

CENTRE FOR ECOLOGICAL SCIENCES
INDIAN INSTITUTE OF SCIENCE
BANGALORE-560 012
INDIA

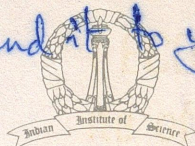
30/05/90
Bangalore.

Dear Prof. Burton,

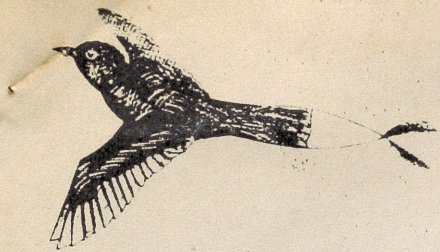
You must have settled down after your sabbatical year at Bangalore. I have just got back from Pondicherry having done a little work on the vegetation mapping - and going through some old maps of the Nilgiri Area. A preliminary draft of the vegetation map should be ready by July.

I am sending herewith in slides the stream and drainage maps of the Nilgiris. Our sample points have also be marked. In addition, I have worked out a stream order dendrogram for the different drainages. This is the perennial stream order. The order of the major rivers works out to 4. But an interesting find from an earlier map (1950) is that there are marked many more perennial streams in that map and the stream order had been 5 or 6. We also know that some of the streams marked perennial in the 1980 map, have of late gone dry and seasonal. All this may help to prove the point of conservation.

I am sending also an early report on the streams of the Nilgiris. There is supposed to be another paper by Hoava, but I have not got it yet. I will send it to you as soon as I get it.



Yours sincerely
M. B. B. Bah



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Yours sincerely
H. B. Bhat

1. CHALIYAR PUZHA

1

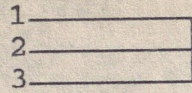
1

2

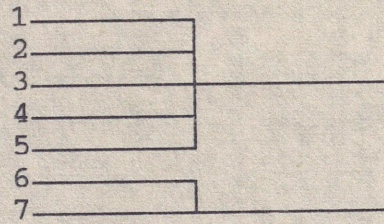
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4

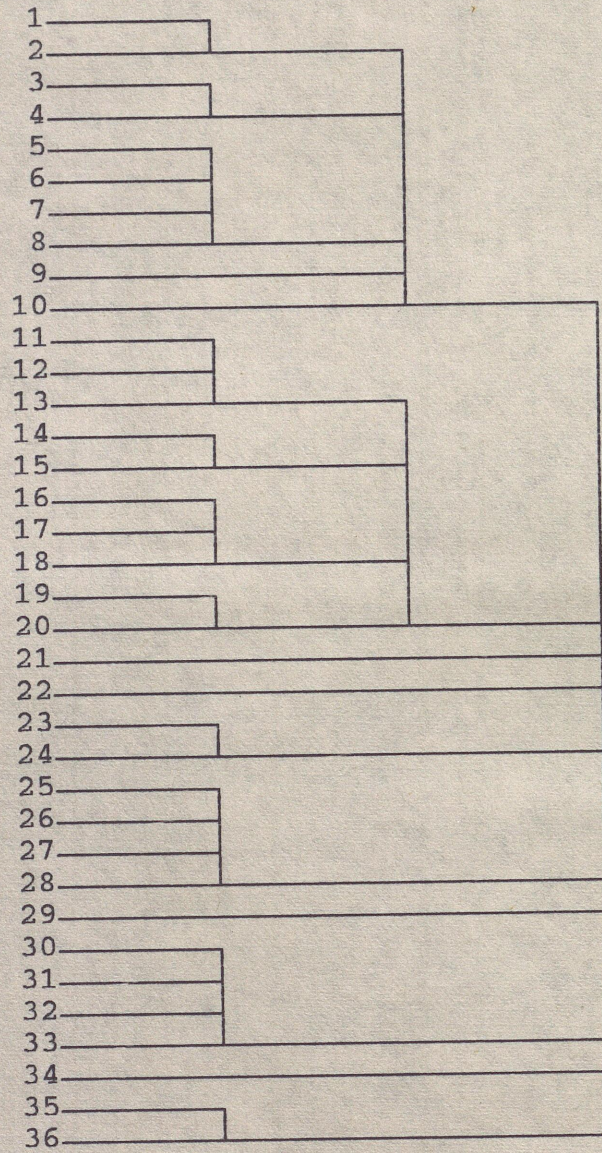
11. Kuruman puzha



12. Kanjira puzha



13. Chaliyar puzha



Dear Prof. Burton,

You must have settled down after your sabbatical year at Bangalore. I have just got back from Pondicherry having done a little work on the vegetation mapping. I also was able to get some older maps of the Nilgiris and extracted some vegetational, land-use and perennial stream features from them. A preliminary draft of the vegetation maps should be ready by July.

