

## Watching out for West Nile virus

By JEAN MacKAY

Will the West Nile Virus return with the birds?

Last summer, assistant superintendent Christian Diaz found a dead crow on his fairway at Clearview Golf Course in Bayside, N.Y. As it turns out, he wasn't the only one. Several thousand crows went belly-up in the greater New York City area last year, and this time, chemical applications weren't targeted for blame.

In 1999, a deadly disease never before seen in the United States struck both humans and birds in the New York City area. Known as the West Nile Virus, it killed seven people and sickened 59 others before the weather turned cold and the mosquito-borne disease was laid to rest. Parts of Nassau and Westchester counties and metropolitan New York City were broadcast-sprayed with malathion, Anvil, and pyrethroid pesticides to kill mosquitoes and prevent further transmission of the disease.

Several thousand birds also died.

Crows appeared to be more sensitive to the disease than other birds — although this may be attributable to the fact that crows are gregarious and dead birds are easy to spot. A diversity of species, including the blue jay, black-crowned night heron, mallard, American robin, several species of hawks and gulls, and belted kingfisher all tested positive for the West Nile virus.

### THE MOSQUITO-PEOPLE-BIRD CONNECTION

The West Nile Virus is an arboviral infection, which means it originates within insect populations — generally blood-sucking insects like mosquitoes or ticks — and undergoes changes in the insect prior to transmission.

Fortunately, not all species of mosquitoes carry the disease. West Nile is primarily transmitted by the Culex mosquito. Unfortunately, while only a small number of Culex mosquitoes may carry the disease, they generally tend to bite birds and people.

Birds can't transmit the disease directly to people, but once they become infected, the virus can be transmitted back to mosquitoes for about four to five days. During that time, birds can fly hundreds of miles, carrying the disease with them. Should they be bitten again by a mosquito, that mosquito becomes a new carrier of the disease.

Though some experts believe the disease outbreak ended with the first frost last November, others say there is a possibility it will spring up again, having been harbored in dormant mosquitoes through the winter. In early March, the Center for Disease Control in Atlanta released a report that mosquitoes collected at three of 69 sites in January and February had genetic material indicating the presence of the virus. Thus, should the disease re-appear this spring, bird migration and disease distribution will need to be closely monitored.

### THE THREAT OF VIRUS VS. SPRAYING

"Some of the guys got really scared about contracting the disease," said Clearview Golf Course's Diaz. But by taking precautions and knowing the disease symptoms, routine maintenance work continued without incident.

The West Nile Virus generally attacks those with weakened immune systems or immune-deficiency diseases. All seven who died last year were elderly. While the virus is rarely fatal, its encephalitis

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The 194-yard, par-3 9th hole on the West Course at Broadmoor, designed by Robert Trent Jones Sr. As part of Broadmoor's Audubon certification in wildlife and habitat management, superintendent Fred Dickman introduced native grasslands along the south boundary of the hole and along the water feature between the tee and green. Wild turkey, black bear, mule deer, bobcat, coyote and fox are commonly seen on the golf courses.

## Broadmoor courses gain certification

COLORADO SPRINGS, Colo. — The Broadmoor East & West Courses have achieved designation as Certified Audubon Cooperative Sanctuaries by the Audubon Cooperative Sanctuary System (ACSS). Only eight courses in Colorado have now received the honor.

"Environmental issues are one of the foremost priorities in golf course management. The Audubon Cooperative Sanctuary Program was instrumental in establishing a future environmental vision for our golf facility. Completing the certifica-

tion program has provided a better golfing experience for our members and guests at The Broadmoor," said Fred Dickman, golf course superintendent for The Broadmoor.

In 1994, The Broadmoor East & West Courses joined the Audubon Cooperative Sanctuary Program for Golf Courses, which provides information and guidance to help courses preserve and enhance wildlife habitat and protect natural resources.

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## No water, little hassle with new urinals

By MARK LESLIE

N EEDHAM, Mass. — If water is destined to be the gold of the 21st century, the Waterless Co. could be sitting on a gold mine.

Across the country, commercial facilities, park districts, restaurants — and a couple of golf courses — are installing the company's waterless urinals in their facilities — acting to save water and pre-empt any situations where they might be left waterless. At the Northern California Association of School Business Officials conference last November, more than 50 school districts signed on to install the units.

At Point Sebago Golf Club in Casco, Maine, superintendent Gerry White said he had two waterless urinals installed last year and "we will definitely add some more."

"The two are in the restaurant," he said. "They've worked great. They don't smell. We're very happy with them."

