

BLM & APHIS Monitoring Project

Project Intent Update: The pilot project was identified as a cooperative project between the US Department of Interior, Bureau of Land Management (BLM); US Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine (PPQ); and the Montana Department of Agriculture (MDA) to monitor sites where *Mecinus janthinus* (*M. j.*) were released for biological control of dalmatian toadflax (DTF). APHIS was best positioned to hire temporary employees to accomplish the work, resulting in an interagency agreement with BLM to fund much of the project. PPQ also contributed funds directly to this project.

Four counties were originally identified as the focus of the pilot based on pro-active cooperators and geographic distribution throughout the state. The objective was to monitor for the presence or absence of *Mecinus janthinus* (*M. j.*) on Dalmatian toadflax (DTF). The counties in the initial project were: Lewis & Clark, Blaine, Lincoln, and Yellowstone. As the season progressed the project expanded to include monitoring of sites in Musselshell, Big Horn, Broadwater, Jefferson and Cascade counties and included multiple species of BC agents and their target weed species. The project monitored 269 sites covering 9 counties. The target weeds focused on were, Dalmatian toadflax, spotted and diffuse knapweed, leafy spurge, and St. Johnswort. The insects monitored were: *Mecinus janthinus* (Figure 2), *Calophasia lunula* on dalmatian toadflax; *Cyphocleonus achates*, *Larinus minutus*, *Agapeta zoegana*, and *Sphenoptera jugoslavica* on spotted and diffuse knapweeds; and *Apthona spp.*, *Oberea erythrocephala* and *Hyles euphorbiae* on leafy spurge. On St. Johnswort we looked for *Chrysolina spp.*

In 2010 the monitoring project included: Broadwater, Cascade, Custer, Jefferson, Lewis & Clark Musselshell, Rosebud and Teton Counties. Fish, Wildlife and Parks (FWP) were on board again this year, we visited 164 Fishing Access Sites (FAS). We also visited the National Bison Range on the Confederated Salish and Kootenai Tribal lands, Rocky Boy, Fort Belknap, and the Northern Cheyenne Indian reservations. The 2010 Monitoring Project visited 208 non FWP sites, for a total of 372 sites.

The target weeds focused on were Dalmatian toadflax, spotted knapweed, leafy spurge, and St. Johnswort. The insects monitored were: *Mecinus janthinus* (Figure 2), on dalmatian toadflax; *Cyphocleonus achates*, *Larinus minutus*, *Agapeta zoegana*, and *Sphenoptera jugoslavica* on spotted knapweed; and *Apthona spp.* and *Oberea erythrocephala* on leafy spurge. On St. Johnswort we looked for *Chrysolina spp.*

County Results:

BROADWATER

- ***Larinus minutus*, spotted knapweed:** Five sites were monitored and no insects were found.
- ***Mecinus janthinus*, Dalmatian toadflax:** Five sites were monitored and two of the five had established insects but not enough to be collected.
- ***Cyphocleonus achates*, spotted knapweed:** Two sites were monitored and no insects were found.
- ***Jaapiella ivannikova*** We looked at one site that was established by Dr. Jeff Littlefield. We found galls on many plants.

CARBON

- ***Jaapiella ivannikova*, Russian knapweed:** 1 site was monitored.

CHOUTEAU

- **Jaapiella ivannikova, Russian knapweed:** 1 site was monitored.

CASCADE

- **Larinus minutus, spotted knapweed:** 2 sites were monitored and both sites had collectable populations.

CUSTER

- **Aphthona spp., leafy spurge:** Eight *Aphthona spp.* sites were monitored and insects were present at over 100% of the sites. No collection efforts were conducted.
- **Oberea erythrocephala:** At one *Aphthona* site, 1 *Oberea erythrocephala* was found, 100 *Oberea erythrocephala* were released in a different area, these were collected in Jefferson County.

JEFFERSON COUNTY

- **Mecinus janthinus, Dalmatian toadflax:** Seven sites were monitored and 5 of the seven had insects and/or feeding damage. One site could be collectable next year.
- **Cyphocleonus achates, spotted knapweed:** Two sites were monitored, one site we did not find any insects.
- **Larinus minutus, spotted knapweed:** Eleven sites were monitored and approximately 50% had insects established, 4 sites had collectable populations.
- **Oberea erythrocephala:** Three sites were monitored, and 130 insects were collected from one site and redistributed in Teton and Lewis & Clark Counties.
- **Chrysolina quadrigemina:** One site was monitored and did not find any insects.

LEWIS & CLARK

- **Mecinus janthinus, Dalmatian toadflax:** Overall, approximately 50% of the 97 *Mecinus janthinus* sites had either an adult present or feeding damage but only a couple of sites had collectable numbers. Dalmatian toadflax populations were very sparse at many of the sites. Results varied from site to site. There have been several releases in the North Hills area, but little sign of establishment. One site near York still has a small collectable population of *Mecinus janthinus* but it is a difficult site to access. One area southwest of Helena had sufficient establishment to support a minor collection, but the landowner sprayed the site. We looked at 25 sites for the City of Helena and found establishment on 8 sites.
- **Aphthona spp., leafy spurge:** Five *Aphthona spp.* sites were monitored and insects were present at over 80% of the sites. No collection or redistribution efforts were conducted.
- **Oberea erythrocephala:** Three sites were monitored, and 130 insects were collected from one site and redistributed in Teton and Lewis & Clark Counties.
- **Hyles euphorbiae:** We found Hyles at about 10% of the leafy spurge sites and no redistributions were conducted.
- **Sphenoptera jugoslavica, diffuse knapweed:** There have been releases in the York area, we looked at 2 sites, but no indication of establishment.

- **Cyphocleonus achates, spotted knapweed:** Eleven 16 sites were monitored and approximately 25% had insects established, three sites had collectable populations.
- **Larinus minutus, spotted knapweed:** 52 sites were monitored and approximately 50% had insects established, 10 sites had collectable populations.
- **MUSSELSHELL**
 - **Mecinus janthinus, Dalmatian toadflax:** Four sites were monitored and two sites had insects released. Insects were found at all sites, but not at collectable numbers.
- **ROSEBUD**
 - **Mecinus janthinus, Dalmatian toadflax:** One site was monitored. Some feeding damage was observed but few insects were observed, possible collection for next year.
- **TETON**
 - **Larinus minutus, Spotted knapweed:** One site was monitored. Some feeding damage a few insects were observed, possible collection for next year.
 - **Cyphocleonus achates, spotted knapweed:** One site was monitored and the insect was established.
 - **Oberea erythrocephala:** One hundred insects were released, they collected from Jefferson County.

TRIBAL

CONFEDERATED SALISH AND KOOTIANI TRIBES

- **Mecinus janthinus, Dalmatian toadflax:** Overall, approximately 80% of the 6 *Mecinus janthinus* sites had either an adult present or feeding damage but only one of sites had collectable numbers.
- **Cyphocleonus achates, spotted knapweed:** Three sites were monitored and approximately 100% had insects established, one site had collectable populations.
- **Larinus minutus, spotted knapweed:** 13 sites were monitored and insects were found on 11 sites, approximately 80% had insects established, 3 sites had collectable populations.

ROCKY BOY

- **Mecinus janthinus, Dalmatian toadflax:** There were no established *Mecinus janthinus* sites, USDA APHIS PPQ gave them approximately 2000 insects.

FORT BELKNAP

- **Cyphocleonus achates, spotted knapweed:** One site was monitored and the *Cyphocleonus achates* were established. There may be collectable populations in a couple of years.

