Understanding Research Patterns, Trends and Author Dynamics on Vanishing Birds Studies in India : A Scientometric Analysis

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ABSTRACT

This scientometric analysis examines the literature on vanishing birds in India from 1991 to 2024, utilizing Bradford's Law, Lotka's Law, and citation analysis. A total of 145 papers were collected from the Web of Science database and analyzed using R-Studio, MS Excel, and VOS Viewer. The study reveals a significant increase in publications starting from 2005, peaking in 2011, 2014, 2017, 2018, and 2020. Citation analysis indicates an increasing impact of research over time. Collaboration among authors is high, with 48.28% involving international affiliations. Most publications are articles, with Green R E and Prakash V emerging as top contributors. Lotka's Law analysis confirms a skewed distribution of author productivity. Top journals for communication include "Current Science," "Bird Conservation International," and "Oryx." This research work delivers valuable insights for understanding research trends and informing conservation efforts for vanishing birds in India.



Keywords :

Avian Biodiversity, Vanishing Birds, Research, Scientometrics and Bibliometrics.

1. Introduction :

The avian biodiversity of India is a source of both pride and concern, as the country boasts a remarkable array of bird species, yet faces significant challenges in conserving them. The decline of bird populations in India is a multifaceted issue, as evidenced by the status of the Great Indian Bustard (GIB), which is critically endangered due to habitat loss, poaching, and fragmentation (Vijayvargiya et al., 2013). Similarly, wetland birds in Uttar Pradesh are affected by changes in habitat characteristics, although a rich diversity persists in these areas (Jha & Mckinley, 2015). The broader context of avian decline is highlighted by the global trend of bird species moving towards extinction, with one in eight species at risk, underscoring the urgency for conservation efforts (Allinson, 2023).

Contradictions arise when considering the ecological dynamics of bird populations. For instance, Wright's hypothesis on the inverse relationship between anole and bird biomass is challenged by alternative explanations such as predation, questioning the generalizability of competition-driven patterns (Waide & Reagan, 1983). Moreover, while desert bird extinctions in the Mojave have less impact on the food web compared to mammals or reptiles, the interconnectedness of bird species suggests resistance to bird losses (Eichenwald et al., 2024). In Hawaii, forest birds face severe threats, yet concerted research and conservation efforts provide insights into reversing declines (Pratt et al., 2009). Vultures, as obligate scavengers, face a particularly high risk of extinction, contrasting with the stable or increasing populations of

facultative scavengers (Buechley & Sekercioglu, 2016). Acidification impacts bird populations differently, with some species experiencing reproductive challenges, while others may benefit from reduced competition (Graveland, 1998). Additionally, anthropogenic noise has been shown to repel birds and reduce their fitness, indicating the importance of noise reduction in conservation strategies (Chen & Koprowski, 2015). Genetic variety studies reveal that birds at higher extinction risk have lower genetic diversity, which could hinder recovery efforts (Jamieson, 2009).

In summary, the vanishing birds in India are part of a global trend of avian population declines. The causes are complex and include habitat destruction, ecological competition, anthropogenic pressures, and genetic factors. Conservation efforts must be multifaceted, addressing specific threats such as habitat loss for the GIB, managing wetland characteristics, and mitigating broader threats like climate change, predation, and pollution. The situation is alarming but not without hope, as targeted conservation actions are effective in certain contexts. It is overbearing to assimilate these insights into a comprehensive conservation strategy to prevent further losses of India's avian biodiversity.

2. Need for the Study :

The avian biodiversity of India is a source of both pride and concern, as the country boasts a remarkable array of bird species, yet faces significant challenges in conserving them. The study of vanishing birds, within the context of Indian ornithology, is pivotal for understanding the threats faced by these avian populations and devising effective conservation strategies. Through this scientometric analysis, we aim to deliver a complete overview of the vanishing bird literature,



highlighting trends, challenges, and opportunities for future research and conservation efforts in India and beyond.

3. Objectives :

1. To find author dynamics influence research on vanishing birds

2. To know year year-wise distribution of Publications

3. To know year year-wise distribution of Citations

4. To know which Journal is used most of time for the scientific communication

4. Literature Review :

A bibliometric study on vanishing species would involve analyzing the volume and nature of scientific literature related to endangered and threatened species (Gessner et al., 2013), highlighting a bibliometric analysis revealing that research on sturgeon and paddlefish has disproportionately focused on low-risk species, neglecting those at high risk of extinction. This indicates a potential gap in conservation efforts and scientific attention. Similarly, text mining and sentiment analysis of endangered species research in South Korea shows an increasing trend in publications, particularly in ecology and plant studies, suggesting a growing scientific interest in conservation over time (Do et al., 2020).

Contradictorily, critiques the effectiveness of the Endangered Species Act (ESA) in the United States, suggesting that the act has not significantly contributed to species recovery and that the process for determining species status is subjective (Pukazhenthi et al., 2005). This might indicate that despite increased research and conservation efforts,

policy and implementation may not always bring into line with scientific findings or lead to successful outcomes.

