March 12, 2011

Mariko Yamasaki, Silviculture/Wildlife Team Leader
Forest Sciences Laboratory
271 Mast Road
Durham, NH  03824

Dear Dr. Yamasaki,:

I am requesting NEPA categorical exclusion for our study of Nutrient co-limitation in young and mature northern hardwood forests.

Proposed Project:

Although temperate forests are generally thought of as N-limited, resource optimization theory predicts that ecosystem productivity should be co-limited by multiple nutrients.  These ideas are represented in the Multi-Element Limitation ([MEL](http://ecosystems.mbl.edu/Research/Models/mel/welcome.html)) model, developed by Ed Rastetter at the Marine Biological Laboratory in Woods Hole, Massachusetts. To test the patterns of resource limitation predicted by MEL, we are conducting nutrient manipulations in northern hardwood forest stands of varying ages.

Location (admin. units, county(s), and state);

There are eight sites at Bartlett Experimental Forest, and 1 in the Saco Ranger District.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Site**  | **USFS Designation** | **Age in 2004** | **Elevation (m)** | **Aspect** | **GIS Coordinates** |
| **C1** | Davis Brook West Timber Sale | 12 | 570 | flat to SE | C1-1: 44.042824,-71.320720C1-2: 44.042538,-71.321201C1-3: 44.041931,-71.321822C1-4: 44.042574,-71.321958 |
| **C2** | Saco RD Cmpt 51 | 14 | 340 | NE | C2-1: 44.059038,-71.269333C2-2: 44.059480,-71.268800C2-3: 44.059813,-71.269119C2-4: 44.059526,-71.269901 |
| **C3** | Saco RD Cmpt 52 stand 17 | 19 | 590 | NNE | C3-1: 44.038185,-71.291325C3-2: 44.037742,-71.291219C3-3: 44.037665,-71.291834C3-4: 44.037222,-71.291729 |
| **C4** | Saco RD Cmpt 52 stand 8 | 26 | 410 | NE | C4-1: 44.053436,-71.268748C4-2: 44.053117,-71.268069C4-3: 44.053147,-71.267087C4-4: 44.052826,-71.266443 |
| **C5** | no stand # on map | 28 | 550 | flat to NW | C5-1: 44.039193,-71.316669C5-2: 44.039836,-71.315839C5-3: 44.040121,-71.315342C5-4: 44.040463,-71.314936 |
| **C6** | Saco RD Cmpt 51 stand 6  | 29 | 460 | NNW | C6-1: 44.040352,-71.275200C6-2: 44.039902,-71.275202C6-3: 44.040350,-71.274576C6-4: 44.039900,-71.274579 |
| **C7** | BEF cmpt 33/34 | mature | 440 | ENE | C7-1: 44.052278,-71.302577C7-2: 44.052730,-71.303198C7-3: 44.053180,-71.303195C7-4: 44.053908,-71.303122 |
| **C8** | BEF cmpt 33/29 | mature | 330 | NE | C8-1: 44.054080,-71.297186C8-2: 44.053793,-71.297666C8-3: 44.053333,-71.297457C8-4: 44.054807,-71.299769 |
| **C9** | Saco RD Cmpt 52 stand ? | mature | 440 | NE | C9-1: 44.043814,-71.278167C9-2: 44.043933,-71.278769C9-3: 44.043340,-71.279463C9-4: 44.044128,-71.279415 |

Length of study:

This will build upon existing work on those sites. We began pre-treatment measurements last year and hope to keep the treatments going beyond the current funding cycle (5 years).

Number and timing of nutrient applications:Nitrogen is to be applied at 30 kg/ha/year in the form of urea; phosphorus at 10 kg/ha/yr, in the form of monosodium phosphate. Plots are 50 m by 50 m, and in each stand, 2 get N and 2 get P (control, N, P, and N+P).  So the amount of area being treated is 0.5 ha in each stand.  The amount of N is thus 15 kg per year (or 33 lbs/year) and P is thus 5 kg per year (11 lbs/yr) at each stand.

Here we evaluate the proposed project in terms of it’s possible effects on the seven extraordinary circumstances (as stipulated in FSH1909.15\_30.4 as listed below):

(*1)  Federally listed T and E species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species;*

Insert table.

*(2)  Floodplains, wetlands, or municipal watersheds;* None.

*(3)  Congressionally designated areas, such as wilderness, wilderness study areas, or national recreation areas;* None. *(4)  Inventoried roadless areas or potential wilderness areas;* None.

*(5)  Research natural areas;* None.

*(6)  American Indians and Alaska Native religious or cultural sites;* Forest Archaeologist Terry Fifield compared the plot locations to the locations of recorded historic and prehistoric sites in the Bartlett Experimental Forest, and found no instances where the study plots are on or near known historic or prehistoric sites.  It was his opinion that the project has no potential to adversely affect cultural resources in the study area. Further, he advised that as this is not considered an undertaking for the purposes of cultural resources, there is no need to formally consult with the NH State Historic Preservation Officer.

*(7) Archaeological sites, or historic properties or area:* See above.

Please let me know if you have any further questions. Thank you for your help in this process.

Sincerely,

Ruth Yanai