

Spotted Knapweed Flower Weevil (*Larinus minutus* and *L. obtusus*)

IMPROVING BIOCONTROL SUCCESS

STORING

- Place weevils in breathable containers, place in a cooler on top of ice blocks
- Place a towel/newspaper between ice blocks and weevil containers to prevent damaging insects
- Insects can be kept in the refrigerator at a moderate temperature, in breathable containers for **up to 3 days**



RELEASING

- Release 200+ weevils per site, scatter the insects close together
- *L. minutus* and *L. obtusus* can both be found in Montana, the two are virtually indistinguishable
- A minimum of a .5 acre infestation is ideal
- For spotted knapweed, best combined with other biocontrol agents

COLLECTING

- Summer- Sweep net adults shortly after the plants begin flowering
- During collection:
 - At least 200 agents in a release
 - Add knapweed foliage to containers (no flowers or seeds)
 - Cover any openings that the weevils could escape from
 - **Immediately store** as described in storage section
- It is important to not transfer weed seeds from the collection site to the release site



MONITORING

- Inspect for adults when knapweed is flowering
- Fall-spring - visually inspect past seasons flowerheads for emergence holes
- Take photos, mark, and record GPS coordinates for release locations
- Monitoring forms available at mtbiocontrol.org

BACKGROUND

BIOLOGY

- One generation per year
- Adults emerge from the soil litter throughout the summer
- Females lay eggs (up to 130) in flowers
- Larvae feed on developing seed
- Larvae pupate into adults in late summer within the flowerhead
- Adults overwinter in soil litter at the base of the plant

IMPACT

- Well established throughout Montana – **inspect for weevils before making additional releases**
- Heavy feeding by adults can stunt and kill affected plants
- Larval feeding greatly reduces seed production

