



National Wetland Condition Assessment: Status of Vegetation Data Analysis



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Vegetation Data Analysis Overview

Data Preparation

Field/Lab
Data Entry &
Validation

Standardize
Taxonomy

Acquire
Ancillary
Data

Preliminary Analysis Steps

Candidate
Condition
Metrics

Reference
Condition &
Disturbance
Gradients

Describing Condition

Vegetation Metrics &
Indices of Condition

Relative and
Attributable Risk





Assessing and Describing Vegetation Condition



Condition

- **Vegetation Multi-Metric Index (MMI)** – Screen candidate metrics, develop and test MMI
- **Floristic Quality** – Calculate and test metrics (e.g., FQAI, Mean C)
- **Taxa Loss Index** – Develop and test Observed/Expected (O/E) Index

Stress/Condition

- **Alien Plant Species** – Develop, calculate, and test metrics or indices





Standardization of NWCA Observed Plant Species Names to USDA-PLANTS Nomenclature



- Identify Steps for Name Reconciliation
- R-Script Filters
 1. Match NWCA names to PLANTS names
 2. Highlight NWCA names needing evaluation
- Nomenclatural Determination
 1. Identify synonyms and accepted PLANTS name(s) to which each NWCA name points
 2. Compare geographic distribution of potential PLANTS names with location of observed NWCA taxon
 3. Review species concept in flora used by field botanist
 4. Consult USDA-PLANTS taxonomists





Species Trait Data

- ✓ Taxonomic Category
- ✓ Growth Habit
- ✓ Longevity (Duration)
- ✓ Wetland Indicator Status
- ✓ Native/Alien Status
- ✓ Coefficients of Conservatism (CoCs)





Determining Native/Alien Status

- Assigned by species & location
- PLANTS Database:
 - Species alien across the entire Lower 48 State floristic region
 - Species alien in Alaska floristic region
- Floras & Distribution: Species native to one area of the US, but adventive in another
- Floras & Literature: Species with cryptogenic origins

