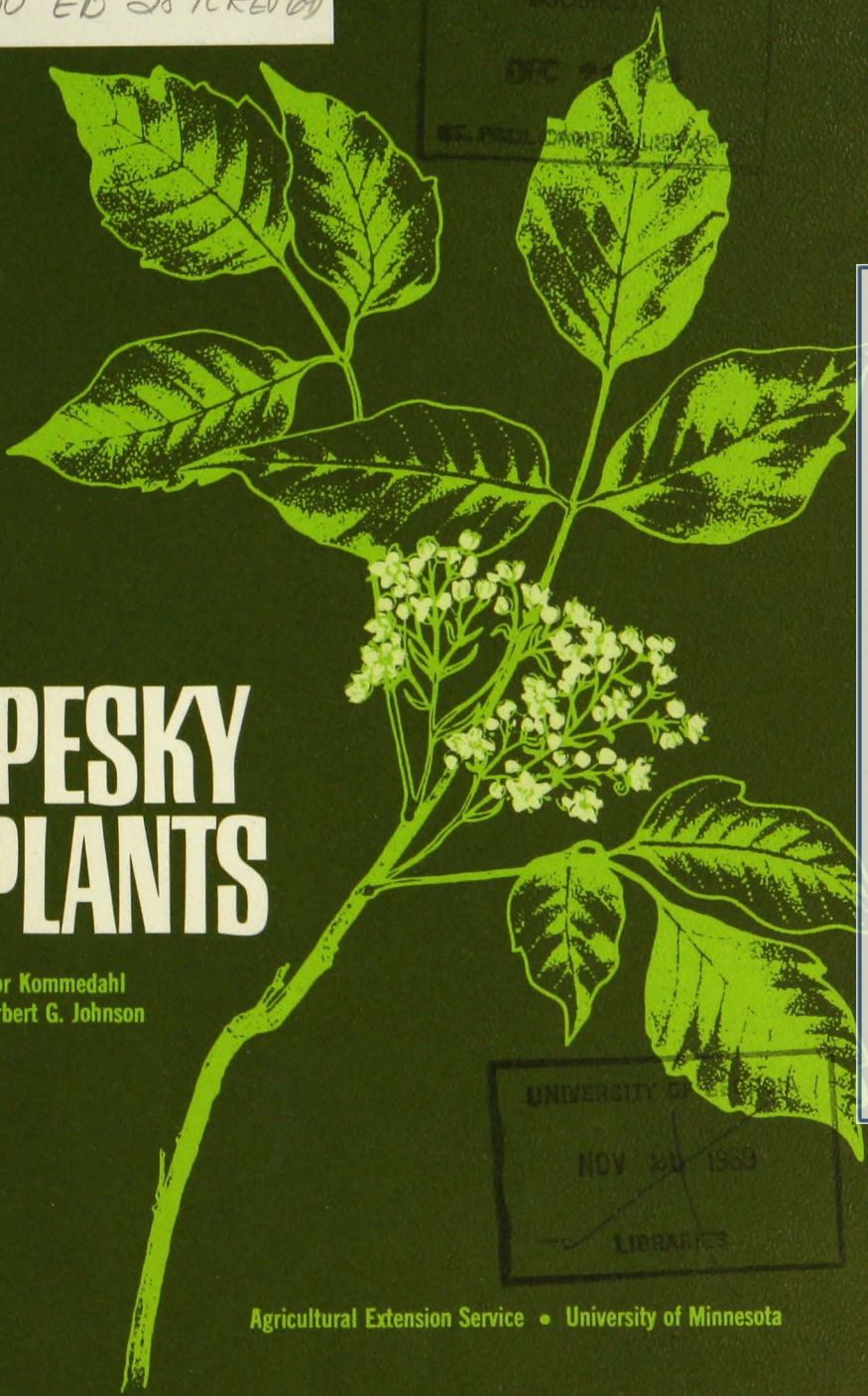
Extension Bulletin 287
Revised 1969



PESKY PLANTS

Thor Kommedahl
Herbert G. Johnson

Agricultural Extension Service • University of Minnesota

CONTENTS PAGE

Thor Kommedahl is a professor, Department of Plant Pathology, and Herbert G. Johnson is a professor and extension plant pathologist, University of Minnesota.

The section on mushrooms, including the photos, was contributed by Clyde M. Christensen, professor, Department of Plant Pathology.

Mention of trade names does not imply endorsement nor does failure to mention a name imply criticism.

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Roland H. Abraham, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55101. 10M—6-69

PESKY PLANTS

This bulletin provides information on identification, growth habits, and control measures for plants that cause skin irritations or are poisonous when eaten and for plants that are injurious because they have thorny fruits, leaves, or stems. Plants that cause hayfever or are bothersome at bathing beaches and on lakeshore property also are described.

The plants considered are those you're likely to encounter at home, summer resorts, campgrounds, parks, or playgrounds.

Control measures given are general. Specific application rates for herbicides are not given; follow the recommendations on the label of the herbicide you use. For additional details on weed control, see Extension Folder 212, *Cultural and Chemical Weed Control in Field Crops,* available at your county extension office. General control methods are given at the end of this bulletin.

IRRITATING OR BLISTER-PRODUCING PLANTS

POISON IVY

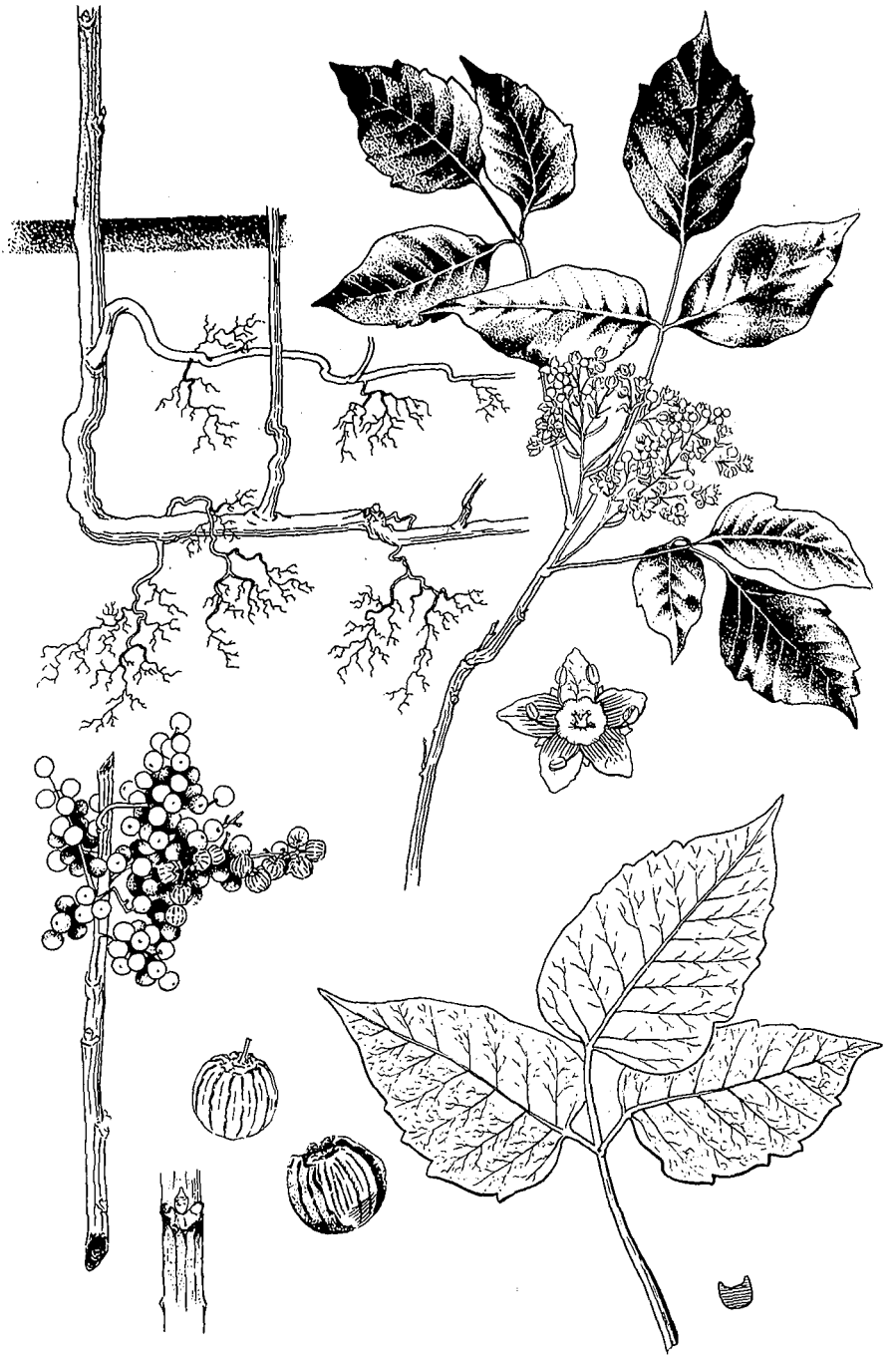
Poison ivy (*Rhus radicans*) and sumacs reduce land values at summer resort areas and inflict much suffering at summer camps, parks, bathing beaches, and woodlands.

The poison found in this woody perennial is 3-*n*-pentadecylcatechol (actually four poisons that differ in minor chemical ways), which is found in the resin ducts of roots and stems and in leaves, flowers, and fruits. Pollen and leaf hairs are not poisonous. You cannot be affected by poison ivy just from breezes blowing over the plant to you.

Contact with poison ivy causes inflammation and sometimes swelling of the skin. This may be followed by intense irritation and blisters. The blisters may break, releasing a liquid, but the liquid cannot cause more blisters. Eventually scabs or crusts form.

The reaction of the poison with the skin is nearly instantaneous, which means that washing the affected area with strong soaps will only remove excess poison. But it's still a good idea to wash the affected area, since the excess poison may otherwise be transferred to unexposed parts of the skin. Symptoms may appear in a few hours or a few days, but they usually are noticeable within 24 hours.

Some persons are more susceptible than others and may even be more susceptible at one time than at another. Moreover, the amount and avail-



Poison Ivy

ability of poison on the plant vary somewhat from time to time. One may contact symptoms of poison ivy by handling clothing or shoes or even by petting animals that have been in contact with poison ivy.

For treatment, consult a physician. Washing with strong soap is not a treatment; it only removes excess poison. Creams or lotions may reduce irritation. ACTH or a cortisone derivative may be administered by a physician in severe cases. Under no circumstances should you eat a leaf in the mistaken notion that this will promote immunity — severe gastric irritation and even death can result.

Poison ivy varies in growth habit from dwarf and erect forms to straggling or climbing forms that produce aerial rootlets that anchor the vines to fences, walls, or trees. Slender, creeping rootstocks grow from the bases of the stems and run underground for several yards. Short leafy stems emerge from the soil from such rootstocks.

The leaves are alternate on the stem and are divided into three leaflets; each is oval shaped, pointed at the tip, and tapered to the base. The terminal leaflet is longer stalked than the two lateral ones. The leaf surface may be glossy or dull green and smooth or somewhat hairy. The leaf margin may vary from entire to toothed or somewhat lobed. In deep shade or in dry weather, leaves may be light green, yellowish green, or even red. In autumn, leaves turn yellow and bright red before falling.

The greenish-yellow flowers, borne in compact clusters, often pass unnoticed. The grayish-white, berry-like fruit measures up to about ¼ inch in diameter and contains a one-seeded pit. Stripes on the fruit make it look like the segments of a peeled orange. Fruits persist on the shrub through the winter and are eaten by as many as 55 different species of birds in the United States. In this way, seeds can be dispersed from place to place. Because some plants produce only male flowers, fruits are not always found on a given plant.

Though often found in rich woods, poison ivy also thrives in pastures, fence rows, banks, waste places, and in dry, rocky fields. It is present on nearly 12,000 acres in Minnesota.

Don't mistake Virginia creeper or moonseed for poison ivy. Virginia creeper has five leaflets and moonseed is only three lobed. Hog peanut, although it has three leaflets, has pink or white flowers, produces a pod, and is a twining vine. Poison oak, which also has three leaflets, does not occur in Minnesota.

In large infestations, poison ivy can be controlled by mowing close to the ground in midsummer, followed by plowing and harrowing or by grazing sheep or goats. For smaller patches, the roots may be grubbed out. If poison ivy is grubbed out and burned, be careful not to stand in the smoke, as the oil will stick to particles of soot and be carried to the skin, causing severe irritation.

Amitrole has given excellent control when applied in the full leaf stage in June and July. Silvex and 2,4,5-T are effective foliage sprays. If desirable plants that might be injured by drift of sprays are close by, you can apply AMS or 2,4-D at the bases of poison ivy plants.

POISON SUMAC

This baneful bog bush, known also as swamp sumac, poison dogwood, poison elder, poison ash, or thunderwood, can be more poisonous than its near relative, poison ivy. The conditions of poisoning and the toxic principles are the same as for poison ivy.

Poison sumac (*Rhus vernix*), with greenish-white berries, can be distinguished from the harmless staghorn sumac and smooth sumac, which have red berries. Some confuse green ash with poison sumac. But green ash has only one stem per plant and the leaf margin is toothed, whereas poison sumac produces a clump of stems and has leaves with unbroken leaf margins.

Poison sumac is a coarse shrub 6-20 feet tall that has smooth, gray bark and smooth branches. Plants have 7-13 leaflets per leaf and the leaves are opposite. The autumn foliage is orange to scarlet.

The greenish-yellow flowers may be male or female and are arranged in a spreading or pendulous branch arising from the attachment point of leaf to stem. Flowers appear from May through July and the globular fruits ripen from August through November and are conspicuous all winter.

Although poison sumacs are most common in the wet places of southeastern Minnesota, they can be seen elsewhere in the state: in bogs and swamps, where tamaracks grow, or along streams and ditches. In contrast, the harmless sumacs grow only in well drained soil or even in fairly dry soils.

Because poison sumac is very poisonous, it is best to eradicate it with chemicals. Also, it may be safest to apply chemicals when the plants are dormant. A mixture of 2,4-D and 2,4,5-T or a soil sterilant can be applied to the bases of the shrubs with success. AMS, like 2,4-D and 2,4,5-T, can be sprayed on the aerial parts of the shrubs in full leaf stage. It is then carried in the sap to the roots and so kills the plants.

SPURGES

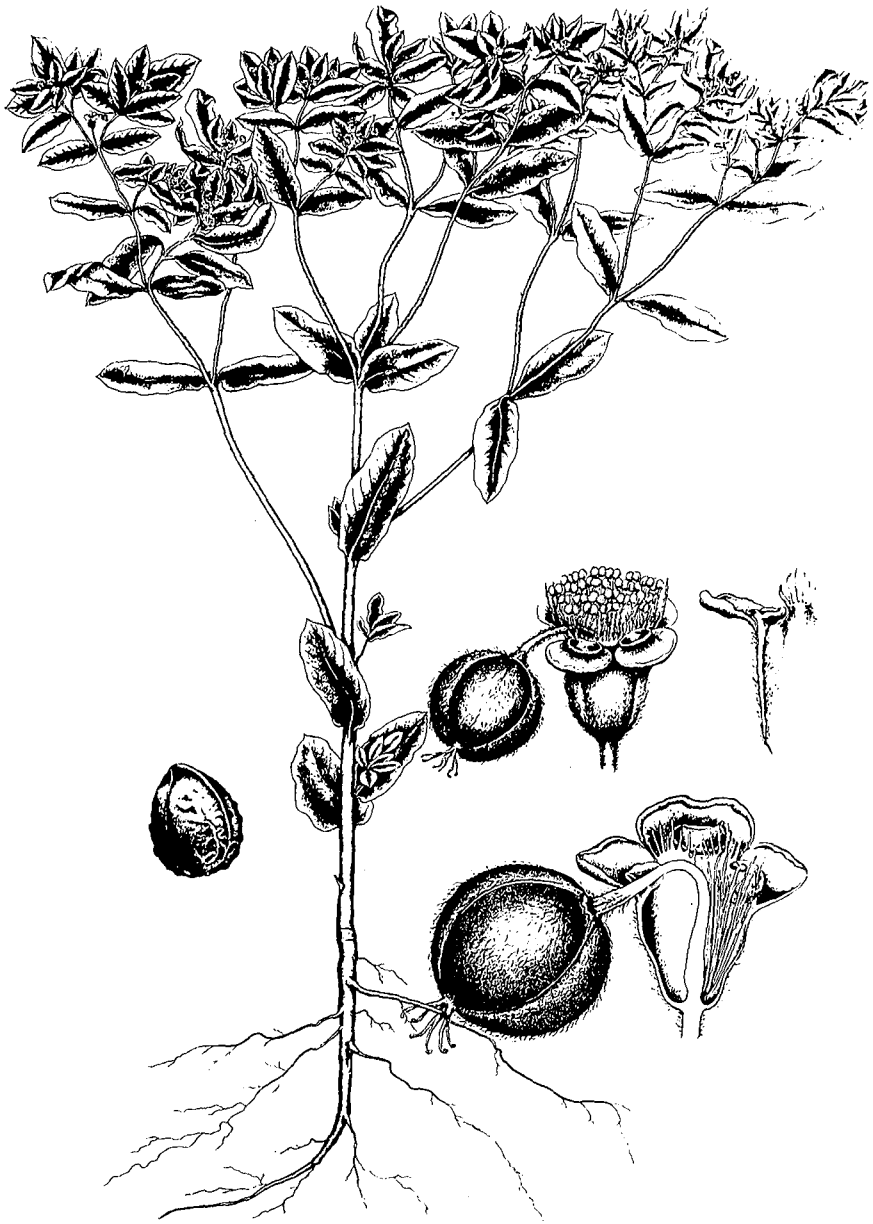
Plants in this group contain a highly acrid milky juice in stems, leaves, and roots. This juice may produce severe irritation and blistering of the skin. Most cases of poisoning result from snow-on-the-mountain.

If eaten, spurges are emetic and purgative. Also, there is swelling about the eyes and mouth, accompanied by abdominal pain. Purgatives sometimes are made from the cypress spurge and can be poisonous if taken in excess.

