



©Scheltema

Restoring complex vegetation communities

Presenter:
Paul Gibson Roy
(the wildflower guy in the picture)

Native Grassy Communities

- At the time of European settlement native grasslands and grassy woodland were widespread from southern Queensland to Victoria on a footprint now termed 'the sheep-wheat belt'
- Because of their openness and arable soils they were prime targets for cropping or modified as exotic pastures
- They now exist as less than 5% of their original extent occurring in locations not utilised for agriculture or retained as travelling-stock reserves



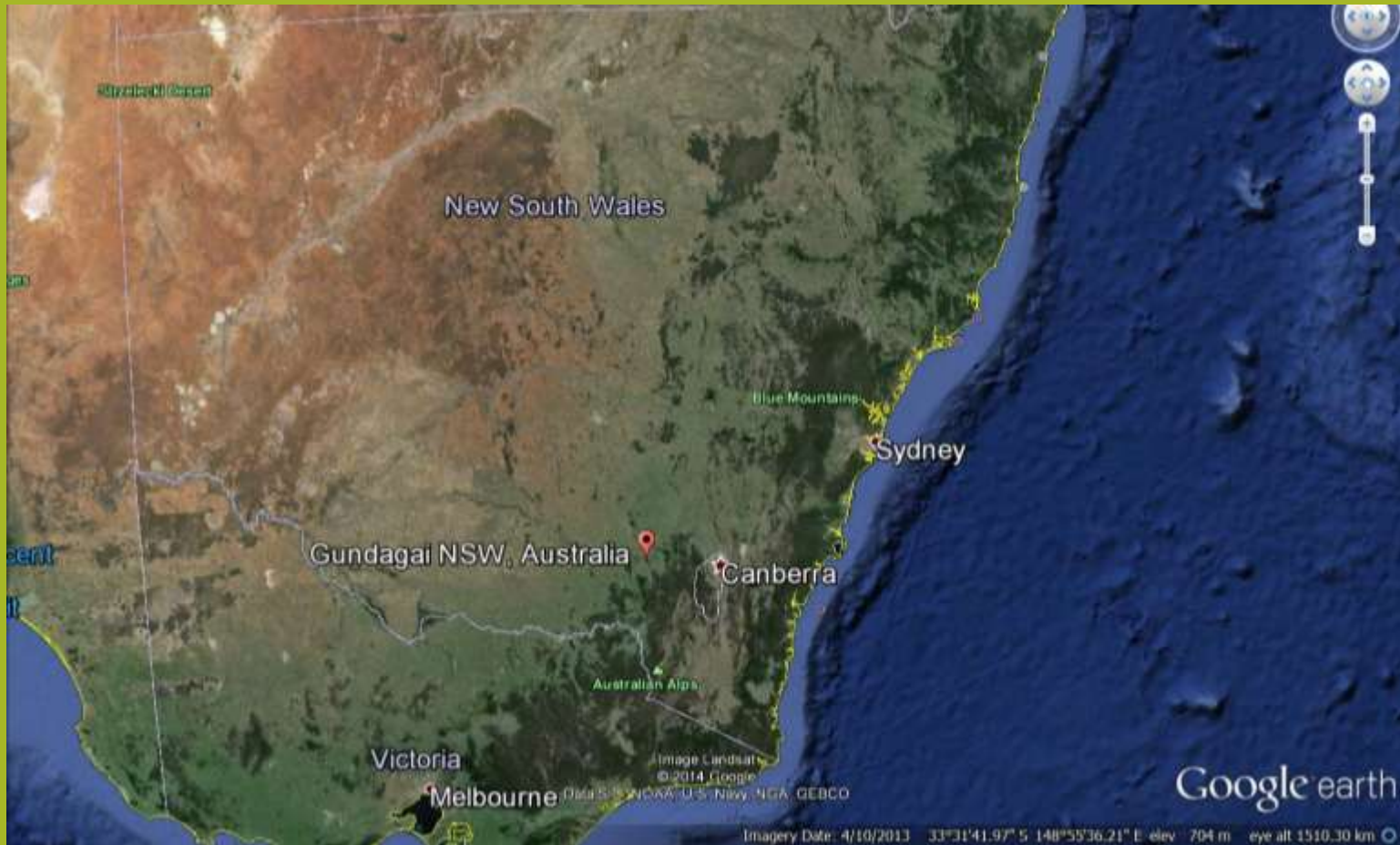


ALTERED AGRICULTURAL LANDSCAPES

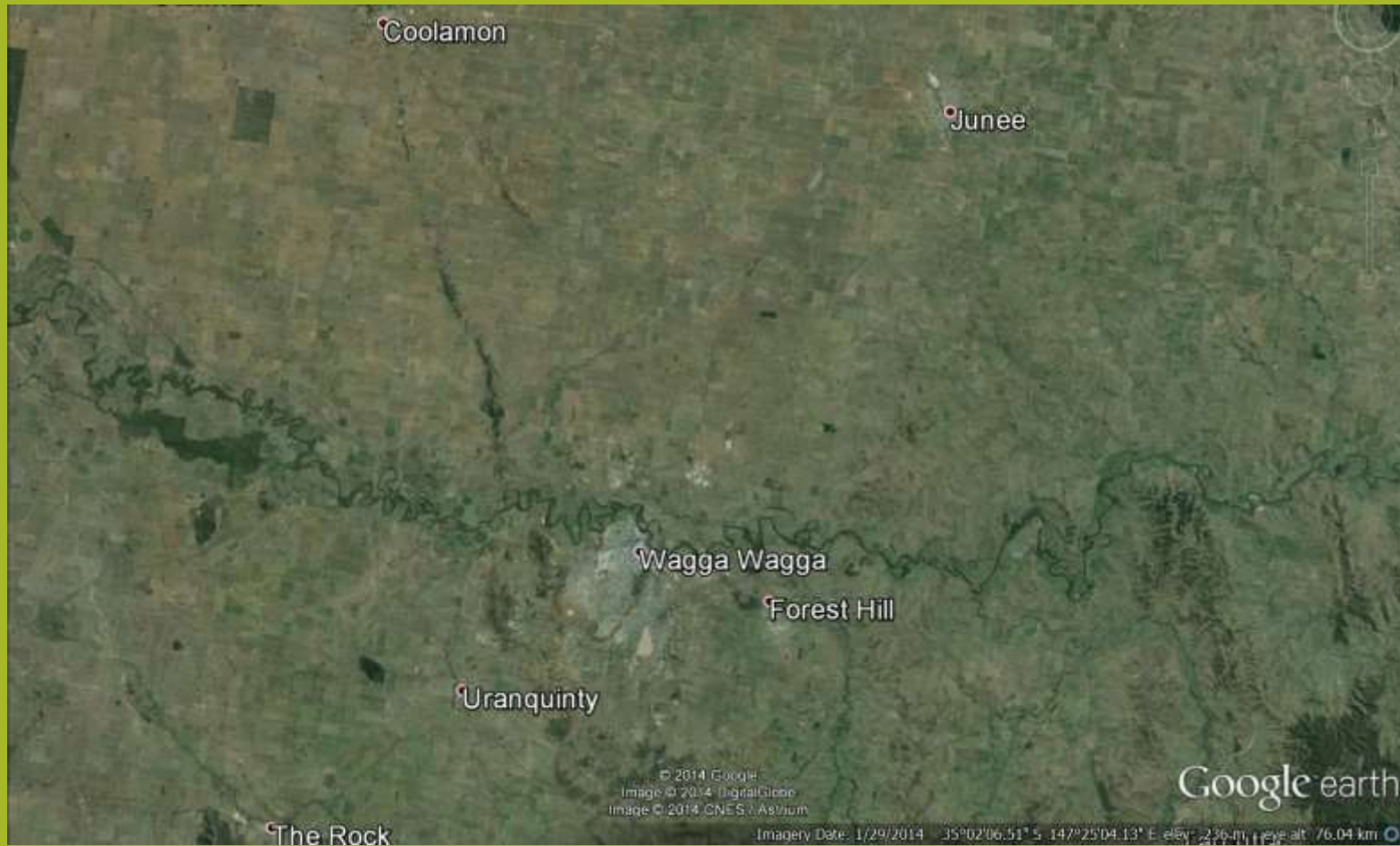


Less than 5%....
How much 'native nature' is there
in our rural landscapes?

