Ichthyotoxic (Poisonous to Fish) by Gayla Aspenleiter

Most of us are aware of plants that are poisonous to children, cats, and dogs but what about plants poisonous to our fish? After a week researching "plants toxic to fish" on the World Wide Web, I discovered that the list of toxic plants is actually very long and most reference toxic to cats, dogs, and humans, not specifically fish. Most of the sources agreed on the plants that "they believe" are poisonous. However, no study has actually been done to see which plants "really are" poisonous to fish. Even though a plant is on the list, this is not confirmation that it kills fish. And, there may be other plants that ARE poisonous that are NOT on the list. Please be cautious of the list when you are planting around your pond.

For example, we have periwinkle growing on the island of our pond which is listed as poisonous to fish. The periwinkle has been on the island for many years and often times, reaches the streams and still no problems with fish dying or even getting sick because of the periwinkle. John and Linda Seifert have chokecherries growing near their pond and they have not lost any fish because of the chokecherries falling into their pond. Either our fish are very smart and know NOT to eat the poisonous plants (leaves, stems, pits, etc.) or the amount they consume is not enough to hurt them.

In an article by Linda Montgomery titled *Toxic Plants for Pond Fish* she mentions that "someone told her about a pond owner in her area that was cutting back Myrtle Spurge (pictured to the right) by her pond and some dropped into the pond and when her fish swam by they died immediately". So I researched Myrtle Spurge and discovered it is an evergreen perennial native to Southeastern Europe and Asia Minor. It is cultivated as an ornamental plant in drought tolerant gardens in the United States. The plant's milky sap can cause significant skin and eye irritation in humans so this could possibly be true for fish too. It is considered a noxious weed or invasive species in some U.S. states such as Colorado, Oregon and Utah.[6] Since there is proof that this plant killed fish, I would definitely not plant it anywhere near my pond!

Insoluble calcium oxalate-containing plants include several types of common plants, including the *Araceae* family of plants, Dieffenbachis, Calla Lily, Arrowhead, Dumbcane, Peace Lily, Philodendron, Pothos, Umbrella Plant, Elephant's Ear, Chinese Evergreen, and Schefflera. Chewing or biting into these plant releases the crystals which penetrate tissue resulting in injury. When dogs or cats ingest insoluble calcium oxalate-containing plants, clinical signs may be seen immediately. Moderate to severe swelling of the lips, tongue, oral cavity, and upper airway may also be seen, making it difficult to breathe or swallow. Insoluble calcium oxalate-containing plants have a different mechanism of toxicity than soluble calcium oxalate-containing plants (e.g., starfruit, rhubarb, shamrock).[11]

The list I've compiled contains only plants and bushes (I'll cover trees in a separate article) that are common to the Pacific Northwest that MAY BE poisonous to fish. Two great websites for poisonous plants are:

http://plants.ces.ncsu.edu/plants/

http://www.aspca.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants.

Plant Name	Toxic Parts	Toxin(s)
Allamanda *(Allamanda Cathartica)*[2,5,15] 	All Parts	Unknown toxin
Aloe Vera[2,5] 	Leaves	Contains aloin and anthraquinone-glycoside[16]
Amaryllis[2,5, 17] 	Bulbs	Bulbs contain alkaloid – lycorine[17]
Anemone[2,5] (Ranunculaceae family)[18] 	All parts	Contains protoanemonin[18]
Anthurium[2,5] (Arum family) 	All parts	Contains calcium oxalate crystals[19]
Atropa Belladonna[5] aka Deadly Nighshade, Climbing Nightshade (*Solanum Nigrum*)[5] 	All parts	Contains tropane alkaloids[20]
Autumn Crocus (*Colchicum autumnale*)[5, 21] 	blubs	Contains colchicine[21]
Azalea (*Rhododendron* spp.) [1,2,4,5,16] 	Leaves[1], all parts[2,5]	Contains Andromedotoxin[16]

Plant Name	Toxic Parts	Toxin(s)
Banberry[2,5] aka bugbane, belongs to family Ranunculaceae 	Berries, roots	Fruits and foliage contain ranunculine and protoanemonin and berries most toxic part of the plant[25]
Beach Pea (Lathyrus Maritimus)[5] 	Stems	Contains β-oxalyl-*L*-α,β-diaminopropionic acid[26]
Bird of Paradise Bush (Caesalpinia Gilliesii)[2,5] 	Seeds/seed pods[27]	Contains tannins[28]
Bleeding Heart(*Dicentra)* aka Dutchman's Breeches) [1,4,5] 	Leaves, stems, roots	Contains Alkaloids[21]
Boxwood (Buxus Sempervirens)[2,5] 	Leaves & stems[2] All parts[5]	Steroidal alkaloids[22]
Brugmansia (*Datura* spp.) [1,2,5,23] Also known as Angel's trumpets 	Flowers, berries, seeds	Contains alkaloids: scopolamine, atropine, hyoscyamine, and nicotine[23]
Buttercup *(Ranunculus, Crowfoot)* [2,4,5] 	All parts	Ranunculus spp. contain the glycoside, ranunculin from which the poisonous principle, protoanemonin is released when the plant is crushed by virtue of enzymatic action which is activated by crushing.[24]
Caladium *(Caladium xaiitliosoma)* [1, 2,4,5] **See Elephant Ears** 	All parts	Contains insoluble calcium oxalates[30]