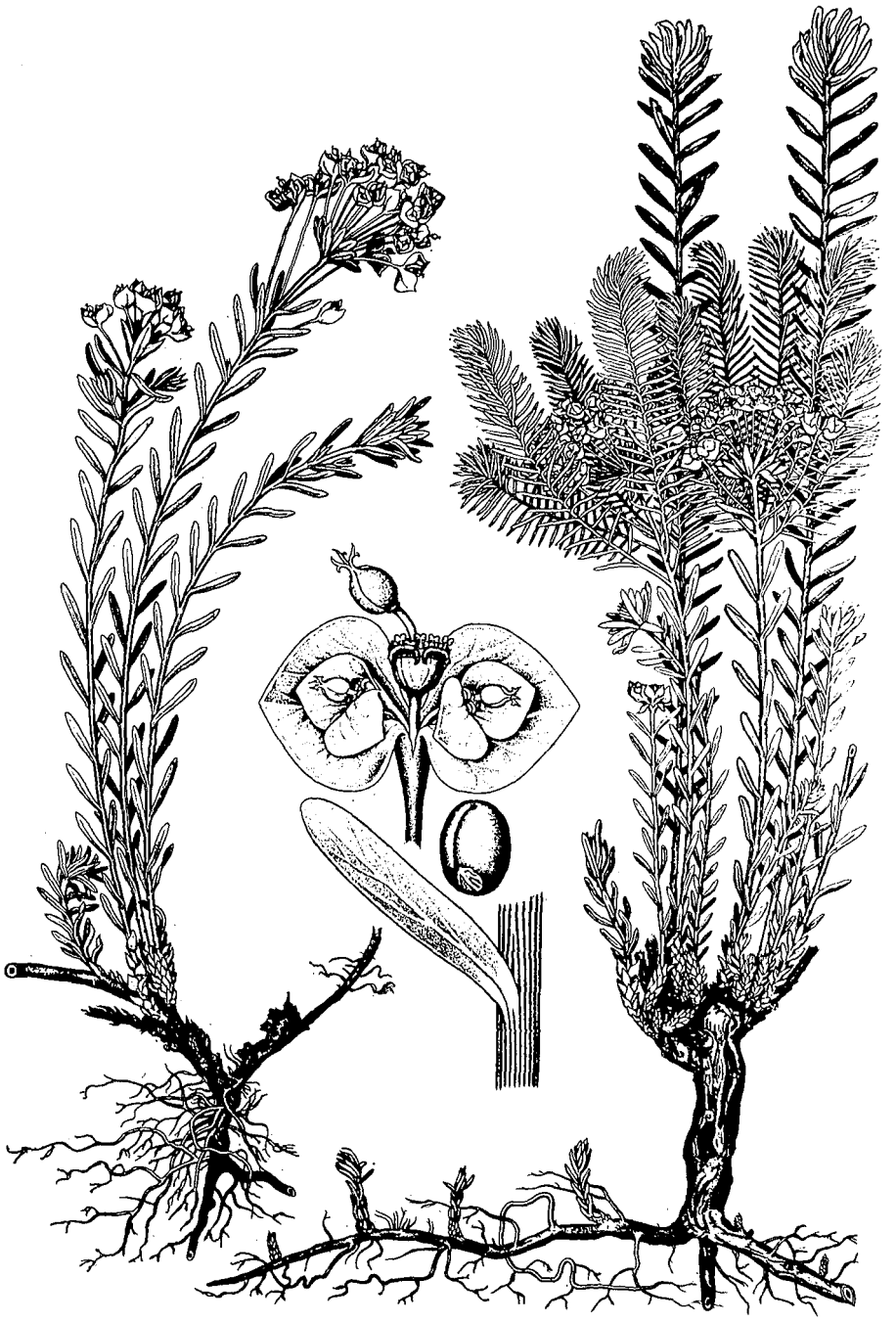
Spurges are found throughout Minnesota with 17,000 acres infested with leafy spurge alone.

Snow-on-the-mountain (*Euphorbia marginata*) is a native annual often planted in gardens because the leaf margins are white and petal like. The simple leaves are alternate on the lower stem but are opposite or whorled on the upper part of the stem. The flowers are borne in clusters with three-forked branches. The fruit, a three-part capsule, is somewhat hairy as shown in the drawing. There are three seeds per capsule.

Poison Sumac



Snow-on-the-Mountain



Cypress Spurge

Cypress spurge (*Euphorbia cyparissias*), sometimes named graveyard spurge because of its frequent appearance in cemeteries, is a perennial herb. It was introduced into the United States from Europe, where it was grown as an ornamental. It frequently inhabits dry, gravelly, or sandy soils.

This weedy plant sometimes grows in densely tufted masses from a network of ropelike rootstocks, or clustered from buds at the crown of the plant, or even scattered from buds on the creeping roots. The stems are smooth and the leaves are alternate but more thickly set on the stem than other spurges. Seeds are not common and reproduction occurs primarily by creeping roots and rootstocks.

Flowering spurge (*Euphorbia corollata*), known also as poison milkweed, is a native perennial that reproduces by seeds and rootstocks and is common in dry, sandy areas. The erect stems are simple or only sparingly branched, smooth, and are about 3 feet tall. The flax-like leaves are alternate at the lower parts of the stem and opposite above. There may be 25-75 or more leaves along the stem. The showy, flower-like parts of the plant are not flowers at all, but are petal-like appendages below the flower.

Leafy spurge (*Euphorbia esula*) is a noxious perennial herb that reputedly made its way into southwestern Minnesota in oats brought from Russia in 1890.

It is deeply rooted; some roots grow 16 feet deep. The roots near the surface are creeping and aid in spreading the weed. The stem is erect and is simple or branched near the summit. Stems frequently are clustered from buds arising on the vertical root. In late summer, pinkish, scaly buds are visible just below the crown. The bluish-green leaves frequently turn to a brownish orange toward autumn. Cuplike structures at the top of the plant contain the greenish-yellow flowers and at maturity a fruit (capsule) is formed which bursts and scatters seed. Some plants produce two or more crops of seed stalks per season.

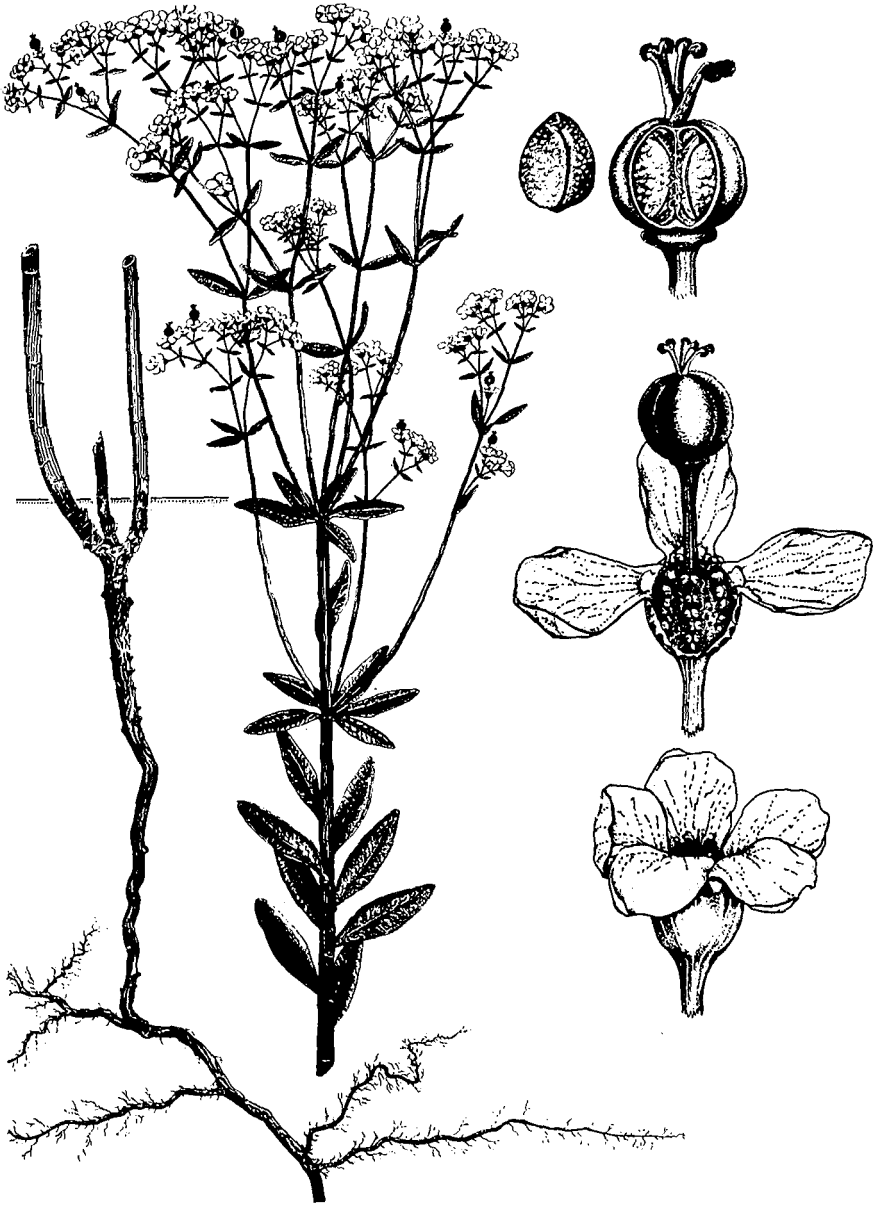
The spurges can be controlled by digging scattered plants if the infestation is small. Continuous mowing will prevent seed formation and exhaust food reserves in roots or underground stems. Close grazing by sheep in spring can eliminate leafy spurge.

It is difficult to kill spurges with herbicides; 2,4-D and 2,4,5-T are poor controllers and silvex is rated only fair. A combination of frequent mowing and repeated application of silvex or amitrole is fairly effective. Small patches in noncrop areas can be eradicated with soil sterilants such as AMS or picloram.

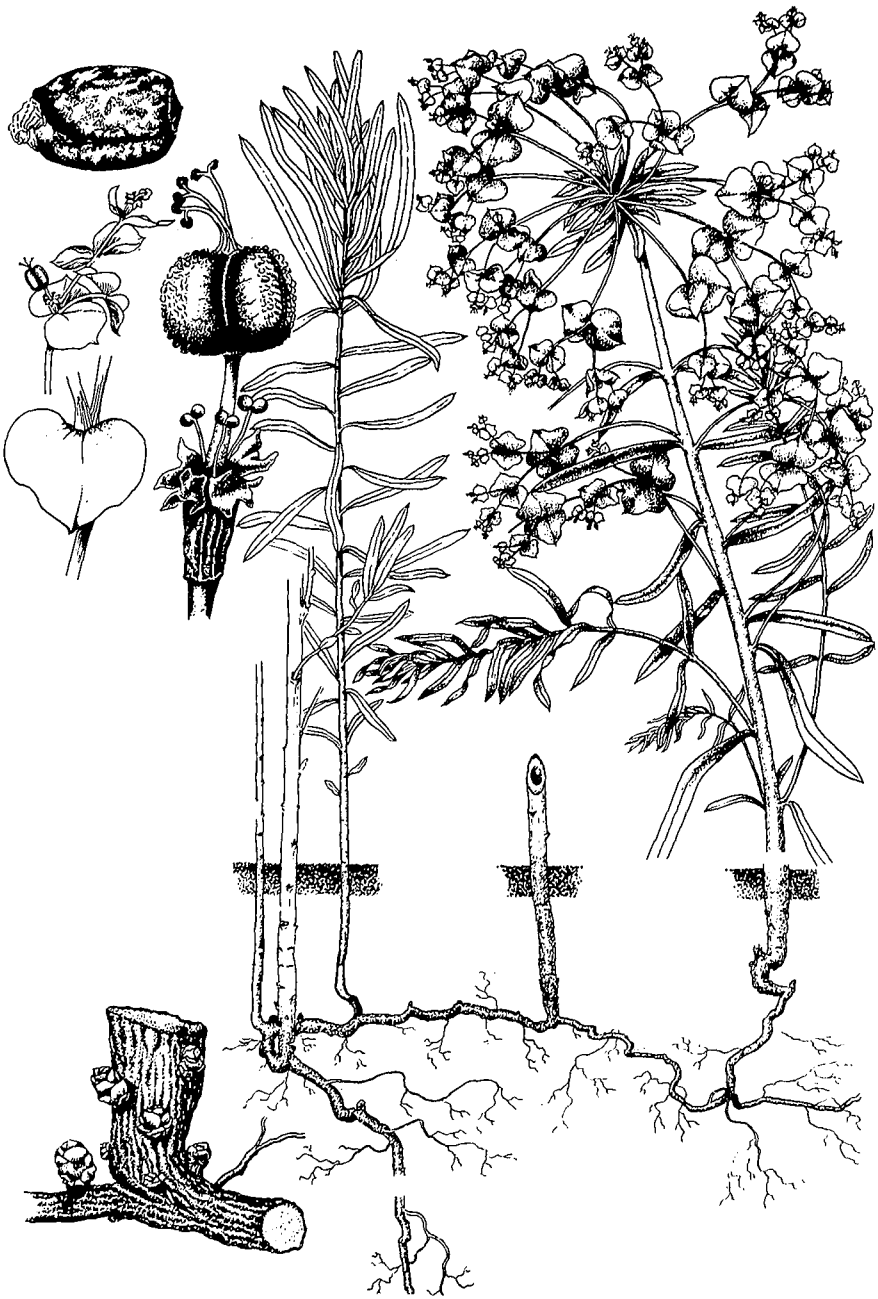
NETTLES

There are two principal kinds of stinging nettles. One is wood nettle (*Laportea canadensis*), which grows mostly in rich, moist woods in deep shade or in the shade along streams or lakes. The other is the stinging nettle (*Urtica dioica*), which is common on higher ground, often in full sunlight. The stinging nettle is a perennial plant introduced from Eurasia and generally found in dense patches.

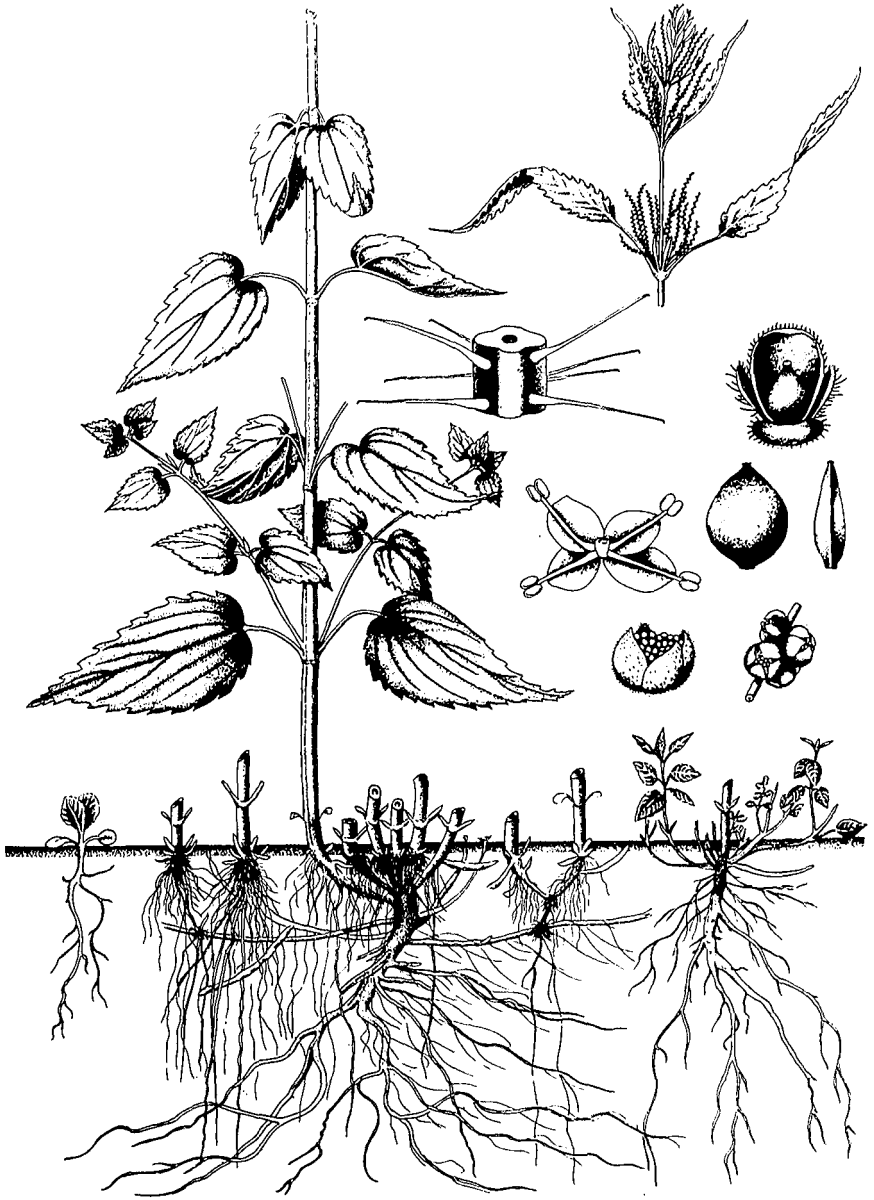
Nettles generally are not poisonous, but they are irritating. The leaves usually are covered with hairs that have broad bases but taper toward the



Flowering Spurge



Leafy Spurge



Stinging Nettle

tip. At the slightest touch, the globular tip is knocked off, leaving a sharp point that easily penetrates the skin. At the same time, a poisonous liquid oozes out of the hair into the skin, causing a burning sensation of short duration.

Many species of stinging nettles differ from the one just described in minor characteristics only. Stinging nettle has a strongly developed root system and a network of underground creeping rootstocks. The bristly, fibrous stems usually are four angled, but sometimes are irregularly angled with deep furrows in them. They contain a watery juice. The whole plant is covered with short bristles and long, stinging hairs. The coarsely toothed leaves are arranged opposite each other on the stem. There is a distinct middle vein in the leaf with branches to the leaf margin. The flowers are small, greenish, without petals, and are borne on the stem just above the point where the leaves are attached. The seeds are flat, granular, and about the size of a pinhead.

The wood nettle is a perennial plant native to the Americas. It often grows in dense stands in heavily shaded, moist woodlands. This nettle produces itching similar to that caused by stinging nettles.

