

PROTECTING MARINE RIPARIAN VEGETATION

Many impacts associated with alterations to marine riparian vegetation can be avoided or minimized through careful planning (e.g., applying appropriate shoreline environment designations and use standards), and some lost habitat functions can be recovered through mitigation or restoration actions. However, even with these measures, the removal or substantial modification of riparian vegetation is likely to result in the temporal loss of some level of habitat function. This is particularly true at restoration or mitigation sites before vegetation can (re)grow to the point where it provides a full suite of ecological functions. Consequently, permitting multiple vegetation alteration or clearing activities within a given area will result in incremental cumulative effects that may increase over time. Therefore, it is important that planners and regulators establish clear, protective standards, and work with project applicants to avoid and minimize adverse impacts to the greatest extent possible.

MARINE RIPARIAN PROTECTED AREAS

Establishing “marine riparian protection areas” is an important regulatory mechanism that can help minimize the impact of development and re-development and trigger mitigation sequencing when projects impact riparian vegetation. Marine riparian protected areas are different from buffers and may be applied in different circumstances. The term “buffer” is typically used to denote a border set aside and managed to protect a relatively sensitive area from the effects of surrounding land-use or human activities. Buffers may work best when applied to undeveloped or partially undeveloped areas (e.g., where homes or other human activities uses are already set sufficiently back from the shoreline). Establishing buffers becomes less effective as the sole mechanism to protect the nearshore in more developed areas. On more developed shorelines, or shorelines designated for future development under the SMP, placing buffers on the landscape may simply create situations where existing landowners become immediately noncompliant, which often results in local resistance to the whole idea of regulation. Local ordinances provide variances and exemptions to deal with noncompliance but this is often done without considering impacts to marine riparian vegetation functions. Further, these exemptions often exclude enhancement (e.g., replanting denuded areas with native vegetation) or mitigation that implements the local shoreline restoration plan. The result is ongoing, incremental degradation of the nearshore, even though buffers have been “theoretically” applied. Marine riparian protected areas, however, can be effectively applied as a regulatory overlay even on developed shorelines. In these circumstances, location-appropriate habitat

protection regulations can be implemented where needed. These could include function- and area-specific buffers, structural setbacks, riparian enhancement requirements (e.g., native vegetation replanting) and other on-site or off-site mitigation requirements triggered when those areas redevelop, expand, or intensify over time. Landscape-based planning (e.g., the shoreline inventory and analysis component of an SMP) should dictate what protections are triggered within the marine riparian protected area overlay. Variances and exemptions should be limited and tied to mitigation and enhancement, including implementation of the restoration plan.

RECOMMENDED WIDTHS FOR PROTECTED AREAS AND BUFFERS

Most of the current science on riparian management areas and buffers comes from studies of freshwater systems. However, where the freshwater riparian area function is similar to functions in the marine system (e.g., large woody debris recruitment, shade, nesting and migration habitat for wildlife) these studies are appropriate to apply to planning and regulatory decisions and reflect BAS.

There is no consensus in the literature recommending a single vegetated buffer width to protect a particular function or to protect all functions. The following tables (Tables III.7 to III.9) summarize recent findings from work in the freshwater environment on the relationship of habitat functions to buffer widths. Table III.7 and III.8 provide summaries from two scientific literature reviews recommending single buffer widths associated with particular functions. Clearly there is large variability in the findings and recommendations. The tables also indicate some of the methods used to resolve this variability. In Table III.7 (May 2003) minimum buffer widths are recommended.

Table III.7. Riparian buffer functions and appropriate widths identified by May (2003).

