

# AN ATLAS OF THE BIRDS OF KERALA

#### Praveen J & PO Nameer

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#### An Atlas of the Birds of Kerala

Ornithology/Reference

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2021

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#### Recommended Citation:

Praveen, J. & P.O. Nameer. 2021. An atlas of the birds of Kerala. Kerala Agricultural University and Bird Count India. Kerala. 219 p.

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## **Contents**

Acknowledgements	5
Introduction	13
Kerala Bird Atlas Project	13
Methodology Seasonal Sampling Spatial Sampling Survey Protocol Other Notes	14 14 14 15 15
Planning and Tracking	16
Analysis	17
How to Read the Visualisations	18
Bird Atlas Survey - Results and Discussion Threatened Birds Endemic Birds	19 19 21
Species Richness	22
Species Maps and Seasonality	23
References	214
Index	215

# **Acknowledgements**

In 2015, a group of bird watchers from Kerala took up the challenge to systematically survey the entire state of Kerala for birds across a five year period. This survey was the first of its kind for India, and when it came to a close in 2020, was Asia's largest bird atlas till date. We were able to cover more than 95% of Kerala in the dry season and more than 80% in the wet season. This would not have been possible without the sustained support received from various individuals and organisations.

We got excellent support for the conduct of the Kerala Bird Atlas (KBA) project from the Department of Agriculture & Farmers Welfare as well as the Department of Forests and Wildlife, Government of Kerala. The district level Atlas reports for Thrissur and Alappuzha, were officially released by the Honorable Minister for Agriculture & Farmers Welfare, Adv. VS Sunilkumar in June 2016. The Honorable Minister for Forests and Wildlife Adv. K. Raju has offered all support for the Kerala Bird Atlas project when we met him in 2016 itself. Honorable Minister for Forests and Wildlife Adv. K. Raju, has also released the Posters on the 'Bird diversity of the 14 grama panchayats", in 2019 which was a by-product of the KBA project. Dr. Asha Thomas, IAS, the Additional Chief Secretary & the Principal Secretary to Forests and Wildlife department, GoK has always been a strong supporter of the KBA project.

Dr. P. Rajendran, the former Vice Chancellor, Kerala Agricultural University (KAU) as well as Dr. R Chandrababu, the current Vice Chancellor has extended all the support and encouragement for the smooth implementation of the Kerala Bird Atlas project at the KAU level. The Director of Research, KAU and the Dean Faculty of Forestry also provided the necessary support for the implementation of the KBA.

The Green Partnership Programme (GPP) has been an initiative that was launched in November 2013 by the State Forest department in collaboration with the various NGOs in the state to document and monitor the birds of the State. The various programmes of the GPP include, wetland bird counts, common bird monitoring programme, heronry count, pelagic bird surveys and forest bird surveys. This was started while Dr. BS Corrie IFS was the Head of Forest Force (HoFF) and continued during the periods of the subsequent HoFFs including Dr. Anil K Bharadwaj IFS and

Mr. PK Kesavan IFS. The permission for the atlas bird survey was accorded by Dr. Anil K Bharadwai IFS and was later extended by Mr. PK Kesavan IFS and Mr. Surendrakumar IFS. We place here our deep sense of gratitude to these senior forest officials for their unstinted support for the successful completion of the Kerala Bird Atlas. The other forest department officials who supported the Kerala Bird Atlas project include, S/Shri./Smt. Abdul Assis IFS, Adalarasan R, IFS, AnjanKumar BN IFS, Anoop KR IFS, Babu C IFS, Deepa KS IFS, Dony G Varghese IFS, Georgi P Mathechan IFS, Jayakumar Sharma PK IFS, Kannan MVG IFS, Karthik P IFS, Karthikeyan K IFS, Keerthi R IFS, Kurra Srinivas IFS, Madhusoodanan PV IFS, Naredra Babu IFS, Naredra Nath Veluri IFS, Narendra Babu S IFS, Padma Mahanti IFS, Pradeep Kumar E IFS, Pradeep Kumar KI IFS, Pramod G Krishnan IFS, Pramod PP IFS, Rajesh Ravindran IFS, Ramesh Bishnoy IFS, Ratheesh D IFS, Renjan A IFS, Revikumar Meena IFS, Sajan NT IFS, Sambudha Majumder IFS, Samuel V Pachuau IFS, SanjayanKumar IFS, Silpa V Kumar IFS, Sunil Babu AP IFS, Suresh PR IFS, SyamMohanLal KN IFS, Unnikrishnan M IFS, Vijayananadan K IFS, Vinodkumar DK, IFS, Vysakh Sashikumar IFS, Warkad Yogesh Nilkanth IFS, among the APCCF/ CCF/CF/DFOs.

Among the DCF/ACFs immense support was provided by S/Shri./Smt. Adarsh M, Afsal Ahammed, Ajith K Raman, Anas NA, Aneesh CP, Ani JR, Anil Antony, Anoopkumar PK, Assif PK, Baiju Krishnan, Biju P, Chinnu Janardhanan, DhaneshKumar P, Dinesh S, Fen Antony, Girija Pushpom, Haby CK, Harikrishnan KV, Harilal MT, Harikrishnan Nair G, Imthyas AP, Jayachandran Nair B, Jayachandran G, Jayamadhavan A, Jayaprakash VP, Jayaprakash K, Jayasankar S, John Mathew, Jose HT, Jose Mathew, Joseph Thomas, Joshil M, Justin Stanley KS, Lekshmi R, Manu Sathyan, Martin Lowel, Mohammed Anwar Y, Mohammed Zainulabdeen KA, Nagaraj BN, Nibu Kiran, Pradeep G, PradeepKumar KI, Prasad G, Praveen P, Radhakrishnan SR, Rahul B, Rajan V, Rajeev M, Rajesh N, Raju K Francis, Ranjith B, Ranjithkumar P, Saby Varghese, Sailesh VK, Sajeeshkumar B, Sajeevkumar B, Saji K, Sajikumar V, Saju PU, Saju S Nair, Saju Varghese, Saju KA, Sanil IP, Sanjayan MP, SanthoshKumar B, Santhoshkumar S, Sathyaprabha Shajana A, Shajikumar YM, Shanavas A, Sreekumar TP, Sreelekha PT, Subash KB, Suhyb PJ, Sujit R, Sunil Sahadevan, SunilKumar KK, Surjith MK, Viju Varghese, Vimal M, Vinayan R, Vinod S and Vipindas PK.

In their capacity as the Range Forest Officers, the following officials facilitated the logistics part of the bird surveys at different forest ranges: Abdul Jaleel P, Abhilash G, Abju K Arun, Ajayaghosh NK, Ajayakumar V, Ajayan C, Ajayghosh V, Ajeesh M, Aji KV, Ajikumar T, Ajithkumar B, Ajithkumar R, Akhil Babu, Akhil Narayanan, Akhil VB, Anand R, Aneesh S, Aneesh MA, Anilkumar N, Anisha Siddik, Anuraj BR, Aravind Balakrishnan, Arun K Nair, Arun R C, Arun Visa, Arunmaharaja B, Ashalatha A, Ashique Ali U, Ashraf K, Asokaraj B, Babu NM, Bhasi Bahuleyan, Biju KV, Delto L Marokey R, Dhanik Lal G, Fasiludeen S, Geo Basil Paul, Harikumar R, Harilal D, Harindrakumar S, Imrose Elias Navas E, Jaleel PA, Jayakumar NV, Jayan BR, Jayaprakash KV, Jiljith KP, Jiyas Jamaludeen Labba, Job J Neriamparambil, Joji John, Jose KJ, Jyothish J Ozhakkal, Kannan S, Krishnadas KR, Libin John, Mathew TS, Mereena MJ, Mohammed Nishal PS, Mohammed Raphy KM, Sudarsanan, Mujeebrahman PK, Najmal Ameen MN, Neethu K, Nithin Lal, Nithin PS, Prem Shamir KP, Priya T Joseph, Rajeevkumar MK, Rajesh C, Rakesh K, Rasheed TM, Ratheesan P, Ratheesan V, Ratheesh KV, Raveendranathan MP, Rehis T, Remya Raghavan, Remya S, Roopesh N, Roy KT, Roy V Rajan, Rubin BR, Saju TS, Salin Jose JC, Sameer MK, Sandeep Kumar G, Sandeep S, Sarathchandran V, Sasikumar T, Savin Sunder P, Selvaraj C, Shaji Jose TF, Shebin VA, Shereef C, Sibin NT, Sijo Samuel, Sindhumathi CR, Solomon Thomas George T, Subair N, Sudheer CK, Sudheer Neroth, Sumu Scaria, Sunil Kumar KP, Sunil P, Suresh Babu P, Suresh J, Suresh P, Thampi PK, Udayan KT, Udayasooryan VB, Veena Devi KR, Vijin Dev A, Vinod Kumar MG, Vinod R and Vinu P. There are also innumerable section forest officers, beat forest officers and forest watchers who also helped us to undertake the atlas field work in the forest areas and we acknowledge the support rendered by each and every one of them.

Indian Bird Conservation Network (IBCN) supported us through a small grant in the first year and our thanks to Dr. Asad R Rahmani, Dr. Raju Kasambe and Ms. Neha Sinha of IBCN/BNHS for arranging the financial support.

It goes without saying that this success is the result of the sheer passion and commitment shown by volunteer birdwatchers of the state, which we all will ever be proud of. We would like to thank each and every participant, especially birders who came forward to support us without considering the state or district boundaries. We

are thankful to birders from all the NGOs (see page 3 for logos) who actively participated in forest and wetland surveys notwithstanding harsh climate and tough terrain surmounting small and large obstacles including great floods and pandemic lockdowns.

Dr. Suhel Quader helped us from initiation through planning to final analysis of data while Abinand Reddy created the atlas visualizations. Members of KeralaBirder yahoo group helped in various ways in this atlas project. George Tom helped to enable Locus Free, a much needed tool for the atlas and to create this book form of the report. Fauzia Arief created an online atlas tracking spatial visualization that gave an up to date status of atlas coverage. Abhilash Chacko kindly designed the layout. Abhinand Chandran, Krishnakumar Iyer and Jishnu R collected and edited the photographs used in this book. Our thanks are also due to all participants of the Kerala Bird Monitoring Workshops conducted between 2015 and 2020 where the protocol and strategy was much debated and finalised and results shared.

We thank all photographers who shared their work to illustrate this book: Abhinand Chandran, Adil Nafar A, Afsar Nayakkan, Amal Us, Aneesh MC, Aneesh Sasidevan, Anith Anilkumar, Arid VK, Arun Shankar, Ashish Malathusseril Shaji, Ashokraj VM, Bijumon KE, Biju PB, CR Pushpa, Dhanesh Ayyappan, Divin Murukesh, Faslu Rahman, Jiju Vinod, Jishnu Narayanan, Jishnu R, Jithesh Nochad, Krishnakumar K Iyer, Latha Prabhakaran, Lathish R Nath, Manoj Karingamadathil, Maxim Rodrigues K, Mohammed Hirash, Mohammed Ramees K, Mohammed Rinaz, Mohammed Sayeer PK, Mridula Murali, Mukundan Kizhakkemadham, Murali Mohan, Najeeb K, Namassivayan Lakshmanan, Navaneeth Nair, Naveenlal Payyeri, Nesru Tirur, Nishad Eshal, Novel Kumar, Paulson Joy, PM Mujeeb, Prashantha Krishna MC, Premchand Raghuvaran, Rahul Nair, Raju Kidoor, Ratish RL, Rayees Rahman, Reji Chandran, Roshnath Ramesh, Sabarish D, Sandeep Sasidharan, Santhosh Kallingal, Sathyan Meppayur, Shabeer V Basheer, Shalu Amana, Shameem Manjeri, Shyamkumar Puravankara, Sidharth S Nambiar, Sreedevi Madhavan, Sreejesh K Nair, Sreejith R Pillai, Sreekumar K Govindankutty, Subin K S, Sujeesh Puthenveetil, Vijesh Vallikunnu, Vineetha Aneesh, Vineeth Viswanath, Vinod Kambalathara, Vinod Kumar, Vivek Chandran, Vivek Puliyeri, Vivek Sudhakaran, and Yadu Prasad.

Our heartfelt thanks are due for all the birdwatchers who participated in the field surveys of bird atlas: Abdul Raheem Munderi, Abdul Rehim, Abdul Saleem, Abhay M Sunil, Abhijith APC, Abhijith AV, Abhijith RS, Abhijith Surendran, Abhinand Chandran, Abhin M Sunil, Abhirami C, Abhirami M Jayakumar, Abhishek Peter, Adheena Xavier, Adhithyan NK, Adil A, Adithya Ajay, Afreed Muhammed NV, Afthab Faisal K, Ahmed Omar Haroon, Aiswaryalakshmi AR, Ajay Neelamperoor, Ajay Rajan, Ajeeshkumar Sahadevan, Ajish George, Ajit A, Ajith Kumar, Aju Raju, Akhil Poovathingal, Akhil Sabu, Akhil US, Akshay Kumar TP, Alagananda CR, Albin Jacob, Amal US, Amara Bharathy, Amitha Bachan KH, Amol Mande, Amrit Krishna, Anagha Bagade, Anamika Menon, Anantha Krishnan K, Ananthapura Shrigiri, Ananthu P, Ananthu Vijayakrishnan, Anas Ibinu Ansari, Andrew Antonio Fernandez, Andrew Johnson, Aneesh KS, Aneesh Sasidevan, Anish Aravind, Anish Mohan Thampi, Anitta Cherian, Anjana Hari, Anjana Nair, Anjitha Devarajan, Anjitha R, Anju Raj, Ankit Vikrant, Anoop CR, Anoopkumar Podavoor, Anoop Palode SS, Anoop Paul, Anoop Raj, Anu John, Anuradha Varma, Anuraj Aylara, Anuraj R, Anushreedha Sivanandan, Apitha Namassivayan, Arathy S Kumar, Aravind Anil, Aravind CK, Archana Nair, Arid VK, Arjun Kannan, Arjun R, Arjun Raj, Arjun Suresh, Arjun Suresh Suresh, Arjun TS, Arjun Vinayan, Arnav Anish, Aromal Senan, Aromal Vaikom, Arshad Kooriyadan, Arulvelan Thillainayagam, Arun B, Arun CG, Arun Chungappally, Arundev G, Arun George, Arun P Gopi, Arunima J, Arun Kumar, Arun Kumar MP, Arunkumar S, Arun Lal, Arun Murali, Arun Thomas, Arun TJ, Arun Varghese, Arya Vinod, Ashfaq Rahman, Ashif Madathil, Ashley Shaji, Ashlin Michael, Ashokkumar Mohanarangan, Ashok Raj VM, Ashwin Surendran, Ashwin Viswanathan, Aslam Mohammed, Asokan Mash, Aswakhosh M, Aswathy Chandran, Aswathy Rajan, Aswin A, Aswin KS, Aswin Nisanth, Aswin S, Athira M, Avinash Aviz, Avishna Arappil, Azhar Ali Ashraf, Azhar Muhammed, B Sreekumar, Balaji PB, Balakrishnan VC, Bala Subramanian, Balasubramanian S, Benchamin C, Ben Vargis, Bhadra JK, Bibin Paul, Bijumon KE, Biju PB, Biju PS, Biju Thenkudi, Bimal Das CK, Bimalnath Punnassery, Bindu K, Bindu Krishnan, Binu Piraroor, Binu Sreelakam, Chaithra Shree Jayasimhan, Chandrasekaran Venkatraman, Charutha K, Chetan Harikishandas Joshi, Chins Chandran, Chithrabhanu Pakaravoor, Christopher Guna, CK Smitha, Clareena Jose, Clince P Jose, Cuckoo Sebastian, Dalip Singh, Damodaran Pallath, David Raju, Deepa Chandran, Deepak VV, Devi Ambika, Devi Ambika S, Devika PS, Devika Sanghamithra, Devipriya KS, Devi SR, Devnath C, Dhanesh Ayyappan, Digvijay

Singh Sikarwar, Dileep PD, Dilgith Surendran, Dilip Joshi, Dilip KG, Dilip Polpakkara, Dipu Karuthedathu, Divin Divi, Divin Murukesh, Divin Venu, Divya Mudappa, Dwijit SS, Edison Jose, Eisa Usman, Elias Rowther B, Emanuel George, Emmanuel George, Faslu Rahman, Fauzia Arief, Fawas Illias, Fazal Koduvally, Firosh Raja, Gaja Mohanraj, Gaythri Devi, Geetha Iyer, George PJ, George Tom, Ginu George, Gireesan TU, Gireesh Pallikkara, Girishmohan PK, Glan Kidoor, Gopal Prasad, Gopika Varrier, Govind Girija, Govindraj Kamareddy, G Parameswaran, Greeshma Paleeri, Gunaseelan EM, Habeel Sahal, Hanna Thomas, Hariasha Chakkarakkal, Hari Bharathan, Hari G, Hari Govind J, Hariharan TV, Hari Krishnan, Harikrishnan KR, Harikrishnan S, Hari Kumar, Hari Mavelikara, Hari Prasad, Haritha Krishnan, Haritha Mohan, Harith Anantharaman, Harith C, Harsha NR, Hashig AH, Hashmi VZ, Hemanth Byatroy, Hillblooms School, Hitha PT, Ijaas Mohamed, Jafer Palot, Jaichand Johnson, Jai Kiran, Jain PK, Jamaludheen Karivelil, Jameela P, Javid Ihsan, Jayachandran ES, Jayadev Menon, Jayakrishnan Mannar, Jayakrishnan S, Jayan Thomas, Jaydev Mandal, Jeffin John, Jibin Kochumon, Jiji Sam, Jiju Vinod, Jincy Justin JK, Jisha Rajesh, Jishnu Kizhakkillam, Jishnu Narayanan, Jishnu R, Jishnu VG, Jismi MO, Jithesh Nochad, Jithin Johnson, Joel Soniya, John Richard Thomas, Jolly KV, Jomon Koshy, Joseph Roy, Jose Rani Babu, Justus Obed, Jyothi Arun, Jyothi Krishnan, Jyothish Nelson, Jyothis JS, Kabeerali Ucharakkadav, Kanchana K, Kannan UL, Karthikeyan R, Karthik K, Karthik KV, Karthik S, Karthik Thrikkadeeri, Kausthubh K Nair, Kavungal Ravi, Kiran Bagade, Kiran Karakulam, Kiran MR, Kiran Raj KR, Kiran S Kumar, Kiron Vijay, Kirubhanandhini V, Kishore P, Kishore R, Kishore Raj D, Krishnakumar K Iyer, Krishna Kumar V, Krishnamoorthy Muthirulan, Krishna Murthy, Krishnan Hari Om Prakash, Krishnanunni MR, Kuttettan Munnar, Lalu P Joy, Latha Prabhakaran, Lathika KK, Lathish R Nath, Lekshmi Jayakumar, Libin Abraham, Lijo Panangadan, Madhumita Panigrahi, Magesh P, Mahesh Raman, Malik Fasil Madala, Manav Sajan, Manoj A, Manoj K, Manoj Karingamadathil, Manoj M, Manoj PG, Manoj Ram, Manu Thomas, Mansur Ahamed, Mariam Shajahan, Mathew Rockey, Mathews B A, Mathew Thekkethala, Maxim Rodrigues K, MD Madhusudan, Mebin Varghese, Mini Anto, Mohammad Sulaiman, Mohammed Hirash, Mohammed Rinaz M, Mohammed Sadique, Mohammed Sayeer, Mohanan Choron, Mohan CP, Mohith Sanjay, Muhammed Bilal, Muhammed Nihal, Muhammed Niyas, Muhasin CT, Mujeeb PM, Mukundan Kizhakkemadham, Muneer Tholpetty, Murali Madhava PS, Mytheeswaran T, Najeeb K, Namassivayan

Lakshmanan, Nameer PO, Naren Kaushik, Naseer Parayil, Navaneeth Nair. Navaneeth Sini George, Naveenlal P, Naveen V, Navya PK, Neethu George Thoppan, Neha Waikar, Nesrudheen PP, Nidheesh KB, Niju S, Nikhil PV, Nilesh KK, Niranjana C, Nirmala Thomas, Nisanth HP, Nisanth Raveendran, Nisha M, Nithin Divakar, Nithin Marokey, Nithin Mohan, Nithish Kumar, Niveditha RK, Novelkumar MS, PA Anish Elanad, Panchapakesan Jeganathan, Parvathy AS, Patrick David, Pavithra Sankaran, PB Samkumar, Polly Kalamassery, Polycarp Joseph, Poornima Viswanathan, Prabhakaran PV, Prabhu K, Pradeep Aymanam, Pradeep Chandran AJ, Pradeep Kidoor, Prakash G, Pramod Nair, Pramod Vazhankara, Pranav Karle, Prapanch J, Prasath Selvaraj, Prashantha Krishna MC, Prasob Enose, Prasoon P, Praveen ES, Praveen J, Praveen Koramkottil, Praveen Shenoy, Praveen Velayudhan, Preetha PC, Preethi N, Premchand Reghuvaran, Puneet Dhar, Pushpa CR, Pushpajan Ayillith Meleveettil, Pushpa Puliyeri, Rahul Nair, Rahul Rajeevan, Rajaguru M, Rajarajan V, Rajasree Vasudevan, Rajeesh Leo, Rajendran TM, Rajesh Krishnan, Rajesh Radhakrishnan, Raju Kidoor, Raju Sankaran, Rameez Elm, Ramesh Iyer, Ramesh M, Ram Mohan Angadipuram, Rangasamy Muthusamy, Raphy Kallettumkara, Ratheesh Kodungallur, Ratheesh Nest, Rathish RL, Raveendran KC, Ravi PN, Rayyan Adam, Regin George, Reji Chandran, Rejitha V, Remya Mohan, Renjan Mathew Varghese, Renjith V J, Renju TR, Renuka Vijayaraghavan, Revathy Reji, Ribish Thomas, Rinsha Siniya U, Riyan Konkath, Robin Antony, Robin C Koshy, Rohan Rai, Ronny Augustine, Roshin Tom, Roshnath R, Sabarish D, Sabeer Mampad, Sachin Chandran, Sachin K Aravind, Sachin Krishna MV, Sadr Hassan, Saeed Anvar Ali MV, Sagu Rafeeg, Sahana M, Sahil Salim, Sajeev Krishnan, Sajin Seethi, Sajitha Siril, Sajith KM, Sajith Komath, Sajith Mannar, Saleem Ali Parambatt, Sali Kutty, Samarth Bharadwaj, Sampath Shanthipalla, Samson Kirubakaran, Samuel George, Sanal VK, Sancia Morris, Sandeep Augustine, Sandeep Das, Sandeep Krishna Das, Sandeep Sathyan, Sandra PR, Sangeetha AB, Sanooj MS, Santhosh Kallingal, Santhosh Kumar, Sanu Raj, Sarath Babu NB, Sashi Kumar, Sasidharan Manekkara, Satheesan KV, Satheesh Pullippadam, Sathi Nair, Sathyan Meppayur, Sathya Priya Ganesh Kumar, Saurabh Sawant, Sedhulakshmi K Unni, Selvaganesh K, Selvaraj Rangasamy, Shaqil Kannur, Shahel AZ, Shahil K, Shahina Nowshad, Shah Jahan, Shahul Valasi, Shameem AP, Shameena S, Sharang Satish, Sharique Pannippara, Shebin C, Shibil OS, Shibi Moses, Shibu Kakkattu, Shijith S, Shiju Babu, Shobi Jose, Shruthi

Venkatesan, Shwe Ta, Shwetha Bharathi, Sibu Nostalgia, Siddhesh Bhor, Sidharth S Nambiar, Siji PK, Siju Joseph, Silpa AR, Sivadas Chettur, Sivakumar AK, Sivaprasad R, Sivashankar Ramachandran, Siyad A Karim, Smitha Sasi, Smitha S Govind, Sneha G Ajay, Solomon Raj Inbanathan, Soni Nambiar, Sooraj Narayanan, Soumya B, S Prasanth Narayanan, Sreebin PS, Sreechand V, Sreedevi A, Sreehari K Mohan, Sreehari M Pillai, Sreehari Neelamperoor, Sreekanth P, Sreekumar ER, Sreekumar K Govindankutty, Sreekumar Mahe, Sreelakshmi Subhash, Sreelal K Mohan, Sreepavithra Thilak, Srinila Mahesh KT, Sri Sowmiya Murugesan, Sritha AG, Sruthy S, SS Prasanth, Subair MP, Subin KS, Subin Sudheendran, Subramanian B, Sudeep R, Sudhakaran KK, Sudheesh Mohan, Sudheesh PD Divakaran, Sujeesh P, Sujith S, Sujith V Gopalan, Sumesh KV, Sumesh PB, Sumi Panniannur, Suraj SR Palode, Suresh AC, Suresh Janardhanan, Suryamol Sukumaran, Susanth Madapurakkal, S Vishnusankar, Swathi Chandramohan, Swetha Menon, Syamili Manoj, Tarun Menon, Tejas Praveen, Thanigaivel Annamalai, Thejas JS, Thomas Abraham, Tijo Thomas, Tilak Sura, Tony Antony, TR Shankar Raman, TS Prasanth, Tubin Babu, Ullas S Menon, Ullas UR, Uma Venkatesan, Ummer Maliyakkal, Unais Valiyora, Vaisakh George, Varsha Karumampoyil, Varun Vijayakumar, Velayudhan C, Venugopalan R, Venugopala Prabhu S, Vidhuram N, Vidya Raju, Vignesh B Sivan, Vijayakumar TT, Vijaya Lakshmi, Vijaykumar Krishnamurthy, Vijay RJ, Vijesh Vallikunnu, Vineeth Kumar CM, Vineeth Viswanath, Vinodh Kambalathara, Vinod KT, Vinod Kumar, Vinod Kumar PK, Vinod Ooralath Sivaji, Vinod Venugopal, Vipin CG, Vipin V Nath, Vishnu B Onam, Vishnudas CK, Vishnu Dev RS, Vishnu Hari, Vishnu K, Vishnu Mohanan, Vishnu Murali, Vishnu Narayanan, Vishnupriyan Kartha, Vishnu Sreejith, Vishnu Vinod, Vivek Chandran, Vivek Puliyeri, Vivek Sudhakaran, Vridhi R, Wahiba Irshad Humam, Yadhu Krishna, Yadu, Yadukrishna J Uchummal, Yahyaharoon KP, Yedu Rajeev, and Yousaf Olavilam. Visiting every nook and corner of the state, finding the right sub-cells and covering all habitats and repeating it for two seasons is a remarkable effort.

It has been an amazing team work that the Kerala birding fraternity have demonstrated and together we have made a historic accomplishment.

Praveen J PO Nameer

#### Introduction

Distribution of a living being in space and time is best visualised as a dynamic map depicting where and when it occurs. An atlas is a simplified view of the actual distribution of a species for a certain geographical area at a well-specified period of time. A bird atlas is a visualisation that shows where all our birds are found, how often they are found and in what periods of the year they are found.

Systematic bird atlases, following a common protocol, have been attempted in a few countries like United Kingdom apart from several states in the United States. In India, Mysore city has produced a similar bird atlas for the neighbourhood of the city corporation. However, such a project to cover an entire state has never been attempted in India. Using the Mysore city atlas as a precursor, in 2015, bird-watchers of Kerala embarked on a project to cover the entire state through systematic sampling to provide a blueprint of the birds found in the region. This project, titled 'Kerala Bird Atlas', has been completed in 2020 to become the Asia's largest bird atlas.

## **Kerala Bird Atlas Project**

Kerala Bird Atlas is an ambitious project to map the distribution and abundance of birds of the state of Kerala. Envisaged as a five year activity during a workshop conducted at Thrissur in June 2015 where several active birdwatchers from Kerala participated, the Bird Atlas has generated more insights into the abundance and distribution of common birds, which was poorly understood until now. By repeating the process after decade, it will be possible to scientifically document the changes in the distribution and abundance of our birds over a period of time.

In the political map of Kerala which spans 38,863 km², more than 3000 locations (known as subcells) were surveyed for an hour in each of two seasons to complete the atlas project. The data from the subcells is aggregated into 775 cells. At the end of the atlas surveys, 739 (95.35%) cells were covered in the dry season and 625 (80.65%) were covered in the wet season.

# Methodology

#### **Seasonal Sampling**

Bird altas surveys were carried out twice a year, in the wet season (mid July to mid September) and the dry season (mid January to mid March). Each seasonal bout lasted 60 days, which included nine weekends. Dry season surveys began in 2016 and ended in 2020 (five cycles). Wet season surveys commenced in 2015 and ended in 2020 (six cycles; to compensate for the loss of survey time due to severe floods in 2018). The target was for each subcell to be visited once per season over the course of the Atlas period.

#### **Spatial Sampling**

The entire state of Kerala was divided into grids of size  $6.6 \text{ km} \times 6.6 \text{ km}$ . This corresponds to a geospatial unit of  $3.75 \text{ minutes} \times 3.75 \text{ minutes}$ . Each grid was divided into four quadrants of size  $3.3 \text{ km} \times 3.3 \text{ km}$ . Each quadrant was further divided into 9 subcells of size  $1.1 \text{ km} \times 1.1 \text{ km}$ . A single randomly selected subcell in every quadrant was chosen for sampling.

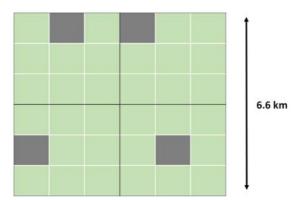


Figure 1: Randomly selected subcells in a grid

#### **Survey Protocol**

A team of birdwatchers with a minimum of two birders and a maximum of five birders sampled the selected subcells. Each birdwatcher team had at least one birdwatcher who could identify most birds of the region. Each subcell had four checklists created and all of them were uploaded into a centralised online database of eBird (www.ebird.org/india). Each checklist was of a fixed duration of 15 minutes that recorded all bird species seen or heard (i.e. complete lists) and completed by walking through a path inside the subcell (i.e. traveling protocol). Teams attempted to cover all habitat types inside a subcell while doing these lists. Whenever possible, multiple teams split the responsibility of covering a subcell to reduce observer bias. Whenever possible, teams attempted to avoid doing all the lists in a subcell on a same day to reduce bias due to transient weather conditions. Birdwatching times were generally expected to be 6:00-10:00hrs and 14:00-16:00hrs. However individual teams were left to decide the best times of the day for birding in each subcell based on the habitat, disturbance levels and bird abundance. Some subcells were resampled if the lists were not representative due to unforeseen conditions like rain, disturbances, wind, etc. and this was decided after a discussion between the coordinator and the lead birdwatcher from the team. A total of 63 forest subcells were found to be located at inaccessible valleys and had to be replaced.

#### Other Notes

Apart from birds, volunteers were requested to report the presence/absence of some additional parameters in each of their lists. They took note of the presence of any waterbody which was approximately greater than  $10\text{m}^2$ . They also recorded if it was standing or flowing water. Presence/absence of any strangler fig trees which were fruiting during the time of the survey were also recorded. Presence/absence of four invasive plants, viz. Lantana camara, Eichhornia crassipes, Salivinia molesta, and Mikania micrantha were also noted by bird watchers. The intention behind collecting these pieces of data was to generate additional ecological information about the surveyed subcells.

# **Planning and Tracking**

KBA was fully carried out as a volunteer activity by birdwatchers. They ranged from pre-teens to sexagenarians. Regional organisations active in each district took up the task to conduct atlas surveys and nominated their district coordinators. District coordinators were a part of the central team at state level and liaised with birdwatchers in their local regions. They took part in overall decision making on protocol definition, technology/tool selection, planning, tracking, quality control and result reviews.

Geospatial files (KML) of the selected subcells and their boundaries were created. They were tagged with numbers and names. Many districts ran a prototype of the atlas, sampling a small portion of the actual subcells, six months prior to the actual atlas to see the viability of the protocol. First four years were focused in executing the atlas district by district while in the last year the groups combined to form state-wide teams to cover the pending subcells. District coordinators conducted a series of meetings with birdwatchers from different parts of the district, explaining the protocol and division of work. Sites were identified using Google Maps, teams were formed based on access points and deadlines communicated. Locus Free, an Android app was used by several birdwatchers who wanted to find the sub cell while their phone was not connected to internet. After the survey, their results were uploaded to eBird and list link was updated in an online spreadsheet. A visualisation using Google Maps was created online to track the progress of the subcell coverage and plan further. Weekly progress was tracked until all the designated subcells were surveyed to satisfactory levels.

# **Analysis**

All eBird lists were reviewed by the district coordinators for protocol, location and duration. Flagged observations were discussed with the observers and appropriate actions were taken. Reviewed eBird lists were downloaded from eBird portal and density maps created offline for dry and wet season separately. Data was analysed at the cell level (6.6 km x 6.6 km) and this would amount to 16 lists (4 lists from each quadrant). In certain cells which did not fall completely in the state and were shared with the neighbouring state or the Arabian Sea, the number of lists would be less than 16. Frequency of a species is the proportion of lists in which a particular species was reported. All eBird lists since 2015 uploaded from Kerala were downloaded to create seasonality charts for the species reported during the atlas. Non-bird data are not presented in this report, and will be analysed separately.

