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POISONOUS PLANTS OF UTAH

Jack D. Brotherson, Lee A. Szyska, and William E. Evenson

ABSTRACT.—A list of the major livestock-poisoning plants has been compiled for the state of Utah. Two hundred fifteen taxa representing 36 families, 119 genera, and 209 species occur within the state. Forty-one percent are from two families, the Asteraceae and the Fabaceae. The remaining families of major importance are: Poaceae, Ranunculaceae, Solanaceae, Chenopodiaceae, Brassicaceae, Asclepiadaceae, Liliaceae, and Euphorbiaceae. Sixty-nine percent of the genera occur with a single species. Thirty-three percent of the taxa are introduced to the state. Most of the plants are insect pollinated; 57 percent are herbaceous perennials.

Most livestock poisoning occurs during the spring. This is due both to concentration of toxins in emerging vegetation and to the absence of more suitable forage on late winter and spring ranges. Green herbage is poisoning in about 80 percent of all taxa, seeds and fruits in about 15 percent, and the remaining 5 percent have toxic compounds confined to flower heads, sap, tubers, or roots. Disturbed or cultivated habitats and poorly managed range harbor the greatest diversity of poisonous plants. Wetlands contain fewer poisonous taxa than do xeric or mesic areas.

The predominate plant toxins are various alkaloids and glycosides. Sixteen percent of the plants have uncharacterized toxins. Cattle and sheep are more susceptible to poisoning than are horses, swine, or poultry.

Records document man's encounters with poisonous plants since ancient times. They have played both positive and negative roles in human culture (Dayton 1948). This conspicuous duality of poisonous plants remains a major concern for range management. Kingsbury's (1964) manual on the poisonous plants of the United States and Canada was designed to aid veterinarians and ranchers in recognizing poisonous plants and the symptoms they produce in poisoned livestock. Valentine (1975) prepared an extensive bibliography on the poisonous plants of American rangelands, and numerous works have been published dealing with local species lists and descriptions (Evenson 1972, Mihalopoulus 1974, Schmutz et al. 1968, Stoddard et al. 1949, USDA 1968).

The scope of this paper is twofold: to provide a list of taxa of the major poisonous plants of Utah, and to present some general patterns observed among poisonous plants within the state. It is hoped that this annotated compilation and discussion will prove useful to range managers and biologists alike.

MATERIALS AND METHODS

Data on poisonous taxa were gleaned from the published literature and by consultation with specialists in botany and toxicology. Much of the descriptive literature on poisonous plants is redundant, consequently, only the more recent works are cited here.

Criteria used in compiling the list of poisonous plants were:

1. The taxon had to be sufficiently abundant (either native or introduced) in natural ecosystems to constitute a legitimate threat to livestock or wildlife. For example, some species of the genus Astragalus are known to be toxic but are not abundant enough within the state to be considered dangerous (Williams and Barneby 1977).

2. Ornamentals were included only if they have escaped widely from cultivation. Such plants are frequent along ecotones or in disturbed habitats.

3. Suspicions of toxicity had to be reasonably well-founded. The genus Astragalus, for example, is represented by more than 100 species in Utah (Welsh 1975), but only those taxa demonstrably toxic were included in the present listing.

Additional variables considered for each taxon were: life history strategy (annual, biennial, perennial), patchiness of distribu-

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tion, occurrence as a cultivar or as a common range plant, growth form (vine, forb, grass, shrub, or tree), generalized habitat requirements including elevation, soil texture and acidity, and moisture preference, nature of the toxin and its localization within the plant, seasonality of poisoning, animals affected, specific juvenile mortality and abortifacient properties. Not all variables could be documented for each species.

Results

Taxonomy

Conservatively estimated, Utah has at least 215 major toxic taxa of plants representing 36 families, 119 genera, and 209 species. Thirty-three percent of these taxa are introduced to the state. Two of these 36 families, the Asteraceae and the Fabaceae contain 41 percent of the total known taxa of poisonous plants (Table 1). In decreasing order of floral prominence, the eight next important families are: Poaceae, Ranunculaceae, Solanaceae, Chenopodiaceae, Brassicaceae, Asclepiadaceae, Liliaceae, and Euphorbiaceae. The number of toxic taxa within a family is not related to the degree of toxicity of individual taxa: two of the most deadly plants, rosary pea or precatory bean (*Abrus precatorius*) and poison hemlock (*Conium maculatum*) belong to the Fabaceae and Apiaceae, one major and one relatively minor family if numbers alone are considered.

<table>
<thead>
<tr>
<th>Family</th>
<th>No. taxa</th>
<th>Percent of taxa occurring in each family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabaceae</td>
<td>50</td>
<td>23</td>
</tr>
<tr>
<td>Asteraceae</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Poaceae</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Ranunculaceae</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Solanaceae</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Chenopodiaceae</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Brassicaceae</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Asclepiadaceae</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Liliaceae</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Euphorbiaceae</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>26 other families</td>
<td>46</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>215</td>
<td></td>
</tr>
</tbody>
</table>

Sixteen genera (13 percent) occur in the flora with more than two taxa. Twenty-two other genera (18 percent) occur with two taxa (including *Cannabis*, which has two subspecies of a single species). Sixty-nine percent of the genera occur with a single species.

The taxonomy of poisonous plants is not readily explained. The poisonous flora of the eastern half of the United States resembles that of Europe more than it does that of the western states (Kingsbury 1961), and Dayton’s paper (1948) on the poisonous plants of the continental United States gives a different listing of major families than that found for the state of Utah alone.

### Table 2. Major toxins found in Utah’s poisonous plant flora.

<table>
<thead>
<tr>
<th>Toxin</th>
<th>Percent of taxa in which toxin occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkaloids</td>
<td>22</td>
</tr>
<tr>
<td>Glycosides, cyanogenetic glycosides</td>
<td>22</td>
</tr>
<tr>
<td>Glycosides, goitrogenic glycosides</td>
<td></td>
</tr>
<tr>
<td>Irritant oils</td>
<td></td>
</tr>
<tr>
<td>Coumarin</td>
<td></td>
</tr>
<tr>
<td>Steroids and triterpenoids</td>
<td></td>
</tr>
<tr>
<td>Selenium</td>
<td>11</td>
</tr>
<tr>
<td>Nitrates</td>
<td>5</td>
</tr>
<tr>
<td>Unknown toxins</td>
<td>16</td>
</tr>
<tr>
<td>Other toxins, amines, oxalates, resins and resinoids, photosensitizing compounds, nutritional deficiencies</td>
<td>19</td>
</tr>
<tr>
<td>Mechanically injurious</td>
<td>4</td>
</tr>
</tbody>
</table>

### Plant Toxins

Most poisonous principles are secondary by-products of the plants’ metabolism (Kingsbury 1964, Levin 1976). In Utah’s flora, many of these toxic metabolites are loosely classed as alkaloids and glycosides (Table 2). These two biochemical groups are primarily artificial constructs, and each consists of numerous toxins (only a few of which have been identified) having generally similar molecular structures or modes of activity.

When the impact of poisonous range plants on livestock mortality is assessed, however, many of the minor toxins become of
serious concern to ranchers. Selenium poisoning by members of the genus Astragalus and other species is an important source of mortality, as is oxalate poisoning by halogeton (Halogeton glomeratus) and fivehook bassia (Bassia hyssopifolia), and loss of sheep due to photosensitization by plants such as springparsley (Cymopterus watsonii) and St. Johnswort (Hypericum formosum). Thus, the commonness of a particular plant species or toxin does not necessarily imply high mortality.

Seasonality and Specificity

Most livestock losses occur in the early spring (Table 3) as animals are turned out into slowly greening range (Evers 1972, Keefer 1978, Kingsbury 1964, Kreger and Sharp 1978, Merrill and Schuster 1978). A second, smaller peak in mortality follows in the summer as the more palatable vegetation withers in the heat and toxins are concentrated in fruits and seeds of poisonous species.

