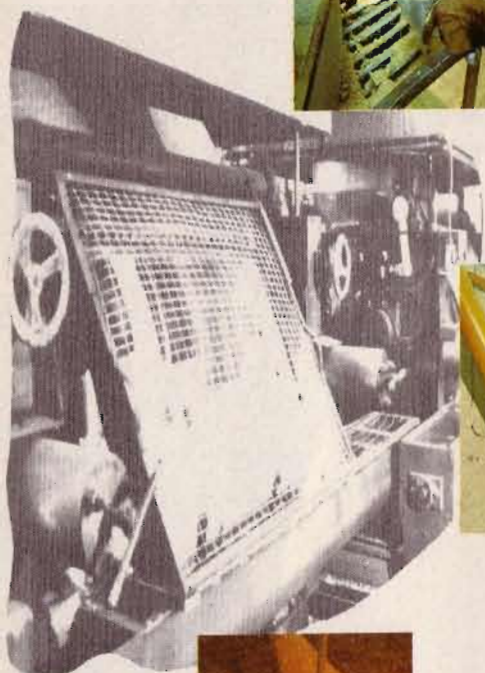




◀ A fishfood ingredient being introduced into a reduction mill to reduce the particle size to a coarse powder.



▲ The coarse powder is delivered to a micropulverizer further reducing the ingredients to micron size.

Water is added to the fine powder and blended under carefully controlled temperature and viscosity conditions through a colloid mill just prior to being delivered to the flaking mills.



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Collecting

Sepik Magic

by Dr. Gerald R. Allen

Curator of Fishes, Western Australian Museum

The slightest mention of New Guinea invariably causes me to lapse into extended bouts of nostalgic reminiscence. There is no other place I have visited on my global travels which is more beautifully scenic or more fascinating from the standpoint of wildlife and native culture. Stretching for some 1500 miles, this island paradise offers a seemingly endless diversity of panoramas, from snow-capped mountain peaks reaching a height of over 16,000 feet to steaming tropical jungles and some of the world's finest coastal scenery with its surrounding coral reefs. The people of New Guinea are as diverse as the landscape. Many have adopted a western life style, but others, particularly in remote highland areas, cling to a primitive existence.

My first visits to the island in 1972 and 1973 were entirely marine oriented. Diving on the reefs of Madang and Rabaul yielded a variety of ichthyological treasures, including a number of fishes new to science. However, since that time my interest has gradually shifted to the little known freshwater fish fauna of the Australia-New Guinea region, particularly the colorful members of the rain-

bowfish family Melanotaeniidae. This pursuit prompted me to revisit New Guinea during the dry seasons (August to November for much of the island) of 1978 and 1979. Unfortunately it is impossible to give a detailed account of these expeditions in the confines of this article. It would require a book! I'll briefly skim some of the highlights and finish with a short story about one of many memorable collecting trips . . . a visit to the mighty Sepik River.

In 1978 I was accompanied by Brian Parkinson, an affable New Zealander living in Rabaul where he is employed as the Government Shell Project Officer. This work requires periodic visits throughout the country to collect and purchase both terrestrial and marine shells which are sold to foreign collectors. Brian and I first met in 1972 at Madang and we have remained good friends over the years. He conveniently scheduled a business trip to coincide with my visit and was able to accompany me throughout the three-week stay. Brian has long maintained an interest in rain-bowfishes and has an excellent knowledge of local geography. He also speaks pidgin English which is understood by most of the natives. Our collecting



A large male specimen of *Melanotaenia goldiei* from the Laloki River System. Photo by G. Schmida.

A young male specimen of the northern rainbow, *Melanotaenia affinis*, photographed in an aquarium by G. Schmida.



This male *Melanotaenia sexlineatus* was captured near Port Moresby at Mt. Diamond. Photo by the author.

The magnificent Popondetta rainbowfish. Photo by G. Schmida.



itinerary included the areas surrounding Port Moresby, Popondetta, Lae and Madang. The final results were most gratifying. We collected eight different rainbowfishes, including three new species and a large collection of the rare Popondetta rainbows. No sooner had I returned from this expedition when I began planning for another visit in 1979. The focus of this trip would be the majestic Sepik River and the vicinity of Vanimo (both on the north coast), the central highlands and the southern coastal region west of the Fly River. I invited Dr. Herbert Axelrod to join me and after an exchange of letters he generously offered assistance.