- Cropping and grazing at a continental-scale
- Systems that require high energy inputs to maintain productivity and desired states
- Skewed toward low complexity
- Low tolerance for biodiversity (native or exotic)



ALTERED AGRICULTURAL LANDSCAPES



ALTERED AGRICULTURAL LANDSCAPES



ALTERED AGRICULTURAL LANDSCAPES



Altered Agricultural Landscapes



Altered Agricultural Landscapes



**SO WHAT DOES A HIGH QUALITY
NATIVE GRASSLAND OR GRASSY
WOODLAND LOOK LIKE?**



ROKEWOOD VICTORIA



ARMADALE NORTHERN NSW



**CHATSWORTH
SOUTH
WESTERN VIC**



STAWELL VIC



ARARAT VIC



**WOORNDOO
SOUTH
WESTERN
VIC**

RESTORING NATIVE GRASSY COMMUNITIES



Restoration in Australia

Historically, restoration most often utilized the approaches of :

- tube stock planting
- drill seeding
- hydro seeding
- assisted regeneration

In most instances the main focus is on the tree and shrub layers



TREES AND SHRUBS



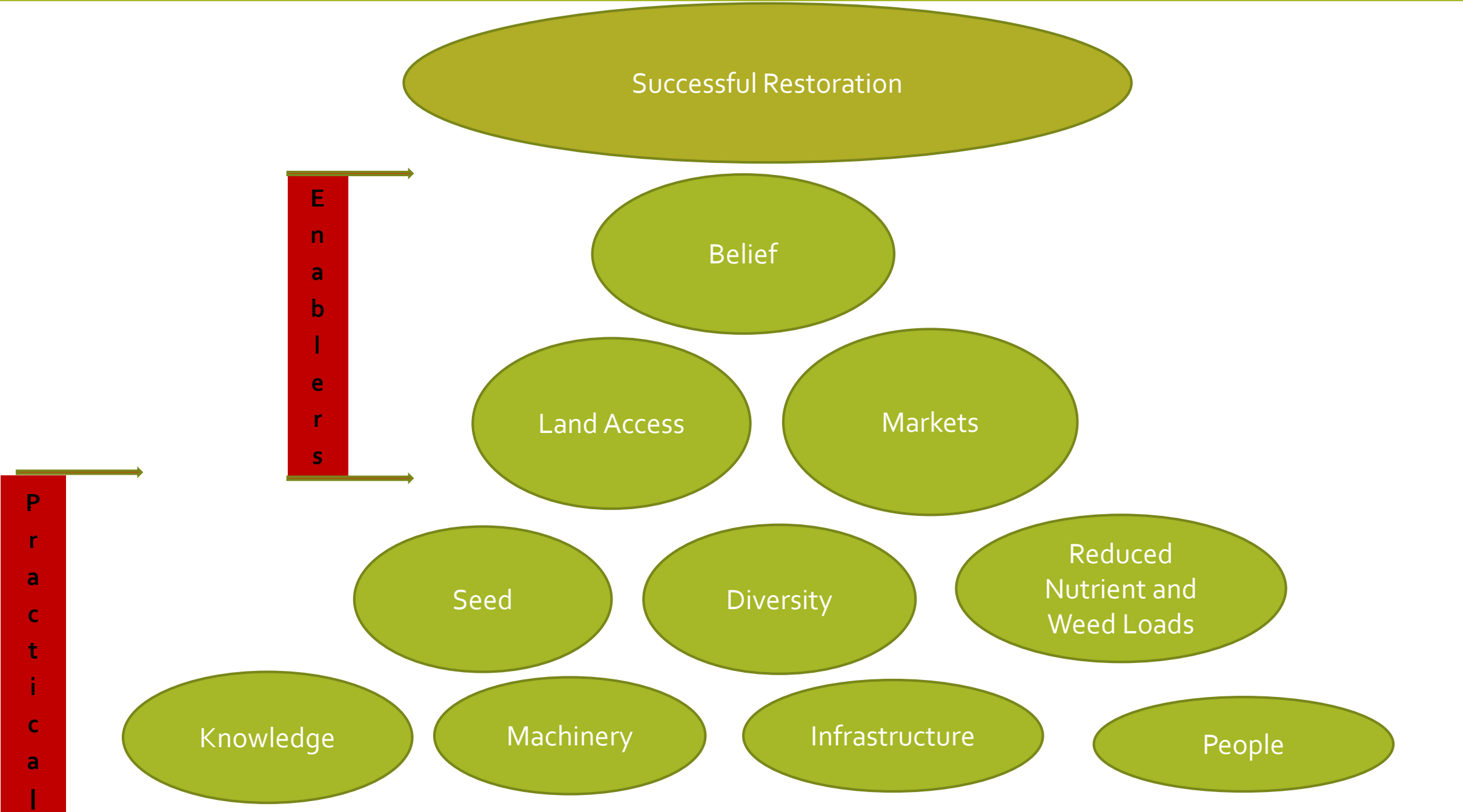
TREES AND SHRUBS



**MORE
TREES
AND
SHRUBS!**



**BUT CAN
COMPLEX
GROUND-
LAYER
COMMUNITIES
BE RESTORED?**





KNOWLEDGE



MACHINERY AND INFRASTRUCTURE





PEOPLE





SEED!!!!

Access to seed of acceptable quality and quantity from a broad range of species is crucial for restoration success

