Fantastic Beasts and Where (and How!) to Find Them

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Lustrum Symposium Archaeopteryx
Utrecht, 5 februari 2019

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In Africa!

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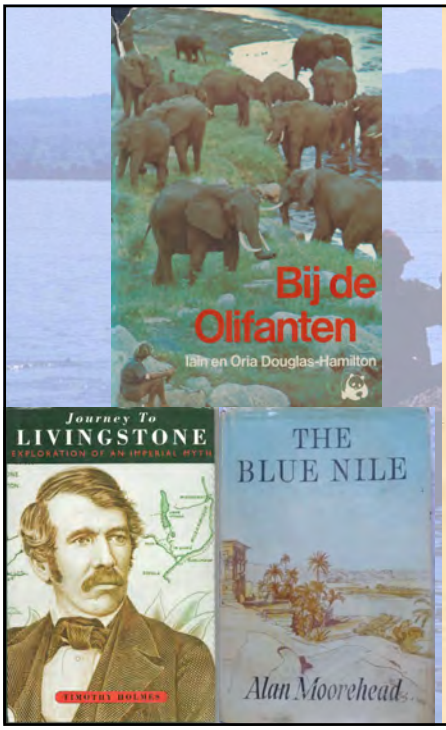
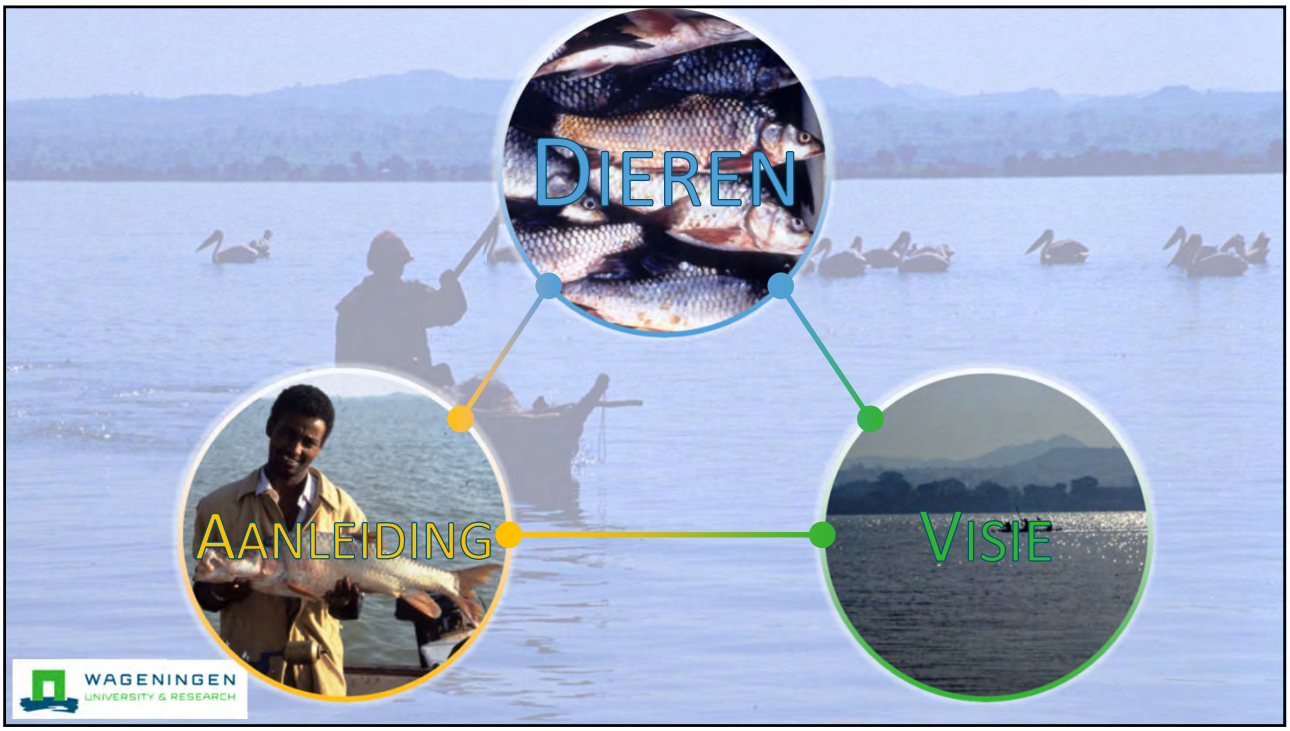

Bij de Olifanten
Iain en Oria Douglas-Hamilton
Journey To
LIVINGSTONE
EXPLORATION OF AN IMPERIAL MYTH
TIMOTHY HOLMES
THE BLUE NILE
Alan Moorehead


SEPTENTRIO
OCCIDENS
ORIENS
MERIDIES
PERSIAE PARS
ARABIA FELIX
NVBIA
PRESBITERI IOHANNIS, SIVE, ABISSINORVM IMPERII DESCRIPTIO


DIEREN
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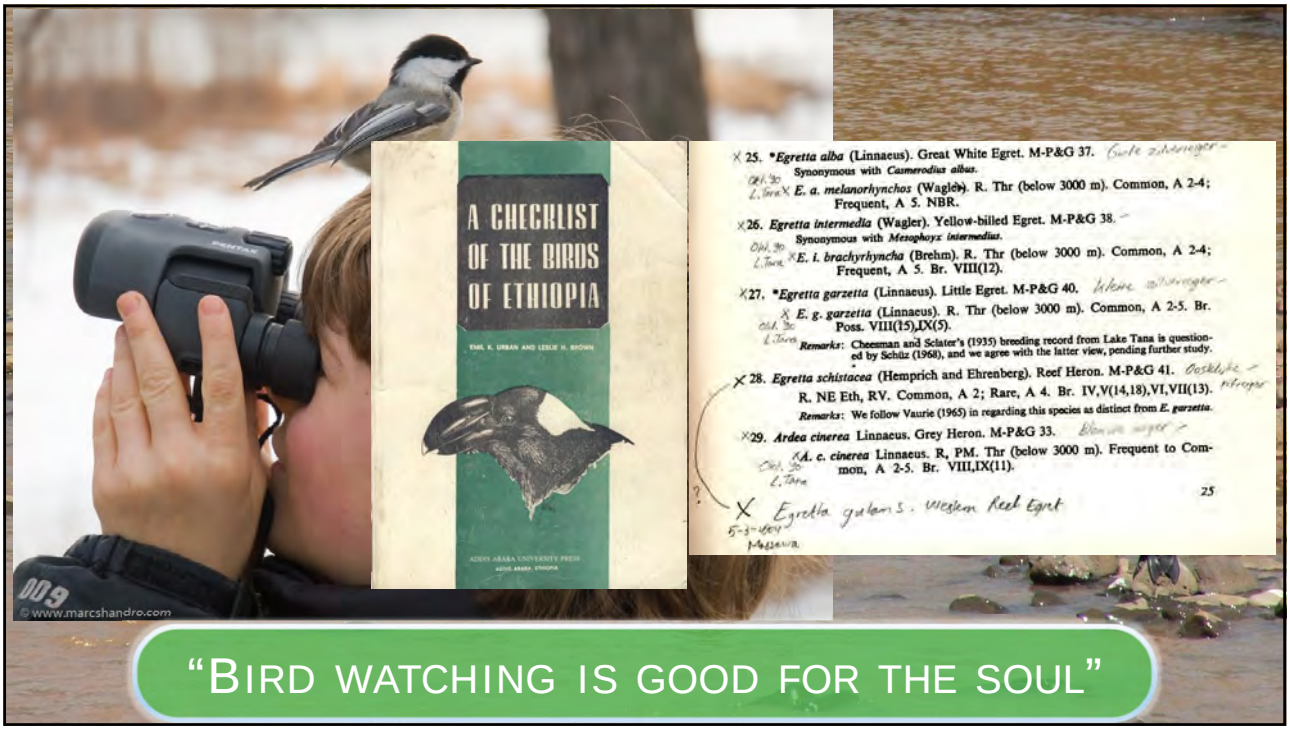
A CHECKLIST OF THE BIRDS OF ETHIOPIA
25. *Egretta alba (Linnaeus). Great White Egret. M-P&G 37.
Synonymous with Casmerodius albus.
E. a. melanorhynchos (Wagler). R. Thr (below 3000 m). Common, A 2-4; Frequent, A 5. NBR.
26. Egretta intermedia (Wagler). Yellow-billed Egret. M-P&G 38.
Synonymous with Mesophoyx intermedius.
E. i. brachyrhyncha (Brehm). R. Thr (below 3000 m). Common, A 2-4; Frequent, A 5. Br. VIII(12).
27. *Egretta garzetta (Linnaeus). Little Egret. M-P&G 40.
E. g. garzetta (Linnaeus). R. Thr (below 3000 m). Common, A 2-5. Br. Poss. VIII(15),IX(5).
Remarks: Cheesman and Sclater's (1935) breeding record from Lake Tana is questioned by Schüz (1968), and we agree with the latter view, pending further study.
28. Egretta schistacea (Hemprich and Ehrenberg). Reef Heron. M-P&G 41.
R. NE Eth, RV. Common, A 2; Rare, A 4. Br. IV,V(14,18),VI,VII(13).
Remarks: We follow Vaurie (1965) in regarding this species as distinct from E. garzetta.
29. Ardea cinerea Linnaeus. Grey Heron. M-P&G 33.
A. c. cinerea Linnaeus. R, PM. Thr (below 3000 m). Frequent to Common, A 2-5. Br. VIII,IX(11).
25
Egretta gularis. Western Reef Egret
© www.marcshandro.com
"BIRD WATCHING IS GOOD FOR THE SOUL"


DE POTEN VAN LANDVOGI
Een vogel loopt op zijn tenen, niet op de gehele voet, want wat eruitziet als een kniegewricht is in werkelijkheid de enkel. De meeste vogels hebben vier tenen; drie wijzen naar voren, en een, die de achterteen
wordt genoemd, ter vele variatie aangepast aan h aan hun voedsel
Lopen. De achterteen van de graspieper is verlengd, wat de vogel steun geeft en achterovervallen voorkomt.
Rennen. De patrijs, die vaak hard loopt, heeft een verkorte achterteen, waardoor het loopvlak wordt verkleind.
Klimmen. Met zijn sterke nagels en twee naar achteren gerichte tenen kan de grote bonte specht langs de schors omhoogklimmen.
Vastklemmen. De nagels van zijn 4 naar voren gerichte tenen dienen de gierzwaluw als haken bij het hangen aan een loodrecht vlak.
DE VELE VORMEN VAN SNAVELS
Knippen. De smient gebruikt zijn korte, brede snavel om gras en plantedelen af te bijten
Openwrikken. De scholekster maakt van zijn snavel een wig om schelpen te openen
Afscheppen. De kluut zift insekten uit de bovenste laag van modder of ondiep water
Scheuren. Met zijn sterke, haakvormige snavel scheurt de steenarend zijn prooi in stukken
Boren. De houtsnip boort met zijn lange, dunne snavel in de zachte grond naar insekten
Hakken. De groene specht hakt een gat in de schors om naar verborgen insekten te zoeken
VORM & FUNCTIE


