

APPENDICES

I - GROUP REPORTS

The recommendations proposed by the seven discussion groupsGROUP 1 — *Discussion leader S.H. Sohmer*

— Organization and the ideal format of a large Flora (over 10,000 species)

The Working Group first recognized that there are really two major categories of Flora projects serving quite different needs in the Malesian region: the local/national projects that serve specific areas with information needed by individuals and institutions in these areas, and the *Flora Malesiana* project that serves a broader integrative purpose.

The format of a specific local/national project cannot therefore serve as a model for the *Flora Malesiana* and vice versa. This is in keeping with Sohmer's main thesis as presented in the introductory plenary session and appended here. However, the working group also recognized that due to the changes in the forces that fund a project like *Flora Malesiana*, changes would have to occur in its format and outlook and particularly its management, in order to continue the viability as well as the quality of the project.

Recommendation 1-1:

The quality of the product, which is based on regional taxonomic research, should be maintained within the concept of a stronger management approach to attain the product faster. *Flora Malesiana* is considered an indispensable tool utilized at the local level in floristic and applied endeavours.

Recommendation 1-2:

The format of *Flora Malesiana* should be adjusted to reduce some less useful parts. The changes recommended by the Working Group relate to the following: concise descriptions; selective bibliography, but retaining complete (regional) synonymy; elimination of unreliable vernacular names and un-informative photographs; in general, no distribution maps.

Recommendation 1-3:

The Working Group considers a stronger management approach to be the single-most important issue and therefore recommends that the services of an individual to manage the project, interface with international funding agencies, and recruit and deal with collaborators in a systematic way, be obtained for the project.

Recommendation 1-4:

Symbiosis can be achieved between *Flora Malesiana* and local/national projects and significantly increase the rate at which *Flora Malesiana* treatments appear, by fostering co-operation between the projects that would upgrade the contents of *Flora Malesiana*. The latter would benefit from local/national projects via:

- a) the intimate field knowledge of local botanists: ecology and field characters;
- b) their knowledge of ethnobotany and uses;
- c) the use of local projects to enhance the field opportunities for *Flora Malesiana* botanists;
- d) sharing illustrations and producing them in the Malesian region.

Besides these generally agreed recommendations the following summarized thoughts emerged:

1. There is no universal 'ideal' format for a Flora.
2. Given that a Flora is desirable and/or necessary, the format depends on what is wished to be achieved, and on local/external conditions.
3. Conditions will always vary, and may include:
 - a) availability and quality and quantity of collections;
 - b) quality and quantity of practitioners;
 - c) particulars and peculiarities of funding source(s);
 - d) pressure on natural resource base.
4. All of this can, perhaps, be summarized as follows:

$$P = \frac{(R)(M)}{T} \quad \text{where}$$

| | | |
|---|---|-----------|
| P | = | product |
| R | = | resources |
| M | = | manpower |
| T | = | time |

5. Availability of R is the most critical primary part of this equation.
6. Given R in sufficient quantity, achieving P is directly proportional to the management of R.

GROUP 2 — *Discussion leader F.S.P. Ng*

- The target group
- Who are the users of a regional Flora and what are Floras exactly used for?
- How should effective feedback from users to Flora writers proceed?

Recommendation 2-1:

In view of the urgent need for an inventory of plant resources in the tropics, Flora-managers should expedite the production of Floras and widen their political and financial support by clearly defining their strategy and products.

Recommendation 2-2:

A flexible, pluridimensional approach to floristic writing should include different formats and products for different audiences, including national planners, professional scientists and the general public.

Recommendation 2-3:

Floras should have keys and descriptions which are user-friendly, and should include alternative keys, diagnostic illustrations, etc., if convenient.

Recommendation 2-4:

Flora-writers should acknowledge taxonomic problems, such as complexes of species, etc., and treat them in commentaries or, if necessary, in alternative publications.

Recommendation 2-5:

Herbaria should be associated with living collections and field stations, and where possible should take part in the production of local Floras and field guides.

Recommendation 2-6:

Taxonomists should offer instruction at different levels to introduce as many people as possible to plant diversity, and to encourage those especially interested in plant taxonomy in a practical, independent way.

GROUP 3 — Discussion leader R.M. Polhill

- Analysis of the major causes of the consistent undertaxation of modern flora projects, in time and size
- Always delay
- What did the former century taxonomists do better?

