

## Forest Preserve District of Cook County

### North Branch Restoration Project SEED PLAN

#### Why collect seed

Most of our natural areas have become degraded by past grazing, fire suppression, fragmentation, alterations in hydrology, and unnatural competition from aggressive species. The populations of many plant species have been drastically reduced in size or lost altogether in many preserve areas. The goal of management is to restore the natural community to a healthy state, one where (assuming the restoration of natural processes, such as periodic fire and movement of seed and pollen) the community becomes self-renewing and self-sustaining, allowing for natural successional processes and evolution to occur. A critical piece of achieving that goal is to restore the natural diversity by restoring the diversity of gene pools and re-introducing those species that research indicates would likely have been present. In the absence of complete historical records, which rarely exist, we use the best information available to help restore the appropriate community floral composition. Good guidance comes from studies of nearby similar communities, authoritative references such as Plants of the Chicago Region by Swink & Wilhelm (1994), herbarium specimens, Public Land Survey notes, historic records such as H.S. Pepon's Flora of the Chicago Region (1927) and similar resources.

We seek especially to restore the more conservative species, those that are most sensitive to recent unnatural disturbance and the first to drop out in response. We are not unduly concerned about the potential of a species, especially a conservative one, to become a problem in the restoration of damaged communities, such as those on the North Branch. We have seen no indication that conservative plant species have become conservation problems. By restoring diversity, we hope to foster more healthy and sustainable communities and provide more niches to support the faunal component and perhaps attract species that have been lost to the community as a consequence of habitat degradation.

#### How the plan was assembled and updated

From the earliest days, the North Branch seed plan was carefully designed in a collaborative way, with the expertise coming from the best sources available, including the staff of the Forest Preserve District (FPD). We were very fortunate in that some of the foremost academic and practitioner experts in the region were willing to advise as this plan was assembled. Our initial seed plan was developed with input and review by Roland Eisenbeis (FPD Superintendent of Conservation), Dr. Robert Betz (Northeastern Illinois University), Raymond Schulenberg (Morton Arboretum), Chuck Westcott (FPD Crabtree Nature Center), and Dr. William Beecher (Chicago Academy of Sciences). The early literature consulted included the Prairie Restoration Handbook by Philip Rock and the ongoing studies from which the discipline of restoration was evolving. North Branch policies were summarized in annual reports to the District.

Over the years, as additional questions arose and as more people took an interest in the work, our seed plan was regularly reviewed and modified by the NBRP Ecological Management Workgroup with input from additional contributors including Dr. Daniel Wivagg (Loyola), Jerry Paulson (Illinois Nature Preserves Commission), Dr. James Reinartz (University of Wisconsin),

Dr. Gerould Wilhelm (Morton Arboretum), Paul Strand (FPD Sand Ridge Nature Center), John Schwegman (Illinois Department of Natural Resources), Ralph Thornton (FPD Land Manager), Richard Clinebell (St. Louis University), Chet Ryndak (FPD Superintendent of Conservation), Ed Collins (McHenry County Conservation District), Tom Vanderpoel (Citizens for Conservation), Doug Ladd (The Nature Conservancy), Dr. Dennis Nyberg (University of Illinois), and others. This seed plan was also modified based on input from burgeoning environmental restoration literature: Restoration and Management Notes (later the journal Ecological Restoration), the Natural Areas Journal, Conservation Biology, Restoration Ecology and the Tallgrass Restoration Handbook (Edited by Packard and Mutel).

Not all of these experts agreed with each other on all aspects of the program. But all thought the general approach of the North Branch to be a good one: from procedural, scientific and practical perspectives.

In August 1992, the North Branch Restoration Project published a “seed ethics” document, summarized below; the editor of that document was Karen Holland (Rodriguez), and it was published in the North Branch journal of that time, *Prairie Projections*.

