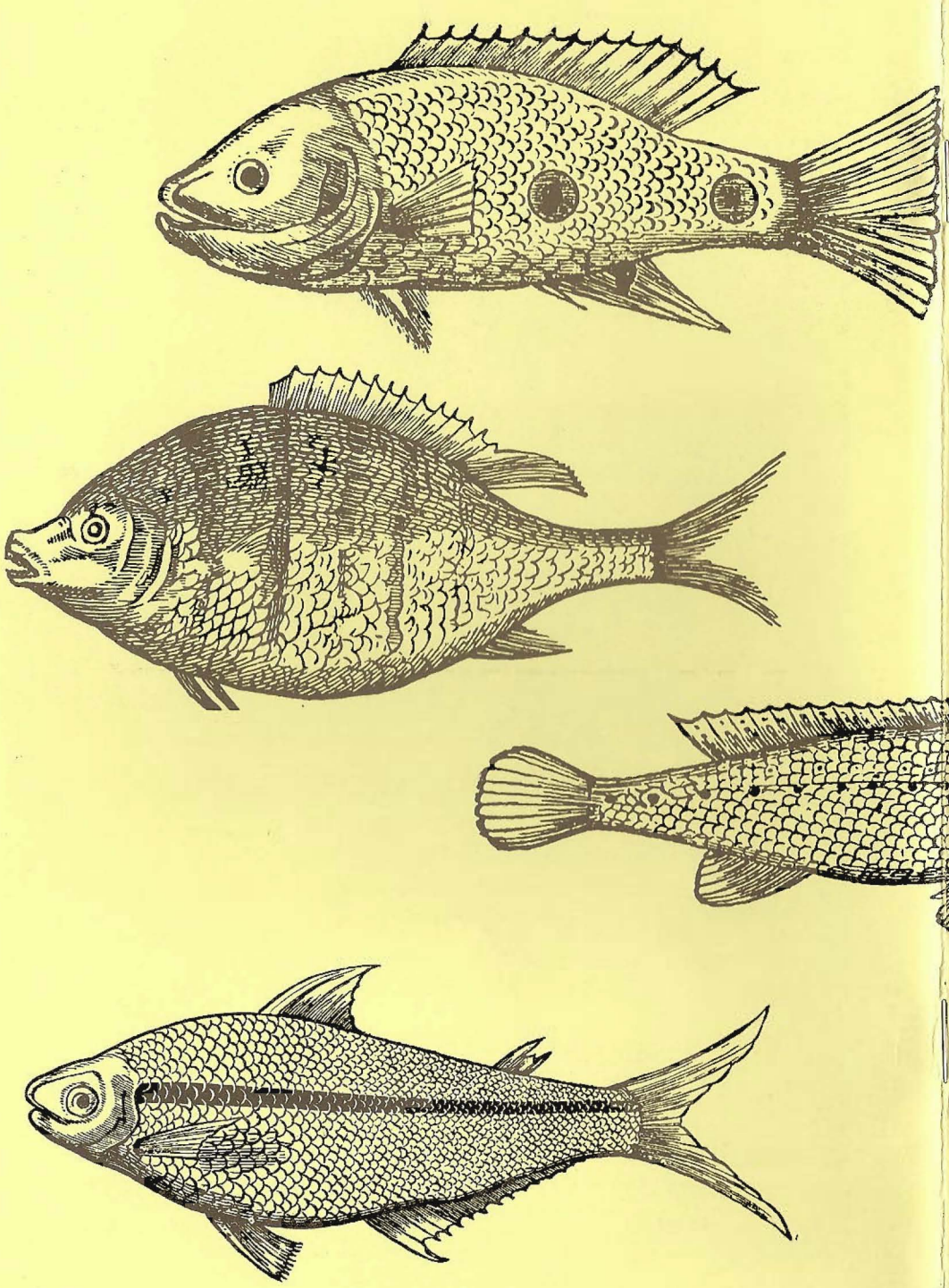

THE CICHLID MONTHLY

Volume 17 No. 4 JULY 1988
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THE CICHLID MONTHLY

CONTENTS VOL. 17 NO. 4

This magazine is produced and edited by Daryl Hutchins ably assisted by Peter Petrus and those nameless behind-the-scenes gremlins.

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JULY 1988

VCS

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*The **Victorian Cichlid Society Inc**, formed by Cichlidophiles in March 1972, thus became the first specialist aquarist group in the State of Victoria.*

The aims of the VCS Inc are: to promote the keeping of Cichlids; to gain and disseminate knowledge of their habits through slides, films, books, lectures, overseas magazines, articles by members and discussion with fellow members or other experts in the field.

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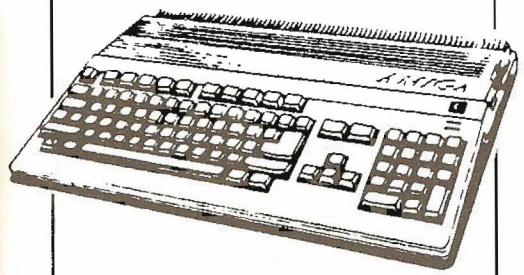
Editorial

DARYL HUTCHINS



OOPS! We missed. I have all sorts of excuses for the magazine being "late" last month — it was handed to members who were at the meeting, others received it in the mail as usual — but they would only bore you.

My biggest regret about the magazine being late is that we will never know if the Donation Auction would have attracted more bidders with a timely reminder. But $445 is not to be sneezed at and I want to thank everyone who participated.

As for the notice about the Cichlid Conference appearing after the conference was over — that was just to see if you were paying attention.

Whilst on the subject of notices — I have decided, in the absence of any other policy, to run member's advertisements for two months. If you want it in again after that you will have to resubmit the ad or notify me that you want it continued.

Non-attendees missed a marvelous meeting: home show slides; donation auction (Graham is actually starting to show some promise as an auctioneer); and then the pièce de resistance, Garry Backhouse's wonderful talk on Australian native fishes.

Of course I am a little biased about native fish — bumbling around the countryside with a dip net and other assorted fish-catching (bring 'em back alive-type) devices is my idea of paradise. Some members who have been around a while would recall that I used to make a living at it when I lived in Cairns, and have been on several other expeditions both before and since that time — though not for a long time now.

Garry is a most capable speaker, who obviously knows what he is talking about, and I was impressed — *but* I have a confession to make.

I was asked to move a vote of thanks and I said no. I do not do that sort of thing very well, especially if I did not enjoy the event. By the end of Garry's presentation, which I believe was cut-down drastically because he went on so late, I wanted to jump up and congratulate him, but I had blown the chance.

It is never too late though (especially for an editor) so thank you Garry, come back soon, and when are *WE* going to go and get a box full of Mangrove Jacks.

CICHLID SCENE

JULY MEETING
20 July 1988

NEXT MEETING will be held on 20 July at the Ashburton Primary School hall, Fakenham Road, Ashburton at 8.00 pm. Supper will be partaken of after the meeting — visitors, as always, are most welcome.

MAIN TALK: 'Cichlid Expo — The Video' — Aart Langelaar.

DOOR PRIZES: Donated by **Pet & Aquarium Industries.**

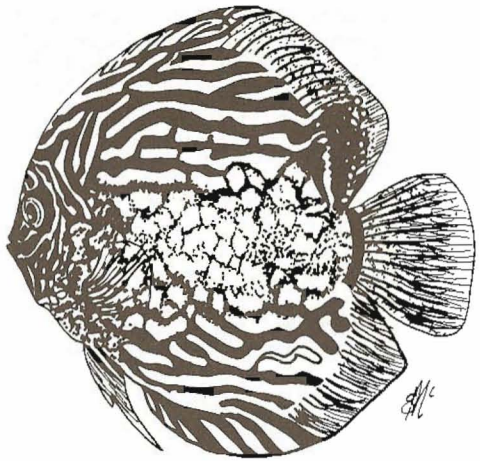
DRAW PRIZES:
1. Mini Atlas — **Danny and Sue Smith.**
2. Java Fern — **A. Nonymous.**
3. Fishbone fern — **Glenn and Jenny Briggs.**

TABLE SHOW: Americans.

