

Vocabulary

- Taxonomy is the study of the classification of living things.
- Morphology is the study of the shape, general appearance, or form of an organism.
- Silviculture is the care and cultivation of forest trees.
- Ecology is the study of the relationships between living and non-living things and their environment.

Dendrology – the science of woody species. Greek: dendron – a tree and logos – science.

Woody plants – perennial herb with a secondary weight gain.

What is a Tree?

A tree is a woody plant with several distinguishing characteristics:

- Often reaches 15 feet (4.572 m) or more in height at maturity.
- Has a single trunk or dominant multiple trunks.
- Has no normal branches on the lower trunk.
- Has at least a partially defined crown.
- Usually larger than other plants and tend to be long-lived.

The growth form or shape, rather than size, is the feature that distinguishes a tree from other plants such as shrubs (Harris 1992). A shrub is a woody plant with multiple stems that is capable of growing to a height of 15 feet.

Distribution of woody species:

trees (with a strong trunk).

bushes (no trunk).

half-bushes (woody plants only in the lower part).

climbing plants (woody plants that can wrap or rely on trees or other substrate).

Broadleaves (*Angiospermae*, usually with a prominent leaf lamina).

Conifers (*Gymnospermae*, usually needle-like leaves – needles).

Evergreen

Deciduous

Indigenous (local, the nature of the growth in our country).

Non-native (exotic, do not grow with us from nature).

Distribution of trees according to height:

Trees I row: over 25 m

Trees II row: from 12 to 25 m

Trees III row: from 5 to 12 m.

Distribution shrub height:

High bushes: over 2.5 m

Medium height from 1 to 2.5 m

Low bushes: up to 1 m

Features trees

They are divided into morphological, ecological, biological, etc.

Morphological characteristics:

Root (shape, depth).

Tree (habitus) – height.

Trunk (diameter, growth direction).

Crown (shape, size, mode of branching).

Bark (color, thickness, structure).

Leaf (shape, size, color, position, hairiness, etc.).

Flower and inflorescence (shape, color, size, etc.).

Fruit (shape, color, size, etc.).

Shoots (color, size, shape and position of the bud).



Ecological features:

Relationship to environmental factors:

The climate: light, temperature, humidity, wind, rainfall.

Edaphic: soil, parent substrate.

Orographic: relief, exposure, slope, altitude.

Biogeographical distribution – areal.

Leaf surface

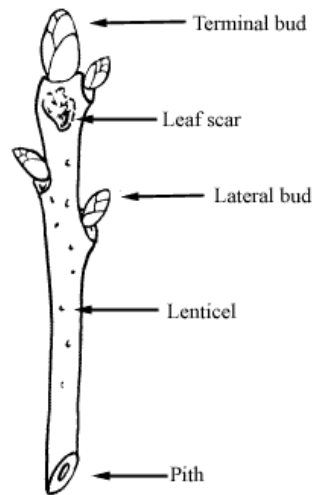
The surface and texture of the leaf are other means of identification. The hair, resin glands, waxes, blooms, and scales provide valuable clues in naming a tree. The texture of the leaf may feel like leather or like paper.

Twigs and Stem

Twigs are useful in identifying trees except for a short period during the spring when the buds are opening and shoots are elongating on these small branches. Several features of twigs, including buds, leaf scars, lenticels, pith, spurs, thorns, spines, and prickles, can help describe

them (table 5 and figure 21). Other factors to consider are color, taste, and odor. The color of the bark can be an most important feature on young stems.

Characteristic	Description
Bud	<ul style="list-style-type: none"> • Are one location of growth tissue in a tree. · • Are usually visible on the twig. · • May be either lateral, on the side of the twig, or terminal, at the tip of the twig. · • Are scaly or naked, smooth or fuzzy.
Leaf scars	<ul style="list-style-type: none"> • Are where a leaf falls from the twig. · • Vary in size and shape. · • Have one or more minute dots or patches that show where the ruptured strands of vascular tissue passed from twig to leaf.
Lenticels	<ul style="list-style-type: none"> • Are small, normally lens-shaped patches on the stem that facilitate gas exchange. · • May be wart-like.
Pith	<ul style="list-style-type: none"> • Is the central portion of the twig. · • Is usually lighter or darker than the wood that surrounds it. · • Varies in color. · • Is star-shaped or pentagonal in oaks, triangular in alders, terete or cylindrical-like in ash and elms, and chambered in walnuts. · • Varies in composition; in most cases is solid, spongy, or hollow.
Spurs	<ul style="list-style-type: none"> • Are dwarfed twigs with some internodal development. · • May grow for several years. · • Produce the fruit on many apple varieties
Thorns, spines, and prickles	<ul style="list-style-type: none"> • Pointed structures that project from the sides of a twig; are important features in some species. · • Thorns are modified twigs. · • Spines are modified stipules. · • Prickles develop from surface tissue and are easily removed.