Plant Name	Toxic Parts	Toxin(s)
Calla Lily (*Zantedeschia*)[2,5] 	All parts	Insoluble calcium oxalate[29]
Cape Jasmine (*ardenia jasminoides*) aka **Gardenia** 	All parts	Contains Genioposide, Gardenoside[59]
Carnations (*Dianthus caryophyllus*)[68] aka Pinks, Wild Carnation, Sweet William 	Leaves	Triterpenoid saponins[68]
Castor bean (*Ricinus communis)* [1,3,4,5] 	Seeds	Contains ricin toxin[32]
Chokecherry (Prunus virginana) [5] 	All parts	Contains hydrocyanic acid[33]
Clover *(Trifolium species)*[4] 		Unknown agent[34]
Columbine (*Aguilegia*)[5] 	Seeds and roots[35]	Member of the poisonous Ranunculus family[36]
Common Privet (*Ligustrum*)[5] 	Black/blue wax coated berries and leaves	Contains Terpenoid glycosides[37]
Coral Berry (*Symphoricarpos*)[5] 	Berries – mildly toxic	contains saponin[38]

Plant Name	Toxic Parts	Toxin(s)
Croton[2,5] 	All parts[39]	Diterpene esters[39]
Cyclamen *(Cyclamen sp.)*[3] 	Bulbs	Contains Terpenoid saponins[40]
Daffodil (*Narcissus*)[2,5] 	Bulbs	Lycorine and other alkaloids[41]
Datura Stramonium (Devil's trumpet, Devil's weed, Devil's cucumber, Hell's Bells, locoweed, stinkweed, pricklyburr, thornapple, Jamestown weed, Jimson weed, tolguacha and Moonflower. It is a member of the deadly Nightshade family.) 	All parts	Tropane alkaloids: atropine, hyoscyamine, and scopolamine[16]
Daphne (*Daphne* spp.) [1,5] 	Bark, leaves, fruit[42]	Contains diterpenes[42]
Death Camas (*Zigadenus venenosus*)[2,5] 	All parts	Contains steroidal alkaloid zygacine[43]
Delphinium (*Larkspur annual*)[5,16] (member of the buttercup family Ranunculaceae) 	All parts All parts	Alkaloids delphinine, ajacine and others[16]

Plant Name	Toxic Parts	Toxin(s)
Dumb Cane (*Diffenbachia)*[5,16] 	All parts, esp. sap	Calcium oxalate crystals called raphides, oxalic acid[16]
Elephant Ears (*Colocasia,* Alocasia)[2,5] Includes Taro, Caladium, Peace Lily  	Leaves and stems	Contains insoluble calcium oxalates[77]
English Ivy *(Hedera helix)*[2,5] 	All parts	Confirmed reports of death[2] Contains Triterpenoid saponins and polyacetylene compounds[16]
Flowering tobacco (*Nicotiana alata)* [1] **Nicotine** *(Nicotiana tabacum)*[3,4] 	Leaves	Contains the alkaloid nicotine[45]
Four o'clock[5] 	Roots and seeds[44]	Unknown toxin[44]
Foxglove (*Digitalis* spp.) [1,2,3,5] 	Leaves[1], seeds[1], all parts[2,5]	Cardiac and steroid glycosides[16]
Goat's Rue *(Tephrosia virginiana)*[3] 	Seeds, aerial parts	Containsa poisonous alkaloid, galegin[47]
Hellebore *(Helleborus sp.)*[3,5] (*Veratrum Viride* and *Ranunculaccea*)[5] 	All parts	Contains toxins bufadienolides, glycosides, veratrin and prtoanemonin[49]

