VOGUE

Students Note Book

DIVERSITY (LIT)

&

TADPOLES

FIELD NOTES

Ryerson

DIVERSITY

I

notes:

1

6.4.87

** Biogeography + Diversity

(References)

* Books

O = x

[ ] = generally on diversity

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** [C. BARRY COX / PETER D. MOORE (1980) BIOGEOGRAPHY (3rd edn) Blackwell scientific pbls, oxford pp 234]

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HABITAT SELECTION IN BIRDS

ed MARTIN L. CODY (1985)
Academic Press, Orlando pp 558

X — BIOGEOGRAPHIC considerations have a great deal to do with which species actually occupy a given habitat in a given region. — p 31

[An Introduction to Habitat selection in Birds — M.L. Cody pp 3–56]

① Stiles, A.W. (1978) Avian communities in temperate & tropical alder forests CONDOR 80: 276–284

② Cody M.L (1983) Continental distr patterns & concept evolution in bird communities. In "Mediterranean-Type Ecosystems", (F.J. KRUGER, D.T. MITCHELL, and J.U.M. JARVIS, eds.), Ecological studies vol. 43 pp 357–402, Springer-Verlag, Berlin & NY.

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X — BSD/FHD "Subsequent work has extended MacArthur techniques to birds & habitats worldwide, & to organisms besides birds, but has also revealed limitations not

only to the generality of 1 parameter but also to circumstances in which the basic relationship, of higher diversity in structurally more complex habitats, may be upheld" — Cody p 9.

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X

– vegn ht + percent canopy cover often recurs as those most significantly related to bird distribution.

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X see "Measurement of Habitat structure" – p 33

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ECOLOGY 60: 512–520

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X effects of habitat extent + patchiness — p 38

[for literature on birds of disturbed + undisturbed forests of America – see p 133 – 1st para of 1. 'Outline diffs in Habitat distrib'.]

Aspect ratio (A) = $\frac{\text{span}^2}{\text{wing area}}$

wing loading (W) = $\frac{N}{m^2}$ N = body mass, m^2 = wing area.

glide ratio = $\frac{\text{forward velocity}}{\text{sinking velocity}}$

X species diversity as mainly a fn of the habitat diversity included in the chosen area – Cody p 192

"Habitat selection in grassland + open-country birds" – pp 191 – 226

(27) MacArthur RH, Recher, H & Cody ML (1966) On the relation between habitat selection & bird spp diversity AM NAT 100 319 – 332.

X. GRASSLAND BIRDS (MORPHS vs DIET)

– most studies have shown " birds v plastic in beh + espy diet – ie are broad diet overlaps + poor relationships bet morphology + diet. – p222

summary of pp 191 – 226 (p222)

a) Certain geographic areas might be used for breeding only in certain years, such as after unusually wet / unusually dry seasons;

b) Certain habitats might be used only in certain circumstances, such as after recent fires;

c) territories can be located c̄ respect to certain vegetational features + can vary widely in size c̄ resource abundance;

d) diets can change, apparently opportunistically as different food taxa are available;

e) the presence ~~X~~ in the territory of other species c̄ similar ecology or espy food requirements can be regulated via direct behavioral interaction & result in partial / complete interspecific territoriality.

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(33) Simberloff D (1983) Competition theory, hypothesis testing, & other community ecological buzzwords AM NAT 122, 626-635

HABITAT SELCN IN SHRUB-STEPPE

(12)

JA Wiens — pp 227-251 X

— In erratically varying environments —

a) selection favoring optimal habitat selection may not always be intense;

b) habitats may not always be fully saturated;

c) resources may not be always limiting;

+ d) changes in habitats/resources may not always be closely tracked

— p 228

(33a) Holmes RT + Holmes RT (1983) Foraging niches & the structure of forest bird communities in contrasting montane habitats CONDOR 85 121-138

(34) Karr JR + Freemark KE (1983) Habitat selection & environmental gradients: dynamics in "stable" tropics ECOLOGY 64 1481-1494

