

Birds Die in Winter Smog

Intense pollution during winter months affects migratory species

In Mexico City, pollution always poses a serious problem. The geographical features of the area, a valley surrounded by mountains, and the direction of the prevailing winds, hinder the dispersal of pollutants. Nevertheless, pollution becomes worse with the arrival of winter, due to the meteorological phenomenon known as "thermal inversion", in which cold air becomes trapped beneath a layer of warm air. Thermal inversions, which have been becoming more frequent in recent Mexico City winters, are dangerous because they prevent pollutants from rising and dispersing into the upper atmosphere.

At the beginning of February this year, in the midst of widespread concern over the effects of pollution, the national press reported the death of an enormous number of birds in Mexico City. Nobody has determined the exact total of bird deaths, though it is known that most of them were Canadian goldfinches (*Bombus cedrorum*), a migratory species whose route begins in Canada and the northern United States, crosses Mexico and ends in its southern regions or even farther south.

The Mexican Ecological Movement was quick to attribute the birds' deaths to the pollution level, and warned of danger to children and the elderly. In the period immediately prior to the deaths, pol-

lution had reached its most critical levels of the winter. The Ministry of Urban Development and Ecology (SEDUE) maintains a daily monitoring network which registers amount and type of pollutants, reporting its findings in the Metropolitan Air Quality Index (IMECA). The IMECA scale goes from 0 to 500, with 200 indicating emergency level. On the days immediately before the dead birds appeared, pollution had been at 270 on the scale, with ozone, nitrogen dioxide and suspended particles accounting for most of it.

Interviewed on the subject, Dr. Miguel Yacamán, of the UNAM Physics Institute, reported that the phenome-

non of dead birds in winter is not entirely new: it also occurred at the end of January 1985, when 50 dead birds were collected from different parts of Mexico City and examined at the UNAM Veterinary School. While it was impossible to reach definite conclusions as to the cause of death in these birds, the amounts of lead and cadmium found in their lungs and livers were double the quantities considered non-toxic for living organisms.

The inhalation of cadmium affects the respiratory system and the kidneys. Many lead compounds cause lung and kidney cancer and destroy red blood cells; they are quickly absorbed by inhalation.

At the beginning of 1986, their concern aroused by the death of the birds, a Physics Institute research team carried out a series of studies designed to determine the level of heavy metal contamination in the human population of Mexico City. The level of metals in the bloodstream can be determined through chemical analysis of hair samples. The results of these analyses as performed on a sample of 100 residents of Mexico City revealed an average lead level double the clinically accepted toxicity point.

"Even if the birds did not die from metal poisoning,"

states Dr. Yacamán, "the findings were still very alarming, because they showed that the birds had as high a concentration of metals in their organisms as has been found in humans. In birds, resistance, absorption time, and response to poisoning are all lower than in humans. Since Mexico City is the most lead-contaminated city in the world, the birds probably absorbed the lead here, though we cannot positively affirm that that was the cause of their death."

Even before the death of the Canadian goldfinches, SEDUE had announced one hundred anti-pollution measures, among the most important of which was the signing of an agreement with the Mexican Automobile Manufacturers' Association, obliging auto-makers to include antipollution devices in their 1988 models. These devices should mean a significant reduction in automobile-produced nitrogen monoxide and carbon monoxide, and hence a decrease in ozone and other harmful compounds. If such devices are also installed in used cars, the effort to reduce the pollution caused by Mexico City's almost three million motor vehicles will be complete.

As for lead pollution control, a first step has been the recent introduction of low-lead gasoline by the Mexican Petroleum Company (PEMEX).

Nevertheless, Mexico City pollution is a much larger problem than this. Mexican Ecological Movement researchers report that 728 thousand tons of particles are annually produced by 30 thousand industrial plants in the city, and that 308 thousand tons of dust blow in annually from the 22 thousand hectares (about nine thousand acres) of stripped land round the city's rim. The magnitude of the problem indicates that there is still much to be done. The results of the measures announced by SEDUE will be seen in years to come.★

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Photo from Novedades archive.

Ecological Alliance march protesting threat posed to Mexico City residents by pollution.