Cattle are susceptible to poisoning by more taxa than sheep, with consequently higher mortality rates and greater economic loss (Nielson 1978). Most of the toxic taxa commonly found on Utah’s rangeland will poison all livestock but others are relatively specific (such as Delphinium poisoning in cattle—ranges infected with the various species of this plant may be safely grazed by sheep). Other poisonous taxa may be razed in moderate amounts without harm if alternative palatable forage is available, and in some species, for example, halogeton, can be utilized by sheep if the animals are introduced gradually to the plant, allowing their rumen microflora to adapt to detoxifying large amounts of calcium oxalate (ames et al. 1976).

The Ecology of Poisonous Plants

The ecology of Utah’s poisonous flora is highly variable, but our data permit a few general observations. Most of the plants are insect pollinated, and 57% are herbaceous perennials. Green herbage is toxic in about 80% of all taxa, seeds and fruits in about 15%, and about 5% of the taxa have toxins confined to flower head, sap, tubers and roots. The relative locations and concentrations of toxins within a plant may vary through the growing season, and depend upon the particular taxon being considered.

Toxic species are likely to be found anywhere in the state, although disturbed habitats and poorly managed rangelands are especially prone to harbor dangerous species. The predominance of poisonous plants in these habitats reflects both a bias in the reported literature and the very real dangers of overgrazing in the western states. Dry desert soils have more taxa of poisonous plants than mesic or hydric ones; however, some of the individually most deadly plants occur in wetlands. Data on elevation, soil texture and acidity were insufficiently complete to permit any valid conclusions.

Discussion and Summary

The benefit to the plant of manufacturing and maintaining toxic substances is unknown. A few phytotoxins such as abrin and cichutoxin appear to function specifically as vertebrate poisons (Kingsbury 1961, 1964) and may have evolved in response to herbivore pressures (Laycock 1978). Selenium accumulators are toxic due to characteristics of the soil, although primary accumulators may actually require trace amounts of selenium for proper growth (Kingsbury 1964).

There does not appear to be any universally applicable method for managing rangelands infested with poisonous plants. Species that occur in dense clumps or thickets may be individually irradiated by chemical or mechanical means. More commonly, however, vast areas will be infested, often as a result of overgrazing. Wise management will include aspects of the following practices:

1. Recognition of poisonous plants and an accurate assessment of their potential

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**Table 3. Livestock mortality by seasons.**

<table>
<thead>
<tr>
<th>Season</th>
<th>Percent of reported poisonings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>65</td>
</tr>
<tr>
<td>Summer</td>
<td>17</td>
</tr>
<tr>
<td>All</td>
<td>11</td>
</tr>
<tr>
<td>Inter</td>
<td>6</td>
</tr>
</tbody>
</table>

Mortality especially high in the late winter and early spring
lethality. Unless forced by hunger, livestock generally will ignore poisonous plants in favor of more palatable forage.

2. Removal of susceptible animals.
3. Provision of sufficient alternate forage if animals must be turned onto ranges in early spring before palatable plants are abundant.
4. Scheduling of range use around livestock susceptibility patterns.

There are several good reviews of management practices (Evers 1972, Keeler 1978, Krueger and Sharp 1978, Merrill and Schuster 1978), and the range literature abounds in articles dealing with specific plants and their effects (see Valentine 1978 for a comprehensive listing). The purpose of the present paper is not to review management techniques in detail, but primarily to provide an updated listing of Utah’s dangerous flora. Further research needs to be done not only in management but in toxicology and pharmacology so that control of poisonous plants will be a matter of understanding instead of eradication and vast areas of range can again be utilized and productive.

POISONOUS PLANTS OF UTAH

The present list of plant taxa was gleaned from published literature and by consultation with experts in botany and toxicology as cited above.

Certain plant characteristics are designated for each taxon in parentheses immediately following the taxon name. The abbreviations are as follows:

P Perennial
B Biennial
A Annual
N Native
I Introduced
T Tree
S Shrub
F Forb
G Grass
R Bush

The following list of families, genera, species, and varieties is arranged in alphabetical order for ease of reference. Plant synonymy follows Manual of the Plants of Colorado (Harrington 1964) and Utah Plants (Welsh and Moore 1973).

Amaranthaceae
Amaranthus retroflexus L. (AIF)
Common name: pigweed, carelessweed, redroot, redroot amaranth.
Toxin: nitrates, under conditions of over-fertilization with too little water.
Habitat: common garden and field weed; waste places.
Animals affected: livestock.

Anacardiaceae
Toxicodendron rydbergii (Small) Greene (PNS)
Common name: poison ivy.
Toxin: 3-n-pentadecylcatechol.
Habitat: moist areas at lower elevations.
Animals affected: humans (dermatitis).

Apiaceae
Cicuta douglasii (DC.) Coul. & Rose (PNF)
Common name: Douglas waterhemlock.
Toxin: alcohol (cicutoxin).
Habitat: swampy or wet habitats along streams and in marshes.
Animals affected: livestock, humans.

Conium maculatum L. (BIF)
Common name: hemlock, poisonous hemlock, spotted hemlock, California or Nebraska fern.
Toxin: alkaloids (conine, N-methyl conine, conhydrine, lambda-coniceine, pseudoconhydrine).
Habitat: weed of roadsides, ditches, edges of cultivated fields and other waste areas.
Animals affected: livestock, humans.

Daucus carota L. (BIF)
Common name: wild carrot, Queen Ann’s lace.
Toxin: nitrates, under conditions of over-fertilization with too little water.
Habitat: waste places.
Animals affected: horses, cattle.

Pastinaca sativa L. var. sylvestris DC. (BIF)
Common name: common parsnip.
Toxin: unknown.
Habitat: widely naturalized weed.
Animals affected: humans (dermatitis).

*Sium suave* Walt. (PNF)
Common name: water parsnip, hemlock water parsnip.
Toxin: unknown.
Habitat: marshy lands and wet soils.
Animals affected: hogs, cattle.

**APOCYNACEAE**

*Apocynum androsaemifolium* L. (PNF)
Common name: spreading dogbane.
Toxin: resins, glycosides.
Habitat: common weed of open places, in coarse soils along streams, meadows, and wooded hillsides.
Animals affected: cats, dogs.
Note: The closely related species *A. medium* Greene and *A. sibericum* Jacq. may show similar effects.

*Apocynum cannabinum* L. (PNF)
Common name: Indian hemp, dogbane, hemp dogbane.
Toxin: resins, glycosides.
Habitat: common weed of open places, in coarse soils along streams.
Animals affected: cats, dogs.

*Nerium oleander* L. (PNF)
Common name: oleander.
Toxin: glycosides.
Habitat: cultivated greenhouse plant, street plant in St. George.
Animals affected: livestock, humans.

**ASCLEPIADACEAE**

*Asclepias asperula* (Decne) Woodson (PNF)
Common name: asper milkweed, spider antelopehorn.
Toxin: resinoids, glycosides and an alkaloid.
Habitat: open dry soils, flats, desert swales, sandy or rocky hillsides with pinyon, juniper or oak.
Animals affected: sheep, cattle, goats, horses, poultry.

*Asclepias fascicularis* Decne ex DC. (PNF)
Common name: Mexican whorled milkweed.
Toxin: resinoids, glycosides and an alkaloid.
Habitat: dry hillsides and roadsides; pastures, moist streamsides.
Animals affected: sheep, cattle, goats, horses, fowl.

*Asclepias incarnata* L. (PNF)
Common name: swamp milkweed.
Toxin: resinoids, glycosides and an alkaloid.
Habitat: marshes.
Animals affected: sheep, cattle, horses, poultry.

