

NATIONAL PROGRAMME FOR ENVIRONMENTAL SCIENCES
(TERRESTRIAL ECOSYSTEMS)

NP14/106/9L/5

FYNBOS BIOME PROJECT : SECOND ANNUAL RESEARCH MEETING

1980

INTRODUCTION

The Fynbos Biome Project has as one of its principal objectives the integration and coordination of ecological research within the biome. Formal coordination at an inter-organizational level is provided by the Steering Committee while informal contact between field workers is maintained through workshop meetings, seminar, etc. As the project develops, annual research meetings will be needed to bring all parties together for an exchange of progress reports, research plans and the review of programme goals. The second such meeting is planned for Tuesday 29 and Wednesday 30 July 1980, at the conference facilities of the Food and Fruit Technology Research Institute, Stellenbosch.

FORM OF MEETING

The meeting will consist of a series of approximately one hour sessions addressing specific topics. Each researcher currently undertaking, or planning to undertake a project within the theme, will be asked to present a 10 minute summary of his/her plans or progress. At the end of each session the Chairman will lead discussion on the overall aims of the topic under review, related to existing and future activities within it.

DOCUMENTATION

Every listed participant will be asked to prepare, in English or Afrikaans, an abstract (\pm 150 words) of his/her proposed contribution for compilation and distribution before the meeting. These should be submitted to the Liaison Officer, Fynbos Biome Project, c/o Department of Organic Chemistry, University of Cape Town, Rondebosch, 7700.

PARTICIPATION

All researchers already associated with the Fynbos Biome Project and those who are interested to learn more about its activities are welcome to attend. Please complete the attached reply form.

COST OF ATTENDANCE

Teas, lunches and a social function will be provided for a nominal fee (\pm R6,00).

APPENDIX

There are a number of listed Fynbos Biome Project activities which will not be reported on verbally during the Second Annual Research Meeting.

Maps will be displayed for the following projects:

Preliminary synthesis of macroclimatic patterns within the Fynbos Biome. Professor R F Fuggle and Ms E Ashton (School of Environmental Studies, University of Cape Town).

A soil map of the Fynbos Biome. Mr J J N Lambrechts (Faculty of Agriculture, University of Stellenbosch).

Historic and present land-use patterns in the Fynbos Biome preliminary synthesis. Professor R J Davies and Dr G Cook (Department of Geography, University of Cape Town).

Projects completed or terminated: Researcher either not available to report, or reporting on new work in the meeting programme.

- Aspects of the distribution and autecology of Hakea. Mr S R Fugler (Botanical Research Unit, Department of Agricultural Technical Services, Stellenbosch).

Mr Fugler is now employed at Jonkershoek Forestry Research Station.

Population ecology of the striped fieldmouse Rhabdomys pumilio on the Cape Flats including their dependence on invasive Acacias. Dr J U M Jarvis and Mr J David (Department of Zoology, University of Cape Town).

The mineral nutrition of members of fynbos plant communities. Determination of the salt tolerance and mineral element requirements of Acacia saligna. Dr J H Jooste (Department of Botany, University of Stellenbosch).

Aspects of the population biology of invasive species. Dr A V Hall and Ms S Milton (Bolus Herbarium, University of Cape Town).

Autecology of Leptospermum laevigatum. Dr C T Johnson (Department of Botany, University of the Western Cape).

Dr Johnson has joined the staff of the Department of Botany, University of the Transkei.

A study of primary youth periods, fruiting and germination in rare or endangered fynbos plant species. Mr P van der Merwe (Cape Provincial Department of Nature and Environmental Conservation, Jonkershoek).

Researchers involved in the following three projects will not be available to report:

Structural and functional classification of fynbos vegetation. Mr B Campbell (Botanical Research Unit, Department of Agricultural Technical Services, Stellenbosch).

Vegetation dynamics within and between fynbos and adjacent biomes. Dr E J Moll and Mr R Cowling (Department of Botany, University of Cape Town).

An ecological study of the Gamka Mountain Reserve. Dr A F Boshoff (Cape Provincial Department of Nature and Environmental Conservation, Jonkershoek).

Avifaunal studies will be reported on by Dr T Crowe of the Percy Fitzpatrick Institute of African Ornithology under one title in the programme. No further progress to report on either of the following two projects:

Comparative studies of the avifaunas of different fynbos plant formations. Professor W R Siegfried, Dr R A C Jensen, Dr T Crowe and Ms J Sommerville (Percy Fitzpatrick Institute of African Ornithology, University of Cape Town).