Implications of High Seed Requirements on Remnant Vegetation

Increased demand for wild native seed could :

- Damage existing stands of native vegetation

- Reduce the capacity of native vegetation to regenerate

- Inadvertently introduce weeds

- Reduce food sources for native fauna

GROWING NATIVE SEED



**SEED PRODUCTION MAY
OFFER A SOLUTION**



Greening Australia Richmond Seed HUB

Grass & Forb SPA: Zone 1

Legend

- Bell Av Near Valder Av
- Feature 1

Grass and Forb Plots

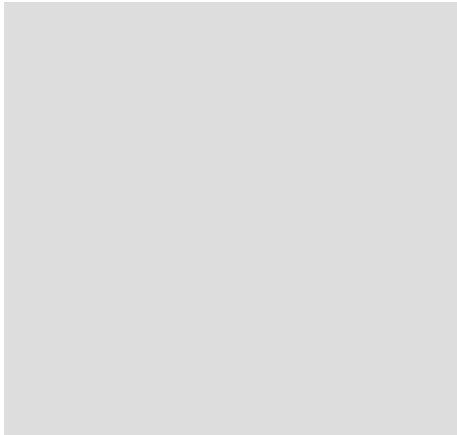
SEED PRODUCTION

Google earth

© 2016 Google

100 m





IN-GROUND KANGAROO GRASS CELLS





HARVEST

EXPERIMENT TO PRACTICE

**THE GRASSY GROUND COVER
RESTORATION PROJECT**

RESTORATIONS ON SCALPS

TIME LAPSE



WICKLIFFE
SITE 1: 2006



WICKLIFFE SITE 1: 2006



2008



2017



WICKLIFFE 2017



THREATENED SEEDDED SPECIES



COLONISING SPECIES



WICKLIFFE SITE 2
2006



WICKLIFFE SITE 2: 2006



WICKLIFFE 2008



WICKLIFFE 2017



GEELONG 2006



GEE LONG 2009



GEE LONG 2017



NARELLAN 2015



NARELLAN 2016



NARELLAN 2017



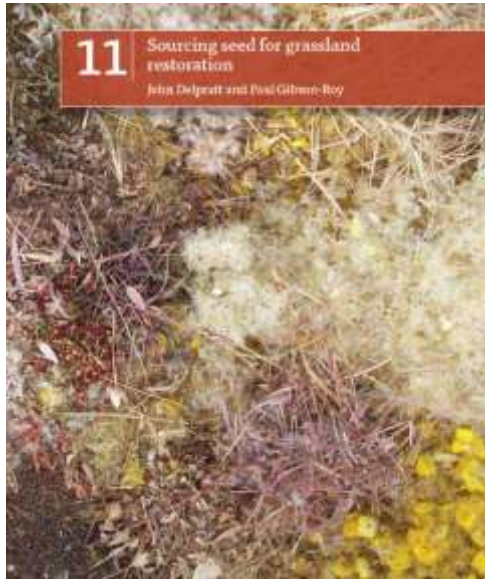
**AND BY INCREASING
UNDERSTORY
COMPLEXITY AND
RESTORING HABITAT,
WATCH THE
BIODIVERSITY
'BLOOM' IN
UNEXPECTED (OR
MAYBE NOT SO
UNEXPECTED) WAYS!!!**