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HABITAT SELN IN TEMPERATE MARSH - NESTING BIRDS

Joanna Burger pp 253 - 281

— aquatic habitats provide abundt food — p 253

— wetlands — = lands where saturation with water is the dominant factor determining 1 nature of soil devpt + 1 types of plts + animals living there — p 254

X Cowardin et al (1979)

— a) marine
b) Estuarine
c) riverine
d) lacustrine (non tidal water areas c̄ < 30% tree, shrub / emergent vegn cover)
e) Palustrine (—— " —— c̄ > 30%)

(42) Cowardin L.M, Carter V, Golet FC + La Roe, ET (1979) Classification of wetlands + deepwater habitats of 1 United States. Fish. Wildl. Serv. Biol. Serv. Program, FWS/OBS - 79/31

— Marshes — do not have trees.

Marshes = called emergent wetlands (Cowardin et al 1979) + occur in estuarine, riverine, lacustrine + palustrine systems.

Types of marshes p 255
Characterized by — salinity
— seasonality
— openness

— Tidal — freshwater —
— seasonal — semipermanent — permanent.
— coastal & riparian
— lacustrine & riparian — open waters
— channels & pools scattered throughout.

— close proximity of small marshes to potential food sources — rural, agricultural & forested areas — make for very attractive habitats.

— openness & edges & very high for many birds.
— structural diversity & high — plant form & structure of marsh play key role in habitat selection. p 255

— / diversity of pl structure allows for niche diversification among spp & results in greater spp packing

Habitat selection p 258
— genetic
— learned
— variable & seasonal

DISPERSION PATTERNS & HABITAT RESPONSES OF BIRDS IN NORTHERN HARDWOODS FORESTS

– Thomas W. Sherry
Richard T. Holmes pp 283 – 309

Trees assessed in 10×10 m qdts.
Shrubs 0.5 – 5 m ht category.
Tree ≥ 10 cm dbh.

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(43) Ambuel, B & Temple, SA (1983) Area-dependent changes in bird communities & vegetation of Southern Wisconsin forests. ECOLOGY 64 1057–1068

– when forests & reds & 'islands' – [Sherry & Holmes] >d nest predat, nest parasitism & competition from open-country spp & some factors thought to decrease populations of forest-dwelling warblers & other migrants —p 304–305

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(44)* Keast A & Morton ES (1980) "Migrant Birds in the Neotropics Ecology, Behavior, Distribution & Conservation." Random House Smithsonian Inst. Press, New York.

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– "we further show that habitat selection by forest birds is a result of diverse biological processes that operate on different spatial + temporal scales"
—p 306 Sherry + Holmes

– X'ce of quadrat size in bird studies –
p 300 – Sherry + Holmes.

HABITAT SELECTION IN AMAZONIAN BIRDS

– John Terborgh pp 311 – 338

(48) Pearson, D L (1971) Vertical stratification of birds in a tropical forest CONDOR 73 pp? ~~453 – 466~~

(49) ——"—— (1975) The relation of foliage complexity to ecological diversity of three Amazonian bird communities CONDOR 77 453 – 466

(50) ——— (1977) A pantropical comparison of bird community structure in six lowland forest sites CONDOR 79 232-244

(51) — & —— (1977) Ecological relationships of small antbirds in Amazonian bird communities. AUK 94 283-292

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(53) Fogden MPL (1972) The seasonality & population dynamics of equatorial forest birds in Sarawak IBIS 114, 307-343

(54) Haffer (1969) Speciation in Amazonian forest birds SCIENCE 165 131-137

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in lowland forest of Amazonian basin
>1000 spp of birds resident.
>500 " can be seen / 10 km²
[— base of Andes from SE Colombia – N Bolivia] > st

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(60) ——"—— & Weske, J.S (1969) The segregation of vacant habitats by Peruvian birds ECOLOGY 50 765-782

(61) ——"—— & ——.—— (1975) The role of competition in the distribution of Andean birds ECOLOGY 56 562-576

— Problems ē MIST NETTING — see p 313

~ spot mapping — " — p 314

Tropical forest birds have large territory sizes p 314.

