

PROJECT 3-1

LIFE CYCLE OF MOSSES

PROBLEM

Little is known about the relative importance and timing of the parts of the life cycle of most Australian mosses. The sort of details that are required are the times of spore discharge, growth of the protonema, leafy gametophyte production, sex organ production (archegonia and antheridia), fertilization, growth of sporophyte, relative importance of reproduction by spores or gemmae and tubers.

INFORMATION

1. Mosses can be identified using the book by Scott and Stone but if you are dismayed by the complexity of the terminology, identification is not essential and "voucher specimens" of the species used can be submitted.
2. Growing clumps of moss away from their natural habitat is not as easy as you might expect. Imitate the natural surroundings as closely as possible. Collect tufts and pack them into small porous pots using the natural substratum. Place the pot in a large plastic ice cream container with about 1" or so of water. Cover top with glass or plastic. Keep in a sheltered position with diffuse light. Water with rainwater or distilled water. Allow to die down in summer.
3. The day length to which gametophytes are exposed may influence the timing of the production of ♀ and ♂ gametes. Day length can be experimentally altered by shining a light on the plants to extend the length of the natural day or by covering them with a box or bag some hours before sun set.
4. Moss spores can be grown. See Project 3-2.
5. The tips of plants should be dissected to find the antheridia and archegonia. Several individuals in several different clumps should be examined as some clumps may be of juvenile plants.

DESIGN OF PROJECT

1. Decide how much time you want to spend in the four possible areas of activity – field observations, spore culture, cultivation of gametophytes, experimental investigation of spore and leafy gametophyte growth.
2. Where are you going to get information on local temperatures, day length, rainfall etc. to relate to your life cycle observations?

REFERENCES

See Project 3-2