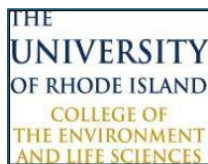


Identifying sites where small clearcuts can expand habitat for New England Cottontail in conjunction with existing habitat patches in Rhode Island



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May 2016



*The RI RC&D
Area Council, Inc.*



Summary

The objective of this analysis was to prioritize forest owners in Rhode Island for outreach programs related to creating habitat for New England Cottontail (NEC). The Natural Resources Conservation Service (NRCS) provides generous funding to landowners to create wildlife habitat through ongoing programs such as the Environmental Quality Incentives Program (EQIP). However, few landowners in Rhode Island are able or willing to create large enough habitat patches to meet the 25 acre patch size needed by NEC. Therefore, an alternative approach is to identify areas where smaller clearcuts could add to existing patches of shrubland to create 25 acre patches. We generated nine maps based on different assumptions. Map 3 (which can identifies 461 high priority polygons in Rhode Island which include patches of upland forest where a clearcut of 3 acres could result in a NEC habitat patch of at least 25 acres in conjunction with existing patches of shrubland, assuming that patches of existing shrubland less than 50 m apart can be considered to be the same patch. Some of the 3 acre clearcut must be inside these polygons but can extend into the surrounding upland forest. Map 9 identifies 60 parcels belonging to existing NRCS clients who could create 3 acre clearcuts on their properties that would result in 25 acre patches in conjunction with existing patches of shrubland. Map 10 further prioritizes the polygons in Map 9 by excluding xeric sites that are likely to have poor or delayed regeneration of shrubby habitat following a clearcut. The maps based on property boundaries are not included in this report for privacy reasons, but are available for use by NRCS staff and authorized affiliates.

This report was prepared with financial support from the National Fish and Wildlife Foundation (NFWF) and the University of Rhode Island (URI), through a subaward to URI from the RI Resources Conservation and Development Area Council as part of a NFWF-financed project entitled “Creating Habitat for New England Cottontail in Rhode Island.

Suggested citation: Buffum, B. 2016. Identifying sites where small clearcuts can expand habitat for New England Cottontail in conjunction with existing habitat patches in Rhode Island. Kingston, Rhode Island: Department of Natural Resources Science, University of Rhode Island.

Photograph on cover page: Shrubbyland developing after clearcut (Bill Buffum).

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1. Introduction

The objective of this analysis was to identify forest owners in Rhode Island with properties that may be suitable for creating habitat for New England Cottontail (NEC). The Natural Resources Conservation Service (NRCS) provides funding to landowners to create wildlife habitat through ongoing programs such as the Environmental Quality Incentives Program (EQIP). However, few landowners in Rhode Island are able or willing to create large enough habitat patches to meet the 25 acre patch size required by NEC. Therefore, an alternative approach is identifying areas where smaller clearcuts could add to existing patches of shrubland to create 25 acre patches.

The current model is an upgraded version of a GIS model created in 2012 (Buffum 2012) that was based on three assumptions generated during a meeting in February 2012 attended by representatives of NRCS, the United States Fish and Wildlife Service (USFWS), the Rhode Island Department of Environmental Management (RIDEM) and the University of Rhode Island (URI).

- The patchsize of NEC habitat should be at least 25 acres, but smaller patches less than 200 m apart can be considered as a single patch.
- The soils should not be excessively wet, defined by having a drainage classification of "very poorly drained" in the Rhode Island Geographic Information System (RIGIS) soils layer.
- The patches should have a 50 meter forested buffer between them and open areas such as agriculture, pasture and developed areas.

In 2015, URI conducted a range-wide analyses of NEC and eastern cottontail (EC) habitat use focusing on proximity to wetlands and developed areas (Buffum 2015). NEC did not appear to avoid wetlands, at least not in the winter when the fecal pellets for the study were collected. This increased our confidence that wetland shrubland areas could be combined with upland shrubland when identifying the size of existing patches of habitat. Even if NEC do not utilize these sites in the summer, they apparently utilize them in the winter, which is the period of highest mortality. In addition, we found no indications that NEC avoided sites near open areas such as agriculture, pasture, grassland or developed areas, however, EC were more likely to occupy sites. This made us feel that the GIS model should continue to exclude a 50 meter forest buffer around open areas.