Plastic Cichlids In Your Aquarium

By Rolly McKay

REPRINTED FROM 'SUPERFISH', THE JOURNAL OF THE QUEENSLAND CICHLID SOCIETY.



YES, the title is correct — but before you turn to the next article with a contemptuous snarl of "plastic plants — maybe, but plastic fish in my tanks — *never*", I hasten to inform you that you almost certainly have maintained them in your tanks from the very first day you purchased a cichlid.

By plastic, I mean trophically and phenotypically plastic.

In earlier issues of 'Superfish' I have discussed the unique structure of the "pharyngeal jaws" and the ability of cichlids to process foodstuffs. In this article I want to develop another line of thought I have discussed with cichlid fanciers, over many years — namely, the adaptability of many trophically specialised cichlids under aquarium conditions.

For instance, many of the Mbuna eat a felt-like algal mat (aufwuchs) composed of firmly attached filamentous algae and associated organisms such as epiphytes, unicellular algae, diatoms and bacteria as well as protozoans and a fine organic detritus. The aufwuchs mat also harbors a rich benthic fauna of insect larvae, small crustaceans and molluscs (Fryer, 1959: Ribbink et al 1983).

A specialised diet, and specialised mouth, jaws and teeth to feed mainly upon particular components of the algal mat (Fryer, 1959). The members of the Mbuna complex are anatomically and behaviorally specialised fishes as we all know. How do they adapt so well to eating cichlid flakes, dried tubifex, grated liver, ox heart, mashed fish tissue (your own special concoction of porridge, spinach, green peas, beans, soya flour, prawns, oysters, trace elements, and a multi-vitamin tablet or two — all bound with egg or gelatin) or thinly grated or sliced zucchini? Throw in a few unwanted fry, a couple of small earthworms, a crushed snail, daphnia, whiteworms or even a small mealworm, and what happens?

You may (like other aquarists have) state that they are raised with aquarium foods. What about wild-caught fishes from Lake Malawi? How did they survive until they spawned? Trophic plasticity — the ability to change their diet and manner of feeding; feeding flexibility; flexible omnivory (I like that one — Ed); call it what you will — that's how!

Let us examine this unusual trait in more detail; examine their feeding behavior and morphology of jaw structures; examine the changes in head shape with growth (ontogenetic tranformation); perhaps experiment with different foodstuffs and compile a list of food items accepted by various species; we may even divide a spawning into two groups of fry and raise them to maturity on quite dissimilar foods (flakes v live food, or plant foods for vegetarians v meat or fish exclusively); perhaps we can raise a divided batch of fry of *Geophagus* on a sandy substrate v a clean glass bottom, how would they vary in head or jaw morphology at maturity and would the nil-substrate-raised individuals dig? Could individuals fed on a strict diet of one kind change their behavior and accept a totally different diet, and if so, how rapidly? Are diet preferences learned? Can we slowly change from live foods to fish flesh, through fish preparations to a purely vegetable diet. A vegetarian Red Devil? Who knows?

It was not altogether surprising to find that the pharyngeal mill was poorly developed and showed even greater signs of reduction than were recorded from wild fish. The aquarium-raised specimens also had 20 per cent less calcium content in the skull (Greenwood, 1965). Snail-feeding populations develop a massive pharyngeal apparatus to deal with their thick-shelled prey.

The situation with the polymorphic *Cichlasoma minckleyi* is even more fascinating.

Two quite distinct morphs occur: the papilliform morph with a more delicate pharyngeal bone with smaller horns, a longer gut, and less expanded upper pharyngeal articulation; and the molariform morph with a heavy pharyngeal mill with strong branchial musculature, and a wider head. These differences led earlier workers to recognise two separate species (Kornfield and Koehn, 1975) although they were puzzled by the fact that the two "species" had identical banding patterns when subjected to electrophoretic analysis, ie the two "species" were genetically identical.

Liem and Kaufman (1984) found that two distinct morphs ate the same high-energy foodstuffs when food was abundant, but the molariform morph ate proportionally more hard-shelled snails when food was restricted under laboratory experiments. These findings supported Smith's (1982) field studies. The specialised morphology of the molariform morph does not increase effiency of feeding on preferred food, but enhances exploitation of the secondary, less preferred food during periods when food became scarce.

The studies of Myer (1987), ('Evolution' 41 [b]: 1357-1369) are of considerable interest and could be quite easily performed by aquarists interested in this field of research. Meyer worked with broods of the piscivorous *Cichlasoma (Nandopsis) managuense*. Two groups of full siblings were fed two different diets for eight months after the onset of feeding; thereafter both groups were fed a common diet. The shape of the head differed significantly at eight months. The group fed on brine shrimp had more pointed (acute) snouts with a relatively longer lower jaw than the group fed on flakes.

When, after such pronounced differences were observed, both groups were fed on brine shrimp to 16 months, the head profile of the flake-fed group converged almost completely towards that of the brine shrimp group. If feeding on two different diets is continued after eight months the phenotypes remain distinct. Differences in diet and possibly in feeding mode are believed to have caused these phenotypic changes.

If all this sounds irrelevant or perhaps even stupid, let us consider the very few but exceedingly important studies made by researchers in this field, and relate this knowledge to the success of eichlid fishes, in terms of evolutionary success in nature, and adaptional success as aquarium fishes.

Greenwood (1959) drew attention to the variability in the degree to which the lower pharyngeal bones are developed in populations of *Astatoreochromis alluaudi* inhabiting the various lakes of Africa.

Fishes from Lake Victoria show maximal development whilst those from the neighboring Koki lakes and Lake Edward exhibit less massive bones with a lower proportion of molariform teeth. On the basis of this morphological difference, Greenwood proposed two subspecies although he realised that the Lake Victoria population fed on the thick-shelled mollusc *Melanoides tuberculata* and the other poputations fed on small fishes or bottom debris and insects, and the difference between the subspecies may have been due to the effects of crushing the heavy molluscs, that is, an adaptional response by the pharyngeal mill to the extra pressure exerted.

In 1953, very small fry removed from a brooding female *Astatoreochromis alluaudi* captured in Lake Victoria were raised on dry food and wet mash in an aquarium at the American Museum of Natural History. Some seven months later the fish were presented with fairly thin-shelled snails of the genus *Planorbis*. The *Astatoreochromis alluaudi* were mostly unable to crush them and soon lost interest. Feeding trials were kept up for several months without any obvious signs of improvement.

The phenotypic plasticity is explained as retardation of the normal developmental rate, and indicates the large potential for environmental influences on the phenotype in *Cichlasoma managuense*. Other species exhibiting morphological changes with growth (ontogenetic change), are *Cyrtocara livingstoni; Cyrtocara rostrata; Cyrtocara spilorhynchus; Cyrtocara compressiceps; Cyrtocara euchilus; Cyphotilapia frontosa; Lamprologus calvus; Lamprologus compressiceps; Geophagus steindachneri; Geophagus jurupari; Petenia kraussi; Petenia splendida,* and others.

Species considered to be specialised feeders under natural conditions are *Pseudotropheus zebra* (aufwuchs), *Cynotilapia afra* (zooplankton), *Lamprologus tretocephalus* (molluscs), *Lamprologus brichardi* (zooplankton), *Nandopsis spp* (piscivores) and the carnivorous *Cyrtocara* species. Most species will take zooplankton when presented in abundance (brine shrimp at various sizes), and many will take flake food.

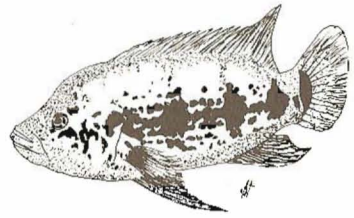
No doubt you will find that any change of diet must be made gradually. You may wish to try feeding *"Cichlasoma" synspilum* on fruit (fresh or dried) or vegetables such as zucchini, versus small fish fry and larger fishes subsequently, or reverse the procedure with *Petenia*.