WAT IS ER NOU AAN VIS, ALS JE VOGELS HEBT?
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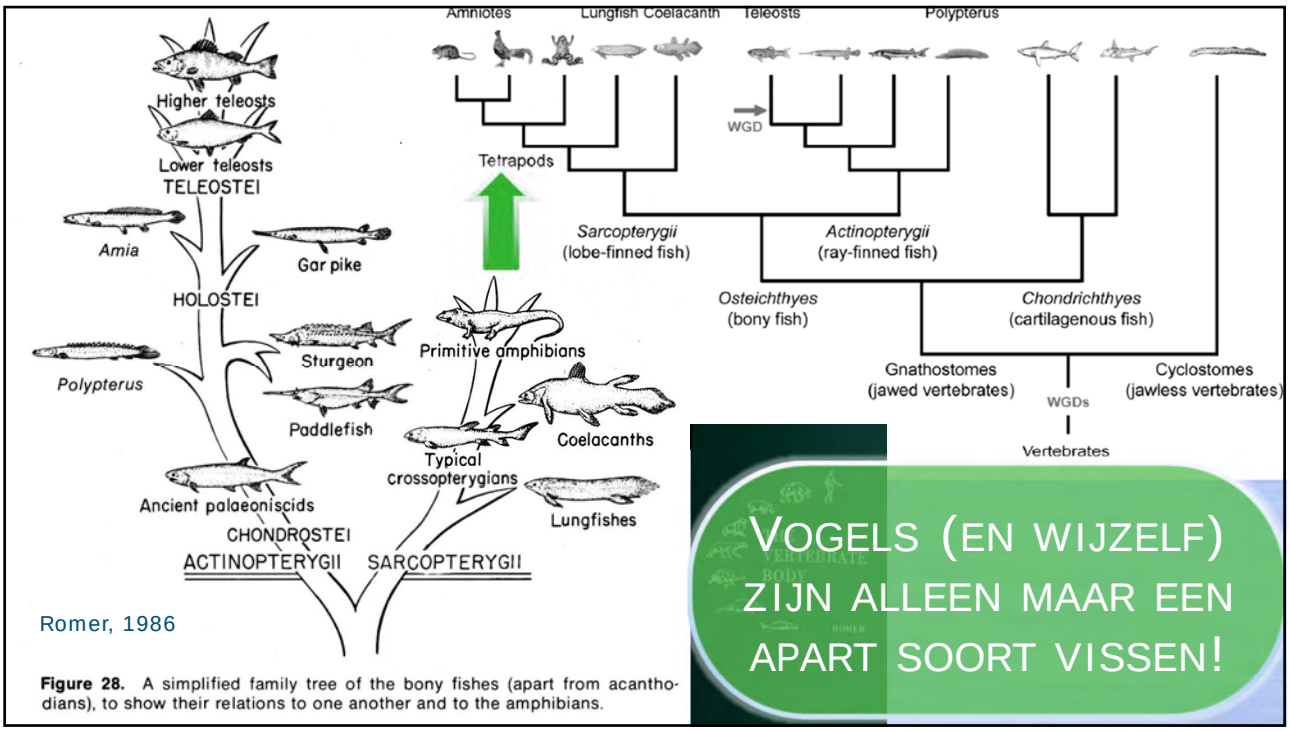
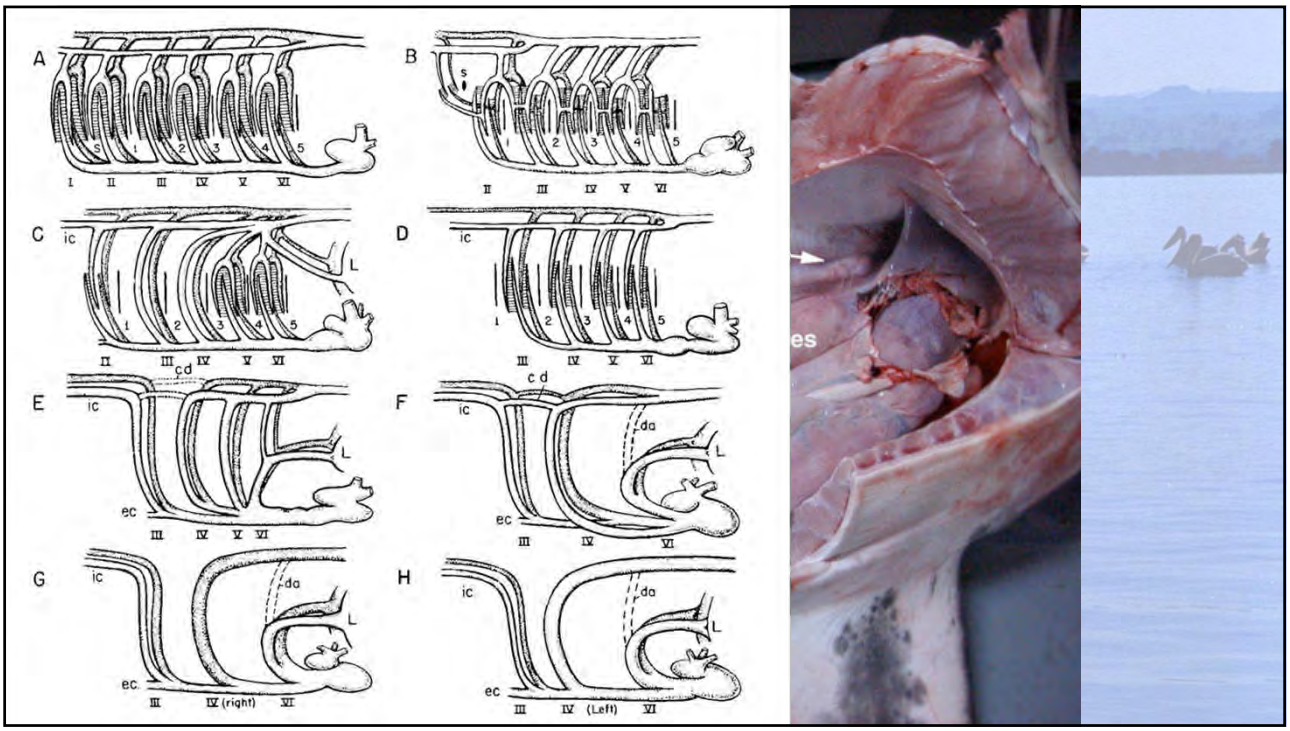

Amniotes
Lungfish Coelacanth
Teleosts
Polypterus
Higher teleosts
Lower teleosts
TELEOSTEI
WGD
Tetrapods
Amia
Gar pike
Sarcopterygii
(lobe-finned fish)
Actinopterygii
(ray-finned fish)
HOLOSTEI
Osteichthyes
(bony fish)
Chondrichthyes
(cartilagenous fish)
Sturgeon
Primitive amphibians
Polypterus
Gnathostomes
(jawed vertebrates)
WGDs
Cyclostomes
(jawless vertebrates)
Paddlefish
Coelacanths
Vertebrates
Typical
crossopterygians
Ancient palaeoniscids
Lungfishes
CHONDROSTEI
ACTINOPTERYGII
SARCOPTERYGII
Romer, 1986
Figure 28. A simplified family tree of the bony fishes (apart from acanthodians), to show their relations to one another and to the amphibians.
VOGELS (EN WIJZELF) ZIJN ALLEEN MAAR EEN APART SOORT VISSEN!


A
B
C
D
E
F
G
H
ic
ec
da
cd
L
s
I II III IV V VI
III IV V VI
III IV (Left) VI
III IV (right) VI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EEN KANS UIT DUIZENDEN!


Atbara
Nahr 'Atbarah
Omdurman
Khartoum
Kassala
Wad Madanī
Kūstī
Al Qaḍārif
Sinjah
Blue Nile
Sudan
Kāduglī
Ad Damazīn
Malakāl
Bentiu
As Sudd
White Nile
Gīmbī
Gambēla
Rumbek
Juba
Kapoeta
Administrative Boundary
Lake Turkana
Gulu
Dem. Rep.
Nak'fa
Eritrea
Keren
Asmara
Massawa
Sen'afe
Ras Dejen 4,533 m (14,872 ft)
Mek'elē
Ādīgrat
Gonder
Lake Tana
Bahir Dar
Desē
Danakil Depression
-155 m (-509 ft)
Djibouti
Djibouti
Assab
Red Sea
Abhā
Jīzān
Najrān
Ṣa'dah
Yemen
Sanaa
Al Ḥudaydah
Ta'izz
Ibb
Say'ūn
Al Mukallā
Aden
Gulf of Aden
Caluula
Boosaaso
Erigavo
Berbera
Hargeysa
Burao
Qardho
Bandar
Laascaanood
Garoowe
Eyl
Galcaio
Garacad
Dusa Marreb
Beledweyne
Somalia
Oddur
Luuq
Baidoa
Giohar
Dolo Odo
Moyalē
Addis Ababa
Dirē Dawa
Jijiga
Nazrēt
Āwash
Gorē
Jīma
Ethiopia
Āwasa
K'ebrī Dehar
Ogadēn
Provincial Administrative Line
Wabē Shebele
Wabē Gestro
Genale
Wenz
Great Rift Valley
Great Rift Valley
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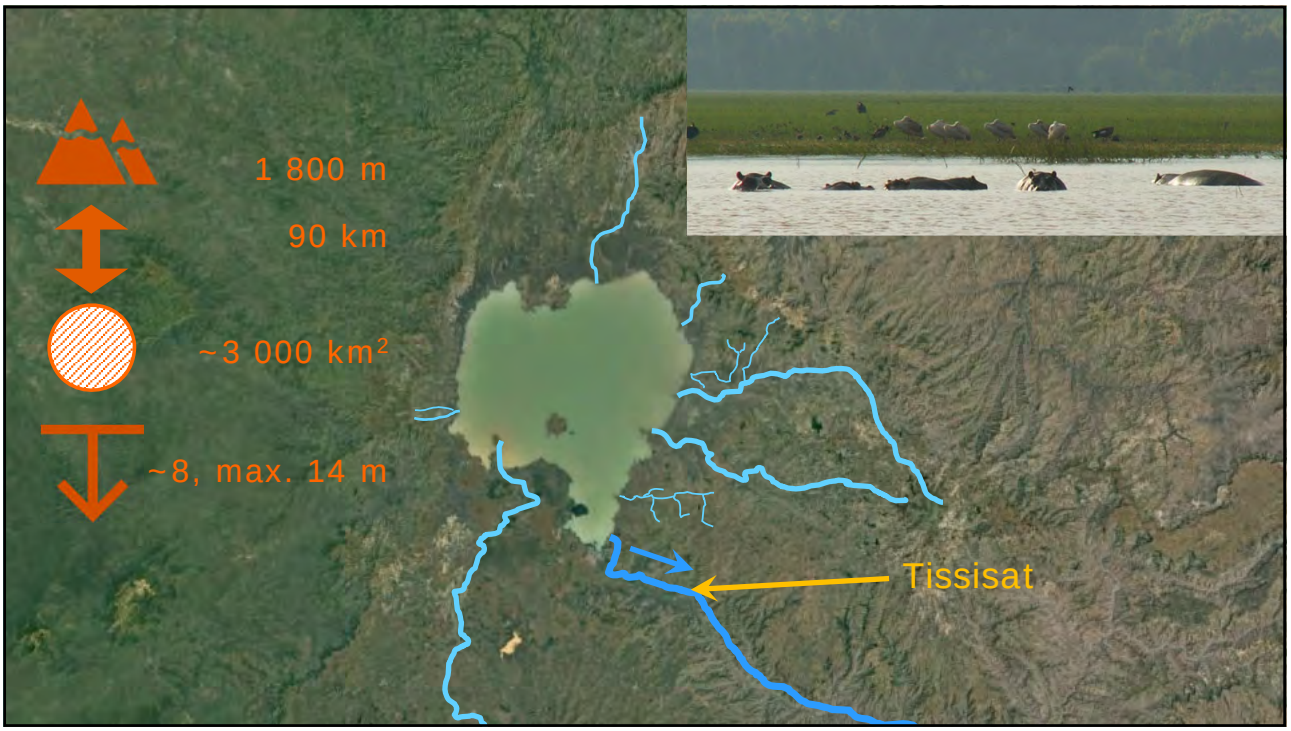
1 800 m
90 km
~3 000 km²
~8, max. 14 m
Tissisat


