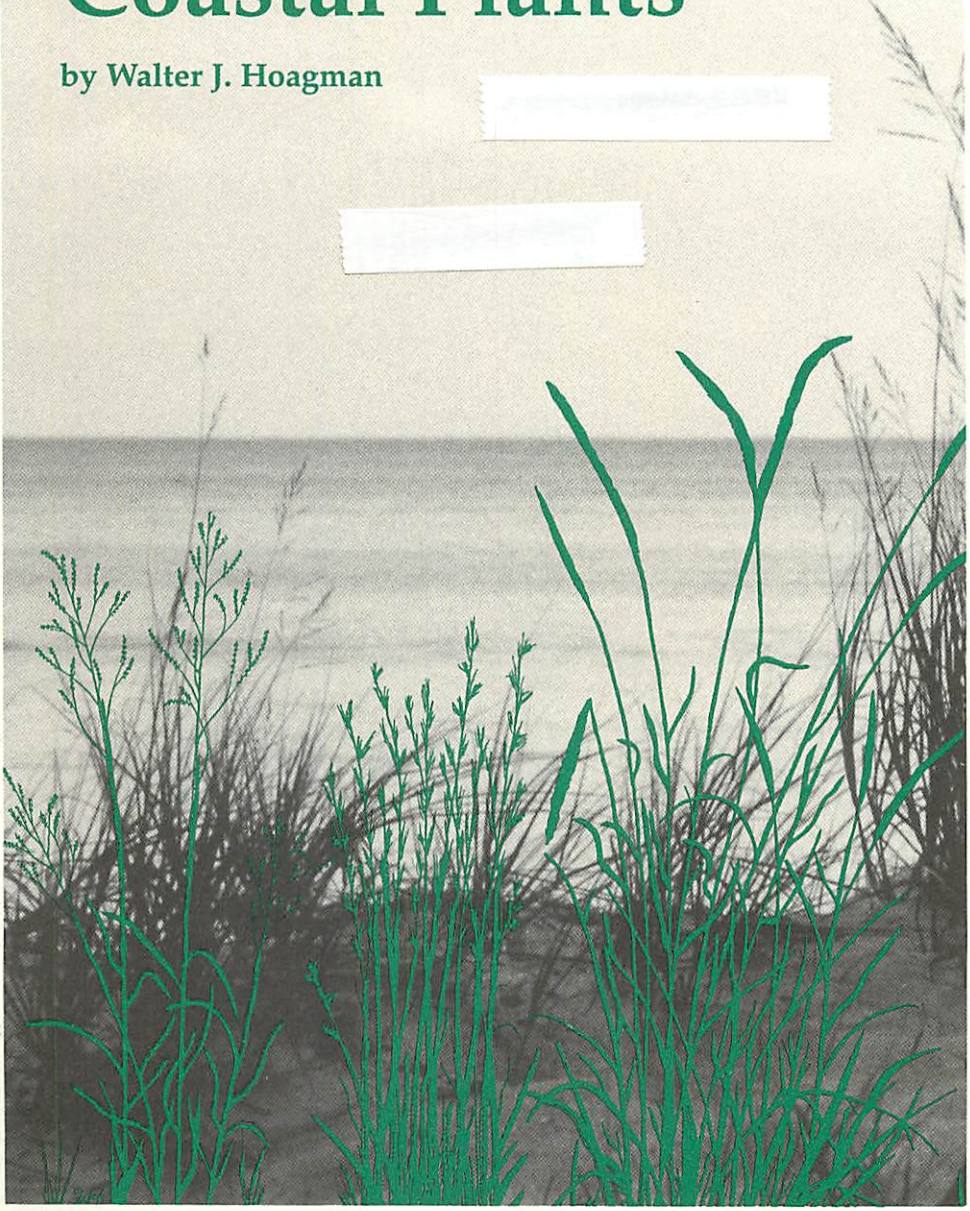
A Field Guide

# Great Lakes Coastal Plants

by Walter J. Hoagman



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By

*Walter J. Hoagman*

District Extension Sea Grant Agent

Michigan Sea Grant College Program

# PREFACE

This field guide has been designed for simplicity of use by beach walkers. All of the plants are shown as they appear in the wild, with blowups of the most important features. The drawings are simplified in many ways, most notably in the amount of fullness and the number of stalks, branches, flowers and leaves. This technique allows identification by silhouette and key features.

The shores of the Great Lakes vary greatly from north to south, east to west, and along any particular lake. Each shoretype is a distinct habitat for plants. The plants selected for this guidebook will not all be found on every stretch of coastline, but most probably will. Conversely, any specific shoretype may have many plants not found in this book. To keep the guidebook manageable, 113 plants have been selected as the most commonly encountered.

Great Lakes shorelines are part of the coastal zones of the United States because they front international boundaries (except for Lake Michigan). This book covers the land portion of the coastal zone between the wet beach and the edge of mixed forest. All the plants selected occur in Michigan and most are found in other Great Lakes states and Canada, too.

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# CONTENTS

# ECOLOGY OF THE SHORE ZONE

The Great Lakes are midcontinental and northern temperate, which means plants from all sections of North America can overlap into the area. Within Michigan, there is a definitive change in the vegetation occurring approximately through the middle of the Lower Peninsula. This line is called the Transition Zone, where climatic patterns and soil types change between the forests and farmlands of southern Michigan and the mixed northern forest of all points north of that zone. Many plants either end or begin their distribution near this zone.

The shores, or coasts, of any state are very complex because of the great variety of geologic structures, glacial drift components, elevations (and former elevations) and exposures — whether they are eastern, western, southern or northern shores. Along any particular shore, cuts, bays, river mouths, rocky points and sandy coves occur. Thus, the vegetation can be very different within one mile, and certainly different from lake to lake at the same latitude.

The purpose of this book is to make learning the common shore plants easy for the average person. Therefore, it does not segregate all of the possible shoretypes previously described and give long lists of the plants found there. A particular five-mile strip could have 100 to 200 species if all the uncommon ones were considered.

Within any habitat type, however, we find that some plants occur repeatedly in many similar areas across the basin. From these plants I have selected those that are the most common and likely to be noticed. Because wetlands cannot normally be walked at the shoreline and their plants are so distinct and numerous, I have reserved these plants for a separate booklet. Only a few are included here because they are common to beach swales.

In spite of the basinwide complexity and the incompleteness of plant coverage here, some generalizations can be made about shore zones and "typical" vegetation.

The most common undeveloped shoretype is the beach, bordered by sandy ridges and dunes grading into a forest edge. The actual beach zone can be mainly sand, gravels and sand, or larger gravels and cobblestones. Figure 1 shows this arrangement. It is the preferred walking shoretype for millions of people every year, and it occurs on every shore. Most of our state parks are located on these shoretypes, and countless cottages and resorts occupy the remainder. Inland of the water, there are often large dune fields, undulating for miles, and up to several hundred feet high. These can reach inland up to a mile, but they more typically extend less than a third of that. Often this shoretype is only 50 to 200 yards wide, bordered by a highway that separates it from the forest.

This shoretype is a harsh environment for plants for several reasons. The substrate is semi-sterile sand, wind and sun have an extreme drying effect, and the water table may be far below the roots. Thus, plants that have evolved protective mechanisms such as fleshy stems, woolly or waxy coatings for leaves, small leaves, roots capable of independent propagation and a perennial life form seem to fare the best. In areas or depressions where organic matter has begun to accumulate, a greater variety of plants begin to appear. These may have to tolerate extreme heat and blowing sand, but at least they can depend on adequate moisture.

In general, our more northerly shores are more rocky than those in the lower part of the basin. The dunal and sand barrens areas adjacent to the shoreline are reduced, and a well defined sandy strand zone may be absent. These are beautiful shores but difficult to walk because of the uneven footing. They are excellent shores for rock-hounding and are usually uncrowded. Sandy areas may occur between the rocky points, with large beach swales (low, flat, wet areas) between the beach and the shrub/tree line. This shoretype has an abundance of water-loving plants because the water table is very close to the

soil surface. The sandy berms will have plants typical of dry dunes and Atlantic Ocean shores. Lake Superior beaches may have plants typical of boreal areas and Hudson Bay.

Some authors have attempted to segment the area between the water's edge and the forest into distinct bands, where only certain plants occur. I have chosen not to distinguish these bands because they commonly overlap, they can't be generalized into a lakewide system, and the average person would need to learn many more species than this work can cover.

Therefore, the plants in this book are not grouped by where they are most likely to occur, but rather by flower color. If the plant is not in flower, other characteristics drawn or described will enable identification in most cases.

Inland lakes have very different shoretypes than the Great Lakes, primarily because of reduced wind and wave action and more constant water levels. A typical large inland lake has large trees and shrubs, vines and grasses growing right up to the water's edge. A small bank of several feet drops down to a narrow sandy or rocky shoreline, usually quite bare of plants. Or the shoreline may contain an abundance of rooted aquatic plants, some growing out from shore. The environment of the shore zone changes abruptly from aquatic/wetland to narrow wet beach to forest. This produces a cool, moist area of intense shade and thick soil within a stone's throw from the water.

# NOMENCLATURE OF THE COASTAL ZONE

**A. BACKDUNES.** Usually where larger trees appear; shrubs, flowers and grass are abundant.

**B. BLOWOUT.** An area that has been eroded by the wind, creating a barren opening.

**C. FOREDUNES.** This zone will contain most of the plants shown in the book. Usually uneven or hilly with clumps of vegetation and many open areas. Can be several hundred feet high or, more often, 5 to 25 feet.

**D. BLUFF.** The sudden rise from the lower, flatter beach to any zone shoreward. May be several of them with flat terraces between.

**E. ORDINARY HIGH WATER.** This is a legal definition of an elevation set for each lake. It separates state-owned bottomland from riparian land (deeded).

**F. BACKSHORE OR DRY BEACH.** A relatively flat zone with some stones, driftwood, etc. Usually has little vegetation, but plants may be profuse in spots. Can be sand, cobbles or rock.

**G. BERM CREST** (nips). A sharp rise of several inches or feet. Usually produced by waves. Could be several of them.

**H. WET BEACH** (swash zone). The favorite walking area. Flat, always wet, smooth or rough, and with no vegetation. The waves run up and down, sorting pebbles and grinding sand. Often rocky and layered with cobbles on northern shores.

**I. SHORELINE.** The place where your toes first get wet. Beyond this line (seaward), there are no restrictions on public trespass. A person can walk along any shore if he or she stays in the water.

**J. SAND BAR.** Waves break on it first, usually 75 to 300 feet from shore. Enjoyable place to swim.

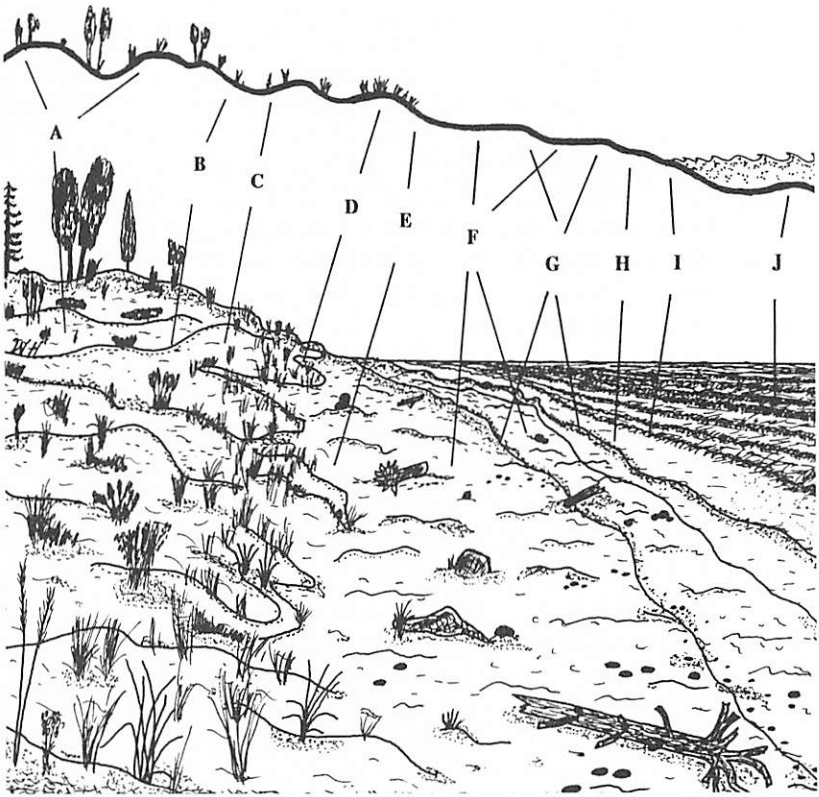



Figure 1. A simplified perspective of the coastal zone with its profile above

The Great Lakes are of very recent geologic origin. They formed in huge valleys cut by river systems draining mid-America. The glaciers scoured out the basins and carried huge amounts of sand and rock southward. As the continent uplifted after the glaciers melted, these valleys filled and drained, depending on what outlets formed or became available for drainage. Between 8,000 and 13,000 years ago, when the glaciers were retreating, the level of Lake Michigan and Lake Huron varied between 710 feet and 230 feet. By 5,000 years ago, there was no ice sheet over North America and Lake Michigan and Huron filled to 605 feet. Since then they have fallen to their present level of 579 feet.

This rise and fall of water resulted in beaches forming well inland of their present locations. Vast forests reclaimed the entire basin, with wetlands prominent in every bay and river mouth. The underlying bedrock of the basin was eroded, cracked and reduced by thousands of fast streams flowing to the lakes. The vegetation began to build up a forest layer of soil, while the root acids and microbe by-products worked to further fracture the rocky substrates.

Along the shores and over offshore shoals, constant wave action continued to reduce the larger stones and gravel to sand-size particles. Much of the resulting sand from the land and underwater was carried to the deeper waters, but an appreciable amount was washed shoreward by the prevailing waves. The finer grains were carried to the zone of highest wave action, while the heavier grains and gravel remained in the surf zone.

The Great Lakes experience tides in fractions of an inch, compared with ocean tides of several feet. However, the lakes experience a pronounced seasonal change in elevation. They are highest in late spring and early summer, falling to their lowest in late fall and winter. The difference is usually 12 to 18 inches. Furthermore, strong on-shore winds push water to that side of the lake during any season, raising the water level along the shore. This allows the waves to rush higher up the beach, bringing wet sand farther up. High waves during a storm can severely erode this upper beach zone, carrying sand out to open water.

In most moderate conditions, however, sand is deposited above the normal swash zone.

Rivers draining into the lakes carry large quantities of silt and sand. At the river mouth (where it empties into a lake), the water takes a left or right turn and flows along the shoreline, depending on the direction of the shore current that day. Because the water also slows, suspended particles fall to the bottom, the heavier first. The waves moving to the shore carry this soil burden to the shoreline, where the lightest particles are pushed up the beach and deposited.

Now the interesting phenomenon of beach and dunal formation begins to takes place. Wet sand clings to itself. It can be balled up and thrown. Wind can sweep over it and scarcely move a grain. Waves in the swash zone can move it around but cannot toss it into the air to be carried inland by the wind.

At the top (inland side) of the wet beach, the waves lose their power and retreat. On any given day, lake elevation and wave size, the swash zone is quite constant. Just above this uprush stopping point (called the strand line) and inland, the hot sun is drying the sand. As the water between the particles on the very upper surface is lost, they begin to lose their grip on one another. Because they are very light and somewhat rounded, the wind can pick up a few and blow them inland. This exposes lower grains to the drying sun. Because they are dry and moving across dry sand, they can be carried considerable distances. The harder the wind blows, the faster this happens and the farther they can travel.

Several things can now happen. The moving air carrying the sand grain encounters hot air rising from the land. This slows it and diverts it upward. The sand particle settles back to the surface, covering other grains. Or the wind momentarily lessens before the next gust, dropping its load. Or the wind encounters an obstruction of some kind such as a rock, an old log or some type of established plant. The wind detours up and around the obstruction, losing speed for an instant and dropping its sand particles. Any small rise will cause sand to collect

on the downwind side of the slope and cause the entire mound to move slowly shoreward.

Winds typically build up in the morning and early afternoon, moving sand inland. Then they die out at night, dropping their loads. As the lake levels slowly recede through the season, more and more of the previously wet beach becomes dry beach, allowing more and more sand to blow inland. In the fall, high winds can move tremendous amounts of sand. With winter's freezeup of the near-shore zone and the pushing ashore of large ice floes, more sand and gravel is deposited higher up the beach than winds or waves normally take it.

Today we see these patterns in many areas along the Great Lakes shore. The shore zone is predominantly sand (except for cobble shores, bedrock or high bluff areas) of low organic content, low soil moisture and nutrients. With the 20th century penchant for living on the shore and modifying every yard to make it mowable and tree-filled, people have altered much of the original character. The coastal zone in many areas is an endless stretch of yards, fences, cottages, patios, green lawns and planted trees. The foredune bluff normally marks the edge of riparian property. It often has erosion control structures dominating the landscape.

To find a natural, self-sustaining shore usually requires a trip to one of our state or federal parks. Fortunately, these are plentiful and will have most of the plants included in this field guide.

## THE VEGETATED SHORE ZONE

No matter how harsh any environment, there are always a few species that are able to gain a foothold if they possess special features that allow them to cope and reproduce. Along the upper zones of the dry beach, plants with roots that grow deeply toward water and upper stems that resist drying can survive. These pioneer plants are typically grasses with

hardened stems and roots that can survive being buried by sand. Foremost among the grasses is marram grass (called American beachgrass in many areas). It has specialized roots and stems that can elongate as sand covers the exposed stems. The roots travel laterally (sideways) and send up more shoots, making more clumps that grow upward as they are buried. The blowing sand piles up around these clumps and mounds begin to form. Lakeward of these growing mounds, smaller plants that depend on thick stems and low form can take hold along the flatter dry beach area. Plants such as sea rocket, evening primrose and winged pigweed can survive but usually not in large numbers.

At the first berm line, the marram grass is joined by sand reed grass, broomgrass and wild rye. If the resulting mounds have trapped some organic matter and are stabilized, the first shrubs begin to appear, usually sand cherry, dwarf willows, cottonwood or balsam poplar, with perhaps a few thistles, milkweeds and beach pea. Beyond this, the pattern of vegetation becomes more predictable. Interspersed between the rolling mounds are numerous bare sand areas containing few plants, but the greener, more stabilized areas are home to dozens of shore flowers and grasses capable of living in a droughty, harsh environment of shifting sand and blowing winds. Most of these plants are specially adapted with thickened stems, hairy leaves, leathery leaves or reduced leaf size. Many can reproduce yearly from their own roots, may have needles or specialized flowers, or grow in a low form.

Farther back from the shoreline, the first trees and different plants make their appearance. Usually widely spaced, growing in a semi-stabilized sand environment, jack pine, wafer ash, the cedars, several junipers, goldenrods, puccoons, poplars, larger willows, various grasses, bearberry and many other flowers can be found. The extent of this "zone" depends primarily on the long-term average strength of the prevailing on-shore winds. Adjacent to Lake Michigan, the ecotype is very deep on Michigan's coast; whereas along Wisconsin's Lake Michigan shore, the zone is fairly narrow. Similarly, Lake Huron has a

narrow zone along Michigan's shore because it is protected from the prevailing westerly winds.

Though the shore zone overall is usually dry and harsh, two small habitats occur that seem to confuse the whole system. Both are more similar to wetlands than dune lands, which they can abut. Beach flats are low, flat areas that occur between the strand line and the ordinary high water mark. They are usually occupied by water-loving plants such as the sedges, rushes, mints, boneset, silverweed, smartweed, asphodel and others. They seldom have shrubs and rarely grasses, never have prominent mounds of sand, and can stretch up to 100 yards back from the water line, though 20 to 40 yards is more typical. Beach flats often border small tributary streams that enter protective coves. The soil is mainly sand and marl, often over limestone bedrock.

The second wet habitat is the beach pool (interdunal wetland). These pools resemble small, elongated ponds, bristling with fringe vegetation and numerous shrubs. There may be open, standing water. They occur in depressions between dunes or sand barrens and are usually not far above the elevation of the main lake, which may be hundreds of yards away. The zone between the interdunal wetland and the main lake is usually rolling, mounded, quite open sand barrens, with their characteristic dry-adapted plants. A similar zone will usually exist between the wetland and the forest edge. Typical plants of this area are sweet gale, red osier dogwood, rushes, numerous sedges, cattails, emergent aquatics, thistles and grapes.

Another common shoretype is the cobble shore. It is found most often around points and with increasing frequency in the north. Sand and undulating backshores are generally absent, replaced by rounded stones, boulders and a narrow foreshore. The tree line can be very close to the water's edge. Between the tree line and the water, the vegetation is dominated by sedges, woody shrubs, annual flowers, willows, stunted trees and low grasses in the drier places. White birch, white cedar, ash, balsam poplar, balsam fir, big tooth aspen, pine and some spruces crowd the edge. Sometimes the shore extends for miles

without a living plant within 30 feet of the water — just stones, cobbles and gravel. Or, the vegetation can be mixed with the stones and cobbles. The tree line usually starts abruptly in both situations. Flowers can be plentiful or very few, depending on the distance from the shoreline and the extent of organic pockets.

One of the most interesting and pretty shore areas to walk is right at the major tree line. Here the coastal sands pushing landward are being overgrown with the spreading forest edging lakeward. This creates an endlessly curving experience of sand prairies and barrens with numerous patches of dense growth, directly alongside the tall tree line of the moist, shaded woods. This "zone" is more protected than the open, rolling barrens, has more organic soils and can provide periods of cooling shade. It abounds with bird life, insects and wildflowers such as harebell, asters, Solomon's seal, small grasses, rock cress, lilies and a variety of shrubs. Common juniper, buffaloberry, American yew, ash, maple, rose, birch, cedar and oak are common.

These very different habitats along a single stretch of beach demonstrate the difficulty of generalizing about zonation. The shore walker who wants to learn the most typical plants must walk these areas and zigzag often between the wet beach and the woods' edge.

The beach is a fascinating place to enjoy the outdoors. Everything is in view. The walking is easy. Each plant has a story to tell and a beauty of its own. Learning the typical plants will enrich anyone's life, provide recreation, and help develop an appreciation for the diversity and beauty of our Great Lakes shores.

# BASIC LAW FOR SHORE USERS

The waters of the Great Lakes and all the bottomlands (everything submerged) belong to the public. They are held in public trust for everyone to use, cannot be owned personally and cannot be modified without specific permits from the state and the U.S. Army Corps of Engineers. Inland lake law holds that the water is public but the bottomlands belong to the adjacent landowner. For the connecting waterways of the Great Lakes—the Niagara, St. Mary's, St. Clair and Detroit rivers—inland lake law holds. For all situations, permits are necessary to modify the bottoms, obstruct passage or alter the shoreline.

A fact of life on the Great Lakes is that water levels vary considerably over a several-year period (Figure 2). This variation is due to the total basinwide precipitation minus evaporation minus outflows. In periods of heavy rainfall extending two to three years, the lakes get higher by several feet; over long periods of low rain (or snow), they drop. A regular yearly rise and fall of a foot or more also occurs (Figure 3).

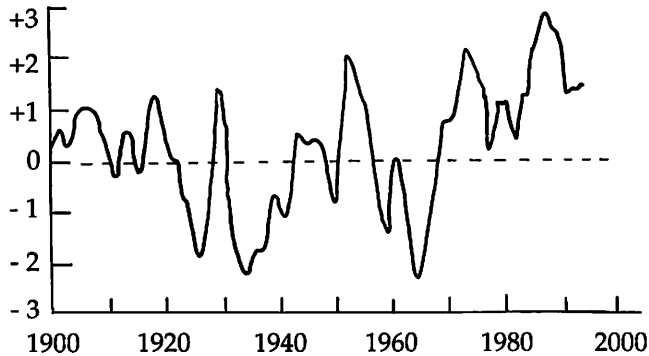



**Fig 2. 1900-1990 water level of Lake Michigan & Lake Huron.**

To express how high anything is in America, the sea level of the Atlantic Ocean is taken as 0 feet, the baseline datum point. Thus Denver, the mile-high city, is 5,280 feet above sea level. Lake Huron and Lake Michigan stand at 578.4 feet when they are at the 1900 to 1991 average. All lakes, with the extremes, are shown in Table 1.