I am sending herewith, in slides, the stream and drainage maps of the Nilgiri area. Our stream sample points have also been marked. In addition, I have worked out a perennial stream order dendrogram for the different drainages. The order of the major streams works out to about four. But an interesting find from an earlier map (1950) is that there are marked many more perennial streams in it and the stream order works out to five and six. Ofcourse this was before the reservoir constructions. We also know that some of the streams that are marked perennial on the 1980 map have since become seasonal. All this may further help to argue the point of conversation.

I am also sending an early report on the streams of the Nilgiris. There is supposed to be another paper by Hoara, but I have not been able to get it. I will send it to you as soon as I get it.

Yours Sincerely,

R.Prabhakar

1. CHALIYAR Puzha

Derived Stream Order

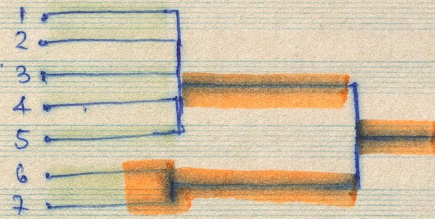
1 2 3 4 5

11. Karaman puzha

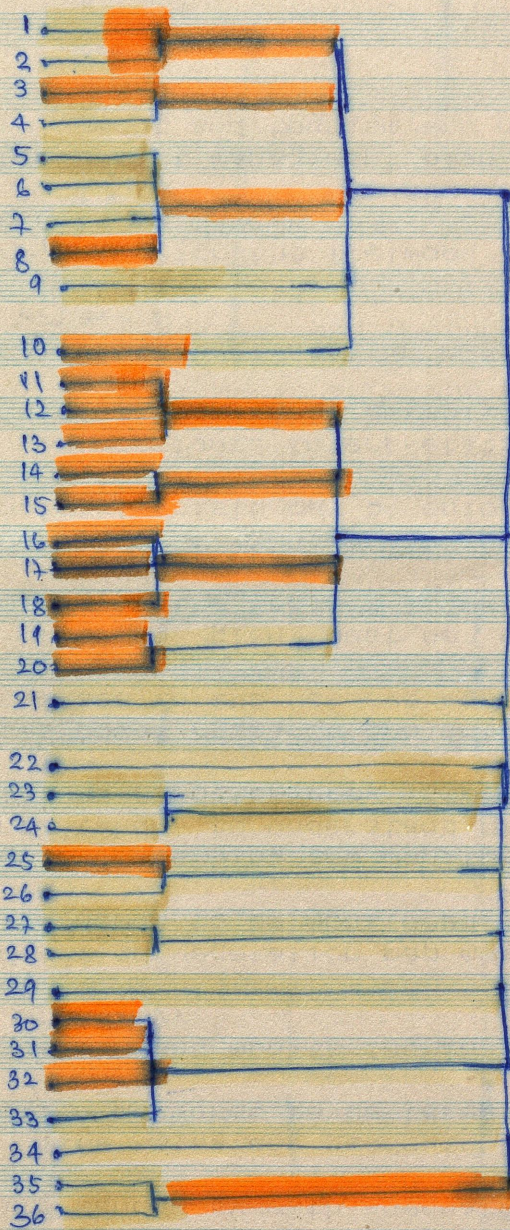


12.