After much meticulous planning, the preparation of gear and a last minute panic involving collecting permits from the Papua New Guinea Government I arrived in the northern Queensland city of Cairns. Dr. Axelrod had arrived a few days early to get in some big game fishing. That evening we celebrated our reunion by doing what comes naturally, swapping fish stories . . . Herb's latest Amazon adventures and my own tales of the previous New Guinea visit. The next day we flew up to Port Moresby, the capital city of the now independent nation of Papua New Guinea, which occupies the eastern half of the island. Following an overnight stop we boarded a small prop plane for the two hour flight to Wewak on the north coast. Once again Brian Parkinson was able to arrange his shell

collecting schedule to coincide with our visit and was on hand to greet us as we disembarked.

As in the previous year we worked at a hectic pace and logged extensive mileage. Brian was able to commandeer 4-wheel drive vehicles from government motor pools at most of our stops. Fortunately this facilitated access to many out-of-the-way places. Particularly memorable was the four-day trek through the rugged central highlands; over 1,000 kilometers of endless curves and some of the worst roads imaginable. The motor pool supervisor registered a look of complete horror when he surveyed the damage at the end of the trip: a missing front windshield, broken headlights, a defective transmission, and wall-to-wall mud on everything! But it was fun. Aside from the fantastic scenery, we even managed to collect a new species of rainbowfish from a small mountain stream near Mendi. It is one of the few members of the family to be found above a 5,000-foot elevation.

The 1979 trip was even more successful than that of the previous year. We obtained 10 species of rainbowfishes, including three which are new to science. One of these was recently described in honor of Dr. Axelrod as *Chilatherina axelrodi* (*Tropical Fish Hobbyist*, Jan., 1980). It was collected from a stream near the Irian Jaya border (Indonesian territory) on the north coast near Vanimo.

Soon after Dr. Axelrod de-

parted for the States, Brian and I visited the Sepik basin. The Sepik is one of New Guinea's three great rivers (along with the Fly and Mamberamo). It rises as a small white-water brook in the mountainous central highlands and meanders for some 800 miles before emptying into the Pacific Ocean. For much of its length the river is very broad and sluggish, forming an extensive floodplain characterized by numerous secondary channels, oxbow lakes and swamps. This is the home of the Sepik Rainbowfish (*Glossolepis multisquamatus*), our principal target on this portion of the trip.

Our first stop was the district center of Angoram, a sleepy village on the lower Sepik. After settling in at the local hotel we

paid a visit to Andrew Richards, the district fisheries officer. Andrew expressed considerable interest in my work and generously offered to accompany us and provide boat transportation. This was a lucky break, as it enabled us to travel over 200 miles up and down the mighty Sepik. Andrew also presented me with several aquarium specimens of the beautiful Sepik rainbow, a species virtually unknown to hobbyists and pictured here for the first time. I especially appreciated this gift, because although we eventually collected a number of specimens, the chances of successfully transporting live rainbows is greatly enhanced if they have first been acclimated to aquarium conditions. Fishes



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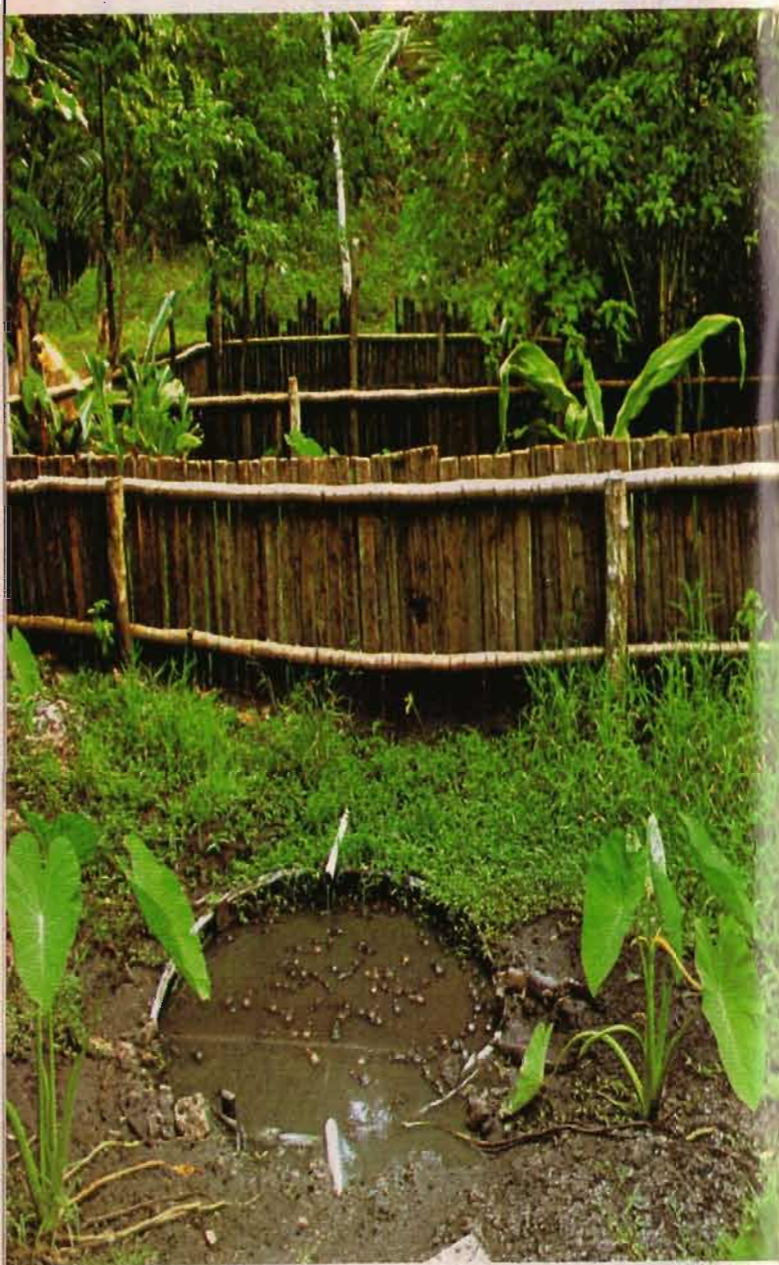
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A view of the pens at Moses' crocodile farm. The pool is dotted with crocodile snouts. Photo by the author.

