to $16 million, and adds $4 million for plant genome studies and $5 million for animal genome studies. These efforts would have been part of the new foods initiative, but it's logical for NRI to fund them, says Sally Rockey, a deputy NRI administrator, because it is already supporting projects in these fields. But some things are lost in the tradeoff, says Nipp. NRI-funded projects do not have the education and extension components that were to be part of the new initiative, and traditionally NRI awards are small, single-institution grants, he notes. "The NRI is not structured to do some of the things that the initiative was supposed to accomplish."

Although the bill's ultimate fate is uncertain—Clinton vetoed it in an attempt to win more emergency aid for farmers—most observers expected its provisions to be retained in a catch-all budget bill passed before Congress adjourned for the year. But supporters of the new initiative are not yet ready to throw in the towel. When Congress considers the agriculture budget next year, says Rockey, "we would hope we can resurrect it."

–ELIZABETH PENNISI

EVOLUTION

Male Mating Blocks New Cuckoo Species

The common cuckoo thrives by hoodwinking other birds, and it has mystified biologists as well. Cuckoos lay their eggs in the nests of many other bird species, but individual females specialize in nests of just a single species, leaving eggs that match those of the host bird to fool it into tending them. In spite of this specialization, the cuckoo itself remains a single species. Now, a study on page 471 reports that the reason lies not in the struggle between host and parasite, but in another ancient battle—between male and female.

Genetic analyses of cuckoos reveal that even as they specialize on different hosts, the different reproductive strategies of males and females prevent speciation. "They're at odds with each other," explains co-author Karen Marchetti, an evolutionary biologist at the University of California (UC), San Diego. Although it's in the interest of the female to mimic a particular host as closely as possible, Marchetti and her colleagues found that the male mates with females that parasitize many different hosts, spreading his genes around. "And that prevents the development of new species," says Marchetti.

"They've confirmed what we suspected but has been hard to show," says Bruce Lyon, an evolutionary biologist at UC Santa Cruz. "These are hard-won data," he says, noting that the secretive behavior of the cuckoo has hindered earlier efforts to study its reproductive patterns. But the jury is still out on some of the team's theories—for example, that cuckoos pass egg traits such as color, pattern, and size only from mother to daughter, enabling them to produce a variety of egg patterns in spite of the males' homogenizing effect. "It's tantalizing, but it raises more questions than it answers," says John Eadie, a behavioral ecologist at UC Davis.

To solve the mystery of how cuckoos specialize without speciating, Marchetti and her co-authors studied the mating patterns of the Japanese common cuckoo. This bird lays its eggs in the nests of three other species, then leaves, letting the hosts perform all the chick-rearing chores. There's always the risk that the host species will learn to recognize foreign eggs and push them out of the nest. "That puts selective pressure on the female cuckoos to lay eggs that match their host's," explains Marchetti. Such evolutionary pressure is beginning to lead to the formation of "host races," with eggs specialized for a particular host species—a process that is more advanced in the European cuckoo, in which females lay very distinct eggs for each host. These races would seem to be poised to develop into different species—but the cuckoos don't go that far. "That's the mystery," says Marchetti.

The Japanese cuckoo has been carefully studied in the field by one of the authors, ornithologist Hiroshi Nakamura of Shinshu University in Nishinagano, Japan. He noted that just 30 years ago, the cuckoo added the third host, the azure-winged magpie, to its surrogate parent list. To see how this new specialization affected the bird's genetics, Nakamura collected blood samples from 83 adult male and 79 female cuckoos. He also sampled 136 chicks, recording which of the three host nest types the chicks were found in.

Marchetti then used this material to determine each chick's parenthood. Family tree in hand, she could then see where each female's chicks grew up. It quickly became clear, as researchers had guessed from field observations but never shown, that females are typically faithful to their host species, laying eggs in the kind of nest in which they were born. If an egg gets laid in the wrong nest by mistake, as happens about 5% of the time, and if the naïve host rears the chick, the cuckoo can immediately be set on a new evolutionary path, leading to the formation of host races—and potentially a new species.

But when researchers looked at the chicks' paternity, they found that the males willingly mate with any female, regardless of which host she is attached to. That behavior should block the development of any new species. "It's a conflict between the sexes," says Marchetti. "The males want to maximize the number of their offspring … [while] the female is under pressure to produce the best matching egg, one the host won't reject."

Because the father's genetic contribution cannot foster specialized eggs, the team speculates that egg-mimicry traits are passed only from mother to daughter. That would increase the chances of the females laying well-matched eggs—even though the male mating habits are working against them. But Eadie and others note that this is still a theory, and the team has yet to muster evidence on how egg mimicry comes about and is maintained. "That's still a big, black box," says Eadie. "This paper has opened the door," says Paul Harvey, an evolutionary biologist at Oxford University. "We're going to see a lot more" now that genetic techniques can be applied to the cuckoo's sneaky reproductive habits.

–VIRGINIA MORELL

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Birds of different feathers. Unwitting warbler feeds cuckoo chick.

SOLAR ASTRONOMY

Recovered SOHO Passes Health Check

Solar astronomers are breathing a sigh of relief this week. After a couple of months out of contact with Earth, spinning out of control, and exposed to extremes of temperature, the hugely successful Solar and Heliospheric Observatory (SOHO) appears to have come through its ordeal unscathed. As *Science* went to press, seven of the 12 instruments on board had been switched on successfully and recommissioning is complete for four of them, reports Bernhard Fleck, the European Space Agency (ESA) Project Scientist for SOHO at NASA's Goddard Space Flight Center in Greenbelt, Maryland. (SOHO is a joint project between NASA and ESA.) "We haven't observed any adverse effects due to the thermal stress so far," Fleck says. He is still surprised at how well the recovery has gone. "It is a miracle," he says.

When SOHO spun out of control in June, following a series of ground control errors (*Science*, 11 September, p. 1585), astronomers feared they would lose a unique vantage point in space to watch the sun as it reaches its 11-year maximum in solar activity around 2001. "The loss would have been a major setback," says Jørgen Christensen-