

Butterfly Fauna of the Mpenjati Nature Reserve

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Impenjati Butterfly Farm

Butterflies of the order “Lepidoptera”, constitute about 1% of all named insects, and are one of the most intensively studied groups. Their comparatively large size and bright colours, species distribution and abundances, and the relative ease with the rearing of some species in captivity has led to a considerable amount of research, with some very interesting findings. An example is the genetic information from research on the “Mocker Swallowtail” (*Papilio dardanus cenea* (Stoll, 1790)), that uncovered the Rhesus factor in human blood. From the human perspective, butterflies are both beneficial and harmful. In the beneficial category, some species of butterflies are prolific plant pollinators, and many of these creatures have high economic value as they are used for entertainment, decorative art and collections. The fact that some butterfly species exhibit a high host specificity makes them a potential biological control agent, especially with the alien invasive plants in Southern Africa.

The Mpenjati Nature Reserve (30.56 S 30.18 E) is controlled by the KwaZulu Natal Nature Conservation Service (*KZN-Wildlife*), and is approximately 66 ha in extent. The reserve is situated 20 km south of Margate. It is a small coastal reserve, with the main feature being the Impenjati river estuary. The reserve is of interest to conservationists and people who appreciate unspoiled natural areas. It is one of the very few remaining undeveloped estuaries on the KwaZulu Natal south coast. The reserve consists of several habitats which are important for both conservation and ecological reasons, these are; coastal grassland, coastal forest, wetlands, dune and estuarine. Bird life in the reserve is abundant, with well over 250 species being recorded. Mpenjati is dominated by coastal grassland and forest. The coastal grasslands are intersected by numerous wetlands. The forest can be further categorized into coastal, and dune forest. The only management actions which affect the vegetation in the reserve, is the control of alien invasive vegetation, and the two yearly use of fire for the maintenance of the grasslands. The species of butterflies in the Mpenjati Nature Reserve currently stands at a count of 118.

A survey of butterflies in the reserve took place from the 1st of October, 2003 to 30th of September, 2004. The objective was to obtain initial data on the composition of the butterfly fauna and to compile the first-ever checklist for the Mpenjati Nature Reserve. Species observations were made using the butterfly transect method which involves the establishment of a fixed route across the various habitat types within the boundaries of the Mpenjati Nature Reserve. The route was divided into a number of sections, which varied in length, depending on the habitat. Each week walks were carried out along the transect, with each butterfly species noted in each section. Transects were walked at a slow steady pace. Counts were only made during the day and when certain weather criteria were met, (Warm, bright and light winds). The study has provided valuable information on the butterfly ecology including population trends, the effects of habitat management, changing distribution patterns (spread/decline), population dynamics, migration and the effects of the weather. It was however, concluded that it was also too early to detect the annual population trend, as the project would have to be carried out over a period of at least 3 to 5 years. For that reason, an initial aim is to develop protocols and a formal repeatable procedure that will allow future transects to be carried out, with accurate count figures on butterfly populations.

The actual butterfly specimens were identified by using, “Pennington's Butterflies of Southern Africa”. Where possible specimens were identified to family, sub-family, species and race. A total of 118 species, (refer to Appendix 1) were identified within the boundaries of the reserve. The capturing of butterflies was not possible as the Mpenjati Nature Reserve is a, “Protected area”. The most abundant butterfly species is the, “African Migrant” (*Catopsilia florella* (Fabricius, 1775)).

The reason here was the large amount of, "Peanut Butter Cassia" (*Cassia didymobotrya*) along the northern boundary of the reserve, which has also been classified as an invasive alien invader. In an open area within the coastal forest a large colony of the "Small striped Swordtail", (*Graphium polices* (Cramer, 1775)) was also discovered. On the negative side, a colony of the, "Coastal Copper", (*Poecilmitis natalensis* Van Son, 1966) was almost destroyed by fire, as much of the host plant, the "Tick Berry Bush", (*Chrysanthemoides monilifera*) was burnt. It was observed that this bush is very susceptible to bush fires.

It is highly possible that the reserve contains more species of all families observed during this survey and, if the bias is addressed in the future, the check list of the butterflies of the Mpenjati Nature Reserve will be longer. For the record some area's of the reserve undergo a control burn every two years. Therefore the vegetation composition of a particular area will determine whether butterflies will inhabit or visit the area and also what the density of the population in these particular area's will be in the future, at any point in

time. The removal of, "Lantana", (*Lantana camara*) a category, "1" alien invader in the reserve will also have an impact on butterfly populations, as the adult butterflies rely heavily on the high nectar content of the flowers. The lantana should be removed, and at the same time it should be replaced with an indigenous alternative. In some area's butterfly numbers are sufficiently low enough to suggest failure in colonizing a suitable area. This can be explained by the fact that the forest alone does not provide conditions for their survival. Most of the forest species encountered, prefer forest clearings, forest edges, forest paths where there are a large supply of nectar plants. All of the fore mentioned scenarios occur at Mpenjati, however the butterflies are visibly absent, due to the fact that the lantana has been removed, and not replaced with a suitable replacement.

