



NEON Terrestrial Plant Diversity and Phenology Technical Working Group

2020 Annual Report



1685 38th St., Suite 100 | Boulder, CO 80301 | 720.746.4844 | www.neonscience.org

National Ecological Observatory Network (NEON) is a project sponsored by the National Science Foundation and proudly operated by Battelle.

Introduction

Since its inception, NEON has relied on expertise within the science, education, and engineering communities to advise on key areas impacting the design, construction, and maintenance of the observatory with the goal to optimize its operation. Currently, two types of external advisory bodies support staff and leadership in making key decisions that guide all of NEON's activities: the Science, Technology & Education Advisory Committee (STEAC) and Technical Working Groups (TWGs). Both bodies are comprised of experts nominated to serve in these roles who are selected by NEON staff following a rigorous selection process.

NEON currently relies upon input from 22 TWGs. These groups play an important role by providing input to NEON's data collection and processing methods and ensuring that NEON infrastructure, data, and programs are a valuable community resource. Working groups are participatory and advisory; they are often tasked with providing input on issues that have scientific, educational, engineering, or operational implications.

This document includes a summary of activities, recommendations, and NEON's response to those recommendations for the Terrestrial Plant Diversity and Phenology TWG during the 2020 funding year (November 2019-October 2020).

Membership of the Terrestrial Plant Diversity and Phenology Technical Working Group includes researchers and practitioners from universities, federal and regional government agencies, and coordinated research networks. This group represents the community of plant diversity and phenology data users that NEON aims to serve; members provide expert input and advice regarding the science design, protocols, and data quality issues related to NEON plant diversity and phenology sampling.

Q1 – November 2019-January 2020

Summary of Activities

The TWG held a kick-off meeting. Activities included: initiation of chair selection process, introduction of members, challenges and questions to be addressed by the TWG during this working group cycle, and discussion of best way for the TWG to function including frequency of meeting and the use of SharePoint as a space to enter feedback and recommendations.

TWG Recommendations

The TWG agreed to consider a co-chair framework, suggested quarterly meetings, agreed to the use of a shared space on the NEON intranet (TWG SharePoint space) for collecting feedback and recommendations, agreed to the suggestion of an TWG meeting at ESA, and provided some feedback on the initial TWG-specific challenges presented: ideas for fuzzing threatened and endangered species including engaging Fish and Wildlife Service, and annually updating invasive species designation lists.

NEON Response

Additional follow-up is needed and planned for Q2. We look forward to working with this group on these questions and challenges.

Notes

It is worth noting that many of the issues will overlap with the internal Taxonomy Working Group formed by the Science Team.

Q2 – February 2020-April 2020

Summary of Activities

While there was no phone meeting, many emails were exchanged as the TWG - working as a group - generated guidance on three questions:

1. Should the plant diversity protocol be modified to include biocrusts?
2. Are plant phenology observations at remote sites at end of the season by camera acceptable?
3. Should local government or NGO lists of state and federal noxious weed species guide selection of new species for phenology monitoring as opposed to the sometime out of date USDA PLANTS lists?

TWG Recommendations

The TWG provided the following recommendations:

1. Biocrusts should be included in the plant diversity protocol.
2. Photographs are acceptable for documenting status of greenness at the NEON site near Barrow, AK, as long as frequent calibrations are made, equipment documented, and clear requirements on similar measurements moving forward to avoid degradation of data quality.
3. In cases where the USDA PLANTS database has yet to recognize newer invasive species, it is appropriate to rely on local and regional lists and track the citation and date lists were accessed.

NEON Response

1. Biocrusts will be documented in NEON data beginning during the 2021 field season.
2. Photographs with specific and rigorous guidelines will be used in late summer at the NEON site near Barrow, AK.
3. The selection of new, invasive species for phenology monitoring is being guided by local, regional, and the USDA PLANTS noxious species lists.

Q3 – May 2020-July 2020

Summary of Activities

Two email discussions took place:

1. Requested feedback on proposed updates to the falling leaves phenophase definition to resolve some ambiguity and suggested dropping the phenophase altogether for drought deciduous broadleaf growth form.
2. A reduction in the number of Tower Plots at which herbaceous plant productivity was sampled, required a decision for plant diversity sampling: should plant diversity which occurs at just three Tower Plots moved to ensure collocation with herbaceous productivity or remain at existing plots to maintain temporal consistency?

TWG Recommendations

The TWG made the following recommendations:

1. General support for the proposed definition changes but some disagreement about whether to drop the falling leaves phenophase from drought deciduous broadleaf species.
2. Given the mismatch in scale (herbaceous productivity sampled from a 0.2 x 2 m clip strip within a 20 x 20 m plant diversity plot) the TWG suggested that herbaceous biomass and productivity - and subsequent comparisons to plant diversity - are most appropriate at the scale of the site or the part of the site (e.g., the tower airshed or a NLCD cover class) as opposed to the plot scale. Therefore, maintaining the existing plot locations for plant diversity is preferable.

NEON Response

1. We are updating the phenophase definition but will keep falling leaves phenophase for all growth forms where it has historically been observed. Field Science affirms that the updated definition resolves their sampling difficulties.
2. Plant diversity sampling continued at existing Tower Plots

Q4 – August 2020-October 2020

Summary of Activities

No activity for Q4

TWG Recommendations

N/A

NEON Response

N/A

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