



REPORT OF THE NATIONAL BUTTERFLY POLL



Submitted to
The Secretary
Ministry of Environment, Forest and Climate Change
Government of India

1 January 2021

Prepared by The National Butterfly Consortium



Presented to the Ministry of Environment, Forest and Climate Change by















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CONTENTS

Executive Summary	1
Why Does India Need a National Butterfly?	2
Ecological, Ecosystem, Scientific and Technological Services	
Provided by Butterflies	3
Background on the National Butterfly Consortium and	
National Butterfly Poll	5
Bringing People Together	6
Process of Short-listing Candidates for India's National Butterfly	7
Profiles of the Seven Species Short-listed for National Poll	8
Voting by Citizens for the National Butterfly	11
A Window Into Voters in the National Butterfly Poll	14
States with Highest Votes	14
Age Structure of Voters	15
Educational and Professional Backgrounds of Voters	15
Relationships of Voters with Butterflies	16
Butterflies with Highest Votes	17
Recommendations to the MoEFCC	18
People's Top Three Choices for India's National Butterfly	19
Appendix	
Special Advisors	24
National Butterfly Consortium Members	24
Credits	26





EXECUTIVE SUMMARY

Butterflies are ambassadors of nature conservation, and they are important biological indicators that reflect the health of our environment. To celebrate these national natural treasures, members of the National Butterfly Consortium, which was formed for this specific purpose from a broad spectrum of nature enthusiasts, educators, scientists and conservationists, organized a National Butterfly Poll in September-October 2020. Citizens of India from a broad swath of cultural, social, educational and occupational backgrounds voted for the National Butterfly in overwhelming numbers. The Krishna Peacock (Papilio krishna) emerged as the most popular choice for India's National Butterfly, followed by the Indian Jezebel (Delias eucharis) and Orange Oakleaf (Kallima inachus). This report outlines the process and results of the National Butterfly Poll, and requests the Ministry of Environment, Forest and Climate Change to take up the worthy cause of notifying India's National Butterfly. This will promote an appreciation of our country's deep connections to its natural heritage, formally establish an icon of India's rich insect biodiversity, and create awareness about the beauty, diversity and conservation of India's splendid butterfly fauna.



WHY DOES INDIA NEED A NATIONAL BUTTERFLY?

Butterflies unite all of humanity in their love for these colourful creatures, and they bring joy to young and old alike. They inspire cultures, art and fashion, powerfully symbolizing the inherent quest for spiritual growth as represented by the metamorphosis of a modest caterpillar into a resplendent butterfly; but nonetheless inspiring at every stage. Butterflies are also important biological indicators that reflect the health of our environment; and function as ambassadors of nature conservation. Thus, butterflies are an apt symbol for the character of India, from the nation's ancient spiritual moorings to its modern transformative ambitions in education, scientific research and technology.

During this transformation, India has maintained its strong commitment to culture, nature, biodiversity, and the environment, signing major national legislation such as The Biological Diversity Act, 2002, and international treaties such as the Convention on Biological Diversity and Paris Agreement. It has invested in setting up long-term ecological observatories and other programmes to tackle climate change and biodiversity conservation. Notifying a National Butterfly will further send a positive message of care for the environment, and of pride in our biological heritage. Butterflies, along with the flowers they visit, are often the first wild things that captivate the attention of a child, instilling a lifelong love for nature and, by extension, conservation. A National Butterfly will strengthen this connection.

Finally, although invertebrates comprise the majority of India's biodiversity, no national symbol currently represents them. A National Butterfly, as an apt and attractive flagship species, will commemorate the rich diversity of insects.