The role of fruit-eating birds as dispersors of seeds in relation to colonization by plants of burnt areas of fynbos. Professor R F Siegfried, Dr R A C Jensen and Dr T Crowe (Percy Fitzpatrick Institute of African Ornithology, University of Cape Town).

Ongoing activities - not being reported on at this meeting:

Theoretical analysis of the subsurface water regimes of experimental catchments in the Western Cape Forest Region. Mr P A Kilpatrick (Jonkershoek Forestry Research Station).

Distribution of alien species on the Coastal forelands. Mr C Boucher and Mr P Shepherd (Botanical Research Unit, Department of Agricultural Technical Services).

Investigation of the population dynamics, germination and establishment of Orothamnus zeyheri Pappe. Mr C Boucher (Botanical Research Unit, Department of Agricultural Technical Services, Stellenbosch).

A survey and classification of the vegetation of the Zachariashoek catchments, Lamotte State Forest. Messrs F J Kruger and B W van Wilgen (Jonkershoek Forestry Research Station, Stellenbosch).

Semi-detailed surveys of selected mountain catchment areas. A reconnaissance survey of the vegetation of the Rooiberg State Forest. Mr H C Taylor (Botanical Research Unit, Department of Agricultural Technical Services, Stellenbosch).

A phenological study in a fynbos community in Swartboskloof, Jonkershoek State Forest. Mr F J Kruger (Jonkershoek Forestry Research Station).

Invasive plants in the Cape of Good Hope Nature Reserve - a comparison of the extent of invasion after 10 years. Mr H C Taylor and Mr S Fugler (Botanical Research Unit, Department of Agricultural Technical Services³).

A study of interception loss in mature Hakea sericea Schrad stands. Mr D B Versfeld (Jonkershoek Forestry Research Station).

FYNBOS BIOME PROJECT : SECOND ANNUAL RESEARCH MEETING

P R O G R A M M E

TUESDAY 29 JULY 1980

08h30 - 08h45 Welcome and Introduction : Dr D Hey (School of Environmental Studies, University of Cape Town)

FIRST SESSION: BIOGEOGRAPHY AND PALAEOECOLOGY

08h45 - 09h35 Chairman: Mr F J Kruger (Department of Water Affairs, Forestry and Environmental Conservation)

1. Palaeoecological studies in the fynbos zone of the southern Cape.
Dr H J Deacon and Mr A Scholtz (Department of Archaeology, University of Stellenbosch).
2. A survey of rare and endangered plant species.
Dr A V Hall, Mrs A Cameron and Miss S J Manchip (Bolus Herbarium, University of Cape Town).
3. A survey of the reptiles and amphibians of the Cape Province: The genus Heleophyryne in the fynbos.
Mr R Boycott (Cape Provincial Department of Nature and Environmental Conservation, Jonkershoek).

Discussion

SECOND SESSION: VEGETATION: CLASSIFICATION STUDIES AND GRADIENT ANALYSES

09h35 - 10h30 Chairman: Mr H C Taylor (Department of Agriculture and Fisheries)

4. An investigation to determine the usefulness of various remote sensing techniques for studying and mapping the Fynbos Biome.
Dr E J Moll, Mrs M L Jarman and Miss L Bossi (Department of Botany, University of Cape Town), Professor K J MacGregor (Department of Computer Science, University of Cape Town).
5. Coastal foreland vegetation survey: West Coast.
Mr C Boucher (Botanical Research Unit, Department of Agriculture and Fisheries, Stellenbosch).
6. Gradient analysis of the vegetation of the mountain catchment areas of the southern Cape and Tsitsikamma Forest Regions.
Mr W J Bond (Saasveld Forestry Research Station, George).
7. Vegetation dynamics within and between fynbos and adjacent biomes.
Dr E J Moll and Mr R Cowling (Department of Botany, University of Cape Town).

Discussion

10h30 - 11h00

TEA

THIRD SESSION:
11h00 - 11h35

INVASIVE PLANTS

Chairman: Dr A V Hall (Bolus Herbarium, University of Cape Town)

8. Further ecological aspects and integrated control of Hakea species in South Africa.
Mr S R Fugler (Jonkershoek Forestry Research Station).
9. Aspects of the chemical control of Hakea sericea Schrad and Pinus pinaster Alt.
Professor D G M Donald and Mr J M Theron (Faculty of Forestry, University of Stellenbosch).
10. The growth, regeneration and dispersal of the Argentinian grass Nasella tussock in the Winter Rainfall Region.
Mr G B Harding (Department of Agriculture and Fisheries) and Dr A V Hall (Bolus Herbarium, University of Cape Town).

