

APPENDIX I: EXOTIC SPECIES PREVENTION

Zebra mussels

Zebra mussels (*Dreissena polymorpha*) are freshwater bivalves that invaded the Great Lakes in about 1988, and although they are not believed to be in any of the Oregon Coastal lakes at this time, their prevention is of utmost importance. Populations currently exist in Nevada and they have been spotted in the Coos Bay area where they were suspected to have arrived on one of the many Asian ships that dock there.

With adhesive byssal threads, Zebra mussels are the only mollusk that can attach to any hard surface including other freshwater mussels which they will kill. Living together in very high densities, these pest organisms attach to water intakes and other water plumbing and can cause complete blockage of pipes. Mussel incrustations on boats can increase drag and can clog engine cooling systems.

Zebra mussels are less than 2-3 cm in length or about the size of a thumbnail and often have a "zebra-striped" coloration. There are several reasons for their rapid spread including the fact that they are highly prolific, first reproducing at an early age. Adults produce large numbers of sperm and eggs and high densities of adults facilitate successful fertilization. Larval stages are planktonic and float for two to three weeks. They develop from egg to adult in less than 3 months.

Hydrilla

Hydrilla is a fast growing weed that degrades water quality and fish habitat, and complicates boat navigation. It is currently being battled in 17 counties of California and in Washington but has not yet spread to Oregon. As with currently existing aquatic weeds in the coastal lakes, control measures are expensive and only slightly effective once this weed has spread throughout a lake.

Hydrilla grows under water, producing long stems that branch out and form thick mats under the water surface. Features distinguishing it from other aquatic weeds are that it has spear-shaped leaves with sawtooth edges and small spines on the underside of the leaf on the center vein. It typically has five leaves encircling the stem in whorls and they produce whitish or yellowish, peanut-size tubers on its roots. A small fragment of the plant can grow into a lake choking mass in only a few weeks.

Education on Exotics

Currently in Oregon, the State Marine Board is working to educate boaters about Zebra mussels and Hydrilla through press releases and a newsletter that goes out to all boats registered in Oregon. Also concerned with these problems is Oregon Department of Environmental Quality, National Marine Fisheries and Environmental Protection Agency because prevention is part of the Clean Water Act which these agencies are required to uphold. The State Marine Board and ODEQ should be encouraged to post information which is not presently done to any significant degree in the watershed area.

Guidelines for prevention given by the State Marine Board include the following list:

- * Drain all bilge water, live wells, bait buckets and any other water from boats and equipment on site. Throw all leftover bait away; do not reuse it.
- * Inspect boat exteriors for any weeds or mussels; remove and discard them in the garbage, not back in the water, no matter how small they are.

- * Thoroughly flush engine cooling systems and clean live wells and pumping system bilges. Wash trailers, hitches, bait buckets and hulls with hot water, or tow boat and trailer through a do-it-yourself and use a high pressure hot water washer to clean up.
- * Dry boats and trailers in the sun for 2-4 days before relauncing in Oregon waters.

APPENDIX J: LAND TYPE ASSOCIATIONS OF COASTAL LAKES WATERSHED

The Siuslaw National Forest has been divided into five soil/climate zones each based on landform, soil, geology, and climate. These are the land type associations in the analysis area.

Land Type Associations in the Coastal Lakes Watershed. Description is from Ellis-Sugai et al. (1997).

Land Type Association	4X - Eolian Coastal Dunes	4A - Coastal Hills and Lakes	4F - Fine-textured Fluvial Lands
Climatic Sub-Category	Coastal	Coastal	Coast Crest-Southern Zone
Geology	Active sand dunes along the coast, with Quaternary river deposits in the lowlands, Tyee Formation in uplands along the eastern edge	Mostly Tyee Formation	Tyee Formation with minor intrusions of basaltic dikes
Geomorphology	Coastal sand dunes with low relief, wet deflation planes between foredunes and active dunes, and small lakes	Coastal lakes present. Relatively low relief, highly dissected by streams	Moderate relief, with moderate drainage density and steep slopes.
Stream Density	11.64 miles/sq.mi.	8.71 miles/sq.mi.	6.17 miles/sq.mi.
Slope Description	Deep in lower slopes and valley bottoms. Moderately deep on bedrock ridges at higher elevations. Clay loams to gravely clay loams to sandy loams.	Moderately deep to deep on ridge systems. Very deep where scattered ancient earthflows present. Gravely loams on steep slopes to gravely clay loams where deeper soils occur.	Shallow to moderately deep on convex ridge slopes, moderately deep to deep in concave slope positions. Gravely loams on steep slopes to gravely clay loams where deeper soils occur.
Soil Productivity	Moderately productive where soil water is sufficient to allow plant growth. Soil moisture probably never limits plant growth except on areas of open sand and high relief.	Moderate to very productive. Moderate to high water holding capacities. Soil moisture rarely limits plant growth.	Moderately productive. Low water holding capacities. Soil moisture limits plant growth or survival on all but north slopes during most summers.
Soil Stability	Unstable soils are uncommon. They may occur on lower midslopes above incised channels. Ancient earthflow terrain in common, but slumps and small earthflows are uncommon. Fluvial erosion in channels is the primary hillslope erosion process.	Infrequent debris slides are primary hillslope erosion process. Local deep-seated landslides occasionally where earthflow terrain is incised by streams.	

