

PROCEEDINGS AND RECOMMENDATIONS

1ST NATIONAL SYMPOSIUM ON BIRD-WINDOW COLLISION, 12 MAY 2026



Table of Contents

1. ABOUT THE SYMPOSIUM	2
2. KEYNOTE ADDRESS	7
2.1. Transcription of the Keynote Speech.....	7
3. PRESENTATIONS	9
3.1. Bird Window Collision in India- Current Status, Challenge & Opportunities.....	9
3.1.1. Session I: Understanding Bird-Window Collision in India— Current Status, Challenges and Opportunities.....	9
3.1.2. Session II: Experience from the Field: Wildlife Rescue Organisations.....	11
3.1.3. Session 3: The Industry Perspective	13
4. PANEL DISCUSSIONS.....	15
4.1. Panel Discussion I: Bird-Friendly Glasses & Other Innovations.....	15
4.2 Panel Discussion II: Role of Institutions and Non-Profits.....	18
4.3 Panel Discussion III: Role of Citizen Science and Media on BWC	21
5. OPEN HOUSE DISCUSSIONS.....	25
6. CONCLUDING REMARKS	27
Transcription of the Keynote Speech.....	28
7. VOTE OF THANKS	30
8. WAY FORWARD & SUMMARY OF RECOMMENDATIONS	31
8.1. Research and Evidence.....	31
8.2. Policy and Law	31
8.3. Industry and Design.....	32
8.4. Awareness and Communication.....	33
8.5. Institutions and Collaboration.....	33

1. ABOUT THE SYMPOSIUM

India is home to over 1,300 bird species and lies at the crossroads of major global migratory flyways, including the Central Asian Flyway, making it one of the most significant avian habitats in the world. Yet bird populations across the country are declining, and bird-window collision, one of the most under recognised threats to avifauna in urban, peri-urban and even rural and pristine areas, may be significantly compounding this decline.

Bird-window collision occurs because birds are physiologically unable to perceive glass as a solid barrier. During the day, reflections of trees, sky, and surrounding vegetation on glass surfaces create the illusion of open space, causing birds to fly directly into facades. At night, artificial lighting inside and around buildings disorients migratory birds, drawing them fatally toward illuminated glass. The consequences— head trauma, cerebral haemorrhage, internal bleeding, fractures, and death are severe, and often go entirely unrecorded.

In the United States, over one billion birds are estimated to die annually from glass collisions, making it one of the leading causes of anthropogenic bird mortality. In India, no national assessment currently exists. The only published study to date- a 2025 paper in the journal *Ornis Hungarica*, documented 35 collisions across 22 species at just two buildings in the Nilgiri Biosphere Reserve over a single year. Over a 1000 data points compiled through citizen science platforms, wildlife rescue organisations, and social media suggests that collisions are widespread across resident and migratory species, with over 110 species recorded and approximately 85% of documented cases originating from Bengaluru alone— not because the problem is geographically limited, but because that is where a basic reporting infrastructure exists.

With majority of India's built environment yet to be constructed, and glass increasingly aspirational in urban, peri-urban and even remote areas, the window for preventive action is narrow. Solutions— bird-safe window films, ceramic frit patterns, acid-etched glass, and design-integrated mitigation measures exist in certain western markets, but not in India. Additionally, awareness is limited, demand is negligible, and no regulatory framework currently mandates bird-safe building design in India.

The **1st National Symposium on Bird-Window Collision** was held on 12th May 2026 in New Delhi, hosted by the Vidhi Centre for Legal Policy, in partnership with the Indian Institute of Science Education and Research (IISER) Tirupati, the Nature Conservation Foundation, Feather Library, supported by the Rainmatter Foundation. The symposium was backed by Nature Future as ecosystem partner; and Roundglass Sustain and Architecture Live as media partners.

The symposium brought together an interdisciplinary group of over 100 participants— including senior ornithologists, wildlife veterinarians, architects, urban designers, green building professionals, conservationists, media professionals, and policymakers— for a full day of presentations, panel discussions, and open deliberation. It was the first gathering of its kind

in India dedicated entirely to the issue of bird-window collision, marking a significant step toward building a coordinated national response to a problem that has long remained invisible in public and policy discourse.

This document is a summary of the proceedings of the 1st National Symposium on Bird-Window Collision, capturing the key presentations, panel discussions, field experiences, and recommendations shared by speakers and participants over the course of the day. It is intended to serve as a reference for researchers, practitioners, policymakers, and advocates working toward bird-safe built environments in India.



The detailed agenda of the symposium is shared below.



1ST NATIONAL SYMPOSIUM ON
BIRD-WINDOW COLLISION
Lecture Room 2, at Annexe - India International Centre, New Delhi • 12th May 2026

AGENDA
PAGE 1/2

9:30 am	Registration & Tea/Coffee
10:00 am	Introduction To The Symposium
10:30 am	Keynote Address by Architect Ashok B Lall , Principal Architect of Ashok B Lall Architects
10.45 am	BIRD WINDOW COLLISION IN INDIA - CURRENT STATUS, CHALLENGES & OPPORTUNITIES Understanding Bird-Window Collision • Mr. Peeyush Sekhsaria, Architect and Conservation Professional; Senior Associate Fellow, Vidhi Centre for Legal Policy • Dr. V.V. Robin, Associate Professor (Biology), Indian Institutes of Science Education and Research (IISER), Tirupati Experience from the Field- Wildlife Rescue Organisations • Col. Dr Navaz Shariff, Chief Wildlife Veterinarian, People for Animals Wildlife Hospital, Bengaluru • Ms. Jayanthi Kallam, Executive Director, Avian & Reptile Rehabilitation Centre The Industry Perspective • Mrs. Suprita Biswas, Associate Director - Technical Development, Green Business Certification Inc. India • Mr. U. Gopinath, Manager- Design & Sustainability, Saint-Gobain India
12:00 pm	Panel Discussion 1 Bird-Friendly Glasses & Other Innovations • Architect Gurneet Singh, Director, Environmental Design Solutions • Mr. Shailesh Ranjan, Business Head- Institutional Sales, Head - Technical, Asahi India Glass Ltd • Architect Nidhi Batra, Chairperson, Institute of Urban Designers India • Ms. Aarushi Srivastava, Development Professional • Mr. Ajay Singh, Manager Sales & Business Development for Habitat, Solar Gard Moderated by Akshatha Narayan , Strategy Lead- Built Environment, Rainmatter Foundation



1ST NATIONAL SYMPOSIUM ON
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AGENDA
PAGE 2/2

1:00 pm

Lunch

2:00 pm

Panel Discussion 2
Role of Institutions and Non-Profits

- **Mr. Jose Louies**, CEO, Wildlife Trust of India
 - **Dr. Monalisa Sen**, Associate Director, ICLEI South Asia
 - **Dr. Faiyaz A Khudsar**, In-Charge- Biodiversity Parks Programme, CEMDE, University of Delhi
 - **Ms. Bharati Ramachandran**, CEO, Federation of Indian Animal Protection Organisations
 - **Ms. Dipal Damania**, Co-Founder, Nature Future
- Moderated by **Debadityo Sinha**,
Lead- Climate & Ecosystems, Vidhi Centre for Legal Policy

3:00 pm

Panel Discussion 3
Role of Citizen Science and Media on BWC

- **Dr. Ashwin Viswanathan**, Scientist & Senior Project Manager, Nature Conservation Foundation
 - **Ms. Esha Munshi**, Founder, Feather Library
 - **Ms. Megha Moorthy**, Editor-in-Chief, Roundglass Sustain
 - **Mr. Rajesh Advani**, Founder Director, Architecture Live
 - **Mr. Kartik Chandramouli**, Senior Digital Editor, Mongabay India
- Moderated by **Ananda Banerjee**, Senior Journalist & Author

4:00 pm

Way Forward- Open House

4:30 pm

Concluding Remarks by **Dr. Asad Rahmani**,
Veteran Ornithologist & Former Director, Bombay Natural History Society

4:45 pm

Vote of Thanks

5:00 pm

High Tea

Organising Partners



VIDHI
Centre for Legal Policy



Ecosystem Partner



Media Partners



2. KEYNOTE ADDRESS

Architect Ashok B Lall

(Principal Architect, Ashok B Lall Architects)



Architect Ashok B Lall opened his address by sharing that he had himself begun exploring bird-window collision as a subject only days before the symposium, when he was invited to deliver this keynote. He offered this as a reflection that even architects deeply committed to sustainable and responsible design had not yet been educated about this issue as a concern. He traced the growing prevalence of glass in urban environments, noting that society's aspirational relationship with large glass facades has come at a significant cost to avifauna. He highlighted that glass buildings, particularly at night disorient migratory birds, as artificial light and reflections simulate open sky. Collisions occur across building types, with the highest risk upto ground plus three floors.