The root system of both kinds of nettles is similar. An outstanding difference between nettles is the leaf arrangement. The wood nettle has alternate leaves and the stinging nettle opposite ones. Also, the leaves of wood nettle often are heart shaped.

Nettles can be controlled by grubbing out the rootstocks and killing by drying, if this is feasible. Mowing frequently and close to the ground will prevent seed formation as well as exhaust food reserves stored in the roots and rootstocks. Nettles also can be killed easily by spraying with 2,4-D.

SMARTWEEDS

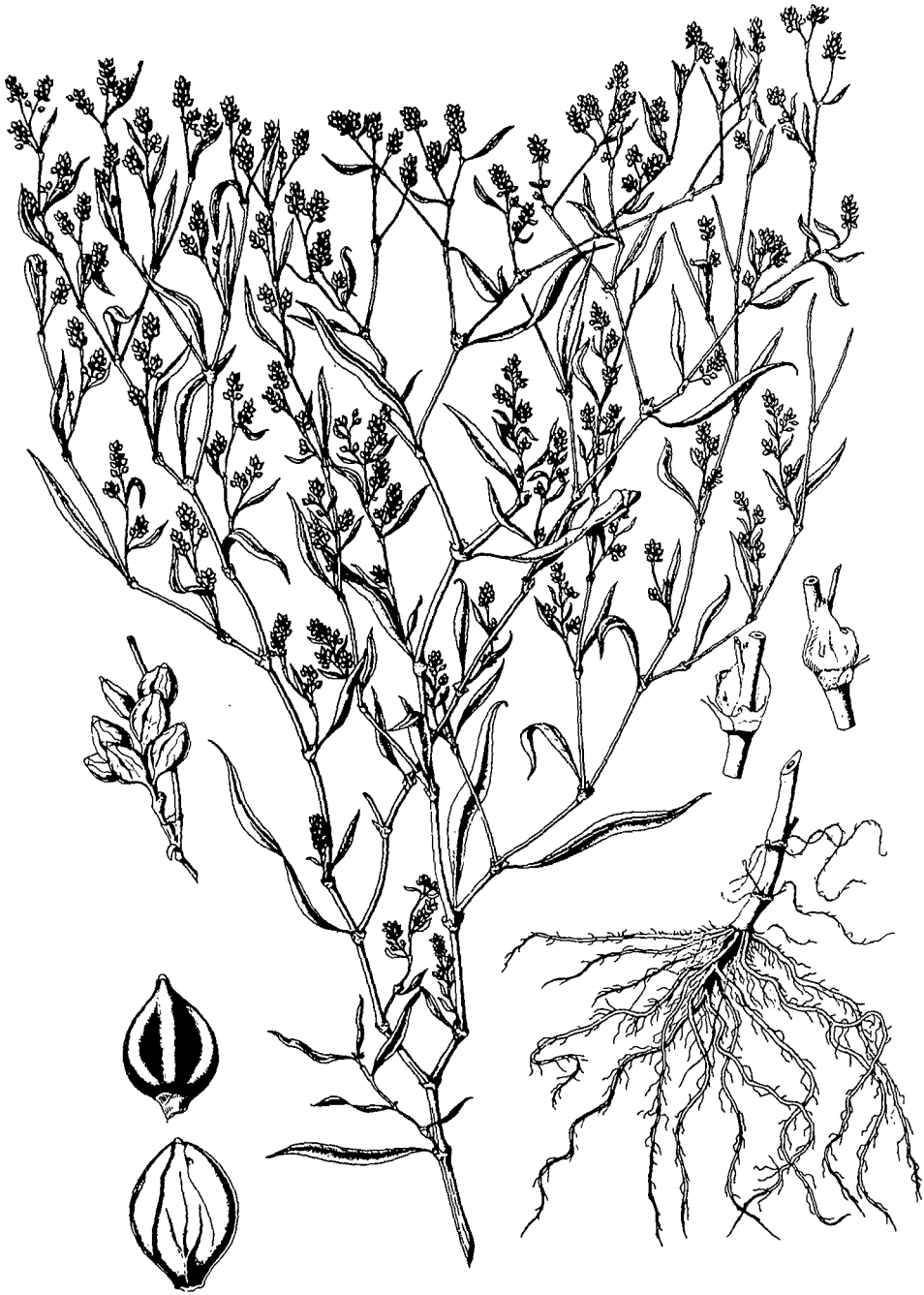
There are many species of smartweeds (46 species in northeastern North America). Many of these contain juices that are bitterly pungent or peppery and cause smarting or irritation to the eyes and nostrils. People who are sensitive to smartweeds occasionally develop skin rashes.

The common smartweed (*Polygonum hydropiper*) probably is the most irritating of the smartweeds. It is weak stemmed and is found primarily in damp or wet places. The stems are reddish and have swollen joints. There is a papery sheath just above each joint. The leaves are alternate and shaped like willow leaves. The greenish flowers produce purplish-black seeds that may be flattened or somewhat three angled.

Lady's-thumb smartweed (*Polygonum persicaria*) differs from common smartweed in that it has a somewhat triangular purple blotch on each leaf, which gives the species its name. Weak stems, willow-shaped leaves, and swollen joints also are characteristic of this species. The flowers are pink or rose colored. The flattened or triangular seeds are purplish black and glossy. This European weed is very common in damp clearings.

Both of these smartweeds are annuals and there are no underground stems or creeping roots to contend with. Frequent mowing will prevent seed set and thus eliminate plants. These weeds will not thrive where drainage is improved.

Common Smartweed



Lady's Thumb Smartweed

Young smartweeds are somewhat susceptible to foliar applications of 2,4-D, but this herbicide generally is not considered satisfactory. The best control is obtained with dicamba. In areas where no crops are grown, dicamba can be applied to the foliage when the weed is actively growing.

POISONOUS PLANTS

WATER HEMLOCK

Cicuta maculata, also called poison hemlock and spotted cowbane, is a member of the parsley family and one of the most violently poisonous species in Minnesota and throughout the United States. Its tuber-like, fleshy roots, which resemble small sweet potatoes and have the fragrance of parsnips, are deadly poisonous. While the roots and rootstocks are the most lethal portions, all parts of the plant contain some toxins, especially when the plants are young.

Children and even adults have eaten the fleshy roots, mistaking them for artichokes, parsnips, or other roots, with fatal results. Cattle, horses, and other domestic animals also have been poisoned by eating the roots. A piece of root the size of a walnut can kill a cow.

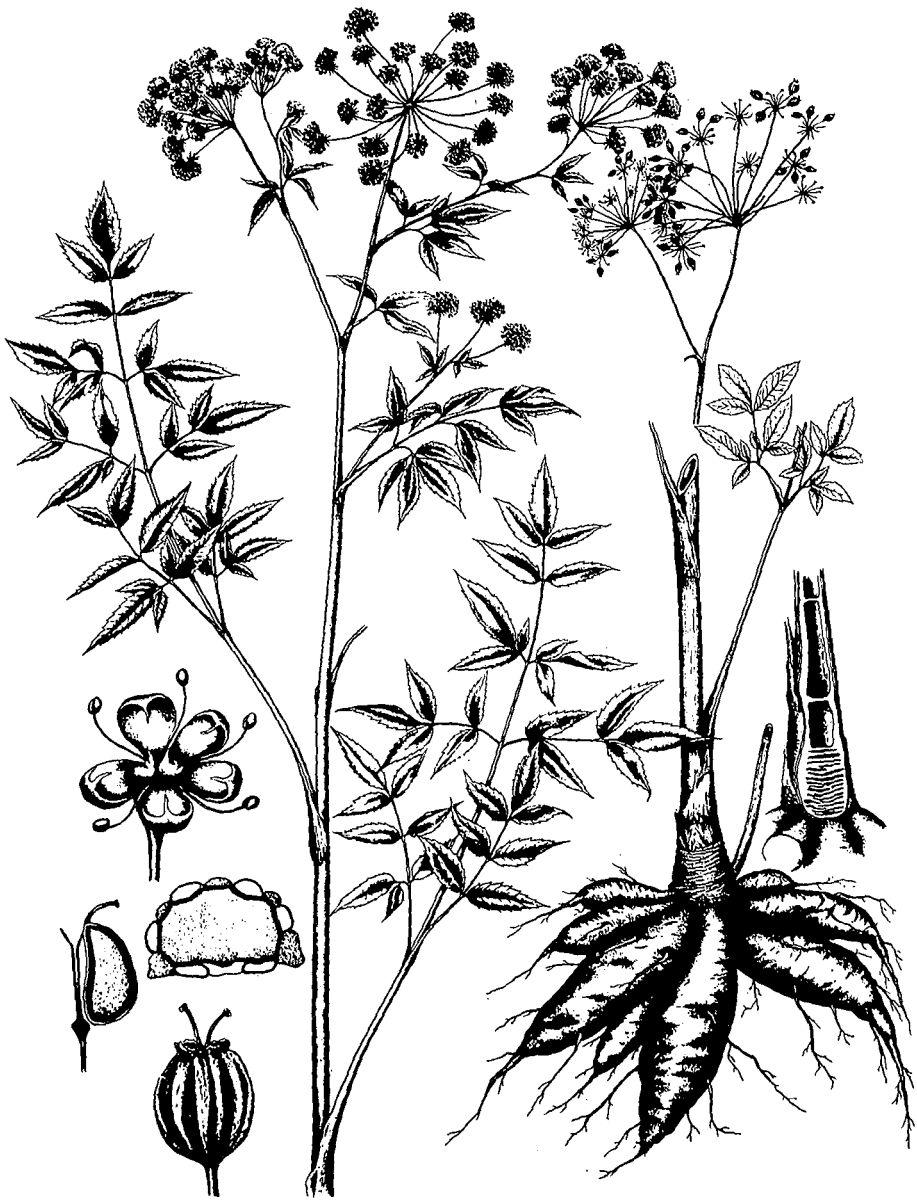
Symptoms of poisoning appear from 1 to several hours after eating the root and include stomach pains, nausea, diarrhea, and dilation of the pupils. There are violent convulsions sometimes accompanied by frothing at the mouth. If emetics, followed by purgatives, are administered soon enough so that vomiting can be induced, the patient has a chance for recovery. Otherwise death can be sudden and is likely to occur during the convulsions. Death may occur in 15 minutes or as long as 8 hours after a lethal dose is taken. A physician should be called as soon as poisoning is suspected.

The clusters of fleshy, fingerlike roots are shallowly embedded in soil, so the whole plant can easily be pulled out. When the roots are cut, a fragrant but poisonous yellow oil oozes from the cut surface. The stem is hollow between the joints, but the stem base has closely set partitions, as shown in the illustration. Children sometimes use the hollow stems to make whistles and are poisoned when they place the stems in their mouths.

The smooth stems, often 6-7 feet tall, often are mottled with purple, especially in the lower parts. The leaves are alternate on the stem, and the veins of the leaf terminate in the notches at the margin. This characteristic differentiates water hemlock from another plant, *Angelica,* with which it often is confused. The veins of *Angelica* end in the teeth, not in the notches of the leaf. And the leaves generally are divided into three groups of three leaflets per leaf.

The white flowers are borne in an umbrella-like cluster and give rise to flattened fruits. Corky ridges alternating with oil tubes appear on the surfaces of the fruits.

Water hemlock is easily destroyed by application of 2,4-D or by digging out the roots of this biennial plant. Marshes, ditches, wet streams, and lake borders near campsites and resort grounds should be checked carefully and all plants should be eradicated.



Water Hemlock

Water Parsnip

WATER PARSNIP

This perennial herb is native and widespread in North America and has been suspected of being poisonous to man and domestic animals. However, no toxic principle has been described. This plant can be readily distinguished from water hemlock because of the corrugated or angled stems and the different shape and grouping of leaflets, from three to eight pairs per leaf, as illustrated.

Water parsnip (*Sium suave*) generally is branched above the middle and the leaves are alternate on the stems. The flowers and fruits are similar to those of water hemlock.

Plants grow in low swampy ground, meadows, muddy banks of streams, and even in standing water.

Other closely related plants are poison hemlock (*Conium maculatum*), which has white flowers and a fleshy, parsnip-like taproot, and wild parsnip (*Pastinaca sativa*), which has the fleshy tap root but yellow flowers. Poison hemlock causes a gradual paralysis of the lungs ending in death, but without convulsions. This was the poison used to end Socrate's life. Wild parsnip is not poisonous, although some persons get blistering of the skin from contact with the wet foliage. Wild carrot is not poisonous to man; however, if cows graze on it their milk can become tainted.

Water parsnip, like water hemlock and poison hemlock, can easily be pulled or dug from the soft ground in spring and destroyed. Or it can be killed with 2,4-D.

JIMSON WEED

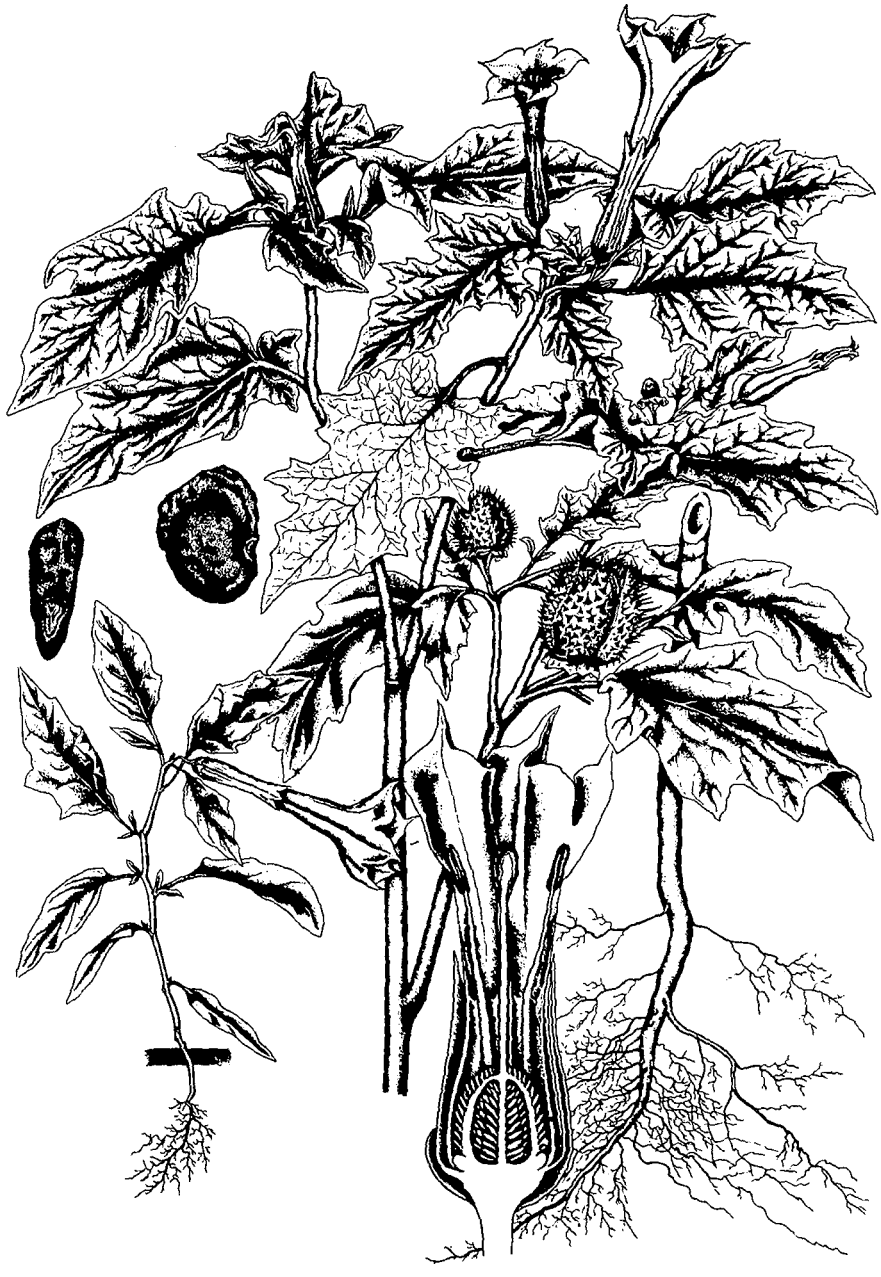
An ill-scented, dangerously poisonous weed, this plant is a stout, robust annual that produces both a nerve and stomach poison called hyoscyamine. Jimson weed (*Datura stramonium*) is in the same family as nightshade, potatoes, and petunias.

Domestic animals are poisoned by feeding on the tops of the plant. Children are poisoned by eating the unripe seed pods, which sometimes are called thorn apples. Some people are especially susceptible and get a skin rash from touching the leaves.

The nervous form of poisoning is most common. Its symptoms are headache, nausea, extreme thirst, a burning sensation of the skin, dilated pupils, and loss of sight and control of limbs. In extreme cases, mania, convulsions, and death occur.

This bushy weed may grow 6 feet tall. Its stems are smooth and may be green or purple. The leaves are alternate, unevenly toothed, and strongly scented. The large, showy, trumpet-shaped flowers are white on the green-stemmed variety and violet or purplish on the purple-stemmed variety. The fruit is a hard, prickly, four-parted capsule containing many large, flat, dark-brown or black seeds. At maturity the capsule bursts into four parts.

Jimson weed grows in fields or waste places, mostly on rich, gravelly soils. It should be mowed before seeds are produced. If mowed after fruits are ripe, the plants should be burned. The herbicides 2,4-D or MCPA will kill this rank weed.



Jimson Weed

Black Nightshade

BLACK NIGHTSHADE

Black or deadly nightshade (*Solanum nigrum*) belongs in the potato family and produces green berries in July and August. The unripe (green) berries are poisonous and contain the alkaloid solanine; the ripe berries (dull, purplish black) may be nontoxic but not dependably so. The cultivated "huckleberry" or "wonderberry" is a close relative of this plant. Varieties exist that have nontoxic berries used in making jams. Leaves also contain solanine. Narcosis and paralysis occur from eating the unripe berries. This may show up first as a paralysis of the tongue and pupil dilation. If poisoning is suspected, an emetic should be given if a physician is not immediately available.

This plant, probably introduced from Europe or Asia, is an annual herb with somewhat angular stems. The leaves are alternate with wavy-toothed edges. The flowers are white and more or less clustered, with 5-10 flowers to a cluster.

