

# Naturescaping

## HABITAT for WILDLIFE & FISH

Larry Pecenka – Habitat Biologist  
Oregon Department of Fish & Wildlife  
(541) 388-6363

[larry.l.pecenka@state.or.us](mailto:larry.l.pecenka@state.or.us)

<http://www.dfw.state.or.us>

### What makes good wildlife and fish habitat?

- Food
- Water
- Cover
- Space

### Why do you want a pond?

(What are your objectives for pond development and management?)

- Wildlife Habitat and Wildlife Viewing
- Fish Habitat and Fish Viewing
- Recreation (Play: Swimming, Golf Hazard, Hunting, Fishing, etc.)
- Irrigation Source
- Livestock Water Source
- Runoff Control / Watershed Improvement
- Fire Protection
- Visual and Audio Aesthetics

### Special Considerations

(Uninvited or out-of-control guests?)

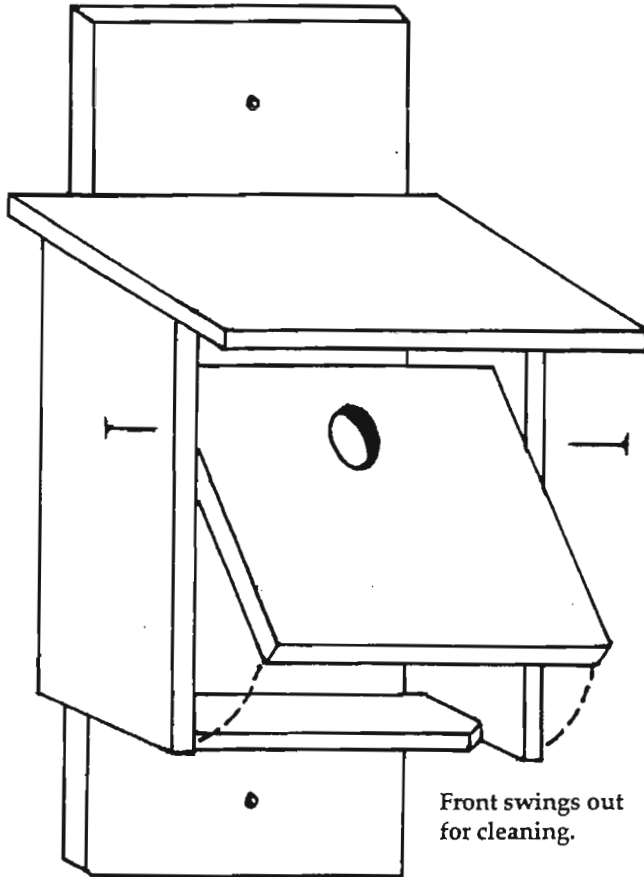
- Build it and they will come!





# NATURESCAPING!

## Song Bird Nest Box



### Specifications:

1. Hole must be exactly 1-9/16 inches in diameter and 1-1/8 inches from top.
2. Cut corners of bottom to allow for drainage, and recess 1/4 inch (optional).
3. Leave space between top and front to allow for ventilation.

### Materials:

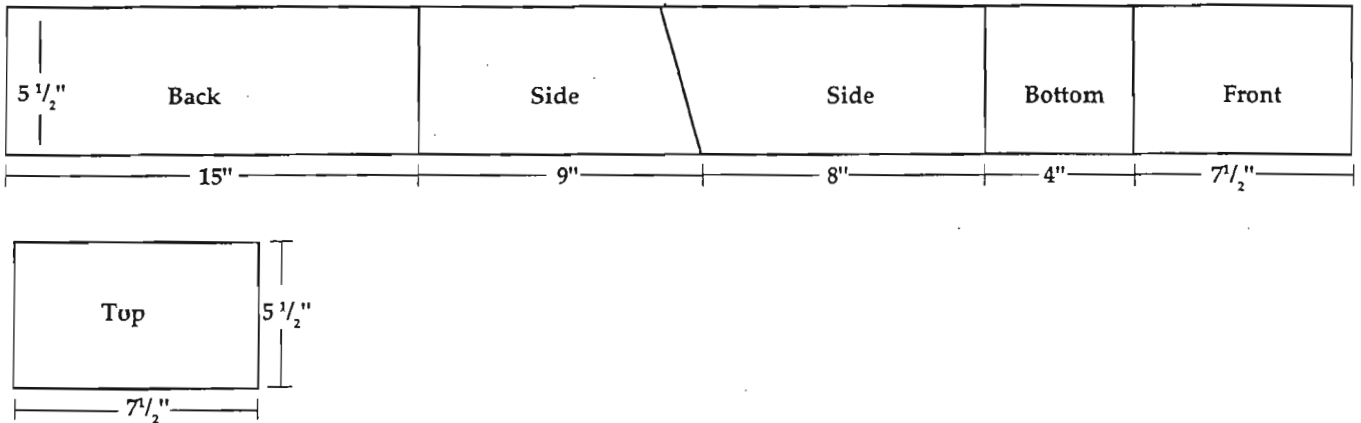
Use 3/4 inch pine, cedar or redwood lumber and leave unpainted. Assemble with 1-3/4 inch galvanized aluminum nails or staples.

1-1/2 inch pivot nails, allow front of swing open for cleaning.