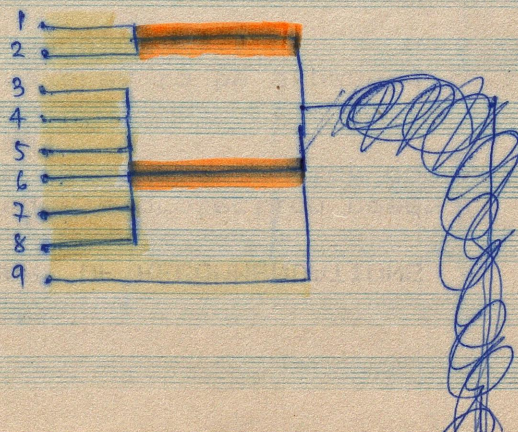
12. Kanjira puzha



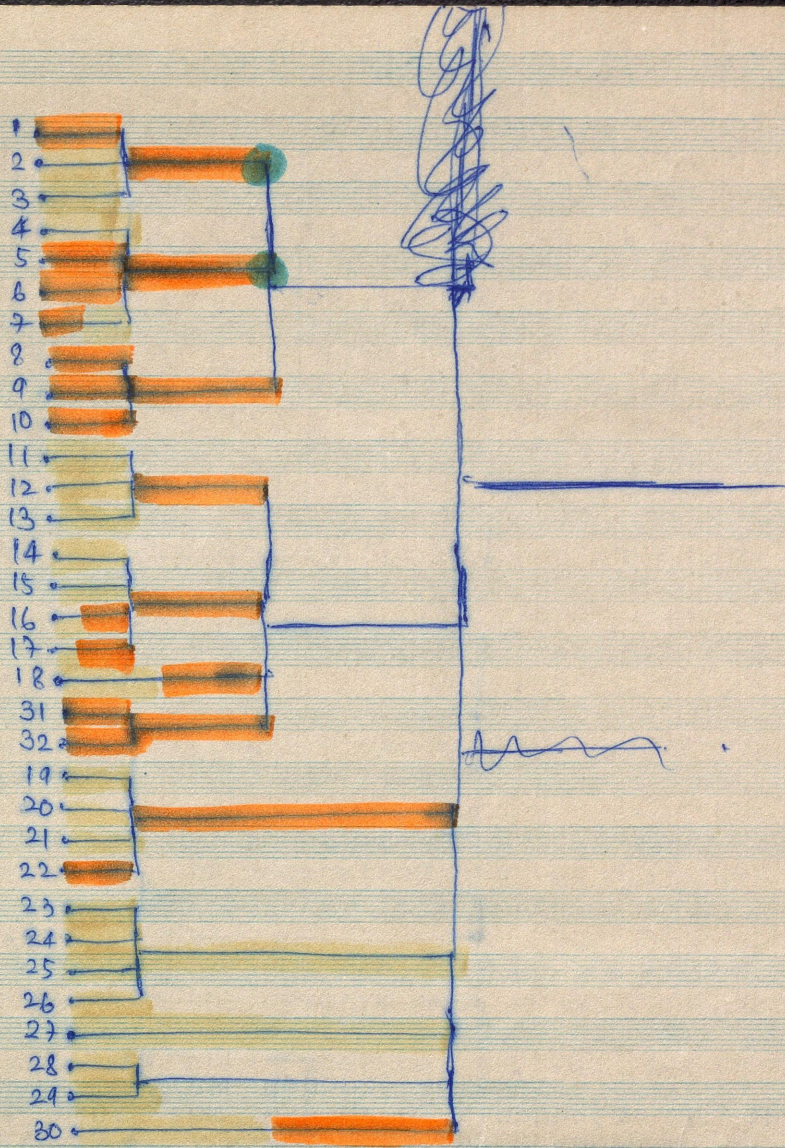
13. Chaliyar Puzha



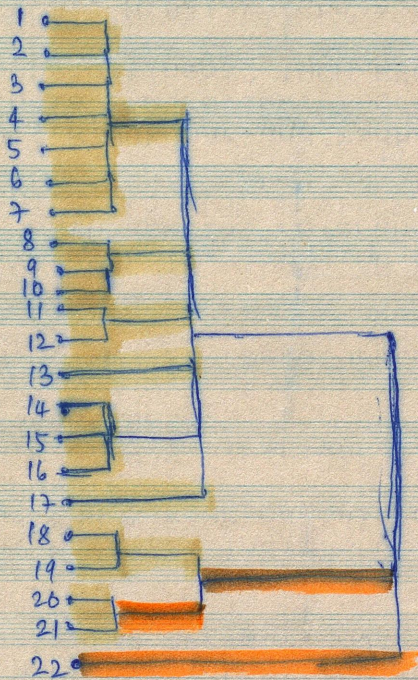
14. Athi puzha



15. Punna puzha