Climate change research on major aquatic species assists various stakeholders (e.g. policymakers, farmers, funders) in better managing their aquaculture activities and productivity for future food sustainability. However, there has been little research on the impact of climate change on aquatic production, particularly in terms of scientometric analyses (Azra et al., 2022).

Presently, a comprehensive perspective delineated the need for i) more international collaboration for research activity focusing on climate change and aquatic production to achieve the United Nations Sustainable Development Goal by 2030; ii) the incorporation of work from molecular biology, economics, and sustainability.

Bibliometric studies and analyses of conservation literature reveal both an increase in research attention towards endangered species and a critical view of conservation policies (Frehse et al., 2016).

While there is a growing body of literature, particularly in certain taxa and regions, there are concerns about the prioritization of species for research and conservation and the effectiveness of legal frameworks like the ESA. These findings underscore the need for more targeted research and policy interventions to address the conservation of highly endangered species (Frehse et al., 2016).

5. Methodology :

Scientometrics is the statistical method of assessing research literature growing in popularity in medicine to evaluate publication patterns, historical evolution, and academic hotspots.

Database name	Web of Science (https : //www.webofscience.com/wos/woscc/basic-search)
Search Term	(((ALL=(Vanishing))) OR ALL=(endangered)) AND ALL=(birds) Region or country is (India)
Total Results	145
Software used	MS Excel, VOS Viewer and R-Package

Vanishing Birds in India (1991-2024) was analysed using Scientometrics methods, where 145 papers were collected from the ***Web of Science*** database and incorporated with R-Studio, MS Excel, and VOS Viewer software. A normal count procedure was applied, and the results were analyzed and interpreted for a logical conclusion.

6. Data Analysis and Interpretation :

Table 1 and Figure 1, illustrate the year-wise distribution of publications, from 1991 to 2009, there were sporadic publications, with only a few articles published each year. However, there is a noticeable increase in the number of articles starting from 2005 onwards. The number of articles published per year starts to increase consistently from 2005 onwards, with occasional fluctuations. This indicates a growing interest in the topic among researchers and possibly an increasing concern about the plight of vanishing bird species. The years 2011, 2014, 2017, 2018, and 2020 stand out as peak years in terms of the number of articles published. These years saw a relatively high number of publications compared to others.

After 2020, there seems to be a plateau followed by a slight decline in the number of articles published. This could suggest a possible saturation of the topic or a shift in focus towards other environmental issues. It suggests a growing interest in the topic of vanishing birds among

researchers, with a significant increase in publications from the mid-2000s onwards, reaching a peak in the late 2010s and early 2020s before stabilizing or slightly declining in recent years.

Table-1
Year-wise distribution of vanishing birds' literature

Year	Articles	%	Cumulative Freq.
1991	1	0.34%	1
1995	1	0.34%	2
1997	1	0.34%	3
2001	1	0.34%	4
2002	1	0.34%	5
2004	1	0.34%	6
2005	6	2.07%	12
2006	5	1.72%	17
2007	4	1.38%	21
2008	3	1.03%	24
2009	3	1.03%	27
2010	4	1.38%	31
2011	8	2.76%	39
2012	3	1.03%	42
2013	6	2.07%	48
2014	8	2.76%	56
2015	5	1.72%	61
2016	5	1.72%	66
2017	8	2.76%	74
2018	11	3.79%	85
2019	2	0.69%	87
2020	12	4.14%	99
2021	16	5.52%	115
2022	13	4.48%	128
2023	11	3.79%	139
2024	6	2.07%	145
Total	145	50.00%	

