Good Beetles and Bad Beetles

Introduction: Beetles of Oklahoma

Beetles (order *Coleoptera*) make up one of the most diverse insect groups in Oklahoma. Some species - like dung beetles - provide critical ecological benefits, while others, such as blister beetles or flea beetles, can cause harm to livestock or crops. Understanding which are “good” and which are “bad” helps gardeners, ranchers, and land stewards make informed decisions.

The Good Guys: Beneficial Beetles

Dung Beetles (Scarabaeidae: *Coleoptera*)

Often underappreciated, dung beetles offer remarkable ecosystem services. These include:

- **Nutrient cycling**: By burying livestock manure underground, they release nitrogen and phosphorus back into the soil, enriching forage for grazing animals and promoting plant growth.
- **Soil structure improvement**: Their tunneling aerates the soil, improving drainage and root penetration.
- **Parasite suppression**: By rapidly removing dung from the surface, they disrupt fly, nematode, and protozoan life cycles, reducing livestock infestations.

There are three functional groups:

- **Rollers**: Shape dung into balls and roll it away to bury it.
- **Tunnelers**: Dig beneath dung pats and bury portions as brood balls.
- **Dwellers**: Live and lay eggs within the pat itself, contributing less soil turnover but still consuming manure.

Research at OSU and beyond underscores their importance: emerging studies like those on breeding or promoting regional beetle populations emphasize their resilience and ecological role on rangelands.

The Bad Beetles: Agricultural & Garden Pests

Blister Beetles (Family Meloidae)

Blister beetles are a high-profile pest in Oklahoma, especially in alfalfa fields and gardens.

- Adults feed on blooms and foliage of alfalfa and various garden plants — legumes, solanaceous crops, and broadleaf weeds are common targets.
- They secrete cantharidin, a potent blistering toxin injurious to livestock (especially horses) if beetles are crushed in baled hay — even dried bodies can be toxic.

Key management tips:

- Scout field edges and borders in late spring to early summer when adult emergence peaks (often mid-May to June in Oklahoma).
- Mow or control weeds (like pigweed or ragweed) that attract blister beetles before harvest.
- Avoid using hay conditioners or running heavy equipment through fields before beetles escape, as this crushes them and traps toxin in the forage.
- If needed, apply targeted insecticides (e.g., low-residual pyrethroids, Sevin, Spinosad) along field margins to minimize swarming into crops—but be cautious of impacts on beneficial insects.

Blister beetles are harmful personally too — cantharidin causes painful blisters on human skin, making gloves and protective clothing essential for gardeners handling plants during infestations.

Flea Beetles and Other Plant-Feeding Coleoptera

- **Flea beetles** (e.g., *Phyllotreta* species) feed on seedlings and young foliage of brassicas, beets, potatoes, and more. Their small size and powerful jumping make them irritating pests and difficult to control once widespread.
- Other leaf-chewing beetles (e.g., Colorado potato beetle, Japanese beetle) are not covered extensively in the references but are part of the broader harmful group in Oklahoma gardens.

Distinguishing Key Traits

Feature	Beneficial Beetles	Problematic Beetles
Function	Nutrient cyclers, soil builders, parasite reducers	Crop or pasture feeders, toxin producers
Habitat	Livestock pastures, rangelands	Alfalfa fields, gardens, field margins
Appearance	Scarab-shaped, often dull black or metallic; moderate size	Slender, soft-bodied, often striped or vividly colored
Timing	Active spring–fall across seasons	Often peak late spring to mid-summer

Dung beetles are scarab-like, robust, and focused underground. Blister beetles are slender, soft-bodied, and gregarious in swarms. Flea beetles are tiny, shiny, and black or bronze, often seen hopping off injured seedlings.

Conservation vs. Control Strategies

Promoting the Beneficials

- Promote ranch-friendly grazing: rotational grazing and minimal residual insecticide use—especially avoiding long-residual pour-ons or avermectin’s that harm dung beetles.

- Maintain habitat and fresh dung availability; avoid broad leaf-hopper sprays that kill non-target insects.

Managing the Pests

- **Blister beetles**: scout field margins prior to cutting; avoid conditioning hay; spray only border zones; mow weeds; choose harvest timing to reduce exposure.
- **Flea beetles**: use row covers over young seedlings, regular scouting, and appropriately labeled insecticides if damage threshold is exceeded (generally small columnar feeding holes on seedlings).

Emerging Research and Rare Species

OSU-linked research has also helped document rare Oklahoma beetles. For instance, the rediscovery and study of a rare “dung beetle” species—once thought lost—suggests that even rare scarab relatives may provide ecological insight, and highlights the importance of conserving native beetle diversity

Fact Sheets:

https://news.okstate.edu/magazines/agriculture/cowboy-journal/articles/2023/research-digs-in-to-improve-dun-beetle-survival.html

https://agriculture.okstate.edu/departments-programs/entomol-plant-path/research-and-extension/entomology-museum/coleoptera/

https://stateimpact.npr.org/oklahoma/2022/03/24/long-embattled-rare-beetle-offers-hope-of-new-discoveries-to-osu-researchers/

https://openresearch.okstate.edu/bitstreams/8c251e90-829a-46ff-a30c-929930b89c55/download

https://beetleidentifications.com/beetles-in-us/beetles-in-oklahoma/

https://extension.okstate.edu/fact-sheets/blister-beetles-and-alfalfa.html

https://animalofthings.com/types-of-beetles-in-oklahoma/