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A preliminary checklist of Papilionoidea from Barot valley, district Mandi, Himachal Pradesh, India (Insecta: Lepidoptera)

Gurinder Kaur Walia, Diksha Chopra, Neeraj Neeraj, Jyoti Mahil & Avtar Kaur Sidhu

Abstract

This is a report of the Papilionoidea' species diversity in the Barot valley of Mandi district of Himachal Pradesh (India). The present checklist was made based on a survey tour conducted in the month of May 2024. This study is the preliminary attempt to provide a checklist of the Papilionoidea fauna of a remote valley Barot in district Mandi. This report is a baseline for future studies on Papilionoidea from this area.
Keywords: Insecta, Lepidoptera, Papilionoidea, biodiversity; conservation, checklist, ecosystem, ecology, India.

Lista preliminar de los Papilionoidea del Valle de Barot, distrito de Mandi, Himachal Pradesh, India (Insecta: Lepidoptera)

Resumen

Este es un informe sobre la diversidad de especies de Papilionoidea en el valle Barot del distrito Mandi de Himachal Pradesh (India). La presente lista de comprobación se ha elaborado sobre la base de un estudio realizado en el mes de mayo de 2024. Este estudio es el intento preliminar de proporcionar una lista de control de la fauna Papilionoidea de un remoto valle Barot en el distrito de Mandi. Este informe es una línea de base para futuros estudios sobre Papilionoidea de esta zona.
Palabras clave: Insecta, Lepidoptera, Papilionoidea, biodiversidad; conservación, lista de control, ecosistema, ecología, India.