Figure-1

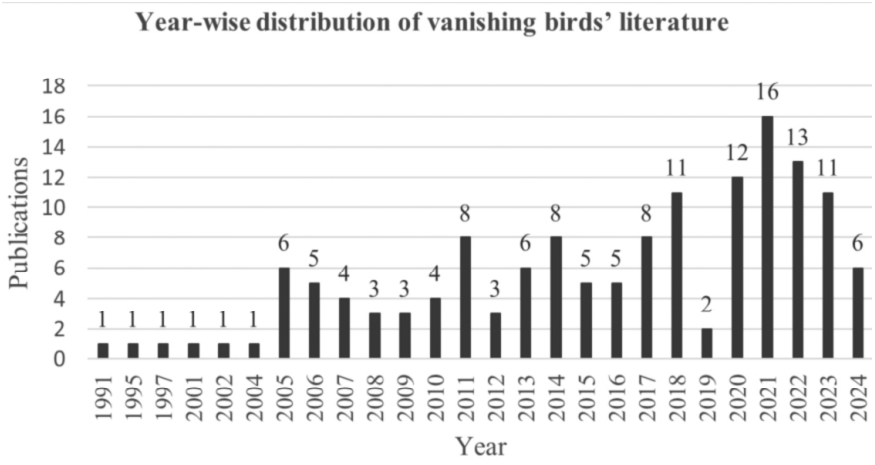


Table 2 and Figure 2 explain the Average Citations Per Year in the Vanishing bird literature in India. Mean Total Citations per Article (MeanTCperArt) : This metric indicates the average number of citations each article received. The values vary widely across the years, ranging from as low as 0.67 to as high as 141. Number of Articles (N) : This represents the number of articles published each year. The number of articles fluctuates annually, with peaks in certain years, such as 2014 and 2020. Mean Total Citations per Year (MeanTCperArt) : This metric calculates the average total citations received per year, considering all articles published in that year. It helps to gauge the overall impact of research on vanishing birds over time. Citable Years : This indicates the number of years for which the research conducted in a particular year remains citable, contributing to the cumulative body of knowledge on the topic. It clearly illustrates fluctuations in research activity and impacts over the years, with some years showing higher citation rates and article counts compared to others. The trends reflect the evolving interest and engagement of the scientific community in studying and addressing the issue of vanishing bird species.

Table 2 : Average Citations Per Year

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
1991	46	1	1.35	34
1995	11	1	0.37	30
1997	17	1	0.61	28
2001	33	1	1.38	24
2002	16	1	0.7	23
2004	51	1	2.43	21
2005	17	6	0.85	20
2006	141	5	7.42	19
2007	55.75	4	3.1	18
2008	11	3	0.65	17
2009	25	3	1.56	16
2010	8.75	4	0.58	15
2011	18	8	1.29	14
2012	13.33	3	1.03	13
2013	10.67	6	0.89	12
2014	37.5	8	3.41	11
2015	5.4	5	0.54	10
2016	20	5	2.22	9
2017	29.75	8	3.72	8
2018	23.45	11	3.35	7
2019	19.5	2	3.25	6
2020	15.83	12	3.17	5
2021	6.69	16	1.67	4
2022	5.62	13	1.87	3
2023	1	11	0.5	2
2024	0.67	6	0.67	1



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Fig.-2 Average Citations Per Year

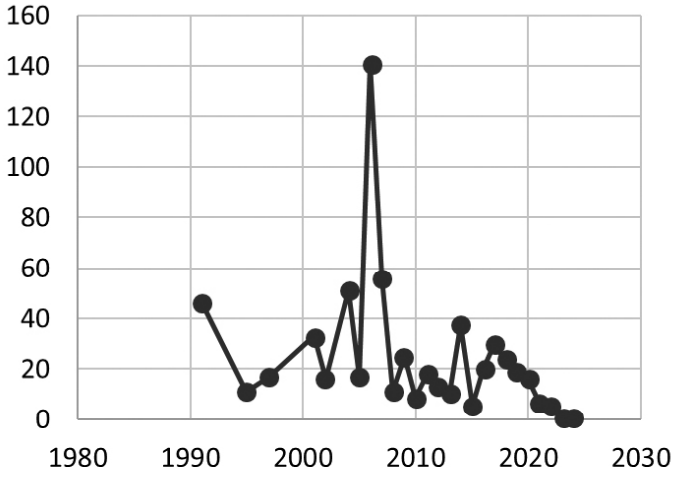


Fig.-3 Highly Cited Authors

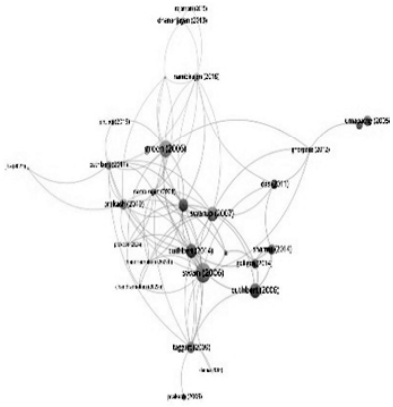


Table 3 and Figure 4 show the Author Collaboration in Vanishing Birds Literature in India. Four documents in the vanishing bird literature in India are single authored. This indicates a limited number of individual contributions to the literature. On average, there are 13.7 co-authors per document.

This suggests a high level of collaboration among authors in producing literature on vanishing birds in India. Collaborative efforts often bring diverse perspectives and expertise to research, enhancing the quality and scope of the work. Approximately 48.28% of the collaborations involve authors from international affiliations. This specifies a important degree of international collaboration in the literature on vanishing birds in India. International collaborations can facilitate knowledge exchange, access to resources, and global perspectives, contributing to more comprehensive research outcomes.

Table-3

Authors Collaboration in Vanishing Birds Literature in India

Authors	Collaboration
Single-authored docs	4
Co-Authors per Doc	13.7
International co-authorships %	48.28

Figure-4

Authors Collaboration

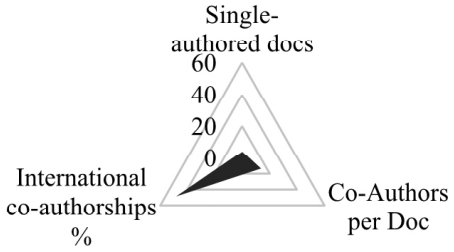


Table 4 and Figure 5 provide insights into the different types of publications in the literature on vanishing birds in India. The majority of publications (134 out of 145) fall into this category.