Characteristic parts of a twig that help in the identification process.

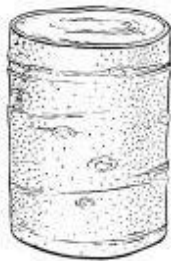
Bark

Bark is one of the most important features for tree identification because of its year-round accessibility. It is especially useful when the tree's leaves and twigs are inaccessible or unavailable during the fall and winter. The shape of the bark is characteristic of some species, for example, the small, rectangular plates on flowering dogwood. Bark on young trees differs from that on more mature trees. Experience is the best way to learn bark characteristics.

Bark characteristics that can be used for identifying mature trees. Typical bark textures are illustrated in bellow:

Bark characteristics that help with identification

Characteristic	Description
shape or general appearance	The shape of the bark is often characteristic of some species, for example, the small-rectangular plates on the flowering dogwood.
Texture	The feel of the bark , such as the smoothness of cherry trees or the layering or plating of white oaks
Thickness	The thickness of the bark can vary within a species as well as between species.
Color	Bark color varies with age, location, site, and light conditions.



Smooth



Furrowed



Scaly



Warty



Shaggy



Smooth
Beech
Fagus sylvatica



Horizontal lenticles
Cherry
Prunus avium



Diamond lenticles
Aspen
Populus tremula



Peeling strips
Silver birch
Betula pendula



Vertical cracks
Hornbeam
Carpinus betulus



Plates
Scots pine
Pinus sylvestris



Intersecting ridges
Ash
Fraxinus



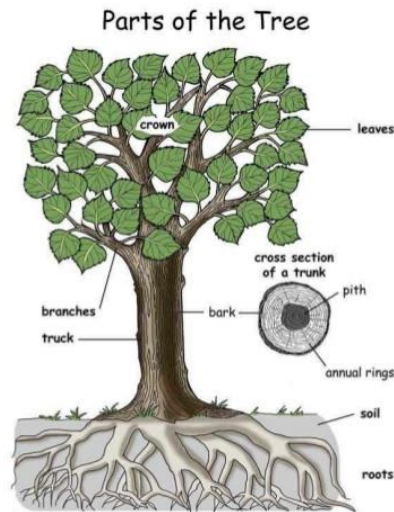
Ridges broken
horizontally
Oak *Quercus*



Curved Ridges
Sycamore
Acer

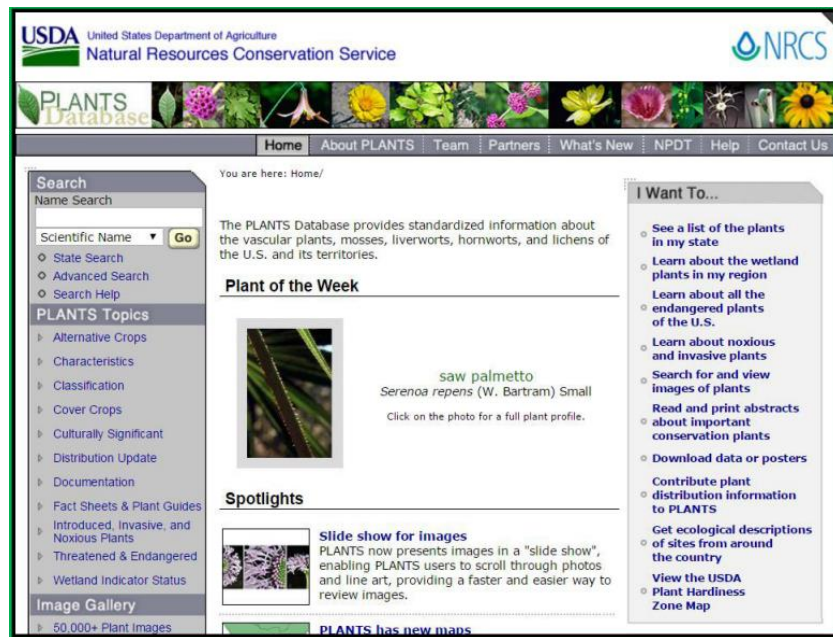


Fibrous
Sequoia
Sequoiadendron



THE UNITED STATES DEPARTMENT OF AGRICULTURE

(<https://plants.usda.gov/java/>)



