

Living on the Water:

A Guide for Floating Home Owners and Marina Managers



Credits

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This is the second version of this guide, published in 2020. It is meant to be a collaborative work in progress. We appreciate the feedback we received on the first version (2016), which proved popular. We hope to continue to provide updates as new ideas and methods to improve our life on the water become available. Look for future online or print versions at wmswcd.org.

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Introduction and Purpose

The purpose of this guide is to provide floating home residents and managers of floating home marinas with information on effective and practical methods to protect property and minimize environmental impacts of living on the water. This includes general information on safety, construction, repair and maintenance, particularly as these activities may affect water quality.

Information is also provided on enhancing associated aquatic habitat, living with and enjoying wildlife, and managing invasive species.

Included is a summary of regulations specific to floating home communities located in Oregon, the City of Portland, Multnomah County, and along Multnomah Channel (for informational purposes only).

The final chapters provide a list of resources and links to additional information on the topics covered. Emergency numbers for moorage operators and homeowners are also provided.

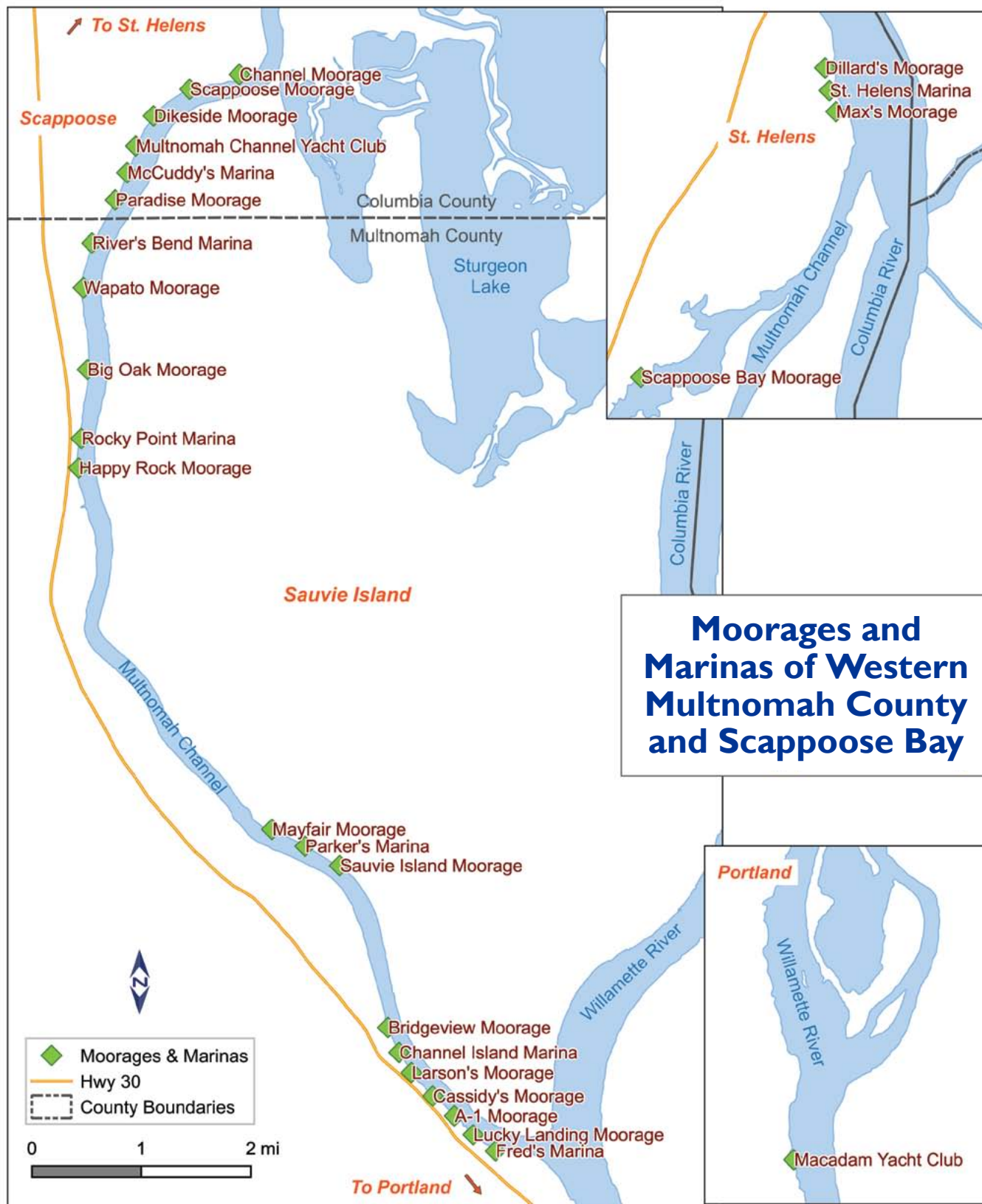
A few highlights of this guide include:

- Fire prevention – Protecting homes and moorages, and emergency response tips

- General facility management practices to reduce impacts – several small things that can make a big difference
- How to keep belongings from blowing away
- The benefits of native vegetation (including less work)
- Invasive species to look out for
- Local wildlife – what to expect and how to better enjoy our wild neighbors
- Where moorage managers and homeowners can go for more information

Regarding the use of “moorage,” “marinas,” and “houseboats”: these terms are used interchangeably in this guide. Local sources of information on floating home communities appear to use these terms for the same or similar descriptive elements; i.e., named communities may be ‘Name Moorage’ or ‘Name Marina’; the regulatory codes appear to use ‘marina’, as do other documents.

*Reference is made throughout this guide to various local floating home regulations, primarily the City of Portland, which has the most comprehensive regulation set. **These references provide very useful information, and are FOR INFORMATIONAL PURPOSES ONLY.** This guide is not intended in any way to be a regulatory document.*



Chapter I – Moorage Facilities

This section discusses operations and maintenance issues specific to marina/moorage facilities, and the following section provides information relevant to individual homes within a moorage. There are over 50 floating home moorages in the greater Portland Metro area; they are found along the Multnomah Channel, the Willamette and Columbia Rivers, and as far downstream as St. Helens. Moorages may have as few as 3 floating home slips or as many as 100 in a single marina. Management and ownership varies considerably among the facilities (described on pages 9-10). The character of moorages also varies from urban to rural to industrial, or adjacent to boat marinas.

The following sections describe key components of moorage facilities and systems.

Fire Prevention and Preparedness

City of Portland Title 28, Chapter 28.06.030 (under the section for New Construction, see link on page 40) details important fire safety elements for marinas including access roads, moorage exits, distance between floating homes and other structures, 'fire clear access' on both the walkways and individual homes, and other construction components critical



*a new floating home arrives at a moorage
photo by Pat Welle*

for fire prevention and safety. An example of requirements for spacing between structures, from Scappoose Fire District, is 4 feet or more, roof-to-roof, for anything in place prior to 1990, and 8 feet or more, roof-to-roof, for anything brought in or built after 1990. Know the regulations for your moorage and apply the best possible safety measures.

Most Multnomah County floating homes are required to follow City of Portland codes, but homes located in northern Multnomah County and southern Columbia County are part of the City of Scappoose or other fire districts and should comply with the appropriate fire codes. Specifically, all moorages north of Cornelius Pass are dispatched to Scappoose Fire District and are required to follow their regulations and codes.

One of the more important considerations for those in Scappoose Fire District is house and moorage numbering – this is applicable to fire, medical, and law enforcement, and includes specific sizing and placement requirements for house and moorage address numbers, as well as the requirement to have a map of the houses at the top of the ramps.