Articles are comprehensive research papers that present new findings, analyses, or interpretations related to vanishing birds in India. These articles likely cover a wide range of topics, including conservation efforts, population trends, habitat loss, and species-specific studies. A small percentage of publications (5 out of 145) are categorized as reviews. These documents likely provide summaries and analyses of existing research on vanishing birds in India, offering insights into current knowledge gaps, emerging trends, and areas for further investigation. The remaining publications include a variety of document types, such as Data Papers, Early Access articles, Proceedings Papers, Editorial Materials, and Letters. While these types are less common, they may still contribute valuable information and perspectives to the literature on vanishing birds in India. Overall, the dominance of articles suggests that primary research and data-driven analyses are the primary focus of the literature on vanishing birds in India. Reviews and other document types complement these research articles by providing context, synthesis, and critical evaluations of existing knowledge in the field.

Table-4

Document Types in Vanishing Birds Literature in India

Types	Publication	%
Article	134	92.41%
Article; Data Paper	2	1.38%
Article; Early Access	1	0.69%
Article; Proceedings Paper	1	0.69%
Editorial Material	1	0.69%
Letter	1	0.69%
Review	5	3.45%
Total	145	100.00%

Figure-5
Document Types

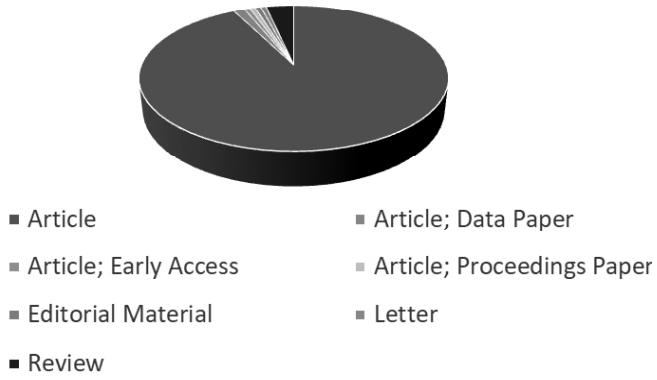


Table 5 and Figure 6 provide information about the top contributors to the literature on vanishing birds in India. With 18 publications, Green RE is the top contributor, accounting for 12.41% of the total publications.

Their significant contribution indicates a strong involvement in research related to vanishing birds in India. Prakash V follows closely with 13 publications, comprising 8.97% of the total. Their substantial contribution suggests a notable presence in the field and a significant impact on the literature.

Cuthbert RJ, Dutta S, Rahmani AR : These authors, along with Bowden CGR, Galligan Th, Saini M, Sharma Ak, and others, each have 6 publications, making them important contributors to the literature.

Their collective efforts contribute to a diverse range of research topics and perspectives within the field of vanishing birds in India.



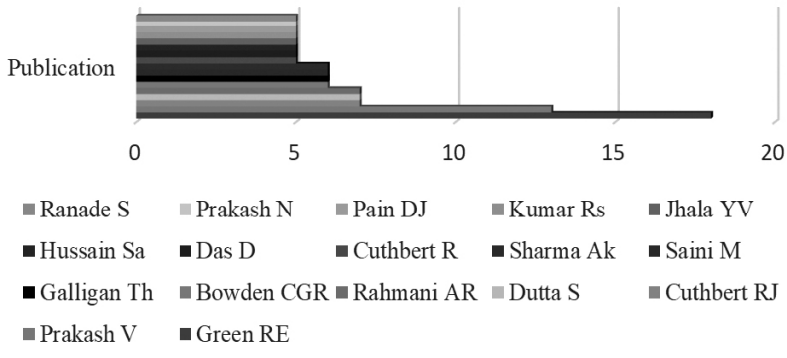
Table-5

Top Contributors in Vanishing Birds Literature in India

Sl.	Name	Publication	%
1	Green RE	18	12.41
2	Prakash V	13	8.97
3	Cuthbert RJ	7	4.83
4	Dutta S	7	4.83
5	Rahmani AR	7	4.83
6	Bowden CGR	6	4.14
7	Galligan Th	6	4.14
8	Saini M	6	4.14
9	Sharma Ak	6	4.14
10	Cuthbert R	5	3.45
11	Das D	5	3.45
12	Hussain Sa	5	3.45
13	Jhala YV	5	3.45
14	Kumar Rs	5	3.45
15	Pain DJ	5	3.45
16	Prakash N	5	3.45
17	Ranade S	5	3.45
		145	

Figure-6

Top contributors



Lotka's Law, formulated by Alfred J. Lotka in 1926, describes the productivity distribution of authors in a scientific field, asserting that a small proportion of authors will produce the majority of the work. The law is often applied to bibliometrics to understand author productivity. Let's analyze the provided data through the lens of Lotka's Law :

7. Calculation of Exponent (n) :

Lotka's Law is often expressed in the form of a power law equation :

$$p\ (n) = \frac{C}{n^{\ a}}$$

Where :

$p\ (n)$ is the number of authors with n publications.