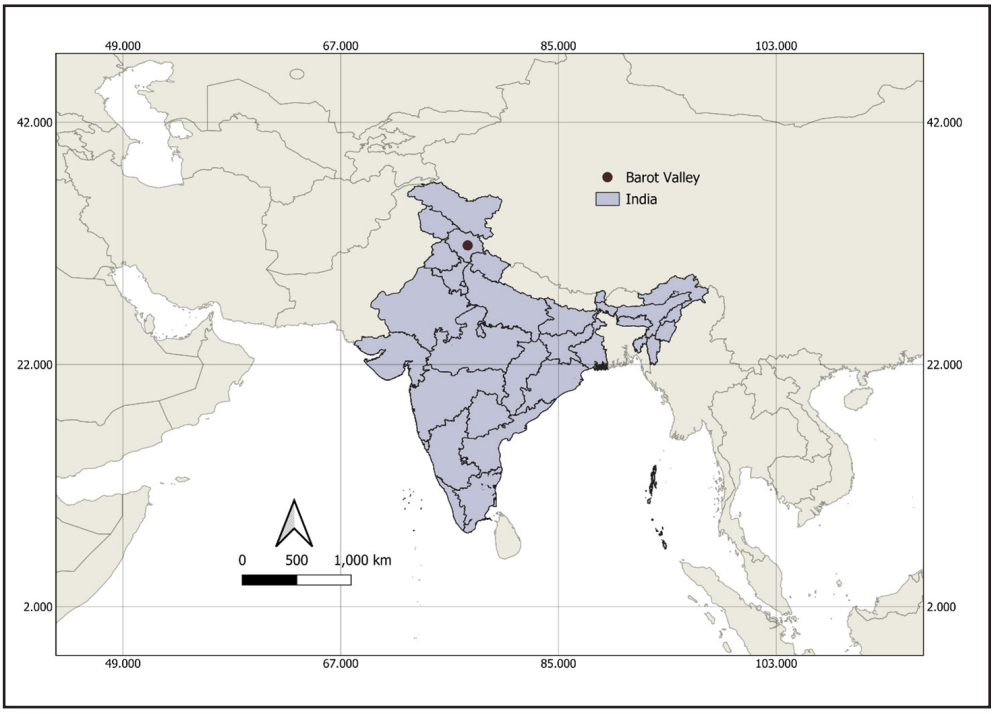
Introduction

Papilionoidea are the paramount flagship invertebrates that plays crucial role in the conservation practices (Barua et al. 2012). Being highly diverse i.e. having around 1,318 species in India, they act as an important bioindicators and occupies vital position in the ecosystem (Kunte 2000; Varshney & Smetacek, 2015). Slightest variations in the environment and forest structures severely affect Papilionoidea's biota (Pollard, 1991). They play a very important role in maintaining the stability of various ecosystems in various ways such as pollination of plants and dispersal of seeds. They also act as an important food source for other groups of organisms (Majer, 1987). Many of the species are strictly seasonal, some show seasonal polymorphism, some are ubiquitous, and some prefer set of habitats (Kunte, 1997). Due to anthropogenic factors such as urbanization, deforestation, biodiversity is being lost at an alarming rate (Achard et al. 2002, Kowarik 1995, McKinney 2002, Miller & Hobbs 2002). In the last few decades, the need to conserve biodiversity has gained prominence in ecological research. The identification and compilation of species in a checklist evinces the biodiversity of that area and is the first step in effectively conserving biodiversity.

Study Area

Barot, located in the Mandi District of Himachal Pradesh, India, is a valley established in the 1920s for the Shanan Hydel Project. It serves as the gateway to the Nargu Wildlife Sanctuary, situated across the Uhl River. Geographically positioned at 32.0372ºN latitude and 76.8439ºE longitude, Barot lies at an elevation of 1,819 meters (6,001 feet) above sea level within a valley formed by the Uhl River, flanked by the Dhauladhar range of the Himalayas. The surrounding forests are abundant with *Cedrus deodara* (Roxb.) G. Don and *Quercus semecarpifolia* Sm. trees, contributing to the rich biodiversity of the region. Barot Valley, nestled within the Dhauladhar range, presents a remarkable landscape, making it a prime destination for wildlife enthusiasts and nature photographers. The region is characterized by a diverse array of flora and fauna, supported by its varied topography and climatic conditions. The area is a microcosm of the larger ecological zone of the western Himalayas, known for its unique biodiversity and endemic species. The climatic conditions of Barot Valley are typical of the subtropical highland climate, with temperature variations ranging from 4ºC in winters to 25ºC in summers. Annual precipitation averages around 1,200 mm, predominantly during the monsoon months of July and August. This climatic regime supports the lush forests and diverse wildlife of the region.

Figure 1. Location of Barot Valley in Himachal Pradesh.



Material and Methods

A survey was made to document Papilionoidea species to Barot valley, district Mandi at 32.0372º N latitude and 76.8439º E longitude. It was a seven-day visit to this area from 16 May 2024 to 22 May 2024. Some species were photographed on camera with the help of Sony DSC-HX60 while some species were collected with the help of net sweeping method. The collected Papilionoidea were killed by following Evans (1932) method by getting the insect into the fold of the net with its wings closed and pinching their thorax gently. We generally visited the field on a sunny day from 8am to 11am and 2pm to 6pm. Existing literature was followed

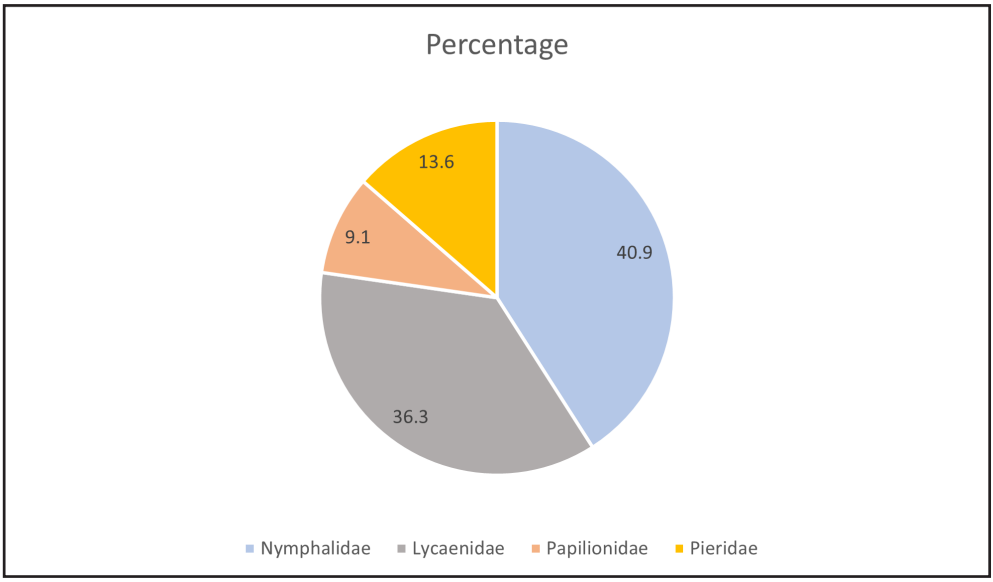
for species identification (Evans, 1932; Kehimkar, 2015; Varshney & Smetacek, 2015). Mapping is done using QGIS software. Online source was also consulted for identification (http://www.ifoundbutterflies.org).