All homeowners and moorage residents and managers should discuss and develop written fire prevention plans for both individual homes and for the dock facilities as a whole. Again, know the fire codes and identify safety practices, and rehearse fire escape plans at regular intervals. Key items for fire management include:

- A dry standpipe system – piping installed on the docks used to pump water from the river in case of fire; highly recommended and required in some areas
- Air Horns – to alert neighbors in the event of a fire; inexpensive and easy to find at any home improvement store; if provided to each homeowner, and kept at the ready, they can prove to be an effective and important early response warning to the whole community
- Fire extinguishers – required for all homes; homeowners and all residents should be familiar with their location and operation; have one both inside and outside the home



fire pump house
photo by Pat Welle

- Recommended fire extinguisher type: I-A:10-B:C (2.5-pound) or a 5-pound extinguisher (2-A:10-B:C)
- Working smoke detectors
- Annual servicing of fire extinguishers and smoke detectors
- Water hose – know where the nearest one is on your dock and how to use it
- Gas and water shut-offs – know where they are and how to turn them off
- Fire buckets – have them available in multiple locations along the dock

Fire Safety Facilities

Moorages have fire pump stations located at critical locations along their docks. Homeowners should become familiar with the nearest station and the operation of all fire safety equipment, in accordance with instructions from their local fire jurisdiction.

Fire Drills and Practice

Regularly practice fire drills that include practicing the use of escape routes and fire suppression activities. It is also recommended that each floating home community conduct a training where all residents can watch a demonstration of a fire pump and practice operating one. All homeowners and residents should be familiar with the location and operation of the fire pumps in their moorage, and particularly the one closest to their homes. Have an escape plan that involves an alternative way out, in case fire blocks access to the main access ramp to the moorage. This might be by kayak, canoe, or other small craft. Always call 9-1-1 in the case of fire.

Additional Safety Notes

Another moorage concern is electricity. All electrical connections should be well secured, without the potential to electrify the water.

Electric shock drowning and electrocution are both potential hazards for anyone who falls into electrified water. (See page 38 for more information.)

In the case of a significant emergency, be prepared to be self-reliant for 72 hours. This includes having water, food, batteries, and other supplies easily accessible.



Scappoose Fire District boat
photo by Pat Welle

Moorage Facilities – General Information

Floating home communities are typically owned or run by a single entity or association. Home spaces are either rented by individual homeowners, or the rights to deck space are owned through an undivided interest managed by an association. The entity or association provides and maintains shared facilities (in

addition to docks and ramps), such as water, sewer, other utility hookups, and parking.

Regardless of ownership, choices related to facility and land management, and landscape design and practices, can affect the environment. Positive contributions can be made in these areas:

Parking lots: Provide for responsible drainage and minimize water runoff by maximizing the amount of pervious surface and surrounding vegetation; this can include a vegetated swale or other buffers on the downslope end. See page 43 for resources on swale construction.

Docks and walkways: Use recycled plastic materials or untreated lumber.

Upland areas: Enhance habitat and aesthetics by planting native plants; manage invasive weeds; provide garden and composting space; where irrigation is needed, use water-conserving systems such as drip irrigation; practice integrated pest management and minimize pesticide and fertilizer use. Find additional details on vegetation in Chapter 3, with links to resources in Chapter 6.

Stormwater management: Install storm drain catch basins in upland areas if space allows, and along docks; use bilge socks to filter oily water and prevent petroleum components from entering the ground or waterways.

Maintenance: Regularly monitor and maintain the property to detect and manage any leaks, spills, or litter that could end up in the waterway.

Lighting: Use energy-efficient systems and those that minimize pollution of the night sky. See details under Moorage Lighting on page 12. A link to the International Dark Sky Association can be found on page 40.

Other areas: Other amenities such as fish-cleaning stations and pet-waste baggie holders are simple ways to improve environmental conditions around marinas.

Home Mooring Connections

Floating homes are generally moored alongside docks; recommended forms of attachment use rigid standoffs or galvanized chains. These features allow homes to rise and fall with water levels, putting less stress on moorage docks and home mounting points. Utility lines for gas, power, phone, sewer, and water are typically suspended from the underside of docks and connected to each home. Some power lines may be suspended above the walkway; all should be constructed or maintained to conform to existing standards (for example, Sections 28.07 to 28.09 of the Portland Codes). Residents and managers should check these lines regularly for leaks or maintenance issues.



*mooring connection of galvanized chains
photo by Pat Welle*

In addition to protecting the environment, regular preventive maintenance can reduce utility costs and avoid larger, more expensive problems, as well as reduce the risk of fire or unintended spills to waterways.

Deck and Marina Protection

Living on the water may mean more exposure to wind, as compared to land-based homes, including on moorage walkways, common spaces and individual decks. Along the Multnomah Channel, for example, winds from

both the north and the south can be more severe than elsewhere since it is funneled along the base of the Tualatin Mountains. Outdoor equipment and furnishings should, therefore, be well secured.

Securing Outdoor Items

Here are some items commonly seen floating downriver and tips to keep them secure:

- Use tie-downs or racks for items such as small boats, kayaks, canoes and inflatable rafts.
- Store chairs and small deck tables folded or overturned against a wall or large planter. Lightweight items may need additional tie-downs.
- Secure chair cushions, deck umbrellas, and other items such as small foam coolers in storage units so they are not easily carried away by the wind.
- Tie tarps to decking or hooks, or secure them with a heavy weight so they are not picked up by the wind.

Moorage Water and Waste Management Systems

Moorages generally get their fresh water from a well on the property, or through municipal services. The water is piped directly to individual homes. Water systems with individual meters can reduce water use significantly by



*pipe insulation
photo by Pat Welle*

allowing the location of leaks in the system to be readily identified and repaired. Additionally, low-flow faucets and other plumbing fixtures can be installed in individual homes to reduce water use.

Each floating home has a sewage holding tank (usually 30-50 gallon) and a float-regulated waste transfer pump, properly called a macerator, but commonly known as a “honey pot.” The honey pot grinds sewage into a slurry, which is pumped through a flexible hose to the dock connection. Tips for honey pot operation and maintenance are described on pages 15-16.

Sewer pipes are either connected to a public sewer system or the moorage may use a private system. Additionally, the former may utilize a tank to hold the waste before sending it to a public system. Sewage systems may

include a drainfield whose location should be generally known, protected from damage, and maintained.

Water Systems in Northern Climates

Water is supplied to homes via deck lines which are likely to be exposed in places and, therefore, subject to outside temperatures. Care is needed in colder climates to prevent pipes from freezing and breaking. Unsubmerged pipes should be insulated using the same methods employed on land-based homes, such as insulation material or heat tape (see photo above). See page 16 for more about managing pipes inside the home during freezing temperature periods.

Moorage Lighting and Signage Regulations

City of Portland regulations (which generally also apply to moorages in Multnomah County) specify how extensive lighting should be to illuminate gangways, ramps, and walkways. Installing low-angle spotlights or deck lighting with covers focuses the light down to the dock surface where it’s needed and reduces light pollution to individual homes and neighbors, as well as wildlife. Marinas are encouraged to be aware of light pollution and take energy saving measures such as replacing incandescent bulbs



*a downward-facing light on the dock
photo by Pat Welle*

with fluorescent lights or other energy efficient lighting, and installing timers or other controls to use light only when needed. Additional information on fixtures and methods to reduce light pollution can be found at the International Dark Sky Association (link on page 40.)

Boat Wakes and Effects on Marinas

Wakes can seriously erode and degrade the banks of rivers, narrow canyons, and other water bodies, as well as cause damage to moored structures. Wakes also create water turbulence and can be dangerous to swimmers, canoers, kayakers, and boat anglers.

The Oregon State Marine Board's (OSMB) message is "Play Away," meaning that wakeboard boats or yachts should operate in areas away from docks, moored or unmoored boats, and other paddle craft. When in crowded areas, owners should operate craft in a way that minimizes wakes. The operator of

the boat is responsible for damage caused by the wake, including damage to boats, docks or injury to persons.

Minimizing Wake-Caused Damage to Floating Homes and Nearby Banks

Floating home owners and moorage managers can help reduce wake-caused damage in several ways:

- Have an outer deck and keep adequate flotation under both the outer deck and home and/or have a floating berm between the main channel and homes.
- Plant and maintain trees, shrubs and other woody vegetation to provide stability and minimize erosion along riverbanks. More details on appropriate vegetation are described in Chapter 3, and available from West Multnomah Soil & Water Conservation District (WMSWCD); links and contact information are provided in Chapter 6.
- Post additional 'No-Wake' signs and install buoys to help discourage wake events near a moorage.