NORTHERN CHEYENNE

- ***Larinus minutus*, spotted knapweed:** Four sites were monitored and all sites had established populations 1 site had collectable numbers.
- ***Aphthona spp.*, Leafy Spurge:** One site was monitored, the insect was established but not at collectable numbers.

Idaho Nez Perce Tribe

- ***Cyphocleonus achates*, spotted knapweed:** Help them with two collections in western Montana, they then took them back to Idaho to help in their biocontrol efforts.

Statewide Results:

- **Dalmatian toadflax (Figure 2):**
 - The 2010 Monitoring Project was expanded to include FWP FAS.
 - General observation is that approximately 50% of the *Mecinus janthinus* sites we visited, we found the presence of adult and or feeding damage.
 - Results of a monitoring visit are just a snapshot in time. Some of the *Mecinus janthinus* sites that did not have any adults or feeding damage were revisited a second time. Either weather or time of year (too early) may have been a factor. It appears that *Mecinus janthinus* is causing some impact in the dalmatian toadflax populations statewide. The amount of damage it is causing is low and slow, and possibly the damage is so subtle that we just aren't noticing much of an impact. Of all the sites visited, we found eleven sites that *Mecinus janthinus* could be collected to some degree, depending on landowner approval.
 - Blaine County was contacted to monitor for *Mecinus j.*, but declined saying that from our help last year he knew what to look for.
 - Most sites not demonstrating establishment were more recent releases
 - Some sites not demonstrating establishment had plants 10 feet or more apart. Perhaps this leads one to believe site that site selection could have been better.
 - This year with the cool wet weather had an effect on the low numbers found and collected. The sites we collected *Mecinus j.* in the Missoula area had to be collected 2-3 weeks later than normal.
- **Leafy Spurge (Figures 4 and 7):**
 - The seasonal employees helped the Spokane Unit of the USDA APHIS PPQ in collecting over 168,000 *Aphthona spp.* and some of these were distributed to FWP and several counties in Montana, and several other states. Later, the project employees help collect over 70,000 more *Aphthona spp.* in Teton County these insects were distributed to many local landowners.
 - If there is sufficient plant populations and *Aphthona spp.* have been released in the area, there is likely collectable *Aphthona spp.* populations.
 - It appears *Oberea erythrocephala* numbers are increasing. We helped the Spokane Unit of the USDA APHIS PPQ collect approximately 700 *Oberea e.* from Fergus County we later collected 130 from a site in Jefferson County. On a site visit to Custer County *Oberea e.* was found at one site, they did not know where or who released them.
- **Spotted knapweed (Figures 3,5,6, and 9):**
 - If there is sufficient plant populations and the following agents had been released in the area, there generally are collectable numbers of *Cyphocleonus a.*, *Larinus m.* and *Agapeta z.*

- We visited one FWP site in the Missoula area; they wanted to know what insects were present. Also, they wanted to locate potential sites for of *Cyphocleonus a* and *Larinus m.*
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- **Russian knapweed (Figure 10):**
 - We worked closely with Dr. Jeff Littlefield finding sites to release a gall forming tip midge.
- **Collections**
 - *Mecinus janthinus* – 4,600 from Missoula County
 - *Mecinus janthinus* – 4,000 from Spokane WA
 - *Oberea erythrocephala* – 830 from Jefferson and Fergus County
 - *Aphthona spp.* – over 238,000 from Fergus and Teton County
 - *Larinus minutus* – over 5,000 from Jefferson County
 - *Cyphocleonus achates* – 106,000 from Ravalli, Sanders, Jefferson, Lewis & Clark Counties
- **Distributions:** Counties, states or groups that received insects from instate collections
 - *Aphthona spp.* – USDA APHIS PPQ in New York and Washington.
 - *Oberea erythrocephala* – Teton, Custer and Lewis & Clark
 - *Mecinus janthinus* – Broadwater, and Musselshell
 - *Cyphocleonus achates* – Broadwater, and Lewis & Clark Counties, and USDA APHIS PPQ in New York, the Nez Perce Tribe in Idaho and the Center for Aquatic Nuisance Species.
 - *Larinus minutus* - USDA APHIS PPQ in New York and Carbon County.

Criteria for sending insects to an area was either they were involved in the pilot project or had an active monitoring program.

Some sites had been or were going to be treated with herbicides. This brings up the issue of how important it is for researchers and weed coordinators or land managers to communicate with each other.

The pilot program was involved in monitoring training for APHIS seasonal employees, landowners at Private Applicator Training, a county weed district. Also, several supervisors went out on site with the seasonal employees' to learn how to monitor and for the presence or absence of insects. We also worked with the Whitehall High School Cypho I-90 Project. In the monitoring program we visited 369 sites for nine Biocontrol agents. Also, we visited 161 FWP FAS for the presence of any Biocontrol agents.

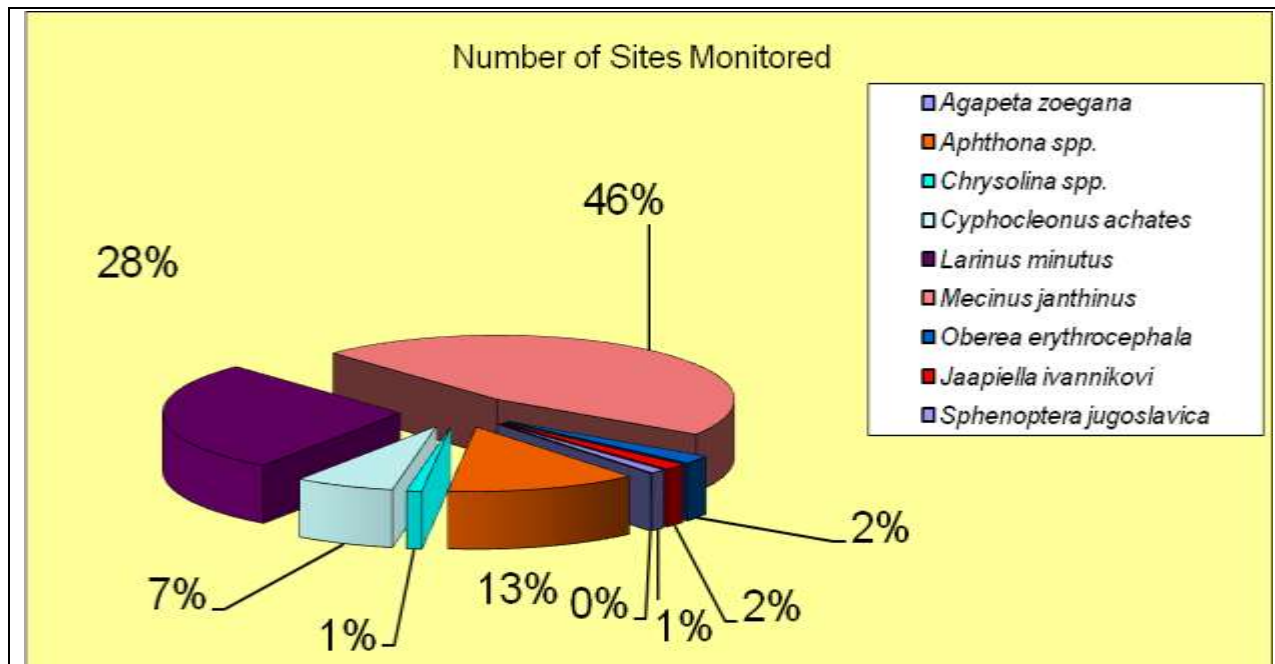


Figure 1.

