

Approved by:
/s/ Tom Landwehr, Commissioner
Minnesota Department of Natural Resources

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Minnesota Department of Natural Resources

Plant Material Standards for Native Plant Community Restoration

Operational Order..... 124

Policy Owner Jason Garms, Ecological and Water Resources Division
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Related Policies..... Operational Order 113 “Invasive Species”

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Next Review Date 2017

Policy Statement

The Department of Natural Resources (DNR) restores and reconstructs native plant communities to replicate ecologically complete resilient native plant communities; re-establish wildlife and aquatic habitat by returning elements of a site’s natural ecological structure and composition; and/or restore ecological components of native forest communities. Minimum standards for native plant materials used on restoration and reconstruction projects are needed to ensure long-term plant fitness as well as safeguard the germplasm found in existing, high quality native plant communities. These standards will help ensure resilient and healthy native plant community restorations under current and future environmental conditions. The Department shall also ensure it is complying with applicable Minnesota Noxious Weed Law (see Minnesota Statutes, sections [18.78](#) and [18.82](#)), Minnesota Seed Law (Minnesota Statutes, sections [21.80 to 21.92](#)), and state law protecting endangered and threatened species (Minnesota Statutes, section [84.0895](#)).

Purpose and Scope

This operational order establishes minimum standards and associated requirements to develop division specific guidelines for collecting and deploying native plant materials used on restoration and reconstruction projects. Standards will help provide for genetic fitness and resilience of restored/reconstructed native plant communities as well as to protect locally adapted germplasm of existing high quality native plant communities.

This operational order applies to all native plant community restoration and reconstruction activities on DNR-administered lands where the primary goal is to replicate ecologically complete and resilient native plant communities; reestablish wildlife and aquatic habitat by returning elements of a site's natural ecological structure and composition; and/or restore key ecological components of native forest communities. This includes a range of DNR projects such as: conversion of an agricultural field to native prairie vegetation, reestablishment of native forest vegetation on an agricultural old field and planting of native vegetation in a reconstructed wetland. It does not include any requirement to reestablish retroactively any native plant community restorations completed before the effective date of this operational order.

This will also ensure that DNR staff members understand Minnesota's noxious weed and seed laws as well as state law protecting endangered and threatened species as they apply to DNR native plant community restoration and reconstruction activities.

This operational order and associated division guidelines provides a framework for DNR land managers implementing native plant community restoration/reconstruction projects. Specific implementation approaches will, by necessity, rely on the exercise of professional judgment informed by the best available science and restoration strategies when making site level project decisions. This is due to the uncertainties inherent in numerous factors that impact the selection and genetics of plant materials best adapted to a site, such as the large number of species used in restoration/reconstruction projects, lack of knowledge of the genetics of most species, the variety of plant pollination/reproductive strategies, past histories of planting efforts throughout the state, and the uncertainty surrounding precise future climatic conditions and which plant materials are best suited to a changing climate.

Exclusions. The following items are not covered by this operational order:

- Plant materials used to restore cultural landscapes associated with National Register of Historic Places properties on DNR-administered lands.
- Forest regeneration projects where the primary goal is not ecological restoration.
- Plantings around areas such as Minnesota DNR offices and visitor centers where plant materials are used primarily for landscaping purposes.
- Temporary plantings of cover crops or agricultural crops for erosion control or as part of site preparation activities prior to restoration.

Performance. This operational order will help to ensure the genetic fitness and resilience of native plant community restoration/reconstruction projects and safeguard the germplasm of high quality native plant communities by:

1. Establishing "Seed Collection and Deployment Zones" to better track and manage the collection and deployment of plant materials, including seeds, seedlings, cuttings, or transplants for all native plant species used in native plant community restorations or reconstructions.
2. Establishing a framework for locating or sourcing plant materials that will ensure restoration and reconstruction projects promote genetic fitness and resilience.
3. Insuring adequate documentation of plant materials collected and deployed for all restoration and reconstruction projects.
4. Avoiding the use of intentionally and artificially selected plant materials that may be poorly adapted to local conditions or may negatively impact local plant populations. Two examples of materials specifically

prohibited from use by this operational order are the named variety, “Lodorm” green needle grass and hybrid poplars.