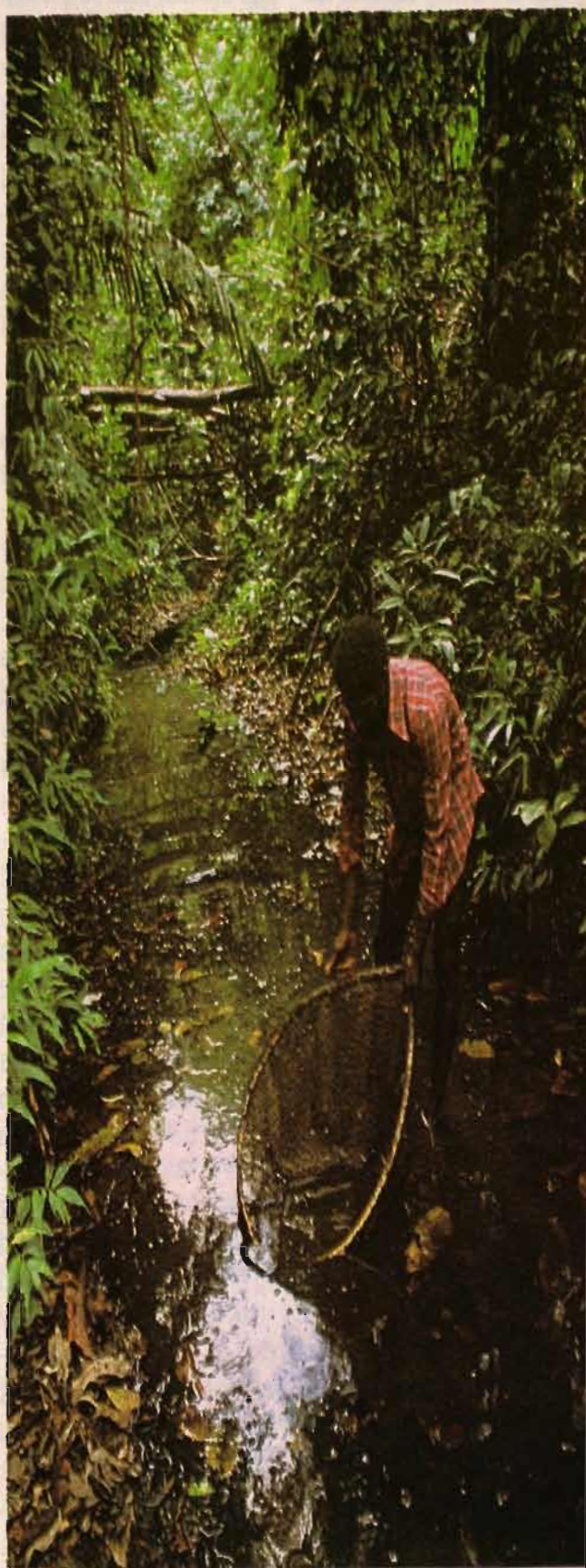
Opposite: Scenic vistas unfold along the road to the Sogeri Plateau. This is the Laloki River Valley. Photo by the author.