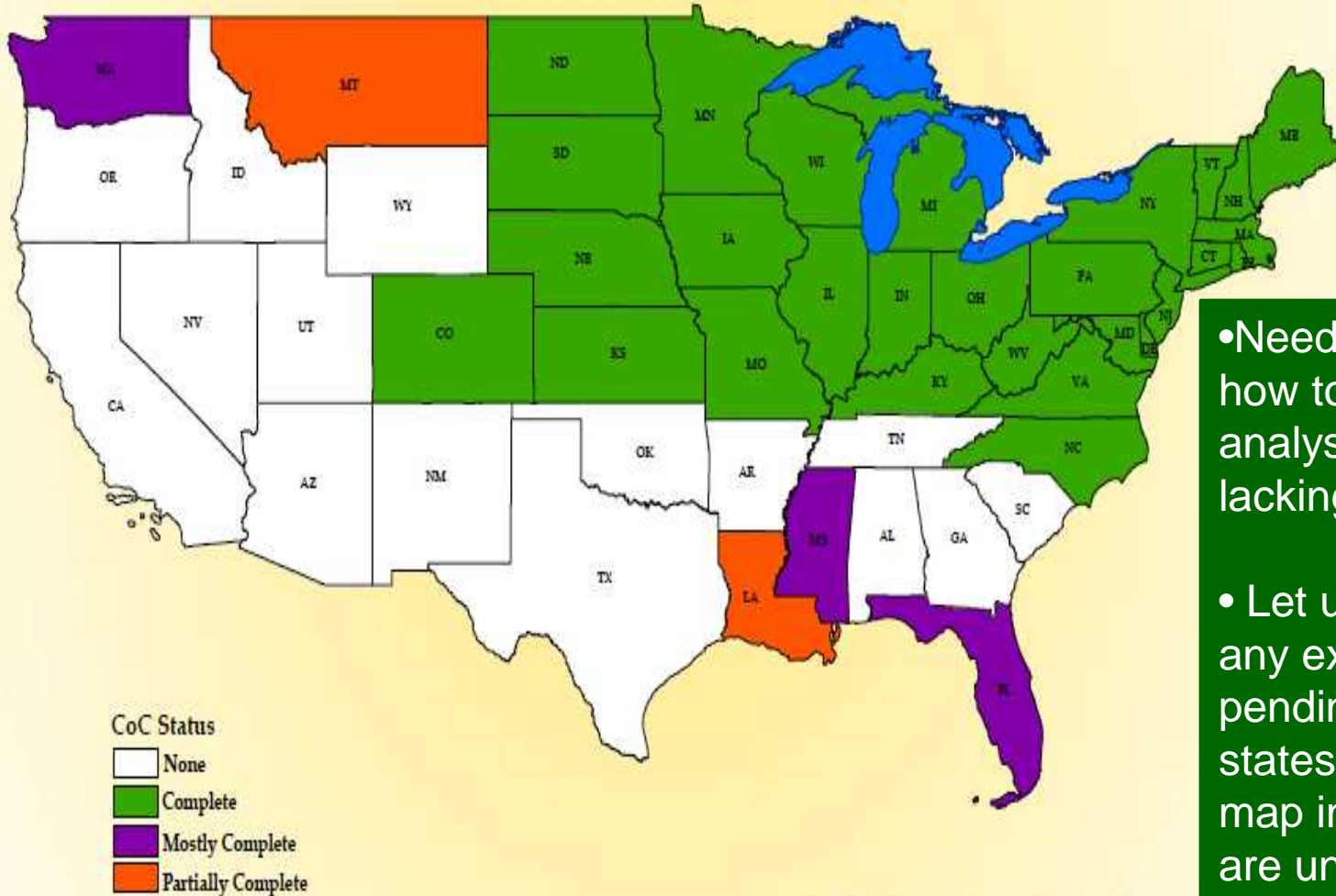


Potentilla recta

Courtesy of USDA-NRCS PLANTS Database;
@Neslon DeBarros



Coefficients of Conservatism (CoC) by State



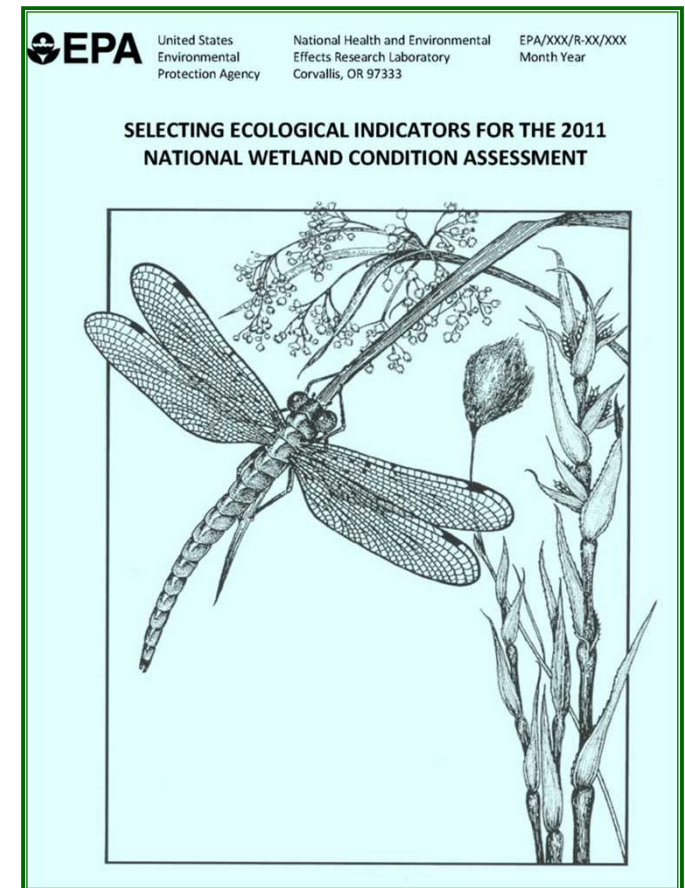
- Need to determine how to handle analysis for areas lacking CoCs
- Let us know about any existing or pending CoCs, for states where the map indicates they are unavailable