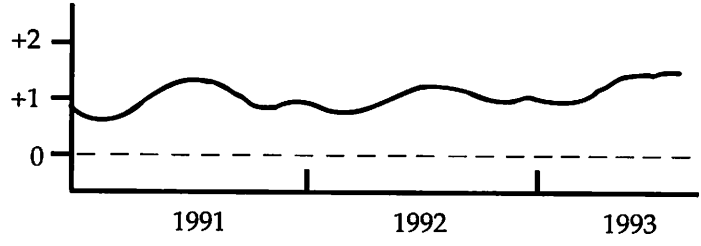



**Figure 3. Seasonal water level change of Lake Michigan and Lake Huron.**

**Table 1. Historical record of water levels on the Great Lakes, in feet above sea level.**

| | Average | Highest level | Year | Lowest level | Year |
|---|---|---|---|---|---|
| Superior | 600.5 | 603.1 | 1986 | 599.5 | 1926 |
| Michigan & Huron | 578.3 | 581.9 | 1986 | 576.2 | 1964 |
| St. Clair | 573.7 | 577.2 | 1986 | 570.5 | 1926 |
| Erie | 570.9 | 574.3 | 1986 | 568.1 | 1936 |
| Ontario | 244.7 | 248.3 | 1947 | 242.1 | 1936 |

**(1) 1900-1992 average, based on International Great Lakes Datum of 1985.**

Shoreland owners on the Great Lakes do not own to the water's edge. They own and are deeded property rights to an elevation calculated from that lake. This elevation is the lake level that can be expected during ordinary high water. Below that elevation the state owns the land, whether it is beach or covered with water. This elevation, or "mark", is a difficult concept to keep straight and is very important when determining what can be done on or to the shore.

The Michigan Department of Natural Resources explains it this way: the ordinary high water mark is the legal boundary separating state-controlled bottomlands and waters from private property. This mark means the line between upland and bottomland which persists through successive changes of water levels, below which the presence and action of water is common or recurrent so that the character of the land is marked distinctly from the upland and is apparent in the soil, the configuration of the surface of the soil and the vegetation. This boundary must not be trespassed when considering construction, dredging or filling activity without a proper permit under Public Act 247.[2]

That's quite a mouthful, but it's very explicit once the concept is understood. In plain English, it means there is a zone between the water's edge and the upland that is normally affected by changes in water level. That zone belongs to the state. The landward limit of this zone is the ordinary high water mark, which is listed below.

**Ordinary high water mark, feet above sea level**

| Superior | Michigan/Huron | St. Clair | Erie | Ontario |
|---|---|---|---|---|
| 602.2 | 580.5 | 575.4 | 572.3 | 246.4 |

A permit is needed to make any modification in the shore zone below that elevation. On Lake Huron, for example, the OHWM is 580.5 feet, which is 2.1 feet higher than the century average. The ordinary high water mark can be determined on site by using a transect and knowing the stillwater lake level that morning.

The adjacent landowner has exclusive right of use to this zone between the OHWM and the water line but cannot modify it without a permit. Seaward of the water edge (the shoreline), the landowner does not have exclusive use but, like all the rest of us, has full public use of the water and the bottom.

[2] From: What You Need to Know About the Great Lakes Submerged Lands Act. Michigan Department of Natural Resources Special Publication, 1982.

If the zone touches public land such as a state park, national park or government forestland, then the public has exclusive use of the land in common with any local landowners (both subject to site-specific rules that may apply). This zone is commonly called the beach because it includes the wet beach and the dry beach back to the area where vegetation becomes distinctly apparent. Sometimes the OHWM is much farther back, well beyond the noticeable vegetation line.

A beach walker can thus walk any public beach but technically is trespassing on the beach in front of private landowners. However, merely walking the beach is seldom a problem. Most landowners do not want picnics, parties, four-wheeling, bonfires, etc., in front of their property and can legally move the people out. A beach walker can walk anywhere along the Great Lakes shores if he/she stays in the water. A boater can hunt, set anchor and fish, or moor overnight along any Great Lakes shore. A person can legally stand in the water and fish along any Great Lakes shore, regardless of who owns the upland.

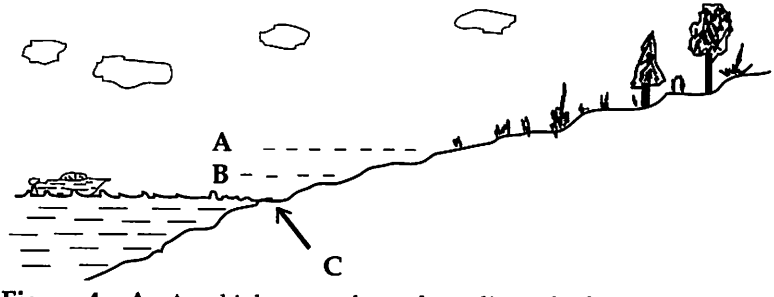



**Figure 4.** **A.** Any high water above the ordinary high water mark
**B.** Ordinary high water mark
**C.** Shoreline (water's edge)
All land (above or below the water) is state-owned lakeward of B. Land above B may be privately owned or publicly owned.

If in doubt about any law concerning the Great Lakes, contact the Department of Natural Resources or other appropriate agency. Your local Sea Grant agent can usually answer questions about a wide variety of lake-related matters.

# HOW TO USE THIS BOOK

The principal idea behind this book is to allow people of any age and technical background to learn the plants of the shore. The drawings and descriptions of similar species are certainly within the ability of any interested amateur. If these are learned, one can feel comfortable with the shore, saunter along and name the plants on sight (often from quite a distance).

## Several things should be kept in mind:

1. All the plants are shown more simplified than they are in the wild.
2. The sizes of the plants are correct relative to one another on each page but not from page to page.
3. Flower color is used to separate the groups, but any page can have two colors on it. Look in the color index if confused.
4. Most of the grasses are in the first section, and most of the shrubs and trees are in the last section. Look in the plant type index if confused.
5. Many of the plants drawn look alike at first glance, but details of leaves and flower parts are also shown. These are also described in the text in case the drawing does not make them obvious.
6. Every plant shown is a distinct species. If a plant is found that is almost identical, it probably belongs to another species of that genus, or perhaps another genus of that family. Usually, related similar plants are described in the text, but not always.

7. Many beach walkers carry a small notebook, as birders do, to record plants they identify. After you ID a plant, examine it closely, compare it to the drawing, fill in any missing details, or add size, location notes, your personal memory aid, month in flower, color of flower, etc. This will help immensely the next time out.

8. From the notebook, transfer the new plants' names to your list at the rear of this book.

9. Though it may sound silly, your rhyme or other memory aid will be the best one to help you remember the plant. Use your imagination and jot it down. Kids have a ball with this and can be very inventive. The memory aids here are a collection from many sources, which I thank.

10. Shore plants are sparse and widely spaced because they have a rough time surviving (usually). To ensure that the next person gets a chance to see them, PLEASE DO NOT PICK OR TRAMPLE THEM.

# SOME HELPFUL PLANT CHARACTERISTICS

The leaves on a plant are as distinctive as its flowes. They can usually be used to identify the plant when flowers are not present. Some books provide elaborate keys to identify any plant, but here we must content ourselves with comparing drawings. In most cases, that will be sufficient. Always look closely at the leaf drawings and read the text. Many plants with the same color flowers have completely different leaves.

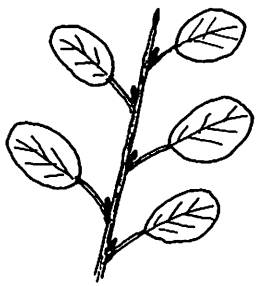
**Types of leaves:** Compound leaves have several leaflets per leafstalk (the green part), often with a bud between the twig and the leafstalk. The two main types are shown. Simple leaves have one blade per leafstalk, with a bud if a woody plant but no bud if a flower. Simple leaves can be parallel-veined or net-veined.

**Leaf arrangements:** If the leafstalks are across the stem from each other, they are called opposite. If they are not, they are alternate. On flowers, one must look closely because of crowding.

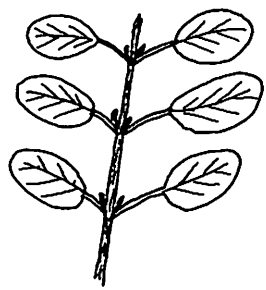
**Types of flowers:** There are several dozen flower types. The basic two are regular flowers, which have a single spread of petals all of one color, and composite flowers, which have small, flat petals surrounding a bushy center portion. Composite flowers are usually two colors, like the sunflower.

COMPOUND LEAVES

SIMPLE LEAVES



ALTERNATE



OPPOSITE

REGULAR FLOWER

COMPOSITE FLOWER

## MARRAM GRASS *Ammophila breviligulata*

(American beachgrass)

Grows abundantly in clumps all over the sandy foredunes, bluffs and berms.

It can be **2 to 4 feet tall,** with darkish green stems and **long, narrow leaves,** dense near the base.

The flower stalk is deep green, turning brown toward late summer and autumn. **Seed area is 10 to 15 inches.**

This grass is a dune builder because its interconnected roots form a dense network of tough binders. As sand buries the plant, it continues to grow upward. It can survive under extremely severe conditions and thus can be found where other plant life does not exist.

Beachgrass is found on every Great Lakes shore and on the Atlantic and Pacific coasts. It is very useful for stabilizing eroding, sandy soils.

**Similar Species:** Wild ryegrass has finer hairs on the seed stalks. Sand reed grass has seeds on multiple stalks.

**Memory Aid:** Marram grass makes many mounds.

Note: The grasses are very difficult to identify to species. At least 100 are known from the shores. All have alternate, simple leaves with parallel veins. The stems are cylindrical and enlarged at the leaf nodes. Grasses have flowers without petals. The fruits are small grains, enclosed in sheathing bracts.


**Marram Grass**

## SAND REED GRASS *Calamovilfa longifolia*

The **flowers are brownish,** tiny on **multibranched heads** borne on slender, waving stalks.

Seeds resemble small rice. This plant is a dune builder, able to withstand very poor soils and dry conditions. Often found in association with sand cherry, cottonwood and marram grass. Very rare on Lake Superior shore.

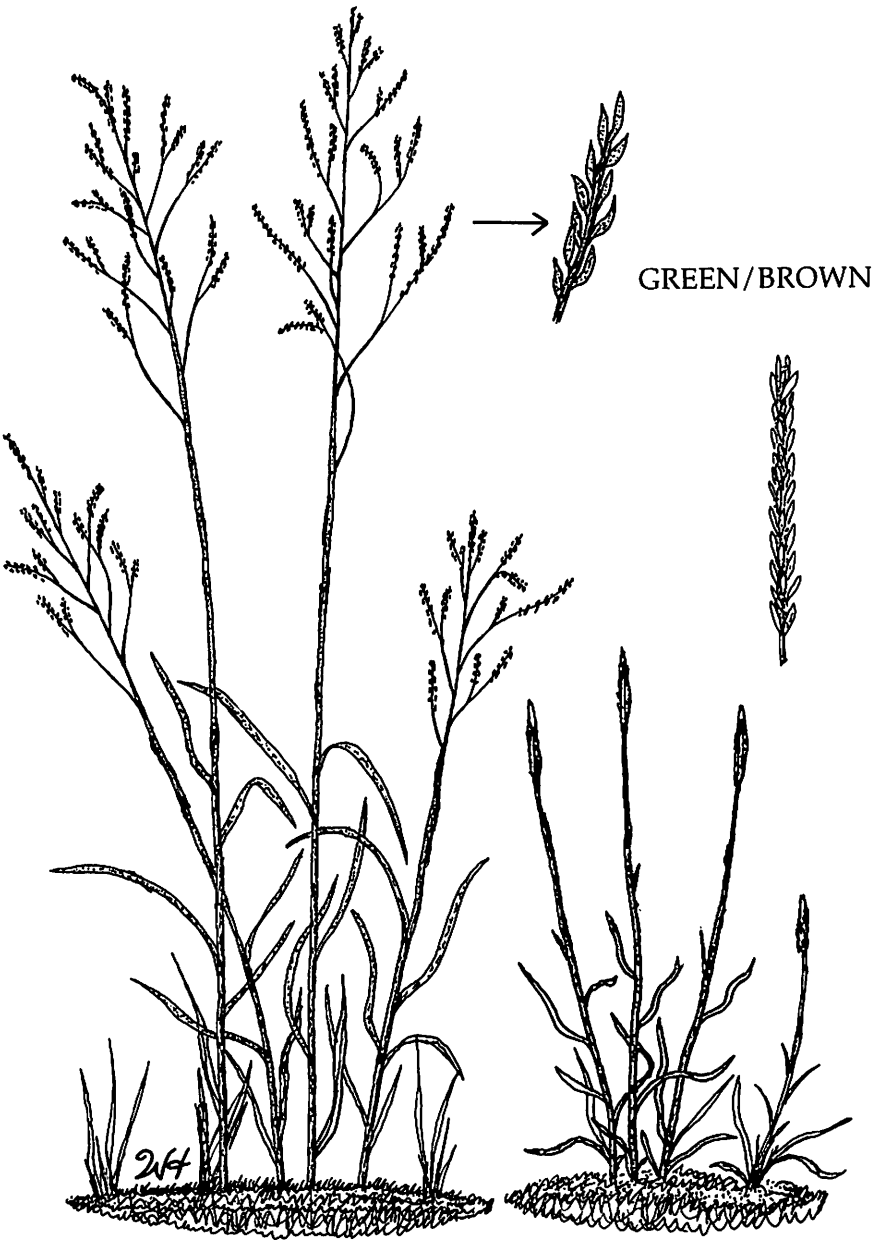
**Similar Species:** Wild rye, marram grass and dune wheat grass have single flower stalks per stem. Redtop grass has a red appearance.

**Memory Aid:** Sandy, grassy, reedy me.

## DUNE WHEAT GRASS *Agropyron dasystachyum*

A moderately sized grass with narrow leaves along stems terminating in single **seed heads that resemble wheat.** Leaves are a conspicuous **blue-green color** and waxy-looking. Common in northern Michigan except for the Lake Superior shore.

**Similar Species:** Marram grass has long, sweeping leaves. June grass has a bushier head. Wild rye has long bristles on its seed head.


GREEN/BROWN
Sand Reed Grass
Dune Wheat Grass

## WILD RYEGRASS *Elymus canadensis*

Wild ryegrass has long, slender stems with few leaves. The flowering **head is light tan** with **long, hairy-looking filaments** clustered around a single stem. The seed head is usually **curved and drooping over,** endlessly moving in light air.

Very common on foredunes, sand flats and along the backshore. Usually exists where marram grass is present.

**Similar Species:** Dune grass and other ryegrasses have different heads. Redtop grass and sand reed grass have much branched, open flowering heads. Marram grass does not have fine filaments (bristles).

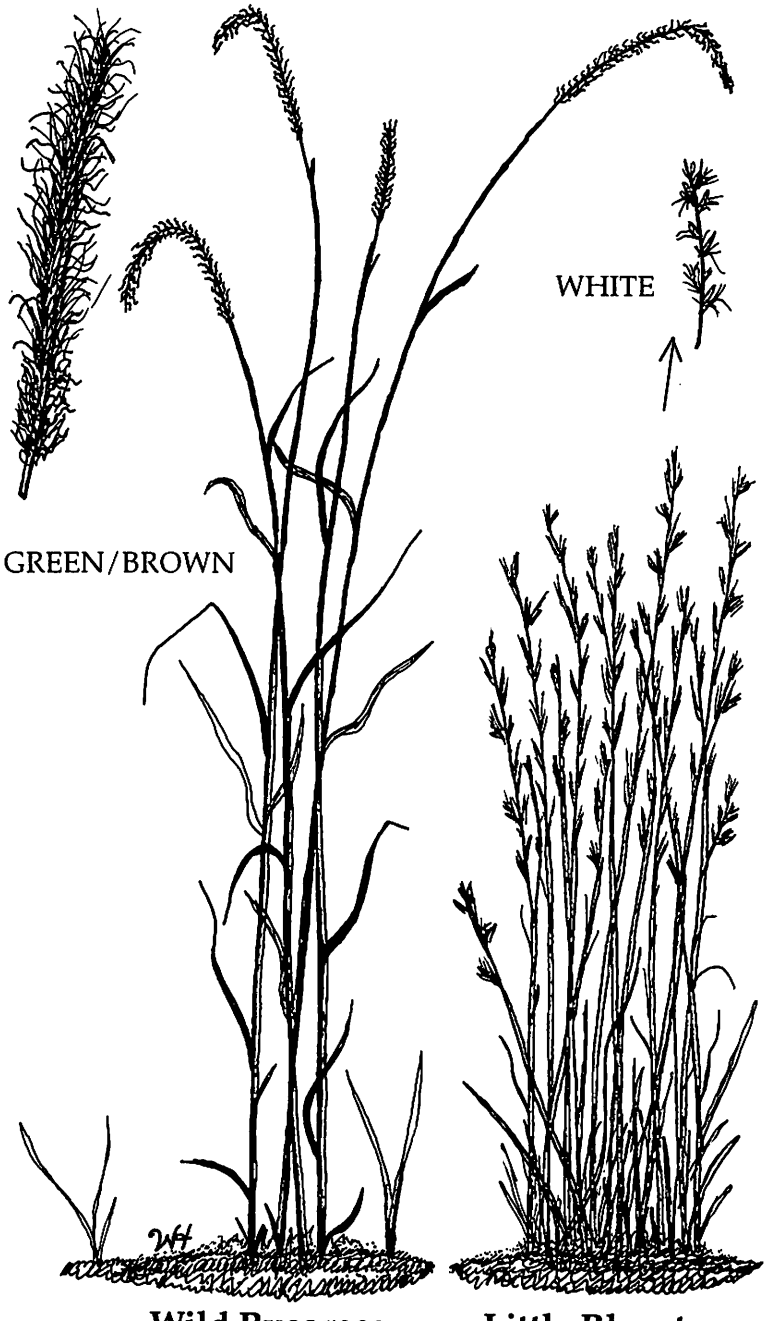
**Memory Aid:** Wild rye nods to the sky.

## LITTLE BLUESTEM *Andropogon scoparius*

Also known as broomgrass, from its appearance of a loose broom if you gather the clump together and put a handle on it. Seed heads are **very light and tufted,** with several tufts along each stalk, whitish with pink trim.

**Similar Species:** Other broomgrasses only.

**Memory Aid:** Broomgrass sweeps a beach clean.




**Wild Ryegrass** **Little Bluestem**

## REDTOP GRASS *Agrostis gigantea*

A tall, very fine grass with long, pointed leaves and **much branched flowering heads.** The seed heads are on delicate stems, attached to the main stem in rings. Overall, the **grass top displays a purplish to red** color, giving it the name of "redtop." The flowering head can be 1 to 4 inches across. Ticklegrass is shorter and has a finer head.

**Memory Aid:** Redtop in the sun a lot.

## POVERTY GRASS *Danthonia spicata*

(Oat grass)

A very distinctive grass, common along the dune line and backshores among the small pines. **The lower leaves are curled,** very thin. Flowering heads contain several seed pods that have a **tufted look.** Stems are very fine.

## PANIC GRASS *Panicum spp.*

A difficult group to separate into species, with at least 29 occurring in Michigan. They flower once in early summer with top flowers, and again in autumn with side flowers.

**Leaves are broader** than the other grasses described, each having a **small, fuzzy area** where the leaf joins the main stem. The **normal seeds** are also **fuzzy-looking** in many species.


GREEN/BROWN
Redtop Grass
Poverty Grass
Panic Grass

## JUNE GRASS *Koeleria macrantha*

This rather short grass has a bushy, **feathery-looking head.** Each flower has numerous brownish sheaths. Long, narrow leaves are very dense near the base. Compare marram and dune wheat grass.

## HAIR GRASS *Deschampia cespitosa or D. flexuosa*

*D. cespitosa* occurs along wetter shores and among rocks; *D. flexuosa* is common to dry, sandy areas with jack pines and junipers. The open flowering head is quite distinctive, with each tiny flower having a slender, **hair-like appendage.** Compare sand reed grass.

## ARROW GRASS *Triglochin maritimum, T. palustre*

Many small seed heads crowded along a single stem give this grass **a knobby appearance.** Usually greenish yellow; brown when mature. Typically found along wet, sandy beaches and interdunal swales.


GREEN/BROWN
June Grass
Hair Grass
Arrow Grass

## WORMWOOD *Artemisia campestris*

**Grayish blue leaves** and stems, tall flower stalk. Flowers small, tubular, **greenish yellow**, very numerous. Leaves **finely divided**, often downy, threadlike. Common to the shores of the Great Lakes in dry, sandy soils.

Usually grows as a solitary plant, about the size of a bucket. Very distinctive against the sand — blue-green color easy to spot.

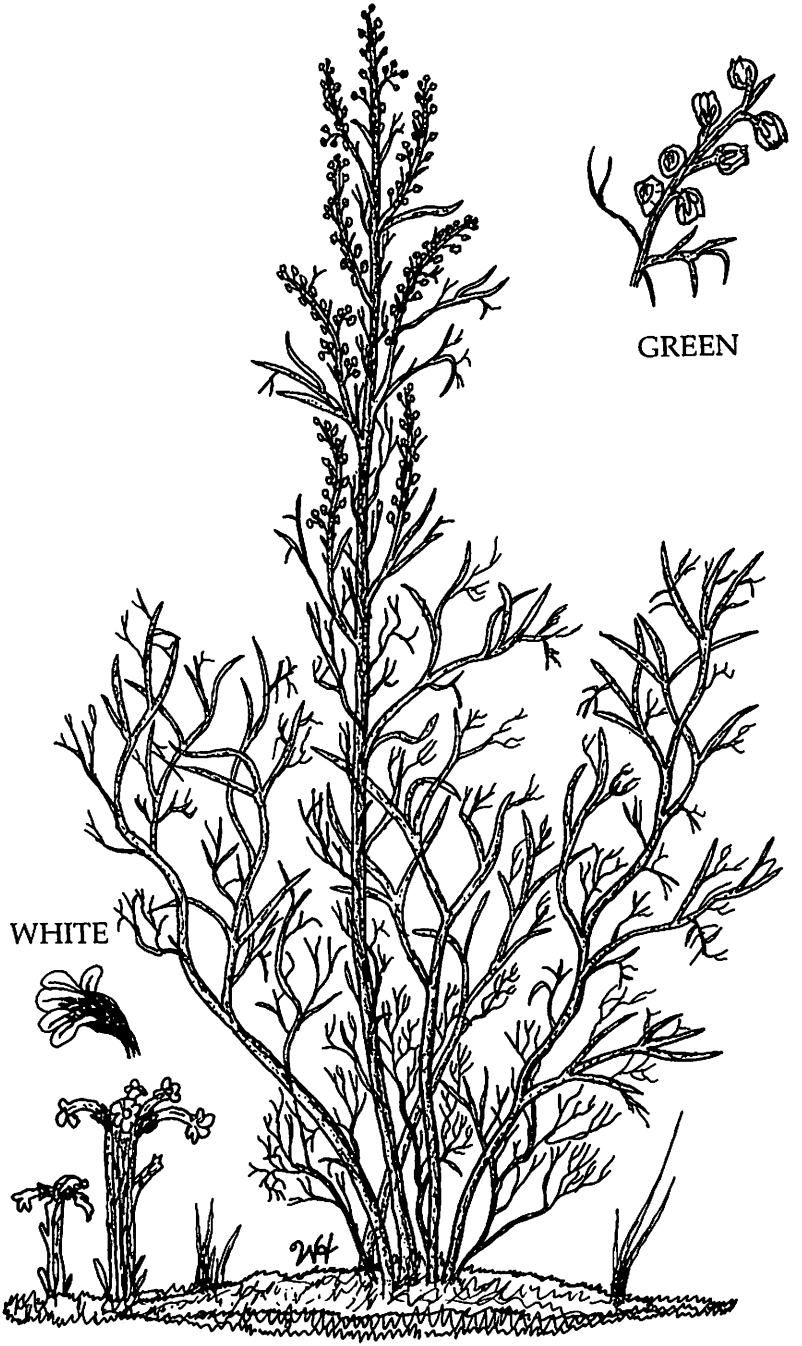
**Similar Species:** Goldenrods and ragweeds have yellow flowers and broader, green leaves.

