

NATURE EDUCATIONAL MATERIALS

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OVERVIEW

In past one year we developed range of educational materials, some of them are completed and few are underprocess. We showcase our works done for United Way Mumbai, Sanjay Gandhi National Park and ISKON.

Works include book field guide, folding field guide, outdoor exhibits, Butterfly garden and tree signage.

EXHIBITS ON BIRDS AND BUTTERFLIES FOR ISKON

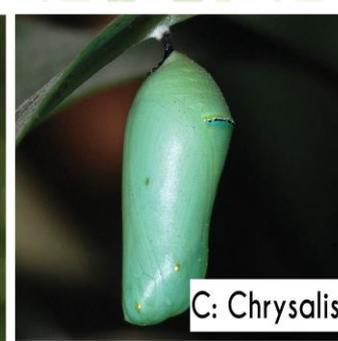
We worked on enhancing the bird and butterfly diversity at ISKON's Govardhan Eco-village in Maharashtra. The works involved in conducting butterfly and bird surveys and based on the data educational exhibits and field guide were developed. Here is a sample of 15 outdoor exhibits.



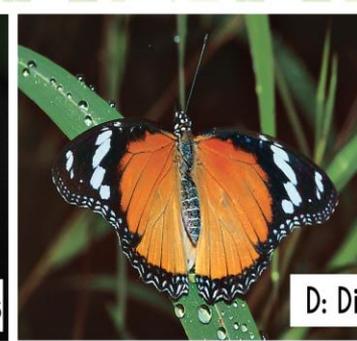
A: Antennae



B: Brimstone Butterfly



C: Chrysalis



D: Dimorphism



E: Eggs



F: Flight period



G: Grass Jewel



H: Hostplant



I: Instar

A-Z OF BUTTERFLIES



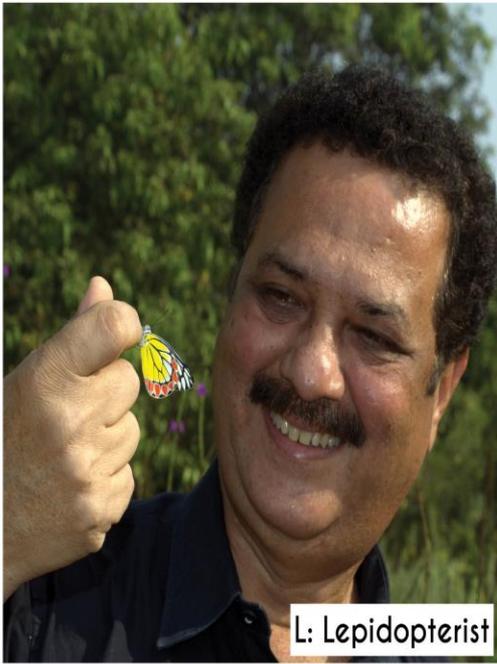
GOVARDHAN
ECO VILLAGE

A: Antennae of butterflies are mostly clubbed | **B: Butterfly** term was coined from Brimstone butterfly which is butter coloured | **C: Chrysalis** is non-feeding and immobile stage in butterfly lifecycle | **D: Dimorphism** means males and females look different. | **E: Eggs** are tiny, beautifully patterned and always laid on specific hostplants. | **F: Flight period** is defined as a season when a butterfly is seen on wing | **G: Grass Jewel** is the smallest butterfly of India, measuring 1.5 cm across. | **H: Hostplant** is a plant on which the butterfly chooses to lay her eggs. | **I: Instar** is a phase between two periods of moulting in the caterpillars.

A. फुलपाखरांच्या शृंगिका (एंटीना) बहुधा गोल्फ साठी वापरल्या जाणाऱ्या दंडुकाच्या आकाराच्या असतात. **B.** फुलपाखराचे इंग्रजी नाव 'बटरफ्लाय' हे नाव बटर (लोणी) च्या रंगाचे 'ब्रिम्स्टोन बटरफ्लाय' या फुलपाखरावरून पडले आहे. **C.** कोशावस्था (क्रिसेसीस) ही फुलपाखराच्या जीवनातील निष्क्रिय अवस्था आहे. या अवस्थेत ते काही खात-पीत नाही. **D.** द्विरूपता (Dimorphism) म्हणजे नर आणि मादी वेगवेगळे दिसतात. **E.** सुंदर आकृतीबंध असलेली लहान अंडी नेहमी विशिष्ट पोषक वनस्पतींवरच घातली जातात. **F.** तो ऋतु जेव्हा फुलपाखरे उडताना दिसतात म्हणजे उड्डाणाची अवधी होय. **G.** ग्रास ज्वेल भारतातील सर्वात लहान फुलपाखर असून त्याचा पंखविस्तार १.५ सेमी आहे. **H.** पोषक वनस्पती म्हणजे ती वनस्पती जी फुलपाखर त्याची अंडी घालण्यास निवडते. **I.** विकासरूप (इन्स्टार) ही कात टाकण्याच्या दोन कालखंडांच्यामधील अवस्था आहे.



J: Jointed Legs



L: Lepidopterist



M: Mudpuddling



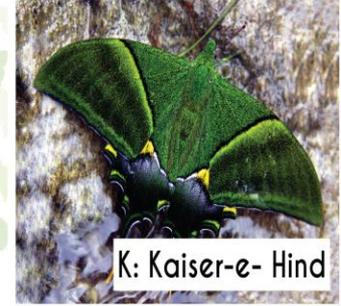
N: Nectarplant



O: Osmeterium



P: Proboscis



K: Kaiser-e- Hind



Q: Queen Alexandra's birdwing

J: Jointed Legs is a feature of insect which is shared by butterflies, they have six legs. | **K: Kaiser-e- Hind** is rare and threatened butterfly found in Himalaya and Northeast India. | **L: Lepidopterist** is the person who studies butterflies, it is derived from the group name-Lepidoptera. | **M: Mudpuddling** is a behaviour of male butterflies who visit damp soil areas to collect salts. | **N: Nectarplant** is a plant that adult butterflies use for feeding purpose. | **O: Osmeterium** is a defensive gland present in all swallowtail caterpillars. | **P: Proboscis** is coiled feeding tube of a butterfly. | **Q: Queen Alexandra's birdwing**, is world's largest butterfly from Papua New Guinea, measuring 25 cm.

J: संयुक्त पाय असणे हे कीटकांचे वैशिष्ट्य आहे जे फुलपाखरांमध्ये ही आढळते. त्यांना सहा पाय असतात. **K:** कैसर-ए-हिंद हे दुर्मिळ आणि धोक्यात असलेले फुलपाखरू हिमालय आणि ईशान्य भारतात आढळते.

L: लेपिडोप्टेरिस्ट म्हणजे पतंग व फुलपाखरे यांचा अभ्यास करणारी व्यक्ती. हा शब्द लेपिडोप्टेरा (पतंगवर्गी) या शब्दातून आला आहे. **M:** नर फुलपाखरे ओल्या मातीत क्षार जमा करण्यासाठी एकत्रित होतात. **N:** मधुरस वन-स्पतींचा उपयोग फुलपाखरे अन्नासाठी करतात. **O:** ऑसमेटेरियम संरक्षण ग्रंथी सर्व स्त्रॉलोटेले अळ्यांमध्ये आढळते. **P:** प्रोबोसिस ही फुलपाखराची गुंडाळलेली सोंडे आहे. **Q:** पापुआ न्यू गिनीतले क्वीन अलेक्सान्द्रा बर्डविंग जगातील सर्वात मोठे फुलपाखरू आहे. त्याचा पंखविस्तार 25 सें.मी. आहे.



R: Redeye



S: Southern Birdwing



T: Tailed Jay



U: Underside & Upperside wing



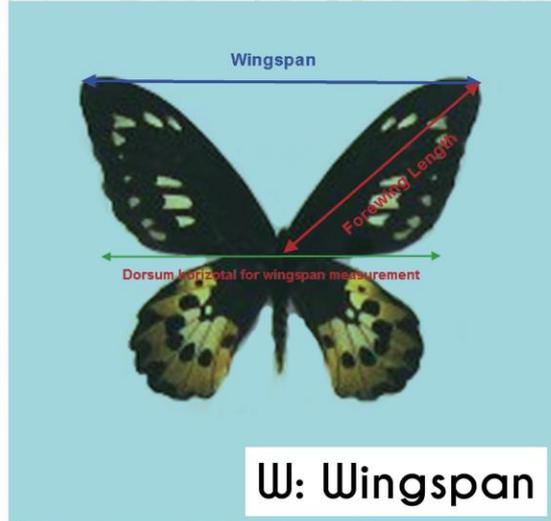
R: Redeye is a group of skippers who are forest denizens and all sport large red eyes | **S: Southern Birdwing** is the largest butterfly of India measuring 19 cm across. | **T: Tailed Jay** is a city butterfly and never sits still on a flower | **U: Underside and Upperside wing** colouration is an important identification tool.

R: रेड आय हा स्किप्पर फुलपाखरांचा गट आहे ज्याला मोठे लाल डोळे असतात. **S:** सदरन बर्डविंग हे भारतातील सर्वात मोठे फुलपाखरू आहे. त्याचा पंखविस्तार १९ से.मी. लांब आहे. **T:** टेल्ड जे हे शहरी भागात आढळणारे फुलपाखरू आहे. ते कधीही फुलावर स्थिर बसत नाही. **U:** पंखांच्या वरच्या आणि खालच्या बाजूचा रंग हे फुलपाखरे ओळखण्यासाठीचे महत्वपूर्ण सुगावे आहेत.