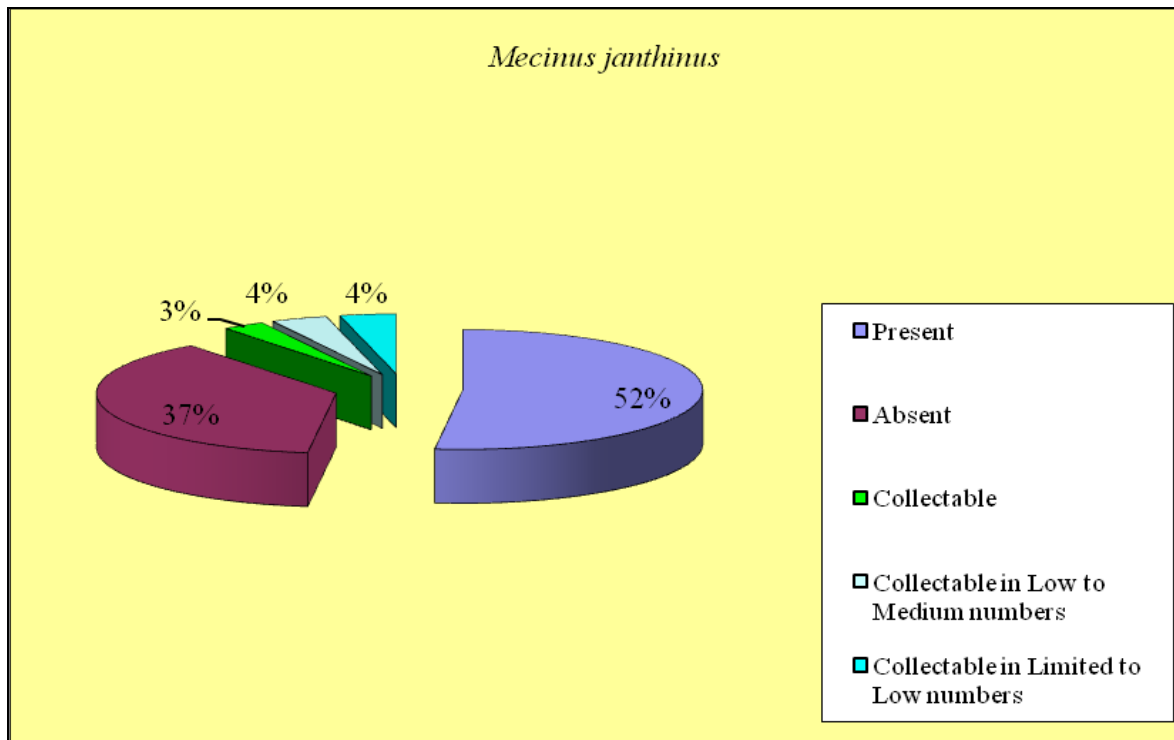


Figure 2.

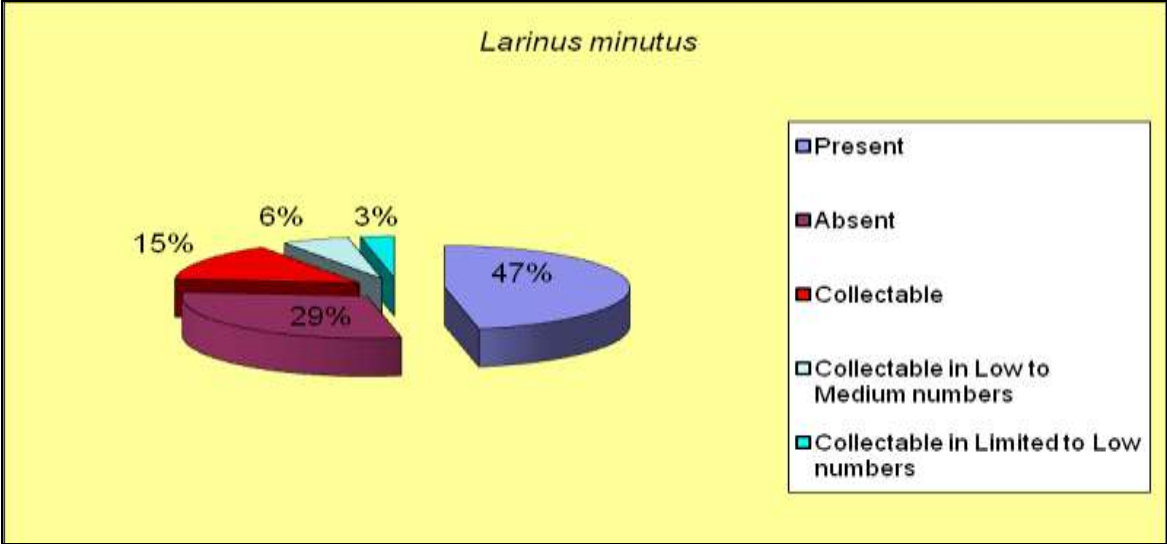


Figure 3.

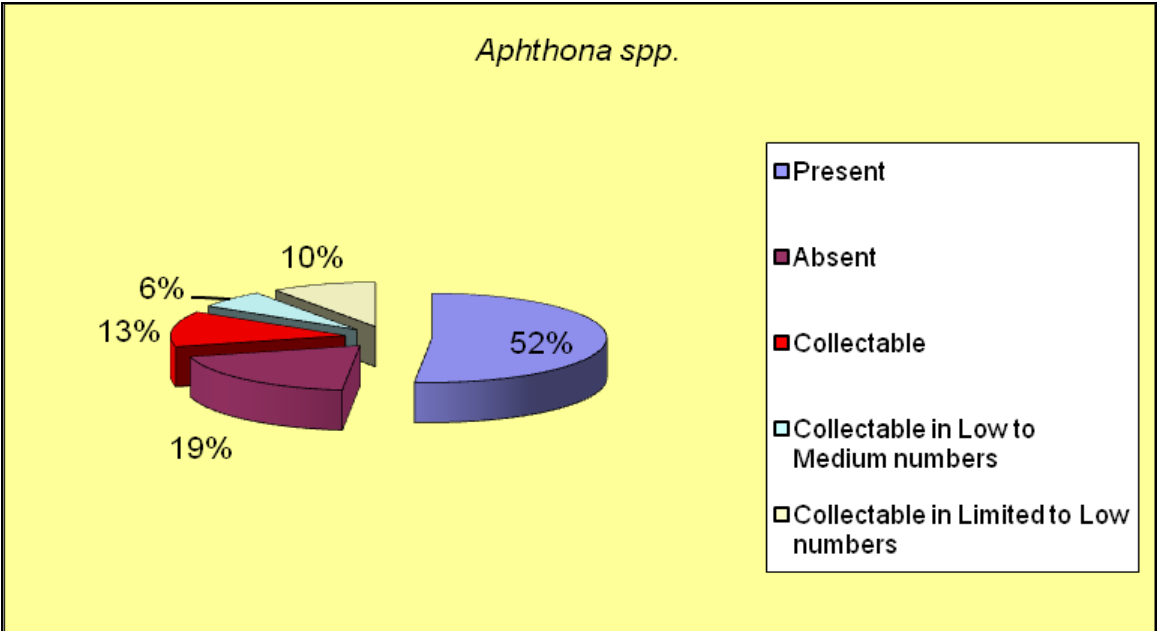


Figure 4.

