

BUTTERFLIES OF YANKARI

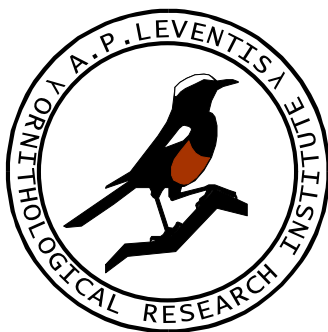


A large group of Grass Yellows (mostly *Eurema brigitta*) gathered at a temporary mud puddle after a rainy night.
Photo by Oskar Brattström

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INTRODUCTION

The initial justification for making a detailed monitoring of Yankari was to investigate if the presence of a permanent ample water source in an otherwise fairly dry savannah habitat would influence the butterfly fauna. As several species of butterflies have dramatically changed its range throughout Africa due to climate change it was considered possible that forest adapted species would have got locked in the riverine forest vegetation that is found all around the hot spring complex in Yankari. There are numerous examples of isolated species communities of butterflies throughout West Africa (most noticeable the highland areas in the Nigeria/Cameroon border) but the amount of forest species in northern riverine savannah habitats has received very limited attention.

METHODS

The monitoring work in Yankari has been done in an un-standardized way trying to qualitatively study species composition instead of measuring relative number of individuals of different species. I have visited as many different habitat types as possible, and during different seasons to try and maximize the number of species recorded. Monitoring African butterflies in a standardized way is very difficult, and no generally accepted way of conducting monitoring in a cross-comparable ways exist at present time. The very few long term studies that has been done over more than a year and studying diversity across seasons have all used slightly different methods and almost exclusively relied on the use of fruit baited traps. Such traps only capture a fraction of the butterflies present in an area (and also work best in rain forest habitats) so for most species that are not attracted to bait of any kind a more directed search is the only available way to verify their presence. For most species the ecological requirements are badly known but it is often known whether they are typical for degraded habitats or very sensitive to disturbance. By comparing the species caught at different sites, estimates of the habitat quality and level of human disturbance can be made.

I have conducted qualitative monitoring of day active butterflies in Yankari between 2007 and 2009 in six different visits with a total of 22 days spent in the field. Most of the dry season has been covered (3 days in September, 9 in October, 3 in November, 4 in March and 3 in April), however no visits have been made during the most intense rainy season due to logistic difficulties. A typical monitoring day consisted of an early morning expedition putting up fruit baited traps in the riverine vegetation, as well as the drier edge zones of the gallery forests. There are a very limited number of true savannah butterflies attracted to bait in the drier habitats and therefore all trapping have been done in areas more typical for fruit feeding species. After traps were placed I tried to spend as much time as possible in the major activity window for butterflies (usually around 08:30-11:00) visiting a number of different locations both visually recording easily identified species, as well as netting more difficult specimens for later identification. In the middle of the day activity often drops due to the extreme heat and most butterflies retreat to shady areas, often in cover of bushes, and are hard to observe. Later in the day traps were checked and emptied. All species that were caught were recorded. Traps were never left hanging in the field at night to avoid being raided by larger animals.

Species were identified and classified according to Torben B. Larsen's (2005) book about West African butterflies, a few species were also recorded from photos I took in 2005 of an old collection of butterflies housed in an office at the old hotel complex. I can't verify that these butterflies are all caught in Yankari but see no reason to doubt it either. All of them are typical for the kind of habitats found in Yankari. Species verified from this collection are marked in the species list (Appendix 1). Occasionally people selling souvenirs at the hotel area have offered mounted butterflies for sale to visitors. Most of the species in these display boxes are common rainforest species but most of them would not survive in an area as hot as Yankari and I have never seen any of these during the field work making it very likely that they were all imported, probably from Cross River state.

RESULTS

Number and nature of recorded species

A total of 75 species of butterflies have so far been recorded by me during this survey. An additional two have been added to the list by studying the older collection. The total number will increase to some degree when I have prepared all the collected material. A few skippers (Fam. Hesperidae) and Blues (Fam. Lycaenidae) are still undetermined. I estimate that Yankari has a butterfly fauna numbering about 100-120 species, a fairly normal number for this kind of savannah habitat.

General aspects of seasonality

Savannah butterflies are extremely seasonal in their occurrence, most species are present as adults all year round but spend large part of the dry season in a state close to hibernation, waiting for the first rains to rejuvenate the moist vegetation required by the larvae. In the early dry season a migration of Sahel butterfly species is also common. The genera *Colotis* and *Belenois* are the most prominent members of this group. Many of the species can be found all year round in Yankari but during the early dry season (Oct-Dec) they can truly dominate the daily observations. During this time of the year the numbers seen on any given day is also very much dependant on the weather the preceding days. If a few days without rain is followed by a nightly rainfall that leave pools of water or mud on the dirt roads, thousands of butterflies can amass around this temporary sources of water and mineral. Most prominent are the Grass Yellows (Genus *Eurema*, see picture on cover page) that sit in large numbers around every moist patch and fly up in small yellow clouds when disturbed.

Effect of riverine vegetation

The riverine vegetation in Yankari had very few forest type butterflies than I had initially suspected. All the forest species are of the kind who normally frequents the dry savannah type forests that can be found across most of the middle belt of West Africa. In the riverine forest the number of butterflies seen is much higher than out in the open areas but they are almost exclusively savannah butterflies that use also this habitat.