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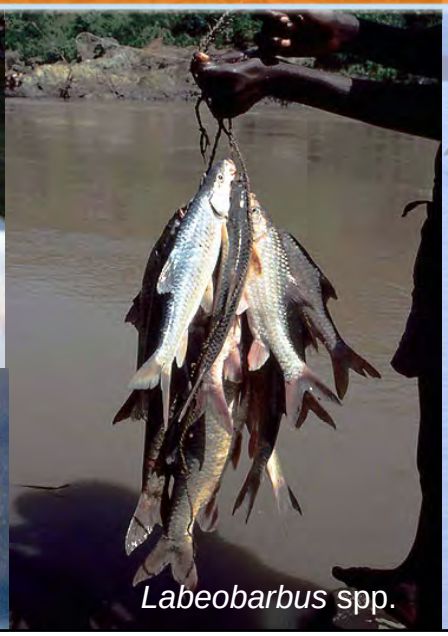
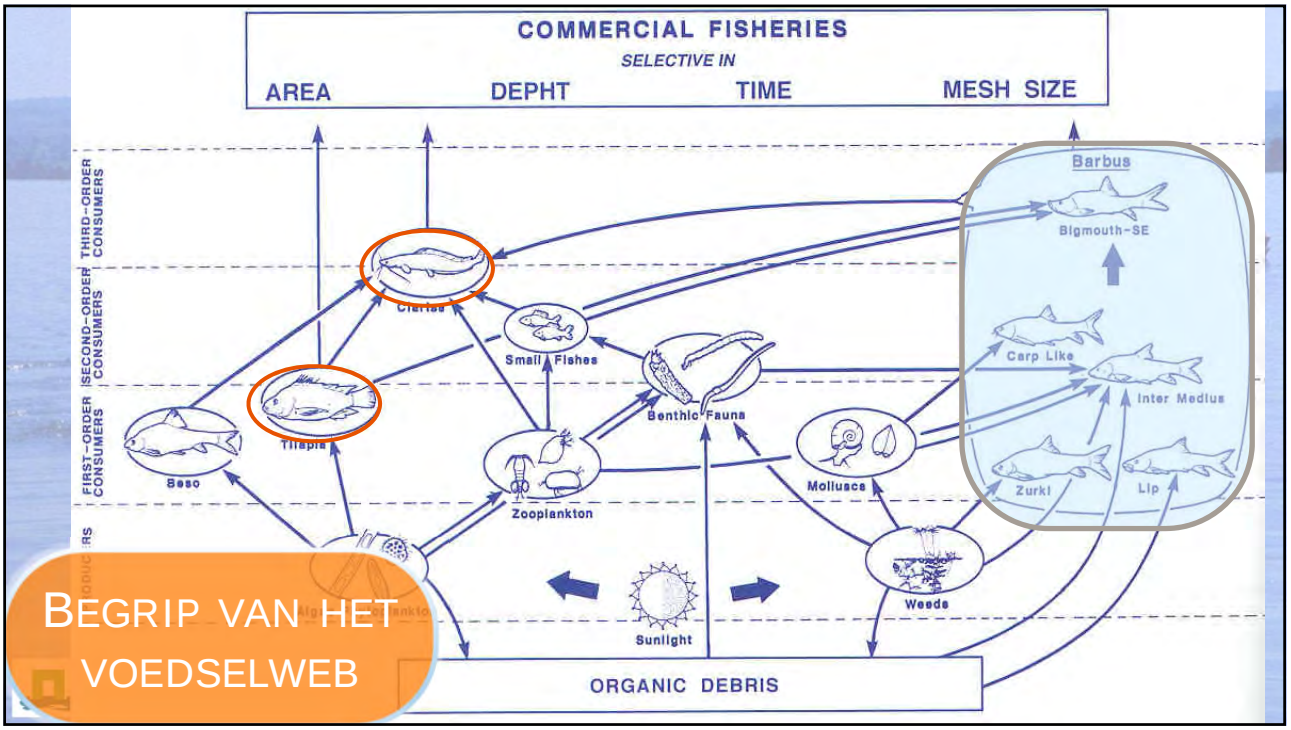
AANLEIDING: VISSTANDBEHEER

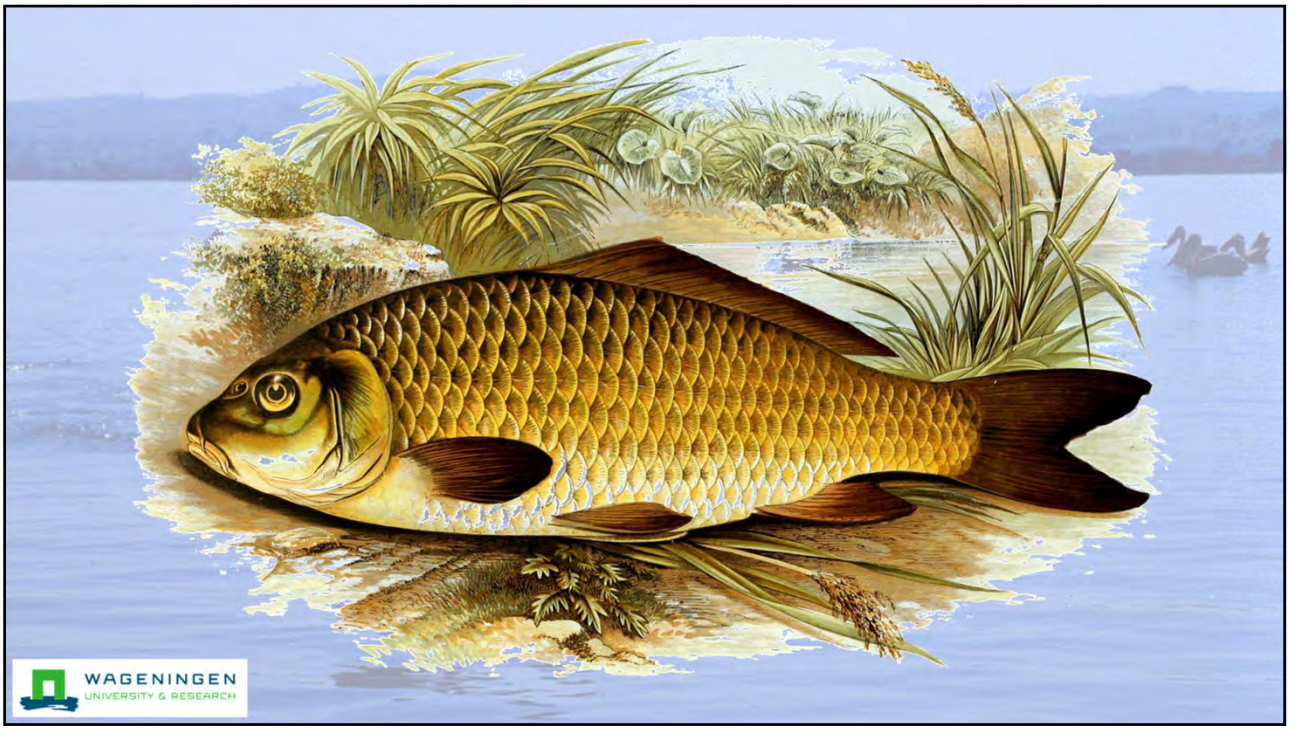

Clarias gariepinus


Oreochromis niloticus tana


Labeobarbus spp.

BEGRIP VAN HET VOEDSELWEB





1990: ALLEEN *BARBUS INTERMEDIUS*

A REVISION OF THE LARGE *BARBUS* (PISCES, CYPRINIDAE) OF EAST AND CENTRAL AFRICA

STUDIES ON AFRICAN CYPRINIDAE
PART II

By KEITH EDWARD BANISTER

Barbus intermedius Rüppell 1837

Barbus intermedius (Rüppell.)

Tafel I. Figur 2.

Diagn. Barbus corpore elongato elliptico, linea laterali continua subdeflexa, squamis 32; pinna dorsali paululum post pinnas ventrales incipiente, corporis et pinnarum colore flavoviridescente; sub mandibula poris 12 paululum conspicuis.

Neuer Nachtrag

von

Beschreibungen und Abbildungen neuer Fische,

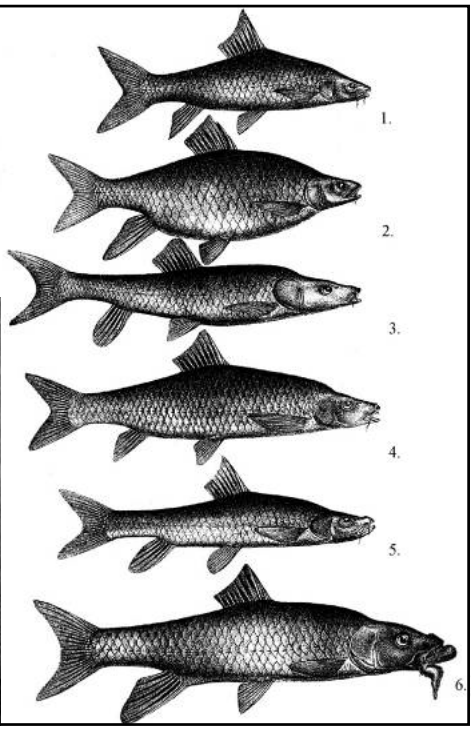
im Nil entdeckt

von

Dr. Eduard Rüppell.

OORSPRONKELIJK 6 SOORTEN BESCHREVEN (1835)

Eduard Rüppell 1794 – 1884



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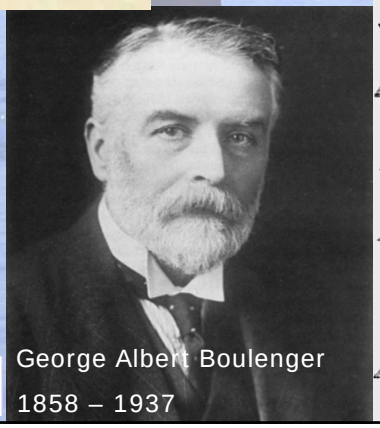
THE ANNALS AND MAGAZINE OF NATURAL HISTORY.

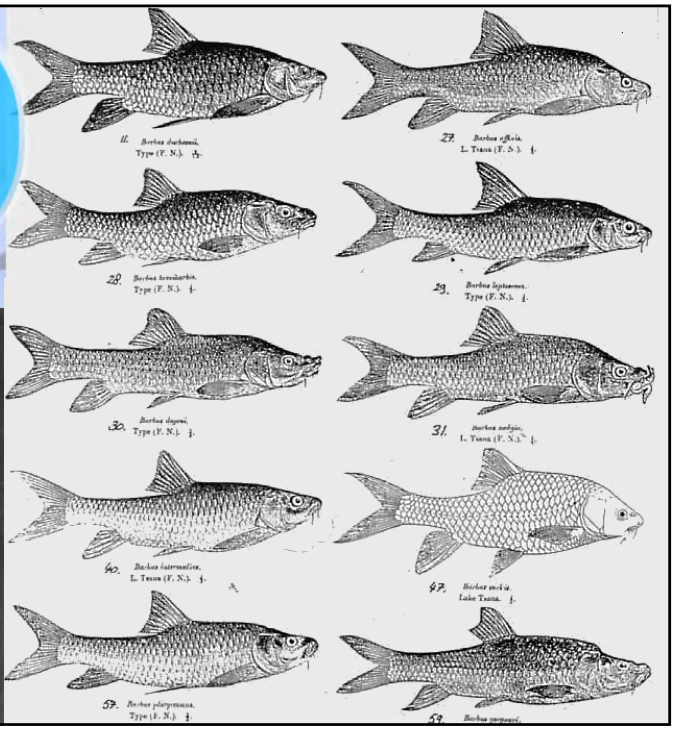
No. 60.

