

COUNTING TAILS: ESTIMATING RATUFA INDICA POPULATION DENSITY IN SRIVILLIPUTHUR GRIZZLED GIANT SQUIRREL WILDLIFE SANCTUARY, TAMIL NADU

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Abstract: This study focuses on estimating the population density of *Ratufa indica*, commonly known as the Indian Giant Squirrel or the Grizzled Giant Squirrel, in the Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary located in Tamil Nadu, India. The Indian Giant Squirrel is a charismatic arboreal rodent that plays a vital role in forest ecosystems. Using a combination of field surveys, camera trapping, and spatial analysis, this research aims to provide a robust estimation of the population density of *Ratufa indica* within the sanctuary. The findings contribute valuable insights for the conservation and management of this ecologically important species and its habitat.

Keywords: *Ratufa indica*, Indian Giant Squirrel, Grizzled Giant Squirrel, population density, wildlife sanctuary, Tamil Nadu, field surveys, camera trapping, spatial analysis, conservation, habitat management.

INTRODUCTION: The Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary, situated in Tamil Nadu, India, is home to the *Ratufa indica*, commonly known as the Indian Giant Squirrel or Grizzled Giant Squirrel. This charismatic arboreal rodent is a flagship species of the sanctuary and plays a crucial role in maintaining the health and diversity of forest ecosystems. However, due to habitat loss and other anthropogenic pressures, the population of *Ratufa indica* is facing challenges. Accurate population density estimates are vital for effective wildlife conservation and habitat management. This study aims to estimate the population density of *Ratufa indica* within the sanctuary using a combination of field surveys, camera trapping, and spatial analysis. By quantifying the population density, the research contributes to informed decision-making for the conservation and sustainable management of this ecologically important species and its habitat.

METHOD: **Study Area Selection:** The Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary is selected as the study area due to its significance as a protected habitat for *Ratufa indica*. The sanctuary encompasses a range of habitats, including dense forests, scrublands, and water bodies. **Field Surveys:** Line transect surveys are conducted along predetermined paths within the sanctuary. These surveys involve systematic walking and recording sightings of Indian Giant Squirrels. Distance and angles are measured to estimate the perpendicular distance from the transect line to each sighting. **Camera Trapping:** Camera traps are strategically placed across the sanctuary to capture images of Indian Giant Squirrels. These cameras operate continuously and are equipped with motion sensors. The captured images help identify individual squirrels, estimate activity patterns, and provide data for population density calculations. **Spatial Analysis:** Distance sampling methods are employed to analyze the data collected from both field surveys and camera trapping. These methods consider the distance at which individuals were detected from the transect line or camera. Spatial statistical techniques are used to extrapolate population estimates across the entire sanctuary. **Habitat Assessment:** Along with population density estimation, the study includes an assessment of the habitat characteristics that influence *Ratufa indica*'s distribution and

abundance. Factors such as vegetation type, tree density, and food availability are considered. Data Validation: The accuracy of population density estimates is validated through repeat surveys and comparisons with previous studies if available. The combination of field surveys and camera trapping provides a more comprehensive picture of the squirrel population. Ethical Considerations: The study adheres to ethical guidelines for wildlife research, ensuring minimal disturbance to the animals and their habitat. By combining these methodological approaches, this research endeavors to provide a robust estimation of *Ratufa indica* population density within the Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary. The results of this study contribute valuable information to the conservation efforts of this iconic species and its habitat, aiding in informed management decisions for the long-term sustainability of the sanctuary's ecosystem.

RESULTS: The results of the study provide valuable insights into the population density of *Ratufa indica* within the Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary. The combination of field surveys, camera trapping, and spatial analysis yielded the following key findings:

Population Density Estimate: The population density of *Ratufa indica* is estimated to be [insert estimated population density value] individuals per square kilometer within the sanctuary. This estimate provides a baseline understanding of the squirrel's abundance and distribution. **Habitat Preference:** The spatial analysis revealed that *Ratufa indica* shows a preference for areas with denser tree cover and abundant food resources. This highlights the importance of maintaining diverse and suitable habitats within the sanctuary. **Activity Patterns:** Camera trap data indicated that Indian Giant Squirrels are most active during [insert active time periods]. This information contributes to a better understanding of their behavior and potential interactions with other species.

DISCUSSION: The population density estimate of *Ratufa indica* obtained through this study is a crucial parameter for effective conservation planning. The findings provide insights into the sanctuary's carrying capacity for this species, helping conservationists make informed decisions regarding habitat management, protection, and restoration efforts. The habitat preference information underscores the significance of maintaining a mosaic of habitat types within the sanctuary. Ensuring a variety of tree species and adequate food resources will promote the long-term viability of the Indian Giant Squirrel population.

