For UNESCO Division of Human Settlements and Socio-Cultural Environments

Forest Management and Biomass Utilization Interdisciplinary Research Seminar
(using the Rotational Group Systems Method)

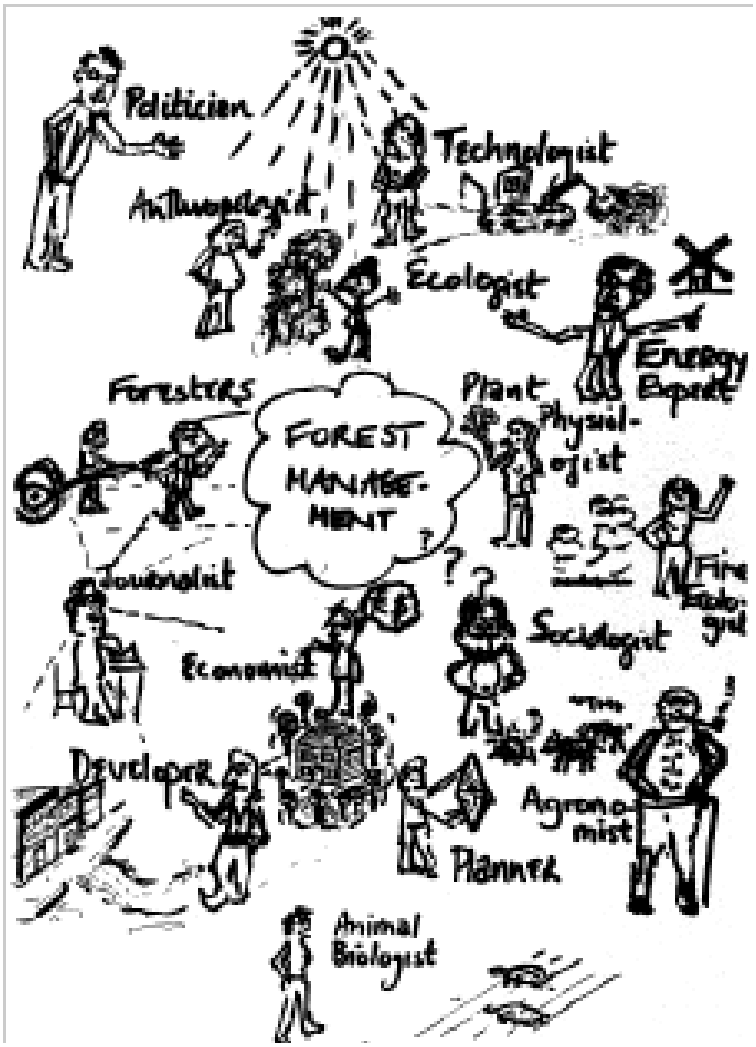
Final Report

Held at: The Kassandra Palace Hotel, Kassandra, Greece October 3rd - 8th 1982
Dr. Martin Wynn London, October, 1982

Contents

1. Introduction

This report follows the Interdisciplinary Research Seminar on 'forest Management and Biomass Utilization' held in Kassandra, Greece in October 1982. In a document [1] prepared prior to the seminar, the rationale behind the content and structure was explained. Here, a brief summary of the structure is given in Section 2, but the body of the report can be found in Sections 3, 4 and 5. Section 3 attempts to review the seminar, evaluating its strengths and weaknesses, whilst Section 4 contains the major recommendations produced at the seminar. Finally, Section 5 establishes some procedural and operational guidelines for the organisation of subsequent seminars using the Rotational Group Systems (RGS)



method, which featured centrally in this seminar. Appendix 1 contains the list of participants attending the course and Appendix 2 comprises material generated in the seminar through the RGS method, using colour-coding to identify Group Reports on the same issues.

Finally, it is worth noting that the RGS method constitutes a new action-research technique not previously tried in UNESCO inter-disciplinary seminars, and not described in the preliminary version of the Handbook on Interdisciplinary Research Methods[2] written after the Skopelos seminar in 1981. The overall success of the Kassandra seminar suggests it could usefully be tried again and should be included in any subsequent UNESCO Guide to Interdisciplinary Research Methods.

2. Seminar Structure and Organisation

It was intended from the outset to hold an essentially discussion-based seminar rather than attempt any de facto primary research in the field. If we accept Lewin's conceptualization of action-research as a three-cornered triangle of research, training and action, then this seminar was essentially a training experience, albeit with a strong investigative bias stemming from the multi-disciplinary make-up of seminar participants (see Appendix 1).

Rotational Group Systems (RGS) were used as the major method to expose different disciplinary perspectives and professional standpoints, on four major issues relating to forest Management and Biomass Utilization, namely:

- Fire, Wood Harvesting and Alternative Biomass Usage;
- Tourism, Recreation and Conservation;
- Agricultural and Pastoral Practices;
- Administrative and Technical Aspects.

Each issue was to be considered twice. In the first half of the week (Phase 1), groups had to 'pull apart' the issues, identifying different factors and problems, specifying information requirements, and attempting to provide some conceptual overview of the different elements which had some bearing on the issue. Then, in the second half of the week (Phase 2), groups were asked to consider the range of Group Reports generated in Phase 1 and to begin to assemble summary statements and recommendations for action relating to each issue. Finally in a concluding stage, groups were asked to synthesise Group Reports produced in Phase 2, producing a final list of recommendations for each of the 4 issues.

Each session, then, would see participants divide up into four groups of four people each, with the make-up of groups and the issue under consideration changing from session to session. This is graphically illustrated in Figures 1, 2 and 3. The common format for sessions A-H was planned as follows:

- Keynote Address (if necessary) by course organisers, providing a brief introduction to the issue, with particular reference to the Greek and Mediterranean contexts (5 minutes).
- Team Tasks, (using RGS). Division of sixteen participants into four groups as detailed in Figure 2. Each group is responsible for writing a short. report (1-2 pages maximum) of their findings, to be entered on Group Report Forms - see Appendix 2 (1-2 hours).
- Panel Presentation of their report by one (or more) of the groups (15-30 minutes).
- Question and Answer Session/Discussion (15-30 minutes).

Each session, then, was to last 2-3 hours, with group reports being typed, photocopied and circulated to participants as they were produced, providing participants with a dossier which was built-up as the seminar. progressed.

3. Review and Evaluation of the Kassandra Seminar

The major facets of the RGS method as exemplified in the Kassandra course are illustrated in Figure 4. The seminar was designed to produce an interdisciplinary synthesis from multi-disciplinary participants. These two are closely related in the RGS method because the stimuli for interdisciplinary learning emanates from the different disciplinary perspectives of participants. The greater the number of disciplines represented by participants, the wider the net will be cast in the final synthesis.

1. M. Wynn 'Forest Management and Biomass Utilization - Course Content and Structure' Division of Human Settlements and Socio-Cultural Environment, UNESCO (Paris), Sept., 1982.
2. M. Wynn, 'Handbook on Inter-Disciplinary Research Methods' (Preliminary Version), Division of Human Settlements and Socio-Cultural Environments, UNESCO, (Paris) Sept., 1981.

Clearly, however, each discipline must encompass the seminar theme to some degree: the example of the marine biologist specialising in the sex life of micro-organisms at a seminar on package tourist development in Skopelos is a poignant reminder of the futility of adding extra disciplinary representatives just for the sake of it. Nevertheless, the breadth of discussion at the seminar and the content of the Group Report Forms (see Appendix 2) bears witness to the scope which the RGS method provides for interdisciplinary learning and exchange. And the general move towards a synthesis embodied in the seminar structure seems to have worked satisfactorily.