However, our experience with creating NEC habitat during the past three years has made us aware of four factors that affect the GIS model:

- Sites on "very poorly drained" soils are generally wetlands, where clearcutting does not comply with the Rhode Island best management practices that require post-harvest stocking levels in wetlands of at least 60% (Cassidy and Aron 2003). Therefore, we decided that the revised GIS model should exclude wetlands.
- Clearcutting on xeric sites often results in poor and/or slow regeneration of shrubby habitat. Therefore, we decided that the revised GIS model should exclude xeric sites.
- NRCS has established 3 acres as the minimum size for the Early Successional Habitat

practice, so we based this analysis on the assumption that landowners would create 3 acre clearcuts.

- Site visits and GIS analyses have made us question whether it is appropriate to consider small habitat patches less than 200 m apart as one patch. Therefore in this analysis we also identified sites under the more conservative assumption that only patches less than 50 m apart can be considered as one patch. This greatly reduces the area for creating habitat, so we recommend that prioritizing these areas, and only considering the areas generated under the 200 m assumption if additional sites are required.

2. Outputs

Table 1 describes the nine maps that we generated, and provides the total area of potential sites for habitat creation in each map, the number of potential polygons, and the mean area of the polygons. It should be stressed that these maps identify potential habitat, and that field assessments will be required to determine that actual suitability.

Table 1. Description of maps with number of polygons, total acreage, and mean acreage per site for the four models

A. Maps included in Report	Total Area (ac)	Number of polygons	Mean acres/polygon (ac)
Map 1. Patches of forest ¹ in upland areas ² in Rhode Island after excluding 50 meter forested buffers from open areas such as agriculture, pasture and developed areas. ³	180,879	17,149	10.5
Map 2. Patches of upland forest where a clearcut of 3 acres would result in a NEC habitat patch of at least 25 acres in conjunction with existing shrubland ⁴ , when patches of existing shrubland less than 200m apart are considered to be part of the same patch. Part of the 3 acre clearcut must be inside this area (to be within 200m of existing shrubland), but the clearcut can extend into the surrounding upland forest.	14,614	936	15.6

¹ Based on the Rhode Island Forest Habitats Map, available at <http://www.rigis.org/data/forestHabitat>.

² The extent of uplands vs. wetlands was based on the “hydric” attribute of the RIGIS Soils 15 map: Soil Survey Geographic Soil Polygons for the State of Rhode Island (soils15), available at <http://www.rigis.org/data/soil>.