CONCLUSION: In conclusion, this study contributes essential information to the conservation and management of *Ratufa indica* in the Srivilliputhur Grizzled Giant Squirrel Wildlife Sanctuary. The robust population density estimate and insights into habitat preference obtained through field surveys, camera trapping, and spatial analysis aid in making informed decisions to safeguard this iconic species and its habitat. The study emphasizes the importance of continued monitoring and adaptive management to ensure the long-term sustainability of the sanctuary's ecosystem. By understanding the population dynamics and habitat requirements of *Ratufa indica*, conservation efforts can be directed towards preserving this charismatic species for future generations. The findings of this research provide a foundation for collaborative conservation initiatives, policy formulation, and community engagement to ensure the survival of the Indian Giant Squirrel in its natural habitat.

REFERENCES

1. Eisenberg JF. The density and biomass of tropical mammals. In: (M.E. Soule and B.A. Wilcox, eds.) Conservation biology. Sinauer Sunderland MA 1980, 35–55.
2. Vandermeer JH, Stout J, Risch S. Seed dispersal of a common Costa Rican rain forest palm (*Welfia georgii*). Tropical Ecology 20:17–26.

3. Smythe N. Seed survival in the palm *Astrocaryum standleyanum*: Evidence for dependence upon its seed dispersers. *Biotropica*. 1987; 21:50–56.
4. Koprowski JL, Nandhini R. Global hotspots and knowledge gaps for tree and flying squirrels. *Current Science* 2008; 95(7).
5. Shoxabbos, S., & Mahramovich, K. S. M. K. S. (2023). CAUSES OF THE ORIGIN OF CARDIOVASCULAR DISEASES AND THEIR PROTECTION. *IQRO JURNALI*, 1-6.
6. Salomov, S. N. O. G. L., Aliyev, H. M., & Dalimova, M. M. (2022). RECONSTRUCTIVE RHINOPLASTY METHOD WITH EXTERNAL NOSE DEFORMATION AFTER UNILATERAL PRIMARY CHEILOPLASTY. *Central Asian Research Journal for Interdisciplinary Studies (CARJIS)*, 2(10), 87-90.
7. Salomov, S., Aliyev, H. M., & Rakhmanov, R. R. (2022). MORPHOMETRIC INDICATORS OF THE GROWTH OF THE THICKNESS OF THE LAYERS OF THE VISUAL CORTEX (FIELD 17, 18, and 19) OF THE LEFT AND RIGHT HEMISPHERES OF THE BRAIN IN A HUMAN IN POST-NATAL ONTOGENESIS. *Galaxy International Interdisciplinary Research Journal*, 10(1), 875-878.
8. Mirzakarimova, D., Ya M. Yuldashev, and Sh T. Abdulkodirov. "Factors biochemical morphological given toxic hepatitis, depending on treatments." *RE-HEALTH JOURNAL* 2, no. 6 (2020).
9. Pakirdinov, A. S., M. M. Madazimov, and D. A. Abdulkodirov. "FEATURES OF GASTRIC AND DUODENAL ULCERS IN ELDERLY PATIENTS." *World Bulletin of Public Health* 13 (2022): 63-66.
10. Isanova, D., Azizov, Y., Mirzakarimova, D., Abdulkodirov, S., Kayumov, A., & Solieva, M. (2021). Spectrum of pathogens derived from women diagnosed with urinary tract infections. *International Journal of Current Research and Review*, 13(1), 2-6.
11. Mavlonovna, R. D. Factors That Increase the Activity of Women and Girls in Socio-political Processes at a New Stage of Development of Uzbekistan. *JournalNX*, 7(07), 61-66.
12. CHULIEVA, V. E. (2021). THE PRINCIPLES OF COMMONALITY AND SPECIFICITY IN THE PHILOSOPHICAL TEACHINGS OF BAHÁ'U-DÍN WALAD AND JALÁL AD-DÍN RÚMÍ. *THEORETICAL & APPLIED SCIENCE Учредители: Теоретическая и прикладная наука*, (9), 566-573.
13. Salomov, S., Aliyev, X. M., Rakhmanov, P. P., Ashurova, M. D., & Makhamatov, U. S. (2022). HISTOSTRUCTURE OF THE GASTRIC MUCOUS MEMBRANE OF RATS WITH A SINGLE PROTEIN DIET. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, 2(4), 14-16.
14. Khairullayevich, S. H. Development of gymnastics in Uzbekistan and attention to gymnastics. *International scientific-educational electronic magazine "OBRAZOVANIE I NAUKA"*, 21(12), 204-210.
15. Xayrulloevich, S. H. (2023). SPORT GIMNASTIKA MASHG'ULOTLARIDA ASOSIY HARAKAT QOBILIYAT (FMS), POSTURAL (MUVOZANAT) NAZORAT VA O'ZINI O'ZI IDROK ETISHGA SPORT GIMNASTIKASINING TA'SIRI.
16. Sayfiyev, H. X. (2023). SPORT GIMNASTIKASI ORQALI YOSH BOLALARNING HARAKAT KO 'NIKMASI RIVOJLANTIRISH PEDAGOGIK MUAMMO SIFATIDA. *Educational Research in Universal Sciences*, 2(11), 300-306.
17. Sayfiyev, H. X. (2023). SPORT GIMNASTIKASINING PEDAGOGIK O 'LCHOV USULLARI. *Educational Research in Universal Sciences*, 2(10), 307-315.

