



Devils Lake

Lincoln County

Mid Coast Basin

Location	
Area	678 acres (274.4 hect)
Type	natural lake
Use	recreation
Location	eastern city limits of Lincoln City; east of US Hwy 101
Access	several boat ramps - city, county, and state
USGS Quad	Lincoln City (24K), New port (100K)
Coordinates	44° 58' 02" N, 124° 00' 51" W
USPLSS	tow nship 07, range 11, section 15

Devils Lake lies immediately east of Lincoln City on the Oregon Coast. It is entirely within the Lincoln City Urban Growth Boundary, and portions of the western shoreline are within the city limits. the lower reaches of the lake are less than 300 yards from the active beach zone of the Pacific Ocean. The lake is approximately three miles long, running north and south, and averages about 0.4 miles in width. It was named because of an Indian legend which tells that a giant fish or marine monster lived in the lake and occasionally came to the surface to attack some hapless native.

Devils Lake was formed when sand dunes and beach deposits of the late Pleistocene Epoch blocked the lower end of the valley drained by the D River. Since the lake surface elevation is substantially above sea level (elevation = 20 feet on USGS topographic map) a freshwater lake now exists, rather than a brackish water estuary. The single outflow from the lake, the D River, drops to the Pacific Ocean. It is listed by the Guinness Book of World Records as the "world's shortest river." The largest inflows from the forested drainage basin are two streams, Rock Creek and Thompson Creek. Rock Creek, the principal source of surface inflow, drains about 60 percent of the basin. It drains an area of predominately undeveloped, forested, steep sloped, mountainous terrain; however, the lower portion is used for cattle grazing and the upper area is managed for timber. Thompson Creek drains the moderately sloped northern portion of the drainage basin, and is an area in which land uses are principally developed residential and livestock grazing.

The recreational value of a freshwater lake adjacent to the local beach environment and adjacent to a growing population center is very high. Lincoln City maintains several municipal properties on Devils Lake and the state of Oregon operates parks near the south end. Devils Lake State Park has two public use areas. East Devils Lake Park is available for day use and boat launching.. Devils Lake Campground is located on the southwest side of the lake, less than half a mile from the Oregon Coast Highway. Lincoln City owns and maintains three smaller parks on the lake.

Fishing in the lake has been successful off and on over the years. It has been treated several times because of a large number of carp. After treatment it will produce good catches of cutthroat and rainbow trout and largemouth bass, and a good population of catfish has developed. However, fishing pressure is fairly light during the summer due to the presence of speedboats and water-skiing in portions of the lake and due to massive macrophyte beds growing to the surface in the other portions.

Water quality in Devils Lake is poor and it is classified as eutrophic. Because of its proximity to the ocean the water shows the influence of sea spray in the slightly elevated concentrations of sodium and chloride. McHugh (1979) included the lake in his study of highly eutrophic lakes in Oregon, and his observations are summarized as follows: Devils Lake has been a problem area for many years. Until 1970 it had the dubious distinction of being the worst polluted lake in the state, as the south end was frequently contaminated by a poorly functioning sewage treatment plant, a situation which has since been corrected. Repeated surveys have found areas with high nutrient levels and coliform counts. Septic systems from homes in the unsewered areas or still functioning in the sewerred areas contribute to the problem. In addition, the two creeks flowing into the lake pass through farm yards and cattle pastures have been found to contain high levels of nutrients and bacteria. These contributions compound the problems of excessive algae and macrophyte growth found in the lake. To reduce these contributions, McHugh recommended developing sewers in the unsewered portions of the drainage basin and discontinuing the use of septic systems.

Another major problem with the lake has been rapid shoaling, caused by siltation and heavy macrophyte growth. Part of the silt has originated from areas in which the forest and shrub ground cover has been disturbed, as in road building and house construction. Some doubtless enters the lake through inflowing streams. Silting tends to be periodic, following heavy rains. During the 1964 floods, a shallow bay off the lake received approximatley three feet of silt in two days. Macrophyte growth has been heavy around the lake margins, where the water is shallow, and in similar areas at the north and south ends. The dense stands of plants die each winter, and the more resistant plant material sinks to the bottom to form peat. At times in the past,



Source: US Geological Survey, no date. View looking north.

Drainage Basin Characteristics								
Area	24.3 sq mi (62.9 sq km)		Relief	moderate		Precip	90-112 in (229-284 cm)	
Agriculture								
Land	Forest	Range	Water	Irrig	Non Irrig	Urban	Other	
Use %	88.9	3.4	4.3	-	-	3.4	-	
Notes	-							
Lake Morphometry				Maximum		Average		
Area	678.0 acres (274.4 hect)		Depth	22 ft (6.7 m)		10ft (3.0 M)		
Ave/Max Depth Ratio	0.440		Volume	6,570 acre ft (8.12 cu hm)				
Shoal area	49%	Volume factor	1.33	Shape factor	2.93			
Length of Shoreline	10.7 mi (17.2 km)		Retention time	2 mo				
Notes	-							
Water Quality								
Trophic status	eutrophic, macrophytes and algal blooms							
Sample date	07/17/81		Temp	75.2F (24.0C)		Diss. Oxygen (mg/l)	8.5	
Transparency	6.9 ft (2.1 m)		Phosp (mg/l)	0.034	Cholorophyll a (mg/l)	2.5		
Alkalinity	24	Conductivity (umhos/cm)	105		pH 8.9			
Major Ions	Na	K	Ca	Mg	Cl	SO4		
	10.6	0.3	4.7	3.1	15.6	3.2		
Notes	-							

waterfront land owners have used an underwater weed cutter, but as these cut-off plant parts were not removed from the lake, they simply added to the peat deposits. The plant beds probably also contribute to silting by slowing water movement through the lake, so that mud entering through tributary streams tends to settle out in the lake, rather than move through it to the outlet.

Local concern for rehabilitation of the lake led to an EPA-funded study (Kramer, Chin, and Mayo 1983) to: 1) identify and quantify the magnitude of the pollution sources and determine their impacts on the lake, 2) analyze and rank alternative control strategies to correct the pollution problems defined in the sampling and monitoring program, and 3) develop a rehabilitation program that is viable, environmentally acceptable and for which funding can be secured for implementation through some local, state, federal and/or private source. Several rehabilitation measures were considered: 1) in-lake rehabilitation such as dredging, plant harvesting, herbicide application, and varying water levels and 2) source control measures such as surrounding land use changes, implementing agricultural forest management, and animal waste disposal practices, rerouting Rock Creek, and sewerred all the homes around the lake. Recommended actions included reducing nutrient inflow through use of better agricultural practices, dredging the south end of the lake to remove nutrient enriched sediments and deepen the lake, applying herbicides to kill the weeds in selected areas, and developing a weed harvesting program. Since EPA's Phase II implementation funding has been reduced, Lincoln City, with strong local homeowner support, is pursuing formation of a service district with taxing authority that could implement an annual lake management program.

Phytoplankton Surveys:

7/17/81

Alga	#/ml	%
<i>Fragilaria crotonensis</i>	65	37.1
<i>Cryptomonas erosa</i>	36	20.6
<i>Anabaena</i> sp.	29	16.6
<i>Kephyrion spirale</i>	19	10.9
<i>Ankistrodesmus falcatus</i>	10	5.7
others (4)	16	9.1
Total	175	100.0