Taxonomy followed is Clements (2019) and English names follow English (India) version of Clements (2019). Malayalam names are as per Chandran et al. (2020). Data recorded as spuhs (species groups like White Egret sp.) or slashes (like Ashy/Black Drongo) were not used in analysis except for Green/Greenish Warbler – a case where likelihood of misidentification is very high.

## How to Read the Visualisations

Figure 2 explains how to read the visualisations provided with this atlas

- 1: Each cell in this map is a 6.6 km x 6.6 km cell and the colour intensity is proportional to the percentage of lists from the cell where the species has occurred. Cells in grey are unsurveyed.
- 2: The two bars (one for each season) shows the precentage of lists where it is present, in dry and wet season.
- 3: The seasonality graph is sectored week wise and it indicates the precentage of lists where a species is reported in all eBird complete lists from Kerala in that week since the year 2015.



Figure 2: How to Read the Visualisations

## **Bird Atlas Survey - Results and Discussion**

A total number of 382 species of birds was recorded during the Bird Atlas survey in Kerala. This comes to more than 70% of the total species of birds ever recorded in Kerala. Out of this 114 species (30%) are migrants. 268 species (70%) of the birds are residents or local migrants.

#### **Threatened Birds**

Out of the 63 species of birds belonging to the threatened category of IUCN known from Kerala (as on September 2020), 35 species were encountered during the Atlas survey (Table 1). Conservation of these birds is extremely important and this bird atlas gives information on the distribution and seasonality of occurrence of these birds in the state.

Table 1. Threatened Birds in Kerala

No	Common Name	Scientific Name	IUCN Red List Status
1	Nilgiri Wood-Pigeon	Columba elphinstonii	Vulnerable
2	Eurasian Oystercatcher	Haematopus ostralegus	Near Threatened
3	Eurasian Curlew	Numenius arquata	Near Threatened
4	Bar-tailed Godwit	Limosa lapponica	Near Threatened
5	Black-tailed Godwit	Limosa limosa	Near Threatened
6	Curlew Sandpiper	Calidris ferruginea	Near Threatened
7	Great Thick-knee	Esacus recurvirostris	Near Threatened
8	River Tern	Sterna aurantia	Near Threatened
9	Swinhoe's Storm-Petrel	Oceanodroma monorhis	Near Threatened
10	Woolly-necked Stork	Ciconia episcopus	Vulnerable
11	Lesser Adjutant	Leptoptilos javanicus	Vulnerable
12	Painted Stork	Mycteria leucocephala	Near Threatened
13	Oriental Darter	Anhinga melanogaster	Near Threatened
14	Spot-billed Pelican	Pelecanus philippensis	Near Threatened
15	Black-headed Ibis	Threskiornis melanocephalus	Near Threatened
16	Red-headed Vulture	Sarcogyps calvus	Critically Endangered
17	White-rumped Vulture	Gyps bengalensis	Critically Endangered
18	Rufous-bellied Eagle	Lophotriorchis kienerii	Near Threatened
19	Indian Spotted Eagle	Clanga hastata	Vulnerable
20	Greater Spotted Eagle	Clanga clanga	Vulnerable

20 KERALA BIRD ATLAS

No	Common Name	Scientific Name	IUCN Red List Status
21	Steppe Eagle	Aquila nipalensis	Endangered
22	Pallid Harrier	Circus macrourus	Near Threatened
23	Lesser Fish-Eagle	Haliaeetus humilis	Near Threatened
24	Malabar Pied-Hornbill	Anthracoceros coronatus	Near Threatened
25	Great Hornbill (Great Pied-Hornbill)	Buceros bicornis	Vulnerable
26	Broad-tailed Grassbird	Schoenicola platyurus	Vulnerable
27	Grey-headed Bulbul	Brachypodius priocephalus	Near Threatened
28	Yellow-throated Bulbul	Pycnonotus xantholaemus	Vulnerable
29	Tytler's Leaf Warbler	Phylloscopus tytleri	Near Threatened
30	Banasura Laughingthrush (Banasura Chilappan)	Montecincla jerdoni	Endangered
31	Nilgiri Laughingthrush (Nilgiri Chilappan)	Montecincla cachinnans	Endangered
32	Palani Laughingthrush (Palani Chilappan)	Montecincla fairbanki	Near Threatened
33	Ashambu Laughingthrush (Ashambu Chilappan)	Montecincla meridionalis	Vulnerable
34	White-bellied Sholakili	Sholicola albiventris	Vulnerable
35	Nilgiri Pipit	Anthus nilghiriensis	Vulnerable

#### **Endemic Birds**

Endemic birds are species which are found only in one geographic region and nowhere else in the world. The Western Ghats is one such area and has 26 endemic species of birds, as per the latest taxonomic classification (Clements 2019) and 25 are found in Kerala (Chandran et al. 2019). All 25 were reported during the bird atlas survey (Table 2.). Many of the endemic birds, as they have only a small area of geographical distribution, deserve highest priority for conservation. Conservation of their habitat is of utmost importance; all these birds belong to forest and high altitude grassland habitat.

Table 2. Birds Endemic to the Western Ghats recorded in Kerala

No	Common Name	Scientific Name	
1	Nilgiri Wood-Pigeon	Columba elphinstonii	
2	Grey-fronted Green-Pigeon (Pompadour Green-Pigeon)	Treron affinis	
3	Malabar Grey Hornbill	Ocyceros griseus	
4	Malabar Barbet (Crimson-throated Barbet)	Psilopogon malabaricus	
5	Malabar Parakeet (Blue-winged Parakeet)	Psittacula columboides	
6	Malabar Woodshrike	Tephrodornis sylvicola	
7	White-bellied Treepie	Dendrocitta leucogastra	
8	Broad-tailed Grassbird	Schoenicola platyurus	
9	Grey-headed Bulbul	Brachypodius priocephalus	
10 Flame-throated Bulbul (Ruby-throated Bulbul)		Rubigula gularis	
11	Rufous Babbler	Turdoides subrufa	
12	Wayanad Laughingthrush	lanthocincla delesserti	
13	Banasura Laughingthrush (Banasura Chilappan)	Montecincla jerdoni	
14	Nilgiri Laughingthrush (Nilgiri Chilappan)	Montecincla cachinnans	
15	Palani Laughingthrush (Palani Chilappan)	Montecincla fairbanki	
16	Ashambu Laughingthrush (Ashambu Chilappan)	Montecincla meridionalis	
17	Malabar Starling (Blyth's Starling)	Sturnia blythii	
18	Nilgiri Thrush	Zoothera neilgherriensis	
19	White-bellied Sholakili	Sholicola albiventris	
20	White-bellied Blue Flycatcher	Cyornis pallidipes	
21	Nilgiri Flycatcher	Eumyias albicaudatus	
22	Black-and-orange Flycatcher	Ficedula nigrorufa	
23	Nilgiri Flowerpecker	Dicaeum concolor	
24	Crimson-backed Sunbird (Small Sunbird)	Leptocoma minima	
25	Nilgiri Pipit	Anthus nilghiriensis	

#### **Species Richness**

The bird species richness in all the grids of the state is shown in Fig. 3. While generally the diversity is uniform across the state, some of the densely populated districts like Thiruvananthapuram and Kozhikode have less species richness compared to the northern districts of Kasaragod and Kannur. The diverse habitats in certain pockets of Palakkad and Kasaragod provides different ecotones and niches suitable for a variety of species. Some of the hilly regions in Pathanamthitta, Idukki and Malappuram could not be covered during the wet season due to logistical reasons and poor weather conditions. These unsurveyed cells are shown in grey.

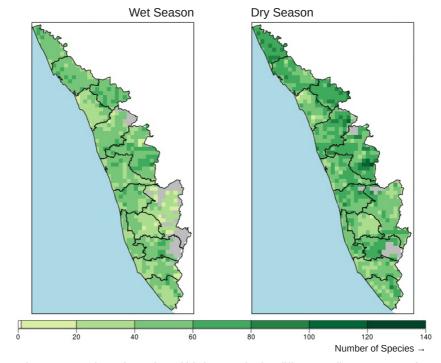
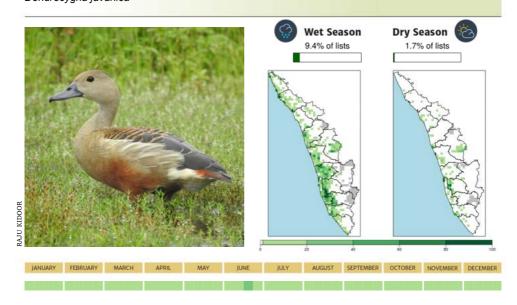


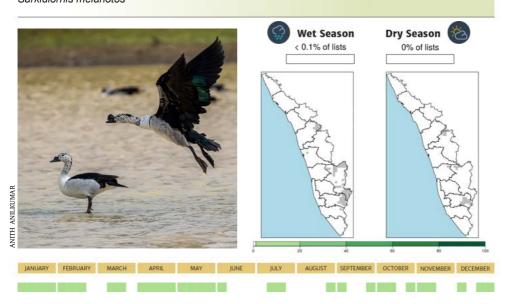
Figure 3: Number of species of birds seen in the different cells across Kerala

**Species Maps and Seasonality** 

# Lesser Whistling-Duck Dendrocygna javanica

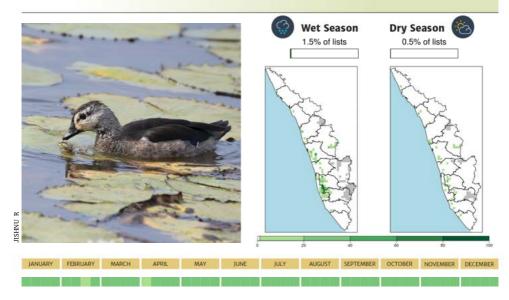


# Knob-billed Duck (Comb Duck) Sarkidiornis melanotos

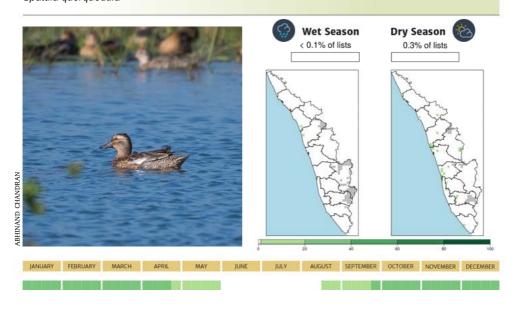


# Cotton Pygmy-Goose (Cotton Teal)

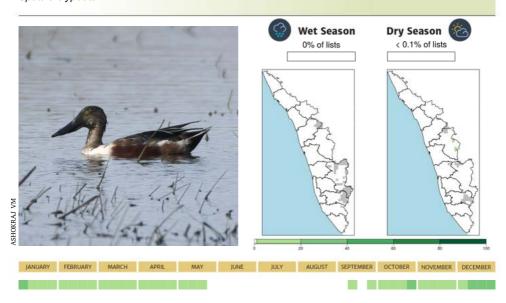
Nettapus coromandelianus



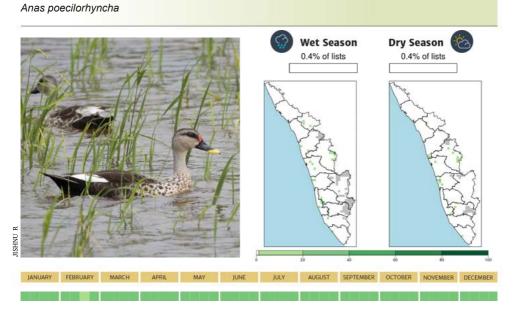
# Garganey Spatula querquedula



# Northern Shoveler Spatula clypeata

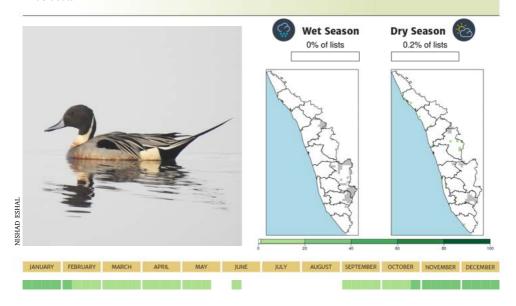


# Indian Spot-billed Duck

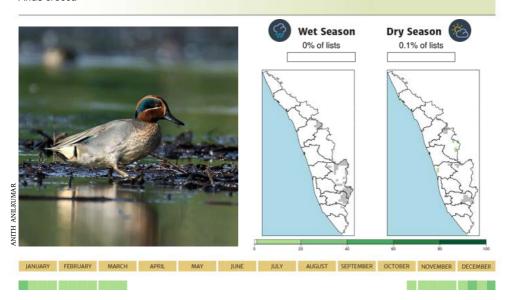


# Northern Pintail

#### Anas acuta

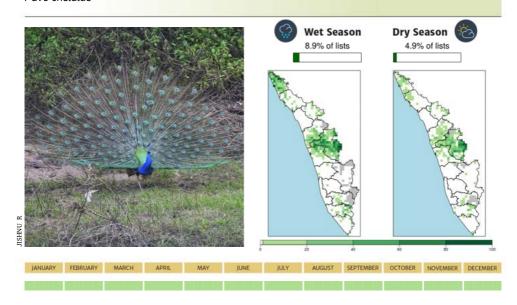


# Green-winged Teal (Common Teal) Anas crecca

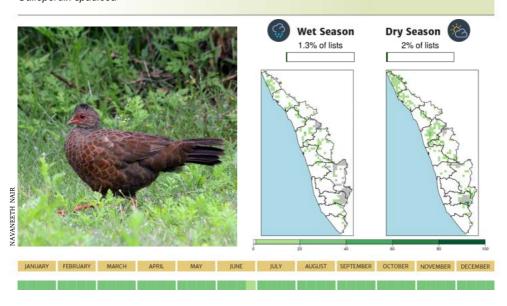


#### Indian Peafowl

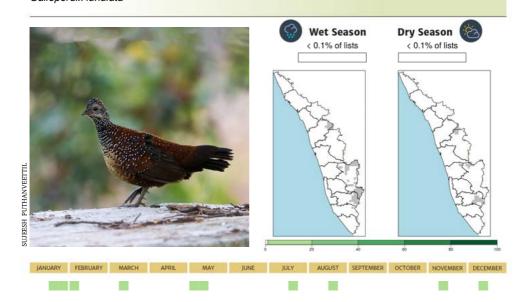
Pavo cristatus



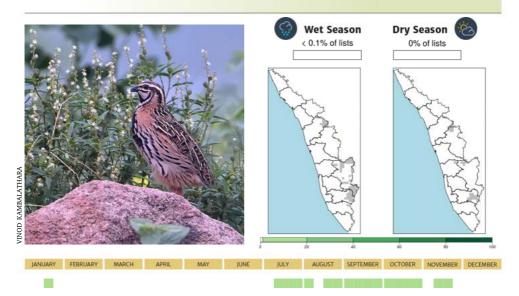
# Red Spurfowl Galloperdix spadicea



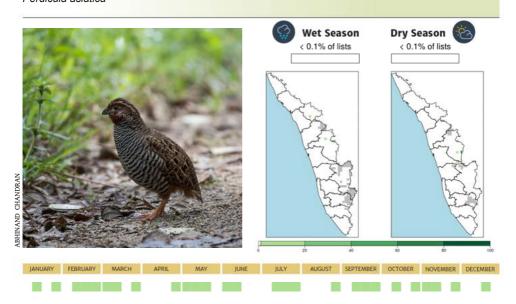
# Painted Spurfowl Galloperdix lunulata



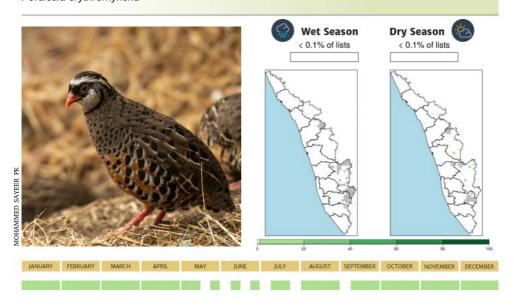
# Rain Quail Coturnix coromandelica



## Jungle Bush-Quail Perdicula asiatica

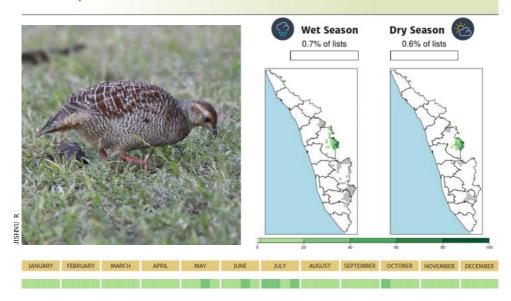


# Painted Bush-Quail Perdicula erythrorhyncha

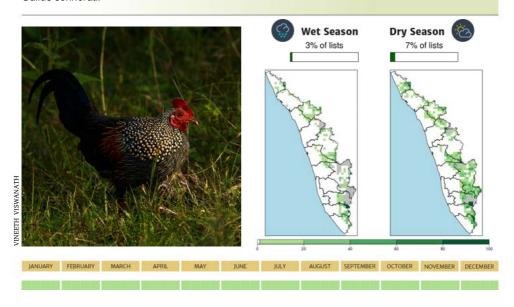


## Grey Francolin

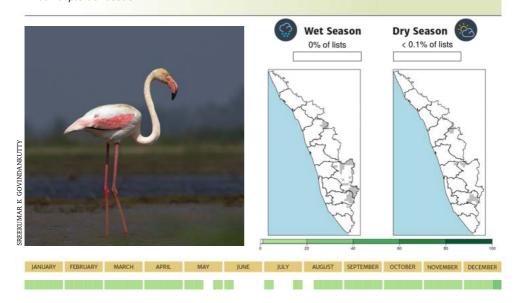
## Francolinus pondicerianus



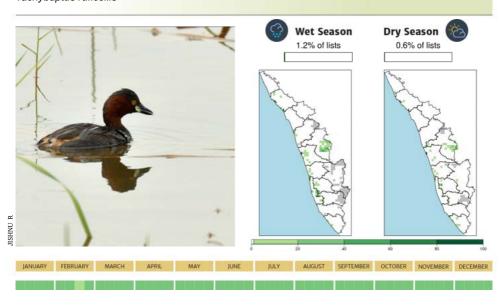
# Grey Junglefowl Gallus sonneratii



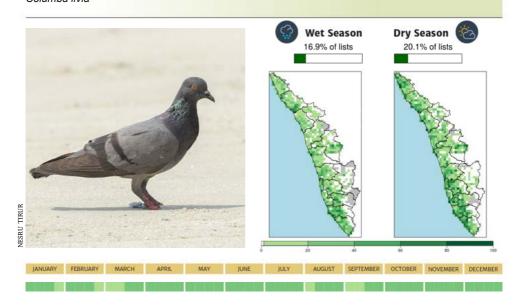
## Greater Flamingo Phoenicopterus roseus



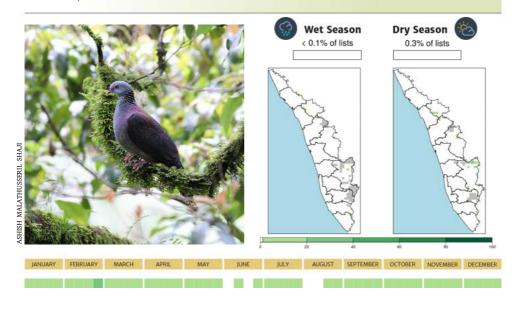
# Little Grebe Tachybaptus ruficollis



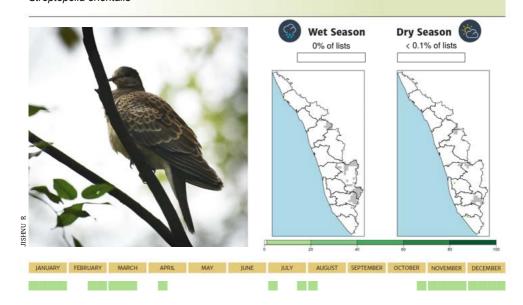
## Rock Pigeon (Feral Pigeon) Columba livia



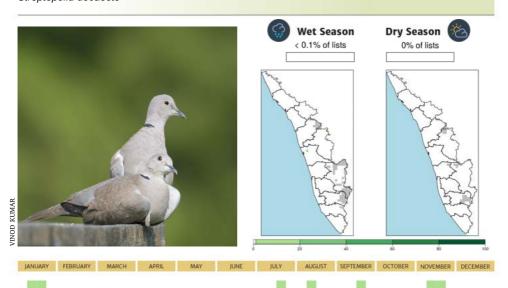
## Nilgiri Wood-Pigeon Columba elphinstonii



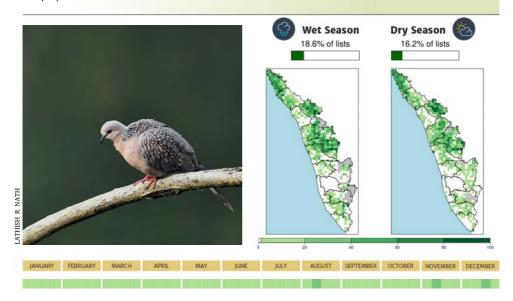
# Oriental Turtle-Dove Streptopelia orientalis



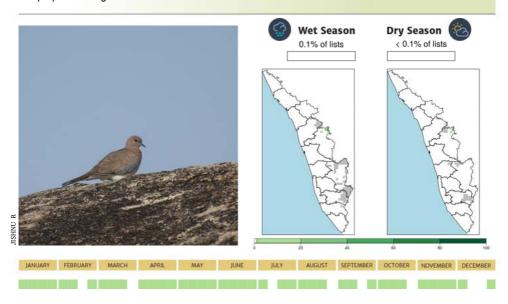
## Eurasian Collared-Dove Streptopelia decaocto



#### Spotted Dove Streptopelia chinensis

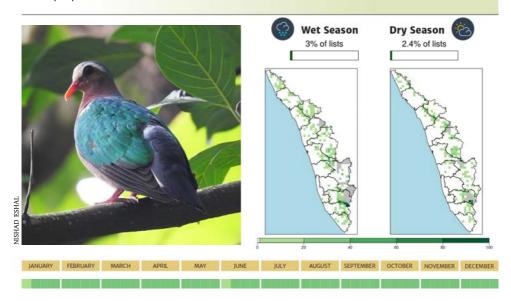


# Laughing Dove (Little Brown Dove) Streptopelia senegalensis

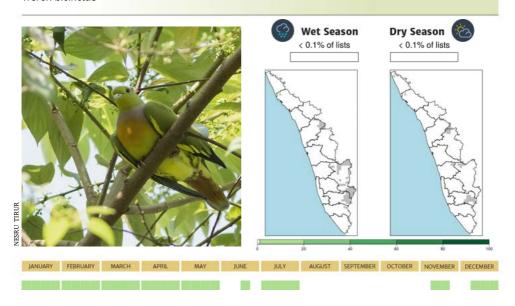


#### Asian Emerald Dove

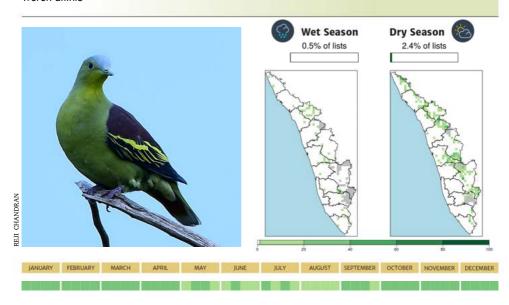
Chalcophaps indica



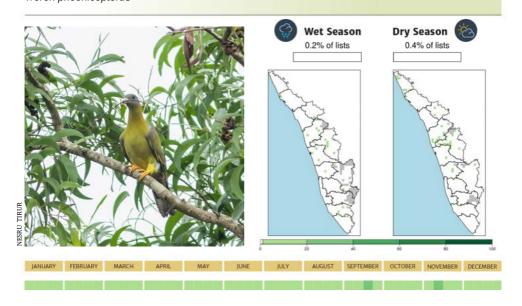
#### Orange-breasted Green-Pigeon Treron bicinctus



## Grey-fronted Green-Pigeon (Pompadour Green-Pigeon) Treron affinis

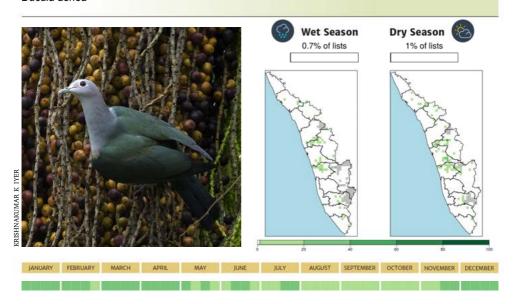


#### Yellow-footed Green-Pigeon Treron phoenicopterus



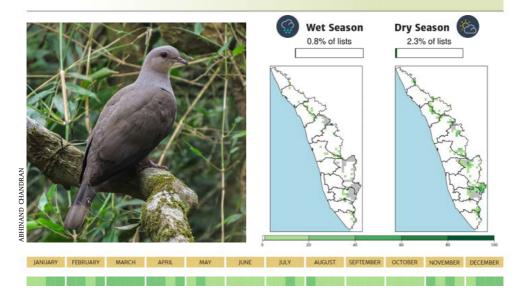
### Green Imperial-Pigeon

Ducula aenea



### Mountain Imperial-Pigeon

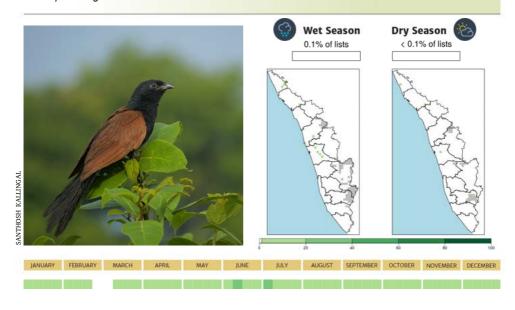
Ducula badia



## Greater Coucal Centropus sinensis

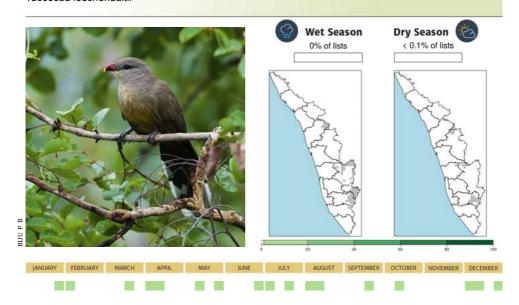


# Lesser Coucal Centropus bengalensis

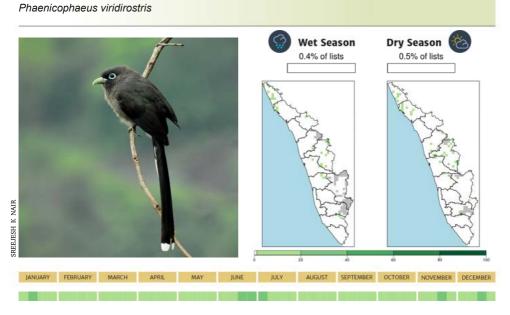


#### Sirkeer Malkoha

Taccocua leschenaultii

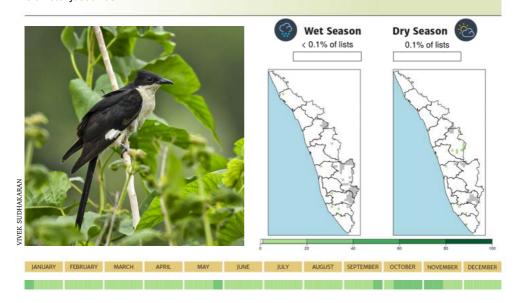


### Blue-faced Malkoha

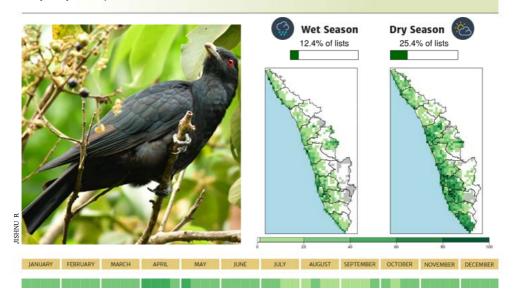


#### Pied Cuckoo (Jacobin Cuckoo)

Clamator jacobinus

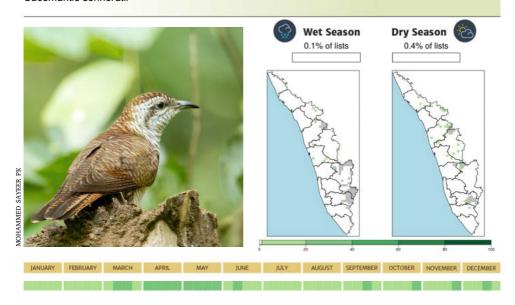


## Asian Koel Eudynamys scolopaceus

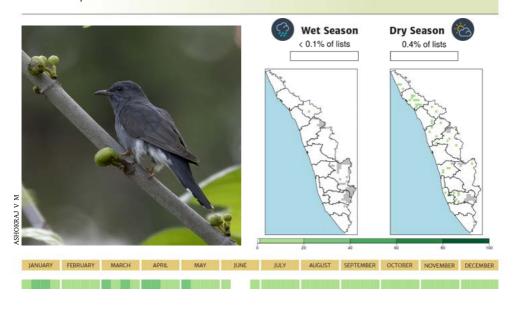


#### Banded Bay Cuckoo

Cacomantis sonneratii

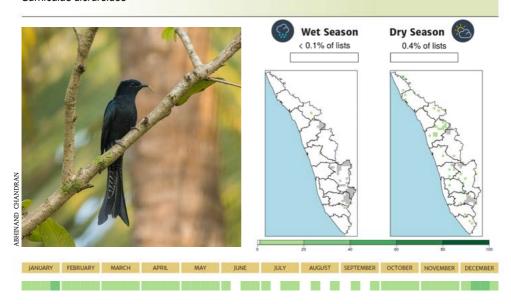


# Grey-bellied Cuckoo Cacomantis passerinus

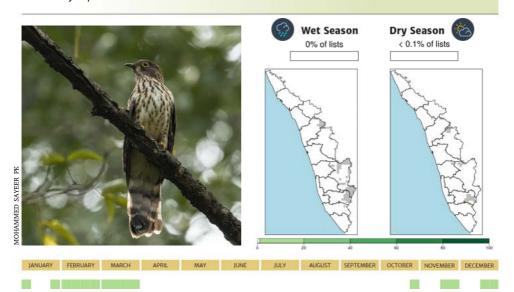


### Fork-tailed Drongo-Cuckoo

Surniculus dicruroides

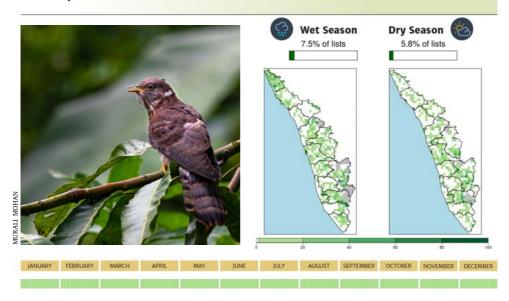


# Large Hawk-Cuckoo Hierococcyx sparverioides

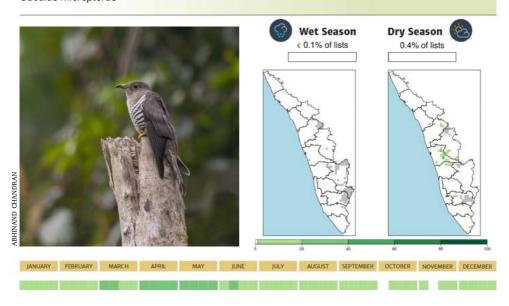


#### Common Hawk-Cuckoo

Hierococcyx varius

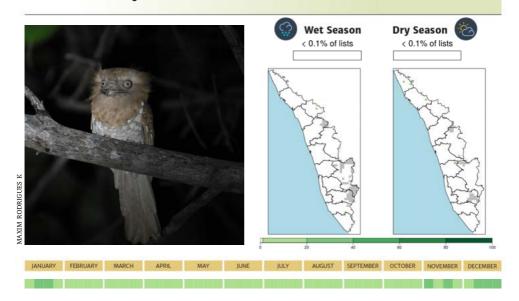


## Indian Cuckoo Cuculus micropterus

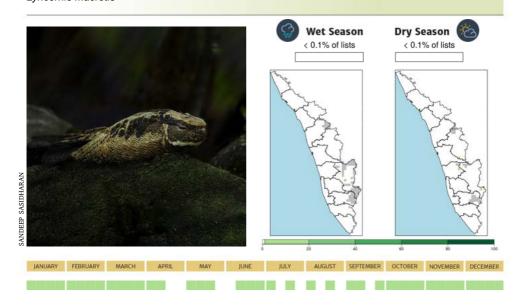


### Sri Lanka Frogmouth

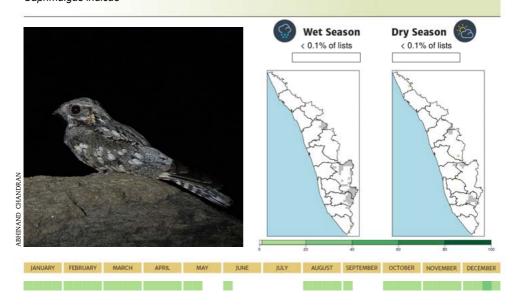
Batrachostomus moniliger



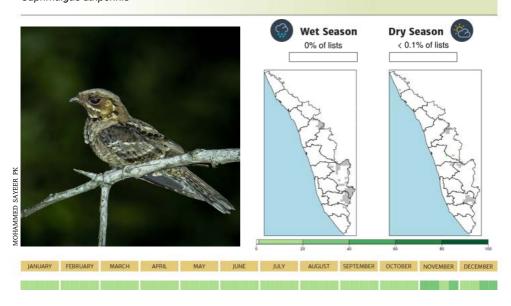
# Great Eared-Nightjar Lyncornis macrotis