**Memory Aid:** Mr. Wormwood has wormy leaves.

## BROOM RAPE *Orobanche fasciculata*

A very small, **colorless plant** with **white flowers**. Usually clustered into several prominent reddish stems. This plant has no chlorophyll, thus is parasitic on roots and rhizomes of adjacent plants. Usually occurs with tall wormwood along the sandy shores of the Great Lakes.

**Similar Species:** There are several other broom rapes, but none occur in sandy, dunal areas. Lack of chlorophyll makes it distinctive from other green plants.




**Broom Rape** **Wormwood**

Along many of the Great Lakes shores, there are flat beach zones and small pools heavily vegetated with a wide variety of wetland plants. This zone is a harsh environment, being only a foot or two above the water's edge. Each winter, ice scours the zone and topsoil seldom accumulates. Three types of plants are shown that the beach walker may encounter. Each group is very difficult to ID to species.

**SEDGES:** Tough, wiry seeds on ends of stalks; leaves resemble grasses but thicker. Some species have triangular stems. Very difficult to ID to species. A typical shore sedge is *Cladium mariscoides;* others could be *Carex garberi, C. viridula* and *C. crawei.* Sedges have solid stems, leaves in three ranks.

**BALTIC RUSH:** *Juncus balticus* and others. This is the most common rush of the shore. It has a peculiar root system, which sends up shoots along a straight line. The rushes all have seed heads below the top of the main stem. Flowers have three petals and three sepals. Others which are likely are *J. articulatis, J. brachycephalus, J. alpinus and J. effusus.*

## NUT GRASS OR UMBRELLA SEDGES:

*Cyperus spp.* Low-growing, spindly-looking plants with numerous flowers in clusters. The flowers or fruits are green or brown, resembling bristly burs. A common species is *C. rivularis.*


GREEN/BROWN
Sedges
Baltic Rush
Nut Grass

## BLUE-EYED GRASS *Sisyrinchium montanum*

This attractive small plant is easily identified by the **six blue petals** and sepals with a **yellow "eye" from above.** The yellow can often be seen in side view. It is not a true grass, but rather an iris with flattened stems and leaves. A portion of the stem rises above the flower.

*S. albidum* is found most commonly in the southern Great Lakes.

**Similar Species:** Harebell has bell-shaped flowers. The asters and chicory have blue flowers but many more petals. Related blue-eyed grasses (*S. angustifolium, S. atlanticum*) have flowers on stalks away from the main stem.

**Memory Aid:** Blue-eyed grass I won't walk past.

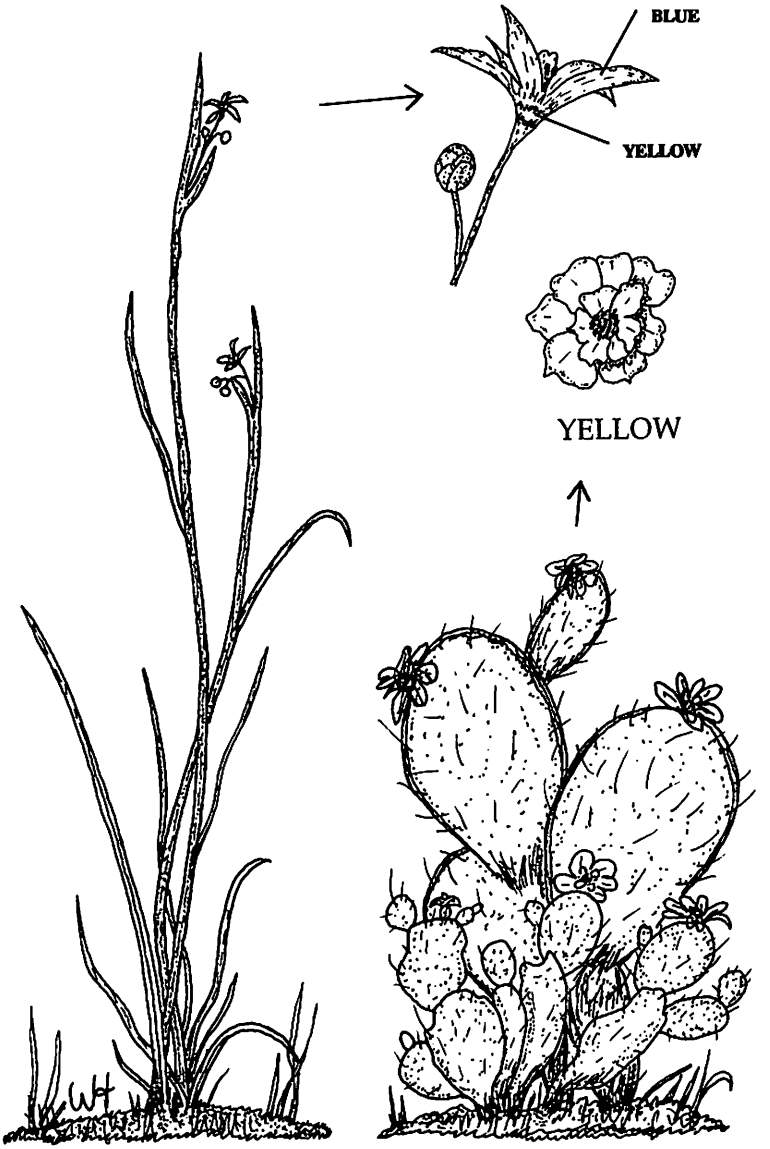
## PRICKLY PEAR *Opuntia humifusa*

Cactus looking, cactus feeling. It has bright **yellow flowers** when in bloom on ends of short, stubby buds.

The segments are thickened and pancake-shaped, like a fattened paddle. **Strong spines** poke out in all directions. Often forms mats 2 to 3 feet across. Requires hot, dry habitat.

**Similar Species:** None — our only plant with such a growth form in the wild. Other cacti have cylindrical heads.

**Memory Aid:** Feet beware of the prickly pear.




**Blue-eyed Grass** **Prickly Pear**

## COREOPSIS *Coreopsis lanceolata*

A common plant with thickened stems and **bright yellow flowers,** height 1 to 2 feet. Leaves are opposite and sparse. **Fine hairs** are present where leaves hug the stem. Petals are notched.

A common plant in many sandy, dunal areas. Blooms May to July in showy clusters.

**Similar Species:** Aster may resemble coreopsis, but flowers are blue or white. St. John's-wort has woody stems and small leaves. Black-eyed Susan flowers have brown centers.

**Memory Aid:** Coreopsis has yellow top-sis.

## GOAT'S-BEARD *Tragopogon dubius*

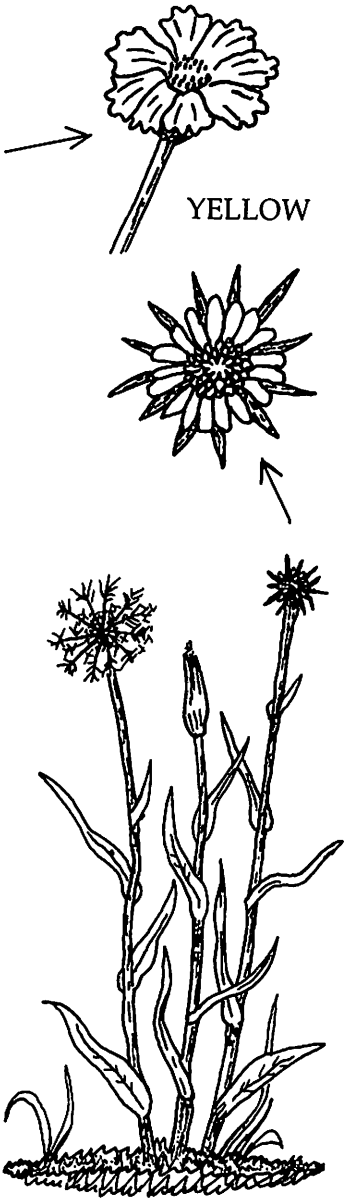
The odd-looking flowers are contained in conical pods that close at sunset and on cloudy days. The flowers are **nearly round, yellow and large.** At maturity, each fruit forms a **fluffy ball.**

Usually found in moist areas along the shore. A most attractive plant.

**Similar Species:** The grasses have similar leaves but lack showy flowers. Lilies have conical flowers with six petals.

**Memory Aid:** Goats have fuzzy beards.

Coreopsis




Goat's-beard

## KALM ST. JOHN'S-WORT *Hypericum kalmianum*

This low, shrubby plant resembles a bushy flower with brown stems. Leaves are small, toothless with transparent dots. Branchlets are four-sided (squarish). **Flowers are bright yellow,** numerous, with five petals. Older **bark is shreddy**. Leaves are opposite, with leafy shoots in angles.

A very common woody plant along the sandy areas of the Great Lakes. Very showy and colorful shrub.

**Similar Species:** Other St. John's-worts can be found near dune ponds or along beach swales. Coreopsis has long leaves and soft stems.

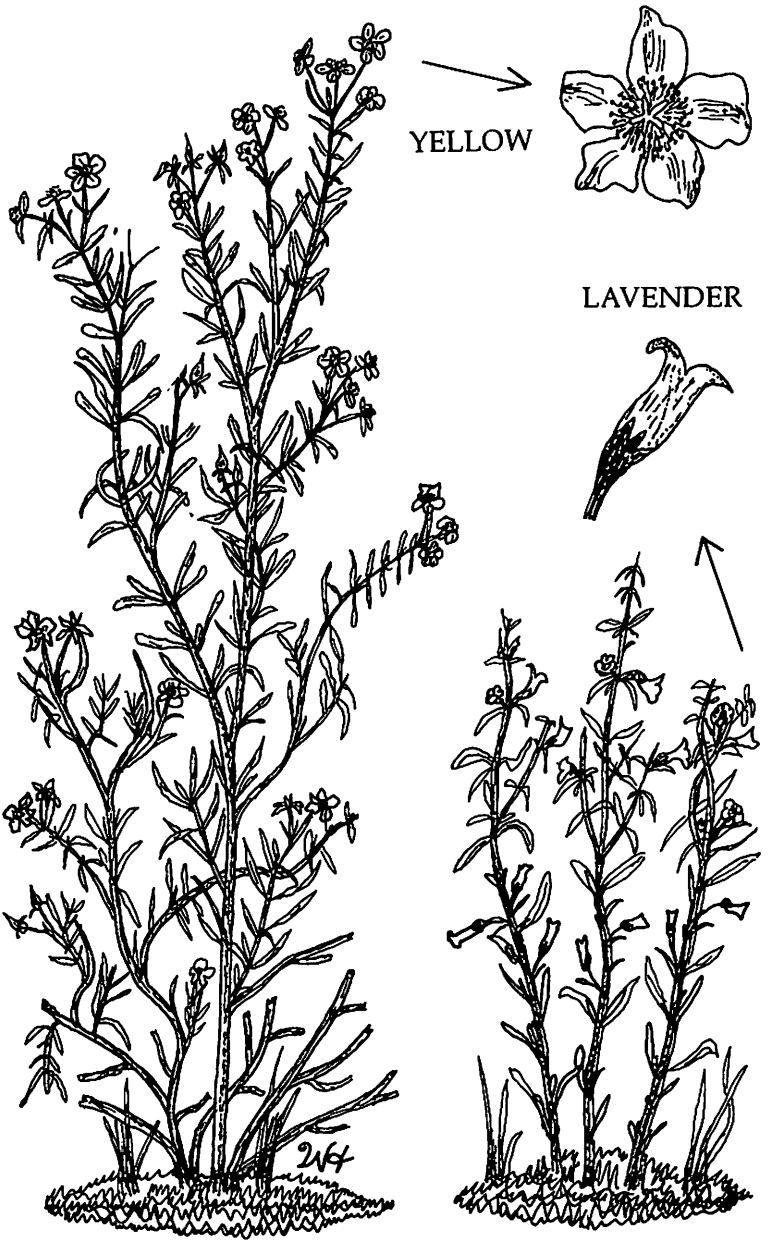
## LOW CALAMINT *Satureja arkansana*

A very small plant (6 to 15 inches) of the mint family. Flowers are **pink to rose-purple** and tubular. Leaves sparse, hugging the stem with leaflets in angles, usually brownish green to reddish. **Aromatic** when crushed — minty smell.

Not a common plant but can be abundant in limy, wet areas near the shore. Often missed because of its small size.

**Similar Species:** Most other mints have different flowers and square stems.

**Memory Aid:** Savor the smell of calamint.




**Kalm St. John's-Wort** **Low Calamint**

## LAKE TANSY *Tanacetum huronense*

Leaves are finely divided and woolly throughout; **flowers yellow** and numerous on top of plant. Usually grows in a clump with 10 to 20 stems, each 2 to 3 feet tall.

Flowers resemble well rounded donuts, tightly packed. A common shore flower in many areas of the north.

**Similar Species:** Yarrow has similar leaves but white flowers. Hairy vetch also has similar leaves, but flowers are blue.

## HAREBELL *Campanula rotundifolia*

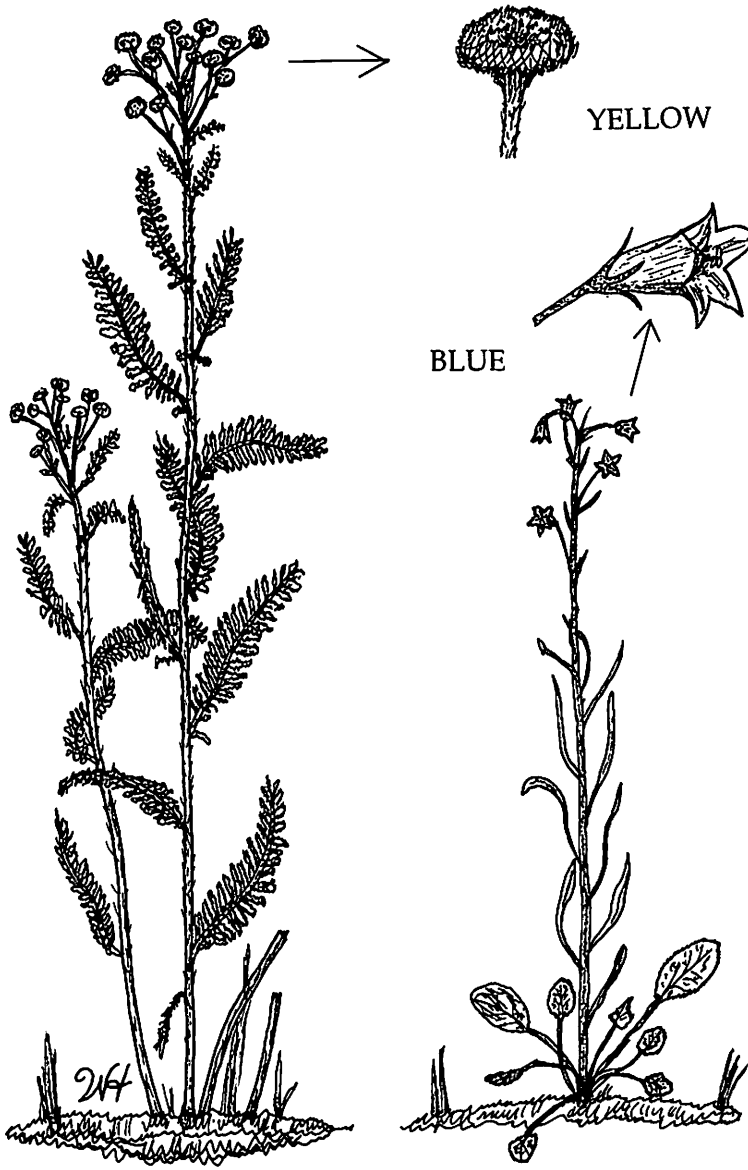
(Often called bluebell)

A very distinctive short plant with **bell-shaped blue flowers.** Stem leaves are long and narrow, **basal leaves are broad** on long stems.

Usually grows along the backshore near trees or clumps of shrubs.

**Similar Species:** The bell-shaped flowers are distinctive. Beach pea has blue flowers but with irregular lips; leaves opposite and ovoid.

**Memory Aid:** Anyone can tell the pretty harebell.




**Lake Tansy** **Harebell**

## GILLMAN'S GOLDENROD *Solidago racemosa*

All goldenrods have **small, yellow flowers,** tightly clustered on upper third of plant. Dozens of goldenrods grow in the Great Lakes region. The most common on the shore are Gillman's and:

**Grass-leaved goldenrod** (*S. graminifolia*): Narrow leaves with parallel veins to base, flowers in flat-topped group.

**Hairy goldenrod** (*S. hispida*): Downy stem and leaves, leaves broad at base, flowers along stem.

**Canada goldenrod** (*S. canadensis*): Flower head as a large bunch, leaves narrow and crowded, toothed.

**Dwarf (or gray) goldenrod** (*S. nemoralis*): Grayish green leaves, downy; flowers crowded, heads curved over.

**Ohio goldenrod** (*S. ohioensis*): Narrow, feather-veined leaves, flowers in flat-topped clusters.

Others that could be found are Houghton's, Deam's and bluestem.

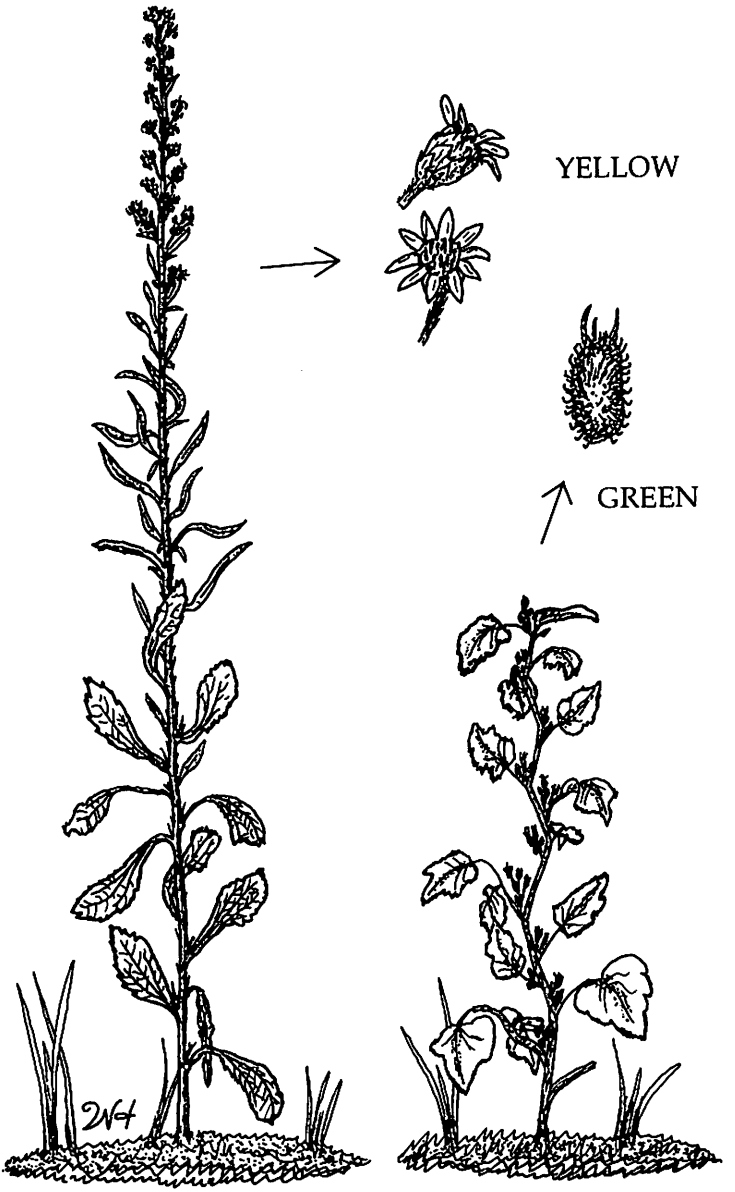
**Memory Aid:** A rod of gold, tall and bold.

## COCKLEBUR *Xanthium strumarium*

A low-growing, often sprawling plant with **greenish flowers** and crooked stems. Leaves alternate, broad, light green, notched, on long stems. The **burs** are less than an inch long, with **prickly incurved spines**; several larger spines on top. The burs are the seed pods and will stick to almost anything. Especially troublesome to girls when boys throw them in their hair.

**Similar Species:** Sand burs have round stickers with straight spines.

**Memory Aid:** Keep cockleburs away from furs.




**Gillman's Goldenrod** **Cocklebur**

## EVENING PRIMROSE *Oenothera biennis*

This tall, striking plant with **prominent yellow flowers** along the stem occurs as many species and varieties in the Great Lakes. Has a very stout stem, closely bunched **linear leaves with teeth** and notches. Often has a purplish cast to the lower stem. Flowers have a distinctive **X-shaped central stigma**, with four bright yellow petals. Flower buds and mature fruits are enclosed in elongated pods.

Very common along some Great Lakes shores. The species *O. oakesiana* and others often found nearby — very difficult to separate.

**Similar Species:** The only group with large, yellow petals in fours and X-shaped stigmas.

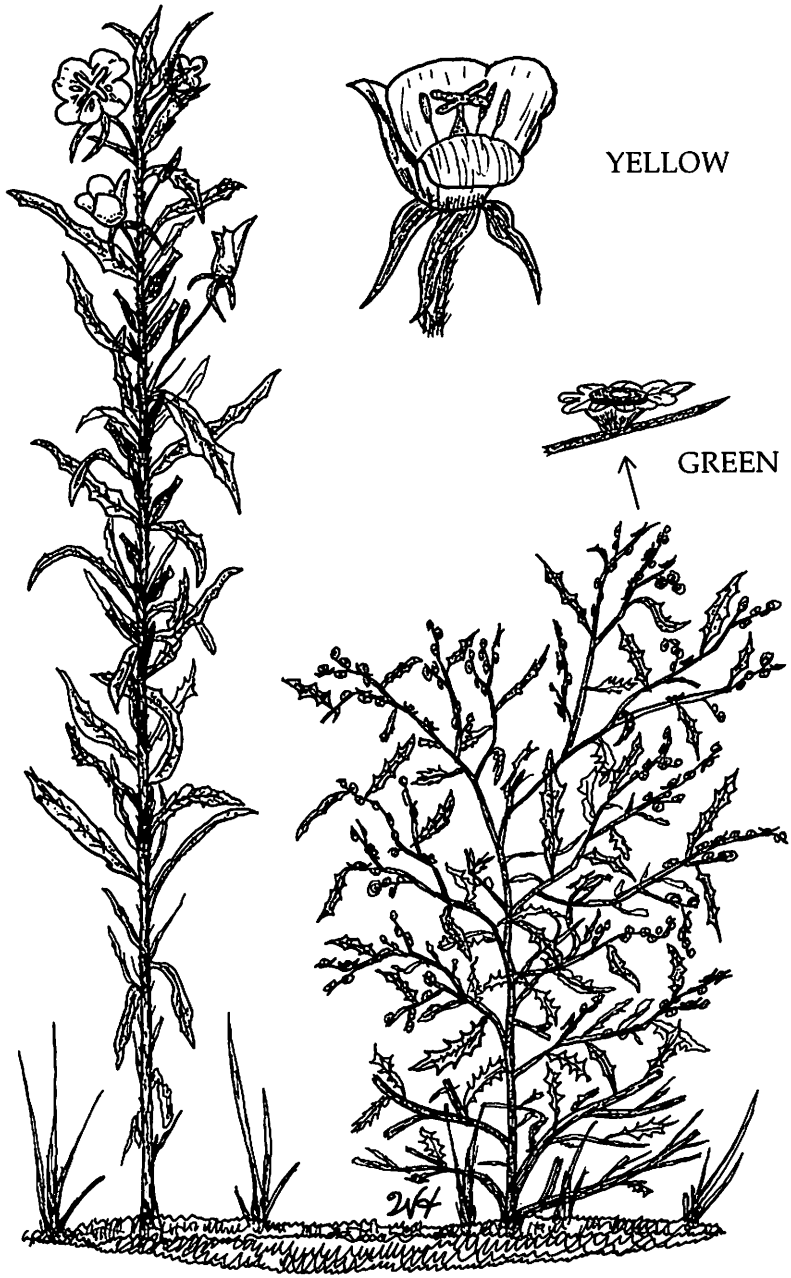
**Memory Aid:** As evening mellows, becomes more yellow.