Plant Name	Toxic Parts	Toxin(s)
Henbane, Black (*Hyoscyamus niger L)* [5] family Solanaceae 	All parts	contains hyoscyamine and other alkaloids[50]
Holly (*Ilex Aquifolium, Opaca, Vomitoria*) [1,2,5] 	Leaves and Berries	Holly may contain caffeic acid, caffeoyl derivatives, caffeoylshikimic acid, chlorogenic acid, feruloylquinic acid, quercetin, quinic acid, kaempferol, tannins, rutin, caffeine, and theobromine[51]
Honeysuckle[2,5] 	Berries	Vine with saponic and cyanogenic glycosides; fruits with carotenoids[52]
Hyacinths[2,5] (Dutch, Wood) 	Bulbs	Alkaloids such as lycorine and glycosides [53]
Hydrangea (Macrophylla, Serrata, spp.) 	Bark, leaves, flowers	Hydrangin, a cyanogenic glycoside[54]
Impatiens *(Balsam, Touch-me-not, Snapweed)*[5] 	Whole plant	Contains 2-methoxy-1,4-naphthoquinone[57], the ASPCA has classified Impatiens as non-toxic[56]
Iris *(Iris X germanica)*[3] (includes German iris, flag iris, etc.) 	Rhizome	Contains pentacylic terpenoids (zeorin, missourin and missouriensin)[46]
Jack-in-the-pulpit (*Arisaema* spp.) [1,2,3,4,5] aka **Indian Turnip** 	All parts	Contains Insoluble calcium oxalates[55]

Plant Name	Toxic Parts	Toxin(s)
Juniper (*Juniperus sabina)* [1] 	All parts	Contains ethereal oils[60]
Laburnum **aka Golden Chain**[5] 	All parts	Main toxin in the plant is cytisine, a nicotinic receptor agonist[48]
Lantana *(Verbenaceae)*[2] aka Shrub Verbena, Yellow Sage, Red Sage 	All parts, esp. green berries	Contains Pentacyclic triterpenoids[61]
Larkspur (*Consolida ajacis)* [1,2,5] 	Foliage, roots, seeds	Contains Diterpene alkaloids[62]
Laurel *(Kalmia latifolia)* aka Mountain laurel, Spoonwood, Mountain Ivy, Calico Bush, Ivy Bush 	All parts	Contains grayanotoxins[58]
Lily (*Lilium longiflorum*) [1,2,4,5,16] Includes: Lily-of-the-valley, day lily, tiger lily, Easter lily, Gloriosa lily 	All parts	Contains Lycorine alkaloids[16]
Lobelia[2,3,4,5] aka Cardinal plant 	All parts[31]	Contains alkaloids lobelamine, lobeline, and others, plus a volatile oil[31]
Locoweed (*Astragalus and Oxytropis species*)[2] 	All parts	Produces swainsonine, a phytotoxin which is harmful to animals[63]

Plant Name	Toxic Parts	Toxin(s)
Mockorange (*Philadelphus* hybrids) 	Seeds	Considered to be toxic but no toxin listed[65]
Monkshood (*Aconitum* spp.) [1,3,5] 	Roots, flowers, leaves	aconitine toxin is absorbed easily through the skin[14]
Morning glory/Moonflowers (*Ipomoea* spp.) [1] 	All parts	Seeds are poisonous[12] Contains Indole alkaloids (Lysergic acid, lysergamide, elymoclavine and chanoclavine)[66]
Oleander (Nerium oleander)[16] 	All parts	Cardiac glycosides: nerioside and oleandroside; saponins, and other unknown agents[16]
Peony (*Paeonia* spp.) [1] 	All parts	Contains Paeonol[67]
Poinsettia (Euphorbia pulcherrima)[16] 		Contains Diterpene esters in latex[16]
Pokeweed *(Phytolacca americana)*[3] aka pokeberry, poke, inkberry, pigeonberry 	All parts	Phytolaccatoxin and related triterpene saponins, an alkaloid (phytolaccin), and histamines[69]
Potato *(Solanum tuberosum)*[4]	Potato sprouts and green skin of old, spoiled potato tubers	Solanine and other alkaloids[70]

Plant Name	Toxic Parts	Toxin(s)
Rhubarb *(Rheum rhaponticum)*[4] 	Raw leaves; blade of the leaf even after cooking	Anthraquinone glycosides and soluble oxalates, also possibly calcium oxylate crystals[71]
Sweet pea (*Lathyrus* spp.) [1,4] 	Seeds	Aminoproprionitrite[72]
Tomato (*Lycopersicon esculentum)* [1] 	Leaves, stems	Glycoalkoloids: solanine and demissine[73]
White snakeroot (*Eupatorium rugosum)* [1] 	All parts	Tremetone, a ketone[74]
Wisteria (*Wisteria* spp.) [1] 	Seeds[75]	Wisterin, a glycoside, and a toxic resin[75]
Yew (*Taxus* spp.) [1] 	Bark, leaves, seed pit	Alkaloid taxine[76]

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