Poster Session

USE OF COMMON PROPERTY RESOURCES (CPR) BY RURAL POPULATION IN DIFFERENT ECOLOGICAL HABITATS IN KARNATAKA, INDIA : A CASE STUDY

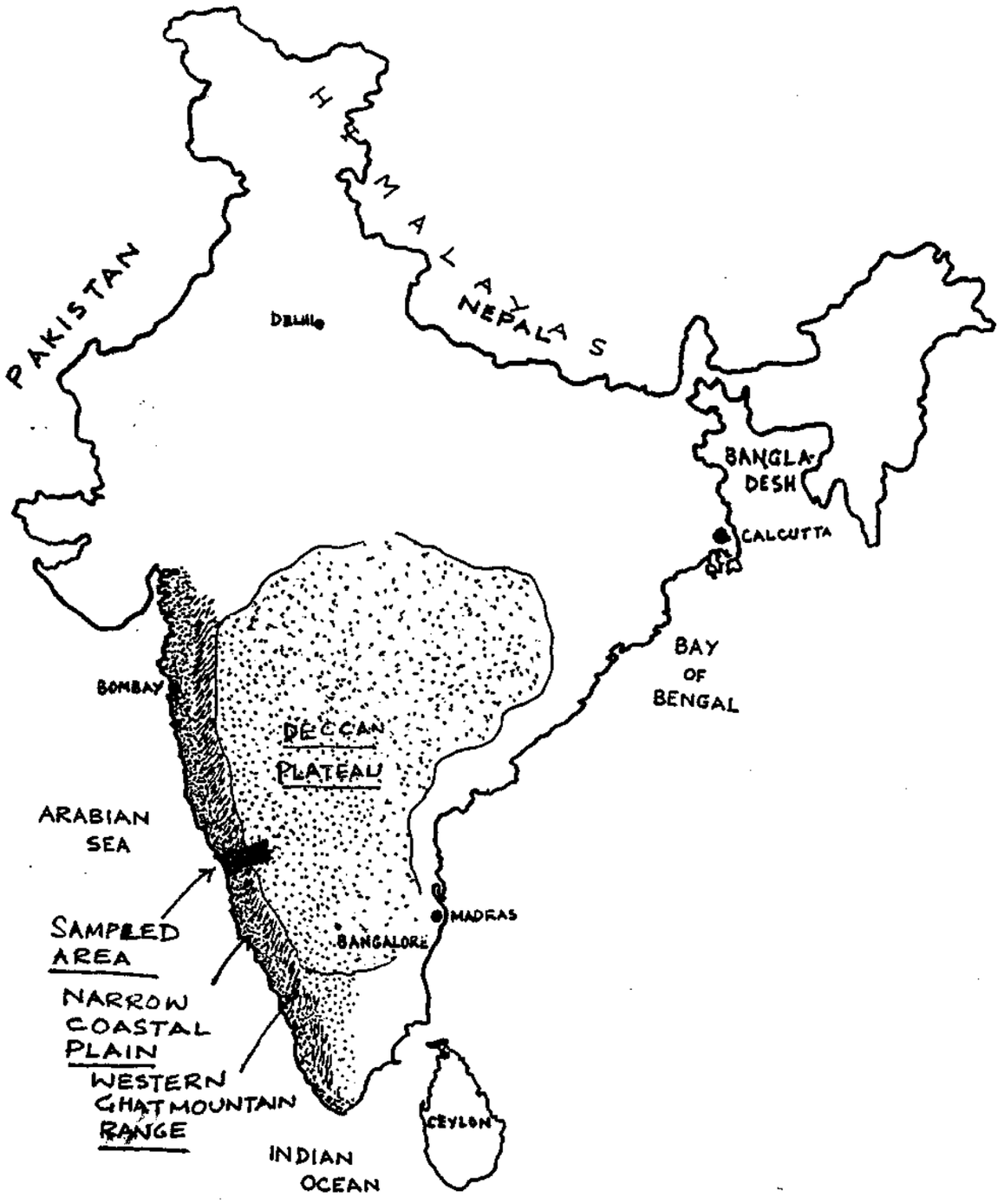
SILANJAN BHATTACHARYYA AND MADHAV GADGIL