*Asclepias labriformis* Jones (PNF)
Common name: labriform milkweed.
Toxin: resinoids, glycosides and an alkaloid.
Habitat: in sandy soils along old stream beds.
Animals affected: sheep.

*Asclepias latifolia* (Torr.) Raf. (PNF)
Common name: broadleaf milkweed.
Toxin: resinoids, glycosides and an alkaloid.
Habitat: dry plains in sandy soils.
Animals affected: sheep.

*Asclepias speciosa* Torr. (PNF)
Common name: showy milkweed.
Toxin: resinoids, glycosides, and an alkaloid.
Habitat: prairies and open areas.
Animals affected: sheep.

*Asclepias subverticillata* (Gray) Vail (PNF)
Common name: whorled milkweed, western whorled milkweed.
Toxin: resinoids, glycosides and an alkaloid.
Habitat. dry plains and foothills; spreads rapidly along waterways and irrigation canals, forming dense stands; prefers sandy soils.

Animals affected: sheep.

**Asteraceae**

**Achillea millefolium** L. (PNF)
Common name: yarrow.
Toxin: alkaloids and glycosides.
Habitat: various.
Animals affected: livestock.

**Ambrosia tomentosa** Nutt. (PNF)
Common name: white ragweed, skeleton leaf bursage
Toxin: nitrates, under conditions of overfertilization with too little water.
Habitat: dry plains, hills, waste ground and fields.
Animals affected: livestock.

**Anthemis cotula** L. (AIF)
Common name: dog fennel, mayweed, mayweed camomile.
Toxin: acrid substance irritating to mucous membranes.
Habitat: weedy plant of disturbed soils, fields and waste places; common weed in hay.
Animals affected: poultry.
Reference: Los Angeles County Livestock Department 1938, Kingsbury 1964.

**Artemisia filifolia** Torr. (PNS)
Common name: sand sagebrush, old man sagebrush.
Toxin: volatile oils.
Habitat: sandy soils.
Animals affected: horses.

**Artemisia spinescens** (DC.) Eaton (PNS)
Common name: bud sagebrush.
Toxin: volatile oils.
Habitat: dry plains and hills.
Animals affected: livestock.

**Aster chilensis** Nees ssp. *adscendens* (Lindl.) Cronq. (PNF)
Common name: pacific aster.
Toxin: secondary selenium accumulator.

Habitat: widely scattered in moist habitats.
Animals affected: livestock.

**Aster glaucodes** Blake (PNF)
Common name: gray aster.
Toxin: secondary selenium accumulator.
Habitat: mountains.
Animals affected: sheep.

**Aster laevis** L. (PNF)
Common name: smooth aster.
Toxin: secondary selenium accumulator.
Habitat: widely scattered in dry to moist habitats.
Animals affected: livestock.

**Aster occidentalis** (Nutt.) Torr. & Gray (PNF)
Common name: western aster.
Toxin: secondary selenium accumulator.
Habitat: mountain meadows at moderate elevations.
Animals affected: livestock.

**Aster pauciflorus** Nutt. (PNF)
Common name: fewhead aster.
Toxin: secondary selenium accumulator.
Habitat: widespread in saline soils.
Animals affected: livestock.

**Bahia oppositifolia** (Nutt.) DC. (PNF)
Common name: bahia, plains bahia.
Toxin: cyanogenetic glycoside.
Habitat: dry soils; plains and hills.
Animals affected: cattle, sheep.
Reference: Deem et al. 1939, Kingsbury 1964.

**Baileya multiradiata** Harv. & Gray (BNF)
Common name: desert baileya, cloth of gold, desert marigold.
Toxin: unknown.
Habitat: sandy and gravelly soils in dry areas.
Animals affected: sheep, goats.
**Baileya pleniradiata** Harv. & Gray (ANF)
Common name: desert marigold baileya.
Toxin: unknown.
Habitat: mesas and deserts of southeastern Utah.
Animals affected: sheep, goats.

**Centarea repens** L. (PIF)
Common name: Russian knapweed.
Toxin: unknown; produces nigropallidal encephalomalacia.
Habitat: fields, roadsides and waste places.
Animals affected: horses.

**Centarea solstitialis** L. (AIF)
Common name: yellow star thistle, yellow centaurea.
Toxin: unknown; produces nigropallidal encephalomalacia; also mechanically injurious.
Habitat: waste places, fields and roadsides.
Animals affected: horses.

**Chrysothamnus nauseosus** (Pall.) Britton (PNS)
Common name: rubber rabbitbrush.
Toxin: unknown.
Habitat: dry, open places at moderate and low elevations.
Animals affected: livestock.

**Grindelia squarrosa** (Pursh) Dunal (BNF)
Common name: gumweed, gumplane, cur-lycup gumweed.
Toxin: secondary selenium accumulator.
Habitat: dry open places: prairies, plains, roadsides and fields.
Animals affected: livestock.
Reference: Throp et al. 1940, Kingsbury 1964.

**Helenium autumnale** L. (PNF)
Common name: sneezeweed, bitterweed.
Toxin: unknown acrid substance.
Habitat: moist low ground in lowlands and foothills.
Animals affected: sheep and cattle.

**Helenium hoopesii** Gray (PNF)
Common name: sneezeweed, orange sneezeweed.
Toxin: glycoside (dugaldine).
Habitat: high mountain slopes and valleys, often forming dense stands in moist, sunny, undisturbed localities.
Animals affected: sheep and cattle.

**Heleomeris longifolia** Rob. & Greenm. var. **annua** (Jones) Yates (ANF)
Common name: annual goldeneye, resin-weed, talloweed.
Toxin: unknown.
Habitat: ranges, hills, plains, and river bottoms.
Animals affected: cattle.

**Hymenoxys richardsonii** (Hook.) Cockerell (PNF)
Common name: pingue. Colorado rubberweed, pingue hymenoxys, rubberweed.
Toxin: unknown: may be associated with mineral imbalance.
Habitat: dry, rocky or clay soils of plains and mountain slopes from 1500 to 12,000 feet.
Animals affected: sheep, cattle, goats.

**Oxyttenia acerosa** Nutt. (PNS)
Common name: copperweed; prickly oxyttenia.
Toxin: unknown.
Habitat: alkaline soils in draws or stream-beds of desert ranges and foothills.
Animals affected: cattle, sheep.
Reference: Throp et al. 1940, Kingsbury 1964.

**Psathyroles annua** (Nutt.) Gray (ANF)
Common name: annual psathyroles.
Toxin: unknown.
Habitat: dry, sandy, often alkaline soils, especially of creek beds and dry washes.
Animals affected: sheep.

**Psilostrophe sparsiflora** (Gray) A. Nels. (PNF)
Common name: greenstem paperflower.
Toxin: unknown: induces kidney damage.
Habitat: dry, open range.
Animals affected: sheep.

*Senecio occidentalis* Nutt. (PNF)
Common name: western coneflower, nig- gerheads.
Toxin: unknown.
Habitat: streambanks and woodlands.
Animals affected: generally unpalatable to livestock; affects hogs and sheep in feeding trials.

*Senecio integrerrimus* Nutt. (PNF)
Common name: groundsel, senecio, lambs-tongue groundsel.
Toxin: alkaloids.
Habitat: dry or moist open woods and slopes, from valleys to near timberline.
Animals affected: livestock, humans (?).
Reference: Clawson 1933, Kingsbury 1964.

*Senecio longilobus* Benth. (PNF)
Common name: woolly groundsel, thread-leaf groundsel.
Toxin: pyrrolizidine alkaloids.
Habitat: dry slopes, mesas and dry washes.
Animals affected: cattle, horses, sheep, goats.
Reference: Clawson 1933, Kingsbury 1964.

*Senecio spartioides* Torr. & Gray (PNF)
Common name: broom groundsel.
Toxin: pyrrolizidine alkaloids.
Habitat: valleys, plains: open areas and pine forests.
Animals affected: cattle, horses, sheep, goats, humans (?).