At Point Sebago, a camping and tenting resort where there is no city sewage system, the waterless units work well, White said, because "we have so many people jammed into this place. In July and August, our septic fields can't handle it. This [waterless urinals] is one step in the right direction."

David Jones, superintendent at Coronado (Calif.) Golf Course, has one unit in his maintenance building that "works well," he said. "If water is a concern, it is definitely worth looking at."

Jones said his materials costs compare closely to the water costs of using a regular urinal, but he added the caveat that employees and golfers both use his unit, so it gets heavy use.

"I'd be much happier using this than a portable potty," he said, "because this doesn't have the odor problem."

Richard Lewis, whose R. Lewis & Co., Inc. here represents Waterless Co. in New England, said he has not had great success in the Northeast but there is a rising interest in this new technology.

"It's the resistance to change," he said. "But we're on an absolute tear in school systems."

The interest that does exist, Lewis said, is "primarily because of the 'greening of America.' People are more environmentally conscientious. Another factor is strict water conservation. Sewer rates are three or four times higher than water now."

Lewis also pointed to a savings in maintenance. Problems with flush valves and gaskets are eliminated, he said, and while the part may cost only a dollar or two, "it can cost \$60 for the plumber."

Vandalism is also reduced with these units, Lewis said, because they are fiberglass and do not break like conventional units.

The plumbing industry converted from 3 gallons-plus to 1.6-gallons-per-flush toilets several years ago. The industry introduced water-saving faucets,

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GOLF AND THE ENVIRONMENT

## Waterless urinals

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shower heads and even tub fillers for baths. The plumbing industry reduced the requirements for urinal systems from 3 gallons per flush to 1 gallon or less. All these efforts have been part of the nation's conservation program.

"But more needs to be done," Lewis said, "and these waterless units will help."

White's cost for the units was \$450 apiece and maintenance is minimal.

The units use absolutely no water. A special trap in the urinals bowl contains a floating layer of Blue Seal, a lightweight immiscible liquid. The heavier urine flows through the Blue Seal layer completely blocking off rest room odors from the unit. The trap fill is good for 1,500 uses.

The Waterless Co. is headquartered in Del Mar, Calif. ♣

## Broadmoor certified

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"The Broadmoor East & West Courses have shown a strong commitment to their environmental program. They are to be commended for their efforts to provide a sanctuary for wildlife on the golf course property," said Joellen Zeh, staff ecologist for the Co-operative Sanctuary System. ♣

## West Nile virus

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stage is extremely damaging. Swelling of the brain may cause high fevers, headaches, uncontrollable violent seizures, and sometimes death.

Broad-scale spraying of malathion and other chemicals to control the spread of disease carries its own set of risks. Malathion's label warns against spraying near water sources, or where runoff is likely to occur — a difficult if not impossible task when aerially spraying the chemical. Ironically, the pesticide has also been found to weaken the immune system (*Journal of Immunology*, 140(2)), thereby making those exposed to it more vulnerable to disease.

Should the disease re-appear, authorities will monitor its outbreak and severity and weigh controversial spraying with threats posed by the disease. If state Health and Environmental departments implement preventative measures outlined by the National Center for Disease Control, conducting widespread pesticide spraying may not be necessary.

### ATTRACTING BIRDS AND PLAYING GOLF SAFELY

While the West Nile virus may or may not reappear this year, there are simple precautions golf course superintendents can take to assuage golfer fears, reduce mosquito bites, and still enjoy attracting birds to their courses. These guidelines are especially relevant for courses in New York, New Jersey and Connecticut, where West Nile appeared last summer and fall.

- Stay informed. Take note of news reports regarding West Nile virus. Should incidence of the disease re-appear, provide factual information to golfers and employees.

- Remove stagnant water sources such as birdbaths, old tires, or rain-water barrels that invite breeding mosquitoes. Aerate water features where possible to decrease habitat for mosquitoes.

- Remind maintenance crews to wear protective clothing outdoors and use insect repellents on clothing and skin to reduce the risk of mosquito bites.

- Be familiar with the symptoms of West Nile virus: severe flu accompanied by fever, headaches, muscle weakness, and mental disorientation. If you suspect that a mosquito bite preceded the onset of such symptoms, see a doctor. Keep in mind that the virus is rarely fatal, but the very old, the very young, and those with weakened immune systems are particularly vulnerable.

Finally, should you find dead birds on your golf course with no visible sign of injury, contact your local wildlife pathology department or health department to find out whether the bird should be tested for West Nile virus. ♣



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