Wake Regulations and Reporting

The OSMB has significantly improved information on their website regarding wake regulations. A link to their main website (for

this and much more information) is on page 40. You can report wake violators by submitting a complaint form (available on the Waterfront Organizations of Oregon webpage; link on page 40) to the Multnomah County Sheriff's Office.

Know the regulations for your area and encourage motorboats to reduce speed either by posting "Wake Watch" or other signs, and/or by using horns to alert boat users that they are going too fast. An example regulation (for Multnomah Channel in Multnomah County) states, "No person shall operate a motorboat in excess of a 'slow-no wake' speed on Multnomah Channel within 200 feet of boat or floating home moorages located between Hadley's Landing (RM 17.5) dock and the main Willamette." (ORS 830.110 & 830.175) Additional rules apply to the Willamette in Clackamas County and other areas, and the OSMB has created an interactive map to check

rules throughout the state (link on page 40).

Minimizing Wakes from Recreational Craft

Reducing a boat's wake takes just common sense and courtesy. This means coming completely off plane when entering a no-wake zone or any area where the wake could compromise the safety of other boats. Slowing the boat slightly can actually increase the size of a wake, depending on the speed.

No wake means NO WAKE. The first rule is to slow down so that the boat is level (without using trim tabs) and the size of the wake is negligible. Operators should look back at the wake being created. Repositioning passengers toward the center of the boat to keep it level can reduce the size of a boat's wake. Too much aft weight lowers the stern and increases the size of the wake. Finally, operators should keep an eye on their depth sounders; shallow water increases the impact of a boat's wake. Damaging wakes can also be caused when an operator waits too long to pull back on the throttle. Even a small boat in the stern-down position can cause a huge wake.



*two boats creating no wake in a no-wake zone
photo by Pat Welle*



*covered honey pot
photo by Pat Welle*

Chapter 2 – Individual Home Operation, Maintenance, and Repair

Water, Waste Management, and other Utilities

Proper maintenance and operation of home facilities is essential to prevent local spills and pollution. Regularly checking home conditions and fixing problems early can reduce costly and significant issues. The following section describes general operation of the major utilities used by floating homes.

Honey pot operation and maintenance

Honey pots capture all waste water from the floating home and transfer it to the moorage wastewater system. They are typically located under the home deck near the dock end of the structure and are made of fiberglass or steel. The current standard container is made of high density polypropylene, which has a nearly unlimited life expectancy if properly installed. Older honey pots will rust and leak over time and should be replaced with a new model as soon as possible. Ideally, you'll find an access panel to the honey pot on the deck. Most honey pots employ a masticator that grinds sewage and a pump that sends it from the pot to the sewer line. Pumps need regular servicing as they can be disabled by power surges but



*uncovered, older honey pot
photo by Pat Welle*



*hooking up utilities on a newly-installed home
photo by Pat Welle*

otherwise will have good life expectancy. Floating home owners must take care to only send human waste and toilet paper through these systems because they use flexible hoses that can become easily plugged.

Living this near the water makes it especially important for homeowners to limit their use of cleaning chemicals, and the toxicity of them, both inside and outside the home. We still need to clean and care for our surroundings, but there are ways to do this that limit negative environmental impacts. Alternatives to the standard cleaning products include baking soda, borax, vinegar and other typically benign chemicals (when used diluted), or vegetable-based soaps. A quick web search can provide

a number of resources for natural cleaning solutions and recipes, as well as commercially-available products made without harmful chemicals. Care should be taken to consult and rely on reputable sources, however. Metro has useful, locally specific information on recycling and managing hazardous waste, and even recycled paint.

Other utilities, including heating and cooling

Electrical: Individual floating homes are connected to moorage electrical systems and are metered in the same way as land-based homes. You can find the requirements for electrical wiring in Titles 26 and 28.07 of the City of Portland Code. You will also find requirements in codes for the cities of Gresham and Scappoose, and both Multnomah and Columbia counties.

Water pipes: A backup to properly insulated pipes (see page 12) is to keep an indoor faucet dripping during very cold temperature periods. This can help prevent freezing of both water and sewer lines. Ideally, a faucet farthest from the home hook-up should be used. Ethanol should not be used in pipes to prevent freezing since it goes into the water system.

Insulation: Floating homes have various structures between the floorboards and the

floats. Insulation may be minimal, if at all, and cool floor temperatures can therefore be a concern for residents. Use area rugs to keep floors comfortable in winter. The amount of insulation in walls and ceilings also varies and homeowners may wish to increase insulation in these areas, where structurally possible.

Heating and cooling systems: Heating and cooling systems for floating homes are similar to land-based homes. Split-system heat pumps are gaining in popularity because they allow the user to direct heat to specific areas of the home. Given the close proximity to other homes, owners should modify or replace older heating and cooling systems if they are noisy and disturbing to neighbors. One option to help with the cost of replacement is the Columbia River PUD rebate program, which applies to many energy saving devices (see link on page 40). Upgrading a water heater is a great potential source of cost savings and energy



*heat pump system—inside
photo by Pat Welle*



*heat pump system—outside
photo by Pat Welle*

efficiency; newer models include on-demand, point-of-use, heat-pump, and even solar. All of the aforementioned options are possible ways to reduce energy consumption in your home.

Home Flotation

Most floating homes are placed on a float constructed of logs and wooden or steel stringers (the structures between the float and the floorboards). Some older homes may have multiple layers of logs. The log floats provide a large mass below water, providing stability during turbulence. Concrete systems (some even with basements!) are also being used, and there are new types such as black-box floats. Homes are also built on barges, which are well-secured to a moorage.

Typically, encapsulated blocks of foam are placed

strategically under the float to fully support the home's weight. Each block provides between 600 and 800 pounds of lift. A licensed and certified diver should install the foam blocks to ensure the home is floating evenly.

Older homes may have un-encapsulated foam blocks. The presence of foam pellets around these blocks may be a sign that they are deteriorating or water animals are chewing on them. This is a good time to replace the old foam with the encapsulated variety to limit both the amount of foam in the water and loss of flotation. Flotation of any kind of foam block can also diminish over time, so homeowners should keep an eye on the float level. Additional foam blocks can be added as necessary, keeping in mind that any new ones must be encapsulated. Another form of flotation is air-filled barrels, which have been used for many years.

Information regarding the precise amount of flotation to use with a log float is not easy to find, but research suggests that a minimum of four-to-six inches of clearance must be maintained between the waterline and the base of the stringers. The objective is to keep the logs as low in the water as possible (to prevent rot), while providing enough flotation to adequately support the structure.

City of Portland code for new construction states "floating structures shall have adequate flotation to maintain a clearance above the water of one foot eight inches (1'-8") minimum from water line to the finished floor level for the lowest occupied floor, under all applicable load conditions." Floating home owners in this area should keep in mind the potential for winter snow and ice accumulation on the roof and decks which, in the case of a storm, could suddenly increase a home's weight. Clearing snow and ice as quickly as possible is critical, but the amount of flotation should account for this condition.

Heavy items such as firewood should be carefully balanced around the home if stored on the float. A slight tilt can cause long-term damage to the stringers, resulting in need for replacement. This is an expensive undertaking, so it is best avoided.

Float inspections

If using bank financing, float inspections are required for the sale and purchase of a floating home. These are important even for buyers not using financing. Lenders require floats to pass an inspection with a minimum life condition (usually 20 years, but can be 30); a professional inspection should include a dive assessment of the float.

External Structure Cleaning and Maintenance

Pressure washing and other exterior cleaning: Homes, decks, and other surfaces may require pressure washing or other cleaning methods. When pressure washing, make sure no toxic substances enter the water body, whether they are cleaning products or the paint and wood sealants/preservatives that may be knocked loose in the process. For other cleaning projects, try using natural and biodegradable products at safe concentrations. Again, diluted baking soda and vinegar are effective alternatives to more toxic chemical cleaning products.

