



# “Ecology, Distribution, and Conservation Status of the Rufous-bellied Eagle (*Lophotriorchis kienerii*) in India.”

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## **Abstract**

The Rufous-bellied Eagle (*Lophotriorchis kienerii*) represents a significant yet understudied raptor species in India's avian biodiversity. This research paper comprehensively examines the ecology, distribution, threats, and conservation challenges facing the Rufous-bellied Eagle in India. Drawing upon existing literature, field observations, and conservation efforts, the paper provides insights into the species' habitat preferences, breeding biology, and behavior. Despite its wide distribution across various forested regions, the Rufous-bellied Eagle faces multifaceted threats, including habitat loss, human disturbances, and persecution. Conservation strategies aimed at safeguarding the species include habitat protection, community engagement, and law enforcement. By synthesizing existing knowledge and highlighting conservation priorities, this paper contributes to the collective understanding of the Rufous-bellied Eagle's conservation status and informs targeted conservation actions for its long-term survival in India's diverse ecosystems.

## **Introduction**

The Rufous-bellied Eagle (*Lophotriorchis kienerii*) stands as a prominent and enigmatic raptor species within the rich avian biodiversity of India. Endemic to the Indian subcontinent, this medium-sized bird of prey with a wingspan averaging around 110 to 120 centimeters (43 to 47 inches). It has a robust build with broad wings and a relatively short tail. The upperparts are dark brown, while the underparts, including the belly, are rufous or chestnut-colored, giving it its distinctive appearance. The head is adorned with a prominent crest, and the eyes are large and yellow. Its strong, hooked beak and powerful talons are adapted for catching and killing prey, which primarily consists of small mammals, birds, and reptiles. The species is found in forested regions across India, including the Western Ghats, Eastern Ghats, Himalayan foothills, and other wooded areas. Understanding the ecology, distribution, and conservation status of the Rufous-bellied Eagle is pivotal for ensuring its long-term survival amidst increasing anthropogenic pressures and habitat alterations. By synthesizing existing literature, field observations, and conservation efforts, this research aims to shed light on the ecological significance and conservation needs of the Rufous-bellied Eagle in India.



Figure 1 Upperparts of Rufous-bellied Eagle  
(Photo Source: www.google .com)

Historically, research on raptors in India has predominantly focused on larger and more conspicuous species such as eagles and vultures, often overlooking smaller and less well-known species like the Rufous-bellied Eagle. However, recent years have witnessed growing interest in the ecology and conservation of lesser-known raptors, spurred by heightened awareness of their importance in maintaining ecosystem balance and functioning (Kushwaha et al., 2019).

The Rufous-bellied Eagle's distribution spans across various forested regions of India, including the Western Ghats, Eastern Ghats, Himalayan foothills, and northeastern states (Naoroji, 2006). Despite its wide distribution, localized declines have been reported in response to habitat loss, fragmentation, and human disturbances (Prakash et al., 2012).

### **Breeding Biology and Behaviour:**

The breeding biology and behavior of the Rufous-bellied Eagle (*Lophotriorchis kienerii*) remain relatively understudied, with limited information available on nesting ecology, reproductive success, and population dynamics within Indian habitats. However, insights from existing literature and anecdotal observations provide valuable glimpses into the species' breeding habits and ecological requirements.

Breeding pairs of Rufous-bellied Eagles typically establish territories within their preferred forested habitats, often occupying areas with dense tree cover and proximity to suitable prey sources. Courtship displays, vocalizations, and aerial acrobatics are observed during the breeding season, serving to strengthen pair bonds and establish territorial boundaries (Naoroji, 2006). These displays may include mutual soaring, talon grappling, and vocal duets, which are characteristic behaviors exhibited by breeding raptors (Rahmani, 2012).

Nesting sites selected by Rufous-bellied Eagles are often situated in tall trees, cliffs, or rocky outcrops, providing elevated vantage points and protection from ground-based predators. The construction of the nest is typically undertaken by both male and female eagles, utilizing twigs, branches, and vegetation to fashion a sturdy platform. Nest materials may be supplemented with softer materials such as leaves or feathers to provide insulation for the eggs and nestlings (Kumar, 2019).

Clutch sizes of Rufous-bellied Eagles usually consist of one to two eggs, although larger clutches have been reported in some cases (Grimmett et al., 2011). Incubation duties are shared between both parents, with individuals taking turns to maintain optimal temperature and humidity levels within the nest. Incubation periods vary depending on environmental conditions and prey availability, typically lasting several weeks before hatching occurs (Prakash et al., 2012).

Once hatched, nestlings are cared for by both parents, who provide food, warmth, and protection from potential threats. Young eaglets grow rapidly under the attentive care of their parents, developing strong muscles and keen hunting instincts through playful interactions and observational learning (Naoroji, 2006). Fledging occurs after several weeks of intensive parental care, during which time the young eagles strengthen their flight muscles and coordination through practice flights around the nesting site.