CENTRE FOR ECOLOGICAL SCIENCES, INDIAN INSTITUTE OF SCIENCE
BANGALORE 560012, INDIA

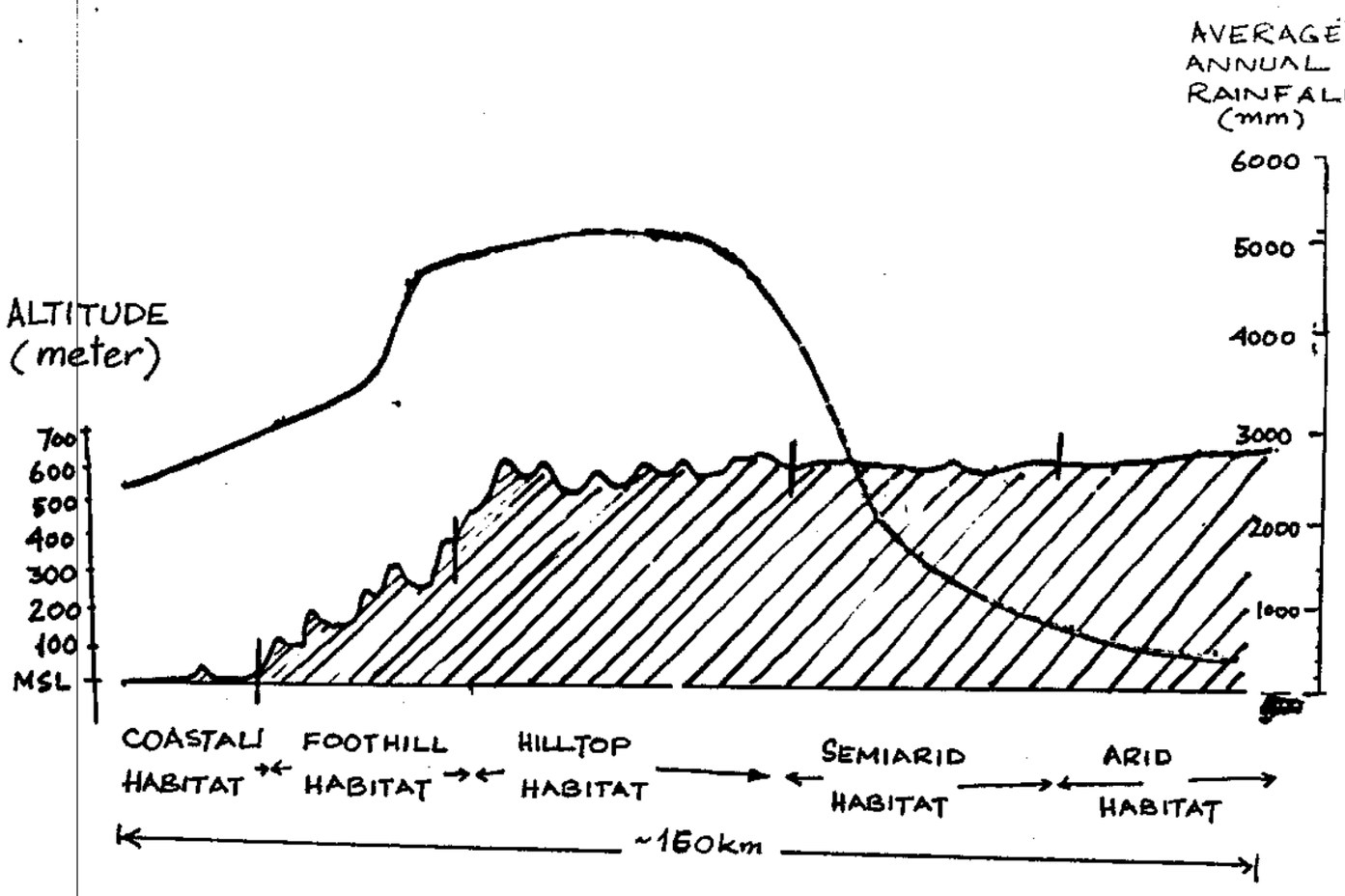
INTRODUCTION

Since the publication of 'Tragedies of commons'[1] many serious attempts, both theoretically[2] and empirically[3,4] have been put forward to show that it is possible to avert the 'tragedy', and many traditional societies have actually used their common property resources sustainably for a long period without depriving any of their members from access to it.[3,4,5]

The present study is an attempt to understand the patterns of use of and dependence on CPR by the rural population of traditional Indian caste society. To understand these patterns better and their possible correlations with the living habitats different village communities are selected for this study from contiguous but distinct ecological zones in Karnataka, a southern state of India.