Mr. Lall discussed practical measures to reduce bird collisions, including bird-safe window films featuring dots, lines, and other patterns, ideally applied to or integrated into the exterior surface of glass, as external visual cues are most effective in alerting birds to the presence of glazing. He also highlighted specialized bird-friendly glass that remains transparent to humans while being visible to birds. Emphasizing that bird-window collision mitigation should be treated as an ethical and societal responsibility rather than a premium "green" feature, he argued that solutions must be affordable and suitable for ordinary buildings, not limited to expensive products accessible only to wealthy clients. While acknowledging that many bird-safe materials are currently beyond the

reach of much of the public, he noted that regulatory mandates could drive widespread adoption, expand market demand, and ultimately make such products more accessible and cost-effective. He therefore called for bird-safe design measures to be incorporated into legislation and urged all sections of society to support a collective movement for bird conservation. Following is a lightly edited version of the keynote speech by Mr Lall. He also used a PowerPoint presentation for sharing visuals with the audience during his keynote.

2.1. Transcription of the Keynote Speech

Glass, Aspiration and the Anthropocentric City...

Glass does not exist in nature. It is entirely a human invention— and one we have come to aspire to deeply. Look at any advertisement for a luxury office or a two-BHK apartment in a new township: what is being sold is the transparent wall. The glass that dissolves the boundary between inside and outside, that connects you to the sunset, the horizon, the trees beyond. This is the anthropocentric view from the inside looking out— and the glass industry is very happy to serve it, and to push it as hard as possible.

The Farnsworth House, a celebrated modernist building designed by Mies van der Rohe in the United States, is perhaps the most iconic expression of this aspiration: a house where the side walls simply disappear, and you are one with the nature outside, separated only by a plane of glass. We have been chasing that idea ever since, at every income level. It used not to be possible. The glass industry has made it possible.

The consequence, for birds, is a surface that either reflects the sky, the sea or the forest— so they fly toward what they think is a continuation of their world— or is transparent to vegetation and sky beyond, so they fly through what they cannot see as a barrier. And it is not only birds. There are quite a few cases of human collision with glass too, particularly children simply not seeing it. Glass that cannot be detected as glass is dangerous for all of us.

What the Data Tells Us...

Artificial light at night draws migrating birds off their routes, according to the US Fish and Wildlife Service. These birds have navigated by stars for generations; a glittering city below confuses those bearings entirely. Reflection in glass reads as a continuity of the sky or forest. Both bring birds into collision.

The magnitude of the problem globally is staggering over one billion birds are killed annually in the USA, approximately 100–115 million in Germany, and 100 million in Great Britain. The data on where collisions happen may also surprise you. 43.6% occur at low-rise buildings of ground to three floors — birds simply flying through gardens and parks and encountering a glass facade at their own eye level. 56.3% occur at buildings of four to eleven floors; very tall buildings of twelve floors and above account for just 0.1%. So do not conclude that tall buildings are the primary problem. The per-building numbers tell a more nuanced story: approximately 2.1 birds per building per year for a low-rise building; 21.7 for a mid-rise building; 24.3 for a very tall building. The conclusion is clear: the more the glass, and more importantly the more glass that cannot be detected as glass, the greater the likelihood of collision.

The Solution Is Not Complicated...

All a bird needs is a visual signal that tells it: I cannot fly through this. The “2×4 rule,” established in 1990, provides the standard: markers placed no more than 2 inches apart horizontally and 4 inches apart vertically, applied to the outer surface of the glass, reduce bird-window collisions significantly. It can be built into the glass or applied as a film. What matters is that it is on the outside — not on the interior surface, where a bird approaching from outside cannot read it.

There are now highly sophisticated solutions — UV-reflective patterns embedded in glass that are virtually invisible to the human eye but visible to birds, so the occupant of a top-floor office sees nothing but transparency while the bird understands it cannot pass through. The industry will sell you that at the highest price. One important caution: bird silhouette stickers alone do not work, unless they follow the 2×4 rule.

But this is not where the argument should rest. The common building – the mid-rise housing society, the small commercial block – is where most of the glass is going up, and where most of the collisions are happening. Simple films applied to the outer surface work. They are not a business opportunity requiring a premium product. And they should not be presented as one.

This Is Not a Business Issue...

Green rating systems now award points for bird-friendly glass. That creates a market, and the industry is happy to serve it. But Architect Lall was unequivocal: this is not a business issue. It is a pure ethical and responsibility issue. We have put glass into our living spaces and our cities without understanding, or caring, what it does to the avifauna around us. We are now beginning to learn that we got something wrong. The collection of people in this room – from research, rescue, industry, policy and media – represents the kind of organised effort needed to build a movement that protects birds within our living spaces. What is needed is not a business case. What is needed is regulation, law, and the collective will to act on what we already know.



3. PRESENTATIONS

3.1. Bird Window Collision in India- Current Status, Challenges & Opportunities

This session consisted of 6 different speakers working on the various aspects of bird window collision with broader themes encompassing overall background, learnings from wildlife rescue organizations and the perspectives of the industry. The session was designed to have a basic understanding of diverse stakeholders which would set the stage for the discussions to follow thereafter. The details are provided below.

3.1.1. Session I: Understanding Bird-Window Collision in India— Current Status, Challenges and Opportunities

I. Mr. Peeyush Sekhsaria (Senior Associate Fellow, Vidhi Centre for Legal Policy)



Mr. Peeyush Sekhsaria presented an overview of bird-window collision (BWC) data in India, highlighting critical gaps in research and reporting. He noted that existing documentation is severely limited, with only one published study covering two buildings and 35 incidents. To address this, his team collected over 1000 data points from social media, citizen science platforms, and wildlife organizations, though 85% of records originated from Bengaluru alone, reflecting uneven reporting across the country.

The data revealed that several affected species are listed on the IUCN Red List and under Schedule I of the Wildlife Protection Act, affording them the highest level of legal protection in India. Both resident and migratory species were found to be impacted, with some colliding in flocks. He also flagged transparent acrylic sheets on newly constructed flyovers as an emerging collision hazard.

Mr. Sekhsaria concluded that there is an urgent need for systematic, nationwide research and coordinated action on bird-window collisions in India.

II. Dr. V.V. Robin (Associate Professor-Biology, Indian Institute of Science Education and Research, Tirupati)

Dr. V.V. Robin, whose research focuses on endemic bird species of the Western Ghats, contextualized the bird-window collision crisis within global and Indian frameworks. Drawing on United States data suggesting approximately one billion bird deaths annually from collisions, he emphasized that the harm caused is unintentional yet devastating. He noted that low-rise buildings account for 44% of collision rates, as birds descend to lower altitudes during migration in search of food, making building height and glass placement critical factors.



He referenced China's rapid progress— surveying 3,700 buildings nationwide within five years — as a model for India, noting findings that shorter buildings and small-bodied birds are most vulnerable, and that surrounding landscape and tree placement also play a significant role.

Key Policy Takeaways

- a) **Systematic Documentation of Fatalities:** Every bird mortality event, irrespective of cause, should be documented as valuable scientific data to improve understanding of bird-window collisions (BWCs) and other anthropogenic threats.
- b) **Multi-Stakeholder Collaboration:** Addressing BWCs requires a coordinated, systems-based approach involving architects, engineers, builders, glass manufacturers, researchers, conservationists, and government agencies.
- c) **Integration with Existing Monitoring Platforms:** BWC data collection should be incorporated into established initiatives such as eBird, the State of India's Birds (SOIB) programme, and the Ministry of Environment, Forest and Climate Change's Long-Term Ecological Observatory network.
- d) **Prioritizing High-Risk Locations:** Monitoring and mitigation efforts should focus on cities located along major migratory flyways and other areas with high bird movement.
- e) **Use of Emerging Monitoring Technologies:** Nocturnal acoustic sensors and similar technologies can help quantify bird traffic, identify collision hotspots, and estimate mortality rates.
- f) **Leveraging Wildlife Protection Laws:** High collision-related mortality among species protected under Schedule I of the Wildlife (Protection) Act and species of conservation concern can provide a basis for stronger regulatory intervention.
- g) **Mandatory Building Regulations:** Voluntary industry standards are insufficient; bird-safe design requirements should be incorporated into legally binding building codes, planning regulations, and municipal byelaws.
- h) **Addressing Public Infrastructure Blind Spots:** Public infrastructure projects, including flyovers and other structures incorporating transparent acrylic or glass barriers, should be subject to mandatory bird-safe design and environmental mitigation requirements.
- i) **Evidence-Based Policy Development:** Robust collision data and long-term monitoring are essential for informing policy, guiding mitigation investments, and evaluating the effectiveness of regulatory interventions.
- j) **Mainstreaming BWCs:** Bird-window collisions should be recognized as an environmental governance issue, with monitoring, reporting, and mitigation integrated into broader biodiversity conservation and environmental assessment frameworks.

3.1.2. Session II: Experience from the Field: Wildlife Rescue Organisations

I. Col. Dr. Navaz Shariff (Chief Wildlife Veterinarian, People for Animals Wildlife Hospital, Bengaluru)



Col. Dr. Navaz Shariff presented the veterinary and rehabilitation perspective on bird-window collision, drawing from over 30 years of experience and the work of People for Animals (PFA) Wildlife Hospital, Bengaluru. Operating on four principles – *Rescue*, *Recovery*, *Rehabilitation*, and *Release*. He informed that the PFA has attended to over 50,000 animals across 235 species, with birds forming the majority. The organisation has also reached over five lakh students through active school outreach programmes on issues including bird collisions and kite *maanjs*.