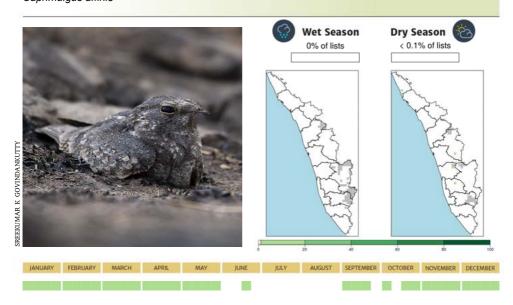
## Jungle Nightjar (Indian Jungle Nightjar) Caprimulgus indicus



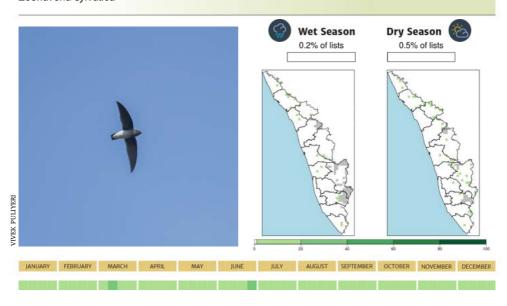
#### Jerdon's Nightjar Caprimulgus atripennis



#### Savanna Nightjar Caprimulgus affinis

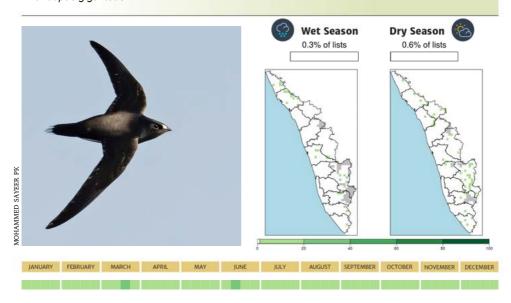


# White-rumped Needletail (White-rumped Spinetail) Zoonavena sylvatica

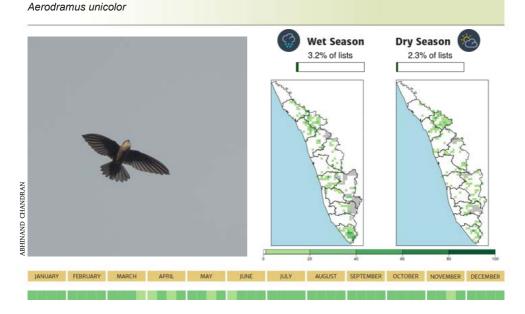


#### Brown-backed Needletail

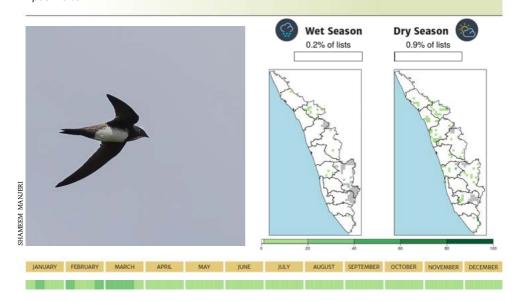
Hirundapus giganteus



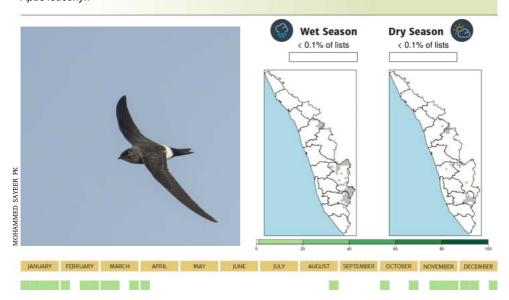
### Indian Swiftlet



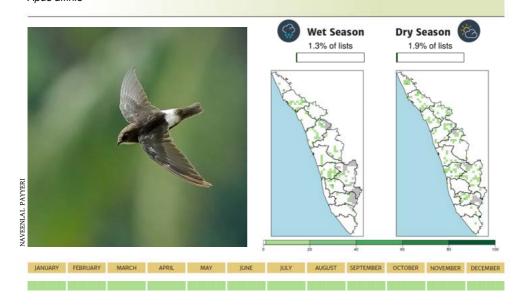
## Alpine Swift Apus melba



# Blyth's Swift (Fork-tailed Swift) Apus leuconyx



## Little Swift (Indian House Swift) Apus affinis

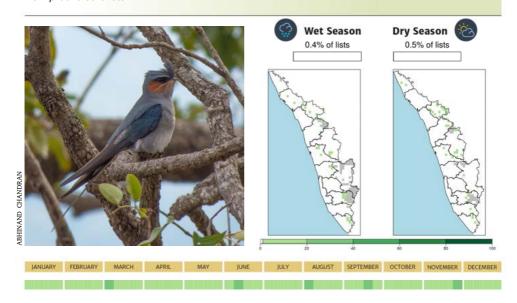


## Asian Palm-Swift Cypsiurus balasiensis

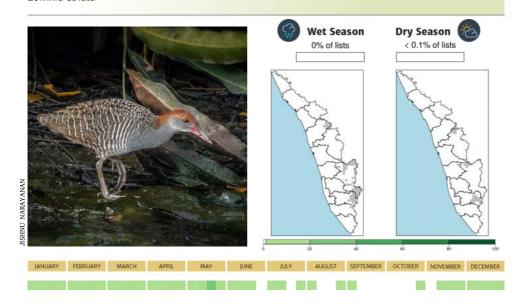


### Crested Treeswift

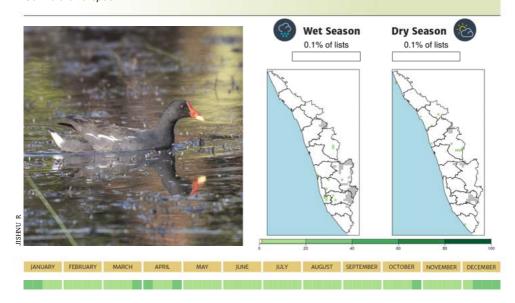
Hemiprocne coronata



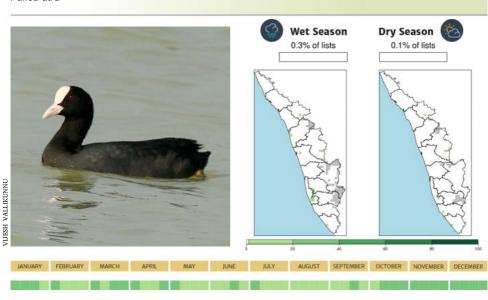
## Slaty-breasted Rail Lewinia striata



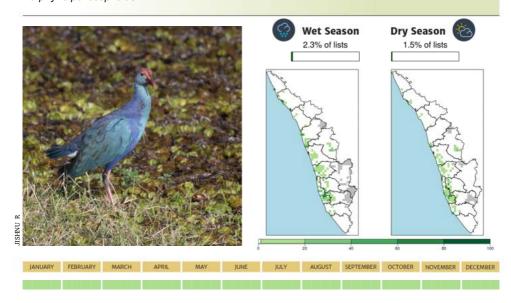
#### Eurasian Moorhen Gallinula chloropus



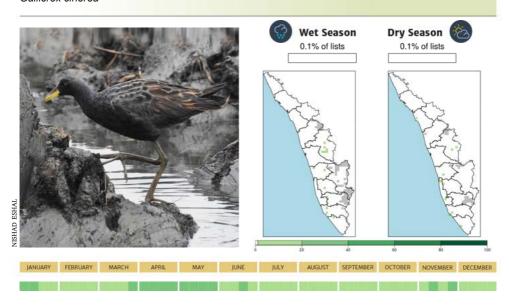
## Eurasian Coot



# Grey-headed Swamphen (Purple Swamphen) Porphyrio poliocephalus

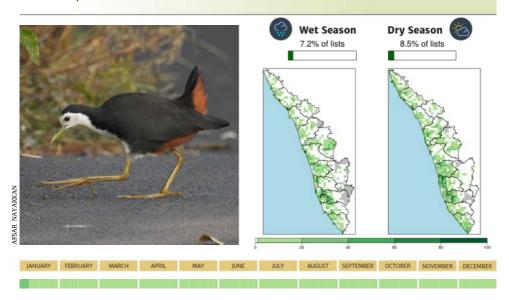


## Watercock Gallicrex cinerea

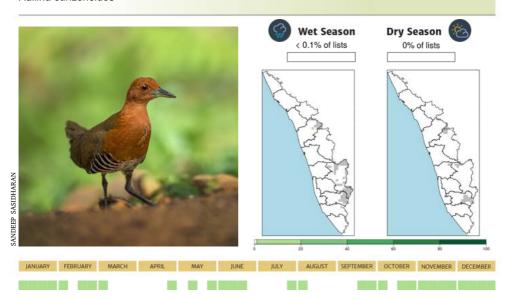


#### White-breasted Waterhen

Amaurornis phoenicurus

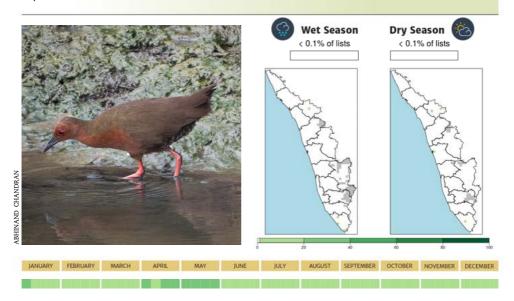


## Slaty-legged Crake Rallina eurizonoides



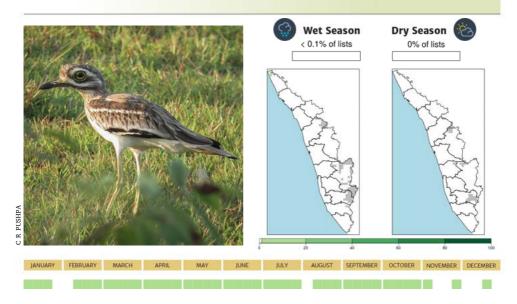
### Ruddy-breasted Crake

Zapornia fusca



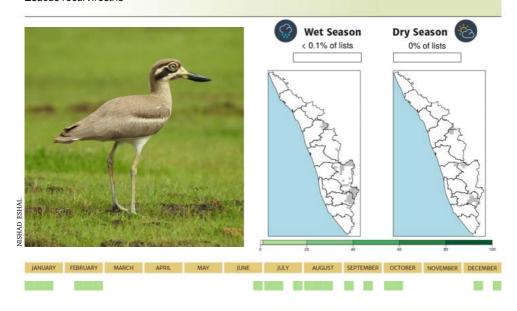
### Indian Thick-knee (Indian Stone-curlew)

Burhinus indicus

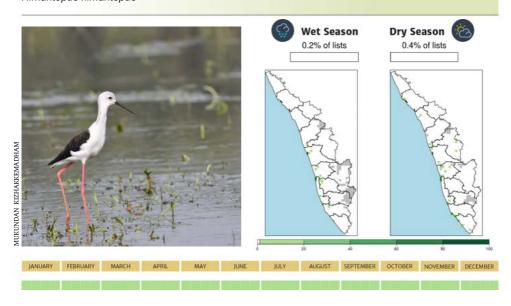


#### Great Thick-knee (Great Stone-curlew)

Esacus recurvirostris

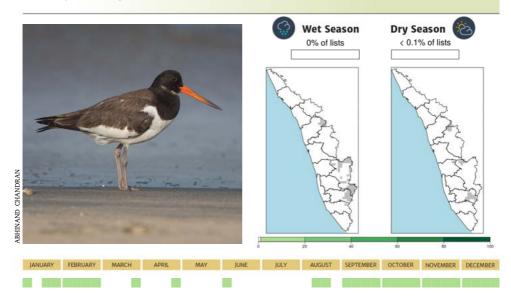


# Black-winged Stilt Himantopus himantopus



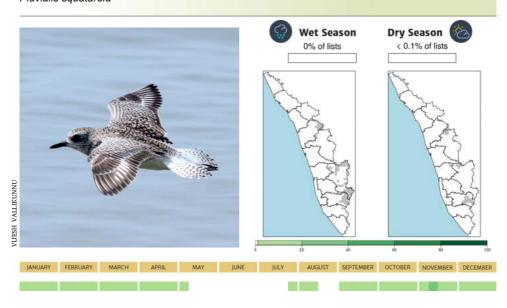
### Eurasian Oystercatcher

Haematopus ostralegus



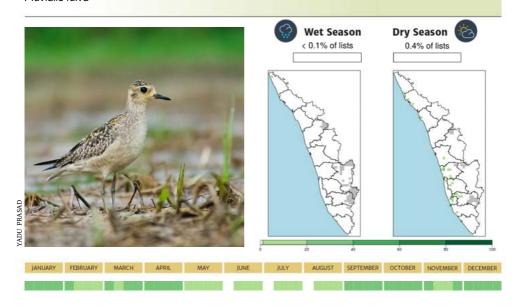
#### Black-bellied Plover (Grey Plover)

Pluvialis squatarola

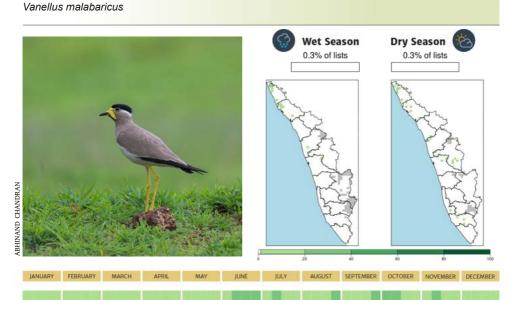


#### Pacific Golden-Plover

Pluvialis fulva

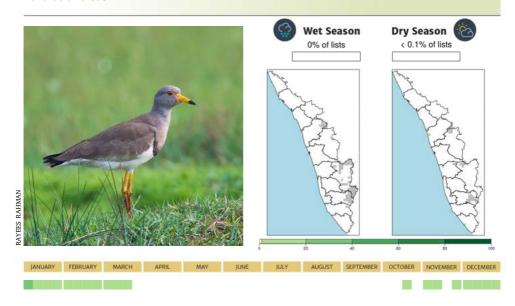


### Yellow-wattled Lapwing



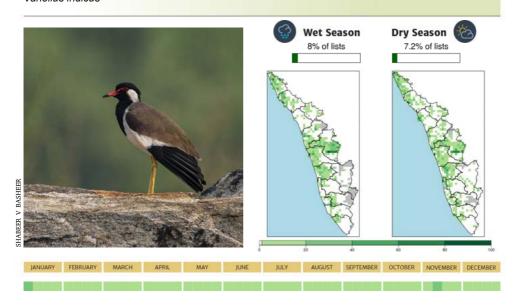
### Grey-headed Lapwing

Vanellus cinereus

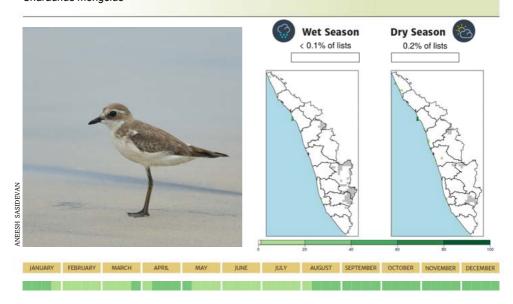


### Red-wattled Lapwing

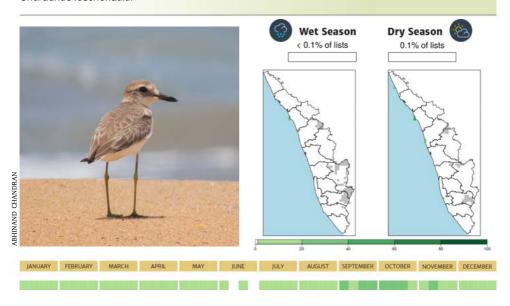
Vanellus indicus



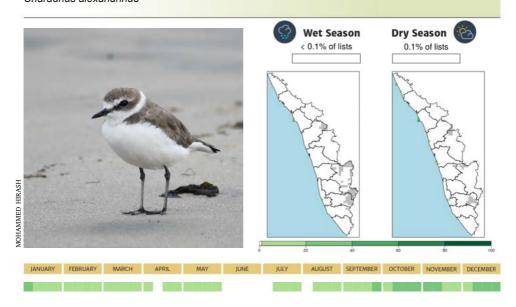
## Lesser Sand-Plover Charadrius mongolus



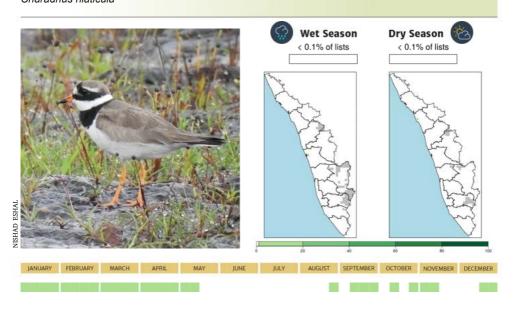
## Greater Sand-Plover Charadrius leschenaultii



## Kentish Plover Charadrius alexandrinus

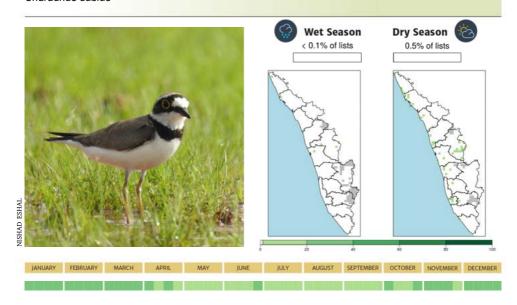


### Common Ringed Plover Charadrius hiaticula

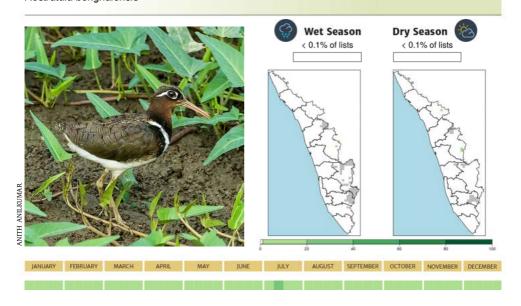


### Little Ringed Plover

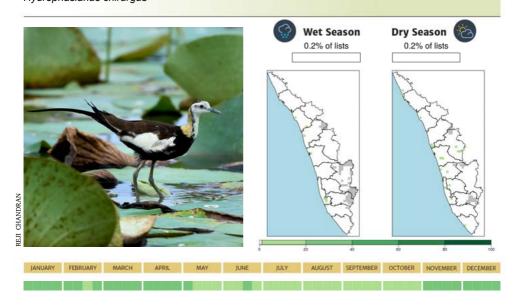
Charadrius dubius



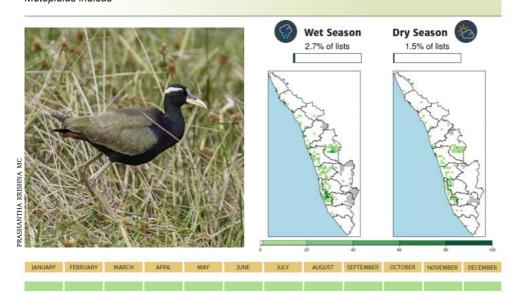
# Greater Painted-Snipe Rostratula benghalensis



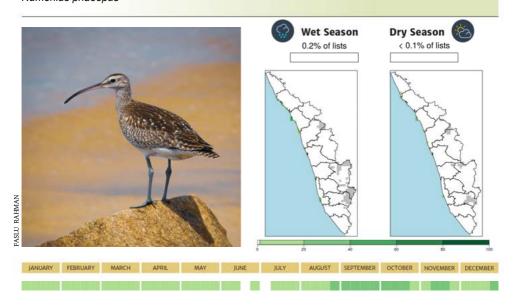
## Pheasant-tailed Jacana Hydrophasianus chirurgus



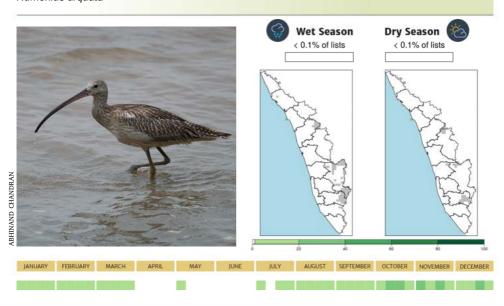
## Bronze-winged Jacana *Metopidius indicus*



## Whimbrel Numenius phaeopus

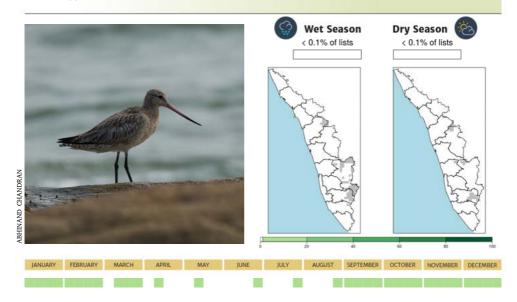


## Eurasian Curlew Numenius arquata



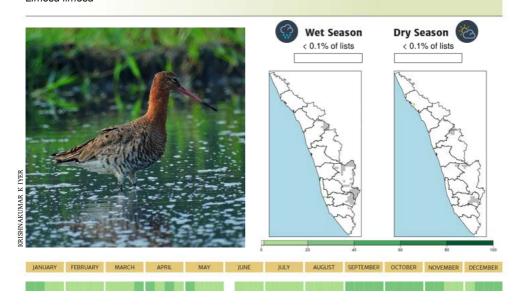
### Bar-tailed Godwit

Limosa Iapponica

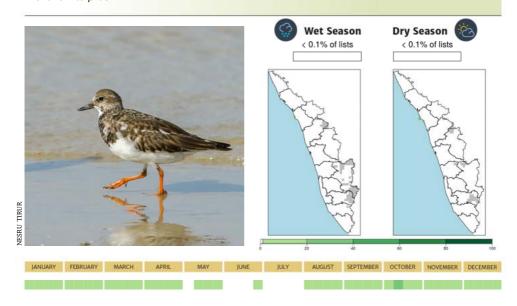


### Black-tailed Godwit

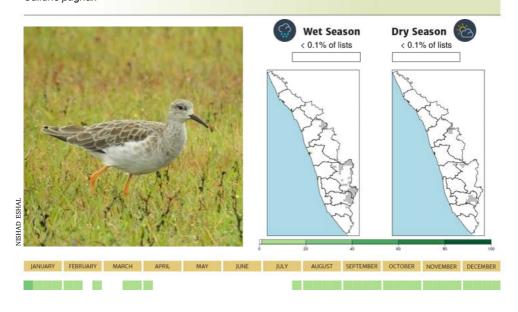
Limosa limosa



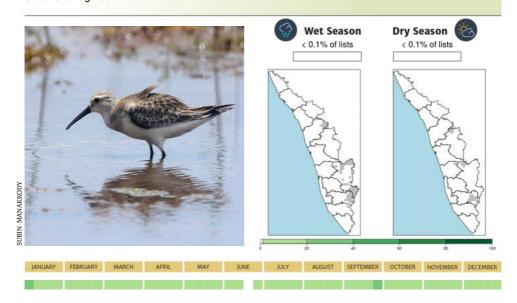
## Ruddy Turnstone Arenaria interpres



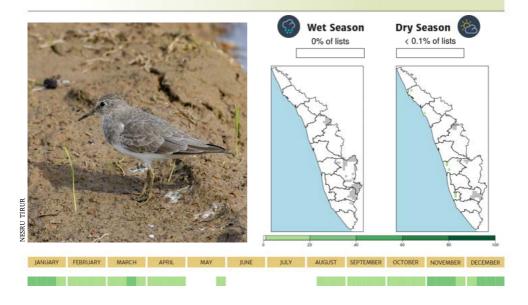
Ruff
Calidris pugnax



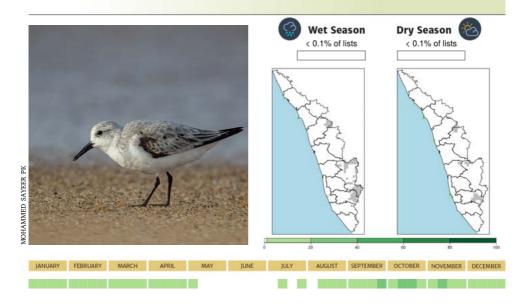
## Curlew Sandpiper Calidris ferruginea



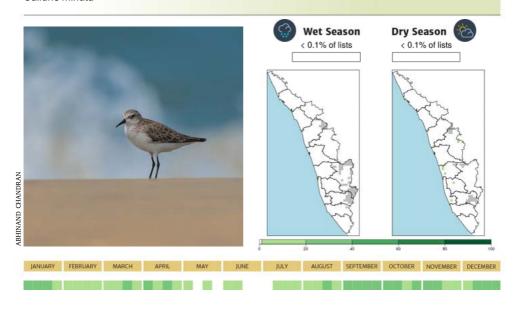
## Temminck's Stint Calidris temminckii



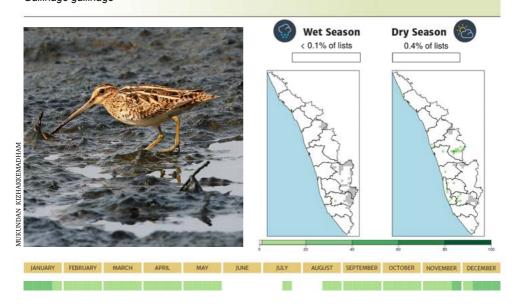
#### Sanderling Calidris alba



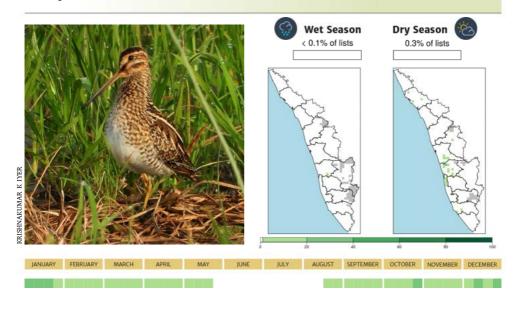
## Little Stint Calidris minuta



#### Common Snipe Gallinago gallinago

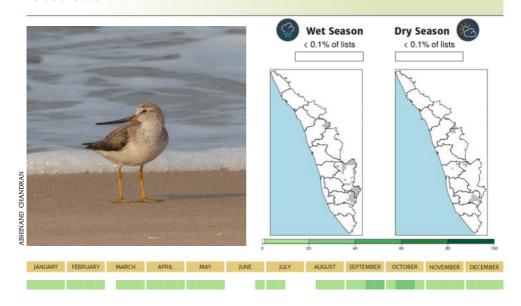


#### Pin-tailed Snipe Gallinago stenura

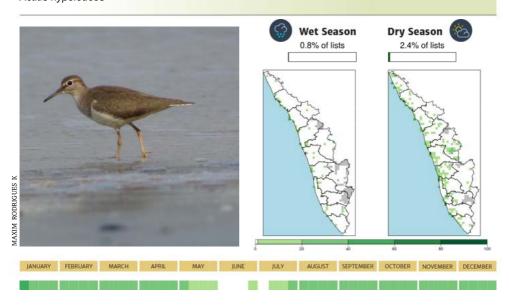


### Terek Sandpiper

Xenus cinereus

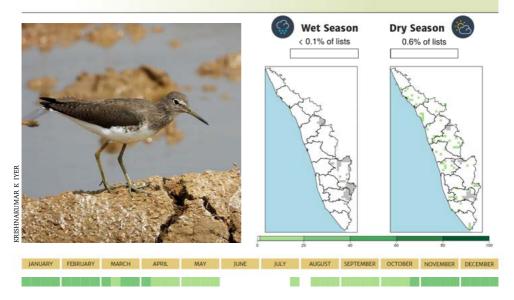


# Common Sandpiper Actitis hypoleucos



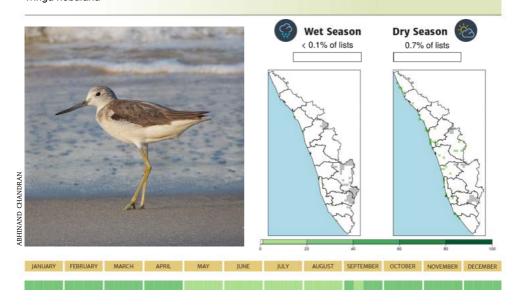
### Green Sandpiper

Tringa ochropus

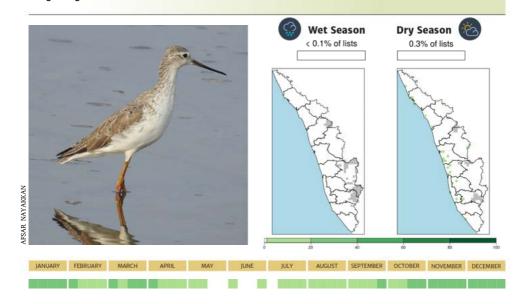


### Common Greenshank

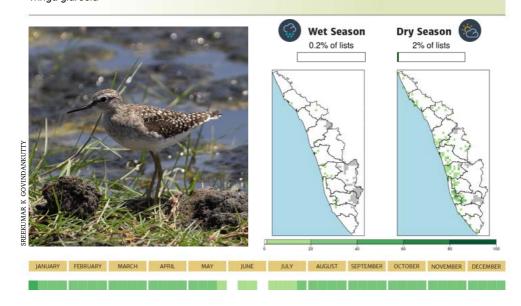
Tringa nebularia



#### Marsh Sandpiper Tringa stagnatilis

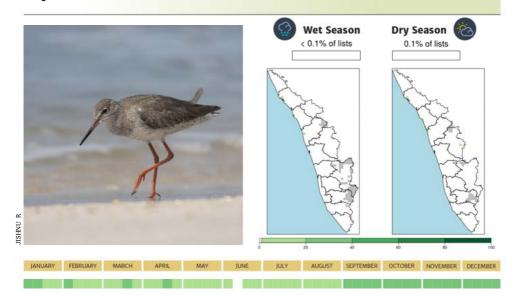


### Wood Sandpiper Tringa glareola



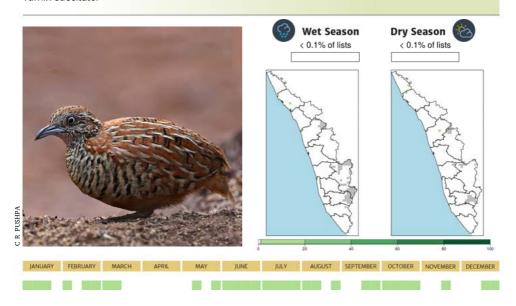
#### Common Redshank

Tringa totanus



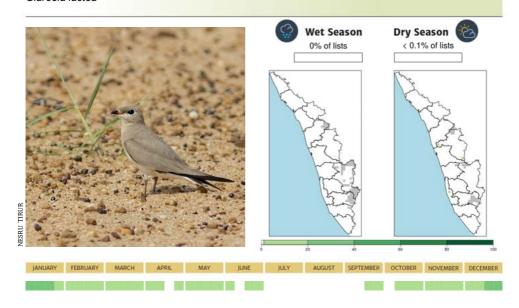
### Barred Buttonquail

Turnix suscitator

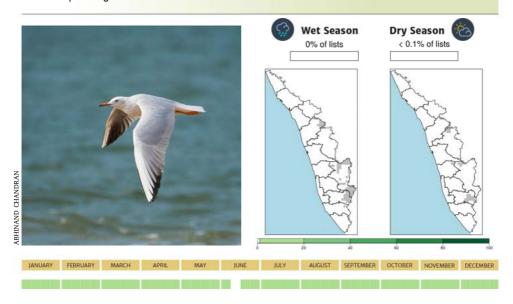


### Small Pratincole

Glareola lactea

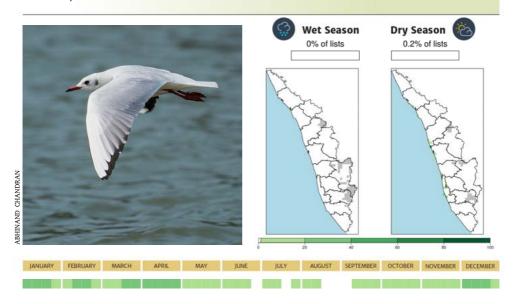


### Slender-billed Gull Chroicocephalus genei

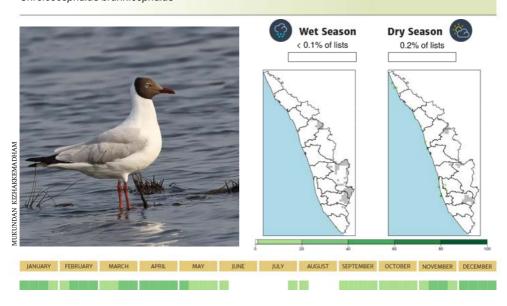


### Black-headed Gull

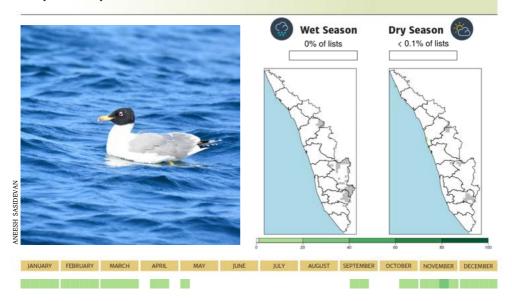
Chroicocephalus ridibundus



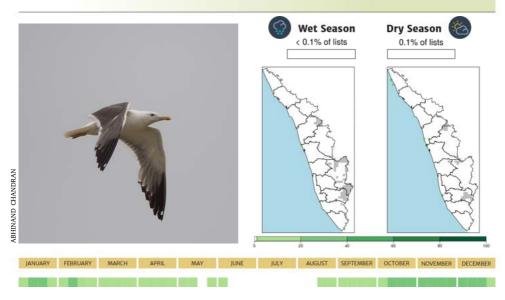
# Brown-headed Gull Chroicocephalus brunnicephalus