These plants inhabit waste places, fields, yards, campgrounds, or open woods and grow well on loam or gravelly soils.

Plants can be easily eradicated by pulling them out by the roots or by hoeing. With young plants, repeated applications of 2,4-D provide control. Silvex gives more effective control.

POISONOUS MUSHROOMS

There are more than 4,000 different species or kinds of wild mushrooms. Of these, 40-50 are known or suspected to be poisonous. The genus *Amanita* includes several of the most deadly kinds. One, *Amanita verna,* is illustrated below.

Amanita Verna

Saddle Fungus

The genus *Amanita* is characterized by gills that are "free;" i.e., they come up close to the stem but are not attached to it. The spores and gills are white. A ring is present and usually is prominent on the stem just below the cap as the cap expands. It later shrinks and becomes inconspicuous. The base of the stem is enlarged into a cuplike sheath or bulb. This bulb often is hidden in the soil and can easily be missed unless one suspects its presence and looks for it.

Although the genus *Amanita* contains the more deadly of the poisonous mushrooms, a number of other mushrooms are known to be somewhat poisonous. It is not enough just to learn the mushrooms of the genus *Amanita* and avoid them. The only safe course is to learn to recognize some of the edible kinds and eat only those you know thoroughly. For example, the edible saddle fungus *Gyromitra esculenta* has long been eaten in quantity in both Europe and America and is considered by many to be a choice edible fungus. Yet there is no doubt that it has caused a number of fatal poisonings in both Europe and America, including a family of five in Minnesota.

For a guide to mushrooms that can be eaten, ask your county agent for a copy of Extension Bulletin 357, *Edible Wild Mushrooms.* Or write to the Bulletin Room, 3 Coffey Hall, University of Minnesota, St. Paul, Minnesota 55101.

HAYFEVER PLANTS

There are several causes of hayfever, but one major cause is plant pollen. In spring pollen comes primarily from trees, in summer it comes from grasses and plantains, and in autumn it comes from ragweeds, primarily from the common ragweed (*Ambrosia artemisiifolia*) and the giant ragweed or kinghead (*Ambrosia trifida*). Both species are native annuals. They grow principally in moist waste places in the southern half of Minnesota.

Common ragweed grows to 1-3 feet tall and has mostly alternate leaves in the upper branches and opposite leaves in the lower parts of stems. The leaves are divided two or three times. Because there are no ray flowers, it may appear that the plant is not in flower and so does not produce pollen. But abundant pollen is produced on the petalless flowers. The nutlike fruits are up to ⅜ inch long and have four to seven short stout spines plus a beak at one end.

Giant ragweed is a robust weed commonly 6 feet and sometimes 15 feet tall. The leaves are all opposite and three parted, except for the topmost leaves.

Mow in midsummer to prevent production of pollen and seed. Spray with herbicides such as 2,4-D to kill both ragweeds.

PLANTS WITH THORNY FRUITS

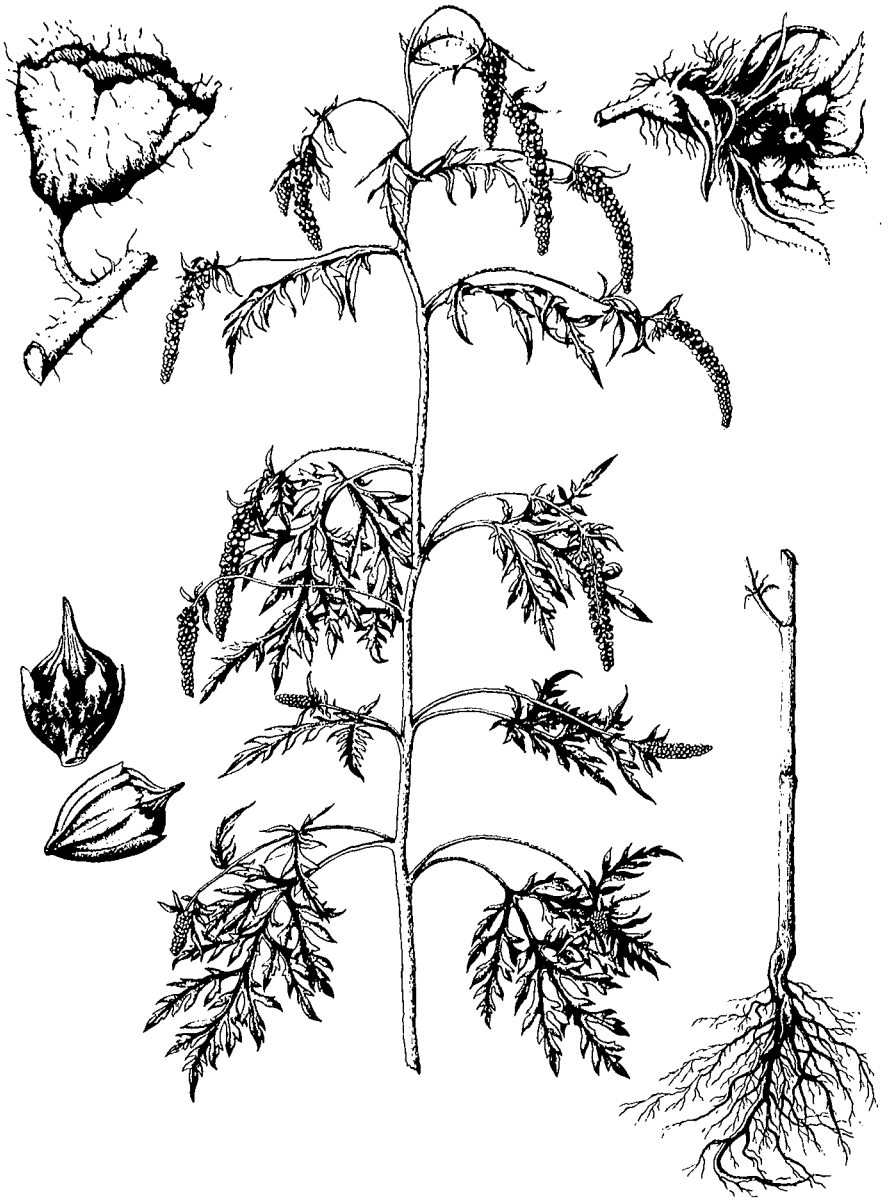
SANDBUR

The sandbur (*Cenchrus pauciflorus*) produces a bur with spines stout enough to penetrate the flesh of man and animals. These spines can result in inflammation and infection of the punctured skin. The burs mix with sand on the beach, ready to puncture the skin of swimmers or sunbathers. Often the spines break off when the bur is jerked from the flesh, so tweezers must be used to extract the severed spine of the bur. The burs also adhere to clothing or get entangled in the fur of domestic animals.

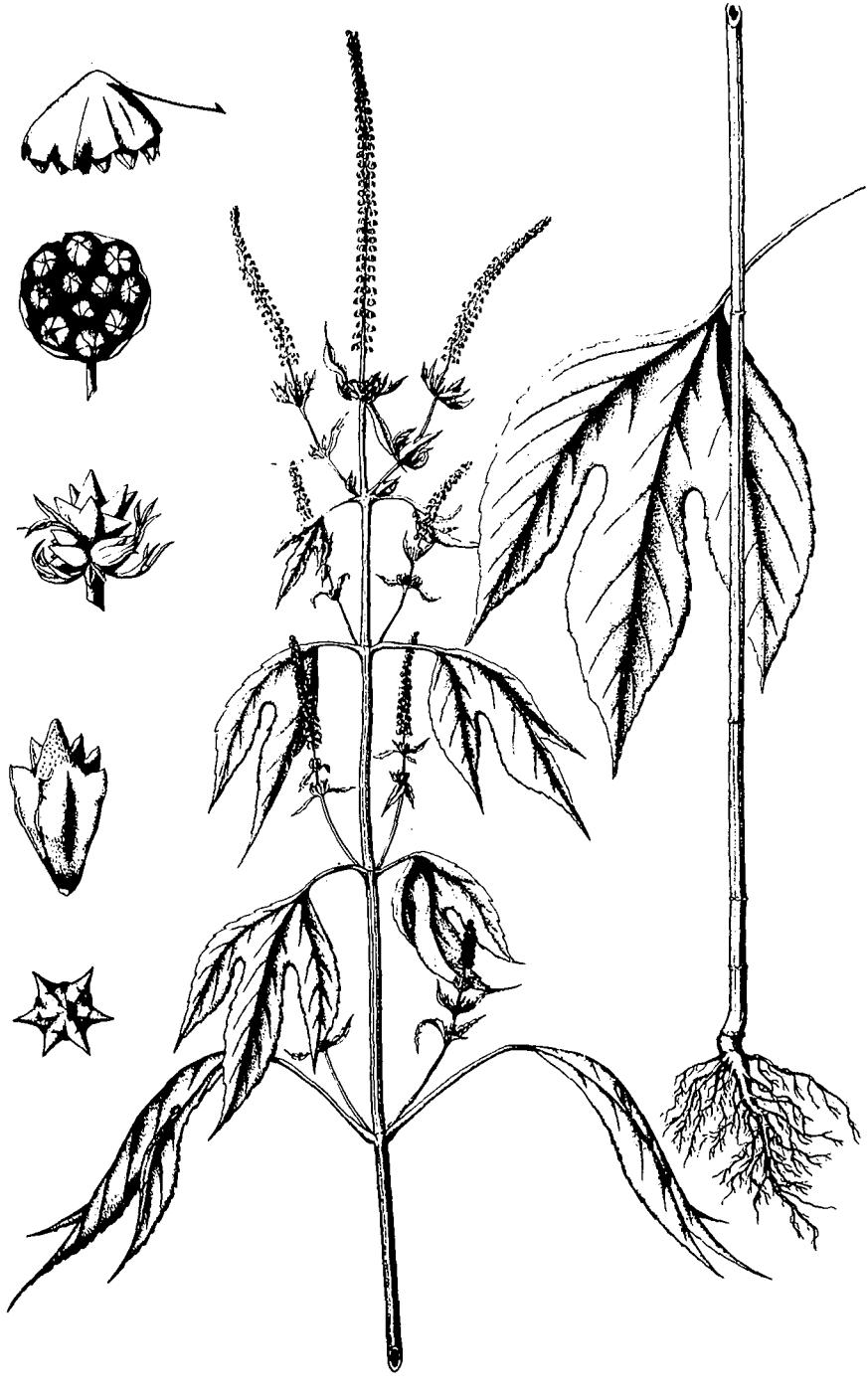
This much-branched, annual grass weed often spreads by taking root at the lower joints of the stem. The sheaths that enclose the stems are loose and often overlap. The usually flat leaves are about ¼ inch wide, and there is a fringe of hairs where the leaf blade joins the sheath around the stem. The grass flower is enclosed by a hairy, spiny bur composed of many bristles, each provided with recurved barbs. It is these barbs that enable the spines to work into the flesh. Seeds in the bur can live in soil for 4 years and probably longer.

Because it is an annual plant, reproduction occurs only from seeds contained in the burs. Moreover, infestation can occur from burs carried on man or animals or from burs floating along the shore from place to place.

Eradication is possible by burning the burs with a flame burner with the flame directed at the tops of the plants. Because burs are produced so close to the ground, mowing is ineffective in eradicating sandbur.



Common Ragweed



Giant Ragweed

Sandbur

For chemical control on beaches or pathways, any of the accepted grass killing herbicides such as dalapon can be used. TCA will kill sandbur, but it can cause skin irritation if bathers lie in the sand shortly after TCA application. Remember that these herbicides will kill many other grasses also, so they should not be used to kill sandbur when it is with desirable grasses. In that case, the best control is to make sure you have good black soil and maintain a healthy, vigorous lawn.

BEGGAR'S TICKS

Hunters, hikers, and late summer or autumn campers are united in their dislike of this robust weed. Two downwardly barbed spines at one end of each seed of beggar's ticks (*Bidens frondosa*) cling tenaciously to clothing and are difficult to rémove, especially from woolens. Moreover, it has only minor value as food for wildlife.

Spanish needle, devil's pitchfork, sticktight, and bur marigold are other names for this weed. Plants on lakeshores may vary from a few inches to 5 feet or more in height. The plant is an annual with opposite leaves that are compound and made up of three divisions. The leaf margin is fine toothed.

The yellow to orange-yellow flowers are conspicuous in late summer. Below the head of flowers there are two rows or series of very small leaves. The blackish seeds are borne on a flat, chaffy disc and are more or less four sided.

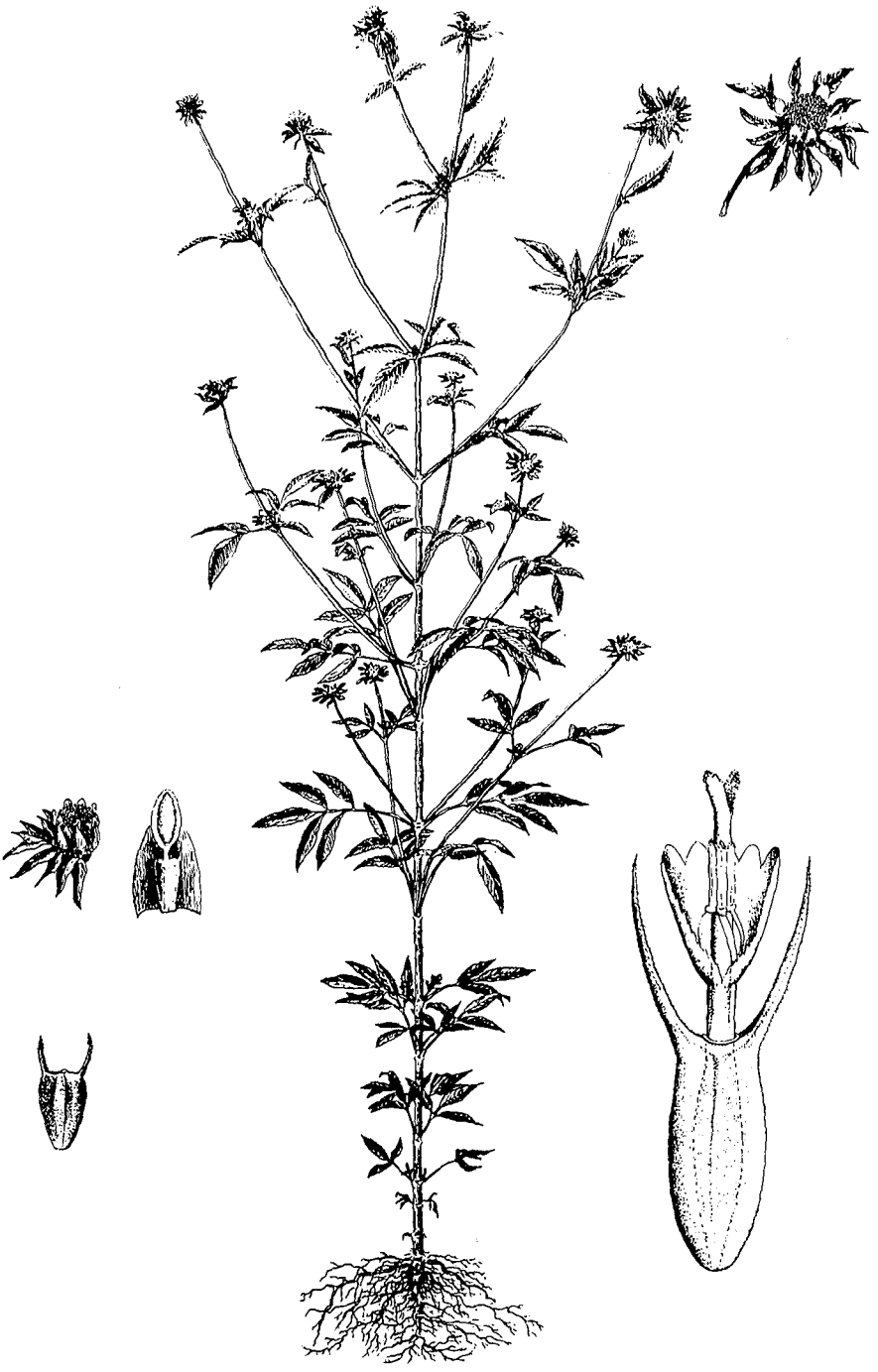
Beggar's ticks grow in damp, open areas, along lakeshores, and sometimes even in relatively dry waste places. Improving the drainage on moist land helps to control this weed. Mowing before seed formation will prevent infestation of land. Spraying with 2,4-D; 2,4,5-T; MCPA; or silvex also will control this plant.