Paint, stain, deck sealants, and potentially toxic chemicals: Paint, pesticides, and insecticides should not be sprayed on or around floating homes due to the potential for transmission from the air to the water. Favor “environmentally-friendly” products and non-toxic cleaners to avoid the possibility of harmful elements entering waterways.

If you are painting or using deck stains, wood preservers, or sealants on your floating home, make sure you prevent any products from dripping or spilling into the water. These types of products typically contain ingredients toxic to the environment and wildlife. Guidelines for

using such projects include:

- Wrap work areas with a tarp to trap any paint chips or dust.
- Keep the paint in small containers.
- Vacuum or sweep frequently to keep chips from becoming airborne.
- Use a tarp or drip pan when mixing or transferring paint or other such chemicals.
- Always contain and clean up paint and toxic substance spills immediately.

Paint and varnish spills are considered oil spills and should be reported and treated according to state regulations. A link to “How to Report A Spill” in Oregon is provided on page 44.

Always store potentially toxic chemicals under cover and at a constant temperature. Containers exposed to the elements can degrade and crack over time. Store toxic chemicals in a tub or container in a storage shed to limit leaks or spills that may enter the Multnomah Channel or other waterway. Consider keeping these materials away from the waterway in a common area.

Take any left-over toxic product to a Metro transfer station. Consult Metro's website for information on location, hours, and fees (see link on page 40).

Chapter 3 – Vegetation and Animals

The opportunities to enjoy and manage vegetation around floating homes and moorages depend on the following factors: 1) upland and riparian or wetland space available; 2) dock, walkway and deck space; and 3) individual and community interest. Native trees and shrubs on the shoreline play a critical role in protecting riverbanks from excessive erosion, enhance an area's aesthetics, and attract birds and other desirable species of wildlife – not to mention creating shade, storing carbon, filtering the air and tempering climate extremes, among other environmental services.



Douglas spiraea
photo by WMSWCD

Continuous native vegetation along the river or channel provides a vital corridor for wildlife movement, as well as critical food and cover. In contrast, invasive weeds provide far fewer beneficial functions and compete with desirable native plants. If left unchecked, they and invasive animals cause increasing amounts of harm.

The following sections provide information on how to use native plants in various moorage settings, including container gardening, as well as information on composting and fertilizer, invasive plants and animals, wildlife that frequent the Multnomah Channel and typical moorages, and other related topics.

A number of website links with additional information on vegetation, wildlife and other natural resources, are provided in Chapter 6. With such knowledge and tools, you can better control invasive species, appreciate native species, and expand and improve native habitat.

Maintaining and Adding Native Plants

Maintaining and adding native vegetation to upland and wetland areas and immediately around moorages and homes is beneficial because they both improve the aesthetic experience and support local wildlife – including birds and pollinators that are adapted to their blooming and fruiting cycles.

Watching wildlife enhances our quality of life, and because native plants are adapted to our soil, climate and pests, they are more likely to survive and thrive than non-native ornamental plants. They do not need as much water, fertilizer, or pest control as non-native vegetation, which saves you time and money!

Most moorage properties contain some areas where new habitats can be created or where existing ones can be restored or enhanced; this is done by controlling invasive weeds and/or preserving and planting diverse native vegetation. A potential new habitat is a rain garden or bioswale below a parking lot to capture and filter possibly-polluted run-off water, or a hedgerow of diverse native shrubs along an access road or fence, or near a community vegetable garden – to capture the services of the pollinators visiting the hedgerow.

Natural habitats to enhance or restore include: 1) native Oregon white oak woodland or savanna, and meadow (possibly converted from lawn and/or over the septic drainfield) – in the upland environment, 2) riparian forest – along the river, channel, or a local creek, and 3) wetland ponds or wet meadow – in the lower areas of the property. You can also create microhabitats by planting native shrubs, grasses and wildflowers in containers on decks and



*Black cottonwood forest
photo by WMSWCD*

along walkways. Create a mini meadow in a pot and enjoy and support pollinators! Particularly useful and well-adapted plant species for Willamette River and Multnomah Channel shorelines, and around ponds and wetlands, are Oregon ash and black cottonwood (vital trees for heron, hawk, and eagle nests, as well as songbirds), red or white alder, and a number of smaller native trees and shrubs. Red osier dogwood and various willow species (such as Pacific, Sitka, and Scouler) are easy to establish and helpful for stemming bank and other soil erosion. Live cuttings, available from local wholesale native plant nurseries or harvested from plants on-site, are particularly suited to planting in moist riverbank or wetland soils, such as around ponds. Also appropriate for such settings are pacific ninebark, Douglas spirea, swamp (clustered) rose, salmonberry, elderberry, black twinberry, Western



*Oregon white oak
photo by WMSWCD*

crabapple, Douglas hawthorn (as opposed to the invasive English hawthorn), and native chokecherry.

In higher riparian or upland areas, planting and maintaining Oregon white oak (*Quercus garryana*) trees is of particular interest because they are an important piece of our heritage and wildlife habitat, and are increasingly rare. Other desirable native, upland tree options include: Willamette Valley Ponderosa pine, which is a conifer that cohabitates well with Oregon oak; bitter cherry

– frequented by cedar waxwings; madrone; and the small cascara tree. Some popular native shrubs suitable for typically dry, upland sites are red flowering currant, Nootka rose, serviceberry, mock orange, oceanspray and Oregon grape (whose pretty yellow flowers are our state flower in Oregon). In addition to the aforementioned species, planting native and adaptable snowberry shrub helps imperiled native bees because it blooms into late summer when few native species are still blooming, and its fruits persist into winter, when food for birds and other wildlife is scarce. Native willows, such as Scouler willow, are also particularly beneficial because they provide food early in the season – in the form of nectar and pollen – for bees and hummingbirds.



*bumblebee pollinating a tall Oregon grape
photo by WMSWCD*



*Douglas aster with Woodland Skipper butterfly
photo by Born1945; tinyurl.com/Douglas-aster*

To further enhance upland habitats, including meadows and hedgerows, you can add native wildflowers. Some that are easy to establish are Douglas aster, Canada goldenrod, yarrow, pearly everlasting, Oregon sunshine and checkermallow. Providing a variety of (tree, shrub, and wildflower) flower types and colors that bloom throughout the season will ensure that pollinators have enough food to thrive and survive the season. See a link to the WMSWCD bloom periods chart on page 42.

Many local nurseries carry a variety of native plants. You can find a list of both retail (for container plants) and wholesale (for economical, bareroot and small container plants) native plant nurseries on the WMSWCD and Metro regional government websites. Contact WMSWCD if you want help

with a habitat improvement project at a marina or moorage in western Multnomah County.

Container Gardening

Container gardening on floating homes is popular along decks and walkways, both in common moorage areas and at individual homes. Special considerations include container weight (plastic weighs less than ceramic but can blow away if too light); the need to prune roots every year or two to keep large plants from outgrowing their pots; and the need to re-pot plants or add soil every three years or so.

Container growing of vegetables is also popular. Keep in mind that fertilizer added to soil may be flushed out by rainwater, so consider compost or organic and slow release fertilizer, if needed. See Using Fertilizers, Herbicides,



*container garden
photo by Pat Welle*

and Pesticides section below for details about responsible gardening and landscape practices.



Camas
photo by WMSWCD

There are a number of native plants that will grow in large containers that can fit on decks. These include small trees and shrubs such as vine maple, mock orange, and Pacific ninebark. Flowers and grasses to plant underneath them – if in a sunny spot – could include camas, tufted hairgrass and coastal strawberry. For shady areas, a good selection may be a vine maple with fringe cup, lady fern, and woodland strawberry underneath. Plants can be added to attract wildlife. Milkweed plants may attract

monarch butterflies or, more likely in our area, swallowtails; elderberry blooms may attract a variety of pollinators and provide berries for birds; and red-flowering currant, honeysuckle, and black twinberry may attract hummingbirds.

The use of hydroponic gardens is another possible way of growing plants around a floating home. These are relatively uncommon around the Portland area, but many examples can be found on the internet. They range from small gardens with flowering plants and trees adjacent to homes, to more extensive and possibly shared community gardens, including vegetable gardens.