ECOLOGICAL, ECOSYSTEM, SCIENTIFIC AND TECHNOLOGICAL SERVICES PROVIDED BY BUTTERFLIES

- Butterflies help pollinate many wild and cultivated plants.
- They are an important part of the food chain, keeping plants in check, and in turn feeding a large population of predators such as spiders, lizards and birds. Thousands of species of insect parasitoids survive exclusively on eggs, caterpillars and pupae of butterflies.
- Their interaction with plants has led to such spectacular adaptations as production of nectar to reward pollinators, and secondary compounds as plant defenses against caterpillars. Many of these secondary compounds are important in traditional and modern medicine.
- Some of the chemically well-defended butterflies have recently shown anti-cancer properties. The potential to develop bio-inspired medicine from such species has not yet been fully explored.
- Nanostructures in the scales of butterfly wings, which produce many
 of their brilliant colour patterns, have recently inspired commercially
 successful iridescent and multi-coloured cosmetics and paints.
 Ongoing research in physics and engineering labs suggests that such
 nanostructures may also be helpful in developing other products for
 the 21st century.
- Early studies focused on butterflies and birds were important to understand the impacts of climate change on distributional ranges, breeding seasons, population dynamics and interspecific interactions of organisms. These studies revolutionized aspects of ecological and climate change research.





Indian Nawab (Charaxes bharata)



BACKGROUND ON THE NATIONAL BUTTERFLY CONSORTIUM AND NATIONAL BUTTERFLY POLL

India is one of the 17 megadiverse countries of the world, hosting four globally recognized biodiversity hotspots. It is home to over 1,400 species of butterflies, many of which are endemic to India's biodiversity hotspots in the Western Ghats, Himalaya, NE India, and Andaman-Nicobar Islands. Hundreds of butterfly species are also legally protected in India under various Schedules of The WildLife (Protection) Act, 1972.

To create awareness about butterflies among Indian citizens and to celebrate our national natural treasures, butterfly enthusiasts and naturelovers from all over the country came together as the National Butterfly Consortium to nominate India's National Butterfly in September 2020. India already has its National Bird (the Indian peacock), National Animal (tiger), National Tree (Indian fig tree), National Heritage Animal (the Asiatic elephant) and National Aquatic Animal (the Gangetic river dolphin), among other national icons, but not the National Butterfly. Considering the ecological importance, conservation significance, and growing popularity of butterflies among the general public, there has emerged a need in the past several years for the declaration of a National Butterfly. Addressing this much-felt aspiration as well as acknowledging this groundswell of support, the citizens of India in September-October 2020 participated enthusiastically in a nation-wide effort in a truly democratic fashion, spear-headed by leading scientists and experts in the country. Read further about the Consortium and the Poll at: https://www.facebook.com/National-Butterfly-Campaign-111639317349078.



BRINGING PEOPLE TOGETHER

In the past two decades or so, national institutions as well as citizen groups interested in nature have made major strides in documenting the diversity, natural history, biology and conservation significance of butterflies. It is now widely recognized that India is one of the key regions for preserving global butterfly diversity. Over the past several years, thousands of butterfly enthusiasts, naturalists, educators, conservationists, and scientists in the country have made considerable efforts to popularize butterfly-watching as a hobby among the general public, and their conservation among the conservation community. Various state Forest Departments as well as other regional and local institutions and citizen groups have organized Butterfly Festivals and other events focused on the observation, documentation, and conservation of butterfly diversity. Notable events in New Delhi, Kolkata, Bhopal, Mumbai, and Bengaluru were supported by the Karnataka Forest Department, NatureMates Nature Club, Bombay Natural History Society, National Centre for Biological Sciences, and others (see the full list of institutional organizers and supporters in the end).

Starting with Maharashtra in 2016, several states such as Kerala, Karnataka, Tamil Nadu, Uttarakhand, and Arunachal Pradesh have also declared their State Butterflies, with other states making efforts to do so. These activities were crowned in September 2020 by over 50 regional organizations and thousands of people coming together to celebrate the Big Butterfly Month. These efforts snow-balled into the formation of the **National Butterfly Consortium** to nominate India's National Butterfly. The Consortium included members of many of India's prominent national organizations and institutions working in the area of biodiversity research, education and conservation.



