

Valuable habitats worth protecting

The Puget Sound region has some of the most rapid coastal population growth in the nation and is expected to support continued growth in coming decades. This will inevitably result in an increasing demand for shoreline development and modification of marine riparian areas.

Past shoreline development activities have significantly altered the natural structure, functions, processes, and beauty of our shorelines. Although current scientific knowledge and public sentiment support protection of natural resources, existing environmental protection programs have proven to be woefully inadequate at stopping the losses.

Lack of attention and poor protective standards have resulted in substantial loss and degradation of marine riparian areas and other nearshore components. Much-needed research programs can fill gaps in our understanding

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of marine riparian functions and encourage increased protective standards to prevent further degradation and losses.

Additional information on this topic is contained in *Marine Riparian: An Assessment of Riparian Functions in Marine Ecosystems* by James S. Brennan and Hilary Culverwell, published by Washington Sea Grant Program and available online (in a downloadable PDF format) at wsg.washington.edu/research/ecohealth/habitat.html. Contact WSGP Publications, sgpubs@u.washington.edu or 206.543.0555 to order this and other Sea Grant documents.

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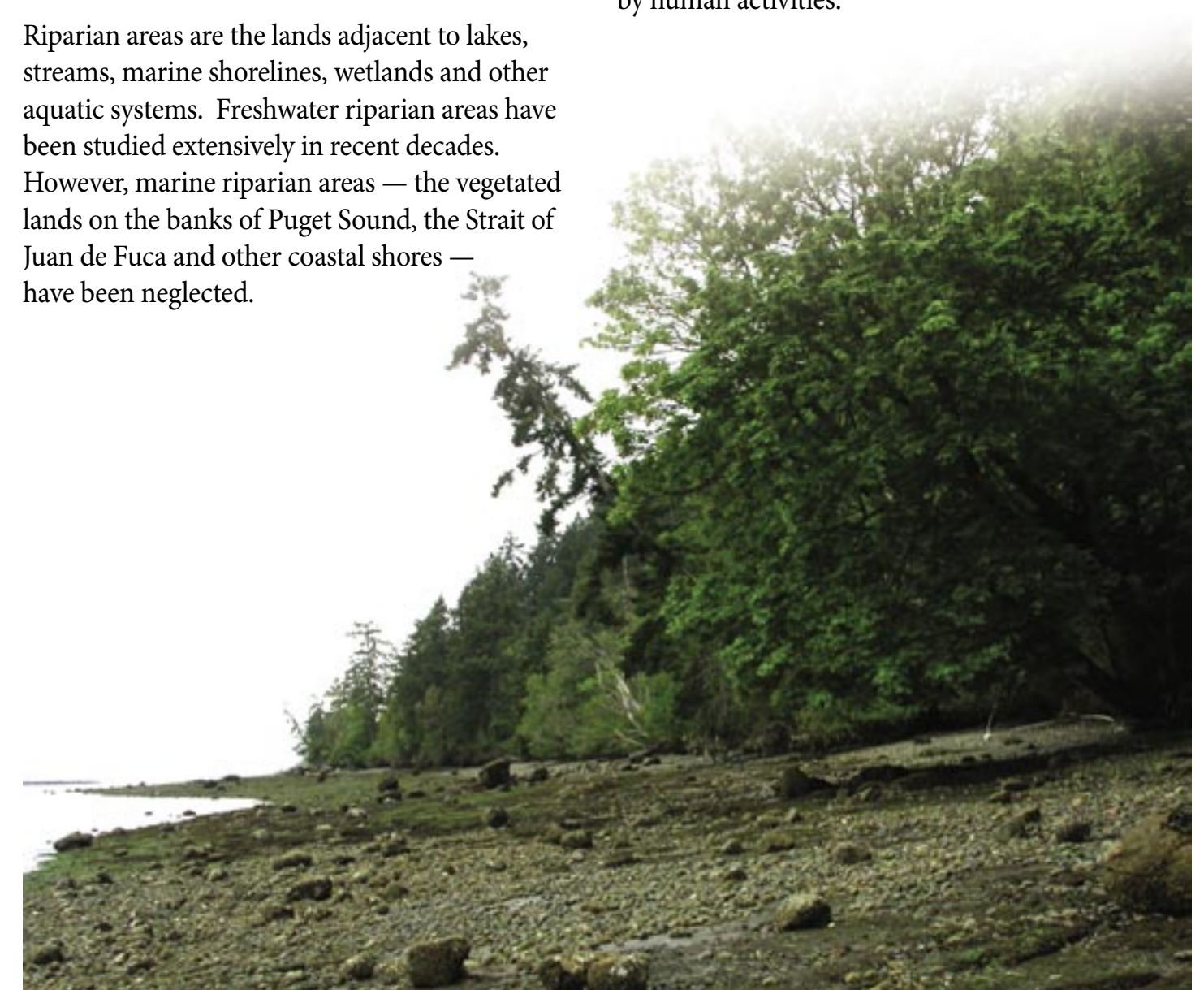


Marine Riparian Areas: These Important Nearshore Environments Offer a Wealth of Functions and Benefits

Marine nearshore environments are some of the most resource-rich and economically important ecosystems in the world. However, the full range of services they provide, as well as the processes that shape these systems, are poorly understood.