5. Permitting the use of plant genotypes known or selected for disease resistance as a means to enhance the effective population size of locally adapted native species. For example, encouraging efforts to restore local American elm populations that have been greatly reduced or eliminated by Dutch elm disease through approaches that plant American elms selected for Dutch elm disease tolerance.
6. Ensuring all DNR native plant community restoration and reconstruction operations comply with state laws regarding noxious weeds, seeds, and endangered and threatened species.
7. Requiring development of division-specific guidelines.
8. Establishing a standing operational order oversight committee.

Procedures

The procedures below are based on the best available science and recommendations of natural resource scientists and land managers. As knowledge about local adaptation and fitness grows, this information will be incorporated into future revisions of this operational order.

DIVISION GUIDELINES

DNR’s four land-holding divisions (Ecological and Water Resources, Fish and Wildlife, Forestry, and Parks and Trails) are required to develop and maintain division guidelines to accompany this operational order. The guidelines will contain procedures specific to each division that are necessary to implement this operational order. This includes activities carried out by contractors, volunteers and cooperators working on DNR-administered lands. Division guidelines shall be completed within one year of the date that the operational order becomes effective.

These guidelines will include:

1. Provisions that safeguard high quality native plant communities during plant material collection operations.
2. Provisions to safeguard high quality native plant communities from degradation as a result of DNR restoration/reconstruction activities.
3. Specifications for how divisions will document the provenance, by county and Seed Zone of each species utilized in the project and where it was deployed. In some cases, there may be multiple records for a single species if multiple source locations are used.
4. Alternative procedures for activities that cannot practicably adhere to the standard operational order procedures.
5. Approval by the appropriate division directors following review by an operational order oversight committee.
6. A review every 3 years in concert with review of the operational order or whenever changes in division responsibilities generate new work activities not adequately addressed by the existing guidelines.

In addition, divisional guidelines may be an appropriate place to include the following:

7. Procedures for species selection.
8. Best management procedures for plant material collection.
9. Minimum diversity levels for restoration/reconstruction projects.
10. Procedures for evaluating restoration/reconstruction projects and incorporating adaptive management.

PROCUREMENT OF PLANT MATERIALS FOR DNR RESTORATION/RECONSTRUCTION PROJECTS

Framework for Selecting Plant Material Sources

Plant materials will be obtained following the sequence below. This will protect the genetic fitness and resilience of native plant species while recognizing the practical aspects of plant material availability geographically. The guiding principle is that plant materials that naturally originated as close to the restoration/reconstruction site as possible and under similar site conditions, will be the most adapted to the local area. The Seed Collection and Deployment Zone map referenced below is attached to this operational order for reference.

Procurement Sequence

For each species to be used in the restoration/reconstruction project, follow the sequence below. If the species cannot be obtained within the areas identified in the first step, move to the second, then third, etc. until the species can be obtained or the last step is reached.

1. Collect plant materials from areas with similar site conditions that are within or immediately adjacent to the restoration or reconstruction site or nearby (“nearby” is defined by the division and generally is considered to be within the same zone).
2. Obtain plant materials from areas with similar site conditions and within the same Seed Zone.
3. Obtain plant materials from areas with similar site conditions in an adjacent Seed Zone.
4. Obtain plant materials from areas with similar site conditions in a Seed Zone that adjoins one of the adjacent Seed Zones.
5. Substitute another species with similar attributes when seed/plant material cannot be found.