THE ROYAL BOTANIC GARDENS KEW

(<http://www.ipni.org/>)

The International Plant Names Index

● Search Plant Names ● Search Authors ● Search Publications

IPNI Overview

- About the Index
- About the data
- Information for authors
- IK chronology
- Standardization
- Data curation
- FAQs
- Mission Statement

Search the Data

- Plant Names
- Authors
- Publications
- By additional terms
- Epithets edited

About IPNI

The International Plant Names Index (IPNI) is a database of the names and associated basic bibliographical details of seed plants, ferns and lycophytes. Its goal is to eliminate the need for repeated reference to primary sources for basic bibliographic information about plant names. The data are freely available and are gradually being standardized and checked. IPNI is a dynamic resource, depending on direct contributions by all members of the botanical community.

IPNI is the product of a collaboration between [The Royal Botanic Gardens, Kew](#), [The Harvard University Herbaria](#), and the [Australian National Herbarium](#).

NEWS

- [Melbourne Code](#) available online.
- From 1 January 2012 electronic material published online in Portable Document Format (PDF) with

MISSOURI BOTANICAL GARDEN
(<http://www.tropicos.org/>)

Tropicos®

Home Names Specimens References Projects Images More Tools

Tropicos® was originally created for internal research but has since been made available to the world's scientific community. All of the nomenclatural, bibliographic, and specimen data accumulated in MBG's electronic databases during the past 30 years are publicly available here. This system has nearly 1.3 million scientific names and over 4.4 million specimen records.

Quick Name Search Search Search Exact

Common Name

News Links Stats Heat Map Country Map

This map shows the country distribution of Tropicos specimen records that have country specified. Click the image to see a larger version and to view counts per country.

Click an image for detailed information:

INFORMATION ABOUT THE HERBARIA OF THE WORLD
(<http://sciweb.nybg.org/Science2/IndexHerbariorum.asp.html>)

THE NEW YORK BOTANICAL GARDEN
INDEX HERBARIUM
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SEARCH BY HERBARIUM CODE

Use the field below to search the database using the herbarium code as the search criteria. Enter the herbarium code in the field and press the Search button to execute the query.

Herbarium Code

Search Clear

SEARCH BY NAME OR LOCATION
SEARCH FOR A PERSON
MAP ALL HERBARIA
INDEX HERBARIUM ANNUAL REPORT

Useful for locating botanical specialists in plant families. Sending a specimen and images to a specialist is a good way to identify an unknown plant.

THIS WEBSITE HAS THE BEST PLANT IDENTIFICATION TOOLS FOR THE NORTHEASTERN UNITED STATES
(<https://gobotany.newenglandwild.org/>)

Go Botany *Discover thousands of New England plants*

NEW ENGLAND WILD FLOWER SOCIETY

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Simple ID Key

Want to know what that plant is? With our Simple Key, you can identify over 1,200 common native and naturalized New England plants! Observe closely, collect a sample or take a photo, answer some questions, and narrow down to the correct identification.

GET STARTED

PlantShare
Connect with other plant fans!

Advanced ID Tools
For experienced botanists!

Teaching Tools
New: a useful teaching resource!

[The WFO Plant List | World Flora Online](#)



Explore the data
Find out about
Check a plant name

WFO Plant List
Snapshots of the taxonomy

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- BRYOPHYTES**
Mosses and liverworts
- PTERIDOPHYTES**
Ferns and fern allies
- GYMNOSPERMS**
Conifers, cycads and allies
- ANGIOSPERMS**
Flowering plants

AS CLASSIFIED IN WFO SNAPSHOT
DECEMBER 2022
LATEST CLASSIFICATION FOR THIS TAXON
© PREVIOUS CLASSIFICATION

The *WFO Plant List* is the most comprehensive and authoritative list of the world's plants, maintained by the global community of taxonomic experts as a free and open-access resource. It is a citable static list of all known plant species generated from the dynamic Taxonomic Backbone of the *World Flora Online* (WFO). WFO aims to be comprehensive for species of vascular plants (flowering plants, conifers, ferns and their allies) and bryophytes (mosses and liverworts).