PROCESS OF SHORT-LISTING CANDIDATES FOR INDIA'S NATIONAL BUTTERFLY

The National Butterfly Consortium members, consisting of top butterfly scientists and other experts, educators, conservationists, and experienced naturalists, identified the following criteria for short-listing Indian butterfly species as candidates for National Butterfly:

- 1. The butterfly should have cultural, ecological and conservation significance for the nation as well as internationally.
- 2. The butterfly should be charismatic.
- 3. The butterfly should have an inherently attractive biological aspect that is engaging to the public.
- 4. The butterfly should be easily identified, observed and remembered.
- 5. The species should not have multiple forms.
- 6. The caterpillars of the butterfly should not be harmful or a pest.
- 7. The butterfly should not be too commonplace.
- 8. Species that are already designated as a State Butterfly should be avoided.

Considering the above criteria, the Consortium arrived at a list of approx. 50 butterfly species. This list was further narrowed down to the final seven species using a scoring system for voting by all the Consortium members. These seven shortlisted species, with their key features given below, were included in the National Poll to nominate India's National Butterfly.



PROFILES OF THE SEVEN BUTTERFLY SPECIES SHORTLISTED FOR THE NATIONAL POLL



1. Five-bar Swordtail (Graphium antiphates): An elegant colour pattern and an extraordinarily long sword-like tail makes this butterfly unforgettable. It occurs in the evergreen forests of the Western Ghats, E. and NE India, and the eastern Himalaya, which span three critically important biodiversity hotspots of India. Its dependence on evergreen forests and its highly seasonal nature make it a suitable candidate to highlight the need to conserve butterflies.

Info: https://www.ifoundbutterflies.org/sp/532/Graphium-antiphates



2. Indian Jezebel or Common Jezebel (Delias eucharis):

A vibrantly patterned flying jewel whose colour scheme is similar to haldi kumkum, which has considerable significance in Indian culture. This bold pattern has evolved to show off its toxic nature, which protects it against many predators. It is widely distributed in India, frequenting gardens and other lightly wooded areas.

Info: https://www.ifoundbutterflies.org/sp/514/Delias-eucharis





3. Indian Nawab or Common Nawab (Charaxes bharata,

previously known in India as Polyura athamas):
The Indian Nawab is widely distributed in moist
forests across the country, where it is easily seen. Its
robust body, powerful, fast movements, intricately
embellished underside of the wings, and the shieldlike head of its caterpillar, reflect aspects of Indian
royalty for which this group of butterflies is named.

Info: https://www.ifoundbutterflies.org/sp/571/Charaxes-bharata

4. Krishna Peacock (Papilio krishna): One of the most beautiful, large, and exceedingly charismatic swallowtail butterflies in the world. The species represents the Himalaya—its stronghold—acting as a flagship species for biodiversity and conservation in the face of climate change in this most critical biodiversity hotspot of India. The play of light on the special nanostructures on its hindwings is responsible for the brilliant blue colour patch. Its name invokes among Indian people a deep cultural connection.



Info: https://www.ifoundbutterflies.org/sp/780/Papilio-krishna

Oakleaf (Kallima inachus): The Orange Oakleaf is a large, colourful butterfly with a beautiful deep blue sheen and a striking orange band on the upper side of its wings, making it immediately recognizable. However, its underside superbly resembles a dried leaf—a masquerade that allows it





to escape predators in the moist forests of central, northern and northeastern India.

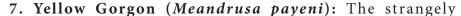
Info: https://www.ifoundbutterflies.org/sp/740/Kallima-inachus

6. Northern Junglequeen (Stichophthalma camadeva):

An extraordinarily large size, beautiful cerulean-blue upper side and striking red eyespots on its underside make this one of the most attractive butterflies in India. Being powerful, it holds its own against small predators. Although normally conspicuous, it can blend into the forest when it rests with wings folded on its back. Some of the traditional weaving patterns of Mishmi communities in Arunachal Pradesh, where it occurs widely, are inspired by the wing patterns of this butterfly.