C is a constant.

a is the exponent, often denoted as the slope of the power-law distribution.

To calculate the exponent a, we need to fit the provided data into this equation. Given that the data is already organized by the number of documents written by authors, we can use it to estimate the exponent.

Analysis of Exponent (n) :

Once we have the exponent, we can interpret its value :

If $a < 2$ it indicates a highly skewed distribution, as predicted by Lotka's Law, where a small proportion of authors contribute significantly to the total output.

If $a = 2$ it suggests a more egalitarian distribution, deviating from Lotka's Law.



If *a*> 2, it suggests a flatter distribution, indicating that productivity is more evenly distributed among authors.

The graph of the data fitted to a power-law distribution suggests that the exponent *a* a is approximately 1.745. Since this value is less than 2, it indicates that the data follows Lotka's Law. The scatter plot of the provided data and the fitted power-law curve are shown. The fitted curve closely follows the trend of the data points, indicating a good fit of the power-law distribution to the data. The exponent *a* estimated from the curve fitting is approximately 1.745. As the exponent a is less than 2, it suggests that the data follows Lotka's Law. This implies that a small proportion of authors produce the majority of the work, which aligns with the expectations of Lotka's Law.

Therefore, based on the estimated exponent a, it can be concluded that the provided data follows Lotka's Law, indicating a skewed distribution of author productivity where a minority of authors contribute significantly to the total output

Table 6

Author Productivity through Lotka's Law

Docs. written	No. of Authors	Proportion of Authors
1	1164	0.77
2	298	0.197
3	24	0.016
4	9	0.006
5	8	0.005
6	4	0.003
7	3	0.002
13	1	0.001
18	1	0.001

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Figure-7

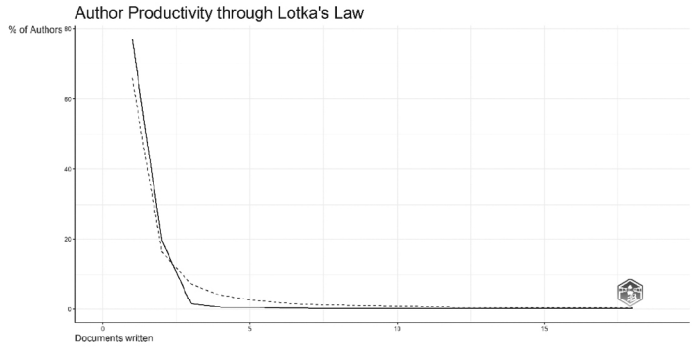


Table 6 and Figure 7 illustrate the Use of channels for scientific communication in Vanishing Birds in India. The top journals for communicating research on vanishing birds in India include "Current Science," "Bird Conservation International," and "Oryx." These journals likely attract a significant readership and provide a platform for researchers to share their findings. Several journals focus specifically on conservation and wildlife research, such as "Animal Conservation," "Conservation Biology," and "Biological Conservation." Researchers likely target these journals to reach audiences interested in conservation efforts and biodiversity conservation. Journals like "Plos One," "Journal of Applied Ecology," and "Environmental Science & Technology" provide interdisciplinary platforms where researchers can communicate their findings to a broader audience, including policymakers and practitioners in addition to academics. "The European Journal of Wildlife Research," "Waterbirds," and "Global Ecology and Conservation" offer a global perspective on wildlife conservation issues, providing insights and comparisons with conservation efforts in other regions. Open-access journals like "Plos One" and "Peerj" facilitate wider dissemination of research findings by removing barriers to access. This ensures that important research on vanishing birds in India reaches



a broader audience, including policymakers, conservationists, and the general public. The data also includes a diverse range of journals covering various aspects of biology, ecology, and environmental science, indicating the multidisciplinary nature of research on vanishing birds in India. Overall, the data suggests that researchers utilize a variety of channels for communicating their findings on vanishing birds in India, ranging from specialized conservation journals to interdisciplinary platforms and global publications. This diverse dissemination ensures that research findings are accessible to a broad audience, facilitating collaboration, knowledge exchange, and informed conservation action