*Image 2 Wingspan of Rufous-bellied Eagle  
((Photo Source: www.google .com)*

## Threats and Conservation Challenges

The Rufous-bellied Eagle (*Lophotriorchis kienerii*) faces a myriad of threats and conservation challenges that jeopardize its long-term survival in India. These threats stem from various anthropogenic activities and environmental changes, posing significant challenges to the conservation of this enigmatic raptor species. One of the primary threats to Rufous-bellied Eagles is habitat loss and degradation due to deforestation, agricultural expansion, and infrastructure development (Grimmett et al., 2011). Rapid urbanization and industrialization have resulted in the conversion of forested landscapes into human-dominated areas, leading to habitat fragmentation and loss of critical nesting sites. Direct human disturbances, such as logging, mining, and recreational activities, disrupt nesting behaviors and breeding success of Rufous-bellied Eagles (Naoroji, 2006). Disturbances at nesting sites can cause abandonment of nests, reduced reproductive output, and increased vulnerability to predation and nest failure.

Rufous-bellied Eagles are occasionally targeted by humans due to perceived threats to livestock or poultry. Poisoning incidents, intentional persecution, and accidental trapping pose significant risks to individual eagles and breeding pairs (Prakash et al., 2012). Misconceptions and negative attitudes towards raptors exacerbate these threats, leading to retaliatory killings and population declines. Changes in prey availability and distribution due to habitat alteration and overexploitation of natural resources can impact the foraging success and reproductive performance of Rufous-bellied Eagles (Rahmani, 2012). Declines in prey populations, particularly small mammals and birds, can lead to food shortages and nutritional stress for breeding pairs and nestlings.

The use of agricultural pesticides and veterinary drugs poses indirect threats to Rufous-bellied Eagles through contaminated prey items (Sankaran, 2009). Pesticides such as organochlorines, organophosphates, and carbamates accumulate in the food chain, leading to bioaccumulation and toxic effects in raptors consuming contaminated prey.

Conservation efforts targeting Rufous-bellied Eagles in India face several challenges, including limited resources, inadequate enforcement of wildlife protection laws, and insufficient public awareness (Prakash et al., 2012). Addressing these challenges requires collaborative initiatives involving government agencies, conservation organizations, and local communities to implement effective conservation strategies and mitigate threats to eagle populations.

## Conservation Strategies

Protecting the Rufous-bellied Eagle (*Lophotriorchis kienerii*) and mitigating the threats it faces in India require comprehensive conservation strategies that address habitat conservation, community engagement, and law enforcement. Drawing upon existing literature and conservation initiatives, the following strategies are proposed to safeguard the long-term survival of this iconic raptor species:

Establishing protected areas and wildlife reserves that encompass key Rufous-bellied Eagle habitats is essential for safeguarding breeding populations and critical nesting sites (Grimmett et al., 2011). Additionally, habitat restoration efforts, such as reforestation and afforestation initiatives, can enhance habitat connectivity and increase the availability of suitable foraging and nesting habitats.

Engaging local communities in conservation efforts through education, awareness programs, and capacity building initiatives fosters stewardship of Rufous-bellied Eagle habitats and promotes sustainable land use practices (Naoroji, 2006). Collaborative partnerships with indigenous communities and stakeholders ensure the inclusion of traditional knowledge and cultural perspectives in conservation planning and decision-making processes.

Implementing measures to minimize direct human disturbances at nesting sites, such as regulating access, establishing buffer zones, and enforcing wildlife protection laws, reduces the risk of nest abandonment and

disturbance-related nest failures (Prakash et al., 2012). Public outreach campaigns and signage can raise awareness about the importance of conserving eagle habitats and respecting wildlife.

Addressing the root causes of poisoning incidents and intentional persecution through targeted outreach, law enforcement, and community engagement initiatives deters illegal activities and fosters coexistence between humans and eagles (Rahmani, 2012). Training livestock owners in non-lethal predator deterrents and providing compensation for livestock losses can mitigate conflicts and reduce retaliatory killings.

Conducting systematic monitoring of Rufous-bellied Eagle populations and research on their ecology, behavior, and habitat requirements informs evidence-based conservation actions and adaptive management strategies (Sankaran, 2009). Long-term monitoring programs, citizen science initiatives, and collaborative research partnerships facilitate data collection and analysis, enabling scientists and conservationists to track population trends and identify emerging threats.

Collaborating with neighboring countries and regional conservation organizations to address transboundary threats, share knowledge and resources, and promote coordinated conservation efforts enhances the effectiveness of conservation actions and maximizes conservation impact (Prakash et al., 2012).

## Conclusion

The Rufous-bellied Eagle (*Lophotriorchis kienerii*) embodies the rich avian biodiversity of India, serving as a flagship species for forest conservation and ecological integrity. Despite facing numerous threats and conservation challenges, the Rufous-bellied Eagle symbolizes resilience and adaptability in the face of anthropogenic pressures and habitat alterations. Through the synthesis of existing knowledge, conservation efforts, and community engagement initiatives, significant strides have been made towards understanding and safeguarding the Rufous-bellied Eagle in India. However, continued vigilance and collaborative action are imperative to ensure the long-term survival of this iconic raptor species.

Conservation strategies aimed at protecting Rufous-bellied Eagles and their habitats must be multifaceted, addressing habitat conservation, community involvement, and law enforcement. By prioritizing habitat protection, mitigating human disturbances, reducing poisoning and persecution, and fostering international collaboration, stakeholders can work towards securing a brighter future for the Rufous-bellied Eagle in India.

Furthermore, ongoing monitoring and research efforts are essential for tracking population trends, identifying emerging threats, and informing adaptive management strategies. Long-term conservation success hinges on the dedication and commitment of scientists, conservationists, policymakers, and local communities to work together towards a common goal: ensuring the persistence of the Rufous-bellied Eagle and preserving India's rich avian heritage for future generations to cherish and enjoy.

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