STICKSEED

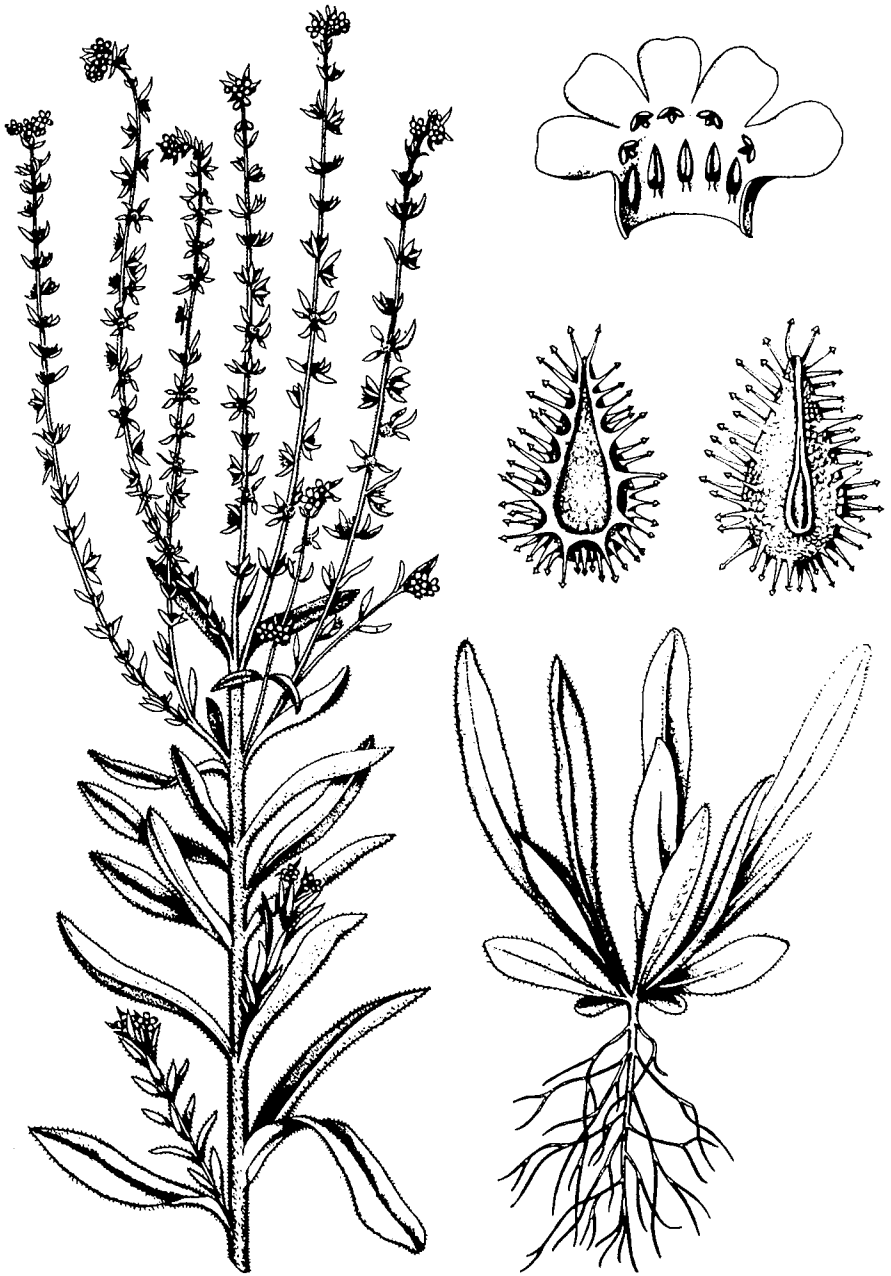
This grayish, hairy, bluish-flowered plant produces many small fruits that are covered with prickles. Common stickseed (*Lappula echinata*) grows 1-2 feet high on dry locations in full sunlight. Virginia stickseed (*Hackelia virginiana*) is found in moist and shaded sites where it is usually 2-4 feet high. Common stickseed has hairy leaves ¾-3 inches long and ⅛-¼ inch wide. The flowers are blue, and the plant sometimes is called blue bur. Virginia stickseed has larger, smooth leaves and flowers that vary from pale blue to white. The stems of both species are erect, simple, slender, and branched at the top. Leaves are alternate, undivided, oblong to narrow, have smooth margins, and are without stalks.

The fruit of these species is a cluster of four small, erect nutlets about ⅛ inch long with a double row of barbed prickles around the margin. These prickly nutlets stick in the wool and hair of animals and to clothing. The name sticktight sometimes is used for the plant. These species are annuals or winter annuals that reproduce by seed.

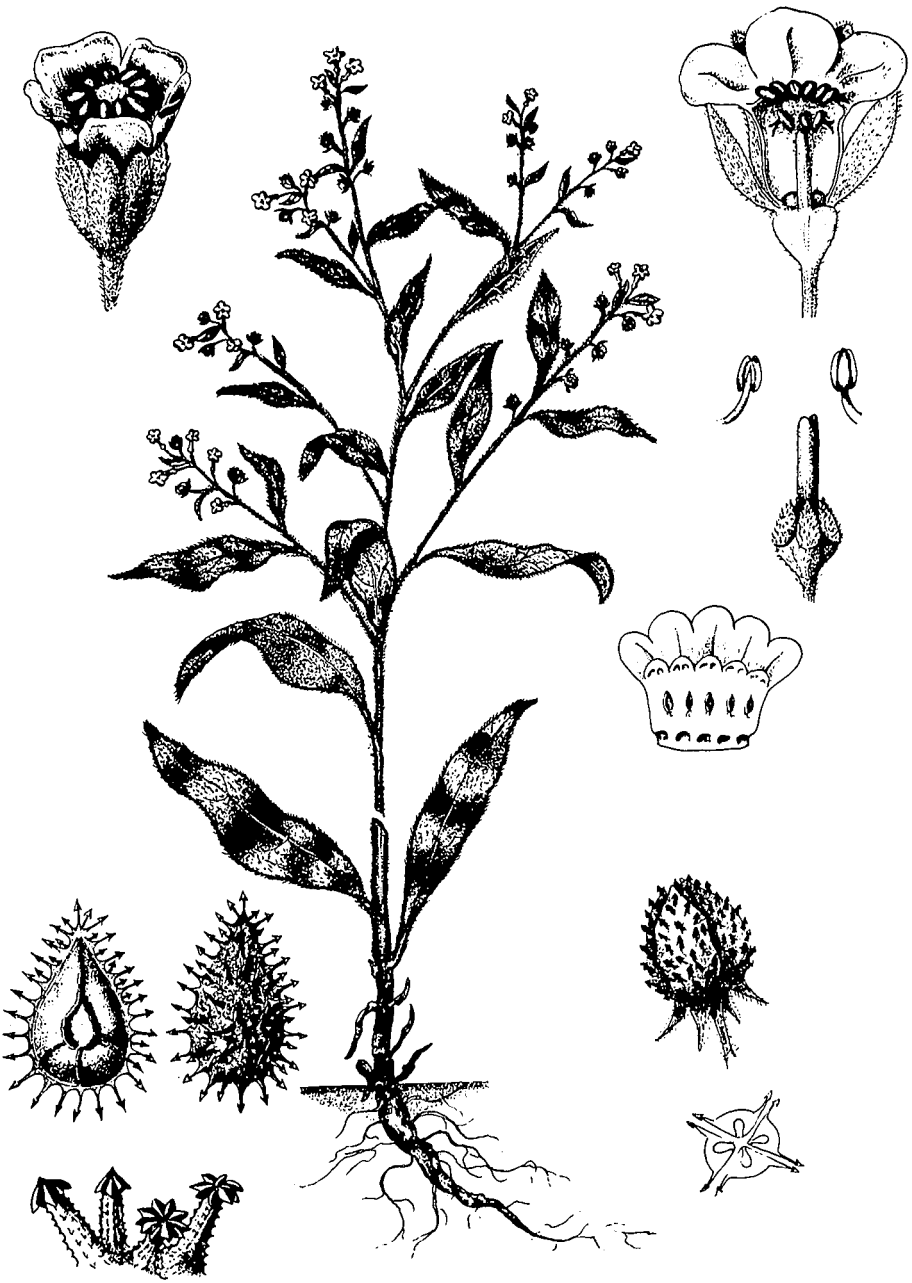
Both stickseeds generally grow in waste places that are not mowed or cultivated regularly. They may be controlled by cutting the rosette stage



Beggar's Ticks



Stickseed



Virginia Stickseed

below the ground with a hoe in fall or early spring. Mowing the plants before they produce seed will prevent formation of the prickly burs and reduce the seed for future generations. Herbicides containing 2,4-D usually provide effective control.

TICK TREFOIL

This plant, sometimes also called beggar's ticks but more commonly called tick trefoil or tick clover, is one of several species of *Desmodium*. One example is *Desmodium canadense*. These plants are perennials of the legume family, having three-part leaves like clover and often having rose-colored, pea-like flowers.

The plant produces a flat, deeply jointed pod that separates into three to six joints, each containing one seed. The surface of the pod is covered with hooked hairs. The seeds are about ⅛ inch long, kidney shaped, and a dull, reddish brown.

There are many wild species of *Desmodium* that grow in woodlands and spread on to neighboring open lands or pastures.

Mowing will prevent seed production but will not eradicate the plant unless repeated often. Tick trefoils are not killed by 2,4-D.

COCKLEBUR

Many a pheasant hunter has cursed this coarse annual weed because of the rough burs that hook or tear his clothing or cling to the fur of animals. The farmer also has reason to eradicate cocklebur (*Xanthium chinense*), since the burs get tangled in the wool of sheep or injure the hide of farm animals, making infection possible. Also, the first seed leaves that emerge in the spring have been reported to be poisonous to some farm animals.

The stem of cocklebur is somewhat rough, angled, and frequently spotted with red. The large, alternate leaves vary from heart shaped to nearly kidney shaped.

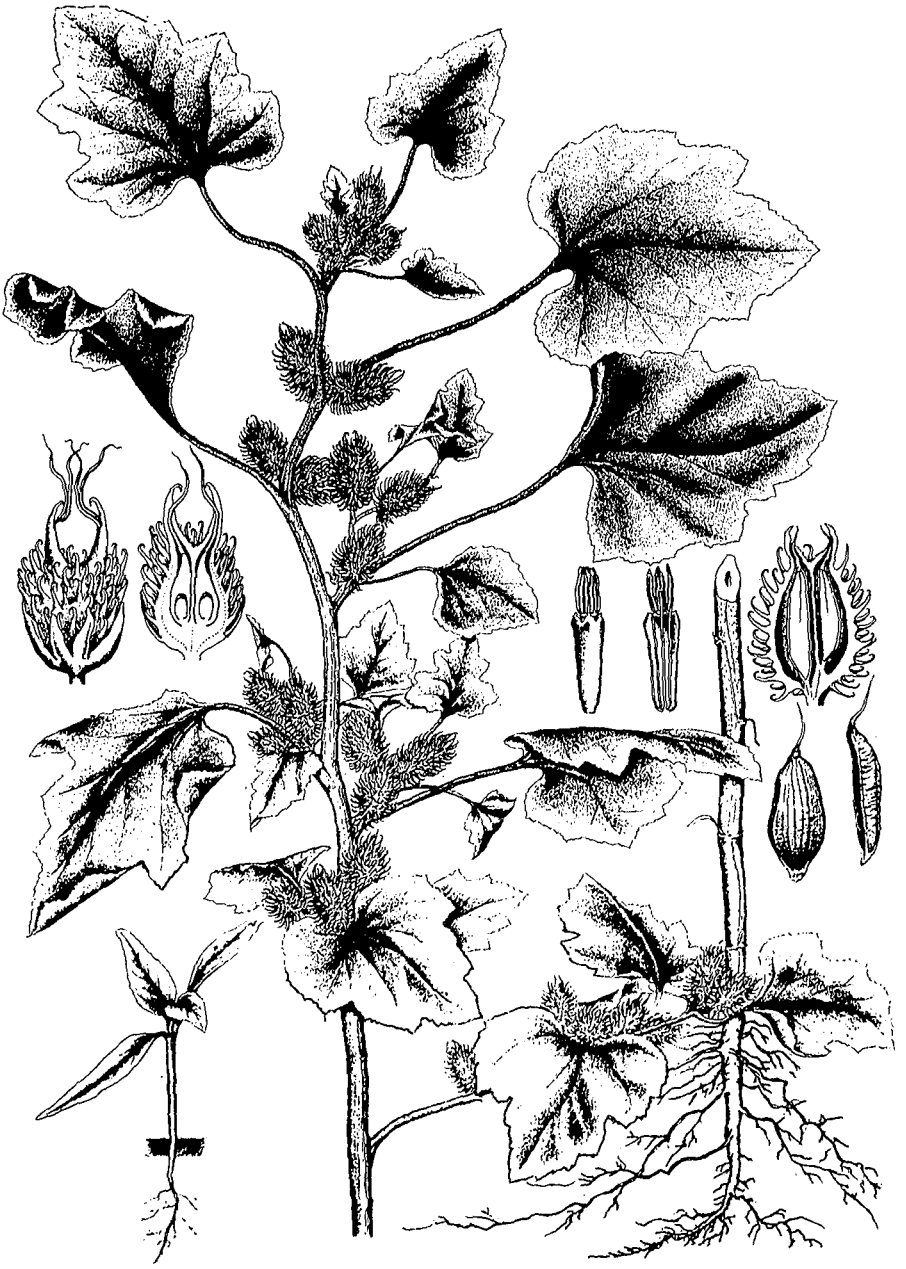
Because of the variation in the shape, hairiness, and spininess of mature burs, many forms or species have been described. In general, the burs have two stout, incurved hooks at one end. Often the hooks on ripe fruits are reddish tinged. Each bur is two chambered with a flattish seed in each chamber. For the species described here there are about 100-150 prickles on one face of the bur.

Cocklebur frequently grows on lowlands, lake beaches, or on wastelands.

Plants should be mowed to prevent seed formation, or they can be killed by spraying them with 2,4-D.

BURDOCK

The large, bristly burs of this biennial (*Arctium minus*) are a major nuisance to those who walk in uncultivated fields or tend domestic animals that have ventured too close to patches of it. The fur or hair of animals becomes thoroughly matted with the prickly fruits of this relative of garden rhubarb.



Cocklebur

Burdock

In the 1st year of growth a rosette of leaves resembling rhubarb in size and growth habit is produced. Fruiting occurs in the 2nd year, when numerous many-seeded burs await the chance encounter with man or animals to be dispersed. The spines have hooked ends that enable them to be carried about by animals.

The large, fleshy taproot produced the 1st year contains stored food for the fruiting year. The rough, hairy leaves of the rosette often measure a foot in length. The pinkish-purple flowers arise from shoots growing just above the place on the stem where leaves are attached. Neglected farmyards, fence rows, or rich soils of uncultivated areas of campgrounds or fields are favorite habitats for this weed. Plants can be eradicated by cultivation, especially during the 1st year. Spraying with 2,4-D; 2,4,5-T; MCPA; or silvex also will control burdock.

PLANTS WITH THORNY STEMS

PRICKLY ASH

The only species of the citrus family native to Minnesota is prickly ash (*Xanthoxylum americanum*). It is a large shrub or small tree, measuring up to 12 feet in height, with thorny stems that easily deter even the experienced hunter or woodsman from attempting to make his way through a thicket of them.

This shrub reproduces by seeds and by the production of horizontal roots. Stems, branches, and twigs have thorns up to ½ inch long. The thorns occur in pairs at the bases of leaves.

The compound leaves bear from two to four pairs of leaflets, plus an odd one. Young leaves are downy. As they mature they become nearly smooth on the upper surface but remain hairy on the lower surface. The leaves are rather thick and dotted with translucent oil glands. While the leaves and fruits are pleasantly aromatic, the taste is disagreeably pungent. The flowers are yellowish green and open before the leaves appear.

The fruit is somewhat fleshy and becomes reddish brown when mature. The black, shiny seeds are about ⅛ inch long.

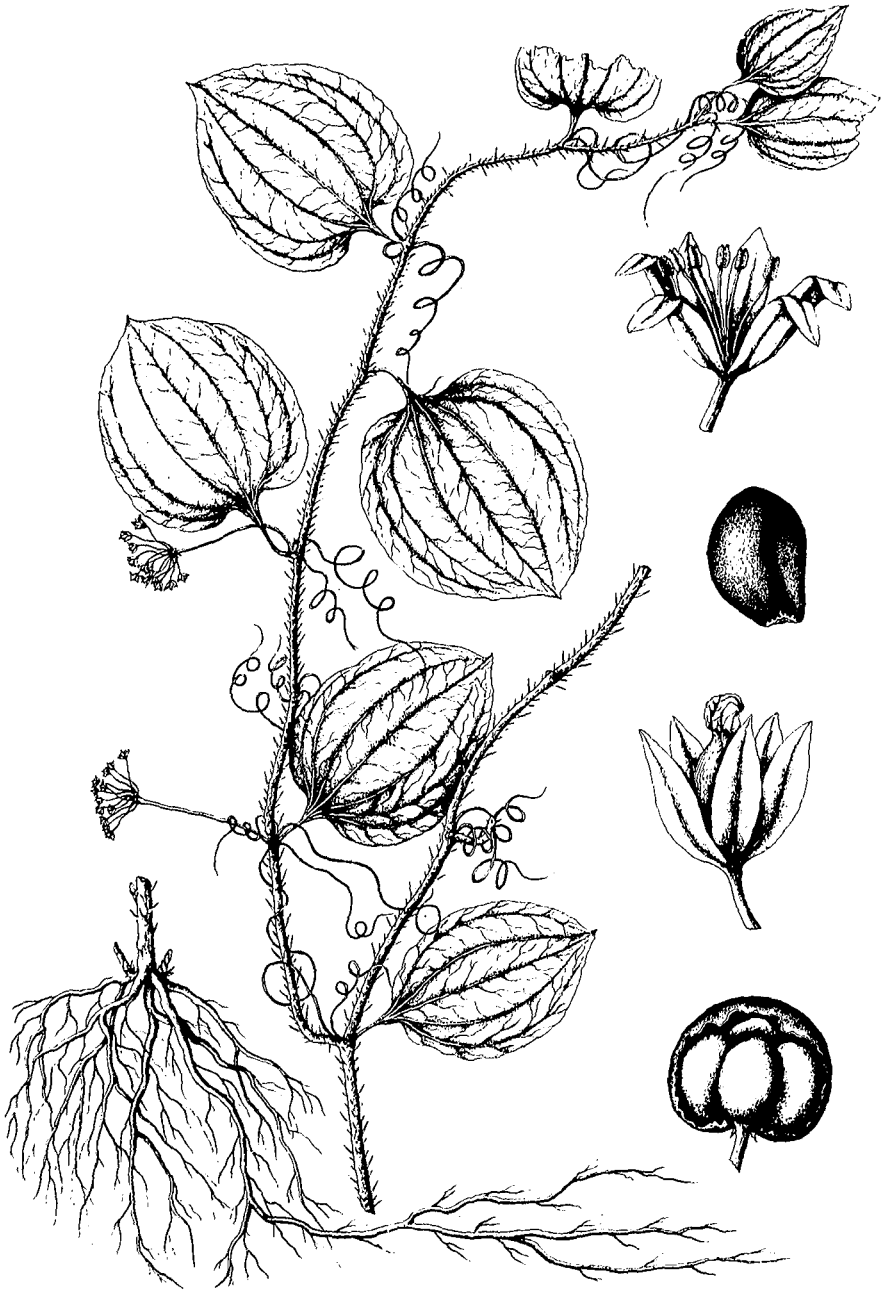
Prickly ash inhabits thickets, riverbanks, and thick, moist woods and frequently thrives at edges of woodlands.

Control of these thorny shrubs can be accomplished by grubbing out the roots or by application of brush killers that contain 2,4,5-T. Repeated applications may be necessary.