The most important alien plant invader threat to the biodiversity of the Mpenjati Nature Reserve is, "Triffid Weed", (*Chromolaena odorata*). Triffid weed swamps indigenous vegetation. It is a scrambling shrub that grows up to 4 metres high. It is native to South and Central America, and was introduced to South Africa in the 1940's and has since spread along the east coast of KwaZulu Natal and as far south as Port St. Johns in the Eastern Cape. Infestations of this weed have now reached critical proportions in the Northern Province, Mpumalanga, Swaziland, and now also Mocambique. Butterflies can also be used as indicators of forest quality. Although there are sufficient host plants in the forest, the absence of species indicates that some unseen factor is influencing the species distribution in that particular area. It was also found that this stretch of coastal forest is in the initial stages of degradation, and if the advance of these alien plants is not stopped in the near future, it could turn out to become a major catastrophe.

In conclusion it is hoped that this short study will provide a better understanding of the natural history of the butterflies of the Mpenjati Nature Reserve, as well as the range, distribution, and affinity for the different types. This study represents an important first step in identifying likely sites to concentrate conservation efforts, based on the changing composition of species within the butterfly community. Area's where degradation has occurred, or is beginning to take place should be targeted for initial Conservation measures. The study can also be improved through additional research over longer periods of time to cover seasonal ranges within the habitat types. A key question that remains to be answered is whether or not using butterflies as indicators will enable researchers to predict the presence of other taxa and thereby contribute immensely to studies of overall ecosystem health in the Mpenjati Nature Reserve.

Reference's

PRINGLE E.L.L., HENNING G.A., & BALL J.B. 1994. Pennington's Butterflies of Southern Africa. Second Edition. Struik, Cape Town.

MIGDOLL I., 1994. Field Guide Butterflies of Southern Africa. Second Edition. Struik, Cape Town.

Appendix 1. Checklist of Butterflies of the Mpenjati Nature Reserve (R. Dobson 2004)

Acraea cabira - Hopffer, 1855
Acraea eponina eponina - (Cramer, 1780)
Acraea esebria esebria - Hewitson, 1861
Acraea horta - (Linnaeus, 1764)
Acraea natalica natalica - Boisduval, 1847
Acraea neobule neobule - (Doubleday, 1848)
Acraea petraea - Boisduval, 1847
Acraea zetes - (Linnaeus, 1758)
Alaena amazoula amazoula - (Boisduval, 1847)
Amauris albimaculata albimaculata - Butler, 1875
Amauris ochlea ochlea - (Boisduval, 1847)
Anthene butleri livida - (Trimen, 1881)
Anthene definita definita - (Butler, 1899)
Anthene lemnos lemnos - (Hewitson, 1878)
Antanartia hippomene hippomene - (Hubner, 1806)
Appias epaphia contracta - (Butler, 1888)
Artitropa erinnys erinnys - (Trimen, 1862)
Azanus jesous jesous - (Guerin-Meneville, 1849)
Baliochila aslanga - (Trimen, 1873)
Belenois aurota aurota - (Fabricius, 1793)
Belenois creona severina - (Stoll, 1781)
Belenois gidica - (Godart, 1819)
Belenois thysa thysa - (Hopffer, 1855)
Belenois zochalia zochalia - (Boisduval, 1836)
Bematistes aganice aganice - (Hewitson, 1852)
Bicyclus safitza safitza - (Hewitson, 1851)
Cacyreus lingeus - (Stoll, 1782)
Cacyreus marshalli - Butler, 1897
Catacroptera cloanthe cloanthe - (Stoll, 1781)
Catopsilia florella - (Fabricius, 1775)
Charaxes brutus natalensis - Staudinger, 1886
Charaxes candiope - (Godart, 1824)
Charaxes cithaeron cithaeron - C. & R. Felder, 1859
Charaxes drucenaus cinadon - Hewitson, 1870
Charaxes ethalion ethalion - (Boisduval, 1847)
Charaxes zoolina zoolina - (Westwood, 1850)
Coeliades forestan forestan - (Stoll, 1782)
Colias electo electo - (Linnaeus, 1763)
Colotis antevippe gavis - (Wallengren, 1857)
Colotis erone - (Angas, 1849)
Colotis ione - (Godart, 1819)
Colotis regina - (Trimen, 1863)
Cyclyrius pirithous - (Linnaeus, 1767)
Cymothoe alcimeda - (Godart, 1819)
Danaus chrysippus aegyptius - (Schreber, 1759)
Dixeia charina charina - (Boisduval, 1836)
Dixeia pigea - (Boisduval, 1836)
Eicochrysops hippocrates - (Fabricius, 1793)
Eicochrysops messapus - (Godart, 1823)
Eronia cleodora cleodora - (Hubner, 1823)
Eronia leda - (Boisduval, 1847)