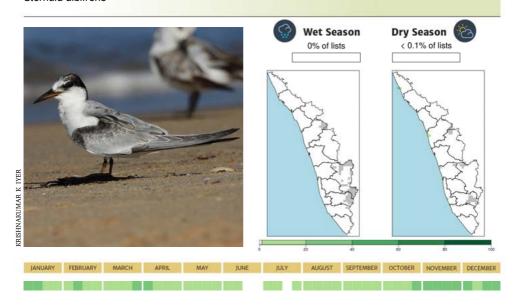
Pallas's Gull Ichthyaetus ichthyaetus



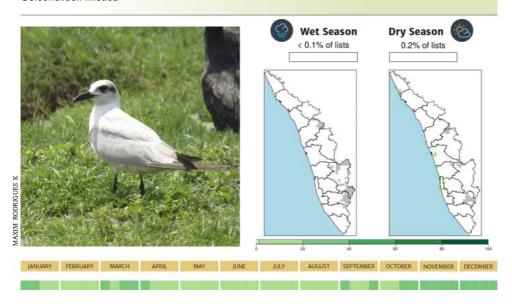
# Lesser Black-backed Gull Larus fuscus



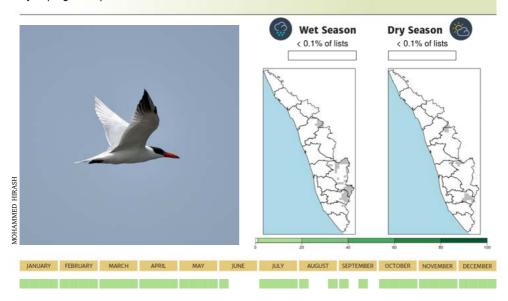
Little Tern
Sternula albifrons



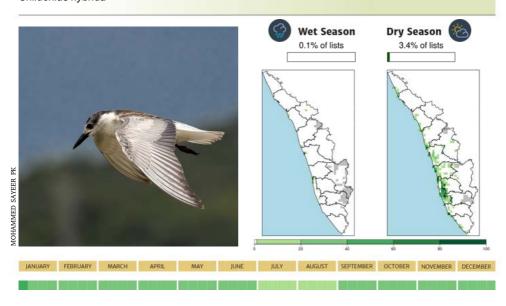
## Gull-billed Tern Gelochelidon nilotica



# Caspian Tern *Hydroprogne caspia*

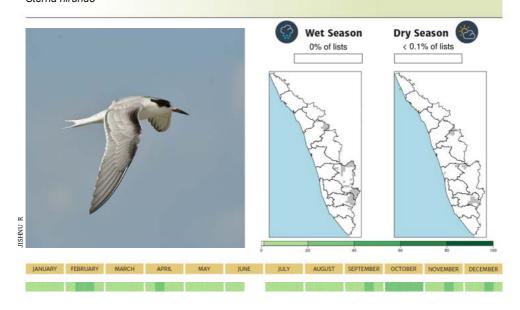


#### Whiskered Tern Chlidonias hybrida

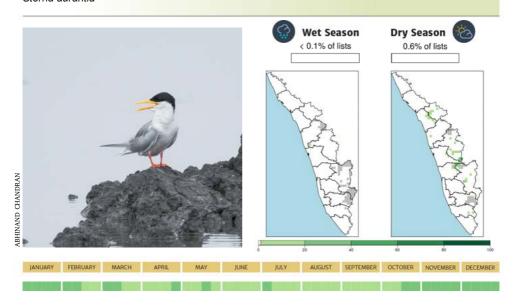


#### KERALA BIRD ATLAS

#### Common Tern Sterna hirundo

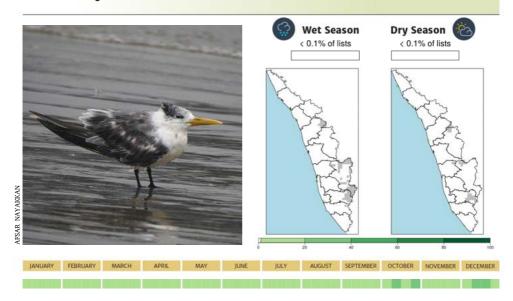


#### River Tern Sterna aurantia



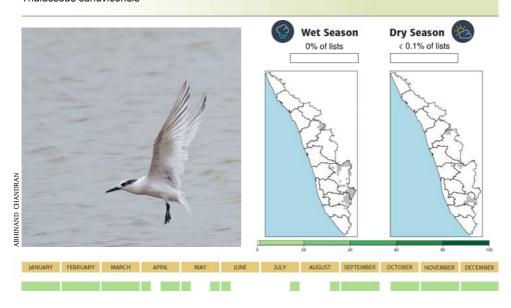
#### Great Crested Tern

Thalasseus bergii



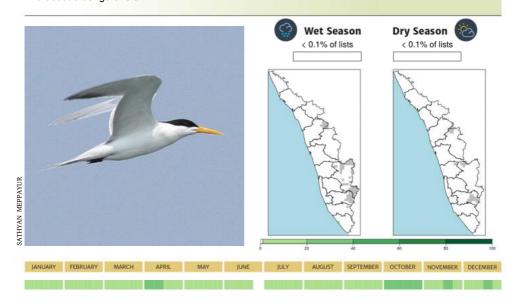
### Sandwich Tern

Thalasseus sandvicensis



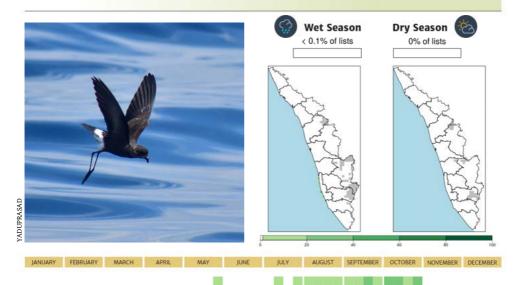
### Lesser Crested Tern

#### Thalasseus bengalensis



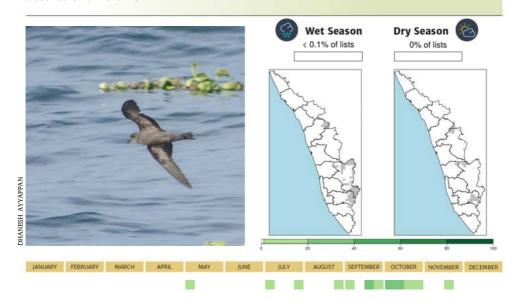
### Wilson's Storm-Petrel

Oceanites oceanicus

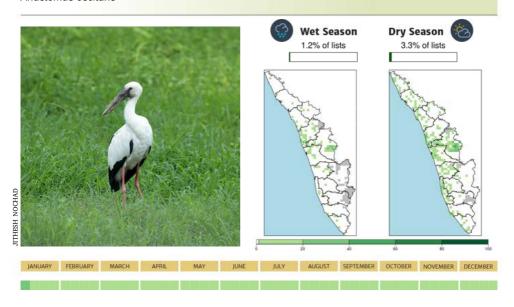


### Swinhoe's Storm-Petrel

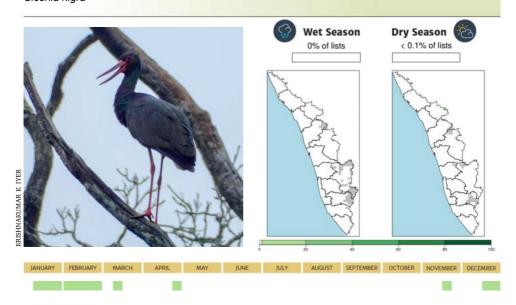
Oceanodroma monorhis



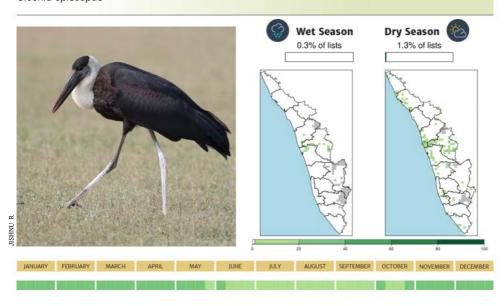
## Asian Openbill Anastomus oscitans



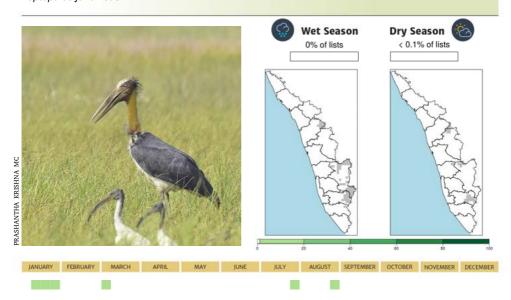
## Black Stork Ciconia nigra



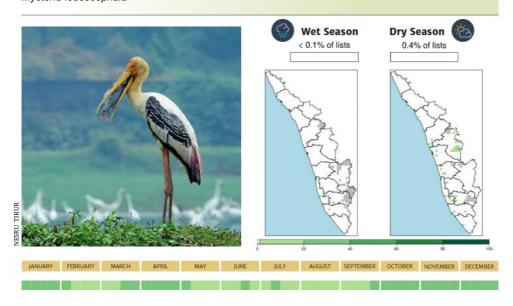
# Woolly-necked Stork Ciconia episcopus



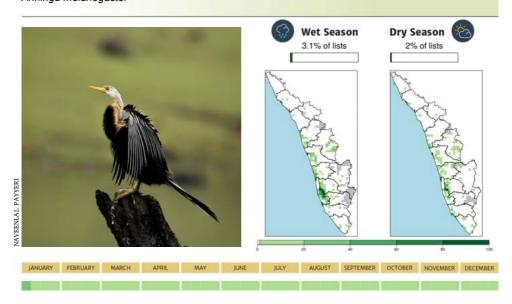
#### Lesser Adjutant Leptoptilos javanicus



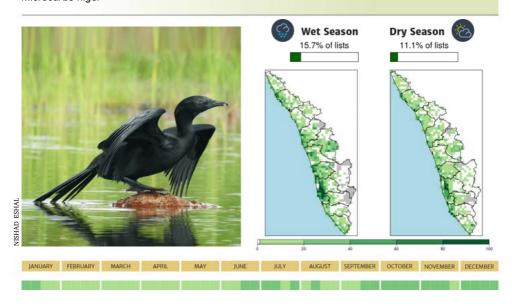
# Painted Stork Mycteria leucocephala



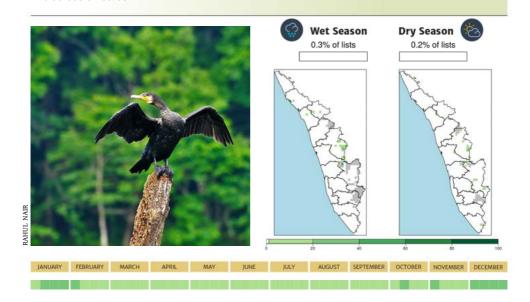
## Oriental Darter Anhinga melanogaster



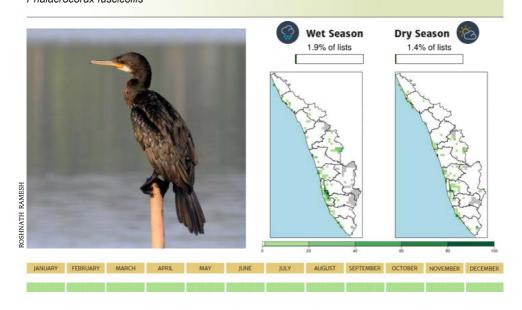
# Little Cormorant Microcarbo niger



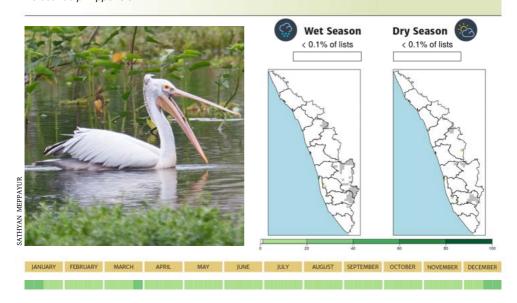
## Great Cormorant Phalacrocorax carbo



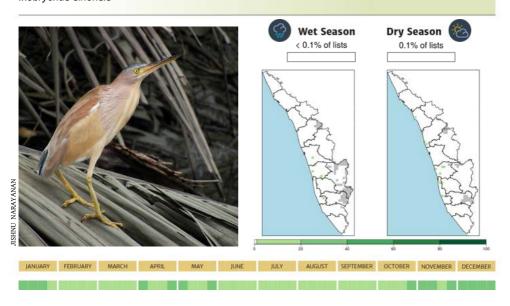
## Indian Cormorant (Indian Shag) Phalacrocorax fuscicollis



# Spot-billed Pelican Pelecanus philippensis

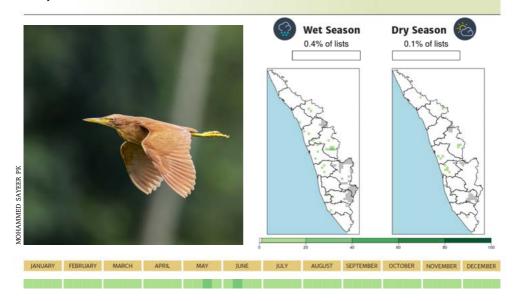


# Yellow Bittern Ixobrychus sinensis

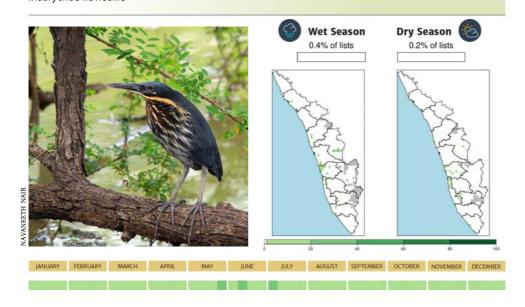


#### Cinnamon Bittern

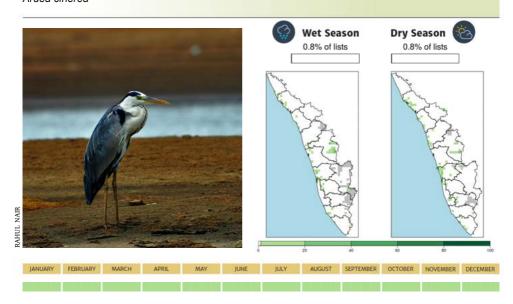
Ixobrychus cinnamomeus



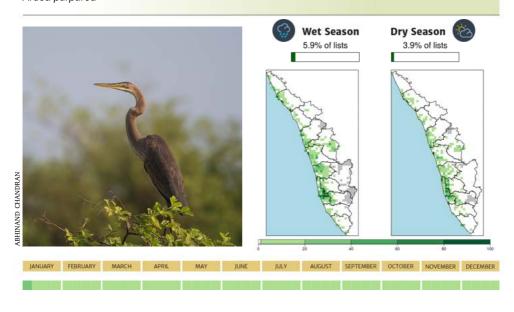
### Black Bittern Ixobrychus flavicollis



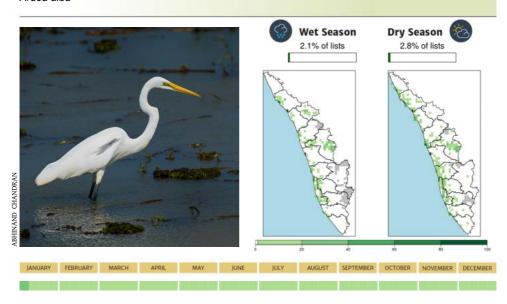
## Grey Heron Ardea cinerea



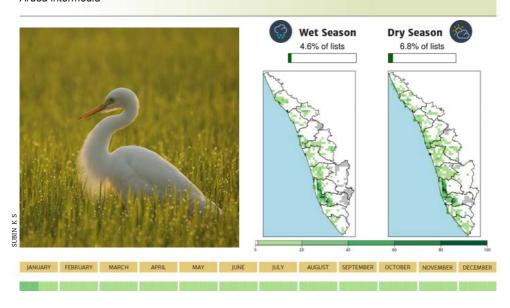
#### Purple Heron Ardea purpurea



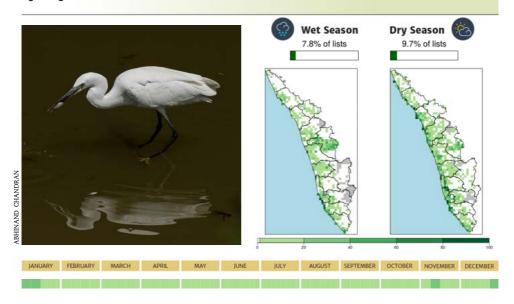
## Great Egret Ardea alba



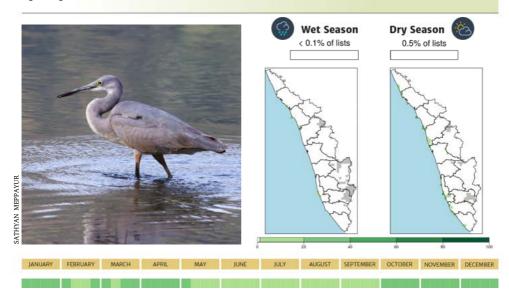
### Intermediate Egret Ardea intermedia



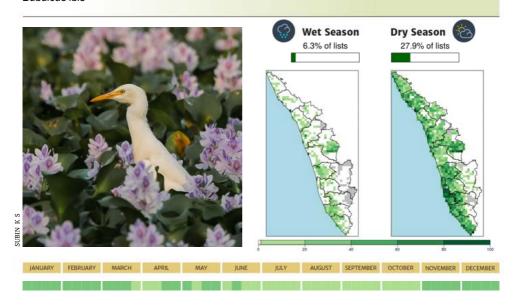
# Little Egret Egretta garzetta



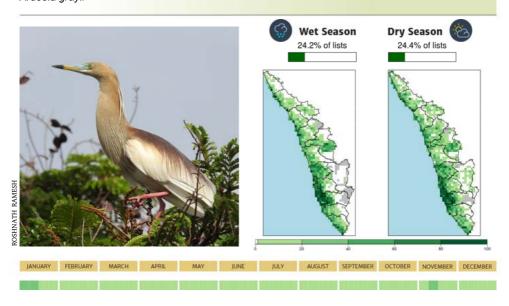
# Western Reef-Heron (Western Reef-Egret) Egretta gularis



## Cattle Egret Bubulcus ibis

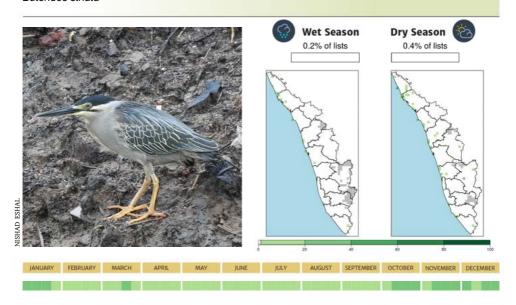


### Indian Pond-Heron Ardeola grayii



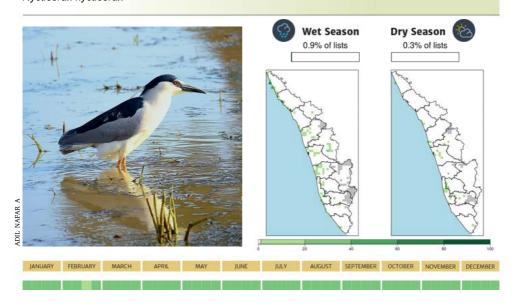
#### Striated Heron (Little Heron)

Butorides striata

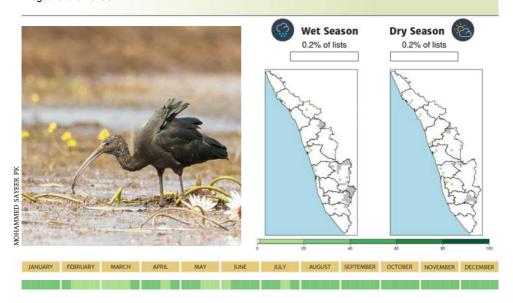


### Black-crowned Night-Heron

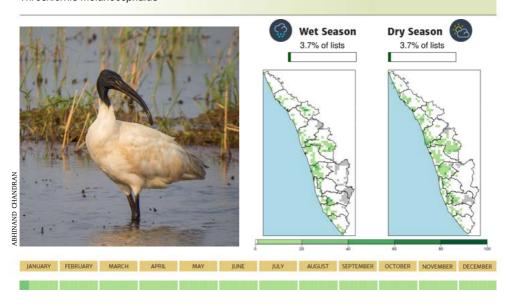
Nycticorax nycticorax



# Glossy Ibis Plegadis falcinellus

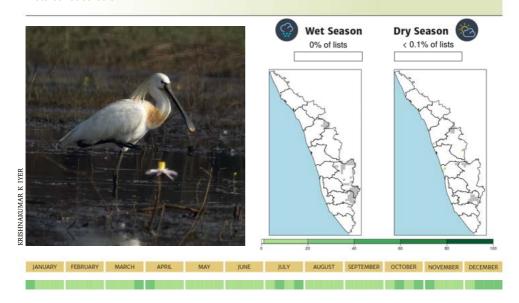


# Black-headed Ibis Threskiornis melanocephalus

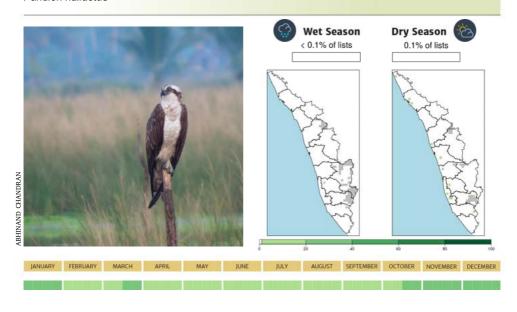


### Eurasian Spoonbill

Platalea leucorodia

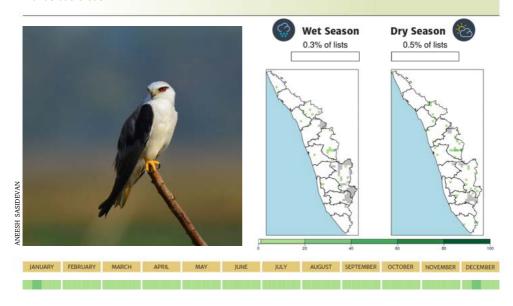


## Osprey Pandion haliaetus

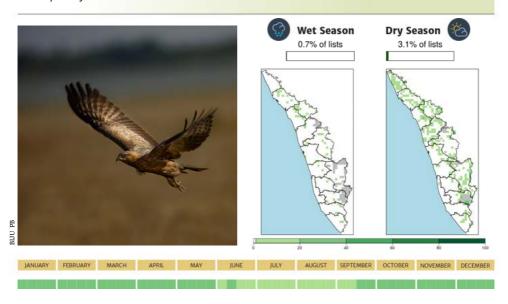


#### Black-winged Kite (Black-shouldered Kite)

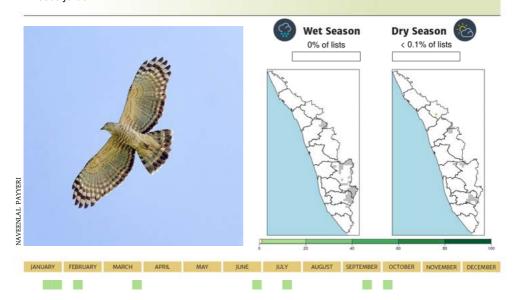
Elanus caeruleus



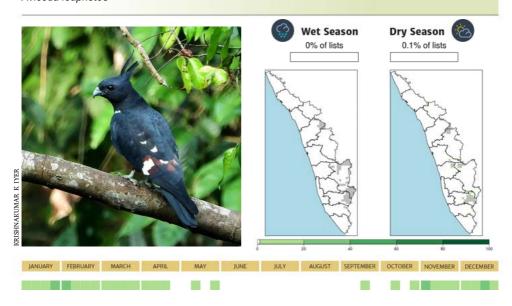
## Oriental Honey-buzzard (Crested Honey Buzzard) Pemis ptilorhynchus



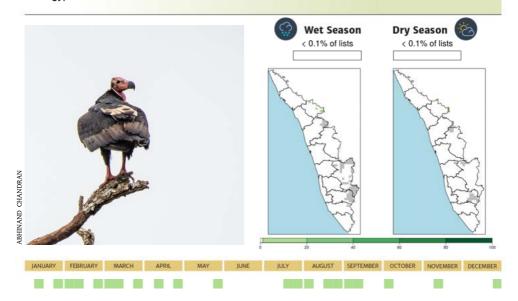
#### Jerdon's Baza Aviceda jerdoni



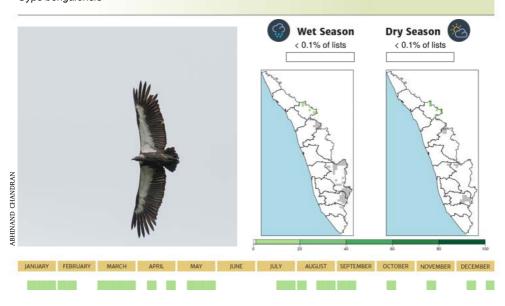
## Black Baza Aviceda leuphotes



## Red-headed Vulture Sarcogyps calvus

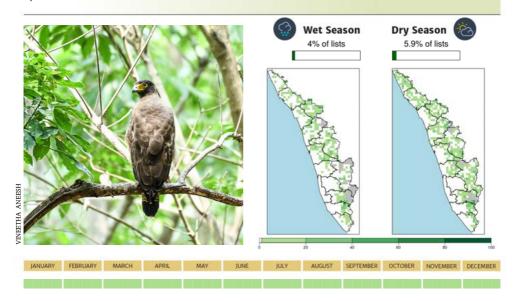


# White-rumped Vulture Gyps bengalensis

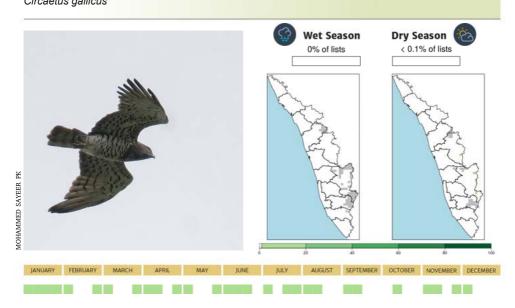


### Crested Serpent-Eagle

Spilornis cheela

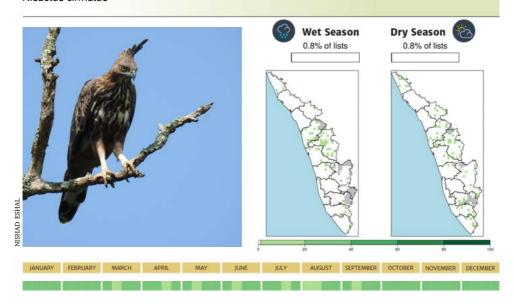


# Short-toed Snake-Eagle Circaetus gallicus

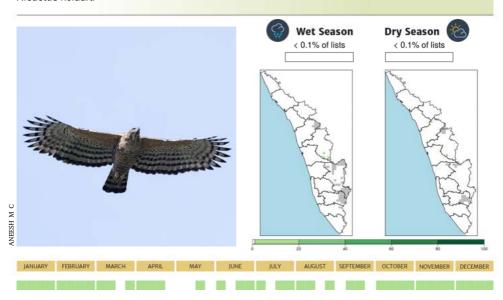


### Changeable Hawk-Eagle

Nisaetus cirrhatus

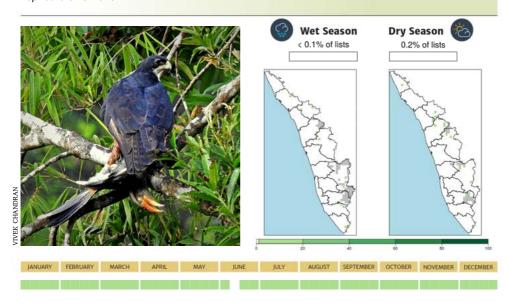


#### Legge's Hawk-Eagle Nisaetus kelaarti

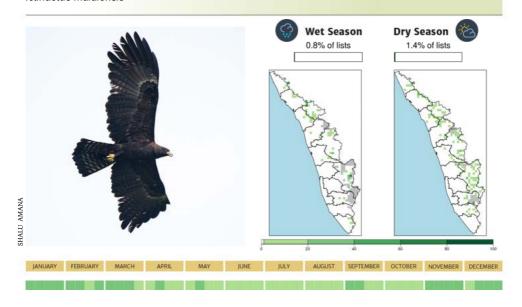


#### Rufous-bellied Eagle

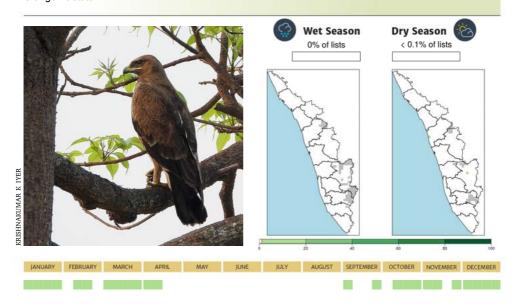
Lophotriorchis kienerii



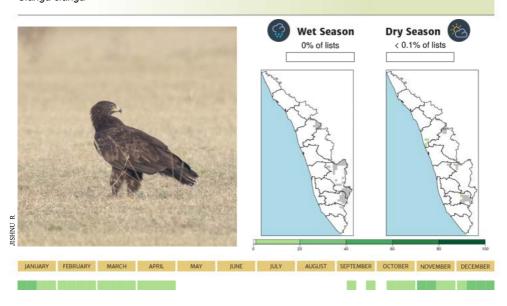
# Black Eagle Ictinaetus malaiensis



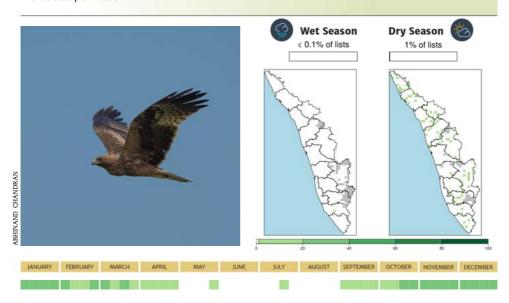
# Indian Spotted Eagle Clanga hastata



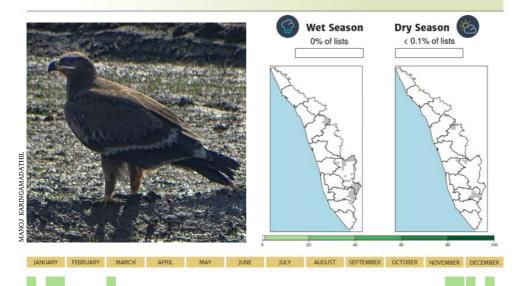
# Greater Spotted Eagle Clanga clanga



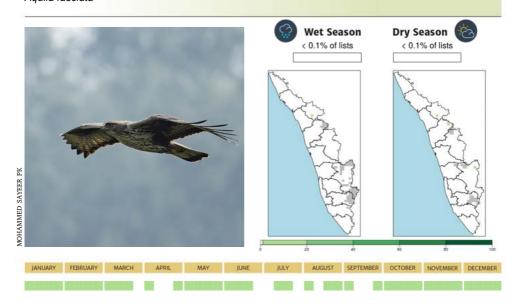
# Booted Eagle Hieraaetus pennatus



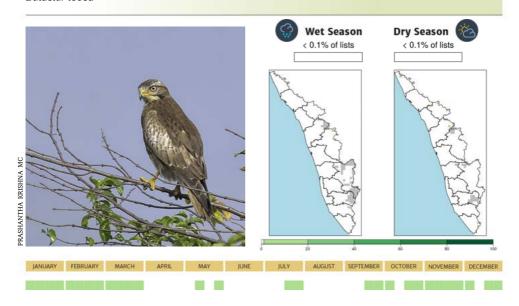
# Steppe Eagle Aquila nipalensis



# Bonelli's Eagle Aquila fasciata

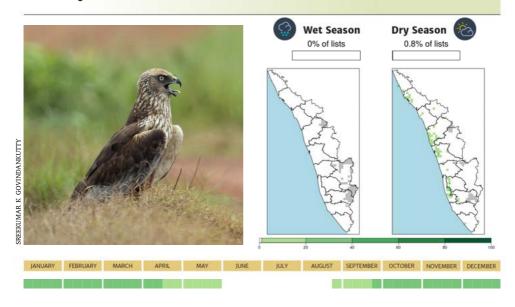


## White-eyed Buzzard Butastur teesa

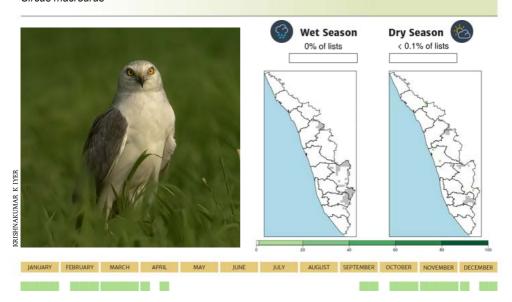


### Eurasian Marsh-Harrier

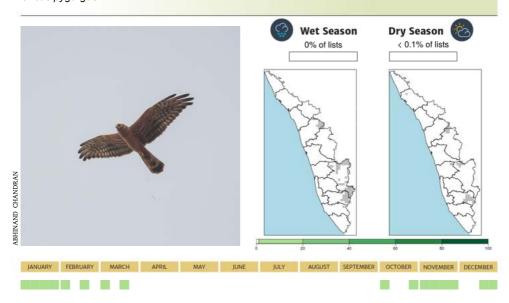
Circus aeruginosus



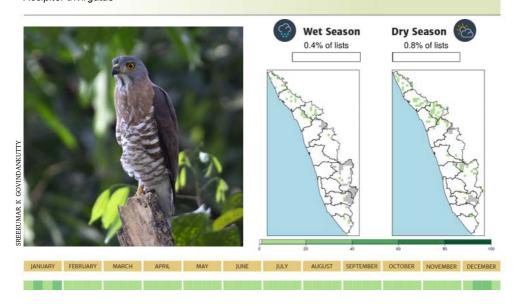
## Pallid Harrier Circus macrourus



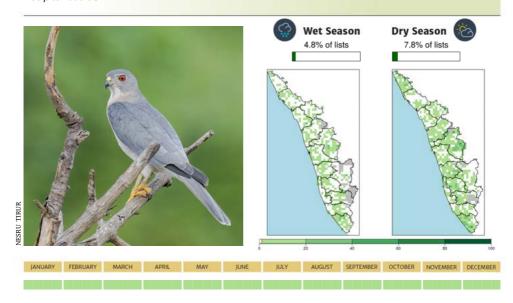
# Montagu's Harrier Circus pygargus



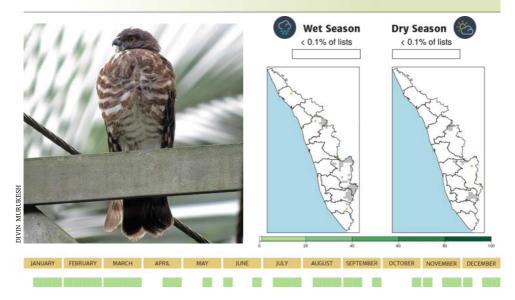
### Crested Goshawk Accipiter trivirgatus