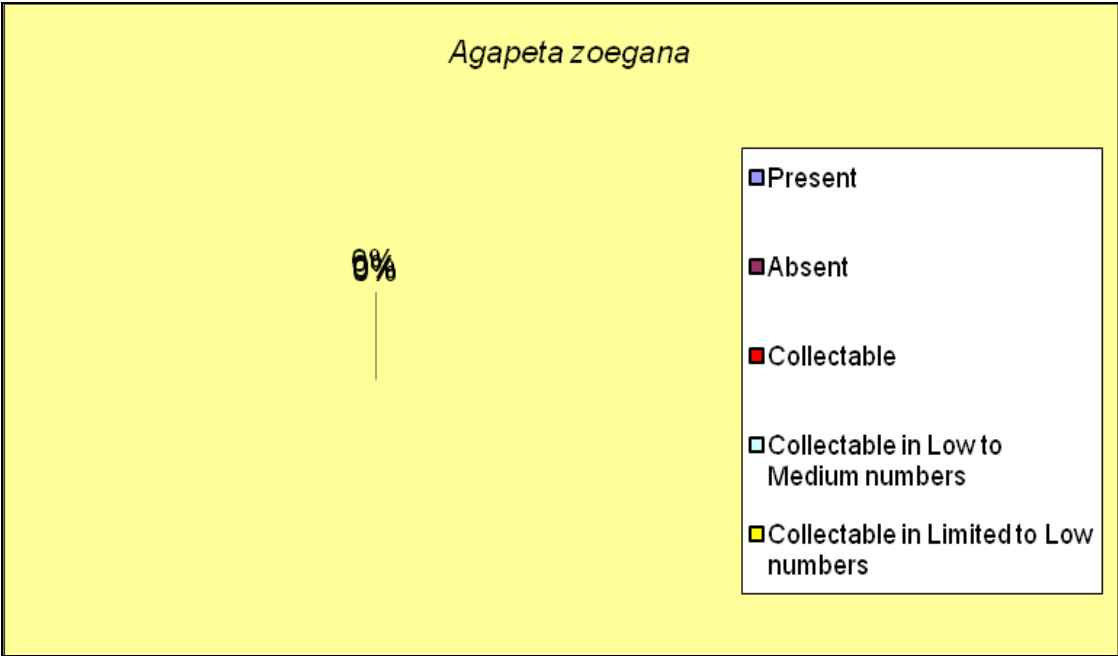


Figure 5.

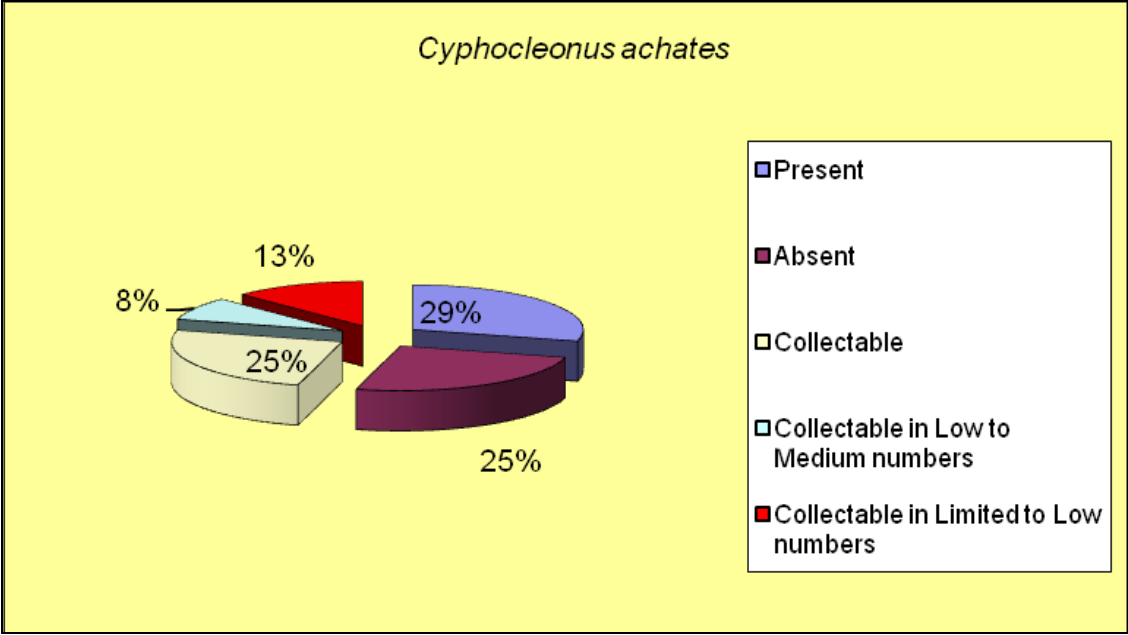


Figure 6.