Riparian Function	Minimum Recommended Width (Feet)	Range of Effective Buffer Widths (feet)
Sediment Removal/Erosion Control	98	26 – 600
Pollutant Removal	98	13 – 860
LWD Recruitment	164	33 – 328
Water Temperature	98	36 – 141
Wildlife Habitat	328	36 – 141 (error? sjm)
Microclimate	328	148 – 656

REGULATING SHORELINE ARMORING ACTIVITIES

As described above, shoreline armoring projects will often produce unavoidable adverse impacts, and numerous, small, incremental impacts can produce significant cumulative effects over time. Therefore, a logical first step toward meeting the SMAs “No Net Loss” mandate is to avoid permitting new shoreline armoring, in cases where it is not necessary. In many cases a structural approach may not be necessary for property or infrastructure protection, and may cause unacceptable environmental impacts. In such cases, alternative means of achieving the desired goal should be recommended. Where shoreline armoring is necessary for erosion control, planners should enforce or encourage the use of alternative design methods that avoid and minimize environmental impacts to the greatest extent possible, and require that unavoidable impacts be fully mitigated. Planners should consider whether the source of the erosion is from a feeder bluff, supplying sediment to downdrift beaches. During SMP development, planners should require that traditional, hard armoring be placed landward of the OHWM elevation, except in special circumstances where this may not be possible. Planners should also consider the future impact of sea level rise on the OHWM when developing SMP regulations.

Recently released SMPs incorporate guidance for protecting habitat from loss through shoreline armoring. For example, the draft Whatcom County SMP includes the following language pertinent to regulating the development of shoreline stabilization structures (Section 23.100.13): (Whatcom SMP)

- a. Alternatives to structures for shore protection should be used whenever possible. Such alternatives may include; no action (allow the shoreline to retreat naturally), increased building setbacks, building relocation, drainage controls, and bioengineering, including vegetative stabilization, and beach nourishment.
- b. New or expanded structural shore stabilization for new primary structures should be avoided. Instead, structures should be located and designed to avoid the need for future shoreline stabilization where feasible. Land subdivisions should be designed to assure that

- future development of the created lots will not require structural shore stabilization for reasonable development to occur.
- c. New or expanded structural shore stabilization should only be permitted where demonstrated to be necessary to protect an existing primary structure that is in danger of loss or substantial damage, and where mitigation of impacts would not cause a net loss of shoreline ecological functions and processes.
 - d. New or expanded structural shore stabilization for enhancement, restoration, or hazardous substance remediation projects should only be allowed when non-structural measures, vegetation planting, or on-site drainage improvements would be insufficient to achieve enhancement, restoration or remediation objectives.
 - e. Shore stabilization should be developed in a coordinated manner among affected property owners and public agencies for a whole drift sector (net shore-drift cell) or reach where feasible, particularly those that cross jurisdictional boundaries, to address ecological and geo-hydraulic processes, sediment conveyance and beach management issues. Where beach erosion threatens existing development, a comprehensive program for shoreline management should be established.
 - f. In addition to conformance with the regulations in this section, non-regulatory methods to protect, enhance, and restore shoreline ecological functions and other shoreline resources should be encouraged for shore stabilization. Non-regulatory methods may include public facility and resource planning, technical assistance, education, voluntary enhancement and restoration projects, or other incentive programs.
 - g. Shore stabilization should be located, designed, and maintained to protect and maintain shoreline ecological functions, ongoing shore processes, and the integrity of shore features. Ongoing stream, lake or marine processes and the probable effects of proposed shore stabilization on other properties and shore features should be considered. Shore stabilization should not be developed for the purpose of filling shorelines.
 - h. Failing, harmful, unnecessary, or ineffective structures should be removed, and shoreline ecological functions and processes should be restored using non-structural methods or less harmful long-term stabilization measures.

Selected Excerpts from: *Protecting Nearshore Habitat and Functions in Puget Sound: An Interim Guide*

- i. Structural shoreline stabilization measures should only be used when more natural, flexible, non-structural methods such as vegetative stabilization, beach nourishment and bioengineering have been determined infeasible. Alternatives for shoreline stabilization should be based on the following hierarchy of preference:
 - 1) No action (allow the shoreline to retreat naturally), increase building setbacks, and relocate structures.
 - 2) Flexible defense works² constructed of natural materials including soft shore protection, bioengineering, including beach nourishment, protective berms, or vegetative stabilization.
 - 3) Rigid works [structures] constructed of artificial materials such as riprap or concrete. Materials used for construction of shoreline stabilization should be selected for long-term durability, ease of maintenance, compatibility with local shore features, including aesthetic values and flexibility for future uses.
 - 4) Larger works such as jetties, breakwaters, weirs or groin systems should be permitted only for water-dependent uses when the benefits to the region outweigh resource losses from such works, and only where mitigated to provide no net loss of shoreline ecological functions and processes.
 - 5) Alternative structures, including floating, portable or submerged breakwater structures, or several smaller discontinuous structures, should be considered where physical conditions make such alternatives with less impact feasible.