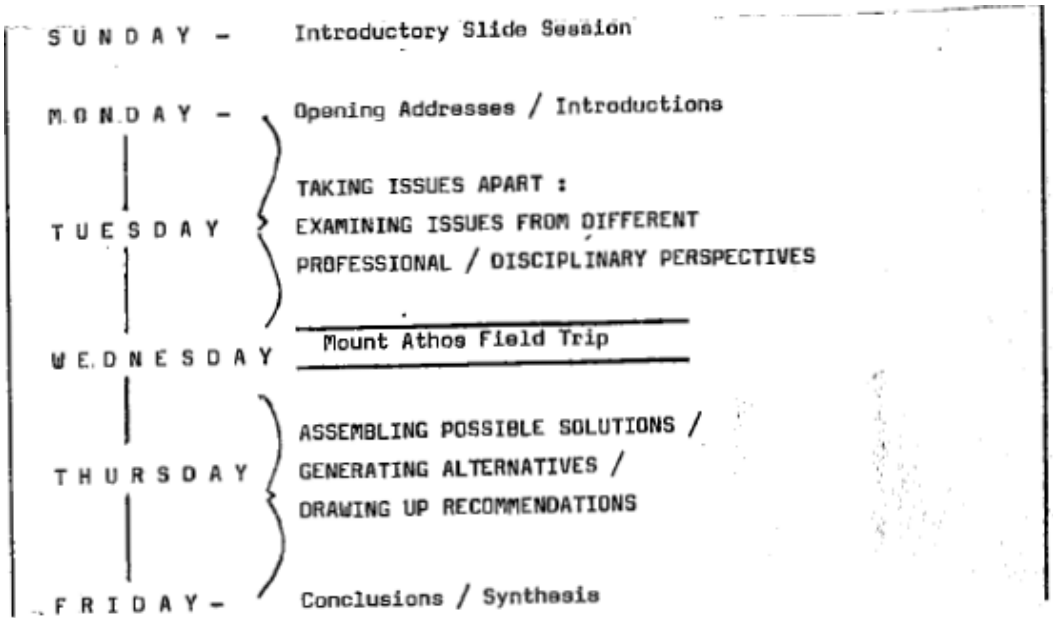


Figure 1. The Kassandra Seminar: Overall Structure

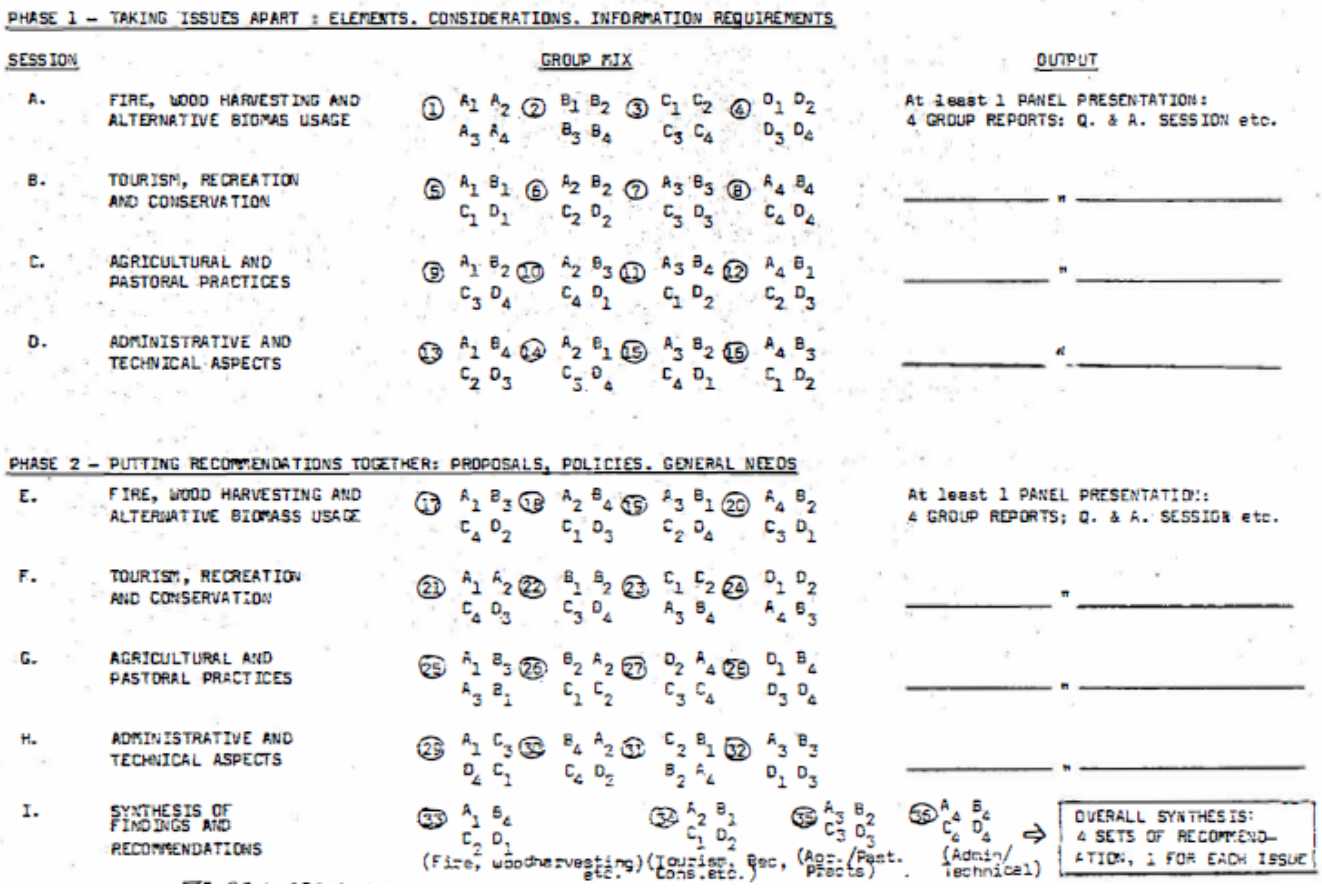


Figure 2 Group Rotation in the Kassandra Seminar

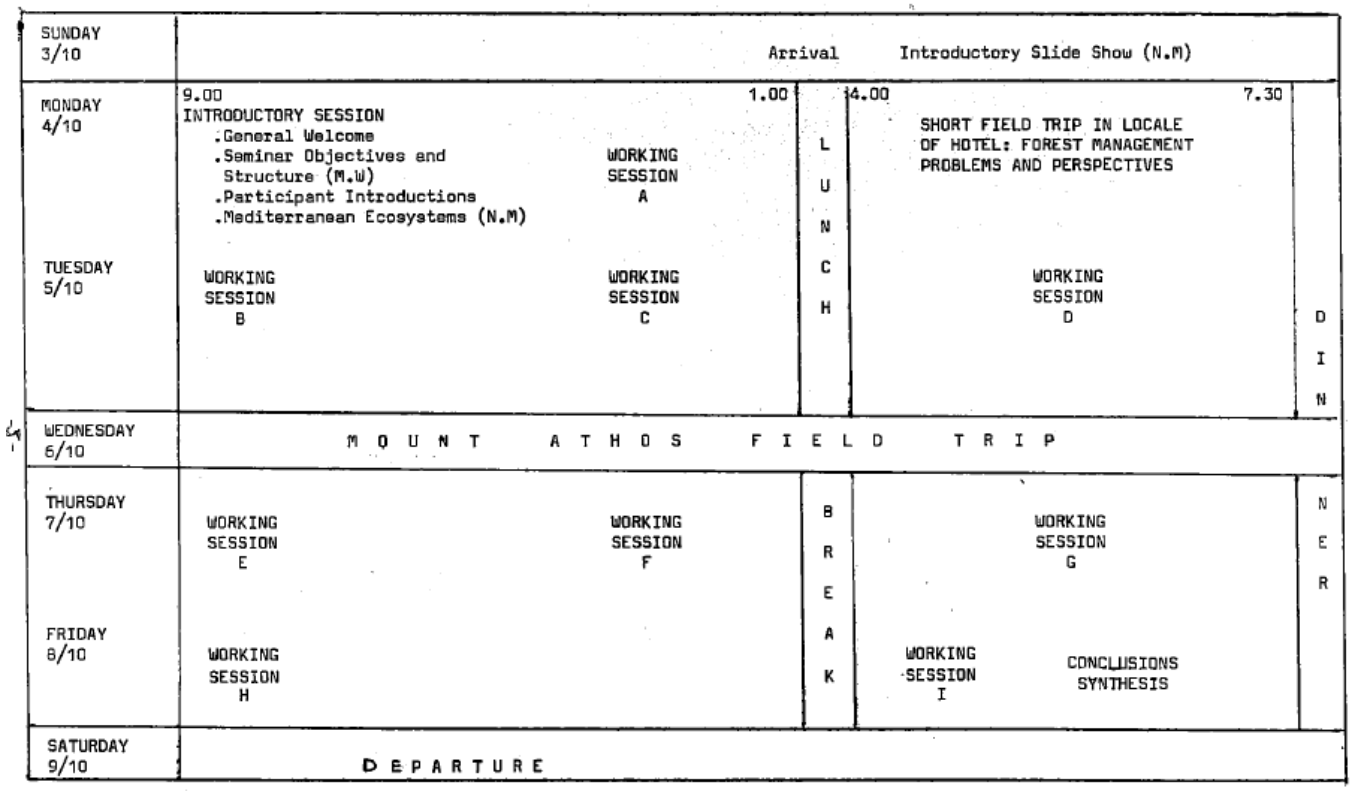


Figure 3. The Seminar Timetable (see in conjunction with figs 1 & 2)

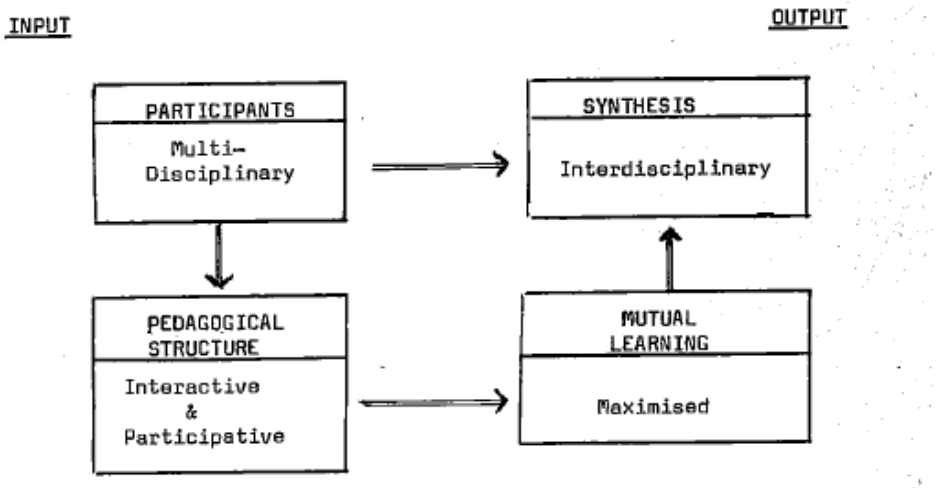


Figure 4. Key Aspects of the RGS Method in the Kassandra Seminar

Phase 2 discussions built upon the Group Report Forms produced in Phase 1, and the make-up of Phase 2 groups (with each member having been in separate groups in Phase 1) encouraged equal consideration of all four Phase 1 reports. Similarly, the Synthesis Groups in session 1 comprised members from each of the Phase 2 groups; and the final presentation of the Synthesis Reports on the four issues showed clearly how the method had allowed - in fact, almost forced - group members to confront and incorporate each other's views and perspectives in their final recommendations for action.

The didactic approach centred on interactive and participative group learning, which seminar members gradually grew accustomed to as the week progressed. Few participants had been involved in this type of intensive group work before, and, as is usually the case in such circumstances, one or two doubts were voiced in the initial stages. 'Why are we doing it this way?' and 'How should we start in the group discussions?' were both heard on the first day, as one or two participants studied the course programme and came up with suggestions for changes to the time-table later on in the week, asking for more plenaries and open discussions.

This negative reaction was, in fact, extremely mild, and by the second day just about everyone was beginning to

realise that the system could work, and was working, resulting in a very productive series of discussions with a high output which was consolidated and built-upon in stages. An added bonus here was that participants were having to learn how to manage intensive group discussions, produce a comprehensive Group Report within a limited period (normally about l½ hours) and then present it to the rest of the seminar members. Each group took it in turns to lead with a formal 'panel' presentation of their findings, and then the other groups either formally presented their report or entered into more informal discussion. This whole experience of giving and receiving information, and attempting to shape and then explain a consensus report from within each group was (in the writer's opinion) of the utmost significance, and seminar members deserve credit for the spirit and enthusiasm with which this was carried out.

It was, however, inherent in the RGS method that mutual learning should be maximized. So often at seminars and conferences, it is the lowest common denominator amongst participants which determines the level of learning. Here, the seminar was structured to provide a framework wherein participants' level of understanding could be 'pulled up' rather than 'dragged down'. Several factors contributed to this: groups were under pressure to achieve a 'meeting of minds' within a limited time period; the group composition was continually changing from session to session; and group output was formally recorded, circulated and stored for future reference by all seminar members,

This last point emphasises the critical importance of effective and efficient technical back-up services. As group reports were produced, they were typed almost instantly, returned for checking and correction, and then photocopied and circulated to all participants. This helped ensure the smooth running of the seminar; without such co-operation, consequent delays and subsequent frustration would have put the success of the seminar in jeopardy.

Finally, some brief comments on the Synthesis Group Report Forms are perhaps appropriate. It is these four reports which summarise the collective output from the seminar, with each report representing a synthesis of the four reports produced for each issue in Phase 2. A certain amount of editing end correction has been done by the author since the seminar, but they remain in essence as presented in Kassandra. They are included in Section 4 as one report, but appear in their original Group Report Form style in Appendix 2. These reports contain a number of positive recommendations for action encompassing a wide range of activities relating to forestry management in Mediterranean Ecosystems. It remains to be seen if they are published, quoted, referred to, or used as the basis for action, in subsequent work in the field.

4. Synthesis of Recommendations from the Kassandra Seminar

The following set of recommendations for Forest Management and Biomass Utilization was given general support by the Kassandra seminar, and represents the collective output of seminar members. Some editing and paraphrasing has been undertaken by the author of this volume and readers are referred to Appendix 2 for the original full reports.

Kassandra Interdisciplinary Seminar on Forest Management and Biomass Utilization
Summary of Recommendations

Fire, wood harvesting and alternative biomass usage

General Introduction

1. Greece has a negative balance of payments for energy, forest products and meat-livestock feed.
2. Maquis represent 2,500,000 ha or 20% of the surface area of Greece. The sustained production is 2 tons/ha/year or 5,000,000 tons/year. The energy equivalent is 2.6 barrels of oil.ton^{-1} maquis. If 40% of the maquis is harvestable, the energy yield could be the equivalent of 2,600,000 barrels of oil or a value of about 91,000,000 US $ (at 1982 prices).
3. Presently most of this energy is lost in wildfire, and what is not lost through fire is only partly used. Especially underdeveloped are the uses of biomass from maquis for industrial primary materials.
4. Maquis also represents an important actual and potential resource for husbandry and an important instrument for watershed management in extensive areas of all Mediterranean climate countries where erosion and floods are major natural hazards.
5. The development of a domestic energy source would create local industries and jobs. The total economic effect on the local economy would be larger than the 91,000,000 US$ value of the energy because of economic multiplier effects and positive externalities.
6. The development of a domestic raw material source for industry. and husbandry would have similar economic effects and may be developed in parallel to a policy to use biomass for energy, to face longer term needs.
7. The criteria that should be taken into consideration for successful management of natural systems include:
   a) available scientific knowledge;
   b) available technologies;

c) the administrative, economic and social background;
d) a global integrated plan for land uses based on a national land Register;
e) national priorities corresponding to social and economic needs regarding maquis biomass energetics and organics, and maquis environments.

Recommendations for Greece

1. Inventories of existing biomass resources need to be completed. The inventory should be carried out in coordination with the national land register, and should include data such as productivity, standing crop, species composition, slope and aspect, and current usage of the resource. Inventory by slope should be emphasized because of implications for watershed management and difficulty of harvesting. This information is important in decisions concerning competing uses for natural biomass. These inventories should use modern survey techniques.
2. Demonstration projects using maquis biomass should be established on a pilot scale, involving public authorities and private enterprises in a cooperative effort to assess the advantages of diffusing the results to the wider public. Tax and financial incentives for such projects are currently available in most Mediterranean countries. As an example, the feasibility of establishing a chipper and densifier in conjunction with a utility, where the wood product would be utilized for heating, could be explored. In most cases the necessary public financial support is relatively modest.
3. The ecological effects of harvesting maquis and forest biomass for the above uses should be monitored and the relevant scientific data assessed. In particular, the determination of the carrying capacity for goats or sheep should be determined after harvesting in order to achieve optimal use of the resource, including the use of harvested maquis biomass after appropriate transformation to animal feed.
4. Using the above information, socio-economic assessment should be completed to evaluate the relative benefits and costs of the mentioned projects.
5. Management practices in phryganic ecosystems must be related to the stage of their development. Three main stages can be discerned:
   a) Degraded stage: coming from maquis and/or forests due to the combination of fire and overgrazing. This kind of phrygana is found usually in the western part of Greece and especially in Eypirus where phlometum communities dominate. The best kind of management there is to forbid grazing. In this case a deciduous forest dominated by Quercus macrolepis will appear since seedlings of this species are very abundant there and they are eaten and/or trampled by the grazing animals.
   b) Successional stage, following abandoned fields. This stage is usually just before the maquis appearance. The best way to manage them is to "help" maquis establishment, and more research must be done in order to understand ways of germination and improvement concerning species like Pistacia, Arbutus etc.
   c) Climax stage, which can be found in semi-arid areas like the Cyclades islands in Greece. The best way to improve the economic output is to try to find new ways of management using "new" type crops with special features like aromatic, medicinal, hydrocarbon producing plants like Euphorbiaceae, etc.
   d) Direct financial support by the Greek government and/or International Organisations is required to carry out the above objectives. In addition, the Greek government can play a pivotal role in encouraging interdisciplinary and interagency cooperation by establishing related projects.
   e) If use of the maquis proves feasible, the Greek government as well as other interested governments and international agencies can facilitate joint ventures through appropriate tax incentives to private enterprises, and through a comprehensive educational program.

Tourism, recreation and conservation

General Introduction

1. Part of effective land management is to co-ordinate tourist development with a balanced utilization of forest/maquis/phryganic ecosystems. Tourist development and recreation may, or may not, involve the active and direct use of these resources. In any case it is likely these activities will impinge in some way on the functioning of Mediterranean ecosystems. The continued existence of tourism demands careful environmental management.
2. Actual tourist patterns are seasonal and concentrate on coastal resorts. Infrastructures and investments are thus under used, whilst tourism has negative environmental impacts in the areas. Thresholds may be reached after which tourism can collapse.
3. Mass seasonal tourism and urban recreation demand can be adapted and extended to encompass a range of eco-tourism activities. This could include the incorporation of ecological information in present day tourist literature

and guide training programmes.

4. Eco-tourism is of particular potential and promise because it can be economically viable, ecologically and culturally acceptable, and fulfil educational objectives. Vast new areas exist in the Mediterranean for such exploitation. Few infrastructures or specific policies have been developed in Mediterranean countries to harness the potential of new opportunities and demands for sea-tourism and recreation.

Recommendations

1. In areas of high tourist and recreational activities, where most of the major infrastructures exist, particular attention should be given to the management and protection of existing natural resources through appropriate national and local policies, including effective land use planning and control.
2. An inventory of available natural resources-and sites best suited to eco-tourism activities should be established at a national level, and diffused to potential users through the national tourism organizations. (Natural Parks and reserves are some of these resources, but eco-tourism should not be limited to only these).
3. Schemes to develop adapted infrastructures for this type of eco-tourism, (such as eco-hotels, nature trails etc.) should be devised (through appropriate R&D and financing) to bring into being amenities that will cater for identified needs.
4. The hotels and amenities located in selected sites should be provided with appropriate information materials on surrounding natural resources, and guides should be trained to assist visitors. (Information activities should involve scientists and students in the field and volunteer environmentalists).
5. Local populations should be involved whenever possible in the development of eco-tourism, thereby enhancing their environmental awareness end increase economic benefits. Service cooperatives in the functioning of (Eco) hotels, and in the diffusion of information and education, could be promoted as a specific form of local population involvement in (eco) tourism.
6. Agro-tourism has potential but serious problems as suggested by experience in France and Spain. Agro-tourism may be combined with environmental education and such activities as harvest festivals.
7. Conservation: If large scale exploitation of maquis, forest and phrygana is to be carried out, there must be provision for the conservation of suitable control areas, so that the impact of the management practices can be measured. These areas could simultaneously serve research educational, and aesthetic needs.
8. The ecological and aesthetic problems of second/weekend house development needs careful analysis and consideration. Disturbance of maquis forest and phrygana ecosystems frequently follows such development with consequent degradation.
9. To monitor the degree and nature of tourism impacts on the environment in general in Mediterranean ecosystems, a monitoring center should be set up with the following objectives:

    a) monitor the environment by region and areas (e.g. coast lines, parks, and other recreational areas).
    b) develop and record operational indicators of pollution (such as those being developed by MEDEAS). This center could form part of the suggested experimental research station as proposed in the UNESCO's Skopelos and Taormina meetings.
    c) to advise intergovernmental agencies in the Mediterranean Basin on legislation and general policy measures.