Each box requires 48 inches of 1x6 and 7 inches of 1x8. One hundred boxes require 188 bd. ft. of 1x6 and 40 bd. ft. of 1x8. Each box requires 18 nails.

Place box in open, sunlit area, 5 to 10 feet above the ground, on fence posts or trees.

### Cutting Instructions:





# NATURESCAPING!

## Nest Box Specifications

SPECIES	Floor of Cavity	Depth of Cavity	Entrance Above Floor	Size of Entrance	Height Above Ground	Suggestions For Placement
BLUEBIRD	5x5"	8"	6"	1-1/2"	5-10'	Place in open sunlit area on fence post or under eaves.
ROBIN	6x8"	8"	*	*	6-15'	Place in shaded parts of trees or under trees.
CHICKADEE	4x4"	8-10"	6-8"	1-1/4"	6-15'	Prefer rustic houses in wooded areas or old orchards.
NUTHATCH	4x4"	8-10"	6-8"	1-1/4"	12-20'	Same as chickadees.
WREN	4x4"	6-8"	1-6"	1"	6-10'	Any partly sunlit spot. House may be hung from a tree limb.
TREE SWALLOW	5x5"	6"	1-5"	1-1/2"	10-15'	Place several boxes together on a post or dead tree near water.
VIOLET-GREEN SWALLOW	5x5"	6"	1-5"	1-1/4"	10-15'	Same as tree swallow.
BARN SWALLOW	6x6"	6"	*	*	8-12'	Place a number of shelves together under the eaves of buildings near water.
PURPLE MARTIN	6x6"	6"	1'	2-1/2"	15-20'	A colony of houses together will attract these birds. A pond or stream should be nearby.
FLICKER	7x7"	16-18"	14-16"	2-1/2"	6-20'	Open wooded areas on dead trees above surrounding foliage. Add wood shavings.
DOWNY WOODPECKER	4x4"	8-10"	6-8"	1-1/4"	6-20'	Same as flicker.
SCREECH OWL	8x8"	15-18"	12-14"	4"	10-30'	Same as downy woodpecker. Add woodshavings.
BARN OWL	10x18"	20-24"	4"	5"	12-18'	Locate near buildings, barns or open fields.
SPARROW HAWK	8x8"	15-18"	12-14"	4"	10-30'	Place in open areas near fields or water.
WOOD DUCK	8x10"	24"	16"	4"	15'	Add 4 inches of wood shavings. Provide drain holes in bottom.

**BUILDING SUGGESTIONS:** Rough cedar or exterior plywood are good, durable building materials. Rough wood should be used so young birds can climb out. Several 1/4" ventilation holes should be provided to prevent suffocation of young birds. Drill three or four 1/4" holes in the floor for drainage. Galvanized nails or brass screws will not rust like ordinary nails. Clean and repair boxes at least once a year.

**GENERAL PLACEMENT SUGGESTIONS:** Boxes that face away from storms are more inviting to birds. Young birds will not become trapped in boxes that tilt forward at the top.

\*Two or more sides open.



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Guide to Oregon's Intertidal Habitats	\$8.75	_____	_____
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All prices include shipping and handling.

**TOTAL PURCHASE** \_\_\_\_\_



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WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

# Backyard Wildlife Sanctuary

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## Ponds and Birdbaths

### The Backyard Wildlife Pond

Of all habitats that you might consider creating to attract wildlife, a pond can be the most satisfying. A well-managed pond adds a spot of beauty and tranquility to your landscape and provides food, cover, and water for an amazing array of creatures. Rich communities of plants and animals can exist in and around the smallest garden pond.

The first priority in creating a pond is to have a clear idea of why you want it. Pond management can succeed only where there is a sense of purpose, of knowing not only what you are doing but why you are doing it. Whether you are targeting frogs, salamanders, birds, dragonflies or fish, you will need to know the needs of these animals to optimize the pond design for them.

### Permits and Advice

Before constructing even a small backyard pond, first check with your local planning office for permit requirements. Also, check with your insurance company, which may have additional safety requirements.

For a one-time consultation or help with design and construction, look in the Yellow Pages under "Ponds," "Landscape Contractors," or "Nurseries" that specialize in water gardens. If a pond exists nearby, ask the owner for information on how it was constructed, who did the work, what permits were required, and what problems were encountered. Also, ask pond owners what they would do differently next time. If you decide to use a contractor, find one with experience building ponds and request a list of references.

Most likely, you'll want to locate your pond where you can enjoy watching the wildlife that use it. A pond that can be seen from the house is especially important if small children play in the area. To help you experiment with different locations, you can lay out a rope or hose, or pound in short stakes to indicate the pond edge.

### Pond Location

As you assess locations for the pond, consider all underground utilities and other potential obstacles, including tree roots, which can make excavation difficult. You may also require supplemental water to keep the pond full, and

Figure 1. Habitat features in and around a pond



[Click to Enlarge](#)

The provision of water can turn an average wildlife habitat into an extraordinary one. While most species depend daily on water for drinking, some also require it for other reasons. Many birds need water to bathe in to keep their feathers in shape. The eggs and young of dragonflies, frogs, toads and most salamanders need to be in water to be developed.

electricity to run a pump for a filter or waterfall. Your pump dealer can provide specifications.