Info: https://www.ifoundbutterflies.org/sp/953/Stichophthalma-camadeva



angled wings, large size, and bright yellow colouration of its underside make this an instantly recognizable butterfly. It has a powerful flight and a habit of rapidly flying up and down hill slopes and forest streams of the eastern Himalaya and NE India, which is an awe-inspiring sight to behold in nature.



Info: https://www.ifoundbutterflies.org/sp/1149/Meandrusa-payeni



VOTING BY CITIZENS FOR THE NATIONAL BUTTERFLY

We harnessed the power of the internet and social media to conduct a nation-wide poll for nominating the National Butterfly. With extensive publicity through national and regional newspapers, TV and radio stations, social media platforms such as Facebook and Twitter, and email lists of academic institutions, we were able to reach tens of thousands if not lakhs of people across the length and breadth of India. This included a broad swath of citizens from varied cultural, social, educational, academic, and occupational backgrounds, as evidenced by the votes that were eventually cast. National newspapers such as the Times of India, Indian Express, The Hindu, and Hindustan Times, as well as regional newspapers such as Loksatta, Maharashtra Times, Lokmat, Sakal, Vikatan, and Dinamalar carried prominent stories about the poll. A Facebook page on the poll increased its reach to an extraordinarily large online community.

An online poll (conducted at https://tiny.cc/nationalbutterflypoll) facilitated voting from 10 September to 8 October 2020, until the end of Wildlife Week. The online and email campaigns throughout this month increased participation from citizens across various walks of life, from young students to retirees, and from corporate sectors to government agencies, including forest officers and scientists, as summarized below.



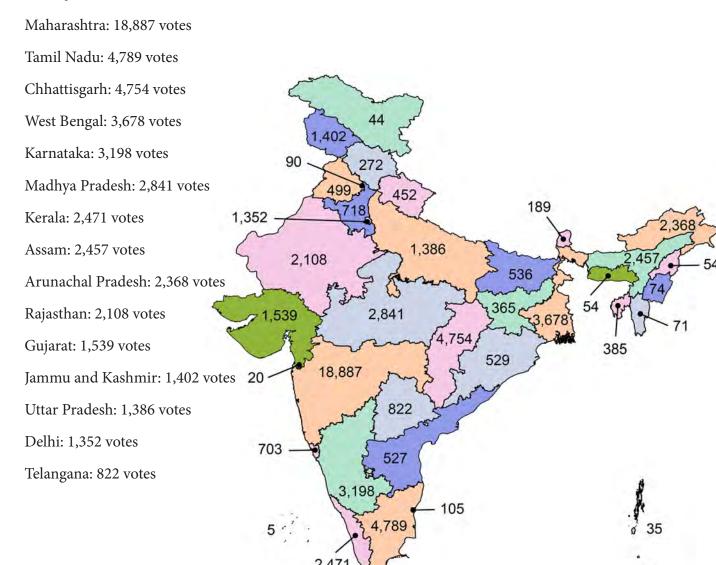




A WINDOW INTO VOTERS IN THE NATIONAL BUTTERFLY POLL

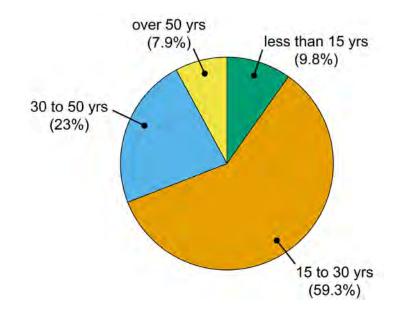
The month-long public voting yielded a significant response, with a total of 59,754 votes representing citizens from all the states and union territories of India, including Andaman-Nicobar Islands and Lakshadweep.

