Butterflies in Ologbo forest

Dr. Oskar Brattström

oskar.brattstrom@gmail.com

Survey efforts and methodology

This survey combines data from tree visits to Ologbo. Initially Robert Warren made a two day survey 8-9 June 2006 and this brief visit produced a number of interesting records. I made a preliminary visit 27-31 October 2008 to asses if the area had potential for future butterfly studies. The result from these two shorter was promising and I therefore returned 22 March – 2 April 2009 to make a more detailed study.

The main survey efforts have been concentrated two the South and North-west parts of the Ologbo Forest. Butterflies were captured using hand netting (most days between 09:30-14:00) and banana/pineapple baited traps, in most cases traps were left in the field over nights and re-baited at regular intervals. Captured specimens were either identified immediately in the field or brought back for later identification. There are still a large number of specimens waiting identification. Some species were also indentified on the wings when capture was not possible. One day was spent in the plantation itself (South of the Dura Club) to get an idea of what species of butterflies are present in an area with fully matured oil palms some distance away from a semi-natural forest. In this area only hand netting and visual observation was used, as the typical canopy species which can often only be recorded using traps hardly occur in this type habitat. In general it was very easy to detect and identify butterflies in this more open type of habitat and most of the species were well known savannah butterflies.

Identification of butterflies were mainly done using Torben Larsen's (2005) book on West African Butterflies. Some butterflies have been analyzed using DNA sequencing (done by Robin van Velzen).

The forests in the interior areas of Ologbo still have an intact canopy even though most of the tallest trees have been felled. Many of the butter-flies encountered in this survey would normally require a more intact forest but have survived the previous logging.

Results and Discussion

So far 212 species of butterflies are recorded from Ologbo, the main survey does not include any species seen only in the farmlands surrounding the forest but only focused on the forest and cleared areas within the forest as well as mature oil palm areas. An accumulation curve shows that there still is a lot to be found, and including more methods to gather butterflies will add species from groups that are now underrepresented in the list (see Trap section further below).

Species composition

Of the species recorded 28% (59 species) can be considered as deep forest butterflies sensitive to habitat degradation, this is promising as demonstrates that the forest still can sustain these kind of sensitive insects. As butterflies are relatively short-lived (no species is expected to survive more than a year as adult) they are suitable for habitat quality estimates, larger and long-lived animals like birds and mammals can potentially survive for decades in a habitat that is no longer suitable for breeding even though some adults still survive. Only 6 species are very untypically for a healthy forest, they were all found in a large clearing within the forest. That not more species have managed to colonize this area shows that the roads leading in to this area are not wide enough to attract typical savannah species in from the surrounding farmlands.

This clearing deep in the southern part of the conservation area of Ologbo Forest is one of the few places where typical savannah species has managed to establish populations within the forest. It is important not to open up to many wide tracks that can act as bridges for invasive species and plants.

Traps

For butterfly traps to work effectively sunny days are needed, unfortunately the weather was sub-optimal during most of the trapping days. The type of butterflies that would normally be found in traps are somewhat underrepresented in the species list so the numbers present in groups like *Charaxes* and other canopy specialists is probably higher in reality. Also traps baited with carrion or fish would have led to more trapping of some groups of butterflies, this can hopefully be done in the future to complete the list of species.

Forest quality

It is evident that the Ologbo forest has been selectively logged, not only are most of the tall trees gone but there is also an extensive network of logging roads everywhere in the remaining forest. It appears like the activity has stopped recently since most of the roads are blocked by fallen trees and undergrowth but still accessible by foot. The butterfly species list includes a high proportion of species that are sensitive to habitat degradation which indicates that the forest is still a sustainable habitat even for demanding rainforest species. The reason for their survival is probably that most of the mid level trees are left intact providing a shaded habitat on the forest floor, also most of the canopy species utilize low plants and trees as larval food plant. How well the extreme canopy species will do in the future is questionable. It is also remarkable that so many of the butterflies found in Ologbo has not been documented from the nearby Okumu forest. Okumu has been surveyed more than most forests in western Nigeria and some of the species not found there are fairly large and conspicuous species that should not have been missed in a survey. Both of these forests must have been fully continuous in recent times before habitat fragmentation separated them, and still the fauna is rather dissimilar. It demonstrates the extreme necessity of conserving every small patch of forest still left in western Nigeria as they all have their unique values. Many butterfly species found over large geographical areas appear to have small isolated populations even in large blocks of forest, probably due to an extreme adaption to precise conditions. As many species are fairly sedentary they won't easily re-colonize areas that regrow into a suitable state or get connected to previously inaccessible habitats we must urgently save what is still left before it is too late. While many animals like birds can cross large open barriers forest butterflies won't survive for a long time in open country as they can't sustain the high temperatures they experience when the canopy is lost making them even more sensitive to fragmentation.