Preliminary Steps in Vegetation Analysis

- Dictionary of Candidate Vegetation Metrics available in NWCA Data (compiling)
- Indicator Groups for Metrics (examples)
 - Vertical Structure and Productivity
 - Species Composition (identity, presence, richness, abundance, diversity)
 - Native/Alien Species Composition
 - Guild Composition based on species traits (growth habit, longevity, hydrophytic status, functional traits)
 - Tolerance to Disturbance
 - Floristic Quality
- Develop R-Script, calculate Candidate Metrics, construct analysis data sets

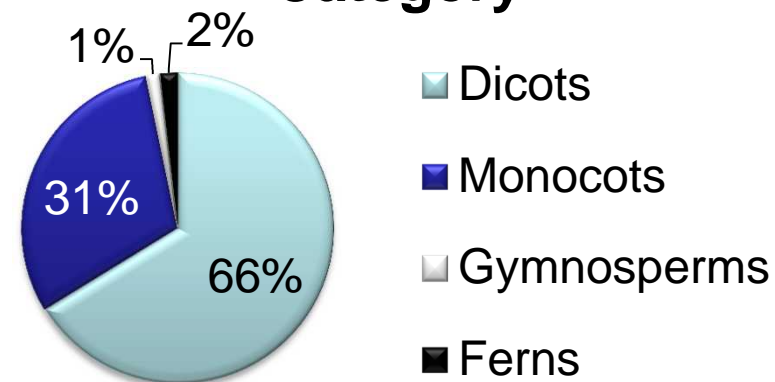




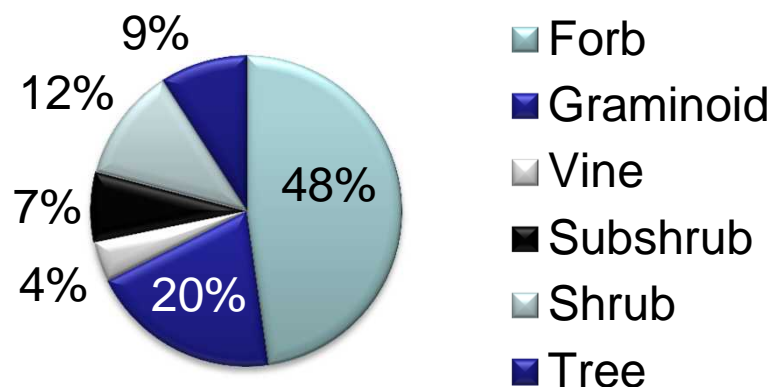
Numbers of Plant Taxa Observed in the 2011 NWCA (Incomplete):

- ❑ 3684 taxa (mainly species level)
- ❑ 192 families, 943 genera
- ❑ 444 Asteraceae, 399 Poaceae, 360 Cyperaceae