Riparian areas are the lands adjacent to lakes, streams, marine shorelines, wetlands and other aquatic systems. Freshwater riparian areas have been studied extensively in recent decades. However, marine riparian areas — the vegetated lands on the banks of Puget Sound, the Strait of Juan de Fuca and other coastal shores — have been neglected.

Their functions and benefits have not been adequately identified or integrated into strategies for managing our shorelines. As a result, many marine riparian areas have been significantly modified and their functions altered or destroyed by human activities.



Many “goods and services” of marine riparian areas are similar to those of freshwater riparian areas. Others may be unique to marine riparian systems. Many of these functions and benefits are summarized on these pages.

Water quality

Riparian areas capture contaminants. By absorbing or filtering contaminated stormwater runoff, soils and vegetation in marine riparian areas can prevent pollutants from entering nearshore waters.



As such, marine riparian areas can provide efficient and cost-effective forms of pollution control. Without them, contaminants can be washed into nearshore waters, where they can degrade habitats and pose hazards to sea life and human health.

Soil stability and sediment control

Riparian vegetation increases soil stability and retains sediments. Soils from unprotected shorelines with steep slopes or bluffs are easily washed into nearshore waters. Here, the fine sediments can clog the gills of fish and invertebrates, smother fish and invertebrate eggs and larvae and bury bottom-dwelling organisms. The native trees, shrubs and grasses of marine riparian areas can hold these soils in place, offering a highly effective form of erosion control and save millions of plants and animals.

Wildlife habitat and food for fish

Healthy riparian areas support rich and diverse communities of animals. In King County, nearly 80 percent of all known wildlife species occupy these habitats. Many of these species — from ruby-throated hummingbirds to black-tailed deer — depend on riparian areas for feeding, breeding, refuge, movement and migration. Cutthroat trout, chinook and chum salmon and many other fish species feed on insects from marine riparian areas. If these areas are altered or eliminated, the food supply and, thus, the abundance of nearshore fish is likely to be reduced.

Nutrient inputs

Riparian areas contribute important organic debris that is transformed into nutrients, which support the marine food web. Wood, leaf litter and other organic matter from riparian areas provide nutrients for life at the base of the food web. Riparian vegetation also supports insects and other prey resources, which are eaten by juvenile salmon and other fish and wildlife.



Shade

Overhanging vegetation and tall trees provide shade along shorelines, protecting shellfish and other forms of intertidal life from the sun's desiccating rays. Studies have shown that the eggs of forage fish (also known as baitfish) on shaded beaches have significantly higher survival rates than those on beaches exposed to bright sunlight. Because forage fish adults and fry are food for salmon and seabirds, their welfare is important to the overall health of Northwest marine systems.

Microclimate

The condition of riparian areas influences temperature and moisture. Riparian plant and animal communities are greatly affected by their proximity to marine waters, through temperature and moisture regulation, tidal inundation, wind exposure, and salt spray. In turn, marine communities are influenced by riparian conditions. For example, marine waters keep lowland areas cooler in summer and warmer in winter; temperature and moisture are also regulated by the type and amount of vegetation cover on the land. Together, these factors contribute to the microclimate on which fish and wildlife depend.

Habitat structure/Large woody debris

Riparian areas are sources of large wood, an important structural element of natural habitats. Resource managers recognize the importance of large woody debris (LWD) in freshwater systems and now use felled trees, stumps



as well as for roosting, nesting, spawning, refuge, and foraging opportunities for fishes and wildlife, and as attachment sites for invertebrates and plants.

and root wads for bank stabilization and habitat restoration projects. Similarly, LWD from marine riparian areas appears to have great value for trapping sediments and forming beach berms,

Human health and safety

Riparian areas serve as buffers for human health and safety. At least three riparian functions — water quality, soil stability and the ability to absorb the impacts of storm surges and other natural, physical assaults on shorelines —

have direct benefits to humanity, especially in the Puget Sound region. Flooding, storm events and landslides pose greater threats when shoreline development does not consider the benefits of maintaining marine riparian areas, which can serve as protective buffers. From this perspective, prohibiting construction in slide-prone areas, establishing proper buffers and setbacks, controlling drainage and maintaining native vegetation could reduce hazards to humans while maintaining the integrity of coastal ecosystems.

Aesthetics

The aesthetic qualities of marine riparian areas are important to people. They add to the quality of life for shoreline residents and visitors and are of economic value, supporting outdoor activities such as wildlife viewing, boating and hiking.

Considerations for Coastal Managers

Any coastal management strategy and the development of shoreline regulations should consider these points:

- Conduct studies, as has been done in freshwater systems, to gather new information and fill data gaps, which would serve as guidance for management actions.
- Encourage experts in a wide range of natural sciences to collaborate on integrated assessments of marine riparian areas.
- Use the precautionary principle: “Do no further harm” to prevent any additional losses of marine riparian areas.
- Maintain and/or restore riparian vegetation for human health and safety.
- Establish appropriate buffers and setbacks that prevent environmental degradation and protect valuable coastal resources.
- Develop and implement programs and offer tax breaks and other incentives for preserving marine riparian areas.
- Identify, evaluate and incorporate the natural processes and functions of marine riparian areas into management strategies.
- Maintain and/or restore riparian vegetation for pollution abatement, soil stability, fish and wildlife enhancement and other benefits.
- Increase efforts to educate decision-makers and the general public of the effects of current shoreline development practices and how their actions affect marine riparian habitats.