*Senecio vulgari* L. (AIF)
Common name: common groundsel.
Toxin: pyrrolizidine alkaloids.
Habitat: weed of gardens and waste places.
Animals affected: cattle, horses, sheep, goats, humans (?).

*Solidago parryi* (Gray) Greene (PNF)
Common name: Parry goldenweed.
Toxin: unknown; causes milk-sickness or trembles.
Habitat: mountains, coniferous forests.
Animals affected: cattle.


*Tanacetum vulgare* L. (PIF)
Common name: common tansy.
Toxin: abortifacient.
Habitat: weed along roadsides, waste areas, ditchbanks and other moist areas.
Animals affected: cattle, humans (?).

*Tetradymia canescens* DC. (PNF)
Common name: spineless horsebrush, gray horsebrush.
Toxin: photosensitizing compounds.
Habitat: dry desert and sagebrush ranges.
Animals affected: sheep.

*Tetradymia glabrata* Gray (PNS).
Common name: littleleaf horsebrush, spring rabbitbrush, coaloil brush.
Toxin: photosensitizing compounds.
Habitat: dry desert and sagebrush ranges.
Animals affected: sheep.

*Tetradymia nuttallii* T. & G. (PNS)
Common name: Nuttall horsebrush.
Toxin: photosensitizing compounds.
Habitat: dry desert and sagebrush ranges.
Animals affected: sheep.

*Tetradymia spinosa* T. and G. var. longispina Jones (PNS)
Common name: longspine horsebrush.
Toxin: photosensitizing compounds.
Habitat: dry desert and sagebrush ranges.
Animals affected: sheep.

*Tetradymia spinosa* T. and G. var. spinosa (PNS)
Common name: spiny horsebrush.
Toxin: photosensitizing compounds.
Habitat: dry desert and sagebrush ranges.
Animals affected: sheep.

*Xanthium strumarium* L. (AIF)
Common name: spiny clotbur, spiny cock-lebur.
Toxin: hydroquinone.
Habitat: fields and wastelands; along shores of ponds, rivers and in flood plains.
Animals affected: livestock, fowl, hogs, humans (dermatitis).

*Xanthocephalum microcephalum* (DC.) Gray (PNS)
Common name: broomweed, perennial snakeweed, slinkweed, turpentine weed, threadleaf snakeweed, matchweed, resinweed.
Toxin: saponin.
Habitat: dry stony plains, slopes and mesas.
Animals affected: cattle, sheep, goats, swine, chicks, rabbits.

*Xanthocephalum sarothrae* (Pursh) Britt. and Rusby (ANF)
Common name: broom snakeweed, snakeweed, matchbrush.
Toxin: saponin.
Habitat: dry stony plains, slopes and mesas.
Animals affected: cattle, sheep, goats, swine, chicks, rabbits.

**Boraginaceae**

*Amsinckia intermedia* Fisch. & Mey (ANF)
Common name: tarweed, fiddleneck, fireweed fiddleneck.
Toxin: unknown; potentially lethal nitrate levels, pyrrolizidine alkaloids (?).
Habitat: dry open cultivated ground or waste areas.
Animals affected: horses, hogs, cattle.

Note: The closely related species *A. tesserata* Gray and *A. retrorsa* Suksd. may show similar effects.

*Cynoglossum officinale* L. (BIF)
Common name: houndstongue.
Toxin: unknown.
Habitat: waste places of plains and hills.
Animals affected: livestock.

**Brassicaceae**

*Brassica hirta* Moench. (AIF)
Common name: white mustard.
Toxin: cyanogenetic glycoside.
Habitat: cultivated weed, escaped to waste areas.
Animals affected: cattle, sheep.

*Brassica kaber* Wheeler (AIF)
Common name: charlock, wild mustard.
Toxin: cyanogenetic glycoside.
Habitat: common weed of grain crops and in waste areas.
Animals affected: cattle, hogs, sheep.

*Descurainia pinnata* (Walt.) Britt. (ANF)
Common name: tansy mustard, pinnate tansy mustard.
Toxin: unknown.
Habitat: heavy stands on dry, sandy soils.
Animals affected: cattle.

*Erysimum cheiranthoides* L. (ANF)
Common name: wormweed mustard, treacle wallflower.
Toxin: cyanogenetic glycoside.
Habitat: weed of cultivation, roadsides, meadows; moist waste areas in valleys and canyons.
Animals affected: hogs.

*Stanleya integrifolia* James (PNS)
Common name: wholeleaf desert prince’s plume.
Toxin: primary selenium accumulator.
Habitat: dry plains and hills.
Animals affected: Not observed to be eaten by livestock.

*Stanleya pinnata* (Pursh) Britt. (PNS)
Common name: prince’s plume, desert prince’s plume.
Toxin: primary selenium accumulator.
Habitat: desert soils, dry plains and mesas.
Animals affected: experimental, normally unpalatable.
**Cannabinaceae**

**Cannabis sativa L.** ssp. *sativa* (AIF)
- Common name: marijuana, hemp.
- Toxin: narcotic element contained in tetrahydrocannabinol.
- Habitat: waste places.
- Animals affected: humans, livestock.

**Cannabis sativa L.** ssp. *indica* (Lam.) Small & Cronq. (AIF)
- Common name: marijuana, hemp.
- Toxin: narcotic element contained in tetrahydrocannabinol.
- Habitat: waste places.
- Animals affected: humans, livestock.

**Caryophyllaceae**

**Saponaria officinalis L.** (PIF)
- Common name: bouncing bet, soapwort.
- Toxin: saponin.
- Habitat: fields, waste places; cultivated and escaping.
- Animals affected: sheep.

**Chenopodiaceae**

**Atriplex gardneri Moq.** (PNS)
- Common name: Nuttall saltbush, Gardner saltbush.
- Toxin: secondary selenium accumulator.
- Habitat: saline plains and hillsides.
- Animals affected: livestock.

**Bassia hyssopifolia** (Pall.) Volk (AIF)
- Common name: fivehook bassia, smoothweed.
- Toxin: oxalates.
- Habitat: dry, saline soils.
- Animals affected: sheep.
- Reference: Pammel 1911.

**Chenopodium ambrosioides** L. (AIF)
- Common name: wormseed goosefoot.
- Toxin: antihelminthic oil.
- Habitat: weed of waste places.
- Animals affected: geese, humans.

**Chenopodium album** L. (AIF)
- Common name: lambsquarter.
- Toxin: nitrates, under conditions of overfertilization with too little water.
- Habitat: weed of waste places.
- Animals affected: livestock.

**Chenopodium glaucum** L. (AIF)
- Common name: oakleaf goosefoot.
- Toxin: nitrates, under conditions of overfertilization with too little water.
- Habitat: weed of waste places.
- Animals affected: livestock.

**Halogeton glomeratus** (Bieb.) C. A. Mey (AIF)
- Common name: halogeton, barilla.
- Toxin: oxalates.
- Habitat: dry saline plains and alkaline soils; roadsides.
Animals affected: livestock, especially sheep.
Reference: Cook and Stoddart 1953, Kingsbury 1964.

*Kochia scoparia* L. Schrad. (AIF)
Common name: summer cypress, burning bush, Mexican fireweed, Belvedere summer cypress.
Toxin: photosensitizing compounds.
Habitat: dry soils, roadsides and waste places.
Animals affected: cattle, sheep, horses.

*Salsola iberica* Sennen & Pau (AIF)
Common name: Russian thistle.
Toxin: nitrates (?), possible oxalates (?).
Habitat: dry soils of plains and foothills.
Animals affected: livestock.
Reference: Huffman et al. 1956.