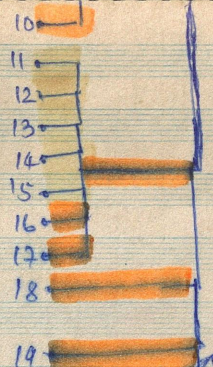


16. Karim puzha

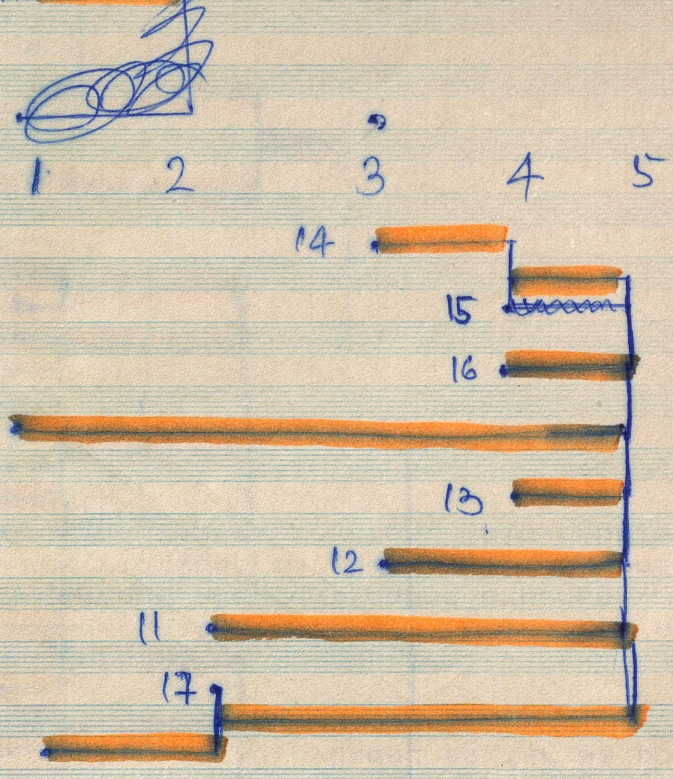


17. Kudira puzha





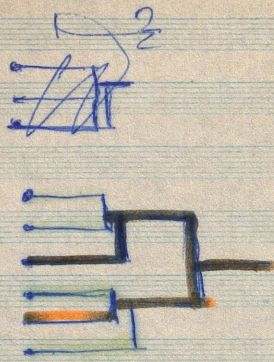
18. Lower Chaligar.



Chaligar River.