Table 7

Use of channels for scientific communication in Vanishing Birds in India

Journal Name	Freq.	%	C.F.
Current Science	11	7.59%	11
Bird Conservation International	7	4.83%	18
Oryx	5	3.45%	23
Animal Conservation	4	2.76%	27
Conservation Biology	4	2.76%	31
European Journal of Wildlife Research	4	2.76%	35
Biological Conservation	3	2.07%	38
Biology Bulletin	3	2.07%	41
Ecology and Evolution	3	2.07%	44
Environmental Science and Pollution Research	3	2.07%	47
Plos One	3	2.07%	50
Waterbirds	3	2.07%	53
Aquatic Sciences	2	1.38%	55
Ecological Informatics	2	1.38%	57
Environment Development and Sustainability	2	1.38%	59
Environmental Science & Technology	2	1.38%	61
Global Ecology and Conservation	2	1.38%	63

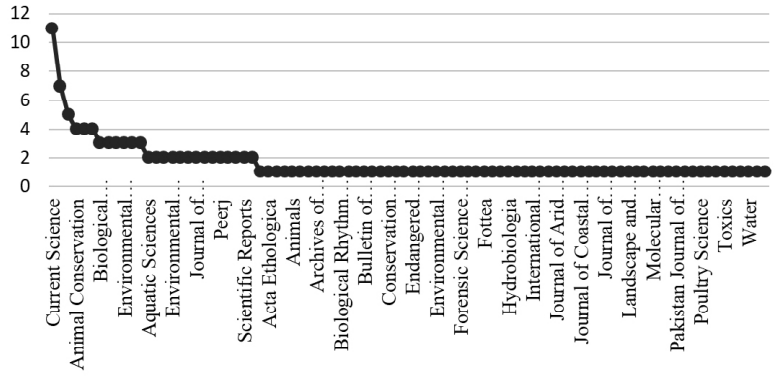
Journal of Applied Ecology	2	1.38%	65
Journal of Environmental Biology	2	1.38%	67
Journal of Ornithology	2	1.38%	69
Journal of The Indian Society of Remote Sensing	2	1.38%	71
Peerj	2	1.38%	73
Science of The Total Environment	2	1.38%	75
Scientific Data	2	1.38%	77
Scientific Reports	2	1.38%	79
Worlds Poultry Science Journal	2	1.38%	81
3 Biotech	1	0.69%	82
Acta Ethologica	1	0.69%	83
Amphibian & Reptile Conservation	1	0.69%	84
Animal Behaviour	1	0.69%	85
Animals	1	0.69%	86
Applied Acoustics	1	0.69%	87
Applied Geography	1	0.69%	88
Archives of Environmental Contamination and Toxicology	1	0.69%	89
Biodiversity Data Journal	1	0.69%	90
Biological Reviews	1	0.69%	91
Biological Rhythm Research	1	0.69%	92
Biology of Reproduction	1	0.69%	93
Biomed Research International	1	0.69%	94
Bulletin of Environmental Contamination and Toxicology	1	0.69%	95
Circuits Systems and Signal Processing	1	0.69%	96
Conservation & Society	1	0.69%	97
Conservation Genetics	1	0.69%	98
Conservation Genetics Resources	1	0.69%	99
Conservation Letters	1	0.69%	100
Endangered Species Research	1	0.69%	101
Environmental Conservation	1	0.69%	102
Environmental Impact Assessment Review	1	0.69%	103
Environmental Toxicology and Pharmacology	1	0.69%	104
Evolutionary Ecology	1	0.69%	105
Flora	1	0.69%	106
Forensic Science International	1	0.69%	107



Forest Ecology and Management	1	0.69%	108
Forktail	1	0.69%	109
Fottea	1	0.69%	110
Human and Ecological Risk Assessment	1	0.69%	111
Human Ecology	1	0.69%	112
Hydrobiologia	1	0.69%	113
Ibis	1	0.69%	114
Indian Journal of Animal Sciences	1	0.69%	115
International Journal of Interactive Multimedia And Artificial Intelligence	1	0.69%	116
Journal for Nature Conservation	1	0.69%	117
Journal of Animal and Plant Sciences	1	0.69%	118
Journal of Arid Environments	1	0.69%	119
Journal of Biogeography	1	0.69%	120
Journal of Cave and Karst Studies	1	0.69%	121
Journal of Coastal Conservation	1	0.69%	122
Journal of Environmental Management	1	0.69%	123
Journal of Ethnobiology	1	0.69%	124
Journal of Ethnobiology and Ethnomedicine	1	0.69%	125
Journal of Forestry Research	1	0.69%	126
Journal of Raptor Research	1	0.69%	127
Landscape and Urban Planning	1	0.69%	128
Mitochondrial DNA Part B-Resources	1	0.69%	129
Molecular Biology and Evolution	1	0.69%	130
Molecular Phylogenetics And Evolution	1	0.69%	131
Natural Areas Journal	1	0.69%	132
Pacific Science	1	0.69%	133
Pakistan Journal of Zoology	1	0.69%	134
Philosophical Transactions of The Royal Society B-Biological Sciences	1	0.69%	135
Plos Biology	1	0.69%	136
Poultry Science	1	0.69%	137
Raffles Bulletin of Zoology	1	0.69%	138
Springerplus	1	0.69%	139
Toxics	1	0.69%	140
Tropical Conservation Science	1	0.69%	141
Urban Ecosystems	1	0.69%	142

Water	1	0.69%	143
Wetlands	1	0.69%	144
Wildfowl	1	0.69%	145
	145	100%	

Figure-8 : Use of channels for scientific communication in Vanishing Birds in India



Bradford's Law is a bibliometric principle often used in library and information science to predict the distribution of journal articles within a field. It suggests that journals can be divided into core, secondary, and tertiary zones, with the number of journals decreasing in geometric progression as one moves from the core zone to the tertiary zone.