How specialised are the "specialists"? You may be astounded at the trophie plastieity of the "herbivores" or "strictly carnivorous" species.

To simply categorise cichlids as omnivorous is not correct. In the wild they have the ability to specialise on a certain type of food, whilst consuming a wide range of dietary items when these are, at times, abundant. They have the ability to shift their preferences if food becomes scarce, and thus the unique modification of the cichlid pharyngeal apparatus with the diverse structure of the lower pharyngeal bone (Fryer and Iles, 1973, Figs 32-39; Liem, 1973, Fig 15) gives the cichlid fishes an advantage over most other families of freshwater fishes.

The considerable success of cichlid species such as *Tilapia* is due in no small part to their trophic plasticity. Their success as aquarium species is in part related to their ability to consume such diverse foods as cichlid flakes or dog biscuits, even (in the case of large *Nandopsis*) cans of dog food (opened of course). No wonder they are successful colonisers (see 'Superfish' 6, Jan-Feb 1985).

The next time you feed your cichlids make a note (in your cichlid notebook) of the variety of foods taken. Try experimenting — who knows, your pet cichlid may appreciate the change. Variety is the spice of life!



Keeping Up . . . New Names for Some Popular Malawi Cichlids.

Dr. Paul V. Loiselle
130 Suburbia Terrace
Jersey City, NJ 07305

An awkward consequence of the opening of Lake Malawi to full scale exportation of aquarium fishes has been commercialization of a large number of undescribed cichlid species. Because aquarists, for whatever arcane reason, seem more disposed to purchase Malawi cichlids that sport a Latin binomen, importers have proven remarkably resourceful in concocting more-or-less recognizably Latinized tags for species not as yet scientifically described. These trade names are not formally proposed, and should thus have no official taxonomic standing. Regrettably, the laxness with which the aposite provisions of the International Code of Zoological Nomenclature have been interpreted over the past few decades has created a situation in which an aquarist can, in describing his experiences with one of these creatively christened species, quite unwillingly find himself the author of a new taxon. The formal description of any of these taxonomically unrecognized species is thus an event to be welcomed, in that it removes at least one potential source of nomenclatorial confusion for future students of Malawi cichlids while providing aquarists with another island of stability in a morass of constantly changing trade names.

Over the last few years, a number of widely available representatives of the popular Malawian genera *Pseudotropheus* and *Aulonacara* have been formally described. For the most part, these descriptions have appeared in European publications inaccessible to most A.C.A. members. It therefore seems appropriate to bring these developments to the attention of the substantial segment of the A.C.A. membership with an interest in these colorful cichlids.

The first of these newly described cichlids is *Pseudotropheus (Maylandia) greshakei* Meyer and Foerster 1983. North American aquarists know this species as the red-dorsal cobalt zebra. A fair color picture of an adult male can be found in Ribbink *et al.* (1983), under the name *Pseudotropheus zebra* "mbenji," their designation referring to Mbenji Island, the only known habitat of this species in Lake Malawi. This species is also covered in the A.C.A. slide series (Slide # 38-3). In the same paper, Meyer and Foerster also propose a new subgenus, *Maylandia*, which comprises *Ps. greshakei*, the type species, and other straight-jawed, deep-bodied *Pseudotropheus* species such as *Ps. zebra*, *Ps. lombardoi*, *Ps. aurora*, *Ps. livingstonii* and *Ps. lanisticola*. The subgeneric name is a patronymic honoring the well-known German aquarist and author, Hans J. Mayland.

The second recently described *Pseudotropheus* species is *Ps. (Maylandia) hajomaylandi* in t' Veen 1984. This robust **mbuna** is better known to American aquarists under the trade name *Pseudo-*

tropheus "greberi." The specific name again honors Hans. J. Mayland. An excellent color photograph of a male of this very colorful but somewhat aggressive species can be found in Ribbink *et al.* (1983).

This history of this nomen exemplifies some of the difficulties facing those who wish to do taxonomic work on a group of organisms of interest to a wider public. The detailed description of this species was undertaken by two German workers, Manfred Meyer and Manfred Schartl. Their paper was submitted to the **Revue francais d'aquariologie,** a recognized scientific journal, and accepted for publication. Meyer and Schartl then appear to have communicated their proposed name to in t'Veen, a Dutch author then at work on a popular book on cichlids, under the impression that it would be printed subsequent to the appearance of their paper. Due to circumstances beyond the control of the parties concerned, the publication of Meyer and Schartl's paper was delayed until November of 1984, while the in t'Veen book made its appearance some months earlier. Systematic ichthyologists are sometimes accused of being excessively close-mouthed when queried about work in progress. This incident goes far towards explaining why.

The most recently described **mbuna** is *Pseudotropheus (Maylandia) barlowi* McKaye and Stauffer 1986. This species is named in honor of Dr. George W. Barlow, well known to ethologists and Neotropical cichlid fanciers for his research on the behavioral implications and evolutionary significance of color polymorhism in the Midas cichlid, *Heros citrinellus.* There are an excellent photographs of a dominant male *Ps. barlowi* in Lewis *et al.*, 1986 ("golden-zebra") and Ribbink *et al.* (1983) (Ps. zebra "fusco"). Photos of both sexes under their proper scientific name may be found in the A. C. A. slide series (Slides #93-3. male & 96-1, female).

The publication of a formal scientific name for this magnificent golden yellow species is a particularly welcome development. Of the three names under which this justly popular **mbuna** has been most widely marketed, two, *Pseudotropheus fuscoides* and *Ps. williamsi,* belong legitimately to two valid but utterly different species. The former is a small **mbuna** with dusky blue males and nondescript brown females characterized by its secretive, rock-frequenting habits. The latter, type species of the genus, is a very large, light blue species with a long snout, somewhat underslung lower jaw and a distinctive pattern of small black flank spots present along the midlateral line and just above the upper lateral line. To the best of my knowledge, only males of the true *Ps. williamsi* have ever been imported into the U.S., where they were sold under the rather descriptive tag of "baby-blue whales!" The third, gold-fin *Gephyrochromis,* is both literally (males have pale blue, females orange-brown vertical fins) and technically (the fish lacks the mixture of bicuspid and conical teeth characteristic of the genus *Gephyrochromis)* misleading.

The genus *Aulonacara* has proven remarkably rich in undescribed species and thus has been particularly burdened with Latinized trade names. It is thus a particular pleasure to report that two of the most popular Malawi "peacocks" have been recently described. In a recent letter, Dr. Ethelwyn Trewavas informed me that *Aulonacara stuartgranti* Meyer and Riehl 1985 is now the correct scientific name for the regal peacock and *Aulonacara baenschi* Meyer and Riehl 1985 that of the sunshine peacock. Color slides of *A. stuartgranti* are to be found in the A. C. A. slide series (Slides # 54-2, male & 57-3, female), one of *A. baenschi* (Slide # 12-2).

While the fact of their description is welcome, its mode of publication is less so. Both taxa were described in the second volume of the **Aquarien Atlas,** a lavishly illustrated aquaristic reference work by Hans A. Baensch and Dr. Rudiger Reihl. Books of this nature are a delight to look upon and deserve the fullest commercial success. However, they do not constitute an appropriate vehicle for the publication of new species.

First of all, neither scientific bibliographic services nor institutional libraries are primed to expect the publication of such material in what is essentially the popular literature. To make matters worse, the cost of such volumes precludes their gratis distribution to interested parties on even a limited scale. Thus it is extremely likely that such descriptions will go unremarked for a considerable period of time. In the case of the two *Aulonacara* species in question, a search of four computerized data bases, one of them the **Zoological Record,** produced no reference to the original description. A search of a fifth, which accesses the Library of Congress card catalog, failed to turn up any reference to the **Aquarien Atlas,** as did a manual check of the extensive holdings of the library of the American Museum of Natural History in New York City. Had it not been for Dr. Trewavas's kindness in bringing these descriptions to my attention, I would still be unaware of them, notwithstanding access to a far broader range of information retrieval possibilities than enjoyed by most fish systematists, much less aquarists.