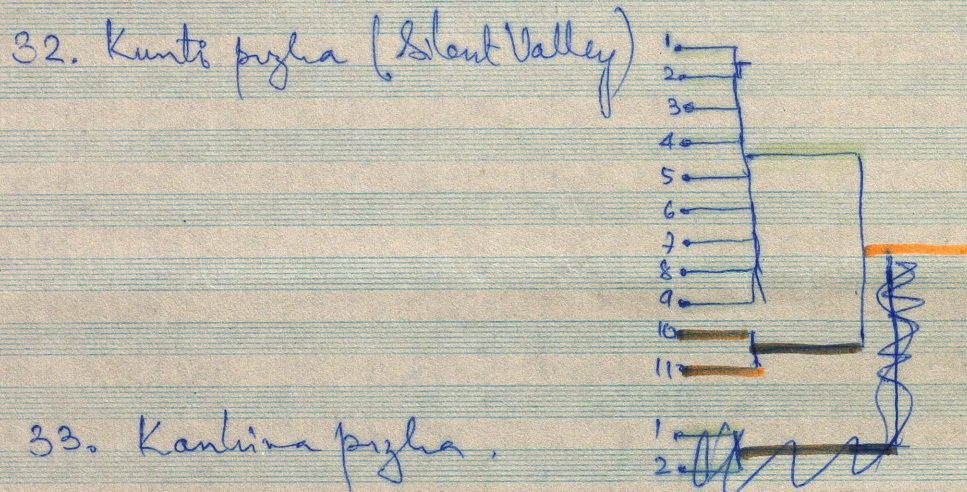
Order 5

2. KADALUNDI



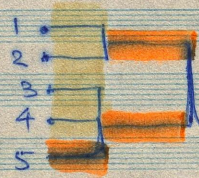
3. PONNANI BASIN

31. Kunti puzha (sub-basin)



33. Karthika puzha

~~4. B~~



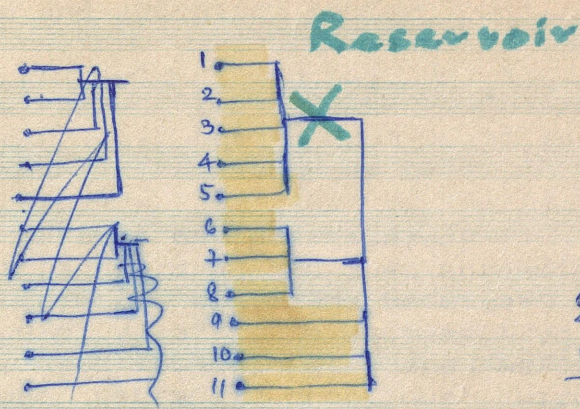
31. Kunti puzha (sub-basin)

Kunti puzha (sub-basin)

3rd Order.

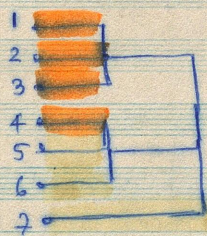
A. BHAVANI BASIN

41. Upper Bhavani :

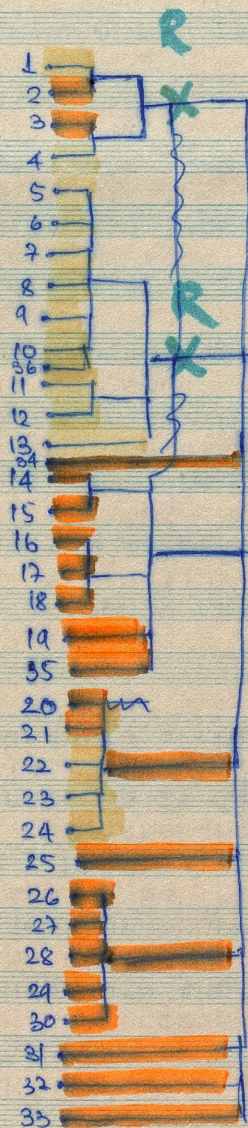


2nd Order if X Reservoir taken as a discontinuity.

43. Varaha pallam

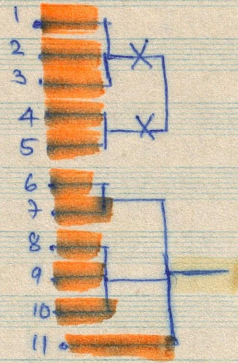


44. Kunda River.

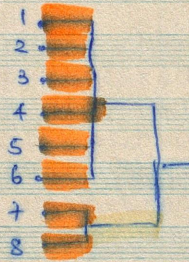


2nd Order if X Reservoir taken as a discontinuity.

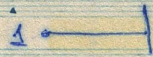
45. Niralai pallam .