Agricultural and pastoral practices

General Consideration

Optimal distribution of capital, labour, land and water use between forest, maquis and phrygana management and agricultural/pastoral practices should be established. This optimization would be dependent on requirements for food, energy and organics and on the available resources (vegetation, water etc.).

The Modelling Approach

A model is proposed to achieve this optimal distribution. The model would require actual and experimental data including ecological information, water balance of Mediterranean ecosystems and land inventory with ownership identified.

Parametrization of the model will depend on governmental decisions concerning national and regional sufficiency vs. economic participation in a global economy. The group felt that modelling is a valid but relatively expensive technique to answer complicated questions of optimization.

Specific Considerations

1. Management of maguis

Rangelands are increasing in area in certain parts of Greece and other Mediterranean countries following the abandonment of marginal agricultural land, but are decreasing in the more accessible and populated areas due to their transformation into agricultural, urban, industrial, and the built land of resort areas.

In order to preserve part of the natural systems, agro-pastoral practices should be limited in specific parts of these areas where a rotational system of grazing and biomass utilization (both energetic and organic) should be adopted.

Energy plantations could be created on marginal agricultural land to supplement natural biomass in areas where this is being harvested. The possibility that abandoned agricultural land could be planted to timber producing trees should also be considered, A major issue in maquis systems management is that of water- sheds and water resources. This is of primary importance to agriculture and allows for control of flood hazards and erosion.

2. Grazing

Increasing demand for meat and dairy products puts pressure on the use of natural rangelands, a large proportion of which is constituted of maquis and phrygana. Non-traditional, native species (such as black pigs, red deer, wild goats) could be considered for their high value in meat production and capability to grow in semi-wild conditions; the carrying capacity of the systems to be grazed should be established.

Additional sources of feed for livestock should be developed. Particularly attractive would be the production of novel feed sources, produced from maquis biomass or agricultural residue and supplemented with inexpensive nitrogen sources.

3. Management of agricultural lands

Traditional agricultural practices must be continually re-evaluated to determine their appropriateness in the modern context.

4. Agrotourism

National policies could be devised to encourage the cooperation of volunteer help of agro-tourists to farmers, pastoralists, fishermen etc.

Such an organized activity would not only help farmers to overcome the effects of price fluctuations of certain less profitable crops (as olives) but also constitute a valid pedagogical experience for the young agro-tourists in better understanding the social and cultural life of that World.

5. Bio-agriculture

There is an increasing demand for vegetables and foods produced by bio-agricultural techniques i.e. without chemical fertilizers and pesticides.

This bio-agriculture should be encouraged and its techniques and practices diffused. Demonstration experiments could be conducted in conjunction with eco-hotels where cooperation among eco-tourists, local farmers and the general public should be encouraged. Experiments could be realized, in which maquis biomass harvesting takes place in order to utilize the fertilizing potentials of the biomass, such as compost.

Maquis vegetation properties should be explored in order to assess the potentials in producing biologically sound pesticides and other valuable by-products.

Administrative and technical aspects

Introduction

The group discussion emphasized that scientists work in a social and economic context, which imposes responsibilities and constraints. This must be recognized. Specifically for Greece, these facts must be taken into account:

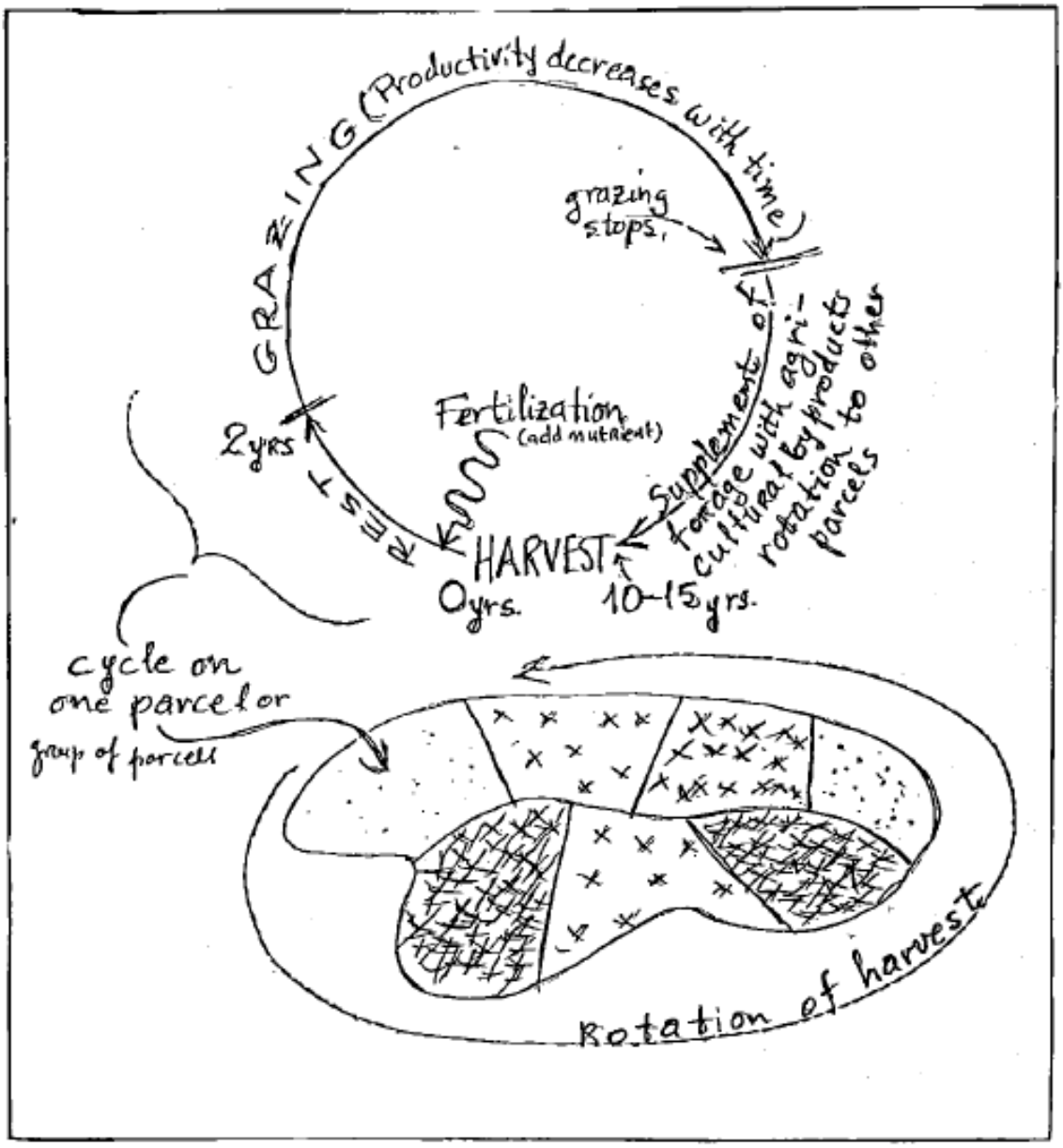
a) Public and Local Administration, through both legislation and civil servants, play a key role in all management activities and policies relating to natural systems.
b) The forests, maquis and phrygana systems of Greece are owned by the state, municipalities and church property organizations. There also exist numerous local customary rights relating to pasturing and to the collection of forest products.
c) New national policy aiming at decentralizing administration at the regional and local level will be soon legislated and subsequently implemented. The new framework of decentralized administration will affect directly all issues with respect to forest management and biomass administration.

Cooperative Research through a Demonstration Project

It seems apparent that:

1. An important goal of ecological research is to convince the government and public of the value of innovative basic research. To accomplish this it must be shown that basic research leads to worthwhile applications. Critical parts of the process which lead from new ideas to practical solutions are communication and cooperation among researchers, politicians, land managers, and local people. This is not an easy thing to achieve, but the demonstration project seems a promising means of bringing diverse interests together.

Proposed Rotational System of Grazing and Biomass Utilisation



2. There is general agreement that a demonstration project for biomass harvest in the maquis of Greece would be valuable both for the specific results that could be obtained, and as a kind of pilot project showing how a variety of groups can work together.
3. We therefore recommend a three phase demonstration project as follows:
   Phase 1: Research.

A research team of biologists and foresters design the project and select the area for the experiment. The basic research needed is outlined and begun. An advisory committee made up of managers (e.g. regional foresters) and local people (e.g. mayors, farmers, etc.) is set up, and kept informed of developments on the project and asked for suggestions regarding practical applications.

Phase 2: Transitional (Research-Technological)

Assuming that the results are encouraging, the next phase continues basic research but includes increasing emphasis on the technological aspects such as testing of harvesting machinery and densification equipment. Researchers organize short courses, workshops, and training sessions to educate managers at all levels about the proposed harvest plan.

Phase 3. Full Implementation.

An appropriate agency, possibly a new one created by special legislation (made possible perhaps by the expected changes in govern- mental organization), takes over the demonstration project. The degree of involvement of scientists is reduced to advise and counsel.

Decentralization

It is generally accepted that in the present period of the ecological crisis, management of biomass systems is outmoded, inappropriate and generally lacking in overall direction. This management is based on an overcentralized administration, which lacks in expertise and imagination and, therefore, is incapable to stop degradation of the environment in Greece. A network of decentralized administrative structures (regional environmental offices), based, at first, on existing forestry services is recommended. These offices will be responsible for the administration of environmental, regional planning, non-agricultural biomass and land use issues, and for the implementation of the region's strategies in relation to the national environmental policy and legislation. Interdisciplinary and interagency communication must be encouraged and these offices should be staffed on an interdisciplinary basis. Information services, ecological education, research technology, administration of biomass utilization projects and training should be also decentralized to the regional level and put under the immediate supervision of these offices.

Research Policy

It was agreed by the group that there is an intensive and accelerated need for cooperative research on structure, function and management of natural ecosystems, promoted and supported through governmental policy.

It was pointed out that the applied character of this research should not conceal the necessity for more basic research in these fields. For example much can be still studied concerning the nutrient cycling in maquis ecosystems, in order to be applied to harvesting. On the other hand, it has been stated that special emphasis must be given to International cooperation between researchers, which it would be desirable to have under the auspices of UNESCO and other interested organisations.

Information

The group agreed that the creation of a communication network, involving information service, education, research, international cooperation, and regional authorities, is a prerequisite for the efficient management of mediterranean-type ecosystems. Specific recommendations included:

a) the use of local offices for collection of required data; vegetation maps for Greece was pointed out as an example of vital missing information.
b) the adoption of easily accessible computerized systems.
c) the dissemination of information to the public through the mass media and directly through the training of school ·teachers, for example.
d) the organization of seminars, workshops, etc., (e.g. through UNESCO) to examine the specific problems arising in this process.
e) the training of information specialists and regional planners with an understanding of biological resources.

5. Guidelines for the Use of the Rotational Group Systems Method in Training & Research Seminars

This section sets out some simple ground rules for the preparation and operation of research and training seminars using the Rotational Group Systems (RGS) method employed in the Kassandra seminar. It is this type of guidance, then, that might be included in a UNESCO guide for Interdisciplinary Research Methods along with similar guidance for the use of other methods such as those included in the Handbook (Preliminary Version)[1] compiled in 1981. The presentation format used here might also be used as a model for use in a wider-ranging guide.

M.G. Wynn. 'Handbook on Interdisciplinary Research Methods - Preliminary Version' UNESCO, Division of Human Settlement & Socio-Cultural Environments, Paris, 1981.

Rotational Group Systems

What is the RGS Method?

- The RGS Method provides a framework for interdisciplinary learning and exchange which harnesses different participant perspectives on selected, issues and topics.
- The RGS Method features intensive group discussion and debate, involving participative interaction between group members.
- Group composition is continually changing from session to session, thereby providing maximum opportunity for participant exposure to the full range of disciplinary perspectives represented in the seminar.

When to use the RGS Method?

- The RGS Method is especially designed for classroom-based seminars, although other modules, featuring field trips or gaming simulation for example, may be used in conjunction with the method.
- Participants are divided into groups of 3-5 people each, there being up to 5 groups. Total participant numbers should thus be between 9 and 25, with 16 being the optimum number (i.e. 4 groups of 4 people each).
- The seminar is likely to be most productive if its general theme encompasses certain contentious issues and touches upon knowledge and information relating to a number of different disciplines. At the same time, this range of disciplines should be represented by participants attending the seminar.

How to Prepare for an RGS Seminar?

- Assign participants group letters and numbers. One way of doing this is to divide participants into four or so main groups randomly, giving each group a letter - A, B, C, D etc. Then randomly assign a number to each group member, using number 1, 2, 3, 4 etc. Participant numbers (A_1-A_4, B_1-B_4, C_1-C_4, D_1-D_4 etc) can then be displayed on name badges, as below.

C_1
Mrs. A. Davaki
Greece

- Identify a set of major issues relating to the seminar theme. Group work on each issue will typically last 2-3 hours. Each issue may be considered twice, for reasons explained below, and then considered in a final summary session. At the outset, estimate the number of major issues required; as a rough guide, the number of full days (7 hours work) using the RGS method will be the same as the number of issues considered (see below).
- Prepare an issue v group timetable, specifying the members of each. group. Here it is essential to ensure that group members change from session to session and that, as far as possible, group member patterns are not repeated.

