

FISHES FROM MOUNTAIN STREAMS IN THE CROCKER RANGE PARK SABAH, MALAYSIA

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ABSTRACT

*A preliminary survey of fishes from the mountain streams of Crocker Range National Park Sabah revealed the presence of at least nineteen species belonging to three families, Cyprinidae, Balitoridae, and Poeciliidae. One specimen of the eel *Anguilla prob. borneensis* (Anguillidae) was also collected. Cyprinids constituted the largest percentage of species and genera, while balitorids constituted the majority of individuals.*

INTRODUCTION

Initial scientific collections and documentation of organisms form the absolute basis of further biological investigations into a region, as well as adding information to regional diversity measures and biogeographic models. This collection of fishes is one of the first contributions to the study of fish diversity in the Crocker Range National Park, the southern extent of the Crocker Mountain Range in Northwest Borneo, Sabah, Malaysia.

METHODOLOGY

Fishes were collected from six rivers in the Crocker Range National Park region during the period from 14-22 October 1999. Locations are specified below. Gear used included 1) minnow trap, 3cm opening, 2) small fine-mesh handnets, 3) kick seines, 1/4' mesh, 4) beach seine, 1/4" mesh, and 5) cast nets of local fishermen. Effort and gear use among rivers varied widely (described below). Specimens were fixed immediately in 5-10% formalin. Identifications were determined using literature sources (Inger and Chin 1962; Kottelot 1984; Chin 1989; Roberts 1989; Kottelot and Whitten 1993; Tan and Martin-Smith 1998) and by comparisons with specimens from the reference collections at the Museum of Comparative Zoology, Harvard University, and the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

RESULTS

Nineteen species belonging to three families, Cyprinidae, Balitoridae, and Poeciliidae, were collected. In addition, one specimen of the eel *Anguilla prob. borneensis* (Anguillidae) was examined and photographed from a fisherman's catch. Cyprinids constituted the largest

percentage of species and genera, while balitorids constituted the majority of individuals (Table 1). Only one species of Poeciliidae (*Poecilia reticulata*) was collected in one river (Sungei Masalog). Collections by site are listed below, in order of increasing altitude.

Table 1: Diversity data for the entire collection.

Family	#genera	(%)	#species	(%)	#individuals	(%)
Balitoridae	4	(33.3)	8	(42.1)	90	(55.2)
Cyprinidae	7	(58.3)	10	(52.6)	71	(43.3)
Poeciliidae	1	(8.3)	1	(5.3)	3	(1.8)
Total	12		19		164	

List of species by sites

Kimanis: Near Ulu Kimanis. Altitude ~300m. Drainage to the west. River width ~20-30m. Low gradient, but strong flow over boulders and fine silts and sands. Very turbid water. Gear: minnow trap, handnets, beach seine, kickseine, castnet. Four collections (from beach, rocky areas, feeder stream pool and riffles, and gift from castnet fishers).

Species	n	SL (mm), range
<i>Gastromyzon borneensis</i>	1	72.8
<i>Glaniopteryx hanitschi</i>	4	45-55
<i>Protomyzon borneensis</i>	33	8-46.8
<i>Lobocheilus bo</i>	1	70
<i>Nematobramis borneensis</i>	3	295-72.7
<i>Paracrossocheilus acerus</i>	5	25.6-33.2
<i>Puntius binotatus</i>	30	25-88.6
<i>Tor cf. soro</i>	19	18.1-43.4
<i>Tor sp.</i>	1	84.1
<i>Anguilla prob. borneensis</i>	1	~1m

Senengang: Sungei Masalog, upstream of Ulu Senengang village. Altitude ~400m. Drainage to the east. River width ~5-10m. Clear water, rocky riffles with a few deep pools. Gear: minnow trap, handnets, kick-seine. Two collections.