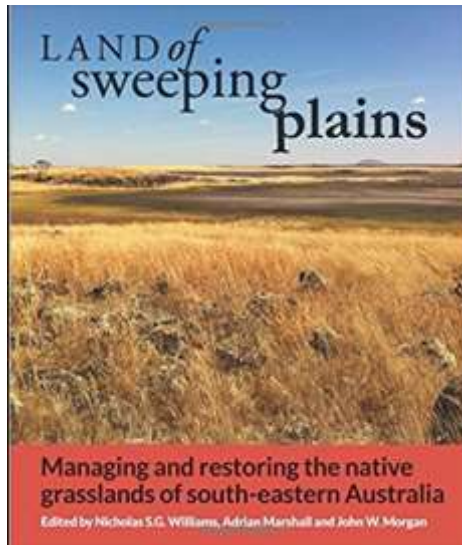
WHY DO WE NEED TO RESTORE GRASSLANDS?



**BAD THINGS KEEP HAPPENING TO REMNANT
GRASSLANDS (OCT 2017)**



For Detailed Information
on Grasslands and
Restoration



LOOKING ELSEWHERE FOR INSPIRATION



HOW OTHERS ARE APPROACHING RESTORATION

Demand from large US markets for native plants and seed have driven huge growth in the restoration and seed production sectors

- Government Incentive Programs
 - Conservation Reserve Program, Wetland Reserve Program, Grassland Reserve Program, Monarch Butterfly Program
- Road Authorities
- Offset mitigation
- Urban and landscape beautification

A lack of similar markets has constrained the Australian restoration and seed production sectors

The bulk of seed demand in the is met by commercial seed growers



Roundstone Native Seed has been growing and supplying high quality regionally adapted Native Seeds to the Eastern half of the US for over 20 years. We are farmers and conservationists and have grown from a small family-owned business to one of the largest seed providers in the East. Our success can be attributed to our commitment to clean high quality seed, development of Genotypes adapted to each region we serve, and an experienced and knowledgeable staff dedicated to friendly helpful service. We focus on quality and service because every success we bring our Customers is a living demonstration and an incentive for others to use natives.

O'BRIEN'S PRAIRIE SEED FARMS
SEEDS • PLANTS • NURSERY

Questions? Talk to a Prairie Seed Farms Seed Consultant
Monday - Friday 8:00 AM - 5:00 PM CST
CALL TOLL FREE 800-LUCAS 80 / (800-583-2788)

Hamilton Native Outpost
NATIVE GRASS AND WILDFLOWER SEEDS

ABOUT US | NATIVE PLANTS | NATIVES FOR... | HOW TO ORDER | OUR SEEDS & SOILS

LEARN MORE ABOUT USING NATIVE PLANTS FOR:
LANDSCAPE | WILDS | YARDS | RESTORATION

Plant Restoration from Photo Gallery

The Big Beaver Blog
Creating a Great Native Plant Garden
Landscape: The Seed, The Soil, and The Sky
New 2015 Native Plant Seed Catalog

Visit, Learn, Enjoy the Beauty
USING & ESTABLISHING NATIVES WORKSHOP
Learn about native plants and how to grow them.

DIVERSITY & WARM SEASON GRASS PASTURE WALK
See diverse native grasses and warm season grasses being used for grazing.

Taylor Creek Restoration Nurseries
NATIVE PLANTS & SEEDS

ABOUT US (Taylor Creek Restoration Nurseries)

100% from the acres of seed collection, growing, harvesting and preparing seed plants, shrubs and trees, Taylor Creek Restoration Nurseries (TCRN) produces the highest quality native, food-grade seed, plants and trees grown. Our seed is locally collected within a 150-mile radius of each of our nurseries. We track seed origins diligently and carry those from the best genetic stock of our seed. Quality grown in beds started from seeds collected entirely on native substrates, the soil is never used, combined to preserve and protect diversity. In contact with nurseries, but our policy is to collect only a small portion of the seed present. Additionally, we provide ecological management housing treatment options to our clients to ensure all concerns remain healthy and viable. We also specialize in local production, so please call us with specific origin needs.

Please contact our Client Services Representative for more information or species availability.
Phone: (866) 897-8445 • Fax: (508) 897-8488 • orders@taylorcreek.com • www.taylorcreek.com

CRNS SEEDS

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ABOUT | PRODUCTS | RESOURCES | MEDIA | CONTACT

We're All Wet (lands)

Wetlands are a vital part of the natural landscape and provide many benefits for people. They offer a habitat for many species and provide important ecosystem services. Wetlands also provide a natural barrier against flooding and help to improve water quality.