LIX.—*Descriptions of new Fishes from the Collection made by Mr. E. Degen in Abyssinia.* By G. A. Boulenger, F.R.S.

BOULENGER: 10 SOORTEN (1902, 1907)



George Albert Boulenger 1858 – 1937



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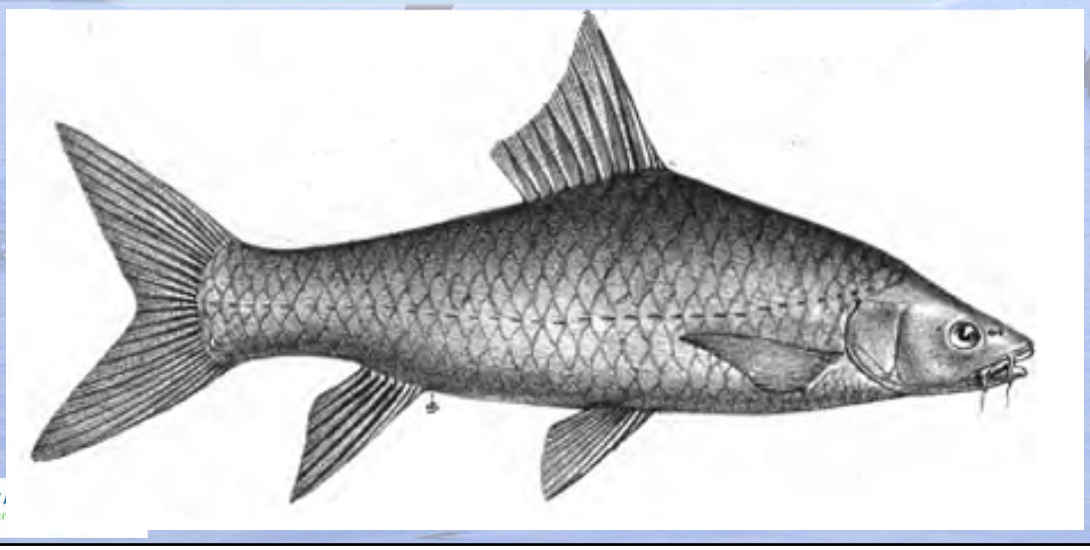
BINI: 23 (ONDER-) SOORTEN (1940)

BANISTER, 1973: ALLEEN *BARBUS INTERMEDIUS*



The *anal fin* has three unbranched rays and five branched rays. The last branched ray is markedly bifurcated.

Pharyngeal bones and teeth. The contrast between the pharyngeal bones of the 176 mm S.L. *Barbus gananensis* and a 171 mm S.L. *Barbus bynni* can be seen in fig. 29. The bone is thicker and deeper in the former and the teeth of the inner row are higher. The second tooth of the inner row in particular is much longer in *Barbus gananensis* than in *Barbus bynni*. These differences are equally clear in the pharyngeal bones of the smaller *Barbus gananensis* when compared with equal-sized *Barbus bynni*. The teeth of the second and third rows are only marginally more robust than in comparable *Barbus bynni* material.

Gill rakers. There are 12 gill rakers on the lower limb of the first gill arch in the largest specimen ; the gill rakers could not be counted in the smaller specimens.

Coloration. In alcohol, the young fish are silvery flanked, with a brown back. The largest fish is sandy brown on the flanks and belly, darker on the back.

DISTRIBUTION. Collected from the Juba river (between Lugh and Bardera) and from the Awata river (upper Juba). Also it is reported from the confluence of the Ganana Dulei and Bas Nabor. It has not been recorded from the Webi Shebeli

Barbus intermedius leptosoma : Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 167, pl. 6, fig. 1 (vide *B. leptosoma* Blgr., 1902).
Barbus intermedius microstoma Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 168, pl. 6, fig. 2.
Barbus intermedius gorgorensis Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 168, pl. 6, fig. 3.
Barbus affinis Rüpp., 1837, *Mus. senckenb.* **2** : 8, pl. 1, fig. 3 ; Blgr., 1902, *Ann Mag. nat. Hist.* (7) **10** : 425 ; Blgr., 1907, *Fish Nile* : 216, pl. 29, fig. 1 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 47, fig. 28.
Barbus affinis brevibarbis : Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 162, pl. 1, fig. 2 (*vide B. brevibarbis* Blgr., 1902).
Barbus affinis nedgia : Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 163, pl. 2, figs. 1 and 2 (vide *Labeobarbus nedgia* Rüpp., 1837).
Barbus gorguarii Rüpp., 1837, *Mus. senckenb.* **2** : 9, pl. 1, fig. 4 ; Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 424 ; Blgr., 1907, *Fish Nile* : 237, pl. 44 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 75, fig. 53.
Barbus gorguarii macrophtalmus Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 177, pl. 12, fig. 2.
Barbus elongatus Rüpp., 1837, *Mus. senckenb.* **2** : 11, pl. 2, fig. 1.
Labeobarbus nedgia Rüpp., 1837, *Mus. senckenb.* **2** : 14, pl. 2, fig. 3.
Barbus nedgia (Rüppell) : Günther, 1868, *Cat. Fish* **7** : 104 ; Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 426 ; Blgr., 1907, *Fish Nile* : 223, pl. 41, fig. 2 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 51, fig. 32.
Barbus gregorii Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 422 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 45.

A synonymy as extensive as this, involving 50 nominal species and subspecies and resulting in one species with two subspecies requires a great deal of justification. The evidence will be presented below.

on an extremely small sample of fish and this trend (if it exists) must remain hypothetical until more information is available about *Barbus gananensis*.

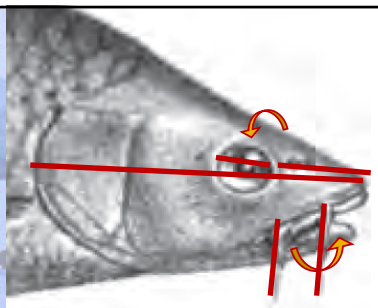
Barbus intermedius Rüppell 1837

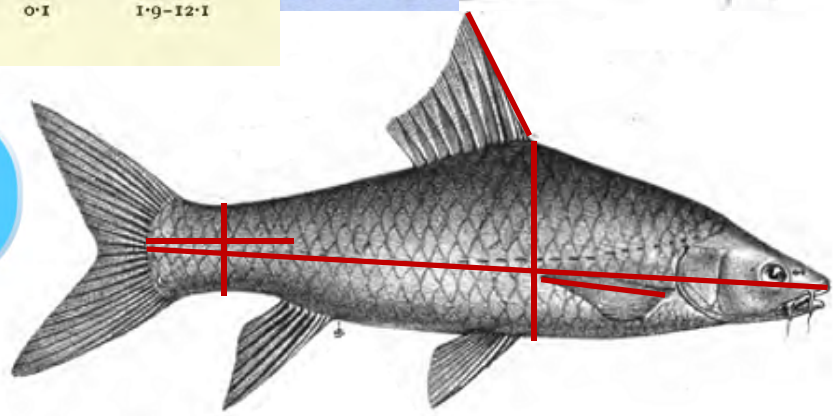
Barbus surkis Rüppell, 1837, *Mus. senckenb.* **2** : 5, pl. 1, fig. 1† ; Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 424 ; Blgr., 1907, *Fish Nile* : 226, pl. 42 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 65.
Barbus intermedius Rüpp., 1837, *Mus. senckenb.* **2** : 7, pl. 1, fig. 2 ; Günther, 1864, *Proc. zool. Soc. Lond.* : 91 (non *B. intermedius* Rüpp. – *fide* Blgr., 1911 : 45) ; Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 424 ; Blgr., 1907, *Fish Nile* : 228, pl. 29, fig. 2 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 59, fig. 39.

† In *Tracts on Natural History*, vol. 4, in the Zoological Department library of the British Museum (Natural History) (Cat. No. 5 q T r) there is a separate of this Rüppell paper bearing the date 1835. The title page, pagination and figures are identical with those in the 1837 *Mus. senckenb.* except that the title page bears the inscription 'Ausgezogen aus dem II Band des Museum Senckenbergianum. Frankfurt am Main, 1835'.
As the cover of the second volume of the *Mus. senckenb.* bears the date 1836 and the title page the date 1837, I am assuming that the 1835 date is either a typographical error or an over-optimistic estimate of the date of publication. Until firm evidence to the contrary is available I shall continue to refer to Rüppell 1837.

pl. 40, fig. 2 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 73, fig. 51.
Barbus platystomus var. vatovae Zolezzi, 1939, *Boll. Pesca. Piscic. Idrobiol.* **15** : 370.
Barbus platystomus platystomus : Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 170, pl. 8, fig. 1.
Barbus platystomus daga Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 171, pl. 8, fig. 2.
Barbus platystomus dehkensis Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 172, pl. 9, fig. 1.
Barbus platystomus prognathus Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 173, pl. 9, fig. 2.
Barbus brevibarbis Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 431 ; Blgr., 1907, *Fish Nile* : 219, pl. 35, fig. 2 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 49, fig. 29.
Barbus bassamensis Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 431 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 39, fig. 11.
Barbus oreas Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 432 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 38, fig. 19 ; Pietschmann, 1913, *Jb. Ver. Naturk. Wiesbaden* **66** : 189.
Barbus leptosoma Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 432 ; Blgr., 1907, *Fish Nile* : 220, pl. 40, fig. 1 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 50, fig. 30.
Barbus duchesnii Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 433 ; Pellegrin, 1905, *Bull. Mus. Hist. nat. Paris* **11** : 291 ; Blgr., 1907, *Fish Nile* : 208, pl. 35, fig. 1 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 31, fig. 12.
Barbus duchesnii maximus Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 165, pl. 4, fig. 2.
Barbus duchesnii ibridus Bini, 1940, *Missione Stud. Lago Tana*, **3** (2) : 166, pl. 5.
Barbus mento Blgr., 1902, *Ann. Mag. nat. Hist.* (7) **10** : 434 ; Blgr., 1911, *Cat. Afr. Fish* **2** : 41, fig. 22.

	n	x̄	s.d.	s.e.	range
L	454				66 –489 mm
D	454	28·4	2·3	0·1	20·7–37·7
H	454	26·4	2·2	0·1	19·0–31·7
I	454	5·9	1·2	0·05	3·5–10·2
IO	454	8·0	0·8	0·03	4·7–12·3
MW	450	5·9	1·0	0·04	3·6– 9·1
Pct	452	21·8	1·8	0·1	15·6–28·0
CPl	454	16·9	1·6	0·1	11·7–22·9
CPd	453	11·6	1·2	0·1	8·0–15·0
Snt	454	8·5	1·1	0·05	5·5–12·7
Ab	449	5·8	1·9	0·1	1·8–11·1
Pb	451	6·9	2·1	0·1	1·9–12·1





"KLASSIEKE" METINGEN

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The morphometric data do not adequately reflect the variation in body form shown by this species. A series of examples of different facies is shown in figs. 36

The body varies in shape from the slender *Barbus dainellii* form (fig. 33) to the deep *Barbus surkis* form (fig. 32). It can be seen, though, from the histograms that in the whole sample the body depth has a normal distribution (figs. 34, 35). There

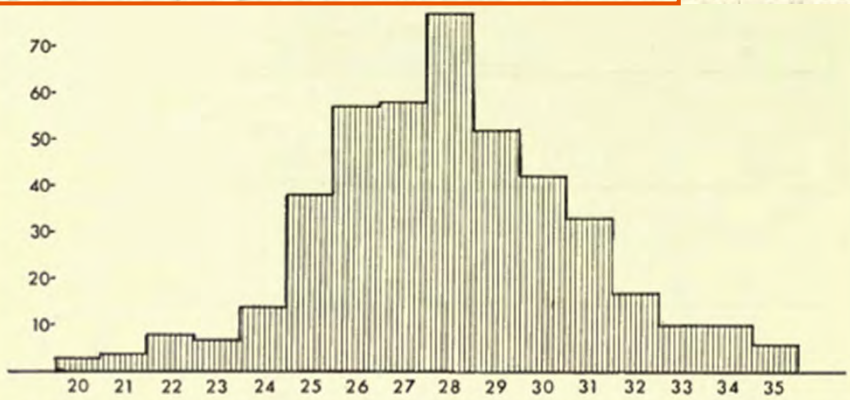

FIG. 35. *Barbus intermedius*: a composite histogram of the body depth for specimens from all the localities treated separately in Fig. 34. The distribution of body depth throughout the whole *B. intermedius* sample is normal.