Anna's hummingbird pollinates and feeds on red flowering currant
photo by Roger van Gelder

Composting

Composting is the process by which organisms such as bacteria, worms, and insects help turn fruit and vegetable waste, or other organic matter, into a nutrient-rich soil amendment. Adding compost to soil promotes vegetation health and growth while reducing fertilizer use and cost; compost is also a more stable and “organic” source of plant nutrients. For floating home residents who typically lack outdoor space for a compost heap, worm bins offer an alternative way to make use of food scraps and plant debris.

Using Worm Bins

Worm composting uses red worms in an enclosed container to create worm castings, or vermicompost, which is even more nutrient-rich than regular compost. All you need to make worm compost is a worm bin, bedding, food, and moderate temperatures. The Metro Recycling Information hotline (503-234-3000) has a list of outlets where you can buy bins as well as designs for building your own. If you’re putting your bin outside, make sure it’s in the shade in the summer and insulated during the winter (fill it with straw and cover with a tarp).

Bedding is an important component of worm bins because it maintains the balance of air

and water that worms need to survive. The worm’s source of food is the bacteria that grows on the food and the bedding supports the bacteria. Some of the best bedding is shredded newspaper (tear into long strips, fluff up and dampen with water; mix with leaves and straw to keep from getting too compacted). Add bedding at the beginning and during harvest time (to about 3/4 the height of the bin) and then add a few handfuls of garden soil to provide bacteria and grit that helps worms digest. Keep fruit and vegetable scraps in a container and empty them into the worm bin once a week. Always keep worms and food covered with two-to-three inches of damp bedding. Harvest three-to-six months after setup and at least once a year thereafter. And, do not release non-native red-wiggler worms (*Eisenia foetida*) or other non-native worms or their egg cocoons into nature since they can harm native forests.

Using Fertilizers, Herbicides, and Pesticides

If you like to have potted plants around your floating home, use pots that don’t drain at the bottom, or make sure pots have large containment trays to keep water from overflowing into the Multnomah Channel or other local waterway.

State and federal Clean Water Act regulations prohibit any household or garden chemical, solution, or product from entering any water body. Prohibited products include fertilizers and pesticides. Never apply herbicides or other pesticides around a water body or in an area where rain can carry the chemical(s) into the water, unless the product is specifically labeled for aquatic use and applied by a licensed applicator.

For fertilizers, favor “natural organic” or “slow release” products since they are less likely to cause pollution if they do runoff, and use only the amount the plants need, when they need it. Or, put your vermicompost or other compost



water primrose (*Ludwigia hexapetala*)

photo by Andrew Zharkikh; tinyurl.com/Water-primrose-Ludwigia

to use. Instead of fertilizing lawn areas, rake 1/2 inch of compost evenly across the grass when it is actively growing. And to reduce reliance on fertilizers in the landscape in general, consider using native plants more often since they are adapted to our climate and soil conditions and need little or no supplements.

If you have a plant or pest problem, practice Integrated Pest Management: 1) Identify the pest, disease, or weed you are trying to control; 2) decide what level of damage you can tolerate; and 3) look for the least toxic and most specific method(s) to control the problem effectively. This may be hand weeding a small area, for example, or introducing ladybugs to control aphids on your roses, or tolerating some damage and/or waiting until ladybugs show up. For specific control recommendations re: pernicious invasive weeds, contact WMSWCD, and for garden pest and disease troubleshooting, contact Multnomah County



invasive common reed (*Phragmites australis*)

photo by WMSWCD

Master Gardeners (link on page 42). For specific guidance on gardening without pesticides, consult the Grow Smart, Grow Safe consumer guide (link on page 42).

Invasive Plant Identification and Control

Invasive plant species occur both in water and on land, in both uplands and wetlands, including riparian areas along waterways. Invasive plants are a nuisance and they displace native plants, which negatively impacts wildlife and habitat, and affects water quality and erosion potential. The loss of diversity of native vegetation along waterways means fewer and less knitted roots to hold the banks and filter run-off.

Invasive weeds spread aggressively and often create monocultures, or biological wastelands, once established, and, they are increasingly difficult to control if left unchecked. Waterways are especially susceptible to infestation because many weed species can spread through floating plant material, including seeds and root fragments. The good news is that there are many resources to help identify and control invasive weeds.

Information on most of the worst local invasive weeds, including those on the “Early Detection, Rapid Response” (EDRR) list, is available at the WMSWCD website. These weeds are targeted

for control because they pose a significant threat to the natural resources and economy of our region but are still limited in extent. Examples of actively treated invasive EDRR plants that currently grow on our local shorelines, including along Multnomah Channel, are the non-native, common reed (*Phragmites australis* ssp. *australis*) and the non-native water primrose (*Ludwigia peploides* and *hexapetala*), which grows in the water. The invasive common reed is very similar to our native reed, but much more aggressive.

Species controlled in select areas are purple loosestrife (*Lythrum salicaria*) (inside Sauvie



purple loosestrife
photo by Gail Hampshire; tinyurl.com/Purple-loosestrife



*invasive knotweed at Multnomah Channel moorage property
photo by WMSWCD*

Island levees) and Japanese and Giant knotweed (*Polygonum cuspidatum*, etc.) (on Sauvie Island). See link on page 42 for which EDRR weeds WMSWCD currently controls and where. Reach out to the Oregon Invasive Species Hotline (link on page 41) to report and get help identifying and controlling any of these species if you think you've found them.

Other invasive weeds that grow along our shorelines and in our wetlands have become more common than we would like. They are, therefore, beyond the "EDRR" stage. Such species include yellow flag iris (*Iris pseudacorus*), Tree of Heaven (*Ailanthus altissima*), autumn olive (*Elaeagnus umbellata*), false indigo bush (*Amorpha fruticosa*), yellow

nutsedge (*Cyperus esculentus*) and woolgrass (*Scirpus cyperinus*).

Even more pervasive are Armenian, previously known as "Himalayan," blackberry (*Rubus armeniacus*) and reed canary grass (*Phalaris arundinacea*), which can completely take over streambanks and wetlands, as well as drier areas. Weeds that favor drier ground and threaten trees, along the shore and elsewhere, include English/Irish ivy (*Hedera hibernica* and *H. helix*) and Old Man's Beard (*Clematis vitalba*), which rob trees of water, nutrients and sunlight, and their weight sometimes bring down mature trees.

All of the aforementioned non-EDRR weeds can be controlled by landowners, residents, landscape professionals and community volunteers, where appropriate. Control is best



*false indigo bush
photo by Oregon State University; tinyurl.com/False-indigo-OSU*



Yellow flag iris (*iris pseudacoris*)
photo by James St. John; tinyurl.com/yellow-flag-iris-James-St-John

followed by planting of native species to fill the void. For more information on EDRR, see links on page 42.

Invasive plants occasionally also show up on floating logs, which are often found near moorages. Some of the invasive species that have been seen in local moorages are: jewelweed (*Impatiens capensis*), non-native Ludwigia, yellow flag iris, yellow archangel (*Lamium galeobdolon*), reed canary grass, non-native common reed (*Phragmites australis* ssp. *australis*), and climbing/bittersweet nightshade (*Solanum dulcamara*).

One method for removing invasive plants when limited in number or size is to hand-pull them, ideally before they go to seed. Confirm what you have and understand how it spreads before you remove it. If it is an invasive plant species that spreads from plant fragments, be sure to get all parts of the plants so it doesn't spread elsewhere, or seek professional help for control. If herbicides prove necessary to control an invasive weed, only aquatic-approved

products and a specially licensed applicator should be employed.

Sometimes confused for an invasive weed is the native marsh pennywort. When found in large patches, it is likely responding to an unnatural abundance of nutrients, such as from fertilizer or livestock manure run-off.