NOTE: It is important to recognize that boundaries of the Seed Collection and Deployment Zones **are not walls which cannot be crossed**. If a restoration/reconstruction area is near one of these boundaries an appropriate choice for restoration materials may be just across the boundary in an adjacent seed zone. This source of materials may actually be more desirable than a more distant source of plant materials from within the same seed zone. This framework recognizes that seed zones are not static; they may be adjusted over time to reflect new information based on research results from climate change and other analyses.

The Minnesota DNR Seed Collection and Deployment Zones are derived from subsections delineated in Minnesota’s Ecological Classification System (ECS), and then snapped to the nearest county boundary for operational use. The ECS subsections are based on a number of environmental variables, including climate, geology, topography, soils, and hydrology. These same variables are known to be the drivers of plant adaption. The existing Division of Forestry Seed Zones were also used as a basis for delineating seed zones, particularly in the northeast section of the state.

Determining the Origin of Plant Materials for Restoration/Reconstruction Projects

1. DNR land managers will determine and document, to the extent possible, the provenance of plant materials used in restoration/reconstruction projects on DNR lands to help insure the genetic fitness and resilience of the species used in the restoration as well as provides information needed by staff in the future.
2. At a minimum, DNR staff will document the provenance, by county and Seed Zone of each species utilized in a project and where it was deployed. In some cases, there may be multiple records for a single species if more than one source location was used.

DNR-Led Collections

1. DNR staff shall check with the landowner/administrator to determine if there are any existing records or local knowledge related to the provenance of the plant material on the collection site. This process will be further detailed in division guidelines (see #3 under Division Guidelines above). Caution and professional judgment are critical in selecting materials where no records or knowledge exist regarding the provenance of the species in order to ensure local adaptability and prevent contamination of the germplasm of high quality native plant communities.
2. Collecting procedures shall comply with Minnesota Noxious Weed laws, Operational Order 113 (Invasive Species) and applicable division guidelines to prevent the introduction and spread of invasive species.
3. If the seed is collected from DNR-administered lands and deployed on non-DNR administered lands, labeling will be required according to Minnesota Seed Law (see Minnesota Statutes, section [21.82](#)). For example, seed collected from a Wildlife Management Area and planted on private lands will need a seed label to comply with Minnesota law protecting endangered and threatened species (Minnesota Statutes, section [84.0895](#)) prohibits taking, purchasing, importing, possessing, transporting, or selling endangered or threatened plants or animals, including their parts or seeds, without a permit. Check the Department's GIS database of rare natural features or contact the DNR Endangered Species Coordinator before making plant material collections that could involve or impact threatened or endangered species.
4. DNR staff, or entities under DNR direction, will insure that collecting methods do not degrade the quality of restored or remnant native plant communities from which they collect seed/plant materials.

Purchasing Seed/Plant Materials

DNR staff will ensure that all seed/plant materials purchased for DNR restoration/reconstruction projects will be of known provenance and meet the criteria for deployment referenced above.

Optimizing Ecological Fitness and Adaptability

DNR land managers will collect plant materials for restorations in ways that optimize fitness traits, such as the ability to grow, reproduce, and persist under a variety of local conditions. Use of these locally adapted materials will help safeguard native plant communities from contamination with ill-adapted genotypes and conserve the adaptive genetic variations needed for survival in current and future environments.

Deployment of Seed/Plant Materials for Restoration/Reconstruction Projects on DNR Lands

1. Safeguarding of existing high quality native plant communities from degradation should always be the highest priority. When restoring or reconstructing a native plant community adjacent to an existing, isolated high quality native plant community, only plant materials with provenance from within the

project site or from nearby areas with similar site conditions can be used. For this purpose, high quality native plant communities are defined as Biological Survey mapped native plant communities with a condition rank of C or higher.

2. The provenance of the species deployed on the site will be recorded, at least to the county level as described above under “Determining the Origin of Plant Materials for Restoration/Reconstruction Projects.”
3. It is illegal to grow or transport prohibited noxious weeds (see Minnesota Statutes, sections [18.75 to 18.91](#)). In addition, Operational Order 113 requires that DNR staff implement site-level management to limit the introduction and spread of invasive species. Deployment procedures shall comply with the Minnesota Noxious Weed Law, Operational Order 113, and associated division guidelines.