PRICKLY GREENBRIER

Hunters and others who tramp through unpastured woodlands may find themselves entangled in the thorny and unyielding vine of greenbrier (*Smilax hispida*). The spines are black, very firm, and usually ¼-½ inch long. They may tear clothing or inflict wounds on unprotected skin. Even in winter the stem is a bright green, which makes the plant readily identifiable.

Prickly Ash



Prickly Greenbrier

The plants are not common. They occur as scattered clumps that climb on other plants in woodlands on rich, moist soil in the southern half of Minnesota. They attain a length of up to 20 feet. Several stems arise from a common rootstock. A pair of tendrils occurs at the base of each leaf.

The leaves are thin, vary from oval to heart shaped, and usually have seven prominent veins per leaf.

Six to twenty flowers are clustered at the bases of leaves. The berries are bluish black.

Greenbrier can be controlled by grubbing out the rootstocks or by application of AMS at the bases of plants.

BUFFALO BUR

This noxious annual weed of the potato family has poisonous, prickly berries and prickly stems. The stiff yellow spines on its stems and fruit are so sharp that even animals will not touch the plant. Moreover, the spines are easily detachable and become imbedded in a man's skin if he brushes against them. The plant is native to our western states but has been introduced into Minnesota in feed, screenings, and hay. Buffalo bur (*Solanum rostratum*) frequently occurs first in the vicinity of feedlots. From there it spreads to cultivated fields and to uncultivated areas.

Stems of the buffalo bur are erect but have many branches and are somewhat spreading. When mature, the plant often breaks at the ground line and is blown around like a tumble weed. It is generally about 1 foot tall, but may reach 2 feet. Leaves are alternate on the stem and are deeply lobed, similar to watermelon leaves. The leaf surface is covered with hair, but veins, midribs, and petioles are prickly. The yellow, wheel-shaped flowers, about 1 inch in diameter and similar to those of tomato, are borne in clusters on prickly stems. The fruit is a berry encased in a spiny covering.

These plants can be controlled by clean cultivation or by mowing waste areas in which they grow to prevent them from producing seed. Selective weed control chemicals generally are not effective.

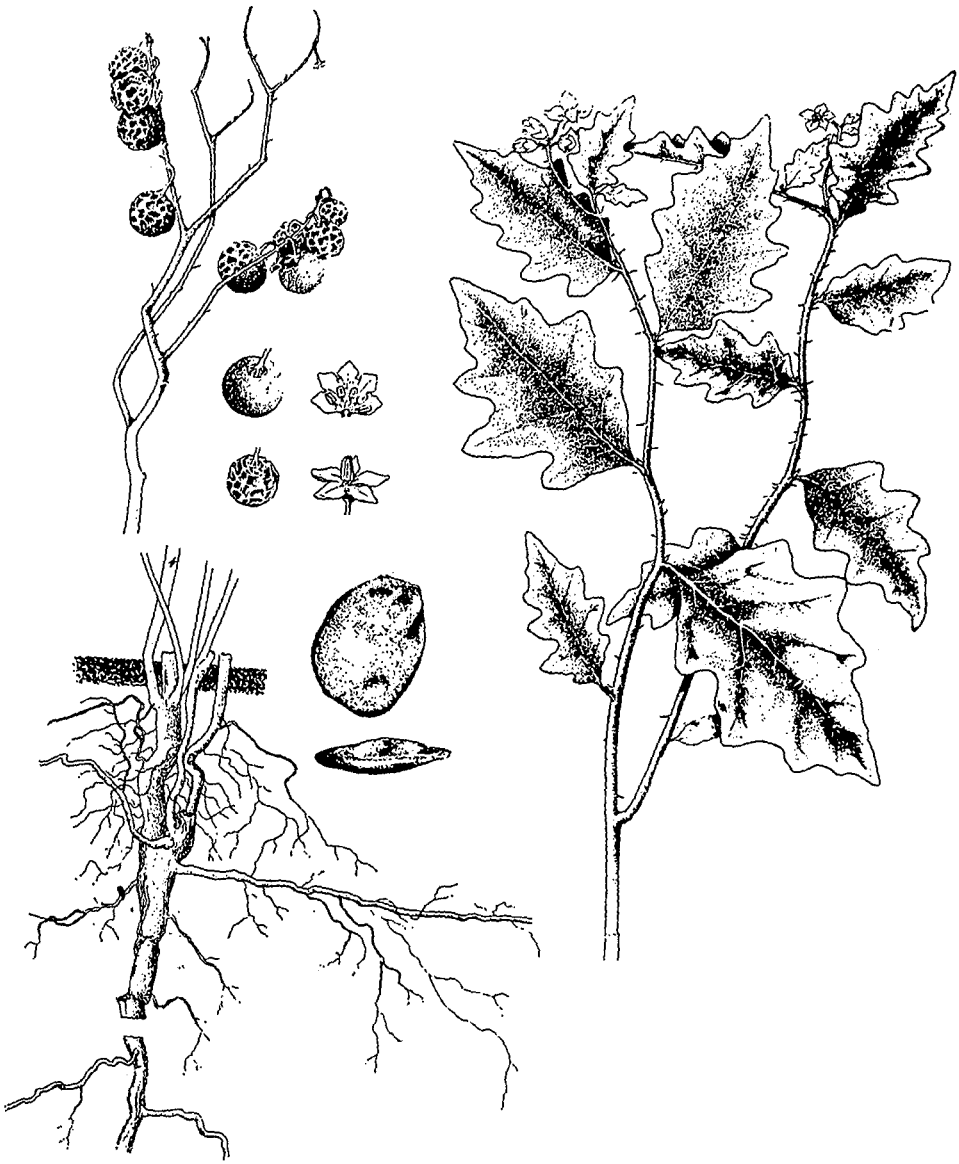
HORSE NETTLE

This close relative of buffalo bur is not only a pest as a weed in spring, but also has poisonous leaves and berries. In addition, it is susceptible to tomato mosaic, which makes it objectionable near tomato fields. Horse nettle (*Solanum carolinense*) is not poisonous at all growth stages but, because the presence or absence of the poison cannot be known at all times, it should never be eaten.

This perennial weed spreads by creeping rootstocks that are up to 3 feet long. Vertical taproots penetrate to depths of 8 feet. It is troublesome in meadows or in crops, especially on loose, sandy soils.

The stems, petioles, fruiting stalks, and leaf midribs and veins are thinly covered with stout, yellowish spines, as in buffalo bur. The stout, erect stems are loosely branched and reach a height of 8-24 inches. Short stiff hairs fill in the space between the spines on the stems. Leaves are shaped like those of white oak, having shallow cuts and rounded lobes covered with hairs.

Buffalo Bur



Horse Nettle

Flowers are pale violet to white on a flower stalk. The fruit is an orange-colored, smooth berry that contains 40-60 seeds.

This plant can be controlled in fields by clean cultivation. It can be choked out on campgrounds or in resort areas by establishing a good sod of bluegrass. Horse nettle patches should be mowed in uncultivated areas to prevent seed formation.

The application of 2,4-D is not always effective; however, 2,4,5-T has given some favorable results. Horse nettle also is very susceptible to amitrole.

CANADA THISTLE

This deep-rooted perennial thistle has been declared noxious in the seed laws of at least 43 states. Canada thistle (*Cirsium arvense*) thrives in every county in Minnesota on an estimated 1.1 million acres. Its prickly leaves and stems are a nuisance in camp and resort areas.

While the major portion of the extensively creeping and freely sprouting roots lies within a foot of the soil surface, roots can penetrate to depths of 6-8 feet or more, especially in loose, well drained soil. New shoots can arise from creeping roots from a depth of 8 inches. For example, in 3 years' time, a 3-inch cutting of Canada thistle can produce a patch 60 feet in diameter. Every piece of the creeping root system can give rise to a new plant.

The stems are ridged and very leafy. The lower surface of leaves is either smooth or somewhat woolly. The leaves, which are alternate, are irregularly lobed and spiny on the margins, although one variety is not lobed and is almost without prickles.

Flower color varies from white to pink, lavender, and rose purple. The flowers on a given plant are all male or all female but occasionally both sexes can be found in one flower. Of course, there is no seed from male plants or from female plants located far away from male plants.

Lack of seed also is caused by the attack of certain insects, notably the Canada thistle midge or the larvae of fruit flies. Often the whole flower head may turn brown from insect attacks.

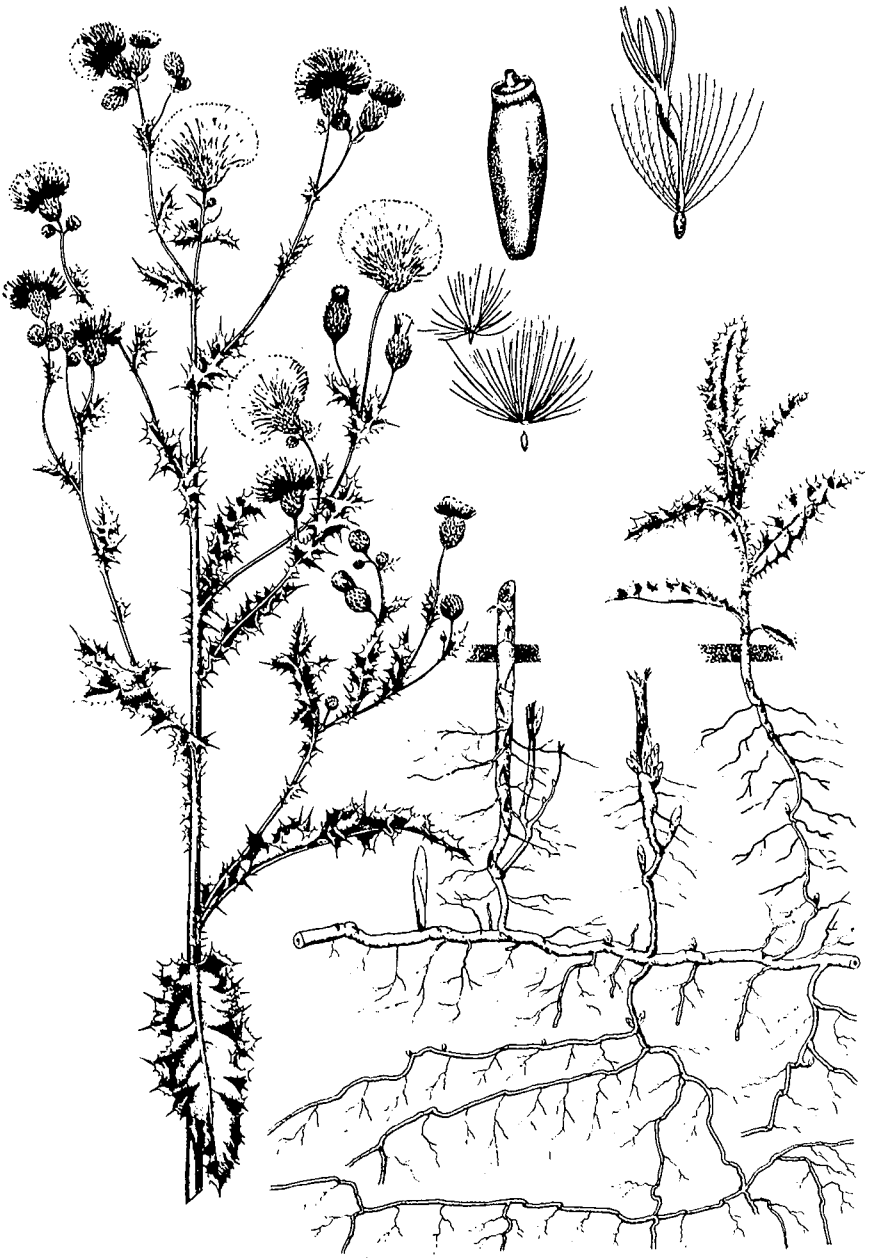
While Canada thistle grows nearly everywhere, it is especially abundant on rich or heavy soils.

The food reserves in the roots are lowest about the 1st week in June, so mowing the plants at this time forces the plant to use up what little food still is available for the production of new shoots. Plants cut while in flower often will continue to ripen, but the seed is not viable.

Usually several applications of 2,4-D each year for several years are necessary for control of Canada thistle. Amitrole also has been effective. For small patches, soil sterilants such as dicamba, picloram, TBA, TBP, and fenac can be used successfully.

BULL THISTLE

An aggressive, fiercely armed weed of clearings, bull thistle (*Cirsium vulgare*), also named common and spear thistle, is a biennial plant that produces a prickly rosette of leaves the 1st year and a spiny-winged, flowering stem the 2nd.



Canada Thistle

This alien weed produces a fleshy taproot, which later becomes spindle shaped. The plant overwinters with no stem appearing above the ground, only a rosette of leaves that are pale, woolly, or webbed beneath and green and smooth above. The lobes bear long, stout prickles.

In the 2nd year a woolly, furrowed, prickly-lobed, and very leafy stem appears. The leaves are alternate and are woolly and spiny like the rosette leaves.

Unlike those in Canada thistle, the heads are solitary or there are only a few at the tips of short, prickly, winged branches. The purple flowers produce seeds ⅛ inch or longer. They are straw colored with grayish-black stripes.

Bull thistle will not persist under cultivation or mowing and also can be killed by repeated applications of 2,4-D.

ROADSIDE THISTLE

This spiny thistle closely resembles bull thistle except that it is less prickly and usually branches only near the summit and not at the base of the stem. It is not as tall and robust as the tall thistle (*Cirsium altissimum*), which it resembles even more closely.

Although sometimes a perennial, roadside thistle (*Cirsium discolor*) usually is a biennial. The 1st year's rosette leaves are stalked and green and smooth above but white-felted beneath, whereas bull thistle is more coarsely woolly. Also, the leaf of roadside thistle is divided nearly to the midrib, making bristly-toothed lobes.

The heads, mostly solitary, are borne on leafy branches of the strongly ribbed flowering stem. While flowers usually are purple, some white-flowered forms occasionally appear.

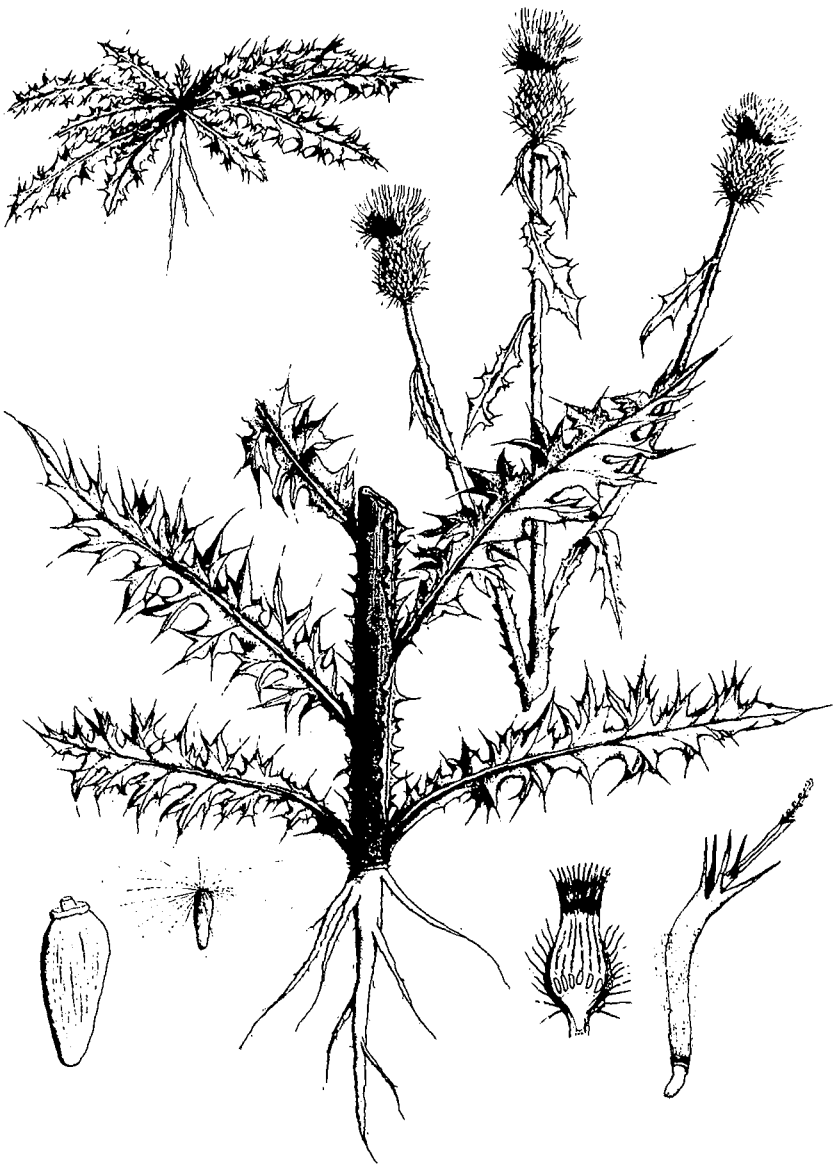
Cultivation and mowing or repeated applications of 2,4-D will control roadside thistle.

TRAILING BRAMBLE

This prickly, trailing bramble (*Rubus flagellaris*), known also as dewberry and running or wild blackberry, is a woody perennial that frequents openings and borders of thickets and is responsible for scratching the arms or legs of many campers or hunters. Many an outdoorsman has been tripped by the trailing canes of this and other brambles.

The stems, or canes, produced the 1st year are long, creeping, and prostrate and usually root at the tips. Prickles on these canes measure more than ⅛ inch in length. In the 2nd year an erect or sometimes trailing flowering cane that is woody, tough, and often reddish or purplish is produced. The leaves of 1st year canes consist of three to five leaflets; the 2nd year canes produce leaves of three leaflets. Veins may be hairy on the under surface of the leaf, at least on 1st year canes. The white blossoms appear in late May or June. The fruit ripens in August, is about ½ inch in diameter, and has a rich flavor that makes it suitable for use in jam.

Common in the southeastern, eastern, and central parts of Minnesota, this species extends north as far as Pine and Becker Counties, chiefly on



Bull Thistle

acid soils, sands or gravels, and in dry fields, clearings, and edges of thickets.