Col Shariff shared that PFA documented 71 collision cases in 2024, 85 in 2025, and 28 between January and April 2026, indicating a rising trend. Most collisions occur early morning, during migratory periods, and in foggy or rainy conditions near green patches and apartment complexes. High-speed collisions typically result in head trauma, cerebral haemorrhage, fractures, and internal bleeding, compounded by secondary injuries from predation after the bird falls. Treatment includes fluid therapy, oxygen support, nutritional care, and continuous CCTV-monitored recovery, with early management of cerebral oedema identified as the critical life-saving intervention. He also highlighted PFA's innovative approaches including a feather bank for restoring flight capability and 3D-printed prosthetic legs for birds, and called for greater awareness among architects and builders, improved citizen reporting, and stronger collaboration between wildlife experts and policymakers.

II. Ms. Jayanthi Kallam (Executive Director, Avian & Reptile Rehabilitation Centre)



Ms. Jayanthi Kallam drew on over 15 years of wildlife rehabilitation experience, sharing that her journey began with a chance encounter with an American woodcock collision victim in New York in 2011 – an experience that led her to leave her career and dedicate herself fully to wildlife rescue. ARRC, established in 2016, has conducted over one lakh rescues, of which 46,000 are birds.

She presented three years of bird-collision data consisting of 529 victims across 58 species— noting that frugivorous birds are at the highest risk. She also noted that October records the most collisions (coinciding with onset of winter

migration) followed by May which coincides with breeding season of resident birds and young juveniles are commonly affected. Ms Kallam also highlighted that 90% of victims are resident birds. She highlighted that

collisions are severely underreported, as small birds often die unnoticed, victims sometimes fly away after impact only to succumb days later, and dead birds are rarely reported to rescue centres.

She outlined the wide range of collision injuries such as beak and eye injuries, air sac rupture, coracoid fractures, cranial bleeding, and internal haemorrhage— noting that outcomes depend on the bird's speed, angle of impact, species, age, and physical condition. She cautioned that well-meaning members of the public handling injured birds can cause fatal stress even when the collision itself was survivable.

Ms. Kallam called for a unified bird collision protocol covering rescue, rehabilitation, and release; priority studies from high-risk cities and major flyways; and greater attention to landscape design around buildings, as fruiting and perching trees close to glass facades significantly increase collision risk. She urged those designing bird-safe structures to speak openly about their work, emphasising that leading by example is one of the most effective drivers of change.

Key Policy Takeaways

- a) **Recognise BWC as a preventable urban threat:** Bird-window collisions should be formally acknowledged as a significant yet highly preventable source of urban wildlife mortality, mandating dedicated mitigation measures in building design and urban planning.
- b) **Extend mitigation policy to residential and institutional buildings:** Since collision rates are not confined to commercial glass facades, mitigation policies should apply equally to residential developments, housing societies, apartment complexes, and institutional campuses.
- c) **Incorporate collision risk into urban planning and building design:** Building guidelines should address the full range of collision risks, including reflective surfaces, transparent barriers, balcony glass railings, and landscape features such as fruiting and perching trees placed close to glass facades that inadvertently attract birds toward hazardous glass.
- d) **Establish standard protocols for rescue, rehabilitation and release:** Scientifically backed standard operating procedures are needed for the rescue, assessment, treatment, rehabilitation, and release of collision victims, including guidance for citizens on how to handle injured birds without causing fatal stress.
- e) **Create a national standardised collision reporting system:** A centralised, standardised system for recording bird-window collisions is needed to address severe under-reporting and improve the reliability of mortality estimates.
- f) **Expand research beyond existing geographic hotspots:** Systematic studies should be prioritised across multiple cities, particularly those along major migratory flyways, to generate representative national data and reduce the current bias toward Bangalore.
- g) **Integrate rescue organisations and citizen science into monitoring frameworks:** Wildlife rescue organisations, citizen scientists, and local communities should be formally incorporated into collision monitoring systems to improve data collection, identify hotspots, and enable rapid response.
- h) **Build awareness and capacity across the construction sector:** Awareness and capacity-building programmes should target architects, developers, builders, housing societies, and apartment associations to promote adoption of bird-safe design practices.
- i) **Foster cross-sector collaboration:** Effective mitigation requires structured collaboration among wildlife rescue organisations, researchers, urban planners, and policymakers to ensure that field evidence and scientific data inform both policy and practice.
- j) **Promote and publicly showcase bird-safe buildings:** Governments, institutions, and developers should document, certify, and publicise bird-safe structures to demonstrate the feasibility and effectiveness of mitigation measures and encourage replication.

3.1.3. Session 3: The Industry Perspective

I. Mrs. Suprita Biswas (Associate Director- Technical Development, Green Business Certification Inc. India)



Mrs. Suprita Biswas represented the green building industry, focusing on how the LEED rating system addresses bird-window collision. With over 1,97,000 projects across 186 countries and approximately 6,000 participating projects in India, LEED operates as a significant instrument of built environment change.

Bird-friendly design has been part of LEED since 2011, developed in collaboration with the American Bird Conservancy (ABC), and has been elevated to a mainstream credit in LEED Version 5, carrying 1 point. The credit applies to new construction and existing buildings, covering all

external glass surfaces up to 50 feet from ground level, balconies, green roofs above 20 feet, guard rails, and windshields.

The key metric is the ABC-defined Threat Factor, determined through standardised tunnel testing. A score of 30 or below is considered bird-friendly, estimated to reduce collisions by at least 50%. She also referenced the Canadian Standards Association (CSA) bird-friendly design standard, which goes beyond glass treatment to consider placement, site design, and vegetation.

Mrs. Biswas acknowledged that current LEED standards are based on North American species and construction typologies and may not fully reflect Indian conditions. She pointed to the regional compliance path developed for Canada as a model that could be adapted for India, and invited feedback and collaboration from Indian practitioners.

II. Mr. U. Gopinath, Manager (Design & Sustainability, Saint-Gobain India)



Mr. U. Gopinath offered an industry perspective on the role of glass as a building material, situating the bird-window collision issue within the broader context of sustainable construction. He noted that with 70% of India's built environment yet to be constructed, glass remains an indispensable material— one that, when used prudently, contributes to energy efficiency and daylighting. He argued that the challenge lies not in the material itself, but in how it is specified and applied by architects and designers.

On bird safety, he recommended that external glass reflectivity be kept below 15% as a baseline measure to reduce collision risk. He elaborated on bird-safe design solutions including ceramic frit printing, acid-etched patterns, and laminated 3D patterns, Solar Gard

retrofit films- most of them are certified by the American Bird Conservancy (ABC) and CSA. He advised that marker spacing of 50mm x 50mm (2x2 inch grid) offers the most effective protection, including for small-bodied birds. He also emphasised that the goal is to create visual contrast and not maximum lines/stickers.

Drawing on industry data, he noted that collision risks are concentrated in specific high-risk zones—particularly glazing within approximately 50 feet (15 metres) of ground level, balconies, and glass guardrails—suggesting that mitigation measures and regulatory requirements should be strategically focused on these areas rather than applied uniformly across all building elements. He also suggested that the LEED green rating systems should also mandate daylighting sensors instead of just daylighting points so the daylight potential of glass is used and artificial lighting reduced.

Mr. Gopinath concluded by emphasizing that bird protection is a shared responsibility among manufacturers, architects, and designers, and called for more integrated, informed decision-making across the industry.

Key Policy Takeaways

- a) ***Integrate bird-safe standards into building regulations:*** Bird-collision mitigation metrics and performance standards should be incorporated into building codes, planning approvals, and environmental clearance processes, moving beyond reliance on voluntary green building certification alone.
- b) ***Mainstream bird-safe design within national green building policy:*** Bird-collision mitigation should be a standard component of national sustainability rating systems and green building policy, not an optional or innovation credit.
- c) ***Codify minimum bird-safe design requirements:*** Building regulations should prescribe baseline standards for new construction, including limits on external glass reflectivity (below 15%) and mandatory use of markers or patterns meeting recognised threat factor thresholds, with strategic focus on the highest-risk zones such as glazing within 15 metres of ground level, balconies, and glass guardrails.
- d) ***Invest in indigenous research and testing capacity:*** Indian research programmes, testing protocols, and certification facilities should be established to generate locally relevant data on bird-glass interactions, reducing dependence on foreign datasets and enabling credible domestic standards.
- e) ***Develop an India-specific compliance framework:*** India should establish a regional compliance pathway, like the Canadian adaptation of LEED, that reflects Indian bird species, migratory patterns, climatic conditions, and construction practices, rather than relying solely on North American and European datasets and typologies.
- f) ***Promote shared accountability across the building lifecycle:*** Bird protection should be treated as a collective responsibility of manufacturers, architects, designers, developers, and regulators, requiring coordinated action from specification through to construction and occupancy.

