



Blue Idaho Fescue grass will help keep out weeds.

**LINCOLN COUNTY
NOXIOUS WEED CONTROL BOARD**

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Chart is courtesy of Montana State University. Photos are courtesy of Gary Piper, Washington State University; Bob Nowierski, Montana State University; USDA APHIS; Agriculture Canada; Dr. R. Beall, Flathead Valley Community College; Bluestem Nursery, Laurier, Wash.; and J. Dean, Brigham Young University. Brochure prepared by Rob Chandler, LCNWCB.

**LINCOLN COUNTY
NOXIOUS WEED CONTROL BOARD**

**Full Circle
Noxious Weed
Control**

Noxious weeds are a symptom of a much larger illness in your plant community



Idaho Fescue

Landowners should develop healthy plant communities that are weed-resistant:

- After controlling noxious weeds, over-seed and plant desirable species to fill up each niche, so weeds can't find an opening.
- A diverse collection of desirable plants will help keep out noxious weeds and promote wildlife biodiversity.

For more information, contact the Lincoln County Noxious Weed Board at 509-725-3646.

What's the problem with just controlling invasives?

- Noxious weed control options are known as “**designed disturbances**”. These “**disturbances**” alter weed sites and allow for establishment of desirable plants.
- **Hand-pulling** soil disturbance and removes the plant and parts of the root.. This leaves desirable species intact.
- **Herbicides** create “**disturbances**” that open up sites for other plants to take root, including undesirable ones including noxious weeds.
- **Cultivation** opens the ground and can destroy undesirable and desirable vegetation.
- **Grazing** animals control some noxious weeds and create “pockets” in the soil bed that capture moisture and plant seeds.
- Noxious weeds are very competitive and typically are the first plants to take advantage of open sites or “niches.”

Disturbances are successful if followed by prompt over-seeding



A healthy, weed-resistant plant community consists of a diverse group of species, including **native grasses, forbs and shrubs**, occupying all the niches (sites) and using all the resources in the system, keeping them from weeds.

Lincoln County Noxious Weed Control

- If seeding in the spring, **aggressive weeding** is important in the first growing season until grasses are well-established.
- Many experts suggest planting **certified seed**. This is a pure grass seed that has been inspected to have **no noxious weeds**. A **blue certification tag** will be affixed to each bag of seed.
- All **grass seeds** are available locally at: **Davenport Building Supply 801 Morgan Street, Davenport, Wash, (509-725-7131 & Rainier Seeds, Inc., 1404 4th Street, Davenport, Wash.** Contact them at **800-828-8873, or at www.rainierseeds.com** for their latest sale catalogs.
- **Planting plugs** is an excellent way to re-vegetate small areas or harsh sites. The advantage of plugs is that they only need periodic water during establishment, and the successful germination rate is much better than seeding. Plugs are an excellent way to incorporate beautiful native grasses into a drought-tolerant landscaping.
- Plugs, plants and seeds are available from **Plants of the Wild, 123 Stateline Road, Tekoa, Wash.** Contact them at **509-284-2848, or at www.plantsofthewild.com** for their latest catalogs.
- For more information contact **WSU-Cooperative Extension at 303 6th Street, Davenport, (509-725-4171)** or at **222 N. Havana Street, Spokane Valley (509-477-2048)**. Check out the **native grass demonstration test plot** southwest of the **Spokane County Fairgrounds**.

Shining Muttongrass, *Poa fendleriana*, a **perennial bunchgrass**, grows to **one-to-two feet tall** and about one foot wide. It needs **10 inches** of annual precipitation. It has silver-green grass leaves, mainly toward the base of the plant. Flowers are silvery pink changing to straw-colored, borne in clusters at the tips of erect branches. It flowers in the spring to early-summer. It prefers full sun to partial shade and rich to well-drained soils. It is fully cold and drought hardy. It needs no supplemental water after established, but it is responsive to supplemental watering and fertilizer. It is fast-growing, and may flower the first year when produced as container stock. The pearly-pink flowering heads of this handsome bunchgrass appear earlier in the season than those of most other native bunchgrasses. Its compact form makes it compatible with peren-



Shining Muttongrass

cial flowers in a bed or border, and it will not become invasive.