CONCLUSIONS

The Yankari butterfly fauna appears to have a fairly normal species composition for an undisturbed West African Savannah. The presence of the hot spring complex appears to have a very limited effect on the specie composition even though it definitely allows a very large numbers of butterflies to sustain themselves close to the rivers as food plants are more plentiful than in the more open formations. As forest butterflies are very sensitive to direct sunlight they are not efficient colonizers of isolated forests. I do not know the recent historical changes in the forests surrounding the spring complex in Yankari but based on the butterfly fauna I find it likely that the area was much drier than what it is today so that even if the lush vegetation presently found close to the rivers should be able to sustain at least a few forest butterfly species they have not yet been able to re-colonize the area after a drier period of time.

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Appendix 1: List of butterfly species recorded In Yankari

Species	Yankari Collection*	Migratory Species**	Notes & Comments
Papilionidae (2)			
<i>Papilio d. demodocus</i>	✓		
<i>Graphium angolanus baronis</i>		✓	
Pieridae (24)			
<i>Catopsilia florella</i>	✓	✓	
<i>Eurema hecabe solifera</i>	✓		
<i>Eurema floricola leonis</i>			
<i>Eurema desjardinsii regularis</i>			
<i>Eurema brigitta</i>	✓		
<i>Pinacopteryx eriphia tritogenia</i>		✓	
<i>Nepheronia a. argia</i>	✓		
<i>Nepheronia t. thalassina</i>	✓		
<i>Eronia leda</i>	✓		1)
<i>Colotis protomedia</i>		✓	
<i>Colotis celimene sudanicus</i>		✓	
<i>Colotis ione</i>		✓	
<i>Colotis danae eupompe</i>		✓	
<i>Colotis aurora evarne</i>	✓	✓	old name: <i>eucharis</i>
<i>Colotis a. antevippe</i>	✓	✓	old name: <i>evenina</i>
<i>Colotis e. euipe</i>	✓	✓	
<i>Colotis evagore antigone</i>	✓	✓	
<i>Colotis e. eris</i>	✓	✓	
<i>Belenois aurota</i>		✓	
<i>Belenois c. creona</i>	✓	✓	
<i>Belenois subeida frobeniusi</i>	✓		2)
<i>Dixeia orbona</i>			
<i>Appias e. epaphia</i>			
<i>Mylothris c. chloris</i>			

	Yankari Collection*	Migratory Species**	Notes & Comments
Lycaenidae (13)			
<i>Iolaus i. ismenas</i>			
<i>Hypolycaena p. philippus</i>			
<i>Pilodeudorix sp.</i>			3)
<i>Anthene amarah</i>			
<i>Lampides boeticus</i>		✓	
<i>Leptotes piritohus</i>		✓	
<i>Cupidopsis c. cissus</i>			
<i>Euchrysops malthana</i>			
<i>Azanus ubaldus</i>			
<i>Azanus jesous</i>			
<i>Zizeeria knysna</i>			
<i>Zizina antanossa</i>			
<i>Zizula hylax</i>			
Nymphalidae (28)			
<i>Danaus c. chrysippus</i>	✓	✓	
<i>Melanitis leda</i>	✓		4)
<i>Bicyclus vulgaris</i>			
<i>Bicyclus sandace</i>			
<i>Bicyclus safitza safitza</i>			
<i>Ypthimomorpha itonia</i>			
<i>Charaxes varanes vologeses</i>			
<i>Charaxes c. candiope</i>			
<i>Charaxes epijasius</i>	✓		
<i>Charaxes achaemenes atlantica</i>			
<i>Charaxes plantroui</i>			5)
<i>Charaxes v. viola</i>			
<i>Vanessa c. cardui</i>		✓	
<i>Precis o. octavia</i>			
<i>Precis antilope</i>	✓		
<i>Hypolimnias misippus</i>	✓		
<i>Hypolimnias a. anthedon</i>	✓		morph <i>anthedon</i>
<i>Junonia orithya madagascariensis</i>			
<i>Junonia hierta cebrene</i>	✓		
<i>Junonia chorimene</i>	✓		
<i>Junonia t. terea</i>			
<i>Byblia anvatara crameri</i>			
<i>Catacroptera cloanthe ligata</i>			
<i>Neptis kiriakoffi</i>			
<i>Neptis morosa</i>	✓		

	Yankari Collection*	Migratory Species**	Notes & Comments
Nymphalidae (cont.)			
<i>Hamanumida daedalus</i>	✓		
<i>Acraea serena</i>			
<i>Acraea c. caecilia</i>	✓		
Hesperiidae (10)			
<i>Coeliades forestan</i>	✓		
<i>Tagiades flesus</i>			
<i>Eretis melania</i>			
<i>Sarangesa phidyle</i>			
<i>Spialia dioumus</i>			
<i>Sophopetes cerymica</i>			
<i>Pelopidas mathias</i>			
<i>Borbo perobscura</i>			
<i>Borbo gemella</i>			
<i>Gegenes niso brevicornis</i>			

*) Species identified from photographs taken of an old collection displayed to the author at Yankari in 2005

**) Species with well documented migratory habits, and therefore likely to only frequent Yankari either seasonally or irregularly.

1. Only known from old collection. A very rare species in Nigeria but should occur in habitats like Yankari.
2. A rare more Sudan Savannah adapted species, need to be verified from still unset collected material.
3. Unverified species, only one worn female encountered but could potentially be a very interesting finding.
4. Only in the old collection and surprisingly not caught in the riverine forest which should be a very good habitat for this normally very common species.
5. Might well be another species, belongs to an extremely complex group called 'Black Daemon Charaxes' and exact species identity requires a large series of individuals from each location and a substantial set of comparative material.