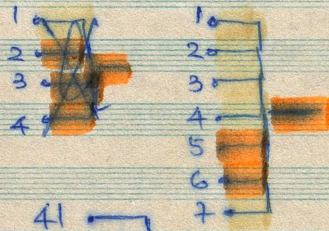
46. Coonoor & Kallar



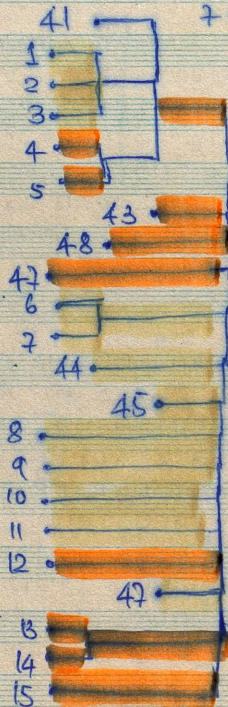
47. ~~Vass~~ Kodungari pallam



48. Siruvani



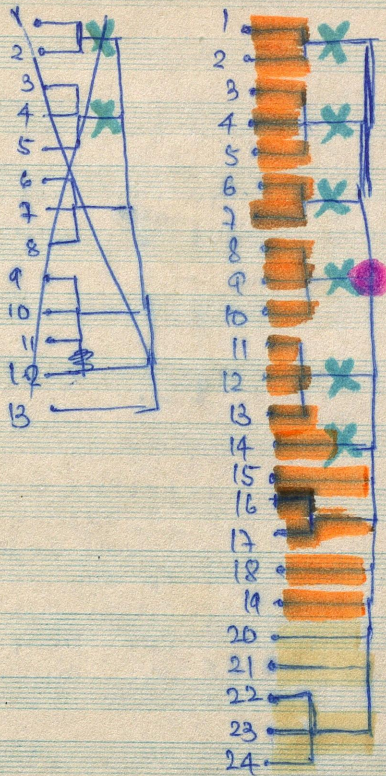
42. Lower Bhanani



Bhanani River
Order 4.

5. MOYAR BASIN

51. Pykara



Order 3 ^{even} if X Reservoir
is taken as a discontinuity.

52. Upper Moyar.

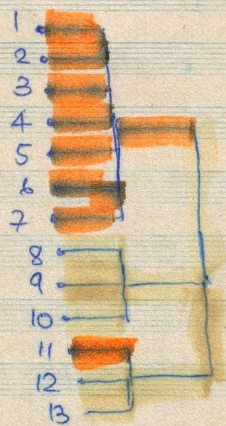


53. Sigur River.

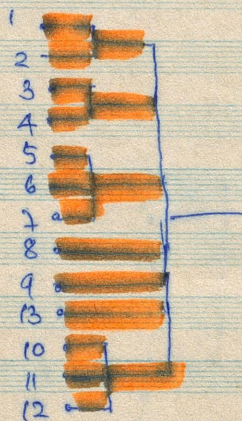


Order 3 even if X Reservoir
is taken as a discontinuity

55. Kedar Halla.

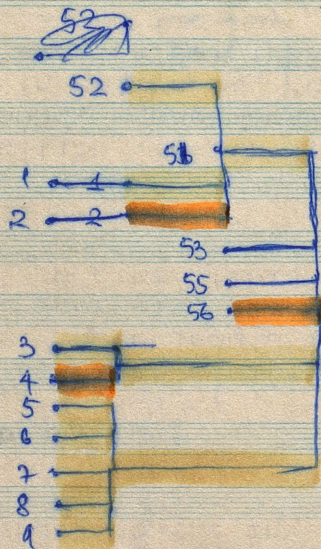


56. Kubkal torai halla



54. Lomer Moyar.

1 . 2 . 3 . 4 . 5 .



Moyar Basis
Order 4

To Prof. Thomas Burton,
for comments.

WESTERN ECO-FLORISTIC ZONE

A. Evergreen types and degradations

1. Low elevation (below 750m)

Dipterocarpus indicus - *Kingiodendron pinnatum* -
Humboldtia brunonis type

- A1.1 Dense evergreen
- A12 { Disturbed evergreen to semi-evergreen
- Secondary evergreen to semi-evergreen
- A13 Secondary moist deciduous forests - Dense
- A14 Secondary moist deciduous forests - Woodland
- A15 Secondary moist deciduous forests - Tree savanna
- A16 Dense thicket
- A17 Low discontinuous thicket to scattered shrubs

2. Medium elevation (750m-1400m)

Cullenia exarillata - *Mesua ferrea* - *Palaquium ellipticum* type

- A21 Dense evergreen
- A22 { Disturbed evergreen to semi-evergreen
- Secondary evergreen to semi-evergreen
- A23 Secondary moist deciduous forests - Dense
- A24 Secondary moist deciduous forests - Woodland
- A25 Secondary moist deciduous forests - Tree savanna
- A26 Dense thicket
- A27 Low discontinuous thicket to scattered shrubs

3. High elevation (1400m-1800m)

Schefflera spp. - *Gordonia obtusa* - *Meliosma arnottiana* type

- A31 Dense evergreen
- A32 Disturbed evergreen
- A33 Tree savanna to grassland
- A34 Dense thicket
- A35 Low discontinuous thicket to scattered shrubs