Getting started on developing a native grass area

- Building a beautiful home nestled in the hills and fields of **Lincoln County** is the dream of many landowners. But the dream can turn to nightmare as weed species invade the areas surrounding the new home.
- By clearing an area for a home site, septic field or driveway, the owners may have unwittingly entered into a long-term battle with noxious weeds.
- However, with good planning and timely action, a homeowner can establish a vegetation cover that will compete successfully with these pernicious invaders while enhancing native biodiversity.
- The key to fighting these weeds is establishing a cover of **perennial bunchgrasses, native forbs and shrubs to fill in each niche.**
- Establishing **native bunchgrasses** is the cornerstone to most naturalization projects. An established planting of bunchgrasses provides excellent competition for noxious weeds, stabilizes soil to help prevent erosion, is extremely drought-tolerant, and needs little water or care after establishment. Also, many bunchgrass species are extremely beautiful as well as excellent accents to any landscape project.
- **Timing is important!** Reestablishing competing vegetation should occur as soon as possible after site disturbance. **Limiting the size of a disturbance** and **avoiding existing native vegetation** are other considerations. Make sure contractors and equipment operators understand these issues.
- There are two main strategies for establishing bunchgrasses are **seeding** and **plugs.**
- **Seeding** works well for large areas. **Late-fall seeding** is recommended when possible. If feasible, roughen up the planting area. Hand broadcast seeds **before snowfall.** Rake the area after sowing to hide seeds and increase soil contact. Keep moist with **periodic watering** in the spring until seedlings are established. Continue **watering bi-monthly** through the first growing season. It is possible to establish native grasses from seed without additional irrigation only if there is adequate spring moisture, but germination rates for seeds locally are only about **20 percent.**

- A “**disturbance**” is any natural or planned event that changes a healthy plant community by opening up sites or “**niches**” for other plants to take root.
- Some “**designed disturbances**” include pulling, spraying herbicides, cultivation, mowing, grazing, burning and bulldozing.
- A “**niche**” is a **site** where resources are available to a plant or noxious weed. It can also be a **time** during a season.
- Many noxious weeds evolved in the eastern hemisphere. A long history of intensive disturbances there has allowed the selection of very competitive species that can dominate native plants.
- Noxious weeds have usually been introduced without the natural enemies that help control their abundance in their place of origin. These factors allow alien weeds to dominate native species and become stable plant communities.
- To create a “**weed-free area,**” develop healthy plant communities that contain diverse plants in each niche, one that is weed-resistant while meeting other land-use objectives, such as forage production, wildlife habitat development, recreational land maintenance, or natural area conservation.

Sandberg's bluegrass fills an “early-season” niche.

Sandberg's bluegrass (Poa sandbergii), a perennial, rarely grows over **12 inches tall**, but sometimes is as tall as **13-24 inches.** This **bunchgrass** needs **eight inches** of annual rainfall. It has small, keeled basal-leaf blades, usually less than two-inches long, and many short upright branches bearing spikelets, with a purplish tinge on many parts of the plant. It is found all over **Lincoln County.** It grows in **most soils** except open sand dunes from **March to May.** It has some forage value, is an excellent cover for wildlife nesting, but provides poor erosion control.



Sandberg's bluegrass

**Control noxious weeds.
Preserve Lincoln County's
natural environment.**

What is a diverse plant community?

- A healthy, weed-resistant plant community consists of a collection of species diverse enough to occupy **all the niches**.
- Desirable plants capture a large proportion of the resources in the system, keeping the resources away from weeds.
- A weed-resistant plant community may include an **early-emerging species**, such as the shallow-rooted **Sandberg's Bluegrass**, which uses the resources that are available in the upper soil profile early in the growing season and during periods of light precipitation.
- As the season progresses, species which initiate **growth later** and continue growing further into the season are needed to use available soil resources from **moderate soil depths**.

**Fill the niches
with desirable
plants before the
weeds take root.**

Idaho fescue, *Festuca idahoensis*, is native to the short-grass prairie habitat. It is about **25 inches** tall. It needs some **10 inches** of annual rainfall. The leaf blades of the plant are blue-green, roughened and hairless. Leaf sheaths are flattened and the basal sheaths have a pinkish tinge. Spikelets have five to seven purple flowers. This **bunchgrass** begins growth early in the spring and flowers in July and August. It grows in **Lincoln County** and on grasslands that endure frequent drought. It germinates in the fall, grows intermittently during mild parts of winter, and it is dormant in the summer if drought occurs. **Idaho fescue** is present in stable communities of sagebrush and dry forest habitats. **Idaho fescue** is not a good competitor, especially when stressed by grazing or burning. In a landscape setting, **Idaho fescue** can survive years with no maintenance. It likes sun; average to poor soil; and is drought tolerant. It dislikes



Idaho fescue

moist, fertile soil. This bunchgrass provides excellent erosion control, some forage value, and excellent cover and nesting for some birds and insects.