For aquarists to remain unaware of a new taxon for several years after its publication is inconvenient. However, their ignorance is unlikely to have any lasting consequences. For other ichthyologists to remain in the dark is quite another matter. Such failures of communication are an invitation to redun-

dant effort leading to the unintended publication of junior synonyms. However, desirable it might be to see the publication of new taxa restricted to refereed journals, there is no indication that such efforts to bypass traditional channels of scientific communication will cease any time in the forseeable future. Access to low cost or gratis publication of high-quality color plates alone constitutes sufficient incentive for even professional systematists to avial themselves of such alternatives. However, if for no other reason than to assure the widest possible recognition of their efforts, one can only urge such authors to make every effort to put copies of their work into the hands of professional reviewing services.

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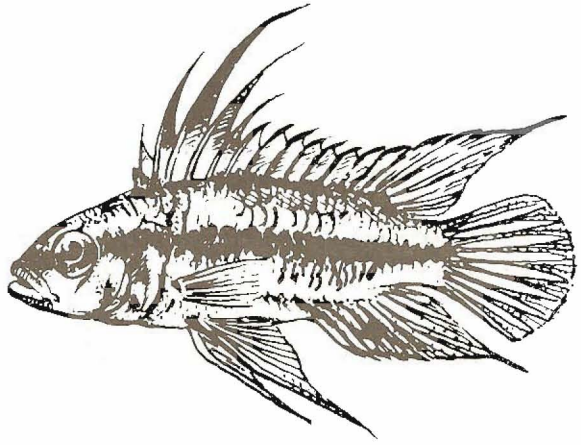
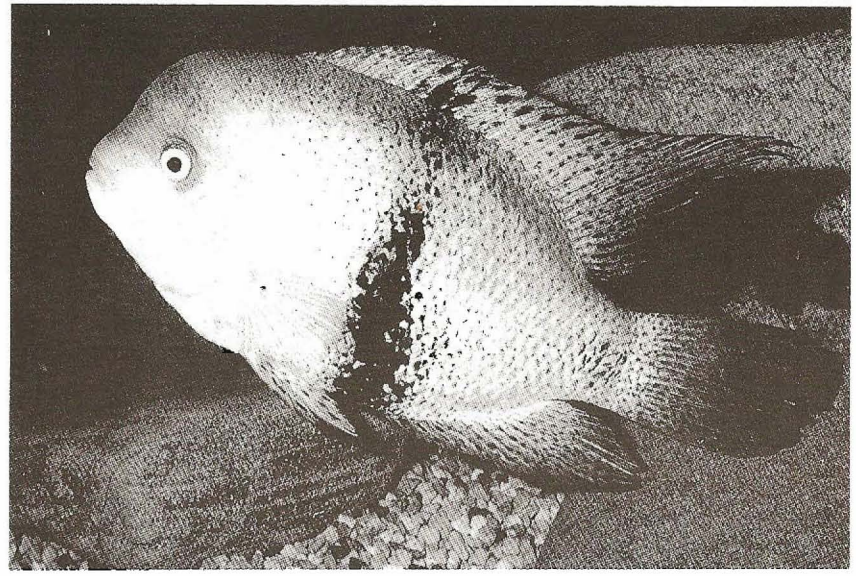
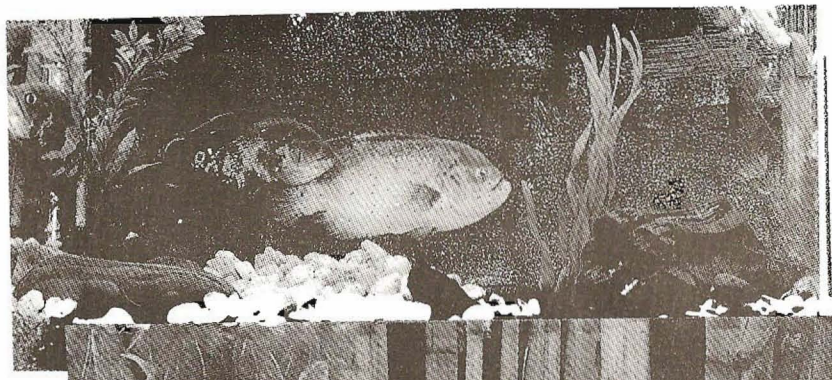
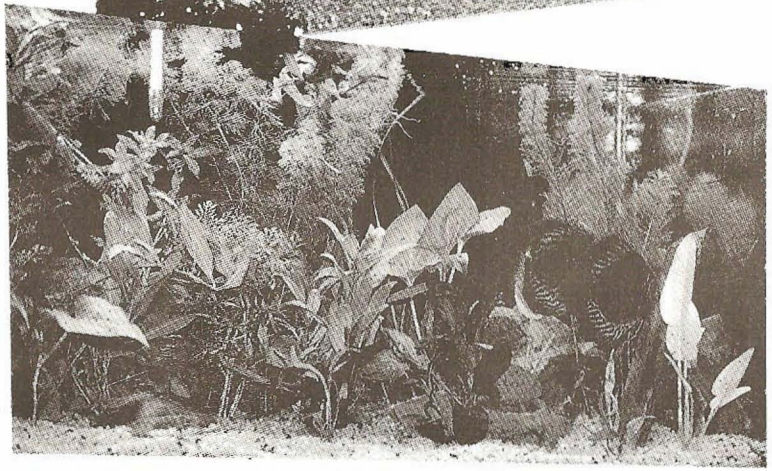
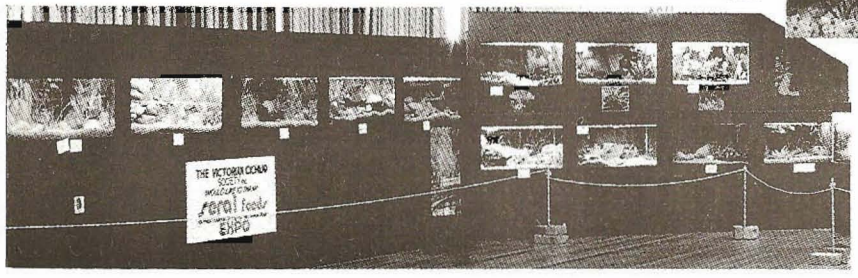


