WILD PEAS OF THE ROCKIES...

Early American Folklore for Poisonous Plants of the Rocky Mountains and Great Plains

"Sagebrush country" provides an ecological environment in the "rainshadow" of the Rockies where all these plants grow.

I was a three-year-old on a dry-land farm in Montana in 1925, the first time I had a glimpse at what plants could do. *Early one morning, one of our usually calm and easy-going young workhorses suddenly did strange things. He leaped high over a fence wire that was flat on the ground. Then, he made a big circle in the yard, threw his head wildly into the air, and charged through a five-wire fence. Down the dirt road he ran, mane and tail flying. The road made a turn at a deep drop-off at a creek bend. Our strange horse stopped suddenly, dust flying from under his feet. He appeared to look down at the chasm; then he switched ends so his rump was to the drop-off and with great deliberation backed down, and down he went. In great astonishment, I looked at my dad. He said, "Loco'd!"*

PART 1: This Issue

Poisonous Plants of the Pea Family

1) Lupine
2) White Locoweed
3) Purple Locoweed
4) Milk Vetch
5) Rabbitsfoot Crazyweed

Elnora A. Old Coyote

Confusion reigns in the pea family about what most taxonomists, botanists, and range-plant specialists agree on. The Indian tribes of the Great Plains and Rocky Mountains simplified matters by calling all wild peas "rattleweeds" because they all had pea-like, fruiting pods in which the seeds came loose when dried and rattled even in a slight breeze, or when brushed against by animal or human.

This entire group of legumes, from the *leguminosae* or pea family, is highly variable, from small, annual or perennial plants, to large trees, with flowers that are from white or creamy to light or dark purple. However, some characteristics are consistent enough to rely upon, as follows:

The leaf types, with few exceptions, are compound leaflets, with individual pinnate leaves. The flowers are bilaterally symmetrical with five petals. The upper single petal is in the form of and called the banner. The two lateral petals are winglike, and the two lower petals are fused into a blunt or pointed beak called a keel, inside of which there are ten stamens, usually nine in one group with fused filaments and one alone, and the style. The ten anthers are alike. If the keel is depressed as by a bee or other insect, these stamens and style explode out and the pollen is showered on the insect, hence carried away to other stigmas in the pollination process.

The fruit is formed as a pod, one compartment with many seeds called peas. The roots most frequently have nodules in which nitrogen from the air is mixed with other elements in the roots to form compounds, such as nitrites and nitrates, which are then stored in the roots.

Some individual plants of the group are easily identifiable because of one or more dramatic characteristics, usually related to one or more strong sensual perceptions, including color and shape, smell, taste or feel.

As we've often seen, Native Indian people had a depth of knowledge about the plants in the territory where they made their homes. Locoweeds of the *Oxytropis* species were often used for sore throats, ear troubles, for healing sores or wounds, and to increase the flow of mothers' milk. These people knew that some of these species had poisonous effects, so their success in using the plants indicates a careful study and intimate knowledge regarding the *Oxytropis* species. Let's explore five of the most common and identifiable of these pea-family plants.

Lupine

ECOLOGY

Many are the species of lupines that grow throughout the grasslands, sagebrush foothills and into the Rockies. Wherever the lupine grows, it is a sea of beautiful, blue-purple flowers, not the earliest of spring bloomers, but on into early summer.

Many lupines are reported to be poisonous in all parts but especially the seeds. Some species are deadly to sheep and to a lesser degree to cattle. Symptoms of poisoning, especially in sheep, are difficulty in breathing, accompanied by snorting, frothing at the mouth, unusual, excited behavior, like running in circles, charging and butting things, convulsions, and possibly, death. The best treatment is prevention—management to keep sheep out of areas of dense stands of lupine. And it is reported that poisoning is worse in wet weather.

Cattle are not as susceptible, usually because they don't eat lupine, unless other forage plants are not around. Horses often show a preference for lupine with no ill effects, and elk seem to graze the plants without damage. Some species are more poisonous than others. Poison varies with seasons and with moisture. All lupines are nitrogen fixers as are other legumes, where nitrogen-fixing bacteria live in nodules on the roots. And lupines are successfully and beautifully grown in flower gardens.

FOLKLORE

"Bluebonnets" are the Texas state flowers. The generic name, *Lupinus,* is Latin, associated with the word, lupus, meaning "wolf," so called because they were thought to ravage the soil of its fertility, much as it is thought that a wolf is a predator in the environment. However, it is now known that, as all legumes, the roots of lupine have nitrogen fixation microorganisms on them, which capture and alter unusable, atmospheric nitrogen into a form usable by organisms. So the beauty blooming out in the plains in late spring, or in your garden, has a *raison d'être*—enjoy! Pick it for a spring bouquet. Know that, as any plant, lupine has a purpose in the ecology of its place.