## WINGED PIGWEED *Cycloloma atriplicifolium*

A small, very bushy plant with sharply pointed and notched leaves. The **greenish flowers** are very tiny and hug the stem closely, very numerous along upper branches. Leaves and young stems can be woolly.

As flat seeds ripen **in fall, entire plant turns purple.** Winged pigweed can grow in bare sand. Often comes loose in fall and rolls along the beach. Plant overall is dome-shaped.

**Similar Species:** Holly-like leaves and wheel-shaped fruits with wings make this plant very distinctive.




**Evening Primrose** **Winged Pigweed**

## SILVERWEED *Potentilla anserina*

A very distinctive plant with **bright yellow flowers** and **silver leaf undersides.** Silverweed seldom grows taller than 12 inches and has many reddish runners connecting adjacent plants. Very common along the back beach on moist flats.

**Similar Species:** Strawberry resembles silverweed but does not have silver undersides.

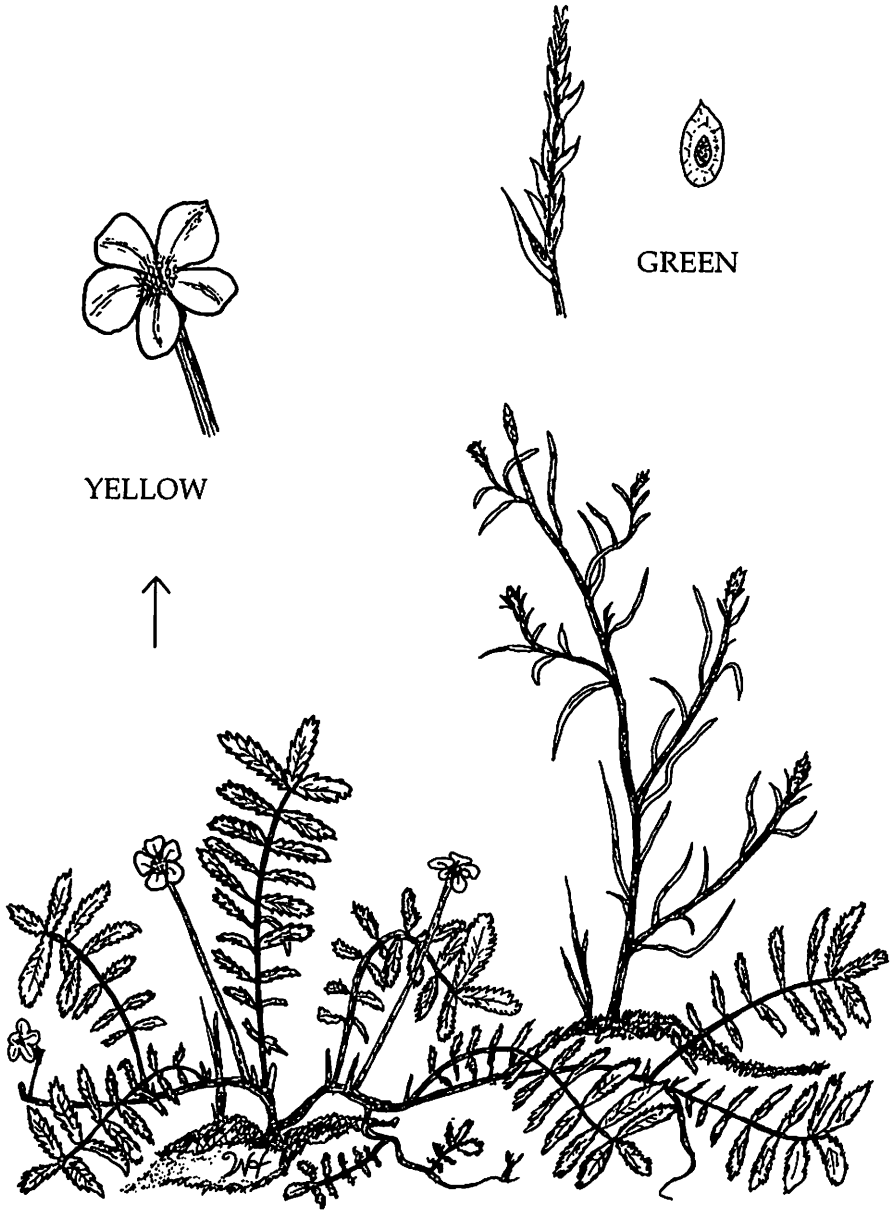
**Memory Aid:** Silver leaf underneath.

## BUGSEED *Corispermum hyssopifolium*

This short, very indistinct plant can survive excessive heat and wind close to the shoreline. The leaves are narrow and quite stiff. The **flowers are very small and greenish,** often go unnoticed without close inspection. In late summer, bugseed loses its leaves and the plant appears nearly dead. Seeds are winged, fruiting head dense.

**Similar Species:** Other small plants of the shore have non-greenish flowers or wider, more flexible leaves.

**Memory Aid:** Seeds small as bugs.




**Silverweed** **Bugseed**

# HAIRY PUCCOON *Lithospermum croceum*

**Yellow** or **orange flowers,** five-lobed, about 1 inch in diameter.

The plant looks fuzzy all over, generally **12 to 20 inches high.** Often found in clumps; stems not woody.

Leaves are usually alternate, although close spacing may make them appear opposite. Most are **covered with stiff hairs,** edges smooth.

This is one of the prettiest flowers of the shore — once known, it will seldom be forgotten. Grows on sand dunes, abandoned fields and jack pine forests.

**Similar Species:** There are two other puccoons, the hoary, which has fewer leaves without fuzz/hairs/bristles, and the narrow-leaved, which also has hairless leaves that are very narrow.

**Memory Aid:** Furry raccoons like hairy puccoons.


**Hairy Puccoon**

## WHITE CAMAS *Zygadenus glaucus*

**Flowers small, greenish white,** fairly inconspicuous but numerous. Petals sharply pointed, six and distinct, overall cup-shaped with a central structure shaped like an urn. Leaves flattened, long and narrow, larger toward base of plant. Flowers have a strong, **unpleasant odor.** Stems are stiff.

A common plant along the sandy foredunes, especially in areas of limestone gravels and sands. Often called "death camas" because roots and other parts are poisonous to humans and animals.

**Similar Species:** None — this is a very distinctive plant.

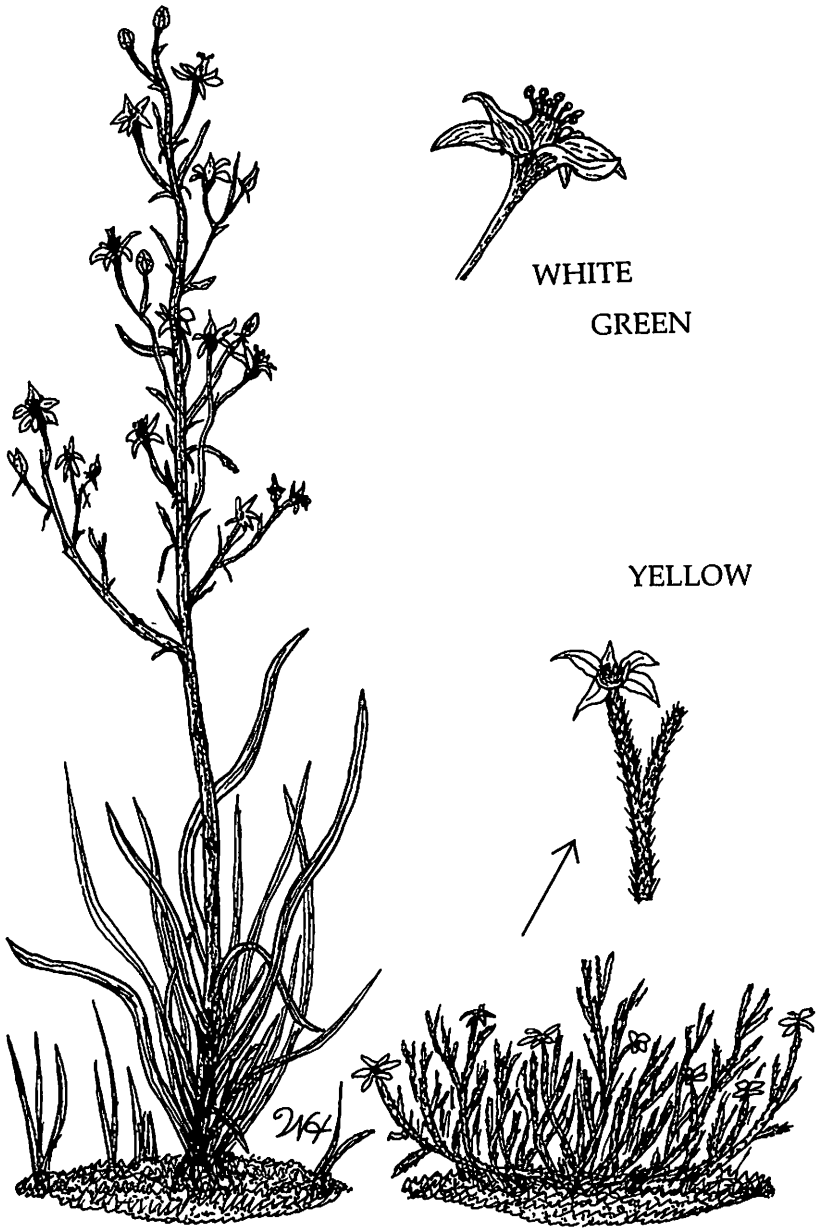
## FALSE HEATHER *Hudsonia tomentosa*

Also called woolly hudsonia or beach heath. A short, spreading, compact plant that resembles moss but has **scale-like or needle-like leaves** packed tightly to the stem. Older bark is often **flaky and brownish.**

Flowers are very small, clustered and usually **pale yellow.** Blossoms in early summer. Stems are covered with **woolly hairs.** Often forms large, spreading mats across depressions in the sand.

**Similar Species:** Junipers and cedars have no flowers. Mossy stonecrop has bright green stems, no hairs.

**Memory Aid:** Beach heather, soft like a feather.




**White Camas** **False Heather**

## YARROW *Achillea millefolium*

A very distinctive plant with finely divided leaves and clusters of **white, small flowers**. Stems often covered with fine hairs. Leaves get larger toward lower portion of stem.

Flowers June to October. Capable of living in very poor, sandy soil. Plant has a **strong aroma**.

**Similar Species:** Lake tansy and hairy vetch have similar leaves, but flowers are different color.

**Memory Aid:** Maybe tomorrow I'll remember yarrow.

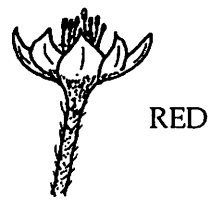
## RED WINDFLOWER *Anemone multifida*

**Single red flowers on a hairy stem**. Leaves are cut into many segments, with long leafstalks on lower ones. The flower appears to have a **yellowish eye**. Blooms May to September.

Fruiting heads are short and cylindrical, often woolly. Fairly common on northern Lake Huron and Lake Michigan back beaches.

**Similar Species:** Canada anemone (*A. canadensis*) has white flowers with yellow centers, grows in clumps along rocky shores.

Yarrow


Red Windflower

## BLACK-EYED SUSAN *Rudbeckia hirta*

A very showy summer flower with **bright yellow petals** and a prominent **brown center.** The stems and leaves are **very hairy.** Normally 2 to 3 feet tall, flowers numerous, to 3 inches in diameter; leaves are alternate.

Usually grows along the backshore near the woods line in dry open areas. Blooms July to September.

**Similar Species:** Asters have purple or white flowers; coreopsis does not have a brown center; coneflowers are related but have lobed leaves.

## NARROW-LEAVED FRINGED GENTIAN

*Gentiana procera*

A late summer flower common to marly lake shores and protected beach swales. Usually 10 to 20 inches tall. **Flowers violet,** with a **fuzzy or fringed appearance,** about 2 inches long. Leaves are narrow and opposite.

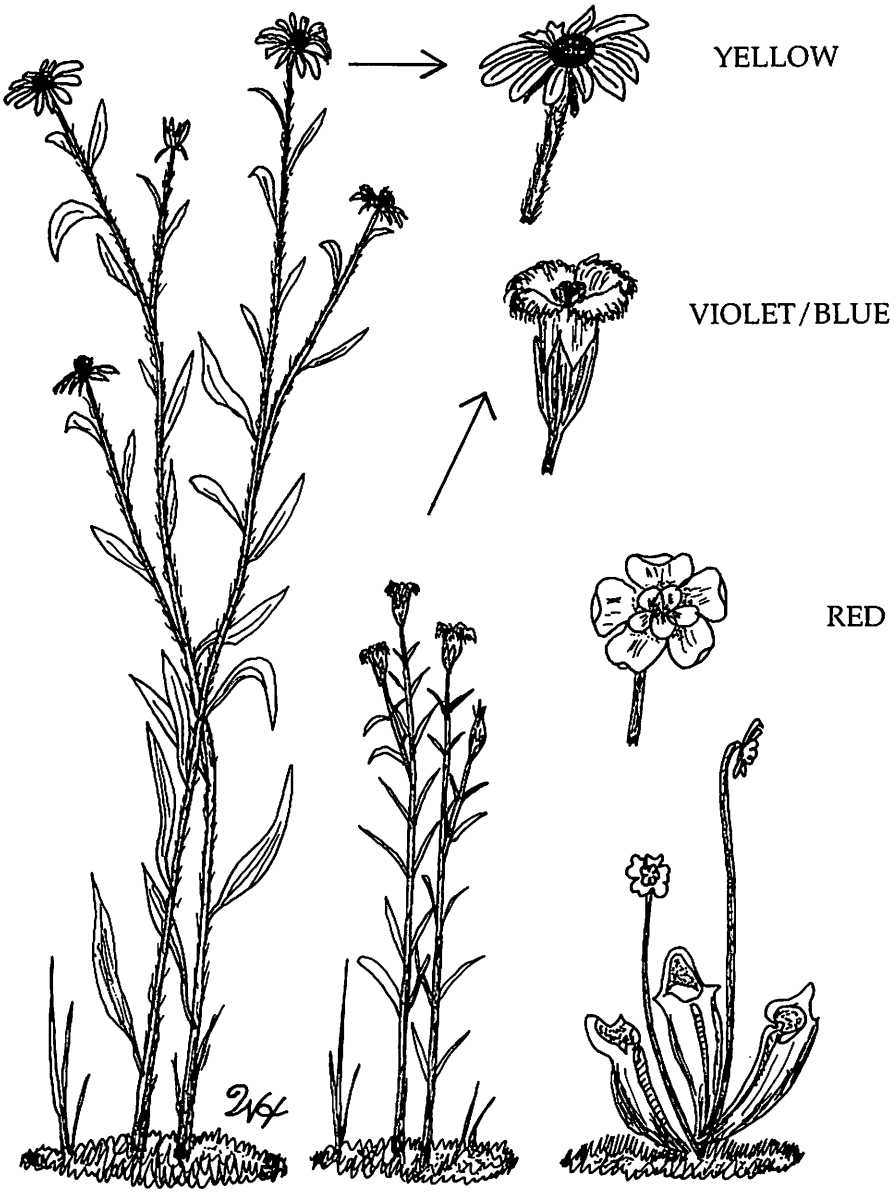
**Similar Species:** Harebell has smooth flowers; other gentians have broader leaves.

## PITCHER PLANT *Sarracenia purpurea*

A most unusual plant that can digest insects for some of its nourishment. Leaves are **urn-shaped** and only basal, **often red striped.** They are usually filled with a watery liquid, hence the name pitcher plant. Flowers are singular, nodding, **dark purple-red,** with five petals folded inward.

This plant is a threatened species. It usually grows near very wet areas, such as interduanl ponds or swales, in direct sun. Our only plant with this growth form.

**Note:** The name of each of these plants reflects a prominent characteristic, so they are easy to remember.




**Black-eyed Susan** **Fringed Gentian** **Pitcher Plant**

## BONESET *Eupatorium perfoliatum*

A tough-looking, erect plant with a hairy stem and small **whitish flowers** in many clusters. Leaves are opposite, very wavy and fuzzy, and **surround the stem.**

Grows primarily in wet ground, common along beach swales or interdunal ponds. Leaves often **dark reddish.**

**Similar Species:** Joe-pye weed has pale pink flowers and leaves do not surround the stem. Snakeroot has leaves on slender stems.

**Memory Aid:** I have finally met the dark boneset.

## ROCK SANDWORT *Arenaria stricta*

A very small plant (6 to 10 inches) with **white flowers** to 1/2 inch in diameter. Leaves are opposite, very sparse above, increasing in number toward the base, appearing **needle-like.**

The plant takes on a ragged appearance toward fall as the parts dry but remain attached to the plant.

**Similar Species:** Sand cress has basal leaves; the other chickweeds have broader leaves.

WHITE

WHITE

**Boneset**

**Rock Sandwort**

## HORSEMINT *Monarda punctata*

## BUGLEWEED *Lycopus americanus*

Horsemint is a **square-stemmed plant** with cream-colored to **yellowish flowers**. The leaves are crowded into whorls around the stem below the flower clusters, toothed, slightly hairy. Leaves paired, with several smaller leaves crowding stem. Flowers are claw-shaped, **with purple spots**. Stem hairy, height to 30 inches. All parts have a mint smell.

Bugleweed (water horehound) has very small flowers and deeply notched leaves. Grows in wet areas along beach. Usually only 1 to 2 feet tall. Does not smell like mint.

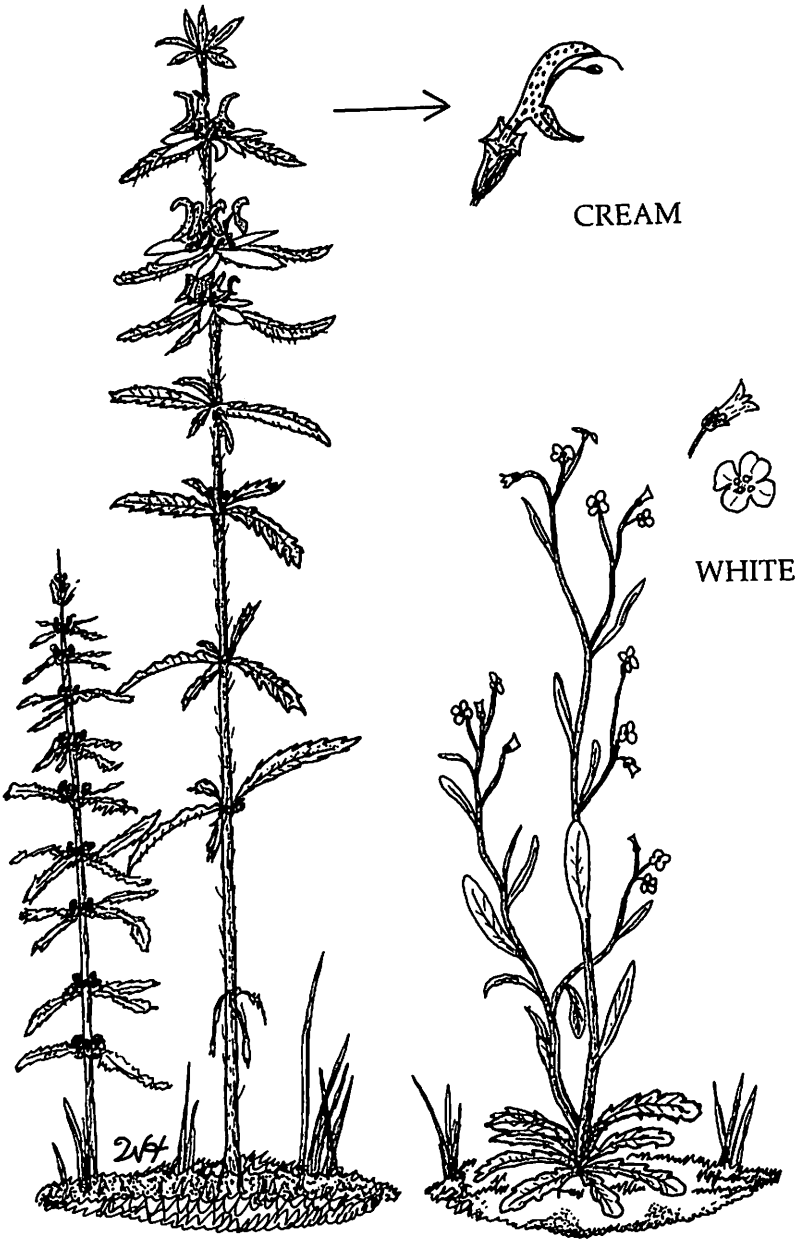
**Similar Species:** Boneset has white flowers, stems not square. Wild bergamot (*M. fistulosa*) has lavender-colored flowers on top of stem, strong mint odor.

## SAND CRESS *Arabis lyrata*

A small plant (12 to 18 inches) with delicate **white flowers**, fine stems and small leaves sparsely along stem. Has a distinctive **basal set of broader leaves**, notched.

The very small flowers and delicate nature of this plant often cause it to be overlooked. Flowers mature into **long, ascending pods** along the stem in late summer.

**Similar Species:** Other plants with basal leaves have different flowers or flowers clustered along the stem. Long pods usually ID this plant of the shore.




**Bugleweed** **Horsemint** **Sand Cress**

## QUEEN ANNE'S LACE *Daucus carota*

**Flowers numerous, whitish,** dome-shaped in side view, with small purplish centers. Leaves are finely divided and pointed at tips.

Easily recognizable at a distance, this plant typically grows in disturbed areas and poor soils. Can be common near the shore or totally absent for long stretches.

**Similar Species:** Vetch and tansy do not have white flowers. Yarrow leaves resemble feathers.

**Memory Aid:** Queen Anne's lace all over the place.

## DWARF LAKE IRIS *Iris lacustris*

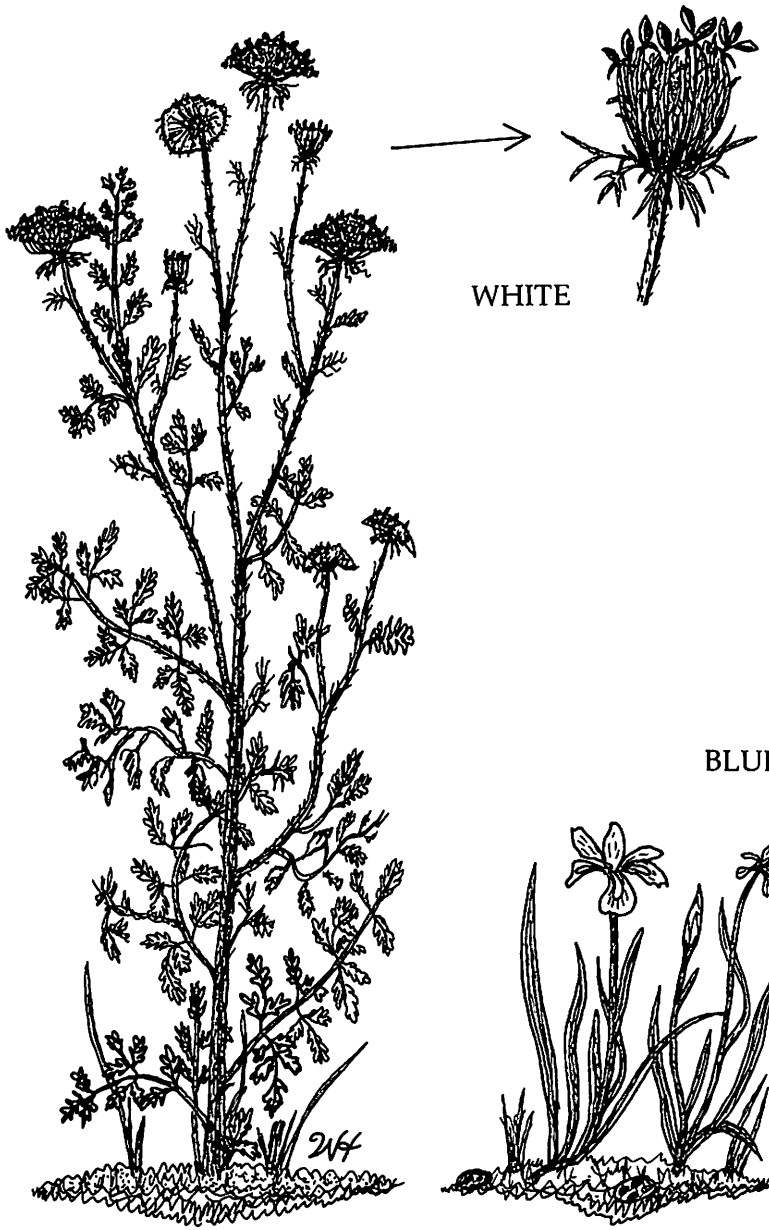
This tiny iris is very local in the Great Lakes, only growing sporadically along rocky shores in the northern portions.