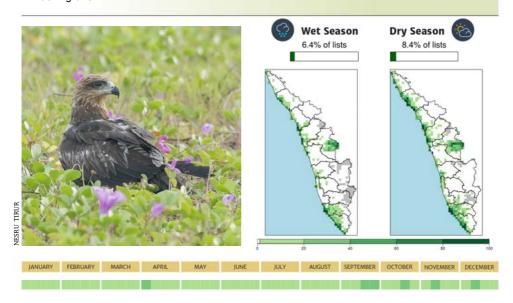
Shikra Accipiter badius



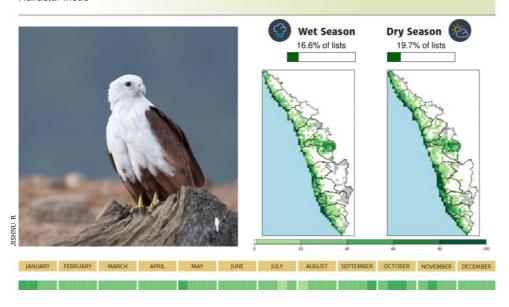
Besra Accipiter virgatus



### Black Kite Milvus migrans

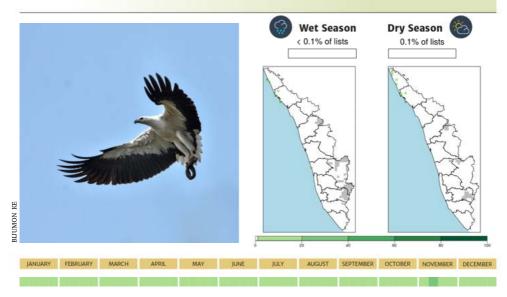


### Brahminy Kite Haliastur indus

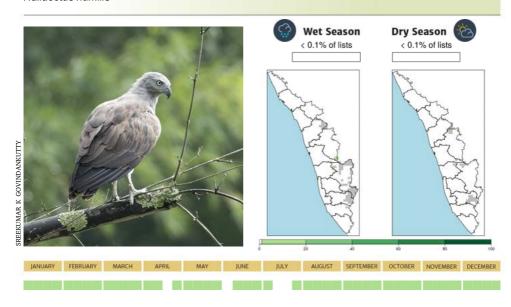


#### White-bellied Sea-Eagle

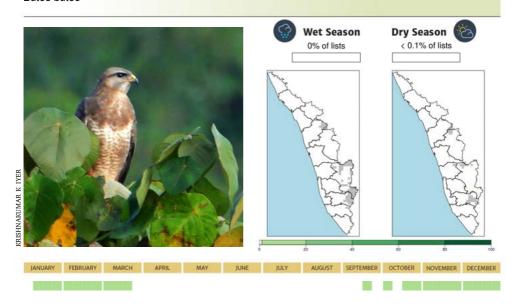
Haliaeetus leucogaster



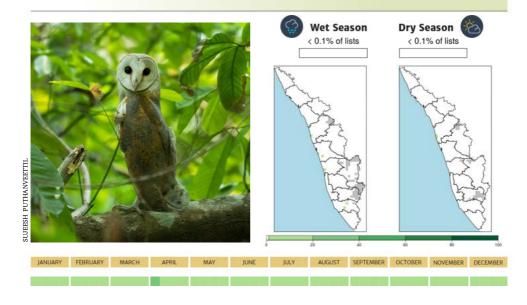
### Lesser Fish-Eagle Haliaeetus humilis



### Common Buzzard Buteo buteo

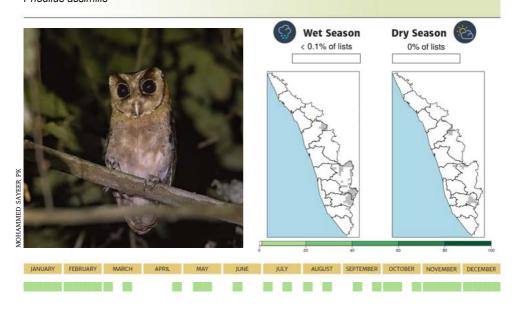


Barn Owl

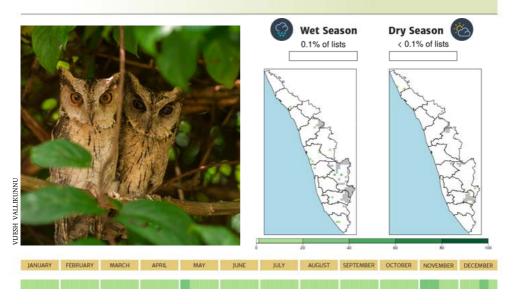


#### Sri Lanka Bay-Owl

Phodilus assimilis

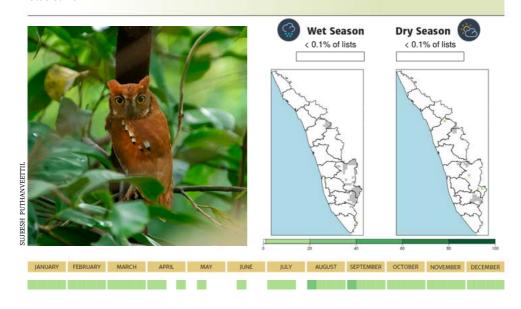


### Indian Scops-Owl (Collared Scops-Owl) Otus bakkamoena



#### Oriental Scops-Owl

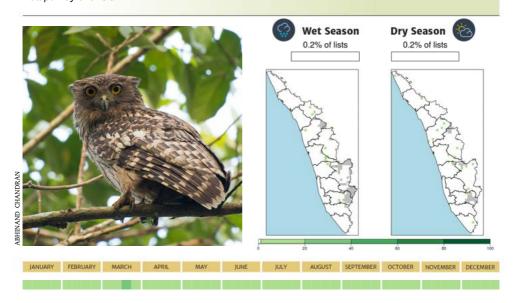
Otus sunia



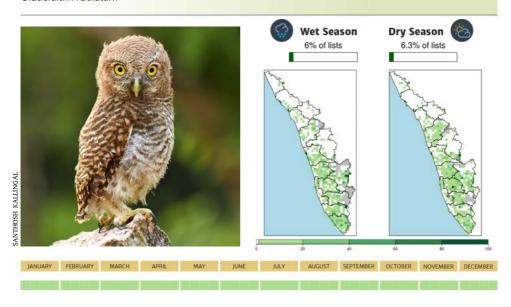
### Spot-bellied Eagle-Owl



### Brown Fish-Owl Ketupa zeylonensis

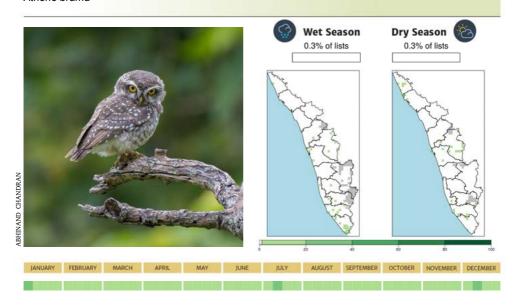


### Jungle Owlet Glaucidium radiatum



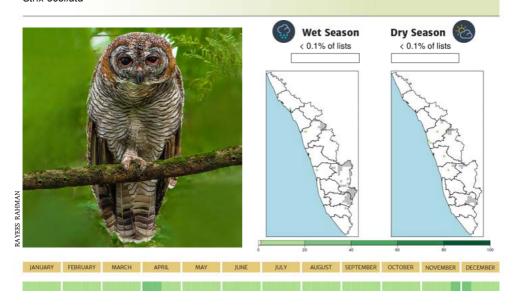
#### Spotted Owlet

Athene brama

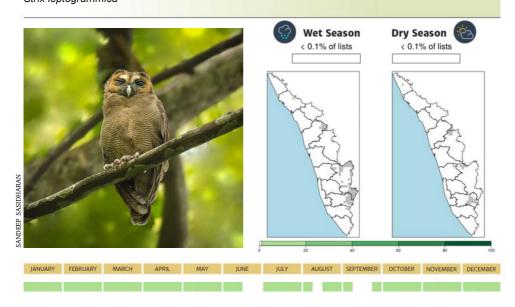


#### Mottled Wood-Owl

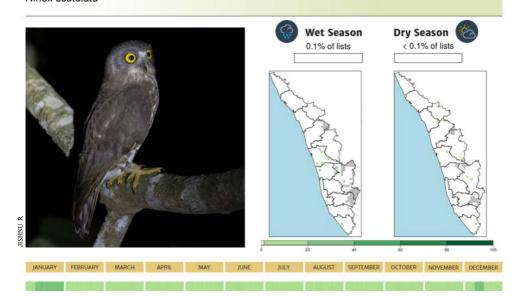
Strix ocellata



#### Brown Wood-Owl Strix leptogrammica



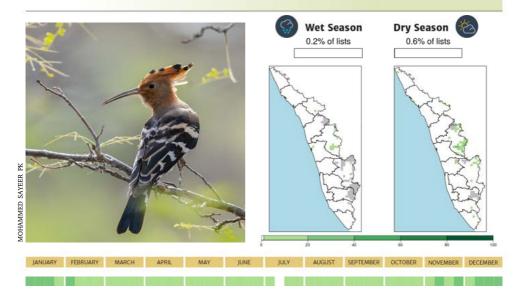
### Brown Hawk-Owl Ninox scutulata



# Malabar Trogon Harpactes fasciatus

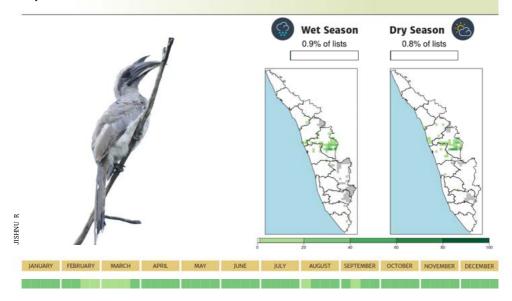


#### Eurasian Hoopoe *Upupa epops*

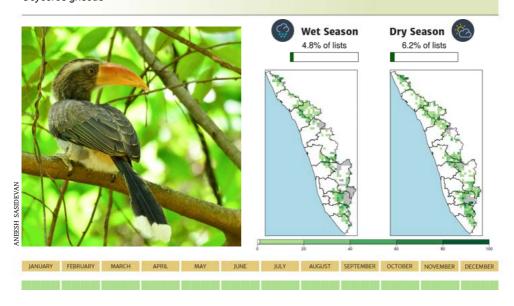


#### Indian Grey Hornbill

Ocyceros birostris

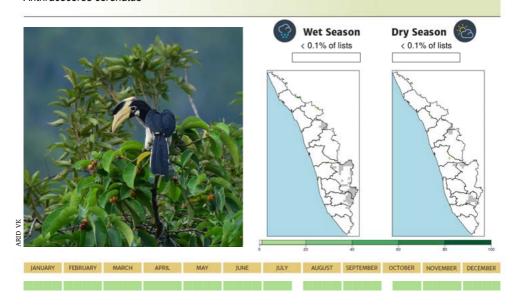


#### Malabar Grey Hornbill Ocyceros griseus



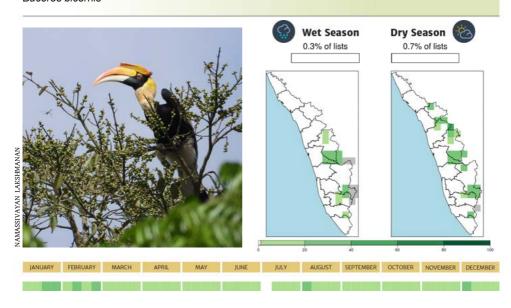
#### Malabar Pied-Hornbill

Anthracoceros coronatus

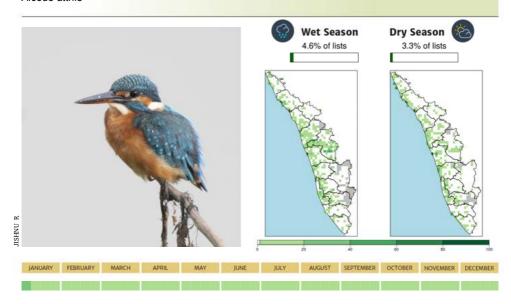


#### Great Hornbill (Great Pied-Hornbill)

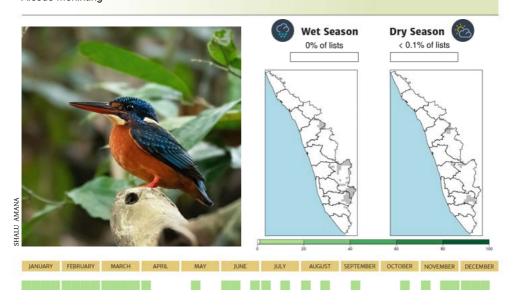
Buceros bicornis



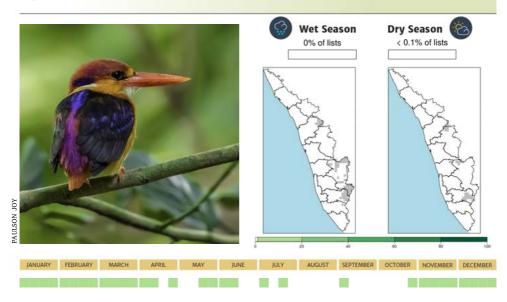
### Common Kingfisher (Small Blue Kingfisher) Alcedo atthis



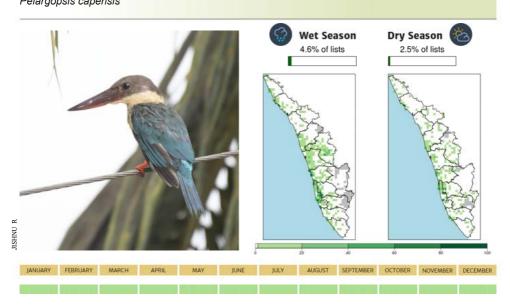
# Blue-eared Kingfisher Alcedo meninting



# Black-backed Dwarf-Kingfisher (Oriental Dwarf Kingfisher) Ceyx erithaca

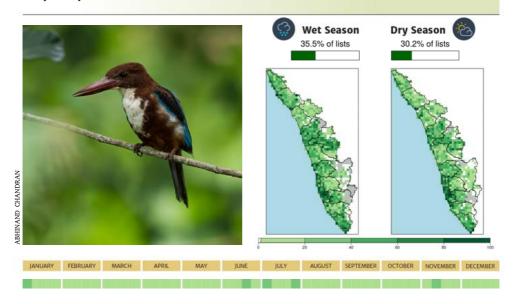


# Stork-billed Kingfisher Pelargopsis capensis

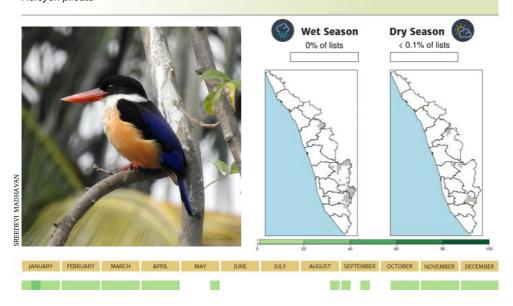


#### White-throated Kingfisher

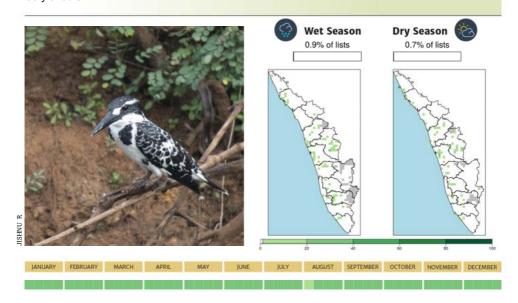
Halcyon smyrnensis



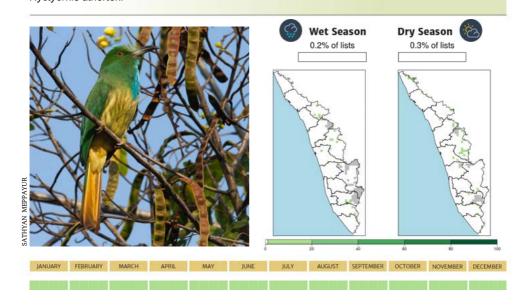
# Black-capped Kingfisher Halcyon pileata



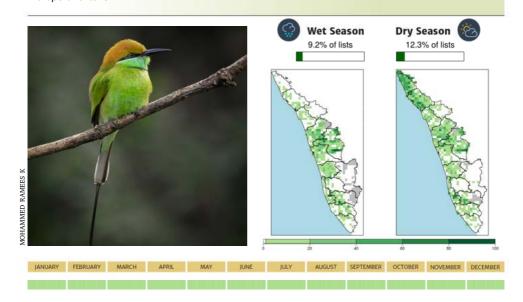
#### Pied Kingfisher Ceryle rudis



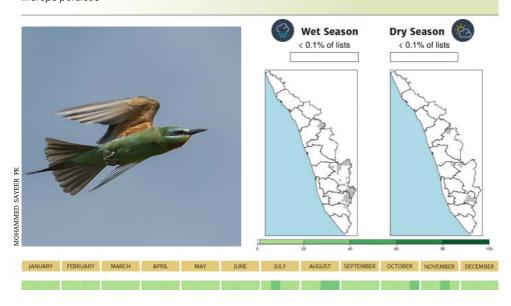
#### Blue-bearded Bee-eater Nyctyornis athertoni



### Green Bee-eater Merops orientalis

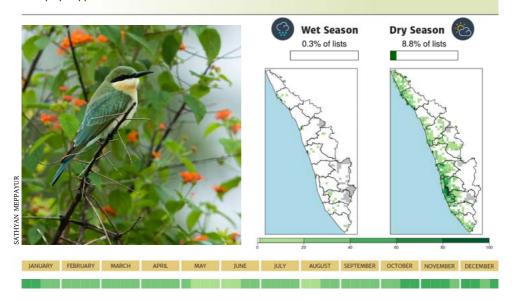


#### Blue-cheeked Bee-eater Merops persicus

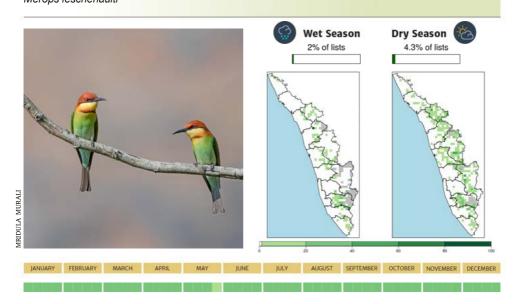


### Blue-tailed Bee-eater

Merops philippinus

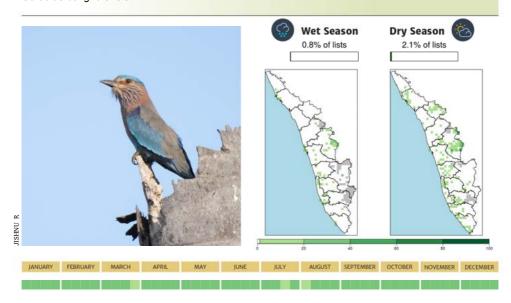


# Chestnut-headed Bee-eater Merops leschenaulti



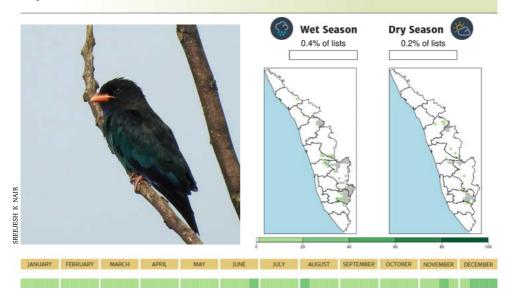
#### Indian Roller

Coracias benghalensis



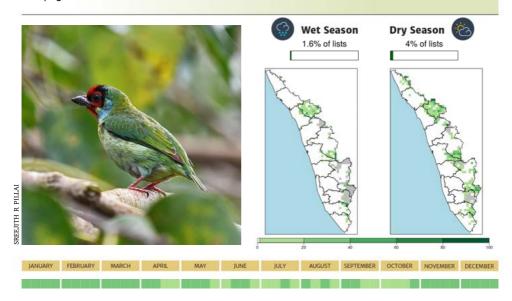
#### Oriental Dollarbird

Eurystomus orientalis



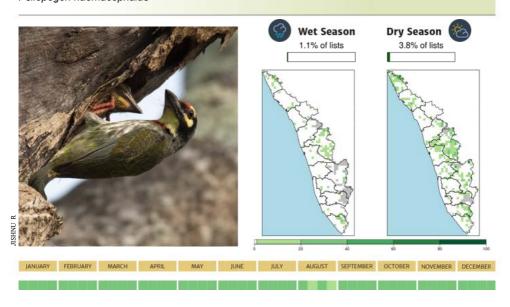
#### Malabar Barbet (Crimson-throated Barbet)

Psilopogon malabaricus



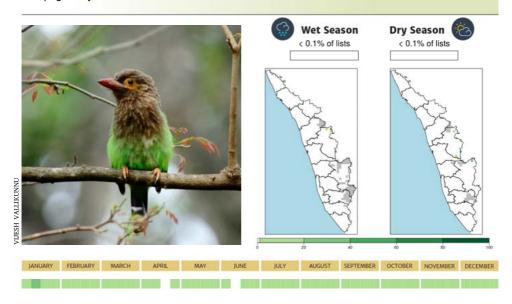
#### Coppersmith Barbet

Psilopogon haemacephalus

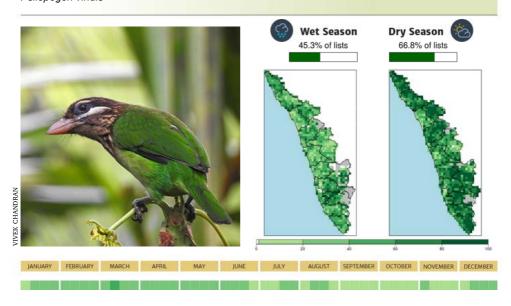


#### Brown-headed Barbet (Large Green Barbet)

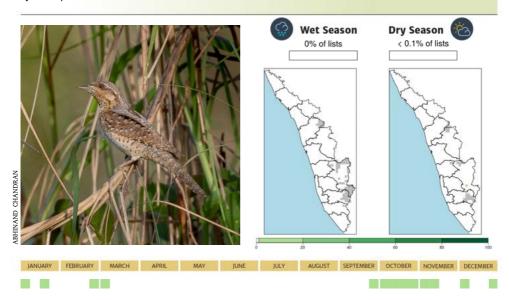
Psilopogon zeylanicus



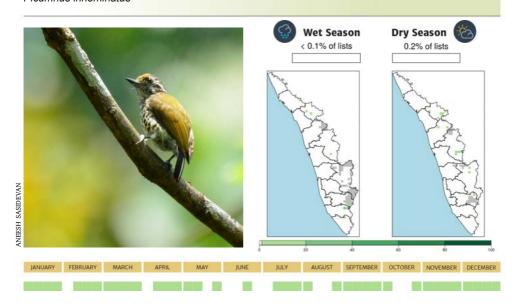
# White-cheeked Barbet (Small Green Barbet) Psilopogon viridis



# Eurasian Wryneck *Jynx torquilla*

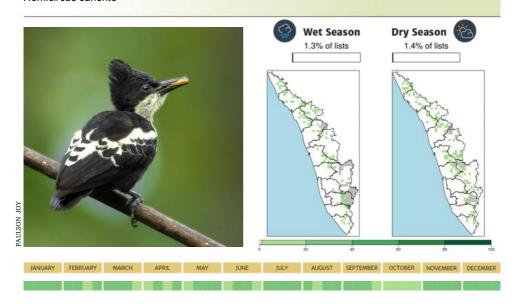


### Speckled Piculet Picumnus innominatus

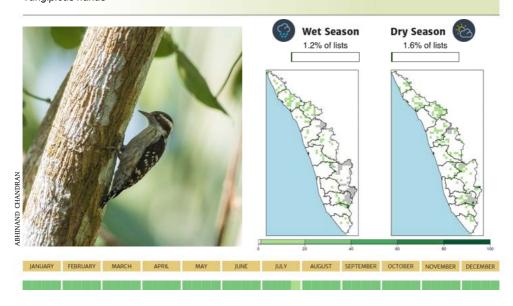


#### Heart-spotted Woodpecker

Hemicircus canente

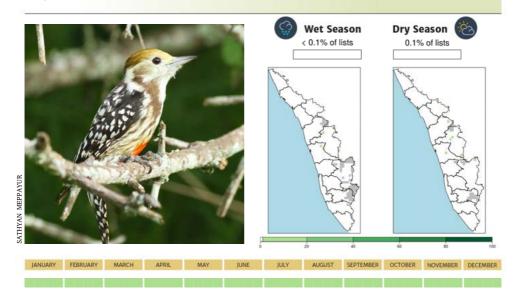


# Brown-capped Pygmy Woodpecker Yungipicus nanus

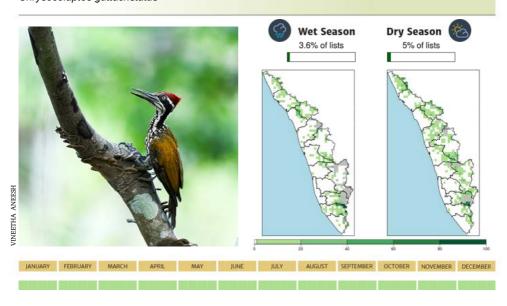


#### Yellow-crowned Woodpecker

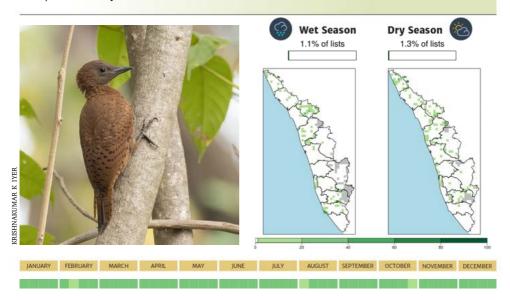
Leiopicus mahrattensis



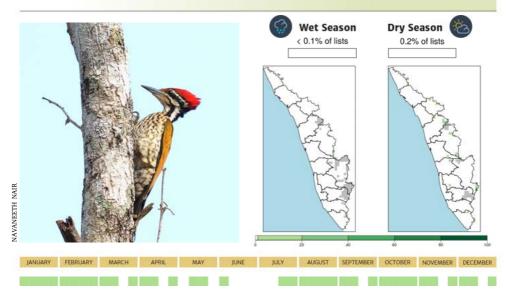
# Greater Flameback Chrysocolaptes guttacristatus



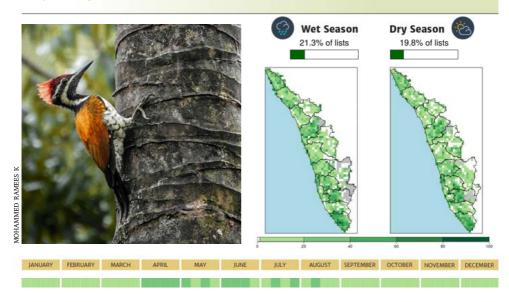
# Rufous Woodpecker Micropternus brachyurus



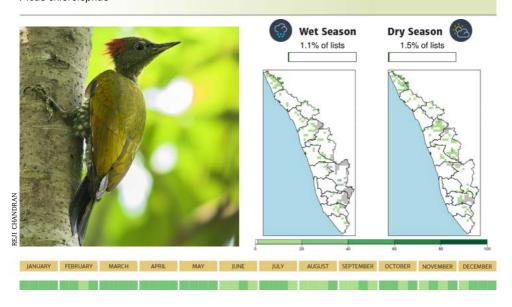
# Common Flameback (Goldenbacked Three-toed Woodpecker) Dinopium javanense



# Black-rumped Flameback (Lesser Goldenbacked Woodpecker) Dinopium benghalense

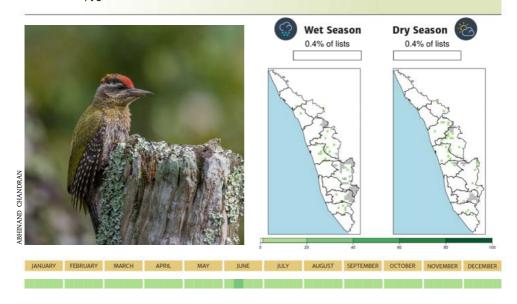


### Lesser Yellownape Picus chlorolophus

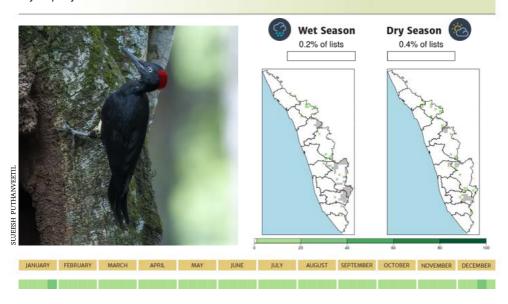


#### Streak-throated Woodpecker

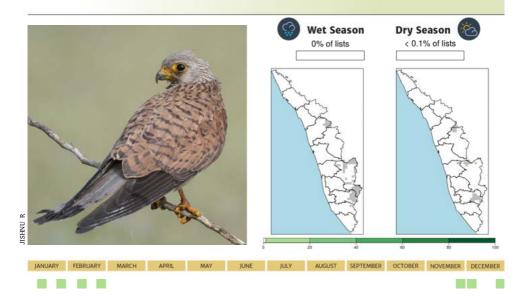
Picus xanthopygaeus



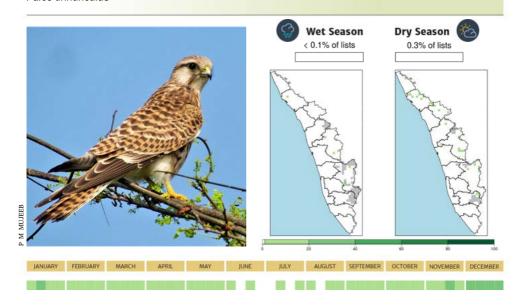
# White-bellied Woodpecker (Great Black Woodpecker) Dryocopus javensis