Because the canes are so long and tangled it is difficult to eradicate these plants by grubbing. Most other bramble or blackberry species are not so thorny and can be more easily grubbed out.

Brush killers containing 2,4,5-T or AMS have been reported to be successful eradicators.

WATER PLANTS

Aquatic plants often are considered weeds because they obstruct boating or swimming or make fishing difficult. However, since weedy lakes produce more food for fish than bare, open regions, some water plants are necessary for fish to live and grow. But there may be waters that are so weedy even fish do not develop properly. Because fish are involved, any chemical control method for water weeds must have the approval of the Minnesota Department of Conservation. If the Department approves, a permit is issued.

Only licensed commercial operators are permitted to treat submerged vegetation, since the chemical used is dangerous to man and fish and is expensive to use. However, there are mechanical methods of controlling aquatic vegetation. Address inquiries concerning the control of aquatic plants to the State of Minnesota, Department of Conservation, Division of Game and Fish, St. Paul, Minnesota 55101.

HORNWORT (Coontail)

Hornwort (*Ceratophyllum demersum*) is one of the most common and widely distributed submerged aquatic plants. It is especially irritating to swimmers because of the rough, scratchy surface of its leaves and stems. It also is one of the most objectionable water plants growing offshore along beaches.

Viewed through the water, the plant appears to be olive green. No roots are produced, even by seedlings. In its early growth stages the lower end often is anchored in mud, giving the appearance of being rooted. Later, the stems float on or near the surface of the water.

The coarse stems are brittle and stiffly branching or they may be ropelike and flexuous. The leaves are in verticils, with 5-12 leaves in a group, each of which is again divided into two or three thread-like segments with teeth along one side of each segment. The leaves often are more densely crowded toward the ends of the branches. For this reason, the plant often is called coontail.

Flowers are rarely seen and seeds are produced in late summer or early fall. Although eaten by ducks, the seed is not regarded as a choice food. But the plants do provide shelter for young fish.

Hornwort is found in quiet lakes, shallow ponds, and slow streams, especially if bottoms are muddy. It apparently is most abundant in hard water.

Hornwort (Coontail)

WATER MILFOIL

This cut-leaf, coarse, submerged water plant (*Myriophyllum verticillata*) can be mistaken for hornwort. The major difference is in the leaf margins of the submerged leaves.

There is an abrupt transition from submerged to emerged leaves, as the leaf division is much coarser in emerged leaves. The submerged leaves are more than 1 inch long and are divided into 9-13 segments. Unlike hornwort, the segments of the milfoil leaves are not toothed.

The robust stems arise from creeping rootstalks and emerge as much as 5 inches above the water surface. They root freely at the lower joints.

Many species of milfoil are almost exactly alike except for flowers and fruit, which makes it difficult to identify species.

This aquatic weed is at best a low grade food for ducks. It grows in the shallow, quiet water of limestone or clay areas and in the shallow bays of lakes near the edges of currents entering the lakes from streams.

WATERWEED

Waterweed (*Elodea canadensis*), a submerged, perennial weed of waterways, can clog bays, ponds, and lagoons, and the sticky, slimy leaves are annoying to swimmers. The brittle stems break easily and add to the debris washed ashore.

The roots are fibrous and the plants, which are 1-3 feet long, often are rooted at the bottom of the lake. Stem fragments sometimes can be found floating in mats on the surface. The leaves frequently are tinged with purple.

These plants are common in the hard waters of lakes, ponds, and slow-moving streams.

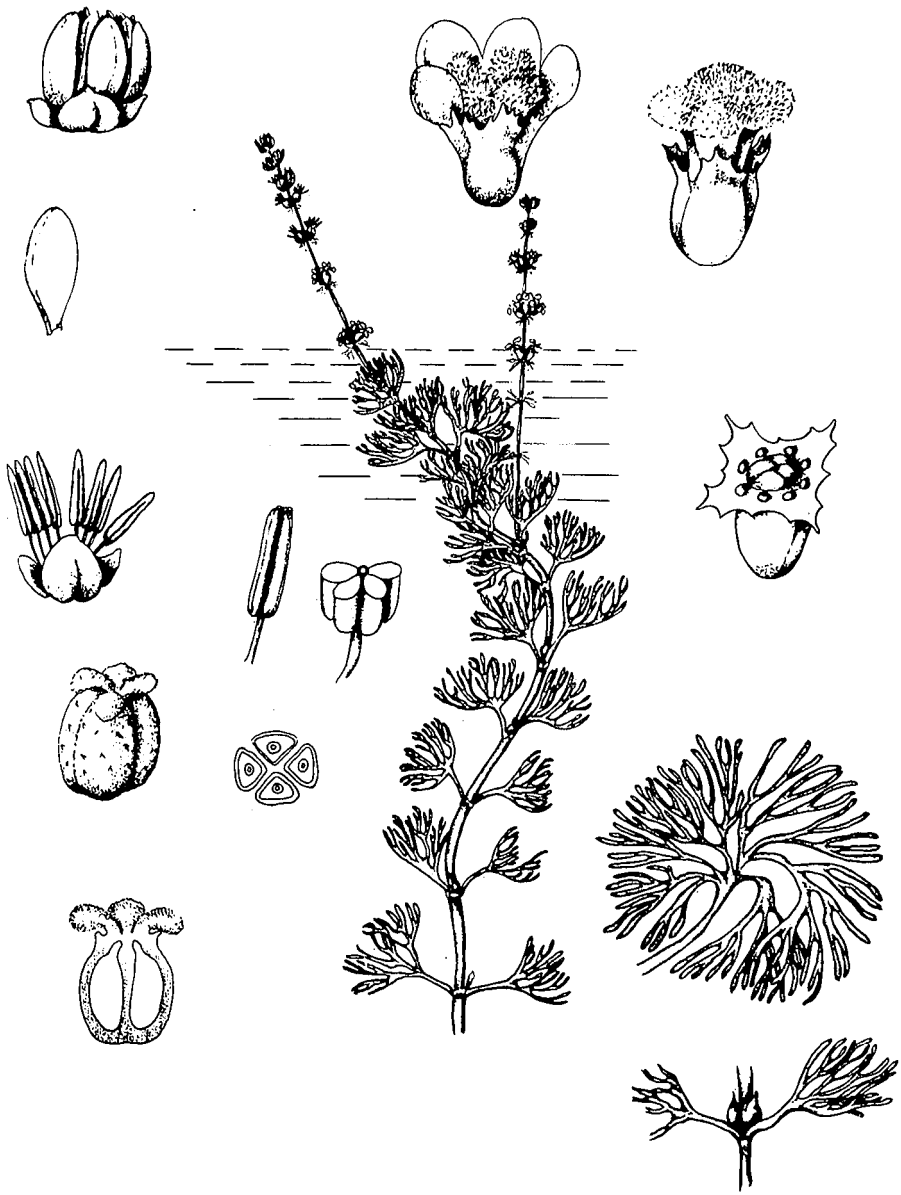
PONDWEEDS

The dominant vegetation in thousands of Minnesota's lakes is pondweed (*Potamogeton* spp.) There are so many species in this family, the largest of the aquatic seed plants, that they will be described as a group.

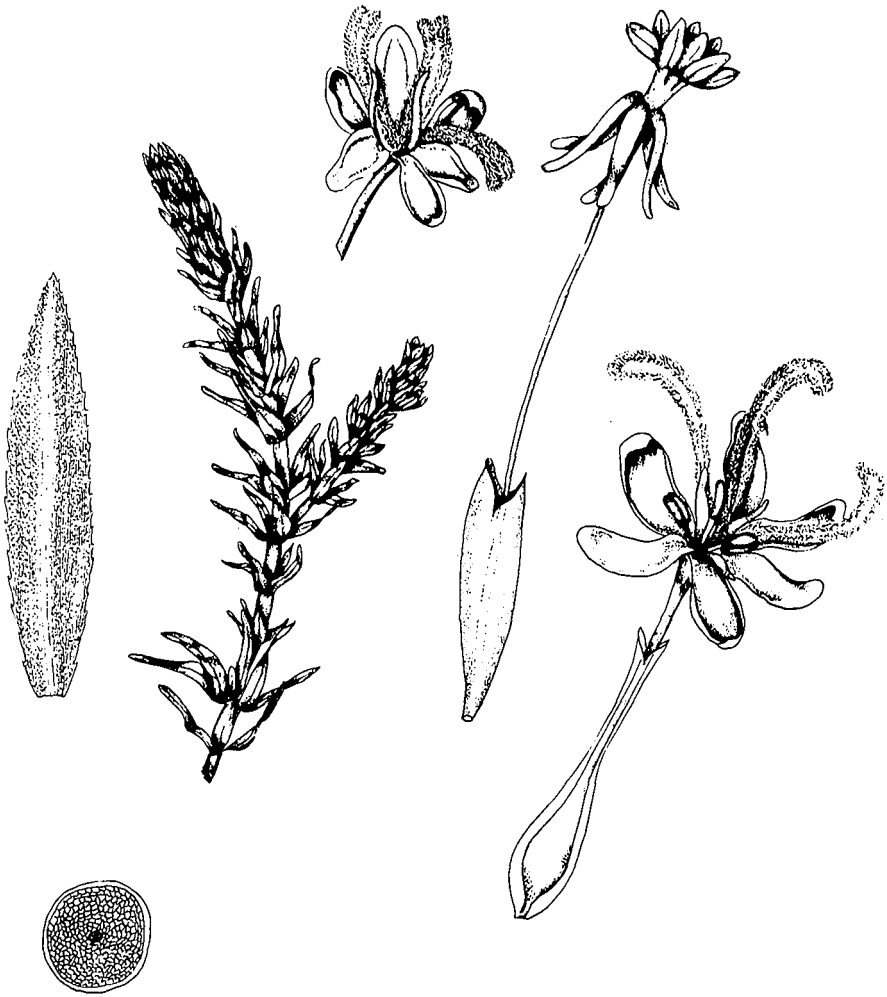
Pondweeds in general are jointed herbs with mostly rooting stems and two-ranked leaves. They grow from lake beds at depths of 4-12 feet, sending out long floating branches on or near the water surface. The submerged leaves are grass like and transparent, while the floating leaves are shorter, broader, oval, and generally of a more leathery texture.

In sheltered bays, pondweeds may grow in dense patches. Wave action may wash fragments of pondweeds to shore.

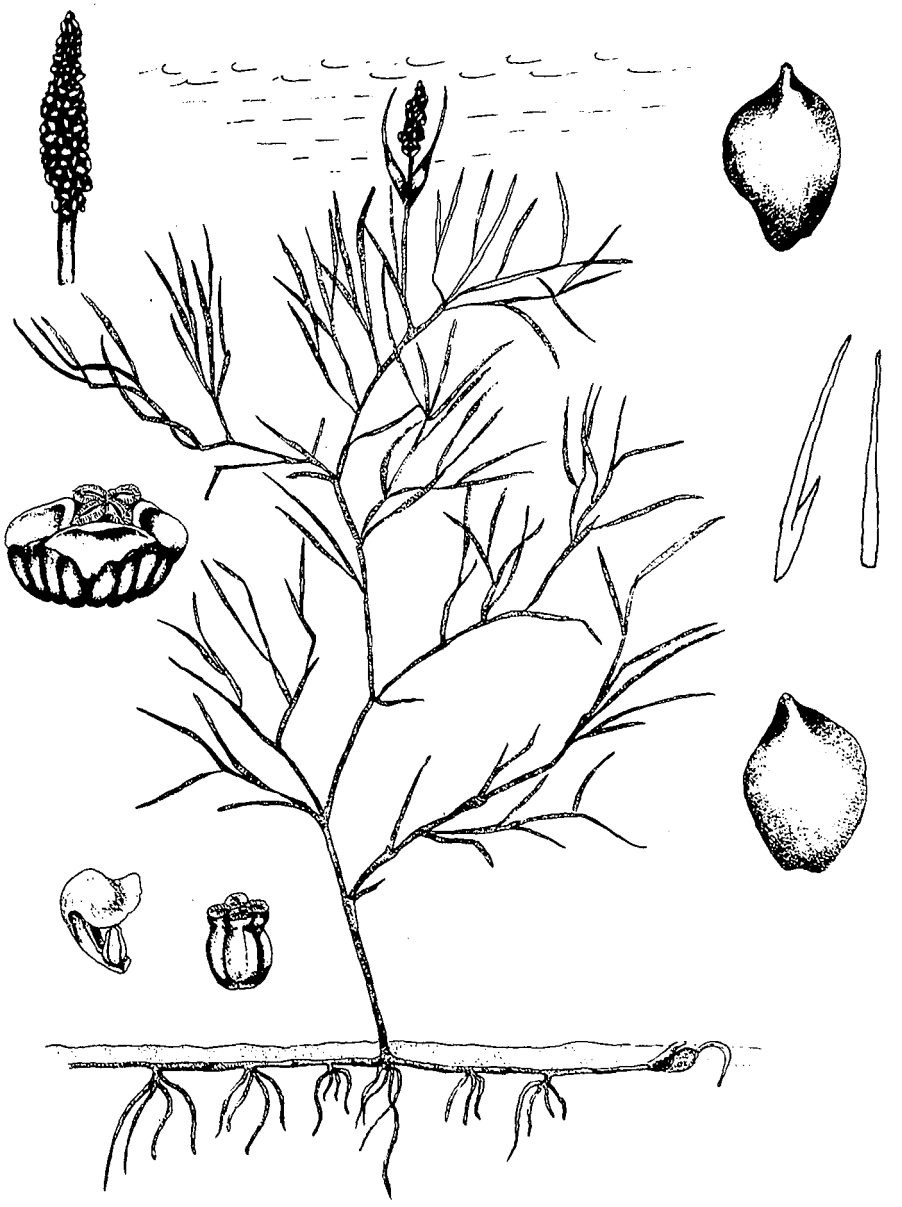
A few common pondweeds are illustrated: sago pondweed (*Potamogeton pectinatus*), which bears tubers on rootstocks and has bristle-shaped leaves; floating pondweed (*Potamogeton natans*), which has red-spotted rootstocks, ridged stems, and floating leaves; and clasping leaved pondweed (*Potamogeton perfoliatus*), in which the leaves are clasping and the veins are prominent.



