

- environmental reasons
- higher level of inbreeding
Possible reasons for their apparent extinction

- Deforestation
- Habitat loss
- Unsustainable development activities
- Climate change
- Overexploitation

![Graph showing species extinction and human population growth](image)

**EXTINCTION**
Possible reasons for their apparent extinction

Habitat lost and degradation
## Conservation Status Fern Flora

<table>
<thead>
<tr>
<th>IUCN Categories</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critically endangered (possibly extinct) (CRp)</td>
<td>21</td>
</tr>
<tr>
<td>Critically endangered (CR)</td>
<td>40</td>
</tr>
<tr>
<td>Endangered (EN)</td>
<td>87</td>
</tr>
<tr>
<td>Vulnerable (VU)</td>
<td>71</td>
</tr>
<tr>
<td>Near Threatened (NT)</td>
<td>40</td>
</tr>
<tr>
<td>Least concern (LC)</td>
<td>63</td>
</tr>
<tr>
<td>Data deficient</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>334</strong></td>
</tr>
</tbody>
</table>

Including six epiphytic species
Asplenium disjunctum Sledge
[Aspleniaceae] [1885]

Radiogrammitis beddomeana (Alderw.) Parris
[Polypodiaceae] [1849-1888 ???]
Lindsaea repens (Bory) Thwaites

Teratophyllum aculeatum Mett.
4. Ecosystem services

Eg. As an indicator species

Family Hymenophyllacaea

19 species including 18 ephiphytes
Health and wealth of the forest

Didymoglossum wallii (Thwaites) Copel
From here where do we go .....?
Future Research Priorities

1. Island wide survey on pteridophyte flora of Sri Lanka
   [based on field exploration]

Central province - well botanized during colonial era
2. Update the pteridophyte collection of the National Herbarium in collaboration with other recognized herbaria

- 76% of pteridophytes specimen in other herbaria (about 34)

- More than 627 specimens at the AK

About 35% specimens are deposited at the Herbarium, Royal Botanic Gardens, Kew, London

Bolbitis semicordata

Dicranopteris thaiwanensis
3. International collaboration

Lack of

- Pteridologists
- Local knowledge, experience and funding

Thus, international Collaboration is necessary.

- For sharing of information.
4. Develop as an ornamental plants in floriculture industry

Dominated by introduced species
Thank you for your attention