

Additional Comments on Butterflies of the Upland Evergreen Forest of the Atewa Range Forest Reserve, Ghana

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Chapter 6

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Torben B. Larsen

INTRODUCTION

Chapter 5 of this report presents a good summary of the Atewa butterfly fauna based on the RAP survey and existing data and appears to be the first major review of butterflies in Ghana that has been written by Ghanaian researchers, which is promising for the future. The most important facts are well highlighted within that chapter: i) the uniqueness of the Upland Evergreen forest in Ghana (the small and damaged area in Tano Ofin aside), ii) the presence of three species of butterflies endemic to the Atewa Range, iii) the presence at Atewa of a significant number of species not found elsewhere in Ghana, and iv) the fact that with 700 species of butterflies certain to occur there, Atewa it is the most biodiverse locality in Ghana for that group. Aduse-Poku and Doku-Marfo thus leave little more to be said.

Mylothris atewa

However, some further notes on the endemic species *Mylothris atewa* (Atewa Dotted Border) are called for. The species seems first to have been collected in the 1960s by Father Theodor Maessen, a Roman Catholic priest who collected butterflies in Ghana for 32 years between 1950 and 1982, recording a total of more than 800 of the 930 species currently known from Ghana. However, only in 1980 was the species described by Dr. Lucien Berger, then curator for insects at the Royal Museum for Central Africa (MARC) in Tervuren, Belgium.

The species is quite different in both sexes from any other member of its genus, of which there are at least 60 species throughout Africa. Both sexes can be recognized at a glance from any of the eight *Mylothris* that fly in Atewa. The species flies only in the higher level forests where the Upland Evergreen vegetation is found, probably because it feeds on a species of mistletoe (Loranthaceae) that is similarly restricted in range. The potential range of this butterfly is certainly less than 100 km², but it occurs patchily and the actual inhabited area within the forest is much less than that. We can be almost certain that the species occurs nowhere else (should an overlooked population exist in Tano Ofin, it will be even smaller).

The small area of occurrence, the small population size, the encroachment on the forest, and the threat to the forest by mining has led to almost certain ranking of this species on the World Conservation Union (IUCN) Red List in the most threatened category of Critically Endangered (CR).

UPLAND EVERGREEN FOREST – A FOSSIL HABITAT

Mylothris atewa obviously evolved in the Upland Evergreen forest, probably during cooler periods when the extent of this forest was larger than it is today, since it could survive at lower elevations. The Atewa Forest has had a complex history. During the many dry periods of the past 20 million years the West African rainforests have been pushed into tiny refuge areas (one of which was centered on Ankasa and southwestern Côte d'Ivoire, another on Liberia and eastern Sierra Leone). The rest of the forest zones were covered with savannah. During such periods the Atewa Forest must have survived as a forest island inside the savannah. Dur-

ing wetter periods the forests expanded far into Senegal and Burkina Faso – the savannahs of the Dahomey Gap in Togo and Bénin were also then covered with forest. But the upland forest type that had evolved during periods of isolation now survived as an island inside the type of lowland rainforest that we see today. The last major climatic perturbation took place as recently as the most recent ice-age. Pollen samples from Lake Bosumtwi show that between 19,000 and 15,000 years ago its surrounding was open savannah country: Atewa was too far to the south for the pollen of its forests to reach the lake. Samples from 10,000 years ago show a completely different picture. The forest had by then extended far to the north and east and no trace of savannah pollen was now present in the lake. Probably most of the Dahomey Gap was forested as well (Maley 1996). But the upland forest on Atewa still survived, and we still have it today.

The Upland Evergreen forest can actually be considered a fossil habitat that is very old, certainly measured in millions or tens of millions of years. Its flora and fauna will have changed over the vast periods of time, but evidence of its origins and affinities with the rest of Africa remain in the DNA of its present inhabitants. How old is *Mylothris atewa*? The relevant DNA analysis has not yet been undertaken. Judging from other butterflies where such studies have been made (e.g. the genus *Bicyclus* (Monteiro and Pierce 2000)), a species as distinct *M. atewa* probably diverged from the other West African *Mylothris* at least 5 million years ago. Ideally no organism should be allowed to go extinct, which will certainly happen to *M. atewa* if the upland forest is severely damaged or diminished in size. However, more important than a single butterfly is the Upland Evergreen forest as a habitat with its own unique and complex ecosystem. Inside the flora and fauna of the Upland Evergreen forest lie many secrets of evolutionary processes that have still not been unlocked. When these processes are unravelled, further light will be thrown on the effects of climatic perturbations on the distribution of organisms.

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