No. of Full Days (7 hours worked) Dedicated to the RGS method	No. of issues that can be considered (assuming that each issue is considered twice)
1	1-2
2	2-3
3	3-4
4	4-5
5	5-6
6	6-8
7	7-10
8	8-12

YOUR NUMBER:

A_1	MERINO	GROUP 1
A_2	MARGARIS	
A_3	LAVRENTIADES	
A_4	BOURITSAS	
B_1	WYNN	GROUP 2
B_2	RALLIS	
B_3	ARIANOUTSOU	
B_4	VERNICOS	
C_1	DAVAKI	GROUP 3
C_2	AYALA	
C_3	DIAMANTOPOULOS	
C_4	BONNIER	
D_1	MARINOS	GROUP 4
D_2	SCICLUNA	
D_3	OECHEL	
D_4	ZEDLER	

Group letters/numbers should be randomly assigned

PHASE 1 – TAKING ISSUES APART					
Session		Group Nos. and Mix			
A	ISSUE 1	1 A_1 A_2 / A_3 A_4	2 B_1 B_2 / B_3 B_4	3 C_1 C_2 / C_3 C_4	4 D_1 D_2 / D_3 D_4
B	ISSUE 2	5 A_1 B_2 / C_3 D_4	6 A_2 B_3 / C_4 D_1	7 A_3 B_4 / C_1 D_2	8 A_4 B_1 / C_2 D_3
C	ISSUE 3	9 A_1 B_1 / C_1 D_1	10 A_2 B_2 / C_2 D_2	11 A_3 B_3 / C_3 D_3	12 A_4 B_4 / C_4 D_4
		PHASE 2 – PUTTING RECOMMENDATIONS TOGETHER			
D	ISSUE 1	A_1 B_3 / C_2 D_4	A_2 B_4 / C_3 D_1	A_3 B_1 / C_4 D_2	A_4 B_2 / C_1 D_3
E	ISSUE 2	A_1 A_2 / B_4 C_2	B_2 A_3 / C_4 B_1	C_3 D_1 / D_2 A_4	D_4 B_3 / C_1 D_3
F	ISSUE 3	A_1 B_2 / C_3 D_4	A_2 B_1 / C_4 D_3	A_3 B_4 / C_1 D_2	A_4 B_3 / C_2 D_1
G	SYNTHESIS	A_1 B_4 C_1 / C_4 D_3 D_2 (ISSUE 1)		A_3 B_3 B_2 / C_3 D_4 (ISSUE 2)	A_4 B_1 A_2 / C_2 D_1 (ISSUE 3)

- Issues may be considered twice by all participants. In Phase One of the seminar, participants will be in a group which will be asked to 'open up' the issue and 'take apart' related problems (i.e. specify components of the issue; establish factual data; conceptualize on the processes involved). In Phase Two, the participants will be asked to 'put together' recommendations, proposals for action etc. using the reports produced in Phase One. Try to ensure that Representatives from all four Phase One groups are included in each of the Phase Two groups. The table below shows a typical timetable, for a three-day course with 20 participants (see also the Kassandra course timetable).
- It should be noted that the two-phase system described above is not always necessary or appropriate; a one-phase system may be used instead, concentrating on, for example, proposals for action.
- It is essential to systematically record the output from different groups, and a supply of Group Report Forms - see overleaf (or equivalent) must be made available.

Tips for Running an R.G.S. Seminar

- As in all courses of this nature, careful preplanning and forethought is of utmost importance.
- Send participants outline information on the major issues to be considered in the seminar, and brief details on the RGS method. It is not necessary to provide detailed explanations of the RGS method to participants.
- Once the seminar is underway, make sure participants are clear in their minds about seminar objectives and procedure. Tasks to be carried out in the initial introductory phase include:
- Assigning group letters and numbers and giving out name badges.
- Arranging the seminar room and checking equipment.
- Explaining the purpose of Group Report Forms and the general structure of the seminar.
- Avoid allowing too much discussion amongst participants as regards the course structure. There are always one or two voices of dissent raised, but stick to your original plan. If preparation has been adequate, there is no reason why the RGS method should not work.
- Nevertheless, be flexible in allowing minor changes in the timetable as regards ending of sessions, lunchbreaks etc.
- Make sure participants are not allowed to 'hide' behind the more dominant group members. Work out a rota for panel presentation of Group Report Forms, so that every participant is made responsible for at least one leading presentation.
- Quick and efficient typing and photocopying services should be on hand. Without these, the continuous circulation of material which is central to the RGS Method is difficult to achieve. If necessary, however, neat longhand and carbon papers may be used as substitutes for typewriter and photocopier.
- The seminar room must be of necessary size to enable free movement of participants about the room. Tables and chairs should be moveable; fixed seats, as in a lecture hall, are a considerable hindrance.
- It is useful to have flip charts, overhead blanks, and coloured pens on hand so that participants may use graphic aids to reinforce their oral panel presentations.
- Flip chart presentations may also be used to clarify the precise objectives and procedure in each phase. The three examples provided overleaf were used in Phases 1, 2 and in the synthesis session in an RGS seminar.

Phase 1

PULLING ISSUES APART

- Factual Data?
- Information Requirements?
- A Set of Relevant Questions?
- Conceptualization of Related Problems?
- Linkages between related Factors or Processes?
- Graphic Presentations?

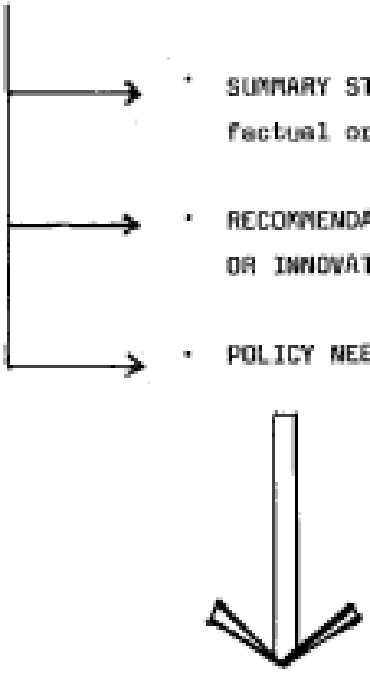
ENTER ON GROUP REPORT FORMS

1-2 PAGES MAXIMUM

PHASE 2

PUTTING RECOMMENDATIONS TOGETHER

Phase 1 Group
Report Forms



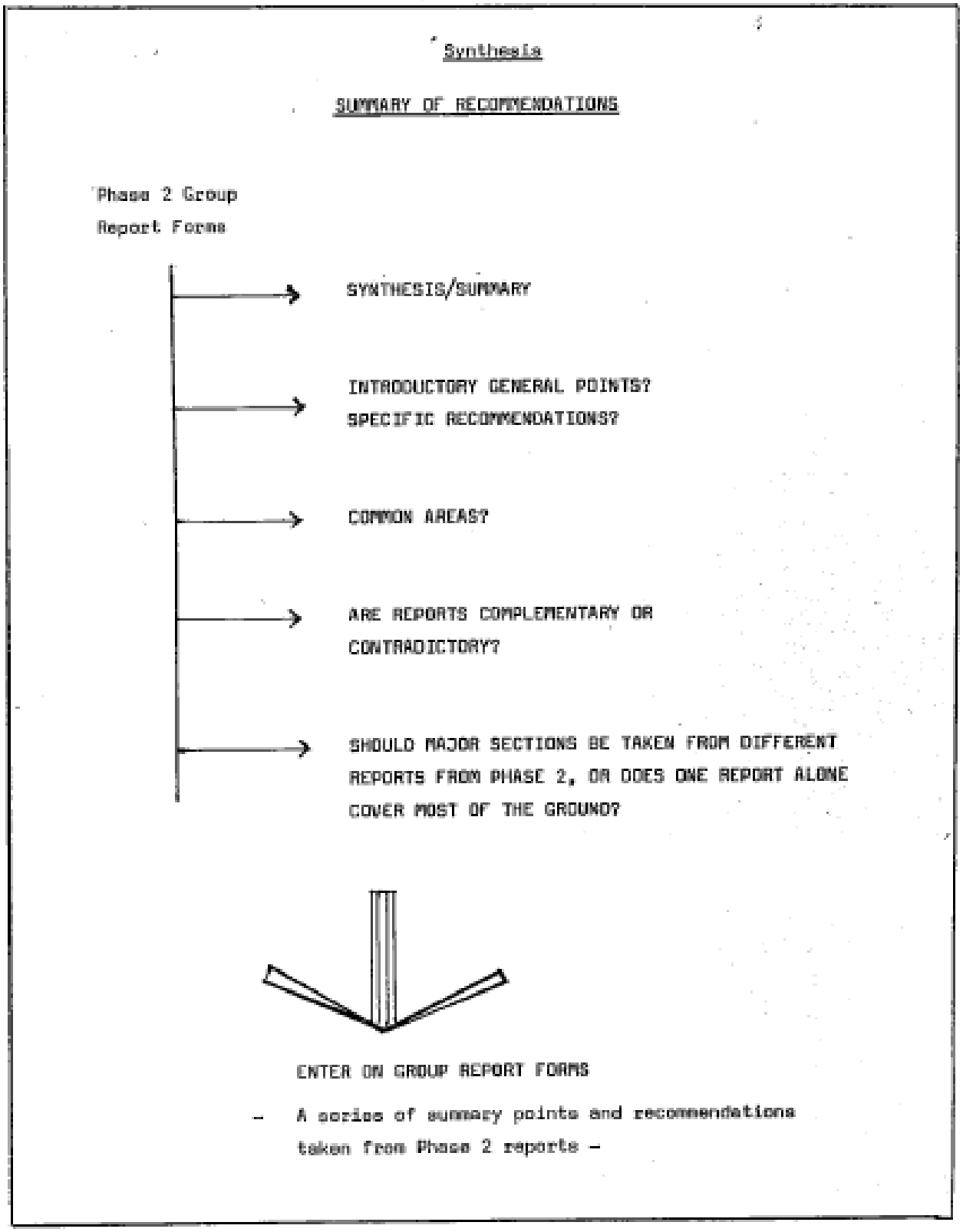
- SUMMARY STATEMENTS (of a conceptual, factual or analytical nature)
- RECOMMENDATIONS FOR ACTION, CHANGE OR INNOVATION
- POLICY NEEDS AND REQUIREMENTS

ENTER ON GROUP REPORT FORMS

1-2 PAGES MAXIMUM

Presentation on Group Report Forms should:

1. _____ - Be in paragraphs (typically 3-8 lines each)
2. _____ - Be concise
3. _____ - Be logical



Appendix 1

List of Participants attending The Kassandra Course

Dr. Margarita Arianoutsou
Laboratory of Ecology
emphasis on Faculty of Physics and Maths.
University of Thessaloniki, Greece
Univ, P.B. 119 - Tel (031) 9912896

-Ecology of Mediterranean-type ecosystems of Greece with special fire-ecology.

Dr. d' Ayala Piergiovanni
Senior Program Specialist
Division of Hyman Settlements and Socio-Cultural Environment
UNESCO, 7 place Fontenoy
Paris 75007, France
Tel, 5771610-ext 5902

Dr. Jean Bonnier
37, Boulevard Perier
Marseille 8
Adresse Postale:
BP 244 13285 Marseille Cedex 8
Telex Sermines Marsl 430152.

-Organization Regionale pour les Etudes de Développement et d'a ménagement.
Secretaire Générale de l'association "Forêt·Méditerraneenne".

Mr. Angelos Bouritsas
18, Tsitouri str.,
Halandri, Athens,Greece
Tel. 6715833

-In service training at the European Communities Office in Athens, responsible for environmental issues.

Mrs. Athena Davaki
Ministry of Physical Planning, Housing and the Environment,
Athens, Greece /Tel 6410242
2A Bouboulinas str.
Kallithea, Athens (home address)

-Librarian-Documentalist
-Responsible for developing a Library for Physical Planning, Town Planning, Environmental Research, Study and Reference, and for establishing a Med. Network and Center for the environment.

Mr. John Diamantopoulos
Laboratory of Ecology Faculty of Physics and Maths
University of Thessaloniki Univ. P.B. 119
Thessaloniki-Greece Tel. (031) 9912896

-Distribution of phrygana
-Remote sending techniques

Prof. George Lavrentiades
39, D. Gounari str.
Tel. 229-296 (Home)
Plant Taxonomy and Plant Geography of the Faculty
of Science University of Thessaloniki
Tel. 991-2403

Prof. N. S, Margaris
Laboratory of Ecology Faculty of Physics and Maths
University of Thessaloniki
Univ. P.B. 119
Thessaloniki- Greece Tel, (031) 9912896

-Ecologv
-Structure and Function and Management of Mediterranean-type ecosystems
-Energy from Biomass

Miss Penny Marinos
National Council for Physical Planning and the
Environment, Secretariat Ministry of National Economy
Zalocosta 1, Athens, Greece Tel: (01) 3606101
Point;
Telex: 6326

-Nature conservation (mainly sea turtles and the Mediterrnean Monk Seal)
-Environmental information (INFOTERRA/UNEP National Focal ENIG/EEC)

Dr. Jose Merino
Assistant Professor of Ecology Department of Ecology
Faculty of Biology
Sevilla-Spain/ Tel. 617011-32

-Plant Ecology
-Ecophysiology
-Land Use

Prof. Walter C. Oechel
Director, Systems Ecology Research Group
San Diego State University
San Diego, Ca 92182 – USA
Tel (714) 265-6613

-Research in mediterranean-type ecosystems on Plant Ecology and ecosystem functions
-Research in tundra
-Research on biomass use in chaparral

Mr. George R. Rallis
21, Dios str.,
Vouliagmeni1 Athens, Greece
Tel. (01) 8960889

-Solar Energy

Dr. Edward Scicluna
Faculty of Management Studies
The University of Malta Msida-Malta
Tel. 36451 ext 287, 251

-Economist (Econometric Modelling)
-Advisor to Government Agencies

Dr. Nicolas Vernicos
15, Lomvardou str., Athens 701 1 Greece
(Greek address)
Tel: (3D1) 6420095
Job tel: (301) 4527812/8D/8l4

-Unesco Consultant
-Economist, economic anthropology, technical aspects of marine pollution

Miss Despina Vokou
Laboratory of Ecology
Faculty of Physics and Maths
University of Thessaloniki
Univ. P.B, 119
Tel. (031) 9912896

-Ecological significance of volatile oil

Dr, Martin Wynn
Department of Gen, Surveying
Faculty of Science, Duncan House,
Stratford, London El5-England
Tel Ol-590-7722 ext, 3342
Tel 0279 815395

-Education/Training/Planning/Urban Geography/Research Methods

Prof. Paul H, Zedler
Biology Department
San Diego State University
San Diego, CA 92182
Tel (714) 265-5386
or message at 265-6767

-Professor of Biology
-Plant Ecology, Plant Population Ecology, Fire-ecology, etc.

Appendix 2

Group Report forms generated in the Kassandra Course

GROUP REPORT FORM

PHASE : 1st

ISSUE : FIRE, WOOD HARVESTING etc.

SESSION : A GROUP NO. : 1 GROUP MEMBERS : A_1 MERINO
A_2 MARGARIS
A_3 LAVRENTIADES
A_4 BOURITSAS

SUMMARY OF MAIN POINTS

1. Can we consider mediterranean-type ecosystems as natural systems from the ecological point of view?
2. Which is the degree of artificiality in these ecosystems?
3. Man-made fires are almost 95% as opposed to natural fires caused by lighting etc. Can we explain above ratios considering adaptive strategies developed by dominant plan and animal species?
4. Why these systems which are possibly suffering from frequent fire attacks are so flamable e.g. resin of Pinus halepensis, ethereal oils of maquis like myrtle and thymus.
5. Collections of wood and resin from forests and maquis decline in number during the last period. Which is the cause and what can be the end-result considering protection of wood from fires?
6. If harvesting is going to be considered seriously, is any type of equipment already available in order to optimize economically this kind of operation?
7. Using above kind of management is possible to create new jobs and to face current economical depression.