Zone 1 : 10 journals
Zone 2 : 32 journals (10 + 32 = 42)
Zone 3 : 47 journals (42 + 47 = 89)
Core Zone (Zone 1) : 10/145X100%=6.90%
Secondary Zone (Zone 2) : 42/145X100%=28.97%
Tertiary Zone (Zone 3) : 89/145X100%=61.38%

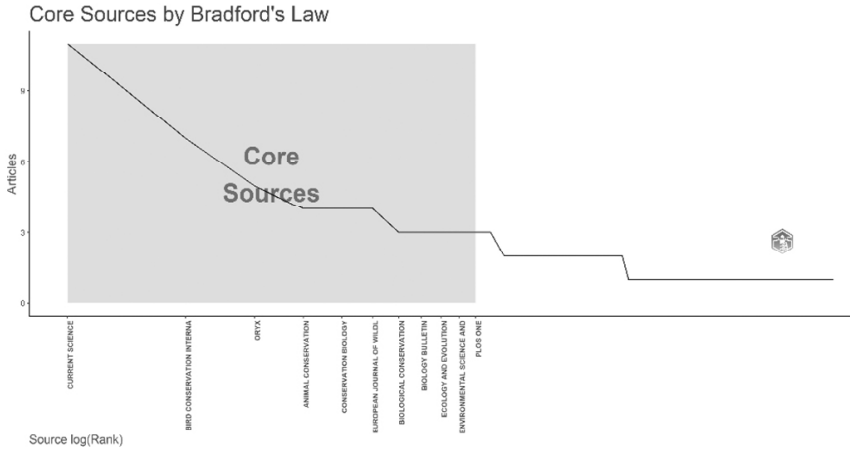


Bradford's Law typically states that if the ratio of the number of journals in successive zones is 1 : n : n^2, then it follows the law. Zone 1 to Zone 2 : 1 : 3.2 (actual : 1 : 3.2) Zone 2 to Zone 3 : 1 : 1.47 (actual : 1 : 1.47) The actual distribution seems to approximately follow Bradford's Law. However, deviations may occur due to various factors such as subject specificity, publication trends, or data limitations. In conclusion, while the actual distribution closely aligns with Bradford's Law predictions, minor deviations are present.

Table-8
Core Sources by Bradford's Law

Sl. No.	Zone	Journal	Publication
1	1	10	50
2	2	32	48
3	3	47	47
	Total	**89**	**145**

Figure-9



8. Findings :

Publication Trends : The analysis reveals a noticeable increase in publications on vanishing birds in India starting from 2005 onwards. The number of articles published per year shows consistent growth, peaking in 2011, 2014, 2017, 2018, and 2020. However, after 2020, there is a plateau followed by a slight decline in the number of articles published, suggesting a possible saturation of the topic or a shift in focus towards other environmental issues.

Citation Analysis : The average citations per year exhibit variations across different years, ranging from as low as 0.37 to as high as 7.42. While some years witness high average citations, others show lower values. However, the overall trend indicates an increasing impact of research on vanishing birds over time, with peaks corresponding to certain years.

Author Collaboration : The literature on vanishing birds in India demonstrates a high level of collaboration among authors, with an average of 13.7 co-authors per document. Approximately 48.28% of collaborations involve international affiliations, highlighting the global nature of research efforts in this field.

Document Types : The majority of publications are articles, indicating a focus on primary research and data-driven analyses. Reviews and other document types complement these articles by providing context, synthesis, and critical evaluations of existing knowledge.

Top Contributors : Green RE and Prakash V emerge as the top contributors, with substantial contributions to the literature on vanishing birds in India. Several other authors also make significant contributions, reflecting a diverse range of research topics and perspectives within the field.



Lotka's Law Analysis : The productivity distribution of authors follows Lotka's Law, indicating a skewed distribution where a small proportion of authors contribute significantly to the total output. This aligns with the expectation that a minority of authors produce the majority of the work in scientific fields.

Scientific Communication Channels : "Current Science," "Bird Conservation International," and "Oryx" are among the top journals for communicating research on vanishing birds in India. Researchers utilize a variety of channels, including specialized conservation journals, interdisciplinary platforms, and global publications, to disseminate their findings, ensuring accessibility to a broad audience.