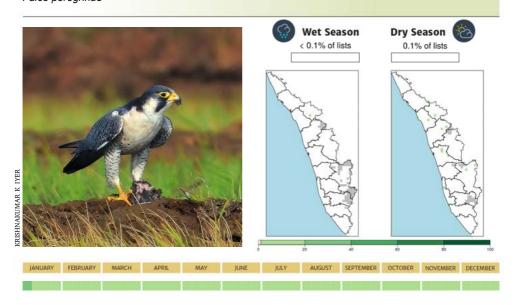
### Lesser Kestrel Falco naumanni



### Eurasian Kestrel (Common Kestrel) Falco tinnunculus

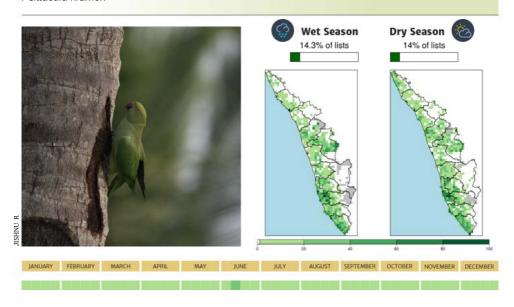


# Peregrine Falcon Falco peregrinus



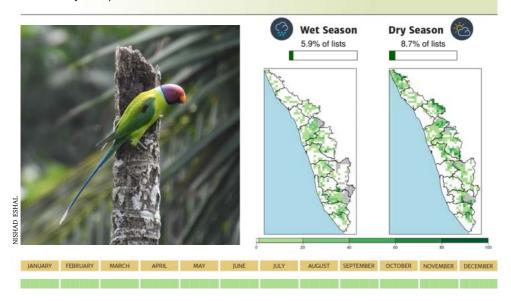
### Rose-ringed Parakeet

Psittacula krameri



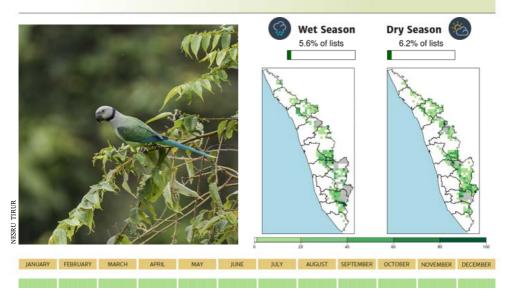
#### Plum-headed Parakeet

Psittacula cyanocephala



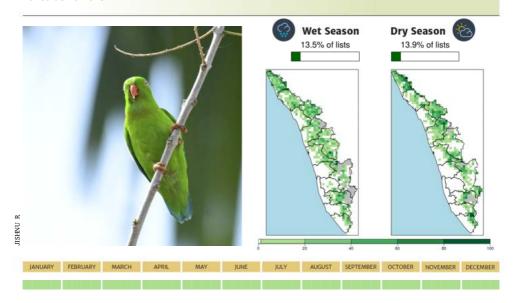
#### Malabar Parakeet (Blue-winged Parakeet)

Psittacula columboides

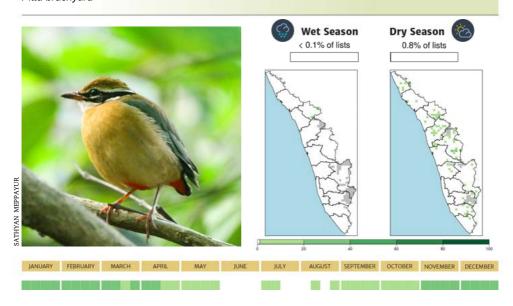


#### Vernal Hanging-Parrot (Indian Lorikeet)

Loriculus vernalis

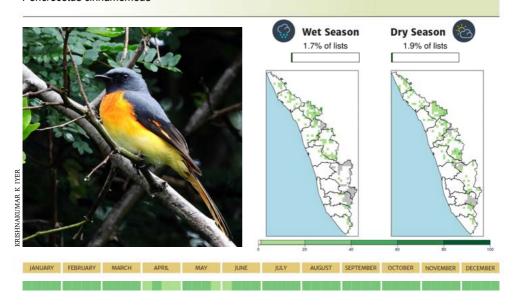


# Indian Pitta Pitta brachyura

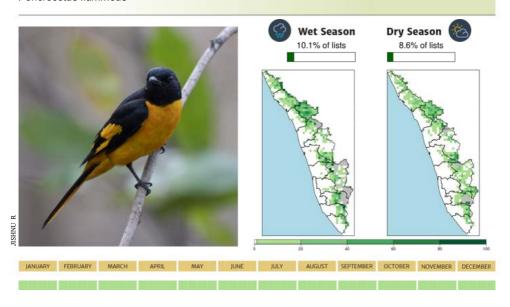


#### Small Minivet

#### Pericrocotus cinnamomeus

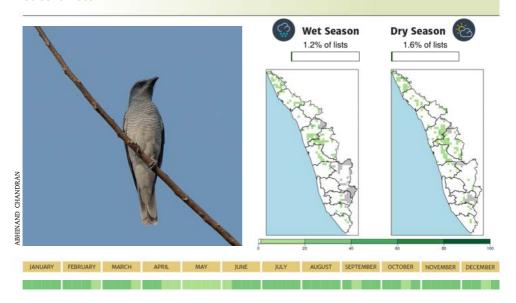


### Orange Minivet Pericrocotus flammeus

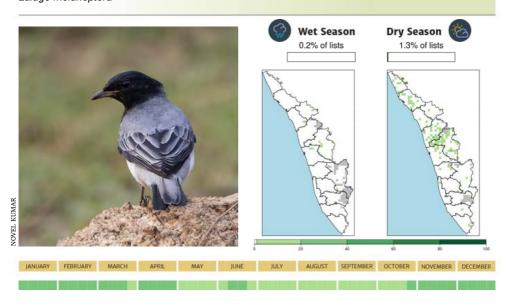


### Large Cuckooshrike

Coracina macei

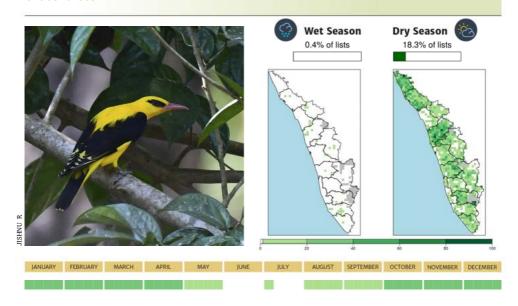


# Black-headed Cuckooshrike Lalage melanoptera



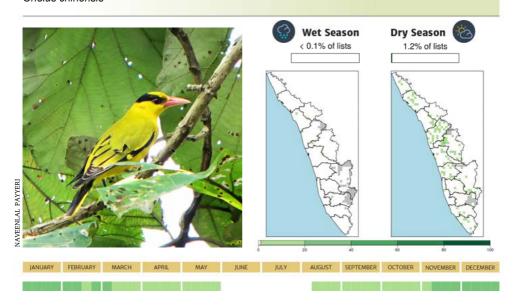
#### Indian Golden Oriole

Oriolus kundoo



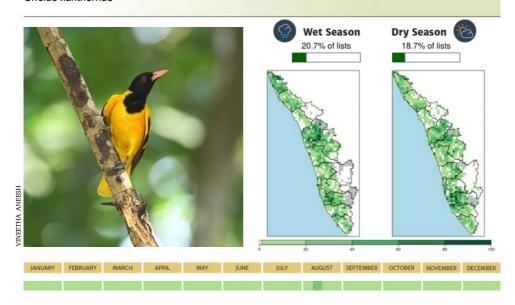
#### Black-naped Oriole

Oriolus chinensis

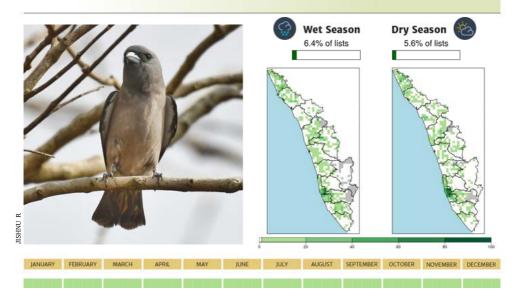


#### Black-hooded Oriole

Oriolus xanthornus

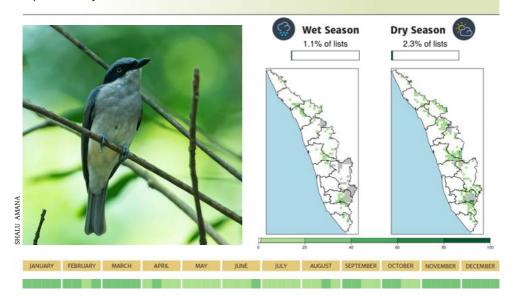


### Ashy Woodswallow Artamus fuscus



#### Malabar Woodshrike

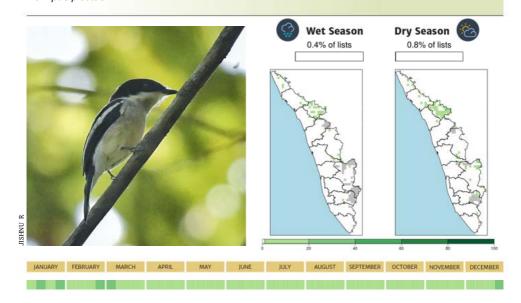
Tephrodornis sylvicola



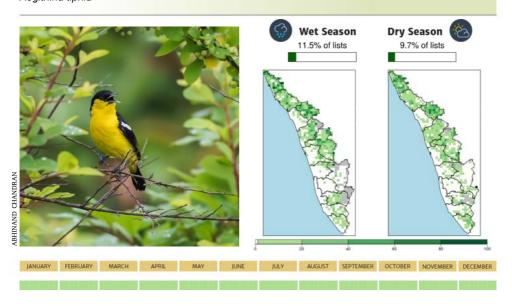
#### Common Woodshrike Tephrodornis pondicerianus



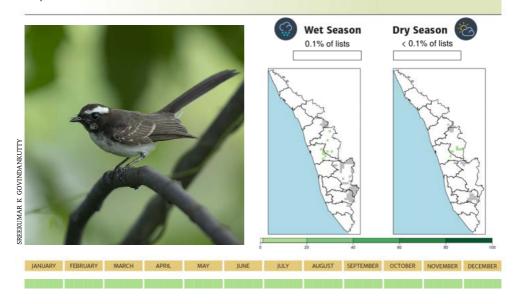
# Bar-winged Flycatcher-shrike *Hemipus picatus*



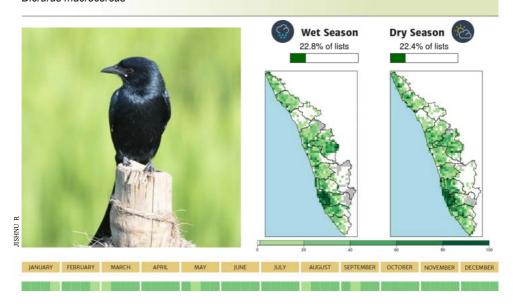
## Common Iora Aegithina tiphia



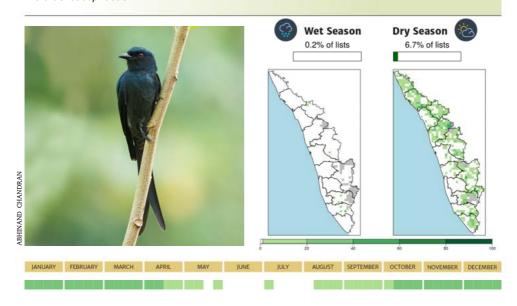
## White-browed Fantail Rhipidura aureola



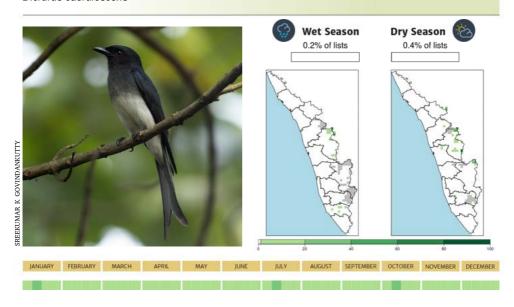
## Black Drongo Dicrurus macrocercus



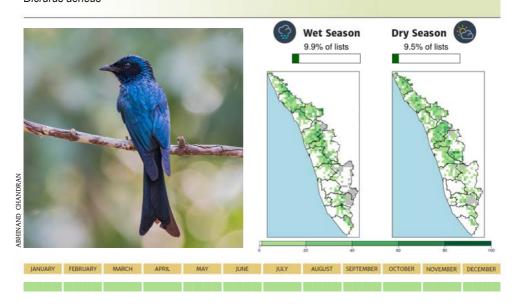
## Ashy Drongo Dicrurus leucophaeus



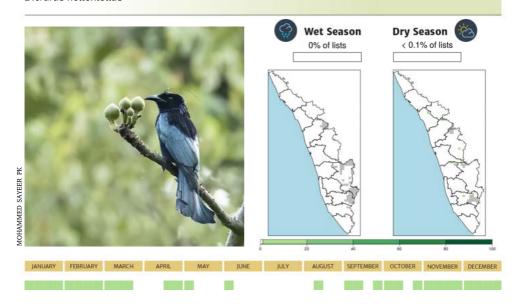
## White-bellied Drongo Dicrurus caerulescens



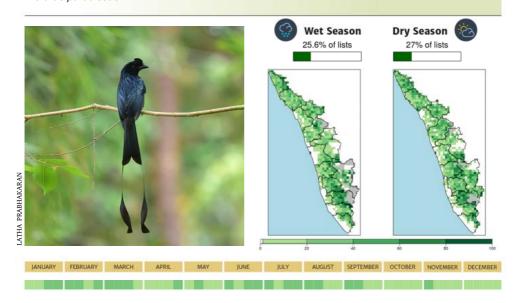
## Bronzed Drongo Dicrurus aeneus



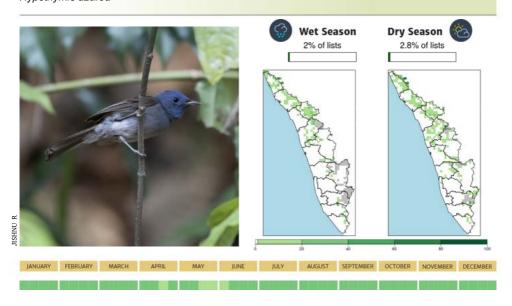
## Hair-crested Drongo (Spangled Drongo) Dicrurus hottentottus



## Greater Racket-tailed Drongo Dicrurus paradiseus

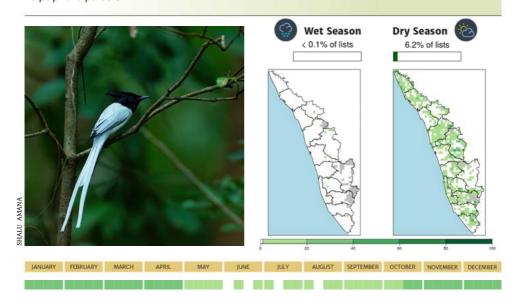


### Black-naped Monarch Hypothymis azurea

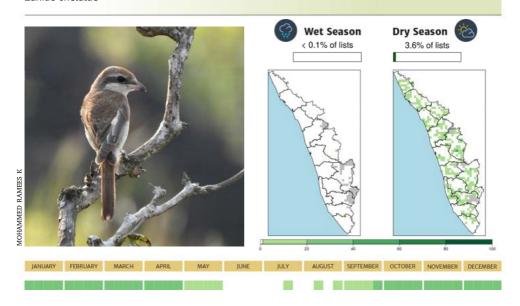


### Indian Paradise-Flycatcher

Terpsiphone paradisi

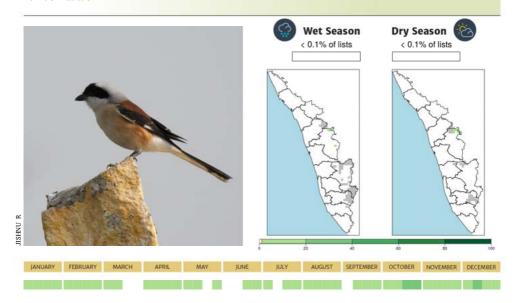


## Brown Shrike Lanius cristatus

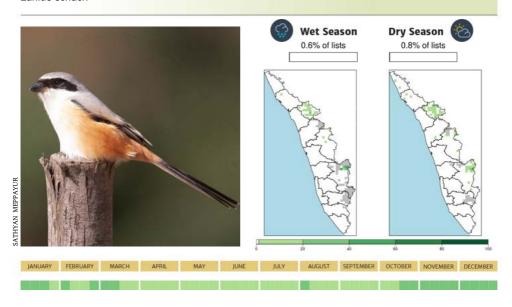


## Bay-backed Shrike

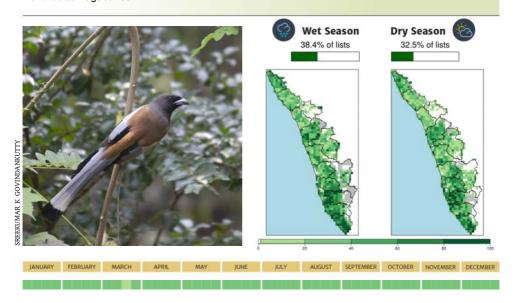
Lanius vittatus



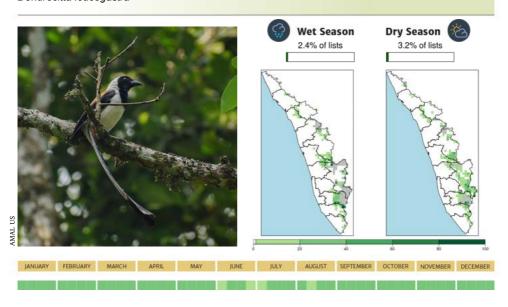
## Long-tailed Shrike Lanius schach



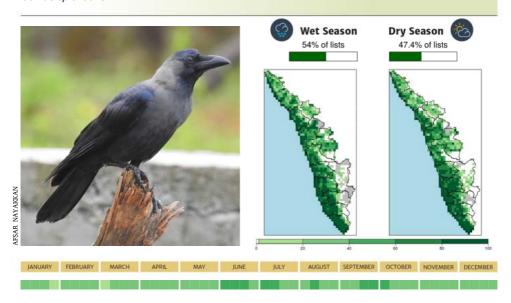
## Rufous Treepie Dendrocitta vagabunda



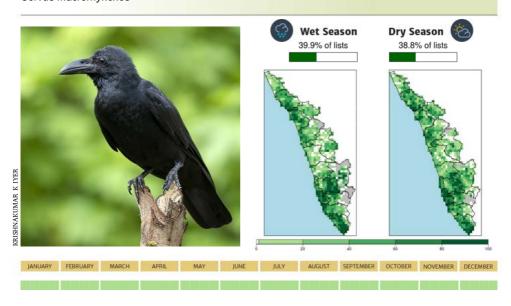
# White-bellied Treepie Dendrocitta leucogastra



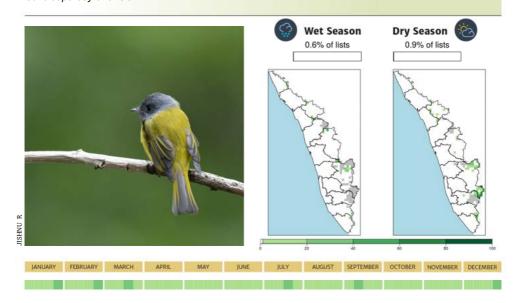
## House Crow Corvus splendens



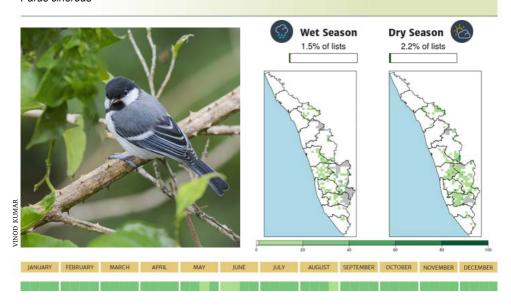
## Large-billed Crow Corvus macrorhynchos



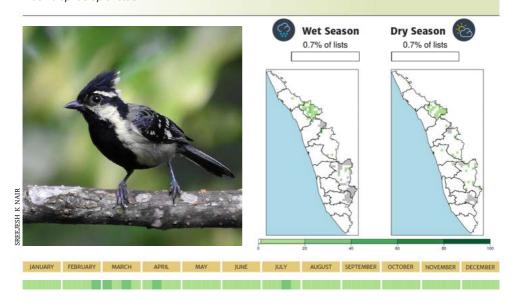
# Grey-headed Canary-Flycatcher Culicicapa ceylonensis



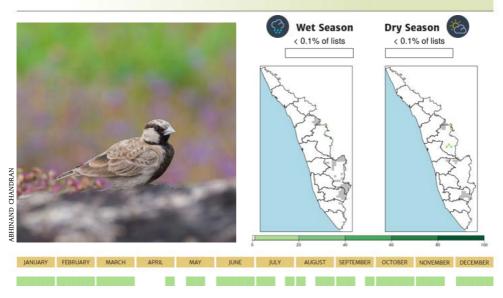
## Cinereous Tit (Great Tit) Parus cinereus



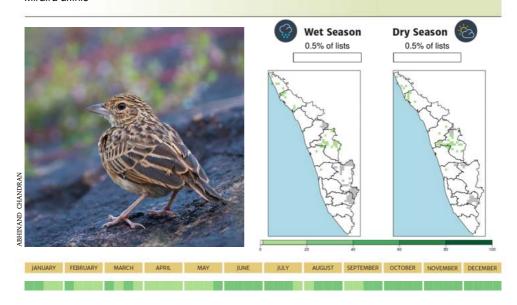
## Indian Yellow Tit Machlolophus aplonotus



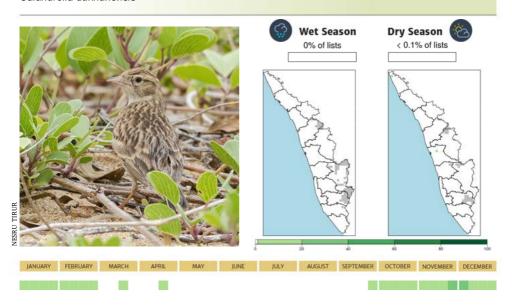
### Ashy-crowned Sparrow-Lark (Ashy-crowned Finch-Lark) Eremopterix griseus



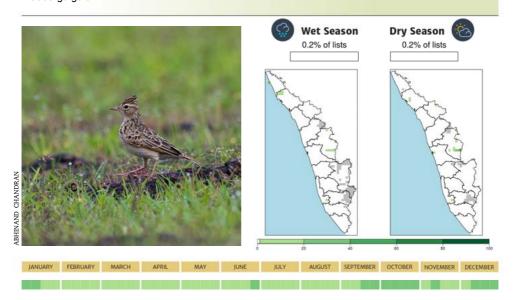
### Jerdon's Bushlark Mirafra affinis



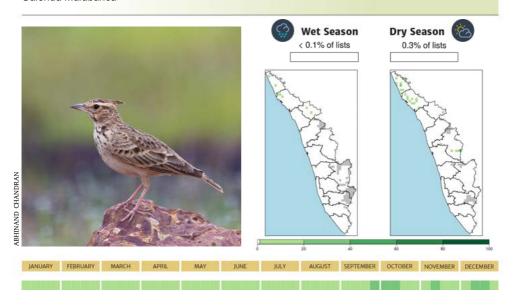
## Sykes's Short-toed Lark (Eastern Short-toed Lark) Calandrella dukhunensis



### Oriental Skylark Alauda gulgula

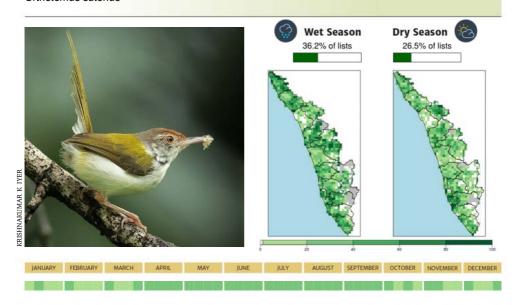


### Malabar Lark Galerida malabarica

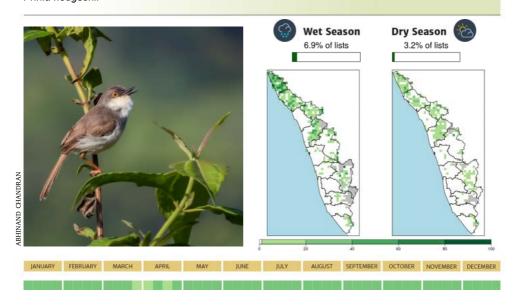


### Common Tailorbird

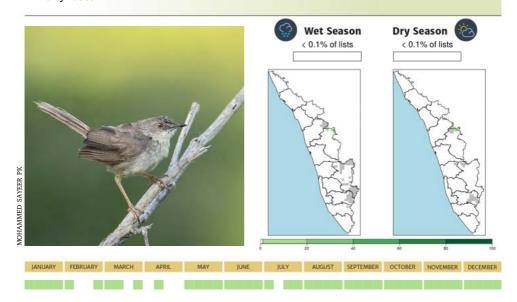
Orthotomus sutorius



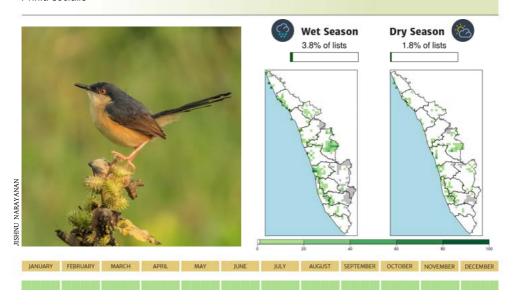
# Grey-breasted Prinia Prinia hodgsonii



## Jungle Prinia Prinia sylvatica

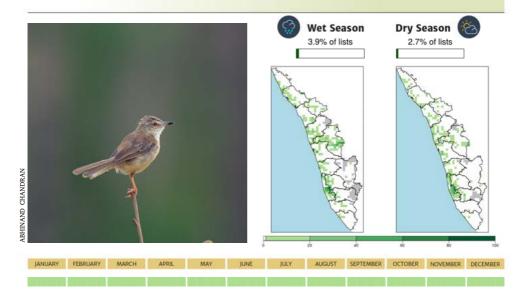


### Ashy Prinia Prinia socialis

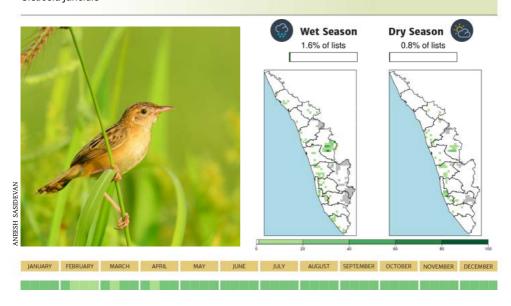


## Plain Prinia

Prinia inornata

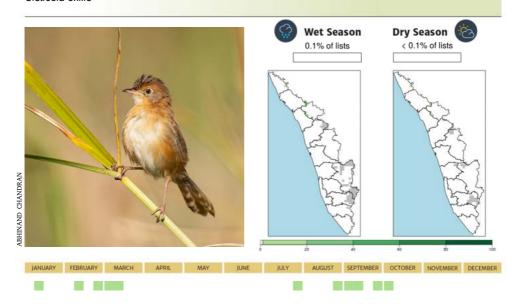


### Zitting Cisticola Cisticola juncidis



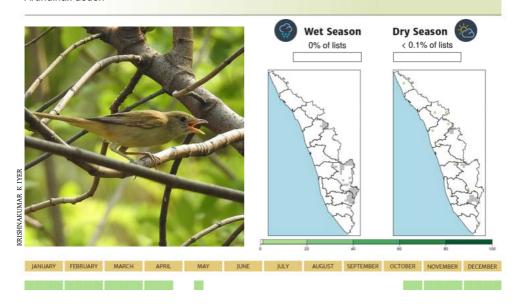
## Golden-headed Cisticola (Bright-headed Cisticola)

Cisticola exilis



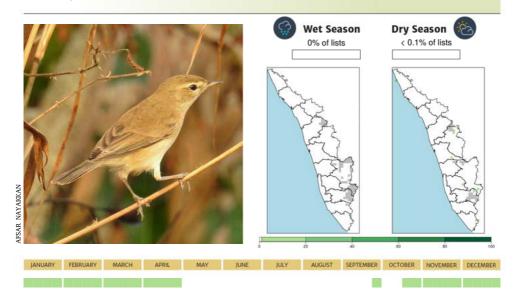
## Thick-billed Warbler

Arundinax aedon

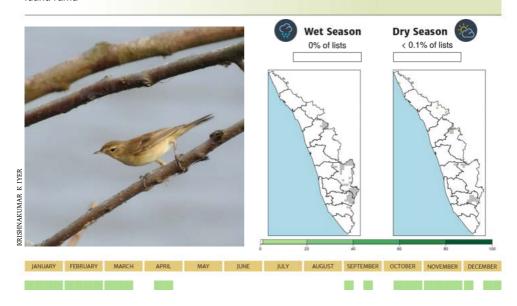


## **Booted Warbler**

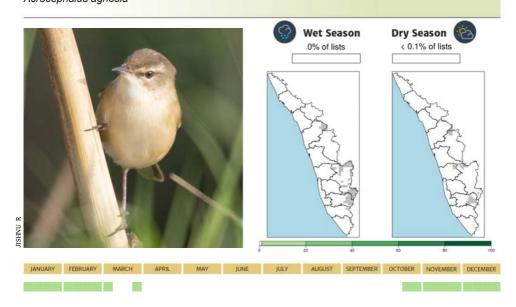
Iduna caligata



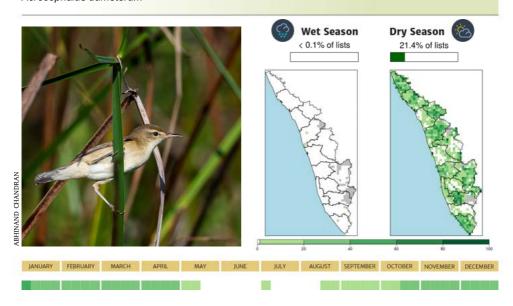
## Sykes's Warbler



## Paddyfield Warbler Acrocephalus agricola

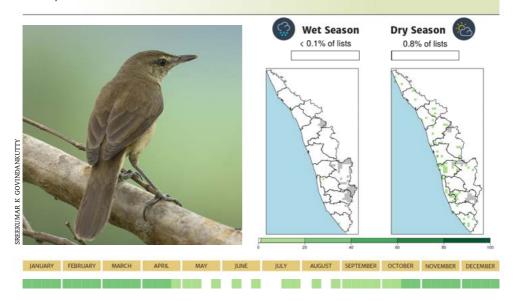


# Blyth's Reed Warbler Acrocephalus dumetorum

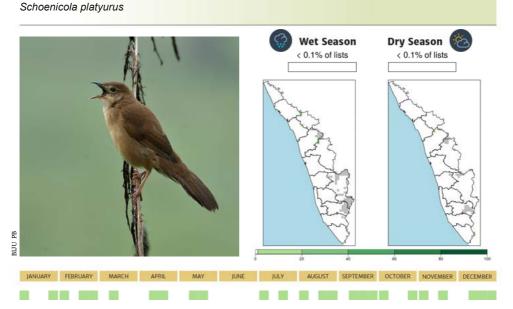


### Clamorous Reed Warbler (Indian Great Reed Warbler)

Acrocephalus stentoreus



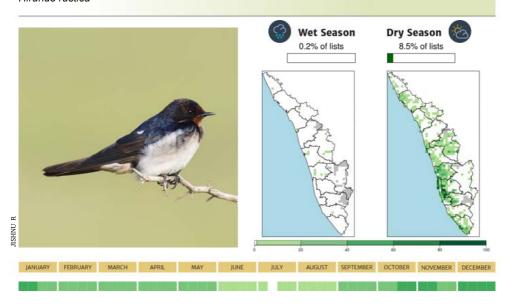
## Broad-tailed Grassbird



## Dusky Crag-Martin Ptyonoprogne concolor

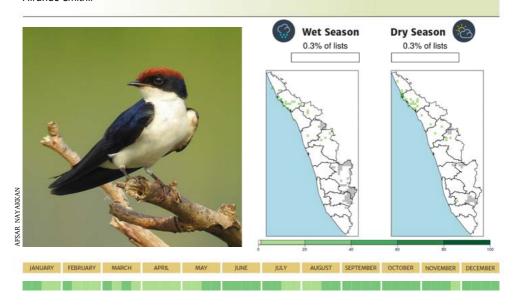


## Barn Swallow Hirundo rustica



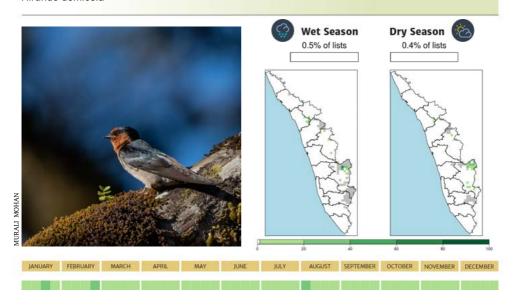
### Wire-tailed Swallow

Hirundo smithii



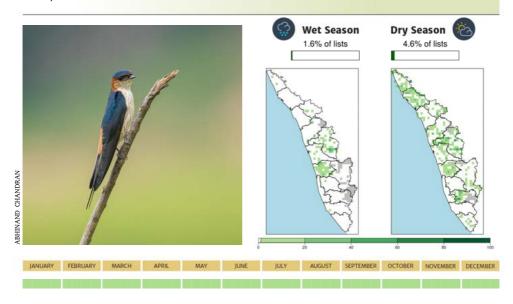
## Hill Swallow (House Swallow)