**Flowers are bright blue with yellow petal centers,** leaves slender and sparse. Normal height is only 5 to 8 inches.

This plant is a threatened species and **must not be picked** for any reason.

**Similar Species:** Blue flag has a similar flower but stands 2 to 3 feet tall, in swampy regions.

**Memory Aid:** Tiny and blue it waits for you.




Queen Anne's Lace

Dwarf Lake Iris

## WHITE SWEET CLOVER *Melilotus alba*

A spindly-looking, erect plant with small **white flowers**. The flower stalks arise from angles between the stem and leaves. Flowers have petals of different shapes. Leaves are **three-parted, with fine teeth**.

Usually found in protected areas along the backshore or near the shrub/tree line.

**Similar Species:** Yellow sweet clover has the same appearance but yellow flowers. All the other clovers have flowers in a compact bunch and most are ground hugging.

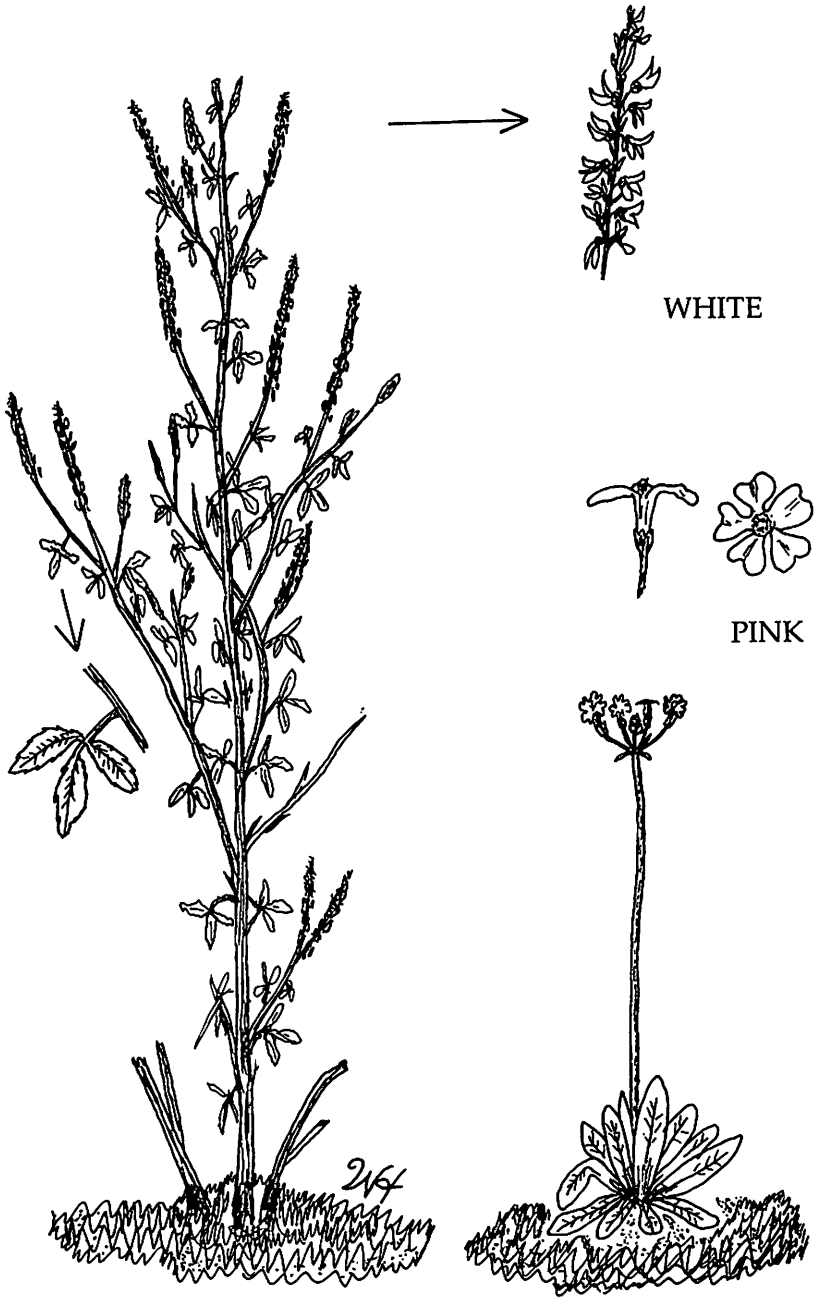
**Memory Aid:** Over and over, I spot white clover.

## BIRD'S-EYE PRIMROSE *Primula mistassinica*

A pretty little shore plant with **lilac, pink or white flowers**, each with a conspicuous yellow center (the bird's eye). Petals five, flowers flat-topped. Leaves all occur in a **basal rosette, small teeth**.

**Similar Species:** Blue-eyed grass has six petals and flattened leaves. King devil has yellow flowers.

**Memory Aid:** Bird's-eye is easy to spy.


WHITE
PINK
White Sweet Clover
Bird's-eye Primrose

## PITCHER'S THISTLE *Cirsium pitcheri*

This plant typically stands 3 to 4 feet tall, with **creamy-white flowers**. The leaves are much branched and spiny-looking, usually a dull **gray** or **buff color**, with a greenish cast.

Has some spines but is not a prickly plant like the field thistle or Canada thistle. Has a woolly look, especially near flowers and on younger leaves. Quite rare — protected in all states. It is one of our most striking plants of the shore, well adapted to strong winds and blowing sand.

**Similar Species:** Other thistles have flowers of different colors, broader leaves and more spines.

**Memory Aid:** Pitcher's thistle cannot whistle.

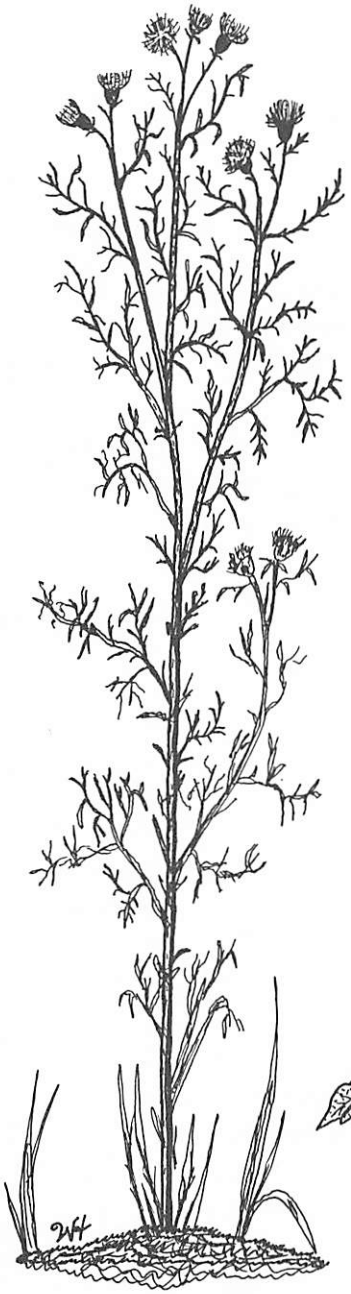
## POISON IVY *Toxicodendron radicans*

Usually grows as a **short, stubby plant** in coastal environments. The leaflets are usually **three per petiole, often notched near the base. White berries.** The center leaflet is on a short stem, whereas the side leaflets are stalkless.

**All parts of the plant can produce extreme skin irritation, blisters and a severe rash.** This is one plant you don't want to cuddle. Keep a fair distance and do not let children or dogs walk through. In thicker places with trees, poison ivy often grows as a vine.

**Similar Species:** Poison ivy is the only common thornless plant with three-parted, alternate leaves and a woody stem base.

**Memory Aid:** Leaflets three, let it be.



CREAM

**Pitcher's Thistle**

**Poison Ivy**

## FLOWERING SPURGE *Euphorbia corollata*

Also known as white spurge because the highly modified flower has **five whitish, petal-like lobes.** The leaves and stem are thickened and **contain a milky juice** (like the milkweeds). Lower leaves are alternate, but upper leaves at flower stems are opposite. Overall, the plant is bright green and somewhat hairy.

**Similar Species:** Seaside spurge is horizontal and spreading. White camas has longer leaves, urn-shaped flowers.

**Memory Aid:** The waves may surge but can't reach spurge.

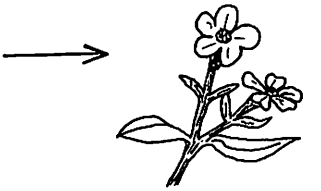
## MOSSY STONECROP *Sedum acre*

A very short, bushy-looking, **bright green plant with tiny yellow flowers.** The stems and leaves are thick and spongy. **Low, matted in colonies 2 to 3 feet across** among rocks and cobbles of northern shores, sometimes on sand if moist enough.

**Similar Species:** False heather has woolly hairs on stem. Juniper and cedar have woody stems, no flowers.

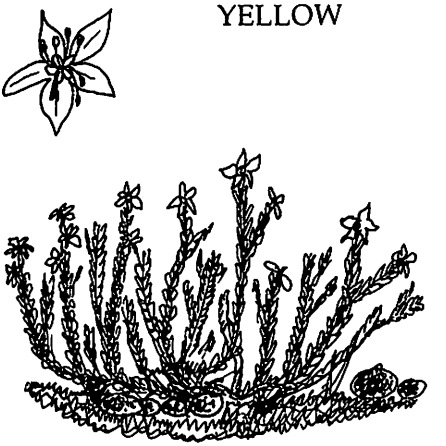
**Memory Aid:** Crop of butter among the stones.

Flowering Spurge



WHITE

YELLOW



Mossy Stonecrop

# STARRY FALSE SOLOMON'S SEAL

*Smilacina stellata*

This member of the lily family has **white flowers** and alternate leaves that clasp the stem. The flowers are very small, about 3/8 inch, resembling small stars.

Flower parts are in sixes. The leaves become narrower near the base of the stem. Berries, if present, are green with black stripes or all black, or can be dark red with black bands.

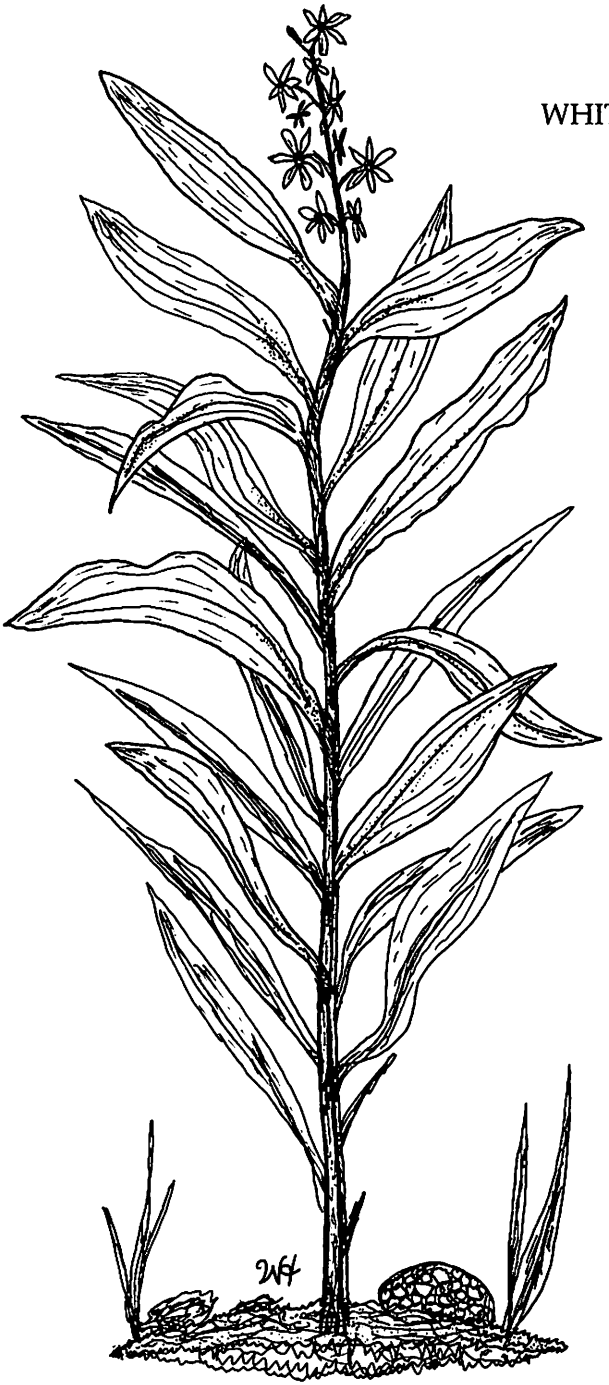
Common to sandy soils and waste places. The variety called *crassa* is usually the one along the coast. It has tightly packed leaves along the stem.

Starry false Solomon's seal is well adapted to beach life because it has heavy rootstocks that can spread the plant over large areas. The berries are enjoyed by birds and other wildlife.

**Similar Species:** False Solomon's seal has oval leaves, creamy white flowers, red berries. True Solomon's seals have their yellowish flowers in the joints of the leaves.

**Memory Aid:** Solomon's seal has star appeal.

WHITE



**Starry False Solomon's Seal**

# SEA ROCKET

*Cakile edentula*

A short, spreading plant 8 to 15 inches tall. The stems are thickened and much curved/forked, with small **flowers, purple to lavender, sometimes whitish.**

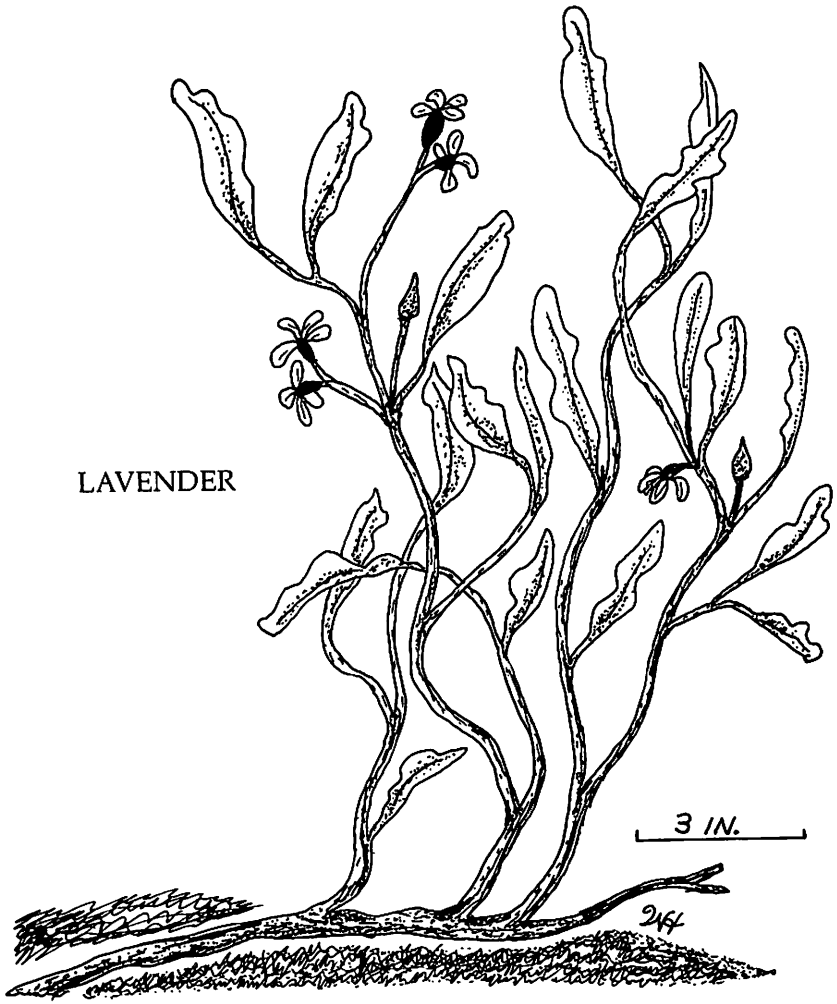
Typically the sea rocket sends up several shoots from a stem lying horizontally on the ground. The leaves are **fleshy and thickish feeling,** often 1 to 3 inches long.

Often has very distinctive **small pods,** like a rocket tip.

This plant can grow in very hostile environments because of the water-holding capacity of its stems and leaves. It will often be the only plant growing near the waterline or above the strand zone.

**Similar Species:** Seaside spurge lies flat on sand and leaves are different. Bearberry has paddle-shaped leaves. Silverweed leaves have notches, are shiny below.

**Memory Aid:** Little rocket by the sea.




**Sea Rocket**

## SMOOTH ROSE *Rosa blanda*

A delicate, freely branching plant with **pale pink flowers and few thorns.** Usually grows as a bushy shrub, but not vine-like or with long, curving wands. Petals five, notched, very aromatic. Leaves are compound, with sawtooth margins of single teeth.

This plant usually grows back from the beach in dry areas with some accumulation of organic soil.

Wild rose (*R. acicularis*) can be found on the shore, too. It has flowers on short, prickly, lateral shoots. Leaves have margins with double teeth. More northerly.

**Similar Species:** Only the roses have thorns and pink flowers. Pasture rose (*R. carolina*) has straight thorns.

**Memory Aid:** Smooth rose good for the nose.

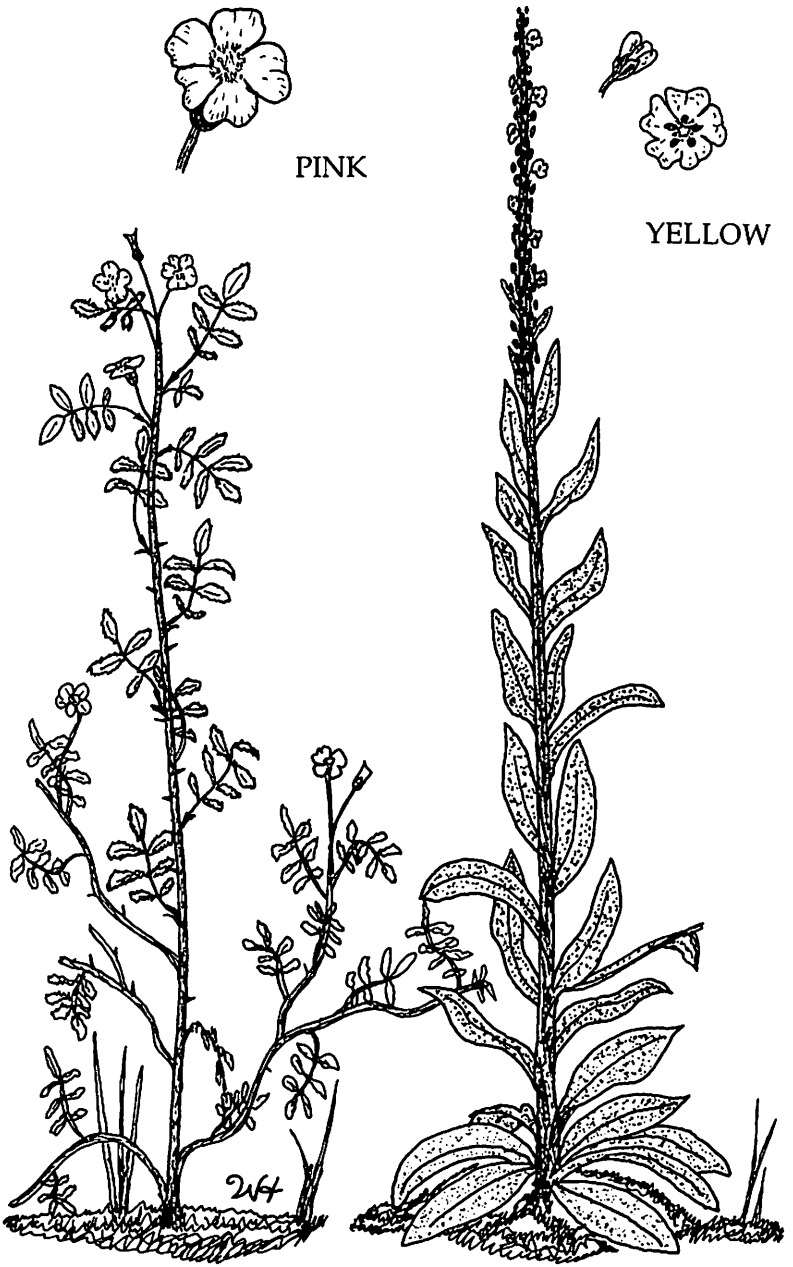
## MULLEIN *Verbascum thapsus*

**Flowers yellow** and clustered along heavy, **knobby-looking stem.** Leaves hairy, **very woolly,** larger near base. Mullein is often called Indian tobacco.

This is one of the easiest to identify of the shore plants. Its shape, size of leaves and much thickened stem give it away from 50 yards. Stems persist through fall and winter, making it stand out in the snow.

**Similar Species:** None.

**Memory Aid:** Fuzzy mullein, soft and sullen.




**Smooth Rose** **Mullein**

## LADY'S-THUMB *Polygonum persicaria*

A spindly-looking plant with **pink flowers** clustered at the tips of the stem. Leaves are smooth and elongated, with **bristles** in the angles; often have purple spots.

Flowers from June through October in very wet areas such as beach flats and cobble areas.

