



Melanotaenia boesemani - photo© Gunther Schmida

Melanotaenia boesemani

Allen and Cross, 1980
Boeseman's Rainbowfish

Species Summary

From October 1954 through to May 1955 Marinus Boeseman took part in a collecting expedition for the Rijksmuseum van Natuurlijke Historie to Netherlands New Guinea (West Papua) with L.D. Brongersma and L.B. Holthuis. His task was to provide a thorough knowledge of the fish fauna by intensively surveying as many rivers and lakes as possible in West Papua. This task was taken to heart and in a relatively short period many localities were visited, resulting in a rich collection for the museum in Leiden. Among the places he visited was Lake Sentani, Tami River, Biak Island, Lake Jamoer (Yamur), Wissel Lakes, Ajamaroe (Ayamaru) Lakes, Lake Aitinjo (Aytinjo), Merauke and the Digul River. This collection included many rainbowfishes, but a thorough study of this material and descriptions of all the new species was never made by Boeseman.

As part of his preparation for the revision of the rainbowfish family, Gerald Allen studied the Dutch collection of 1954-55 at the end of the 1970's. He discovered no less than four new rainbowfish species, which he described in 1980 together with Norbert Cross. These species were *Melanotaenia boesemani*, *M. ajamaruensis*, *M. japonensis* and *Glossolepis pseudoincisus*. *Melanotaenia boesemani* and *M. ajamaruensis* were collected in March 1955 by Marinus Boeseman and his companions in the Ayamaru Lakes, a complex of lakes on the Ayamaru River in the centre of the Vogelkop Peninsula, West Papua. Specimens of *Melanotaenia boesemani* was also found in Lake Aytinjo, 25 kilometres to the southeast of

Ayamaru village and from Djitmau, about 3 km south of the Ayamaru Lakes. The specimens preserved in alcohol still showed the unusual colour pattern.

The colour pattern of male *Melanotaenia boesemani* is completely different from most other rainbowfishes and show a half-and-half colouration when fully matured. The head and front portion of the body are a brilliant bluish-grey, sometimes almost blackish, with the fins and posterior half of the body largely bright orange-red. Between these two areas, or roughly just behind the pectoral fin, there are alternating light and dark vertical bars. Their wild colouration can fade somewhat in captivity, possibly due to something lacking in the diet, or from the nature of captivity itself. The males are easily distinguished from females by their different colour and longer and more elongated dorsal fin rays, and are usually much deeper bodied than females. They may reach a maximum size of 12 cm, but are usually less than 10 cm.



Melanotaenia boesemani [Lake Aytinjo female] - photo© Joël Felix

Females display a broad dark mid-lateral stripe accompanied by a series of narrow yellow or reddish-orange longitudinal stripes corresponding with each scale row that deepen or lighten according to mood. Mature, older females often show colouration similar to subordinate males, but are usually easily identified by a shallower body/chest depth and smaller, more rounded fin edges.

In November 1982, Gerry Allen had the opportunity to collect live specimens during a visit to the remote Vogelkop Peninsula. Heiko Bleher, a well-known fish collector, had accompanied Gerry Allen on the trip and was able to transport a number of live specimens captured during the expedition back to Europe, whereupon they were subsequently bred and distributed in the aquarium hobby. At the time it was thought that females of *Melanotaenia boesemani* were *Melanotaenia ajamaruensis*. In 1998, Heiko Bleher collected more live specimens of *Melanotaenia boesemani* from Aytinjo Lake and they too, have been distributed in the aquarium hobby.

Distribution & Habitat

Melanotaenia boesemani are found mainly in Lake Ayamaru and a few surrounding tributaries, but it also occurs in Lake Hain and Lake Aytinjo. The Ayamaru Lakes region is located about 120 km East-South-East of Sorong, at the headwaters of the Ayamaru River in a mountainous region of the Vogelkop Peninsula, West Papua. The region contains three small freshwater lakes and associated marshes. The largest lake, Lake Ayamaru drains east via the other two lakes (Lake Hain and Lake Aytinjo) into an upper tributary of the Kais River which eventually flows into the Ceram Sea to the south.

The lakes are positioned centrally on the Ayamaru Plateau, a heavily karstified region of Miocene limestone. The average elevation of the plateau is reported as 350 m above sea level. The Ayamaru Plateau extends for 20-30 km to the south and south-west of the lakes before giving way to a broad zone of relict alluvial landforms dissected by wide flooded river valleys.

Lake Ayamaru has an area of approximately 22 km² and is located in a rather flat terrain, at about 250 metres altitude. The lake has variable depths with clear water and abundant vegetation. In the wetter months (April-June) the lake can rise by up to 5 metres from its dry season level; it never dries out completely, but the shoreline recedes several hundred metres. It has a muddy bottom, and the sediments of the shores are reportedly white, either sand or kaolin clay. The lakes and streams have a pH of 6.4~7.8 (de Vries, 1962) and temperate 26~27°C. Heiko Bleher reported the water conditions as pH 9.0, hardness 5° dGH, and conductivity 145 mS. When Marinus Boeseman collected his specimens, he reported a pH of 6.4~6.5.