Species	n	SL (mm), range
<i>Gastromyzon borneensis</i>	1	86
<i>Protomyzon borneensis</i>	13	17.4-43
<i>Protomyzon whiteheadi</i>	5	14.2-16.6
<i>Paracrossocheilus acerus</i>	3	24-42.5
<i>Rasbora argyrotaenia</i>	2	84-87
<i>Tor sp.</i>	3	19-30.5
<i>Poecilia reticulata</i>	3	7.1-15.7

Tikelod: Upstream of Kg. Tikelod. Altitude ~700m. Drainage to the east, into Sungei Padas.

River width ~8-10 m, moderate gradient, clear water, small pools and riffle areas. Gear: minnow trap. One collection.

Species	n	SL (mm), range
<i>Puntius binotatus</i>	1	51

Tandulu: Upstream of third river crossing along access road. Altitude ~700m. Drainage to the east, into S. Padas. River width, approximately 8-10 m, but collected from a small pool on a side stream. Moderate gradient. Bottom sandy and pebbly. Gear: handnets. One collection.

Species	n	SL (mm), range
<i>Nemacheilus olivaceous</i>	1	56.2
<i>Protomyzon borneensis</i>	1	33.2
<i>Sundoreonectes</i> sp. A	2	71.2-92.2

Mahua: Vicinity of Mahua base camp, 3km from Kg. Patau, below the Mahua waterfall. Altitude ~980m. Drainage to the east into Sungei Padas. River width approximately 3-5m. with boulders and pebbly bottom, riffles and small pools. Moderate to steep gradient. Clear water. Gear used: minnow trap, handnet. Four collections.

Species	n	SL (mm), range
<i>Gastromyzon borneensis</i>	1	53.3
<i>Glaniopsis denudata</i>	3	22.8-26.2
<i>Glaniopsis hanitschi</i>	16	29-65
<i>Nemacheilus</i> sp. A	1	57.1
<i>Nemacheilus</i> sp. B	1	73
<i>Protomyzon borneensis</i>	1	32

Telecom Tower: High mountain stream, just off the east side of the peak, between the small forestry cabin and the Telecom Tower a few miles from CRP headquarters. Altitude ~1800m. Drainage to the east. Stream width ~1m. Very steep gradient. Bottom with rocks and boulders. Clear water, becoming turbid quickly after a rain. Gear: handnets. One collection.

Species	n	SL (mm), range
<i>Sundoreonectes sahanus</i>	9	29.7-57.4

DISCUSSION

The rivers of Crocker Range Park vary widely in physical characteristics, from clear high-mountain streams to lower-altitude, wider, turbid rivers.

Collections from lower-altitude rivers had a large percentage of cyprinids, while no cyprinids were collected from rivers and streams of greater than ~700m altitude. Some taxa appear to be restricted to particular altitudinal ranges, although more extensive collecting is clearly required. In this collection, lower altitude mountain streams were more diverse by all measures. Currently

there are three morphs from this collection that are being investigated as either new species or novel variants of existing species.

Two notable observations were immediately apparent from the collection data. First, three postlarval specimens of an introduced South American species, the guppy *Poecilia reticulata* were found in Sungei Masalog, indicating that breeding populations are probably present in this river. They are a potential competitive threat to native species.

Secondly, Sungei Masalog and Sungei Kimanis had juvenile specimens of *Tor* spp., a threatened genus (Kottelot and Whitten 1993), which suggests breeding activity by *Tor* in both these rivers. I was unable to classify these juveniles to species because the taxonomy of the entire genus is chaotic (Kottelot and Whitten 1993). Sungei Kimanis was extremely turbid with silt as a result of nearby logging activities, and therefore *Tor* appear to be able to survive as juveniles even in these conditions. Studies of *Tor* should be a priority for investigators in this area, given the importance of this taxon to local communities, the dearth of knowledge of its biology and basic taxonomy, and the massive habitat changes in the past few years affecting rivers where spawning occurs. The Crocker Range National Park has *Tor*-inhabited rivers with varying levels of human impacts and could be a good location for a comparative study.

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