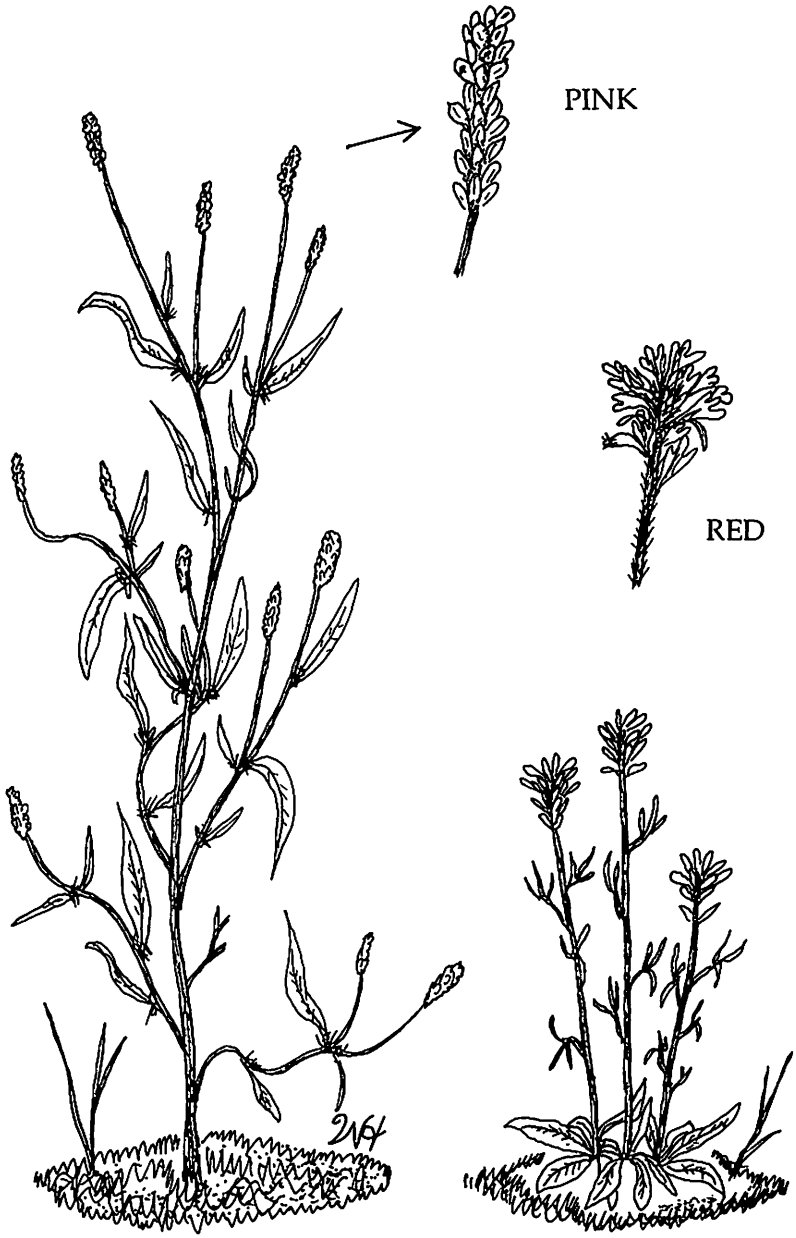
**Similar Species:** Pinkweed and dock smartweed do not have bristles — very similar otherwise.

## INDIAN PAINTBRUSH *Castilleja coccinea*

**Red-orange flowers** in a bunch, with small yellow (or green) true flowers hidden between. Leaves are **sparse and hairy** on the stem; basal leaves form a ring. Stems also hairy, often purple. Usually 12 to 18 inches tall.

This plant can be very common along the shore or entirely absent a short distance away. It is a parasite on other plants, getting some of its nourishment from them. A very distinctive plant of wet places.

**Similar Species:** Orange hawkweed has cup-shaped flowers.




**Lady's-Thumb** **Indian Paintbrush**

## COMMON MILKWEED *Asclepias syriaca*

Usually a tall, stout plant with **dull purple to greenish pink flowers.** Each flower group springs from the leaf axils. Each flower has small, recurved sepals. The leaves are large, **opposite,** stout and oval, with fine down underneath and a prominent midrib.

All parts of the plant ooze a whitish, **milky substance** when broken. Seed pods in late summer are 3 to 4 inches long, with warty projections. As they ripen, they release small seeds **with fine hairs** for wind transport.

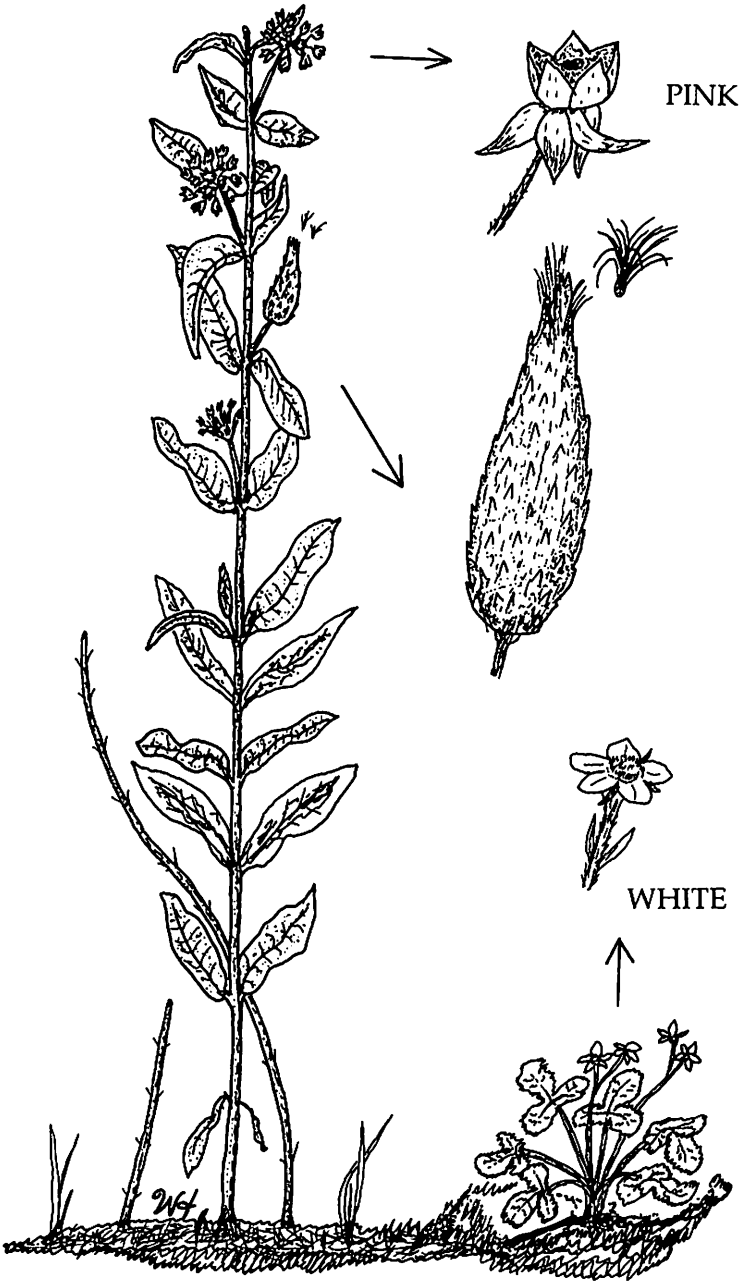
**Similar Species:** Several other milkweeds may be found on Great Lakes shores. Butterfly weed (*A. tuberosa*) has orange flowers and no milky juice, and the lower leaves are alternate. Green milkweed (*A. viridiflora*) has green flowers, milky juice and narrow leaves. Swamp milkweed (*A. incarnata*) has milky juice, purplish to red flowers.

**Memory Aid:** Milky weeds have tufted seeds.

## WILD STRAWBERRY *Fragaria virginiana*

Looks identical to the garden strawberry except all parts are smaller. **Flowers white.** Berries seldom over 1/2 inch, dark red when ripe. Usually grows in sandy flats among the dunes or along and among the tree line adjacent to the back dunes. **Very good to eat.**

**Similar Species:** Silverweed has yellow flowers and shiny underparts.


PINK
WHITE
Common Milkweed
Wild Strawberry

## SMOOTH ASTER *Aster laevis*

Typically 3 feet tall, many flowers, each with 15 to 20 petals, **lavender, pale violet or blue. All have yellow centers,** which become darker orange with age.

Leaves are single, alternate, **increasing in size lower,** with teeth. Upper leaves reduced, smooth.

**Similar Species:** New England aster has larger flowers, lavender to purple with 45 to 100 petals. Large-leaved aster has white to pale lavender flowers with 9 to 20 petals, leaves broad, heart-shaped, rough. Ox-eye daisy (*Chrysanthemum leucanthemum*) has 15 to 30 white petals, yellow centers and very narrow, stalkless leaves.

**Memory Aid:** Faster, faster, I spot aster.

## STICKY FALSE ASPHODEL *Tofieldia glutinosa*

This short, stubby plant is found in moist areas back from the beach. Flowers are **white with tiny pink spots.** Leaves are long and flat.

Flower stalk is covered with **sticky, black hairs.** Seed head resembles small pine cone on a stalk, **reddish;** seeds have small tails. This member of the lily family is very common along beach swales of the northern lakes.

**Similar Species:** Small false asphodel (*T. pusilla*) does not have sticky stems. Other short shore plants with white flowers in bunches have different leaves.

LAVENDER

RED

WHITE

**Smooth Aster**

**Sticky False Asphodel**

## SPOTTED KNAPWEED *Centaurea maculosa*

Spindly-looking, with many side branches; small, finely divided leaves, hairy and **grayish green.** The **flowers are usually pink or rose-purple,** about 3/4 inch in diameter. Has numerous **black tips** (spots) on the bracts surrounding the flower, giving the plant its name.

**Similar Species:** Pitcher's thistle has creamy-white flowers. Other thistles have spiny leaves. The related white star thistle (*C. diffusa*) has white flowers.

**Memory Aid:** Lots of spots, call me knapweed.

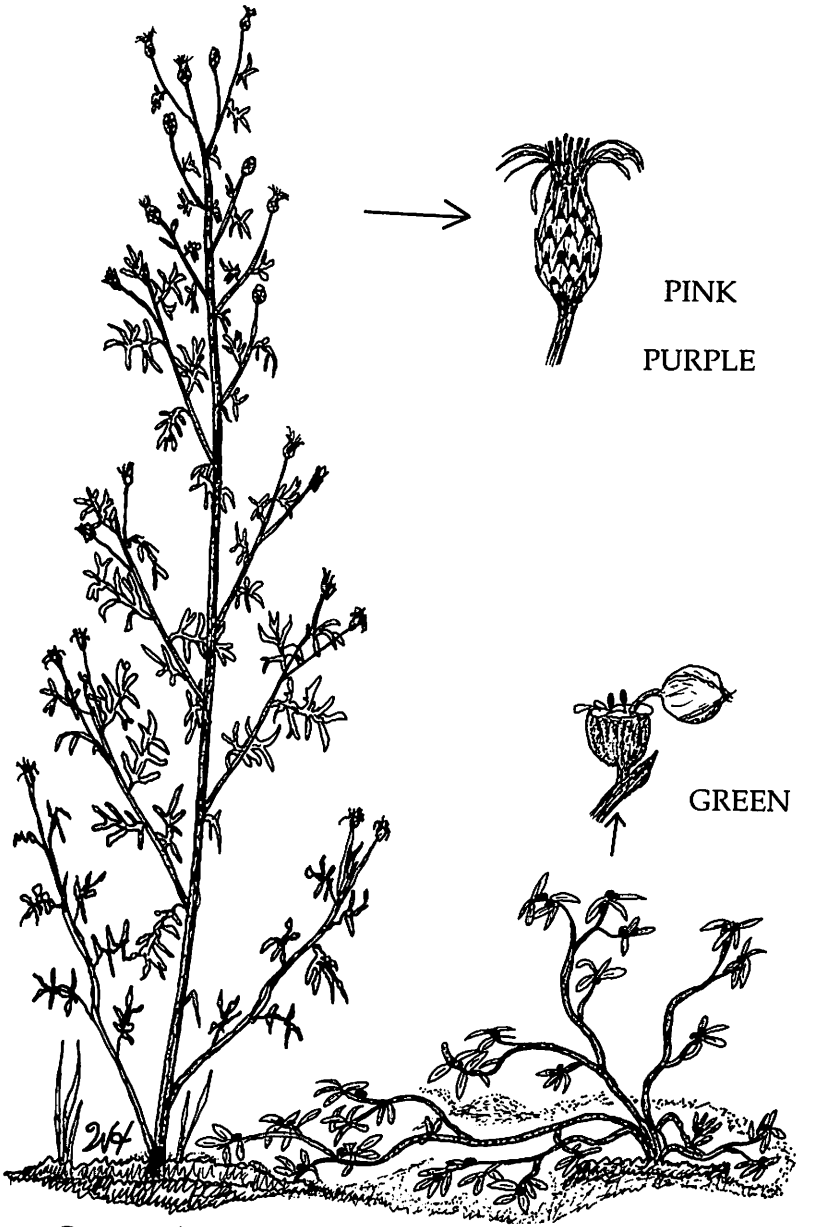
## SEASIDE SPURGE *Euphorbia polygonifolia*

A low, **creeping plant** with **fleshy stems** and small, smooth-edged leaves. The **flowers are green, tiny** and oddly shaped, with the seed case growing out on a stalk at maturity.

When broken, the twigs yield a milky juice, a trait common to all the spurges. Often forms a mat of growth over bare sand, with the stems becoming reddish by fall.

**Similar Species:** Flowering spurge (*E. corollata*) is an upright plant with tiny white flowers. Prostrate spurge (*E. glypto-sperma*) is similar but has leaves with maroon centers.

**Memory Aid:**
A seaside spurge prefers to merge (with the sand).




**Spotted Knapweed** **Seaside Spurge**

## HAIRY VETCH *Vicia villosa*

A tall (or reclining) **hairy-stemmed plant** with **violet to white flowers.** The leaves are compound with **tendrils at the ends.** Flowers are grouped along ends of stems and have **a distinct profile,** similar to the next species. Plant overall looks weak and delicate.

**Similar Species:** Beach pea (below) does not have hairy stems. Yarrow and Queen Anne's lace have white flowers.

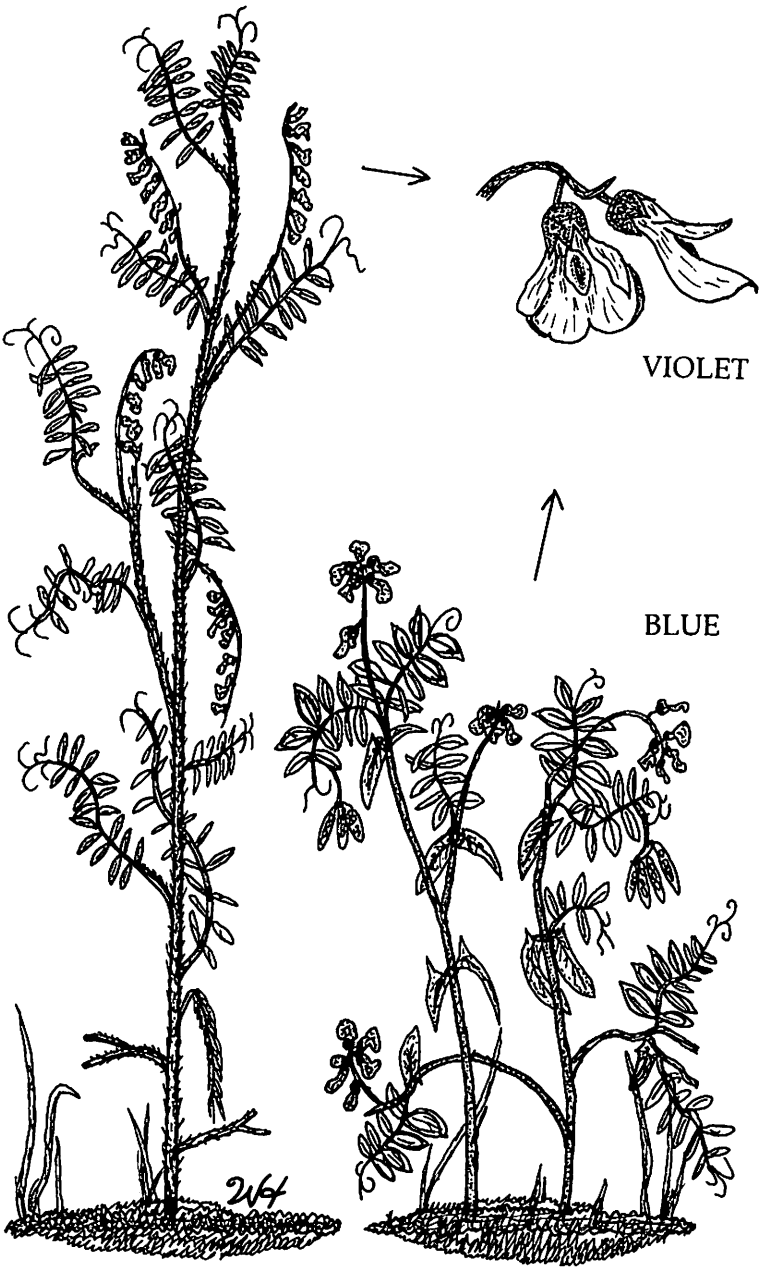
## BEACH PEA *Lathyrus maritimus*

A squat, trailing to erect, **vine-like** plant with **rose-purple to blue-violet flowers.** Has compound leaves similar to vetch, but also single leaves in pairs along the stem.

Can thrive on sand dunes and tolerate intense sun. The flowers resemble those of vetch but have much broader lips and droop less, with several arising from a common point on stem.

**Similar Species:** Hairy vetch (above).

**Memory Aid:** Blue as the sea, I spot beach pea.


VIOLET
BLUE
Hairy Vetch
Beach Pea

## WOOD LILY

*Lilium philadelphicum*

A large, striking plant **with reddish orange flowers, yellow centers and numerous purple spots.** The leaves are arranged **in whorls** around the hairless stem, covered with a fine powder.

One of the most striking plants of the Great Lakes shores. Can be found in waste places, sandy shores and roadsides, usually away from strong wind areas, as in depressions or near tree line.

**Similar Species:** Daylilies (*Hemerocallis fulva*) have flowers that are more orange without the purple spots. Michigan lilies (*L. michiganense*) have drooping flowers.

**Memory Aid:** Don't be silly and pick the lily.

## KING DEVIL

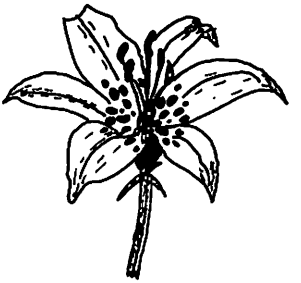
*Hieracium florentinum*

Small **yellow flowers** on a nearly leafless stem. Lower **leaves hairy,** quite thick. Usually grow in clumps to 2 feet tall. Common in wet sand along northern shores.

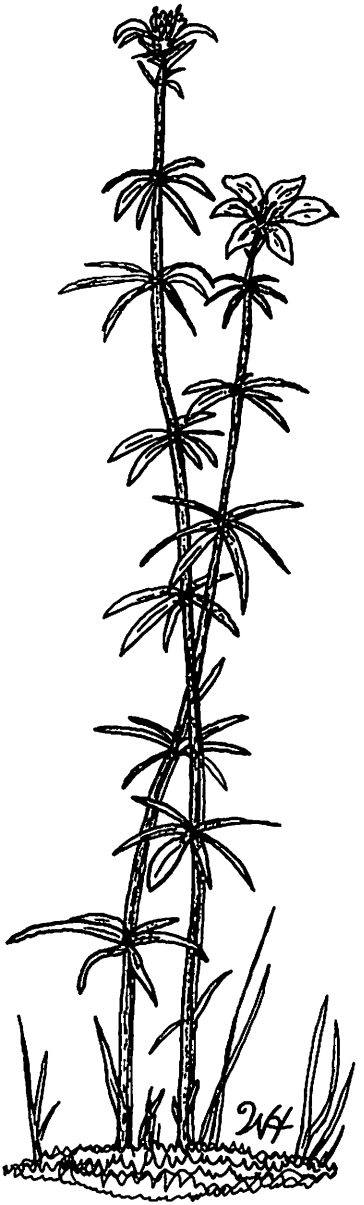
**Similar Species:** Orange hawkweed (*H. aurantiacum*) has hairy stems and orange flowers. Rattlesnake weed (*H. venosum*) has purplish veins on basal leaves. Smoothish hawkweed (*H. floribundum*) has bristles along midrib of basal leaves.

**Memory Aid:** King devil grows near water level.

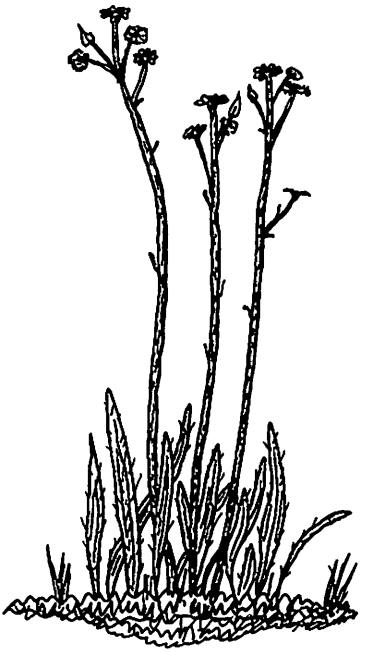
RED/ORANGE



YELLOW



**Wood Lily**



**King Devil**

## SPIKED LOBELIA *Lobelia spicata*

## KALM'S LOBELIA *Lobelia kalmii*

Both tall plants have **pale blue to purple flowers** of five petals, with the **upper two narrow** and usually recurved. Small, pointed bracts are found halfway down the flower. Spiked lobelia has oval leaves with **smooth margins**. Kalm's lobelia has very narrow leaves with **notched margins**. Both may have some white on flowers.

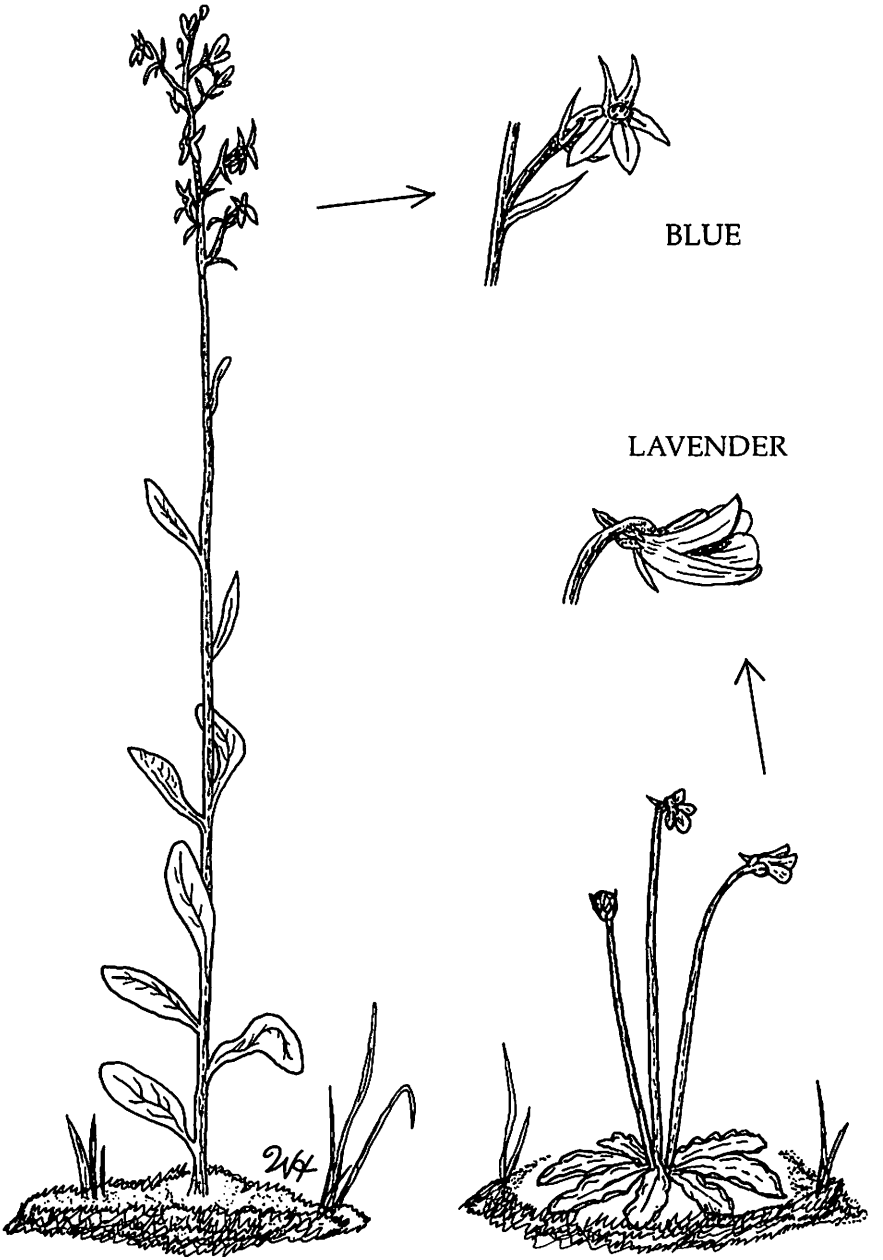
**Similar Species:** Great blue lobelia (*L. siphilitica*) has flowers over 1 inch in dense terminal clusters; grows to a height of 4 feet; leaves large, pointed. Harebell has bell-shaped flowers. Beach pea is more sprawling.