TOP 15 STATES WITH THE HIGHEST VOTES:



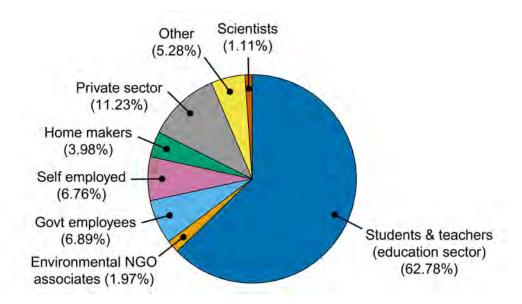


MAJORITY OF THE VOTERS WERE YOUNG: A resounding 69% of the voters were below 30 years of age, showing a very enthusiastic young population that is engaged in natural history, ecology, the environment, and nature conservation.



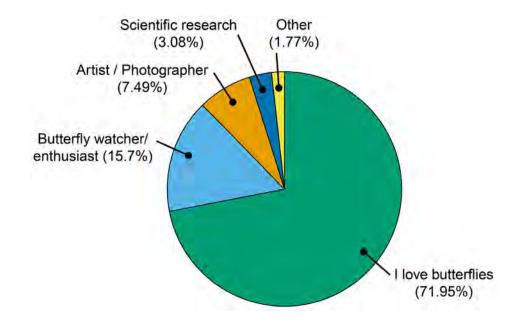
VOTERS WERE FROM A WIDE VARIETY OF EDUCATIONAL AND PROFESSIONAL

BACKGROUNDS: A majority (nearly 63%) of the voters were students and teachers (education sector), but citizens working in private sector as well as government jobs also had a strong showing. A small proportion of the voters were associated with environmental NGOs, and a smaller proportion were working scientists. Thus, voters represented a fairly broad section of Indian society.



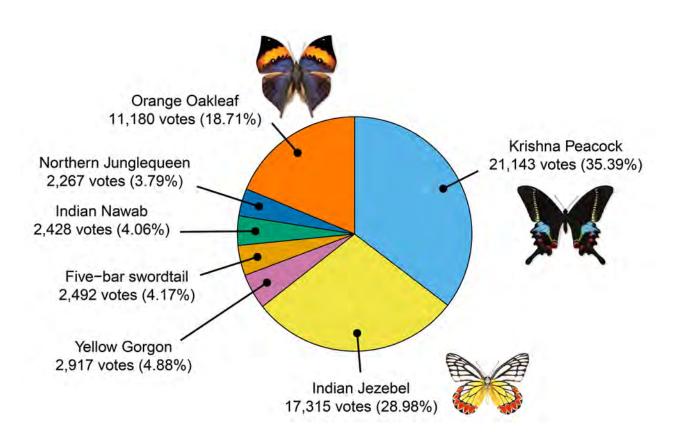


PARTICIPATED OUT OF THEIR LOVE FOR BUTTERFLIES: The majority of voters had a general interest in butterflies, borne out of love for butterflies. A significant proportion also had a more serious relationship with butterflies, as butterfly-watchers and enthusiasts. Over 10% of voters had a deeper relationship with butterflies, as artists/photographers or research scientists.





WINNER AND RUNNER-UP OF NATIONAL BUTTERFLY POLL: The magnificent Krishna Peacock won the poll by a wide majority, followed by the Indian or Common Jezebel and Orange Oakleaf. The remaining four species combined received only 17% of the total votes. Thus, there were clear front-running contenders for India's National Butterfly.





RECOMMENDATIONS TO THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

National symbols such as the National Animal and National Bird inspire a sense of unity, pride and purpose among citizens. They also highlight the strong cultural connections between India's people and its rich natural heritage. Finally, they underscore the need to ensure that our natural heritage continues to thrive and remains the spiritual core of our biodiverse nation.