A healthy pond needs daily exposure to at least five hours of sunlight during the growing season (spring through fall). Some shade is a good thing, however. It helps to prevent algae growth and keeps a shallow pond cool. Try not to locate the pond directly under trees which drop leaves or needles; decaying vegetation in a pond can make the water acidic and low in oxygen.

An obvious place to locate a pond is in a low area where water naturally collects. However, because a high water table will cause a synthetic liner to "bubble up" or a concrete one to crack, it is better to locate these types of ponds above the high-water line. Also, stay away from direct surface runoff from nearby roads, parking lots, and heavily fertilized areas, all of which negatively affect water quality. Finally, consider where natural drainage will go, and how the pond might flood in a heavy rain.

### Shape, Size, and Depth

A pond can be almost any shape and any depth. Even a one-foot-deep pond can contain a variety of aquatic life if kept full and in partial shade in the summer. A more stable pond would have to be at least 24 inches deep, and 36 inches is preferable. No matter how big you make your pond, after a while you'll probably wish you had made it bigger. Generally it's not much more time-consuming to take care of a large pond than to take care of a small one.

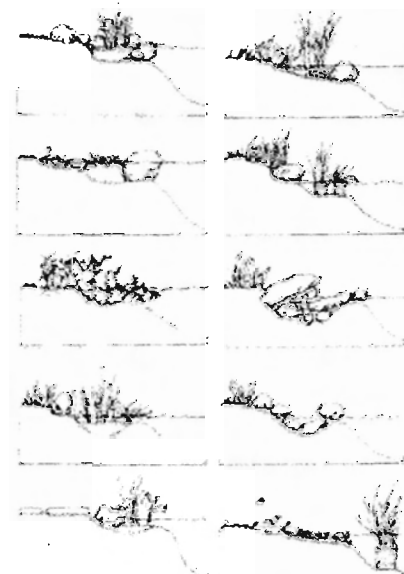
A natural appearance can be achieved if the general shape of the pond and its slopes are varied. Varying the slopes on the edge (Fig. 2) will allow for a mixture of plants and provide the different water depths sought by wildlife.

A gradual slope, or beach-like area, on at least 50 percent of the edge is optimum. Many songbirds, including robins, chickadees, and warblers, use the shallow (1/4-inch to one-inch) water at the beach for drinking and bathing. Mud in this area is also used as nesting material by cliff and barn swallows; a variety of insects use mud for basking and nesting. Coarse-textured material, such as sand or pea gravel, should be used to create traction and a natural-looking surface on slopes when a synthetic liner is used.

### Lining the Pond

If your new pond doesn't hold water naturally, you'll want to make it

**Figure 2.** Examples of ways to create the edge of a pond



[Click to Enlarge](#)

**Figure 3.** Steps to follow when installing a pond liner

watertight by using a liner. The liner may be concrete, earth (clay), or a flexible, synthetic material manufactured for ponds. Prefabricated shells are both durable and easy to install. However, they are available only in limited sizes and shapes, and their slopes can be steep and slippery, features that are not child-friendly or hospitable to some wildlife. Also, some swimming pool liners and children's play pools are treated with chemicals to combat algae, which will leach into the pond and kill plants, fish, and possibly other wildlife that use the pond.

For a small pond, a flexible, synthetic liner is recommended (Fig. 3). Available at landscape supply centers or aquatic plant nurseries, a flexible liner allows you to easily shape the contours of the pond to your specifications. Furthermore, a flexible liner is guaranteed, impervious to freezing, nontoxic to plants and wildlife, and not too difficult to install.

To calculate the size (length and width) of a liner required:

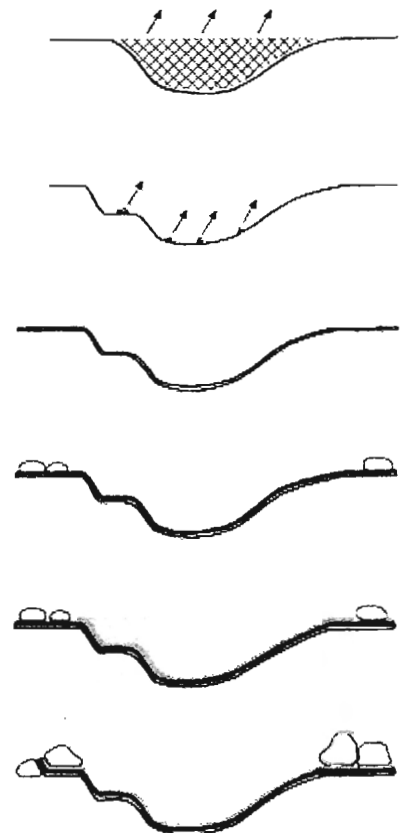
- **Length = length of pond + (2 x depth) + 4 feet (2 feet overlap, each side)**
- **Width = width of pond + (2 x depth) + 4 feet (overlap)**

If the pond has been excavated, measure the length and width of the liner you'll need by running a measuring tape down one bank, along the bottom, and up the other side, and add enough for overlap.

Place the liner over the protective layer (old rug, cardboard) in the pond and allow it to sag in. Work the liner into the shape, folding it over at the corners and making sure that there is plenty extending all around the pond edge. Wrinkles and folds won't weaken the liner. Temporarily secure the liner in place by laying large, smooth stones on the apron around the pond.