A male Sepik rainbowfish, *Glossolepis multisquamatus*, photographed in an aquarium by the author.

The author attracts a crowd of local villagers while searching for rainbowfishes in a mountain stream at Wagau. Photo by G. Tait.



Moses scoops for rainbows with a hoop net in a tiny tributary of the Sepik River. Photo by the author.

which are freshly captured and shipped without proper acclimation often succumb to disease or net damage. Thanks to Andrew I now have a small breeding stock in my home aquaria.

The species is exceptionally hardy. Not a single specimen was lost during the lengthy transport, first to Sydney and then across the continent to Perth. They are excellent community fish and seldom quarrel among themselves. I presently have four adult males and a single female in a 90-gallon tank with about 20 other assorted rainbows. Water temperature and pH are maintained at approximately 76°C and 7.2 respectively. Feeding of dry flake food and a fresh frozen mixture of beef steak and fish are given twice daily. After about two weeks in their new aquarium surroundings the brilliant natural colors were restored, and the males engaged in occasional chasing bouts with the female. Soon after this activity was first noticed spawning began to occur nearly every day. A male entices the female by erecting the fins between rapid bursts of swimming. At the height of the male's arousal, its colors are particularly brilliant, and a beautiful yellow-orange mid-dorsal stripe appears which extends from the snout to the beginning of the dorsal fin. When the female settles into the Java moss covering the bottom several small adhesive eggs are released and simultaneously the male fertilizes them while vigorously shaking its body. The vegetation with the

eggs attached must be removed to a nursery tank before hatching or the fry are quickly eaten by the adult rainbows. The hatching occurs after about one week, and the young should be fed several times daily with a finely pulverized dry food mixture. Growth is rapid and sexual maturity is usually attained before the end of the first year.

Getting back to our first stop, that afternoon Andrew offered to take us on a boatride to the village of Chambel. Our destination was a small creek which only a week earlier had produced some large, colorful rainbows. These were captured by friends of Andrew, and although he did not see the fish he was told they were definitely not the Sepik rainbow. It took about an hour to reach the village in an outboard-powered canoe. We were greeted by a group of small children who directed us to the hut of a man named Moses. Apparently he was the person who had helped catch the fish for the previous visitors. Moses, who appeared to be in his mid-twenties, proved to be very friendly and immediately set about the task of organizing a collecting safari. He gathered up two hoop nets and instructed about 20 children to help carry our nets and buckets. We followed a well trampled trail for about one mile, the first few minutes through tall grass and then mostly through dense rainforest. Finally we came to a narrow, leaf-littered stream-bed which had only a trickle of flow, but was composed of a series of shallow