With this in mind, Indian citizens voted in overwhelming numbers to nominate the National Butterfly. From a nation-wide poll that attracted broad participation from educational, research, government and private sectors, a strong top candidate emerged (Krishna Peacock; see below). It is the pleasure and privilege of the National Butterfly Consortium to place the results of this Poll before the MoEFCC. The Ministry in its role as the custodian of the ecological integrity of our country has been supportive of citizen-led initiatives and we hope for its continued support in this collective endeavour. We urge the Ministry to constitute a panel of experts from prominent national agencies and institutions such as the National Biodiversity Authority, Zoological Survey of India, Wildlife Institute of India, and National Centre for Biological Sciences, and representatives from State Forest Departments, to review these efforts and results, and notify India's National Butterfly.

Notifying a National Butterfly will bring into sharp focus India's strong commitment to the preservation of biodiversity and mitigating impacts of climate change under the Convention on Biological Diversity and Paris Agreement, towards which India has already made substantial progress. The notification will facilitate a long-term healthy engagement between nature-lovers, students, scientists, state forest departments, conservationists, policy makers, and the ecotourism industry across the nation.



People's Top Three Choices for India's National Butterfly

Krishna Peacock (Papilio krishna)

This species ranked first, with 21,143 out of 59,754 votes (35.4%)

This is an extraordinarily beautiful and charismatic swallowtail butterfly, donning deep blue and red spots framed against yellowish-green bands and resplendent green scales on its black wings. The play of light on the special nanostructures on its wings is responsible for its brilliant blue and green colour patches. Its name, derived from its black and deep blue colouration, invokes among Indian people a strong cultural connection (Lord Krishna is known for his dark, bluish complexion).





It is an attractive candidate to be India's National Butterfly not only because of its superb colouration, but also because it represents the Himalaya—its stronghold—acting as a flagship species for biodiversity and conservation in the face of climate change in this most critical biodiversity hotspot. It thus represents the Himalayan and NE regions of the country where forests, animals and people have co-existed for hundreds if not thousands of years, and where the former have deeply influenced the culture and customs of the latter. This symbolism is important for a diverse and culturally deeply rooted nation such as India.

Males and females of the Krishna Peacock look similar. However, there are two subspecies in India: (1) the subspecies known as *Papilio krishna krishna* Moore, [1858] (Himalayan Krishna Peacock) occurs in the eastern Himalaya from Darjeeling and Sikkim to Arunachal Pradesh, and (2) *Papilio krishna manipuri* Tytler, 1939 (Manipur Krishna Peacock), distinguished by a narrower blue patch on the hindwing, occurs in the Manipur-Naga Hills in NE India. Further subspecies occur in N. Myanmar, S. China and Indo-China.



ssp. krishna (Himalayan Krishna Peacock)

ssp. manipuri (Manipur Krishna Peacock)



A Report to Ministry of Environment, Forest and Climate Change Government of India



The Krishna Peacock occurs commonly along forest streams from 1,000-2,500m asl in the eastern Himalaya and NE India

It thrives in Indian landscapes where forests and rural communities co-exist, such as in Sikkim (top) and Arunachal Pradesh (bottom)

The species has a single generation per year. Adult butterflies emerge from pupae in early May, and fly until early June. During this time they are commonly seen flying up and down the mountains and valleys, often visiting flowers of shrubs and trees, from which they take nectar. Males often settle on wet soil, sipping salts and other nutrients dissolved in water of mountain streams.

Females lay pale yellowish-green, round eggs on the kanukpa tree (Euodia fraxinifolia; family Rutaceae), on which caterpillars subsequently feed. The pupae presumably stay dormant for a staggering nearly 10 months, from about July to early May of the next year, through the cold winter.

