Northern Goshawk Acoustic Survey in Steep Rock Preserve

Washington, CT

Introduction

Northern goshawks (*Accipiter gentilis*; Fig 2a,c), hereafter NOGOs, are an uncommon and threatened resident bird of prey in Connecticut. Occupancy in the state has historically been low and continues to decline,[1] likely due to increased landscape fragmentation and development.[2]

Steep Rock Association (SRA) is a land trust in western Connecticut that stewards its lands for biodiversity and passive recreation. Its holdings of intact old growth forests are rare in the landscape and vital to forest-interior birds, such as NOGOs. Connecticut Department of Energy and Environmental Protection (DEEP) research on woodland raptors documented a population with a southwestern distribution in the state, which encompasses our study site (Fig 2b); however, NOGOs have not been reported at historically occupied SRA preserves in the last six years.

We assessed the presence of NOGOs in a 998-acre preserve and established a framework that can be used by other organizations invested in the conservation of this species.

Objectives

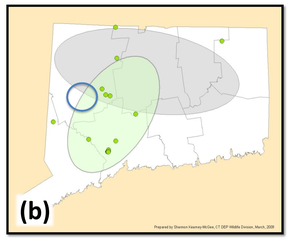
- Design and perform pilot broadcast acoustic survey.
- Visit old nest sites and collect habitat parameter data.
- Create survey map for future effort.
- Contribute woodland raptor observations to state professionals.

Methods

Acoustic Broadcast Surveys

- Technique to illicit a territorial response from target species.
- Stations positioned 200 meters apart and arranged in a grid (Fig 2d).
- Topographic map, GPS unit, and compass used to navigate between stations.
- NOGO calls broadcast from megaphone at all stations twice during summer months in morning or afternoon hours (Fig 1a).

Figure 1. (a) Grant Ketchum broadcasting at a survey station. (b) Woodland raptor nest observed at previously occupied site.



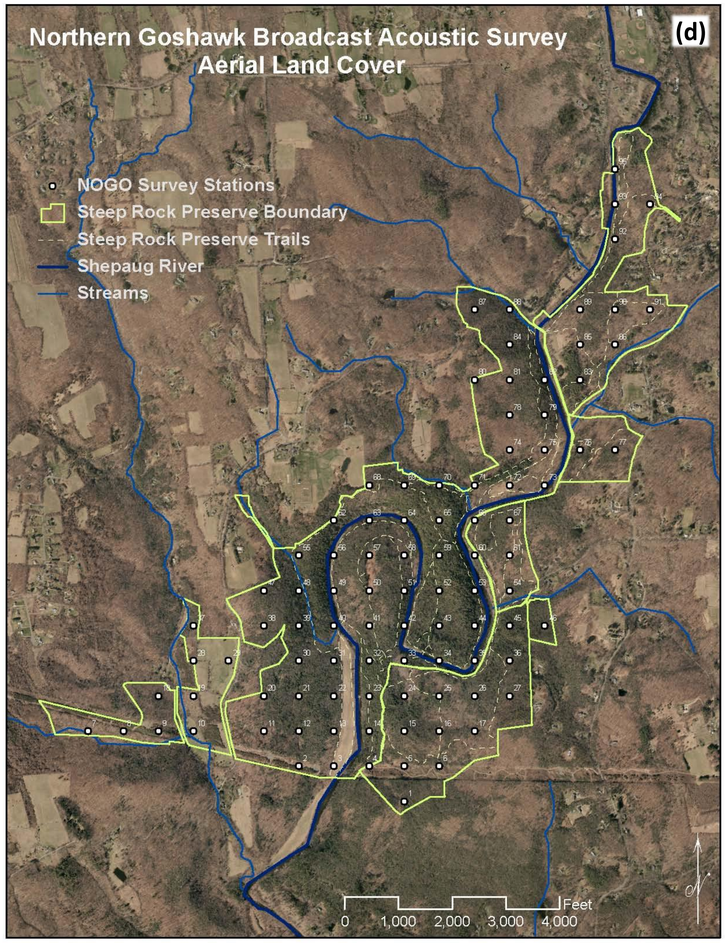


Figure 2. (a) Juvenile Goshawk. (b) Statewide goshawk distribution in 2006-2008. Green dots = NOGO detections, Gray ellipse = standard deviation of survey effort, Green ellipse = standard deviation of NOGO distribution, blue circle = study site location. (c) Adult Goshawk. (d) Map of 2018 survey stations (white dots) within SRA's Steep Rock Preserve.

Steep Rock Preserve			Hidden Valley Preserve		
Tree Species	DBH (in.)	Height (ft.)	Tree Species	DBH (in.)	Height (ft.)
White Pine	42	128	White Pine	34	112
Eastern Hemlock	43	104	Eastern Hemlock	24	100
White Oak	24	100	White Oak	22	95
Red Oak	23	112	Shagbark Hickory	15	78

Table 1. Past NOGO nest site attributes.

Methods Continued

Nest Site Surveys

- Visual searches for nests at previously used sites (Fig 1b).
- Data collection of habitat parameters:
  - ◊ Species, diameter at breast height (DBH), and total height of dominant trees composing canopy in 1-acre plot around approximate site (Table 1).
  - ◊ Aspect and position on slope (Fig 3).

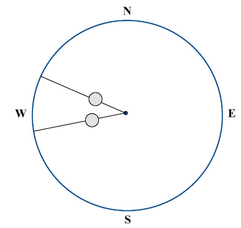


Figure 3. Slope aspect and position of each nest site (gray circles) relative from plateau/summit (center dot) to nearest water feature/valley (edge of diagram).

Results

- Total of 190 call sequences broadcast at 95 separate survey stations (Fig 2d).
- NOGOs not documented, but red-shouldered hawk, broad-winged hawk, and barred owl were detected.
- Old nest sites (*n*=2) located in mixed mature forest dominated by eastern hemlock with supra-canopy of white pine (Table 1).
- Old nest sites positioned 65-70% up slope with westerly aspect (Fig 3).
- Observed raptor nests in eastern hemlock at 60-80% of tree's height (Fig 1b), which appeared not to be used recently.

Conclusion

NOGOs are assumed to be easily detected based on their aggressive territoriality of nest sites; therefore, lacking an encounter suggests that they no longer nest in Steep Rock Preserve. Replicating this study on other preserves will be easily accomplished and the presence of NOGOs elsewhere may explain why they no longer inhabit the study site. A recommendation for improving subsequent efforts is to begin the field season earlier (April-May) when NOGOs are beginning to nest and are presumably more vocal than while raising young during the 40-day nestling period (June-July).

This study is applicable to conservationists and land managers who strive to make informed decisions regarding land use impact on wildlife. NOGOs are sensitive to disturbance so their presence or absence should be determined when planning activities, trail routes, or structure installments to avoid any degree of harassment. Findings from this project were shared with state biologists to supplement their knowledge on woodland raptor distribution and population trends, which may influence their protection status.

Acknowledgements

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References

1. Kearney, S. 2008. Inventory and Assessment of Connecticut's Priority Species: Job 1: Connecticut's Greatest Conservation Need Bird Inventory and Assessment: "Woodland Raptors." Internal report of the Wildlife Division of the Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, Connecticut.
2. Becker, T. E., Smith, D. G., and Bosakowski, T. 2006. Habitat, Food Habits, and Productivity of Northern Goshawks Nesting in Connecticut. Studies in Avian Biology No. 31:119-125.

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