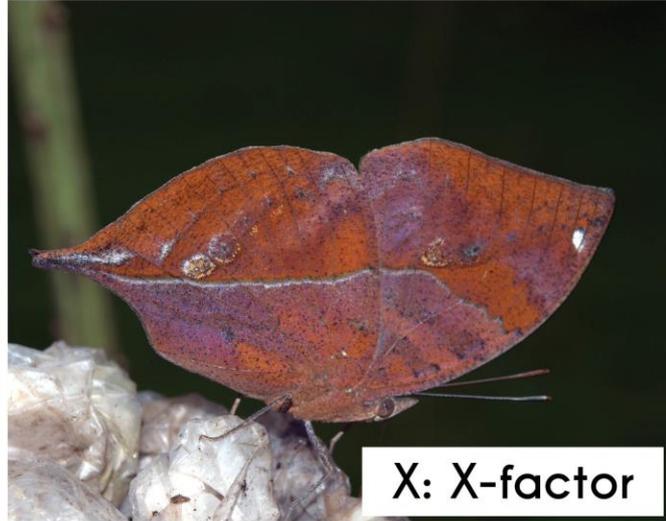




V: Veins



W: Wingspan



X: X-factor



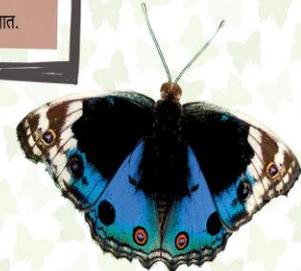
Y: Young of a butterfly



Z: Zebra Blue

V: Veins of butterfly wings provides support as well as nourishment | **W: Wingspan** is measured between wingtips or from thorax to forewing tip | **X: X-factor** of butterflies is their beauty and grace which sets them apart from other animals | **Y: Young** of a butterfly is a caterpillar | **Z: Zebra blue** is a tiny butterfly

V: फूलपाखराच्या पंखातील शिरा आधार आणि पोषण दोन्ही देतात. **W:** पंख विस्तार हे दोन पंखांच्या टेकामधले किंवा छातीपासून पुढच्या पंखांच्या टोकापर्यंत मोजले जाते. **X:** फुलपाखराचे अद्वितीय सौंदर्य आणि त्यांचा नाजुकपणा त्यांना अन्य प्राण्यांपासून वेगळे करतो. **Y:** अळी ही फुलपाखराची लहानपणाची अवस्था आहे. **Z:** झेब्रा ब्ल्यू काळ्या आणि पांढऱे पट्ट्या असणारे एक लहान फुलपाखरू आहे.



Blues (ब्ल्यूस) (380 species/9 species)

Small and often brilliantly colored-iridescent blues. Most of these sport a 'false head' to distract a predator's attention to a lesser vulnerable area.

लहान आणि बरेचदा चकचकीत इंद्रधनुषी निळे रंग असलेले. काही फुलपाखरांमध्ये पंखाचे खालचे टोक डेक्यासारखे दिसते जेणे करून भक्षकाचे लक्ष त्याच्या डेक्या एवजी पंखाच्या खोऱ्या डेक्या कडे जाते.

Swallowtails (स्वॉलोटेल्स) (101 species / 8 species)

Beautiful and usually large bodied known for their brilliant colouration. Some are distasteful to birds while some mimic them and remain protected.

मोठ्या आकाराचे आकर्षक आणि त्यांच्या निरनिराळ्या रंगांसाठी प्रसिद्ध असणारे फुलपाखरू. काही जण पक्ष्यांसाठी बेचव असतात तर काही त्यांची नक्कल करून



BUTTERFLY FAMILY

फुलपाखरांचे कुटुंब

Out of 1501 butterfly species known from India, 64 were recorded at GEV. Learn more about them. भारतात आढळणाऱ्या फुलपाखरांच्या १५०१ प्रजातीं मधील ६४ प्रजातींची नोंद गोवर्धन पर्यावरण सुसंगतग्राम मध्ये झाली आहे. त्यांच्याबद्दल अधिक जाणून घ्या.

Brush-Footed (ब्रशफुटेड) (461 species / 24 species)

Largest group of butterflies of variable sizes. Besides nectar, some adults feed on decomposing plant and animal matter.

फुलपाखरांचा सर्वात मोठा गट. काही फुलपाखरे मधुरसाच्या व्यतिरिक्त कुजत पडलेल्या वनस्पती आणि प्राण्यांतून पोषक तत्त्व घेतात.

Whites and Yellows (पांढरी आणि पिवळी) (92 species/11 species)

Dominant group of medium-sized all-season butterflies. Males and females may look different. Males indulge in mudpuddling in large numbers.

मध्यम आकाराच्या बारमाही फुलपाखरांचे प्रमुख गट. नर आणि मादी भिन्न दिसू शकतात. नर फुलपाखरे मोठ्या संख्येने ओल्या मातीत शार जमा करण्यासाठी एकत्रित होतात.

Punches & Judies (पंचेस आणि जुडीस) (20 species/0 species)

Small to medium sized butterflies with small metallic spots on their wings. Some sit with partly open wings. Some feed on decomposing plant and animal matter.

पंखांवर छोटे - छोटे धातूसारखे टिपके असणारी लहान ते मध्य आकाराची फुलपाखरे. काही अर्धवट उघडे पंख घेऊन बसतात. काही फुलपाखरे कुजत पडलेल्या वनस्पती आणि प्राण्यांतून पोषक तत्त्व घेतात.

TOP 10 BUTTERFLIES OF GEV (गोवर्धन पर्यावरण सुसंगतग्राम मधील टॉप १० फुलपाखरे)

Of the 60 species recorded at GEV, here are top 10 butterflies.

गोवर्धन पर्यावरण सुसंगतग्राम मध्ये नोंद झालेल्या ६० प्रजाती मधील टॉप १० फुलपाखरे.

1. Blue Mormon

State butterfly of Maharashtra. Hill butterfly that locally migrates to foothills during monsoon. Caterpillar feeds on lemon plants.

महाराष्ट्राचे राज्य फुलपाखर. एरवी डोंगरावर राहणारी ही फुलपाखरे पावसाळ्यात डोंगराच्या पायथ्याशी आणि समवृत्ती स्थलांतर करतात. अळी लिंबाच्या झाडाची पाने खाते.



ब्ल्यू मॉर्मॉन
Wingspan 120-140 mm

2. Common Mormon

Commonest swallowtail, female mimics two distasteful butterflies; Crimson Rose and Common Rose. Caterpillar feeds on curryleaf and lemon plants.

स्वॉलोटेल्स मधील सर्वत्र आढळणार. यांची मादी दोन बेचव फुलपाखरांची नकल करते - क्रिमसन रोज आणि कॉमन रोज. अळी कढीपत्ता आणि लिंबाची पाने खाते.



कॉमन मॉर्मॉन ♀
Wingspan 70-115 mm

3. Common Crow

Dullest among the group. Seen patrolling its territory with hairpencils. Caterpillar feeds on Banyan and Peepal trees.

आपल्या गटातील सर्वात फिकट रंगाचा सदस्य. आपल्या क्षेत्राची ते शरीरातील (ब्रश-सारखे एक अवयव) हेयर-पेंसिल्सच्या मदतीने टाहकणी करत असतात. अळी पिंपळ व वडाची पाने खाते.



कॉमन क्रो
Wingspan 80-90 mm

4. Plain Tiger

Commonest Milkweed seen hovering around Giant Milkweed plant where it lays its eggs. Young caterpillars create trenches on leaves to drain the poisonous sap.

रुईच्या झाडांवर धिरट्या घालणारे मिल्कवीड प्रजातीतील सर्वसामान्य फुलपाखर. ते ह्या झाडावर अंडी घालतात. विचारी द्रव्य काढून टाकण्यासाठी अळ्या पानांवर चरे तयार करतात.



प्लेन टायगर
Wingspan 70-80 mm

5. Golden Angel

Aptly named for its golden sheen on its wings. Body colours varies with dry and wet months. Caterpillars feed on various plants by creating a leaf shelter.

पंखांवर सोनेरी चमक असल्यामुळे योग्य इंग्रजी नाव पडले आहे. पावसाळा आणि उन्हाळा, यावर शरीराचा रंग अवलंबून असतो. पानांच्या गुंडळीत राहून अळ्या विविध झाडांची पाने खातात.



गोल्डन एंजेल
Wingspan 35-45 mm

6. Yellow Orange Tip

Brightly coloured butterfly where females lack the orange patch. Caterpillars remain well camouflaged on Caper host plants.

चकचकीत रंगीत फुलपाखरांच्या या प्रजातीत मादांमध्ये नारींगी ठिगळ नसतो. अळ्या आपल्या पोषक वनस्पती मासतोडी वर छद्मवेश करून राहतात.



येलो ऑरेंज टिप ♂
Wingspan 50-55 mm

7. Common Wanderer

Fast-flying butterfly, female mimics the distasteful glassy tiger butterfly. Caterpillar similar to Yellow Orange Tip.

हे वेगाने उडणारे फुलपाखर आहे. मादी बेचव ग्लासी टायगर फुलपाखराची तंतोतंत नकल करते. याची अळी येलो ऑरेंज टिप सारखी असते.



कॉमन वॉन्डरर ♂
Wingspan 65-80 mm

8. Common Jezebel

Colourful butterfly that lays eggs on Mistletoe—a parasitic plant seen growing on other trees. Caterpillars feed in groups and pupae are brightly yellow.