GROUP REPORT FORM

PHASE : 1st

ISSUE : FIRE, WOOD HARVESTING etc.

SESSION : A GROUP NO. : 3 GROUP MEMBERS : C_1 DAVAKI
C_2 AYALA
C_3 DIAMANTOPOULOS
C_4 BONNIER

SUMMARY OF MAIN POINTS

Questions:

1. Why should we have biomass useage?
2. Under which conditions?
3. What are the technical means?
4. How feasible?

1. Form of energy readily available and an instrument for capture of the solar energy which might be used in the future anyway.
2. Appropriate Social-Economic, Historical and specific environmental conditions and situation to be assessed in each case.
3. The problem is that with available technology, wood harvesting and alternative biomass usage-with a few exceptions - is not economically feasible.

Products that can come out are:

-Cattle grazing
-Fuel
-Protection of soil
-Recreation
-Biochemical transformation of (Tannins, Colors, Resins, medicinal plants)

4. We do not have enough knowledge to identify the added value of products of the forests in order to increase private and public interest to manage more rationaly the mediterranean forest and recover the costs which are implied.

PHASE : 1

ISSUE :FIRE,WOOD HARVESTING etc.

SESSION : A GROUP NO. : 4 GROUP MEMBERS : D_1, D_2, D_3, D_4

SUMMARY OF MAIN POINTS

Economic aspect of alternative biomass use (D_3)

- In California, costs of harvesting chaparral are relatively low.
- However, usage is low due perhaps to "conservative" thinking of consumers, entrepreneurs bankers and decision makers.
- It would be interesting to study whether the economic agents are actually very rational considering the hidden risks involved (eg. storage, distribution, reliability, loan facilities etc.

Costs and benefits of various management alternatives

Fire

-loss of property and life
-cost of fire suppression
-erosion
-land speculation
-changes of land use
+maintenance of extant ecosystems and possible promotion of nitrogen-fixing plants
+wildlife
changes in management should be slow and accompanied by research.

Wood harvesting

-selective
-clear cutting
+ fire suppression
+ energy conversion
+ increased diversity (flora and fauna)
+ possibility of grazing
±possible changes in plant composition
+lower cost
- positive erosion } immediate
- loss of wildlife }

- = minus
+ = plus

Problem: lack of established uses (non-conventional)

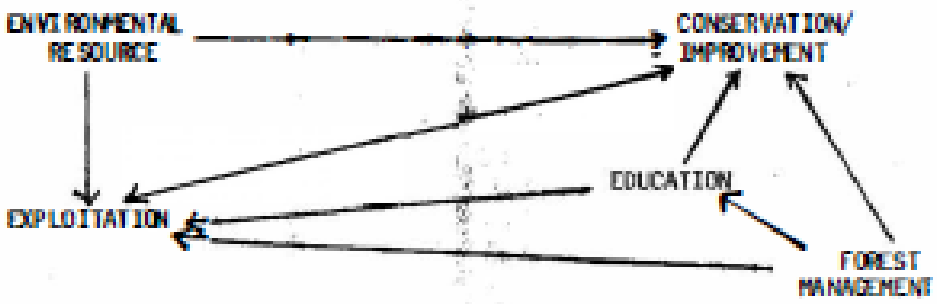
GROUP REPORT FORM

PHASE : 1

ISSUE : TOURISM, RECREATION etc

SESSION : B GROUP NO. : 5 GROUP MEMBERS : A_1, B_1, C_1, D_1

SUMMARY OF MAIN POINTS



Impacts of Tourist and Development (Exploitation of Resource)

Types of Development (today)
- Hotel Complexes, Second Houses, Winter Sports

Where - Coast, Mnt. Uplands

Effects/Process - Clearance, Erosion, Fire Hazards, Plant and Rocks collecting, Trampling Litter, Disturbance of Flora and Fauna, Predation
- Socio-Cultural-effects on attitudes; indirect Socio-cultural (Negative and Positive)

Potential of Different forms of Tourist Development (Mainly Eco-Tourism)

- Natural Trails, Natural Reserves, Study Center, Birdwatchers, Lake-areas (watersports/ fishingers)
- Winter sports
- Need for careful planning, management and co-ordination with other forms of exploitation

CONSERVATION

- Poorly Developed Conceptually(in Greece): Public awareness low
- Need for government initiatives and action co-ordination.

GROUP REPORT FORM

PHASE : 1

ISSUE : TOURISM, RECREATION etc.

SESSION : B GROUP NO. : 6 GROUP MEMBERS : A_2, B_2, C_2, D_2

SUMMARY OF MAIN POINTS

of the quality of available resources and sites best suited for this activity. The hotels should be provided with appropriate information materials and their surrounding natural resources and guides should be trained in the new field in order to assist this special increasing public.
Local population should be associated eventually in the form of service cooperatives in the functioning of Eco-hotels and to the infosmation activities that the eco-hotels could perform e.g. projecting of films, slides, conferences etc., in order to achieve a good integration of tourism activity, environmental awareness and economic benefits.

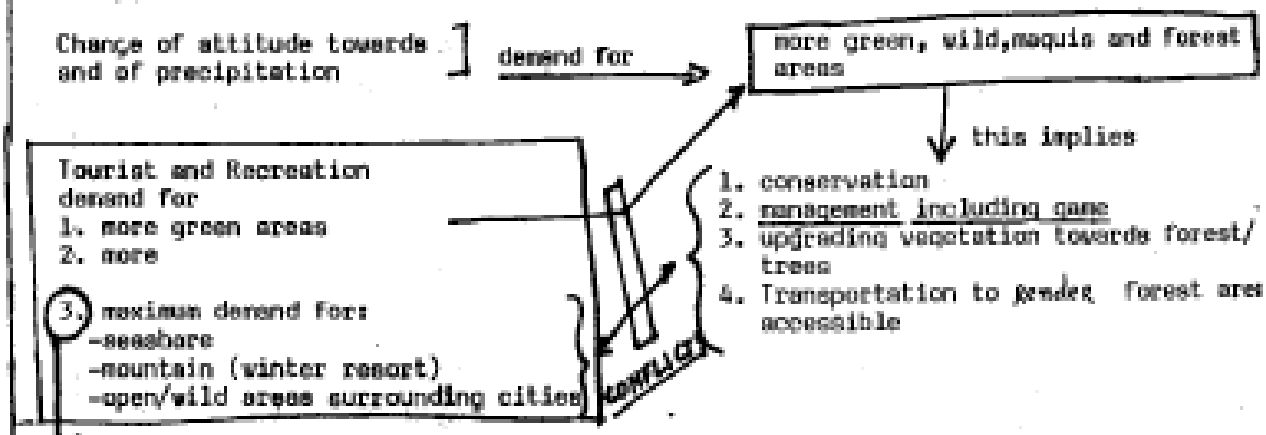
PHASE : 1

ISSUE : TOURISM, RECREATION etc.

SESSION : B GROUP NO. : 6 GROUP MEMBERS : A_4, B_4, C_4, D_4 BOURITSAS VERMICOS BORNIER ZIDLER

SUMMARY OF MAIN POINTS

Need for integrated development combining agriculture, tourism, and wild land management and preservation.



Areas that are most demanded must be managed through

1. zoning of uses (taking into consideration institutional+property constraints)
2. landscape upgrading and preservation
3. harvest/fire of forest+chaparral
4. management of wild life (hunting) and optimal use of biomass

CONFLICTS

- in land uses (agricultural land turned into built tourist areas, fire used to destroy wildlands to allow development).
- in seasonal patterns of land/natural resources use and resources
- accessibility /preservation (road)
- hunting/ecotourism ⟷ preservation of natural cycles

ISSUES AND QUESTIONS

-recreation needs/tree biomass
-emphasis on coastal areas Highpoints
-growing demand for recreational area by urban populations
-for indigenous populations need, greatest crowded cities
-tourist enterprises could use biomass
-major impact is building+roads; public beach and other amenities
-conflict for beaches (e.g. sea turtles, wetlands, birds, etc.)
-tradition in Greece places forest "out of bounds" same is true in Southern France.
-very low use of macchie and phrygana-can this be increased?
-e.g. Camargue: natural habitat is only "a road to the sea"
-accessability by car and availability of parking. The major determinant of land use
-tourism tends to destroy agricultural land before forest land (even if very poor)
-regulation prevent use of forest land, agricultural land is more available(also in France)
-is this a lack of zoning policies? not in France, but in Greece?
-need to preserve cultural sites (cultural heritage)
-need to preserve trad. agriculture but existing agriculture may not be ancient but very recent. Agriculture should be preserved
-collection or private use of the land-involvement of local government in process of development

GROUP REPORT FORM 9/1

PHASE : 1

ISSUE : AGRICULTURAL AND PASTORAL PRACTICES

SESSION : C GROUP NO. : 9 GROUP MEMBERS : A_1, B_2, C_3, D_4

SUMMARY OF MAIN POINTS

1. Consider this propositions: The greatest improvement in agricultural productivity will be achieved by investment in the most productive land.

Examples: introduce irrigation technology etc.

2. BUT- In proposing improvement, respect the traditional agricultural practices of the region and recognize that farmers are rational and will act in their best interest.

3. Other points to consider:

a) use (possibly creation) of breeds of animals that can utilize maquis etc.

b) make efforts to reduce overgrazing of wildlands by agricultural by-products.

c) encourage preservation of wildlands by showing farmers that they can produce useful ergy

d) increase grazing by conversion of existing marginal cropland to high yielding pasture

e) control fires (1981) $1,15X10^6$ olive trees lost, 120,000 fruit trees) consider shelterbelts for reducing fire hazard

f) encourage agro-eco-tourism to build local appreciation of preservation-conservation

g) improve statistical base so that best decisions can be made

h) encourage tourist facilities to use local not imported products.

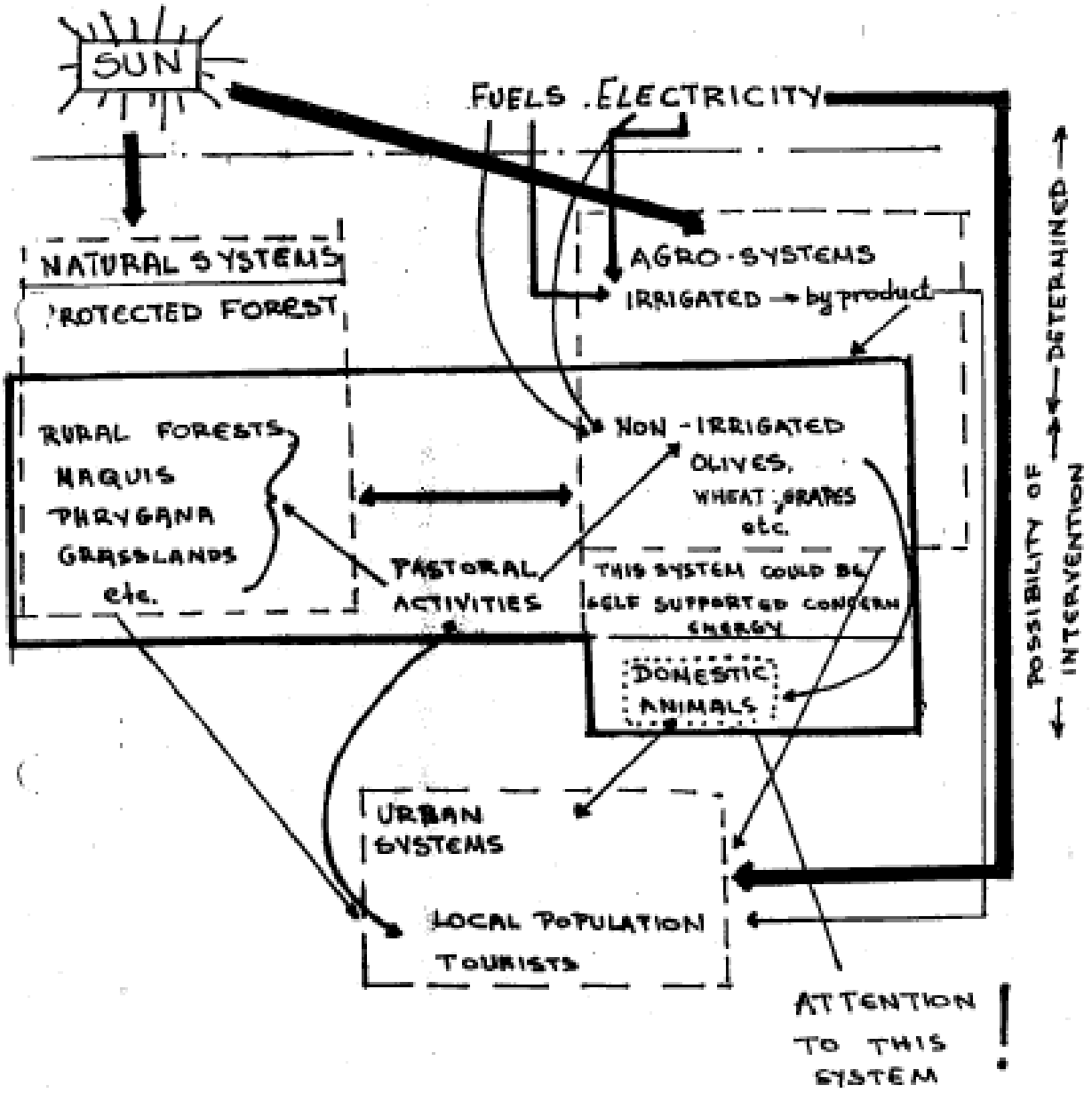
GROUP REPORT FORM

PHASE : 1

ISSUE : AGRICULTURAL AND PASTORAL PRACTICES

SESSION : C GROUP NO. : 10 GROUP MEMBERS : A_2, B_3, C_4, D_1

SUMMARY OF MAIN POINTS



NOTE:

No change can be made to protected forest as well as to irrigated agriculture. These systems can be characterized as determined by the socio-economic point of view

PHASE : 1

ISSUE : AGRICULTURAL, PASTORAL PRACTICES

SESSION : C GROUP NO. : 11 GROUP MEMBERS : A_3, B_4, C_1, D_2

SUMMARY OF MAIN POINTS

CONCEPTUAL SCHEME FOR COMBINED BIO-FUEL PRODUCTION AND LIVESTOCK FARMING FROM BEGGS OF OTHER PERENNIAL CROP. HIGH NUTRIENT FEED IS NOT MANDATORY (BASED ON JUICE EXTRACTION ALONE)