Figure 2. A-C Pictures of landscape of Barot valley.

Results

A seven-day survey resulted in the record of 44 species of Papilionoidea from four families. The highest diversity of family Nymphalidae was observed with 18 species followed by Lycaenidae with 16 species, Pieridae with 6 species and lowest number of Papilionidae was observed with 4 species. Of these, five species are protected under Schedule II of the Indian Wildlife (Protection) Act. 1972. A summary of photographic records is given. A list of all the 44 species is given in the table. This report is a baseline for future studies on Papilionoidea from Barot valley. This area can be explored more as it has high species richness.

Figure 3. Diversity of Papilionoidea in Barot Valley.



Discussion

Barot valley, nestled within the Dhauladhar range, presents a remarkable landscape, making it a prime destination for wildlife enthusiasts and nature photographers. The region is characterized by a diverse array of flora and fauna, supported by its varied topography and climatic conditions. The area is a microcosm of the larger ecological zone of the western Himalayas, known for its unique biodiversity. It was a random sampling of riverside, waterfall, forest, rural and urban areas.

The present study reported 44 species from Barot valley, district Mandi, which comprises four families Nymphalidae, Lycaenidae, Pieridae and Papilionidae. Family Nymphalidae was dominant among other families. Play a very important role in maintaining the stability of various ecosystems in various ways such as pollination of plants and dispersal of seeds. They also act as an important food source for other groups of organisms (Majer, 1987). They act as bioindicators as well and are very important to assess the health and stability of ecosystem. Quantification of diversity and species richness is of importance for evaluating the conservation status.

Conflict of Interest

The authors declare that they have no known financial interest or personal relationship that could have influence the work presented in this article.

References

Achard, F., Eva, H. D., Stibig, H. J., Mayaux, P., Gallego, J., Richards, T., & Malingreau, J. P. (2002). Determination of deforestation rates of the world's humid tropical forests. *Science*, *297*(5583), 999-1002. https://doi.org/10.1126/science.1070656 PMid:12169731

Barua, M., Gurdak, D. J., Ahmed, R. A., & Tamuly, J. (2012). Selecting flagships for invertebrate conservation. *Biodiversity and Conservation*, *21*, 1457-1476. https://doi.org/10.1007/s10531-012-0244-7

Kowarik, I. (1995). Time lags in biological invasions with regard to the success and failure of alien species. In

Plant Invasions: General Aspects and Special Problems (pp. 15-38). Springer Netherlands. https://doi.org/10.1007/978-94-015-8541-7_2

Kunte, K. J. (1997). Seasonal patterns in butterfly abundance and species diversity in four tropical habitats in northern Western Ghats. *Journal of Biosciences*, *22*, 593-603. https://doi.org/10.1007/BF02703399

Kunte, K. (2000). *India, a Lifescape: Butterflies of Peninsular India*. Universities Press.

Kunte, K., Sondhi, S., & Roy, P., (2024). *Butterflies of India, v. 4.27*. Indian Foundation for Butterflies Trust. URL: https://www.ifoundbutterflies.org.

Majer, J. (1987). The conservation and study of invertebrates in remnants of native vegetation. In D. Saunders, A. Burbidge & A. Hopkins. *Nature Conservation: The Role of Remnants of Native Vegetation* (pp. 333-335). Surrey Beatty & Sons.

McKinney, M. L. (2002). Urbanization, biodiversity, and conservation: The impacts of urbanization on native species are poorly studied, but educating a highly urbanized human population about these impacts can greatly improve species conservation in all ecosystems. *Bioscience*, *52*(10), 883-890. https://doi.org/10.1641/0006-3568(2002)052[0883:UBAC]2.0.CO;2

Miller, J. R., & Hobbs, R. J. (2002). Conservation where people live and work. *Conservation Biology*, *16*(2), 330-337. https://doi.org/10.1046/j.1523-1739.2002.00420.x

