Ecology & Evolution | Nov 16, 2026 | 5 min read | By Bryan White

Urban Canopy Conservation and Genomics Track Threatened Southern Flying Squirrels on Nebraska's East Campus

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An unexpected urban population of southern flying squirrels (Glaucomys volans) -- a Tier-1 state-threatened mammal in Nebraska previously thought to be restricted in the state to deciduous bluffs along the Missouri River near Indian Cave State Park -- has become the focus of coordinated forestry management, nest-box monitoring, and conservation genomics on the University of Nebraska-Lincoln (UNL) East Campus. First uncovered in December 2021 when a campus landscape crew felled a dying oak tree, the Lincoln population has drawn renewed national attention in November 2026 following a conservation grant from Mutual of Omaha's Wild Kingdom and the National Wildlife Federation.

For urban ecologists and foresters, the Lincoln flying squirrels present both a conservation opportunity and a practical management puzzle: how a nocturnal, cavity-nesting gliding mammal dependent on connected mature hardwoods established a breeding foothold inside an urban university arboretum -- and how campus tree management can sustain it.

From Accidental Discovery to Active Canopy Stewardship

Because southern flying squirrels are strictly nocturnal and spend daylight hours hidden inside tree cavities, they routinely evade casual human observation even in heavily trafficked parks and campuses. Prior to the 2021 East Campus discovery, historical museum specimens and field surveys documented Nebraska's Glaucomys volans populations primarily in southeastern deciduous forests -- especially oak, hickory, and basswood stands at Indian Cave State Park along the Missouri River valley.

Once the East Campus colony was confirmed, researchers and students in UNL's School of Natural Resources launched trail-camera surveys, habitat mapping, and artificial nest-box installations across mature campus tree stands. Those nest boxes compensate for the loss of natural snag cavities when dead or storm-damaged trees are removed for campus safety, allowing researchers to monitor occupancy, overwintering survival, and seasonal habitat use.

| Ecological / Research Dimension | | Lincoln East Campus Record | | Conservation Significance |

| Focal Species | | Southern flying squirrel (Glaucomys volans) | | Tier-1 state-threatened species in Nebraska |

| Native State Stronghold | | Southeastern Missouri River bluffs (e.g., Indian Cave State Park) | | Oak-hickory-basswood deciduous forest specialist |

| Urban Colonization Genomics | | ddRADseq comparisons (Wettschreck et al., 2026) | | Tests natural range expansion vs. human translocation |

| Active Habitat Interventions | | Artificial nest boxes & trail-camera monitoring |

| Offsets snag removal and maps canopy connectivity |

Genomic Clues: Natural Dispersal Versus Human Translocation

To determine how Glaucomys volans arrived in Lincoln -- well inland from the Missouri River corridor across largely agricultural prairie -- a 2026 study in Conservation Genetics by Jennifer Wettschreck, Sarah A. Sonsthagen, and colleagues applied double-digest restriction-site associated DNA sequencing (ddRADseq). By comparing genomic variation in Lincoln's urban squirrels against museum and field samples from native southeastern Nebraska populations at Indian Cave State Park, the team evaluated whether the urban colony arose through natural riparian range expansion or human-assisted translocation.

Separating those two colonization pathways carries direct wildlife-management implications. Natural dispersal along wooded creek corridors would highlight the importance of maintaining riparian tree stepping-stones across eastern Nebraska, whereas isolated founder events underscore the genetic vulnerability of small urban enclaves to inbreeding and habitat fragmentation .

Forestry Management for Gliding Mammals

Sustaining Glaucomys volans on East Campus requires balancing campus arboriculture with the biomechanical requirements of a gliding mammal. Southern flying squirrels rely on a furred membrane called the patagium, stretched between their forelimbs and hindlimbs, to glide from upper canopy branches to lower trunks of neighboring trees without descending to the ground -- where domestic cats, owls, and vehicle traffic pose severe mortality risks.

Consequently, canopy gap distance and mature mast-producing trees (particularly oaks and hickories that provide winter acorns and hickory nuts) govern whether an urban woodland functions as viable habitat. By integrating nest-box arrays, targeted deadwood retention where safe, and canopy-connectivity planning into East Campus forestry operations, UNL researchers are turning an accidental 2021 find into a living laboratory for threatened-species conservation in urban ecosystems.

References & Primary Sources

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