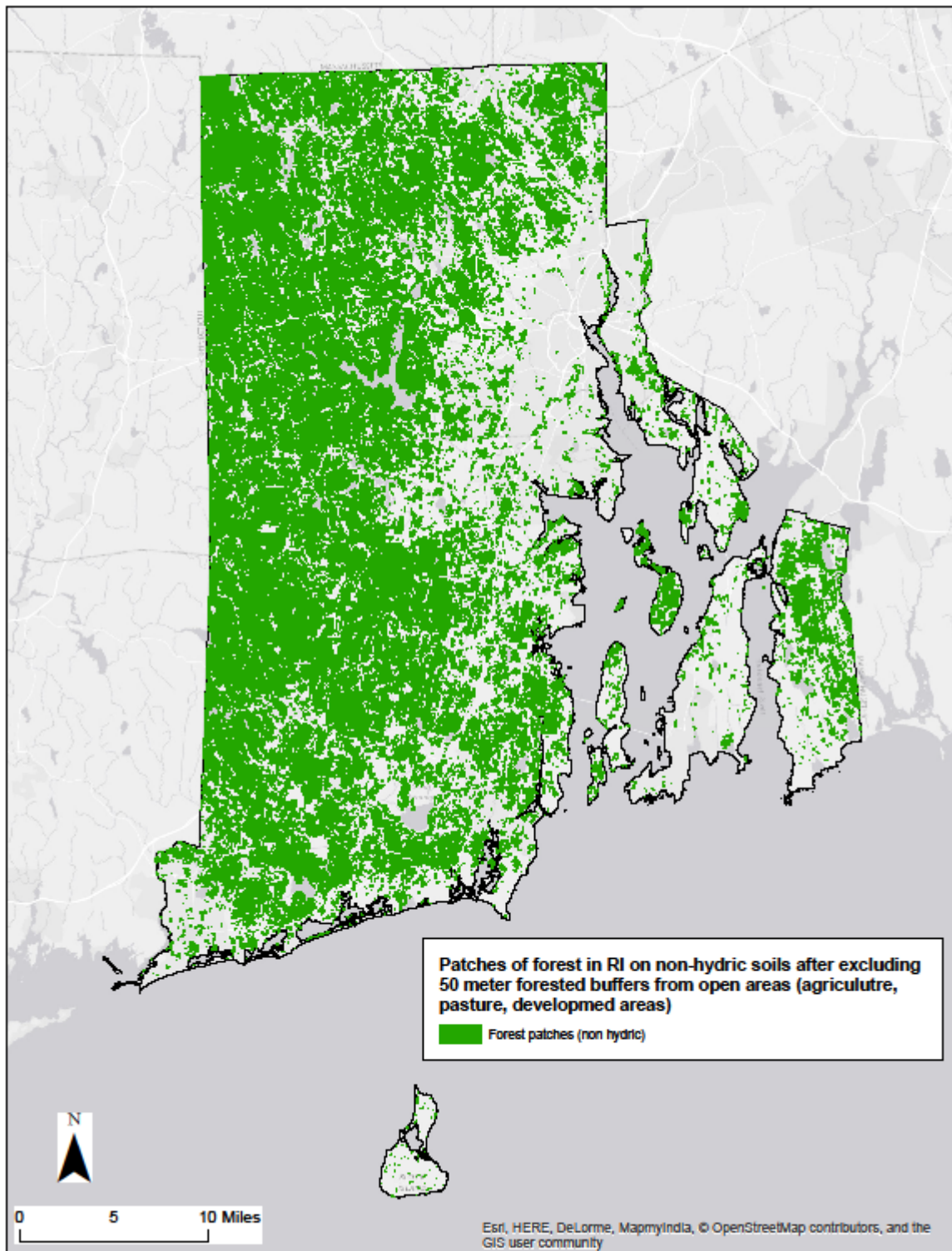
³ The 50 meter buffer from open areas was based on areas categorized as agriculture, grassland, developed and barren in the RI Forest Habitats Map, available at <http://www.rigis.org/data/forestHabitat>.

⁴ The extent of existing shrubland was based on the Rhode Island Forest Habitats Map, available at <http://www.rigis.org/data/forestHabitat>.