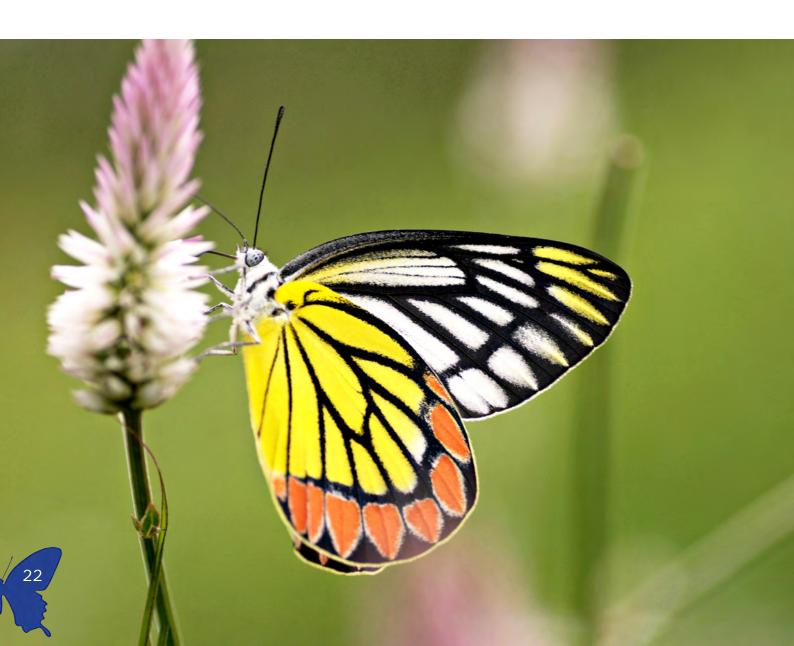
See further images and information on this species on the Butterflies of India website: https://www.ifoundbutterflies.org/sp/780/Papilio-krishna.



Indian Jezebel (Delias eucharis)

This species ranked second, with 17,315 out of 59,754 votes (29%)

This species was a suitable candidate for the National Butterfly because it is widespread in India, occurring very commonly in urban gardens and all over the countryside, where most people can see it easily. It is strikingly patterned with the haldi-kumkum colour scheme, which makes it especially appealing. Its caterpillars live gregariously and feed on mistletoes (especially Dendrophthoe falcata; family Loranthaceae). See further images and information at: https://www.ifoundbutterflies.org/sp/514/Delias-eucharis.

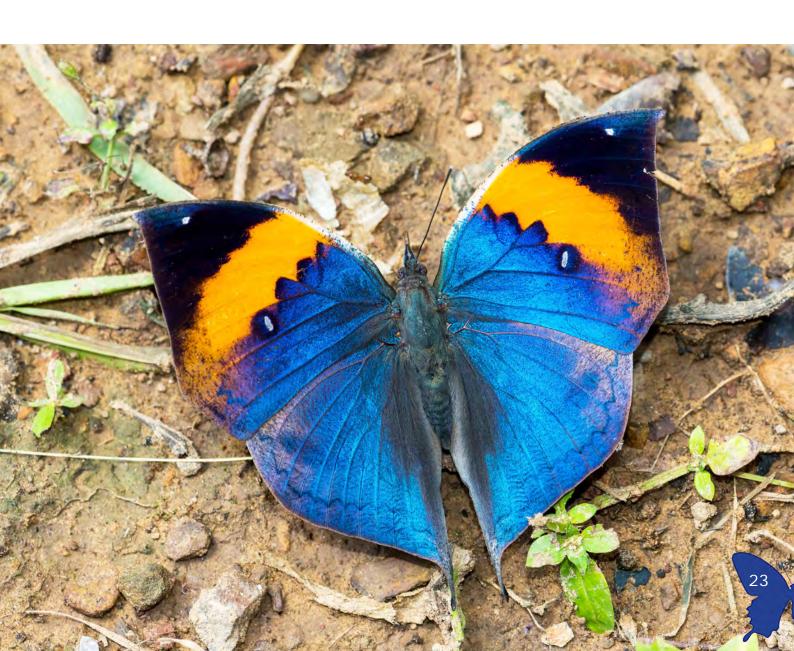




Orange Oakleaf (Kallima inachus)

This species ranked third, with 11,180 out of 59,754 votes (18.7%)

This species was an attractive candidate because it is brilliantly colourful and distinctive on the upper side. Interestingly, it looks remarkably like a dried leaf on the underside, helping it blend in its forested habitats in the Himalaya and NE India, extending southward to hill ranges of central India. Its caterpillars feed primarily on the leaves of relatives of acanthus (especially species of *Strobilanthes*; family Acanthaceae). See further images and information at: https://www.ifoundbutterflies.org/sp/740/Kallima-inachus.