Lincoln County Noxious Weed Control

- beetle, for **Spotted & Diffuse Knapweed**.
- Mecinus janthinus**, a stem-boring weevil, for **Dalmatian Toadflax**.
- A combination of a **gall midge, mite and rust** for **Rush Skeletonweed**.

- Biocontrols have been released for several other noxious weeds, but results in **Lincoln County** have so far been mixed. These biocontrols are for **Leafy Spurge** (flea beetles and moths), **Canada Thistle** (seed-eating beetles) and **St. Johnswort-Goatweed** (leaf and flower-eating moth). The released biocontrols have worked well in other places. Research may find other biocontrols soon.



Adult Mecinus janthinus



Mecinus janthinus larvae

A field of some **10 acres** on **Hawk Creek Ranch Road** north of **Davenport** has a **five-acre test plot** for a new broadleaf herbicide. In the remaining area, **Larinus minutus** insects have been released to control **Spotted Knapweed**.

The new herbicide effectively killed the **Spotted Knapweed**, but also all the other broadleaf plants in the test plot. There were large open areas around the dead hulks of knapweed.

Where the biocontrols had been released, the insects reduced the number of knapweed plants, but also allowed native broadleaves to return to the area again. There were no vacant niches or open areas where the insects had been working.



Mecinus janthinus, up close

- A root weevil and a root beetle have been released for **Houndstongue** in **British Columbia, Canada**, but have not yet migrated south to the state of **Washington**. They may be available in a few years.
- Very effective biocontrols exist for **Purple Loosestrife** (leaf-eating beetles), but the weed is not in **Lincoln County** yet although it is in **Spokane County** and **Idaho**.



Rust Skeletonweed rust

Is there an advantage to using biocontrol insects?

- Releasing biocontrols introduces the **natural enemies** that helped control the abundance of noxious weeds in their place of origin.
- The **greatest advantage** in releasing biocontrols is that the insects selectively choose **only the targeted noxious weeds**. They do not attack other plants. They do not kill all the broadleaf plants like herbicides.
- Biological controls are effective for **inaccessible areas** where spraying herbicides or other control methods are too costly.
- Do not use biological controls for small patches, especially if it can be sprayed with a herbicide or controlled by another method.
- Biological controls need **three-to-five years** for weed management. The impact of released insects will not be noticeable until they reach **high-population densities**.
- Use an **integrated approach** of spraying accessible areas, releasing insects for other areas, and cultivating and over-seeding all areas of infestation.
- There are **three biocontrols** that currently work very well in **Lincoln County:**
 1. **Larinus minutus**, a flower seed-head



Adult Larinus minutus



Eaten knapweed seed heads



Larinus minutus, up close

- Finally, the diverse plant community may include a **deep tap-rooted, very late-maturing species**, such as **alfalfa** or **big sagebrush**. These species are capable of extracting resources from deep in the soil profile and throughout much of the growing season.
- Maximum diversity in plant species is optimal for energy flow through the system, as well as nutrient and water cycling.
- Promoting maximum diversity of desirable plants is the best way to avoid a noxious weed problem.
- **Maximum diversity of plants** also promotes **wildlife survival**. Many species of birds, insects and animals have specialized niches dependent on native plants for food, cover and shelter. Noxious weeds disrupt entire ecosystems and introduce mono-cultures of one dominant weed where once there had been hundreds of native plant species.

Wildlife need biodiversity to survive.