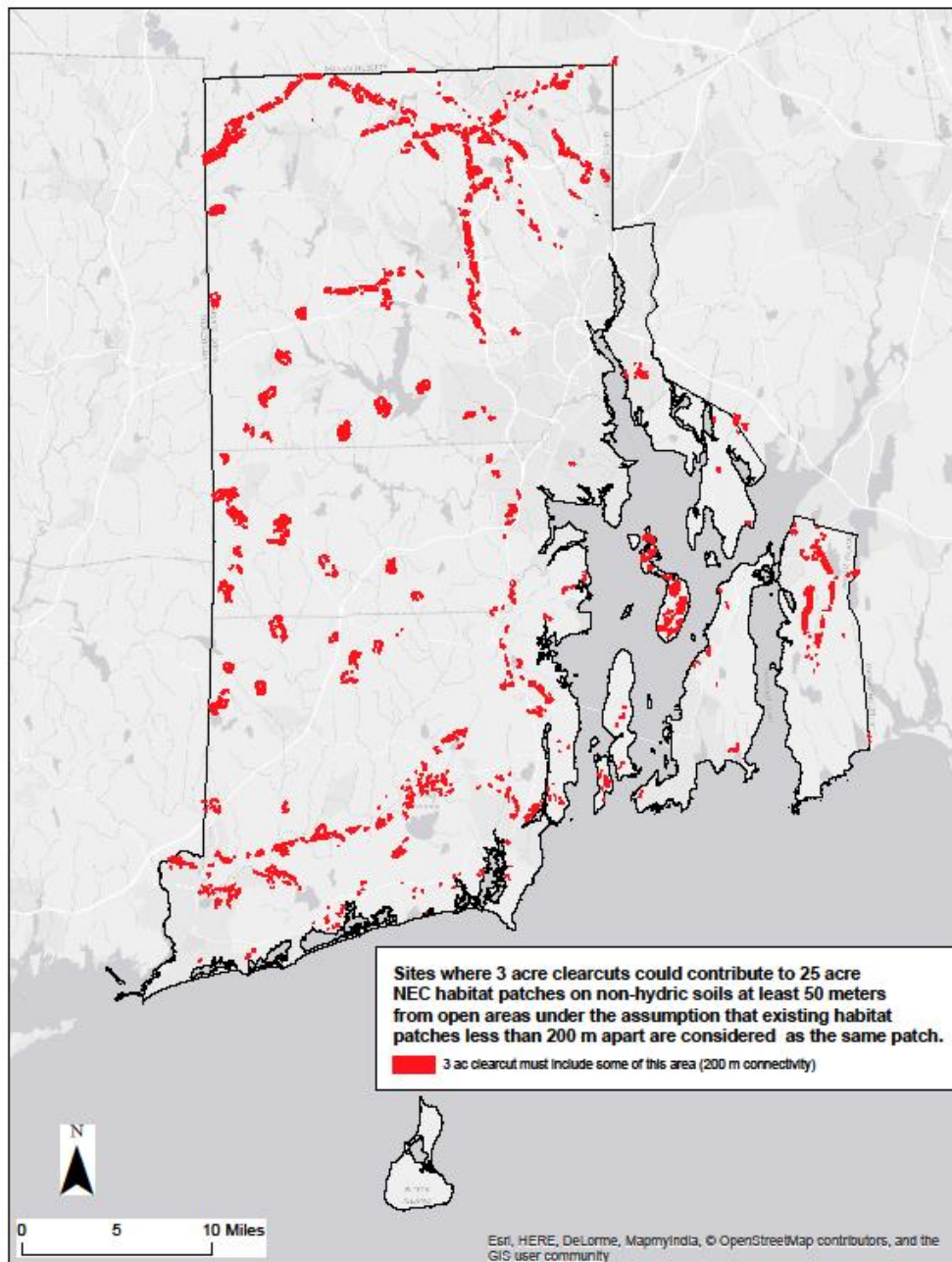
A. Maps included in Report	Total Area (ac)	Number of polygons	Mean acres/polygon (ac)
Map 3. Same as Map 2, but when existing habitat patches less than 50m apart are considered to be part of the same patch. Part of the 3 acre clearcut must be inside this area (to be within 50m of existing shrubland), but the clearcut can extend into the surrounding upland forest.	2,358	461	5.1
Map 4. Detail of Map 2, also showing existing shrubland and the area where clearcuts could be extended into adjacent upland forest.			
Map 5. Detail of Map 3, also showing existing shrubland and the area where clearcuts could be extended into adjacent upland forest.			
B. Additional Maps incorporating property boundaries of existing NRCS Clients (not displayed in this report for privacy reasons)			
Map 6. Same as Map 2, but only forest areas within property boundaries of existing NRCS clients.	3,046	206	14.8
Map 7. Same as Map 6, but excluding sites on xeric soils ⁵ that are likely to have poor and/or delayed regeneration of shrubby habitat after clearcutting.	2,575	178	14.5
Map 8. Same as Map 3, but only within property boundaries of existing NRCS clients.	351	60	5.8
Map 9. Same as Map 8, but excluding sites on xeric soils ⁵ that are likely to have poor and/or delayed regeneration of shrubby habitat after clearcutting. These are the highest priority landowners to be targeted in future outreach programs.	313	55	5.7

⁵ Xeric soils were defined for the purpose of this study as being classified as "excessively drained" in drainage attribute of the RIGIS Soil 15), Soil Survey Geographic Soil Polygons for the State of Rhode Island (soils15), available at <http://www.rigis.org/data/soil>.