अन्य झाडांवर वाढणार्या परजीवी वनस्पती बांडुगुळवर अंडी देणारे रंगीत फुलपाखर. अळ्या एकत्र खातात आणि कोश चमकदार पिवळे असते.



कॉमन जेझेबेल
Wingspan 65-85 mm

9. Baronet

Fast-flying bright butterfly which never visits flowers. Usually seen sitting on rocks. Caterpillar feeds on East Indian ebony tree.

फुलांवर कधीच न बसणारे वेगाने उडणारे चकचकीत फुलपाखर. सामान्यतया दगडावर बसलेली दिसतात. अळी तेंदुच्या झाडाची पाने खाते.



बैरोनेट
Wingspan 50-60 mm

10. Monkey Puzzle

Brilliantly coloured small butterfly. Adorns false head at the lower wing tip to fool the predator. Caterpillar remains well camouflaged while feeding on Ixora plants.

चकचकीत रंगीत लहान फुलपाखर. भक्षकाला फसवण्यासाठी पंखाचे खालचे टोक खोटा डोक्यासारखे दिसते. अळी एकसुराची पाने खाताना झाडावर लपून राहते.



मंकी पझल
Wingspan 22-30 mm

TOP 10 BUTTERFLIES OF GEV (बाह्य सभ्यता विज्ञान केंद्र, गेव)

1. Blue Morpho [Image of Blue Morpho butterfly] [Text description]	2. Common Mormon [Image of Common Mormon butterfly] [Text description]	3. Common Grouse [Image of Common Grouse butterfly] [Text description]	4. Peacock [Image of Peacock butterfly] [Text description]	5. Indian King [Image of Indian King butterfly] [Text description]
6. Common Woodcreeper [Image of Common Woodcreeper butterfly] [Text description]	7. Common Jezebel [Image of Common Jezebel butterfly] [Text description]	8. Pierrot [Image of Pierrot butterfly] [Text description]	9. Monkey Puzzle [Image of Monkey Puzzle butterfly] [Text description]	

Photo: ISAAC KEHIMKAR

Being a butterfly is nothing close to being human

फुलपाखराचे जीवन मानवासारखे सोपे नसते

Learn how hard butterflies struggle and strategies they use to remain alive

फुलपाखरे किती कठीण संघर्ष करतात आणि जिवंत राहण्यासाठी ते कुठली युक्ती वापरतात ते जाणून घ्या.



Blue Oakleaf resembles dry leaf from outside and has radiant blue inside. When chased by predator settles among dry leaves and remain invisible.



Look Like Anything But A Butterfly

ब्ल्यू ओकलीफ बाहेरून वाळलेल्या पानासारखे दिसते पण आतून मात्र चमकदार निळे असते. भक्षक जेव्हा मागे लागतात तेव्हा ते वाळलेल्या पानांमध्ये लपून बसते आणि अदृश्य राहते.

फुलपाखरू सोडून वाटेल ते दिसा!

Pupa of Mime butterfly resembles a broken twig.



माइम फुलपाखराचे कोश एखाद्या तुटलेल्या डहाळीसारखे दिसते.

Water Snowflat rests above leaves and resembles that of a bird dropping



वॉटर स्नोप्लॅट पानावर बसतो आणि पक्ष्यांच्या विष्ठेसारखा दिसतो.

Look Like Your Enemy's Shit

Early stages of Common Mormon caterpillars resembles fresh bird dropping



कॉमन मॉर्मॉनची अळी लहान असताना पक्ष्यांच्या ताऱ्या विष्ठेसारखी दिसते.

आपल्या शत्रुच्या विष्ठेसारखे दिसा!

Being A Bluffmaster
फसवणूक करणारे

Caterpillar of Great Orange Tip butterfly when threatened puffs up its head region to imitate a snake.

ग्रेट ऑरेंज टिप फुलपाखराच्या अळ्या धोका असल्यास सापासारख्या दिसण्यासाठी डोक्याचा भाग फुगवतात.



Chemical Warfare
रासयनिक युद्ध

Plain Tiger caterpillar feeds on poisonous Giant Milkweed plant and stores the poison inside its body. This makes the caterpillar, pupa and adult distasteful for birds.



प्लेन टाइगर ची अळी विषारी रुईची पाने खाते आणि त्यातील विष शरीरात साठवून ठेवते यामुळे अळी, कोश आणि फुलपाखरू पक्ष्यांसाठी बेचव होतात.

Hiring Security Services
पुरक्षा सेवा नियुक्त करणे

Caterpillar of Centaur Oak Blue secretes sugary liquid which attracts ants who feed on the secretion. They in turn protect the caterpillar from other predators.



सेंटोर ओक ब्ल्यू ची अळी साखरेसारखा द्रव तयार करते. या द्रवाला मुंग्या आकर्षित होतात. त्यांच्या बदल्यात त्या अन्य भक्षकांपासून अळीचे रक्षण करतात.

Butterfly Effect On Our Mind & Body

आपल्या मनावर आणि शरीरावर फुलपाखराने होणारा परिणाम

Butterflies
are the brand
ambassadors of our city



फुलपाखरे
ही
शहराच्या जैवविविधतेचे

biodiversity. As long as
they keep flying and they
keep fluttering around our
homes, our offices and our
parks - *all is well in
our environment* and
we should be worried if
in case they are not
around us. So how
does butterflies
help us ...

प्रतीक आहेत. जो पर्यंत ते
आपल्या घरांच्या भवती, कार्यालय
आणि उद्यानांमध्ये, उडतायत आणि
फडफडतायत तो पर्यंत आपल्या
परिसरात सर्व ठीक आहे असं
समजायचं. ते जर अवती-
भवती नसतील तर कालजी
करायची गरज आहे. तर मग
फुलपाखरे आपल्याला
कशी मदत करतात -

Check out these top 5 indirect benefits our mind and body
experiences by being in nature and having butterflies around us.

फुलपाखरांच्या भवताली आणि निसर्गाच्या सन्निध्यात राहून आपले मन
आणि शरीर ह्या ५ अप्रत्यक्ष फायद्यांचे अनुभव घेते.



Lower Blood Pressure
रक्तदाब कमी होणे



Higher Energy Levels
उच्च ऊर्जा पातळी



Less Visit To Doctors
डॉक्टरकडे कमी भेटी



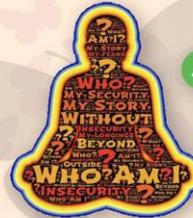
Better Immune Power
उत्तम रोगप्रतिकार शक्ती



Better Digestion
उत्तम पाचक आरोग्य



Stronger Resilience
मजबूत प्रतिरोधक्षमता



Increased Self Awareness & esteem
स्वतः बदल ची जाणीव आणि आदर

Tip on stress busting: Observe a butterfly for 1 minute and see what it does to you!

ताण निवारणाबद्दल टीप: १ मिनिटापर्यंत एका फुलपाखराचे निरीक्षण करा आणि मग पहा की तुम्हाला काय होतं ते!



Improvement in
problem solving skills
समस्या सोडवण्याचे कौशल्य सुधारणे



Positive Emotions
सकारात्मक भावना



Better Attentional Capacity
अधिक एकाग्रता क्षमता

Tip on stress busting: Observe a butterfly for 1 minute and see what it does to you!
ताण निवारणाबद्दल टीप: १ मिनिटापर्यंत एका फुलपाखराचे निरीक्षण करा आणि मग पहा की तुम्हाला काय होतं ते!



A: Anting



C: Calls



E: Eagles



G: Geese



B: Beaks



D: Dusting



F: Feathers



H: Hunting Party

A-Z OF BIRDS (पक्ष्यांबद्दल A-Z तथ्ये)

A-Anting: Bird rub ants, on their body to get rid of parasitic infections. | **B-Beak:** Multipurpose organ that varies as per the diet. | **C-Calls:** Ways of communication in bird world. e.g: Shama -the best songster. | **D-Dusting:** Bathing in dust to get rid of excess oil from feathers. | **E-Eagles:** Predatory birds with powerful beaks, claws and eyesight. | **F-Feathers:** Helps in insulation from water and cold weather. | **G-Geese:** Group of waterbirds related to ducks. e.g: Bar-headed Goose- highest-flying bird. | **H-Hunting party:** Group of insect eating birds who hunt together at different canopy levels. | **I-Indian Peacock:** National bird.