Butterfly diversity in the Oil Palm Plantation

The butterflies found in the oil palm plantation are all of the kind that can survive in degraded habitats. They are either forest butterflies that handle hot microclimates or true savannah species that should normally not occur as far south as Edo state, but have colonized most of

southern West Africa following extension of derived savannah habitats due to human impact. The oil palm habitat can't be considered to have any conservation value of its own, however as it is much more shaded than a open farmland /derived savannah it could enable butterflies in small forest patches to fly to nearby patches improving the gene flow and ease local re-colonization. It could also buffer the edge zones of the forest making them more protected from human activities in the forest proper as well as shading the edge areas to avoid colonization by invasive plant species. The reasonably common butterflies in the plantation are: *Papilio demodocus, Colotis euippe, Oboronia ornata, Bicyclus dorothea, Hypolimnas missipus, Protogoniomorpha parhassus, Junonia oenone, Junonia sophia and Junonia terea.*

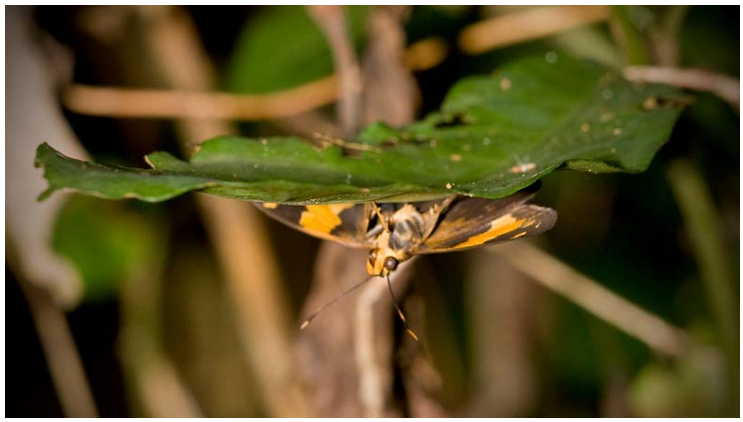
Species new to the region

Bicylcus nov. (ottossoni) - This butterfly which is not yet formally described (it will be named *Bicyclus ottossoni*, paper describing the species is in progress) was found in the southern parts of Ologbo. It appears to be closely related to *Bicyclus ignobilis* but has some morphological differences. It also has completely different male pheromones than ignobilis. This species is only known from Ologbo (it is probably a Niger Delta endemic) and it is rather distinct so it is unlikely that it has passed unnoticed in surveys in the surrounding areas.

Catuna niji - This butterfly has not recorded anywhere in Nigeria except in Ologbo, it is fairly common in the swampy areas in the southern part of Ologbo. All species in this genus are easy to identify in the field so the fact that it only found in Ologbo, shows that it is very localized

Melphina statira This skipper is rare all over its range (Senegal to Cross River area) and Ologbo is the only area in Western Nigeria where this species is recorded.

Celaenorrhinus illustris/perlustris This skipper (pictured to the right) belongs to either of the two species *Celaenorrhinus illustris* or *C. perlustris*. Unfortunately it escaped just after the picture was taken and to properly determine these species more of the wing pattern needs to be seen. Neither of the two species has previously been found in western Nigeria.