Hirundo domicola



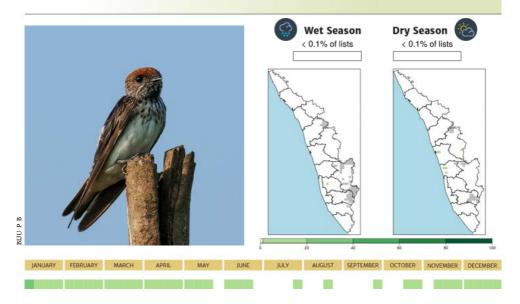
## Red-rumped Swallow

Cecropis daurica

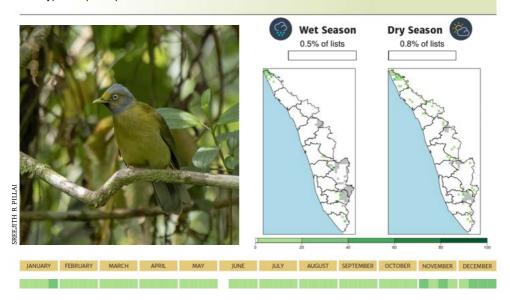


## Streak-throated Swallow

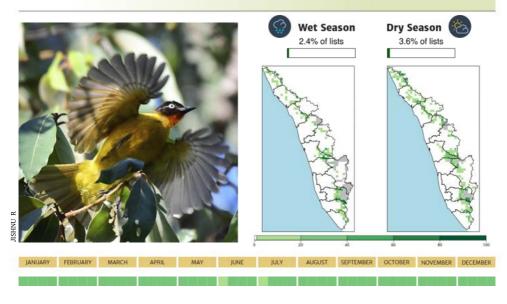
Petrochelidon fluvicola



## Grey-headed Bulbul Brachypodius priocephalus

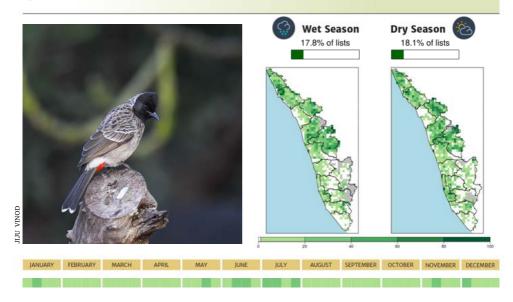


# Flame-throated Bulbul (Ruby-throated Bulbul) Rubigula gularis

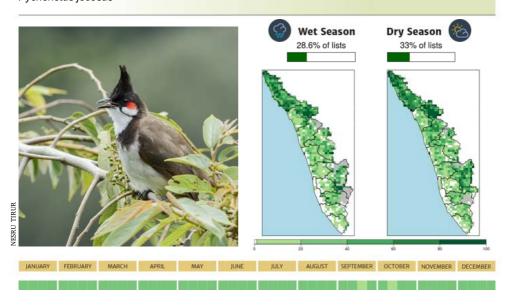


### Red-vented Bulbul

Pycnonotus cafer

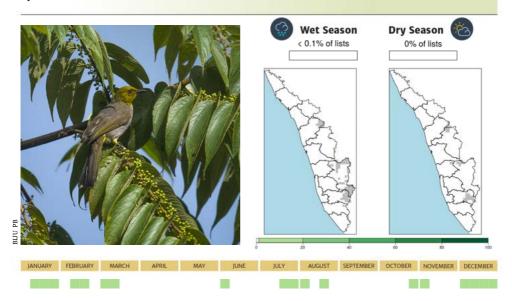


### Red-whiskered Bulbul Pycnonotus jocosus



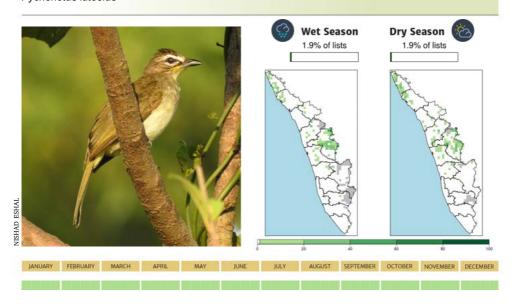
### Yellow-throated Bulbul

Pycnonotus xantholaemus



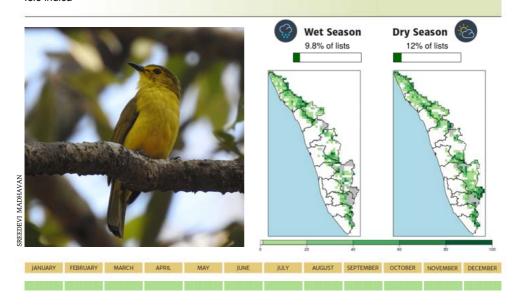
### White-browed Bulbul

Pycnonotus luteolus

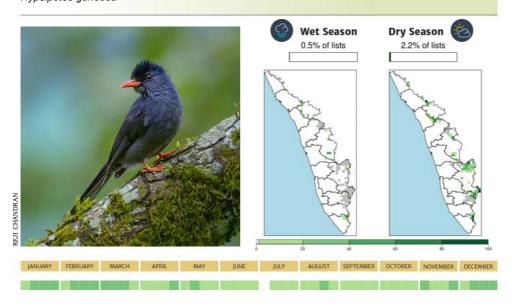


### Yellow-browed Bulbul

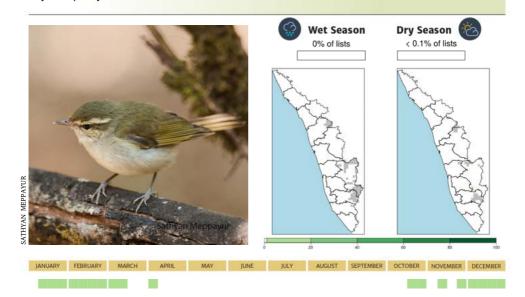
Iole indica



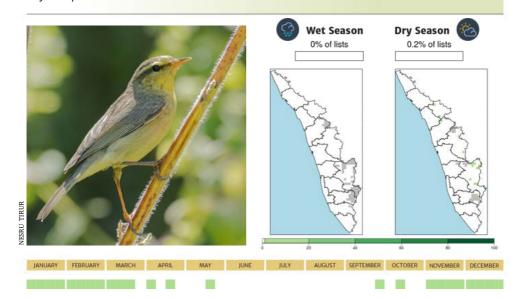
### Square-tailed Bulbul (Black Bulbul) Hypsipetes ganeesa



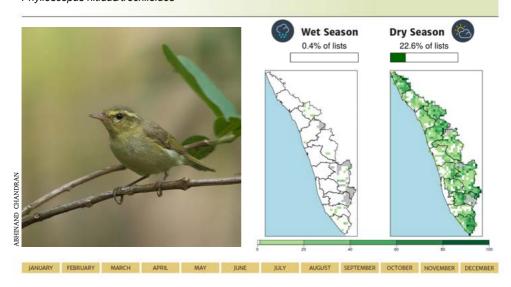
### Tytler's Leaf Warbler Phylloscopus tytleri



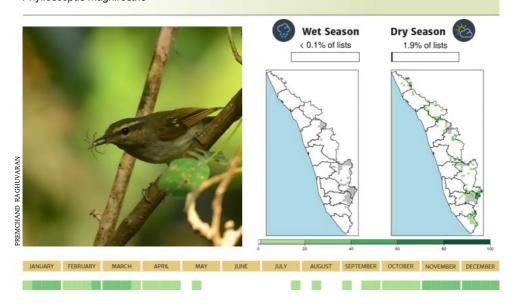
## Tickell's Leaf Warbler Phylloscopus affinis



## Green/Greenish Warbler Phylloscopus nitidus/trochiloides

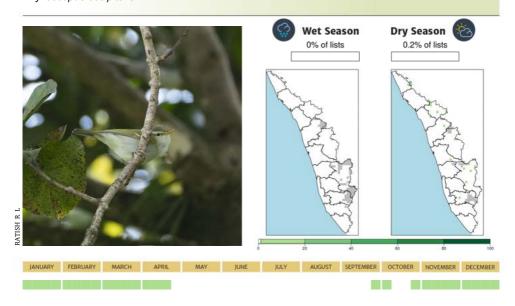


# Large-billed Leaf Warbler Phylloscopus magnirostris

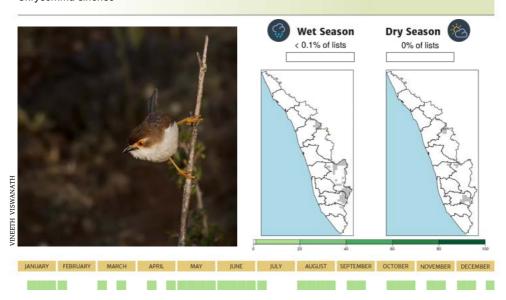


### Western Crowned Warbler

Phylloscopus occipitalis



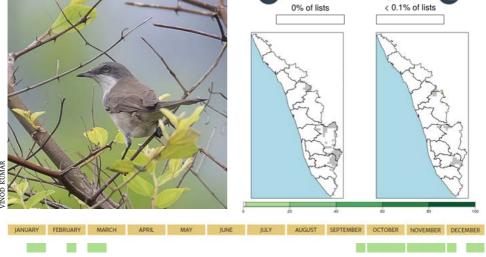
### Yellow-eyed Babbler Chrysomma sinense



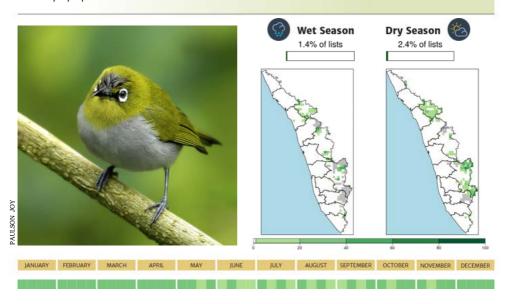
**Dry Season** 

### Lesser Whitethroat Sylvia curruca

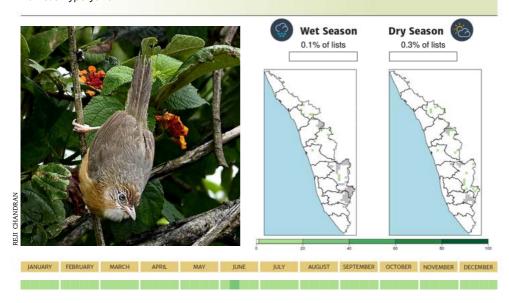




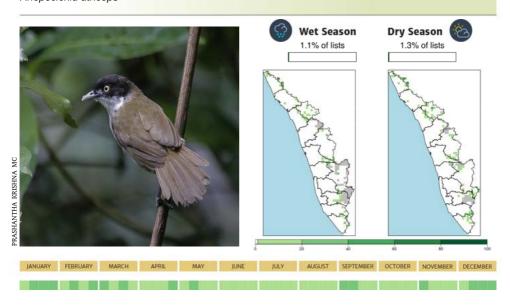
### Indian White-eye (Oriental White-eye) Zosterops palpebrosus



## Tawny-bellied Babbler Dumetia hyperythra

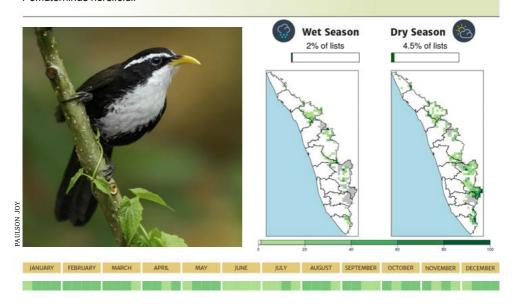


# Dark-fronted Babbler Rhopocichla atriceps



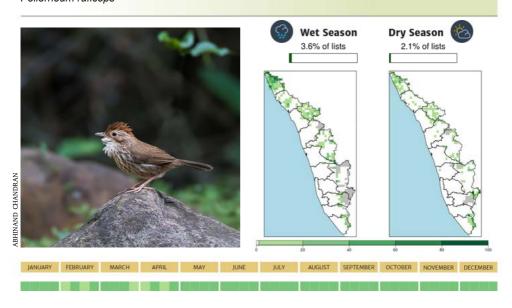
#### Indian Scimitar-Babbler

Pomatorhinus horsfieldii



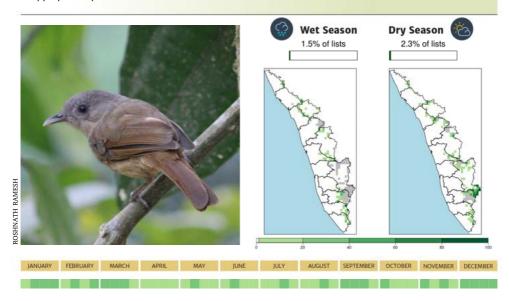
## Puff-throated Babbler

Pellorneum ruficeps

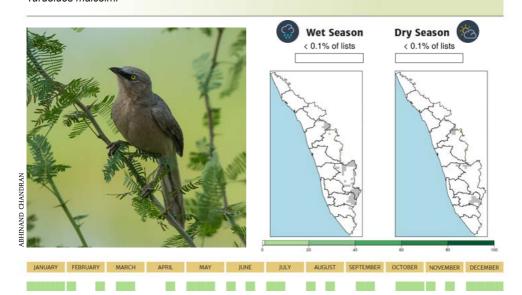


### Brown-cheeked Fulvetta

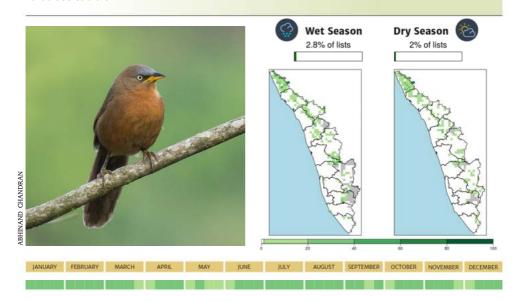
Alcippe poioicephala



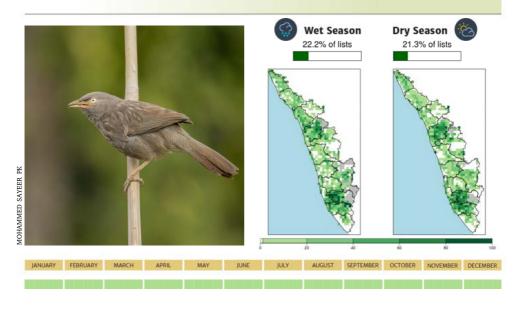
## Large Grey Babbler Turdoides malcolmi



## Rufous Babbler Turdoides subrufa

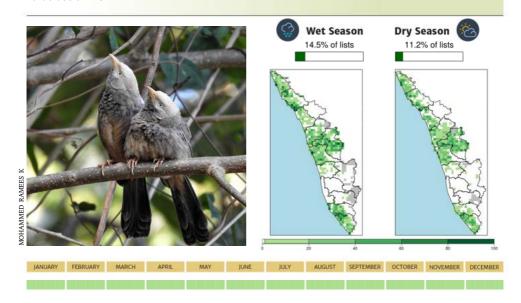


## Jungle Babbler Turdoides striata



### Yellow-billed Babbler

Turdoides affinis

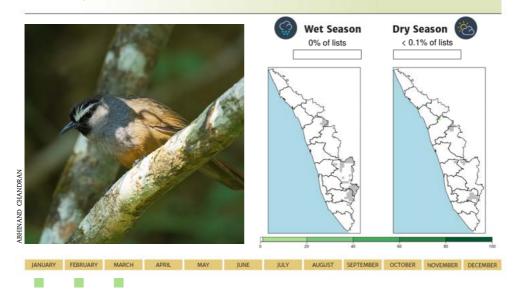


### Wayanad Laughingthrush lanthocincla delesserti



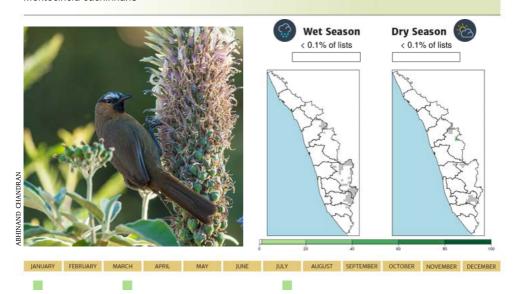
## Banasura Laughingthrush (Banasura Chilappan)

Montecincla jerdoni



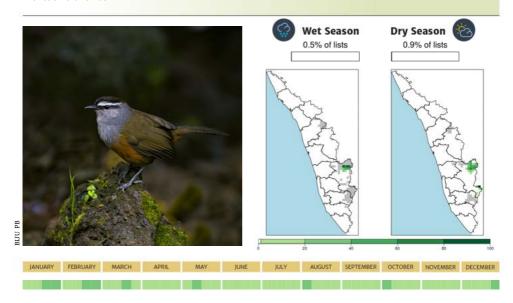
# Nilgiri Laughingthrush (Nilgiri Chilappan)

Montecincla cachinnans



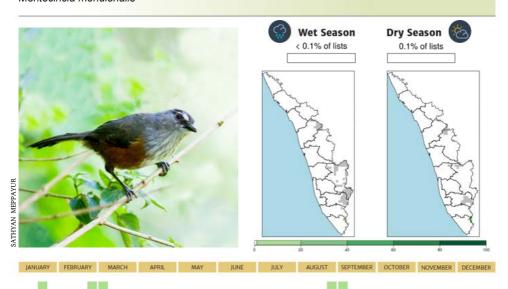
## Palani Laughingthrush (Palani Chilappan)

Montecincla fairbanki



## Ashambu Laughingthrush (Ashambu Chilappan)

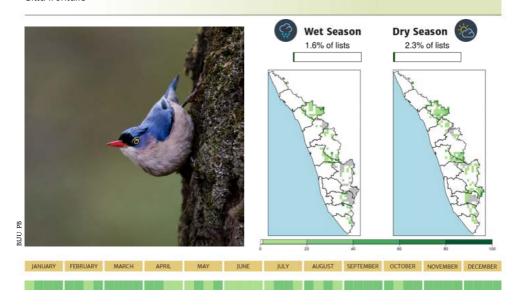
Montecincla meridionalis



# Indian Nuthatch Sitta castanea

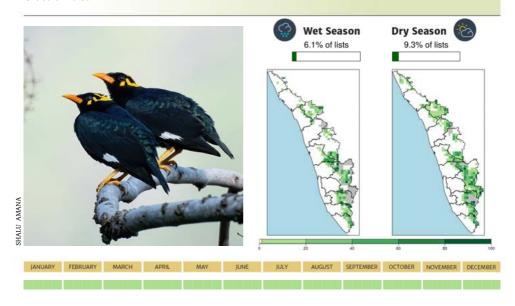


#### Velvet-fronted Nuthatch Sitta frontalis

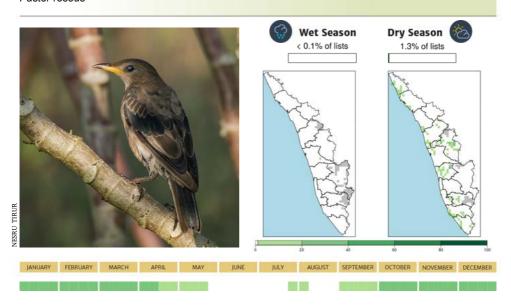


## Southern Hill Myna

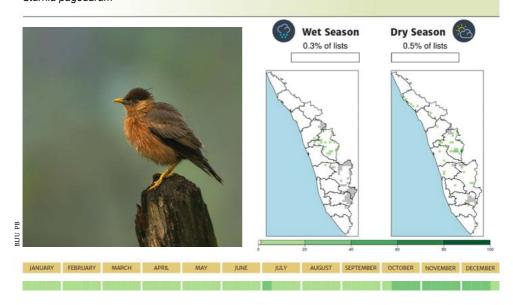
Gracula indica



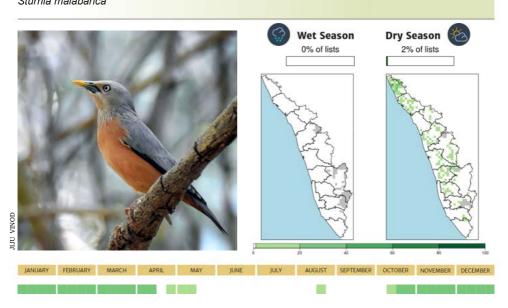
# Rosy Starling Pastor roseus



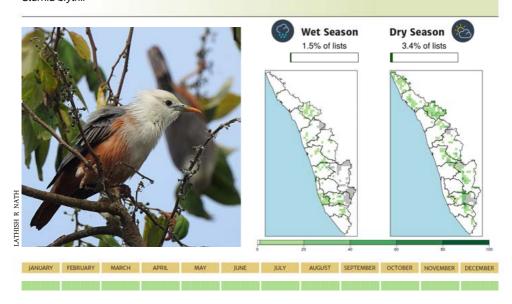
# Brahminy Starling Sturnia pagodarum



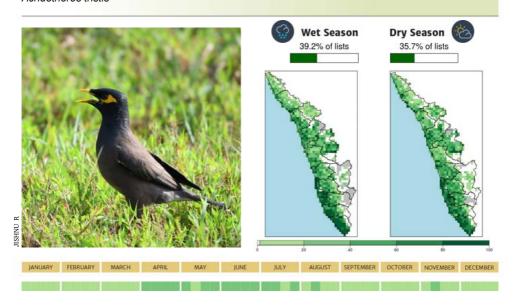
# Chestnut-tailed Starling Sturnia malabarica



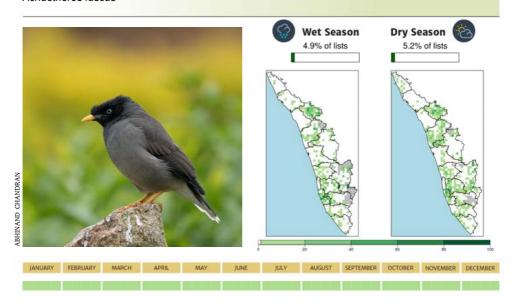
#### Malabar Starling (Blyth's Starling) Sturnia blythii