Recommendation 3-1:

This meeting stresses that large Floras need a Steering Committee chaired by a Flora Manager whose main job is to guide production, organize staffing, control finances, arrange schedules and appoint Editors.

Recommendation 3-2:

The *Flora Malesiana* Steering Committee should encourage the establishment of an 'Expertise Centre' (currently under discussion with the Ministry of Education) in the University of Leiden and should explore the possibility of a database system central to the *Flora Malesiana* project.

Recommendation 3-3:

Stronger interaction between participating organizations should be encouraged and the new technology will enable expertise from the Malesian region, vital to the *Flora Malesiana* project, to be collected and disseminated much more effectively.

Recommendation 3-4:

To sustain development of plant taxonomy in the Malesian region there should be further training courses, such as the Leiden-Bogor-UNESCO training program.

Recommendation 3-5:

Funding should be sought for further inter- and intra-regional travel, study leave and short-term technical support for production of Flora treatments.

Recommendation 3-6:

This meeting strongly supports the moves by the International Union of Biological Sciences (IUBS) to adopt for all plants a list of standard names that would not be upset by mere nomenclatural priority.

GROUP 4 — *Discussion leader A.S. George*

— Large flora treatments and monographic studies

The main conclusion reached was that botanical knowledge of the *Flora Malesiana* region is still largely in an 'inventory' stage. In many instances monographic work is not possible. In this respect a 'complete' monographic *Flora Malesiana* is not possible within a realistic time frame.

Nevertheless monographic work will continue to be produced and will be part of the *Flora Malesiana* program.

Recommendation 4-1:

The aim of the *Flora Malesiana* work should be the writing up of available material succinctly, in the form of a concise Flora which may in many respects be provisional but will lay the foundations for subsequent monographic work.

Recommendation 4-2:

The current state of knowledge of families in the *Flora Malesiana* region should be assessed and used as the basis for setting a schedule for production of a concise *Flora Malesiana*.

Recommendation 4-3:

Availability of external funding should be investigated with a view to appointing a team of full-time Flora writers and editors.

Recommendation 4-4:

This recommendation should be presented positively, not in the context of the difficulty of completing a monographic *Flora Malesiana*, but in the context of its advantages for a broad spectrum of uses, including management of the Flora for resource utilization and conservation, and as the basis of future scientific work.

Recommendation 4-5:

The concise *Flora Malesiana* and the *Flora of the Philippines* could have the same format. Contributors should cooperate in the preparation of taxa for both Floras, thus avoiding duplication of effort.

Recommendation 4-6:

Flora writers, if not local botanists, should work in conjunction with local botanists wherever possible.

GROUP 5 — *Discussion leader P. S. Ashton*

- Exploration expeditions in the Tropics: what is no longer needed, what is still needed, what is urgently needed?
- A review of aims and goals

Recommendation 5-1:

In view of the shortage of manpower necessary to acquire materials ensuring a sound basis for *Flora Malesiana*, the available manpower must be used more efficiently.

Recommendation 5-2:

There is no need to pin-point under-collected areas, since these are covered by the Campbell & Hammond (1989) inventory report.

Recommendation 5-3:

It is essential to step up the collection of neglected taxa and for improvement of field data.

Recommendation 5-4:

A very efficient way to obtain collections is through long-term, including multi-disciplinary, research projects, preferably initiated by the Malesian countries with the possibility of expatriate participation. This reduces costs and helps solve problems with obtaining visas etc. Such types of exploration should have a training/education component benefiting local scientists and technicians.

Recommendation 5-5:

There is a great need for specialist collecting. By specialist collecting is meant all collecting involving special techniques and all collection of data on groups of plants or data on features that have so far been neglected. This type of collecting need not necessarily take place in remote, under-collected areas. It may even be more efficient in easily accessible, otherwise well-known areas.

Recommendation 5-6:

Attempts must be made to collaborate with applied activities such as research on medicinal and food plants. Logging and mining companies should also be approached to allow collecting before bulldozing.

Recommendation 5-7:

A more concerted effort to analyze the market for our research is the surest prerequisite for increased funding.

GROUP 6 — *Discussion leader A.H. Gentry*

- Herbarium taxonomy versus field knowledge
- Is there an attainable solution?