Concluding remarks

- Ologbo is the only place in the world know too have a population of *Bicyclus ottossoni*. No other butterflies in West Africa are known to have such restricted distributions, and therefore until we know more about this species we must remember that it might be an absolutely unique butterfly demonstrating the high conservation value of the Ologbo Forest. I hope to be able to learn more about this species in coming visits to Nigeria.
- Within the whole of Nigeria *Catuna niji* is only recorded from Ologbo Forest. This demonstrates the importance of saving swampy rainforest habitats in southern Nigeria, all severely threatened by human activities.
- The fact that so many butterfly species occurring in Ologbo have not been recorded in Okumu, and in some cases not in any part of western Nigeria, demonstrates how unique every tiny forest in this region is. Presco has a unique possibility of protecting a valuable forest, as many other areas in western Nigeria don't receive the level of protection they dearly need.

Acknowledgements

I am grateful to Dr. Elizabeth Greengrass who invited me for the initial visit in 2008 and Pieter van Dessel who invited me to perform the longer monitoring in 2009. Robert Warren gave me access to all his data from 2006 to include in this report. All of the Presco Eco-Guards assisted me in the field work, and showed great interest in conservation related issues. A lot of people helped me out with transportation and other important tasks; I am grateful for all their help. Robin van Velzen analyzed the DNA samples from some of the *Cymothoe* species.

References

Larsen, T.B. 2005. Butterflies of West Africa. Apollo Books, Stenstrup, Denmark.

List of butterfly species positively recorded from Ologbo Forest, Edo State, Nigeria

Species	Not found in Okumu[1]	Habitat type[2]	Tolerance level[3]	Comments (see list below)
Fam. Papilionidae (7)				
Papilio chrapkowskoides nurettini		Forest	High	
Papilio sosia		Forest	Low	
Papilio menestheus		Forest	Low	
Papilio demodocus		Savannah		
Papilio cyproeofila		Forest		
Graphium latreillianus theorini	✓	Forest	Low	(4)
Graphium policenes		Forest	High	
Fam. Pieridae (13)				
Eurema senegalensis		General	High	
Eurema hecabe		Savannah		
Eurema floricola leonis	✓	Forest	High	
Nepheronia argia		Forest	High	
Nepheronia t. thalassina		Forest	High	
Colotis euippe euippe		General		
Belenois calypso		General		
Appias sylvia		Forest	High	
Leptosia alcesta alcesta		Forest	High	
Leptosia hybrida hybrida		Forest	High	
Leptosia medusa		Forest	High	
Leptosia marginea		Forest		
Megalopalpus zymna		Forest		

Species	Not found in Okumu	Habitat type	Tolerance level	Comments
Fam. Lycaenidae (37)				
Ptelina carnuta		Forest		
Pentila petreia		Forest	Low	
Pentila maculata		Forest	Low	
Telipna acraea		Forest		
Telipna rothi	✓	Forest		
Mimeresia libentina		Forest		
Liptena submacula		Forest		
Liptena modesta	✓	Forest	Low	
Kakumia otlauga	✓	Forest	Low	
Falcuna gitte/libyssa		Forest		(5)
Tetrarhanis simplex	✓	Forest		
Tetrarhanis symplocus		Forest		
Larinopoda aspidos		Forest		
Micropentila adelgunda	✓	Forest		Very rare species
Stempfferia michelae		Forest	Low	
Aethiopana honorius divisa		Forest	High	
Epitolina dispar		Forest		
Epitolina melissa		Forest		
Oxylides faunus		Forest	High	
Aphnaeus orcas	✓	Forest		
Iolaus sp.		Forest		(6)
Hypolycaena lebona		Forest	Low	
Hypolycaena kaukumi		Forest	Low	
Hypolycaena antifaunus		Forest		
Hypolycaena nigra		Forest	Low	(7)
Anthene rubricinctus		Forest		
Anthene ligures	✓	Forest		
Anthene sylvanus sylvanus		Forest	High	
Anthene larydas		Forest	High	
Anthene locuples		Forest	Low	
Tuxentius carana kontu		Forest		
Thermoniphas micylus micylus		Forest		
Thermoniphas sp.		Forest		Not determined yet
Oboronia punctatus	✓	Forest	High	
Oboronia pseudopunctatus	✓	Forest		
Oboronia ornata		Forest	High	
Azanus mirza		Savannah		