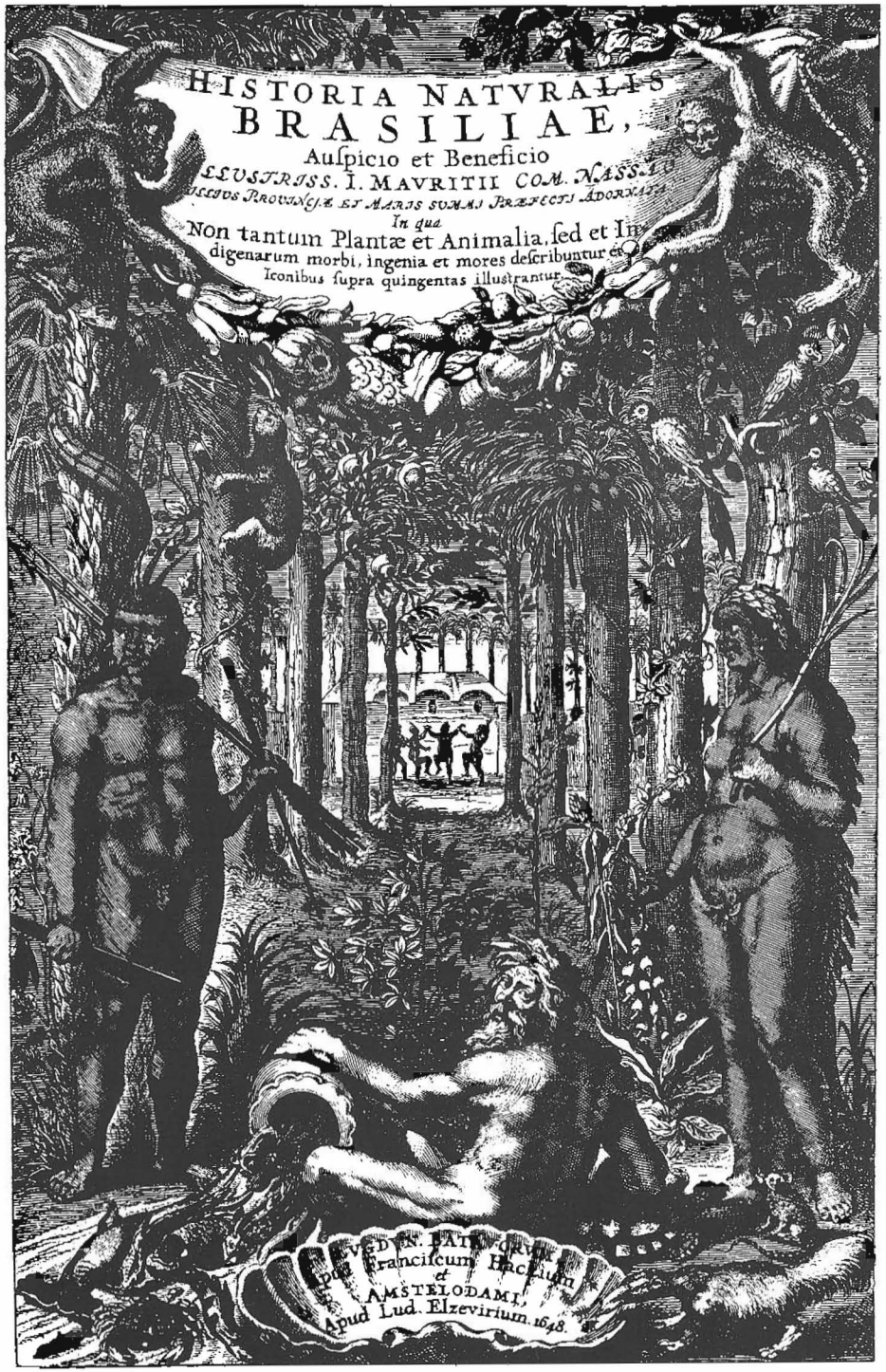




THE VICTORIAN CICHLID SOCIETY Inc. WELCOMES YOU TO OUR EXOTIC FISH & FLORA EXPO !







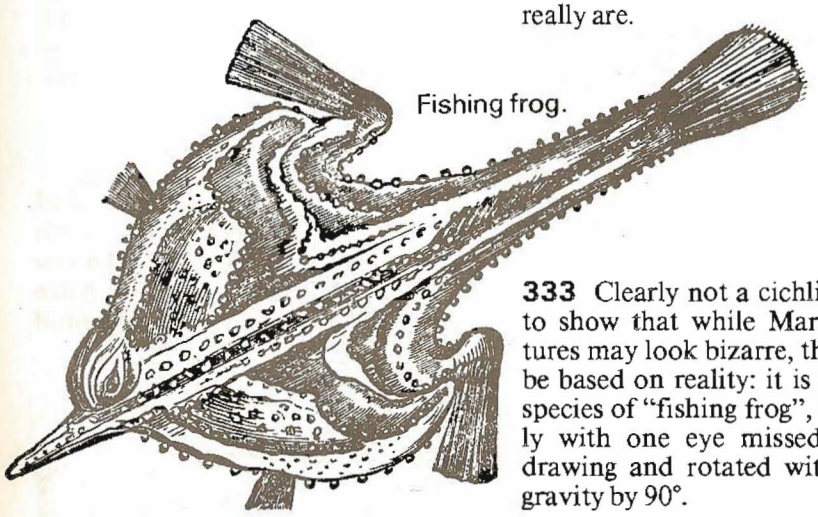
Brazilian Cichlids in the 17th Century

By Professor W. R. A. Muntz
Dean of Science
Monash University

IN 1648, Jorge Marcgrave of Liebstadt published his 'Natural History of Brazil'. Marcgrave died at the age of 34, but his work survives and has a surprisingly modern flavor about it: most of the plants and animals he depicts are readily recognisable today.

While the original work was published in Latin, in 1941 the University of São Paulo published a Portuguese translation with all the original pictures, which I was fortunate enough to purchase when in that city.

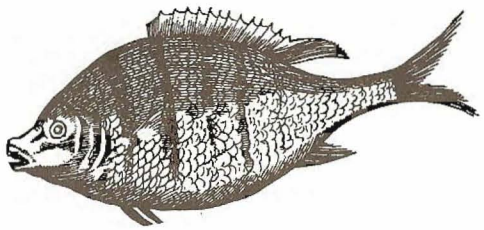
A major section of the book concerns the fishes. Since Marcgrave's descriptions are fairly idiosyncratic (apart from being written in Latin/Portuguese!), and he only occasionally states whether the fish in question is marine or freshwater, it is often difficult to know whether a picture refers to a cichlid or some other group. I thought it might nevertheless be of interest to reproduce some of his pictures for the Victorian Cichlid Society, with annotations based on Margrave's text: apart from all else I might get some interesting comments back from readers as to what the fishes really are.



Fishing frog.

333 Clearly not a cichlid! I put it in to show that while Marcgrave's pictures may look bizarre, they appear to be based on reality: it is clearly some species of "fishing frog", unfortunately with one eye missed out in the drawing and rotated with respect to gravity by 90°.

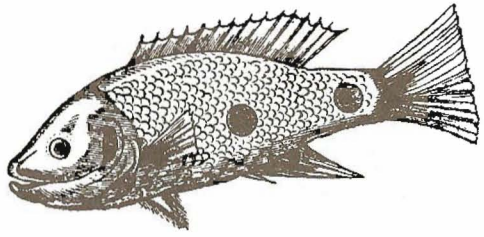
Jaqueta.



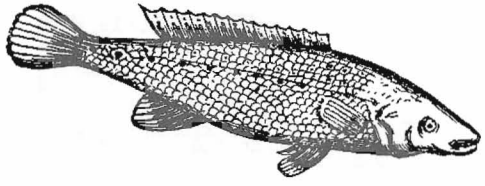
374 It is not clear to me whether this is a cichlid, but it appears at least to be close. In Portuguese it was called a "Jaqueta", because the local negroes wore jackets of the same color: from the text the colors appear to be mainly black and silver or blue. Whether it is marine or freshwater is not stated, but it is said to be good to eat.

411 This, I am sure, is a cichlid. The Indian name for it in 1648 was "Acara", and Marcgrave says it is a freshwater fish. *Acara* is a generic name that has been applied to *Astronotus ocellatus* in the past. *Astronotus* is, in the local vernacular, known today as "Tucunaré": Marcgrave says it is worth eating, and from personal experience I certainly agree.

Acara.

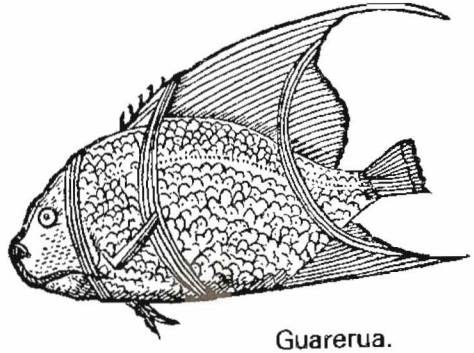


Nhaquunda.