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(62) MacArthur, RH, MacArthur JW & Preer J (~~[illegible]~~) (1962) On bird spp diversity II. Prediction of bird census from habitat measurement Am NAT 96 167–174

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In Amazonian forests — 328 spp of birds excluding (kingfishers, swallows etc feeding near water) were found in 110 ha plot i.e., 1.1 sq km. p 320.

Light — very important factor of distributions — p 324.

see Pearson (1971)

+ (64) Fitzpatrick JW (1980) Foraging behavior of Neotropical tyrant flycatchers CONDOR 82: 43–57

Factors affecting diff in BSD of habitats
— 1) diffs in foraging substrates
2) ~ food resources
3) ~ competitors

structural complexity not always tightly related to
BSD — p 325 – 326 ref 59,

(65) Vuilleumier F (1972) BSD in Patagonia (temperate S. America) Am NAT 106, 266 – 271

X. BS / habitat is correlated to
1) stature of vegn
2) no of superimposed strata of plts
3) PS diversity
4) variety of resources offered by habitat
& 5) temporal continuity of res. availability

— forest structure — insectivorous
— floristics — frugivorous & nectarivorous

Tropical vs Temp BSD (old hypotheses)
1) > structural complexity in Tropics
2) > guilds unrepresented in temperate forests.
3) larger guild niches — broader underlying resource spectrum — Tropics
+ 4) tighter spp packing.

(66) Leigh EG (1975) Structure & climate in tropical rain forest. Ann Rev. Ecol Syst 6 67-86.

(67) Karr JR (1976) Seasonality, resource availability & community diversity in tropical bird communities. Am Nat 110, 973-994.

Habitat - consumer interactions in frugivorous birds - Carlos M. Herrera pp 341-365

X small birds have higher metabolic rates & energy requirements relative to body wt than larger ones

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X.

HABITAT SELN BY NONBREEDING, MIGRATORY LAND BIRDS

— RICHARD L. HUTTO pp 455 - 476

Habitat — "a spatially contiguous vegn type II appears >/< homogenous thro'out & is physiognomically distinctive from other such types"
— p 456

Choice
① Geographic location
② Particular habitat type
③ precise location in habitat
} p 458

- food availability is 4 times greater in 1 edge than interior forest - Mexican lowland evergr. forest. migrant birds 5 times > in edge.

HAB. SELN IN ISLAND Vs MAINLAND BIRDS

Jacques Blondel pp 477 - 516

- typ ∈ large territories & home ranges will be precluded from islands ∈ only small patches of suitable habitat — stochastic extinct possible
- p 485

(76) Moore, N.W & Hooper, M.D (1975) On the no of bird spp in British woods. Bird Conserv 8, 239–250.

(77) Galli, AE, Leck CF, & Forman RT (1976) Avian distich pattern in sprg forests islands in central New Jersey Auk 93 356-365

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(80) Am Nat Nov 1983.

(81) Bock, CE & Richlip RE (1983) Range size & local abundance of some North american songbirds: A positive correlation Am Nat 122, 295–299

(82) Brown J.S (1982) Niche shift & the minimization of competition Theor Pop. Biol 22 367-381

(83) Brown, James (1984) On the relationship between abundance & distribution of species Am Nat 124 (in press)

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(88) Macarthur RH & Pianka, ER (1966) On optimal use of a patchy environment. AM NAT 100 603-609

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Population growth models

(1) $\frac{dN}{dt} = rN$ — exponential

(2) $\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$ or $\left(r - \frac{rN}{K}\right)N$ — logistic

$N_t = \frac{K}{1+\left[e^{-r(t-t_0)}/N_0\right]}$

(3) $\frac{dN_i}{dt} = r_i N_i \left(\frac{K_i - N_i - \sum_{j\neq i}^{n} \alpha_{ij} N_j}{K_i}\right)$ Lotka-Volterra competition model.

or

$$\frac{dN_a}{dt} = \left(r_a - X_{ab} N_b\right) N_a$$

$$\frac{dN_b}{dt} = \left(r_b - X_{ba} N_a\right) N_b$$

where N_a = prey or host population size

N_b = predator or parasite population size

r_a & r_b = intrinsic rates of increase of prey & host pop

X_{ab} = effect of pop a has on intrinsic growth of pop b.