Species	Not found in Okumu	Habitat type	Tolerance level	Comments
Fam. Nymphalidae (129)				
Amauris niavius		General		
Amauris hecate hecate		Forest		
Gnophodes betsimena		Forest	High	
Gnophodes chelys		Forest	High	
Melanitis leda		General		
Bicyclus xeneas occidentalis		Forest	Low	
Bicyclus ephorus		Forest	Low	
Bicyclus italus		Forest		
Bicyclus ignobilis ignobilis		Forest	Low	
Bicylcus sp. nov (ottossoni)	✓	Forest	Low	(8)
Bicyclus nobilis		Forest	Low	
Bicyclus taenias		Forest	Low	
Bicyclus technatis		Forest	Low	
Bicyclus vulgaris		General		
Bicyclus dorothea		Forest	High	
Bicyclus sandace		General	High	
Bicyclus auricruda fulgida		Forest	Low	
Bicyclus sylvicolus		Forest	Low	
Bicyclus martius martius		Forest	High	
Hallelesis asochis	✓	Forest		
Charaxes fulvescens senegala	✓	Forest	High	
Charaxes protoclea	✓	Forest		
Charaxes cynthia	✓	Forest	High	
Charaxes lucretius		Forest		
Charaxes brutus		Forest		
Charaxes tiridates		Forest	High	
Charaxes smaragdalis		Forest	Low	
Charaxes ameliae		Forest		
Charaxes zingha		Forest		
Charaxes etesipe		General		
Charaxes eupale		Forest	High	
Charaxes hildebrandti		Forest	Low	
Charaxes pleione	✓	Forest		
Charaxes lycurgus		Forest	High	
Palla violinitens		Forest	Low	
Palla ussheri		Forest	High	
Palla publius		Forest	Low	

Species	Not found in Okumu	Habitat type	Tolerance level	Comments
Fam. Nymphalidae (cont.)				
Kallimoidoes rumia		Forest	High	
Antanartia delius		Forest		
Precis sinuta		Forest		
Hypolimnas misippus		General		
Hypolimnas anthedon		Forest	High	
Hypolimnas dinarcha	✓	Forest	Low	
Hypolimnas salmacis		Forest	High	
Salamis cacta		Forest	High	
Protogoniomorpha parhassus		Forest	High	
Junonia oenone		Savannah		
Junonia sophia		General		
Junonia stygia		Forest	High	
Junonia terea		General		
Ariadne enotrea enotrea		General		
Ariadne actisanes		Forest	High	
Sevenia amulia		Forest		
Cymothoe beckeri beckeri	✓	Forest	High	Very common
Cymothoe egesta egesta		Forest	Low	
Cymothoe hypata okumu		Forest	Low	
Cymothoe hesiodotus nigeriensis		Forest	Low	
Cymothoe caenis	✓	Forest	High	DNA tested
Cymothoe coccinata		Forest		
'Cymothoe ogova'	✓	Forest	Low	Possibly very small *C. sangaris*
Cymothoe sangaris		Forest	Low	
Pseudoneptis bugandensis ianthe	✓	Forest	High	
Pseudacraea eurytus		Forest	High	
Pseudacraea lucretia lucretia		Forest	High	
Pseudacraea semire		Forest	High	
Neptis metella metella		Forest	High	
Neptis 'nysiades'	✓	Forest		(9)
Neptis strigata		Forest		
Neptis nicobule		Forest	Low	
Neptis agouale agouale		Forest		
Neptis melicerta		Forest	Low	

Species	Not found in Okumu	Habitat type	Tolerance level	Comments
Fam. Nymphalidae (cont.)				
Catuna crithea		Forest	High	
Catuna niji	✓	Forest		New species for Nigeria
Catuna oberthueri		Forest		
Catuna angustatum		Forest	Low	
Euryphura togoensis		Forest	Low	
Euryphura chalcis		Forest		
Aterica galene galene		Forest	High	
Cynandra opis opis		Forest	High	
Euriphene incerta?		Forest	Low	(10)
Euriphene barombina		Forest	High	(10)
Euriphene epe		Forest	Low	Newely described species
Euriphene gambiae gabonica		Forest	High	
Euriphene ampedusa		Forest	High	
Euriphene atossa atossa		Forest	Low	
Euriphene doriclea		Forest	Low	
Bebearia carshena		Forest	Low	
Bebearia oxione oxione		Forest	Low	
Bebearia cocalia continentalis		Forest		
Bebearia sophus sophus		Forest	High	
Bebearia plistonax		Forest		
Bebearia laetitia		Forest	Low	
Bebearia phantasia		Forest	Low	
Bebearia phantasina		Forest	Low	
Euphaedra luperca		Forest	Low	
Euphaedra medon		Forest	High	
Euphaedra xypete		Forest	High	
Euphaedra hebes		Forest	Low	
Euphaedra diffusa albocoerulea		Forest		
Euphaedra themis		Forest	High	
Euphaedra aureola nitens		Forest	Low	
Euphaedra janetta		Forest	High	
Euphaedra adonina adonina		Forest	Low	(11)
Euphaedra ceres		Forest	High	
Euphaedra proserpina		Forest	Low	
Euphaedra velutina'	✓	Forest		(11)
Euphaedra eleus		Forest	Low	(4)
Euphaedra ruspina		Forest		
Euphaedra harpalyce		Forest	High	
Euptera elabontas	✓	Forest		