THE LOCATION OF THE REGION UNDER PRESENT STUDY



TOPOGRAPHIC AND RAINFALL PATTERNS IN THE STUDIED REGION SHOWING DIFFERENT HABITATS

SALIENT FEATURES OF THE COMMUNITIES LIVING IN THESE HABITATS

Hierarchial 'caste society' : typical to Indian subcontinent.
More than one 'caste' group lives in a village community . Each is strictly endogamous and maintains a distinct cultural identity too. Each group often has a particular occupation pursued through generations . Similarly the socio-economic status in the community is often fixed for a group .

Reciprocal, though highly inequitable, exchange relations for resources, services, and information between these groups function in the community.

All these communities are basically agrarian in nature.

All communities depend heavily on local natural resource bases for fuel, fodder, suplementary food etc.

SALIENT FEATURES OF :

COASTAL HABITAT AND THE COASTAL COMMUNITY

- NARROW STRIP (MAX. WIDTH 10 KM) OF COASTAL PLAIN, MOSTLY ESTUARINE IN NATURE

- DENSELY POPULATED FOR AT LEAST LAST 500 YEARS

- ORIGINAL FOREST COVER OF MOIST TROPICAL NATURE AND MANGROVES ARE ALMOST FULLY EXHAUSTED

- FISHING IS THE MAIN ECONOMIC ACTIVITIES AT COMMERCIAL LEVEL

-AGRICULTURAL PRACTICE, MAINLY PADDY CULTIVATION, SERVES ONLY THE LOCAL SUBSISTENCE DEMAND

- HIGH SCARCITY OF FUEL AND FODDER IS MET BY LARGE INFLOW OF THOSE FROM FORESTED FOOTHILL ZONES

CRR USE IN

COASTAL COMMUNITY

HABITAT TYPES	RESOURCE TYPES	%POPULATION HARVEST IT	MAINLY USED FOR	CONTRIBUTION ⊛ TO DEMAND	PRESENT STATUS
SEA	Fish	8·62	Sale & Self	Major	Abundant
ESTUARY & RIVER	Fish	24.06	Sale & Self	Major	Abundant
	Clam, Oyster	29·34	Self	Major	Abundant
	Dead Shells	10·15	Sale(to lime makers)	Major	Abundant
	Leaf dust	14·01	Self (As manure)	Moderate	Abundant
	Drift wood	7.6	Self (as fuel)	Minor	Scarce
RIVERSIDE LOWLAND	Crabs	14·7	Self	Major	Abundant
	Mangroves	2·5	Self (as fuel)	Minor	Scarce
STREAMS	Pandanus	3.0	Self (mat weaving)	Minor	Scarce
HILLOCKS	Laterite blocks, soil & lime stone	37·36	Self	Major (construction)	Abundant
	Firewood	11·16	Self	Minor	Scarce
	Fodder grass	10·35	Self	Minor	Scarce

Sample size - 925 fam...

⊛ Contribution from this harvest to the total demand of this resource type by the local population for self use or ⊛ sale.

FOOTHILL HABITAT AND FOOTHILL COMMUNITY

- TILL RECENTLY, SPARCELY POPULATED, ONLY BY SOME SHIFTING CULTIVATOR GROUPS. IN LAST 40 YEARS FOLLOWING ERADICATION OF MALARIA AND BUILDING OF NEW ROADS PEOPLE MAINLYY FROM COAST STARTED SETTLING IN THE CLEARED FOREST AREAS.