Blackfeet Indian People made a tea from silvery lupine *(Lupinus argenteus,)* which they called "wolf turnip" to use for coughs, gas pains, and as relief for painful hiccups. They also boiled the leaves and sprayed it on their horses where flies gather and form sores.

WHITE ~ ~ ~ ~ LOCOWEED

ECOLOGY

White pointlocos grow throughout the grassland plains and foothills, on rangelands and upward to alpine ridges. The white loco blooms in late spring to summer amid grasses and sagebrush. It is especially adapted to sandy soils and well-drained, gravelly soils. The sturdy, woody taproot and hairiness upward on the stems and leaves enable the white loco to persist under dry conditions in wind-swept plains and bleak, wintry mountain peaks.

"Pointloco" and "crazyweed" are common names for this species

LUPINE (Bluebonnets)

Lupinus spp. • Leguminosae (Pea Family)

Lupinus wyethia Wats., L. argenteus Pursh., L. parviflorus Nutt., L. aduncus Greene, L. sericeus Pursh.

"Bluebonnets" in Texas!
Fields and fields
of blue bonnets—and poisonous!
Lured by blue-purple beauty,
picked for early spring bouquets.
Lovely, delicate pea blossoms—
purple and poison!

DESCRIPTION

Lupine is a pea. The plants may be annual, perennial, herbaceous to shrubby, from 2 1/2 feet to 10 feet tall, growing smooth or hairy from a taproot, usually woody, thicker at the top, forming a crown. There are nitrogen fixation nodules on the roots. The leaves are palmately compound, divided into 4 to 17 thin, finger-like leaflets. Some are clover-like with three leaflets. During the middle of the day, the leaflets fold up in what is called sleeplike movements.

because it is known to have harmful, poisonous effects on the animals that eat too much of it. Sheep and horses particularly get into trouble, seemingly developing a persistent desire (addiction) for the plant, then modeling loco-eating to other animals. The word *loco* is Spanish for "crazy," hence is well suited to this white, pea-like legume with its pointed keel.

The symptoms and behavior of animals that consume locoweed are a chronic poisoning affecting the nervous system, exhibited by irregularities in movement, stumbling, variable gait, and a lack of muscular coordination, accompanied by problems with visual perception, i.e., failure to judge distances, sizes, depth and height of objects such as fences or bushes. Emaciation, weight loss, and weakness increase with continued eating of the plant.

Among tame animals, horses show the most aggravated effects. At first, the horse has intermittent, "crazy," excitable behavior, balkiness and waywardness. A "loco'd" horse is hard to handle, to rein, to back up, and to stop.

The animal may step off a cliff or wade seemingly without concern into a turbulent or wide stream. Final behavior includes weakened knees and legs, and the animal may fall and be unable to rise. Death can result.

Cattle may demonstrate similar behavior, but tend to tremble all over, shake their heads, and *moooo* forlornly. Small animals like sheep will show more weakness and fall down sooner.

The most successful strategy is avoidance—keeping animals away from range with large amounts of locoweed, or to grub out the plants, which is a sizeable job. Moving the animals to alfalfa is helpful. Constipation results from ingestion of loco, and the alfalfa may help counteract that. Dosing the animal with epsom salts may be effective. Daily dosing of 4–6 teaspoonfuls of Fowler's Solution (potassium arsenite) in the horse's drinking water has been helpful. A dose of 1/5 grain of strychnine, administered with a hypodermic needle, has been used to treat "loco'd" cattle. But as yet, research has not resulted in conclusive information regarding the poisoning effects of, or the antidotes for, this plant.

Major characteristics of this poisonous member of the pea family include the pointed beak at the tip of the keel (the lower two flower petals fused together), which is why this plant is named "pointvetch," and the equal length of the teeth of the sepals. Usually their pea-like flowers are white *(Oxytropis sericea Nutt.)* or purple *(Oxytropis lambertii Pursh)*. Flowers are in a cluster at the end of leafless flower stalks. Compound leaves are usually basal in opposite leaflets with linear leaves and hairiness on all parts of the plant, either silky or woolly.

WHITE LOCOWEED
(Silver or Silky Crazyweed, White Pointloco)

Leguminosae (Pea Family)

Oxytropis sericea Nutt. , O. macounii

My foolish young horse
stepped high over pebbles in his path,
ran through the barbed four-wire fence,
fell over backward in the crick,
shied at moonbeams, pawed at shadows...
My dad said, "He ate the pointed
locoweed—he's loco."
My poor horse crumpled to his knees
and dropped on the ground.
My dad said, "He's dead!"

DESCRIPTION

Belonging to the pea family, white loco or pointloco has the same characteristics generally described for a legume: a perennial herb with compound leaflets, irregular flowers borne in clustered racemes. Flowers have five sepals more or less united, five white petals sometimes tinged with purple, especially as the flower ages.