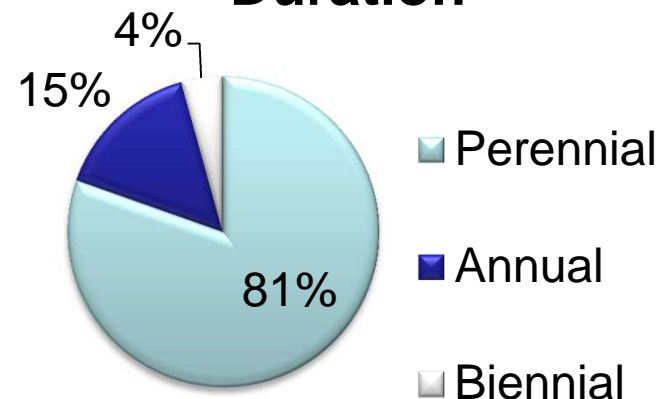
Category



Growth Habit



Duration





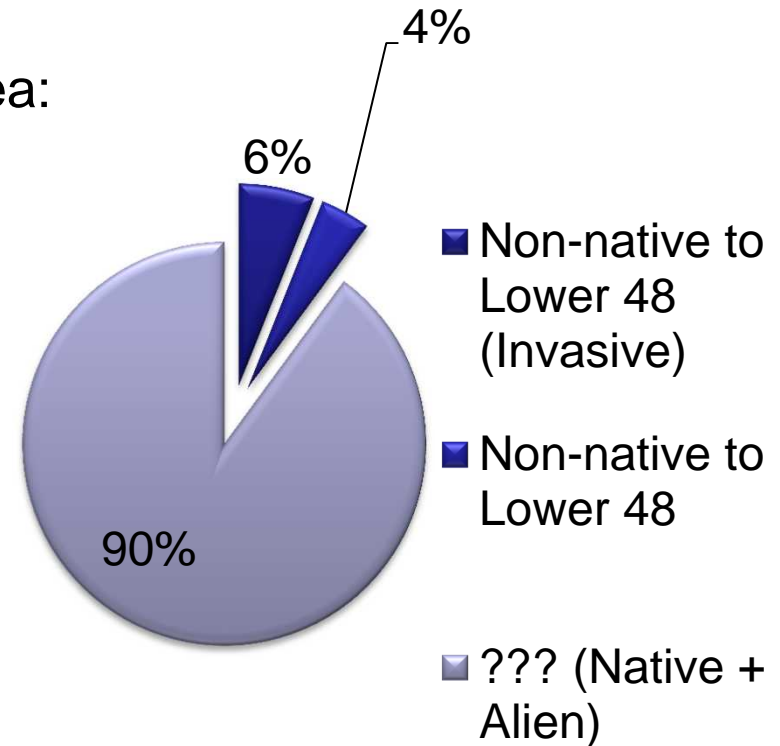
Non-Native Species (Incomplete):

Alien to Entire Lower 48 State Floristic Area:

- ❑ 372 (10%) of observed NWCA species
- ❑ At least 223 (60%) are listed as invasive

Other Likely Sources of Alien Species:

- ❑ **Adventive** species native in some parts of US, but introduced in others
- ❑ **Taxa with introduced subspecies or varieties**
- ❑ **Cryptogenic species** with native and introduced genotypes or unknown origin