Pollard, E. (1991). Monitoring butterfly numbers. In *Monitoring for Conservation and Ecology* (pp. 87-111). Springer. https://doi.org/10.1007/978-94-011-3086-8_6

Varshney, R. K., & Smetacek, P. (Eds.). (2015). *A Synoptic Catalogue of the Butterflies of India*. Butterfly Research Centre, Bhimtal & Indinov Publishing. https://doi.org/10.13140/RG.2.1.3966.2164

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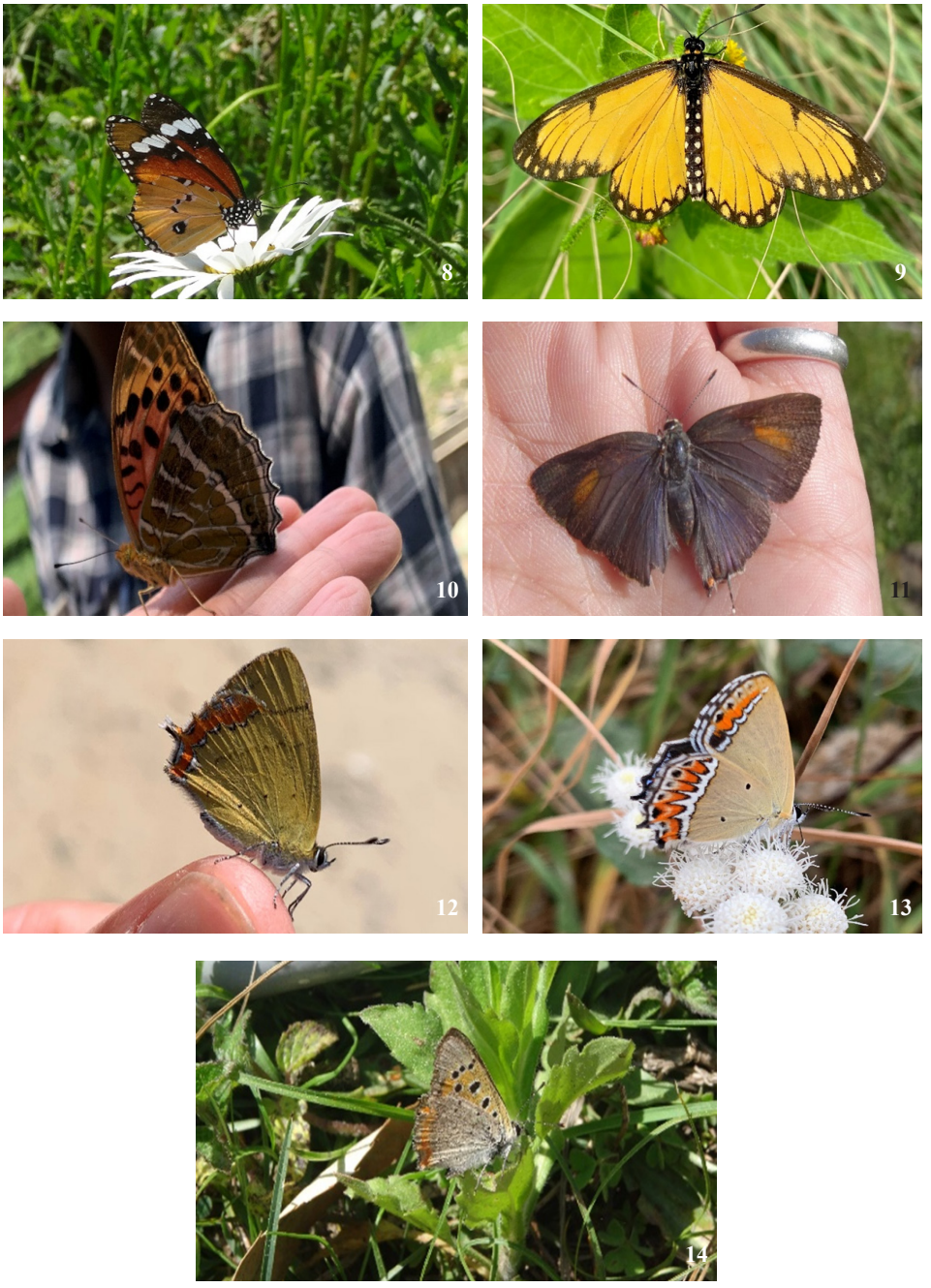
Table 1. List of Papilionoidea of Barot Valley