Roles and Responsibilities

Division Directors are responsible for approving division-specific guidelines related to this operational order. Division Directors are also responsible for appointing representatives to the Oversight Committee.

Division Managers and Supervisors ensure that all personnel under their supervision understand and implement native plant community restoration activities consistent with this operational order and division guidelines. These individuals are also responsible for insuring that field staff have the resources necessary to implement this operational order.

Project Managers are responsible for understanding and adhering to the operational order and discipline guidelines as it pertains to specific work activities.

Operational Order 124 Oversight Committee will consist of representatives from each of the DNR’s four land-holding divisions (Ecological and Water Resources, Fish and Wildlife, Forestry, Parks and Trails). The committee will be responsible for:

- Reviewing and recommending changes to division guidelines.
- Reviewing and recommending changes to the operational order every four years.
- Coordinating efforts to assist in the implementation of the operational order.

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Definitions

Adaptive Management. A dynamic approach to grassland, wetland, and forest management in which the effects of treatments and decisions are continually monitored and used, along with research results, to adjust management on a continuing basis to ensure that objectives are achieved.

Deployment. The assignment of a seed source to a project for the purpose of planting materials to re-establish a native plant community.

Germplasm. The hereditary material that is transmitted from one generation of plants to the next.

High quality native plant community. Any Minnesota Biological Survey mapped native plant community with a condition rank of C or higher.

Native Plant Community Restoration or Reconstruction. Re-establishment of a native plant community, such as a prairie, wetland or forest, using seeds, seedlings, cuttings, or transplants on a site. Reconstructions are typically defined as sites with little/no actively growing remnant vegetation. Restorations augment degraded remnant by replacing missing species and/or species abundance. The aim of restoration or reconstruction projects is to replicate ecologically complete historic native plant communities; re-establish wildlife and aquatic habitat by returning elements of a site's natural ecological structure and composition; and/or restore ecological components of native forest communities.

Plant fitness. An individual's contribution of young to later generations, measured by longevity and reproductive success.

Provenance. The geographic sources where the seeds/plant material naturally originated.

Resilient Native Plant Communities. Those communities which have the ability to absorb or adapt to the effects of climate change or other external forces and continue to function, although possibly in different ways or with a different suite of species than in a prior state. The resilience of a native plant community often depends on the degree of genetic variation that resides within the species which comprise that community.

Seed Transfer Zone. The geographic range in which a given plant population will likely thrive, based on variables such as soils, topography, geology, precipitation, and temperature range.