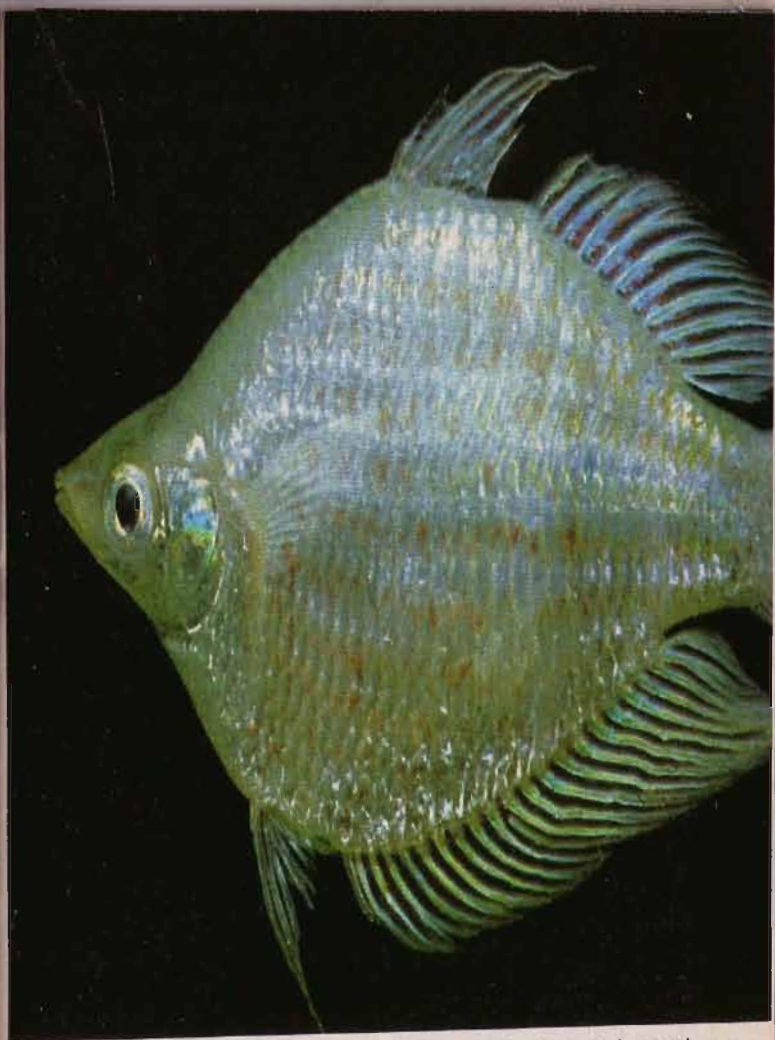
pools. There was so little water that it hardly looked worth sampling, but from previous experience I knew this sort of habitat is capable of producing excellent fish. Moses scrambled down the steep bank into the stream and began working the pools with his hoop net. This implement is popular for fish catching in many parts of New Guinea. Basically it consists of a circular wooden-bough frame, about one yard in diameter with fine mesh netting, stretched relatively tight, forming a shallow bag. Moses proved its effectiveness by catching a trio of 3-inch rainbows on his first scoop. He quickly placed these in a water-filled bag and handed them up to me. They were exceptionally colorful specimens of the northern rainbow (*Melanotaenia affinis*), a species found along much of New Guinea's north coastal region. Moses continued his efforts downstream while I worked in the opposite direction with a one-man shrimp seine, a baggy net attached to a pair of short poles and weighted in front. The net is about a yard wide which in this case was sufficient for blocking the entire stream. As I pushed the net forward through a 15-foot-long pool I could clearly see rainbows dashing back and forth in an effort to evade the on-coming net. Reaching the end of the pool, I quickly pushed the net up on dry land. Several large *M. affinis* flopped wildly before being placed in a plastic bag. After less than an hour of collecting we had

taken about 40 fish, all the same species. I preserved a portion of the catch in formalin but kept the majority alive for shipment back to Australia. They are now thriving in my aquaria.

During the trek into the jungle we were surprised to learn that Moses earned his living by raising crocodiles. When we returned to the village he agreed to give us a guided tour of his farm. This consisted of three large wooden pens with a small circular pool in each. He had diverted a small stream through the pens to facilitate a continuous supply of fresh water. I peered over the fence into one of the enclosures and could see dozens of 1- to 3-foot crocs lazily floating in the tiny pool. Moses told us that he had about 300 animals which he hoped to raise to a marketable size. He explained that this task was not easy, as theft was a constant problem and sufficient food was not always obtainable. Moses caught many of the young crocs in his own traps and the others were purchased from fishermen for one to two dollars each, a small investment considering a 6-footer brings as much as 200 to 300 dollars. He feeds them twice daily with generous portions of fish, mainly *Tilapia mossambica*, the introduced African cichlid which is now perhaps the most common fish in the Sepik River. The Papua New Guinea Government strictly forbids the practice of killing adult crocodiles and wisely controls the farming of these animals, issuing a limited



This small rainforest stream yielded a large catch of Popondetta rainbowfish. Photo by the author.



An unusually large specimen of the red-striped rainbowfish, *Melanotaenia splendida rubrostriata*, from a reservoir on Daru Island near the mouth of the Fly River on New Guinea's south coast. This fish, which measures about 5 inches in length, was collected in dirty water and lacks the brilliant markings typical of fish from less turbid waters. Photo by the author.

number of farming licenses and ultimately purchasing the skins. These are sent to Paris and Singapore for tanning. Moses farms both the smaller freshwater croc and its more ferocious cousin, the saltwater or mangrove crocodile which sometimes grows to a length of 20 feet and is a feared maneater.

We offered to pay Moses for his labors, but surprisingly he refused the money. Obviously he enjoyed the collecting as much as we did. Night was fast approaching so we quickly piled the gear into the boat and began the return trip. Bouncing along the rippled surface into a fresh evening breeze I suddenly became aware of the

special beauty unique to the Sepik.

We passed the silhouettes of quaint villages set high on the river bank amidst stately coconut palms. Savoring the earthy scent of village smoke mixed with assorted river smells, we watched as the last rays of the setting sun turned the sky to a brilliant crimson color. It's difficult to convey the deep sense of contentment experienced at that moment . . . this feeling was repeated at the end of each day during our sojourn on the river. Such is the magic of New Guinea, particularly the majestic Sepik basin.