APPENDIX

SPECIAL ADVISORS

Prof. K. VijayRaghavan: Principal Scientific Adviser to the Government of India.

Dr. V. B. Mathur: Chairperson, National Biodiversity Authority, Chennai.

Dr. Kailash Chandra: Director, Zoological Survey of India, Kolkata.

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Prof. Karthikeyan Vasudevan: Senior Principal Scientist, CSIR-Centre for Cellular & Molecular Biology, Hyderabad.

Prof. Camille Parmesan: Plymouth University, UK; and CNRS and University Paul-Sabatier, France.

NATIONAL BUTTERFLY CONSORTIUM MEMBERS

List of participants who helped define criteria for short-listing and identified approx. 50 species for the National Poll. They are listed here in alphabetical order, as surname, first name, designation, and affiliation.

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- 7. Churi, Paresh: Director, Breathingroots Pvt Ltd., Maharashtra.
- 8. Dasgupta, Judhajit: Journalist, ABP Pvt. Ltd., West Bengal.
- 9. Gachhui, Ratan: Professor of Life Sciences & Biotechnology Jadhavpur University, West Bengal.
- 10. Haneesh, K. M.: Member, Bangalore Butterfly Club, Karnataka.
- 11. Dr. Irungbam, Jatishwor Singh: Researcher, Institute of Entomology, Biology Center, Czech Republic.
- 12. Karmakar, Tarun: Curatorial Assistant, National Centre for Biological Sciences, TIFR, Bengaluru; and Member, Indian Foundation for Butterflies.
- 13. Madan, Sohail: Centre Manager of CEC-BNHS, Bombay Natural History Society, New Delhi.
- 14. Mhatre, Sarang: Butterfly Expert, Madhya Pradesh Forest Department.
- 15. Ogale, Hemant: Naturalist, Whistling Woods, Amboli, Maharashtra; and Member, Indian Foundation for Butterflies.
- 16. Pandey, Ratindra: Manager, Uttar Pradesh State Tourism Development Corporation.
- 17. Dr. Patwardhan, Amol: Secretary, Hope Nature Trust, Thane, Maharashtra.
- 18. Pertin, Minom: Deputy Director, Society for Education & Environmental Development, Arunachal Pradesh.
- 19. Rangnekar, Parag: President, Foundation for Environment Research and Conservation, Goa.
- 20. Roy, Arjan Basu: Secretary, NatureMates Nature Club, West Bengal.
- 21. Dr. Sadasivan, Kalesh: Research Associate, Travancore Nature History Society, Kerala.



- 22. Sarkar, Vivek: Research Assistant, Wildlife Institute of India, Dehra Dun, Uttarakhand; and Member, Indian Foundation for Butterflies.
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- **26. Shetty, Sammilan:** Conservationist and Founder, Butterfly Park, Belvai, Karnataka.
- 27. Singh, Saurab: Director, Jashpur Wildlife Welfare Foundation, Chhattisgarh.
- 28. Sondhi, Sanjay: Trustee, Titli Trust, Dehra Dun, Uttarakhand.
- 29. Dr. Subramanian, K. A.: Scientist-E, Officer-in-Charge, Southern Regional Centre, Zoological Survey of India, Chennai, Tamil Nadu.
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Krushnamegh Kunte: Cover, Contents, facing page from p. 1, p. 4, p. 8 (top), p. 9 (top), p. 10 (all), pp. 12-13, p. 20, p. 21, p. 27, and back cover.

Arjan Basu Roy: p. 9 (middle), p. 19.

Divakar Thombre: p. 8 (bottom), p. 9 (bottom), p. 22, p. 23.

Other credits:

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