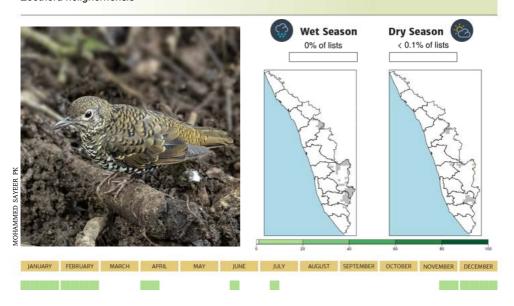
# Common Myna Acridotheres tristis



# Jungle Myna Acridotheres fuscus

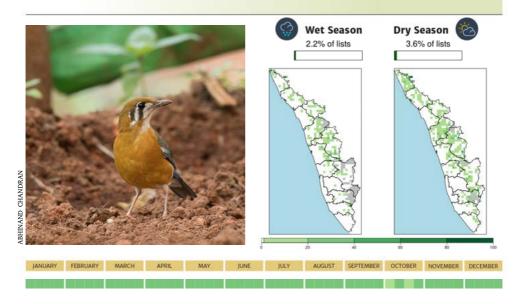


#### Nilgiri Thrush Zoothera neilgherriensis



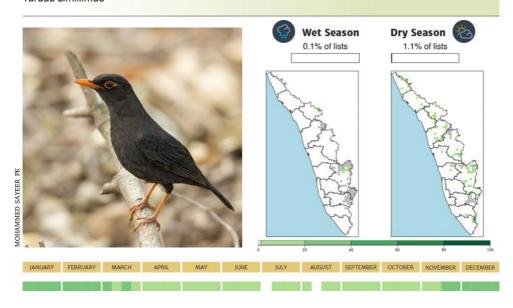
## Orange-headed Thrush

Geokichla citrina



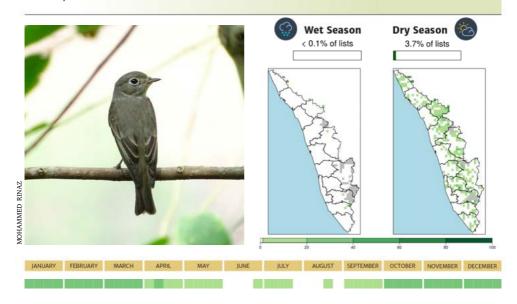
#### Indian Blackbird

Turdus simillimus



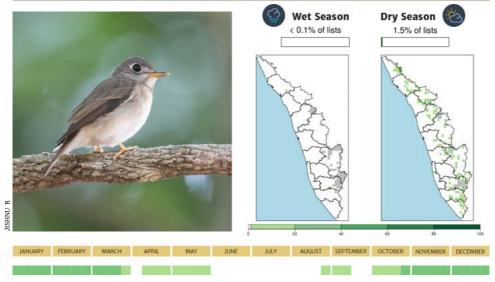
## Asian Brown Flycatcher

Muscicapa dauurica

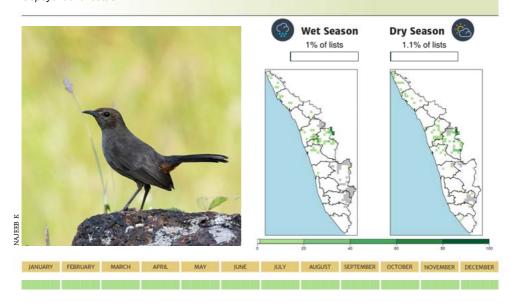


# Brown-breasted Flycatcher

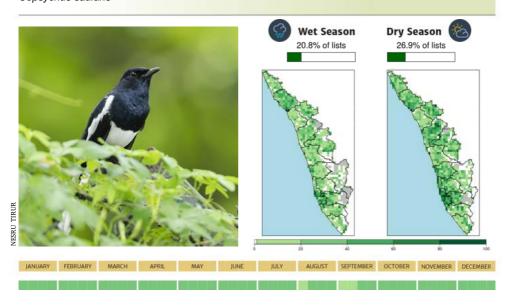
Muscicapa muttui



# Indian Robin Copsychus fulicatus

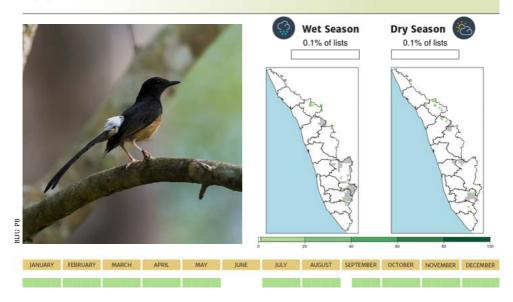


#### Oriental Magpie-Robin Copsychus saularis



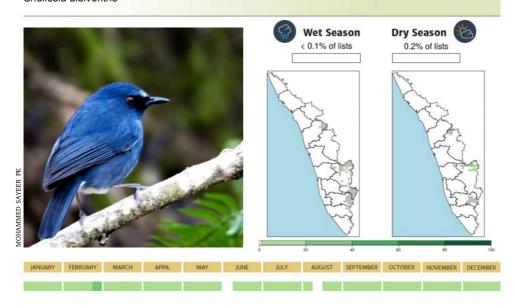
## White-rumped Shama

Copsychus malabaricus



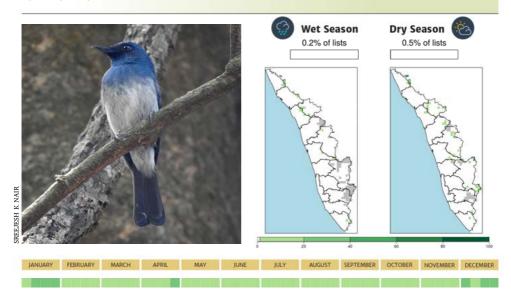
## White-bellied Sholakili

Sholicola albiventris



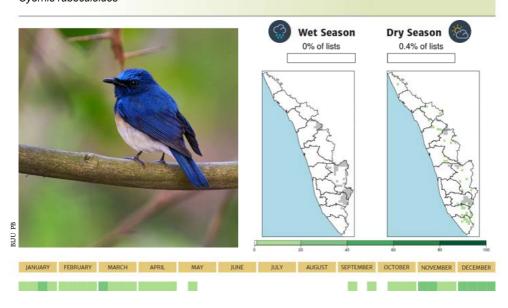
## White-bellied Blue Flycatcher

Cyornis pallidipes



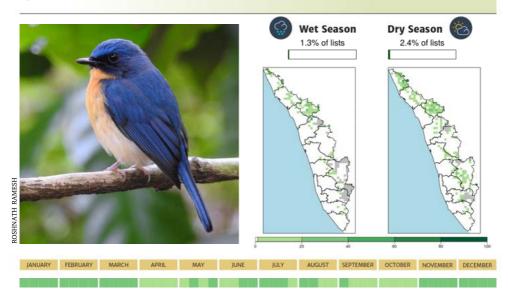
## Blue-throated Flycatcher

Cyornis rubeculoides

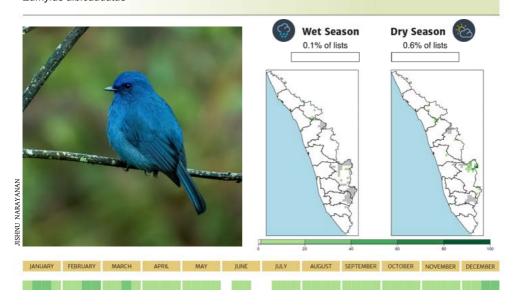


## Tickell's Blue Flycatcher

Cyornis tickelliae

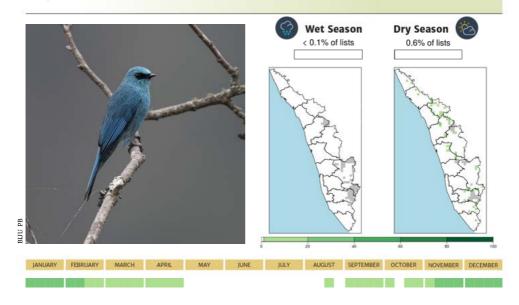


#### Nilgiri Flycatcher Eumyias albicaudatus



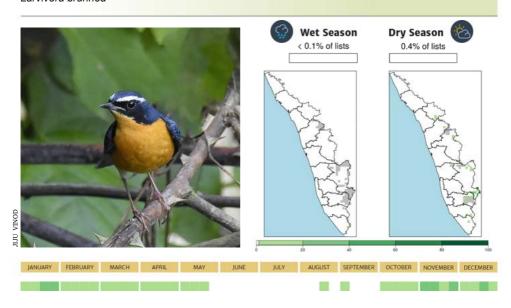
# Verditer Flycatcher

Eumyias thalassinus



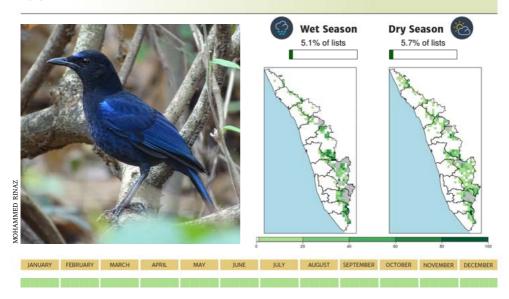
## Indian Blue Robin

Larvivora brunnea

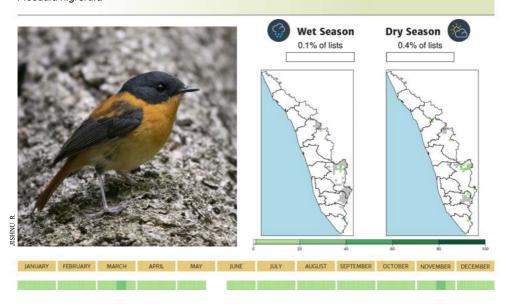


## Malabar Whistling-Thrush

Myophonus horsfieldii

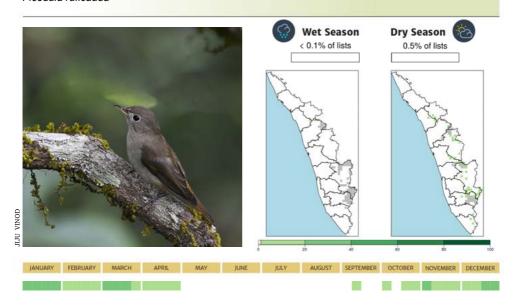


# Black-and-orange Flycatcher Ficedula nigrorufa

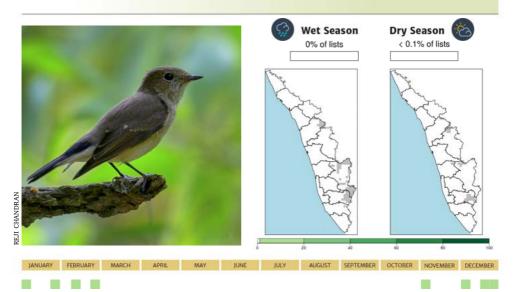


## Rusty-tailed Flycatcher

Ficedula ruficauda

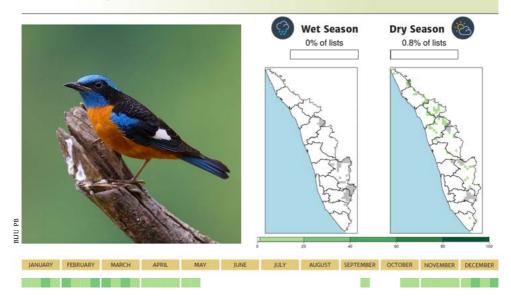


# Taiga Flycatcher (Red-throated Flycatcher) Ficedula albicilla

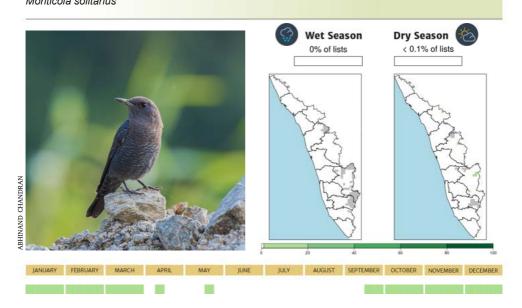


# Blue-capped Rock-Thrush

Monticola cinclorhyncha

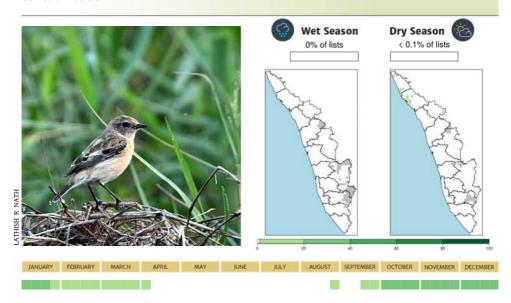


# Blue Rock-Thrush Monticola solitarius

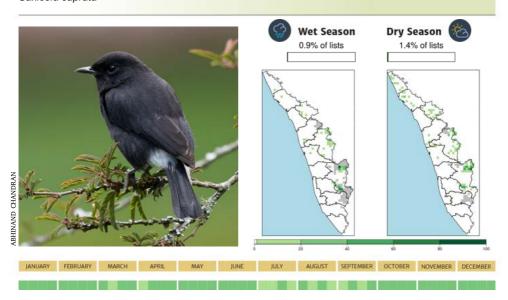


#### Siberian Stonechat (Common Stonechat)

Saxicola maurus

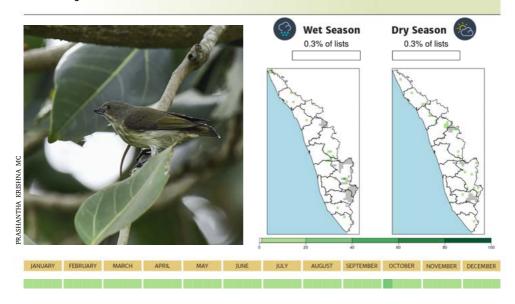


#### Pied Bushchat Saxicola caprata

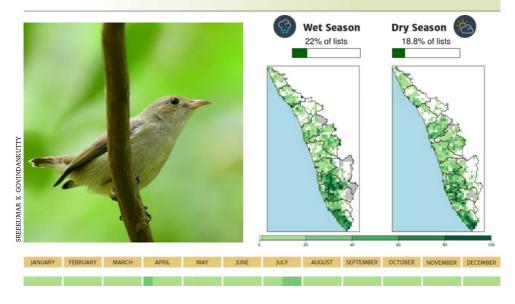


## Thick-billed Flowerpecker

Dicaeum agile

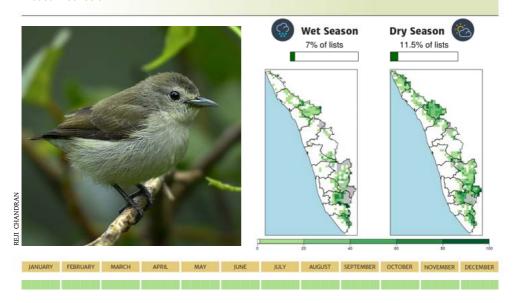


# Pale-billed Flowerpecker Dicaeum erythrorhynchos



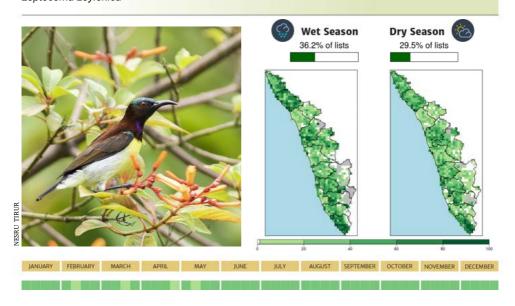
## Nilgiri Flowerpecker

Dicaeum concolor



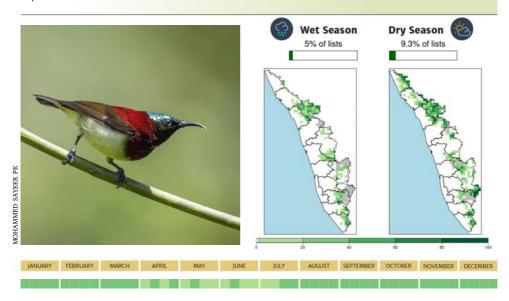
## Purple-rumped Sunbird

Leptocoma zeylonica

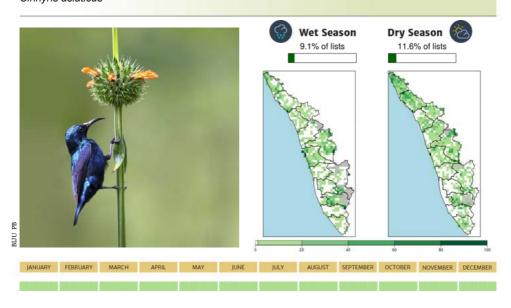


#### Crimson-backed Sunbird (Small Sunbird)

Leptocoma minima

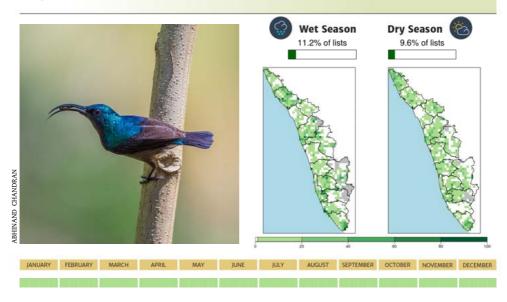


# Purple Sunbird Cinnyris asiaticus

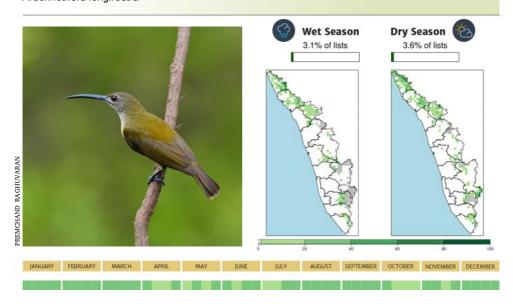


## Loten's Sunbird (Long-billed Sunbird)

Cinnyris lotenius

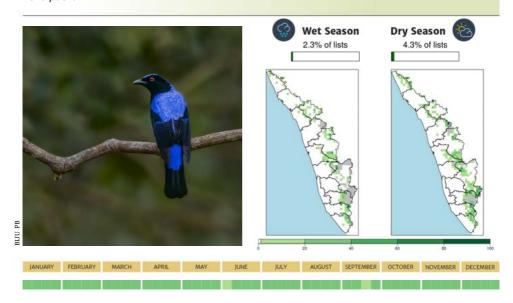


#### Little Spiderhunter Arachnothera longirostra

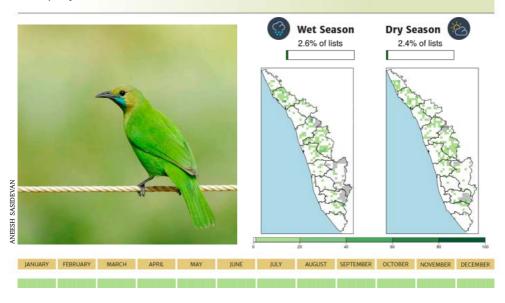


## Asian Fairy-bluebird

Irena puella

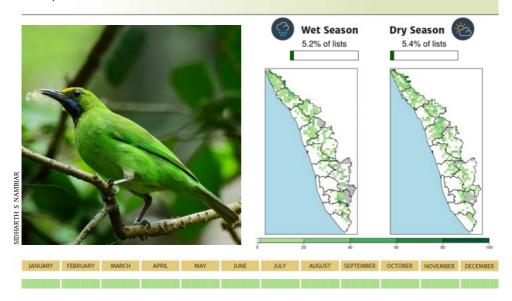


#### Jerdon's Leafbird (Jerdon's Chloropsis) Chloropsis jerdoni

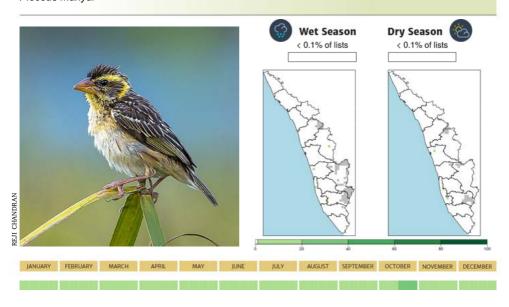


## Golden-fronted Leafbird (Golden-fronted Chloropsis)

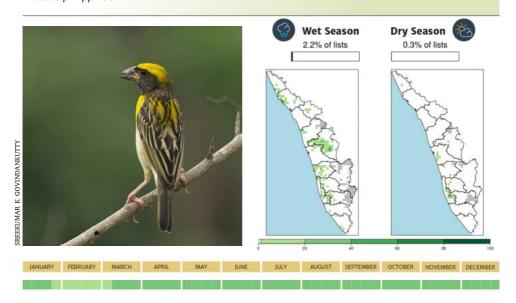
Chloropsis aurifrons



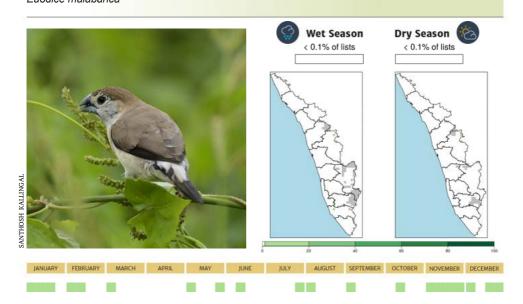
# Streaked Weaver Ploceus manyar



#### Baya Weaver Ploceus philippinus

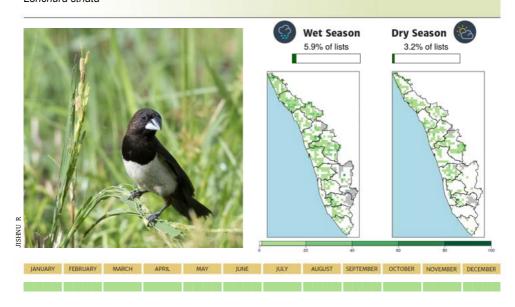


# Indian Silverbill (White-throated Munia) Euodice malabarica



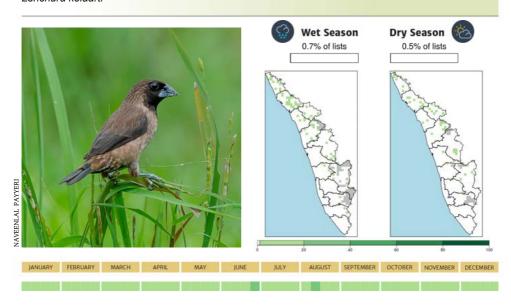
### White-rumped Munia

Lonchura striata



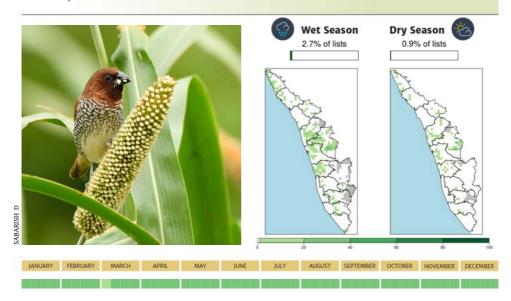
#### Black-throated Munia

Lonchura kelaarti



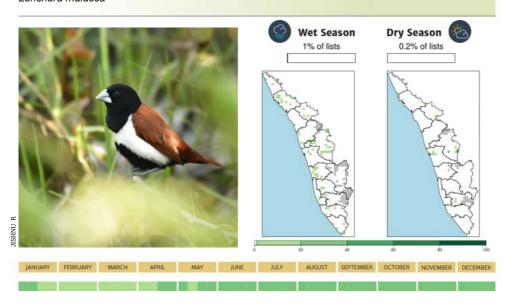
## Scaly-breasted Munia (Spotted Munia)

Lonchura punctulata

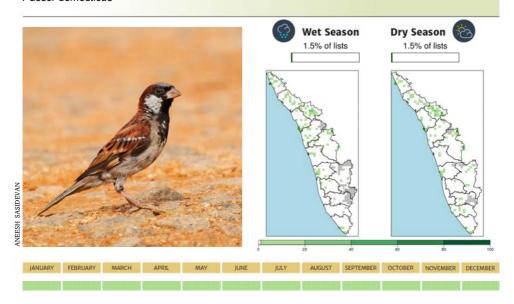


## Tricolored Munia (Black-headed Munia)

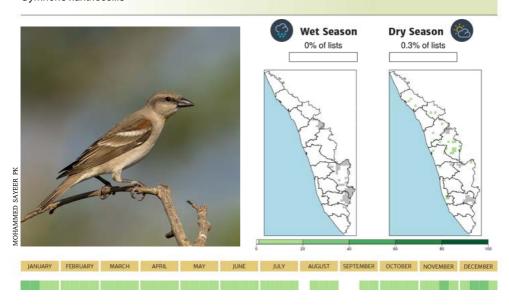
Lonchura malacca



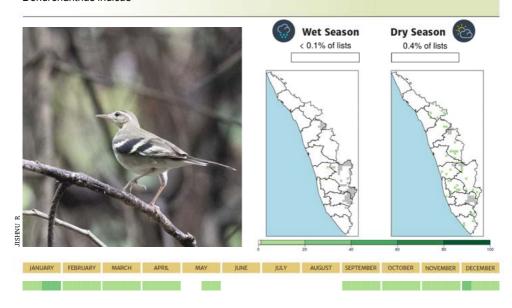
# House Sparrow Passer domesticus



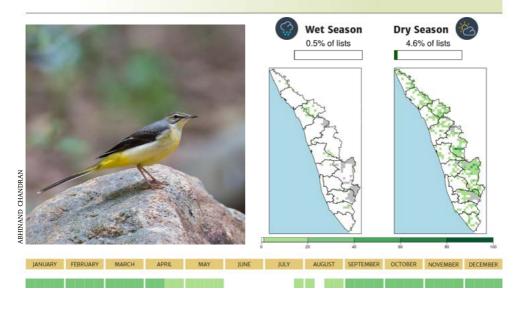
# Yellow-throated Sparrow (Chestnut-shouldered Petronia) *Gymnoris xanthocollis*



# Forest Wagtail Dendronanthus indicus

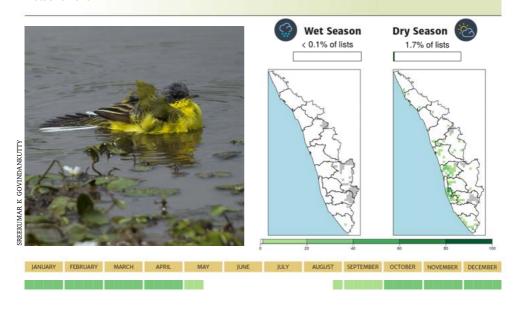


# Grey Wagtail Motacilla cinerea

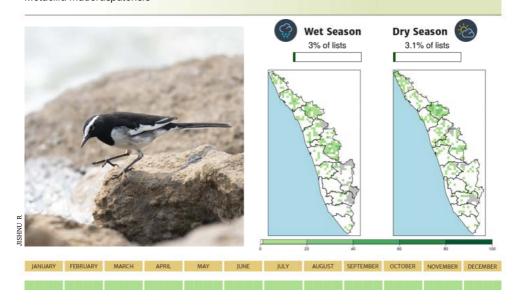


## Western Yellow Wagtail

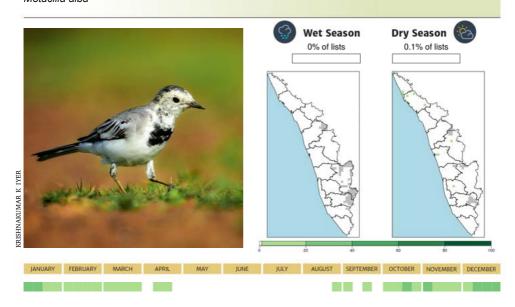
Motacilla flava



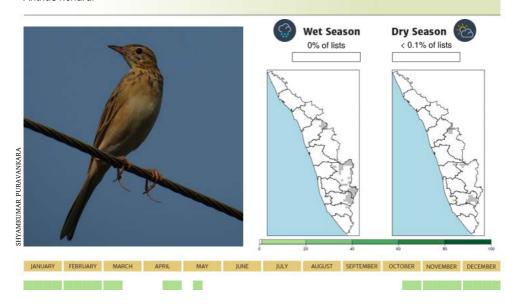
# White-browed Wagtail (Large Pied Wagtail) Motacilla maderaspatensis



# White Wagtail Motacilla alba

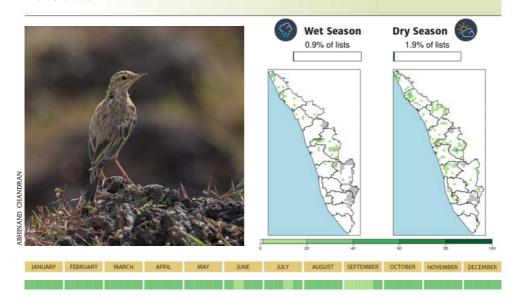


# Richard's Pipit Anthus richardi

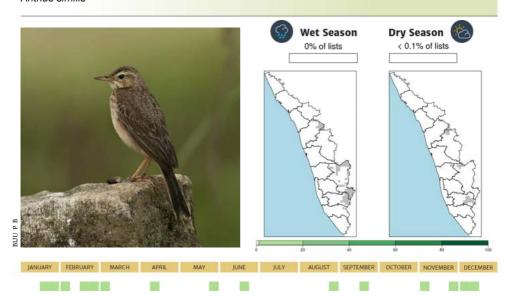


## Paddyfield Pipit

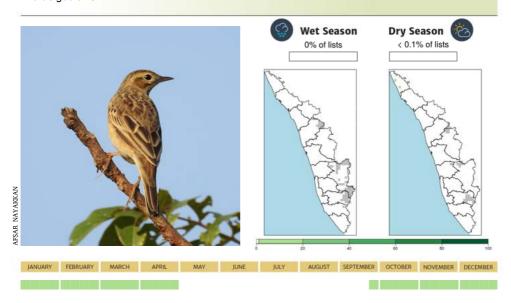
Anthus rufulus



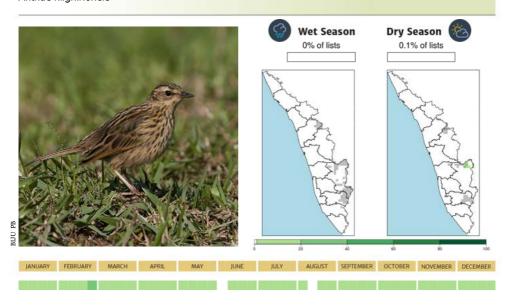
# Long-billed Pipit Anthus similis



# Blyth's Pipit Anthus godlewskii

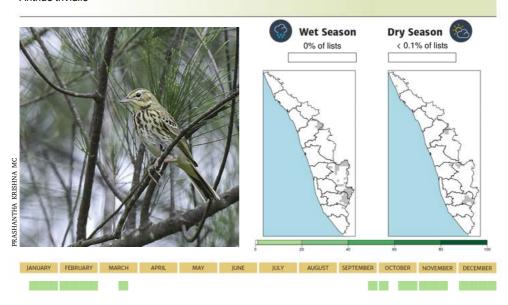


# Nilgiri Pipit Anthus nilghiriensis

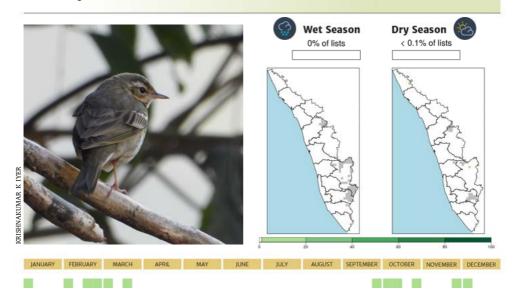


Tree Pipit

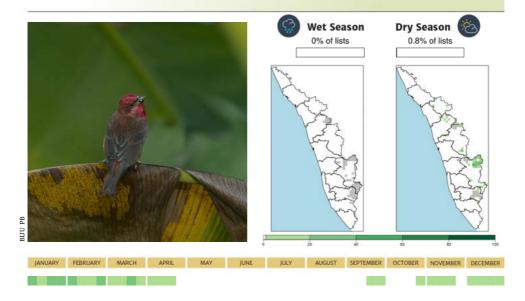
Anthus trivialis



# Olive-backed Pipit Anthus hodgsoni



# Common Rosefinch Carpodacus erythrinus



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#### 215 KERALA BIRD ATLAS

## Index

Adjutant, Lesser 84	Canary-Flycatcher, Grey-headed 152			
Babbler, Dark-fronted 174	Cisticola, Golden-headed 159			
Jungle 177	Zitting 158			
Large Grey 176	Collared-Dove, Eurasian 34			
Puff-throated 175	Coot, Eurasian 52			
Rufous 177	Cormorant, Great 86			
Tawny-bellied 174	Indian 86			
Yellow-billed 178	Little 85			
Yellow-eyed 172	Coucal, Greater 39			
Barbet, Brown-headed 127	Lesser 39			
Coppersmith 126	Crag-Martin, Dusky 163			
Malabar 126	Crake, Ruddy-breasted 55			
White-cheeked 127	Slaty-legged 54			
Bay-Owl, Sri Lanka 111	Crow, House 151			
Baza, Black 97	Large-billed 151			
Jerdon's 97	Cuckoo, Banded Bay 42			
Bee-eater, Blue-bearded 122	Grey-bellied 42			
Blue-cheeked 123	Indian 44			
Blue-tailed 124	Pied 41			
Chestnut-headed 124	Cuckooshrike, Black-headed 139			
Green 123	Large 139			
Besra 107	Curlew, Eurasian 64			
Bittern, Black 88	Darter, Oriental 85			
Cinnamon 88	Dollarbird, Oriental 125			
Yellow 87	Dove, Asian Emerald 36			
Blackbird, Indian 186	Laughing 35			
Bulbul, Flame-throated 166	Spotted 35			
Grey-headed 166	Drongo, Ashy 145			
Red-vented 167	Black 144			
Red-whiskered 167	Bronzed 146			
Square-tailed 169	Greater Racket-tailed 147			
White-browed 168	Hair-crested 146			
Yellow-browed 169	White-bellied 145			
Yellow-throated 168	Drongo-Cuckoo, Fork-tailed 43			
Bush-Quail, Jungle 30	Duck, Indian Spot-billed 26			
Painted 30	Knob-billed 24			
Bushchat, Pied 196	Dwarf-Kingfisher, Black-backed 120			
Bushlark, Jerdon's 154	Eagle, Black 101			
Buttonquail, Barred 73	Bonelli's 104			
Buzzard, Common 110	Booted 103			
White-eyed 104	Greater Spotted 102			

#### 216

#### KERALA BIRD ATLAS

Indian Spotted 102	Orange-breasted 36				
Rufous-bellied 101	Yellow-footed 37				
Steppe 103	Greenshank, Common 71				
Eagle-Owl, Spot-bellied 112	Gull, Black-headed 75				
Eared-Nightjar, Great 45	Brown-headed 75				
Egret, Cattle 92	Lesser Black-backed 76				
Great 90	Pallas's 76				
Intermediate 90	Slender-billed 74				
Little 91	Hanging-Parrot, Vernal 137				
Fairy-bluebird, Asian 201	Harrier, Montagu's 106				
Falcon, Peregrine 135	Pallid 105				
Fantail, White-browed 144	Hawk-Cuckoo, Common 44				
Fish-Eagle, Lesser 109	Large 43				
Fish-Owl, Brown 113	Hawk-Eagle, Changeable 100				
Flameback, Black-rumped 132	Legge's 100				
Common 131	Hawk-Owl, Brown 115				
Greater 130	Heron, Grey 89				
Flamingo, Greater 32	Purple 89				
Flowerpecker, Nilgiri 198	Striated 93				
Pale-billed 197	Honey-buzzard, Oriental 96				
Thick-billed 197	Hoopoe, Eurasian 116				
Flycatcher, Asian Brown 187	Hornbill, Great 118				
Black-and-orange 193	Indian Grey 117				
Blue-throated 190	Malabar Grey 117				
Brown-breasted 187	Ibis, Black-headed 94				
Nilgiri 191	Glossy 94				
Rusty-tailed 194	Imperial-Pigeon, Green 38				
Taiga 194	Mountain 38				
Tickell's Blue 191	Iora, Common 143				
Verditer 192	Jacana, Bronze-winged 63				
White-bellied Blue 190	Pheasant-tailed 63				
Flycatcher-shrike, Bar-winged 143	Junglefowl, Grey 31				
Francolin, Grey 31	Kestrel, Eurasian 134				
Frogmouth, Sri Lanka 45	Lesser 134				
Fulvetta, Brown-cheeked 176	Kingfisher, Black-capped 121				
Garganey 25	Blue-eared 119				
Godwit, Bar-tailed 65	Common 119				
Black-tailed 65	Pied 122				
Golden-Plover, Pacific 58	Stork-billed 120				
Goshawk, Crested 106	White-throated 121				
Grassbird, Broad-tailed 162	Kite, Black 108				
Grebe, Little 32	Black-winged 96				
Green-Pigeon, Grey-fronted 37	Brahminy 108				

#### 217

#### KERALA BIRD ATLAS

Koel, Asian 41	Spotted 114				
Lapwing, Grey-headed 59	Oystercatcher, Eurasian 57				
Red-wattled 59	Painted-Snipe, Greater 62				
Yellow-wattled 58	Palm-Swift, Asian 50				
Lark, Malabar 155	Paradise-Flycatcher, Indian 148				
Sykes's Short-toed 154	Parakeet, Malabar 136				
Laughingthrush, Ashambu 180	Plum-headed 136				
Banasura 179	Rose-ringed 135				
Nilgiri 179	Peafowl, Indian 28				
Palani 180	Pelican, Spot-billed 87				
Wayanad 178	Piculet, Speckled 128				
Leafbird, Golden-fronted 202	Pied-Hornbill, Malabar 118				
Jerdon's 201	Pigeon, Rock 33				
Magpie-Robin, Oriental 188	Pintail, Northern 27				
Malkoha, Blue-faced 40	Pipit, Blyth's 211				
Sirkeer 40	Long-billed 210				
Marsh-Harrier, Eurasian 105 Nilgiri 211					
Minivet, Orange 138	Olive-backed 212				
Small 138	Paddyfield 210				
Monarch, Black-naped 147	Richard's 209				
Moorhen, Eurasian 52	Tree 212				
Munia, Black-throated 204	Pitta, Indian 137				
Scaly-breasted 205	Plover, Black-bellied 57				
Tricolored 205	Common Ringed 61				
White-rumped 204	Kentish 61				
Myna, Common 184	Little Ringed 62				
Jungle 185	Pond-Heron, Indian 92				
Southern Hill 182	Pratincole, Small 74				
Needletail, Brown-backed 48	Prinia, Ashy 157				
White-rumped 47	Grey-breasted 156				
Night-Heron, Black-crowned 93	Jungle 157				
Nightjar, Jerdon's 46	Plain 158				
Jungle 46	Pygmy-Goose, Cotton 25				
Savanna 47	Quail, Rain 29				
Nuthatch, Indian 181	Rail, Slaty-breasted 51				
Velvet-fronted 181	Redshank, Common 73				
Openbill, Asian 82	Reef-Heron, Western 91				
Oriole, Black-hooded 141	Robin, Indian 188				
Black-naped 140	Indian Blue 192				
Indian Golden 140	Rock-Thrush, Blue 195				
Osprey 95	Blue-capped 195				
Owl, Barn 110	Roller, Indian 125				
Owlet, Jungle 113	Rosefinch, Common 213				

#### 218

#### KERALA BIRD ATLAS

Ruff 66	Painted 84			
Sand-Plover, Greater 60	Woolly-necked 83			
Lesser 60	Storm-Petrel, Swinhoe's 82			
Sanderling 68	Wilson's 81			
Sandpiper, Common 70	Sunbird, Crimson-backed 199			
Curlew 67	Loten's 200			
Green 71	Purple 199			
Marsh 72	Purple-rumped 198			
Terek 70	Swallow, Barn 163			
Wood 72	Hill 164			
Scimitar-Babbler, Indian 175	Red-rumped 165			
Scops-Owl, Indian 111	Streak-throated 165			
Oriental 112	Wire-tailed 164			
Sea-Eagle, White-bellied 109	Swamphen, Grey-headed 53			
Serpent-Eagle, Crested 99	Swift, Alpine 49			
Shama, White-rumped 189	Blyth's 49			
Shikra 107	Little 50			
Sholakili, White-bellied 189	Swiftlet, Indian 48			
Shoveler, Northern 26	Tailorbird, Common 156			
Shrike, Bay-backed 149	Teal, Green-winged 27			
Brown 148	Tern, Caspian 78			
Long-tailed 149	Common 79			
Silverbill, Indian 203	Great Crested 80			
Skylark, Oriental 155	Gull-billed 77			
Snake-Eagle, Short-toed 99	Lesser Crested 81			
Snipe, Common 69	Little 77			
Pin-tailed 69	River 79			
Sparrow, House 206	Sandwich 80			
Yellow-throated 206	Whiskered 78			
Sparrow-Lark, Ashy-crowned 153	Thick-knee, Great 56			
Spiderhunter, Little 200	Indian 55			
Spoonbill, Eurasian 95	Thrush, Nilgiri 185			
Spurfowl, Painted 29	Orange-headed 186			
Red 28	Tit, Cinereous 152			
Starling, Brahminy 183	Indian Yellow 153			
Chestnut-tailed 183	Treepie, Rufous 150			
Malabar 184	White-bellied 150			
Rosy 182	Treeswift, Crested 51			
Stilt, Black-winged 56	Trogon, Malabar 116			
Stint, Little 68	Turnstone, Ruddy 66			
Temminck's 67	Turtle-Dove, Oriental 34			
Stonechat, Siberian 196	Vulture, Red-headed 98			
Stork, Black 83	White-rumped 98			

#### KERALA BIRD ATLAS

Wagtail, Forest 207

Grey 207

Western Yellow 208

White 209

White-browed 208

Warbler, Blyth's Reed 161

Booted 160

Clamorous Reed 162

Green/Greenish 171

Large-billed Leaf 171

Paddyfield 161

Sykes's 160

Thick-billed 159

Tickell's Leaf 170

Tytler's Leaf 170

Western Crowned 172

Watercock 53

Waterhen, White-breasted 54

Weaver, Baya 203

Streaked 202

Whimbrel 64

Whistling-Duck, Lesser 24

Whistling-Thrush, Malabar 193

White-eve. Indian 173

Whitethroat, Lesser 173

Wood-Owl. Brown 115

Mottled 114

Wood-Pigeon, Nilgiri 33

Woodpecker, Brown-capped Pygmy

129

Heart-spotted 129

Rufous 131

Streak-throated 133

White-bellied 133

Yellow-crowned 130

Woodshrike, Common 142

Malabar 142

Woodswallow, Ashy 141

Wryneck, Eurasian 128

Yellownape, Lesser 132









# AN ATLAS OF THE BIRDS OF KERALA Praveen J & PO Nameer



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