A- मुंग्या अंगाला घासणे: परजीवी संसर्गापासून मुक्त होण्यासाठी पक्षी आपल्या अंगाला मुंग्या घासतात. **B-** चोच: बहुउद्देशी आणि आहारानुसार बदलणारा अवयव **C-** साद घालणे: पक्षी जगात संवाद साधण्याचे मार्ग. शामा सर्वोत्कृष्ट गायक असतात **D-** धुळीत माखणे: पिसांमधील अतिरिक्त तेल काढून टाकण्यासाठी उदा. धुळीत आंघोळ करणे **E-** गरुड: मजबूत चोच, पंजे आणि तीक्ष्ण नजर असणारे शिकारी पक्षी **F-** पिसे: पाणी आणि थंड हवामानापासून संरक्षण करतात. **G-** हंस: बदकांशी संबंधित पाण्यात राहणाऱ्या पक्ष्यांचा गट. उदा. राजहंस-सर्वात उंच उडणारा पक्षी **H-** शिकारी पक्ष्यांची टेळी: किडे खाणाऱ्या पक्ष्यांची टेळी जी विभिन्न स्तरातील छत्रांवर शिकार करताते **I-** मोर: भारताचा राष्ट्रीय पक्षी



I: Indian Peacock



GOVARDHAN
ECO VILLAGE

Photo Credits : Graegham Wallis, Maria K. Poiri, Muthurisse, Lee Hiller, Kerry Teo



J: Jungle Fowl



L: Largest Indian Bird



N: Nests



O: Ornithology



Q: Quails



K: Kingfishers



M: Migration



P: Pale-billed Flowerpecker

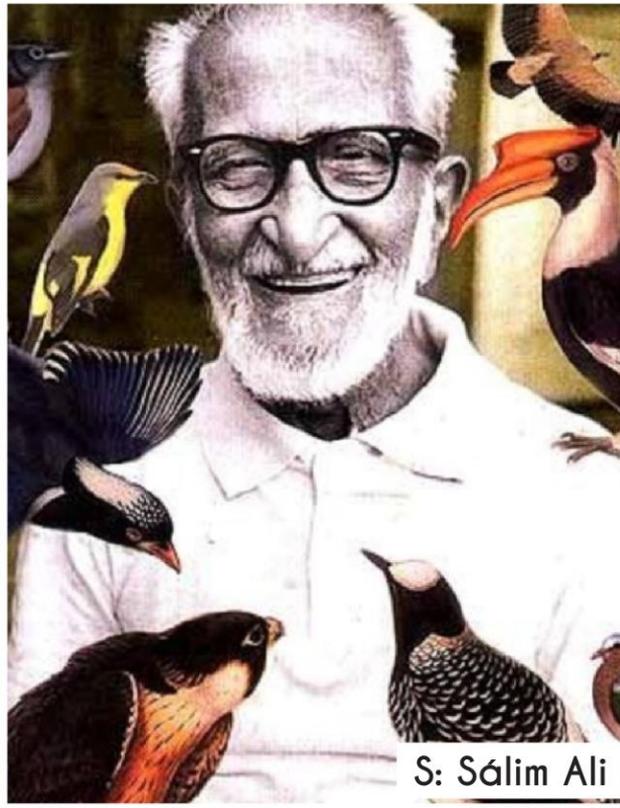
J-Jungle fowl: Wild ancestors of domestic fowl. | K-Kingfishers: Excellent fish hunters and divers. E.g. White-throated Kingfisher. | L - Largest Indian Bird: Bearded Vulture (~ 2.8 m wingspan). | M - Migration : Seasonal movement to avoid harsh weather. | N- Nests: Built to raise young. | O - Ornithology: Field of bird study. | P - Pale-billed Flowerpecker: One of the smallest birds of India (8 cm long). | Q - Quails: Stubby ground birds.

J- रान कोंबडी: कोंबडी चे जंगली पूर्वज K-धीवर: माशांची उत्कृष्ट शिकार करणारे आणि पाण्यात सुरकांडी उडी टाकणारे पक्षी उदा. पांढऱ्या छातीचा धीवर L- सर्वात मोठा भारतीय पक्षी: दाढीवाले गिधाड (~२.८ मी. पंखविस्तार) M-स्थलान्तर: असह्य हवामान टाळण्यासाठी हंगामी हालचाल N-घरटे: पिलांचे संगोपन करण्यासाठी बनवलेले आश्रय स्थल O- पक्षिशास्त्र: पक्ष्यांचा अभ्यास करणारे शास्त्र P- टिकेलचा फुलटोचा: भारतातील सर्वात लहान पक्ष्यांपैकी एक (८ सें.मी. लांब) Q- लावा पक्षी: छोटा व जाड जमिनीवरचा पक्षी. उदा. जंगली लावा

Photo Credits: Albin A. S. Seelip-Sheela, Amanda Guerrero, Mukesh Patel, TK Chitra, Vivek Rauf, Vilay Anand Hanavet, Srikanth Rajan



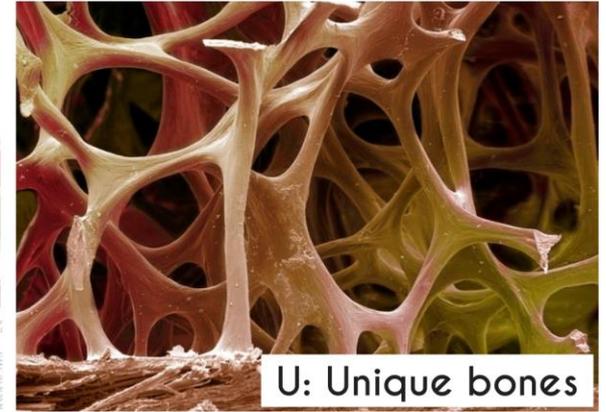
R: Roosting



S: Sálim Ali



T: Thrushes

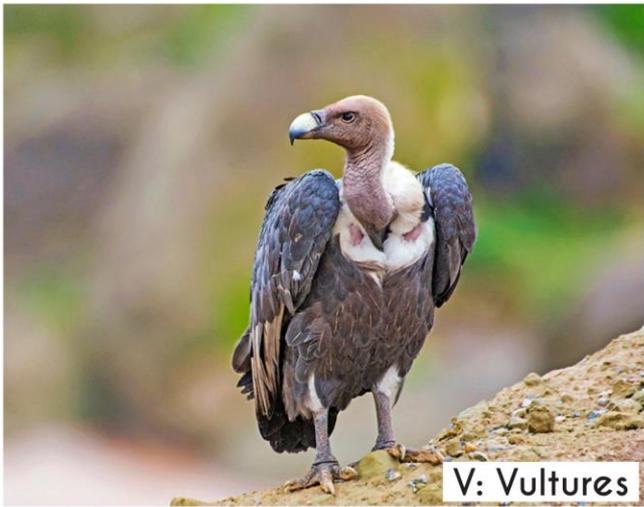


U: Unique bones



R-Roosting: Site where birds retire to at the end of the day. | **S-Sálim Ali:** India's first ornithologist to study birdlife of Indian subcontinent. | **T-Thrushes:** Some Thrushes are well-known songsters. E.g. Orange-headed Thrush | **U-Unique bones:** Hollow air filled bones of birds make them lighter.

R- रातनिवारा: ते स्थान जिथे पक्षी दिवसाच्या शेवटी येऊन विसावतो
S- सलीम अली: भारतीय उपमहाद्वीपाच्या पक्षीजीवांचा अभ्यास करणारे भारतातील प्रथम पक्षीशास्त्रज्ञ
T- कस्तूर: काही कस्तूर सुप्रसिद्ध गायक आहेत. उदा. नारिंगी डेक्याचा कस्तूर
U- पोकळ हाडे: पक्ष्यांची पोकळ हाडे त्यांना हलके बनवतात.



V: Vultures



W: Woodpeckers



X: X-factor



Y: Yellow footed Green Pigeon



Z: Zygodactylous feet

V-Vultures: Critically endangered scavenging birds E.g. White-backed Vulture | **W - Woodpeckers:** Hunt insects on tree barks with help of their strong beak and sticky tongue. | **X-X-factor:** Birds are lords of sky symbolizing freedom | **Y- Yellow-footed Green-pigeon** State bird of Maharashtra. | **Z - Zygodactylous feet:** Two toes point forwards, and two to the rear.

V- गिधाड: अत्यंत धोक्यात असलेले कुजणारे मांस खाणारा पक्षी. उदा. पांढऱ्या पुठ्याचे गिधाड **W- सुतारपक्षी:** मजबूत चोच व चिकट जीभ यांच्या मदतीने झाडाच्या फसालीवर किड्यांची शिकार करणारे पक्षी. **X- अद्वितीय घटक:** स्वातंत्र्याचे प्रतीक पक्षी आकाशाचे सरदार आहेत. **Y- पिवळ्या पायाची हरोळी:** महाराष्ट्राचा राज्य पक्षी **Z- चार बोटे असणारे पाय:** दोन बोटे पुढच्या बाजूला आणि दोन बोटे मागच्याबाजूला.

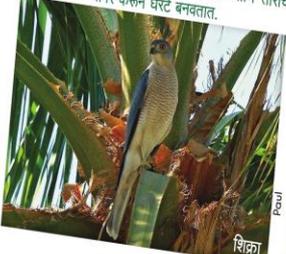
TOP 10 BIRDS OF GEV (गोवर्धन पर्यावरण सुसंगतग्राम मधले टॉप १० पक्षी)

1266 species birds found in India out of which 63 were recorded from GEV. | भारतात १२६६ पक्ष्यांच्या प्रजाती आहेत. त्यातील ६३ प्रजातींची गोवर्धन पर्यावरण सुसंगतग्राम मध्ये नोंद केली गेली आहे.

1. Shikra

Predatory bird from forests, farmland & urban areas. Powerful beak, claws & eyesight make it an excellent hunter. Feeds on small mammals, reptiles, birds and insects. Both partners make untidy nest using twigs and wires.

जंगलात, शेतात आणि शहरी भागात आढळणारा शिकारी पक्षी. मजबूत चोंच, फंजा आणि तीक्ष्ण दृष्टी त्याला उत्कृष्ट शिकारी बनवतात. छोटे सस्तन प्राणी, सरपटणारे प्राणी, पक्षी आणि किडे खातो. नर आणि मादी दोघेही डहाळी आणि तारंजा वापर करून घरटे बनवतात.



शिक्रा
30-34 cm

2. Lesser Whistling Duck

Nocturnal, aquatic bird seen around water bodies. Feeds on aquatic plants. Nests in tree holes. Produces shrill whistling calls while flying. Parents carry chicks on their back while swimming.

हे निशाचर, जलचर पक्षी, पाण्याच्या साठ्या जवळ आढळतात. पाण्यातील वनस्पती खातात आणि झाडांच्या पोकळींमध्ये घरटे बांधतात. उडकाना हे पक्षी शीळ घालतात. पोहताना पालक पिलांना पाठीवर घेतात.