If desired, add a two to four-inch layer of sand or washed gravel over the liner. If the sides of the pond aren't too steep, the material won't settle into the bottom. This provides shelter for small organisms, creates a natural appearance, increases the surface area for growth of bacteria that break down fish wastes and other organic matter, and gives the fish something to root in for food (algae).

Fill the pond slowly with water. (If you use water that contains chlorine, let it stand for at least 24 hours before adding any plants or animals to allow the chlorine to evaporate.) Soil may be added or removed under the liner's edge to adjust the level and overflow point. Lay rocks directly on the liner around the pond edge to help conceal the liner. For safety, rocks at the edge should be



Click to Enlarge

able to stay in place on their own. Trim the excess liner.

### **Filter and Waterfalls**

Reaching and maintaining an ecological balance in a small pond with an artificial liner can be difficult, especially if it contains fish. A filter will generally be necessary if you want to view fish in a lined pond. A pond without fish may not require a filter.

Filters work in two ways: mechanically, by physically screening out particles in the water; and biologically, by converting toxic ammonia and nitrites from fish wastes and other material into material that can be utilized elsewhere.

Waterfalls and cascades can be practical as well as aesthetically pleasing. They can give an extra dimension in the liveliness of movement of the water. If water is circulated by one means or another, it will be constantly replenished with oxygen, to the greater benefit of pond life. Not all plants appreciate moving water; water lilies, for example, prefer still water. But if the cascade is a trickle rather than a torrent and is carefully sited, there will be quiet backwaters for the lilies.

A commercial pump dealer can help you with general design questions for your filter and waterfall. Let them know that your intent is to provide wildlife with a safe environment.

### **Safety**

Families with young children need to consider the hazards of a pond and perhaps postpone construction until children are old enough to understand the danger associated with water. If you construct a pond, contact your neighbors with small children to educate them about safety.

Access points such as a large, sturdy flat rock or platform at the pond's edge can make visiting safer for children and the elderly. Any rocks at or near an access point should be able to easily support the weight of an adult. A series of steps, or shelves can be dug within the pond to make it safer. Dig a shelf around the pond in the range of 10-12 inches and plant marginal plants in this area, with the final depth in the middle of the pond 18-24 inches. A shelf should be 12-24 inches wide. In addition, areas can be made inaccessible by closely planting shrubs or other vegetation at the edge of the pond.

Stringently follow safety guidelines and avoid electrocution by having electrical outlets near your pond installed with a ground fault circuit interrupter (GFCI), which prevents any shorting out or similar problems associated with outdoor electricity. (See "[Maintaining Birdbaths](#)" for additional information.)

### **Pond Vegetation**

Plants provide food, oxygen, shelter, hiding places, and platforms on which wildlife rest, live, lay eggs, and metamorphose. Plants also stabilize the pond edge, hide the pond liner, and shade the surface of the water to limit algae growth and keep the water cool in summer.

A new pond will need a year or so of plant growth before it will look natural and begin to appeal to a variety of wildlife. Plants nearby will colonize on their own, but adding your own will speed the process along and assure you get what you want. Wetland and aquatic plant nurseries carry stock to get you started. Never dump aquarium plants into your pond. Many are aggressive growers and can quickly take over.



Your pond should have no more than 65 percent of its surface covered with plants during the summer months. Oxygen enters the pool where water and air meet, and sunlight needs to reach submerged plants, animals and their eggs. Pond vegetation includes these main groups:

**Submerged plants** are rooted or free-floating plants that grow completely underwater and include: coontail (*Ceratophyllum demersum*) and elodea (*Elodea canadensis*).

**Floating leaf plants** float either on or are raised slightly above the pond surface. Floating plants, including water fern and duckweed, can spread very quickly. Others include: watershield (*Brasenia schreberi*), white water lily (*Nymphaea odorata*), yellow pond lily (*Nuphar lutea* ssp. *polysepala*), pondweed (*Potamogeton natans*), and bladderwort (*Utricularia vulgaris*).

**Marginal plants** create the immediate habitat surrounding your pond and thrive in 6 to 12 inches of water. Floating plants include: great water-plantain (*Alisma plantago-aquatica*), inflated sedge (*Carex vesicaria*), wapato (*Sagittaria latifolia*), hardstem bulrush (*Scirpus acutus*), wool grass (*Scirpus cyperinus*), and small-fruited bulrush (*Scirpus microcarpus*).

### Establishing Pond Plants

In a pond lined with a flexible liner, plants can be grown in plastic containers or directly into gravel within in the pond. Containers facilitate removing plants from the pond for thinning, replanting, and protection in cold weather. Containers also help keep aggressive growers in check. Containers that extend above the water surface serve as small islands in your pond and are places for frogs to rest and hunt. A nice size for a container is 12 inches wide and eight inches deep. The containers can rest on the shelves you construct around the inner edge of the pond (Fig. 2).

To plant containers, fill them with a mix of one-quarter sand, one-half garden loam, and one-quarter compost. Be careful not to use materials that float, such as vermiculite and perlite. Also, be sure there is nothing sharp on the bottom of the container that could wear a hole in the liner. An extra piece of liner or carpet remnant placed under the container will provide added protection from wear and tear.