9. Conclusion :

The study highlights a growing interest in the topic among researchers, with a peak in publications observed in recent years. While citation rates vary, there's an overall increasing impact of research on vanishing birds. Collaboration among authors, both domestically and internationally, is robust, contributing to the richness of the literature. Finally, diverse scientific communication channels ensure broad accessibility to research findings, facilitating collaboration and informed conservation efforts.

Overall, the analysis underscores the importance of continued research and collaborative action to address the challenges facing vanishing bird species in India. Finally, the diverse range of scientific communication channels utilized by researchers ensures that findings on vanishing birds in India are accessible to a broad audience, facilitating collaboration, knowledge exchange, and informed conservation action on both national and global scales.

Bibliography

Allinson, T. (2023). How Birds Reveal the Scale of the Biodiversity Crisis. In N. Maclean (Ed.), The Living Planet : The State of the World's Wildlife (pp. 106-131). Cambridge University Press. https : //doi.org/10.1017/9781108758826.007

Azra, M. N., Mohd Noor, M. I., Sung, Y. Y., & Abd Ghaffar, M. (2022). Visualizing a Field of Research With Scientometrics : Climate Change Associated With Major Aquatic Species Production in the World. Frontiers in Environmental Science, 10. https : // doi.org/10.3389/fenvs.2022.905428

Buechley, E. R., & Sekercioglu, Ç. H. (2016). The avian scavenger crisis : Looming extinctions, trophic cascades, and loss of critical ecosystem functions. Biological Conservation, 198, 220-228. https : //doi.org/10.1016/j.biocon.2016.04.001

Chen, H. L., & Koprowski, J. L. (2015). Animal occurrence and space use change in the landscape of anthropogenic noise. Biological Conservation, 192, 315-322. https : //doi.org/10.1016/ j.biocon.2015.10.003

Do, M. S., Choi, G., Hwang, J.-W., Lee, J.-Y., Hur, W.-H., Choi, Y.-S., Son, S.-J., Kwon, I.-K., Yoo, S.-Y., & Nam, H.-K. (2020). Research topics and trends of endangered species using text mining in Korea. Journal of Asia-Pacific Biodiversity, 13(4), 518-523. https : //doi.org/10.1016/j.japb.2020.09.008

Eichenwald, A. J., Fefferman, N. H., & Reed, J. M. (2024). Potential extinction cascades in a desert ecosystem : Linking food web interactions to community viability. Ecology and Evolution, 14(2), e10930. https : //doi.org/10.1002/ece3.10930



Frehse, F. de A., Braga, R. R., Nocera, G. A., & Vitule, J. R. S. (2016). Non-native species and invasion biology in a megadiverse country : Scientometric analysis and ecological interactions in Brazil. Biological Invasions, 18(12), 3713-3725. https : // doi.org/10.1007/s10530-016-1260-9

Gessner, J., Jari?, I., Rochard, E., & Pourkazemi, M. (2013). AS WE SEE IT : Sturgeon and paddlefish research focuses on low-risk species and largely disregards endangered species. Endangered Species Research, 22(2), 95-97. https : //doi.org/10.3354/esr00543

Graveland, J. (1998). Effects of acid rain on bird populations. Environmental Reviews, 6(1), 41-54. https : //doi.org/10.1139/a98-003

Jamieson, I. G. (2009). Loss of genetic diversity and inbreeding in New Zealand's threatened bird species. Department of Conservation.

Jha, K. K., & Mckinley, C. R. (2015). Composition and Dynamics of Migratory and Resident Avian Population in Wintering Wetlands from Northern India. Notulae Scientia Biologicae, 7(1), Article 1. https : //doi.org/10.15835/nsb719484

Pratt, T. K., Atkinson, C. T., Banko, P. C., Woodworth, B. L., & Jacobi, J. D. (2009). Conservation Biology of Hawaiian Forest Birds : Implications for Island Avifauna. Yale University Press.

Pukazhenthi, B., Comizzoli, P., Travis, A. J., & Wildt, D. E. (2005). Applications of emerging technologies to the study and conservation of threatened and endangered species.

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JLD : Vol. 10. No. 2. August- 2024
p-1-27
www.jld.net.in

Reproduction, Fertility and Development, 18(2), 77-90. https : //doi.org/10.1071/RD05117

Vijayvargiya, M. K., Mathur, R., & Sharma, B. K. (2013). Conservation of Bustards with special reference to Great Indian Bustard Ardeotis nigriceps : The State Bird of Rajasthan. In B. K. Sharma, S. Kulshreshtha, & A. R. Rahmani (Eds.), Faunal Heritage of Rajasthan, India : General Background and Ecology of Vertebrates (pp. 333-345). Springer. https : //doi.org/ 10.1007/978-1-4614-0800-0_11

Waide, R. B., & Reagan, D. P. (1983). Competition Between West Indian Anoles and Birds. The American Naturalist, 121(1), 133-138. https : //doi.org/10.1086/284044