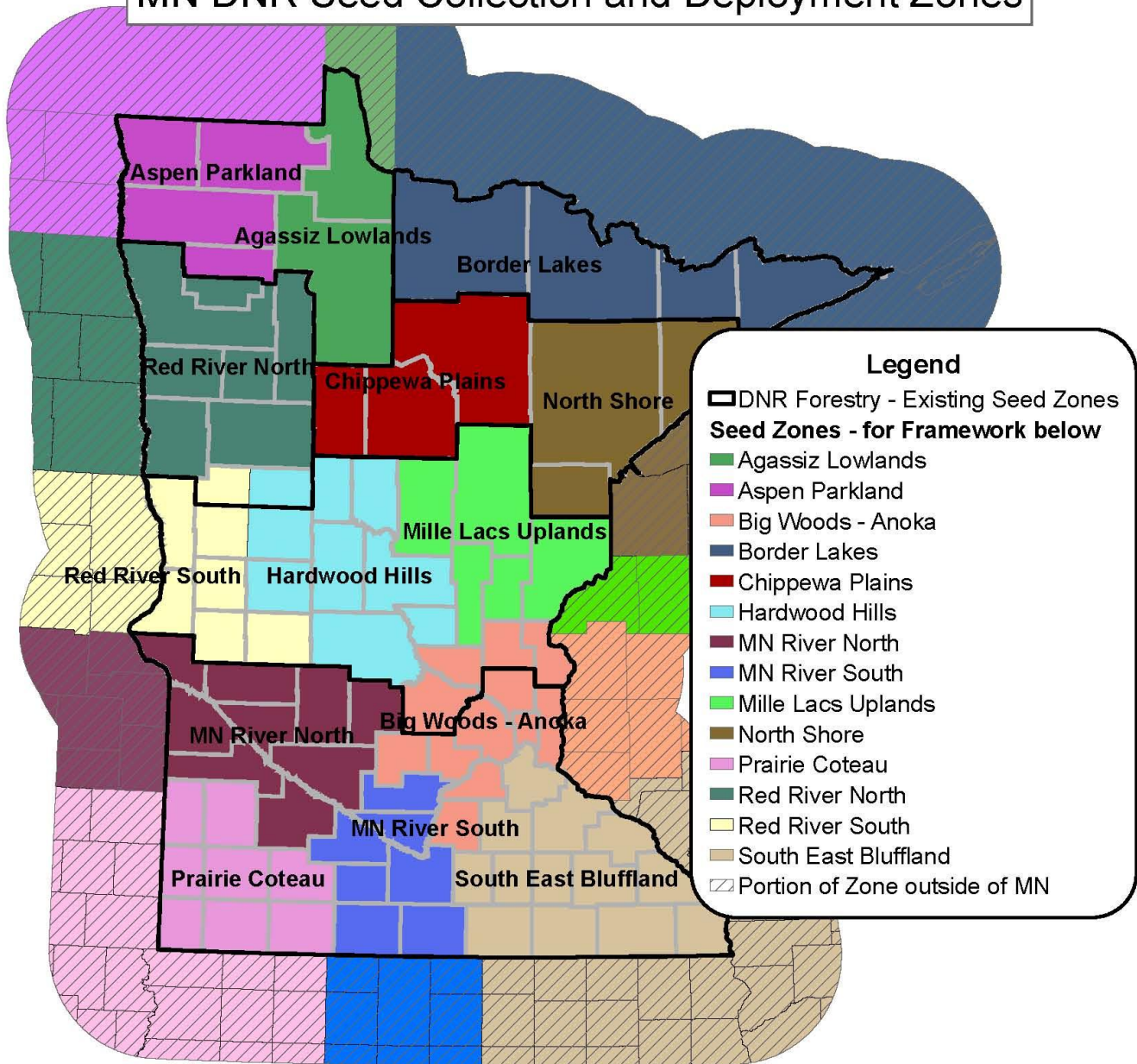
History

Supersedes: not applicable

Maintenance:
MM/DD/YYYY ..

Amended:
MM/DD/YYYY ..

MN DNR Seed Collection and Deployment Zones



Framework for Selecting Plant Material Sources

1. Collect plant materials from areas with similar site conditions that are within or immediately adjacent to the restoration or reconstruction site or nearby (Nearby is defined by the division and generally is considered to be within the same zone).
2. Obtain plant materials from areas with similar site conditions and within the same Seed Zone.
3. Obtain plant materials from areas with similar site conditions in an adjacent Seed Zone.
4. Obtain plant materials from areas with similar site conditions in a Seed Zone that adjoins one of the adjacent Seed Zones.
5. If seed/plant material can't be found, substitute another species with similar attributes.

Note: It is important to recognize that boundaries of the Seed Collection and Deployment Zones are not walls which cannot be crossed. If a restoration/reconstruction area is near one of these boundaries an appropriate choice for restoration materials may be just across the boundary in an adjacent seed zone. This source of materials may actually be more desirable than a more distant source of plant materials from within the same seed zone. This framework recognizes that seed zones are not static; they may be adjusted over time to reflect new information based on research results from climate change and other analyses.