You can "mulch" the plants in containers or pockets with an inch of pea gravel and coarse sand to prevent the soil from clouding the pond. If you use only soil or fine sand, fish - especially koi - will root around in it and cloud the water.

Plants in containers can appear unnatural. Planting directly into the gravel within the pond can be more visually appealing and works to maintain the water quality more efficiently than plants in containers.

### Wildlife In and Around the Pond

Animals living in a small pond are very vulnerable. A small pond can quickly warm up or freeze over, lose water or fill up. This places considerable stress on aquatic life forms, which cannot instantly move to a safer, more stable environment. Thus the life that colonizes a pond must be tolerant of a fluctuating environment or be able to adapt by mobility.

Even so, a surprising number of flying aquatic insects will colonize a new pond if there is another body of water within a half-mile. Water-boatmen, beetles, and dragonflies investigate new waters quickly and will stay if conditions suit them. As your new pond begins to mature, other wildlife will visit and inhabit

the area. Tiny aquatic mollusks and crustaceans will find their way from a nearby wetland on the feathers and feet of a visiting bird. Fish also may be introduced from eggs brought in by waterfowl. Larger ponds located in suitable habitat may attract frogs, newts, salamanders, toads, turtles, and snakes. Many of these will travel up to about a half-mile from their home pond or wetland, as long as there is adequate cover along the way.

#### **Adding Fish and Other Wildlife**

Seek expert advice from your state Fish and Wildlife office when stocking fish or any other wildlife in your pond. Non-native species of reptiles, amphibians (especially bullfrogs), and fish create many serious difficulties for native populations if they leave your pond. They take over habitats and food supplies, and they may introduce diseases to wild populations. In particular, wildlife purchased from pet stores are sometimes raised under poor conditions and frequently pass on disease.

Introducing fish will profoundly alter the pond's ecosystem. Fish eat amphibian eggs, tadpoles, and dragonfly larvae. Excess fish create stress, deplete oxygen, and can add an unhealthy amount of ammonia to the pond from wastes.

Although small fish can provide a valuable service by eating mosquito larvae, predatory aquatic insects such as dragonfly larvae and water striders also eat mosquito larvae. Bats, birds, toads, and frogs eat the adults. Also, moving water (with a fountain or cascade) discourages mosquitoes from laying eggs. Fish are therefore unnecessary for mosquito control.

#### **Viewing Pond Life**

You can easily observe small aquatic life in your pond using a few simple tools from your kitchen. With a measuring cup or meat baster, collect some water near a pond-side plant. Put your sample in a white pan or deep white plate. A hand lens or magnifying glass will help you to see very small organisms. Sampling different places along the edge will net different creatures. Enjoy bug watching, but ensure a steady diet for fish and other vertebrate life by putting your water sample and invertebrate organisms back where you got them.

#### **Improving a Pond for Wildlife**

No matter what size pond you have, there are ways to improve it for wildlife. For example, birds and other wildlife are attracted to the sounds, movement, and the flashing light of moving water. Falling water is also soothing to the human ear and masks noise. A small dribble or trickle over a log or rock is all you really need.

#### **Here are some other ways to improve a pond for wildlife:**

- Add a floating log anchored to the shore. Fish tend to gather under such logs.
- Include a multi-forked stick that protrudes above the water's surface. (You can stick it in a sand-filled coffee can.) Songbirds and dragonflies will use the branch as a perch.
- Include a large rock that protrudes above the water's surface. Turtles, frogs, and butterflies will use it for basking.
- Submerge a small brush shelter in shallow water as a place for turtles, salamanders, frogs, toads, and aquatic insects to attach their eggs and to serve as a hiding place for fish or tadpoles (Fig. 2).
- Add a rock shelter next to or around part of the pond for animals such

as salamanders (Fig. 2). Add a group of large rocks in the pond as hiding places for fish and/or amphibians.

- Create a gentle slope and a better beach around a portion of your pond by adding sand, small rocks, or soil in steep areas.
- Install nest boxes nearby for cavity-nesting birds, such as violet green swallows and wood ducks. A bat house will help control a pond's mosquito population.