Map 1. Patches of forest in Rhode Island on non-hydric soils after excluding 50 meter forested buffers from open areas (agriculture, pasture, developed areas)

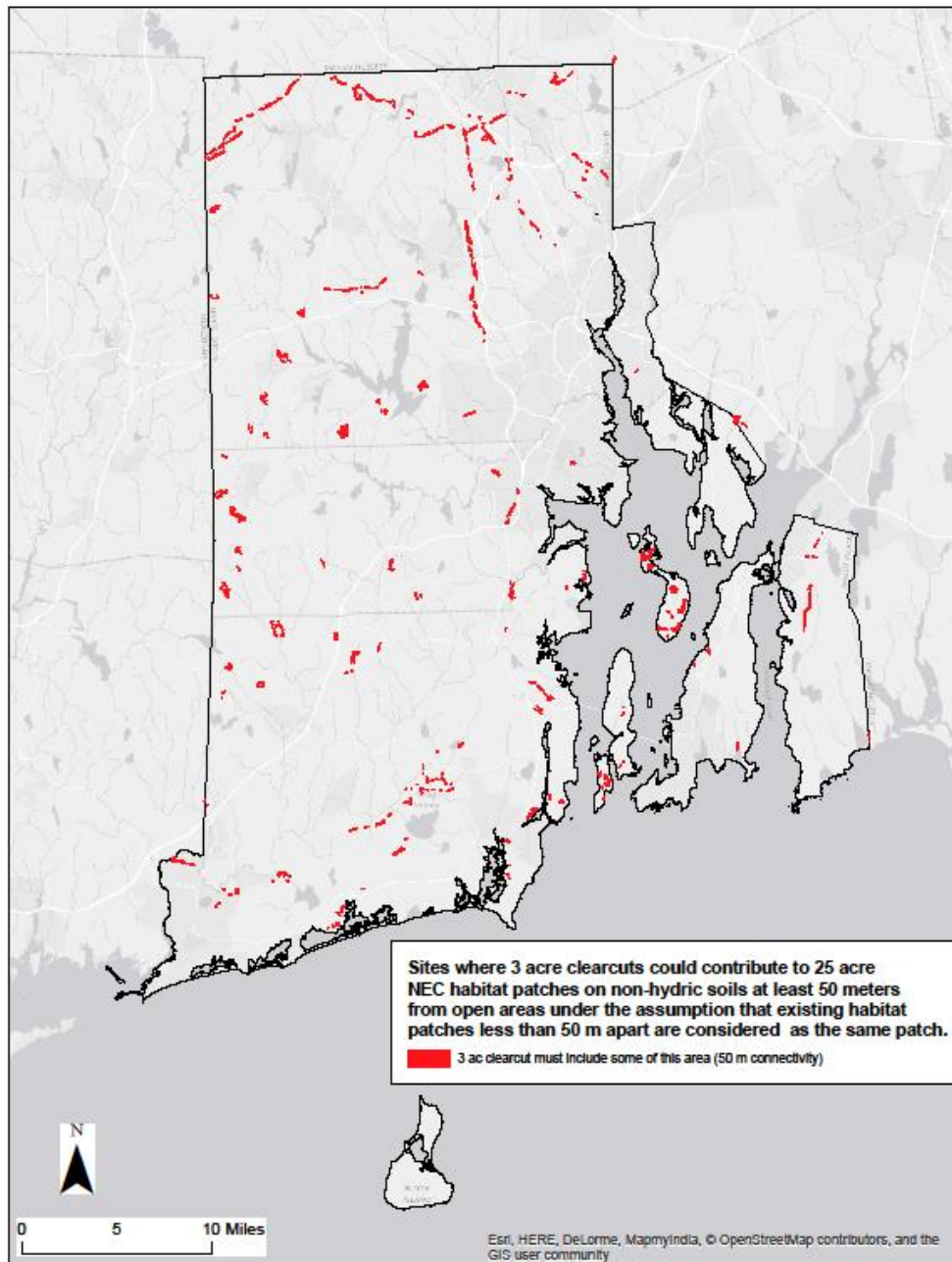


Map 2. Sites where 3 acre clearcuts could contribute to 25 acre habitat patches on non-hydric soils that are at least 50 meters from open areas (assuming habitat patches less than 200 m apart can be considered as the same patch). Part of the 3 acre clearcut must be inside this area (to be within 200m of existing shrubland), but the clearcut can extend into the surrounding upland forest.