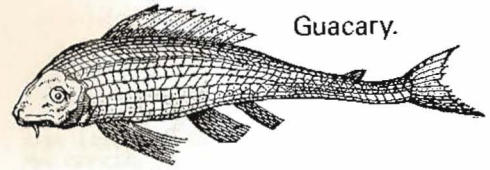
420 Called "Nhaquunda" (an Indian term). This is probably a cichlid. It is said to be freshwater. The text makes a point about the black spots, each the "size of a pea", between which there are "dispersed blue points". The blue points are apparently lacking in the female, despite which she is said to be equally good to eat!

440 Few identifying statements in the text, not even whether it is freshwater of marine: this fish is called "Guarerua". The eye is said to have a black pupil with a yellow surround, the fins are black, and the scales black and lustrous like silk, sometimes with semilunar yellow fringes.

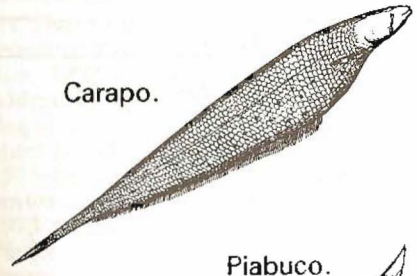


Guarerua.

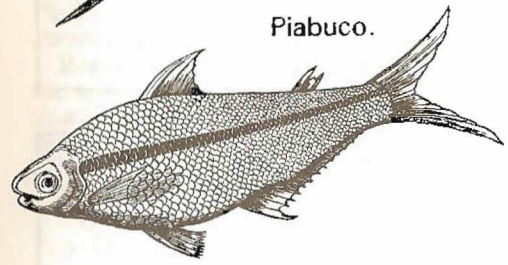
Guacary.



Carapo.



Piabuco.



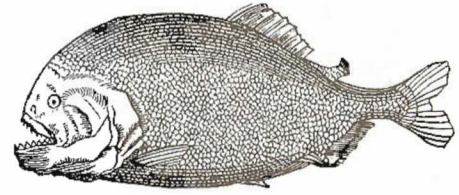
398 is of course the piranha, also known in Marcgrave's time as Piraya. These are the now traditional comments on its ferocity:

> It is said that the white, triangular, extremely sharp teeth can with a single bite remove a piece of meat from anyone as if with a penknife, and that it has such a thirst for blood and desire of human meat that we should flee from it!

In his usual way Marcgrave also comments on its edible qualities: very white flesh, dry and of good taste, and eaten on many occasions by Margrave himself.

405, 415 and **419** are not cichlids, but nevertheless common aquarium species. Number 405, known as "Guacary", would seem clearly to be a species of *Hypostomus*. Number 415, known as "Carapo", is obviously one of the gymnotid eels, and number 419, called "Piabuco", one of the tetras.

Marcgrave describes Piabuco as having elegant eyes with a clear pupil, surrounded by a silver circle mixed with a little red above. The stripe is light in color, the scales silver, tinged above the stripe with a "certain brilliance" of "hyacinth green". The name Piabuco survives in the keel-bellied Slender Tetra, *Piabucus dentatus*, whose appearance fits Marcgrave's description quite closely.



Piraya (piranha).

Marcgrave describes 120 fishes (both marine and freshwater) in all, so the number of possible cichlids, which I have extracted from his list, is small. Some of the other fishes he illustrates could be cichlids, since from pictures published in 1648 it is difficult, for example, to discriminate between wrasse and cichlid without a statement as to whether they are freshwater or marine. The ones I have selected are nevertheless very convincing to my mind, and the pictures themselves both attractive and surprisingly accurate.

VCS

TABLE SHOW REPORT

May 1988

TANK	SPECIES	ENTRANT
1	Tilapia buttikoferi	A. Langelaar
2	Pseudotropheus zebra	M. Criddle
3	Pseudotropheus elegans	J. Staude
4	Pseudotropheus lombardio	S. Stevens
5	Lamprologus brichardi	D. Smith
6	Haplochromis burtoni	D. Skop
7	Lamprologus brichardi	P. Dundas
8	Julidochromis regani	D. Thorn
9	Lamprologus lelupi	J. Shields

JUDGE'S REPORT

Tank	Cond (max 30)	Fins (max 30)	Shape (max 20)	Scales (max 10)	Age (max 10)	Total
1	24	20	15	5	3	67
2	20	20	13	5	5	63
3	23	23	15	8	6	75
4	20	20	15	5	6	66
5	24	23	15	6	5	73
6	19	20	12	5	4	60
7	21	23	16	7	7	74
8	24	22	15	6	7	76
9	24	22	16	8	7	77

JUDGE'S COMMENTS

1. Damage on side, still very young.
2. Good fish, little damage on anal fin.
3. Very well cared for fish.
4. Damage around mouth.
5. Nice fish.
6. Immature fish, excellent potential. Good condition.
7. Nice presentation of species.
8. Good size and condition.
9. Lot of color and potential.

RESULTS

1st J. Shields 2nd D. Thorn. 3rd J. Staude.

POPULAR CHOICE

Popular choice went to tank nine — the Lamprologus leleupi of Jonathan Shields. Congratulations Jonathan, good fish.

My appreciation to Danny Genovese for his judging. Such a hard job on big nights.

Martin Criddle

What is a species?

By Dr E. Trewavas

THIS ARTICLE IS REPRINTED FROM 'CICHLIDAE' THE OFFICIAL JOURNAL OF THE BRITISH CICHLID ASSOCIATION

IN THE COURSE of John Poulton's interesting article on this subject ('Cichlidae', 7 #4). He quoted a sentence from an address given by the late Dr Charles Tate Regan at the meeting of the British Association for the Advancement of Science in 1925. Because others have also quoted this sentence in isolation, I published a note in 1973 putting it in context. It is at John Poulton's request that I now offer the substance of that note to the BCA.

Regan used the word "community" in the sense in which we now use "population" and so defined it, distinguishing between it and an ecological "association" of species, which we now call a community.

Regan wrote:

> "Community" is the right name for a number of similar individuals that live together and breed together."
>
> "A species is a community, or a number of communities, whose distinctive morphological characters are, in the opinion of a competent systematist, sufficiently definite to entitle it or them to a scientific name."

The following sentences make it clear that where the subjectivity came in was in deciding whether this entity was a species or subspecies or a population of lower rank not requiring a name. Even for this he had a fairly objective criterion.

> "In practice it often happens that geographical forms, representing each other in different areas, are given only subspecific rank, and that closely related forms, not easily distinguished, are given specific rank when they inhabit the same area but keep apart."

A further sentence referred to the difficulty in evaluating morphological differences.

> "No systematist has, or should have, any rule as to the amount of difference required for the recognition of a species or subspecies."

As for the origin of species, the role of isolation, imposed by topography or by habit and degree of mobility (vagility) was appreciated by him in the modern sense and was expressed in his comment on Johannes Smidth's work on *zoarces* (the viviparous blenny). In this fish, at the mouth of a twenty-mile fiord the vertebrae numbered 115, but at the inner end of the same fiord averaged 109.3, with intermediates between.

> "If we suppose that these fish move on an average a mile a year, or even less, and mate with the nearest fish of the opposite sex, we can understand how the tendency to form a pure fiord race is hampered by continuous interchange."

Later in the same address:

> "The whole of my work leads to the conclusion that the first step in the origin of a new species is not a change of structure, but the formation of a community, either with new habits or in a new or restricted environment."

The statements of the nature and origin of species express succinctly the views held today, after six decades of added experience and new techniques.

How subjective decisions may be is illustrated among cichlids by the treatment of *Sarotherodon melanotheron*, the black-chinned tilapia of West African brackish waters, by Thys van den Audenaerde and myself, both experienced taxonomists. (Whether competent or not must be left for others to say.)

The black-chinned tilapia exists as a series of populations from Senegal to the Zaire estuary. Thys (1968) considered the different populations to be five species; I considered them to be five subspecies of *Sarotherodon melanotheron*. Thys relied on small color characteristies, and the topological fact of interruptions by unfavorable stretches of coastline. I balanced the color differences against fundamental color similarities and considered that,

because of the lowering of the salinity in the coastal waters when rivers flooded, no population is entirely isolated. Individuals have been caught in the sea. Interpopulation breeding tests have not been made and would be significant only if both sexes had free choice.