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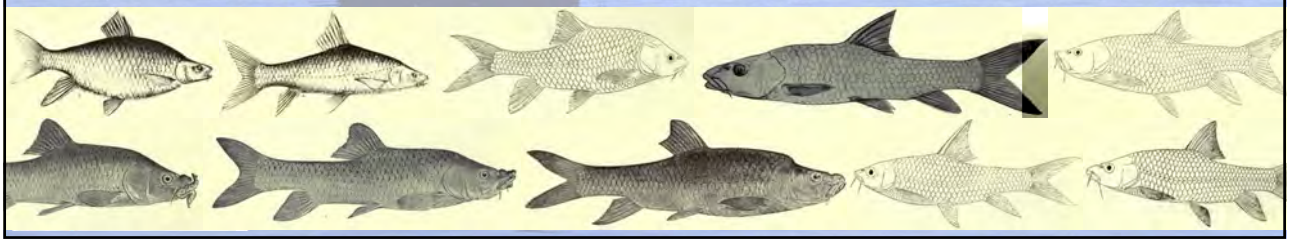
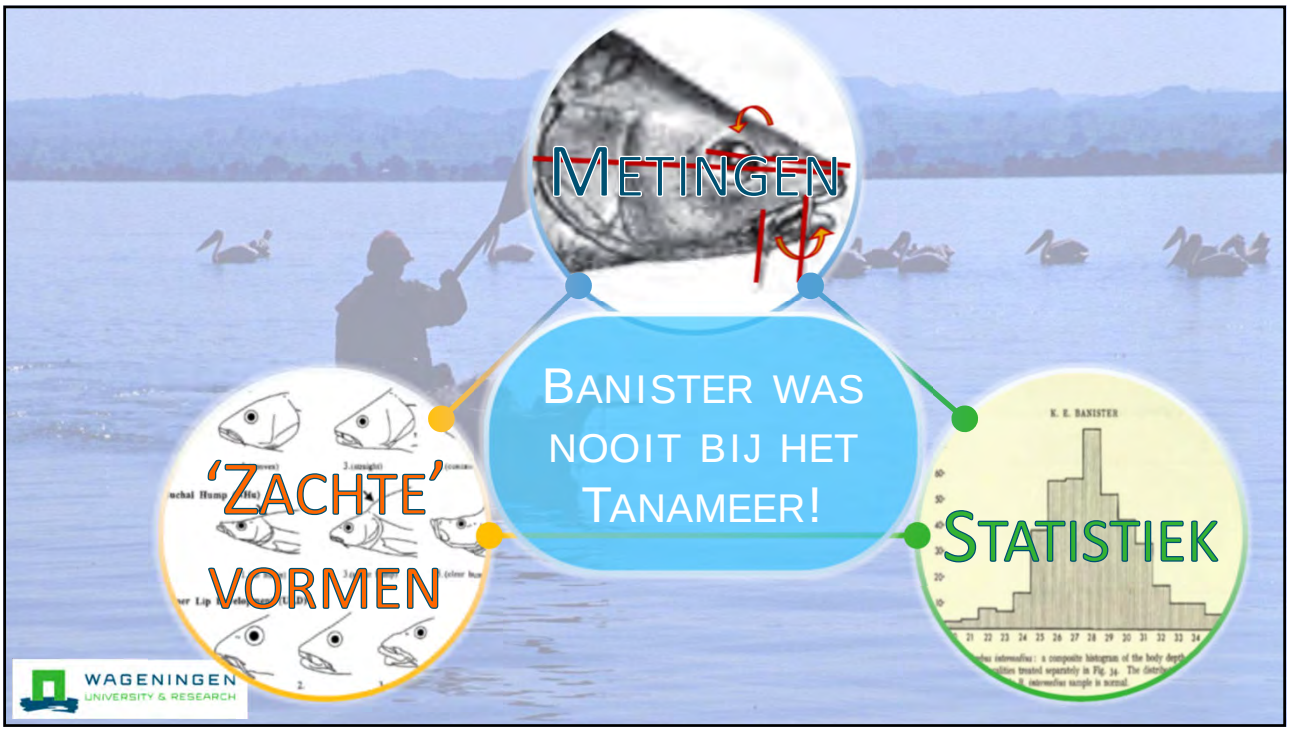
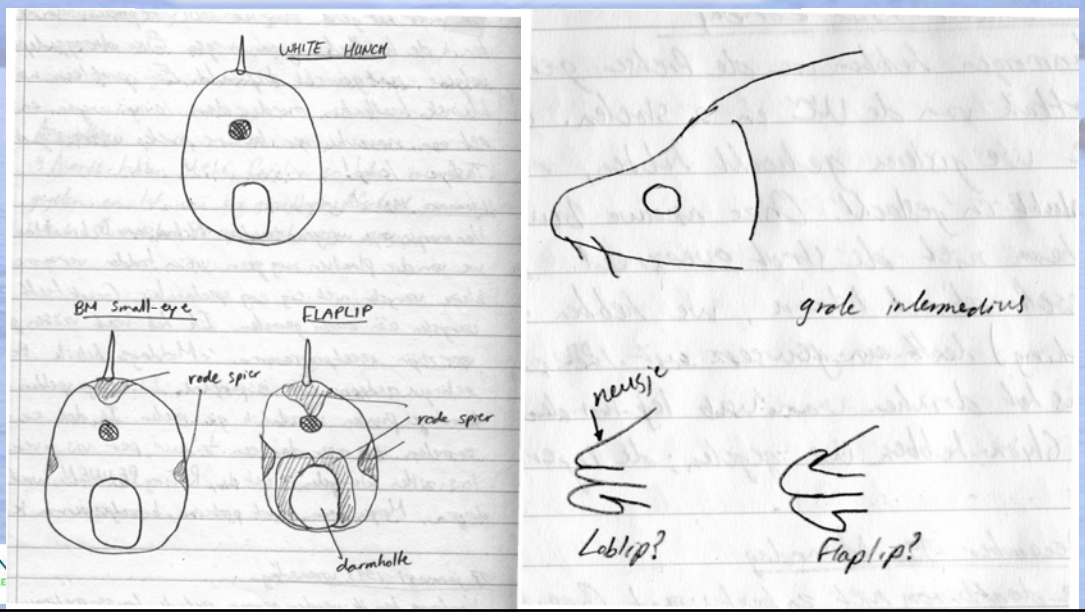
The mouth and lips exhibit a considerable degree of variation. 'Rubber-lipped' forms are common, e.g. the forms described as *Barbus degeni* (fig. 36) and *Barbus nedgia* (fig. 37). *Barbus rueppelli* (fig. 38) and *Barbus gorguarii* (fig. 39) have large mouths with the gape at 45 de[illegible] to the horizontal; however, *Barbus kassamensis* (fig. 40) and *Barbus hursensis* (fig. 41) link this mouth type with the ventral or sub-terminal mouths of the forms referred [illegible] (fig. 42) and *Barbus erlangeri* (fig. 43). The ventral mouth with a horny lower lip is found in *Barbus macmillani* (fig. 44) and *Barbus bingeri*. Although the differences seem quite distinct when isolated examples are considered, examination of a large number of specimens shows that the mouth types grade into each other without any sharp divisions. The form of the mouth in this species is valueless as a taxonomic character.

WAT IS SIGNAAL, WAT RUIS?