Isaac Kshikar

अडई
42 cm

3. Greater Racket-tailed Drongo

Largest drongo, well-known for calls and mimicry. Prefers forest habitats. Feeds on insects and flower nectar. Aggressive, known to steal food from other birds. Builds cup-like nest inside tree fork.

सर्वात मोठा कोतवाल आपल्या आवाजासाठी आणि नकलेसाठी प्रसिद्ध आहे. जंगलात राहणे अधिक पसंत करतो. किडे आणि मधुरस खातो. हा आक्रमक असतो आणि अन्य पक्ष्यांकडून अन्न चोरू शकतो. कपाच्या आकाराचे घरटे झाडाच्या बेचक्यात बनवतो.



भृंगराज कर्तवाल
31-35 cm

4. Spotted Dove

Long tailed pigeon with spotted neck. Prefers woodland, scrub and farmland. Moves in pairs on ground looking for seeds and grains. Both partners make nest which is a cup of twigs.

जिमेदार मान आणि लांब शेपटी असलेला पारवा. जंगल, खुर्दट झाडे असलेली स्थळे आणि शेत तो अधिक पसंत करतो. बियाणे आणि धान्य शोधत जमिनीवर जोड्यांमध्ये फिरतात. दोघेही डहाळीनी कपाच्या आकाराची घरटे बनवतात.



रिपकेवाला हेलो
30 cm

5. Black-hooded Oriole

Local migrant bird. Prefers open woodland and cultivation. Nests among tree. Feeds on insects and fruits. Has a liquid flute-like call. Seen singly or in pairs, among trees.

स्थानिक स्थलांतर करणारे पक्षी. याला खूले जंगल आणि लागवडीखालील क्षेत्र आवडतात. झाडांमध्ये घरटे बांधतो. किडे आणि फळे खातो. याचा आवाज बासरी सारखा आहे. एकदा किंवा जोडीने झाडांमध्ये आढळतो.

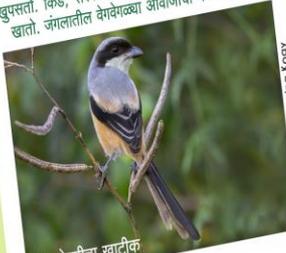


बुरखाधारी हळड्या
25 cm

6. Long tailed Shrike

Vocal predatory bird from open habitats. Impales its prey on thorns before tearing them apart with sharp beak. Feeds on insects, reptiles and small mammals. Mimics a range of forest sounds.

खुल्या अधिवासात आढळणारा गामक शिकारी पक्षी. धारदार चोंचीने फाडण्या आधी आपल्या भक्ष्याला तो काट्यात खुपसतो. किडे, सरपटणारे प्राणी आणि छोटे सस्तन प्राणी खातो. जंगलातील वेगवेगळ्या आवाजांची नकल करतो.



Zhangying Kou

लांब शेपटीचा खाटीक
25 cm

7. Indian Paradise-flycatcher

Local migrant from thick forests and well-wooded habitats. Males, females and juveniles look different. Largely feeds on insects. Both partners build neat cup nest of grass and spider webs.

घनदाट वने आणि वृक्षयुक्त अधिवासातील सुंदर स्थानिक स्थलांतर करणारे पक्षी. नर, मादी आणि तरुण भिन्न दिसतात. दोघे जोडीदार भवत आणि कोळ्यांच्या जाळ्यांनी सुबक घरटे बनवतात.



Hemir Singh

स्वर्गीय नर्तक
20 cm

8. Gold-fronted Leafbird

Well camouflaged vibrant bird. Usually found in pairs among trees hunting for insects, spiders and flower nectar. Mimic the calls of other bird species and have loud calls.

उत्तम छपवेध धरण करणारा आकर्षक पक्षी. सहसा झाडांमध्ये जोडीत किडे, कोळी आणि फुलांमधील मधुरस शोधताना दिसतो. पक्ष्यांच्या अन्य प्रजातींच्या आवाजांची नकल करतो आणि याचा आवाज मोठा असतो.



Vivek Rout

सोनकपळी जगणपक्षी
19 cm

9. Black-naped Monarch

Prefers thick forests. Feeds on insects. When alarmed, raises its crest. Builds cup nest in a tree fork decorated with spider-egg cases. Large spiders may feed on them.

घनदाट वनात आढळणारा हा पक्षी किडे खातो. धोक्याची चाहूल लागताच, तुरा वर करतो. कपाच्या आकाराचे घरटे झाडाच्या बेचकीत बनवून त्यांना कोळ्यांच्या अंड्यांच्या कोशांना सजवतात. मोठे कोळी याना खातात.



Isaac Kshikar

काळ्या मानेची आकाशी माशिमर
16 cm

10. Sahyadri Sunbird

Exclusive bird from Western Ghats. Curved bill used for nectar feeding as well on small insects and spiders. Nest purse-like hanging from a twig, ornamented with scraps of forest litter.

हे केवळ पश्चिमी घाटातील जंगलात आढळतात. मधुरस पिण्यासाठी बाक असलेल्या चोंचीचा वापर करतात आणि छोटे किडे आणि कोळी पण खातात. घरटे बटव्याच्या आकाराचे डहाळीवरून लांबकळणारे आणि जंगलातील कचरा वापरून सुशोभित केलेले असते.



Hiren Joshi

विगोरचा शिंजीर
10-15 cm

Length. लांबी.

BIRDS IN OUR CULTURE

आपल्या संस्कृतीतील पक्षी

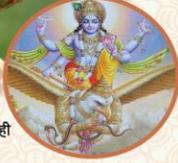
Birds have played versatile roles in Vedic tradition from messengers to carriers. Here we provide glimpses of such cultural connections with the bird world

पक्षी यांनी वैदिक परंपरेत संदेशवाहकांपासून वाहकांपर्यंत अष्टपैलू भूमिका बजावली आहे. येथे पक्ष्यांच्या अशा सांस्कृतिक संबंधांची आम्ही झलक देत आहोत

Eagle - गरूड

Garuda-vehicle of Lord Vishnu, participated in Samudra Manthan.

During chaos the eagle soars very high in sky teaching us to rise above issues and focus on the goal. E.g. Tauny Eagle



हे विष्णु भगवानचे वाहन आहे आणि समुद्रमंथनात सहभागी झाले होते. गोंधळादरम्यानही गरूड आकाशात फार उंच उडतात. तो आपल्या समस्यांमधून उचून आपल्या ध्येयाकडे लक्ष केंद्रित करण्यास शिकवतो. उदा. पिंगट गरूड

Rose Ringed Parakeet - पोपट

Vrinda devi, Mistress of Vrindavan engaged parrots to communicate confidential messages for orchestrating pastimes of Radha and Krishna. The speaker of Srimal Bhagavatam, Sukadev Goswami is personal parrot of Shrimati Radharani in Spiritual World. Also vehicle of goddess Meenakshi and Kamakshi.

वृंदावनाची अधिपती वृंदादेवी राधाकृष्णच्या रासलीलेतील वृंदावनाची तयारी

करण्यासाठी गोपनीय संदेश पाठवायला पोपटांचा वापर करीत. श्रीमद्भागवतम हे निवेदक सुखदेव गोस्वामी हे श्रीमती राधारानीचे आध्यात्मिक विश्वातील वैयक्तिक पोपट आहेत. हे देवी मिनाक्षी व देवी कामाक्षी यांचे वाहन आहे.



Peacock - मोर

एकदा कृष्णाने मोरांसोबत नृत्य केले. भेटवस्तू म्हणून त्यांनी कृष्णाला एक मोरपिस दिले. तेव्हापासून तो ते खेव्यावर धारण करून असतो. हे भगवान कार्तिकेय आणि देवी सरस्वतीचे वाहन आहे.



Kartikeya and goddess Saraswati.

Once Krishna danced with peacocks in Vrindavan and as a token of gift they gave a plume to Krishna who since then always sports it on his head. Also vehicle of lord

Vulture - गिधाड

Jatayu & Sampati from Ramayan valiantly fought with Ravana to protect Sita and helped with directions to the monkey search party to find Sita. E.g. White-backed Vulture

सामायणातील जटायू आणि संपातीने सीतेला वाचवण्यासाठी रावणाला लढविला आणि वानरांच्या सेनेला सीतेच्या शोध मोहीमेत दिशा सांगण्यात मदत केली. उदा. पांढऱ्या पुटल्याचे गिधाड



Crow - कावळा

Vehicle of Shani deva. During Sradha ceremony, rice is fed to crows who are supposed to be representing the forefathers.

हे शनीदेवतेचे वाहन आहे. श्राद्धाच्या विधीच्या वेळेस कावळांना पूर्वाजांचे प्रतिनिधी मानून भात खायला घालतात.



Owl - घुबड

Vehicle of Goddess Lakshmi. With its ability to see in the night with its big eyes, owl teaches us to see through the darkness of ignorance. Eg. Barn Owl

देवी लक्ष्मीचे वाहन. मोठ्या डोळ्यांनी रात्री पाहण्याचा त्याच्या क्षमतेमुळे घुबड आपल्याला अज्ञानाच्या अंधारातून पुढे पाहण्यास शिकवतो. उदा. जंगली पिंगळा



Symbol of love, peace or as messengers. Doves appear in the symbolism of Judaism and Christianity. E.g. Spotted Dove

Dove होला

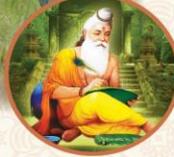
प्रेम, शांती किंवा संदेशवहनाचे प्रतीक. यांचा यहूदी व ख्रिस्ती धर्मांमध्येसुद्धा उल्लेख मिळतो. उदा. त्रिपकेवाला होला



Sarus Crane - सारस क्रौंच

Seed verse of Ramayan arose as a curse given by Valmiki to a hunter for killing a sarus crane.