Restoring the native landscape for over 50 years

Local Conservation Seeds (LCS) provides seed banks over 1000 species of native and introduced seeds and live plant material for restoration, landscaping, revegetation and conservation.

The environmental ethics and commitment to the field are important to our organization and are the foundation of our work. American energy and our values are the best choice for use in restoration projects.

We have been in business since 1960 and we are a pioneer in the field. We have been in business since 1960 and we are a pioneer in the field. We have been in business since 1960 and we are a pioneer in the field.

September 28, 2015
Tennessee Chapter of American Society of Landscape Architects Conference
Nashville, TN

September 26, 2015
Tennessee Chapter of American Society of Landscape Architects Conference
Nashville, TN

Seed Bank Search

Allendan Seed Company

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About Us

It is hard to believe that our first seed business was the Midwest was a result of unique and diverse genetic plants. The rich combination of native and introduced species, which include, various corns, even vegetable production in south of Indiana and through, have formed the "seed bank" for which thousands of acres of seed banks in the heartland have. Our seed bank is the result of our passion for the Midwest, and the 1/2 of the Midwest's native genetic diversity. Because of the diverse benefits, native grasses and wildflowers present, a commitment is underway to reproduce these principles.

ABOUT US

Shelving Star Native Seeds, based in Spring Grove, Wisconsin, was established in 1988 in response to the increasing demand for local sources, native grass seed. Using the knowledge, expertise, hard, and gentle seed that a professional farming background. Shelving Star quickly became a major supplier of seed-bank for corporate, municipal, and private landowners across the state of Wisconsin.

Founded for seed for native production fields was originally collected within a 150-mile radius of the intersection of the border of Wisconsin, Wisconsin, and Iowa. Our production and sales increased, additional seed sources from Minnesota, Wisconsin, Iowa, Illinois, Michigan, and Indiana were added. There are currently over 1000 acres of native grasses, wildflowers, sedges, and rushes in production, with more being added every year.

Shelving Star Native Seeds system to use native seed-collecting goal, which is defined by both the Minnesota and Iowa crop improvement programs. The plant seed of the seed-collecting program, combined with Shelving Star's seed production program, provides our customers with high-quality seed at competitive prices.

Feyh Farm Seed Company
Processors and Producers of Native Grasses & Wildflowers

Home | About Us | Register | Contact Us

Grown for Your Farm or Ours

Feyh Farm Seed Company is a family farm in Kansas producing native grasses, cool season grasses, sedges and wildflowers. We have been in the native grass seed business for nearly 40 years. Only native grasses are offered for products to the end user. We are the largest smooth brome processor operating in North America, offering over 30 percent of all smooth brome seed produced.

No Job Too Small or Too Large

Feyh Farm Seed Company produces and processes all major native grasses used in commercial mixes in Kansas. We also carry a full line of native and other grasses that a customer may require to complete a mixture mix. Whether you need native grass seed for CRP, EOP or WEP, allow us to give you a quote on your grass seed needs.

Feyh Farm Seed also handles restoration projects and temporary and permanent seed mixes.

HEDGEROW FARMS

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About Us

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About Our Grassland Seed & Plants

Hedgerow Farms specializes in producing high quality seed of native grasses, sedges and wildflowers. We offer single species, custom seed mixes, plug transplants and native grass stems. We are currently developing several species mixtures for various applications. Our seed and plants are used in habitat restoration projects, agricultural revegetation projects, erosion control seed banks and rural landscaping. To learn more please see our projects, click here:

There are many ways to find out more information about our products and services. You can follow us on our blog at www.hedgerowfarms.com. We have an online product and service manual available online. You can also find out more about our products and services by visiting our website at www.hedgerowfarms.com. All of these can be found on our website and information page in the sidebar of the website.