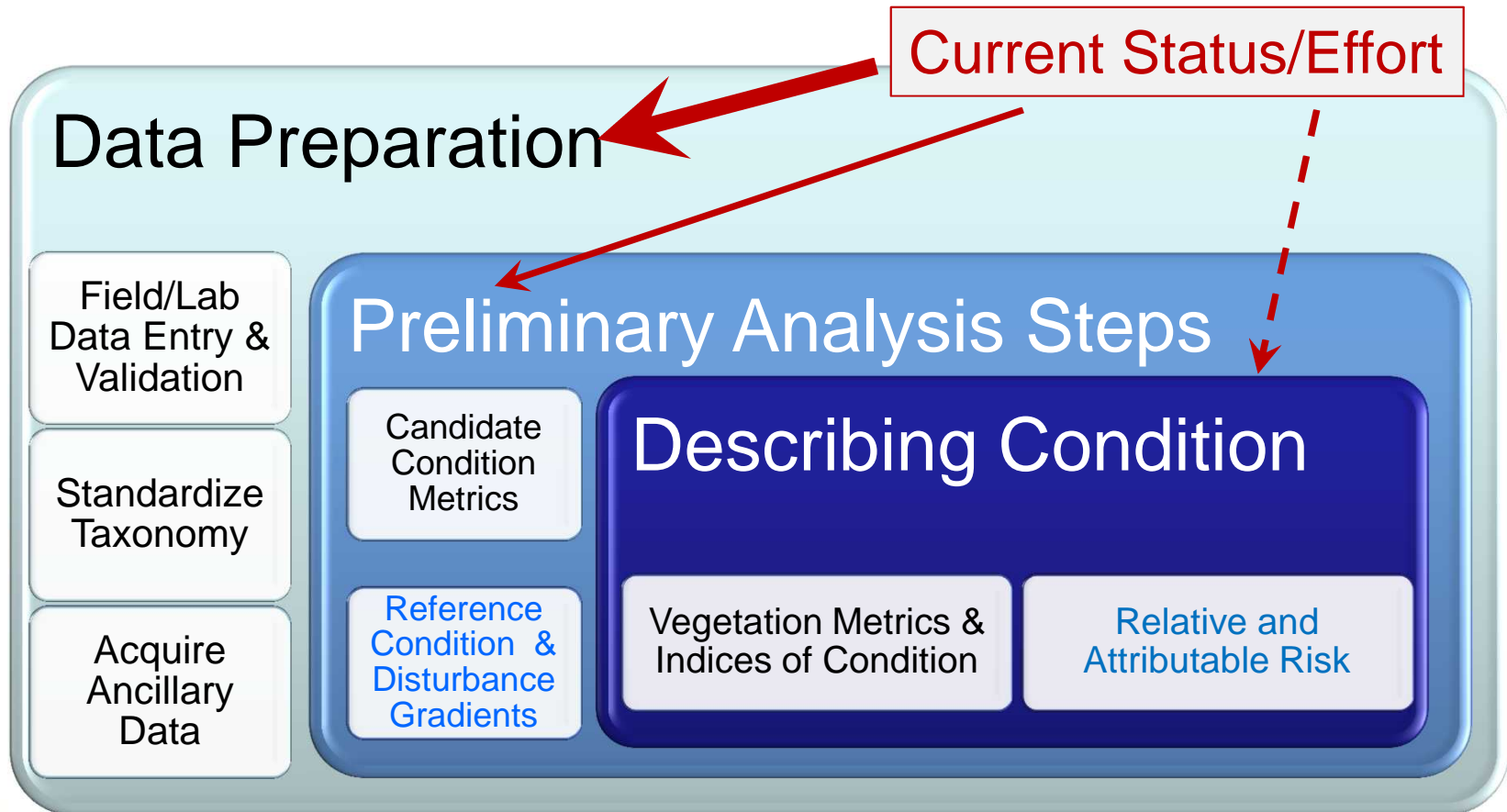


Native Status





Vegetation Data Analysis Overview





Thank You

To all the NWCA participants who have provided invaluable input to the Vegetation Component of the NWCA, including the many partners from:

