



**IFAR 2005 Professional Development Program  
Completion Report  
[800 words]**

**Instructions:**  
Please submit the completion report by email, using this form, through the sponsoring CGIAR Center to [ifar@ifar4dev.org](mailto:ifar@ifar4dev.org) within two months after the completion of the fellowship.

*Please check if Thalwitz Scholarship*  **Yes**

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**Name of Applicant**     David NGUENGA -----

<b>Sponsoring CGIAR Center</b>	<b>WorldFish Center</b> -----
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### I. Work Program goals achieved (maximum length: 200 words)

Fieldwork led to the collection and acclimation in captivity of 8 rainforest ornamental fish species belonging to 5 families as shown in the following table:

Family	Genus	Species	Observations
Distichodontidae	<i>Neolebias</i>	<i>Neolebias ansorgii</i>	Senescent
		<i>Neolebias trewavasae</i>	Immature
Mochokidae	<i>Microsynodontis</i>	<i>Microsynodontis batesii</i>	Gravid
Alestidae	<i>Brycinus</i>	<i>Brycinus opisthotaenia</i>	Immature
		<i>Brycinus holotaenia</i>	Immature
Mastacembelidae	<i>Mastacembelus</i>	<i>Mastacembelus sp.</i>	Immature
Cyprinidae	<i>Barbus</i>	<i>Barbus camptacanthus</i>	Gravid
		<i>Barbus jae</i>	Maturing

Apart from *Microsynodontis batesii* and *Barbus camptacanthus* which were gravid at the time of their collection, all other species were still undergoing sexual maturation or had already spawned in nature. *B. camptacanthus* and *B. jae* naturally spawned in captivity. They were released into well-fertilized small earthen ponds provided with spawning structure in the form of floating plants (*Eichornia crassipes*, *Pistia stratiotes*), wood piles or floating “kakabans” constructed of grass. For *B. camptacanthus*, water level was gradually increased and spawning occurred within one week. It was observed that *B. camptacanthus* was not a seasonal spawner as it could breed many times a year. The time interval between two consecutive spawnings was approximately 6 weeks.

For *B. jae*, spawning was achieved over the course of several months. Ponds were stocked the 11 June with 20 pair of maturing broodfish. Following intense rains over the course of August, gravid females were observed during sampling on 25 September. In a test fishing event at the end of the rainy season (13 November), juveniles of approximately 5 mm TL were observed. At pond harvest on 19 December, evidence of at least three spawning events were found in the form of juveniles of differing size classes, despite heavy predation by toads (*Bufo camerounensis*). Females were found to be heavily gravid, implying that reproduction is not wholly dependant upon the seasonal rains.

Trials to artificially reproduce *Microsynodontis batesii* did not yield consistent results. Oocyte maturation and ovulation were induced using LHRHa + Metoclopramide at a dose of 0.02 µg and 5 µg per g of female bodyweight, respectively. Sperm could be obtained by a gentle manual pressure on the abdomen. After fertilization, no egg hatching occurred. Sexually-immature individuals are being fed a high-protein artificial diet (45 % crude proteins) made from locally available materials in order to enhance ovarian recrudescence in captivity.

### II. Plans for follow-up (maximum length: 200 words)

Fieldwork will continue during the second phase of the project in order to increase the diversity of rainforest ornamental fishes presently in our collection. It is anticipated that fieldwork will be carried out between April and May 2006. Experience from the previous fish collecting work has shown that this period might be the peak reproductive season for most rainforest ornamental fishes.

We intend to transfer the experimental site to Kribi where ornamental fish biodiversity is reported to be high in some rivers and their tributaries (Lobe, Kienke, Lokundje, etc.).

Sexually mature individuals will be induced to spawn in captivity. Larval rearing will be carried out either in aquaria or in well-fertilized earthen fishponds.

We shall continue to evaluate the stage of sexual maturity of ornamental fishes captured in 2005 and maintained in captivity.

**III. Report budget utilization including whether budget was spent as planned (maximum length: 100 words)**

The allocated budget was used as outlined in the proposal. The state of expenses is summarized in the table below:

<b>Items</b>	<b>Amount (US\$)</b>
Living allowance (6 months)	5,000
Broodstock collection	400
Equipment & materials	470
Artificial diets & Artemia cysts	450
Pond facilities	1,950
Local travel	1,500
<b>TOTAL</b>	<b>9,770</b>

The unspent portion stands at \$ 230. We intend to use it for the maintenance of the broodstock (artificial diet, pond fertilization, etc.) pending the approval by IFAR.

**IV. Assessment of the fellowship experience and general comments. (maximum length: 300 words)**

The work on the development of aquaculture technology for rainforest ornamental fishes is a new field of research in Cameroon. The opportunity to work more closely with the WorldFish Center (WFC) within the framework of the IFAR-funded project has tremendously increased my knowledge base. The ease in obtaining some materials ordered overseas (e.g. Artemia cysts, LHRHa, etc.) rendered the overall work very enjoyable. Broodfish collection has shown that the abundance of ornamental fishes of interest to the aquarium trade was very low. Consequently, the development of appropriate technology for the reproduction and the culture of rainforest ornamental fishes is of utmost importance in order to add value to natural resources and increase incomes among forest communities.

It is just regrettable that the study period was too short (June-December) to yield consistent results. The project was launched when the spawning season of most of the ornamental rainforest fishes has come to an end. It is hoped that the spawners could complete their sexual maturity in captivity under controlled conditions.