Other native aquatic plants such as common elodea (*Elodea Canadensis*) and coontail (*Ceratophyllum demersum*) are also sometimes mistaken for non-natives, especially in settings with an abundance of nutrients, e.g. irrigation or drainage canals, where they can act weedy.



native marsh pennywort (*hydrocotyle*)
photo by Rich Miller

Priority Aquatic Invasive Animal and Plant Species

A number of high priority aquatic plant and animal invaders, including aquatic animals that can cause great economic and ecological harm, have been documented in Oregon waters and are targeted for control by the Oregon Department of Agriculture, the Oregon Department of Fish and Wildlife (ODFW), and the Oregon State Marine Board. Others have yet to arrive and the goal is to keep them out of the state. Some of the aquatic invaders of concern are plants; others are animals such as introduced fish, crayfish, snails, and mussels.

Animals: Zebra and quagga mussels, which adhere to submerged natural and man-made surfaces, can destroy boat motors and aquatic ecosystems.



zebra mussel (left) and quagga mussel (right)
photo by U.S. Geological Survey

Statewide efforts are underway to prevent the introduction of zebra and quagga mussels into Oregon.

Other non-native animal species for which to be on the lookout are the non-native red swamp, ringed, and rusty crayfish, which have been found in Oregon, but are not wanted; see ODFW invasive species webpage (link on page 43) for help differentiating from native signal crayfish. Report any of the aforementioned species, as well as Red eared sliders and Common snapping turtles, to the Oregon Invasive Species Hotline if found (see link on page 41).

Plants: Plants of concern that are truly aquatic include hydrilla (*Hydrilla verticillata*), which is not yet established in Oregon, as well as flowering rush (*Butomus umbellatus*) and yellow floating heart (*Nymphoides peltata*).



non-native red swamp crayfish
photo by Rick Boatner, Oregon Department of Fish and Wildlife

These plants still have limited distribution and should be reported to Oregon Invasive Species Hotline if found.

Other aquatic invasive weeds such as South American waterweed (*Egeria densa* or *Elodea*), Eurasian watermilfoil (*Myriophyllum spicatum*), curly pondweed (*Potamogeton crispus*) (former aquarium plants) and parrot feather (*Myriophyllum aquaticum*) already infest water bodies throughout western Oregon, including the Willamette River and canals on Sauvie Island. These species, therefore, don't warrant reporting if found.

What can you do? Prevention and early response are the best tactics for minimizing the spread of aquatic invasive plant and animal



flowering rush
photo by WMSWCD



Hydrilla verticillata

photo by Matthew Beziat; tinyurl.com/hydrilla-Beziat

species. Be sure to **CLEAN, DRAIN, and DRY** boats and other watercraft and equipment, including fishing waders and boots, before moving to a new waterway; see the Oregon State Marine Board aquatic invasive species program website for “how-to” details. As noted above, if you suspect you have found a priority aquatic invasive species, please report it to Oregon Invasive Species Hotline. And, in the case of aquatic weeds that may be responding to other human influences, consider if you can help reduce any factors that contribute to their proliferation.

Additional resources, including a prioritized list of invasive plants found on Sauvie Island/ Multnomah Bottomlands, and aquatic weed guides from the Benton Soil and Water Conservation District and the City of Portland are referenced in Chapter 6 under Plants and Animals.



*native purple martins with gourd houses
photo by WMSWCD*

Wildlife Around Moorages and Floating Homes

One of the joys of living in a floating home community is the abundance of wildlife, including waterfowl, riverine mammals, and birds. There are a number of things homeowners can do to encourage desirable wildlife activity and reduce any conflicts.

Birds and birdhouses: A successful way to attract purple martins, a species of concern, is to hang gourds or carefully sized nest boxes from pilings or other elevated structures. Be sure to hang them high enough so they aren't

under water in the spring. Nest boxes with just the right size opening can attract swallows, and, along with the martins, are mosquito control agents. Clean nest boxes annually to keep these avian visitors interested and healthy. Such birdhouses can also be attached to decks.

Bats: They are our friends in mosquito control. To encourage bats, mount bat boxes in quieter areas of the moorage near the water. For guidance on how to build and mount bat boxes correctly, including proper exposure to the sun, and position on the tree or structure, see resources listed on page 43.

Nutria: These non-native, aquatic rodents are a nuisance around moorages as they can damage banks by burrowing and browsing the native vegetation. Mitigation measures for nutria include exclusion wire around small areas of desirable plants and trapping; prevention and control measures are described on the Oregon Department of Fish and Wildlife's website. Your local ODFW office, e.g., on Sauvie Island, is the best source of information regarding legal options to deal with nutria conflicts.

Beaver and otter: These native species are frequent visitors around floating homes and marinas. Playful otters are fun to watch and beavers are essential wetland engineers, so it's best to learn to live with them. That said,

both animals can chew on pellet foam blocks under floating homes. So, homeowners should watch for pellets in the water, and if necessary, replace un-encapsulated foam blocks with encapsulated varieties. Your local ODFW office can also offer advice and information on options to manage beaver damage.

Frogs and salamanders: Several of our local native species breed in wetlands and attach their eggs to wetland vegetation that emerges from the water; long-toed salamanders also use tiny willow branches that dip into the water. If you have ponds or wetlands, you can plant shoreline and emergent vegetation and add branches to the water to provide more habitat. You can also enhance nearby woods and maintain downed trees and logs on the ground to give frogs and salamanders a safe place to overwinter and thrive as adults.



*red-legged frog, a native species
photo by WMSWCD*

The red-legged frog is a “sensitive species” that travels from above Harborton Road, across Highway 30, into the wetlands just upstream of Fred’s Marina, and then back to the forest. Migration of these red-legged frogs, along with chorus frogs (tree frogs) and long-toed and northwestern salamanders, occurs between December and March each year, assisted in the last several years by a cadre of dedicated volunteers. If driving Marine Drive or Harborton Road during these months, slow down to keep these amphibians alive!

Native turtles: Both the Western painted and the pond turtle are shy creatures who like quiet waters. They might be found in less trafficked wetland or slough areas near marinas and on log booms if properly angled for basking. Help them by placing logs or small wooden rafts (such as small untreated packing pallets) in the water and enjoy them from a distance if you spot them.



*native western painted turtle
photo by Pat Welle*

Fox and Coyote: Keep in mind the potential for such native predators in nearby upland areas, especially if you have small pets. Learn to appreciate these local wildlife.

Pollinators: Install a variety of native flowering vegetation around marinas and gardens to support imperiled native bees (and honey bees) that are vital to food production and ecosystems. Certain (non-native) flowering herbs, such as rosemary, lavender, hyssop, Russian sage, borage, and various mints are especially attractive to pollinators (which include hummingbirds). Note that the mints



*native orange honeysuckle
photo by WMSWCD*



*green sweat bee on native yarrow plant
photo by WMSWCD*

and borage may spread aggressively and are, therefore, safer grown in containers. Native honeysuckle is particularly attractive to “hummers,” as are regularly cleaned, full hummingbird feeders. For guidance on creating pollinator habitat and selecting plants with a range of bloom times, see the information and guides available on the “Planting for Pollinators” page on the WMSWCD website (link on page 42); the Bloom Period chart lists specific species, their growing needs and bloom times, as well as color.

Songbirds: Our songbirds also benefit from a variety of native flowering and fruiting plants, either along the shoreline, in hedgerows, along the edge of the woods or wetlands, or in a created meadow. Bird feeders can help attract and support such birds too.

Waterfowl: Moorages are a great viewing place for many ducks and other waterfowl. Wood Ducks, teals, scaups, and Bufflehead are some of the many species that can be seen from our decks! Canada geese are common and Trumpeter swan can be seen during the nonbreeding season. It is best to enjoy these birds without feeding them, which interferes with their natural foraging behavior and nutrition.

Eagles, herons, osprey and cormorants: These can all be enjoyed in the moorage setting. The first three particularly benefit from tall and dead trees for perching and nesting. Keep or plant such trees like cottonwoods along the shoreline and nearby in places where they don't pose a hazard to human infrastructure. Cormorants enjoy perching on remnant pilings and will also roost or nest in trees.