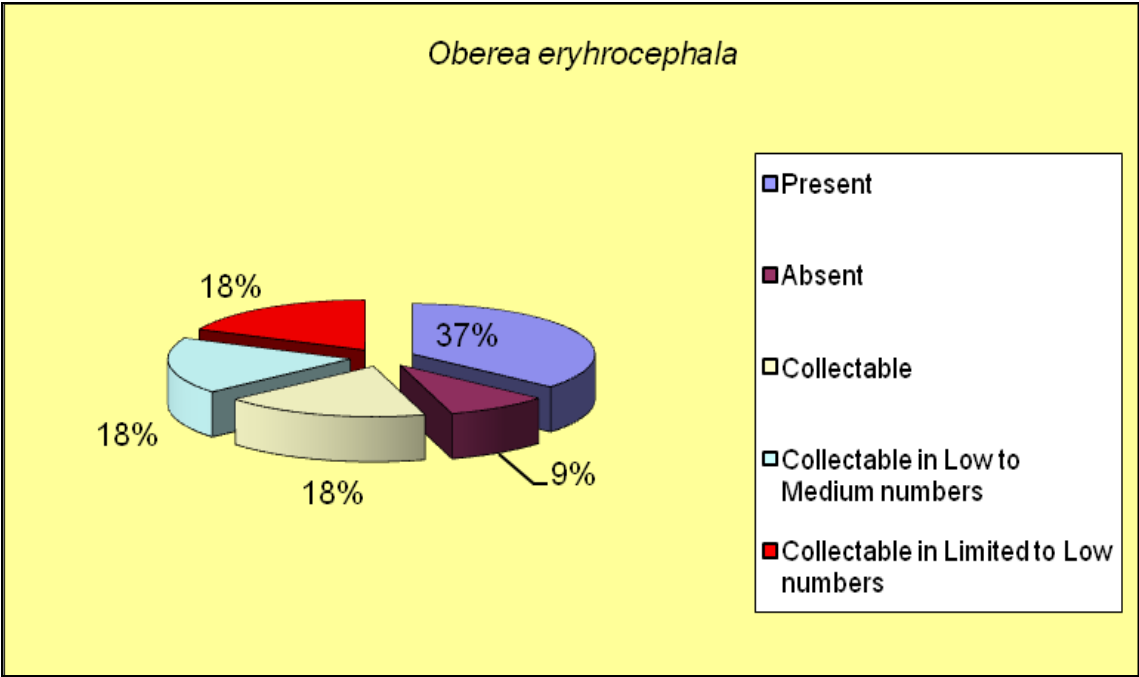


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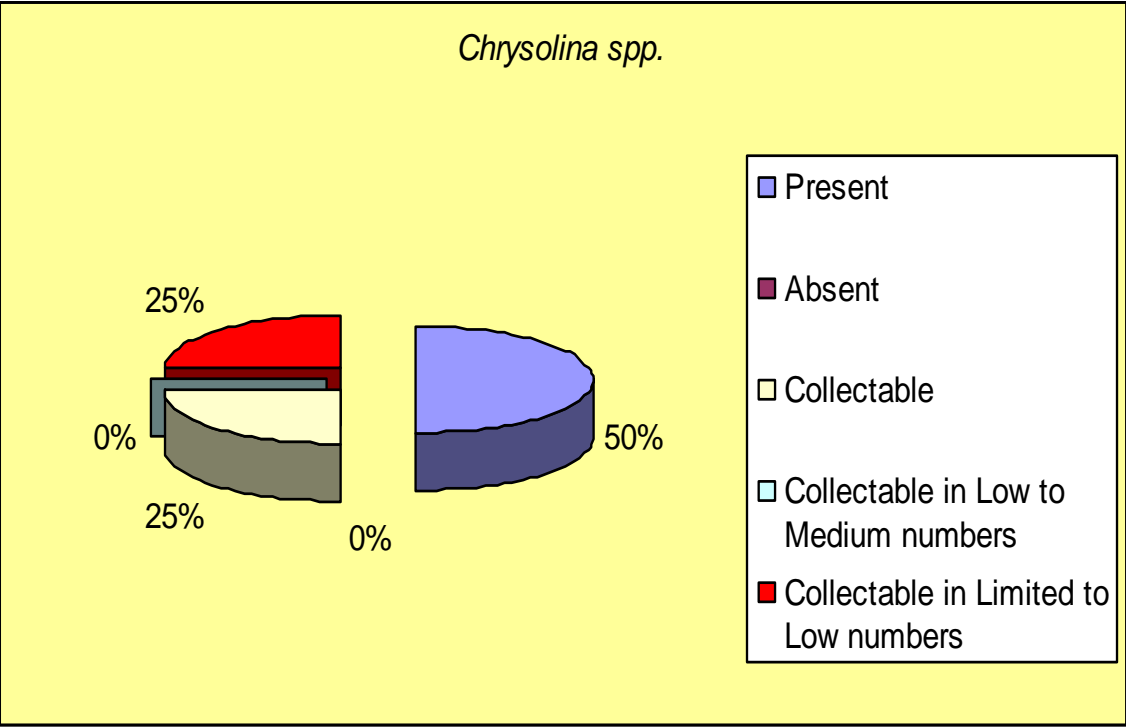


Figure 8.

