Eastern Whip-poor-will Prey: Protecting Moths Across Landscapes

Findings - Implications - Actions

Findings (what the data show)

• Natural-cover threshold: In residential landscapes, moth abundance drops sharply below about 65–70% natural cover across 0.5–10 km scales.

• Patchiness = resilience: Landscapes with more ecotones and patchiness (mixed open canopy forest, rock barrens, wetlands, old fields) consistently support higher moth abundance and buffer against disturbance.

• Adjacency matters: Subdivisions and night lighting have the strongest negative associations. Golf courses also trend low. Aggregate pits show more localized, limited impacts.

• Agriculture is variable: Overall lower average abundance but with high variance—management practices (hedgerows, wet swales, timing of mowing/pasturing) and patchiness drive outcomes.

• Hydro corridors: Among the most consistently negative land uses, with limited exceptions where corridors intersect wetlands.

• Shoreline caveat: Lakes are moth "null zones." Shoreline residential sites tend to have low abundance; lake-related microclimates (wind, moisture) further depress productivity.

Implications (so what for planning & permitting)

• Set cover targets: Aim for at least 70% natural cover within a 0.5–2 km radius around EWPW sites. Shoreline areas require extra caution.

• Design for mosaics, not monotones: Protect and restore edge-rich, mixed habitats. Patchiness stabilizes prey supply under disturbance.

• Treat light like a pollutant: Night lighting can override habitat quality—control spectrum, intensity, and duration.

• Focus on high-impact adjacencies: Subdivisions, hydro corridors, golf courses, and shoreline residential areas need tailored mitigations to avoid chronic prey deficits.

Actions (by audience)

A) Residential & Shoreline

• Keep the green ratio: Retain at least 70% natural cover at the community scale; exceed this in shoreline zones where possible.

• Build patchiness: Preserve or plant native corridors between lots, keep mast trees, favour open-canopy with shrubs/forbs, and avoid mowing to the water's edge.

• Adopt dark-sky standards: Use fully shielded fixtures, warm spectrum (<3000 K), motion-activated lighting, and curfews near edges and shorelines.

• Establish shoreland buffers: Plant 10–30 m native buffers, reduce mowing, and block stray light over water.

B) Agriculture and Roadsides

• Protect and stitch mosaics: Maintain hedgerows, shelterbelts, wet swales, and old fields to increase patchiness and stabilize moth populations.

• Time disturbance: Stagger mowing and pasturing to leave late-season refuges; minimize broad-spectrum pesticide use; favour integrated pest management.

• Site-level checks: Use simple ecological land classification and farm practice logs (sprays, seed type, rotation) to track variability and tailor best practices.

C) Infrastructure & Utilities

• Hydro corridors: Reduce herbicide dependence where possible; diversify with native shrubs and forbs; maximize benefits from wetland intersections.

• Golf courses: Implement dark-sky lighting, cut chemical inputs, expand native roughs and buffer strips, and monitor moth abundance at course edges.

• Aggregates: Keep lighting minimal and localized, suppress dust during key activity periods, and prioritize native revegetation post-extraction.

Quick Monitoring Protocol

• When: Warm, dry, low-wind nights (³13 °C), May–September.

• What: 1 Robinson or UV light trap (+ simple pan traps if available).

• Where: Place traps in 2–3 fixed spots (edge, interior, near disturbance).

• How: Collect overnight, dry insects, weigh medium-bodied moths as proxy for abundance.

• Report: Record annually with cover %, patchiness, and lighting hours ® compare year to year to track BMP success.