एका पारध्याने सारस पक्ष्याला मारलेले पाहिल्यावर रामायणातील पहिले श्लोक वाल्मीकींच्या तोंडतून शापाच्या रूपाने उद्भवले.



Swan - हंस

Vehicle of lord Brahma and goddess Sarasvati. Has ability to separate water from milk thus teaching us to focus on and extract the essence.

भगवान ब्रह्मा व देवी सरस्वती यांचे वाहन. त्याच्यात दूधातून पाणी वेगळे करण्याची क्षमता असते. आपल्याला ह्या पक्ष्यापासून लक्ष केंद्रित करणे आणि एखाद्या गोष्टीचे सार समजून घेणे, हे शिकायला मिळते.



Koel - कोकीळ

Krishna and his friends would imitate sounds made by Koel and other birds and thus have great fun during their cow herding pastimes.

श्रीकृष्ण आणि त्यांचे मित्र कोकीळा आणि इतर पक्ष्यांच्या आवाजांचे अनुकरण करून गाई हाकताना करमणूक करायचे.

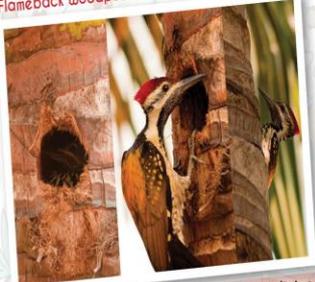


BIRD ARCHITECTURE (पक्ष्यांची वास्तुकला)

Check out ten different kinds of nest styles below (खालील दहा निरनिराळ्या प्रकारची घरटी बांधण्याच्या शैली पहा)

Black-Rumped
Flameback Woodpecker

छोटा सोनपाठी सुतार



Nest in tree cavities that are drilled into living trees.

जिवंत वृक्षामध्ये छिद्र करून पोकळीत घरटी तयार करतात.

Tailor Bird

शिंपी पक्षी



Nest is built by stitching of two leaves together using grass and spider silk, cotton is used for cushioning.

हे घरटे दोन पानांना, गवत आणि कोळ्याच्या रेशमा सोबत शिवून बनवले जाते. कापसाचा वापर गादीसारखा होतो.

Baya Weaver

सुगरण



Males skillfully weaves pendulous suspended nests made up of grass.

नर कौशल्याने गवताच्या पात्या विणून झाडावरून लोंबकळते घरटे बांधतो.

Indian Paradise-flycatcher

स्वर्गीय नर्तक



Cup shaped nests are made in tree forks using grass and spidersilk, decorated with forest litter.

गवत आणि कोळ्याच्या रेशमाचा वापर करून झाडाच्या बेचक्यात कपाच्या आकाराचे घरटे जंगलातील केवकचरा वापरून सुशोभित केले जाते.

Purple-rumped Sunbird

जामळ्या पुढ्याचा सिंजीर



Purse-shaped nest, suspended from branches with generous use of spider web, dry leaves and twigs.

कोळ्याची जाळी, कोरडी पाने आणि गवताचा उदार वापर करून बटव्याच्या आकाराचे, फांद्यांवरून लोंबकाळणारी घरटी बनवतात.

Great Hornbill

महाधनेश



Nest in natural tree cavities. Female seals herself inside the nest with a wall of mud and faeces. Male feeds her and chicks through a narrow slit in the wall.

झाडाच्या नैसर्गिक पोकळीमध्ये घरटे बांधतो. मादी स्वतःला विखल आणि विठेच्या मितीने घरच्याच्या आत कोडून घेते. नर तिला आणि पिलांना मितीतील एका अरुंद फटीतून भावतो.

Asian Green Bee-eater

वेडा राघू



Build nest over sand or mud embankment by digging a hole inside it.

वाळू किंवा मातीच्या बंधाऱ्यावर छिद्र पाडतात आणि मा बौळ करून घरटे बांधतात.

Wire-tailed Swallow

तारवाली भिंगारी



Builds painstakingly globular adherent structure using clay mud pellets mixed with saliva.

अत्यंत कष्ट करून चिकट मातीच्या गोळ्यांमध्ये लाळ मिसळून गोलाकृती घरटी बांधतात.

Pheasant-tailed Jacana

लांब शेपटीचा कमळपक्षी



Males constructs floating nest with help of grass and water plants, where he incubates the eggs.

नर, गवत आणि पाण्यातील वनस्पती वापरून तराफ्या सारखे साधे घरटे तयार करतात आणि अंडी उबवितात.

White-rumped Munia

पांढऱ्या पुढ्याची मनोली

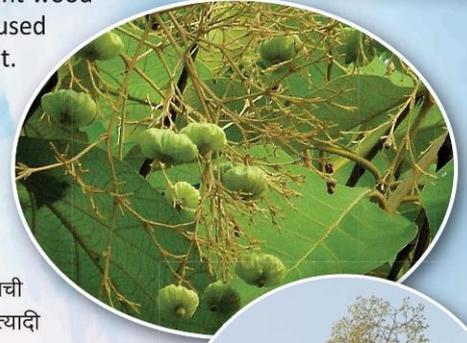


Ball like nest with small entrance built among branches, using twigs, grass strands and bamboo leaves.

डहाळी, गवत आणि बांबूची पाने वापरून छोटे प्रवेश द्वार असलेले चेंडू सारखे घरटे झाडाच्या फांद्यांमध्ये बांधतात.

Teak (*Tectona grandis*)

This is a straight, tall tree with large, rough leaves. It has small flowers pollinated by insects like black ants, horseflies, and particularly bees. Its fruit are unique since the seeds are enclosed in an inflated, bladder-like covering, which is pale green initially and brown at maturity. Its termite-resistant wood is used to construct buildings and ships. The leaves are used in packaging and yield a red dye used as a wood colourant. Its bark and flowers are used in traditional medicine. Teak defoliator – a moth caterpillar – is a pest that denudes the tree when attacking it in large numbers.



सागवान

मोठ्या आणि खरखरीत पानांचा, सरळसोट वाढणारा हा एक उंच वृक्ष आहे. याची फुले छोटी असतात आणि काळ्या मुंग्या, माश्या आणि मुख्यत्वे मधमाश्या इत्यादी किटकांमार्फत यांचे परागीभवन होते. याची फळे वैशिष्ट्यपूर्ण असतात कारण याच्या बियांवर पिशवीसारखे फुगीर आवरण असते; फिकट हिरव्या रंगाचे हे आवरण पिकल्यानंतर तपकिरी रंगाचे होते. या झाडला वाळवी लागत नाही त्यामुळे याचा वापर इमारतीच्या बांधकामासाठी आणि जहाजबांधणीसाठी होतो. याची पाने पॅकिंगसाठी वापरतात तसेच यापासून लाकडाला देण्यासाठीचा लाल रंग तयार करतात. याच्या सालीचा आणि फुलांचा वापर पारंपारिक पद्धतीने तयार होणाऱ्या औषधांमध्ये करतात. पतंगाच्या अबल्या मोठ्या प्रमाणावर पानांवर आक्रमण करतात.

The largest teak tree in the world is located in Parambikulam Tiger Reserve, Kerala. Known as Kannimara Teak, it is about 450 years old and 39.98 m tall, with an astounding girth of 7.02 m.

जगातले सगळ्यात मोठे सागाचे झाड केरळातल्या 'परंबीकुलम' या व्याघ्र प्रकल्पात आहे. कन्निरा साग, या नावाने ते ओळखले जाते. ४५० वर्षे जुने हे झाड ३९.९८ मीटर उंच असून त्याचा घेर ७.०२ मीटर इतका आहे.

SIGNAGES

- 25 Tree signages
- 29 Butterfly Garden Plant signages

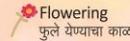
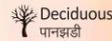






Photo: ISAAC KEHIMKAR



Miracle Leaf | पानफुटी

Kalanchoe sp.

Hostplant

1 Red Pierrot

पोचक दानरपती

1 रेड पीएरो



FOLDING FIELD GUIDE

The 5-fold field guide for Govardhan Ecovillage was developed which covered 60 species of butterflies and birds found inside Govardhan Eco-village

Another field guide was developed on Mangroves Ecosystem of Navi Mumbai for United Way Mumbai. This was developed in Hindi and English covering 42 species.

Worlds of Sky BIRDS of Govardhan Ecovillage

There are 1266 bird species found in India of which 63 are found in Govardhan Ecovillage. Check out 30 interesting birds here.

VERY SMALL BIRDS (6-12 cm)

Pale-billed Flowerpecker (*Dicaeum erythrorhynchos*)
Smallest among birds. Feeds on nectar and berries. Prefers urban gardens with berry bearing trees. Nest is small pendant purse-like structure made of cobwebs, fibre, moss, suspended from the tip of a twig.



Green Warbler (*Phylloscopus nitidus*)
Known for its amazing migration from Himalaya to Peninsula and Andaman Islands in winter. Feeds on insects including caterpillars. Nest is one among in low shrub.



White-rumped Munia (*Lonchura striata*)
Frequents open woodland, grassland and scrub, and is well adapted to agricultural lands. Feeds mainly on seeds, moving through the undergrowth in groups, often found near water and have been observed feeding on algae.