REGULATING OVERWATER STRUCTURES

Due to the clear adverse impacts on the nearshore environment from overwater structures, local planners and regulators must first manage the shoreline to avoid (not permit) the impacts and then to minimize impacts through careful review of permit applications. This guidance provides the tools and information necessary to determine if a proposed project avoids and minimizes ecological impacts to the greatest extent possible, and mitigates for unavoidable impacts consistent with regulatory standards.

The Shoreline Management Act (SMA) and related guidance for updating local Shoreline Master Programs (SMPs) provides a basis for developing more specific guidance for planning and permitting these activities. Because the SMA allows for the development of certain types of overwater structures to support water-dependent uses, it follows that permitting of some activities known to cause harm will take place. However, the SMA also mandates that permitted shoreline activities result in “No Net Loss” of habitats and habitat function. To remain consistent with this mandate, SMPs must provide a clear sequence of steps for avoiding and minimizing these impacts to the greatest extent possible, and for mitigating unavoidable impacts.

A key first step is to identify conditions when new structures should not be approved based on the potential to impact sensitive habitats. For example, Island County’s SMP prohibits new piers and docks on one of their bays in order to protect surf smelt spawning area. Because even carefully designed projects will produce some incremental loss of habitat functions, some limits on the total number of new structures allowed will be necessary to control cumulative effects. The SMA provides useful guidance in this regard, recommending alternative approaches such as using moorage buoys and shared facilities that limit the number of new facilities while providing equivalent access. Useful elements of the broad regulatory guidance provided by the SMA include the development of local policies and requirements that:

- a. State a clear preference for use of mooring buoys and shared facilities rather than individual private docks and piers. This policy addresses the potential cumulative impacts of multiple individual docks. If a shoreline inventory has already indicated that certain sensitive areas of the shoreline have a high number of overwater structures, a policy or regulation to restrict new structures in that area or require a higher level of scrutiny for those areas could also be adopted.

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- b. Regardless of shoreline designation, applicants must demonstrate conclusively that use of a moorage buoy, nearby marina, public boat ramp, or other existing shared facility is not possible. This includes providing evidence of contact with abutting property owners and evidence that they are not willing to share an existing dock or develop a shared moorage. For commercial/industrial facilities, this would include evidence that existing commercial facilities can't be shared or are inadequate for the proposed use.
- c. New residential subdivisions must provide shared moorage if and when moorage is desired by the residents. A joint use agreement should be developed to ensure future shared use of the facility. If appropriate, an agreement to allow public use of the structure may be required. This information should be recorded on the face of the plat and/or as part of covenants.
- d. Avoid locating docks, piers and mooring buoys, including those auxiliary to single family residences, in areas where they will adversely impact shoreline ecological functions or processes, including currents and littoral drift.
- e. Docks, piers, and mooring buoys should not be located in areas containing sensitive, unique, or high-value fish and shellfish habitat.
- f. When permitted, these structures must be the minimum size and length to accommodate the intended use.
- g. Docks and piers should not be located on shallowly sloped beach areas because of the large footprint required to attain adequate water depths for launching.
- h. Prohibit new private or commercial docks in the Natural Shoreline Environment Designation, except as related to science and environmental education facilities that may be permitted in that designation. A conditional use permit should be required for docks in the conservancy environment.

A second key step in creating specific planning and permitting guidance is to employ innovative design standards for new and replacement structures. These design standards, which are based on BAS, are intended to produce overwater structures that avoid and minimize adverse impacts to the greatest extent possible. Finally, the guidance should also provide a means for determining when mitigation for unavoidable impacts should be required, and what form this mitigation should take.