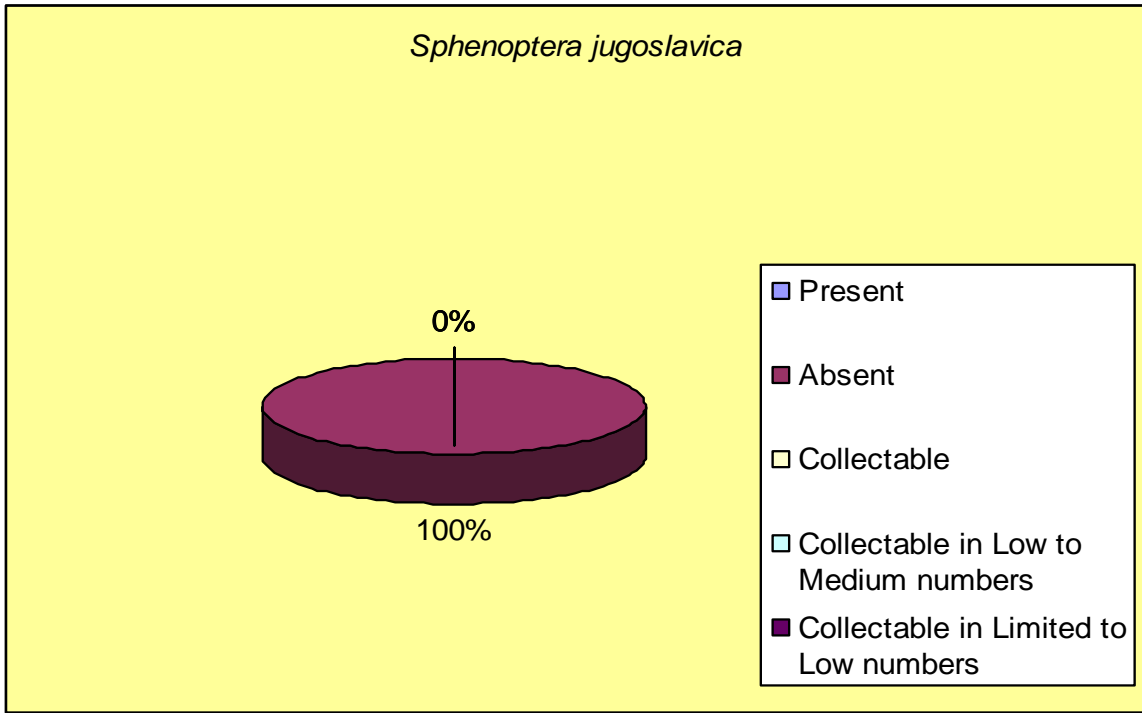


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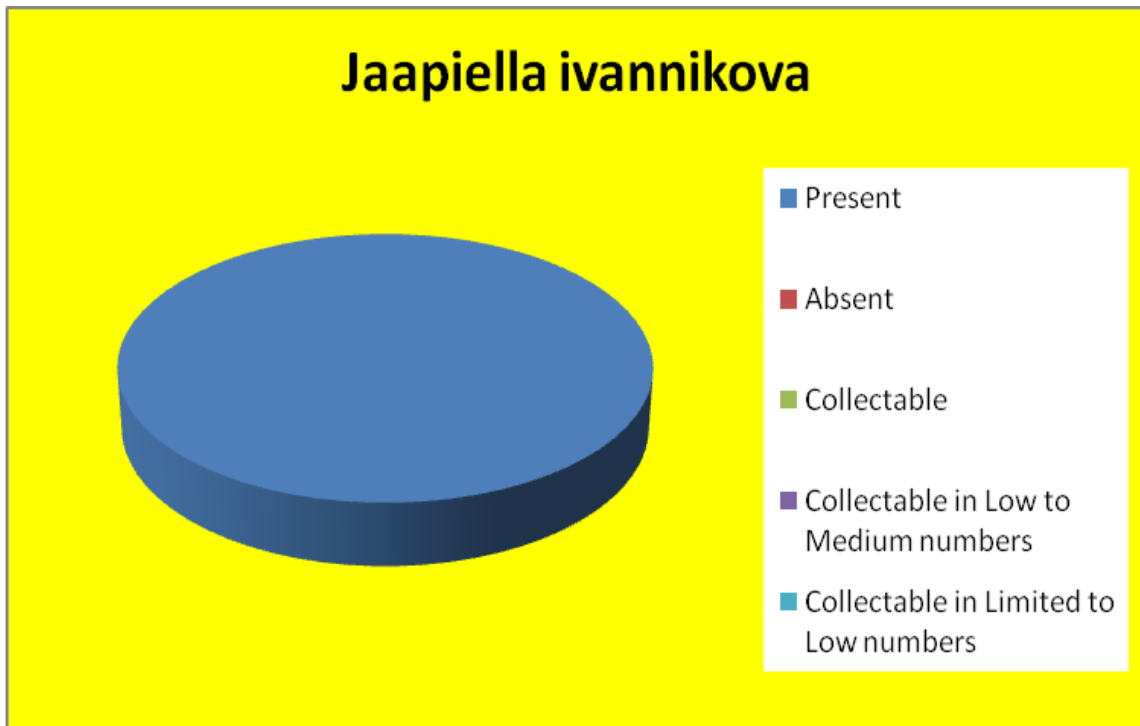
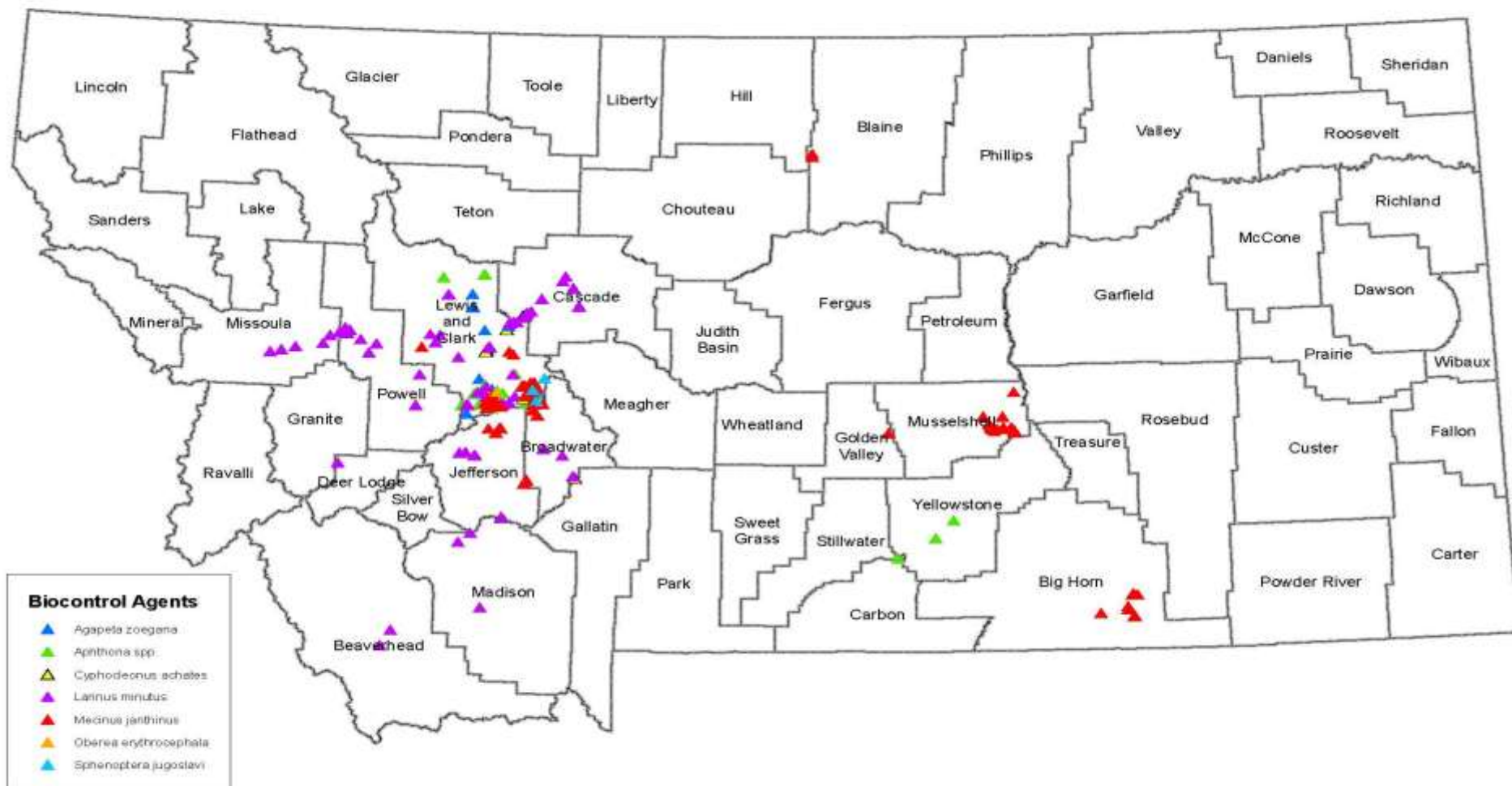


Figure 10.