In August 1959, G. A. Reeskamp surveyed the lakes with the objective of determining the potential fisheries of the lakes. He reported that the lakes were shallow and interconnected by channels that might perhaps be better termed as "broads". The three lakes average approximately 2.13m in depth and drain in an easterly direction into the Kais River. During the rainy season the water level rises to approximately 2.74m and at the dry season large areas of these broads become dry. The greatest depth was found close to the southern margin of the lakes where a basin about 18.28m diameter was discovered with a depth of approximately 6.09m. The outstanding characteristic of the lakes was the clearness of the water. Owing to the clarity of the water there is complete light penetration to the bottom with the resultant abundant bottom flora of aquatic plants. Samples of the waterplants were stiff to the touch, indicating a high lime content. The pH of the water determined by Bromothymol-blue was recorded as 7.8. Fish in these lakes appeared to be extremely scarce in relation to the large area of available water. In the shallow creeks along the margins, however, one obtains an impression of the fairly rich fauna but in the open water few fish may be seen and in general the fish appear to remain in the shallow margins of the lakes where food such as water insects, snails, fish fry, etc., are more plentiful.

The Ayamaru lakes only support a small number of fishes and most of these are of very small size and diversity. The Dutch introduced some larger fish species, such as carp and labyrinth fishes into the lakes in the mid-1930s to provide new sources of animal protein. As early as 1938, *Trichogaster pectoralis*, *Helostoma temminckii* and *Cyprinus carpio* were introduced into Lake Ayamaru to supply the requirements of a Dutch military post in that area. The two first-mentioned species are still found there as a result of a highly successful acclimatisation. *Cyprinus carpio* was introduced to the lake in 1938, 1951 and 1969. *Gambusia (affinis)* was introduced in 1959 for malaria control.

Reeskamp reported that "the local natives benefited by the somewhat improved stocks of fish in the lake since the native species were apparently seriously depleted many year ago. Generally speaking, the methods of fishing are very primitive and there is considerable destruction of fish by poisons, locally known as "akar kajoe" or "akar boreh", derived from the Derris (*Derris elliptica?*). This system of fish poisoning seems to be increasing and must no doubt have disastrous results on the existing stocks and will inhibit any development unless it can be fully prevented. Very large numbers of fry are killed by the poison and it is certainly in the interests of the natives themselves that this practice should be prohibited." Reeskamp also recommended that plant-eating fish should be introduced into the lakes to utilise the vast quantities of submerged aquatic vegetation.

Melanotaenia ajamaruensis, *Melanotaenia boesemani*, *Pseudomugil reticulatus* and *Glossogobius hoesei* have been reported from the lakes and surrounding streams. Other species reported as occurring are *Chaenogobius isaza*, *Arius* spp. (one is cream-coloured and the other black) and *Glossamia* sp. There are apparently reliable reports that large eels also occur in the Aytinjo Lake. Crayfish are abundant in the lakes. Two species have been observed, one of which attains about 5 cm in length and the other about 10 cm (*Cherax holthuisi* was collected by M. Boeseman in 1952 from the Kais River). Also, possibly three species of giant prawns (*Macrobrachium*), which local have named according to their colour: udang biru (blue), udang hitam (black), and udang putih (white, but occasionally with some reddish-orange). However, very little research has been carried out, and it is possible that other species occur in the lakes.

The waterplant *Ceratophyllum demersum* has been recorded from the lake and *Eichhornia crassipes* was introduced in 1980s, but it covered only a small part of the lake. Formerly there were two species of submerged macrophyte (species not reported), but these disappeared or became very scarce after the introduction of *Cyprinus carpio*. As a result, one small species of fish local known as 'bobok' was reported to have become extinct because of the disappearance of its habitat (the submerged macrophytes). Heiko Bleher reported that the lake is almost filled with aquatic plants. Mainly *Vallisneria*, *Ceratophyllum* and *Najas* species.

Boeseman described Lake Aytinjo as "... a widened river, flowing southeast, with a length of 4 km and strongly varying width with a maximum of about 350 m. At the north-western, end the principal river widens to become a lake which consists of two parts separated by considerable rapids and small cataracts; at the south-eastern end the lake abruptly stops, but a subterranean connection with the Kais River is supposed to exist here. The mountains at most places closely surround the lake which has steep and rocky shores, almost perpendicular at some places but elsewhere allowing some wider marshy banks. The water is clear, pH about 6.5, flowing rather strongly only at the narrower parts of the lake, including the upper reaches. The bottom is rocky, at most places covered with sand, stones or large rocks, but muddy at some places. Both the aquatic and terrestrial vegetation are dense, at least where the stony substratum allows growth."

Remarks

Melanotaenia boesemani was named in honour of Dr. Marinus Boeseman, the collector of the type specimens. According to labels accompanying the type specimens the native name for this species is 'sekiak' and 'ikan rascado'. Marinus Boeseman was born on June 22, 1916 in Enkhuizen, a small port on the Zuiderzee in Holland. After the untimely death of his father, Marinus, aged 11, his two elder sisters and his mother moved to Oegstgeest, a neighbour town of Leiden where he continued his primary and secondary education. In 1935 he entered

Leiden University to study biology. On November 1, 1947 he was appointed curator of fishes at the Rijksmuseum van Natuurlijke Historie in Leiden, and held that position until his retirement on 30 June 1981. He died on July 14, 2006 at the age of 90.

Since its introduction to the aquarium hobby, *Melanotaenia boesemani* has steadily increased in popularity and today, it could be considered the most popular rainbowfish in the hobby.

Literature

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