Recommendation 6-1:

Species distinguished in a Flora should as much as possible agree with biological reality. As a consequence, the herbarium taxonomist:

- a) should try to recognize species which can be distinguished on characters visible in the field, although not necessarily in herbarium specimens.
- b) Monographers are reminded that flexibility in approach is needed to cope with different patterns in nature which may demand different taxonomic solutions. Splitting or lumping must be decided on a case-by-case basis.

Recommendation 6-2:

Very frequently the ecological interactions and requirements of taxa provide valuable clues as to their taxonomic status, especially where related taxa occur sympatrically.

Ecological data should therefore be appreciated as an aid to decide whether or not two entities are kept as separate taxa. Mechanisms for incorporating ecological data into taxonomic decision-making need to be encouraged.

Recommendation 6-3:

Decisions to merge taxa should be taken as seriously as decisions to recognize new taxa. The taxonomist should specifically justify decisions to merge taxa. To enable field workers to refer to infraspecific forms which may seem separable on a local scale but not throughout the taxon's distribution, the herbarium taxonomist should adequately discuss the patterns of variability within the species. He might recognize this local infraspecific variant as varieties, forms, or as informal taxa.

Recommendation 6-4:

More interaction and more exchange of information should take place between the herbarium taxonomist working on a Flora and the field worker. The following suggestions are made:

- a) The field worker should provide representative collections of vegetative parts (e. g., sterile end twigs, reiterant shoots, bark, wood samples) as well as fertile material. He should be encouraged to provide more complete field notes, including ecological data, vernacular names, ethnobotanical notes, useful specific field characters, in short, anything that is not evident from the actual specimen.
- b) The field workers should adequately sample the pattern of local morphological and ecological variation within taxa by the use of multiple collections.
- c) The herbarium taxonomist should consider providing supplementary keys (e. g. based on vegetative characters). He should prepare these keys in close cooperation with the field worker.
- d) The herbarium taxonomist should circulate preliminary versions of his keys for testing by field workers.
- e) Immediate identifications to the collections made by field workers should always be provided by the herbarium taxonomist, even if these identifications are provisional. The herbarium taxonomist should promptly respond to requests from the field worker for (provisional) results, and solicit feedback on taxonomic problems.
- f) Preliminary results might be published by the herbarium taxonomist in local publications, in collaboration with the field worker if appropriate.
- g) The field worker should be aided to publish relevant results from his own observations. This might include checklists, florulas, or co-authorship of preliminary results.
- h) When making labels for his collections, the field worker should take care to differentiate clearly between data and interpretations (e.g., "said to be used for ...", unless the use is actually confirmed).

- i) New data bases for the exchange and storage of field knowledge should be mutually compatible. *Any such database should be specimen based, not taxon based.*

Recommendation 6-5:

The *Flora Malesiana* project is asked to commission a *short* manual for field collecting. This manual should be compiled with input from herbarium taxonomists working on different plant groups. Fill-in forms of suggested label information might be included for the groups which are especially problematic to collect.

Recommendation 6-6:

The organization of local technical training courses should be arranged for field workers.

Recommendation 6-7:

The *Flora Malesiana* project should have a 'Bulletin Board' with offers of and requests for collections, collecting facilities etc.

Recommendation 6-8:

The herbarium taxonomist needs field experience. This will remove the artificial dichotomy between the herbarium taxonomist and the field worker.

GROUP 7 — *Discussion leaders J.S. Burley and P.F. Stevens*
— Resources for inventory

Recommendation 7-1:

The rate of botanical collecting in Malesia needs to be increased if future taxonomic decisions made in the *Flora Malesiana* are to be soundly based on a representative sample of existing biological variation, and the growth of plant systematics into the 21st century is to be ensured.

Recommendation 7-2:

Shortages of manpower, materials and/or space are seriously affecting many herbarium worldwide. Collecting programs which do not address the problems of documentation, mounting, distribution and preservation of specimens are not likely to function efficiently.

Recommendation 7-3:

Education, field training and motivation of participating staff should be an integral part of future collection programs.

Recommendation 7-4:

There is a need for close communication and collaboration between systematic botanists and applied biologists if data resulting from collection programs are to be effectively utilised.

Recommendation 7-5:

The establishment of new collecting programs should not result in the slowing down of existing monographic work, or delay the completion of *Flora Malesiana*. Additional resources will be required.