The information resource for Euro-Mediterranean plant diversity



EURO+MED PlantBase
The information resource for Euro-Mediterranean plant diversity

February 14, 2023

WELCOME to the Euro+Med PlantBase

The Euro+Med PlantBase provides an on-line database and information system for the vascular plants of Europe and the Mediterranean region, against an up-to-date and critically evaluated consensus taxonomic core of the species concerned. After several years of planning, the project is now firmly underway. The first stage of the project (referred to as Phase One) has been financed for three years by the European Union under Framework V.

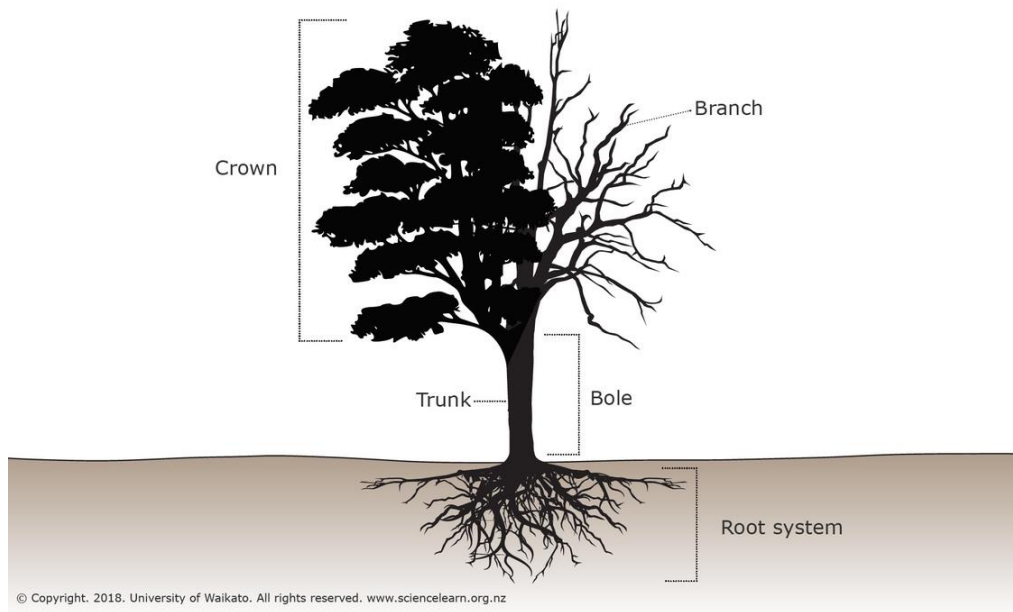
The Euro+Med PlantBase is part of the Pan-European Species directories Infrastructure (PESI), funded by the European Union under the Framework 7 Capacities Work Programme.

PESI
EU NOMEN

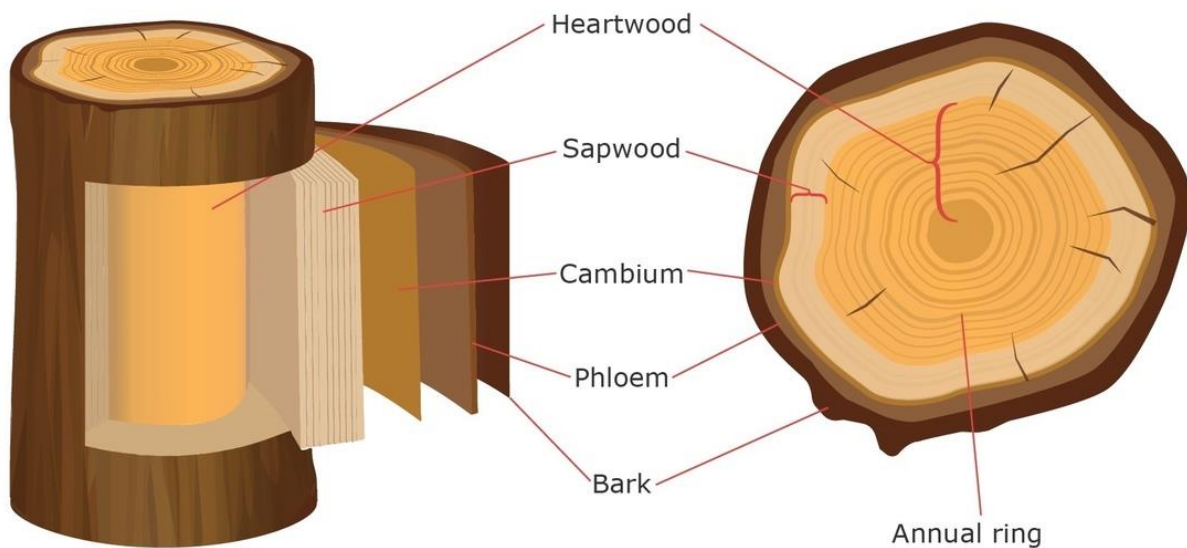
The Euro+Med PlantBase is being sponsored by:

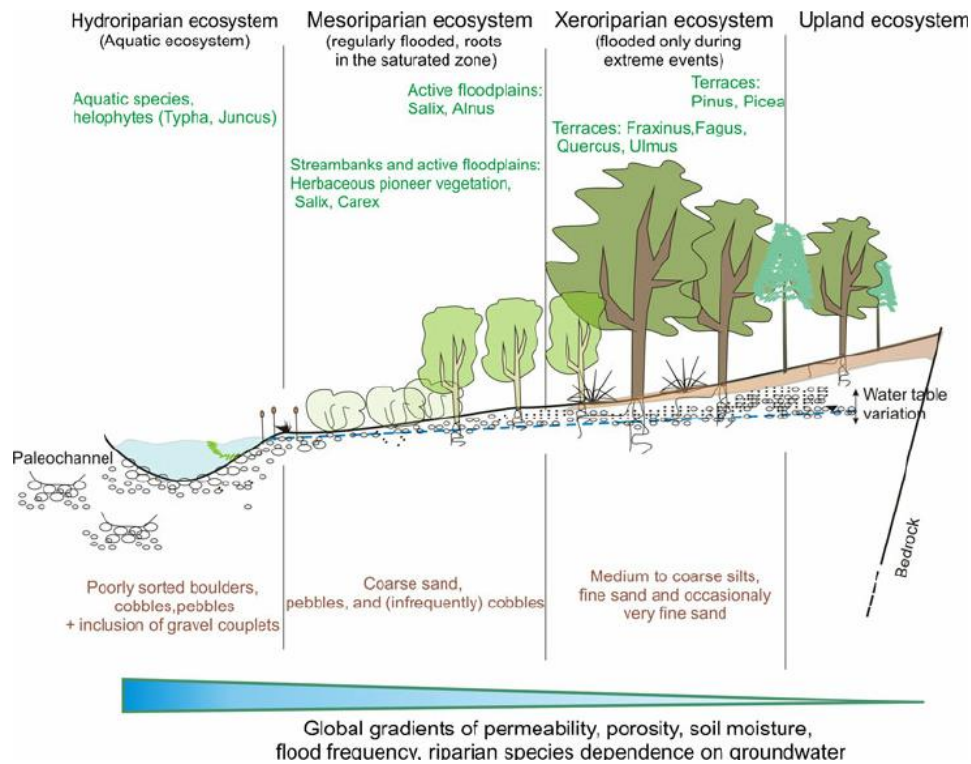
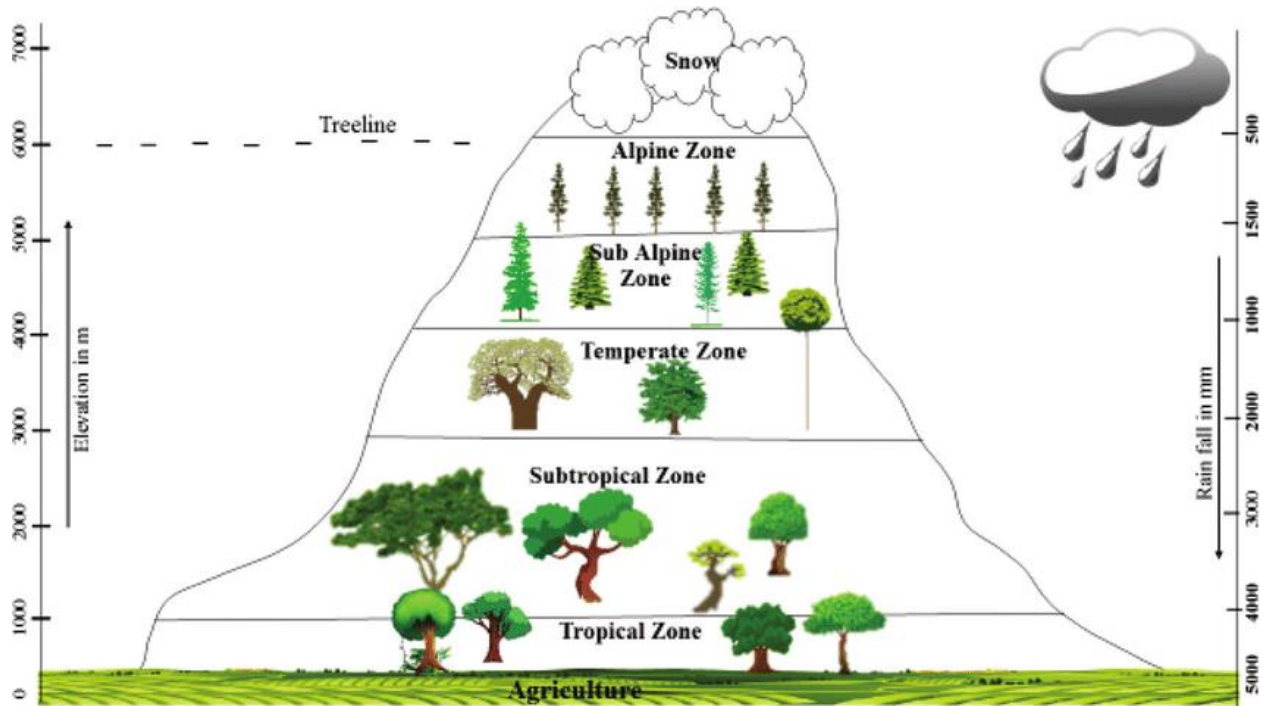
optima