*Sarcobatus vermiculatus* (Hook.) Torr. (PNS)
Common name: greasewood, black greasewood.
Toxin: oxalates.
Habitat: dense stands confined to alkaline flats or saline soils of low and lower middle elevations.
Animals affected: sheep, sometimes cattle.

**Equisetaceae**

*Equisetum laevigatum* A. Br. (PNF)
Common name: smooth horsetail.
Toxin: thiaminase.
Habitat: marshes, alluvial thickets, sandy banks; weed of cultivation.
Animals affected: horses.

**Ericaceae**

*Kalmia microphylla* (Hook.) Heller (PNS)
Common name: pale laurel, bog laurel, alpine kalmia.
Toxin: resinoids, andromedotoxin.
Habitat: wet meadows and bogs of high elevation.
Animals affected: sheep, calves, goats.

*Ledum glandulosum* Nutt. (PNS)
Common name: western Labrador tea.
Toxin: resinoids, andromedotoxin.
Habitat: wet meadows and bogs of high elevation.
Animals affected: sheep, cattle.

**Euphorbiaceae**

*Croton longipes* Jones (PNF)
Common name: croton.
Toxin: croton oil (caustic).
Habitat: roadsides, fields, and dry stream-beds; artemisia and pinyon belts.
Animals affected: livestock.

*Croton texensis* (Klotz.) Muell. Arg. ex DC. (ANF)
Common name: Texas croton.
Toxin: croton oil (caustic).
Habitat: roadsides, fields, and dry stream-beds; artemisia and pinyon belts.
Animals affected: livestock.

**Euphorbiaceae**

*Euphorbia cyparissias* L. (PIF)
Common name: cypress spurge, graveyard weed.
Toxin: unknown acrid principle.
Habitat: cultivated and escaping to roadsides and waste places.
Animals affected: cattle.

**Euphorbia esula** L. (PIF)
- Common name: leafy spurge.
- Toxin: unknown acid principle.
- Habitat: field weed of roadsides and waste places.
- Animals affected: horses, sheep.

**Reverchonia arenaria** Gray (ANF)
- Common name: reverchonia, sand reverchonia.
- Toxin: unknown.
- Habitat: uncommon; plains and hillsides, sandy areas, Kane Co.
- Animals affected: sheep.

**Ricinus communis** L. (AIF)
- Common name: castor bean.
- Toxin: ricin (a phytotoxin).
- Habitat: cultivated as an ornamental.
- Animals affected: livestock, humans.

**Fabaceae**

**Acacia greggii** Gray (PNT)
- Common name: catclaw acacia.
- Toxin: cyanogenetic glycoside.
- Habitat: plains and dry canyons; forms thickets along Beaver Dam Wash, Washington Co.
- Animals affected: sheep.

**Astragalus asclepiadoides** Jones (PNF)
- Common name: milkweed milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: saline desert areas.
- Animals affected: livestock.

**Astragalus bisulcatus** (Hook.) Gray (PNF)
- Common name: two-grooved poisonvetch, two-grooved milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: plains and bottom lands, sagebrush zone.
- Animals affected: livestock.

**Astragalus convallarius** Greene var. **convallarius** (PNF)
- Common name: timber poisonvetch, lesser rushy milkvetch.
- Toxin: produces locoism.
- Habitat: dry hillsides, desert shrub to lower montane zones.
- Animals affected: livestock.

**Astragalus drummondii** Dougl. ex Hook. (PNF)
- Common name: Drummond milkvetch.
- Toxin: produces locoism.
- Habitat: dry hillsides, brushy places.
- Animals affected: livestock.

**Astragalus eastwoodae** Jones (PNF)
- Common name: Eastwood poisonvetch, Eastwood milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: dry hillsides.
- Animals affected: livestock.

**Astragalus flavus** Nutt. ex Torr. & Gray var. **argillosus** (Jones) Barneby (PNF)
- Common name: yellow milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: dry plains and hillsides, salt desert areas.
- Animals affected: livestock.

**Astragalus flavus** Nutt. ex Torr. & Gray var. **candidans** Gray (PNF)
- Common name: Canada yellow milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: dry plains and hillsides, shales and clays of southern Utah.
- Animals affected: livestock.

**Astragalus flavus** Nutt. ex Torr. & Gray var. **flavus** (PNF)
- Common name: yellow milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: dry plains and hillsides, saline silts and clays in saline desert areas, south-central Utah.
- Animals affected: livestock.
Astragalus iselyi Welsh (PNF)
Common name: Isely milkvetch.
Toxin: primary selenium accumulator.
Habitat: dry hillsides, salt desert areas.
Animals affected: livestock.

Astragalus lentiginosus Dougl. ex Hook. var. araneosus (Sheld.) Barneby (PNF)
Common name: spider milkvetch, cobweed milkvetch.
Toxin: produces locoism.
Habitat: dry hillsides in sagebrush.
Animals affected: livestock.

Astragalus lentiginosus Dougl. ex Hook. var. palans (Jones) Jones (PNF)
Common name: straggling milkvetch.
Toxin: produces locoism.
Habitat: salt desert areas, dry hillsides and canyons, mixed desert shrub communities.
Animals affected: livestock.

Astragalus lentiginosus Dougl. ex Hook. var. wahweapensis Welsh (PNF)
Common name: Wahweap loco, Wahweap milkvetch.
Toxin: produces locoism.
Habitat: dry hillsides in sagebrush, sandy soils, Kane Co.
Animals affected: livestock, esp. horses.

Astragalus miser Dougl. ex Hook. var. oblongifolius (Ryd.) Cronq. (PNF)
Common name: timber milkvetch, Rydberg weedy milkvetch.
Toxin: miserotoxin.
Habitat: widely scattered in lower montane zones.
Animals affected: livestock.

Astragalus moencoppensis Jones (PNF)
Common name: Moenkopi poisonvetch, Moenkopi milkvetch.
Toxin: primary selenium accumulator.
Habitat: heavy soils, salt desert through pinyon-juniper areas.
Animals affected: livestock.

Astragalus mollissimus Torr. (PNF)
Common name: Thompson woolly locoweed.
Toxin: produces locoism.
Habitat: dry plains and hillsides.
Animals affected: livestock.

Astragalus Pattersonii Gray ex Brand. (PNF)
Common name: Patterson locoweed, Patterson milkvetch.
Toxin: primary selenium accumulator.
Habitat: dry plains and hillsides.
Animals affected: livestock.

Astragalus praelongus Sheldon (PNF)
Common name: stinking milkvetch.
Toxin: primary selenium accumulator.
Habitat: dry plains and hillsides, clay and seleniferous soils.
Animals affected: livestock.

Astragalus preussii Gray (PNF)
Common name: Preuss milkvetch.
Toxin: primary selenium accumulator.
Habitat: dry plains and hillsides, seleniferous clays and silts.
Animals affected: livestock.

Astragalus pubentissimus Torr. & Gray (PNF)
Common name: Green River locoweed, Green River milkvetch.
Toxin: produces locoism.
Habitat: canyons, mountainsides.
Animals affected: livestock, mainly sheep.

Astragalus racemosus Pursh var. treleasi Porter (PNF)
Common name: alkali milkvetch.
Toxin: primary selenium accumulator, causes “alkali disease” or “blind stagers.”
Habitat: Uinta and Duchesne River formations.
Animals affected: cattle.

Astragalus rafaelensis Jones (PNF)
Common name: San Rafael milkvetch.
Toxin: primary selenium accumulator.
Habitat: seleniferous clays and silts, salt desert shrub zones, Emery Co.
Animals affected: livestock.

*Astragalus sabulosus* Jones (PNF)
- Common name: straightstem poisonvetch, Cisco milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: salt desert shrub zone on shales.
- Animals affected: livestock.

*Astragalus saurinus* Barneby (PNF)
- Common name: dinosaur milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: salt desert shrub and pinyon-juniper zone, Uintah Co.
- Animals affected: livestock.

