

Extra! Extra! Extra! 30 pages of summer reading! Extra!Extra! Extra!

# NewScientist

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**Extreme worms**  
**More trash please**  
**Turbo-charged boys**  
**Knitting in space**  
**Love connection**  
**Help find aliens**  
**Earth's final summer**

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# Summer special



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## Bad dope

MARIJUANA damages DNA as much as tobacco, creating potentially fertile ground for cancers, according to a study of mothers and their newborn infants.

Marijuana smoke contains many of the same carcinogenic chemicals found in cigarette smoke, and people tend to hold marijuana smoke longer in their lungs. Epidemiologists have not yet linked marijuana to cancer, but this may be because cancers take decades to develop and widespread marijuana use is a recent phenomenon.

Marinel Ammenheuser and her colleagues at the University of Texas Medical Branch in Galveston set out to discover whether marijuana smoke directly damages DNA. Using blood and urine tests, the researchers identified 17 pregnant women who smoked marijuana but



did not use tobacco, cocaine or heroin. The study also enrolled an equal number of women who used none of the drugs.

The researchers collected blood from each woman and from 10 umbilical cords. They found that the frequency of mutations in the DNA was nearly three times as high in the marijuana smokers and their infants as in nonsmokers (*Mutation Research*, vol 403, p 55).

Ammenheuser says that the increased mutation rate in marijuana users resembles that found in tobacco smokers. "It's only a hint that there may be trouble there, but it's scientifically plausible."

"There's more and more evidence from our lab showing increased levels of mutations in lungs," says Michael Roth of the University of California's Los Angeles Medical Center. His group will publish a study next month in the *Journal of the National Cancer Institute* showing that marijuana is associated with mutations known to be linked to lung cancer. He also has preliminary evidence suggesting that THC, the mood-altering ingredient in marijuana, may promote the carcinogenic effect. **Nell Boyce**

## Tar babies

**Swarms of mayflies are laying their eggs on roads rather than rivers**

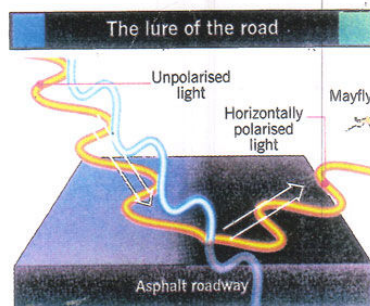
ADULT mayflies have only a few hours in which to find a mate and reproduce. Worse still, reflected light is deceiving them into laying their eggs on roads instead of in rivers, Hungarian researchers have found.

Direct sunlight reflected off the surface of water is strongly polarised in the horizontal plane. Many water-dwelling insects use this polarised light to identify open stretches of water where they can lay their eggs during their brief mating period.

Entomologist Sándor Andrikovics of Eszterházy Teachers' Training College in Eger, Hungary, noticed swarms of mayflies laying eggs on the surface of local roads, where their broods quickly dried up and perished. Now, together with biophysicists György Kriska and Gábor Horváth of Eötvös University in Budapest, Andrikovics has found that light reflected by dry asphalt roads is also horizontally polarised, possibly explaining their allure.

To confirm this, the researchers offered mayflies various surfaces for laying their eggs, and measured how strongly each one polarised the light it reflected. They found that the insects swarmed more frequently above a shiny black plastic sheet than other shiny and matt surfaces. According to the researchers' report in *The Journal of Experimental Biology* (vol 201, p 2273), so many mayflies were mating and landing on the shiny black sheet that it sounded like "raindrops rattling on the plastic".

The light reflected from the shiny black plastic was more strongly polarised than light from the other test surfaces. But when



Confused: to mayflies, roads look like open water

the scientists mounted the plastic vertically, rotating the plane of polarisation, the mayflies were no longer attracted to it.

According to the researchers' measurements, roads polarise light almost as strongly as the black plastic sheeting. They are currently testing whether dark, smooth asphalt is more attractive to mayflies than light or rough roads. They also point out that other features of roads, such as the lack of overhanging vegetation and the slightly warmer air above them, help make the asphalt more attractive to mating swarms of mayflies than nearby streams.

Roads near to streams could damage the local mayfly population. "If mayflies were heavily drawn to roads and the species was fragile in an area, then this could have an influence," suggests Michael Hubbard, an aquatic entomologist at the Florida Agricultural and Mechanical University in Tallahassee.

By laying eggs on roads, where they cannot survive, mayflies could be depriving streams of an important energy source, Hubbard says. Besides being food for fish, the insects return carbon to stream ecosystems when they die and when their larvae cast off their egg casings. However, Hubbard points out that the proportion of flies mating and laying eggs on roads would have to be very large to produce a significant effect on stream communities. **Jon Copley**

K Taylor/Bruce Coleman