- States
- Tribes
- Other Federal Agencies
- Universities and NGOs



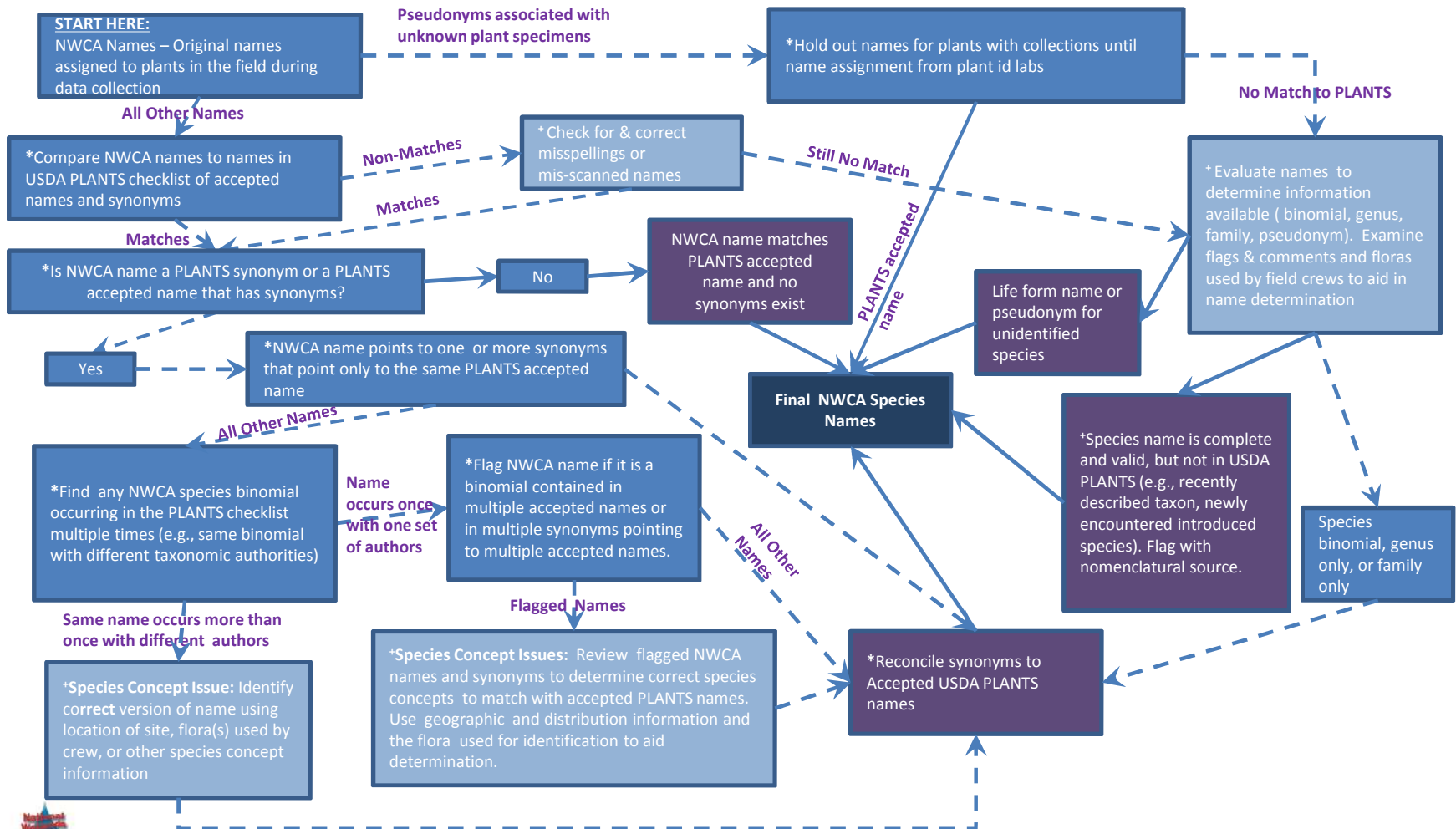


Additional Slides for Reference





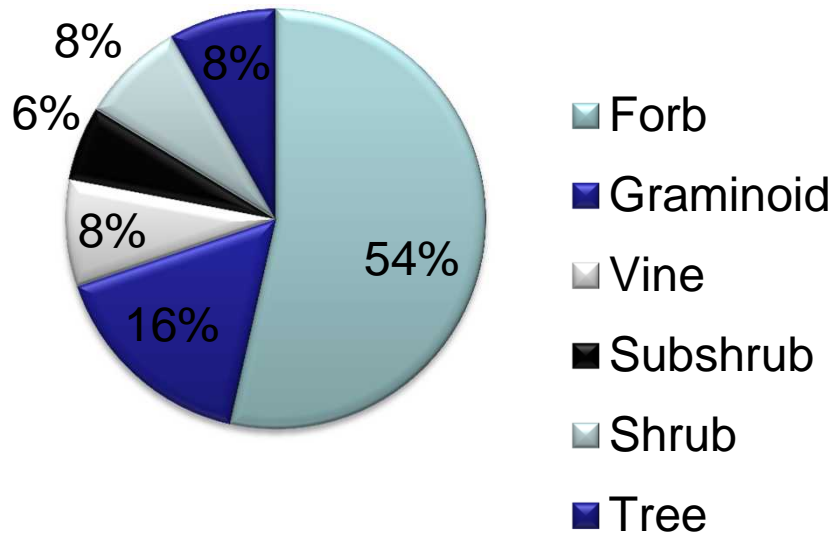
Process for Standardizing Plant Species Names to PLANTS Nomenclature





The 372 species (partial list) that are alien to all Lower 48 States are represented by:

Growth Habit



Families (n = 78)