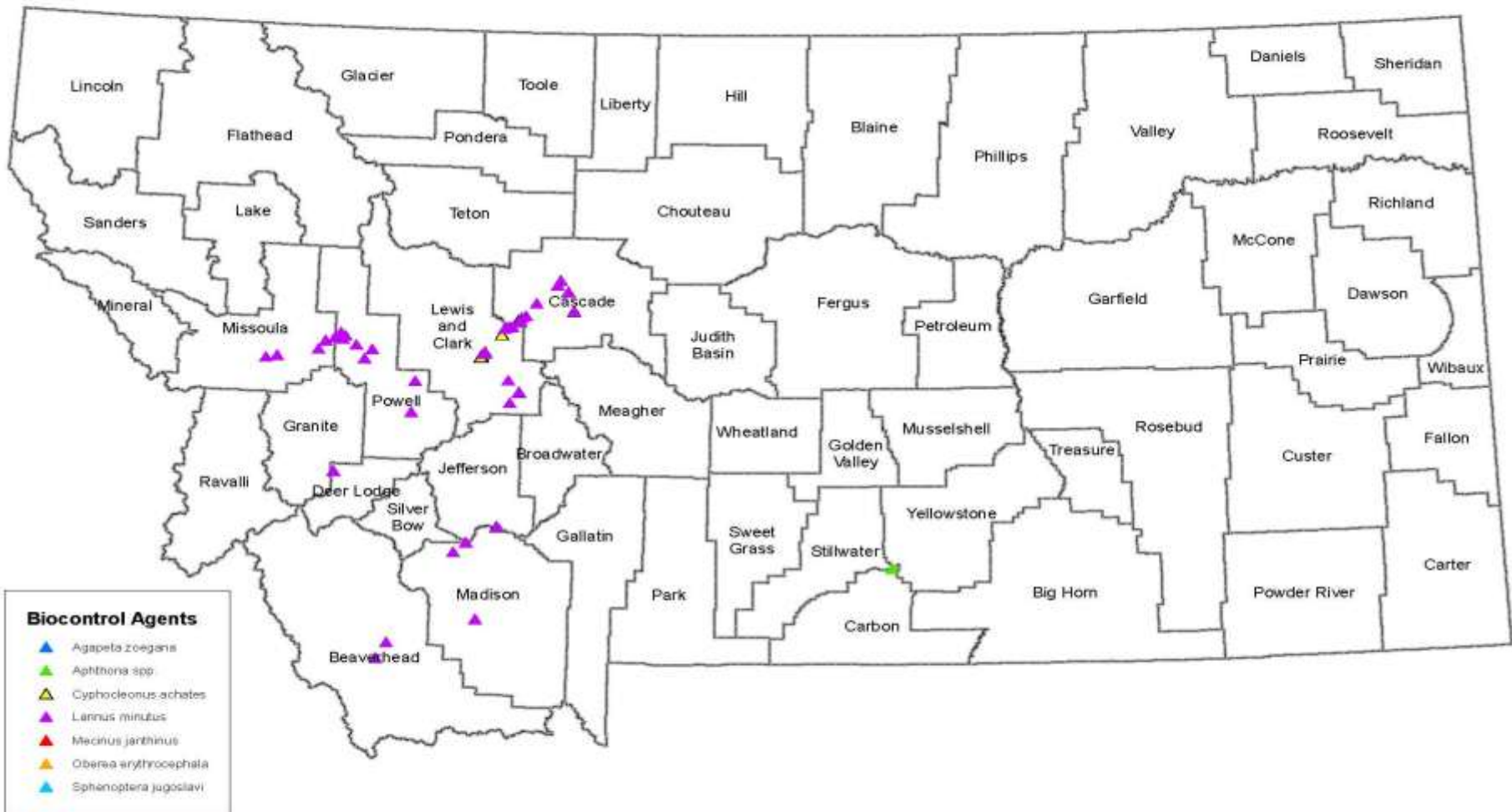
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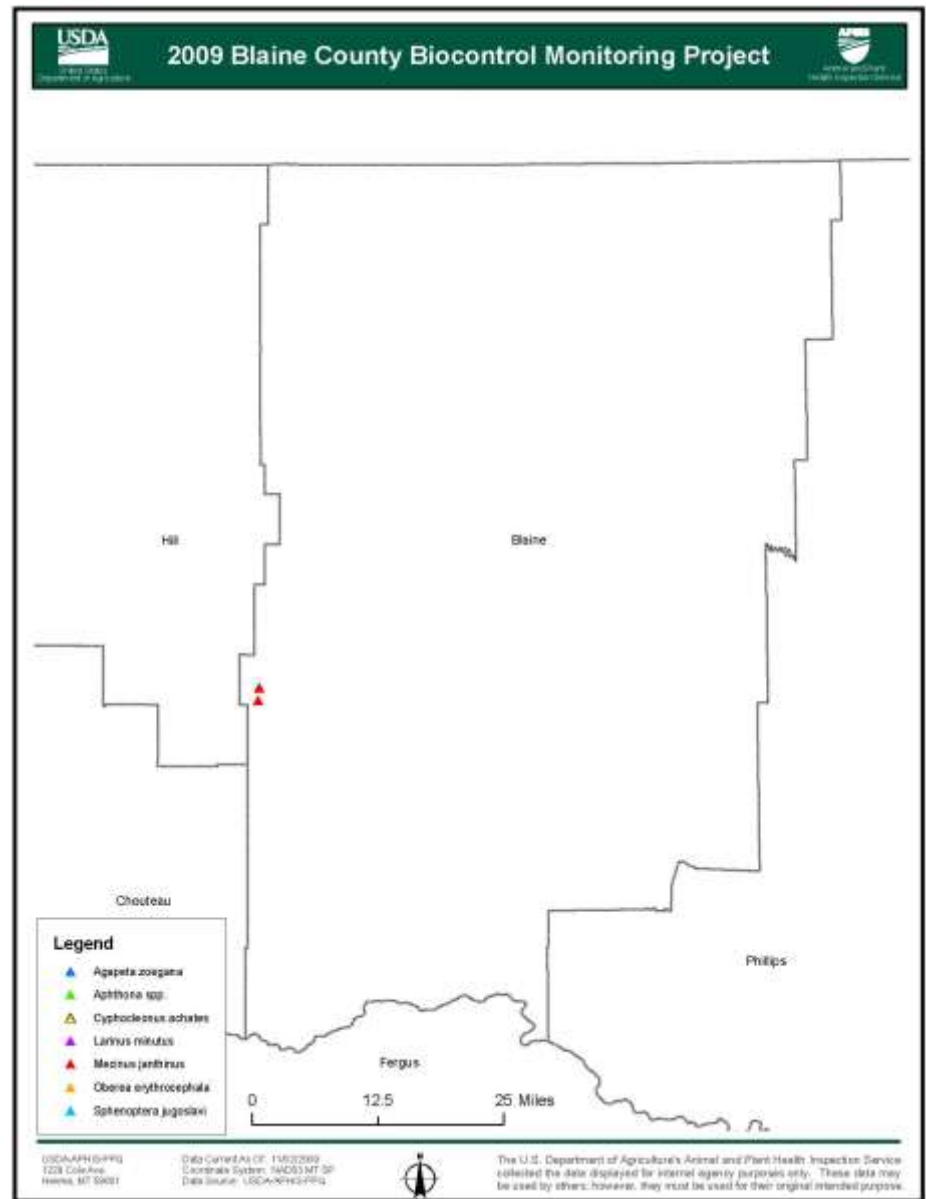
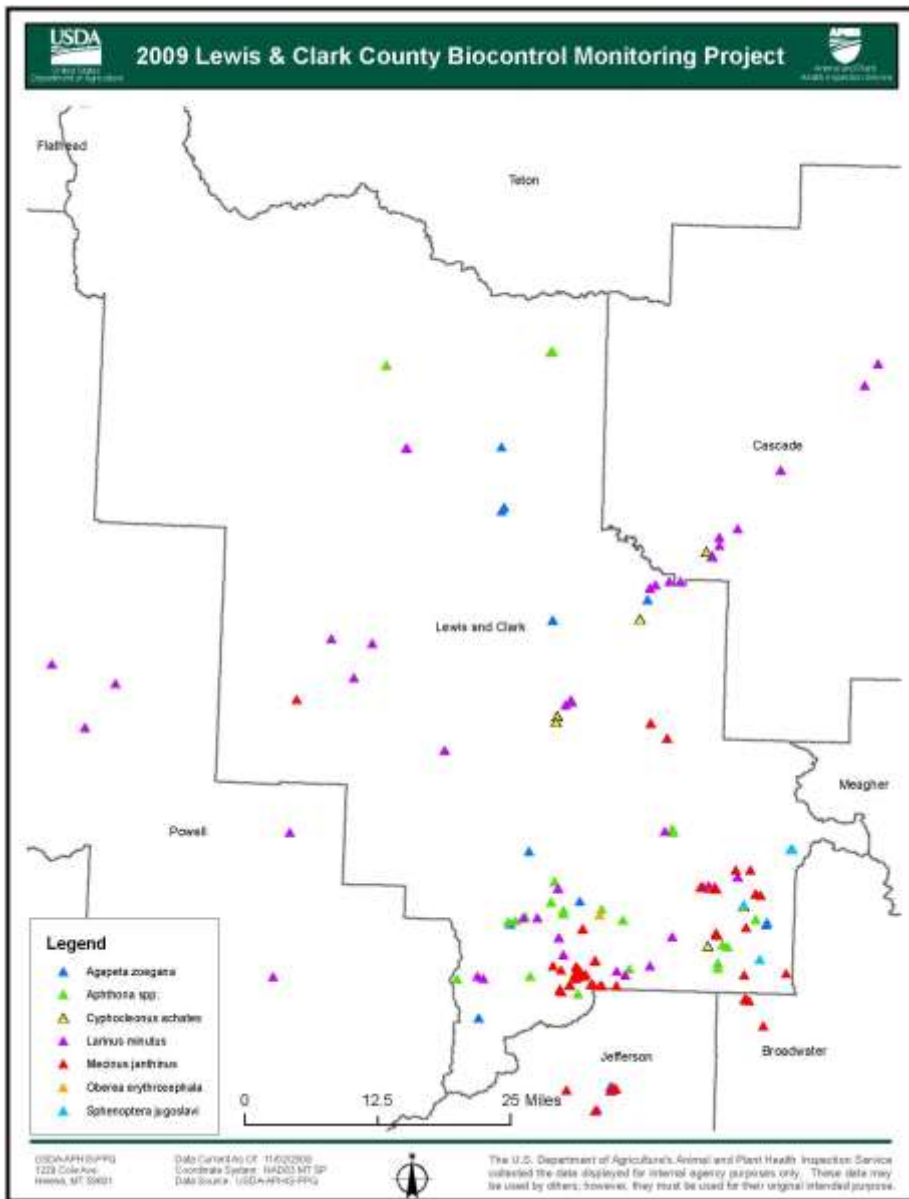
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Montana Biocontrol Monitoring Project