### Background

Because most individual North Branch restoration areas were so small and of only fair or good quality, experts feared unnatural “founder effect” and depauperate gene pool problems if restoration were limited to seeds from within each small area. Thus, the plan that was approved called for gathering seeds from spontaneous populations at a wide variety of nearby remnants. When the plants resulting from these seeds began to interact with each other and with those plants of the same species (if any) that remained in a given area, the expectation was that the most local alleles would likely prosper over time, but perhaps be more or less frequent than historically because of changed conditions (now wetter, more heavily browsed, higher nitrogen levels, global climate change, etc.). It was also thought that the populations would likely benefit from alleles needed for disease resistance, environmental extremes, etc. that had not survived in the small remnant populations.

Especially in the early years when it was possible to do so, seed gathering concentrated as much as possible on remnants that were in danger of destruction. In fact, most of the seeds came from remnants that have since been destroyed. These include the Chevy Chase Prairie on the Lake Cook line in Wheeling (widely regarded as the highest quality prairie in Illinois before it was bulldozed to make a business park), the Des Plaines railroad triangle (now a Wieboldts Warehouse), and a large number of similar areas, including many unmanaged forest preserve areas where the diverse native vegetation is now also gone. Thus today, both the original and the restored species of the North Branch restoration areas have added conservation value because they contain the genetic information from a wide variety of local populations, many of which are now otherwise extinct.

## Collection of seeds

**Learn about the sites from which seed is to be gathered and which will receive the seed, the plants seed is to be collected from, and the people who will be collecting.**

- ◆ Determine the best methods to avoid or reduce the impact of people trampling to collect.
- ◆ Obtain appropriate permits to collect on public lands and permission to collect private property.
- ◆ Train seed collectors in techniques that maximize the survival of the donor plant and the retention of the collected seeds, while minimizing the collection of unripened seeds.
- ◆ Utilize pre-settlement and post-settlement historical records to determine the habitat classification of the site which will receive the seed.
- ◆ Collect from and deposit seed on sites which are geologically similar and/or biologically connected.

**Tend the collection by gathering ripened seed from known plants, leaving seed for regeneration and for animals, and ensuring donor plants remain intact.**

- ◆ Monitor plant populations for seed ripeness often – in order to collect at the appropriate time.
- ◆ Pick seed only from plants that have been positively identified. (In the case of difficult sedges, label bags of unidentified species with associates or habitat types (e.g. mesic woods or wet prairie).
- ◆ Collect seed from endangered or threatened species only with proper authorization.
- ◆ Delay harvesting of species in which segregating ripened and unripened seed is difficult or impossible until most seeds have ripened.
- ◆ Harvest no more than 50% of seed on a site from perennials and 25% from annuals and biennials.
- ◆ Remove and transfer plants from a site that is being destroyed to a protected site under the supervision of a qualified plant ecologist.
- ◆ Document what kind of seed is collected, where it is collected from, and how much is collected in order to add to the records of site dynamics.

**Share the harvest as soon as possible with those who will sow thoroughly processed seed as mixtures on prepared ground.**

- ◆ Process seed in a timely manner using proven techniques. Prepare seed mixtures according to community type.
- ◆ Clear only enough ground at degraded sites to accept the quantity of seed available.
- ◆ Prepare sites with an established plant structure (by burning, scything, etc.) to make them more receptive to rare seed from more conservative species, in order to establish more natural diversity.

**Protect the seed that is not sown by storing in a manner that effects continued viability.**

- ◆ Find storage space for seed which is not immediately planted.
- ◆ Store seed as required by individual species and seed mixes. (Never store seed in a hot car, even for a short time. Never allow seed to mold or dry excessively.)

**Nurture the plantings by managing the site.**

- ◆ Always control brush seedlings and re-sprouts before seeding. This work may take a full year in difficult areas.
- ◆ Manage the seeded area using accepted ecological restoration practices.
- ◆ Monitor the site for the emergence of plants expected from the seed mixture and for threats from undesired, invasive species.

For the ecological reasons stated previously, during the 1970s and 80s, the North Branch volunteers, as a matter of policy, collected from many varied areas. These included sites in danger of being destroyed, trail edges, and railroad rights-of-way.