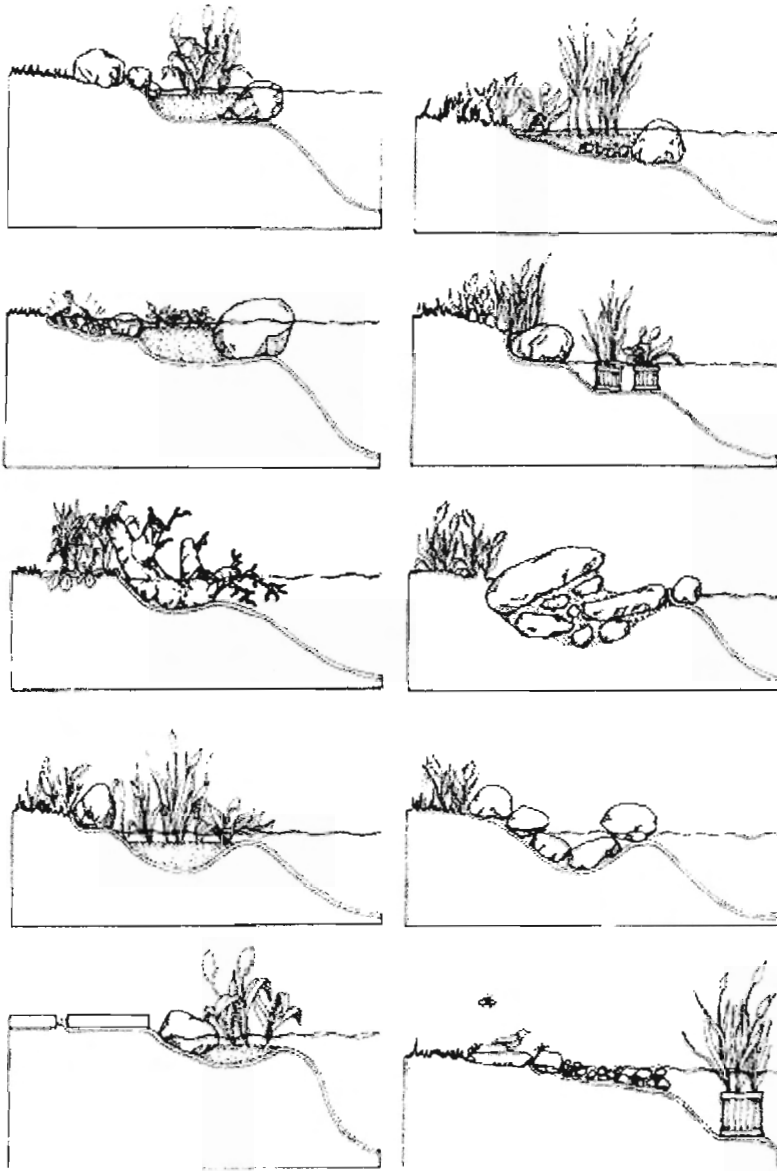
### **Algae**

Algae are free-floating microscopic plants without true roots, flowers, or leaves. They are an essential food for fish, tadpoles, ducks, and snails, as well as providers of dissolved oxygen for all aquatic creatures. In a balanced pond system, algae growth is controlled, creating at most a moss-like coating on the surface of the liner, which gives it a natural look.

An overabundance of nutrients (decayed vegetation, fish wastes, fertilizer runoff) will increase algae and color the water brown, yellow, pea-soup green, or even red. When this occurs, the pond is said to be "blooming." Algae blooms also occur in new ponds and in the spring before pond plants get big enough to shade the water adequately.

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Find a bug or error in the system? [Let us know about it!](#)  
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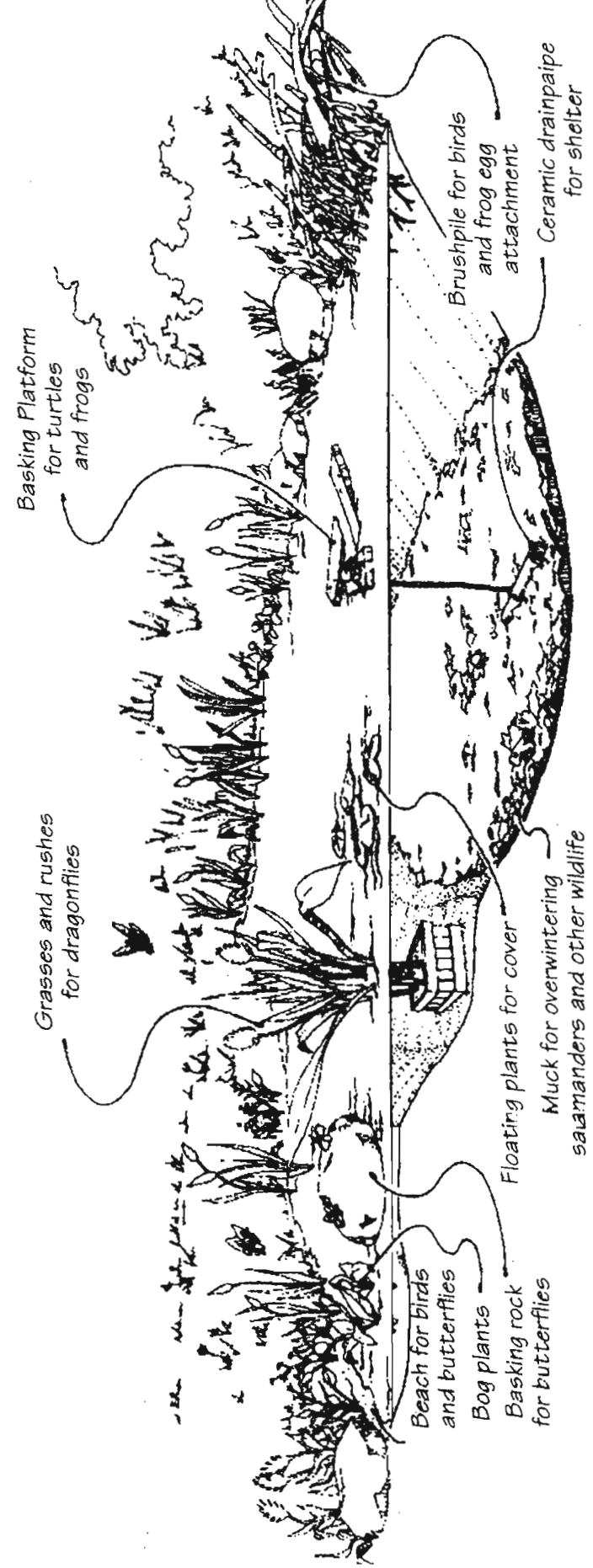