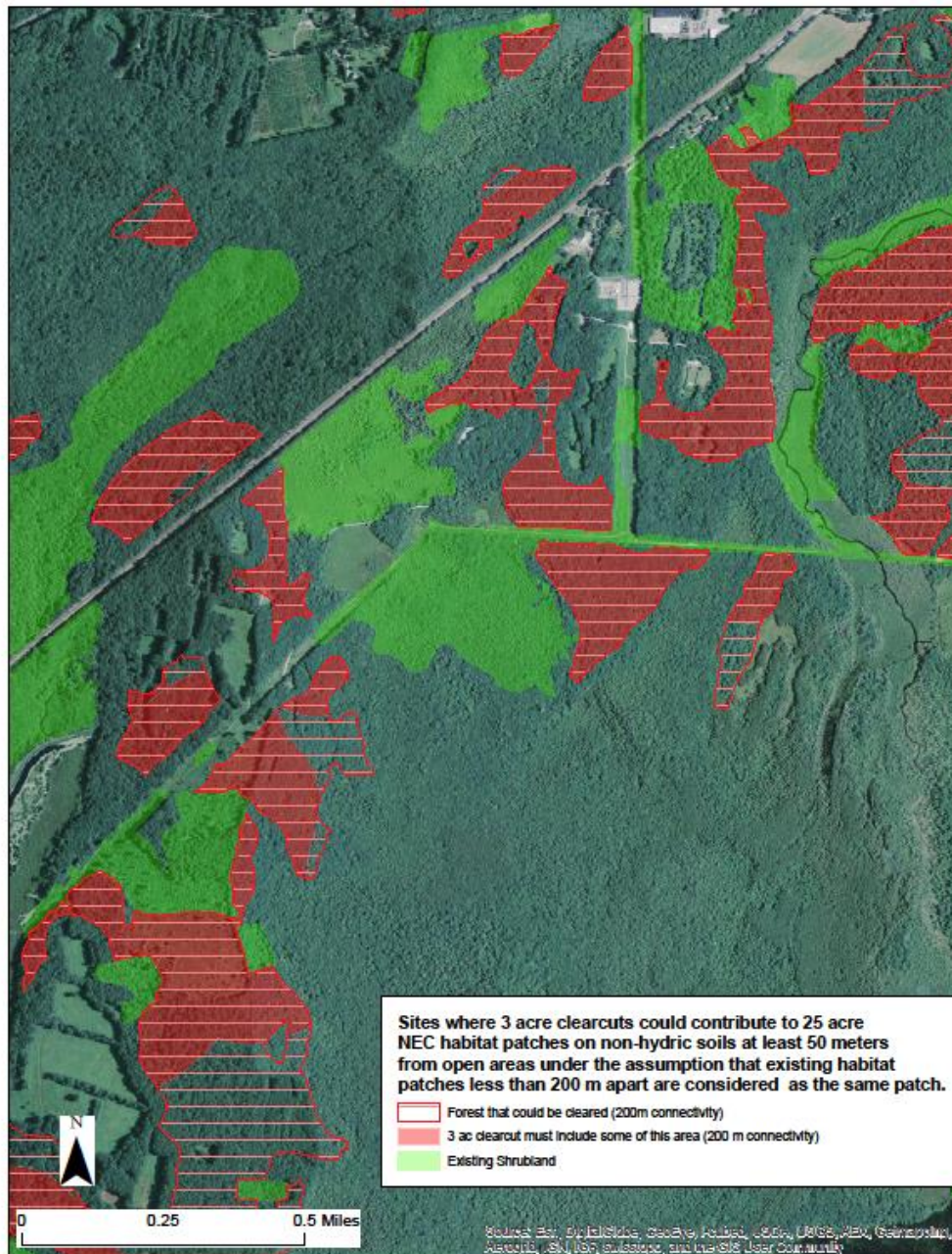


Map 3. Sites where 3 acre clearcuts could contribute to 25 acre habitat patches on non-hydric soils that are at least 50 meters from open areas (assuming that habitat patches less than 50 m apart can be considered as the same patch). Part of the 3 acre clearcut must be inside this area (to be within 50m of existing shrubland), but the clearcut can extend into the surrounding upland forest.