- DENSE TROPICAL MOIST FOREST COVER IS STILL ABUNDANT CONSIDERABLY (68 % OF TOTAL AREA UNDER FOREST)

- AGRICULTURE IN FOREST CLEARNGS SERVES THE SUBSISTENCE DEMAND WHILE GATHERING MINOR FOREST PRODUCE IS THE OTHER MOST IMPORTANT ECONOMIC ACTIVITY

CPR USE IN

FOOTHILL COMMUNITY

HABITAT TYPES	RESOURCE TYPES	%POPULATION HARVEST IT	MAINLY USED FOR	CONTRIBUTION TO DEMAND	PRESENT STATUS
RIVER/ STREAM	Fish	73.52	Self	Minor	Scarce
	Sand	6.09	Self	Major	Abundant
	Water	25.38	Self (drinking)	Minor	Scarce
FOREST	Minor Forest Produce (13 items)	85.18	Sale & self	Major	Abundant
	Timber (18 species)	74.07	Self	Major	Abundant
	Fire wood (19 Species)	87.03	Self	Major	Abundant
	Game animals (14 species)	50.0	Self	Minor	Moderately Abundant
	Bamboo (basket making)	0.6	Self	Minor	Scarce
	Caryota palm (Trunk)	9.25	Self (construction)	Minor	Abundant
	Bossera (leaf)	3.2	Self (Weaving umbrella)	Minor	Moderately Abundant
	Fodder grass	$\ll$ 1.0	Self	Minor	Scarce
	Mud (special type)	3.7	Self (Pottery)	Minor	Scarce

Sample size : 54 families

GENERAL FEATURES OF

HILLTOP HABITAT AND HILLTOP COMMUNITY

- ORIGINALLY FORESTED LIKE FOOTHILL HABITAT, MUCH OF ITS FOREST COVER IS NOW HIGHLY DEGRADED DUE TO OVER-EXPLOITATION FOR COMMERCIAL DEMAND

- HORTICULTURE OF MIXED CROPS OF BETEL NUTSAND SPICES IS MOST SUITABLE IN THIS HABITAT AND IS THE MAIN ECONOMIC ACTIVITY IN THE COMMUNITY

- EACH HORTI-GARDEN OWNER (ALMOST ALWAYS FROM 'HAVIG BRAHMIN'-A PRIESTLY GROUP) ENJOYS THE RIGHT OF EXPLOITING A PATCH OF FOREST ATTACHED TO HIS GARDEN AS SOURCE OF FUEL, FODDER, LEAF MANURE ETC. OTHERS USE REMAINING FOREST PATCHES

CPR USE IN :

HILLTOP COMMUNITY

HABITAT TYPES	RESOURCE TYPES	%POPULATION HARVEST IT	MAINLY USED FOR	CONTRIBUTION TO DEMAND	PRESENT STATUS
RIVER/ STREAMS	Fish	6·89	Self	Minor	Moderately abundant
	Sand	14·8	Self	Minor	Scarce
	Water	0·16	Self (Drinking)	Minor	scarce
FOREST	Minor Forest Produce (13 items)	24·07	Self & Sale	Minor	Scarce
	Firewood (18 species)	22·22	Self	Minor	Scarce
	Timber (23 species)	22·22	Self	Major	Scarce
	Fodder grass	≪ 1·0	Self	Minor	Scarce

SAMPLE SIZE = 87 families

GENERAL FEATURES IN

SEMIARID HABITAT AND SEMIARID COMMUNITY

It has long history of intensive agriculture of diverse crops supported by tank irrigation. Natural tanks are abundant here.

A major part of demand for fuel and fodder is met from agricultural byproducts.

Natural vegetation of dry deciduous types are found only in a few patches, meet remaining demand for fuel and fodder.