*Astragalus tetrapterus* Gray (PNF)
- Common name: fourwing poisonvetch, four-wing milkvetch.
- Toxin: produces locoism.
- Habitat: plains, dry hillsides.
- Animals affected: cattle, sheep.

*Astragalus toanus* Jones (PNF)
- Common name: Toano milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: clay soils, salt desert shrub zone.
- Animals affected: livestock.

*Astragalus woodruffii* Jones (PNF)
- Common name: Woodruff milkvetch.
- Toxin: primary selenium accumulator.
- Habitat: desert shrub zone on sandy and sandy-silt soils.
- Animals affected: livestock.

*Lathyrs latifolius* L. (PIF)
- Common name: perennial peavine, perennial sweet pea.
- Toxin: alpha, gamma-diaminobutyric acid.
- Habitat: rangeland.
- Animals affected: rats (experimental), sheep (lathvism).

*Lathyrs sylvesteris* L. (PNF)
- Common name: everlasting sweetpea, flat pea.
- Toxin: alpha, gamma-diaminobutyric acid.
- Habitat: rangeland.
- Animals affected: sheep, rats (experimental).

*Lupinus alpestris* A. Nels. (PNF)
- Common name: mountain lupine.
- Toxin: alkaloids.
- Habitat: mountains.
- Animals affected: cattle, sheep.

*Lupinus arbustus* Doug. ex Lindl. var. calcaratus (Kellogg) Welsh (PNF)
- Common name: Douglas spurred lupine, spur lupine.
- Toxin: alkaloids.
- Habitat: hillsides, dry soils.
- Animals affected: cattle, horses, sheep.

*Lupinus argenteus* Pursh (PNF)
- Common name: silvery lupine.
- Toxin: alkaloids.
- Habitat: dry flats and slopes in woods, plains and hills.
- Animals affected: sheep, cattle, horses, goats, hogs, deer.

*Lupinus caudatus* Kell. (PNF)
- Common name: Kellogg’s spurred lupine, tailcut lupine.
- Toxin: alkaloids.
- Habitat: exposed hillsides.
- Animals affected: cattle.

*Lupinus leucophyllus* Doug. (PNF)
- Common name: woolly-leaved lupine, velvet lupine.
- Toxin: alkaloids.
- Habitat: dry soil, foothills.
- Animals affected: sheep, cattle, horses, goats, hogs, deer.

*Lupinus pusillus* Pursh (ANF)
- Common name: low lupine, rusty lupine.
- Toxin: alkaloids.
- Habitat: dry plains, foothills.
- Animals affected: sheep.
Lupinus sericeus Pursh (PNF)
Common name: silky lupine.
Toxin: alkaloids.
Habitat: dry hillsides and valleys.
Animals affected: sheep, cattle, horses, goats, hogs, deer.

Medicago sativa L. (PIF)
Common name: alfalfa, lucerne.
Toxin: saponin.
Habitat: cultivated and escaping.
Animals affected: cattle, chicks, hogs, sheep.

Melilotus alba Desr. (BIF)
Common name: white sweetclover.
Toxin: dicoumarin.
Habitat: waste places and fields, escaped from cultivation.
Animals affected: cattle.

Melilotus officinalis L. Lam. (BIF)
Common name: yellow sweetclover.
Toxin: dicoumarin.
Habitat: waste ground, fields; used for forage and fertilizer.
Animals affected: cattle, sheep, horses.

Oxytropis lambertii Pursh (PNF)
Common name: white loco, white paint loco, silky crazyweed.
Toxin: unknown alkaloids; produces locoism.
Habitat: prairies and mountains, usually in drier areas, lower to middle elevations.
Animals affected: livestock.

Oxytropis sericea Nutt. ex Torr. & Gray (PNF)
Common name: white paint loco, silky crazyweed.
Toxin: alkaloids; produces locoism.
Habitat: open gravelly or well-drained slopes and hills at lower to middle elevations.
Animals affected: livestock.

Pisum sativum L. (AIF)
Common name: garden pea.
Toxin: unknown.
Habitat: cultivated.
Animals affected: sheep, cattle.

Poinciana gilliesii Hook. (PIS)
Common name: bird of paradise.
Toxin: unknown; green seed pods are gastrointestinal irritants.
Habitat: cultivated ornamental, small population established in Washington Co.
Animals affected: humans, livestock.

Prosopis glandulosa Torr. (PNT)
Common name: mesquite.
Toxin: unknown; may cause a nutritional deficiency.
Habitat: dry ranges, washes and draws at low elevations, especially along streams where the water table is high.
Animals affected: cattle.

Robinia pseudoacacia L. (PIT)
Common name: black locust.
Toxin: unknown.
Habitat: escaped from cultivation; around dwellings or along fencerows.
Animals affected: horses, cattle, sheep, poultry, humans.

Thermopsis montana Nutt. (PNF)
Common name: golden pea, mountain thermopsis, yellow pea.
Toxin: alkaloids.
Habitat: common in pastures.
Affected animals: cattle.

Trifolium hybridum L. (PIF)
Common name: Alsike clover.
Toxin: photosensitizing compound.
Habitat: cultivated; escaped to roadsides and meadows.
Animals affected: horses, hogs, sheep, cattle.
Trifolium pratense L. (PIF)
Common name: red clover.
Toxin: unknown.
Habitat: cultivated and escaping along roadsides and ditches.
Animals affected: cattle, horses, sheep.

Trifolium repens L. (PIF)
Common name: white clover.
Toxin: cyanogenetic.
Habitat: cultivated and escaping.
Animals affected: newborn pigs.

Vicia villosa Roth (PIF)
Common name: hairy vetch, winter vetch.
Toxin: photosensitizing compound.
Habitat: cultivated; occasionally escaping.
Animals affected: cattle, horses.

Haemodoraceae
Iris missouriensis Nutt. (PNF)
Common name: wild iris, blue flag, fleur-de-lis, western blue flag.
Toxin: unknown.
Habitat: moist soils along stream banks, in marshes or moist mountain meadows.
Animals affected: calves, laboratory animals.

Hypericaceae
Hypericum formosum H.B.K. (PNF)
Common name: southwestern St. Johnswort.
Toxin: photosensitizing compounds.
Habitat: moist soils of plains and hills.
Animals affected: cattle, sheep, horses, goats.

Juncaginaceae
Triglochin concinna Davy (PNF)
Common name: arrowgrass, goosegrass, sourgrass, podgrass, Utah arrowgrass.
Toxin: hydrocyanic acid.
Habitat: salty marshes and ponds.
Animals affected: sheep, cattle.

Triglochin debilis L. (PNF)
Common name: arrowgrass, weak arrowgrass.
Toxin: hydrocyanic acid.
Habitat: damp soils, marshes and sloughs; usually where the soil is alkaline or the water calcareous or brackish.
Animals affected: sheep, cattle.

Triglochin maritima L. (PNF)
Common name: arrowgrass, seashore arrowgrass, shore arrowgrass.
Toxin: hydrocyanic acid.
Habitat: damp soils, marshes and sloughs; usually where the soil is alkaline or the water calcareous or brackish.
Animals affected: sheep, cattle.
Lamiaceae

Lamium amplexicaule L. (AIF)
- Common name: henbit, dead nettle.
- Toxin: unknown.
- Habitat: occasional weed of fields and waste places.
- Animals affected: sheep, horses, cattle.

Liliaceae

Allium schoenoprasm L. (PNF)
- Common name: chives.
- Toxin: unknown.
- Habitat: cultivated; river bars, lake shores, wet meadows.
- Animals affected: horses.

Asparagus officinalis L. (PIF)
- Common name: asparagus.
- Toxin: unknown.
- Habitat: cultivated and widely escaped.
- Animals affected: cattle and dairy cows.
- Reference: Los Angeles County Livestock Department 1938, Kingsbury 1964.

