

Asociación Colombiana
de Fisiología

PROFORMA PARA ENVÍO DE RESÚMENES

VIII Congreso Colombiano de Fisiología

Esta proforma aplica para todas las personas interesadas en presentar un resumen en el VIII Congreso Colombiano de Fisiología. Todos los autores deberán diligenciar completamente la información solicitada y respetar los límites máximos de palabras establecidos para cada sección. Al momento del envío, se deberá indicar el área temática del trabajo: Fisiología Animal, Fisiología Vegetal o Fisiología Humana, así como la modalidad de participación: presencial o virtual. Los trabajos de grado de estudiantes de pregrado tendrán un tiempo de presentación de 15 minutos; las demás presentaciones dispondrán de 20 minutos. Recuerde enviar el resumen en las fechas establecidas al correo de colfisiscolombia@gmail.com

1. Área temática Marque una sola opción:

☒ Fisiología Animal

☐ Fisiología Vegetal

☐ Fisiología Humana

2. Modalidad de participación Marque una sola opción:

☒ Presencial

☐ Virtual

3. Tipo de trabajo Marque una sola opción:

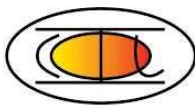
☒ Trabajo de investigación

☐ Trabajo de grado de pregrado

☐ Otro _____

4. Indicaciones para la presentación

- Los trabajos de grado de estudiantes de pregrado dispondrán de 15 minutos para la presentación.
- Las demás presentaciones dispondrán de 20 minutos.
- No se evaluarán resúmenes que no se ajusten a la estructura, límites de palabras y campos requeridos en esta proforma.



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FORMATO DILIGENCIABLE

Título en español

Cría de *Morpho helenor*: potencial para nuevas líneas de investigación

Título en inglés

Breeding *Morpho helenor*: Potential for New Research Avenues

Autores

Juliana Sosa Espinosa^{1,2}

Marco A. Giraldo¹

Sandra I. Uribe²

Afiliación institucional

¹Biophysics Group, Institute of Physics, University of Antioquia, Medellín, Colombia.

²Group of Molecular Systematics, National University of Colombia, Medellín, Colombia.

Correo del autor de correspondencia

patricia.sosa@udea.edu.co

Área temática (Animal / Vegetal / Humana)

Animal

Modalidad (Presencial / Virtual)

Presencial

Tipo de trabajo

Trabajo de investigación

Resumen en español (máx. 50 palabras)

Este estudio presenta una cría en cautiverio exitosa para mariposas *Morpho helenor*. Mediante la optimización de un protocolo previo, el proceso fue refinado para maximizar la emergencia de adultos sanos y minimizar el tiempo de desarrollo. Estos resultados destacan oportunidades para la investigación en múltiples campos y en conservación.

Abstract in English (máx. 50 palabras)

This study presents a successful captive breeding of *Morpho helenor* butterflies. By refining an existing breeding protocol, the process was optimised to maximise healthy adult emergence while minimising developmental time. These results highlight promising opportunities for research across multiple fields and in conservation strategies.

Introducción (máx. 150 palabras)

Butterflies are widely used as model organisms in animal ecology and evolutionary biology [1,2]. However, studies of their development, life cycle and instar-specific traits often rely on the establishment of reliable captive breeding processes [2–5]. These approaches are often jeopardised by pathogens and disease outbreaks, which increase mortality in immature stages and compromise experimental success [6].

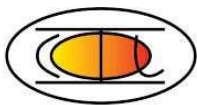
In this context, captive breeding is a key stone for both fundamental research and conservation strategies, where the objective is usually to obtain sufficient numbers of healthy adults that allow for the maintenance of their life cycle in captivity, thus enabling research.

Here, we present a case-specific and successfully optimised captive breeding process for *Morpho helenor*. We further highlight the broader research opportunities that arise from establishing a continuous viable population of this butterfly.

Métodos (máx. 150 palabras)

We carried out two experiment approaches to assess the effects of diet, breeding density, and relative humidity on larval survival and breeding efficiency in the laboratory. We compared the breeding success of larvae being fed with either *Bauhinia picta* or *Arachis pintoi*. Survival success was defined as the number of larvae reaching the pupal stage, while positive breeding outcomes were considered if larval developmental time was reduced without compromising adult quality, while also aiming for an efficient use of available resources (e.g. containers, host plant availability and maintenance effort).

The implemented breeding protocol was a optimised composite protocol, which integrated the



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established procedures extensively used at the National University of Colombia (Medellín Campus) and the Butterfly House of the Joaquín Antonio Uribe Botanical Garden. These protocols are restricted for public disclosure (unpublished).

Adult quality was evaluated based on overall viability and the absence of morphological impairments.

Resultados (máx. 250 palabras)

Our main findings show that both host plant and larval density have effect on developmental time. By carefully adjusting these parameters, we reduced the larval development time by up to 40%. Higher larval densities resulted in the shortest developmental times, particularly when compared to isolated larvae. *A. pinto* was the most efficient food source in reducing development time.

Strict control of humidity within the breeding containers was a key factor in improving breeding success. We achieved survival rates exceeding 80% by regulating relative humidity inside the breeding containers, representing a high and desirable survival rate that is unusual for Lepidoptera captive breedings. As high larval densities are desirable for increasing the breeding efficiency, our results open the possibility of expanding the research potential of captive breeding in insects, for both research and conservation purposes.

We also provide evidence of the potential inaccuracies introduced when isolating semi-gregarious larvae in life cycle duration reports. Isolating gregarious or semi-gregarious larvae to estimate instar duration and growth rates may artificially introducing bias by artificially broadening development time estimates, likely due to stress-related effects.

Finally, we highlight the importance of adapting standard breeding protocols to specific objectives and available resources, in order to improve the overall success of captive breeding programs.

Conclusiones y recomendaciones (máx. 150 palabras)

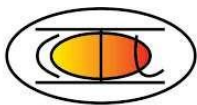
By carefully designing a standardised breeding protocol that accounts for the specific environmental conditions and biological key traits of the model species, we established a captive breeding

of *M. helenor* with a breeding efficiency exceeding 80%. This perspective suggests that case-specific, fine-tuned breeding standardization leads to successful captive breeding outcomes. Consequently, careful adaptation of breeding protocols to meet case-specific aspects of a breeding, along with their rigorous implementation, should be prioritised over replicating protocols that were standardised under different breeding contexts.

This achievement is now crucial for conducting optical and behavioural experiments that aim to assess the visual ecology of *Morpho* butterflies. Furthermore, captive breeding provides deeper insight into the ecology of this species across different life stages, while expanding the research potential in physiology, behaviour and conservation.

Bibliografía (máx. 6 referencias)

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