TADPOLES

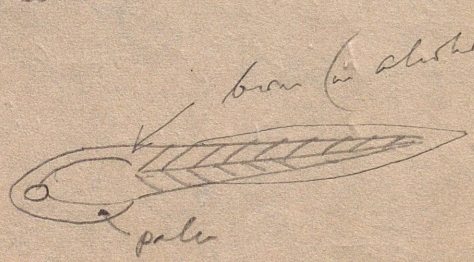
3.5.90 Mudumalai: Bidarahalla

Rosy apart light ē bl abdomen
brachia. Tail transpart. ē bl tips.
shallow, stagnant pools along edge of streams at - btwn rocks + bitten.
size small: nearly fully metamorphosed frog ē tail
S-V c. 7mm.

R. limnocharis

11.12.89 Thomas Bunton (Nilgris) Higher elevation streams

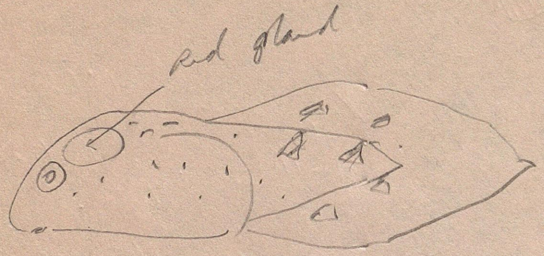
SV - 10 mm (Calyptra)
Tail - 30 mm



17.11.89 Thomas Burton

Moyar (Thorapalli)

R. curtipes

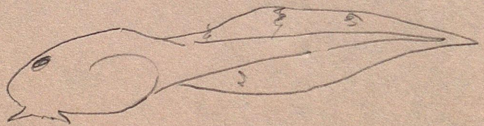


In shoals normally & looks black.

11.6.90 U. Kolimani along Pex estate

Tadpole in flowing streamlet. Benthic

6.5 cm; SV 1.7cm Olive brown c̄ golden dorsal spot. Hind leg just appeared. Mouth ventral c̄ broad fringe of suckers; belly dark with spiral viscera visible.



13.6.90 Kuniparai Stream in rain forest
on rock & leaf litter. Bunthic

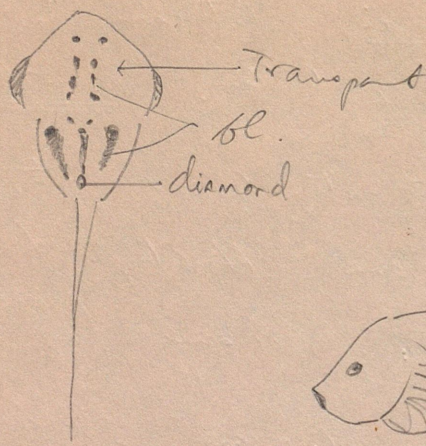
Slim brown & streaks & spot on tail.
5.5 cm; SV 2.0 cm Hindlegs fully developed.
Pectoral muscle: became big in Bangalore.
Anstin; 3.5 cm 1.0 cm SV lighter:

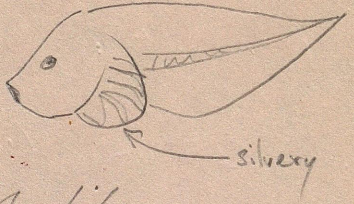
going bigger in Bangalore.

14.7.90 Kyarne hut (Mundiwalai)

Stagnant pools, muddy - outskirts of main lake
lgt & grass & Cyperus; pool tends to be
closely located to the edge of forests.
small shrubs; mainly in water along the
middle stratum 'mesoplagic' swimming &
going down.