Common Iora (*Aegithina tiphia*)
Insect eating bird. Known for its long musical whistles and short chirps. During the breeding season the male performs an acrobatic courtship display, darting into the air fluffing up all his feathers, then spiraling down to the original perch.



Sahyadri Sunbird (*Aethopyga vigorsii*)
Exclusively found in evergreen and moist-deciduous forest of Western Ghats. Strongly curved bill used for nectar feeding. Also feeds on small insects, and spiders. Nest is purse-like, with patch, ornamented with scraps of forest litter, and attached to twig.



SMALL BIRDS (12-16 cm)

Jungle Owl (*Glauclimn radiatum*)
Mainly active at dawn and dusk, but is known to call and fly during daytime as well. Found on tall trees and steep hillsides. Feeds mainly on beetles and other insects.



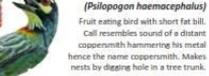
Tickell's Blue Flycatcher (*Cyornis tickellii*)
Local migrant. Males and females look different. Feed mainly by capturing insects in flight but their prey includes insects such as termites and wasps that may be gleaned or picked from the ground. Wary bird and very difficult to spot even after metallic song clearly heard.



Black-naped Monarch (*Hypothymis azurea*)
Slim and agile passerine bird. Males and female look different. Found in thick forests and other well-wooded habitats. Feeds on insects. Eggs are laid in a small cup nest in a tree.



Coppersmith Barbet (*Psilogobus haemaphysalis*)
Fruit eating bird with short fat bill. Call resembles sound of a distant coppersmith hammering his metal hoes by beating hole in a tree trunk.



Red-rumped Swallow (*Cecropis daurica*)
Insect feeding bird from open grasslands. Fast flier who catch insects while in flight. Makes mud nests over cliff edges.



MEDIUM BIRDS (16-19 cm)

Green Bee-eater (*Hirundo orientalis*)
Insectivorous bird. Known for its aerial stunts other birds and other insects snapping them in the bill and coming back to the perch.



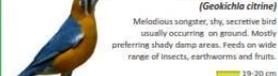
Red-whiskered Bulbul (*Pycnonotus jocosus*)
Common bird seen among hill forests as well as urban gardens. Feeds on fruits and insects. Get their English name due to a red feather on its cheek. Calls are loud and melodious.



Indian Paradise Flycatcher (*Terpsiphona paradisi*)
Handsome local migrant from thick forests and well-wooded habitats. Males, females and juveniles look different. Both partners build neat cup nest of grass and fibers plastered with cobwebs built in fork of tree.



Orange-headed Thrush (*Geothlypis citrina*)
Melodious songster, shy, secretive bird usually occurring on ground. Most preferring shady damp areas. Feeds on wide range of insects, earthworms and fruits.



Oriental Magpie-robin (*Copsychus saularis*)
Common bird in urban gardens as well as forests. Particularly well known for their songs. Feeds on insects. Males and females look different. Female builds the grass lined nests almost anywhere from thick shrubs, in the fork of trees.

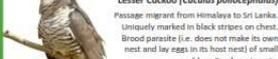


AVERAGE BIRDS (20-26 cm)

Long-tailed Shrike (*Lanius schach*)
Highly vocal predatory bird of scrub and open habitats. Impales its prey on thorns before tearing them apart with sharp beak. Master of mimicry which are limited to bird calls. Mainly feeds on large insects, small reptiles and mammals.



Lesser Cuckoo (*Curculius poliocephalus*)
Passage migrant from Himalaya to on Lanka. Uniquely marked in black stripes on chest. Brood parasite (i.e. does not make its own nest and lay eggs in its host nest of small warblers. Feeds on insects.



Black-hooded Oriole (*Oriolus xanthornus*)
Local migrant. Feeds on insects, fruits and berries. Known to build nest on same tree occupied by Black Drongo probably for protection.



Jungle Babbler (*Turdoides striata*)
Grasshopper and very social. Usually seen hopping on forest floor and agricultural lands always seen in a group of 7 to 8. They feed mainly on insects, but also eats grass, nectar and berries.



Black-rumped Flameback (*Dinopium benghalense*)
One of the few woodpeckers that are seen in urban areas. Unusual in having rattling-whinnying call and an undulating flight. Pointed bill and sticky long tongue helps in feeding on insects hidden inside tree bark.



LARGE BIRDS (27-32 cm)

Brown-capped Pygmy Woodpecker (*Picoides nanus*)
Forest bird found in the wooded areas mostly with the mixed hunting flocks (i.e. different birds hunting in groups). Feeds on insects, larvae, ants, termites, beetles, spiders. Nests in the trunk of the trees.



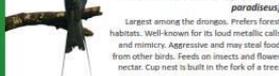
White-throated Kingfisher (*Haliastur indiensis*)
Largest among the kingfishers who are often found away from water. Feeds on a wide range of prey that includes small reptiles, amphibians, crabs, small rodents and even birds. Call is like a loud shrill. State bird of West Bengal.



Spotted Dove (*Spilopelia chinensis*)
Long tailed pigeon with spotted neck. Prefers woodland, scrub, and farmland. Move in pairs on ground looking for seeds and grains. Both partners make nest which is cup of twigs.



Greater Racket-tailed Drongo (*Dicrurus paradisus*)
Largest among the drongos. Prefers forest habitats. Well-known for its loud metallic calls and mimicry. Aggressive and may steal food from other birds. Feeds on insects and flower nectar. Cup nest is built in the fork of a tree.



Black-headed Cuckoo-Shrike (*Coccyzus melanocephalus*)
Local migrant. Males and females look different. Feeds mostly on insects, especially caterpillars also take fruit such as berries and figs.



VERY LARGE BIRDS (35-55 cm)

Lesser Whistling Duck (*Dendrocygna javanica*)
Aquatic duck, rests during day time and feeds at night in paddy fields. Feeds on shoots and grains but sometimes on fish and snails. Broad wings produces a loud two-note wheezy call in flight.



Asian Koel (*Eudynamis scolopacea*)
Males are famous for their songs. Females look different. Feeds on fruits, berries and insects. Known as brood parasite on crows. Male distracts the nesting female crow while the female Koel sneaks in her egg by removing one egg.



Cattle Egret (*Bubulcus ibis*)
Aquatic bird. Usually seen with grazing cattle, riding on their back or running in and out between their legs, catching insects that get disturbed by cattle movement. They get golden yellow feathers along their head, neck and back during breeding season.



Greater Coucal (*Centropus sinensis*)
Large bird found in wide range of habitats from jungle to cultivation and urban gardens. Weak flier, often seen among vegetation walking on the ground as they forage. Feeds on fruits, snails, insects, field mice, lizard, snakes, eggs of other birds.



Flying Jewels of Govardhan Ecovillage BUTTERFLIES

There are more than 60 butterfly species recorded here, we provide information about top 30 most common butterfly species here.

SKIPPERS (8 SPECIES)

Malabar Spotted Flat (*Colasyntrichus ambarensis*)
This forest dweller is often seen resting on rocks. Common to flowers for nectar. Flat flier. Caterpillar feeds on *Asystasia* plants, and remains hidden in the rolled leaf.



Common Redeye (*Gangara leoboda*)
Confined to wooded areas, especially where its favourite host plant bamboo grows. Visits flowers in lower bushes. Gets its name for its striking red eyes.



BLUES (9 SPECIES)

Common Cerulean (*Janias celesta*)
A false eye dot and a tail is a deception for predators to attack for its head. Most common just after rains. Caterpillars feed on Pongam and are protected by ants.



Grass Jewel (*Chilades trachylus*)
This tiny butterfly is the smallest butterfly in India. Seen along the road on flowers. Always flies along the ground level. Caterpillar feeds on *Tournefortia* while they are fiercely protected by the guarding ants.

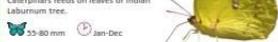


Red Pierrot (*Talicauda nyesus*)
This butterfly will always be found near its favourite plant - plant of the locally-loved *Kalabachor*. Caterpillars survive by remaining hidden inside the fleshy leaves they feed on.



YELLOW & WHITES (11 SPECIES)

Common Emigrant (*Catopsilia pomona*)
This flat flier is usually seen feeding from flower to flower. Often known to migrate in large numbers for new pastures. Caterpillars feeds on leaves of Indian *Laburnum* tree.



Common Jezebel (*Delias eucharis*)
Bright colours of this butterfly are actually warning colours to its would-be predators. Flies slow enough for its would-be predator recognize its warning colours and keep off. Caterpillars feeds on parasitic *Melastoe* trees.



Common Grass Yellow (*Eurema hecabe*)
Most common butterfly in this campus, seen all round the year among grasses. On hot days, several of these butterflies could be seen on damp patches on mud. Caterpillar feeds on leaves of *Pot Cassia* and English *Tamarind*.



White Orange Tip (*Ixias marianne*)
Confined to forested area, this butterfly is seen more commonly during rains. Flowers are its favourite for nectar. Female is not brightly patterned. Caterpillar feeds on *Caper* plants.



Yellow Orange Tip (*Ixias pyrene*)
Bright flier is the male, while female is seen more commonly during rains. More common around forested areas. Like most butterflies, it loves to look in the sun. Seen on flowers and on damp patches. Caterpillar feeds on *Caper*.

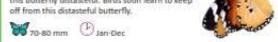


Blue Tiger (*Tirumala limnacea*)
Commonly seen on flowers and on *Rattalped* plants. Birds are its favourite for this distasteful butterfly. Known to migrate along with *Striped Tiger*. Caterpillar feeds on *Green Milkweed* climber.



