

# West Bengal Butterfly Biodiversity Database - A compendium of butterfly biodiversity with information regarding the habitat and status of individual identified species of butterflies of West Bengal

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## INTRODUCTION

There are a diverse array of factors that influence the biodiversity of a particular area. However, most of the influencing factors can be classified under intrinsic and anthropocentric values that become associated with it. Together they form the backbone of the services towards the ecosystem (Daily, 1997, Baumgärtner, 2007). Species diversity of a particular region brings to light several criteria for assessment - from understanding the functional roles that a species perform in a community to the impact assessment of anthropogenic misdoings in urban ecosystems (Wilson, 1997).

Insects in a community architecture are responsible for the services such as pest control, nutrient degradation and decomposition as well as pollination of plant species (Losey and Vaughan 2006). Kunte, 2000 and Tiple *et al.*, 2006 rightfully point out that butterflies exhibit rich community ecosystem service features probably evidenced by their history of co-evolution with plants (Ehrlich and Raven, 1964). Apart from these they are also considered to be important indicators of ecosystem health, which gets affected by human disturbances, loss of habitat and pollution levels. (New, 1991, Pollard and Yates, 1993, Kunte, 2000, Thomas, 2005 and Bonebrake *et al.*, 2010, Kunte *et al.*, 1999, Kocher and Williams, 2000, Kunte, 2000, Summerville and Crist, 2001 and Koh, 2007) They are perceived to be more sensitive than many other taxonomic groups (Thomas *et al.*, 2004 and Thomas, 2005). These attributes make them a sustainable model for ecological and conservation studies and emphasises the need for setting up robust methods for their conservation (Watt and Boggs, 2003 and Ehrlich and Hanski, 2004).

Butterflies are characterized by their short life cycles which makes them to quickly react under environmental alterations. Even minute changes are sensed by them since they have a limited ability to disperse and more often than not feed on specific food plants. It is probably due to these factors that recent research has shown that butterfly populations decline more rapidly than the birds and plants signifying their importance as indicators.

### Butterfly Biodiversity Resources Publicly Available

The curiosity and awareness regarding butterfly

conservation has increased worldwide and thus a large number of repositories have been created though some are not maintained or updated regularly. Table 1 summarizes the top twelve butterfly information resources available on the web with the exception of the first serial.

### Butterfly conservation in West Bengal

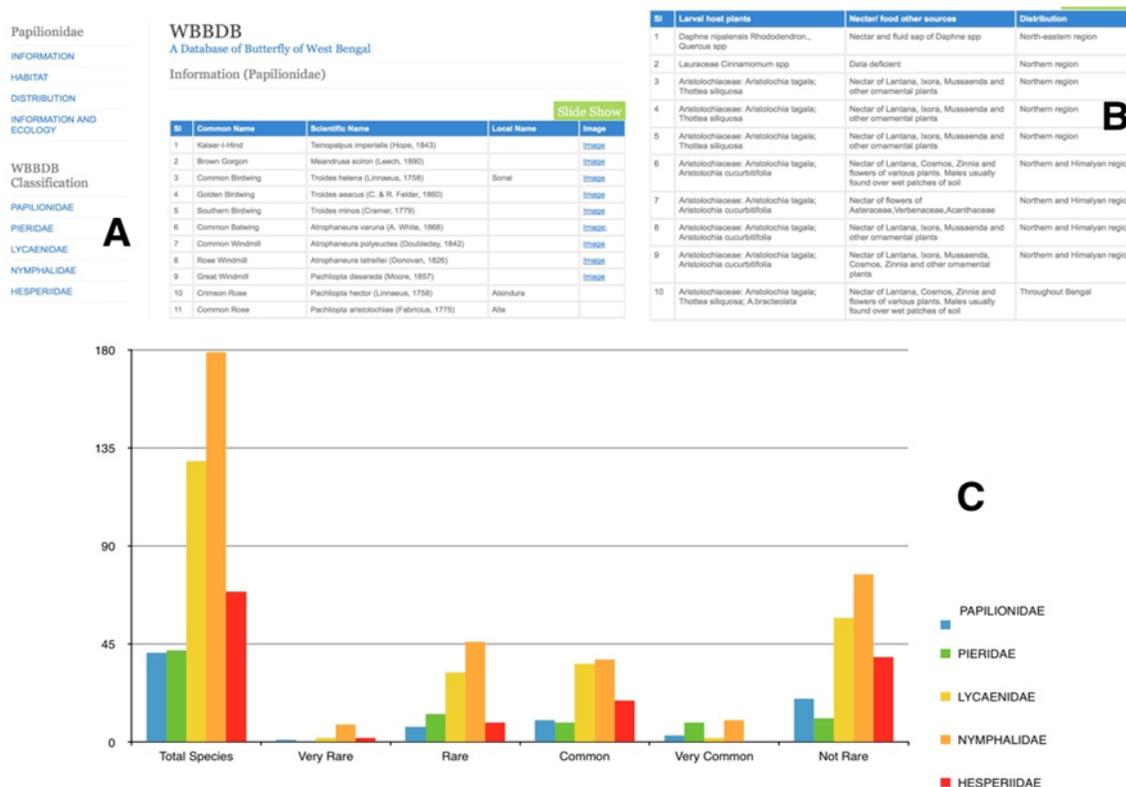
Though the awareness regarding the increasing loss in butterfly biodiversity of the state is already present, few concerted efforts are being taken to redeem the butterfly diversity of the state threatened by unplanned urbanization and reduction in green patches along with wetlands. Further it is also important to make the common man understand the importance of conservation of these natural resource through proper correlation and identification of the available species. Though efforts have been taken to map the diversity of butterflies in Kolkata metropolitan area, a state wide map is still unavailable. This work focuses on the identification and cataloguing of the butterflies of West Bengal state, throughout its twenty districts, in a publicly available information database. The database is designed (Figure 1) to provide information regarding the habitat and ecology of the individual species along with their individual descriptions.