*great blue heron in a cottonwood tree
photo by Pat Welle*

Chapter 4 – Recreational Craft, Swimming, and Other Activities

Many floating home owners are active recreational boaters, and moorages often have recreational craft alongside their homes. There are a number of important things to do to properly maintain and use these crafts to minimize their impacts on the natural environment. See suggestions below.

Invasive Species Permits

Because of the negative impacts of invasive species on our waterways and the need to fund prevention and control programs, operators of motorboats or non-motorized watercraft 10-feet or longer (e.g. kayaks, stand

up paddleboards, rafts, etc.), are required to purchase and carry a Waterway Access Permit (formerly called an Aquatic Invasive Species Permit) when boating in Oregon state waters. The cost is fairly minimal. More information is available at the Oregon Department of Fish and Wildlife websites listed on page 43.

Gas and Oil Spills

Gasoline, diesel, oil, and other petroleum products used in boats and power equipment are harmful to the aquatic environment. These products can kill fish, mammals, and birds or cause cancer, mutations, and other birth defects. They can also harm plants, which supply needed food and oxygen to aquatic life. If you spill any amount of oil or fuel into the water, you are responsible for the immediate clean-up and must report the spill by calling the Oregon Emergency Response System (OERS) at 1-800-452-0311 and the National Response Center at 1-800-424-8802. Don't try to clean up oil spills in the water with soap or detergent; doing so causes oil to scatter deeper into the water, which is why it's unlawful to use those products in water bodies. Detergents also contain chemical ingredients that are harmful to aquatic life.

When fueling a boat, refer to the Oregon Clean Boater Guide. In brief, the guide directs you to



*kayaking on the Multnomah Channel
photo by WMSWCD*



*a Clean Marina fueling station
photo by Rocky Pointe Marina*

monitor the fuel nozzle at all times, making sure it's connected to the fuel tank to avoid spilling. Only fill the tank to 90% because fuel expands as it warms up. Fill portable gas tanks on land where spills are easier to clean up. If your vessel has a built-in fuel tank, install a fuel/air separator in the vent line to prevent air vent spills.

Consider replacing your older two-stroke engine; they release up to 30% of their gas/oil mixture into the water. Choose a quieter and cleaner direct-injection two-stroke or a four-stroke engine.

Refueling Stations for Boats

Moorages that have refueling stations for recreational craft can modify their operations to limit impacts to water quality. For example:

1) install catch basins for filling portable fuel tanks on land; 2) install double-wall tanks with an alarm system that detects leaks; and 3) have absorbent materials available to clean up spills. The Oregon State Marine Board has more information on these practices.

Water Quality for Swimming and Fishing

Many moorage residents and visitors enjoy getting on the water for recreation – for wading, swimming, paddling, or fishing – and some wonder if water contact is safe. There has been greater attention to cleaning up the Lower Willamette River in recent years, and as a result, water quality is improving.

The 2015 Willamette River Report Card, by the Meyer Memorial Trust, describes the key indicators that experts used to give the river a B- grade overall. The health of the river decreases as it flows downriver, however, and the lowest grade of C was assigned to the Lower Willamette and Multnomah Channel. A link to the publication is provided on page 43.

The City of Portland, Bureau of Environmental Services has a regular sampling program for water quality in the Willamette River (see link on page 43). The Oregon Health Authority has recreational advisories available on their

website (see link on page 44). Sampling results and more information specific to the Lower Willamette are available from both agencies.

According to Oregon Department of Environmental Quality (ODEQ) personnel, the Willamette River is generally safe for all activities, except for regular consumption of fish from the river. An ODEQ Fact Sheet updated in 2018 (*Is it Safe to Swim in the Willamette River in Portland*) notes the Willamette River is monitored regularly at several locations, and that the water is safe for swimming and other recreation most times of the year.

In 2011, the City of Portland completed a massive installation of new larger pipes to better manage combined sewer overflows that were going into the Willamette River. Nonetheless, recreators should still use caution after large storm events, and in the late summer when higher temperatures and lower water levels can cause algae blooms in still water areas. These are characterized by water filled with stringy, slimy plant-like material that sometimes contains toxic cyanobacteria.

The Oregon Health Authority recommends not swimming in cloudy water, not swallowing river water while swimming, showering after swimming, and washing hands before eating.



toxic algae bloom

photo by California Dept. of Fish and Wildlife; tinyurl.com/algabloom-CDFW

Water Safety for Swimming

Electricity and water are a dangerous combination for swimmers. It's critical that owners of floating homes regularly inspect their utility lines and wiring to make sure they are secure and intact. "Electric Shock Drowning" is a drowning resulting from paralysis caused by electrical currents in the water, which can come from faulty electrical equipment and wiring, and improper grounding. More information can be found at the Electric Shock Drowning Prevention Association website (see link on page 44).

Chapter 5 – Codes and Regulations

City of Portland Title 28 – Floating Structures

Title 28 of the City of Portland Charter and Code covers floating structures for all moorages along the Willamette River and Columbia River in the Portland Metro area, including unincorporated western Multnomah County. These regulations, which are specific to structural, mechanical, plumbing, and electrical components of buildings, recognize that floating structures interact with the environment differently than land-based structures, and have distinctive design requirements. The City's Harbor Master inspects such structures and permits, tests, and inspects fire protection standpipes.

The City of St. Helens and Columbia County also have a mix of structural, mechanical, plumbing and electrical codes they apply to floating homes in their jurisdiction. Contact the appropriate entity for additional information on specific requirements for your location. See page 40 for links to municipal codes.

Oregon State Marine Board (OSMB)

The OSMB's Clean Marina program works

to protect and improve local water quality by promoting the use of environmentally safe practices at marinas. Marinas certified as 'Clean Marinas' receive recognition and are provided free pollution prevention supplies and technical assistance for environmental compliance. The program is described on the OSMB website, and in the Oregon Clean Marina Guidebook. Links are provided on page 40.



The Marine Board provides regulations on boat operations, including the creation of wakes. New rules have been added regarding wakes for the Willamette River in Clackamas and other counties upriver of Portland. See pages 13-14 for more information on wakes.

The Marine Board is also responsible for issuing certificates of title and floating home identification number plates.

The agency has an interactive map on their website of boater facilities and other resources. Look for the link on their homepage for "Interactive Boat Oregon Map." Find the homepage link on page 40.



*moorage at night
photo by Pat Welle*

Chapter 6 – Resources

Moorage, Home, and Boater-related

City of Portland – Charter, Code and Policies, Title 28 Floating Structures: portlandoregon.gov/citycode/28192

City of St. Helens – Municipal Codes for Floating Homes: codepublishing.com/OR/StHelens/#!/html/StHelens15/StHelens1516.html

International Dark Sky Association: darksky.org/lighting/lighting-basics

Multnomah County – Sauvie Island Multnomah Channel Rural Area Plan (RAP), Chapter 2: multco.us/file/67286/download

Oregon State Marine Board (OSMB) –

- Homepage with link to Interactive Boat Oregon Map: oregon.gov/OSMB/Pages/index.aspx
- Oregon Clean Marina Program & Clean Marina Guide: oregon.gov/OSMB/boater-info/Pages/Clean-Marinas.aspx

Resource conservation

Columbia River PUD Residential Energy Efficiency Rebate Programs: crpud.net/ways-to-save/at-home/

Energy efficiency in homes: energystar.gov/

Metro –

- Composting: oregonmetro.gov/tools-living/yard-and-garden/composting
- Garbage and Recycling: oregonmetro.gov/tools-living/garbage-and-recycling

Wakes

Oregon State Marine Board – Information and Regulations on Wakes: oregon.gov/osmb/boater-info/Pages/Wake.aspx

Waterfront Organizations of Oregon – no-wake information: waterfrontoregon.com/no-wake-information

Plants and Animals

Invasive Species

Benton Soil and Water Conservation District –
Aquatic Weed Guide: bentonswcd.org/assets/BSWCDAquaticWeedGuidebklt15.pdf

