

## How smoke makes a wildflower grow

After 15 years and some 50,000 seeds that refused to come up, researchers have finally cracked the mystery of how to sprout one of California's more puzzling wildflowers.

In nature, the bleeding heart *Dicentra chrysantha* springs up freely after fire scorches dry, scrubby chaparral landscape. Yet Jon E. Keeley of the U.S. Geological Survey in Three Rivers, Calif., and C.J. Fotheringham of California State University, Los Angeles spent years failing to find the right triggers to germinate seeds in the laboratory.

The secret is burying the seeds in soil for a year and then exposing them to a 10-minute puff of smoke, the researchers report in the October *ECOLOGY*. The paper describes 25 chaparral species that respond not to a fire's heat but to its smoke. Only a few of the species need burial before sprouting.

Last year, Keeley and his colleagues announced finding the first North American wildflower to need smoke to get growing (SN: 5/31/97, p. 334). Keeley suspects that not all the smoke-sensitive chaparral plants respond via the same biochemical pathways. For example, the 10-minute exposure needed by bleeding hearts kills seeds of the first smoker plant he found, the whispering bell, which needs just a minute of smoke. —S.M.

## Look out, here comes that scrawny guy

Bigger males may trounce smaller ones in territorial clashes from beer halls to bug fights, but researchers in Brazil report what they call the first instance of the reverse: a natural territorial advantage for small size.

Males of the tropical butterfly *Heliconius sara* defend patches of jungle as their private mating arenas, chasing off as many as possible of the challengers who flutter in for a takeover battle. Yet the intruders are more likely to back down and flee when tangling with a shrimpy defender than with an average-size male, report Malva I. Hernández and Woodruff W. Benson

from the State University at Campinas in Brazil.

The reason may be that bigger males have more to lose, the authors speculate in the September *ANIMAL BEHAVIOUR*. The males also mate outside the arenas, clustering wherever females are emerging from pupal skins. In this fray, the bigger males probably do have an advantage. So, a scrawny male's best hope is in his own territory with the rare females that the larger males miss and with older females that mate multiple times. The system favors the small, feisty males willing to risk injury in defending their territories and the large males who flit away. —S.M.

## Can iguanas ride rafts for 200 miles?

In a flash of spectacular luck, finding just the right lizard in the right hurricane, a researcher has provided the best evidence yet of a group of land animals traveling over water to a new home. At least 15 green iguanas appeared on the Caribbean island of Anguilla several weeks after Hurricane Luis and then Hurricane Marilyn thrashed by in September 1995, reports Ellen J. Censky, director of the Connecticut State Museum of Natural History at the University of Connecticut in Storrs. In the Oct. 8 *NATURE*, she and her colleagues propose that the iguanas washed ashore on debris blown in from Guadeloupe, some 200 miles away.

Censky had been studying iguanas on Anguilla for more than a decade and knew green iguanas did not occur there naturally. Islanders told her about great tangles of uprooted trees 30 to 50 feet tall that had come ashore. Analyzing recent weather, currents, and species occurrence, Censky proposes that the iguanas arrived as castaways after surviving at least 3 weeks at sea. After 2 years of monitoring, researchers could still find some of the seafarers, which supports the idea that people aren't the only species to colonize new lands by sailing. —S.M.

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W.H. Freeman, 1998, 230 pages,  
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