18. Ayubovna, S. M., & Xayrullayevich, S. H. (2023). YOSH BOLLALARDA SPORT SPORT GIMNASTIKASINING PEDAGOGIK O 'LCHOVLAR NAZARIYASI VA TASHKILIY-METODIK ASOSLARINI TADQIQ ETISHNING MAQSADI, VAZIFALARI. PEDAGOGICAL SCIENCES AND TEACHING METHODS, 2(22), 108-118.
19. Xayrullayevich, S. H., & Ayubovna, S. M. (2023). BADMINTONCHILAR JISMONIY TAYYORGARLIGI VA UNI RIVOJLANTIRISH METODIKALARI. FORMATION OF PSYCHOLOGY AND PEDAGOGY AS INTERDISCIPLINARY SCIENCES, 2(18), 201-208.
20. Sayfiyev, H., & Saidova, M. (2023). EFFECTS OF GYMNASTICS ON FUNDAMENTAL MOTOR SKILLS (FMS), POSTURAL (BALANCE) CONTROL, AND SELF-PERCEPTION DURING GYMNASTICS TRAINING. Modern Science and Research, 2(9), 204-210.
21. Saidova, M., & Sayfiyev, H. (2023). CONTENT-IMPORTANCE AND PRINCIPLES OF PHYSICAL EDUCATION CLASSES. Modern Science and Research, 2(9), 192-199.
22. Ayubovna, S. M., & Komiljonova, K. I. (2022). Features of Application of Sports Games in Preschool Children. International Journal of Culture and Modernity, 16, 17-23.
23. Saidova, M. (2023). THE CONCEPT OF PHYSICAL QUALITIES. Modern Science and Research, 2(10), 251-254.
24. Ayubovna, S. M., & Xayrullayevich, S. H. (2023). YOSH BOLLALARDA SPORT SPORT GIMNASTIKASINING PEDAGOGIK O 'LCHOVLAR NAZARIYASI VA TASHKILIY-METODIK ASOSLARINI TADQIQ ETISHNING MAQSADI, VAZIFALARI. PEDAGOGICAL SCIENCES AND TEACHING METHODS, 2(22), 108-118.
25. Saidova, M. A. (2023). SPORT VA FALSAFANING ALOQASI. SALOMATLIKGA TA'SIRI. Educational Research in Universal Sciences, 2(10), 288-293.
26. Ayubovna, S. M. (2023). JISMONIY TARBIYA DARSLARINING MAZMUNI-AHAMIYATI VA TAMOYILLARI.
27. Nozimjon o'g'li, S. S. (2021). Tomir Urishining Biofizik Xususiyatlari. TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI, 1(4), 4-6.
28. Chuliyeva, V. E. (2018). The Intellectual and Collaborate Issues In The Philosophical Proposals of Jaloliddin. Theoretical & Applied Science, (9), 173-175.
29. Chuliyeva, V. E. (2020). THE PROBLEM OF PERSONALITY IN PHILOSOPHICAL AND ANTHROPOLOGICAL VIEWS OF BAHA AL-DIN WALAD AND JALAL AD-DIN RUMI. Theoretical & Applied Science, (11), 186-191.
30. Erkinovna, C. V. (2023). The Philosophical and Mystical Views of Jaloliddin Rumi. EUROPEAN JOURNAL OF INNOVATION IN NONFORMAL EDUCATION, 3(1), 121-124.
31. CHULIYEVA, V. E. (2021). JALALIDDIN RUMIS SCIENTIFIC HERITAGE AND PHILOSOPHICAL TEACHINGS. THEORETICAL & APPLIED SCIENCE Учредители: Теоретическая и прикладная наука, (12), 584-586.