B. Deciduous types and degradations

1. Moist deciduous forests

Lagerstroemia microcarpa - *Tectona grandis* - *Dillenia pentagyna* type

- B11 Dense forest
- B12 Woodland to savanna-woodland
- B13 Tree savanna
- B14 Scrub-woodland to dense thickets
- B15 Discontinuous thicket to low scattered shrubs

2. Dry deciduous forests

Anogeissus latifolia - *Tectona grandis* - *Terminalia alata* type

- B21 Dense forest
- B22 Woodland to savanna-woodland
- B23 Tree savanna
- B24 Scrub-woodland to dense thickets
- B25 Discontinuous thicket to low scattered shrubs

C. Edaphic types

C11 1. Riparian forest

C12 2. Swamp

EASTERN AND NORTHERN ECO-FLORISTIC ZONES

A. Deciduous types

1. *Acacia* spp. - *Albizia amara* - type (less than 500 m)

II A11 Scrub-woodland to dense thicket
II A12 Discontinuous to low scattered shrubs

Scrub Woodland Scrub

2. *Gypocarpus* type (slopes from 300m-600m)

A21 Tree savanna
A22 Scrub-woodland to dense thicket
A23 Discontinuous thicket to low scattered shrubs

3. *Anogeissus latifolia* - *Chloroxylon sweitenia* - *Albizia amara* type

A31 Dense forest
A32 Savanna-woodland
A33 Tree savanna
A34 Scrub-woodland to dense thicket
A35 Discontinuous thicket to low scattered shrubs

4. *Anogeissus latifolia* - *Pterocarpus marsupium* - *Terminalia* spp. type
(600m-1400m)

- A41 Dense forest
- A42 Woodland to savanna-woodland
- A43 Tree savanna
- A44 Scrub-woodland to dense thicket
- A45 Discontinuous thicket to low scattered shrubs

B. High elevation evergreen to semi-evergreen forests (1400m-1800m)

1. Meliaceae - Lauraceae type

- B11 Dense forest
- B12 Woodland to savanna-woodland
- B13 Tree savanna
- B14 Grassland

C. Edaphic types

C11 1. Riparian forest

III MONTANE ECO-FLORISTIC ZONE (ABOVE 1800m)

- A11
← 1. Shola forest → Dense forest
- A12 Tree and shrub savanna
- 2. ← Grassland
- B21

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF ZOOLOGY
NATURAL SCIENCE BUILDING

EAST LANSING • MICHIGAN • 48824-1115

August 28, 1990

Mr. R. Prabhakar
Centre for Ecological Sciences
Indian Institute of Science
Bangalore 560 012
INDIA

Dear Mr. Prabhakar:

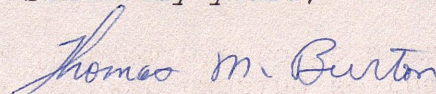
Thank you for your letter and the slides, photocopies, and data that you sent to me on May 31. I must apologize for the long delay in answering this letter. I have been very busy writing two manuscripts that had to be finished prior to presenting them to a symposium on diatoms that met from August 11-18 in San Francisco. Those manuscripts and interactions with my five graduate students plus directing my large research project on northern Michigan streams has kept me very busy. Currently, I am getting ready to move from northern Michigan back to East Lansing so that I can teach my classes this fall term. It promises to be a very hectic autumn.

Realistically, I probably will not be able to finish work on the conservation paper on the Nilgiris streams prior to winter of 1991. However, I do hope to find some time to start on this paper soon. Thus, any updates of data from you and the vegetation maps would be appreciated as soon as possible. As soon as I arrive on campus next week, I will get the slides that you sent me made into prints and will get them drawn into finished maps by our graphics artists. If you have updates of any of the data on these slides, please send them along quickly.

I am uncertain how to handle the dendrograms on the drainage systems. The order of the streams is, of course, strongly influenced by what is considered to be a perennial versus an intermittent stream. I think it might be better to use historical data from the earlier map for determination of stream order for the paper and to present changes based on later maps as being modifications due to human impacts. What is your opinion?

Please thank Dr. Sukumar for the copies of the excellent slides of the elephants for me. I have used them already in talks to my graduate students on my experiences in India. Please give my regards to Dr. Gadgil and to everyone else in the Centre.

Sincerely yours,



Thomas M. Burton
Professor