Ornithogalum umbellatum L. (PIF)
- Common name: star-of-Bethlehem, snowdrop.
- Toxin: cholchicine alkaloid.
- Habitat: weed of grasslands and thickets.
- Animals affected: sheep, cattle, children.

Veratrum californicum Durand (PNF)
- Common name: false hellebore, corn-lily, skunk cabbage.
- Toxin: alkaloids.
- Habitat: bogs and wet meadows from 7500 to 9500 feet.
- Animals affected: cattle, sheep, fowl, humans.

Yucca L. (PNS)
- Note: members of this genus have been reported to contain saponins, salicylic acid, the alkaloid imperalolin, and several resins. None of the species in which these toxins have been identified are found in Utah.
- Reference: Pammel 1911.

Zigadenus elegans Pursh (PNF)
- Common name: death camas, mountain death camas.
- Toxin: alkaloids.
- Habitat: prairies, meadows.
- Animals affected: cattle, horses, hogs, fowl, humans.

Zigadenus paniculatus (Nutt.) Wats. (PNF)
- Common name: death camas, foothill death camas, sandcorn.
- Toxin: alkaloids.
- Habitat: dry soils; hills and plains.
- Animals affected: cattle, horses, hogs, humans.

Zigadenus venenosus Wats. (PNF)
- Common name: death camas, meadow death camas.
- Toxin: alkaloids.
- Habitat: moist, grassy meadows.
- Animals affected: sheep, cattle, horses, hogs, humans.

Pinaceae

Pinus ponderosa Doug. ex Laws (PNT)
- Common name: western yellow pine, ponderosa pine.
- Toxin: unknown.
- Habitat: coniferous forest at moderate elevations; dry hillsides, plateaus, slopes, valleys and mesas.
- Animals affected: cattle.

Poaceae

Avena fatua L. (AIG)
- Common name: wild oats.
- Toxin: mechanically injurious.
- Habitat: cultivated land and waste places.
- Animals affected: livestock.
- Reference: Pammel 1911.

Avena sativa L. (AIG)
- Common name: cultivated oats.
- Toxin: nitrates, photosensitizing compounds, grass tetany.
Habitat: open ground, grasslands, waste places; lawns and golf courses.
Animals affected: cattle, horses, hogs, turkeys, goats, sheep and wild ruminants.

*Bromus rigidus* Roth (AIG)
Common name: ripgut brome.
Toxin: mechanical injury from mature awns.
Habitat: common weed.
Animals affected: cattle and sheep.

*Bromus rubens* L. (AIG)
Common name: foxtail chess, red brome.
Toxin: mechanical injury from mature awns.
Habitat: common weed, dry and saline soils.
Animals affected: cattle and sheep.
Reference: Davis 1952.

*Bromus tectorum* L. (AIG)
Common name: cheat grass, downy cheat.
Toxin: mechanical injury from mature awns; may also be implicated in ergot poisoning.
Habitat: common weed, especially in dry places; plains and foothills.
Animals affected: cattle.
Reference: Pammel 1911.

*Cynodon dactylon* L. Pers. (PIG)
Common name: Bermuda grass.
Toxin: photosensitizing compound.
Habitat: open ground, grasslands, waste places; lawns and golf courses.
Animals affected: cattle.

*Eragrostis cilianensis* (All.) Link (AIG)
Common name: lovegrass, stinkgrass, stick grass.
Toxin: unknown.
Habitat: cultivated ground, gardens and waste places; weed in fields and along roadsides.
Animals affected: horses.

*Festuca arundinacea* Schreb. (PIG)
Common name: fescue, tall fescue, alta fescue, goar fescue.
Toxin: alkaloids.
Habitat: unimproved pastures; wet, heavy soils of high organic content.
Animals affected: cattle.

*Glyceria striata* Lam. Hitch. (PNG)
Common name: fowl m annagrass.
Toxin: cyanogenetic.
Habitat: wet areas.
Animals affected: cattle.

*Hilaria rigida* (Thurb.) Benth ex Scribn. (PNG)
Common name: gall eta grass, big gallet a, dixie grass.
Toxin: unknown.
Habitat: dry lands and desert ranges to 4000 feet.
Animals affected: cattle.

*Holcus lanatus* L. (PIG)
Common name: velvet grass, mesquite grass, Yorkshire velvet grass.
Toxin: unknown.
Habitat: open ground, meadows and moist places; occasionally cultivated.
Animals affected: livestock.

*Hordeum jubatum* L. (PNG)
Common name: squirreltail grass, foxtail grass, wild barley.
Toxin: mechanically injurious.
Habitat: weed in open ground, meadows, prairies, along streams, ditches and waste places.
Animals affected: sheep, cattle, horses.

*Hordeum vulgare* L. (AIG)
Common name: cultivated barley.
Toxin: mechanically injurious.
Habitat: cultivated for grain and along road shoulders; sometimes spontaneous in waste places but not persistent.
Animals affected: hogs, dogs, humans, poultry.
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Setaria lutescens (Wiegel) Hubb. (AIG)
  Common name: yellow bristle grass, foxtail grass, pigeon grass.
  Toxin: mechanically injurious.
  Habitat: common weed of cultivated and waste areas.
  Animals affected: livestock.

Sorghum halepense L. Pers. (PIG)
  Common name: Johnson grass.
  Toxin: hydrocyanic acid, nitrates.
  Habitat: weed of cultivated fields, waste places and along irrigation ditches and stream bottoms.
  Animals affected: cattle, sheep, horses.

Sorghum vulgare Pers. (AIG)
  Common name: grain sorghum.
  Toxin: cyanogenic glycoside.
  Habitat: cultivated.
  Animals affected: cattle, sheep, horses.

Stipa commata Trin. & Rupr. (PNG)
  Common name: needle-and-thread grass.
  Toxin: mechanically injurious.
  Habitat: dry plains and hillsides, sandy soil.
  Animals affected: livestock.
  Reference: Pammel 1911.

Stipa neomexicana (Thurb.) Scribn. (PNG)
  Common name: New Mexican feather-grass.
  Toxin: mechanically injurious.
  Habitat: common in dry rocky canyons and mesas.
  Animals affected: livestock.
  Reference: Pammel 1911.

Zea mays L. (AIG)
  Common name: corn, maize.
  Toxin: nitrates, under conditions of overfertilization with too little water.
  Habitat: cultivated for grain, forage or silage.
  Animals affected: livestock, humans.

Polygonaceae

Beta vulgaris L. (AIF)
  Common name: beet, sugar beet, fodder beet, mangel-worzel, mangold.
  Toxin: oxalates, nitrates, under conditions of overfertilization with too little water.
  Habitat: cultivated.
  Animals affected: livestock.

Rheum rhaponticum L. (PIF)
  Common name: rhubarb.
  Toxin: oxalic acid, oxalates.
  Habitat: cultivated and persisting.
  Animals affected: livestock, humans.

Rumex acetosella L. (PIF)
  Common name: sheep sorrel, dock.
  Toxin: oxalates.
  Habitat: common weed of acid or sterile, gravelly soils of pastures and meadows; waste places.
  Animals affected: sheep.

Rumex crispus L. (PIF)
  Common name: curly dock.
  Toxin: oxalates.
  Habitat: moist fields and waste places.
  Animals affected: sheep.

Polypodiaceae

Dryopteris felix-mas (L.) Schrott (PNF)
  Common name: male fern.
  Toxin: thiaminase.
  Habitat: mountains: damp soils, deep shaded ravines, in cliffs or talus.
  Animals affected: horses.
  Reference: Harvey et al. 1944, Kingsbury 1964.

