

# Biocontrols for Rush Skeletonweed

## *Skeletonweed Gall Midge, Skeletonweed Rust and Gall Mite*

Created by Lincoln County Noxious Weed Control Board, August, 2005

Photos courtesy of Dr. Gary Piper, Washington State University and Eric Coombs, Ore. Dept. of Agriculture

Biocontrol for Rush Skeletonweed typically includes the introduction of three insects which are all released at the same time:

(1) Skeletonweed gall midge (*Cystiphora schmidtii*) - Larval feeding causes gall formation on leaves and stems.

(2) Skeletonweed rust (*Puccinia chondrillina*) - The rust causes stunting, desiccation and other stress-induced problems for the host plant. Seedling plants are damaged and stunted, if not killed.

(3) Skeletonweed gall mite (*Eriophyes chondrillae*) -: This mite causes gall tissue to form on shoots and buds. It is very effective in reducing seed production and killing young plants.

### Biology of Gall Midge:

- Four to five generations per year.
- Overwinters as mature larvae in galls on stem, leaf or in soil
- Females lay eggs in rosettes, stem leaves and stems.
- Females each lay about 100 eggs.
- Eggs incubate about nine days.
- Larvae feed on the leaf or stem and this creates galls.
- Mature larvae typically pupate in silken cocoons inside galls.
- Feeding activity initiates gall formation.
- Larvae damage rosettes and flowering stems, causing premature yellowing, desiccation and death. Rosettes may die. Infested plants may have fewer branches and flower heads than uninfested plants. Seeds have reduced weight and viability. Heavily infested stands may take on a purple-reddish cast.

### Availability of Gall Midge:

- Early July to late September.



Rush Skeletonweed



Adult Gall Midge



Galls with larvae on stem

## **Biology of Rush Skeletonweed Rust:**

- Multiple generations per year.
- From spring to fall, this fungus develops on above-ground plant parts and releases infective spores. Lesions form at the bases of flowering shoots in the fall. The lesions produce spores that remain dormant until spring.
- Spores germinate on the rosette leaves and form clusters of yellowish pycnia which soon yield pycniospores. These produce aecia and aeciospores on the leaves. Aeciospores germinate to produce brown pustules, thus completing the life cycle.
- Rust infections of fall and spring rosettes often result in premature death of plants, especially seedlings. Open lesions cause desiccation, reduces photosynthesis, and decreases plant vigor.
- Fungus-infected stems are stunted, deformed and produce few branches and floral buds. Seed yield, weight and viability are reduced in rusted plants. The weed's ability to regenerate from root buds is also diminished.
- During the spring and fall, infected rosettes may be dug and transplanted among uninfected plants to spread the rust. During the summer, use infected floral stems.

## **Biology of Skeletonweed Gall Mite:**

- Multiple generations per year.
- Overwinters as adults, female adults in the rosette bud.
- Females lay between 60 and 100 eggs inside the gall.
- Several hundred nymphs feed within a gall.
- Overwintered adults invade shoot buds at the spring bolt.
- Feeding on the buds creates contorted leaf-like galls.
- Weed damage by adults and nymphs decreases plant vigor, hinders rosette formation, stunts the plant, reduces the number of vegetative shoots produced, decreases and sometimes prevents seed production, and commonly results in the death of seedlings or first-year satellite plants.
- Gall Mites rapidly colonize plants growing in undisturbed, well-drained soils on south- or west-facing slopes. Mite populations do not persist on sites subjected to repetitive soil disturbance, such as cropland.

## **Availability of Gall Mite:**

- Early July to late September.



**Galls with larvae on leaf**



**Skeletonweed Rust on leaf**



**Skeletonweed Rust on leaf**



**Damage by Gall Mites**



**Damage by Gall Mites**