Family	Subfamily	Scientific name	WPA Status	Observations
Nymphalidae	Nymphalinae	*Aglais caschmirensis* (Kollar, [1844])		Photographed
Nymphalidae	Limentidinae	*Neptis soma* Moore, 1858	Sch-II	Observed
Nymphalidae	Nymphalinae	*Symbrenthia lilaea* (Hewitson, 1864)		Photographed
Nymphalidae	Limentidinae	*Athyma opalina* (Kollar, [1844])		Observed
Nymphalidae	Limentidinae	*Neptis hylas* (Linnaeus, 1758)		Observed
Nymphalidae	Nymphalinae	*Vanessa cardui* (Linnaeus, 1758)		Photographed
Nymphalidae	Nymphalinae	*Vanessa indica* (Herbst, 1794)		Observed
Nymphalidae	Nymphalinae	*Junonia iphita* (Cramer, [1779])		Photographed
Nymphalidae	Nymphalinae	*Kaniska canace* (Linnaeus, 1763)		Photographed
Nymphalidae	Nymphalinae	*Kallima inachus* (Doyère, [1840])		Observed
Nymphalidae	Danainae	*Euploea mulciber* (Cramer, [1777])	Sch-IV	Photographed
Nymphalidae	Danainae	*Danaus chrysippus* (Linnaeus, 1758)		Photographed
Nymphalidae	Satyrinae	*Lethe isana* (Kollar, [1844])		Observed
Nymphalidae	Satyrinae	*Paralasa shallada* Lang, 1880		Observed
Nymphalidae	Heliconiinae	*Acraea issoria* (Hübner, [1819])		Photographed
Nymphalidae	Heliconiinae	*Argynnis children* Gray, 1831		Photographed
Nymphalidae	Libytheinae	*Libythea myrrha* Godart, 1819		Photographed
Nymphalidae	Cyrestinae	*Cyrestis thyodamas* Doyère, [1840]		Observed
Lycaenidae	Theclinae	*Horaga onyx* (Moore, [1858])	Sch-II	Observed
Lycaenidae	Theclinae	*Rapala selira* (Moore, 1874)		Observed
Lycaenidae	Theclinae	*Rapala nissa* (Kollar, [1844])		Photographed
Lycaenidae	Lycaeninae	*Heliophorus moorei* (Hewitson, 1865)	Sch-II	Photographed
Lycaenidae	Lycaeninae	*Heliophorus sena* (Kollar, [1844])		Photographed
Lycaenidae	Lycaeninae	*Lycaena panava* (Westwood, 1852)		Photographed
Lycaenidae	Lycaeninae	*Lycaena phlaeas* (Linnaeus, 1761)		Photographed
Lycaenidae	Polyommatinae	*Lampides boeticus* (Linnaeus, 1767)	Sch-II	Photographed
Lycaenidae	Polyommatinae	*Pseudozizeeria maha* (Kollar, [1844])		Observed
Lycaenidae	Polyommatinae	*Aricia agestis* ([Denis & Schiffermüller], 1775)		Photographed
Lycaenidae	Polyommatinae	*Leptotes plinius* (Fabricius, 1793)		Observed
Lycaenidae	Polyommatinae	*Celastrina huegeli* (Moore, 1882)		Photographed
Lycaenidae	Polyommatinae	*Celastrina argiolus* (Linnaeus, 1758)		Photographed
Lycaenidae	Polyommatinae	*Prosotas nora* (C. Felder, 1860)	Sch-II	Observed
Lycaenidae	Polyommatinae	*Celastrina gigas* (Hemming, 1928)		Observed
Lycaenidae	Polyommatinae	*Jamides bochus* (Stoll, [1782])		Photographed
Pieridae	Pierinae	*Pontia daplidice* (Linnaeus, 1758)		Photographed
Pieridae	Pierinae	*Delias belladonna* (Fabricius, 1793)		Photographed
Pieridae	Pierinae	*Pieris brassicae* (Linnaeus, 1758)		Photographed
Pieridae	Pierinae	*Pieris canidia* (Linnaeus, 1768)		Photographed
Pieridae	Pierinae	*Colias fieldii* Ménétriés, 1855		Photographed
Pieridae	Coliadinae	*Catopsilia pomona* (Fabricius, 1775)		Observed
Papilionidae	Papilioninae	*Graphium cloanthus* (Westwood, 1841)		Photographed
Papilionidae	Papilioninae	*Papilio polytes* Linnaeus, 1758		Observed
Papilionidae	Papilioninae	*Graphium sarpedon* (Linnaeus, 1758)		Photographed
Papilionidae	Papilioninae	*Papilio machaon* Linnaeus, 1758		Observed