## BUTTERWORT *Pinguicula vulgaris*

A very short plant with a **prominent basal rosette** of wrinkled leaves, somewhat greasy-looking and thick. **Flowers are pale lavender to reddish purple,** with five petals and whitish centers. Basal leaves are **slimy to the touch**. Slime traps small insects for digestion by the plant.

**Similar Species:** Pitcher plant has ascending basal leaves.

**Memory Aid:** Butterwort traps bugs for sport.




**Spiked Lobelia** **Butterwort**

## STAGHORN SUMAC *Rhus typhina*

**Very stout shrubs** to 5 to 8 feet, much branched, usually found in dense clusters. Branches and twigs densely woolly, with large, compound, toothed leaves. Branches resemble the horns of stags.

The fruits are dense, conical, **red fuzzy heads** about 3 to 6 inches long. When ripe, the heads can be crushed in water, strained through cheesecloth and used for a pleasant tea.

**Similar Species:** Smooth sumac (*R. glaba*) has hairless twigs; winged sumac (*R. glabra*) has leaves without teeth; fragrant sumac (*R. aromatica*) has three-parted, aromatic leaves.

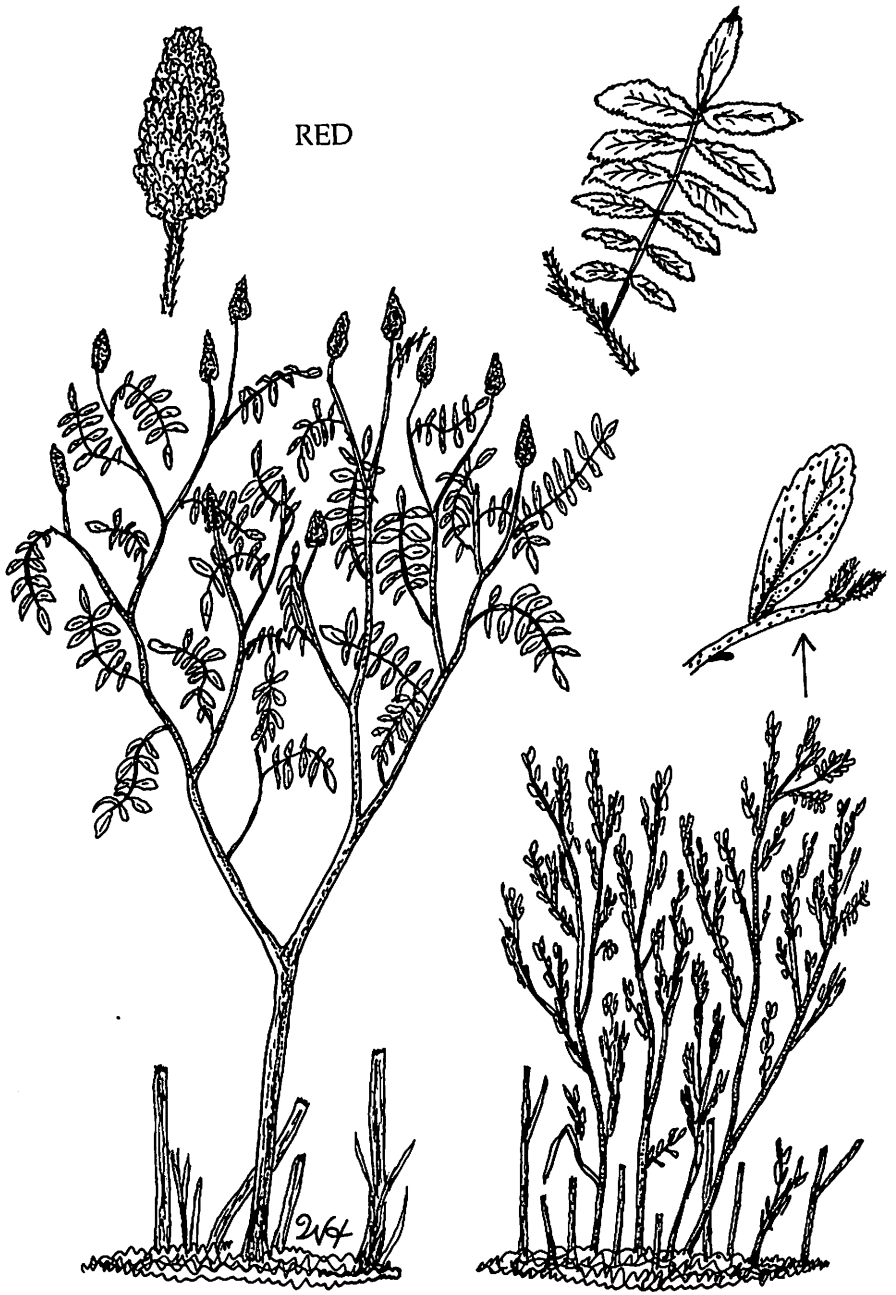
## SWEET GALE *Myrica gale*

A densely packed, close growing **shrub** to 5 feet tall. Leaves, twigs and seeds are **very fragrant when crushed.**

Usually found in semisaturated soils, such as beach swales, creek mouths and the cobble zone. The **leaves** have **numerous spots.** Often grows in very dense thickets, to the exclusion of other plants.

**Similar Species:** Our only shrub that smells like scented soap or candles.

**Memory Aid:** One inhale marks sweet gale.




**Staghorn Sumac** **Sweet Gale**

## SOAPBERRY *Shepherdia canadensis*

A medium-size **woody shrub** with opposite leaves, growing in dense clumps back from the beach. Undersides of leaves covered with silver and brown, whitish scales. Leaves oval with **small leaves in leafstalk angles**, often hairy. Bark is smooth.

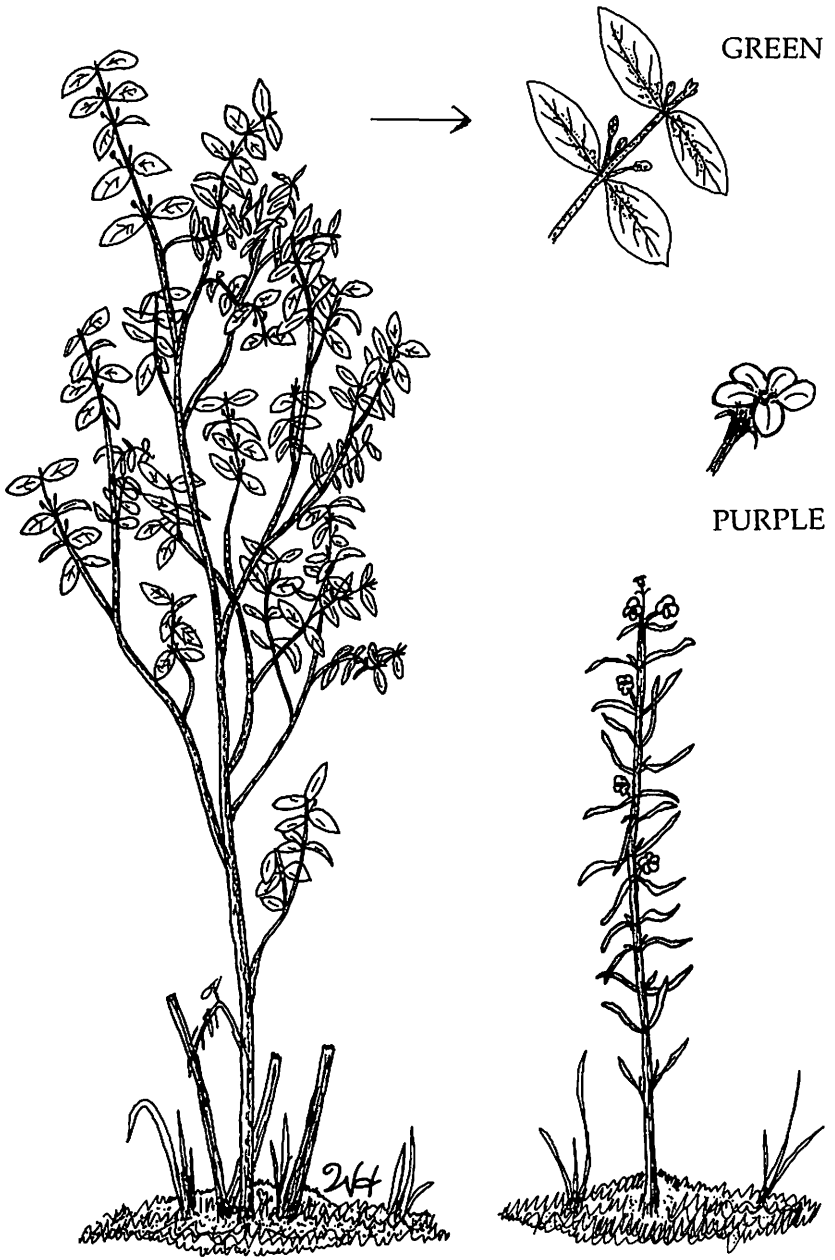
Flower heads are many clustered, **greenish yellow**, bell-shaped in April-June, followed by **bright red berries**. Berries can be boiled, releasing foamy suds that resemble soap, reportedly good for soaking in.

**Similar Species:** St. John's-wort has transparent dots on leaves and shreddy bark. Willows have alternate leaves. Honeysuckle bark is thin and papery.

## PURPLE GERARDIA *Agalinis purpurea*

A **narrow-leafed**, tall plant with **pink flowers**, tending toward rose or purple. Regular flowers with **five petals, hairy inside**, in bloom August and September. Leaves are **opposite**, with several smaller leaves in angles.

**Similar Species:** Common gerardia has very narrow leaves, not hairy inside flower. Lobelias have recurved petals.


GREEN
PURPLE
Soapberry
Purple Gerardia

## NINEBARK *Physocarpus opulifolius*

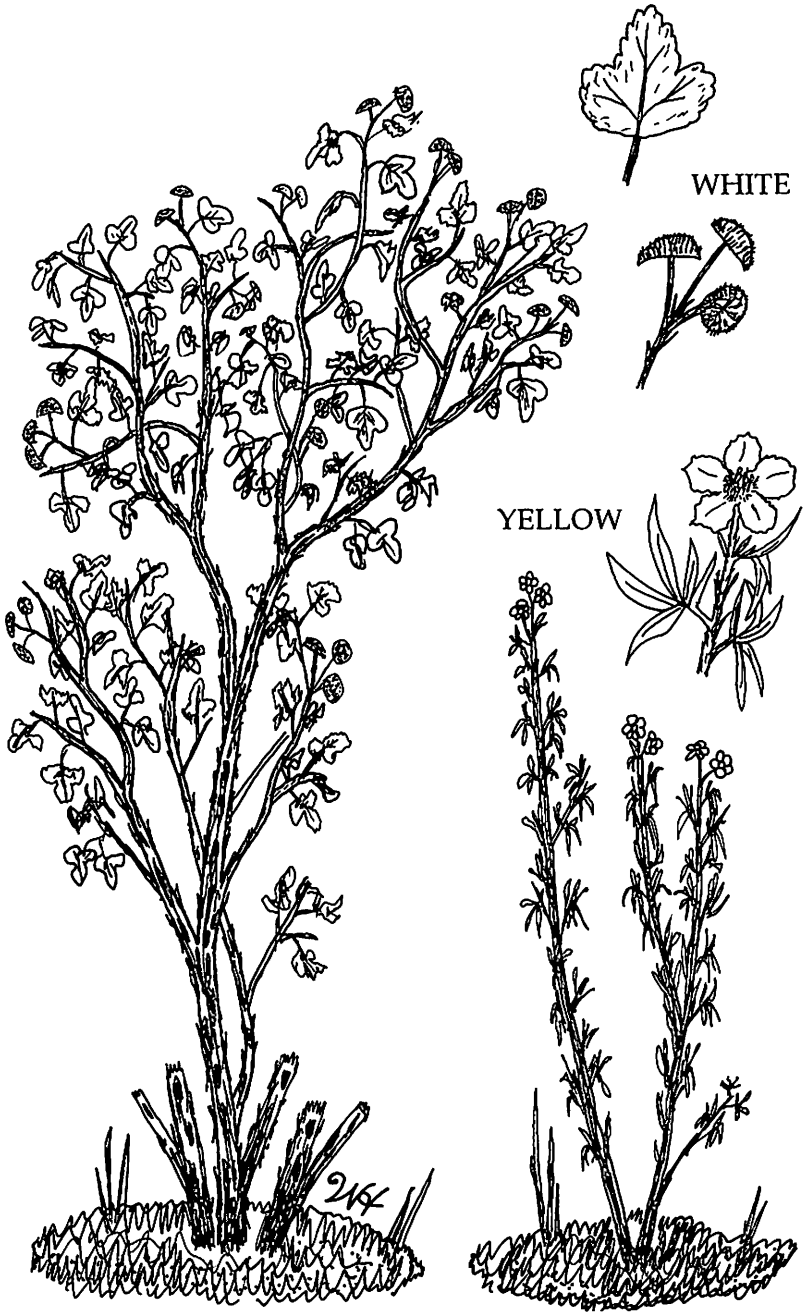
A stout-looking, woody shrub with **shredding bark**, much branched, grows in clumps. Leaves are alternate along the twigs, each with **three distinct lobes**. Flowers in tight, umbrella-shaped groups, **white, very small**. Blooms in early summer, very showy from a distance.

**Similar Species:** Resembles willow but leaves are different. Honeysuckles have shredding bark and opposite leaves. Maples have opposite leaves.

## SHRUBBY CINQUEFOIL *Potentilla fruticosa*

This member of the rose family is a shrub with **bright yellow flowers**, each having five petals. Leaves are **compound** with five leaflets, numerous and narrow along the stem. Blooms June to October. Stem is hard and woody.

**Similar Species:** St. John's-wort has simple leaves. Other cinquefoils have broader leaves with pronounced teeth. Yellow rocket (*Barbarea vulgaris*) has small, bunched, yellow flowers with four petals; grows in clumps.




**Ninebark** **Shrubby Cinquefoil**

## SWAMP HONEYSUCKLE *Lonicera oblongifolia*

A stout bush, usually 4 to 6 feet tall, with **very papery bark** (shredding) and numerous stems arising from a common cluster. Twigs have small lines that circle stems just above leaves or leaf scars.

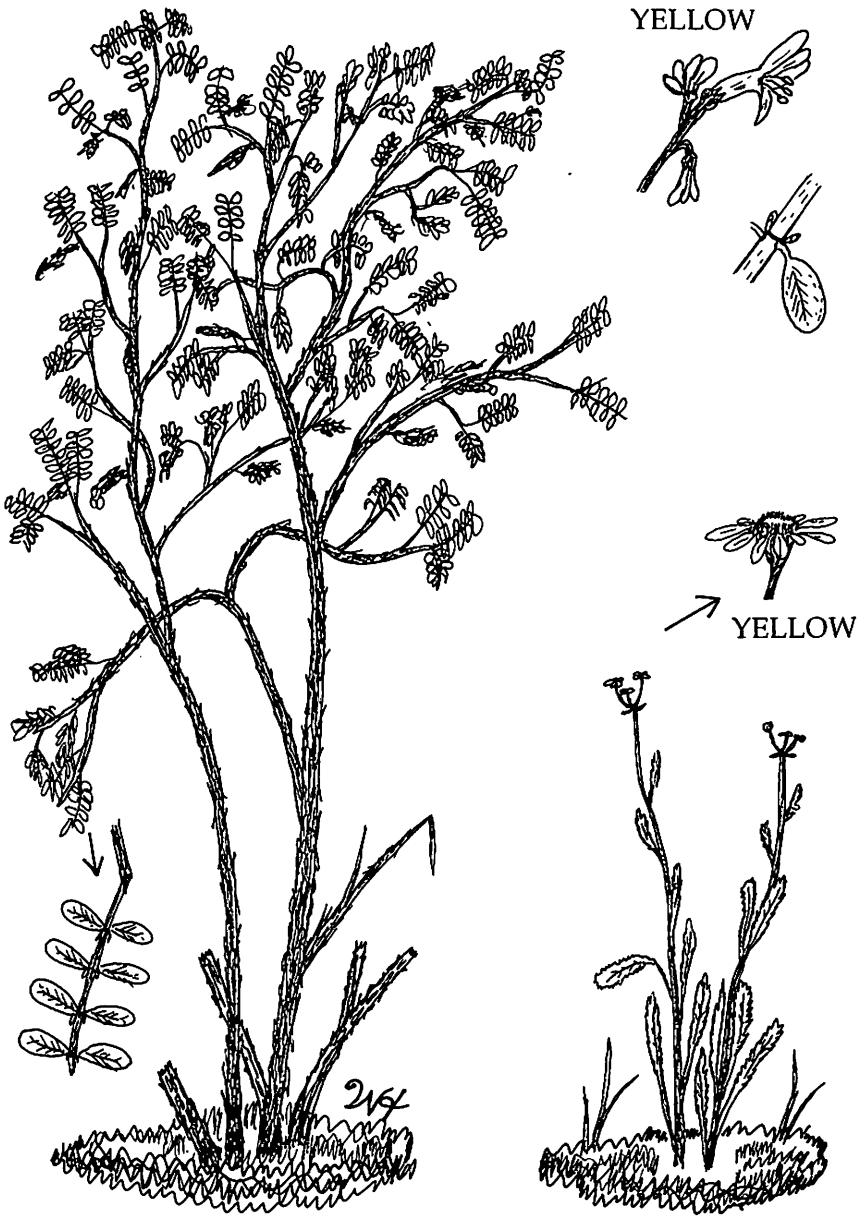
**Flowers yellowish,** packed **in clusters,** each very small. Leaves are opposite and simple. Berries in late summer are **orange to red,** numerous.

**Similar Species:** Canada honeysuckle (*L. canadensis*) has yellow flowers and fruits always red, leaf edges fringed with hair. Northern honeysuckle (*L. villosa*) has hairy twigs and leaves, blue berries.

## BALSAM RAGWORT *Senecio pauperculus*

Slender plant up to 2 feet tall, with toothed **lower leaves on long leafstalks,** becoming closely attached above. **Flowers are deep yellow** with the petals very distinct. Flower center is a darker orange, crowded and tufted. Can be found in a large variety of habitats.

**Similar Species:** Roundleaf ragwort (*S. obovatus*) has egg-shaped leaves on long stems. Golden ragwort (*S. aureus*) has heart-shaped leaves and 10 to 12 flowers per plant.




**Swamp Honeysuckle** **Balsam Ragwort**

## DUNE WILLOW

*Salix syrticola*

The willows are very common to the shores. They grow as **stiff shrubs with many stems per clump.** The leaves are always **alternate** and simple. The stem's buds are always covered with **large, single bud scales.**

**Dune willow:** Wide fine-toothed leaves, usually heart-shaped at base, hairy below. Twigs hairy. Dune willow and heartleaf willow are considered identical species by some authorities.

**Heartleaf willow** (*S. cordata*): Broad leaves, fine teeth, green below, twigs woolly, leaves not leathery, long tips.

**Sandbar willow** (*S. interior*): Narrow leaves, prominent teeth, not hairy, green beneath.

**Broadleaf willow** (*S. glaucophylloides*): Leaves semi-leathery, narrow but egg-shaped, shiny dark green above, whitened below. Twigs and leaves white-woolly.

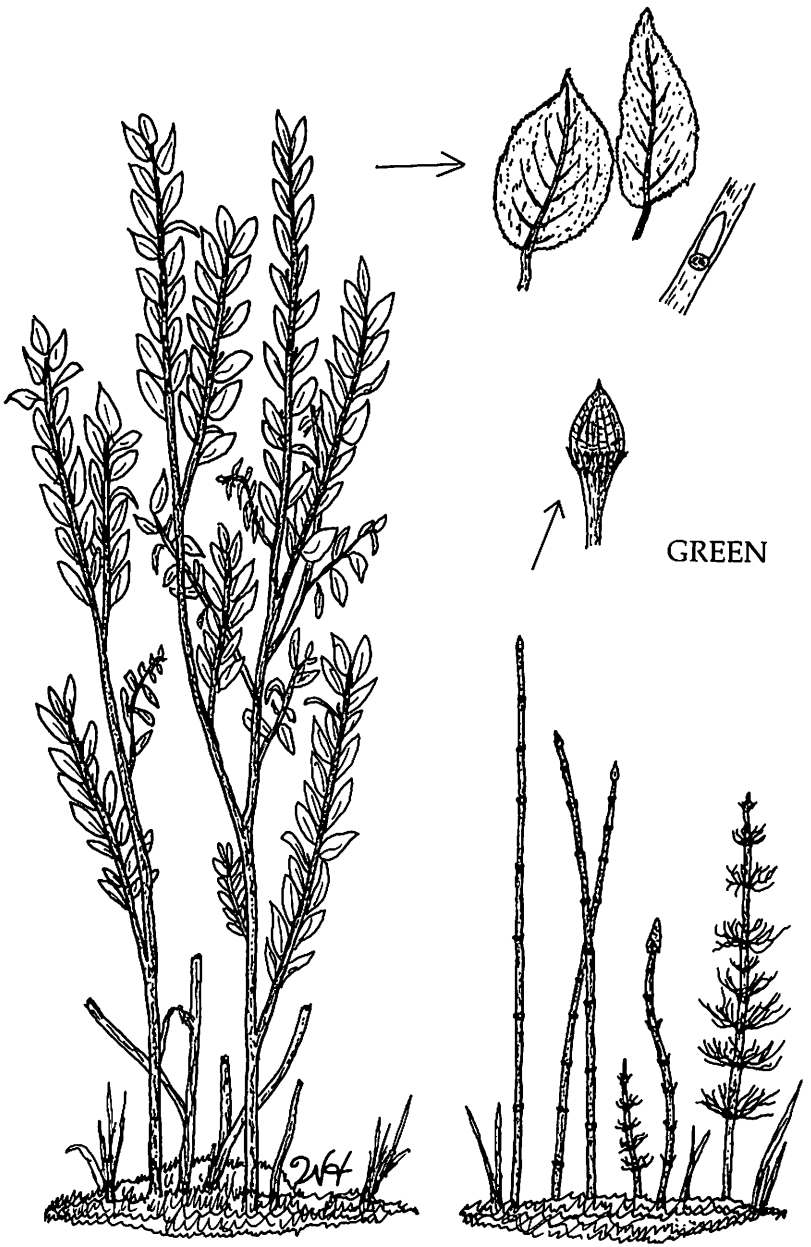
**Similar Species:** Cottonwoods have two scales per bud; St. John's-wort, honeysuckle and soapberry have opposite leaves; sand cherry has several bud scales.

## SCOURING RUSH
## HORSETAIL

*Equisetum hyemale*
*Equisetum arvense*

These two are very easy to recognize by the **segmented stems and lack of leaves.** They resemble greenish, short cane poles with small caps. Stems are hollow.

Scouring rush is usually 2 to 3 feet, without fern-like growths along stem. Horsetail has both bare stems and tufted stems, usually to 18 inches tall.




**Dune Willow** **Horsetail**

## COTTONWOOD *Populus deltoides*

## BALSAM POPLAR *Populus balsamifera*

These are both trees but on the shore can be stunted- looking bushes. They have alternate **toothed leaves and large, sticky buds** with two scales. Both are pioneer species because they can survive and grow in harsh environments of low fertility.

Cottonwood has **flattened leafstalks**, with two or three **obvious glands** on top of leafstalk. The end buds are large and yellowish, **very gummy**. Twigs are yellowish and angled.

Balsam poplar has **rounded leafstalks** and **no glands** on the leafstalk. The end buds are also gummy and **very fragrant when crushed**. Twigs are normally dark brown and round.

**Similar Species:** Willows have single bud scales.

## SAND CHERRY *Prunus pumila*

One of the most common shore bushes. Identified by the low, spreading profile, stout branches, **leathery, sharply pointed leaves** and the presence (summer and fall) of very dark berries. The leaves are usually shiny above with fine teeth, alternate on the stem.