Oregon Department of Agriculture –

- Common Reed: oregon.gov/oda/programs/weeds/oregonnoxiousweeds/pages/aboutoregonweeds.aspx#common-reed
- Noxious weed brochures: oregon.gov/ODA/programs/Weeds/Pages/WeedsResources.aspx
- Hydrilla, An Aquatic Invader Brochure: oregon.gov/ODA/shared/Documents/Publications/Weeds/HydrillaBrochure.pdf
- South American Water Weed (Egeria densa) Brochure: oregon.gov/ODA/shared/Documents/Publications/Weeds/SouthAmericanWaterweedBrochure.pdf
- Yellow floating heart (Nymphoides peltata)- Brochure: oregon.gov/ODA/shared/Documents/Publications/Weeds/YellowFloatingheartBrochure.pdf

Oregon Invasive Species Hotline:
oregoninvasiveshotline.org / 1-866-INVADER



*boat creating an unacceptable wake in a no-wake zone
photo by Pat Welle*

Oregon State Marine Board – Aquatic Invasive Species:

- oregon.gov/OSMB/boater-info/Pages/Aquatic-Invasive-Species-Program.aspx
- oregon.gov/OSMB/forms-library/Documents/Environmental/AISBrochureWEB.pdf

Portland State University – Oregon Lake Watch: pdx.edu/oregon-lake-watch/watch-list-species

U.S. Department of Agriculture – New Zealand Mud Snail: invasivespeciesinfo.gov/aquatics/mudsnail.shtml

WMSWCD – Early Detection-Rapid Response (EDRR) / High priority weeds:

- wmswcd.org/programs/early-detection-rapid-response-edrr-weeds/
- EDRR Treatment Species List: wmswcd.org/wp-content/uploads/2015/10/WMSWCD-EDRR-List_8-20-19.pdf
- Weed Watchers EDRR ID Guide (co-produced): wmswcd.org/wp-content/uploads/2015/06/EDRR-Booklet.pdf?525e89
- Sauvie Island/Multnomah Bottomlands invasive plants (Prioritized list in Appendix 4, page 90): wmswcd.org/wp-content/uploads/2015/08/SICO_10-15-18_web-version_vert-maps.pdf

Native Plants and Vegetation

East Multnomah SWCD – Native plant sources: emswcd.org/native-plants/local-sources/

Grow Smart, Grow Safe Consumer Guide: growsmartgrowsafe.org

Metro – Native Plants for Willamette Valley Yards: oregonmetro.gov/sites/default/files/native_plants_for_willamette_valley_yards_booklet.pdf

Multnomah County Master Gardeners: multnomahmastergardeners.org / 503-445-4608

Native Plant Society of Oregon: npsoregon.org/landscaping1.html

Oregon State University – Rain Gardens: seagrant.oregonstate.edu/sgpubs/rain-gardens

Scappoose Bay Watershed Native Plant Nursery: scappoosebay-wc.org/native-plant-nursery/

WMSWCD –

- Bloom Periods chart: wmswcd.org/wp-content/uploads/2018/05/WMSWCD_PollBloomChart_interactive_4.2018.pdf
- Planting for Pollinators: wmswcd.org/programs/planting-for-pollinators/



*floating homes in winter snow
photo by Pat Welle*

- Guide for Using Native Willamette Valley Plants along your Stream: wmswcd.org/wp-content/uploads/2015/06/Guide-for-Using-Willamette-Valley-Native-Plants-Along-Your-Stream.pdf

Wildlife

Building Bat Houses:

- batcon.org/resources/getting-involved/bat-houses
- extension.oregonstate.edu/4hwildlifestewards/pdfs/bats.pdf

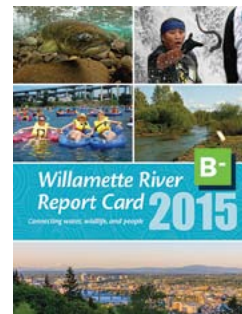
Oregon Department of Fish and Wildlife (ODFW):

- Information on Nutria: dfw.state.or.us/wildlife/living_with/nutria.asp
- Invasive species information: dfw.state.or.us/conservationstrategy/invasive_species.asp
- Sauvie Island Wildlife Area: myodfw.com/sauvie-island-wildlife-area-visitors-guide
- Waterway Access and Aquatic Invasive Species permits: myodfw.com/articles/buying-aquatic-invasive-species-prevention-permit
- Wildlife viewing: myodfw.com/wildlife-viewing

Water Quality and Safety

2015 Willamette River Report Card:

- ecoreportcard.org/report-cards/willamette-river/publications/2015-willamette-river-report-card/



City of Portland

- Stormwater Solutions Handbooks (information on bioswales):
 - For design: portlandoregon.gov/bes/article/129057
 - For plant choices: portlandoregon.gov/bes/article/129060
- Willamette River Recreation Index (water quality information): portlandoregon.gov/bes/57781



*floating homes in morning fog
photo by Pat Welle*

Electric Shock Drowning Prevention
Association: electricshockdrowning.org/

Oregon Department of Environmental Quality –

- How to Report A Spill: oregon.gov/deq/Hazards-and-Cleanup/env-cleanup/Pages/How-To-Report-A-Spill.aspx
- Bioswales, Vegetative Buffers, and Constructed Wetlands For Stormwater Discharge Pollution Removal: oregon.gov/deq/FilterPermitsDocs/biofiltersV2.pdf

Oregon Health Authority –
Recreational advisories: oregon.gov/oha/ph/newsadvisories/Pages/RecreationalAdvisories.aspx

Grants and Programs

WMSWCD's Healthy Streams and Healthy Habitats programs offer technical assistance, conservation plans, and cost-share for rural habitat projects, which can include moorages. See: wmswcd.org/services/conservation-planning/ or wmswcd.org/types/habitat-restoration/ or contact kammy@wmswcd.org.



rainbow over the Multnomah Channel, downstream of Sauvie Island bridge
photo by Pat Welle

Chapter 7 – Emergency Numbers and Services/ Contracting Resources

Emergency Numbers and Utilities

Fire/Medical/Police Emergency: Call 9-1-1.
(Non-emergency number is 503-823-3333)
Multnomah County Sheriff: 503-988-4300
Multnomah County River Patrol: 503-988-6788
Columbia County Sheriff: 1-503-366-4611
NW Natural: 1-800-882-3377
Poison Control 24-hour Hotline: 1-800-222-1222
PGE: 503-464-7777 or 1-800-542-8818
Columbia River PUD: 503-397-1844
Sauvie Island Fire non-emergency: 503-621-1242
U.S. Coast Guard:
 Marine Safety Office: 503-240-9301
 Report oil spills: 800-OILS-911 (800-645-7911)
Wildlife nuisances, ODFW: 503-621-3488

Contracting and Homeownership Resources

The following companies and contractors are listed for information purposes only and **do not constitute any kind of endorsement**. Always ask for references and go to the Oregon Construction Contractors Board website to verify license status, see history of complaints, etc.: oregon.gov/ccb/pages/index.aspx



*floating home in transit
photo by Pat Welle*

Contractors

Derek Morrell, for new construction and building supplies, including logs and stringers:
derekmorrellfloatinghomes-boathouses-woodproduct.com

Even Construction, for new construction and remodel: **evenconstruction.com**

Floating Home Services (Kent Moulton), for sewer repairs, pumps, tanks, leaks:
503-543-6979 or 503-803-3813

Dive Services, for home and flotation inspection, or other related services:
2-Deep Diving: 503-366-0468
Harbor Services: 503-286-4244 or 503-453-7317
John Glen: 503-366-4430 or 503-803-1459
Marine Services: 504-460-1522
Richie Rich: 503-282-1210 or 503-497-8922

Floating Home Lenders

The following financial institutions are financing floating homes, as of this document's publication date: Banner Bank; InRoads Credit Union; Trailhead Credit Union

Homeowners Insurance

All homeowners should have insurance; The following insurance companies are covering floating homes, as of this document's publication date: Chubb; Red Shield Insurance (redshield.com/floating.html); United Heritage Insurance. Floating home owners should be aware of the differences between available policies, which may or may not include coverage for Perils of the Sea (accidents or casualties of the sea).



*Sauvie Island bridge
photo by Pat Welle*



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