CPR USE IN

SEMIARID ZONE COMMUNITY

HABITAT TYPES	RESOURCE TYPES	%POPULATION HARVEST IT	MAINLY USED FOR	CONTRIBUTION TO DEMAND	PRESENT STATUS
RIVER	Fish	≪ 1·0	Self	Minor	Scarce
	Water	4·2	Self (irrigation)	Minor	Scarce
RIVER & POND BANKS	'Appu'-Grass	11·86	Self (mat weaving & roof thatch)	Minor	Abundant
	Mud	69·91	Self(pottery & Construction)	Minor	Scarce
POND	Water	22·88	Self (Irrigation & drinking)	Minor	Scarce
HILLOCK	Fodder grass	56·53	Self	Major	Scarce
	Fire wood (7 species)	69·5	Self	Major	Scarce
	'Mede' grass	1·71	Self (broom, rope)	Major	Moderately abundant
	Phoenix sp.	1·71	Self (making broom,rope)	Major	Moderately abundant

SAMPLE SIZE = 467 families

GENERAL FEATURES

ARID HABITAT AND ARID COMMUNITY

Outcrops of granites and pebbled uncultivable lands cover a good part of its landscape.

A good portion of the population are semi-nomadic shepherds who provide a major supply of woolen products and meat to neighboring regions.

Agricultural practice suitable to aridity serves this community for both subsistence and commercial needs beside provide some supply of fuel and fodder as byproducts.

Natural vegetation of thorny scrubs abundans and provide a good supply of fuel and fodder.

CPR USE IN

ARID ZONE COMMUNITY

HABITAT TYPES	RESOURCE TYPES	%POPULATION HARVEST IT	MAINLY USED FOR	CONTRIBUTION TO DEMAND	PRESENT STATUS
RIVER	Fish	3·9	Self & Sale	Major	Moderately abundant
	Water	≪1.0	Self (Irrigation)	Minor	Scarce
RIVER & POND BANKS	'Appu'-grass	4·8	Self(mat weaving & roof thatch)	Major	Abundant
	Mud	68·29	Self(pottery & construction)	Minor	Scarce
	Sand	19·5	Self (construction)	Minor	Scarce
POND	Water	17·34	Self (Animal)	Minor	Scarce
HILLOCK & OTHER UNCULTIV-ABLE LAND	Fodder grass	70.00	Self	Major	Abundant
	Firewood (4 species)	90.00	Self	Major	Abundant
	'Mede' grass	2·4	Sale (making broom)	Major	Moderately abundant
	Phoenix sp..	2·4	Sale(making basket,broom)	Major	Abundant

Sample Size = 1025 families.

QUANTITATIVE SUMMARY OF CPR USE BY THESE COMMUNITIES

	COASTAL	FOOTHILL	HILLTOP	SEMIARID	ARID
# CPR items used	15	22	19	8	9
	average # items used /community= 15				
community % population use at least one item CPR	86.9	93.5	26.0	76.6	90.0
	average % pop./ community use at least one item= 74.6				
maxm. distance one travels to reach a CPR source(in Km.)	12	3	5	5	6
	average of maxm. distances travelled= 6.2 Km.				

CONCLUSION: Our observations allow concluding following pattern regarding the CPR use in these area :

Total Resource Pool Available To A Village Community

Private Ownerships	**CPR**
-farming land -household areas -pastures (excepting and semi-arid communities)	- habitats for fishing,hunting - habitats for gathering items serve the demand for food , fuel, fodder, construction, processing equipments etc.

No concern about property right is prominent.	**Property right is defined for a group/village**
Resources used by any one, usually distance being the only determinig factor	**Only members of the owner population unit are prmitted to use**
Foraging constraints and level of requirement set the level of exploitation	**Level of exploitation is contrained by restrictions imposed on the individual users by the owner unit**

When Resource value and its exhaustion probability are realised by the users

or

Rituals or supernatural beliefs value protections of such resources just as coincidence

REFERENCES

1. Hardin, G. 1960, The competitive exclusion principle, Science 131,1292-7.

2. Axelrod and Hamilton, W. D. 1981, The evolution of cooperation, Science, 211, 1390-6

3. Gadgil, M. 1985, Social restraints on resource utilization: The Indian experiences, in ' culture and conservation' by Mcneely and Pitt (eds.), Croom Helm.

4. Gadgil, M. and F. Berkes, 1990, Traditional Resource management system,

5. Jodha, N. S. 1990, cited in 'Joint management for forest lands : experience from South Asia, a Ford Foundation program.

Acknowledgement

We sincerely acknowledge the helps by Mr. Y. Kanade and other staffs at field stations Of Centre for Ecological Sciences at Kumta and Sirsi during field works.