In the white loco, the keel is pointed like a beak, a distinguishing characteristic. The pistil with slightly club-shaped stigma is attached to a one-celled ovary, which develops into a seed pod with pea-like seeds, which loosen when the pods dry.

FOLKLORE

The Northern Cheyenne name is "WI KE ISSE E YO," a general term used for all pointvetches or locoweeds. It is believed that Indian people knew much about the possible poisoning effects of the *Oxytropis* species, and yet it has been reported that the Blackfeet people made a tea of the leaves to apply to sores, to treat ear troubles, and chewed the leaves and swallowed the juice for sore throats and coughing spasms, used even for children successfully. There may be a lesson here...that careful observation and care in using a plant may indicate that, even though it is known to have negative effects under some circumstances, may be medicinally used in another way—and to find that other way is important!

PURPLE ~ ~ ~ ~ LOCOWEED

ECOLOGY

Purple locoweed grows from sea level in Alaska to 12,000 feet in Colorado! These plants grow in sandy soils on the grassy plains, on well-drained

PURPLE LOCOWEED (Purple Pointvetch)

Leguminosae (Pea Family)

Oxytropis lambertii Pursh.

Purple *crazyweed*—
plant of purple mystery,
yet my Indian family knew it well.
They knew if used with prayer,
it had a soothing effect.
Used unwisely or carelessly,
by human or animal,
the result was *crazy* behavior.

DESCRIPTION

This low, woolly, purple-flowered loco (crazyweed, pointvetch, "rattleweed") is identifiable by the pointed beak. The purple, five-petaled flowers are in clusters (spikes) at the end of flower stems, combined in a bell shape and covered with fine, silky hairs. The ovary is three-parted, forms pea pods, also silky-hairy, with pea-like seeds. Leaves are leaflets arising from the base of the plant, each leaf compound pinnate, narrowly lance-shaped, white and woolly. The taproot is perennial, thick and woody, with a much-branched crown from which both flower and leaf stems arise.

sandy-to-gravelly soils in the foothills, and upward into the mountain slopes. It is more abundant in the higher elevations than is white locoweed.

As with white loco, this plant is poisonous to grazing animals. Horses and sheep are more susceptible and are reported to develop an addictive desire for the plant. Animals show similar aberrant behavior, which may finally result in weakness and death, probably from starvation, since they are seeking the locoweed.

The best control of locoweed effects is to remove the animals from places where the plant is abundant or to grub the plants out. Research to discover or isolate the substance causing the crazy behavior in animals has not been successful.

FOLKLORE

Indian people found medicinal uses for the purple locoweed, knowing full-well of its negative effects. The Northern Cheyenne "WI KE ISSE E YO" means sweet or bitter medicine, and applied to all locoweeds, but more frequently the purple loco, *Oxytropis lambertii,* was the one they meant. They reported that the powdered roots of this loco were given to women to increase milk flow, and to offset milk that did not seem to agree with the child.

MILK VETCH

ECOLOGY

Many species of vetches grow throughout the Great Plains grasslands in hilly sagebrush areas and up under and into the forests of the Rocky Mountains. Vetches are wretches—difficult to separate from each other, and many. Many are reputed to be poisonous, more to livestock than to native animals, and more so to animals unfamiliar with them. If other forage plants are available, animals are less likely to eat enough of them to be in trouble.

A species identified as "woolly loco," *Astragalus mollissimas Torr.*, is one of the most poisonous of all, to be avoided and grubbed up if at all possible.

FOLKLORE

All plains Indians very quickly noticed when their animals acted strangely and sought the reasons among the local plants eaten. Though earlier Indians did not grub the plants up as the farmers who came later did, the Indians did keep their animals away from plants they observed to cause harm or crazy behavior.

RABBITSFOOT CRAZYWEED

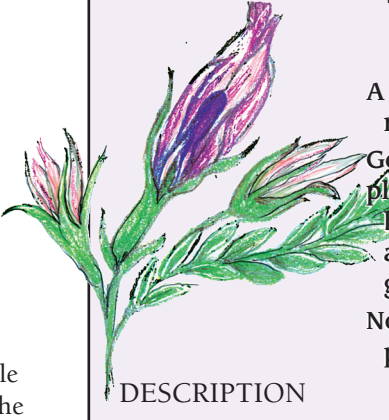
ECOLOGY

Rabbitsfoot crazyweed grows in open plains, often in gravelly places or on rocky outcrops throughout the plains from valleys to timbered foothills. It blooms from April to June.

MILK VETCH (Poison Vetch)

Leguminosae (Pea Family)

Astragalus spp.



