

Radar may help boats enter Columbia

Radar has helped bring tremendous safety advances in aviation.

And radar-equipped aircraft and Oregon State University scientists are combining to help make it safer for ships to cross the ocean bar and enter the Columbia River.

"Few people realize that the entrance to the Columbia River is considered to be the most dangerous harbor entrance in the United States," says OSU geography Professor Charles L. Rosenfeld.

"That's from the U.S. Army Corps of Engineers, which has the responsibility for maintaining U.S. harbors. It's also reflected in the insurance rates that large ships pay for entry into Portland."

Rosenfeld, who is also a pilot and radar image interpreter for the Oregon Army National Guard, has found that radar pictures taken by National Guard planes at various times and

seasons can help pinpoint the most dangerous spots for ships as they pass from the ocean into the mouth of the mighty Columbia River. Then vessels can avoid the highly hazardous areas.

"Over the past 150 years or so, we've had almost that many major shipwrecks at the mouth of the Columbia," Rosenfeld points out. "There are literally dozens of ships that have been wrecked by the tremendously high and unpredictable wave conditions at the mouth of the Columbia."

From a tossing boat in the turbulent waters, it's hard to determine which direction the waves are coming from and their full height, he said.

"From the radar-carrying planes, however, it's possible to photograph what is taking place and then to pinpoint critical spots that boats and ships must avoid if they are to

stay out of trouble," Rosenfeld continued.

The OSU studies, which used National Guard planes, were funded by the U.S. Army Corps of Engineers. They have determined that the dangerous waves that cause shipwrecks occur at places where high waves or tides coming in from the ocean meet strong currents of fresh water coming down the Columbia and emptying into the sea.

"The wave pattern is usually complex, varying seasonally with prevailing winds and river discharge as well as the tidal cycle," Rosenfeld and his graduate student James W. Bell report in the 1979 edition of the Association of Pacific Coast Geographers.

The edition was just published, however, by the OSU Press. Some follow-up radar flights were just completed recently and some were also flown in March, both for the Na-

tional Oceanographic and Atmospheric Administration. These studies, employing OSU techniques, will help assess the effects of the sediment from Mount St. Helens upon the lower Columbia.

"The ocean wave conditions at the mouth of the Columbia River have long been a hazard to small craft navigation and they have created problems for dredging and spoils disposal," the paper notes.

The radar flights, computer models developed by OSU oceanographers and geographers, shipwreck records and tidal gauge data have been put together and new techniques developed for predicting waves and pinpointing the most hazardous spots within the two-mile-wide entrance to the Columbia.

Because the deep, dredged channel that serves large vessels as they pass up the river is only 500 feet wide, however, there are

limits to the amount of maneuvering that ships can do within the harbor entrance, it was noted.

Safety depends in special measure therefore on the research data that allow wave forecasting for ship movements, Rosenfeld observed. "The studies have let OSU and the Corps of Engineers get a good handle on the combined river and ocean conditions that produce the most hazardous situations."

The fact that Astoria hopes eventually to get supertanker coal carriers to load from docks underlies the importance of safety advances in the Columbia River entrance, he added.

"The waves are so large that any big bulk carrier could literally be lifted simultaneously at the bow and stern, despite the fact that these are big, heavy ships, they are not built to be lifted at both ends."



February

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- Have soil test performed on garden plot to determine nutrient needs. Contact local county Extension office for instructions.
- Western Oregon: plant seed flats for cole crops (cabbage, cauliflower, broccoli, brussels sprouts).
- Fertilize rhubarb with manure or a complete fertilizer.
- Western Oregon: plant perennial herbs outdoors (chives, lovage, mint, rosemary, sage, thyme).
- Apply first of four lime sulfur sprays on apple trees to prevent apple scab.
- Western Oregon: prune fruit trees.
- Western Oregon: good time to plant fruit trees and deciduous shrubs.
- Delayed dormant sprays of lime sulfur for fruit and deciduous trees and shrubs.
- Prune and train grapes.
- Prune roses in western Oregon; wait until May in high elevations of eastern and central Oregon.
- Western Oregon: good time to plant roses and new rose varieties.
- Central Oregon: gather branches of quince, forsythia, flowering cherries and bring inside to force early bloom.
- Prune summer-flowering plants such as butterfly bush, cotoneaster, clematis, hydrangea.
- Control moles with traps or poison bait.
- Western Oregon: Elm leaf beetles emerging from hibernation; may be seen indoors.

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