There are also some plants you should NOT use in or around your wildlife pond. These noxious weeds and/or very invasive plants include:

- **Brazilian elodea** (*Egeria densa*)
- **Purple loosestrife** (*Lythrum salicaria*)
- **Eurasian water milfoil** (*Myriophyllum spicatum*)
- **Parrot's feather** (*Myriophyllum aquaticum*)

- **Duckweed** (*Lemna minor*)
- **Yellow pond lily** (*Nuphar lutea* ssp. *polysepala*)
- **Pondweed** (*Potamogeton natans*)
- **Bladderwort** (*Utricularia vulgaris*)

**Marginal Plants** create the immediate habitat surrounding your pond and thrive in six to 12 inches of water. These plants help camouflage the edges of a pond constructed with an artificial liner. Most can be grown in containers. In an



For information on constructing a wildlife pond, refer to these publications:

# Crossing Paths



WITH WILDLIFE IN WASHINGTON TOWNS AND CITIES

Spring 1999

## New WDFW director values non-game wildlife recreation

### Newsletter survives

The Washington Department of Fish and Wildlife's new director Dr. Jeffrey Koenings ("Kaynings") is committed to wildlife enthusiasts like you! Koenings, who took the reins in January, is a fish biologist by education and was a special assistant to Alaska's fish and wildlife director. Besides improving WDFW's financial management and restoring wild salmonids, Koenings' other top priority is providing more "non-consumptive" wildlife information and activities for the majority of citizens who neither hunt nor fish.

That, of course, includes the Backyard Wildlife Sanctuary program and this newsletter, which has obviously survived! In last fall's edition we surveyed you about future cost coverage of this publication. All of the results and decisions (one being to keep publishing!) are on page 6. Your responses included ways to improve this newsletter that you'll see in this edition. Enjoy!

## The right plants are critical to your backyard wildlife pond

More and more Backyard Wildlife Sanctuary managers across the state are adding ponds to their habitat. Standing water can greatly increase wildlife activity, but the kind of plants you choose in and around your pond can be critical. (If you missed our feature on building ponds, Spring 1994, see the references at the end of this article.)

The plants in your pond provide food, oxygen, shelter, hiding places, and platforms on which wildlife rest, forage, lay eggs, and metamorphose. Plants also stabilize the pond shoreline, hide the pond liner, and shade the surface of the water to limit algae growth and keep the water cool in summer.

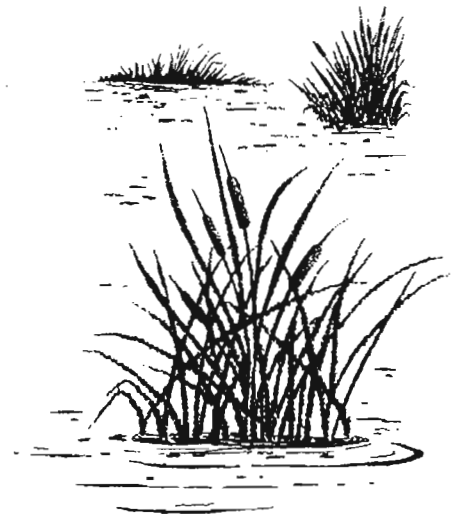
Plants nearby may colonize on their own and some may come in with birds, but adding your own will speed the process along and assure you get what you want. (Never dump aquarium plants into your pond. Many are aggressive growers and can quickly take over.) Your pond should have no more than 65 percent of its surface covered with plants during the summer months. Oxygen

enters where water and air meet, and sunlight needs to reach submerged plants, algae, fish, and amphibian eggs.

As elsewhere in your landscape, the aim is to provide a variety of habitats for wildlife, so use a range of plant types in your pond. Aquatic plant nurseries are good places to view specimens.

**Submerged Plants** are rooted or free-floating plants that grow completely underwater. They grow in one to four feet of water and are extremely important because they release all their oxygen into the water rather than into the air. They also provide egg-laying sites and hiding places for fish, frogs, and other aquatic animals. The seeds and leafy stems may be eaten by ducks. These include **Coontail**, (*Ceratophyllum demersum*) and **Elodea**, (*Elodea canadensis*).

(Continued on page 7)



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**Crossing Paths is a twice-yearly newsletter for Washington residents enrolled in the Backyard Wildlife Sanctuary Program.**

**Westside:** 16018 Mill Creek Blvd., Mill Creek, WA 98012 / 425-775-1311

**Eastside:** N. 8702 Division St., Spokane, WA 99218 / 509-456-4082

[www.wa.gov/wdfw](http://www.wa.gov/wdfw)

### Crossing Paths Newsletter

**Writer/Editor:** Madonna Luers

**Contributing Urban Wildlife Biologists:**

Russell Link, Patricia Thompson (Seattle - Mill Creek)

Howard Ferguson (Spokane), Michelle Tirhl (Tacoma)

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WILDLIFE**

## (Pond plants, continued from pg.1)

**Floating Leaf Plants** float either on or raised slightly above the pond surface. Their roots are generally one to three feet below the water's surface. Leaves of water lilies and other floating water plants provide shade for fish, resting places for frogs and dragonflies, breeding places for water beetles and snails, and attachment sites for other aquatic animals including caddisflies and midges. Ducks, shorebirds, and muskrats eat the plants and the aquatic insects that live with it. Deer eat the leaves, stems, and flowers of pond lily; beavers eat the rhizomes. Floating plants, such as water fern and duckweed, can spread very quickly.