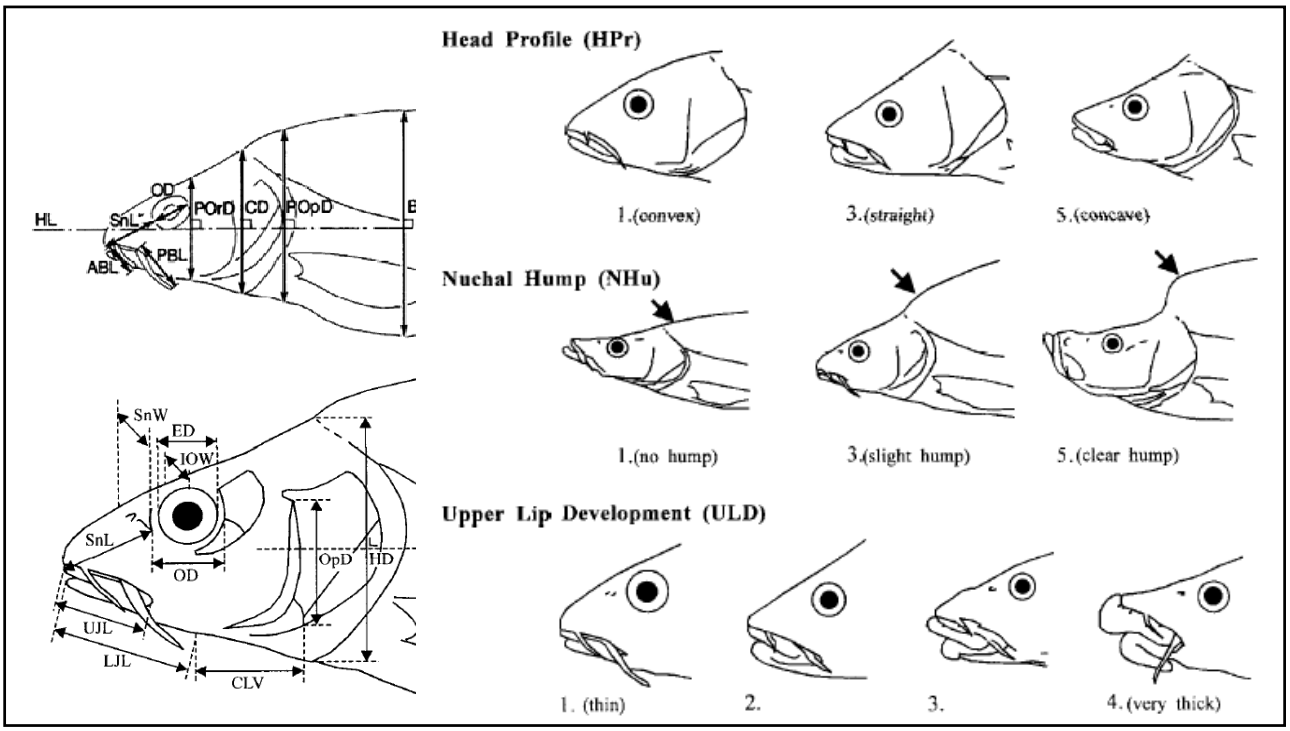


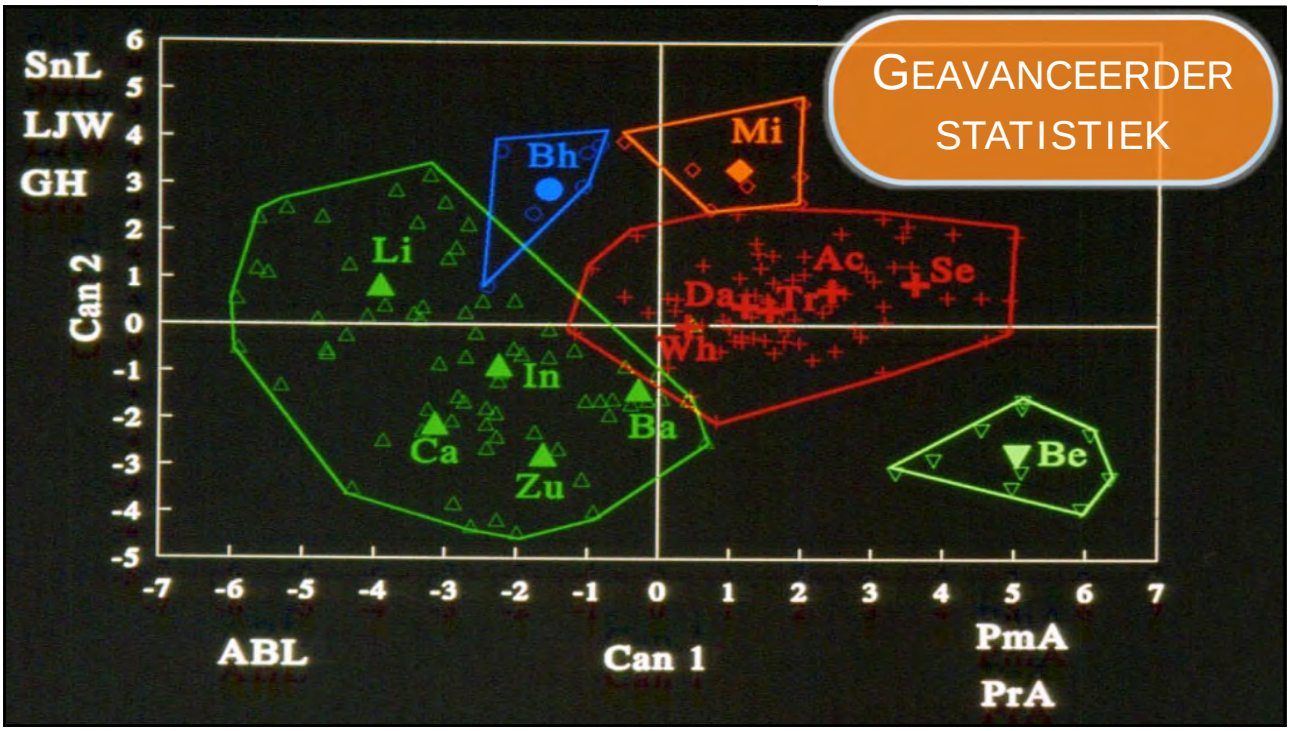


DEDEN WIJ HET BETER?




VEEL
METINGEN


HL
SnL
OD
POrD
CD
POpD
PBL
ABL
SnW
ED
IOW
SnL
OD
OpD
HD
UJL
LJL
CLV
Head Profile (HPr)
1.(convex)
3.(straight)
5.(concave)
Nuchal Hump (NHu)
1.(no hump)
3.(slight hump)
5.(clear hump)
Upper Lip Development (ULD)
1. (thin)
2.
3.
4.(very thick)



Environmental Biology of Fishes **39**: 1–22, 1994.

The barbs (*Barbus* spp.) of Lake Tana: a forgotten species flock?*

Leo A.J. Nagelkerke, Ferdinand A. Sibbing, Jos G.M. van den Boogaart, Eddy H.R.R. Lammens[1] & Jan W.M. Osse
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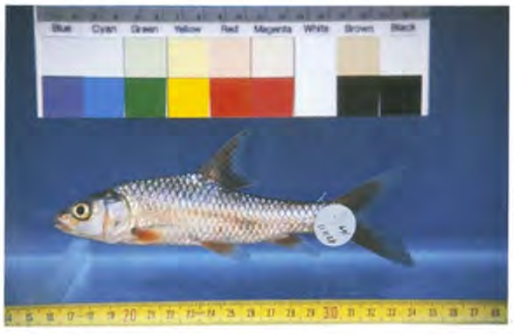
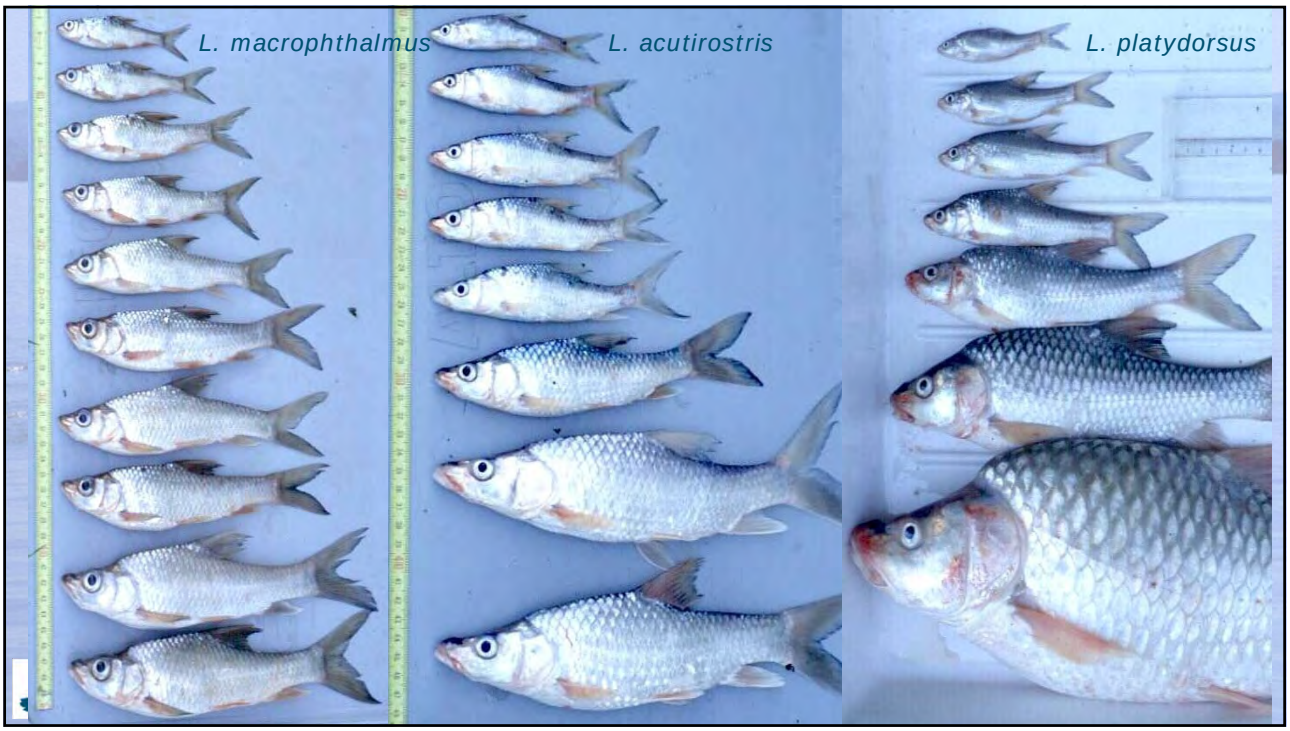
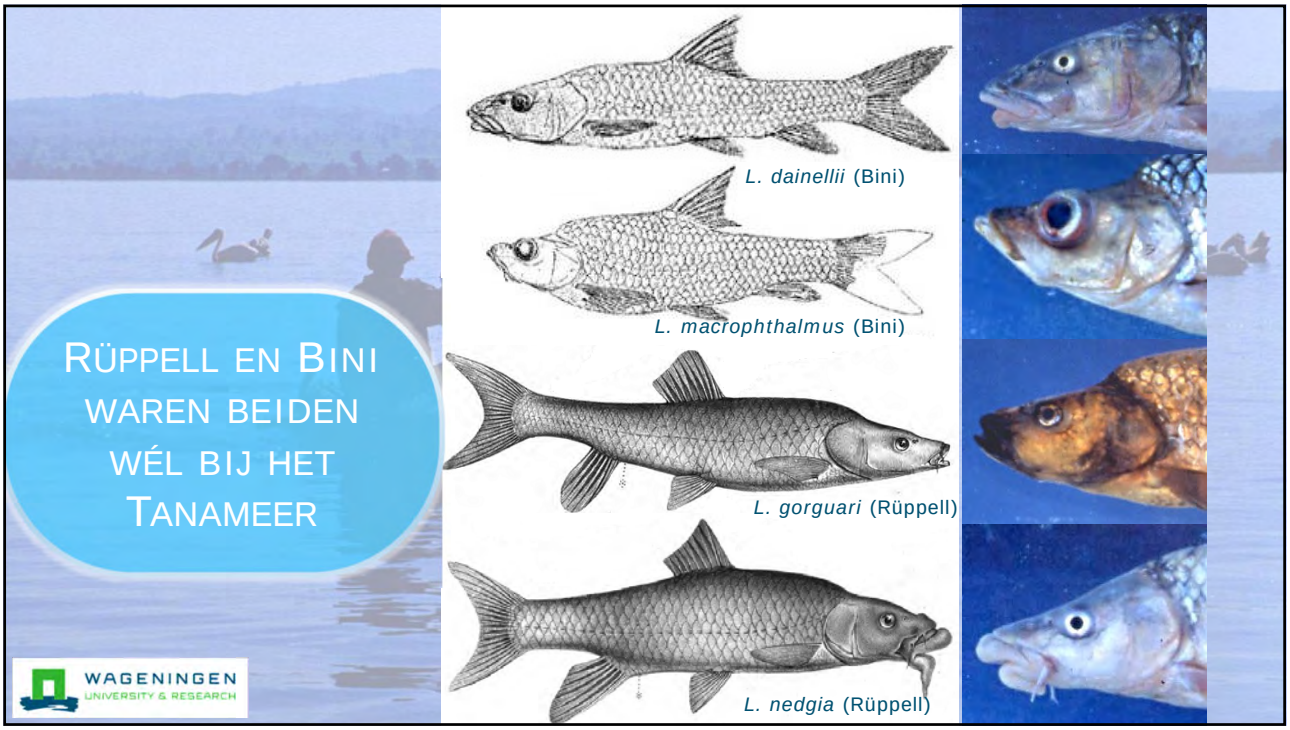
Key words: Cyprinids, Ethiopia, Morphotypes, Food-niche, Biodiversity, Feeding, Evolution, Fisheries, Resource partitioning, Piscivory



Synopsis

In October-December 1990, the large barbs (*Barbus*) that contribute more than 35% of the catch in lake Tana (northern Ethiopia) were studied. Previous authors (Rüppell 1837, Boulenger 1902, 1911, Bini 1940) described from 6 to 23 (sub)species for the lake. Banister (1973) lumped all of these into one subspecies: *Barbus intermedius intermedius* Rüppell, 1837. We found that the Lake Tana *Barbus* could be readily categorized in at least 13 discrete morphotypes, some of which were already distinguished by local fishermen. None of the known descriptions are adequate to distinguish the barbs unambiguously, which is important for monitoring and management of developing fisheries. Intermediates between morphotypes were rare (< 10%). By applying canonical discriminant analysis on a set of 17 morphometric characters (including some directly associated with feeding) our initial morphotype-distinction was confirmed. Also, differences between the morphotypes in distribution, related to depth and substratum were found, as well as differences in intestinal contents, a key to the food-niche. The high number of piscivorous morphotypes (8 out of 13) was striking as piscivory is relatively rare among cyprinids. Piscivory was found to be highly correlated with morphological (feeding related) characters. The presence of discrete morphotypes, that also differ in food-niche and distribution, strongly suggests that several distinct populations exist, that may be (partly or completely) reproductively segregated. Knowledge about these populations, that may represent separate units of fish stock, is of crucial importance for the management of sustainable fisheries and protection of the biodiversity in Lake Tana. It is possible that several species or even a unique cyprinid species flock are present, that urgently need protection.