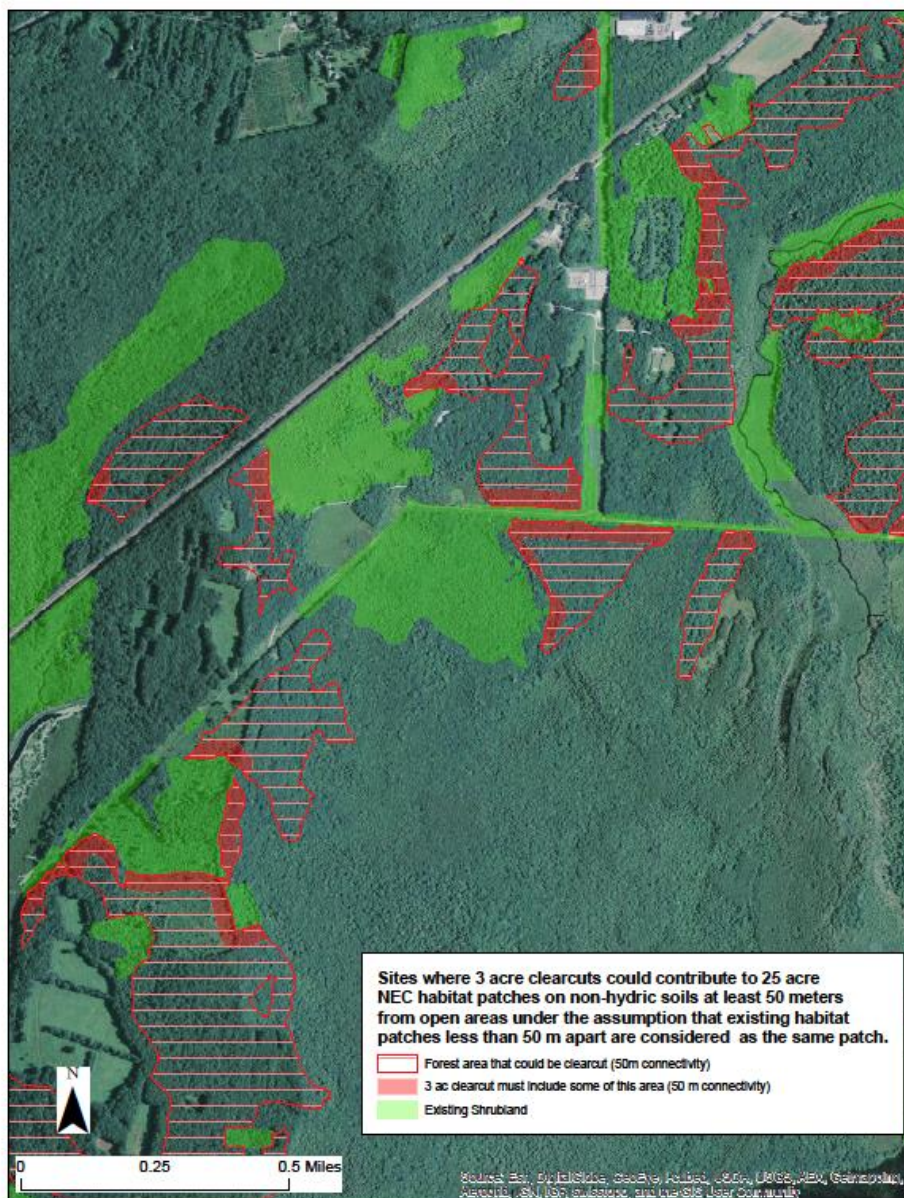
Note that extent of potential sites is much lower than in Map 1.



Map 4. Detail of Map 2: Sites where 3 acre clearcuts could contribute to 25 acre NEC habitat patches on non-hydric soils at least 50 meters from open areas assuming that existing habitat patches less than 200 m apart are considered as the same patch. The map also shows existing shrubland and areas where clearcuts could be extended into adjacent upland forest. Part of a 3 acre clearcut must be inside a solid red polygon (to be within 200 m of existing shrubland), but the clearcut can extend into the surrounding upland forest (marked with horizontal red lines).



Note that extent of sites that must be at least partially included in the 3 acre clearcuts is much lower than in Map 4, since part of the clearcuts must be within 50 m (rather than 200 m) from existing shrubland.



3. References

- Buffum, B. 2012. Identification of Sites for Creating Habitat for New England Cottontail in Rhode Island. University of Rhode Island, Department of Natural Resources, Kingston, RI.
- Buffum, B. 2015. Habitat preferences of New England cottontail and eastern cottontail in relation to proximity to wetlands and developed areas. University of Rhode Island, Department of Natural Resources, Kingston, RI.
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