

# REPORTS

BUTTERFLY FLYBY ♦ VACCINES GO WILD  
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## BUTTERFLY FLYBY

*What are those big yellow trees in the Gulf?*

**F**or workers on oil and gas rigs and production platforms in the Gulf of Mexico, counting monarch butterflies in the fall had become an interesting diversion. While many platforms reported scattered landings of two or three, there were also reports of hundreds, even thousands at a time, crowding the yellow metal frames of the platforms. They would come in early in the evening, stay through the night, and take off before sunrise the next day. Gary N. Ross, a Baton Rouge, Louisiana, entomologist, thought the phenomenon was worth exploring.

For the monarch butterflies, which each year migrate from the continental United States to breeding grounds in Mexico, this has been a period of diminishing returns. As many as 80 percent of the colonies may have been lost to habitat destruction in Mexico last year. Though this does not mean the end of the monarchs—there were an estimated 200 to 300 million to begin with—there is concern for the butterflies' future.

Over the last two years Ross has verified that the oil platforms and rigs in the Gulf have become a regular stop along the monarchs' offshore migration route from the coast of Louisiana to the northeast coast of Mexico. What's the attraction? Their color, for one; monarchs are attracted to yellow. But Ross now thinks that color may be

only a minor draw. He thinks the real attraction is magnetic.

The oil platforms and rigs all have electrical generators that produce a magnetic field. Further, the legs of the platforms are wired with anodes that create an electrical field in the water around them to prevent rusting. Since monarchs migrate by following magnetic fields (their bodies

produce a biosynthetic form of magnetite), Ross hypothesizes that the monarchs pick up the magnetic field of the platform, see what look like big yellow trees growing out of the Gulf, and come in for a landing.

Have they been drawn off course? Or are they taking advantage of a new rest stop along their normal migration route? It may be difficult to ever find out. Though the monarchs masterfully navigate some 2,000 miles over land and sea, it is literally a once-in-a-lifetime trip.

—Bruce Stutz

## VACCINES GO WILD

*Once they're out, can we get them back?*

**T**hough at least 25,000 people throughout the world succumb each year, human rabies has been largely obliterated in the United States and the rest of the developed nations. The reason: a highly successful program aimed at vaccinating dogs, the major carriers of rabies in modern times. But just when we thought rabies was a thing of the past, a new concern has begun to spread throughout Europe and the United States.

The current rabies epizootic, or animal epidemic, no longer afflicts our pets, but rather, millions of wild raccoons, foxes, skunks, and bats. Fearing that the epizootic may create a human epidemic, scientists have recently begun genetically engineering

**Migration break:**  
Why are monarchs homing in on oil rigs in the Gulf of Mexico?

vaccines, which they then release into the wild.



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One such vaccine, developed by veterinarian Charles E. Rupprecht, uses a small piece of genetic material from the rabies virus inserted into a vaccinia virus, which serves as the carrier. The protein produced by the rabies gene is not itself infectious but is still capable of producing an immune response against rabies.

In laboratory and field tests between 1984 and 1990, vaccinated raccoons developed rabies antibodies, while nontarget species were unaffected.

Rupprecht, now at Thomas Jefferson University in Philadelphia, is working with the state of New Jersey to spread tens of thousands of units of vaccine-laced bait. "We're laying down a swath of the vaccine," he explains, "to see if we can keep rabies out."

In Europe a genetically engineered vaccine fights rabies among red foxes, which roam the countryside attacking—and infecting—cattle. In Belgium, researchers recently air-dropped bait laced with genetically engineered vaccine around the country.

John G. Debbie, New York State public health veterinarian, says the latest effort to halt the rabies epizootic is crucial. "In 1989, before raccoon rabies reached New York State," he explains, "only eighty-one people were treated for rabies. Last year we treated nine hundred sixty-five people. And this year we expect the total to reach fourteen hundred. If we don't stop the spread of animal rabies, we face the danger of increased human infection. People *can* be exposed."

But Edward P. Bruggemann, a staff scientist for the National Audubon Society and the recent author of an article on the new vaccine in the professional journal *BioScience*, says, "You've got to vaccinate about ninety-nine percent of the raccoons to eradicate rabies. That's not really possible. And as long as even a few raccoons have rabies, anyone bitten by a raccoon in the wild will receive treatment, because it won't be possible to know whether the specific animal has rabies or not."

Since the extensive vaccination program won't stop people from seeking treatment for rabies, Bruggemann believes it's a waste of time and money in the United States. Less pressing but still

worth noting, he says, is "the issue of whether it's wise to spread large numbers of genetically engineered organisms throughout nature without sufficiently testing their impact on all nontarget species or the environment at large."

Rupprecht and other scientists who are developing the vaccines say their programs should go forward—not to eradicate rabies, but to control it and prevent its spread from one region to the next. Rupprecht calls the fears unfounded.

In fact, more genetically engineered vaccines for wildlife are on the way. One of the splashiest new efforts comes from Australia, where rabbits brought to the continent some 150 years ago are devastating native mammal populations, stripping the landscape of vegetation, and eroding the soil. Australians have long tried to control the rabbit population through traps, fences, and poisons, all to no avail. But now, says Hugh Tyndale-Biscoe, director of the government's Co-operative Research Centre for Biological Control of Vertebrate Pest Populations, in Canberra, a more humane form of relief is at hand.

He and his colleagues are developing a contraceptive vaccine that would spread by means of a virus from rabbit to rabbit. The rabbits would become infertile but not ill. "We're also doing similar research to control the European fox, another pest problem," Tyndale-Biscoe says.

He adds that contraceptive vaccines would also benefit nations such as Indonesia and the Philippines, where rat populations are out of control. But each new contraceptive vaccine will take years to develop and introduce.

"You've got to make sure that any genetically engineered organisms released into the environment affect *only* the target species," Tyndale-Biscoe emphasizes. "Because once you release these vaccines, you cannot take them back."

—Pamela Weintraub

# END OF AN ERA?

*Debt and death haunt Europe's Greens.*

**T**he shooting in October 1992 of Petra Kelly, probably Europe's best-known Green, seemed to mark the end of an era of growth in environmental radicalism. Kelly's violent end came 17 months after the collapse of the German Green Party she once dominated; it was riven by internal divisions and swept aside by the demise of the Soviet Union, which eroded the urgency of the party's peace policies.

The once brilliant Greens have faded elsewhere in Europe, too. In Great Britain they staggered the political establishment in 1989 by taking 15 percent of the vote in elections for the European parliament. But the British economy hit serious trouble, and their vote faded to nothing by the 1992 general election, which was



**As she was: Petra Kelly in 1983, during better days for the Greens.**

fought on the issue of who was most capable of reviving the economy. Nobody rated the Greens very high in that department. In France, Les Verts, who had scored spectacular successes in regional elections in March 1992 and had been briefly courted by Prime Minister Pierre Bérégovoy, failed to make an impression during the referendum on further European integration last autumn.

The lesson appeared to be that, as skeptics had always argued, concern