L. macrophthalmus
L. acutirostris
L. platydorsus


RÜPPELL EN BINI WAREN BEIDEN WÉL BIJ HET TANAMEER
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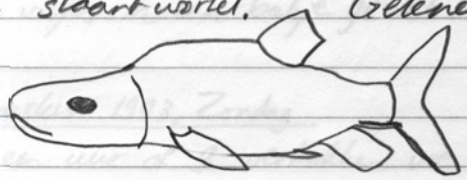
L. dainellii (Bini)
L. macrophthalmus (Bini)
L. gorguari (Rüppell)
L. nedgia (Rüppell)

13 Augustus 1993, Vrijdag

SS 077. Een grote(!), alweer ingewikkelde vangst vandaag. Zuurki- en extramedius-achtige beesten. Bm-intermediate eye en dat soort beesten, met alles ertussenin. Het was zo ingewikkeld dat we er uiteindelijk een 'pooled sample' van gemaakt hebben. Eén van de vreemde vissen, was een groot, slurig beest, met een enorme kop, een breed lijf en een zeer korte staartwortel. Gelukkig had er wel eens meer een gezien. Het zag er zeer vreemd uit!



NIET ALTIJD ZO DUIDELIJK!

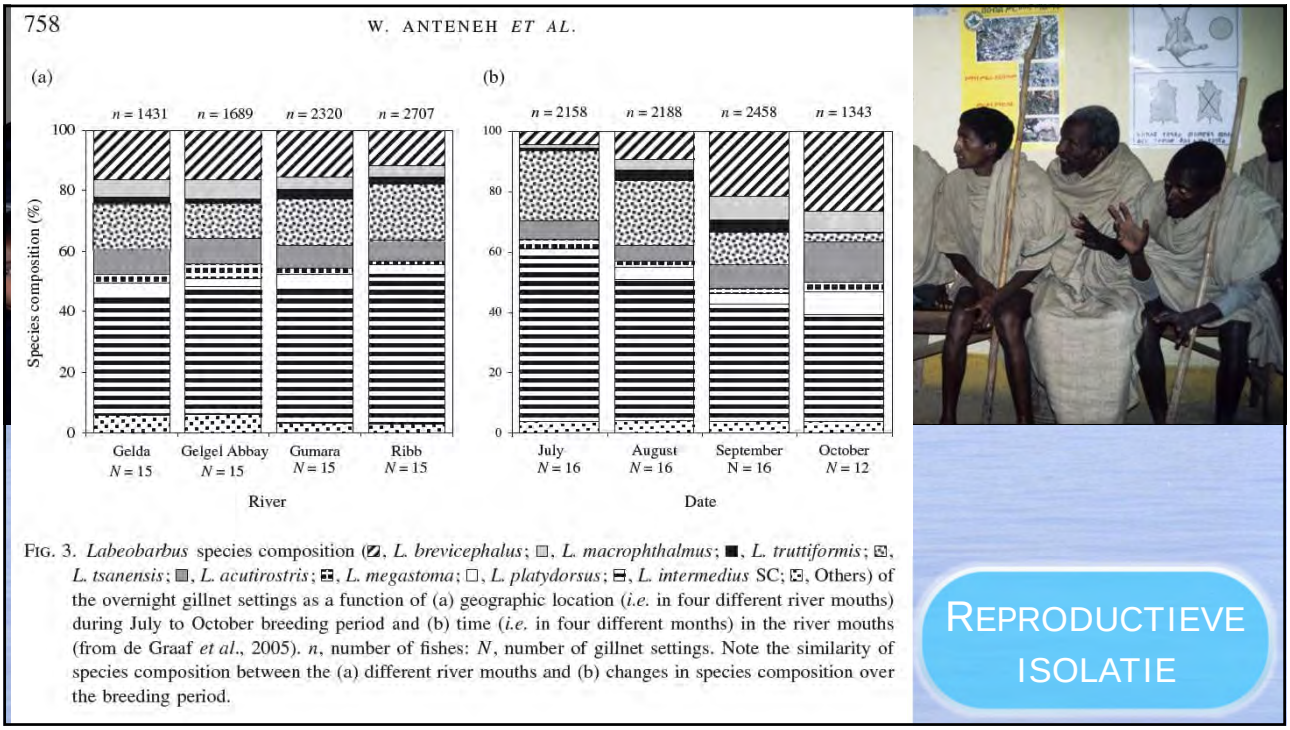
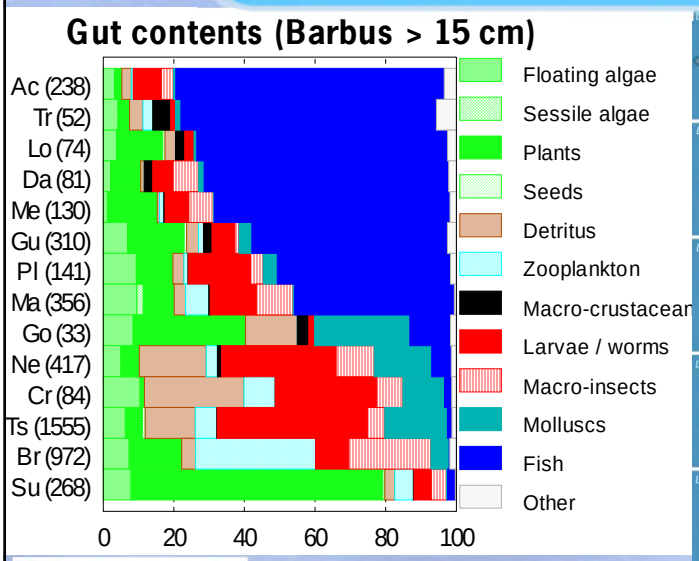


FIG. 3. *Labeobarbus* species composition (◪, *L. brevicephalus*; ▨, *L. macrophthalmus*; ■, *L. truttiformis*; ⊠, *L. tsanensis*; ▩, *L. acutirostris*; ⊞, *L. megastoma*; □, *L. platydorsus*; ⊟, *L. intermedius* SC; ⊡, Others) of the overnight gillnet settings as a function of (a) geographic location (*i.e.* in four different river mouths) during July to October breeding period and (b) time (*i.e.* in four different months) in the river mouths (from de Graaf *et al.*, 2005). *n*, number of fishes: *N*, number of gillnet settings. Note the similarity of species composition between the (a) different river mouths and (b) changes in species composition over the breeding period.

REPRODUCTIEVE ISOLATIE

ECOLOGISCHE DIFFERENTIATIE



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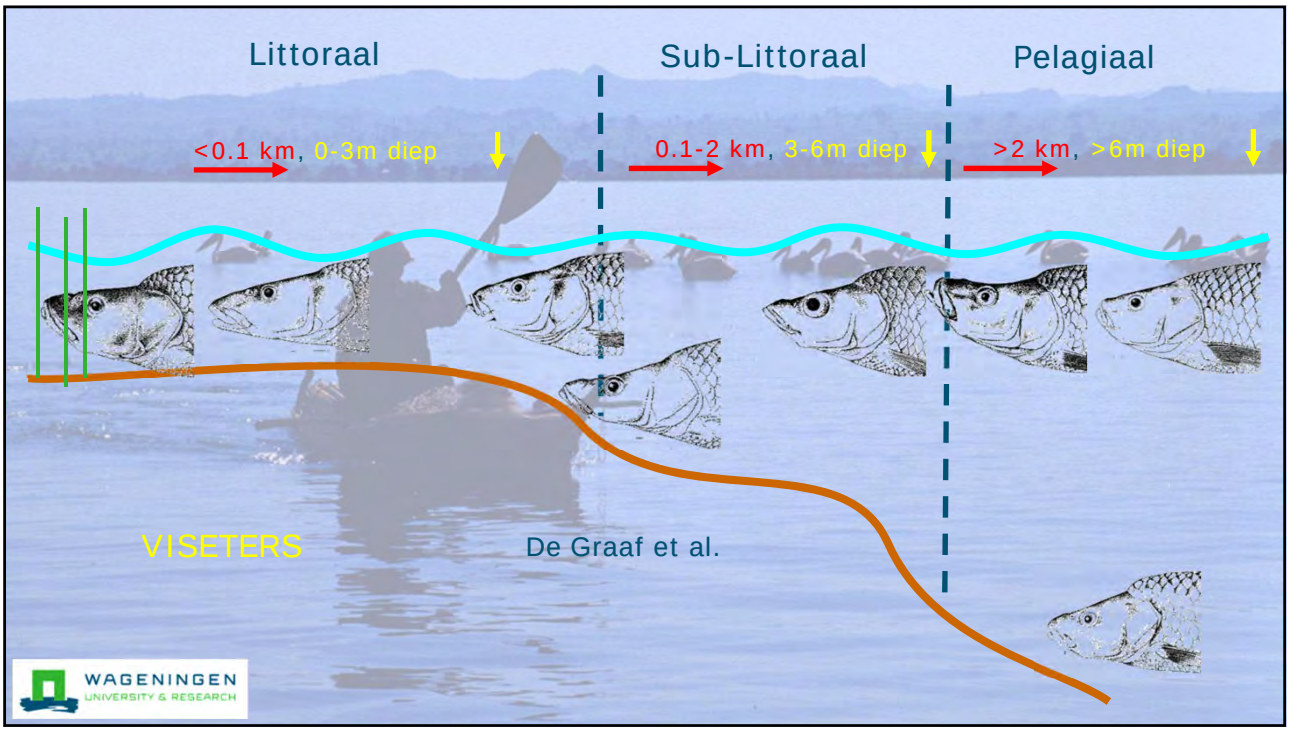

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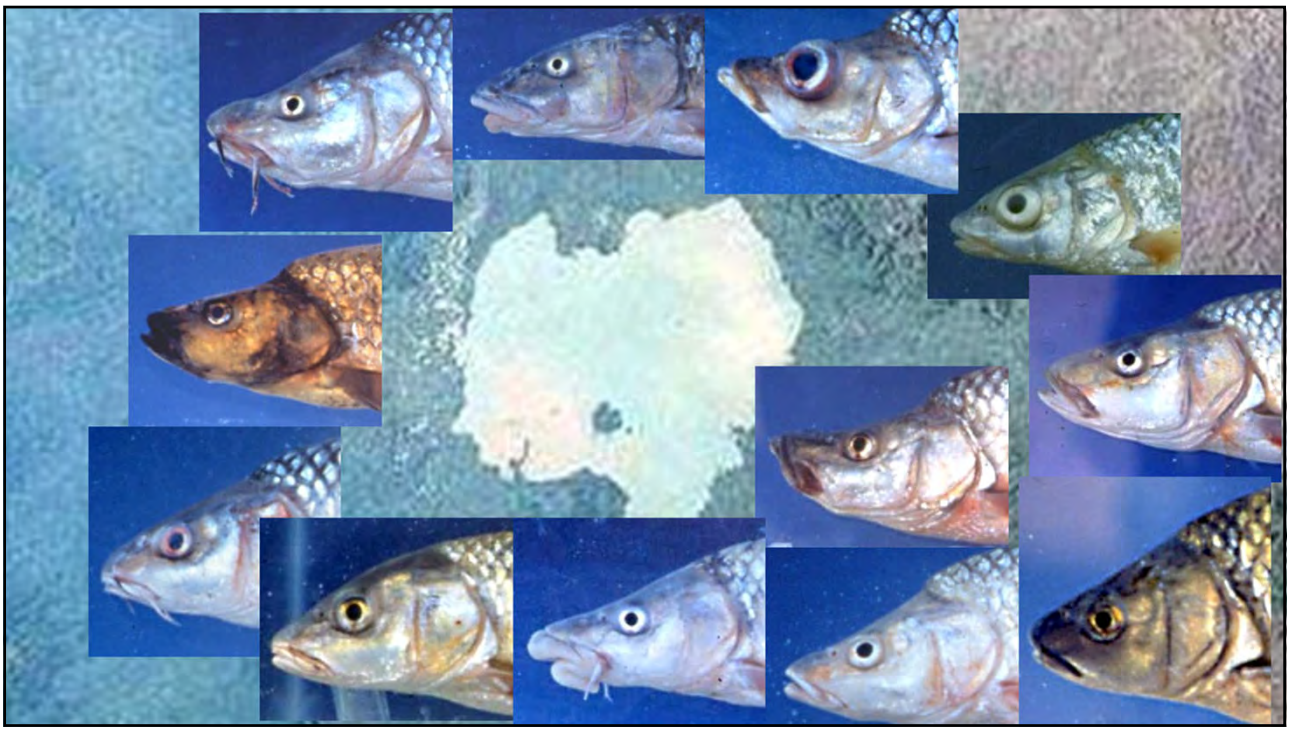