Eunica boisduvali boisduvali - (Wallengren, 1857)
Eurema brigitta brigitta - (Stoll, 1780)
Eurema desjardinsii marshalli - (Butler, 1897)
Eurema hecabe solifera - (Butler, 1875)
Eurytela dryope angulata - Aurivillius, 1899
Eurytela hiarbas angustata - Aurivillius, 1894
Freyeria trochylus - (Freyer, 1845)
Gegenes hottentota - (Latreille, 1823)
Gonatomyrina gorgias gorgias - (Stoll, 1790)
Graphium colonna - (Ward, 1873)
Graphium leonidas leonidas - (Fabricius, 1793)
Graphium policenes - (Cramer, 1775)
Henotesia perspicua - (Trimen, 1873)
Hypolimnas misippus - (Linnaeus, 1764)
Hypolimnas anthedon wahlbergi - (Wallengren, 1857)
Hypolimnas deceptor deceptor - (Trimen, 1873)
Hypolycaena buxtoni buxtoni - Hewitson, 1874
Hypolycaena philippus philippus - (Fabricius, 1793)
Iolaus pallene - (Wallengren, 1857)
Iolaus sidus - Trimen, 1864
Iolaus silas - Westwood, 1852
Junonia archesia - (Cramer, 1779)
Junonia terea elgiva - Hewitson, 1864
Junonia hierta cebrene - Trimen, 1870
Junonia oenone oenone - (Linnaeus, 1758)
Junonia natalica natalica - (C. & R. Felder, 1860)
Junonia octavia sesamus - (Trimen, 1883)
Junonia orithya madagascariensis - (Guenee, 1865)
Lachnocnema bibulus - (Fabricius, 1793)
Lachnoptera ayresii - Trimen, 1879
Lampides boeticus - (Linnaeus, 1767)
Lepidochrysops patricia - (Trimen, 1887)
Libythea labdaca laius - Trimen, 1879
Melanitis leda helena - (Westwood, 1851)
Metisella metis - (Linnaeus, 1764)
Moltena fiara - (Butler, 1870)
Mylothris rueppellii haemus - (Trimen, 1879)
Myrina dermaptera dermaptera - (Wallengren, 1857)
Myrina silenus ficedula - (Trimen, 1879)
Nepheronia argia varia - (Trimen, 1864)
Neptis saclava marpessa - Hopffer, 1855
Netrobalane canopus - (Trimen, 1864)
Papilio constantinus constantinus - (Ward, 1871)
Papilio dardanus cenea - (Stoll, 1790)
Papilio demodocus demodocus - (Esper, 1798)
Papilio nireus lyaeus - (Doubleday, 1845)
Pardopsis punctatissima - (Boisduval, 1833)
Papilio ophidicephalus phalusco - (Suffert, 1904)
Pentila tropicalis tropicalis - (Boisduval, 1847)
Phalanta phalanta aethiopica - (Rothschild & Jordan, 1903)
Pinacopteryx eriphia eriphia - (Godart, 1819)
Pontia helice helice - (Linnaeus, 1764)
Protogoniomorpha anacardii nebulosa - (Trimen, 1881)

Protogoniomorpha parhassus aethiops - (Palisot de Beauvois, 1805)
Pseudacraea boisduvalli trimenii - Butler, 1874
Pseudacraea eurytus imitator - (Trimen, 1873)
Pseudacraea lucretia tarquinia - (Trimen, 1868)
Spialia spio - (Linnaeus, 1767)
Spindasis natalensis - (Westwood, 1852)
Stonehamia varanes varanes - (Cramer, 1777)
Tagiades flesus - (Fabricius, 1781)
Thestor basutus basutus - (Wallengren, 1857)
Tuxentius melaena - (Trimen, 1887)
Vanessa cardui - (Linnaeus, 1758)
Virachola antalus - (Hopffer, 1855)
Virachola dinochares - (Grose-Smith, 1887)
Zizula hylax hylax - (Fabricius, 1775)

Fig 1. Vegetation Map of the Mpenjati Nature Reserve