4. PANEL DISCUSSIONS

4.1. Panel Discussion I: Bird-Friendly Glasses & Other Innovations

Moderated by Ms. Akshatha Narayan (Strategy Lead- Built Environment, Rainmatter Foundation)

The panellists explored design interventions, material/film innovations and the market and policy barriers to adoption, and case studies addressing bird window collision. Ms. Akshatha Narayan framed the panel around a central question: how do different built environment stakeholders move toward coexistence with ecology, and what trade-offs are they willing to make? She noted that glass emerged as a material solution to human needs such as daylighting and connection with nature. However, that anthropocentric approach to design has contributed to the current crisis. She summarised the panel's collective blind spots as the absence of the right data, the right messaging, and the right narrative— at both consumer and industry level – and concluded that biodiversity, not just bird-window collision, needs to be mainstreamed as a foundational metric of sustainable design.



Key Insights from the Panellists

I. Ar. Gurneet Singh (Director, Environmental Design Solutions)

Ar. Gurneet Singh identified facade design as a critical blind spot, observing that the widespread adoption of glass curtain walls has led architects to invest significantly less time in facade detailing— a practice that historically balanced aesthetics, energy efficiency, and environmental performance. He highlighted that bird collision threat factors and visual contrast metrics are quantifiable and can be simulated, and called for accessible, AI-enabled tools that allow architects to evaluate their facade designs without requiring specialised consultants. He stressed the importance of embedding biodiversity awareness in architectural education, noting that students remain largely unaware of basic glass parameters such as solar gain coefficient and external reflectivity, let alone their impact on birds. He recommended that clients begin including bird-safe design as an explicit requirement alongside green building certifications. Looking five years ahead, he expressed hope for documented before-and-after impact studies — carried out through ESG or CSR frameworks— that could build a compelling evidence base for developers and government alike.

II. Mr. Rishabh Patel (Technical Manager, Asahi India Glass Ltd)

Mr. Rishabh Patel identified awareness as the primary blind spot, specifically the disconnect between those who design and build, and those who ultimately occupy and experience buildings. He noted that procurement decision-makers, who hold significant purchasing power, are often the least informed about environmental impact, prioritising visual appeal and cost above all else. He cited mixed-use buildings as a particular challenge, where retail tenants on lower floors which are the highest-risk zone for bird collision actively resist any treatment on glass that might affect aesthetics. He argued that the absence of pioneer projects in India is a critical barrier, and called on architects to design bird-safe solutions into their buildings from the outset, noting that design accounts for 70% of the outcome while materials account for only 30%. He proposed leveraging CSR and ESG frameworks to fund pilot projects at lower cost, which would stimulate local manufacturing, reduce prices, and build the commercial case for wider adoption. Looking ahead, he expressed hope for a more diverse conversation— one that includes end users, developers, and government officials— and a shift toward positive outcomes.

III. Ar. Nidhi Batra (Chairperson, Institute of Urban Designers India)

Ar. Nidhi Batra approached the issue from an urban planning perspective, arguing that the biggest blind spot is society's unwillingness to question its assumptions about how cities should be built. She noted that urban planning remains fundamentally anthropocentric, with biodiversity absent from master plans, policy instruments, and even restoration project metrics— which typically stop at carbon and tree counts. She cited her research with some research institutions which found that biodiversity impacts are rarely accounted for in nature-based solutions projects across the Global South. She identified Environmental Impact Assessments, form-based codes — including those recently introduced by Indian Railways and the Urban Challenge Fund under the Ministry of Housing and Urban Affairs as existing levers through which bird-safe design could be advocated. She stressed the importance of overlaying ecological corridor and migratory route data onto city-level planning frameworks, and called for campus-level audits at institutions already conducting biodiversity surveys as an immediate starting point. She also raised the important point that ecotourism lodge guidelines including those developed by forest departments do not currently address glass fenestration or bird collision, representing a significant and overlooked gap.

IV. Ms. Aarushi Srivastava (Development Professional)

Ms. Aarushi Srivastava offered a ground-level perspective, sharing how bird-safe window films were successfully implemented at her office through a process that began with a simple photograph sent by a colleague— a bird

silhouette on a window. She noted that the challenge was not insensitivity but unawareness, and that evidence had to be painstakingly built by asking housekeeping staff not to dispose of dead birds, documenting incidents, and presenting findings to management. Starting with a single window in 2024 at approximately ₹150 per square foot, the initiative grew to cover two full facades and has since inspired the organisation's headquarters to undertake a similar installation. She emphasised that timing, internal advocacy, and making the issue personal are critical to institutional action. Looking ahead, she called for more success stories and greater social media propagation to reach younger audiences and build momentum around the issue.

V. Mr. Ajay Singh Manager (Sales & Business Development, Habitat, Solar Gard)

Mr. Ajay Singh spoke from six years of experience in the retrofit market, identifying cost, lack of demand, and absence of regulation as the primary barriers. He noted that bird-safe window films are currently imported from the United States, with no local manufacturing in India, and that films are priced at approximately ₹600 per square foot including installation— a figure that drew strong reactions from the audience. He argued that local manufacturing will only begin once demand is established, which in turn requires either regulatory mandates or high-profile pilot projects. He proposed combining bird-safe films with solar control properties, currently under development — to give customers a tangible return on investment through energy savings, making the case easier to build. He also suggested partial application on lower floors of high-rise buildings as a practical cost reduction strategy. He emphasised on how at early-stage the market currently is towards bird-friendly retro fitments, and regulatory push remains essential for adoption by builders.

Key Policy Takeaways

- a) **Establish Bird-Window Collisions as a Recognized Policy Issue:** BWCs should be formally incorporated into environmental governance, urban planning, and biodiversity policy frameworks, moving the issue from an overlooked phenomenon to a recognized environmental concern requiring regulatory intervention.
- b) **Strengthen State-Level Regulatory Action:** Given the limited powers of municipal bodies, bird-safe design requirements should be incorporated into state-level planning regulations, building rules, and urban development policies, with stronger coordination between urban-development and environmental agencies.
- c) **Develop a National BWC Monitoring and Reporting System:** A centralized, publicly accessible database with standardized reporting formats should be established to facilitate nationwide data collection, hotspot identification, and evidence-based decision-making.
- d) **Support and Institutionalize Wildlife Rescue Networks:** Rescue centres, veterinary facilities, SPCAs, and wildlife-response organizations should receive greater institutional support, funding, and training, recognizing their role as the primary responders to bird-collision incidents and key contributors to data collection.
- e) **Create Standardized Rescue and Rehabilitation Protocols:** National SOPs should be developed for the reporting, rescue, treatment, rehabilitation, and release of bird-collision victims to ensure consistency across institutions and improve outcomes.
- f) **Leverage Academic and Corporate Campuses as Pilot Sites:** Universities, research institutions, and corporate campuses should be encouraged to undertake structured monitoring and mitigation programmes, generating robust datasets and serving as demonstration projects for broader adoption.
- g) **Expand Monitoring Beyond Existing Data Hotspots:** National monitoring efforts should prioritize underrepresented regions and ecological contexts to address the current concentration of data in a few cities and build a more representative understanding of BWCs across India.
- h) **Adopt a Broader Landscape-Based Approach to Mitigation:** Policy responses should account for collision risks arising from geography, building design, and other built-environment features beyond glass alone, including ecologically sensitive tourism and wildlife areas.
- i) **Create Market Conditions for Affordable Bird-Safe Solutions:** Regulatory mandates, public procurement standards, and pilot projects can help generate sufficient demand to support domestic manufacturing, reduce costs, and make bird-safe materials more accessible across the construction sector.

4.2 Panel Discussion II: Role of Institutions and Non-Profits

Moderated by Debadityo Sinha (Lead, Climate and Ecosystems, Vidhi Centre for Legal Policy)

The panel examined how government agencies, local governments, academic institutions, rescue organizations, and civil society can collectively advance bird-window collision mitigation in India. Mr Debadityo Sinha opened by drawing together key tensions from earlier in the day that science defines the problem and industry offers solutions, but that ethical commitment and market forces alone have not been sufficient, and that incentives for action remain very low. He noted that bird-window collision is invisible in more than one sense, and that issues which are not visible rarely gain traction. Closing the session, he observed that beyond data and policy, what the discussion ultimately pointed to was the need for greater sensitivity and empathy towards other living beings.



Key Insights from the Panellists

I. Mr Jose Louies (CEO, Wildlife Trust of India)

Mr Jose Louies highlighted the fundamental invisibility of bird-window collisions as both a physical and a policy challenge. Since the problem involves glass, he argued, it remains difficult to perceive and therefore difficult to address. Reflecting on his own experience, he recalled that even as a child visiting a church with a large glass wall, he would find dead birds each week without understanding why. More recently, at an interpretation centre inside a tiger reserve, he noticed dead birds every morning outside a glass-walled facility with reflective surfaces.

These experiences, he noted, illustrate that bird-window collisions are overlooked not only in urban areas but even within protected areas managed by wildlife professionals.