Discussion

FOURTH SESSION:
11h45 - 13h30

VEGETATION: ECOPHYSIOLOGICAL STUDIES

Chairman: Professor O A M Lewis (University of Cape Town)

11. The mineral nutrition of members of fynbos plant communities.
Dr J H Jooste (Department of Botany, University of Stellenbosch).
12. The impact of parasitic plants on the floristic composition and productivity of plant communities within the Fynbos Biome.
Professor J Visser (Department of Botany, University of Stellenbosch).
13. The influence of different soil moisture regimes on growth, water relations and chemical composition of members of the proteaceae.
Professor J A de Bruyn and Ms A Botha (Department of Botany, University of Stellenbosch and University of the Western Cape).

Discussion

12h30 - 13h30

14. The reproductive physiology of lowland plants.
Dr L Raitt (Department of Botany, University of the Western Cape).
15. Reflectivity of some fynbos communities.
Professor R F Fuggle and Mr M Morris (School of Environmental Studies, University of Cape Town).

16. The biology of proteoid roots and extrafloral nectaries.
Dr B Lamont (Department of Botany, University of Cape Town).

Discussion

13h30 - 14h30

LUNCH

FIFTH SESSION:

14h30 - 15h30

ANIMAL ECOLOGICAL STUDIES

Chairman: Dr C J Loedolff (University of Cape Town)

17. Avifaunal studies in the fynbos.
Professor W R Siegfried and Dr T Crowe (Percy Fitzpatrick Institute of African Ornithology, University of Cape Town).
18. Herbivory in Strandveld.
Professor G N Louw, Mr J Glyphis and Dr G Puttick (Zoology Department, University of Cape Town), Professor R C Bigalke (Faculty of Forestry, Stellenbosch University), Professor W R Siegfried (Percy Fitzpatrick Institute of African Ornithology, University of Cape Town).
19. Habitat ecology of the klipspringer Oreotragus oreotragus in the Cape Province, and
An ecological study of the leopard Panthera pardus in the Cape Province.
Mr P M Norton (Cape Provincial Department of Nature and Environmental Conservation);
20. A gradient analysis of animal communities on forest lands in southern Cape and Tsitsikamma Forest Regions, and
Surveys and assessments of the fauna of forest land catchments in the southern Cape and Tsitsikamma Forest Regions.
Mr G J Breytenbach (Saasveld Forestry Research Station, George).

Discussion

15h30 - 16h00

TEA

FIFTH SESSION:

16h00 - 16h45

(Continued)

21. Distribution, status and feeding habit survey of the larger birds of prey and vultures in the Cape Province.
Dr A H Boshoff (Cape Provincial Department of Nature and Environmental Conservation).
22. The distribution, status, feeding habits and reproduction of carnivores of the Cape Province.
Mr C T Stuart (Cape Provincial Department of Nature and Environmental Conservation).

23. A study of the chacma baboon Papio ursinus in the Cape Province.
Mr P H Lloyd (Cape Provincial Department of Nature and Environmental Conservation).
24. Distribution, migrations and population dynamics of bats in the Cape Province.
Mr J C Hershelman (Cape Provincial Department of Nature and Environmental Conservation).

Discussion

16h45 - 17h15

25. A study of animal communities and water chemistry in black water lakes in fynbos.
Dr J Day and Mr T Gardner (Department of Zoology, University of Cape Town).
26. The effects of veld burning on small mammal populations in fynbos, with special reference to Jonkershoek and Zachariashoek.
Professor R C Bigalke and Mr K Willan (Faculty of Forestry, University of Stellenbosch).

Discussion

19h30

Social evening at Jonkershoek Forestry Research Station.

WEDNESDAY 30 JULY 1980

SIXTH SESSION:
09h00 - 10h00

IMPACT OF LAND-USE ON ECOSYSTEM PROCESSES

Chairman: Mr A Viljoen (Department of Agriculture and Fisheries)

27. Determining the effects of management measures on water quality in experimental catchments at Jonkershoek, Zachariashoek and Jakkalsrivier, and Determining the effect of controlled burning systems applied in fynbos on stream discharge components of experimental catchments at Jonkershoek, Zachariashoek and Jakkalsrivier, and Determining the effects of converting protected fynbos to a plantation of Pinus radiata on stream discharge components at Jonkershoek Forestry Research Station.
Mr D B van Wyk (Jonkershoek Forestry Research Station).
28. Investigation of the effects on community structure and mineral balance of clear-felling of Pinus radiata in Bosboukloof catchment, Jonkershoek Forestry Research Station, and
A study of the water balance of a plantation of Pinus radiata and of fynbos at the Jonkershoek Forestry Research Station: rainfall interception and soil moisture fluctuation.
Mr D B Versfeld (Jonkershoek Forestry Research Station).

