

## **SKILLS AND KNOWLEDGE FOR LICHENOLOGISTS - (Feb 2024)**

Sue Knight, Pete Martin, Mark Stephens, Maxine Putnam (Learning pathways Working Group of EPC)

To be a proficient lichenologist you need to develop a wide range of knowledge and skills. 4 stages are outlined below, each requiring considerable time and commitment. Learning is not linear, and the stages may need to be re-visited several times. You need to use the teaching resources to the full to meet your own style of learning. This may take the form of formal courses, workshops, field meetings, mentoring, on-line learning and support and takes several years to acquire. The following list of stages and outcomes aims to help you make the most of the support on offer and to identify areas where additional skills/knowledge will be helpful to you.

This document is intended as guidance for a focus on the field identification of lichens which will need to be supported by microscopy as necessary. It can be used by lichenologists, to give them an idea of the range of “topics” they need to pursue as they become more competent. In addition, it can provide a framework for those planning to deliver courses.

It should be noted that the BLS does not recognise this as a formal accreditation scheme and it is provided for guidance. There is considerable overlap between stages and people develop different skills at different rates and have a range of opportunities to progress.

### **The Beginner stage lichenologist should:**

- Be aiming to ID 50 lichens, most likely in the local neighbourhood
- Be using a hand lens
- Use basic terminology to describe lichen features visible with a hand lens. (For further details refer to LABs content and Learn the Language terminology, which can be supplied on request
- Develop identification skills
- Use FSC identification guides
- Use “Dobson”
- Be aware of the BLS website and resources
- Develop techniques and protocols for chemical tests
- Use the C and K chemical tests and KC test
- Use a UV lamp/torch
- Use appropriate collecting and storage techniques and protocols
- Use a lichen checklist to aid systematic recording of features
- Be aware of networking opportunities e.g., local groups/zoom meetings, information on the BLS website etc.
- Understand the concept of lichen symbiosis and how lichens are named
- Be aware of the importance of habitat

### **The Intermediate stage 1 lichenologist should be developing their knowledge e.g. through attendance at BLS meetings, local group meetings, using the BLS website and Zoom sessions and should :**

Aim to ID up to 100 lichens (possibly focusing on a few geographical areas or habitats)

Be able to refer to the formal LGBI 3 glossary (produced by Mark Powell) and so expand their understanding of the terms associated with lichen structure and be able to recognise these structures to facilitate use of the Flora.

Use "The Flora" (The Lichens of Great Britain and Ireland) 2<sup>nd</sup> ed. And the LGBI 3 accounts ( as they are posted on the BLS website)

Expand the range of resources used to ID lichens

Use a dissecting microscope

Experience using a compound microscope with guidance

- Prepare a slide for microscopy e.g. squashes and sections to show spores (video available)
- Measure dimensions using calibration information provided.
- Use polarising sheets
- Use Ink- vinegar technique
- Be able to recognise some different spore morphologies

Be familiar with recording procedures using the BLS database and spreadsheets

Understand the concept of environmental drivers of lichen distribution

Begin recording lichens of specific lichen habitats (using a field notebook) and particularly in their Vice County

Recognise silica rich and calcareous rocks

Recognise acidic and basic barked trees as far as possible and recognising this may change with time

Make up chemicals e.g. C and K

Lead "lichen walks" in areas they feel confident in, probably in their local area.

Recognise that there are "recent" lichen name changes (see taxon dictionary)

**The Intermediate stage 2 lichenologist should be continuing to develop their knowledge and skills by increasing their confidence and competence and should:**

Aim to ID up to 200 lichens

Identify most of the lichens in Dobson that are present in their local area, using the Flora (and other sources) regularly

Expand their understanding of the terms associated with lichen structure (see Mark Powell's glossary on BLS website). Be able to recognise these structures and use them in identifying lichens

Be confident in using a compound microscope (preferably with Kohler illumination and using oil immersion)

Develop confidence/competence in sectioning apothecia and perithecia and recognising structures

Develop confidence/competence in staining techniques for spores, sections and ascus tips using a range of chemicals (e.g., Pd, iodine)

Make up Pd

Recognise the presence of pycnidia, lichenicolous fungi

Use more "difficult characters" for ID purposes e.g. pycnidia, conidia, paraphyses characters

Aim to ID some lichenicolous fungi

Routinely record lichens from their local area for the BLS database

Be able to access the grey literature

Support other beginner and intermediate lichenologists in the field and via zoom, in areas they have become confident in e.g. by leading events

Assist in survey work, using up to date name changes

**Advanced stage. It is recognised that to reach this stage will have involved extensive study and commitment and that these skills will be built on with experience. Over time, experience will be gained leading to expertise in particular habitats and groups of lichens.**

**The Advanced stage lichenologist should:**

Develop and demonstrate competence in the identification of specific genera, using the latest Flora information or other appropriate sources (e.g. international sources)

Develop and demonstrate competence in the identification of Lichenicolous fungi

Develop and demonstrate competence in the identification of pyrenocarps

Regularly record lichens in their local area and beyond, entering records into the BLS database

Show competence in setting up a compound microscope with Kohler illumination (if relevant) and using oil immersion

Show competence in the diagnostic microscopic identification/interpretation of a wide range of key lichen microscopic structures e.g. paraphyses, spores, ascus tips etc

Identify lichen communities

Recognise habitats and key indicator species

Show a wide knowledge and be able to access the 'grey literature'

Show a wide knowledge and use of the published literature.

Show familiarity with the conservation status of lichens

Be familiar with and able to identify, in the field, the lichens of many of the habitats across their region

Carry out advanced surveys

- Plan and effectively carry out a lichen survey
- Write up the findings of a lichen survey in report format
- Undertake appropriate risk assessments (for guidance see BLS website)
- Provide recommendations for site management

Lead field trips (as confidence develops in identifying lichens) in a range of habitats e.g., coastal, upland, woodland, aquatic etc and a range of substrates e.g., corticolous, saxicolous etc

Develop research skills and links to relevant contacts

If you have any feedback on the document please contact [sueknight10@btinternet.com](mailto:sueknight10@btinternet.com)