He also noted that WTI's own veterinary units, largely based in remote areas, rarely receive birds with a confirmed diagnosis of glass-hit injury, making it difficult to quantify the problem through existing networks. He situated BWC alongside other preventable threats such as kite-festival string injuries and called for mitigation measures to be prioritised alongside awareness. He emphasised the need for meaningful dialogue between the scientific community, manufacturing industry, and designers, so that species-specific behavioural knowledge informs building design decisions. On next steps for his organisation, he indicated that his immediate priority would be training WTI's emergency response and veterinary network to identify and handle suspected collision victims, alongside supporting advocacy for policy changes that treat glass-related hazards to wildlife in the same way as other linear infrastructure threats.

II. Dr Monalisa Sen (Associate Director, ICLEI South Asia)

Dr Monalisa Sen examined the issue from the perspective of urban governance, offering a candid account of the structural barriers that prevent city governments from acting on biodiversity concerns. She noted that city administrations are run almost entirely by engineers who, while highly skilled in infrastructure and construction, are largely unfamiliar with biodiversity and its connections to urban ecosystem services. For most city governments, she observed, biodiversity means little more than a tree or a bird in isolation.

She also identified a fundamental institutional disconnect. For instance, urban development is governed under the Ministry of Housing and Urban Affairs, while biodiversity sits with the Ministry of Environment, Forest and Climate Change. As a result, city governments are encouraged but not mandated to address biodiversity concerns, and bird-window collisions have no presence in any existing policy or regulation. Without a legal or policy mandate, municipal authorities have nothing to enforce, and any progress made under one city leader risks being undone when leadership changes. She argued that building the capacity of city government engineers to understand biodiversity, and what it means when a bird collides with glass or survives because it does not, is the necessary starting point for any bottom-up change. She also stressed that political acceptability of any regulation would have to be driven by public demand, and that grassroots awareness is therefore the foundation on which any policy reform must rest.

III. Dr V.V. Robin (Associate Professor-Biology, Indian Institute of Science Education and Research Tirupati)

Dr Robin emphasised the potential of academic and corporate campuses as practical and accessible starting points for systematic bird-window collision monitoring in India. He noted that campuses, including university campuses and institutional sites, harbour significant bird diversity, with studies suggesting that more than 50% of bird species can be found on Indian campuses. These sites also offer controlled environments with identifiable buildings and relatively stable access, making them well suited for structured monitoring along the lines of the Chinese model he had described earlier in the day, which involved systematically monitoring around 3,000 buildings across the country.

He also broadened the definition of campuses to include large private-sector facilities, sharing that he had recently attended a campus biodiversity meeting organised by Infosys, where participants were drawn entirely from corporate campuses rather than academic institutions. Companies such as Tata Motors had approached IISER to explore using bioacoustics and artificial intelligence to monitor birds on their campuses, motivated by sustainability commitments. He argued that this emerging corporate interest in campus biodiversity represents an opportunity to combine pilot monitoring projects with practical mitigation demonstrations. He also suggested that if India were to develop a grid-based citizen science monitoring framework, with coverage across diverse geographies and landscapes, including resorts and non-urban sites, targeted data could be generated that would support more credible advocacy with policymakers.

IV. Ms Bharati Ramachandran (CEO, Federation of Indian Animal Protection Organisations)

Ms Bharati Ramachandran brought the perspective of animal welfare law and civil society advocacy to the discussion. She noted that while SPCAs are legally mandated to exist in every district of India under a Supreme Court order, many remain non-functional, leaving NGOs and charitable wildlife hospitals as the de facto first responders to wildlife emergencies including bird-window collisions.

She drew a direct parallel with FIAPPO's experience compiling a national report on crimes against animals in 2020, in which over 4,93,910 cases were documented through various organisations. That effort led to a sustained push for the National Crime Records Bureau to begin tracking animal crimes, a process still being pursued through a Delhi High Court case. The lesson she drew was that collated, nationally comparable data, gathered in uniform fields from across organisations, is the essential foundation for driving policy change. However, she acknowledged the practical difficulty faced by rescue centres operating in real time, driven by passion and often severely constrained in funding, cannot simultaneously respond to emergencies, maintain rigorous data systems, and do policy advocacy. She called for funders and support organisations to step in with the technical capacity and resources to help rescue centres aggregate and use their data.

She also raised the importance of public communication and language reform. She observed that everyday language systematically stigmatises birds, from the phrase "bird-brained" to the way stray animals are routinely described as menaces in media coverage. She called for a shift in how birds and animals are spoken about, greater media education, and expanded awareness among climate-focused donors, who often do not recognise the intersectionality between climate and biodiversity and therefore do not fund it.

V. Ms Dipal Damania (Co-Founder, Nature Future)

Ms Dipal Damania brought a philanthropy and partnership perspective, describing how Nature Future, which she co-founded two years ago, works with around 20 nonprofits across India on visioning, communication, processes, and fundraising. Her entry into conservation through birdwatching with BNHS gave her a direct sense of both the passion that drives the sector and the gap between that passion and its reach into the corporate and donor communities.

She shared an instructive example from the Malshej Ghat area in the Sahyadris, where the valley's geography and wind patterns disorient birds, pushing them toward a Maharashtra Tourism resort on the valley's edge. The white wall of the resort was a collision site for many birds, and the solution, painting the wall a colour other than white, was straightforward. However, the area now has multiple resorts, collisions are not reported, and there are no rescue centres nearby. The case illustrated, she argued, that bird-window collision is not only an urban glass problem. Geography, topography, and architecture interact in ways that create collision risk well beyond city limits, and identifying these non-urban hotspots requires a broader monitoring approach than currently exists.

She pointed to the marine stranding helpline model as an existing framework that could inform a more coordinated collision response system, where trained volunteers report sightings and veterinarians provide real-time guidance. She also called for standardised data templates across rescue organisations and for birdwatchers and citizen scientists to be encouraged to report dead birds, not only live collision victims. On the longer horizon, she described success in five years as a state where data, patterns, and hotspots are known, and at least one policy-level pilot has been designed and is ready to scale.

Key Policy Takeaways

- a) **Bridge Inter-Ministerial Policy Gaps:** *To overcome the structural barrier where city engineers report to MoHUA but biodiversity falls under MoEFCC. State governments must enforce environmental mandates that legally require urban local bodies and village councils to integrate avian safety into urban planning and local bylaws.*

- b) **Mainstream Biodiversity in Urban Planning and Building Policy:** Bird-window collisions, should be integrated into urban planning frameworks, master plans, form-based codes, Environmental Impact Assessments (EIAs), and sustainability standards.
- c) **Institutionalize Bird-Collision Monitoring and Reporting:** Governments, research institutions, corporate campuses, and educational institutions should adopt standardized bird-collision monitoring protocols and contribute data to centralized reporting systems to improve the evidence base for policy interventions.
- d) **Legally Classify Building Collisions Wildlife Hazards:** Transition bird-window collisions from an "invisible urban phenomenon" into a recognized statutory wildlife hazard similar to the threat from linear infrastructure—subjecting high-risk developments to mandatory mitigation standards under state wildlife action plans.
- e) **Mandate Institutional and Corporate Campus Audits:** Leverage existing sustainability frameworks by introducing policy guidelines that require corporate and academic campuses already conducting mandatory biodiversity surveys to incorporate structured, gridded bird-collision monitoring into their annual compliance reports.
- f) **Regulate Geographically Sensitive Tourism Zones:** State forest and tourism departments must expand regulations to identify geographic collision hotspots (such as valley resorts) and mandate bird-safe building specifications for all rural hospitality and ecotourism infrastructure operators.

4.3 Panel Discussion III: Role of Citizen Science and Media on BWC

Moderated by Ananda Banerjee (Senior Journalist & Author)

Mr. Ananda Banerjee opened the panel by connecting the day's recurring theme of empathy to the power of storytelling, citing the house sparrow campaign launched by The Independent in London in 2000. Without any scientific data, the campaign, triggered by the observation of a dramatic decline in sparrow numbers around Kensington Gardens - inspired



public engagement across continents, eventually leading to the establishment of World Sparrow Day in 2010, championed by an Indian, Mohammad Dilawar. He argued that empathy, not data alone, has historically driven conservation action, and that storytellers and media professionals have a critical and often underutilised role in making invisible problems visible. He guided the panel through themes of media responsibility, citizen science, specimen documentation, and sustaining long-term public interest.

Key Insights from the Panellists

I. Mr Rajesh Advani (Founder Director, Architecture Live)

Mr Rajesh Advani candidly acknowledged that Architecture Live, a platform focused on critical discourse around architecture and urbanism, had largely overlooked the issue of bird-window collision despite its direct relevance to buildings. He recognised that issues of ecological consequence such as BWC demand sustained critical coverage. He committed to connecting with speakers, building a contributor network, and creating a dedicated platform section for readers to engage with and report cases. He identified cracking social media algorithms as a central challenge, arguing that sustained, agenda-driven publishing across multiple outlets rather than isolated stories is the only way to build the kind of consistent feed that shifts public attention and eventually pressures policymakers. He stressed that real cases exist in abundance and that what is needed is a structured mechanism for people to report them.