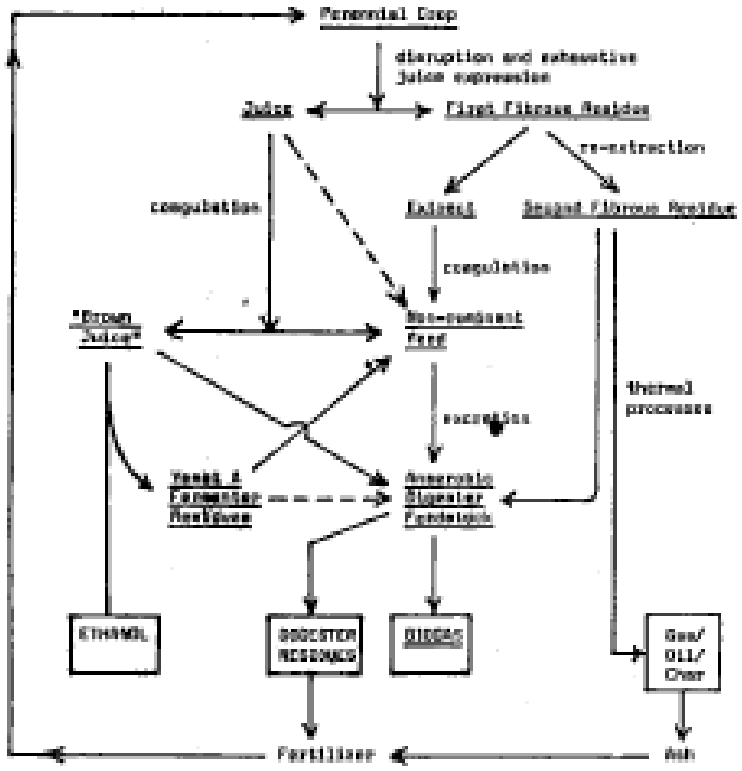


DIAGRAM 1

GROUP REPORT FORM

PHASE : 1

ISSUE : Administrative and Technical Aspects

SESSION : D GROUP NO. : 13 GROUP MEMBERS : A_1 Marino, B_4 Vernicos, C_2 Ayala, D_3 Dechal

SUMMARY OF MAIN POINTS

1. Forestal administrative and technical bodies should be directly associated in the technical innovative issues concerning biomass harvesting and other experimental management practices.

2. A cooperation system among public forestal administration technicians and interested University and polytecnic schools should be established. It is suggested that a Unesco "Human Settlements Managers " training course should be organized associating in the experiment officials and technicians of the central public admindstration Local Authorities and/or techniciens with scientific researchers.
The training/communication experiment should focus on simulated issues related to a pilot project of biomass harvesting and forest management. The results would increase awareness in the participating parties of the multi-sectoral problems involved in the feasibility of such a project. That awareness and the proposed solutions would lead to the effective realization of the pilot project.

3. Using existing mass media, and currently planned environmental broadcasting programs, inform and sensitize the public in forest management issues.

Technical Experiment

There is a need for a technical experiment to test the feasibility of biomass harvesting and biomass use. This should include end product uses and overall economics. Suggested products include animal feed, home heating fuel (possibly densified in Athens) and compost.

GROUP REPORT FORM

PHASE : A

ISSUE : ADMINISTRATIVE AND TECHNICAL ASPECTS

SESSION : D GROUP NO. : 14 GROUP MEMBERS : A_2, B_1, C_3, D_4

SUMMARY OF MAIN POINTS

TECHNICAL ASPECTS

1. REFORESTATION

- Primitive Methodology
  - Destruction of Existing Vegetation prior to replanting.
  - Introduction of Fast Growing Species
- No clear statement of objectives
  - Production or Protection.

2. MAQUIS HARVESTING

- Possibility of Maquis Harvesters (from U.S.) being introduced.
- briquettes for domestic fuel

GROUP REPORT FORM

PHASE : 1

ISSUE :ADMINISTRATIVE AND TECHNICAL ASPECTS

SESSION : D GROUP NO. : 16 GROUP MEMBERS : A_4, B_3, C_1, D_2

SUMMARY OF MAIN POINTS

We have mismanagement of the Environment:

lack of environmental awareness on a global scale

exploitation of world's resources which are not unlimited renewable and non renewable

overcentralization both in population and in management

government policies-catch crop policies

In order to have better management (optimized) better-full use of our resources

We need information existing environmental data, historical data, Eros Sector Data

To be made available collect, store, disseminate through existing technology

Researchers, Legislators, Administrators

Continued Research will support

So that: Appropriate Legislation to be introduced, passed, acted upon

Result in:

education

better environmental awareness

Information about what efforts have been already undertaken in the field by administrations or volunteer organizations...

decentralization of administration - and population

Local authority:: assuming responsibility and forcing the law in a conscious way

Effective/ Optimal Environmental Management Preservation

Better Use of existing resources while protecting the environment

Will lead to management of the adequate environment

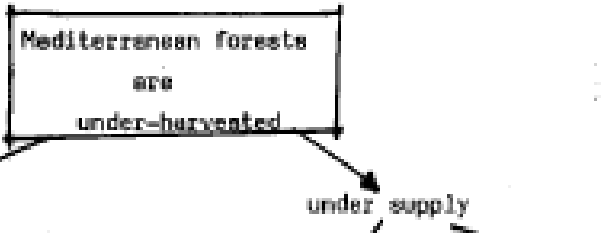
GROUP REPORT FORM

PHASE : 2

ISSUE : FIRE, WOOD HARVESTING etc.

SESSION : E GROUP NO. : 17 GROUP MEMBERS : A_1, B_3, C_4, D_2

SUMMARY OF MAIN POINTS



Recommend:
1. Real cost of non-renewable sources of energy should be reflected in the price.
2. Consumers should be informed of the alternative sources of energy (e.g. wood, maquis)
3. Relatively cheaper sources of energy would not be utilized unless consumers are not encouraged (by subsidies) to change their long-life expensive equipment (e.g. heating equipment) which handles the new source
4. Encourage Harvesting
   - legislation
   - subsidization
   - nationalization/privatization

Recommend: These educational institutions should be interconnected through the exchange of staff and students under the general framework of the Mediterranean.

PHASE : 2

ISSUE : FIRE, WOOD HARVESTING etc.

SESSION : E GROUP NO. : 18 GROUP MEMBERS : A_2, B_4, C_1, D_3

SUMMARY OF MAIN POINTS

could be completed using field measurements , land-sat imagery and aerial photographs, and achieved information.
2. Demonstration projects using maquis biomass should be established as soon as possible. Two possibilities on a small such harvesting project in conjuction with a co-generation plant producting electricity and space heating. The private sector could be involved perhaps in the form of a project with a new industrial or service utility, which would utilize the energy produced. Tax incentives are available for such an enterprise. A second possibility would be the establishment of a chipper and densifier conjuction with a town where the wood product would be utilized for home heating. In either case, the public funds needed are viewed to be small, perhaps in the order of 4,000,000 drs.
3. The demonstration project should include basic ecological research on the effect of biomass harvesting approaches and techniques in the structure and function of maquis ecosystems.
4. The demonstration project should experimentally explore optimal use of the resource. This would include determining the carrying capacity following harvesting for goats and/or sheeps. Also to be considered is the possible use of maquis as a feedstock for sheep and goats.
Using the above information, social economic assesment should be completed which would evaluate the relative benefits of use of maquis for biomass for energy, conversion to forests for wood production, grazing, and for production of an alternative animal feed.

NEEDS AND REQUIREMENTS TO IMPLEMENT RECOMMENDATION

1. Direct financial support by the Greek government and/or International Organizations is required to carry out the above projects. In addition the Greek government can play a pivotal role in encouraging interdisciplinary and interagency cooperation in establishing these projects.
2. If use of the maquis proves feasible, the Greek government can facilitate cumm through appropriate tax incentives to private enterprise and through a comprehensive educational program.

IMPROVING THE ECONOMIC OUTPUT IN PHRYGANIC ECOSYSTEMS

Concerning with the management practices which must be undertaken in order to improve the situation in phryganic ecosytems the following points must receive attention
First phryganic ecosystems can be discerned in the following three kategories according to their origin:
1. Degraded stage coming from maquis and/or forests due to the combination of fire and overgrazing. This kind of phrygana is found usually in the western part of Greece and especially in Hyperous where phlometum communities dominate. The best kind of management there is order to improve the whole situation is to forbid grazing activity. In this case a decidous forest dominated by Quercus macrolepis will appear since seadlings of this species are very abundant there and they are eaten and/or trampled by the grazing animals.
2. Successional stage following abandoned of old fields. This stage is usually just before the maquis appearance. The best way to manage them is to "help" maquis establishment and more research must be done in order to understand ways of germination and improvement concerning with species like Pistacia, Arbutus etc.
3. Climax stage which can be found at the semi-arid areas like Cycladen islands in Greece. The best way to improve the economic output is to try to find new ways of management using "new" type crops with special futures like aromatic, pharmeceutical , oil-producing plants like euphorbiaceae etc.

GROUP REPORT FORM

PHASE : 2

ISSUE : FIRE, WOOD HARVESTING etc.

SESSION : E GROUP NO. : 20 GROUP MEMBERS : A_4, B_2, C_3, D_1

SUMMARY OF MAIN POINTS

Biological and climatic conditions in Greece as well as human factors are causes of uncontrolled fires which constitute a threat to wildlife and lead to loss of property and life.

Management is necessary to control natural and man-made fires and to utilize a potentially important source of energy.

National forestry policy in Greece should be conceived as part of the natural resources policy. Guidelines for alternative uses of biomass should not be limited to reforestation.

Alternative biomass management such as harvesting has been proved more efficient, less expensive and ecologically sounder than reforestation which is used to meet only conventional recreational demand.

Natural regeneration is much more efficient than was commonly thought, provided grazing is controlled.

Harvesting maquis, in California for instance, appears to be economically feasible and efforts should therefore be made to convince consumers about the rationality of producing energy from biomass.

Technological and feasibility studies for other uses of biomass such as paper and pulp production are incomplete and it is thus difficult to make rational proposals at this stage.

GROUP REPORT FORM 21/1

PHASE : 2

ISSUE :TOURISM, RECREATION etc.

SESSION : F GROUP NO. : 21 GROUP MEMBERS : A_2, A_1, C_4, D_3

SUMMARY OF MAIN POINTS

I INTRODUCTION

Comparing mediterranean-type ecosystems with northern ecosystem-types like deciduous and/or coniferous forest we can see that much more plant and animal species (e.g. diversity) are present. If we compare Germany with Greece although the vegetation is more developed in the first the number of species is almost three times more in the second. On the other hand we are now at a time when ecological life type as well as wild life observerers, ecological association movements and even parties are growing up with an enormous speed. That means both high political pressure as well as attention to the new ways of life. The second directs also to the new type of tourism which is developing from people accepting the high values of this way of life. Every year more and more people are coming to Greece in order to observe the birds of the Evros Delta, the wild flowers of the Olympus, the Gorge of Samaria and the sea turtles of Zakynthos. It seems for sure that a high demand will be developed in the near future and the people involving in the touristic business are already aware. On the other hand many problems must be solved before groging this type of activity. Carefull inventories as well as production of booklets describing and drawing the attention of eco-tourist to special features of the areas we plan to develop, is a prerequest in order to optimize the whole activity.

II. RECOMMENDATIONS FOR ACTION

A. Harvesting effects on tourism and recreation

The goal is to maximize thepositive effect on tourism maquis biomass and to minimize the negative effect. Several suggestions are made to accomplish this.
Harvesting for biomass will increase penetrability of the maquis to tourists and recreationists. To maximize this benefit, some biomass harvesting should be conducted near tourist centers and in areas of exceptional ecological interest and scenic appeal.
Campgrounds and self guiding trails should be established in hause areas,
Wildlife and wild flowers will increase after harvesting. To increase the effect on tourism aggressive advertising campaigne should be mounted in Europe and abroad.
Following the South Africa model posters and tourist information should feature the wild flowers and wild life and areas of special interest should be identified. To expand the tourist season, emphasis should be placed on the spring profusion of wild flowers.
The Universities should serve as a major source of trained personnel. To act as tour guides and advisors, and new courses on the natural history of Greece and on ecotourism should be developed.
To minimize the negative visual impact of harvesting on ecotourism, the border of harvested areas should be sculptured . Straight lines should be avoided and harvesting patterns should be visually and ecologicallly compatable with the landscape.
Care should be exercised in selecting sites to be harvested and the appropriate methods used in order to avoid negative effects on species diversity, slope stability and water quality.

III. EFFECTS ON CONSERVATION

To maximize the positive effects of harvesting on conservation the following conditions must be satisfied:

A. The rate of harvesting should be controlled so that the maquis are kept as maquis
B. The variability of niches can be next at a high level by a carefully prepared harvesting program.
C. The risk of fires can be further diminished by keeping the amount of biomass removed as big as possible, within the otherwise set limits, and its distribution as sparse as possible.
D. The ideas of conservation should be "planted", spread and propagated in the public using educators, mass media, etc. (NOTE: if appropriately planned, eco-tourism could help, as a positive feedback mechanism, for this purpose).
E. The number of species requiring fire should be studied, the effects of harvesting on them analyzed and the combination of harvesting along with controlled burning examined as a possible solution.
F. The age of the older stands will be increased by keeping the harvesting rate as low as possible within the above set limits; finally

GROUP REPORT FORM

PHASE : 2

ISSUE : TOURISM, RECREATION, CONSERVATION

SESSION : F GROUP NO. : 22 GROUP MEMBERS : B_1, D_4, B_2, C_3

SUMMARY OF MAIN POINTS

1. Part of effective land management is to co-ordinate tourist development with a balanced utilization of forest/maquis ecosystems. Tourist development and recreation may, or may not, involve the active and direct use of these resources. In either case it is likely these activities will impinge in some way on the functioning of these ecosystems.

2. LAND-USE PLANNING and CONTROL including the compilation and utilization of comprehensive recreational resource inventories can play a vital role in ensuring balanced and complementary exploitation of forest and maquis resources.

3. The ecological and aesthetic problems of second/weekend house development need careful analysis and consideration. Disturbance of maquis and forest ecosystems frequently follow such development with consequent erosion and degradation.

4. High density coastal tourist development because of its change of direct and indirect impacts of forest/maquis ecosystems needs careful planning. (This also applies to winter sports centres i.e. alpine vegetation).