Bottlebrush Squirreltail, Sitanion hystrix, grows to **13-24 inches** in height with a spread about a **foot wide**. It only needs **six inches** of annual precipitation. It has bright-green leaves mainly toward the base of the plant. Flowers are purplish, changing to straw-colored, borne in spikes at the ends of the stems. It blooms mid-spring to late-summer depending on elevation. This **perennial bunchgrass** requires **full sun and well-drained soils**. It is fully cold-hardy and very drought-resistant. It needs no supplemental water after establishment but is responsive to supplemental watering and fertilizer. The plant is easily obtained from direct late-fall seeding, but does not do well in competition with other bunchgrasses or vigorous perennial herbs. It is fast-growing and will flower the first year when produced as container stock. This well-behaved, noninvasive bunchgrass is very attractive in flower, when the long awns of the flowering spikes are a shining purple. The awns later turn straw color and spread out at right angles to the stems, giving the plant a striking appearance, especially in back light. When ripe,



Bottlebrush Squirreltail

the stem breaks into pieces, and the segments, with awns and seed attached, are dispersed along the ground by wind, somewhat like little tumbleweeds. It provides good nesting cover for wildlife.

**Control noxious weeds.
Preserve Lincoln County's
natural environment.**

Change a weed patch into healthy land

- Determine **land-use objectives** first. Is the land to be used for forage production, wildlife habitat development, recreational land maintenance or natural area conservation?
- Understand the stages in the weed's life cycle that are most vulnerable to stress or control.

**Understand where
the weeds are
most vulnerable.**

- **Kochia** is an **annual** noxious weed. Pulling or mowing the weed prior to seed production will decrease its spread in later seasons.
- Tillage of **Canada Thistle** can spread a patch if root parts are spread. A small patch in a big field can then become a huge infestation.
- Releasing flower weevil biocontrols (**Larinus minutus**) for **Diffuse Knapweed** will decrease weedy patches in later seasons since the insects feed on the seeds in the flower head.

- Understand the stages in a desirable species' life cycle that will enhance its performance.

- A landowner in **Wibur** mowed an empty lot full of **Sandberg's bluegrass** to a low height instead of allowing it to grow to its normal height of **12-24 inches**. After it was mowed, it never went to seed and allowed noxious weeds to find niches and take root.

- **Design disturbances** to create sites for desirable species. Use an integrated approach and alternate means that complement each other:

Chemical: Spraying herbicides on noxious weeds.

Mechanical: Tillage, pulling and mowing.

Biological: Releasing insects that control noxious weeds.

Cultural: Planting desirable vegetation, fertilization of desirable plants, over-seeding, and using goats, sheep or other livestock for grazing.

- In an ecologically-based weed management system, a **disturbance** is used to push the process in a desired direction that will minimize the need for future high-energy control methods.
- After a disturbance, once sites are available for desirable species, the niches must be filled before weeds can establish again.

Lincoln County Noxious Weed Control

- For desired plants to take root, a niche must be available for them and unavailable for noxious weeds.
- After a disturbance, "**controlled colonization**" of desirable plants is accomplished by over-seeding, planting and fertilizing, controlled grazing, disease control, providing resources and water, maximizing growth rates, and introducing biocontrol insects.
- The **emphasis** needs to be on **encouraging desired plants**, rather than simply controlling weeds.
- **Without "controlled colonization" and over-seeding after a disturbance**, the plant community is first composed of fast-growing, short-lived species, typically annual and biennial plants. Once the annuals and biennials alter a site, it is only then that short-lived perennials will come in and thrive. In the following seasons when short-lived perennials dominate and alter a site again, only then will a plant community of long-lived perennial plants become stable at that site.
- **Without "controlled colonization" and over-seeding of desirable plants**, it is unlikely that a stable community of long-lived perennial plants will thrive before alien and noxious weeds invade native areas.

**Over-seeding is
essential after
a disturbance.**

Needle-and-Thread Grass, *Stipa comata*, is a **perennial bunchgrass** that grows **one to three feet high** and up to one foot wide. It needs **10 inches** of annual precipitation. It provides good erosion control. It has long pale-green grass leaves, mostly at the base. Flowers are greenish, ripening to golden, with one-flowered spikelets at the tips of branches. The fruits are long-awned. It flowers by early summer, ripening by midsummer. It prefers full sun and coarse, well-drained soils. It is fully cold-hardy and drought-resistant. It requires no supplemental water once established. The **awns** are the "**threads**" of needle-and-thread, while the slender, sharp-pointed brown one-seeded **fruits** are the "**needles**." This elegant bunchgrass looks best in massed plantings. The long-awned seedheads all hang down together in the wind and glisten beautifully in the sunlight, like silver-gold rain.



Needle-And-Thread Grass