II. Mr Kartik Chandramouli (Senior Digital Editor, Mongabay India)

Mr Kartik Chandramouli shared his experience of researching and publishing a long-form piece on bird-window collision in India, tracing its origins to a bird monitoring symposium where he first heard Peeyush Sekhsaria present on the issue. He noted that while people across sectors, including the glazing industry, architects, researchers, and rescue organisations, were willing to speak, the absence of structured Indian data posed a significant journalistic challenge. He stressed the importance of calibrated reporting, neither overstating the scale of the problem nor downplaying it, and of grounding stories in what scientists, ecologists, and rescue organisations are observing and documenting. He warned against sensationalism, citing the example of reporting on telecom towers affecting sparrow populations, which later proved inaccurate and eroded public trust in science. He called for a tip sheet or communications guide developed collaboratively by scientists and practitioners to help journalists report accurately. He also emphasised the importance of reaching mainstream and regional language newspapers, noting that the issue extends well beyond urban centres, and cited the need for fresh angles such as scientific studies, solution stories, and specific incidents to justify repeat coverage of the same topic. He noted that his Mongabay story had been picked up by other outlets including Mongabay International, reflecting growing interest in the issue.

III. Ms Megha Moorthy (Editor-in-Chief, Roundglass Sustain)

Ms Megha Moorthy emphasised the power of personal storytelling as a tool for driving awareness, citing several accounts shared during the day, including Ms Aarushi Srivastava's office initiative, Mr Jose Louies's childhood memory of finding dead birds outside a church, and Ms Jayanthi Kallam's encounter with a woodcock, as examples of how individual experiences make systemic issues emotionally accessible. She outlined multiple formats through which the BWC story could be told like explainers, short films, podcasts, and interactive digital content. She shared that Roundglass Sustain is developing a video game following a sparrow navigating a changing urban Bengaluru landscape and suggested that bird-window collision could be woven into such narratives to reach younger, broader audiences. She called for a coordinated campaign, akin to the Lights Out programme in the United States, bringing together multiple organisations and media voices. She stressed the importance of reaching mainstream and regional language publications and working with wildlife and environment social media influencers, noting that the media today is more decentralised and democratic than ever. When a friend questioned the need for a full-day symposium on bird-window collision, she reflected that

this itself illustrated how poorly understood the scale of the problem is and how urgently the issue needs to be communicated in as many languages and mediums as possible.

IV. Dr Ashwin Viswanathan (Scientist and Senior Project Manager, Nature Conservation Foundation)

Dr Ashwin Viswanathan brought a rigorous data and citizen science perspective to the discussion, noting that even the State of India's Birds report, built on contributions from fourteen organisations and the eBird platform, had not highlighted bird-window collision as a significant threat until recently, reflecting how blind even the conservation community had been to this issue. He explained that earlier attempts to engage Indian birders in collision monitoring, modelled on North American campaigns by FLAP (Fatal Light Awareness Program), yielded little result because the narrow seasonal window of mass mortality characteristic of eastern North America does not apply to India, where collisions occur year-round across a far wider range of locations and circumstances.

He noted that eBird, while a powerful tool, is used by an estimated 50,000 systematic bird watchers in India, which is insufficient for the scale and structure of data collection that BWC monitoring demands. He called for new dedicated platforms, data curation systems, and collaboration with rescue centres that have far wider geographic reach. He affirmed, however, that citizen science data, when properly curated, can be highly reliable, as demonstrated by the strong correlation between eBird-derived trends and independently produced scientific datasets in the State of India's Birds reports. He stressed that scaling up data collection for BWC will require dedicated staff, structured protocols, and a new ecosystem built specifically around this problem. He also suggested that the State of India's Birds portal and the Myna app could eventually serve as repositories for this data, but only once the upstream data generation infrastructure is in place.

V. Ms Esha Munshi (Founder, Feather Library)

Ms Esha Munshi spoke about the Feather Library's work in preserving bird specimens for scientific, zoological, and veterinary education, arguing that every bird that dies, regardless of cause, carries valuable information that must not go to waste. She noted that post-mortem examination of glass-hit birds confirms the cause of death through physical evidence such as head trauma and breast concussion, and that such specimens fill critical gaps in scientific knowledge about species behaviour, ecology, and distribution. Operating currently with permissions from Gujarat and Karnataka, Feather Library receives calls from across the country, including remote regions such as Assam, from people who have found dead birds and wish to preserve them for science.

She highlighted that species rarely encountered alive in the field, including the grasshopper warbler and Nilgiri wood pigeon, have arrived at the library as glass-hit casualties, underscoring the breadth and geographic spread of species affected. She raised an important legal dimension: the transport of bird specimens across state lines requires permission from the Principal Chief Conservator of Forests of the respective state and operating without such permission places both the sender and receiver at legal risk. She called for a centralised, publicly accessible reporting system where anyone finding a dead bird, from a glass collision or any other cause, can notify a responsible authority, and advocated for rescue centres to systematically collect species-level, floor-level, and glass-type data on every collision case received. She noted that people who report dead birds typically do not know the cause of death and simply want the matter resolved, which means the responsibility of inferring cause and recording data rests with the receiving institution.

Key Policy Takeaways

- a) **Establish a National Bird-Window Collision Reporting and Citizen Science Platform:** India should develop a centralized, publicly accessible platform for reporting bird-window collisions and bird mortalities, supported by standardized data fields, verification protocols, and integration with existing biodiversity monitoring initiatives.
- b) **Institutionalize Data Collection and Curation Mechanisms:** Effective BWC monitoring requires dedicated infrastructure, trained personnel, and standardized methodologies. Citizen-science observations, rescue-centre records, and scientific datasets should be systematically curated to support robust research and policymaking.

- c) **Strengthen Collaboration Between Researchers, Rescue Centres, and Citizen Scientists:** Monitoring frameworks should formally integrate academic institutions, rescue organizations, specimen repositories, and citizen-science networks to improve geographic coverage, data quality, and continuity.
- d) **Develop Standardized Reporting Protocols for Rescue and Rehabilitation Centres:** Wildlife rescue organizations should be encouraged to record species identity, collision circumstances, building characteristics, floor level, and glass type for all collision cases to improve understanding of risk factors and mitigation needs.
- e) **Create Legal and Administrative Pathways for Scientific Specimen Preservation:** Governments should streamline and clarify procedures for the collection, transport, and preservation of bird specimens for scientific, veterinary, and educational purposes while maintaining appropriate safeguards.
- f) **Support Dedicated Public Awareness and Behaviour-Change Campaigns:** Governments, conservation organizations, and media institutions should collaborate on sustained, multilingual public-awareness campaigns that communicate the scale, causes, and solutions to bird-window collisions.
- g) **Leverage Diverse Media Formats to create awareness on BWC:** Policy outreach strategies should utilize mainstream media, regional-language publications, digital platforms, social media, podcasts, films, educational content, and interactive media to reach diverse audiences.
- h) **Recognize Every Wildlife Mortality as a Data Opportunity:** Policies should encourage the systematic documentation, investigation, and scientific use of bird mortalities, including collision victims, to improve knowledge of species distributions, threats, and conservation needs.
- i) **Expand Conservation Engagement Beyond Birding Communities:** Since existing birdwatching networks alone cannot provide the scale of monitoring required, future BWC initiatives should actively engage residents, schools, institutions, housing societies, and community groups in reporting and awareness efforts.



5. OPEN HOUSE DISCUSSION



Following the three panel discussions, the floor was opened to participants for an open house session, facilitated by Mr Peeyush Sekhsaria (Vidhi) and Dr Ashwin Viswanathan (NCF). The session invited actionable ideas, recommendations, and reflections from across the room to help shape future research, policy, and implementation efforts related to bird-window collision.

Several significant suggestions emerged. One participant proposed targeting multinational companies, particularly American, Canadian, and European firms operating in India, as first adopters of bird-safe building standards, noting that such companies are already bound by stringent standards in their home countries and are more likely to voluntarily adopt best practices. The discussion on certification also raised whether an India-specific bird-safe certification, developed by a credible domestic body, would carry weight with large corporates and MNCs as a marker of sustainability. The consensus was that certification holds value for institutional and corporate clients, but that for smaller residential and community buildings, broader awareness and accessible technical guidance are more important than formal certification pathways.

A landscape designer asked a practical question that resonated widely: how much data is enough for designers to begin communicating the urgency of this issue to their clients? The facilitator's response was clear- even a single documented case is sufficient grounds to begin action, and the field cannot afford to wait for large datasets before implementing known solutions. It was also noted that data alone will not drive change, but that this does not mean data is unimportant. The key point is not to wait for many accidents before acting.

An audience member raised the importance of including light pollution, electrocution from power lines, and windmill collisions within the broader advocacy framework, urging that bird-window collision is not fought in isolation but bundled with related threats to build a stronger collective case.

The question of legal pathways was also raised, including whether approaching bodies such as the MCD in Delhi through unified building bylaws could be an effective route. Dr Monalisa Sen responded that municipal corporations follow state directives and do not legislate independently; advocacy would need to be directed at the state government level, where a visionary official could initiate a pilot-level intervention.