To find a specific seed mixture, plant mix, or find information on the farm and our general contact information, click here:

Seed Production in the US



Large-scale Grass Crops



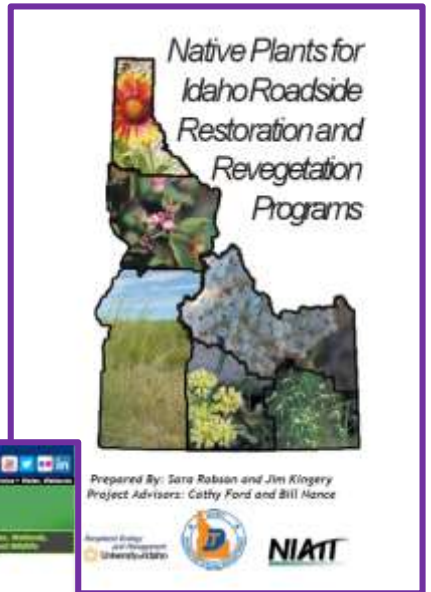
Large-scale Forb Crops



Natives on US Roadsides

History of Vegetation Management

- 1965:** The Highway Beautification Act—under Ladybird Johnson’s influence—encouraged the removal of billboards, screening of junkyards, and landscaping of roadsides.
- 1969:** The National Environmental Policy Act (NEPA) established the notion of avoidance and minimization of disturbance. This law encouraged environmentally sensitive solutions.
- 1987:** The Surface Transportation and Uniform Relocation Assistance Act (STURAA) is the act that includes the requirement to plant native wildflowers with of one percent of a highway project’s landscape budget when federal funds are used. By 1987, some states were already planting more than that minimum. By 1994, only 38 states had program level support for native wildflowers.
- 1991:** The Intermodal Surface Transportation Efficiency Act (ISTEA) provided funding for enhancements. One of the ten categories of enhancements was landscaping. All ISTEA projects were subject to the STURAA requirement of native wildflower use.
- 1994:** The Executive Memorandum on environmentally and economically beneficial landscaping was signed by President Clinton. The memo recommended the use of regional native plants, less fertilizers, less pesticides, less irrigation on federal grounds, lands, and federally funded landscape projects ...as in highway construction projects.
- 1999:** An Executive Order on invasive plants was signed by President Clinton. It ordered increased communication and cooperation of all agencies through a National Invasive Species Council. All agencies focused on prevention and control of invasive plant species, and followed up with restoration of native plants as directed.⁶⁰



Environmental Review Toolkit

Water, Wetlands, and Wildlife

Project Overview

Agreement Levels

Environmental Laws and Regulations

Guidance and Specific Considerations

Resources and Information Management

- Field Management
- Invasive and Non-Native Plants
- Wetlands
- Wetland
- Wetland

Water, Wetlands, and Wildlife

Field Management

System Overview

Greener Roadsides

Greening Roadsides website

Pioneering Partnerships

By the end of the twentieth century, federal and highway right-of-way users often had little voice in the road-side landscape. In the late 1970s and early 1980s, however, a desire to diversify roadside vegetation and aesthetics was growing among state and federal highway agencies and the public. Encouraged by the Lyndon "Capitol" Johnson changes in roadside beautification and the loss of advertising and other commercial signs, many states and localities took action. In 1982, the National Highway Traffic Safety Administration (NHTSA) and the U.S. Department of Transportation (DOT) issued a report titled "Roadside Beautification: A National Program." The report was the first to call for a national program to improve roadside aesthetics. In 1987, upon the suggestion of roadside beautification, the National Highway Traffic Safety Administration (NHTSA) and the U.S. Department of Transportation (DOT) issued a report titled "Roadside Beautification: A National Program." The report was the first to call for a national program to improve roadside aesthetics. In 1987, upon the suggestion of roadside beautification, the National Highway Traffic Safety Administration (NHTSA) and the U.S. Department of Transportation (DOT) issued a report titled "Roadside Beautification: A National Program." The report was the first to call for a national program to improve roadside aesthetics.

In 1980, Oregonians contacted the Federal Highway Administration's (FHWA) National Highway Beautification Program and asked to receive the benefit of connecting our roadsides with a roadside "look." The FHWA agreed to the request and the "Greening Roadsides" program was established to identify a national goal to improve roadside management and to the benefit of the road to travel. For the rest of the 1980s, the FHWA worked in the spirit of shared responsibility.

In a pioneering partnership, Oregon, Idaho, Kansas, Oklahoma, and Texas were funded by the Federal Highway Administration to develop a plan for a national roadside control. The effort focused on identifying and controlling roadside vegetation and aesthetics. The "Greening Roadsides" program was established to identify a national goal to improve roadside management and to the benefit of the road to travel. For the rest of the 1980s, the FHWA worked in the spirit of shared responsibility.