5. ECO-TOURISM is of particular potential and promise because it can be economically viable ecologically and culturally acceptable and fulfills educational objectives. Greater use may be made of existing tourist facilities by utilization of recreational resources for nature and forest trails, horse riding , hunting, study and eco-centers Local people and traditional crafts and music may be encompassed (access and precise location of eco-centres i.e. main roads are important factors at the micro-level).

6. AGRO-TOURISM has potential but serious problems as suggested by experience in France. Agro-tourism may be combined with eco-centers and such things as harvest festivals.

7. CONSERVATION

1. If large scale manipulations of maquis and forest are carried out there must be provision for the conservation of suitable control areas so that the impacts of the management practices can be measured. These areas could simultaneously serve research, educational, and aesthetic needs,

2. Animal populations must also be considered.

3. Volunteers from the clientele of eco-hotels should be used, where appropriate, to augment professional scientists. For example, A "running" bird list could be kept at each eco-hotel, listing sitings and estimated abundance through the season.

GROUP REPORT FORM

PHASE : 2

ISSUE : TOURISM, RECREATION etc.

SESSION : F GROUP NO. : 23 GROUP MEMBERS : A_3, B_4, C_1, C_2

SUMMARY OF MAIN POINTS

The approach adopted by the group implies 3 steps:

first step manage existing tourist investments and complexes by limiting negative impacts on environment resources that sustain tourism and recreation.

second step promote R & D for eco-tourism, diffuse information through all media and attract public, put a break on uncontrolled expansion of traditional tourism.

third step open new areas and develop a comprehensive eco-tourism in infrastructure.

---

maquis = include all shrub vegetation

recreation = include secondary homes, strolling, picnicing and relaxing in nature.

eco-tourism = include new tourist and recreational behaviours and activities that allow for opening up new areas and countryside that is not actually of interest to the service industry.

GROUP REPORT FORM

PHASE : 2

ISSUE : AGRICULTURE AND PASTORAL PRACTICES

SESSION : C GROUP NO. : 25 GROUP MEMBERS : A_1, A_3, B_1, B_3

SUMMARY OF MAIN POINTS

1. No traditional agriculture can be considered as bad or good, since practices are continously changing through time.
2. Further research is needed to establish the carrying capacity of maquis systems under "grazing" (goats,deer,sheep). Only then we will be able to determine optimum grazing practices.
3. Agro-tourism should build on established agriculture practices and may be organized so that tourists work their passage.
4. The conversion of maquis to wheatfields should be stopped or even reversed. Apart from ecological considerations Greece is self-sufficient in wheat, whilst having a considerable deficiency in energy production. Thus, maquis harvesting for energy purposes is a more rational use of such ecosystems.

GROUP REPORT FORM

PHASE : 2

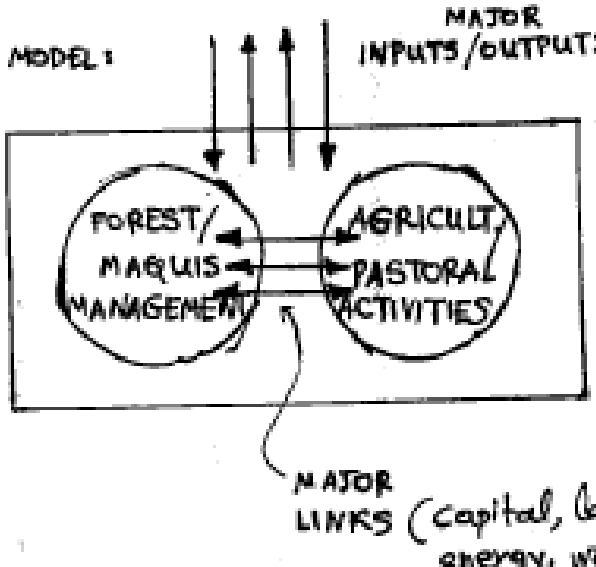
ISSUE : AGRICULTURAL AND PASTORAL PRACTICES

SESSION : C GROUP NO. : 27 GROUP MEMBERS : A_6, C_3, C_4, D_2

SUMMARY OF MAIN POINTS

1. There has been considerable evidence that agricultural and pastoral activities and forest/maquis management can be seen as elements of a larger system; Capital investment, employment, land quantity and quality, water and energy inputs are forming the net (links) between these two subsystems.
2. An expected conflict on one or more of these factors may arise between the two parts, given the pressure in the areas of food (land), energy, and organics, especially in the Mediterranean Basin.
3. One way to predict and, if possible, help to manage this possible crisis might be the study of this larger system (consisting of agriculture, animal husbandry, forests, maquis regarding the production/use of the "five F's" (food, feed, fiber, fertilizer, and fuel)
4. As a result of such a study, potential optimal distribution of capital, labor, land, water use between forest/maquis management and agricultural/pastoral practices can be d rmined (equilibrium condition).
5. For an efficient application this novel approach, the question of relative national/regional autonomy vs. specialization in a mediterranean economy should be answered. (HINT: Food, as well as fuel, is as a powerful tool in international politics).
6. As one of the first subjects to be studied in this way, we recommend the possible integration of grazing in forest/maquis management.
7. Considerable attention must be given to the water balances of mediterranean-type ecosystems, since agricultural productivity has been proved strongly correlated to water inputs.
8. A detailed inventory of land quality is necessary in this approach since capital investement (e.g. for irrigation) is strongly influenced by land productivity.
9. The models constructed in the first approximation to these complex problems can be kept working on long periods of time, refed with actual data, as well as experimental ones, and constantly modified to improve predictions (WARNING: simulation is a tool, not a panacea!).
10. We recommend that the available theoretical analysis on the forms of socio-economic integration of agriculture into the dominent mode of production be taken into consideration in this new field (e.g. as fas as land ownership is concerned.).

THE MODEL:



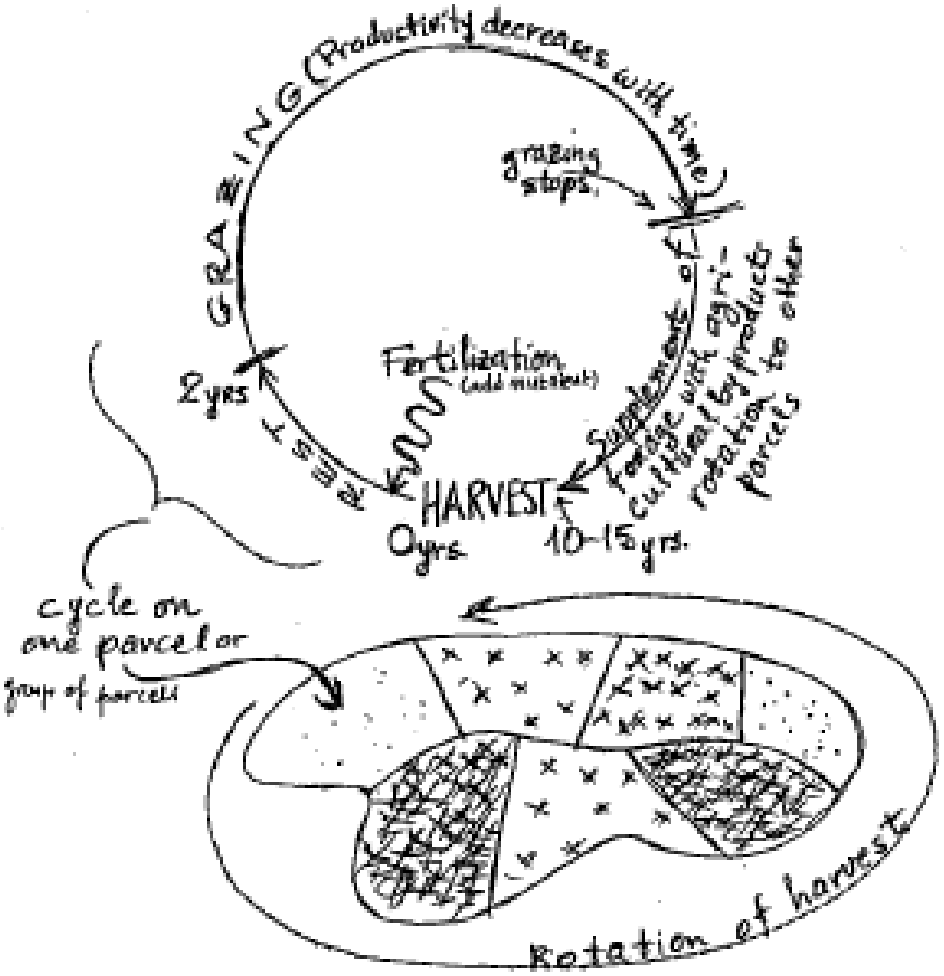
PHASE : .2

ISSUE : AGRICULTURAL AND PASTORAL PRACTICES

SESSION : G GROUP NO. : 28 GROUP MEMBERS : D_1, D_3, D_4, B_4

SUMMARY OF MAIN POINTS

Proposed Rotational System of Grazing and Biomass Utilisation



GROUP REPORT FORM

PHASE : 2

ISSUE : ADMINISTRATIVE AND TECHNICAL ASPECTS

SESSION : H GROUP NO. : 29 GROUP MEMBERS : A_1, C_1, C_3, D_4

SUMMARY OF MAIN POINTS

INTORNUCTION

The most important goal of projects in forest and maquis management is to convince the government and public of the value of innovative research.

We must avoid "selling" a particular technology because this is dangerous, politicaly and scientificaly. Failure of the specific project can discredit the research process. For example biomass harvest of maquis must be presented as a promissing possibility and not a panacea. We should work toward establishing an atmosphere open to the exploration of new avenues.

TH(most important part of the process is communication and cooperation among researcher, politicians, land managers and the local people. Ideally the government would set broad goals, researchers would explore alternatives and land managers administrators and local people would implement the most promissing practical technologies.

Taking the example of biomass harvesting a model project is one way to foster cooperation. This could be done in three phases.

1. Research
2. Transfer (if the project is successful) to managers and local people, for implementations.
3. After full implementation, research would move on to other project.

1. Research phase: Research team of several biologists and at least one forester design the project and select the area and an advisory committee is formed of administration managers and local people. This committee meets from time to time to evaluate the progress of(esearch.

2. Transfer phase: If the research indicates that the technology is successful students and local people should be given short courses and brought into project management.

3. Full implementation: Management of the project is transfered to Forest Department or other organization perhaps a local committee based on the advisory group. The researchers' group move on to other project.

GROUP REPORT FORM

PHASE : 2

ISSUE : ADMINISTRATIVE AND TECHNICAL ASPECT

SESSION : H GROUP NO. : 31 GROUP MEMBERS : B_1, A_4

SUMMARY OF MAIN POINTS

1. The forestry administration in Greece has considerable funds at its disposal for effective management. At present, however, management techniques are often outmoded or inappropriate, and generally lacking in overall direction. Administration is overcentralized and generally lacking in imagination.
2. Land development policy is rigid and unrealistic, making any new development or disturbance in maquis or forest difficult to achieve in theory. In practice, however, regulations are circumvented or ignored, and loopholes found. A complete re-examination of existing legislation and attitudes is needed.
3. Reforestation accounts for the lion's share of the Forestry Division budget and yet this is conducted without any clear statement of objectives (increase in green space? protection? or production?), and with primitive clearance and planting methods. Again, more effective management, which takes into account related governmental policies (particularly agricultural) is needed.
4. Greece's forest and maquis areas are a potentially rich resource. A detailed comprehensive land register should be compiled, and feasibility and research studies are needed to establish ecologically sound optimum uses and management practices. These must consider how increased harvesting might best be combined and co-ordinated with other functions and activities (eco-tourism, existing and new agricultural and pastoral practices).
5. In-service training which would bring new developments in forestry management to the attention of foresters and technicians, should be introduced. Greater collaboration, cooperation and information exchange both within the forestry administration and with other institutes and agencies should be introduced. One way forward might include the setting up of a Unesco human settlement managers training course, organised in association with forestry officials, central and local government representatives and academic centres. An initial training/research programme might focus on simulated issues related to a pilot project of biomass harvesting and forest management.
6. Ecologically sound management should be combined with a wide ranging ecological education program, aimed at a number of target groups: schools, institutes, week-end, eco-agro-tourists, special research groups etc.

GROUP REPORT FORM

33/2

PHASE : SYNTHESIS

ISSUE : FIRE, WOOD HARVESTING etc.

SESSION : 1 GROUP NO. : 33 GROUP MEMBERS : A_1, B_4, C_2, D_1

SUMMARY OF MAIN POINTS

INTRODUCTION STATEMENT

It is assumed that natural ecosystems exploit basic resources like water, sunlight and nutrients with high efficiency. Man-made agricultural systems nowadays created, depend not only on high energy, fertilizers and water inputs but on the fact that these systems are very fragile; insecticides and pesticides are added, generating, inevitably, a growing number of ecological problems.

Using simple ecological theory guidelines we can proceed to the exploitation of natural ecosystems considering their resilience to perturbations. Using the above ideas we can consider utilization of maquis ecosystems for energy and organics also having in mind that;

1) Stability of an ecosystem functions towards economically profitable output can be advised only in case that diversity is maintained and more global biosphere stability taken into consideration.

2) Successful management will be achieved when the optimization criteria take into account the complexity of all ecological, social and economic systems involved.

3) Management of natural ecosystems will also have to optimize land use at the regional and national level. Elements of land and land characteristics are more or less optimal to the various natural ecosystems (forests, maquis, phrygana, etc.), and more or less adapted to particular uses (grazing, biomass harvesting, fire control, reforestation, etc.). Scientific research should explore all alternatives.

Biological and climatic conditions in Greece as well as human factors are causes of uncontrolled fires which constitute a threat to wildlife and lead to loss of property and life. Specialists however, consider that controlled fires have several positive effects on natural ecosystems. Management is necessary to control natural and man-made fires or alternatively to utilize a potentially important source of energy present in the biomass, along with the other biomass resources.

National forestry policy in Greece should be conceived as part of the natural resources policy. Guidelines for alternative uses of biomass should not be limited to reforestation. Alternative biomass management in several areas, such as harvesting has also been proved efficient and eventually less expensive or ecologically sounder than conventional reforestation.

Natural regeneration as opposed to reforestation seems to be more efficient that was commonly thought, provided grazing is controlled, during critical stages of the system's regeneration (see: proposed Rotational System of Grazing and Biomass Utilization).

Harvesting maquis, in California mediterranean-type climates for instance, appears to be economically feasible and efforts should therefore be made to convince consumers about the rationality of producing energy from biomass, ensuring thus an immediate market outlet for the harvested biomass, preferably at the local level.