A participant highlighted the extensive network of bird hospitals run by Jain-communities' areas across India, suggesting that these institutions, some operational for over 50 years, represent a significant and largely untapped data source that should be integrated into any national BWC documentation effort.

Dr V.V. Robin reiterated that the priority for India should be to design a structured first-phase sampling effort across migratory flyways and diverse urban landscapes, generating locally relevant data to inform locally appropriate policy rather than directly transplanting western solutions without contextualisation. He noted that while some nuances specific to the Indian or tropical context remain to be understood, particularly around the role of nearby trees and other site-level variables, the guidance on glass treatment is already clear enough to act on. He also suggested that known high-collision buildings, such as those already identified by researchers and rescue centres, could serve as experimental sites where interventions are applied and outcomes monitored, offering a practical and low-cost way to validate solutions in the Indian context.

Dr Asad Rahmani added that data published in peer-reviewed journals carries weight not only with policymakers but with courts, urging researchers to publish consistently and across multiple journals, drawing on the precedent of the vulture diclofenac case and the *manjha* ban, both of which were advanced significantly by published scientific evidence cited in PILs.

A participant working in a rescue centre highlighted that existing collision data collected by rescue centres had not previously been analysed from an architectural perspective, such as which floor, what type of glass, and what building configuration, because rescue centres had not historically been asked for it. She noted that this kind of interdisciplinary collaboration, where field data is re-examined through the lens of architecture and design, is a gap that the symposium had helped identify and that people from other fields are now welcome to pursue.

An architect in the audience made a closing appeal to the architectural fraternity: when designing near green belts, parks, or ecologically sensitive areas, extra care must be taken with glass facades regardless of building height. A further request came from another participant, directed at rescue organisations, for a simple set of first-aid pointers for members of the public who witness a bird collision, noting that stress caused by improper handling can itself be fatal, and that many people who encounter injured birds do not know what to do in the critical first moments.



6. CONCLUDING REMARKS

Dr Asad Rahmani

(Veteran Ornithologist and Former Director, Bombay Natural History Society)



Dr Asad Rahmani opened by acknowledging that despite his decades of experience in wildlife conservation and advocacy, he had spent the day as a learner. He took notes through every session, he said, and was speaking as much on behalf of the room as from his own expertise. He noted that he would share a few things people might not agree with, and that this was quite alright, because if everyone thinks alike, no one is thinking. He spoke candidly and from personal experience, sharing examples from landmark conservation battles in India to offer the symposium a clear-eyed perspective on what it takes to move from awareness to lasting policy change.

He drew extensively on the vulture-diclofenac crisis and the Great Indian Bustard power-line campaign to illustrate a central argument: that good science, published in credible journals and sustained over time, is the foundation on which all effective advocacy and legal intervention rests. He noted that courts and governments consistently ask for evidence before acting, and that India's near-absence of peer-reviewed literature on bird-window collision is therefore one of the most urgent gaps to address. Dr Rahmani was equally direct in cautioning against over-reliance on awareness as a strategy. While acknowledging its value, he argued that awareness alone has rarely saved a species, and that regulation and its implementation are what ultimately make the difference. He cited the rhinoceros in Assam and the Great Indian Bustard in Rajasthan as examples where public affection for a species did not prevent its decline, and where legal protection and enforcement did. He urged the participants to pursue policy and legal instruments with the same rigour brought to research and communication, and to appoint dedicated advocacy capacity to sustain that effort over the years it will take.

He also emphasised that prevention must be the primary goal, not rescue. Rescue centres do vital work, but an injured bird has already sustained damage that is often irreversible. The effort and resources of this growing community, he argued, are best directed at stopping collisions from happening in the first place.

He closed by calling for long-term, institution-based research on bird-window collision across India. He expressed confidence that the people and organisations gathered at the symposium had the depth, diversity, and commitment to build something lasting, and encouraged them to stay the course. Following is a lightly edited version of the concluding note by Dr Asad Rahmani.

Transcription of the Keynote Speech

The Value of Good Science...

I want to begin with the vulture crisis. Not as a cautionary tale, but as a model for how good science, persistent advocacy, and policy engagement can together drive meaningful change.

When vulture populations began collapsing in the 1990s, the initial instinct was to dismiss the decline. With millions of vultures still visible in the field, many argued that the birds had simply moved elsewhere. The decline was real, and it was catastrophic. Vibhu Prakash's long-term raptor monitoring work was instrumental in proving this. The next challenge was identifying the cause. For years the assumption was a virus, especially as collapses spread from Bangladesh and Cambodia to Nepal and Pakistan. The answer came from carcass analysis: a Pakistani study found no virus, and when a villager mentioned a new drug in the area, diclofenac was identified as the culprit. Stored vulture carcasses in India were then analysed, and we found a 100% correlation between visceral gout and diclofenac exposure. That paper was published in Nature on 28th January 2004. It was the science that made the case.

Getting the drug banned was not straightforward. The Drug Controller of India resisted. Veterinarians argued that diclofenac was a wonder drug for livestock. A dedicated advocacy officer worked for four to five years on the campaign. The issue was eventually raised in the National Board for Wildlife, chaired by the Prime Minister, and a recommendation to ban diclofenac was secured. I made sure that recommendation was formally recorded in the minutes of that meeting. I have seen too many decisions disappear without a written record. The ban came. The science made it possible; the advocacy made it happen.

Awareness Is Not Enough...

Let me be direct on the question of awareness. Awareness will never harm anyone, and it is wonderful. But my experience is that awareness alone does not save species. In Assam, everyone is proud of the rhinoceros. That pride is genuine and deep. But it was not pride that saved the rhino: it was the shoot-at-sight order. It was a rule. Similarly, years of awareness in the Thar desert did not slow the decline of the Great Indian Bustard, because the wires kept killing them.

Awareness and regulation must go together. Without regulation, even the most successful awareness campaign leaves the underlying cause untouched.

The Power of a Published Paper in Court...

Let me give you a second illustration. Up to around 2008, even experienced ornithologists did not know that power lines and windmills were killing significant numbers of birds. The Wildlife Institute of India conducted a systematic study across a 4,000 square kilometre area, with teams walking under transmission lines regularly to collect carcasses before scavengers removed them. They found that approximately 90,000 birds die annually under those lines, including an estimated 18 Great Indian Bustards per year. That paper became a cornerstone of the Supreme Court PIL on the bustard. The court gave an order. The science made it possible.

The manja ban is another example. Ashish Pittie's paper published in Indian Birds, not a high-impact international journal, was cited in a PIL. The judge accepted it as evidence and gave a court order. The order has not been well implemented, but it exists. And it exists because of a published scientific paper.

My message to you is clear: India currently has only one peer-reviewed paper on bird-window collisions. Many more are needed. Publish in credible journals, consistently and repeatedly, because it is those papers that a court will ask for. If you go to court without a draft policy or a published body of evidence, the court will ask: where is the rule? Where is it written?

Rescue Is for Our Satisfaction: Prevention Is What Matters...

I want to say something about rescue that may be uncomfortable. Rescue centres do remarkable work. They have rehabilitated black bears, clouded leopards, elephants, and animals whose stories have become part of conservation history. This work matters. But an injured bird is, biologically, a dead bird. The energy expenditure, the stress, the disruption to breeding cycles: the damage is done even when the bird survives. Rescue centres exist for our satisfaction as much as for the bird's survival. Prevention is the priority. The goal must be to stop the collision from happening.

Long-Term Research and Institutional Commitment...

I want to close with a reflection on the kind of research that produces enduring results. The Edward Grey Institute at Oxford University has been studying birds in a 40-hectare woodland for over 70 years. The Arabian Babbler study has been running since 1973. The data from these long-term projects is of a depth and quality that short two or three-year projects simply cannot replicate. I urge the researchers here to design monitoring programmes with longevity in mind, and to build in continuity so that the work outlasts any individual researcher. Institutions are precisely the right vehicles for this. The kind of continuity that long-term science requires can only be guaranteed at the institutional level.

Key Policy Takeaways

- a) **Strengthen the scientific evidence base:** Bird-window collision research should prioritise the generation and publication of rigorous, peer-reviewed evidence capable of effective policy, conservation planning, and withstanding judicial scrutiny.
- b) **Integrate advocacy with scientific research:** Dedicated advocacy efforts are required to translate scientific findings into policy outcomes. Researchers, conservation organisations, and civil society groups should work collaboratively to ensure that evidence informs legislative, regulatory, and administrative action, and that this engagement is sustained over years, not limited to single meetings or events.
- c) **Establish policy before approaching courts:** A model regulatory or policy framework on bird-safe building design needs to be in place so that courts have a basis on which to direct government action. Pursuing legal intervention without an underlying policy weakens the case significantly.
- d) **Leverage corporate and institutional leadership:** Corporations, universities, and research institutions should be encouraged to adopt bird-safe measures proactively and serve as early adopters of emerging standards and best practices.
- e) **Prioritise prevention over response:** Conservation efforts should focus primarily on preventing bird collisions through improved design, planning, and mitigation measures, rather than relying on rescue and rehabilitation after collisions occur.
- f) **Promote sustained multi-stakeholder engagement:** Effective long-term solutions will require continued collaboration among scientists, architects, policymakers, conservation organisations, media professionals, and civil society actors to maintain momentum and drive systemic change.