BRUSH FOOTED BUTTERFLIES (24 SPECIES)

Plain Tiger (*Danais chrysipus*)
More local and common butterfly in this area. Its caterpillar feeds on the toxic *Green Milkweed* plants, and accumulates plant toxins that make this butterfly distasteful. Birds soon learn to keep off from this distasteful butterfly.



Striped Tiger (*Danais genutia*)
Birds soon learn to avoid this brightly patterned butterfly, as it is distasteful. Seen on flowers and on *Rattalped* plants. Caterpillar feeds on *Hyrtis* plants.



Common Crow (*Euploea core*)
Slow sailing flier of this dark butterfly is unmistakable. Distasteful for birds. Seen on flowers and on *Rattalped* plants. Caterpillar feeds on leaves of *Oleander*, *Banyan* and *Peepal* trees.



Common Evening Brown (*Melanitis leda*)
Certainly an exception, as unlike most butterflies this butterfly flies during the early hours at dusk and late in the evening. Eyespots on the wings are seen only during the rains, dry season form has no eyespots, but the dark brown marks make this butterfly invisible among dry leaves.



Blue Tiger (*Tirumala limnacea*)
Commonly seen on flowers and on *Rattalped* plants. Birds are its favourite for this distasteful butterfly. Known to migrate along with *Striped Tiger*. Caterpillar feeds on *Green Milkweed* climber.



Baron (*Euthalia nais*)

Most active flier during the hottest part of the day. Prefers forested areas. Prefers to feed on overripe fruits and tree sap. Caterpillars feed on *Tendu* leaves.



Danaid Egfly (*Hypolimnites misippus*)
This attractive butterfly prefers to fly in drier open areas. Female could be easily mistaken for *Distasteful Plain Tiger*, whom she mimics to escape being eaten by birds.



Peacock Pansy (*Junonia almana*)
A marsh loving butterfly, commonly seen where its favourite foodplant, *Talimkhana* grows in abundance. Eye spots on the wing help in deflecting predator's attention from attacking its head.



Blue Pansy (*Junonia heurippa*)
Open grassy patches and dry stream beds patches are its favourite where it flies at ground level during the hottest time of the day. Underwings are paler resembling leaves.



Common Sailer (*Negyptis helios*)
Common butterfly seen sailing along the road, and often settling on flowers. More abundant during rainy season. Caterpillar feeds on leaves of *Red Silk cotton* tree.



Common Baron (*Euthalia aconthea*)

Common butterfly seen sailing along the road, and often settling on flowers. More abundant during rains. Caterpillars feed on leaves of *Red Silk cotton* tree.



Bamboo Treebrown (*Letho eurypa*)
Shy butterfly, prefers to remain around bamboo clumps in the woodland. Flies close to ground in search of over ripe fallen fruits or oozing tree sap. Never visits flowers.



Blue Oakleaf (*Kallima horfieldi*)
Classic example of adaptive mimicry - a leaf like look perfectly copied. Usually sits with closed wings to avoid detection from predators. Never visits flowers, but over ripe fruits are its favourite.



Common Bushbrown (*Mycalopsis perversus*)
Eyes on the wings are only seen during the rains. In summer the spots are absent which helps them to merge among the fallen leaves. More than flowers, over ripe fruits are its favourite.



Common Four-ring (*Ypthima huebneri*)
Four eye spots on the hindwing give this butterfly its name. During the dry season, eye spots on hindwing are reduced to small dark spots. Caterpillar feeds on grasses.



SWALLOWTAILS (8 SPECIES)

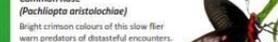
Tailed Jay (*Graphium agamemnon*)
A swift flier, seen visiting flowers, and come to mud-puddle on stream banks. Most tree and *Custard Apple* are its most favoured food plants to lay eggs on. Caterpillars remain well camouflaged.



Common Jay (*Graphium doson*)
A swift flier, seen visiting flowers, and come to mud-puddle on stream banks. Most tree and *Custard Apple* are its most favoured food plants to lay eggs on. Caterpillars remain well camouflaged.



Common Rose (*Pachliopta aristolochiae*)
Bright crimson colours of this slow flier warn predators of distasteful encounters. Caterpillar feeds on poisonous *Birthwort* plant which makes them distasteful. Known to migrate.



Blue Mormon (*Papilio polymnestor*)
Mainly a dweller of the forested hills. Migrates to lower areas during rains. Strong winging flight is typical of this butterfly. Caterpillar feeds on lemon plants.



Common Mormon (*Papilio polytes*)
Male does not resemble the female, but she mimics two distasteful butterflies: *Common Rose* and *Curry-leaf* and *Lemon*. A familiar butterfly in the garden.



BUTTERFLY STICKERS

A sheet of 24 butterflies was developed for the Wells Fargo's Butterfly Habitat Project in Bangalore. This was in collaboration with Karnataka Forest Dept. The sticker sheet is given away as educational souvenirs for the school students visiting the butterfly habitat created by us in Jarakbande Kaval Forest (Sliding Stone Tree Park)



COMMON NYPHALID
This butterfly is found in most of the Indian cities.

COMMON PIERID
This butterfly is found in most of the Indian cities.

COMMON BUTTERFLIES
This butterfly is found in most of the Indian cities.

BOOK FIELD GUIDES (UNDER PRESS)

Two publications are underway;

Field Guide to Common Wildflowers of Sanjay Gandhi National Park covering 100 species to be published by Maharashtra Forest Dept.

Field Guide to Common Moths of India covering 740 species to be published by Birdwing Publishers- a vertical of Ladybird Environmental Consulting

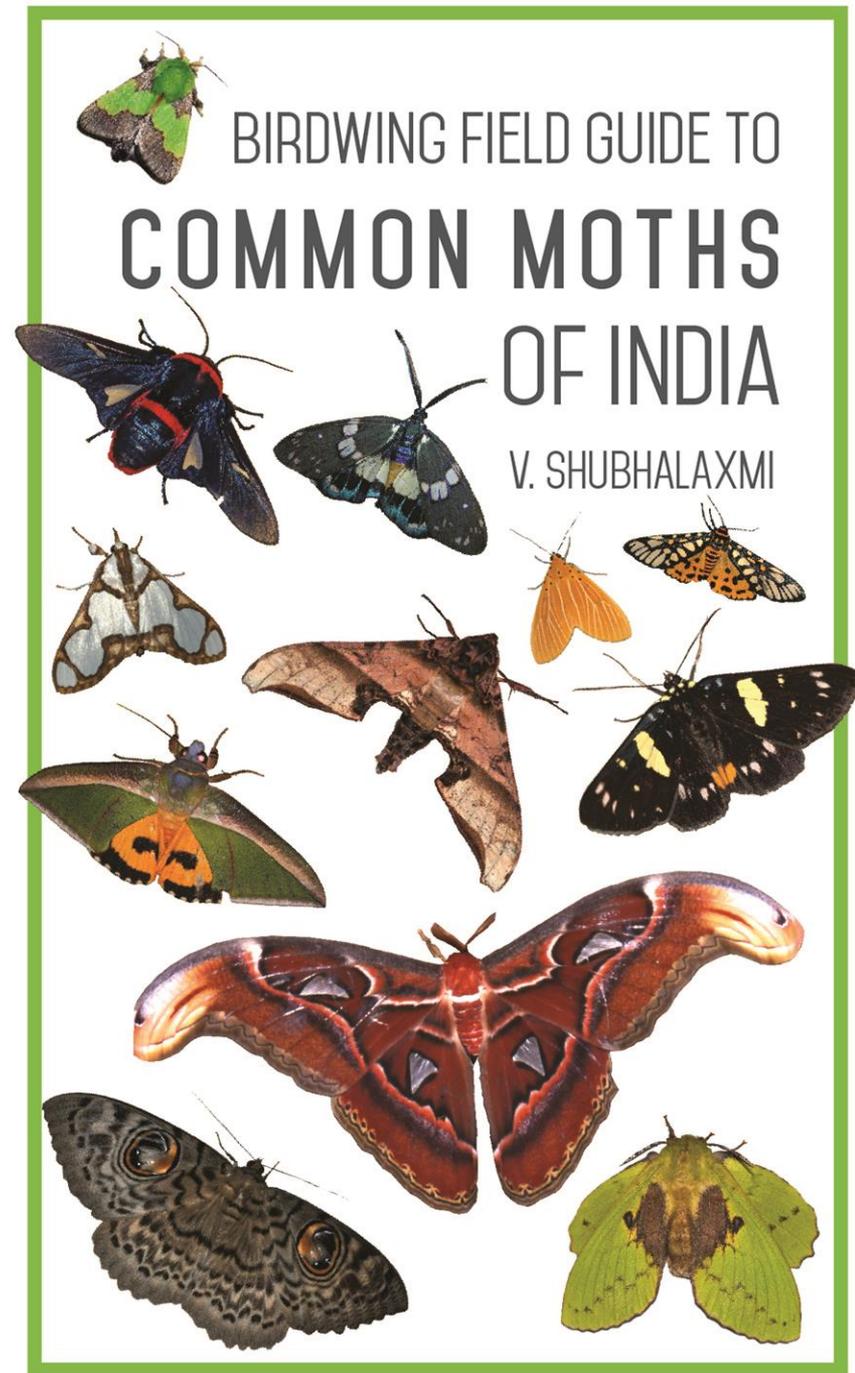
A Pocket Field Guide



Common Wildflowers of Sanjay Gandhi National Park



Text and Photographs by
Isaac Kehimkar
Dr. V. Shubhalaxmi



THANK YOU

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