Usually the only cherry found in the sandy environments of the shore. It can tolerate harsh conditions and traps sand around itself.

**Similar Species:** Willows have single bud scales.

Cottonwood

Sand Cherry

## WHITE BIRCH *Betula papyrifera*

A tree with distinctive **white bark with horizontal brown streaks,** often shreddy and rolling off in thin sheets. It usually grows in clumps of two or three.

Leaves are simple, **finely toothed,** broad and not finely pointed. Can be 40 to 70 feet tall but more typically is 30 to 45 feet along the shore.

**Similar Species:** Three other birches have white bark but are very rare in the Great Lakes region. Poplars, aspens and beeches have similar leaves but yellow or grayish bark.

**Memory Aid:** White birch dressed for church.

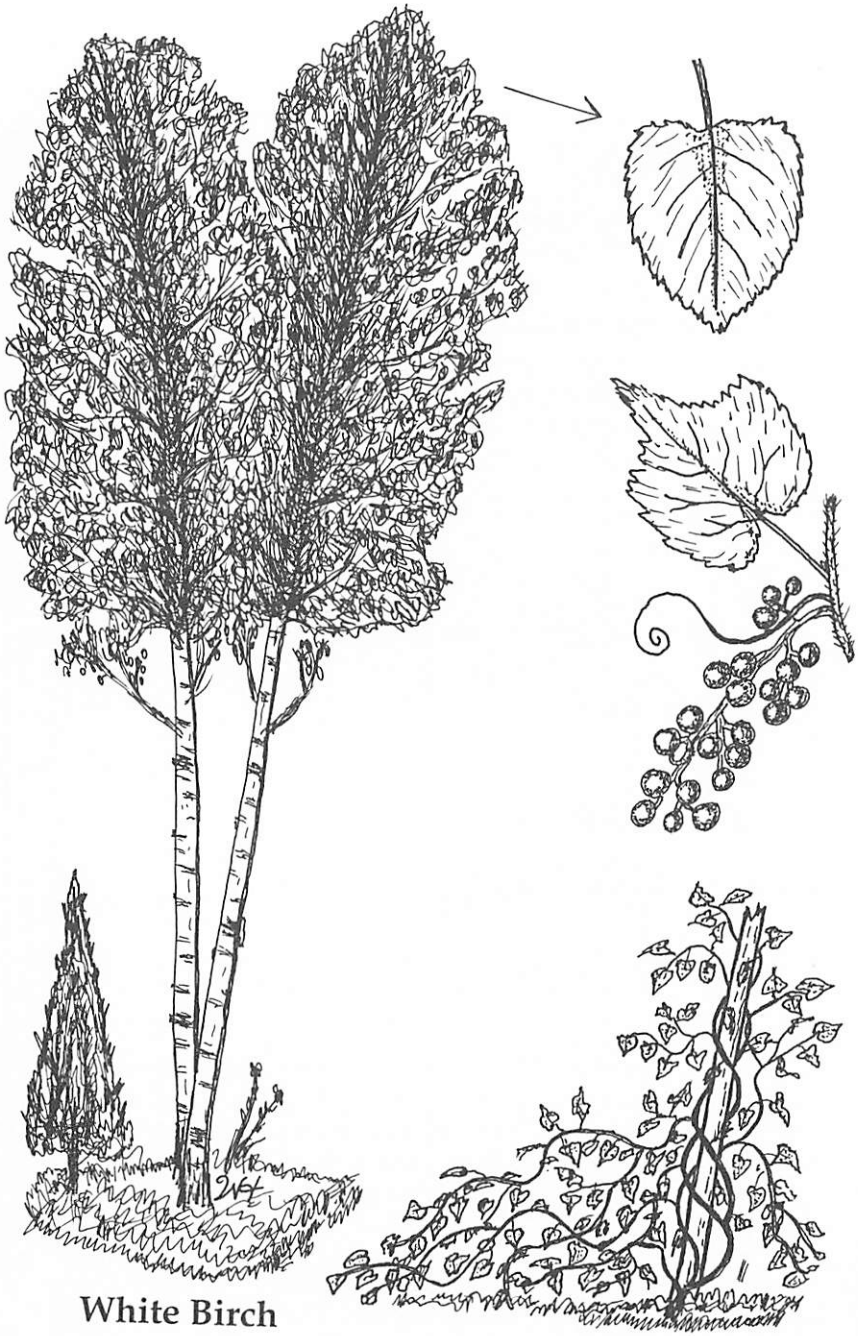
## SUMMER GRAPE *Vitis aestivalis*

## RIVERBANK GRAPE *Vitis riparia*

A **sprawling vine** with **hairy stems and long tendrils,** older bark shreddy. Grapes black to 1/2 inch, in clusters. Leaves red-woolly beneath on *V. aestivalis,* shiny green and hairless on *V. riparia.*

**Similar Species:** Dune grape (a variety of *V. riparia*) can occur in drier environments in same area. Leaves are softly hairy beneath.

**Memory Aid:** A sprawling vine makes grape wine.



White Birch

Summer Grape

## RED CEDAR *Juniperus virginiana*

## NORTHERN WHITE CEDAR *Thuja occidentalis*

Red cedar has **needles and scales** that are very small and close to the stem. The tree often has a dark orange or brownish look. Fruit is round, bluish black, with fine powder. Tree usually stands alone. This is the favorite wood for cedar closets because of its fine aroma that repels insects. Common in the southern half of the Great Lakes basin, absent in the north.

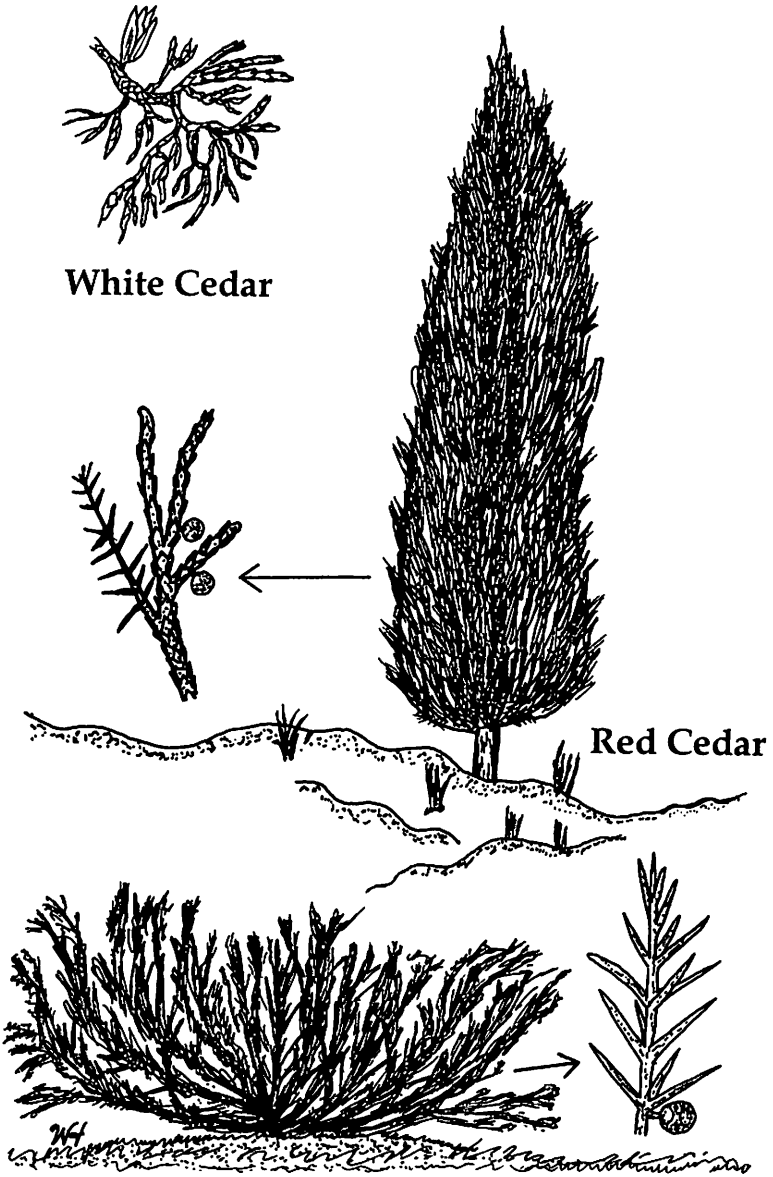
White cedar has **only scale-like leaves,** with prominent resin glands. Cones (fruits) are bell-shaped and composed of woody scales. The leaf sprays are much flattened. The overall shape is nearly the same. Very common in the north. The spruces, pines and firs have no scale leaves.

## COMMON JUNIPER *Juniperus communis*

## CREEPING JUNIPER *Juniperus horizontalis*

Common juniper is closely related to red cedar but grows as a spreading bush instead, usually 2 to 4 feet high but often 5 to 10 feet across. The **awl-shaped needles** are arranged in **whorls of three,** and **scale-like leaves are absent.** Very abundant in dry zones back from the beach all around the Great Lakes.

Creeping juniper has the same type of foliage as red cedar but **spreads across the sand as a low mat** to 4 inches high. It is very common along northern shores but uncommon in the south.


White Cedar
Red Cedar
Common Juniper

## JACK PINE *Pinus banksiana*

A scraggly-looking pine tree with dark, patchy bark, **two needles per set**, and small, compact cones. Commonly 20 to 30 feet tall along the shores. The needles are short (to 1 inch), dark green, stout. The tree is **often much branched, bent and with numerous forks**. Cones are usually bent.

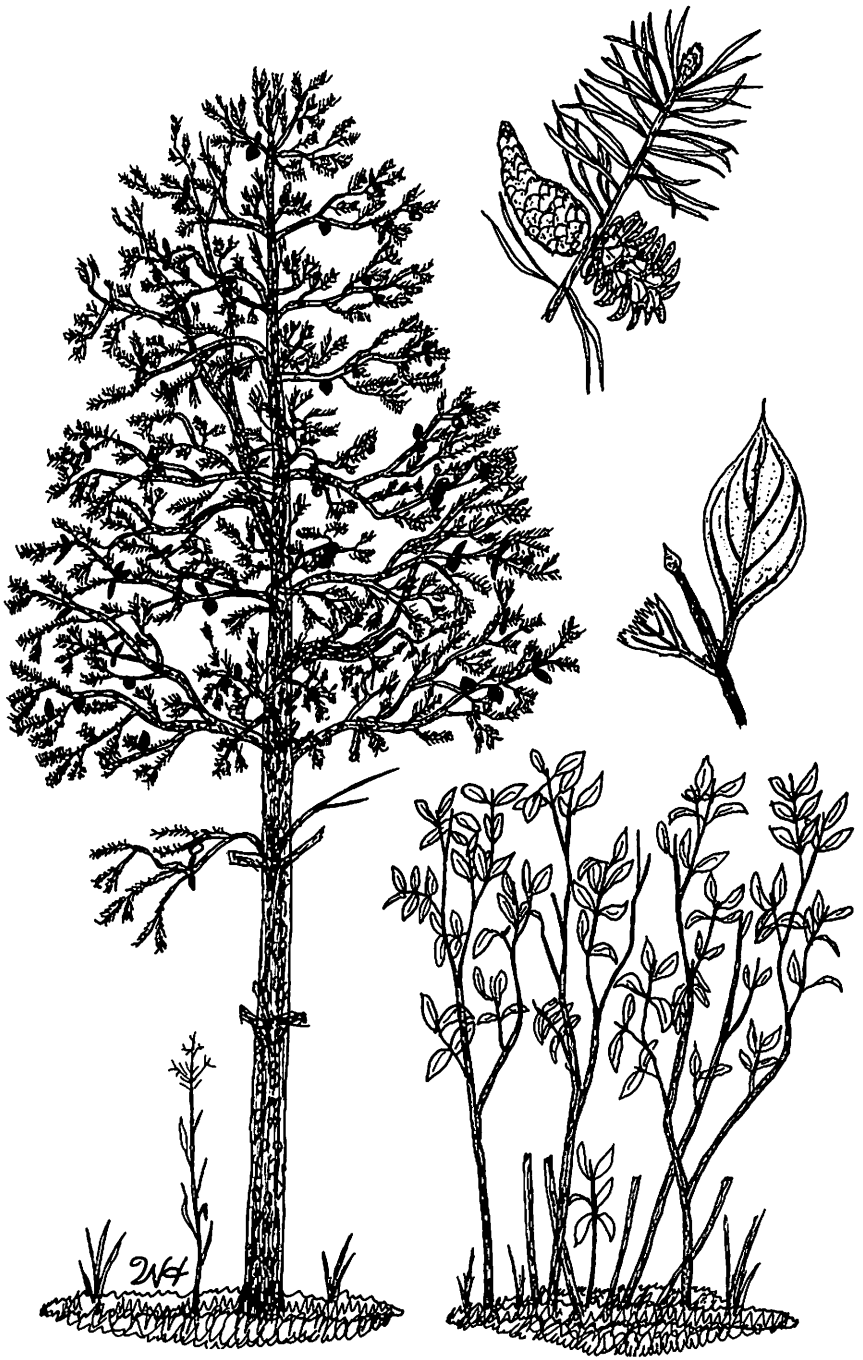
**Similar Species:** Red pine (*P. resinosus*) also has two needles per set, but needles are 3 to 5 inches long. White pine (*P. strobus*) has five needles per set. Scotch pine (*P. sylvestris*) has orange-brown bark near top of trunk.

**Memory Aid:** The scraggly pine of our shoreline.

## RED OSIER DOGWOOD *Cornus stolonifera*

A **compact shrub** with many stems per cluster. Usually grows to 5 to 6 feet but may reach 15 feet. The **stems are a dull red**, with many lighter spots. Leaves are opposite and whitish below, with the **veins following the margins**. Flowers are small, whitish and clustered. **Berries are white**. This dogwood does best in wet areas.

**Similar Species:** Willows and sand cherry have alternate leaves. Honeysuckle has brown, shredding bark.



Jack Pine

Red Osier Dogwood

## WHITE PINE *Pinus strobus*

## RED PINE *Pinus resinosa*

These two pine trees are easily distinguished. **White pine has five needles per cluster**, the only pine with that number, cones 3 to 6 inches long, and dark, smooth bark.

Red pine has **two needles per cluster**, and pinkish, scaly bark. Red pine cones are short (2 inches), not bent.

These two pines are the stately sisters of the north woods. Each has fine-grained, clear lumber with hundreds of uses. They were the main trees sought during the Great Lakes lumbering era. Stumps 3 to 4 feet across remain today in the north.

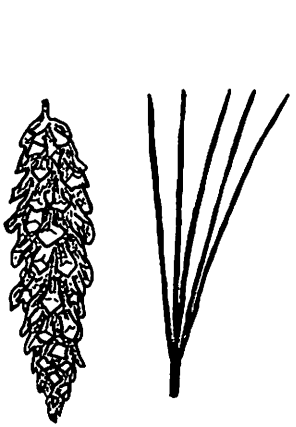
**Similar Species:** The firs have flat needles; the spruces, four-sided needles; and cedars, scale-like leaves.

**Memory Aid:** White pine has five needles fine.

## BEARBERRY *Arctostaphylos uva-ursi*

A low (to 6 inches), sprawling, compact, shrubby plant with thickened, leathery leaves. The **tiny flowers are pink or white, and bell-shaped**. The stems and twigs have reddish, **shredding bark** in some varieties, with sticky hairs in early summer. Berry is red to dark red.

**Similar Species:** Sand cherry has pointed leaves.
St. John's-wort has yellow flowers with opposite leaves.



White Pine

Red Pine

PINK

Bearberry

## WHITE SPRUCE *Picea glauca*

## BLACK SPRUCE *Picea mariana*

These two trees look very similar. They have thick, darkish foliage and **branches nearly to the ground**. Both have **four-sided needles that surround the twigs.**

White spruce has hairless twigs, blue-green needles and **cones about 2 inches long.**

Black spruce has **hairy twigs,** shorter and darker needles and **smaller cones.** Grows in wetter environments.

**Similar Species:** Spruces are the only conifers with short, four-sided needles. Firs have flat needles. Pines have needles in clusters.

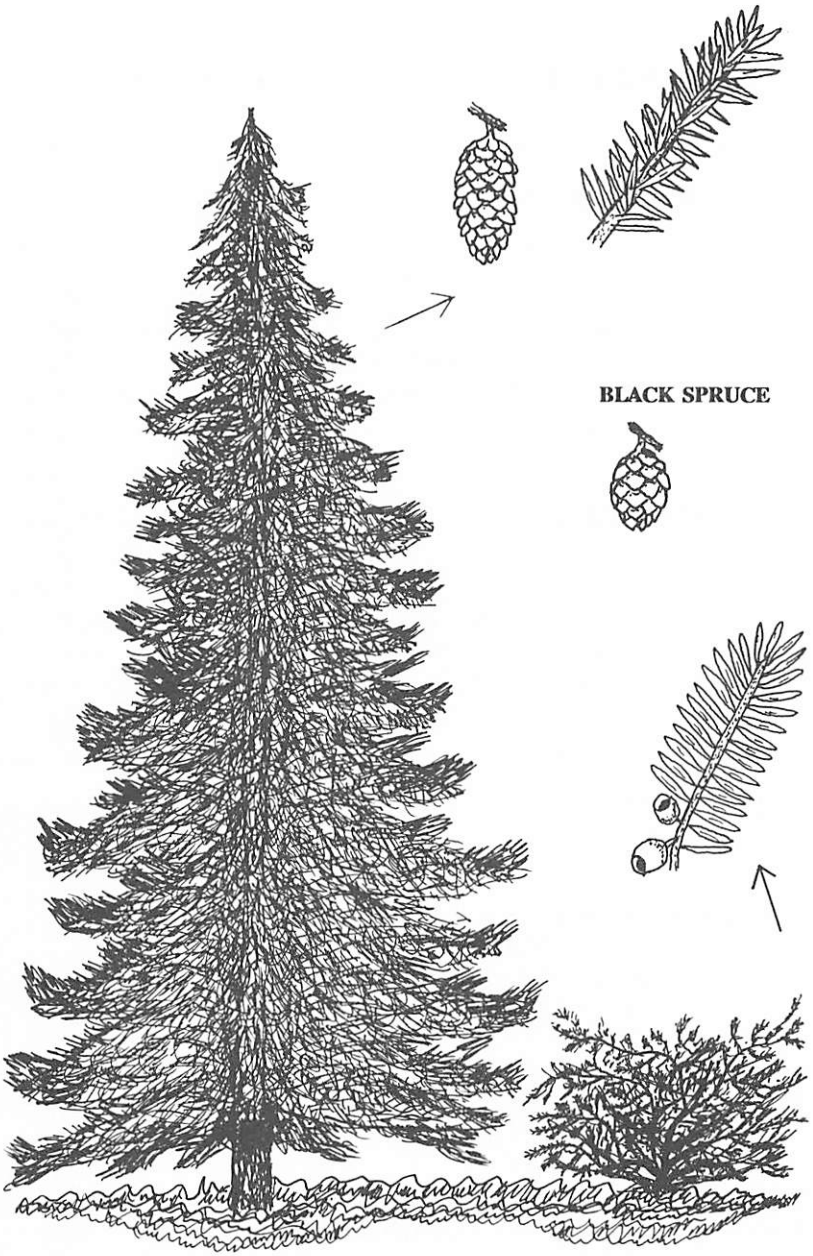
**Memory Aid:** Prickly as a goose, that's the spruce.

## AMERICAN YEW *Taxus canadensis*

A low, spreading **woody shrub with flat needles** arranged on opposite sides of the twigs. The needles are shiny and twigs are smooth. Seeds are contained in small, red, berry-like structures **with open ends.**

**Similar Species:** Balsam fir has flat needles but is tree shaped. Hemlock is also a tree, with needles on short stalks.

**Memory Aid:** Yew can see a long way.




White Spruce American Yew

## SOME COMMON TREES OF THE SHORE

### **BLACK OAK** (and others) *Quercus velutina*

The most common oak along the backshore; can survive in dry, infertile soils. Tips of leaves have **hair-like, bristly points**. End buds are hairy. Red oak (*Q. rubra*) has hairless end buds. White oak (*Q. alba*) has rounded leaf lobes. All oak leaves are alternate on stem.

### **RED MAPLE** *Acer rubrum*

Most maples have **simple leaves that are opposite**. Bark light gray on small trees, darker and furrowed on large trunks. Red maple has **whitish leaf undersides**; sugar maple (*A. saccharum*), pale green.

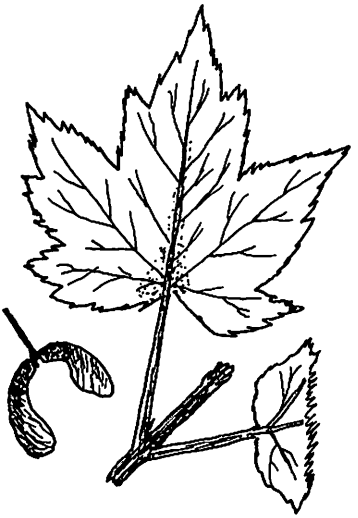
### **WHITE ASH** *Fraxinus americana*

**Opposite, compound leaves**. Leaf edges may be toothed but are usually smooth. Leaf size 8 to 12 inches overall, pale and whitened beneath. Black ash (*F. nigra*) has larger leaves, always toothed; usually 7 to 11 leaflets.

### **HOPTREE** (Wafer ash) *Ptelea trifoliata*

Upright shrub or small tree (to 20 feet). Trunk light colored. Leaves have three leaflets. Flowers **greenish**, May to July; fruits flat, winged. If twigs and leaves are velvety, variety is *P. mollis*. Absent in the north.

BLACK OAK



RED MAPLE

WHITE ASH

HOPTREE

# INDEX TO COMMON NAMES

# INDEX TO COMMON NAMES (Cont.)

# INDEX TO SCIENTIFIC NAMES

# INDEX TO SCIENTIFIC NAMES (Cont.)

# INDEX TO PLANTS BY FLOWER COLOR

## GREEN OR BROWN



## CREAM

## YELLOW



## WHITE

## PINK



## LAVENDER



## RED



## BLUE

## WOODY SHRUBS WITHOUT NEEDLES



## WOODY SHRUBS WITH NEEDLES



## TREES WITH NEEDLES



## TREES WITH LEAVES

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## My List of Shore Plants Found

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## About the Author:

Walter Hoagman grew up on the shores of Lake Erie, where his early interest in all things wet, or nearly so, developed into a career of research and teaching about the Great Lakes and oceans. After obtaining a teaching degree in biology from Eastern Michigan University, he completed a master's degree in natural resources at the University of Michigan, then a doctorate at the University of Wisconsin Center for Great Lake Studies. He has written numerous technical and popular articles throughout his career at Indiana State University, the University of Virginia and Michigan State University.

In his current position as district Michigan Sea Grant Extension agent for northern Lake Huron, Hoagman continues to educate youths and adults on many aspects of Great Lakes resources. He resides in Tawas City with his wife, Athelia Marie, and enjoys boating, woodworking, golf, fishing, and raising a dog or two.

## ABOUT THIS BOOK

Anyone who has walked a Great Lakes shore has noticed the beautiful flowers, abundant grasses, stunted trees and patterns of sand mounds decreasing to the water's edge of cobble or packed sand. Constant change and harsh conditions have made this zone distinct biologically and geologically from inland areas. This field guide attempts to make understanding the coastal zone easy for the amateur by:

- Showing most of the common plants in detail.
- Giving characteristics of similar species.
- Avoiding unnecessary technical language.
- Covering flowers, grasses, shrubs and trees.
- Including sections on shore vegetation, beach formation, lake levels and basic shoreland law.
- Providing humorous memory aids to help with recall.
- Providing for self-growth and teaching.
- Condensing many heavy field guides into one pocket-sized book specific to the coastal zone.

Teachers, shoreland owners, students, tourists, nature lovers, camp groups and general beach walkers will find this book indispensable to understanding the shore and learning the most common plant species. It has been purposely written for all ages and requires no technical botanical training.

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