WBBDB has been developed keeping in mind that the actual conservation of biodiversity starts from the common man, thus common names of the butterflies have been included wherever possible along with live photographs of the individual members. To make the database user friendly the ecological status has also been indicated wherever data has been identified. The biggest challenge now is to make people aware that such a database exists so that wildlife enthusiasts as well as researchers can contribute as well as benefit from the information that is currently present in the database. Ultimate goal of the effort is to generate awareness and working knowledge regarding the butterflies that are available at this juncture in West Bengal which has a unique geography with the Himalayas bordering the north and the bay of Bengal forming the southern limits encapsulating a large gangetic plain and deltaic region. The following table (Table 2) summarizes the existing butterfly information repositories which are web accessible

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**Figure 1.** West Bengal Butterfly Biodiversity Database (WBBDB). A: Home Page of the database, B: Classification Scheme of the members; C: Overall Database Architecture.



**Figure 2.** WBBDB features: A: Typical tabular entry of the database, B: A snapshot of details of distribution of the specific members; C: Overall comparison amongst the members pertaining to ecological status - very rare, rare, common, very common and not rare.

**Table 1.** Various Resources on Butterflies and their URL's.

Serial	NAME	URL	STATUS & CONTENT
1	Butterflies of India	<a href="http://www.ifoundbutterflies.org/diversity-and-classification">http://www.ifoundbutterflies.org/diversity-and-classification</a>	Incomplete and Under Construction
2	Biodiversity Information System of Europe	<a href="http://biodiversity.europa.eu/topics/species/butterflies">http://biodiversity.europa.eu/topics/species/butterflies</a>	Comprehensive and Updated information regarding Europe region Updated
3	National Park Service	<a href="https://www.nps.gov/ever/learn/nature/butterflies.htm">https://www.nps.gov/ever/learn/nature/butterflies.htm</a>	Everglades National Park centric data, Updated
4	National Biodiversity Data Centre (Ireland)	<a href="http://www.biodiversityireland.ie/record-biodiversity/surveys/butterfly-monitoring-scheme/">http://www.biodiversityireland.ie/record-biodiversity/surveys/butterfly-monitoring-scheme/</a>	Ireland butterfly biodiversity, well documented and updated
5	The Big Biodiversity Data Count	<a href="http://www.sussex-butterflies.org.uk/BBBC/">http://www.sussex-butterflies.org.uk/BBBC/</a>	Butterfly biodiversity of Sussex region, Updated
6	Butterflies of Canada	<a href="http://www.cbif.gc.ca/eng/species-bank/butterflies-of-canada/?id=1370403265518">http://www.cbif.gc.ca/eng/species-bank/butterflies-of-canada/?id=1370403265518</a>	Compendium of Canadian Butterflies, Updated
7	Guantanamo Bay Butterflies	<a href="http://www.livescience.com/22995-butterflies-reveal-biodiversity-at-guantanamo.html">http://www.livescience.com/22995-butterflies-reveal-biodiversity-at-guantanamo.html</a>	different butterfly species at the U.S. military base at Guantanamo Bay documented, Not updated
8	United Kingdom butterfly Monitoring Scheme	<a href="http://www.ukbms.org/Obtaining.aspx">http://www.ukbms.org/Obtaining.aspx</a>	Contributory Database of butterflies, Updated
9	Butterfly India	<a href="http://indiabiodiversity.org/group/butterflyindia/userGroup/show">http://indiabiodiversity.org/group/butterflyindia/userGroup/show</a>	"This group encourages the sharing of images of Indian butterflies with location and time data, thereby facilitating its occurrence to be mapped." Updated
10	Ghana Butterfly Biodiversity Project	<a href="http://iz.carnegiemnh.org/GhanaBFly/Gallery.asp?cat=butterflies&amp;recs=20&amp;page=1">http://iz.carnegiemnh.org/GhanaBFly/Gallery.asp?cat=butterflies&amp;recs=20&amp;page=1</a>	Collection of Images of Butterflies from the Ghana region, Updated
11	Butterflies of Hong Kong	<a href="https://www.afcd.gov.hk/english/conservation/hkbiodiversity/speciesgroup/speciesgroup_butterflies.html">https://www.afcd.gov.hk/english/conservation/hkbiodiversity/speciesgroup/speciesgroup_butterflies.html</a>	Detailed information on butterflies of hong kong. Updated
12	Iberian Butterfly Biodiversity	<a href="http://www.gotscience.org/2015/09/unexpected-biodiversity-in-iberian-butterflies/">http://www.gotscience.org/2015/09/unexpected-biodiversity-in-iberian-butterflies/</a>	Not a structured database format but contains information

**Availability**

[http://thebiome.in/databases/wbbdb\\_intro.php](http://thebiome.in/databases/wbbdb_intro.php)

**CONCLUSION**

WBBDB manages to incorporate existing data regarding the variety of butterflies along with their ecological status in an user friendly web accessible database which is continuously being curated as we get contributory photographs and information regarding butterfly species of the state. We believe that a community effort should play critical role in the awareness generation and conservation of these beautiful works of nature.

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