Plants in this group include:

- **Water fern** (*Azolla mexicana*)
- **Watershield** (*Brasenia schreberi*)
- **Duckweed** (*Lemna minor*)
- **Yellow pond lily** (*Nuphar lutea* ssp. *polysepala*)
- **Pondweed** (*Potamogeton natans*)
- **Bladderwort** (*Utricularia vulgaris*)

**Marginal Plants** create the immediate habitat surrounding your pond and thrive in six to 12 inches of water. These plants help camouflage the edges of a pond constructed with an artificial liner. Most can be grown in containers. In an

earthen pond, they help strengthen the banks by preventing shoreline erosion. Marginal plants are used as habitat by birds, mammals, amphibians, and reptiles. Floating plants, such as spike rush and cattail, can spread very quickly.

Marginal plants include:

- **Great water-plantain** (*Alisma plantago-aquatica*)
- **Inflated sedge** (*Carex vesicaria*)
- **Spike rush** (*Eleocharis palustris*)
- **Wapato**, duck potato, arrowhead (*Sagittaria latifolia*)
- **Hardstem bulrush** (*Scirpus acutus*)
- **Wool grass** (*Scirpus cyperinus*)
- **Small-fruited bulrush** (*Scirpus microcarpus*)
- **Soft-stem bulrush** (*Scirpus validus*)
- **Cattail** (*Typha latifolia*)

There are also some plants you should **NOT** use in or around your wildlife pond. These noxious weeds and/or very invasive plants include:

- **Brazilian elodea** (*Egeria densa*)
- **Purple loosestrife** (*Lythrum salicaria*)
- **Eurasian water milfoil** (*Myriophyllum spicatum*)
- **Parrot's feather** (*Myriophyllum aquaticum*)

## Can we design a better future for wildlife?

Remember first visualizing your backyard as a wildlife sanctuary? Using program materials, perhaps you sketched out a landscape design and dreamed of wild animals using it.

Envisioning the future for wildlife on a statewide scale is what a potentially new WDFW resource planning process is all about. It's called "**Alternative Futures**" because it predicts how conditions alternative to current ones could benefit fish, wildlife, and other natural resources.

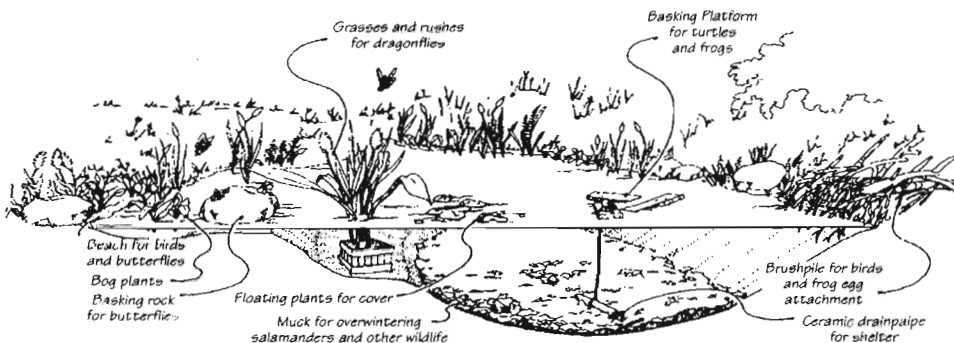
This process could provide new planning tools and forums for land-owners, planners, and elected officials for informed decision-making. It could help current issues like salmon, but more importantly it could identify fish and wildlife problems in the making that are not yet evident.

Instrumental to the process is the **Washington Gap Analysis Project** which has identified unprotected ("gaps" in protection of) habitats across the state where animal distribution is predicted. Combined with known distribution data, like our **Priority Habitats and Species** work, it advances us to "alternative futures."

In concert with GAP, the Department of Urban Design and Planning at University of Washington is now developing ways to apply that information to local land use plans. A pilot project localized GAP in 1997-98 in Spokane County because of its existing planning and Geographical Information System (GIS).

Now Pierce County is piloting a project, not only because of its GIS planning status, but also for its broad range of habitat types, development densities, and current conservation issues. It will help the county's open space mapping, salmon recovery, and current watershed analysis.

We hope "Alternative Futures" does for Washington what backyard wildlife managing does for you!



For information on constructing a wildlife pond, refer to these publications:

"Ponds: Planning, Design, Construction," Ag. Handbook #590, Natural Resource Conservation Service (NRCS), USDA

"Landscape Design: Ponds Notebook #2," NRCS, USDA

"Urban Wildlife Managers Notebook 2: Simple Backyard Pond," National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 21044

"Water in the Garden: A Complete Guide to Design and Installation of Ponds, Fountains, Streams, and Waterfalls," by James Allison; Little, Brown & Co., 1991

"Garden Pools and Fountains," by Edward B. Clafin; Ortho Books, 1988

"For Your Garden: Pools, Ponds, and Waterways," by Dawn Tucker Grinstein; Grove Weidenfeld, 1991.