29. The influence of mountain catchment declaration on land management in the Winterhoek area of the western Cape : ecological, economic and social implications, and Distribution and abundance of invasive alien plants in mountain catchments of the western Cape forest region.
Mr D P Bands (Jonkershoek Forestry Research Station).
30. Effect of flower harvesting on the composition and dynamics of natural fynbos plant and animal communities.
Mr M Wells (Department of Agriculture and Fisheries) and Dr A V Hall (Bolus Herbarium, University of Cape Town).

Discussion

SEVENTH SESSION:
10h00 - 10h30

PELLA STUDY SITE ACTIVITIES

Chairman: Dr E J Moll / Professor A A Theron
(University of Cape Town/University of Stellenbosch)

31. Vegetation communities of the Pella Research Site (Coastal Fynbos).
Mr P Shepherd and Mr C Boucher (Department of Agriculture and Fisheries, Stellenbosch).
32. Soil forms of the Pella Research Site.
Mr M Fry, Mr J J N Lambrechts and Professor A A Theron (Department of Soil Science, University of Stellenbosch).

Discussion

10h30 - 11h00
SEVENTH SESSION:
11h00 - 12h15

TEA

(Continued)

33. Seasonal process studies within lowland fynbos.
Dr E J Moll, Dr D T Mitchell and Miss J Sommerville (Department of Botany, University of Cape Town).
34. The distribution of phosphorus and biomass in a proteoid element of fynbos vegetation.
Dr D T Mitchell, Professor O A M Lewis, Dr S Jongens-Roberts and Mr G Brown (Department of Botany, University of Cape Town).
35. Variations in soil phosphorus in coastal fynbos.
Dr D T Mitchell, Professor O A M Lewis, Dr S Jongens-Roberts and Mr G Brown (Department of Botany, University of Cape Town).
36. A preliminary study on mineral cycling and the distribution of soil micro-organisms in the Fynbos Biome.
Dr D T Mitchell, Mr F Coley and Miss D Olivier (Department of Botany, University of Cape Town).

37. An investigation of cycling and processing of nitrogen in the Fynbos Biome (in co-operation with the phosphorus cycling project).
Professor O A M Lewis, Dr D T Mitchell and Mr W Stock (Department of Botany, University of Cape Town).

Discussion

12h15 - 12h30

38. Dendrographic studies of the water relations of the fynbos.
Dr K H Schütte (Department of Botany, University of Cape Town) and Mr K Achleitner (Department of Zoology, University of Cape Town).

12h30 - 13h45

LUNCH

EIGHTH SESSION:
13h45 - 14h30

IMPACT OF FIRE ON COMMUNITIES

Chairman: Mr D P Bands (Jonkershoek Forestry Research Station)

39. Long term effects of fire regime in fynbos community structure in Langrivier and vicinity, Jonkershoek State Forest.
Mr B W van Wilgen (Jonkershoek Forestry Research Station).
40. Seasonal variation in invertebrate biomass and numbers in different burn ages of fynbos.
Professor J H Giliomee, Miss D Donnelly and Mr C Schlettwein (Department of Entomology, University of Stellenbosch).

Discussion

14h30 - 15h30

41. Investigation of the population dynamics of Widdringtonia cedarbergensis Marsh and its interaction with fire.
Mr F J Kruger (Department of Water Affairs, Forestry and Environmental Conservation).
42. Experimental investigations of the effects of season of burn of fynbos communities in plot trials at Kogelberg: studies on community structure and function and the immediate response of communities to treatment.
Mr F J Kruger and Mr D Lemaitre (Jonkershoek Forestry Research Station).
43. Study of the origin, occurrence and spread of fynbos fires and controlling effects of weather as indicated by available records.
Messrs F J Kruger, D P Bands and B W van Wilgen (Jonkershoek Forestry Research Station).

44. A comparison of the initial stages of post-fire regeneration in Protea laurifolia shrub and Renosterveld on the Piketberg.

Mr H P Linder (Bolus Herbarium, University of Cape Town).

Discussion

15h30 - 16h00

TEA

16h00 - 16h30

CONCLUDING SESSION

Chairman: Mr B J Huntley (CSP, CSIR).