Another example is that a population in a pool fed by a tbermal spring near the Northern Oaso Nyiro in Kenya. This was named *Tilapia percivali* by Boulenger. I consider it a subspecies of *Oreochromis spilurus* although it has quite definite morphological distinctions from typical *Oreochromis spilurus.* I am influenced by its geographical position. The pool where it lives drains into the Oaso Nyiro, samples of whose population cannot be distinguished from *Oreochromis spilurus.* I have no doubt that the pecularities of *Oreochromis spilurus percivali* are due to environmental influence, but whether they are genetically based is unknown.

In both these instances it is possible that new techniques of molecular biology might give us more objective criterion, but so far they have not been applied to these cases.

We are familiar now with the new status of the so-called "morphs" of *Pseudotropheus zebra.* Fryer, who described these morphs knew that they lived together, but it was Holzberg (1978) who by his observations underwater in nature and in aquaria first discovered that for reproductive purposes they "kept apart", the four "morphs" being respectively males and female of two species.

Then a team (McKaye et al, 1984) including specialists in eleetrophoretic teehniques found that although their molecular patterns were extremely similar the *frequencies* of alternative forms ("allies") of certain protein molecules differed between the two species. The differenees were greater than those found between micropopulations of the same, common, BB male and its occasionally OB female.

To my mind, the observations of assortative mating of the two pairs of supposed "morphs" was the real demonstration that they are two species, but it was good that the moleeular test supported it.

A further technique, that of DNA hybridisation, is being developed and there are hopes that this will provide an objective criterion. Sounds like magic to me!

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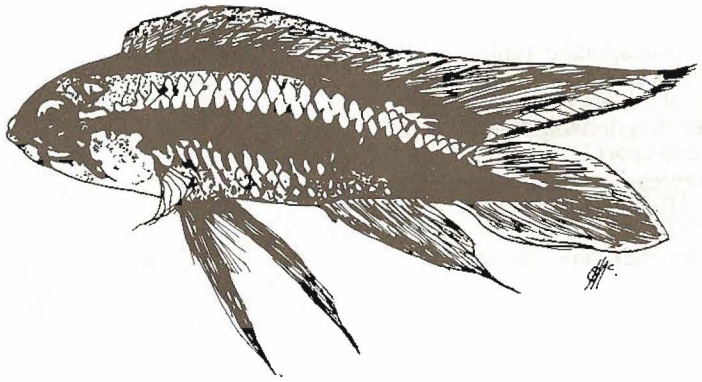

CONFERENCE REPORT

Report from Chairman of 1987 Conference:

Norm Halliwell briefly ran through the items which were raised during the NSW Conference. These included:

1. Hybrids.
2. Species maintenance.
3. Species synopsis.
4. Water chemistry research.

State Reports:

VIC: Mainly reported on our expo and species maintenance list which was distributed to each state's representative before the conference started.

WA: Reported on lack of "on time" deliveries of fish from other states because of problems with transport and the inspeetion criteria which must be followed. Generally the government body is not concerned with types of species, but are *deadly* on plant matter.

NSW: Reported they have no restrictions but agree that there are a number of species which should be totally banned and that we should show responsibility and some give and take on allowable species.

SA: Mainly reported on their permit system.

FOLLOW-UPS

Species synopsis:

NSW submitted a number of synopses and did encounter some problems with acceptance of some because of the information supplied in them. It was agreed that roughd rafts should be distributed to the state societies for comments prior to final distribution.

Photos:

SA are working on a new system to make photo-taking easier.

AGENDA

Illegal imports:

All agreed that there is not a great deal that can be done about them. Continuation of illegal imports may contribute to the closure of normal imports.

Fish diseases:

Discussion mainly centred around blindness.

Fish quality:

Covered in crossbreeding.

Water quality:

Water quality was discussed by means of "degree of acclimatisation required" when transferring fish either tank-to-tank or even state-to-state. In general, the fish must go into a "clean" tank.

Crossbreeding:

This topic did bring out some lively discussion on some particular species eg *similus/red ornatus,* but in general resorted back to all, agreeing that there should be more education at retail level.

Raising fry with parents:

This topic also created some interesting discussion, but basically, ran into problems when deciding what was meant by milking and what constituted raising fry with parents eg 14 days to three months.

Guest speaker — Norm Halliwell — Malawi visit:

Norm basically made us all green with envy by relating some of the things he saw and did during his 2-week visit to Lake Malawi and then on to Great Britain. We also had the opportunity to look through quite a large photo album containing all the photos he had taken of fish and some of the landscapes around Lake Malawi.

David Thorn

MAY TO JUNE 1988 TREASURER'S REPORT

		OPENING BALANCE	390.83
DEBITS		CREDITS	
Postage	54.05	Memberships	95.00
Printing	70.00	Raffle	71.00
Trophies	65.00	Trading Table	50.00
Raffle	19.68	Auction	25.00
Trading Table	29.85	Advertisements	**.**
Supper	13.25	Miscellaneous	17.00
Miscellaneous	121.76		
EXPENDITURE	373.59	INCOME	258.00
		CLOSING BALANCE	275.24

Manny Vella

ANNUAL DINNER

ANNUAL DINNER

Twenty-two people, so far, have confirmed they are coming to the annual dinner . . .
Saturday, 13th August 1988
at Dudley's Restaurant
475 South Road, Moorabbin.

We need 30-35 people to have the restaurant to ourselves. If we can't get the numbers it would be much better if we filled the place with family or friends.

$30 per head ($10 deposit per head required).

Please see Sue Smith, or phone her, to make sure of your place.

Interested in the Electric Blue?

By Peter McDonald

REPRINTED FROM 'FISHTALES', the magazine of EDAS, Box 502, Ringwood 3134.

FOR SOME OF US, the keeping of African cichlids is something for the more advanced hobbyist. For a start, they are a bit savage; they need large tanks; they have to be kept on their own; they like "funny" water conditions; they have strange breeding habits; they are generally a bit dull compared with the more common varieties in the community tank — and they *are* expensive.

Well, have you really thought about the Electric Blue? What a beautiful fish. If you hark back to Bruno's Junior Show, the fish that was placed first was an Electric Blue — and, it also won popular choice! Someone must like them, eh?

The Electric Blue (*Haplochromis ahli* for the purists) has lots of advantages over many other Africans, not the least of which is the outstanding color of the male when he matures in a tank of co-operative females. But, apart from that, they are an interesting fish; have a captivating personality; and, they are possible to breed.

They can be kept with other attractive Africans like the Peacock (*Aulonocara nyassae*) — in fact both will breed in the one tank as separate colonies. Think of that — a colony of Peacocks and a colony of Electrics with their distinctive habits, all in one tank — what a set-up!

How do we set-up a tank for these "specialist" fish. Well, to start with, they like lots of rock. The tank should be set-up so that the rocks form small caves, or hiding places. Largish flat pieces placed horizontally are also advantageous as that is where the female likes to lay her eggs.

Nevertheless, having done that and presented the perfect breeding rock for them, invariably, they will decide to dig a hole in the gravel and deposit the eggs there just to prove who is in charge of the situation.

The water should be alkaline, around 8.0 pH, and fairly hard — around 400 ppm. Temperature does not seem to be all that critical, the normal 24-26°C seems to keep them happy. Regular water changes of around 10 per cent per week makes things comfortable — and keep the tank covered, as they can become airborn in the frenzy of mating.

They eat just about anything, although live food naturally helps the situation if maximum color and breeding quality fish are your aims.

They are not as aggressive as some would have us believe, and once a male has established his right to be the father of the colony, they settle down to a domestic life not unlike the suburbs — an occasional spat, but nothing too serious.