Coastal Lakes Watershed Analysis LTA and Fire Regime Blocks

4F

Original data was compiled from multiple source data and may not meet the U.S. National Mapping Standards of the Office of Management and Budget. For specific data source names and/or additional digital information, contact the Forest Supervisor, Siskiyou National Forest, Corvallis, Oregon. This map is for informational purposes only and is not to be used for any other purpose without the consent of the Forest Supervisor.

Pacific Ocean

4X

4A

Central Interior

Coastal Fog Zone

Mt Sunset

Mt Popocatepetl

-  LTAs
-  Soil Climate Zones and Fire Regime Blocks



APPENDIX K: LANDFORM/PLANT COMMUNITY CODES

Lichens of the Oregon Dunes 7/98

Scientific Name	Scientific Name	Scientific Name
Alectoria vancouverensis	Hypogymnia inactiva	Parmotrema crinitum
Arthothelium spectabile	Hypogymnia physodes	Peltigera collina
Bacidia sp.	Hypogymnia tubulosa	Peltigera membranacea
Bryoria capillaris	Hypotrachyna sinuosa	Peltigera neopolydactyla
Buellia insignis	Kaernefeltia californica	Pertusaria glaucomela
Caloplaca cerina	Lecanora confusa	Physconia americana
Caloplaca holocarpa	Lecanora expallens	Platismatia glauca
Catillaria endochroma	Lecanora pacifica	Platismatia herrei
Cavernularia hultenii	Lecanora sp.	Platismatia lacunosa
Cavernularia lophyrea	Lecidea albofuscescens	Pseudocyphellaria anomala
Chaenotheca chrysocephala	Lecidea sp.	Pseudocyphellaria anthraspis
Chrysothrix candelaris	Lecidea sp. 2	Pseudocyphellaria crocata
Cladina portentosa	Lecidea sp. 3	Ramalina farinacea
Cladonia cervicornis	Lecidella euphorea	Ramalina menziesii
Cladonia coniocraea	Lepraria sp.	Ramalina roesleri
Cladonia ecmocyna	Leptogium corniculatum	Rinodina colobina
Cladonia fimbriata	Lobaria oregana	Rinodina sp.
Cladonia furcata	Lobaria pulmonaria	Sphaerophorus globosus
Cladonia gracilis	Loxosporopsis corallifera	Sticta limbata
Cladonia ochrochlora	Melanelia fuliginosa	Thelomma ocellatum
Cladonia pyxidata	Menegazzia terebrata	Thelotrema lepadinum
Cladonia sp.	Micarea prasina	Tuckermannopsis chlorophylla
Cladonia squamosa	Micarea sp.	Tuckermannopsis orbata
Cladonia verruculosa	Mycoblastus affinis	Usnea cornuta
Cliostomum griffithii	Nephroma bellum	Usnea fragilescens
Coccotrema pocillarium	Nephroma laevigatum	Usnea hesperina
Collema furfuraceum	Ochrolechia farinacea	Usnea longissima
Collema nigrescens	Ochrolechia juvenalis	Usnea madeirensis
Crust	Ochrolechia subpallenscens	Usnea sp.
Diplotomma penichrum	Ochrolechia trochophora	Usnea subfloridana
Evernia prunastri	Opegrapha atra	Usnea wirthii
Fuscopannaria leucostictoides	Opegrapha protuberans	Xanthoria polycarpa
Graphis elegans	Parmelia hygrophila	Xylographa vitiligo
Hypogymnia apinnata	Parmelia saxatilis	
Hypogymnia enteromorpha	Parmelia sulcata	
Hypogymnia heterophylla	Parmotrema chinense	
Lichen surveys were made between 1994 and 1997 for the assessment of air quality.		
The lichens above were collected from the following Current Vegetation Survey points:		
1076028		
1080040		
1082032		
1082044		
1084032		
1084044		
And from the following off-grid plots:		
OD-1		
OD-2		
OD-6		
OD-7		
OD-10		
OD-11		