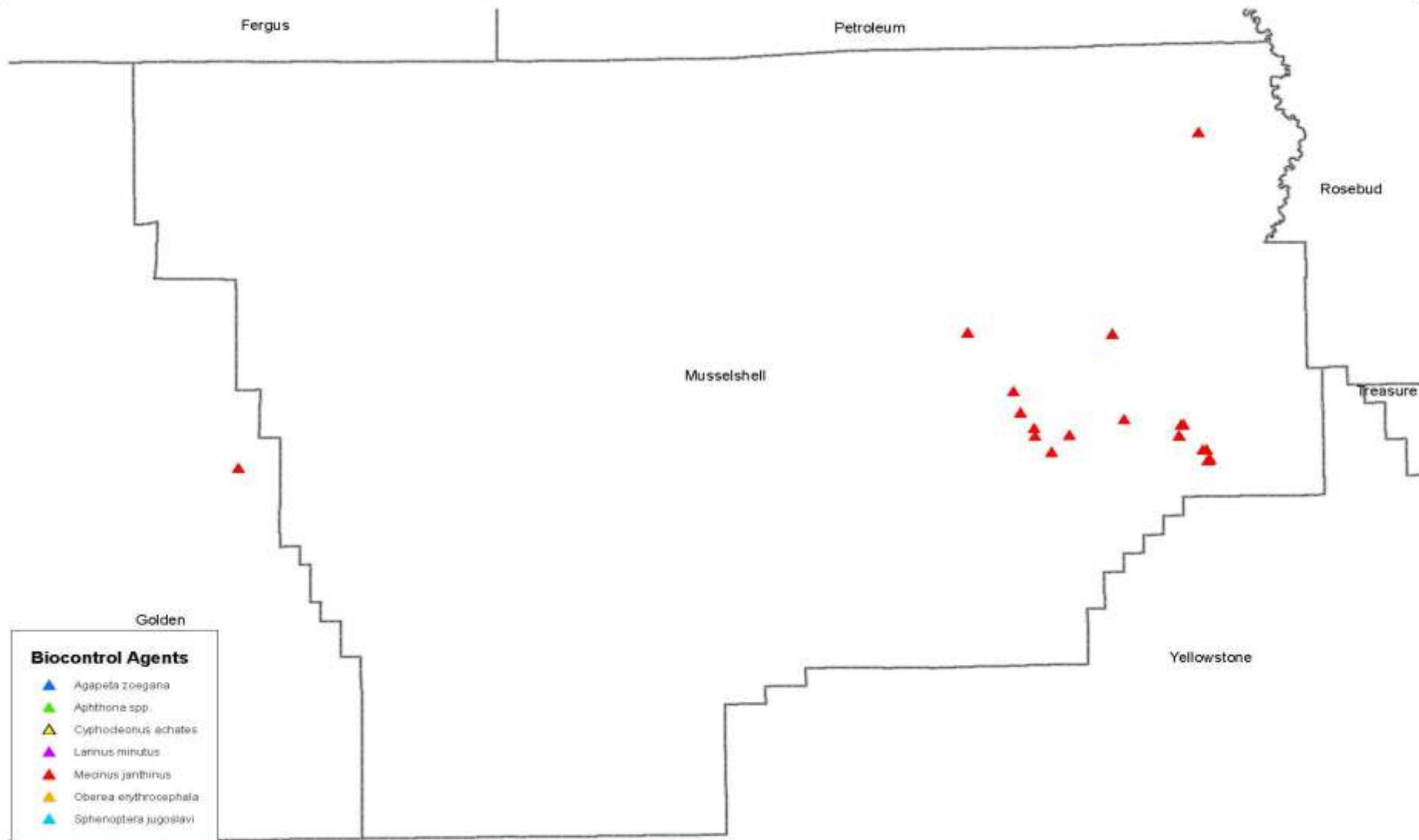


2009 Montana Biocontrol Monitoring Project of FWP Lands

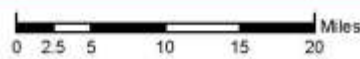
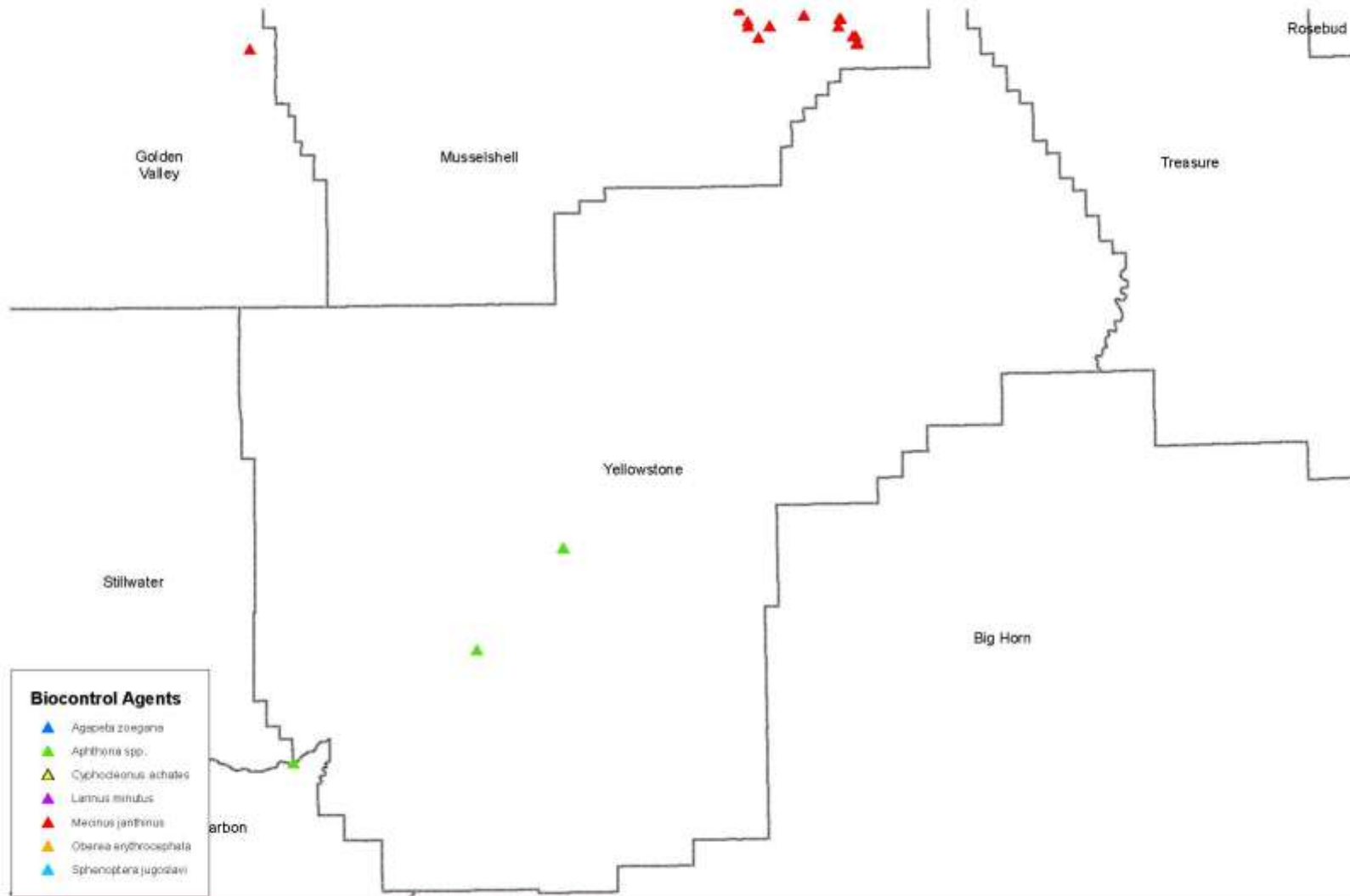




2009 Musselshell County Biocontrol Monitoring Project



2009 Yellowstone County Biocontrol Monitoring Project



2009 Big Horn County Biocontrol Monitoring Project