A pea, a legume, a vetch,
nitrogen-fixing, an asset.
Good for soil and other plants,
but likely poisonous,
a danger to animals—
good and bad in one.
Not very large, a white,
pea-flowered plant.

DESCRIPTION

Milk vetches are peas. Each flower is white, often tinged with shades of purple, pink or brown. Many flowers occur in the head along a spike. Each has five petals as in the other peas. The fruit becomes a pod, which divides with pea-like seeds. Leaves are long and flat, made up of many alternately attached leaflets, reverse elongated, egg-shaped, sometimes with hairs, and sometimes with light colored, slightly inrolled edges. Roots are deep taproots, thickened crown roots, and many branches.

RABBITSFOOT CRAZYWEED

Leguminosae (Pea Family)

Oxytropis lagopus Nutt.
(var. atropurpurea (Rydb.) Barnegy)

On hairy rabbits' feet,
a dwarf in silver walks
in rocky places.
With flowers, beauty in lavender,
never letting on
it holds a poison
within the plant's body.

DESCRIPTION

Rabbitsfoot crazyweed has five, fuzzy sepals attached together, which reminded early people of rabbits' feet, hence the common name. It is a low, tufted perennial, with short, purplish stems and green leaves covered with silky white hairs, giving the leaves a silvery appearance.

The five-petaled flowers, ranging from blue to reddish-purple, are crowded at the end of their stems. As with other peas, the flower has five petals, with the lower pair combined into a keel-like beak that is very pointed. The leaves are shorter than the flowers, pinnate, with 7 to 15 oval-shaped leaflets covered with silky, white hairs. The roots are tough against the wind and cling to rocky crevices.

FOLKLORE

Rabbitsfoot crazyweed is poisonous to livestock if consumed in enough quantity. Livestock and big-game animals shun this locoweed unless the range is mismanaged and there is nothing else to eat. Early people used the flowers to reduce swelling, and for sore throats.

~ ~ conclusion ~ ~

Be aware and be wary, for at any moment, a pea bean, or something else unexpected, may have you running for an emetic. Sneak up on fresh, green things in spring. Watch out for locoweed in your pastures. Don't let your animals into the spring alfalfa field. Be especially careful when you're pregnant. Be ever so grateful to people investigating, with all of the advances in modern science, to help us understand our natural world. But listen to old wives' tales, for there may be useful information in their memories. Continue to be amazed, awed and reverent toward nature's plants. And when all else fails, say a prayer to the unknown power for, "Help!" Plants, though they are the absolute source of our food, can "do animals in" if we are not careful to moderate, to observe, and to learn.

Much is known about the negative effects of poisonous plants, and about animals' and people's responses to poison ivy, chokecherry, nightshades, tobacco, poppy seeds, fermented fruit juices, lupines and locoweeds, water hemlock and larkspurs—and especially the death camas, the sweet clover, and St. Johnswort. (More on these in the next issue...) But much is also known about the so-called side effects of the medicinal applications of plants, or any chemical element isolated and concentrated into pills, liquids or sprays.

From time to time, animals, people, and even the bacteria, fungi, viruses (or whatever is causing the trouble) will respond differently to the use of these substances. Drugs, such as codeine and morphine, have long been used as painkillers. Darvon, until found to be addictive, hence more of a problem than a treatment, was once thought to be a great painkiller, a great discovery. To use, or not to use, a substance is often a dilemma that demands continual vigilance, and the accumulation, recording and reporting of information, that can not rest on a single, or even many, results.

If there is one contribution that has accompanied the advance of the discipline called science, it is a commitment to a process of continuing to gain information, testing it over and over—always with a mentality that something new may disprove a finding and necessitate a different response. A better approach to medicinal treatment must take us away from blatantly prescribing any new (or old) substance because it has appeared to be effective, first on rats and lesser animals, then on humans. A newer approach might harken back to the old medicinal treatments carried out by medicine people, both Indian and pioneer, from simpler days.

This longer process of using "nature's pharmacy" for an affliction, personalized for an individual patient, with proper dosage, and with time for careful observation of the result, must be a part of the solution. We all know this, but increasing numbers of patients, and mass medicine, limited by the number of experts and caring doctors, versus the number of cases, are high hurdles we must leap. ■

Part 2: Next Issue

Other Western Poisonous Plants

6) Larkspur
7) Death Camas
8) Western Waterhemlock
9) Western Poison Ivy
10) True Hemlock

Dr. Elnora A. (Stenersen) Old Coyote, age 85, grew up in Eastern Montana and married John M. Old Coyote, a full-blooded Crow Indian. With the help of many tribal people, she has been researching and teaching the use of native plants for many years. She has studied and written about over 300 Montana plants. Included here are her notes on ecology and folklore, and her original sketches and poems. Elnora lives in Huntley and can be reached at (406) 348-2474.