Technological and feasibility studies for other uses of biomass such as paper and pulp production are incomplete and it is thus difficult to make rational proposals at this stage. But uses of this biomass as animal feed may be developed at present and this should be done in order to demonstrate that natural system's biomass can be exploited in multiple ways thus avoiding the one-track approach.

PHASE : SYNTHESIS

ISSUE : PHRYGANIC ECOSYSTEMS

SESSION : I GROUP NO. : 33 GROUP MEMBERS : A, B, C, D,

SUMMARY OF MAIN POINTS

(3) The ecological effects of harvesting maquis and forest biomass for the above uses should be monitored and the relevant scientific data assessed. In particular, the determination of the carrying capacity for goats and sheep should be determined after harvesting in order to achieve optimal use of the resource, including the use of harvested maquis biomass after appropriate transformation to animal feed.
(4) Using the above information, socio-economic assessment should be completed to evaluate the relative benefits and costs of the mentioned projects.

IMPROVING THE ECONOMIC OUTPUT IN PHRYGANIC ECOSYSTEMS

Concerning the management practices which must be undertaken in order to improve the situation in phryganic ecosystems, the following points must receive attention. At first phryganic ecosystems can be discerned in the following three categories according to their origin:
1. Degraded stage coming from maquis and/or forests due to the combination of fire and overgrazing. This kind of phrygana is found usually in the western part of Greece and especially in Epirous where phlometum communities dominate. The best kind of management there, in order to improve the whole situation is to forbid grazing. In this case, a deciduous forest dominated by Quercus macrolepis will appear since seedlings of this species are very abundant there and they are eaten and/or trampled by the grazing animals.
2. Successional stage following abandoned fields. This stage is usually just before the maquis appearance. The best way to manage them is to "help" maquis establishment and more research must be done in order to understand ways of germination and improvement concerning with species like Pistacia, Arbutus etc.
3. Climax stage which can be found at the semi-aris areas like Cyclades islands in Greece. The best way to improve the economic output is to try to find new ways of management using "new" type crops with special features like aromatic, medicinal, hydrocarbon-producing plants like Eupherbiaceae etc.

NEEDS AND REQUIREMENTS TO IMPLEMENT RECOMMENDATIONS

1. Direct financial support by the Greek government and/or International Organizations is required to carry out the above projects. In addition the Greek government can play a pivotal role in encouraging interdisciplinary and interagency cooperation in establishing these projects.
2. If use of the maquis proves feasible, the Greek government as well as other interested governments and international agencies can facilitate joint ventures through appropriate tax incentives to private enterprises and through a comprehensive educational program.

GROUP REPORT FORM

PHASE : SYNTHESIS

ISSUE : TOURIST, RECREATION AND CONSERVATION

SESSION : I GROUP NO. : 34 GROUP MEMBERS : B_1, C_1, D_2, A_2

SUMMARY OF MAIN POINTS

1. Part of effective land management is to co-ordinate tourist development with a balanced utilization of forest/maquis/phrygenic ecosystems. Tourist development and recreation may, or may not involve the active and direct use of these resources. In any case it is likely these activities will inpinge in some way on the functioning of Mediterranean ecosystems. The continued existence of tourism demands careful environmental management.
2. Actual tourist patterns are seasonal and concentrate on coastal resorts. Infrastructures and investments are thus under-used, whilst tourism has negative environmental impacts in these areas. Thresholds may be reached after which tourism can collapse.
3. Mass seasonal tourism and urban recreation demand can be adapted and extended to encompass a range of eco-tourism activities. This could include the incorporation of ecological information in present day tourist literature and guide training programmes.
4. Eco-tourism is of particular potential and promise because it can be economically viable, ecologically and culturally acceptable, and fulfill educational objectives. Vast new areas exist in the Mediterranean for such exploitation but few infrastructures or specific policies have been developed in Mediterranean countries to harness the potential of new opportunities and demands for ecotourism and recreation.

RECOMMENDATIONS

1. In areas of high tourist and recreational activities, where most of the major infrastructures exist, particular attention should be given to the management and protection of existing natural resources through appropriate national and local policies, including effective land use planning and control.
2. An inventory of available natural resources and sites best suited to ecotourism activities should be established at a national level, and diffused to potential users through the national tourism organizations. (Natural parks and reserves are some of these resources, but eco-tourism should not be limited to only these).
3. Schemes to develop adapted infrastructures for this type of ecotourism, (such as eco-hotels, nature trails etc.,) should be devised (through appropriate R & D and financing) to bring into being amenities that will cater for identified needs.
4. The hotels and amenities located in selected sites should be provided with appropriate information materials on surrounding natural resources, and guides should be trained to assist visitors. (Information activities should involve scientists and students in the field and volunteer environmentalists).
5. Local populations should be involved wherever possible in the development of eco-tourism, thereby enhancing their environmental awareness and increase economic benefits. Service cooperatives in the functioning of (Eco)hotels, and in the diffusion of information and education, could be promoted as a specific form of local population involvement in (eco) tourism.
6. AGRO-TOURISM has potential but serious problems as suggested by experience in France and Spain. Agro-tourism may be combined with environmental education and such activities as harvest festivals.
7. CONSERVATION. If large scale exploitation of maquis, forest and phrygana is to be carried out, there must be provision for the conservation of suitable control areas, so that the impact of the management practices can be measured. These areas could simultaneously serve research educational, and aesthetic needs.
8. The ecological and aesthetic problems of second/weekend house development need careful analysis and consideration. Disturbance of maquis and forest and phryganic ecosystems frequently follows such development with consequent degradation.
9. To monitor the degree and nature of tourism impacts on the environment in general in Mediterranean ecosystems, a monitoring center should be set up with the following objectives:
(a) monitor the environment by region and areas (e.g. coast lines, parks and other recreational areas).
(b) develop and record operational indicators of pollution (such as those being developed by MEDU). This center could form part of the suggested experimental research station as proposed in the UNESCO's Skopelos and Tecrnina meetings.
(c) to advise intergovernmental agencies in the Mediterranean basin on legislation and general policy measures.

GROUP REPORT FORM

PHASE : SYNTHESIS

ISSUE : AGRICULTURAL AND PASTORAL PRACTICES

SESSION : I GROUP NO. : 35 GROUP MEMBERS : A_3, C_3, D_3, Vokou

SUMMARY OF MAIN POINTS

GENERAL CONSIDERATION

Optimal distribution of capital, labour land and water use between forest, maquis and phrygana management and agriculture/pastoral practices should be established. This estimization was dependent on requirements for food, energy and organics and on the available resources (vegetation, water capacity etc.)

THE MODELING APPROACH

A model is proposed to achieve this optional distribution. The model would require actual and experimental data including ecological information, water balance of mediterranean ecosystems and land inventory with ownership identified.

Parametrization of the model will depend on governmental decisions concerning national and regional sufficiency vs. economic participation in a global economy; economic modelling is a valid but expensive approach to answer complicated questions of optimization.

SPECIFIC CONSIDERATIONS

. Management of maquis

Rangelands are increasing in area in certain parts of Greece and of other Mediterranean countries following the abandonment of marginal agricultural land. Whereas they decrease in the more accessible and populated areas due to their transformation into agricultural, urban, industrial and built land of resort areas.

In order to preserve part of the natural systems agro-pastoral practices should be limited in specific parts of these areas where a rotational system of grazing and biomass utilization (both energetic and organic) should be adopted.

Energy plantations could be created on marginal agricultural land to supplement natural biomass in areas where this is being harvested. The possibility that abandoned agricultural land could be planted to timber producing trees should also be considered.

A major issue in maquis systems management is that of watersheds and water resources. This is of primary importance to agriculture and allows for control of flood hazards & erosion

2. Grazing

Increasing demand for meat and dairy products puts pressure on the use of natural rangelands, a large proportion of which is constituted of maquis and phrygana.

Black pigs, red deer, wild goats, could be considered for their high value in meat production and capability to grow in semi-wild conditions; the carrying capacity of the systems to be grazed should be established.

Additional sources of feed for livestock should be developed. Particularly attractive would be the production of novel feed sources, produced from maquis biomass or agricultural residue and supplemented with inexpensive nitrogen sources.

3. Management of agricultural lands

Traditional agricultural practices must be continually reevaluated to determine their appropriateness in the modern context.

4. Agrotourism

National policies could be devised to encourage the cooperation of voluntaar help of agro-tourists to farmers, pastoralists, fishermen etc.

Such an organized activity could not only help farmers to overcome the effects of price fluctuations of certain less profitable crops (as olives), but also consitute a valid pedagogical experience for the young agro-tourists in better understanding the social and cultural life of the that World.

5. Bio-agriculture

There is an increasing demand for vegetables and foods produced by bio-agricultural techniques i.e. without chemical fertilizers and pesticides.

This bio-agriculture should be encouraged and its techniques and practices diffused. Demonstration experiments could be conducted in connection with the eco-hotels.

Experiments could also be realized where the maquis biomass harvesting takes place in order to utilize the fertilizing potentials of the biomass. Such a compost

Maquis vegetation properties should be explored in order to assess the potentials in producing biologically sound pesticides and other valuable by-products.

PHASE : SYNTHESIS

ISSUE : ADMINISTRATIVE AND TECHNICAL ASPECTS

SESSION : 1 GROUP NO. : 36 GROUP MEMBERS : A_4, B_3, C_4, D_4

SUMMARY OF MAIN POINTS

INTRODUCTION

The group discussion emphasized that scientists work in a social and economic context, which imposes responsibilities and constraints. This must be recognized.
Specifically for Greece, these facts must be taken into account:
a) Public and Local Administration through both legislation and civil servants play a key role in all management activities and policies relating to natural systems.
b) The forests, maquis and phrygana aytems of Greece are owned by the state, municipalities and church property organization. There also exist numerous local customary rights relating to pasturing and to the collection of forest products.
c) New national policy aiming at decentralizing administration at the regional and local level will be soon legislated and subsequently implemented. The new framework of decentralized administration will affect directly all issues with respect to forest management and biomass administration.

COOPERATIVE RESEARCH THROUGH A DEMONSTRATION PROJECT

It seems apparent that:
1. An important goal of ecological research is to convince the government and public of the value of innovative basic research. To accomplish this it must be shown that basic research leads to worthwhile applications. Critical parts of the process which lead from new ideas to practical solutions are communication and cooperation among researchers, politicians, land managers, and local people. This is not an easy thing to achieve, but the demonstration project seems a promising means of bringing diverse interests together.
2. There is general agreement that a demonstration project for biomass harvest in the maquis of Greece would be valuable both for the specific results that could be obtained, and as a kind of pilot project showing how a variety of groups can work together.
3. We therefore recommend a three phase demonstration project as follows:

Phase 1: Research. A research team of biologists and foresters design the project and select the area for the experiment. The basic research needed is outlined and begun. An advisory committee made up of managers (e.g. regional forester) and local people (e.g. mayors, farmers, managers etc.) is formed and kept abreast of developments on the project and asked for suggestions regarding practical application.

Phase 2: Transitional (Research-Technological) Assuming that the results are encouraging the next phase continues basic research but includes increasing emphasis on the technological aspects such as testing of harvesting machinery and densification equipment. Researchers organize short courses, workshops, and training sessions to educate managers at all levels about the proposed harvest plan.

Phase 3. Full Implementation. An appropriate agency, possibly a new one created by special legislation (made possible perhaps by the expected changes in governmental organization) takes over the demonstration project. The degree of involvement of scientists is reduced to advice and counsel.

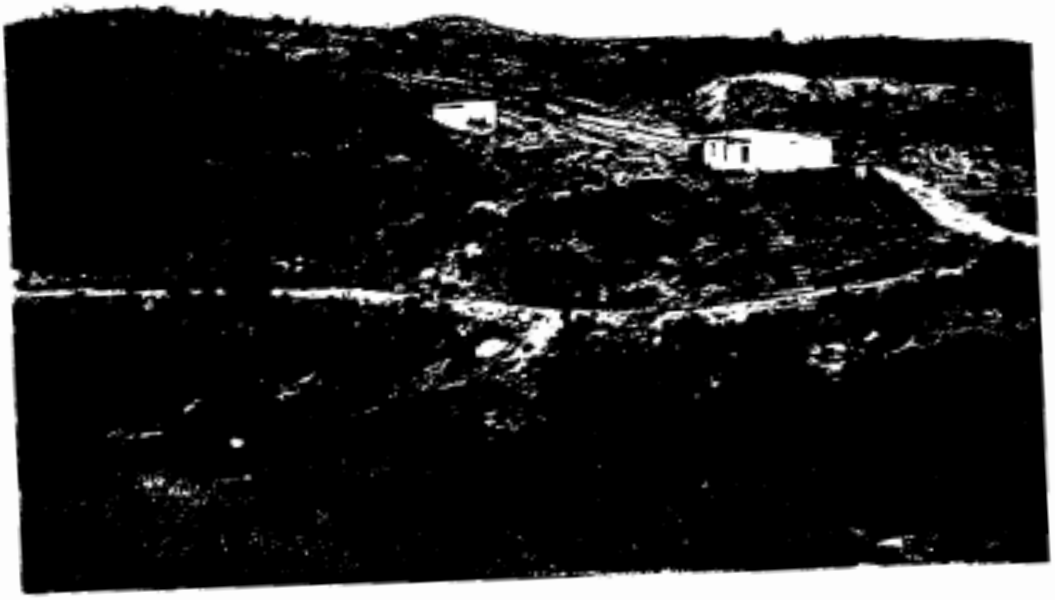
DECENTRALIZATION

It is generally accepted that in the present period of the ecological crisis, management of biomass systems is outmoded, inappropriate and generally lacking in overal direction. This management is based on an overcentralized administration, which lacks in transparence and imagination and, therefore, incapable to stop degradation of the environment in Greece. A network of decentralized administrative structures (regional environmental offices), based ,at first, on existing forestry services in recommended. These offices will be responsible for the administration of environmental, regional planning, non-agricultural biomass and land use issues, and for the implementation of the region's strategies in relation to the national environmental policy and legislation. Interdisciplinary and interagency communication must be encouraged and these offices should be staffed on an interdisciplinary basis. Information services, ecological education, research technology, administration of biomass utilization projects and training should be also decentralized to the regional level and put under the immediate supervision of these offices.

RESEARCH POLICY

It was agreed by the group that there is an intensive and accelerated need for cooperative research on structure, function and management of natural ecosystems, promoted as an idea through the governmental policy.

MAQUIS/FOREST LANDSCAPE



SHEPHERDS ACCOMMODATION IN REPLANTED ZONE

PROF HARDARIS LEADS
EXAMINATION OF BURNT
MAGNIS.

MISS VOKOU TASTES
PINE RESIN.