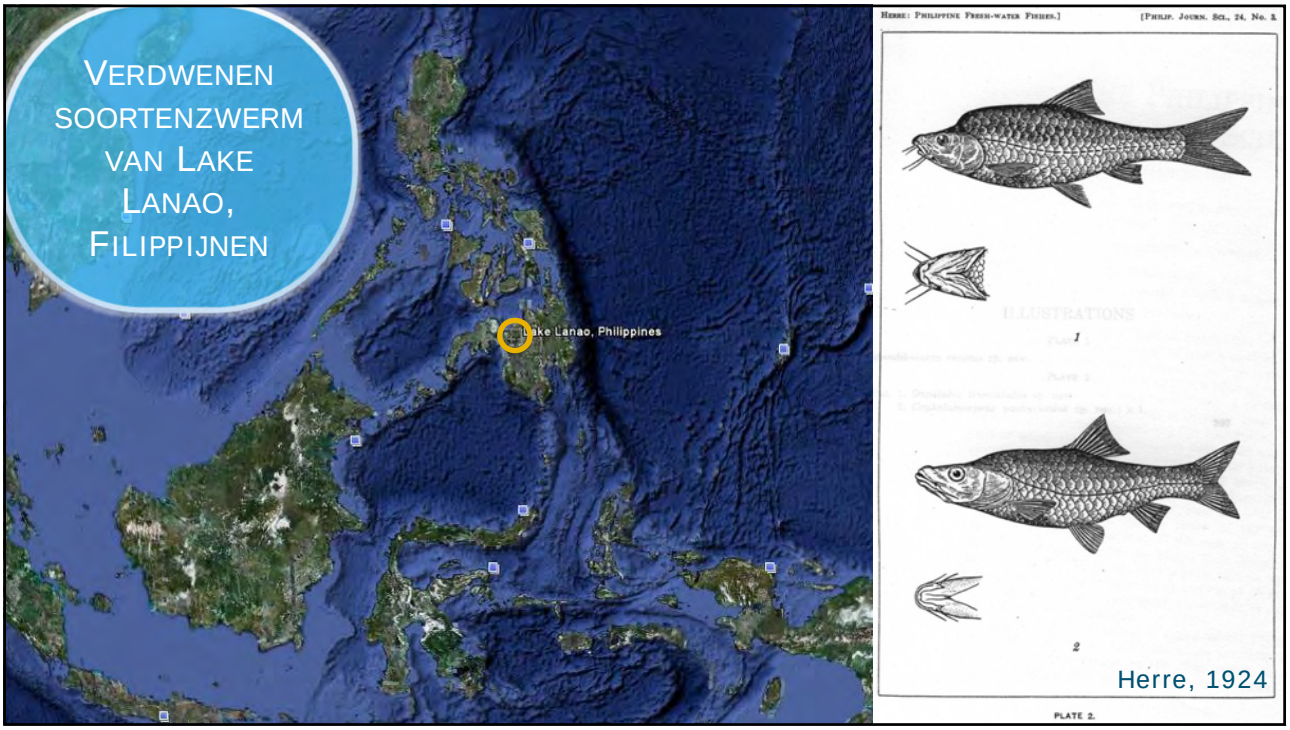
VERDWENEN SOORTENZWERM VAN LAKE LANAO, FILIPPIJNEN
Lake Lanao, Philippines
HERRE: PHILIPPINE FRESH-WATER FISHES.
[PHILIP. JOURN. SCI., 24, No. 2
ILLUSTRATIONS
PLATE 2.
Herre, 1924

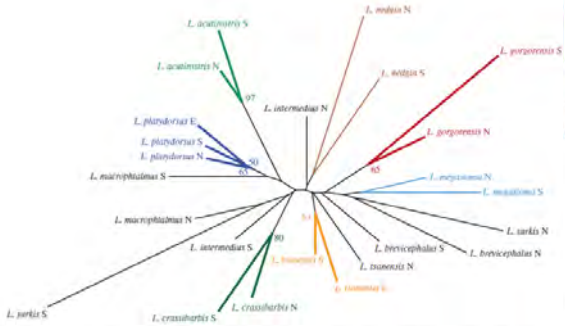

Fig. 4. Neighbour-joining tree using Nei *et al.*'s D_A distance. Bootstrap values indicated if >50 (after 10 000 resamplings). Geographically distant populations (N, north; S, south; E, East) of a labeobarb species which group together are indicated with thicker lines.

Journal of FISH BIOLOGY

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Shallow genetic divergence and species delineations in the endemic *Labeobarbus* species flock of Lake Tana, Ethiopia

L. A. J. NAGELKERKE*†, K. M. LEON-KLOOSTERZIEL‡, H.-J. MEGENS§, M. DE GRAAF‖, O. E. DIEKMANN¶ AND F. A. SIBBING‡

radiation and possibly speciation (Sibbing & Nagelkerke, 2001; de Graaf *et al.*, 2008). This would be yet another example suggesting that speciation might come about with only little genetic modification. Therefore, it is not possible to derive species status from genetic information only; knowledge of the natural history of species is always necessary.

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GENETICA ALLEEN VERTELT NIET HET HELE VERHAAL

HET VINDEN VAN "FANTASTIC BEASTS" VEREIST DOORZETTINGSVERMOGEN, GEDULD EN VEEL WERK

HET IS EEN ROMMELIG PROCES!

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Material

Holotype, 402 mm standard length, RMNH 32950, Rema (locality 25), Lake Tana, Ethiopia, 15.xi.1990, J.G.M. van den Boogaart, E.H.R.R. Lammens, L.A.J. Nagelkerke & F.A. Sibbing; paratypes (9), 198-366 mm standard length, RMNH 32951-32959, localities 1, 11, 20, 21, 22, and 29, Lake Tana, Ethiopia, 10.xi.1990-15.xi.1995, J.G.M. van den Boogaart, A.B. van den Burg, S.P.L.M. van Gaans, S. Kranenbarg, E.H.R.R. Lammens, L.A.J. Nagelkerke, F.A. Sibbing & G.M.J. van Snik.

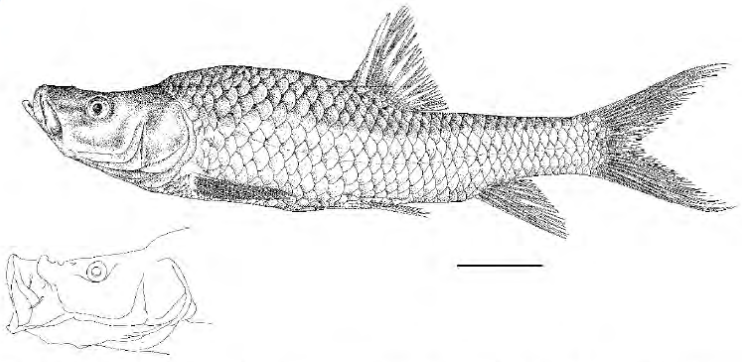
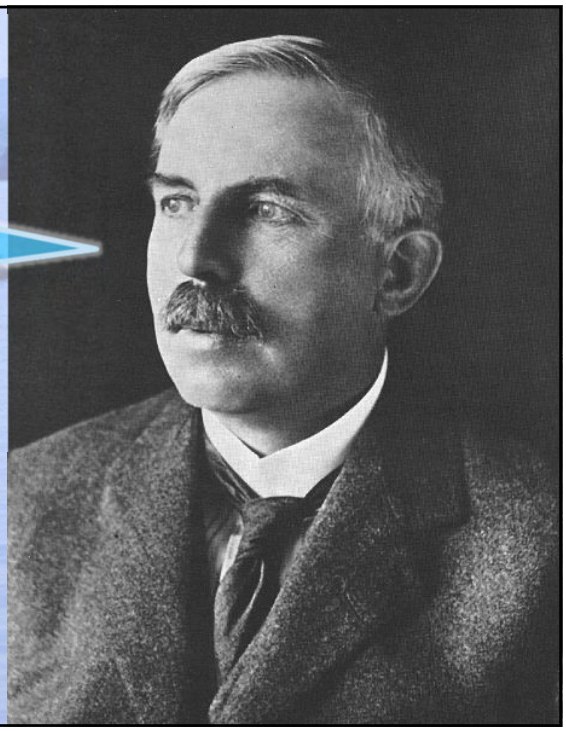


Fig. 7. *Barbus megastoma* Nagelkerke & Sibbing, 1997. Holotype, RMNH 32950, SL 402 mm, lateral view. The lateral view of the expanded head shows its protruded oral gape. Scale equals 50 mm.

"ALL SCIENCE IS EITHER PHYSICS OR STAMP COLLECTING": *ERNEST RUTHERFORD*
(FATHER OF NUCLEAR PHYSICS)



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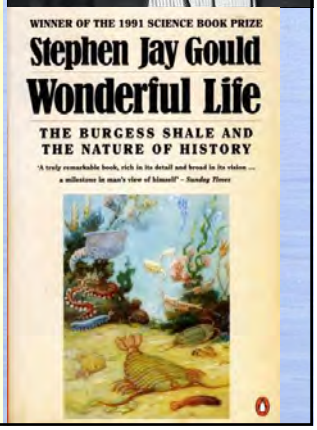
These differences place historical, or narrative, explanations in an unfavorable light when judged by restrictive stereotypes of the "scientific method." The sciences of historical complexity have therefore been demoted in status and generally occupy a position of low esteem among professionals. In fact, the status ordering of the sciences has become so familiar a theme that the ranking from adamantine physics at the pinnacle down to such squishy and subjective subjects as psychology and sociology at the bottom has become stereotypical in itself. These distinctions have entered our language and our metaphors—the "hard" versus the "soft" sciences, the "rigorously experimental" versus the "merely descriptive." Several years ago, Harvard University, in an uncharacteristic act of educational innovation, broke conceptual ground by organizing the sciences according to procedural style rather than conventional discipline within the ... ke the usual twofold division into physical versus biological, but recognized the two styles just discussed—the experimental ... historical. We designated each category by a letter rather than a name. Guess which division became Science A, and which Science B. My course on the history of earth and life is called Science B 16.

HET BELANG VAN NATUURLIJKE HISTORIE



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ANALYSIS: LAKE TANA: HOW AN INVASIVE WEED IS THREATENING ITS SURVIVAL

addisstandard / October 23, 2017 / 12k

Lake under threat

The Lake Tana region faces imminent danger of destruction

Lake Tana and its surrounding wetlands are of immense ecological value and provide the means of existence for millions of people, however increasing human activity is causing the destruction of this unique area. Ecosystems are being degraded through the high pressure on natural resources.

FANTASTIC BEASTS VERDWIJNEN SNELLER DAN WE ZE VINDEN

10.1002/ldr.2730

THE DECLINE OF THE LAKE TANA (ETHIOPIA) FISHERIES: CAUSES AND POSSIBLE SOLUTIONS

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Dank voor jullie aandacht!

Heel veel dank aan allen die dit werk mogelijk hebben gemaakt

ArchaeopteryX

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