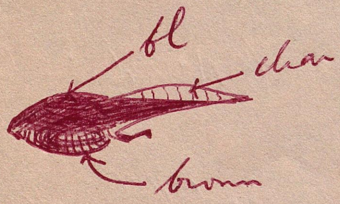
They are in captivity in Bangalore
20 Tadpoles.





fish like

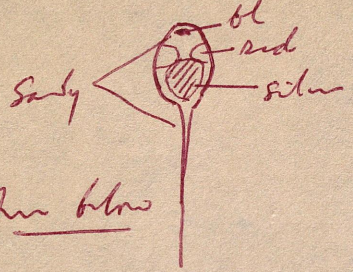
7.9.90

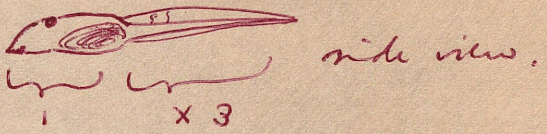


Bufo melanostictus

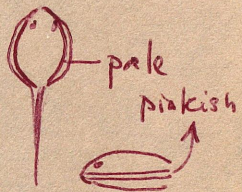
Tadpoles from the pond of metallurgy. (IISc.)

10.7.90 unidentified Tadpoles from valley School — Shyamal.





From stagnant pools along streambed.



One frog emerged on 28.9.90

— from mainly limnocharis but shorter & webbing on feet very small; first finger much longer than 2nd 2 = 4. Eye & snout c. same length? SV < 1 cm.

Can this be R. breviceps / dobsoni?

FROGS

C. life size.

<u>Polypedates</u> n. <u>cruciger</u> ♂

from [illegible]

June 1990.

NKRIA

Bufo Parkeri

Colour suits ? descriptn
in Boulr. the ridge
on head is characteristic

ridge turning inwards on
hind neck.

B. melanostictus.

NERIA Ablitu

Nyctibatrachus major: 1* dead male 5.0 cm SV
c̄ well developed femoral glds
this male was calling

Also — 2 juvs c̄ the white bands
aliciae? ← 2 small frogs — one tan as normal
the other orange-red.

1* large male dark tan c̄ faint
blotches on limbs.

One large live female — 8.0 cm

N. aliciae? the male from Ghatakh. webbing
< than major; the dorsal pattern differs
from juv. major in that there are no bands &
the markings are [illegible] b/t eyes & back.

Ansonia ornata — Juv 1 — 2.0 cm
1 — 2.1 cm
1 — 1.8 cm
adult 1 — 2.8 cm
1 — 3.2 cm

1 live. — 2.8 cm

Minixali – ? 4 diat — 2 jinli

Annicth * 2 alin

BIOSPHERE RESERVES

MAB

1980

Project Document 1

THE NILGIRI

BIOSPHERE RESERVE

NATIONAL MAN &

BIOSPHERE COMMITEE

DOE

Objectives

(1) Conservation of biological diversity
- including genetic diversity of
(cultivated types
domestic animals
wild relatives.

(2) Benchmark studies in natural ecosystems

(3) Comparative studies on man-modified ecosystems

(4) Dept of technology of ecological restoration and training in this field.

Why a Biosphere?

"Conservation of biodiversity is best served by the preservation of a large, compact area with maximal habitat continuity embracing as rich a mosaic of habitat types & successional stages as possible.

To conserve the entire biodiversity
2 (minimum) BR / Biogeographical provinces.

since ~~1986~~ 1973, ~~40~~ 40 nations set aside
161 BR (since UN Sponsored prog. of MAB)

NBR

Wynad - Mysore Plateau - Nilgiris.

Wynad Sanctuary
- Nagarhole — " —
- Bandipur — " —
- Mudumalai — " —

Hill slopes of Nilambur
Nilgiris
Upper Nilgiri Plateau
Silent valley
Siruvani Hills

} Important areas of dry semi Deciduous forest Evergreen wet evergreen Shoolas Grasslands & Swamps.

Attapadi plateau
Mysore valley
Wynad

} Cultivated plants.

Largest park - Nilgiri Tahr
- LTM } endangered spp
- ~~S~~ Lion, Elephant etc..

Total area 5670 km²

3020 km² core
3290 km² manipulate (fruit)
1330 km² — " — (agr.)

FUNDS

- Technical directorate — 7.4%
- 15 field unit — 18.5%
- 3 field directorate — 37%
- in Sutton general duty groups — 12.3%
- Ecological unit groups — 12.3%
- Research + maintenance — 12.3%

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