We looked for spontaneous populations on soils like those in the restoration areas (for example, not sand). Since we knew of populations of most prairie species within 15 miles, we decided to limit our search to that distance from the North Branch preserves. When we began to look for oak savanna and open woodland seeds, we found we needed to go farther afield to find the species that once lived along the North Branch. In the case of these species, we set our collecting limit at 25 miles. If species documented from the North Branch area were unavailable at even that distance, in the case of a small number of species we obtained them from the closest spontaneous source (see “Major Seed Sources – North Branch Restoration Project).

In more recent years, most threatened sites have been destroyed, and more diverse seed is available from restored North Branch areas, so most seed now comes from restored and spontaneous populations of North Branch sites.

It is the policy of the North Branch to collect and sow as many species of the original native plants of the North Branch region as possible, with the exception of some seemingly aggressive species such as *Mertensia virginiana*, *Rubus* spp, *Eupatorium rugosum*, etc. Experience has also led us to reduce collected quantities of *Andropogon gerardi*, *Sorghastrum nutans* and other somewhat aggressive species. Nor do we collect large quantities of those species that are doing quite well on their own at most areas, such as *Aster sagittifolius drumondii*, *Aster lateriflorus* and others. Before collecting seed at a managed area, advice is sought from the stewards.

The North Branch also realized early on that there were some species with too small populations or too difficult to collect in the wild to gather significant quantities of seed. So a wild seed garden program was begun. Wild seeds of challenging species were taken to the Chicago Botanic Garden to be germinated. Some of these plants were restored directly to the wild. Most plants from these seeds were given to volunteer gardeners who committed to care for the plants, enjoy and learn about them, and then collect the seed and return it to be used in NBRP restoration work. The community of “wild seed gardeners” has grown into a group of over 100 gardeners who in aggregate grow about 100 species, collecting and returning large quantities of seed that simply couldn't have been collected in the wild.

### Distribution

The North Branch prairies, savannas and woodlands comprise one long, linear site, and have been treated as such for three decades by the NBRP under the guidance of the Forest Preserve District of Cook County. The macro-site is fragmented by suburban development into micro-sites such as Bunker Hill, Harms Woods, Watersmeet, etc.

The mixes produced from the annual harvest are distributed to NBRP site stewards based on the amount of work that has been done in the respective communities on those areas, and thus varies from year to year.

From the beginning, the North Branch has had a policy and practice of not introducing seed to high or very high quality sites. It seemed to be a prudent and conservative course to manage such areas only by fire and the removal of invasives. For this reason we do not introduce our seed mixes into the very high quality areas of Somme Prairie, Morton Grove Prairie, Glenbrook North Prairie, Edgebrook Flatwoods, and south Harms Woods. In the case of a few very conservative species that only prosper in mature communities, those species have been seeded into high quality areas as approved.

For a time, we also reserved some experimental areas free from seed introduction to test for seed bank release. In wet-mesic, mesic and dry-mesic areas, we have found the seed bank to contribute little; without seeding such areas tend to return to brush or, in some cases, are colonized by whatever weedy species are nearby. The few species that have apparently emerged from the “seed bank” include *Geranium bicknellii*, *Geranium carolinianum*, and *Chenopodium hybridum*.

Bare soil areas pose special problems and may be the most critical to seed. Opening an area that has little to no herbaceous ground cover is an open invitation to erosion and weed incursion.

### Somme Prairie Nature Preserve

Even before its dedication as an Illinois Nature Preserve, no seed was introduced to Somme Prairie. Since its dedication, it has been managed according to specialized principles approved by the District and the Illinois Nature Preserves Commission in the site management plan. According to that plan, no seeding is ordinarily done in the very high quality (“Grade A”)

portion of the preserve. (Exceptions were made for seeding of three endangered species, which do best in high quality areas.)

In recent years, the Illinois Nature Preserves Commission has updated its policy on restoration seeding to encourage restoration of degraded areas in nature preserves with seed from similar nearby areas. Under the new policy, approval was granted to use the appropriate standard North Branch mixes in Somme Prairie Nature Preserve.

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