Parts of a tree



Structure of a woody stem





What Does That Mean?			
acaulis	stemless	micrantha	small flowered
alba	white	microphylla	with small leaves
angustifolia	narrow-leaved	millefolia	with many (thousands of) leaves
annua	annual	montana	from mountains
argentea	silvery	multiflora	many flowers
arvensis	of the field	nana	small
aurantiaca	orange	officinalis	with herbal uses
aurea	golden, yellow	pallida	cream
australis	from the south (not necessarily Australia)	palustris	from marshes
autumnalis	of autumn	parviflora	small flowered
azurea	blue	parvifolia	with small leaves
caerulea	blue	pauciflora	few-flowered
caespitosa	dense	paucifolia	with few leaves
campanulata	campanulate, like a bell	pendula	hanging
campestris	of the field	perennis	perennial
canadensis	from Canada	pinnata	with pinnate leaves
capensis	from the Cape, South Africa	polyphylla	with many leaves, leafy
chinensis	from China	praecox	early, of spring
chrysantha	yellow	prostrata	prostrate
coccinea	red	pumila	small
compacta	compact	punica	red
decidua	deciduous	purpurea	deep pink
densiflora	dense-flowered	pygmaea	small
digitata	(leaves) like a hand, with 5 lobes	quercifolia	oak-leaved
esculenta	edible	rosea	rose pink
farinosa	floury, powdery	rotundifolia	round-leaved
flava	yellow	rubra	red
flora plena	with double flowers	rupestris	of hills
foetida	with an unpleasant smell	sanguinea	blood-red
glabra	smooth	sativa	cultivated
grandiflora	large-flowered	saxatilis	of rocks
hirsuta	hairy	semperviva	perennial
humilis	short	sibirica	from Siberia
japonica	from Japan	spicata	spiked
lanceolata	lance-shaped (leaves)	spinosa	spiny
latifolia	wide-leaved	stellata	starry
longiflora	with long flowers	sulphurea	yellow
longifolia	with long leaves	syvestris	of woods
lutea	yellow	tenuifolia	with thin, narrow leaves
macrantha	large flowered	umbellata	flowers in an umbel
macrophylla	with large leaves	vernalis	of spring
macrorrhiza	with large roots	villosa	hairy
maculata	spotted	viridis	green
majus	bigger	vulgaris	common
maritima	near the sea		