Species	Not found in Okumu	Habitat type	Tolerance level	Comments
Fam. Nymphalidae (cont.)				
Acraea peneleos		Forest	Low	
Acraea alciope/aurivillii		Forest	High	
Acraea lycoa lycoa	✓	Forest	High	
Acraea oberthueri		Forest	Low	
Acraea bonasia		Forest	High	
Acraea polis		Forest	High	
Acraea pseudegina		General		
Acraea endoscota		Forest		
Acraea leucographa/admatha	✓	Forest		
Acraea quirina		Forest	High	
Acraea eugenia	✓	Savannah		Only photographed
Acraea vestalis vestalis		Forest		
Acraea alcinoe alcinoe		Forest	High	Could be *A. macaria*
Acraea consanguinea		Forest		
Acraea excisa	✓	Forest		
Acraea epaea epaea		Forest	High	
Acraea tellus tellus	✓	Forest	Low	
Lachnoptera anticlia		Forest		
Phalanta eurytis eurytis		Forest	High	

Species	Not found in Okumu	Habitat type	Tolerance level	Comments
Fam. Hesperiidae (26)				
Coeliades chalybe	✓	Forest		
Pyrrhochalcia iphis		Forest		
Celaenorrhinus b. boadicea	✓	Forest		
Celaenorrhinus illustris/perlustris?	✓	Forest		(12)
Tagiades flesus		Forest	High	
Eagris decastigma	✓	Forest		
Ceratrichia phocion phocion		Forest		
Pardaleodes incerta murica	✓	Savannah		
Pardaleodes edipus		Forest	High	
Acada annulifer	✓	Forest		
Osmodes laronia		Forest		
Osmodes thora	✓	Forest	High	
Osmodes sp.				
Paracleros placidus	✓	Forest		(13)
Semalea pulvina		Forest	Low	
Semalea atrio		Forest	Low	
Semalea arela	✓	Forest	High	
Hypoleucis o. ophiusa	✓	Forest		
Andronymus caesar		Forest		
Andronymus hero		Forest	Low	
Pteroteinon laufella		Forest	High	
Caenides kangvensis	✓	Forest	Low	
Caenides dacena	✓	Forest	High	
Monza alberti		Forest	High	
Melphina statira	✓	Forest		(15)
Fresna nyassae	✓	Forest		Very rare

COMMENTS

1) Okumu records from Torben Larsen's list later modified by Robert Warren and Oskar Brattström
2) Indicates the primary habitat for the different species
3) Indicates if the species has a high or low tolerance for habitat degredation. Data taken from Larsen (2005) and personal notes from various field work in West Africa
4) Species verified by field observation only
5) Exact identification will require later dissection
6) This is most likely several species, they will have to be investigated later
7) This might be two species
8) This is a butterfly species not known to science before this study. It will be described in a separate paper later this year
9) This 'species' is most likely a complex of several species
10) Only females captured (males are more distinct) but most likely both species are present
11) Both of these species look somewhat different than expected but this is common in the genus
12) This record is from a photograph that unfortunately do not show the specific part of the wing pattern that separates these species, regardless it is a new record for western Nigeria
13) Needs to be dissected, species not recorded from Nigeria (might be an atypical *Paracleros biguttulus*)
14) This species has previously not been recorded in Western Nigeria