Figures 4. 1-7. 1. *Aglais caschmirensis.* **2.** *Libythea myrrha.* **3.** *Symbrenthia lilaea.* **4.** *Vanessa cardui.* **5.** *Junonia iphita.* **6.** *Kaniska canace.* **7.** *Euploea mulciber.*

Figures 5. 8-14. 8. *Danaus chrysippus.* **9.** *Acraea issoria.* **10.** *Argynnis childreni.* **11.** *Rapala nissa.* **12.** *Heliophorus moorei* **13.** *Heliophorus sena.* **14.** *Lycaena phlaeas.*



Figures 6. 15-21. 15. *Aricia agestis*. **16.** *Lycaena panava*. **17.** *Celastrina argiolus*. **18.** *Celastrina huegelii*. **19.** *Jamides bochus*. **20.** *Pontia deplidice*. **21.** *Delias belladonna*.

Figures 7. 22-27. 22. *Pieris canidia.* **23.** *Pieris brassicae.* **24.** *Colias fieldii.* **25.** *Graphium cloanthus.* **26.** *Graphium sarpedon.* **27.** *Lampides boeticus*).

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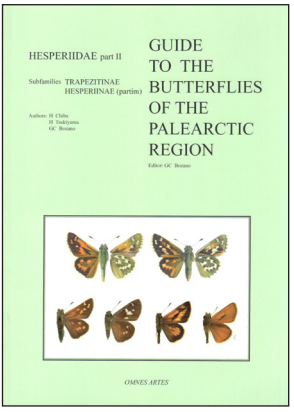
REVISIÓN DE PUBLICACIONES
BOOK REVIEWS

H. Chiba, H. Tsukiyama & G. C. Bozano
Guide to the Butterflies of the Palearctic Region: Hesperiidae part II
82 páginas
Formato 29'5 x 21 cm
Omnes Artes, Milano, 2025
ISBN: 978-88-87989-34-2



Tenemos en nuestras manos, una nueva entrega de esta interesante serie conocida como *Guide to the Butterflies of the Palearctic Region*, concretamente se trata de la segunda parte de los Hesperiidae Latreille, 1809, estudiándose las subfamilias Trapezitinae Watherhouse & Lyell, 1914 y dentro de ella la tribu Barcini Swinhoe, 1893 (con dos géneros *Barca* de Nicéville, 1902 y *Apostictopterus* Leech, 1891) y Hesperiinae Latreille, 1809 (partim) y dentro de ella la tribu Hesperiini Latreille, 1809 (con tres géneros *Thymelicus* Hübner, [1819], *Hesperia* Fabricius, 1793 y *Ochlodes* Scudder, 1872).

En esta entrega se tratan 32 especies que se encuentran en la Región Paleártica Oriental.

De todas y cada una de las especies, nos presentan la descripción original, así como de todas las sinonimias consideradas, al igual que ocurre con las subespecies que los autores consideran como válidas en este trabajo. También nos encontramos con las principales características que nos permiten diagnosticarlas, datos sobre la morfología de la genitalia del macho y, en varios casos, de la hembra (principalmente del género *Thymelicus*), interesantes notas taxonómicas, datos sobre su distribución (que podemos ver en un mapa de la región Paleártica) y las principales referencias bibliográficas consideradas.

Es importante destacar, que se presentan excelentes fotografías de los ejemplares, no sólo de la especie original, si no de un gran número de subespecies consideradas. Termina la obra con una detallada bibliografía específica, que recoge todas las referencias contempladas a lo largo del trabajo y que consideramos imprescindibles en su conjunto.

No podemos terminar estas líneas, sobre este excelente trabajo y, de la que ya podemos considerar como una serie clásica, sin felicitar a los autores por la realización de tan importante trabajo, así como a la Editorial una vez más, por su dedicación en publicar esta obra básica, que no debe de faltar en ninguna biblioteca que se precie, tanto institucional como particular. El precio de este libro es de 32 euros y los interesados lo pueden pedir a:

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