Pteridium aquilinum (L.) Kuhn (PNF)
  Common name: Bracken fern.
  Toxin: thiaminase and its coenzymes.
  Habitat: upland pastures, aspen zone.
  Animals affected: livestock.

Portulacaceae

Portulaca oleracea L. (AIF)
  Common name: purslane, pusley.
  Toxin: oxalates.
Habitat: common weed of garden and cultivated areas.
Animals affected: sheep.
Reference: Mathams and Sutherland 1952, Kingsbury 1964.

**Ranunculaceae**

*Aconitum columbianum* Nutt. (PNF)
Common name: western monkshood.
Toxin: alkaloids.
Habitat: mountains from 5000 to 10,000 feet; along streams and wet meadows; moist places and thickets.
Animals affected: livestock, humans.

*Actaea arguta* Nutt. (PNF)
Common name: baneberry, western baneberry.
Toxin: irritant oil.
Habitat: mountains in rich, moist soil.
Animals affected: livestock, humans.

*Caltha leptosepala* DC. (PNF)
Common name: elkslip marshmarigold.
Toxin: glycoside (protoanemonin).
Habitat: wet mountain soils.
Animals affected: livestock.

*Delphinium andersonii* Gray (PNF)
Common name: Anderson larkspur.
Toxin: alkaloids.
Habitat: subsaline soils of plains and hills.
Animals affected: cattle, sheep.

*Delphinium barbeyi* Huth. (PNF)
Common name: barbey, larkspur, tall larkspur.
Toxin: alkaloids.
Habitat: mountains; meadows and open woods, summer ranges; common under aspen and along streams.
Animals affected: cattle, occasionally sheep.

*Delphinium nuttallianum* Pritz. (PNF)
Common name: Nuttall larkspur, low larkspur, Nelson larkspur.
Toxin: alkaloids.
Habitat: moist soils, hills, foothills, and sagebrush deserts.
Animals affected: cattle, sheep.

*Delphinium occidentale* Wats. (PNF)
Common name: duncecap larkspur, tall larkspur.
Toxin: alkaloids.
Habitat: mountain summer ranges, common under aspen and along streams; mountain meadows.
Animals affected: cattle, occasionally sheep.

*Ranunculus acris* L. (PIF)
Common name: tall field buttercup, tall buttercup.
Toxin: protoanemonin.
Habitat: common pasture weed.
Animals affected: livestock.

*Ranunculus cymbalaria* Pursh (PNF)
Common name: alkali buttercup; trailing buttercup.
Toxin: glycosides (protoanemonin).
Habitat: muddy banks along brackish streams and marshes.
Animals affected: livestock.

*Ranunculus flammula* var. *filiformis* (Michx.) Hook. (PNF)
Common name: creeping spearwort buttercup.
Toxin: glycosides (protoanemonin).
Habitat: marshy ground of lakes, streams and ditches.
Animals affected: livestock.

*Ranunculus repens* L. (PIF)
Common name: creeping buttercup.
Toxin: protoanemonin.
Habitat: meadows and marshes at lower elevations; wet pastures.
Animals affected: livestock.

*Ranunculus scleratus* L. (PNF)
Common name: celeryleaf crowfoot.
Toxin: glycosides (protoanemonin).
Habitat: borders of lakes, ponds and streams.
Animals affected: livestock.

*Ranunculus testiculatus* Crantz (AIF)

Common name: burbuttercup; testiculate buttercup.
Toxin: glycosides (protoanemonin).
Habitat: general in the intermountain region.
Animals affected: livestock.

**Rosaceae**

*Cercocarpus montanus* Raf. (PNS)

Common name: mountain mahogany, birchleaf mountain mahogany, true mountain mahogany.
Toxin: cyanogenetic glycoside.
Habitat: stony hills and slopes.
Animals affected: livestock.

*Prunus armeniaca* L. (PIT)

Common name: apricot.
Toxin: cyanide.
Habitat: cultivated and persisting.
Animals affected: livestock, humans.

*Prunus persica* Batsch. (PNT)

Common name: peach.
Toxin: cyanide.
Habitat: cultivated.
Animals affected: livestock.

*Prunus virginiana* L. (PNT)

Common name: choke cherry.
Toxin: cyanogenetic glycoside.
Habitat: common in hills, mountains, along streams, thickets, fencerows and edges of woods.
Animals affected: sheep, cattle.

**Santalaceae**

*Comandra umbellata* (L.) Nutt. (PNF)

Common name: bastard toadflax.
Toxin: alkaloids, glycosides, secondary selenium accumulator.
Habitat: common weed, found in various habitats.
Animals affected: livestock.


**Solanaceae**

*Datura meteloides* Dunal (ANF)

Toxin: alkaloids (atropine, hyoscynamine, hyoscine).
Habitat: plains, dry hills and valleys; cultivated and escaping.
Animals affected: humans, horses, cattle, sheep, hogs, mules, chickens.

*Datura stramonium* L. (ANF)

Common name: Jimsonweed, sacred datura.
Toxin: alkaloids (atropine, hyoscynamine, hyoscine).
Habitat: waste areas, rich soils of barnyards, heavily used portions of pastures.
Animals affected: horses, cattle, sheep, hogs, mules, chickens, humans.

*Hyoscyamus niger* L. (BIF)

Common name: black henbane, henbane.
Toxin: alkaloids (hyoscynamine, hyoscine, atropine).
Habitat: widespread dry soils of roadsides and waste areas.
Animals affected: humans, fowl, livestock.

*Lycium halimifolium* Mill. (PIS)

Common name: matrimony vine, tea vine.
Toxin: unknown.
Habitat: cultivated and escaping around homesites and cemeteries.
Animals affected: calves, sheep.

*Nicotiana attenuata* Torr. ex S. Wats. (ANF)

Common name: wild tobacco, coyote tobacco.
Toxin: nicotine.
Habitat: dry, sandy stream beds and flats.
Animals affected: horses, pigs, livestock, humans.
 Nicotiana trigonophylla Dunal ex DC. (ANF)  
Common name: wild tobacco, desert tobacco.  
Toxin: nicotine.  
Habitat: dry desert soils.  
Animals affected: horses, pigs, livestock, humans.  

Solanum dulcamara L. (PIF)  
Common name: European bittersweet, climbing nightshade, bitter nightshade.  
Toxin: glycoalkaloids.  
Habitat: woods, thickets and waste places; cultivated and escaping.  
Animals affected: cattle, horses, sheep, humans.  

Solanum eleagnifolium Cav. (PNF)  
Common name: silverleaf nightshade, white horsemellette, trapillo.  
Toxin: glycoalkaloids.  
Habitat: serious weed of prairies, open woods and disturbed soils; dry ground; barnyards.  
Animals affected: cattle, sheep.  

Solanum nigrum L. (AIF)  
Common name: black nightshade.  
Toxin: glycoalkaloids.  
Habitat: common weed of fields and waste places.  
Animals affected: livestock, humans.  

Solanum rostratum Dunal (ANF)  
Common name: buffalo bur, Kansas thistle, Texas thistle, buffalobur nightshade.  
Toxin: glycoalkaloids.  
Habitat: plains, roadsides, barnyards.  
Animals affected: hogs.  

Solanum triflorum Nutt. (ANF)  
Common name: three flowered nightshade, cutleaf nightshade.  
Toxin: glycosides.  
Habitat: prairies, fields and waste places; weed of cultivation and disturbed soils.  
Animals affected: horses, cattle.  

Typhaceae

Typha latifolia L. (PNF)  
Common name: cattail.  
Toxin: unknown.  
Habitat: common in moist soils, marshes and ponds.  
Animals affected: horses.  

Zygophyllaceae

Tribulus terrestris L. (AIF)  
Common name: puncture vine, caltrap.  
Toxin: nitrates, photosensitizing compound.  
Habitat: dry soils of waste lands, roadsides and deserts.  
Animals affected: sheep.  

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