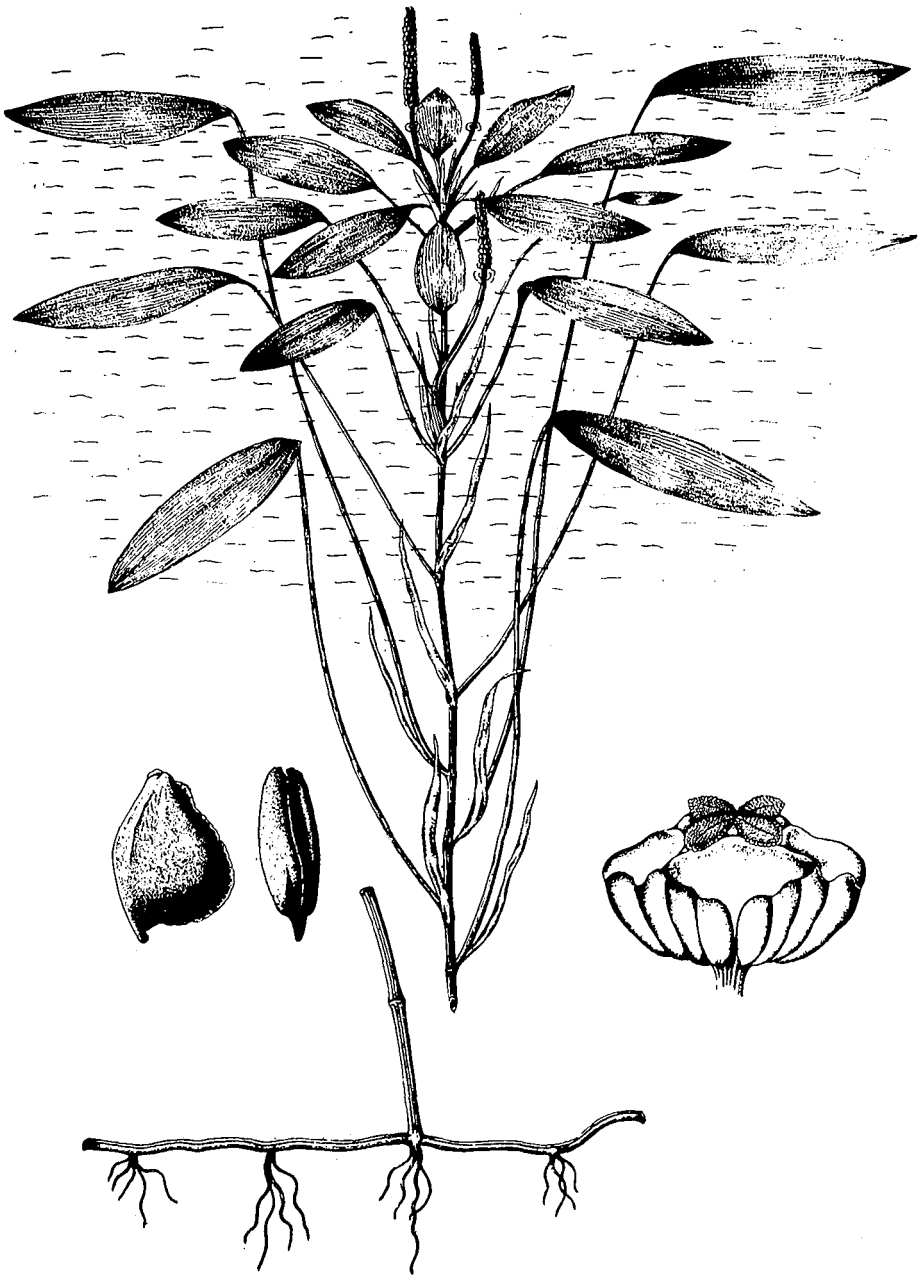
Water Milfoil



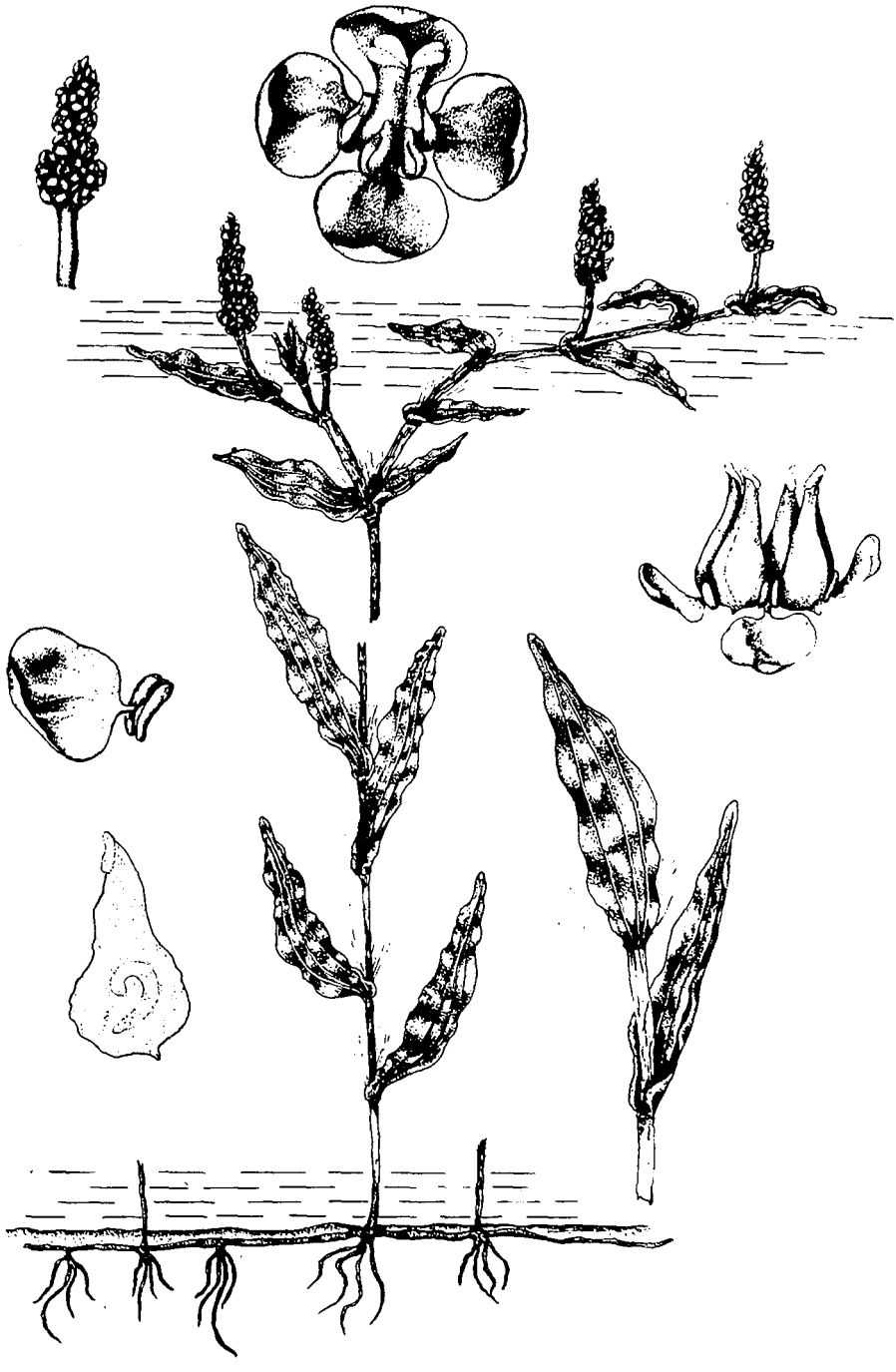
Waterweed



Sago Pondweed



Floating Pondweed



Clasping Leaved Pondweed

BULRUSHES

Bulrushes (*Scirpus* spp.) are widely distributed in ponds, lakes, wet swales, and marshes. Floating vegetation may lodge in the rushes, producing objectionable odors when decaying. But the odor probably is due to bacteria or blue-green algae.

The bulrushes are annuals or perennials and vary in height from a few inches to several feet. If perennial, thick stands are produced from rootstocks.

River bulrush (*Scirpus fluviatilis*) is common in sloughs, along the borders of ponds, and in the bays of large lakes. The great bulrush (*Scirpus validus*) grows in shallow ponds, especially around spring holes, bog holes, and stream banks. Other rushes also are common in Minnesota.

SEDGES

Most of the nearly 200 species of sedges in Minnesota have three-sided stems with three-ranked leaves. Often the leaves are finely toothed or spiny at the margin and on the lower midrib and can inflict severe cuts to arms and legs. These grasslike perennials generally inhabit wet meadows and swales, although a few grow best in standing water. One of these, creeping spike-rush (*Eleocharis palustris*), grows in shallow water at the margins of ponds, streams, and lakes. Such plants are objectionable at beaches because they hold organic debris that produces unpleasant odors when it decays.

Spike-rush resembles rushes in that its stems are nearly round and leafless except at the base, where there is a red to brown sheath. The rootstocks are reddish and can produce a solid stand in a short time.

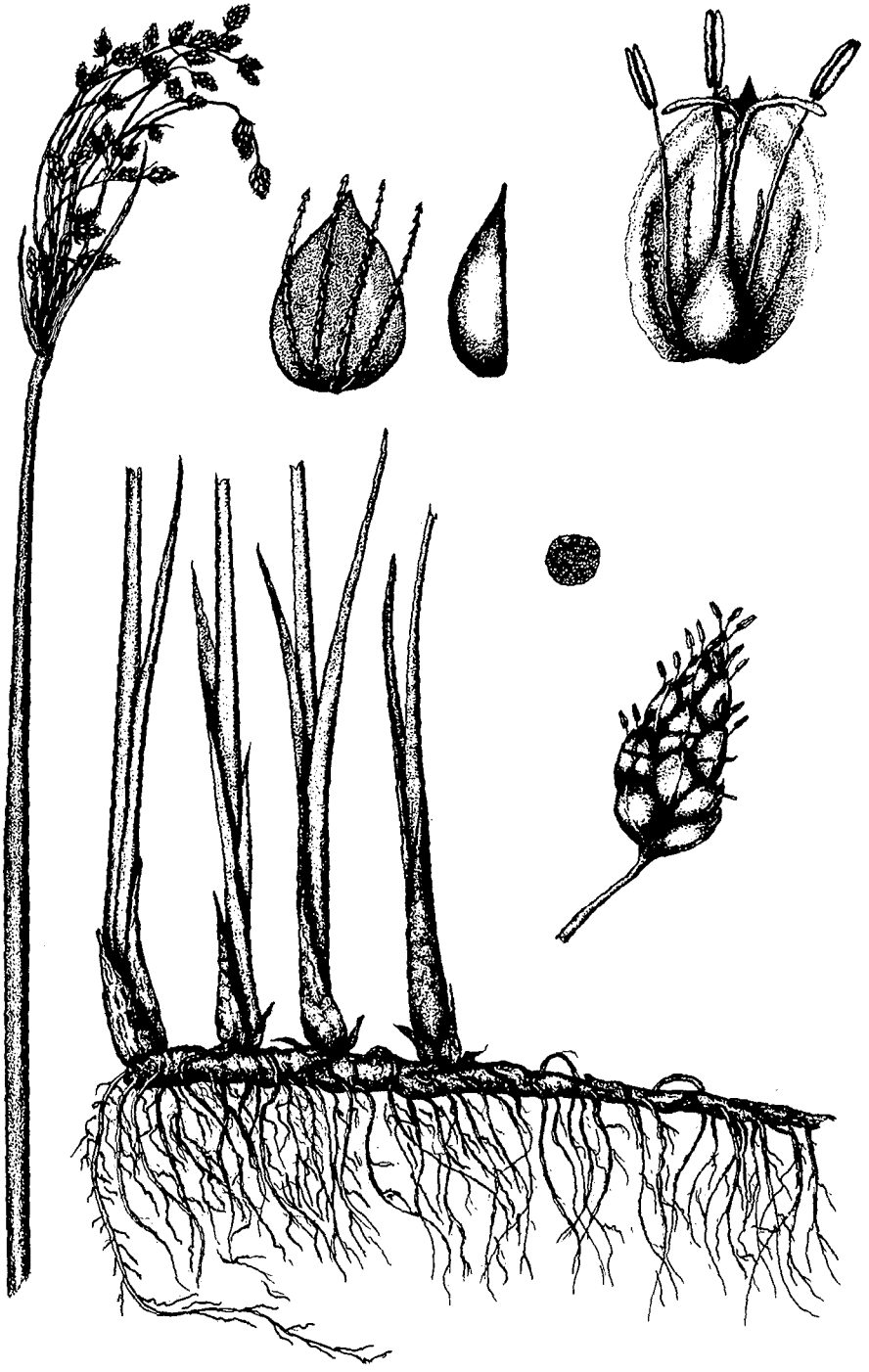
DUCKWEED

Duckweed is a common surface seed plant, often mistakenly identified as algae. There are three common species in Minnesota: *Lemna minor* and *L. trisulca* (both called duckweed) and *Spirodela polyrhiza* (greater duckweed). All duckweed plants are at least ⅛ inch in size, whereas algae, such as water bloom and pond scum, are visible as individual plants only with the aid of a microscope. Thread-like algae and seaweed are larger but do not resemble duckweeds.

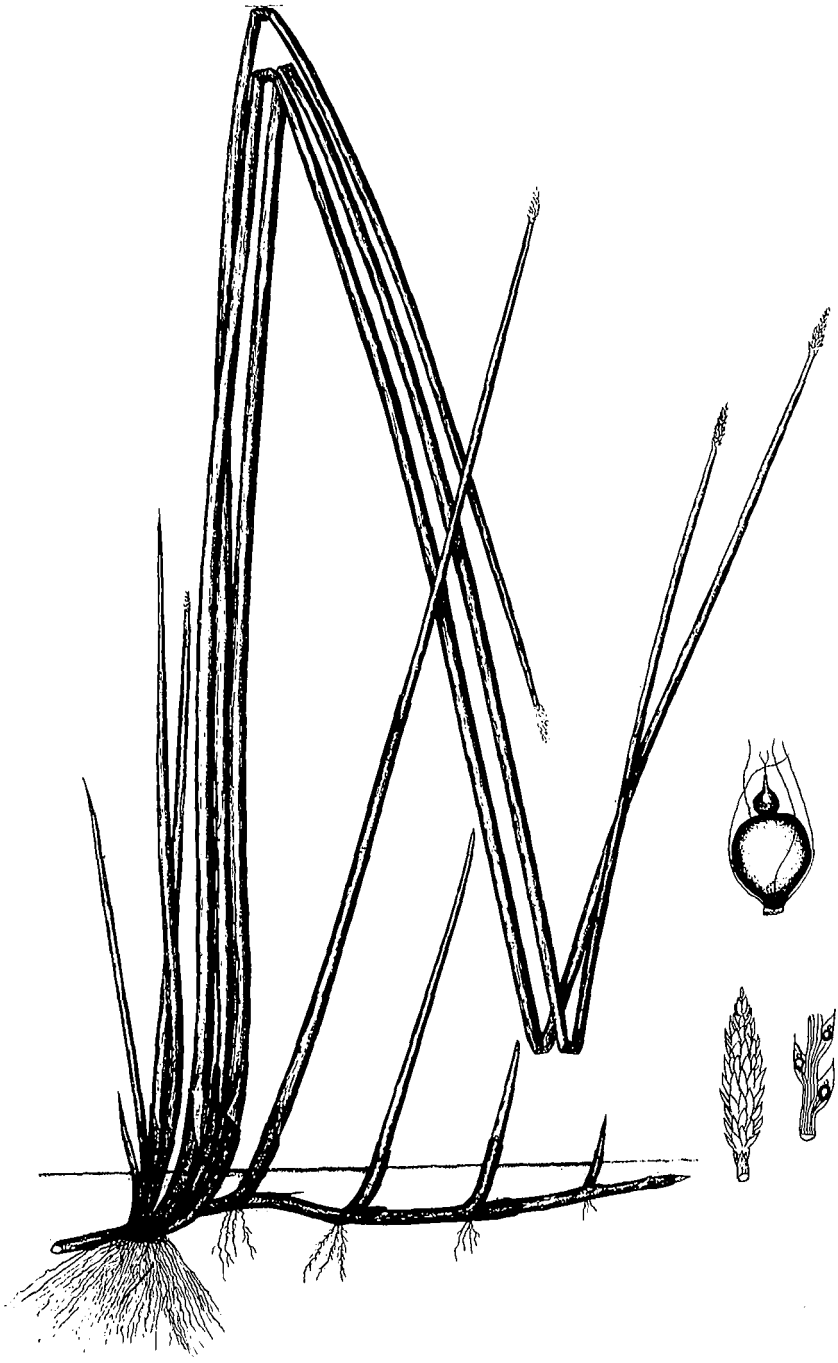
Duckweeds have no organized leaf or stem tissue, only an undifferentiated plant body resembling a leaf from which one root (in common duckweed) or three roots (in greater duckweed) hang down into the water.

POND SCUMS AND WATER BLOOM

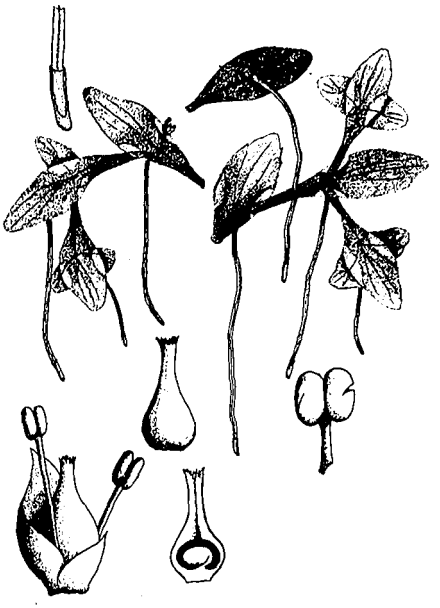
Besides kelps and seaweeds, algae include two other major types: the green pond scums, which are green and threadlike, and water bloom, which is made of bluish-green gelatinous balls. There are many useful and harmful species in each of these groups.



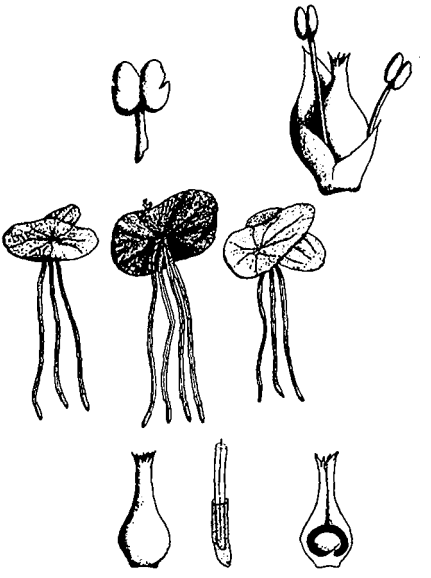
Great Bulrush



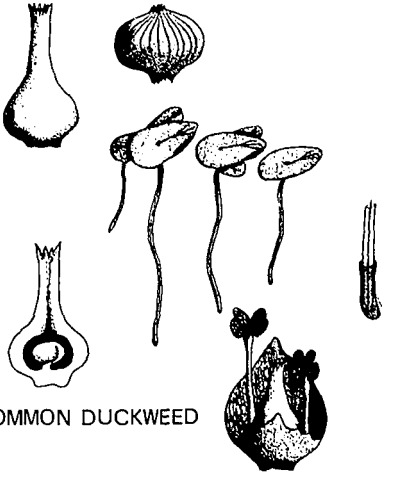
Creeping Spike-rush



COMMON DUCKWEED



GREATER DUCKWEED



COMMON DUCKWEED

Duckweed

Water bloom generally includes the blue-green algae. These algae are poisonous to animals (livestock, wild animals, birds, and pets) that drink water containing them. They also cause intestinal disorders in man if present in water supplies or if swimmers accidentally drink the water. Some swimmers develop a skin rash from swimming in water high in content of water bloom algae. Blue-green algae impart a grassy odor to surface water if present in minute amounts. With an increase in amount the odor becomes pungent. In high concentrations the odor is vile, resembling that of decaying fish. The odors from decaying water bloom algae and pond scums are most noticeable just before frost.

Scum-forming algae become noticeable in early summer and increase up to September or October. They are especially common on the stagnant waters of ponds, lakes, and even some streams. Although they are a nuisance, they are not believed to be poisonous to animals that drink the water.

CONTROL OF PESKY PLANTS

Pesky plants usually can be controlled by one of these methods:

1. *Dig out.* This method usually is effective if few plants are involved. It may not be practical if the plants are deep rooted or poisonous.
2. *Mowing.* If the area can be cleaned up and mowed regularly, most plants other than grasses and a few lawn weeds will not survive.
3. *Use of herbicides* (weed control chemicals). A list of some effective herbicides follows; descriptions of herbicides that are most effective for particular weeds are included with the weed descriptions. Apply herbicides to the leaves and stems of plants or to the soil around them. Always read the labels and follow instructions carefully. You may kill desirable plants if you use herbicides improperly.

Herbicides for control of pesky plants

Common name	Chemical name	Some trade names*
amitrole	3-amino-1,2,4-triazole	Amino-triazole, Amizol, Weedazol, mixtures
AMS	ammonium sulfamate	Ammate
dalapon	2,2-dichloropropionic acid	Dowpon, Radapon, mixtures
dicamba	2-methoxy-3,6-dichlorobenzoic acid	Banvel, mixtures
fenac	2,3,6-trichlorophenylacetic acid	Fenac, mixtures
MCPA	2-methyl-4-chlorophenoxyacetic acid	Several, mixtures
picloram	4-amino-3,5,6-trichloropicolinic acid	Borolin, Tordon beads, mixtures
silvex	2-(2,4,5-trichlorophenoxy) propionic acid	Several
TBA	2,3,6-trichlorobenzoic acid	Several, mixtures
TBP	2,3,6-trichlorobenzyloxypropanol	Several, mixtures
TCA	trichloroacetic acid	TCA, mixtures
2,4-D	2,4-dichlorophenoxyacetic acid	Several, mixtures
2,4,5-T	2,4,5-trichlorophenoxyacetic acid	Several, mixtures

* "Several" means there are numerous trade names for the chemical; "mixtures" means the chemical is mixed with other chemicals in commercial formulations.