Distinguishing the males from the females is not easy early in life, but as they mature the male will adopt the sparkling color that gives them ther common name. The females tend to be greyish-brown with a smattering of blue. At breeding time at least eight vertical bars, which may be hardly discernible at other times, appear on the male, and a white stripe appears on the top of his head. A gold coloration may also be present on the caudal, ventral and anal fins.

Being mouthbrooders, the Electric Blue exhibits behavior which is nothing short of fascinating for the aquarist.

At the time of the "event", the female deposits her eggs on either the flat rock the owner has carefully provided, or more commonly, the hole in the gravel the male has provided. The male circles the female, and almost the instant the egg is released from the now visible breeding tube, the female snatches it up in her mouth — this continues for some time. When the whole performance is over the female goes off to "sulk" in a corner, presumably as a result of having been left with the whole brood to hatch in her mouth.

It is a good idea to remove the female after three or four days to a separate tank and allow her to get on with the business without being disturbed. If you are lucky, and some are, in about two weeks time she will spit out her brood and let them fend for themselves. After about four weeks, she can be removed to the colony tank to start all over again.

Feeding the fry is the normal routine for egglayers — baby brine shrimp and microworms, followed by powdered dry food. Others at EDAS may have many other suggestions regarding baby-raising, and it would pay to ask around. The fry can be successfully kept in a five-gallon tank until they are around a centimetre long and should be starting to show color and be sexable at about five centimetres in legth.

The only thing I haven't mentioned is the size of the original colony tank. A 30-inch tank seems OK, but I think a three-footer would be more to their liking. As far as expense is concerned, ask around, there are babies available for less than $10 each. If you don't win a female, think of the beautiful show fish you will have. (Bruno made me say that!)

June Minutes

The meeting opened at 8.21 with Graham welcoming everyone present. The slides of the 1988 Home Show entries were presented by Amanda Genovese and Graham, who explained the merits of each entry. John Reeves presented his summary of organising the Home Show and announced the trophy winners — 1st, Johnathan Shields; 2nd, Scott Haymes; 3rd (and Best Novice — Ed) Martin Criddle.

John thanked the judges (Amanda and Danny Genovese, Graham Rowe) and the photographer (Trevor Zylstra) for their efforts.

Apologies received: — Heinz Staude, Sue Smith, Peter Petrus, Scott Haymes. May minutes taken as read on motion moved by Martin and seconded by Aart.

Treasurer's report:

May Balance	$390.83
Income	$258.00
Expenditure	$373.59
Closing Balance	$275.24

received on a motion moved by Matthew, seconded by Keith.

Syd Solch defeated Kevin in the quiz and won a bag of food. Manny and Glenn were thanked for the questions.

The Special Donation Auction was then held, which raised $455.

After a short break, at 10.20, Gary Backhouse presented the main talk of the evening on Australian Native Fishes. A vote of thanks was moved by Graham.

Table Show results were presented by Martin and Danny Genovese was thanked for judging. Draw prizes, courtesy of **Pet and Aquarium Industries**) were presented.

Draw prize:	1st	Garry van Ekeren	Solar heater.
	2nd	Kevin Blitz	Plastic plants.
	3rd	Madascar Rainbows	Johnathan Shields.

Breeder's Achievement Award badge (5) was presented to Johnathan Shields by John Reeves.

Meeting adjourned for supper at 11.10 pm.

Dwarf Acara From Argentina

By Paul V. Loiselle

AFTER A LAPSE of several decades, sporadic shipments of aquarium fish are coming in from the Rio Parana — Rio de la Plata region of South America.

We owe the reappearance of the very first aquarium cichlid, *Cichlasoma facetum*, the Chanchiti, to such shipments, as well as the introduction of several previously unimported *Geophagus* and *Aequidens* species. One of the most attractive of the latter is a small, very blunt-headed *Aequidens* whose overall appearance led to it being christened the Yellow or Argentine Curviceps by wholesalers and hobbyists.

This Argentine newcomer keys out to *Aequidens dorsigerus* (Heckel) and it is similar to the better-known *Aequidens curviceps* Ahl. Both specics are quite small, males rarely exceeding seven centimetres and unagressive to a fault.

While their reproductive pattern is quite different from such genera as *Apistogramma* and *Nannacara*, all of these small acaras are really dwarf cichlids and should be treated as such. They look their best in a well-planted tank and seem to feel at home in the presence of active schooling dither fishes like small tetras and livebearers.

These dwarf acaras will not tolerate dissolved waste build-up. Like all other riverine dwarf cichlids, they demand regular partial water changes as part of their maintenance. *Aequidens dorsigerus* differs from *Aequidens curviceps* in water quality preferences. *Aequidens curviceps* is an Amazonian species which prefers soft, acid water conditions. Its Argentinian cousin on the other hand, seems to like neutral to slightly alkaline, moderately hard water.

Both do well over a temperature range of 18-27°C and I suspect that *Aequidens dorsigerus* could probably tolerate brief drops to 10°C in a pinch without coming to harm. Both enjoy the usual live and prepared foods, and are easy to feed.

SPAWNING

Both species are biparental substratum spawners. Females are slightly smaller and plumper than males, have shorter dorsal and anal fins, and usually have a more clearly defined black mark in the spiny dorsal fin.

These differences are not always obvious in young fish, and the surest way to obtain a pair of any dwarf acara is to purchase a group of six to eight fish and allow nature to take its course.

Both *Aequidens curviceps* and *Aequidens dorsigerus* often spawn on broad-leafed aquatic plants such as Amazon Sword plants, but some pairs find the inside corner of their tank or a smooth stone equally attractive as spawning sites. Both parents tend the clutch, with the female doing most of the fanning of the tight round patch of eggs, while her mate chases intruders away.

Opinions vary on how reliable these fish are as parents. In my experience, brood care breaks down sometime between hatching and the time fry become mobile. Other aquarists have found both species to be good parents — caring for the fry for six to eight weeks.

If brood loss due to parental cannibalism persists after two or three spawning efforts, the eggs can be hatched artificially by removing them to a small nursery tank containing a few drops of four per cent neutral Acriflavine per litre and providing gentle water circulation with an airstone.

The eggs hatch in 60-72 hours at 24°C and the fry are free-swimming three days later. Newly hatched brine shrimp are an acceptable first food, as are microworms. With ample feeding and regular water changes, the young will attain sexual maturity in about eight months at approximately 4½ centimetres.

I have seen four other *Aequidens* species in wholesalers' tanks that clearly fall into the same morphological group as *Aequidens dorsigerus*. Clearly this is one group of dwarf cichlids that has barely been tapped as a source of aquarium fish. If they prove to be as colorful and interesting as *Aequidens dorsigerus and Aequidens curviceps*, those cichlid fanciers who take a chance on them will be well rewarded for their efforts.

OSCAR EYES WANTED

FOR SCIENTIFIC RESEARCH
AT MONASH UNIVERSITY

If one of your Oscars should die, we would like to have him/her, young or old.

Put it in a plastic bag (or two) and stick it in the freezer.

Give us a ring and we will arrange to pick them up.

Please phone Steve Morton
on 565 3663 BH
or 211 9259 AH.

Notice of Motion

On the night of 19 August a Special General Meeting will be held (at the usual venue) for the purpose of voting on the following alterations to the rules of the Victorian Cichlid Society Incorporated:

3.6 (present wording retained — the following added to the the end of the paragraph) . . . with normal rights for two adults and their children.

3.7 Junior membership with full rights will be available for persons between the ages of 15 eyars and 18 years.

3.7 . . . becomes 3.8.

3.8 . . . becomes 3.9.

16.1 (d) A candidate for election as an officer of the society shall be:
(i) not less than 18 years of age;
(ii) a financial member of the society.

16.1 (e) A member is not entitled to vote at any election of office bearers unless all monies due and payable by the member to the society have been paid, including tbe amount of the annual subscription payable in respect of the current financial year.

16.1 (f) A financial mamber of not less than 15 years of age may vote at an election and in the case of a family membership, members of the family unit, each of whom is not less than 15 years of age, may vote.