7. VOTE OF THANKS

Mr. Debadityo Sinha

Lead, Climate & Ecosystems, Vidhi Centre for Legal Policy



Mr Debadityo Sinha delivered the vote of thanks on behalf of the organising team. He began by expressing gratitude to all invited speakers, noting that attending a full-day symposium on a subject that is neither widely visible nor popularly recognised requires genuine commitment. Many speakers had taken leave from their offices, travelled from other cities on early morning flights, or attended despite being unwell. He extended special thanks to Dr Asad Rahmani in particular, who closed the day with remarks drawn from a lifetime of experience.

He extended special thanks to keynote speaker Architect Ashok B Lall for his direct and heartfelt opening address, and reiterated Dr Rahmani's central message that good research is necessary to inform the law, describing it as a thought he hoped everyone would carry forward from the day. He noted that Mr Lall and Dr Rahmani's presence and engagement gave the organising team both confidence and encouragement.

He acknowledged the participants warmly, noting the quality and focus of their engagement throughout and apologising that the tight schedule had not allowed all questions to be accommodated. He also expressed appreciation for the industry representatives who had attended and shared their perspectives honestly, recognising that this kind of open dialogue across sectors is precisely what the issue needs.

He thanked the core organising team namely Mr Peeyush Sekhsaria, Dr V.V. Robin, Dr Ashwin Viswanathan, Ms Esha Munshi, and Ms Akshatha Narayan. He also acknowledged his own coordination team at Vidhi, especially Esha Rana and Srijani Datta, who had worked behind the scenes for managing logistics and coordination. Thanks were extended to administrative staff of Vidhi and the India International Centre for their logistical support ensuring the event got over smoothly. He acknowledged ecosystem partner Nature Future and media partners Roundglass Sustain and ArchitectureLive, both of whose editors had been present in-person and their active participation. He extended his appreciation for graphic designer Mayur Nanda for designing the poster for the symposium.

He closed by reflecting that this was the first symposium of its kind on bird-window collision in India, and that the organising team had not known how it would go. There are many more voices to include, he said, and ideally a future event would span at least two days with a broader range of stakeholders and more time for discussion. He invited all participants to share their feedback. But taking the first step, he noted, is what matters, and with that he brought the symposium to a close.

8. WAY FORWARD & SUMMARY OF RECOMMENDATIONS

The following recommendations draw together the key calls to action from across the symposium's presentations, panel discussions, and open deliberation. They are organised into five thematic areas which emerged from the deliberation.

8.1. Research and Evidence

Key challenge

The issue of bird window collision is largely invisible due to limited research from India. For effective conservation planning and policy, science-based evidence is needed.

Key suggestions

- a) Expand monitoring beyond existing hotspots to cover cities along major migratory flyways, smaller towns, non-urban areas, and ecologically sensitive zones including wildlife tourism sites.
- b) Use academic, research, and corporate campuses as immediate pilot monitoring sites. They harbour significant bird diversity, offer controlled environments, and are already exploring biodiversity monitoring through sustainability commitments.
- c) Support wildlife rescue organisations and citizen science programs to record standardised data for every collision case: species, floor level, glass type, and building configuration. This data, properly curated, can directly inform research and policy.
- d) Treat every bird mortality as a potential data point. Develop a national system for reporting bird deaths from any cause and streamline legal procedures for transporting specimens across state lines for scientific use.
- e) Publish research in peer-reviewed journals consistently. Government decision-makers respond to published scientific evidence. India needs a cumulative body of literature on bird-window collision that can anchor future legal and policy action.
- f) Design monitoring programmes for the long term that shapes conservation policy. Institutional commitment to multi-decade monitoring is needed.

8.2. Policy and Law

Key challenge

Bird-window collision currently has no presence in any Indian law, policy, or building regulation. Without a regulatory mandate, government bodies have no grounds to act, leading to limited interventions on ground.

Key suggestions

- a) Develop a model policy or regulatory framework on bird-safe building design. This is the foundational step. State governments and courts need a rule to act on.
- b) Incorporate bird-safe design requirements into state-level building codes, planning approvals, and environmental clearance processes. Municipal bodies follow state rules and cannot legislate independently, so advocacy should be directed at the government.
- c) Address the inter-ministerial gap. For instance, urban development sits with the Ministry of Housing and Urban Affairs; biodiversity conservation sits with MoEFCC. Coordination mechanisms between these ministries, and biodiversity training for urban administrators, are needed to close this structural disconnect.
- d) Recognise building-related glass collision as a statutory wildlife hazard, comparable to the threats posed by linear infrastructure such as power lines and roads, particularly for buildings near green belts, migratory corridors, and ecologically sensitive areas.
- e) Use existing instruments. Environmental Impact Assessment mandates, form-based codes, public procurement standards, and urban development funds such as the Urban Challenge Fund, etc. offer immediate levers for introducing bird-safe design requirements without waiting for new legislation.
- f) Connect advocacy for bird-window collision with other infrastructure related threats such as light pollution, power line electrocution, and windmill collisions.

8.3. Industry and Design

Key challenge

Solutions already exist, and the bird-window collision is avoidable. The challenge is not a lack of technology but a lack of demand, awareness, and regulatory requirement.

Key suggestions

- a) *Prescribe baseline design standards in building regulations such as limits on external glass reflectivity, mandatory use of markers or patterns at recognised threat factor thresholds, with priority focus on glazing within certain metres of ground level, balconies, and glass guardrails.*
- b) *Develop an India-specific compliance framework. Current international standards are calibrated to North American species and building types. India needs a regional pathway grounded in its own bird species, migratory patterns, and construction practices.*
- c) *Invest in domestic research and testing capacity for bird-safe glass. India has no local certification facility. Building this infrastructure would reduce reliance on foreign datasets and support the development of credible Indian standards.*
- d) *Use CSR and ESG frameworks to fund early pilot projects at institutional and corporate campuses. High-profile case studies build the commercial and reputational case for adoption, stimulate local manufacturing, and bring costs down.*
- e) *Make bird-safe design part of the architectural brief from the start. Fritting, patterning, and low-reflectivity specifications cost nothing extra when integrated at the design stage. Architects should routinely include bird-safe requirements in facade briefs and help clients understand the options.*
- f) *Tailor the approach to building type. Formal certification matters for large institutional clients. For smaller residential and community buildings, accessible technical guidance and affordable solutions are important.*

8.4. Awareness and Communication

Key challenge

Awareness without regulation is unlikely to be sufficient. But regulation without public engagement is unlikely to be effective. Both are needed, and they reinforce each other.

Key suggestions

- a) Invest in sustained, multilingual communication across mainstream media, regional language publications, digital platforms, podcasts, films, and educational content.
- b) Lead with personal stories and concrete examples rather than just aggregate data. Individual accounts of collision incidents make the issue emotionally real for general audiences in a way that statistics alone do not.
- c) Develop a simple, practical guide for journalists covering bird window collision: what the issue is, what Indian data exists, what solutions are available, and what angles are available for follow-up coverage. Accurate, calibrated reporting is critical to building public trust.
- d) Engage communities beyond the existing birdwatching network. Schools, housing societies, resident welfare associations, and community groups should be brought into awareness and reporting initiatives. Wildlife rescue centre and SPCAs represent a significant and largely untapped network for both data and outreach.
- e) Integrate bird-window collision into architectural and planning education so that future professionals enter practice with an understanding of glass reflectivity, collision risk, and bird-safe design options.
- f) Encourage a shift in public language around birds and urban wildlife. How birds are spoken about in everyday discourse affects how seriously they are taken as a policy concern.

8.5. Institutions and Collaboration

Key challenge

Sustaining momentum will require institutional investment in evidence building, advocacy, collaboration and coordination.

Key suggestions

- a) Establish a dedicated advocacy function to pursue policy interventions through concerned government partners over a sustained period. Conservation campaigns that have resulted in policy change have typically required years of consistent, focused engagement.
- b) Build a coalition rather than a single-issue campaign. Connecting with organisations working on light pollution, habitat loss, and other anthropogenic threats may broaden the coalition, attract more diverse funding, and strengthen the policy case.
- c) Support rescue organisations as data partners. They are the primary first responders to bird-window collisions and hold years of field data. Invest in helping rescue centres collate and share this data systematically.
- d) Convert informal commitments into structured partnerships with clear responsibilities and timelines. The connections made at the symposium need to translate into sustained, accountable collaboration to have lasting impact.
- e) Design research and monitoring programmes for long-term continuity from the outset, so that the work is not dependent on any single individual or short funding cycle.



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Disclaimer: These recommendations reflect the collective deliberations of speakers and participants at the 1st National Symposium on Bird-Window Collisions, 12 May 2026, New Delhi. They do not represent the official position of any individual organisation.

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