Protection

Management of native plants and wildflowers are being protected using various techniques. A variety of management techniques are being used to control and protect roadside vegetation and aesthetics. The "Greening Roadsides" program was established to identify a national goal to improve roadside management and to the benefit of the road to travel. For the rest of the 1980s, the FHWA worked in the spirit of shared responsibility.

Revegetation

Native plants and wildflowers are being planted using many techniques of revegetation. These plants are being used to control and protect roadside vegetation and aesthetics. The "Greening Roadsides" program was established to identify a national goal to improve roadside management and to the benefit of the road to travel. For the rest of the 1980s, the FHWA worked in the spirit of shared responsibility.

Public Outreach and Information

Information signs, roadside signs, posters, and brochures are being used to educate the public about roadside management and how transportation systems have affected the roadside.

Community Involvement Economic Development

Recreation and educational opportunities are being provided and developed in roadside areas. The "Greening Roadsides" program was established to identify a national goal to improve roadside management and to the benefit of the road to travel. For the rest of the 1980s, the FHWA worked in the spirit of shared responsibility.

North Carolina Department of Transport Wildflower Program

WILDFLOWER PROGRAM FUNDING

Revenue from the sale of personalized license plates provides the principle source of funding for the North Carolina Department of Transportation Wildflower Program. When you purchase a personalized plate you are supporting wildflowers and highway beautification with a portion of the extra fee. Many people choose to make a direct contribution to the wildflower program, since 100 percent of such contributions are used for the program. Contributions can be made to the North Carolina Department of Transportation.



For more information or to make a contribution to the Wildflower Program write to the:

North Carolina Department of Transportation
Roadside Environmental Unit
1557 Mail Service Center
Raleigh, North Carolina 27699-1557

The North Carolina Department of Transportation Wildflower Program began in 1985 as an integral part of highway beautification. Twelve acres were sown during the first year of production. Today, wildflower beds are installed and maintained across the state by Roadside Environmental personnel in each of the fourteen highway divisions.

This booklet is intended as a reference to identify the wildflowers planted by NCDOT, as well as some of the naturally occurring ones growing along North Carolina highways. Both botanical and common names are listed on the following pages. Photographs with descriptions and planting information are arranged alphabetically.

This guide also contains the installation techniques used by Roadside Environmental personnel, as well as instructions for planting your own wildflowers at home.

We hope this booklet will be useful as you drive along our highways and in your own wildflower gardening endeavors. Remember, for your own safety, do not stop and pick the wildflowers. Please leave them for everyone to enjoy!



QUICK FACTS ABOUT THE WILDFLOWER PROGRAM

- ✦ Former First Lady Dottie Martin (pictured to the left), wife of former Gov. Jim Martin, is credited with initiating the idea for the N.C. program after reading an article in the Wall Street Journal about wildflower beds in Texas.
- ✦ Tourism in North Carolina provides \$18 billion to the state's economy annually. Since most visitors arrive by vehicle, the Wildflower Program plays a particularly important role in making the state an appealing destination. The program is one of NCDOT's most popular initiatives, and receives hundreds of comments of praise each year from residents and visitors alike.



Oregon State Federation of Garden Clubs Road Beautification Project



"Let's create a fantastic tapestry across Oregon as a reminder to all that we have a Beautiful state. Let's let wildflowers make our statement in opposition to the outdoor advertising industry. Let's light up our landscape with wildflowers and other native plants. And by planting wildflowers. Help create A tapestry of colour across Oregon, a Beautiful State to visit and a place to live"

- A collaboration between the OSFGC and the Oregon Department of Transportation first discussed in 2014 and now ready for launch in 2016 aiming to establish a spectacular project of planting wildflowers across the state of Oregon in honour of the 50th Anniversary of Lady Bird Johnson's Highway Beautification Act



Natives on US Roadsides





Texas

Oregon



FOOD - EXIT 256

 Snow's Specialty Breads - Salads	 Almost Home RESTAURANT	 Pietro's Pizza
 Denny's	 24 HOURS	 24 HOURS



Texas



Indiana





Texas

Natives in US built landscapes





CAN WE USE OUR ROAD CORRIDORS TO A POSITIVE OUTCOME

PGIBSON-
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