

Conflict and Harmony

Author: BEARDSLEY, TIMOTHY M.

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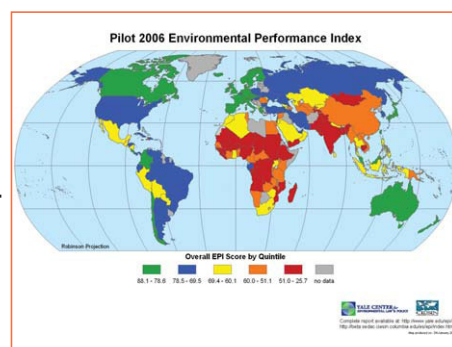
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Cover: A pair of red phalaropes (*Phalaropus fulicaria*), which nest in the high Arctic and winter on southern oceans, near Barrow, Alaska. Phalaropes reverse the usual pattern of sex roles in birds. Females initiate courtship, are larger and more brightly colored than males, and may have multiple mates; males incubate the eggs and tend the young. In the article that begins on p. 801, Tamás Székely and colleagues discuss evidence that in shorebirds, conflict between the sexes over the provision of care to the young plays a profound role in the evolution of breeding systems and courtship displays. Photograph: Mike Denega.

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Editorial Correspondence: 1444 I Street, NW, Suite 200, Washington, DC 20005; telephone: 202-628-1500; fax: 202-628-1509; e-mail: bioscience@aibs.org. Instructions for preparing a manuscript for *BioScience* can be found at www.aibs.org/bioscience/resources/Info_for_contribs.pdf.

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BioScience

Organisms from Molecules to the Environment

American Institute of Biological Sciences

Conflict and Harmony

Two articles in this issue of *BioScience* have the word "conflict" in their titles. The parallels—and the differences—are instructive.

In the article that begins on p. 801, Tamás Székely and colleagues write about studies conducted over more than a decade on sexual conflict and parental cooperation in shorebirds. The work combines experiments conducted in the venerable ethological tradition on wild populations of the Kentish plover (*Charadrius alexandrinus*), game-theoretical modeling of evolutionarily stable breeding strategies, and the use of molecular phylogenies for comparative analyses of behavior patterns. The effort has yielded telling evidence of an evolutionary tug-of-war between male and female shorebirds over which sex cares for the young, a conflict that is also affected by the degree of precocity of the young. Each sex benefits from leaving the other holding the baby, so to speak, but the decision on if and when to desert depends on whether, as W. S. Gilbert put it, there are lots of good fish in the sea (referring to mating opportunities, not food resources). The Kentish plover is at what might seem a tense point in the evolutionary saga, one where either sex can be faithless, and each may sometimes leave. This starts to look like a good ethological story that is leading investigators in some interesting directions, such as the constraints on courtship displays. Like all the best research, it has raised at least as many questions as it has answered.

On p. 819, a more speculative Forum article by John Shivik discusses a less familiar instance of evolutionary conflict, that between macro- and microscavengers. Both large and small scavengers benefit from extracting nutrients from carrion, and so their interests, like those of male and female birds, conflict. Once the reader has quelled a natural aversion to contemplating carrion—an aversion that is itself instructive—he or she is likely to find Shivik's ideas provocative. If bacteria and other omnipresent microorganisms rot a carcass too much, later diners risk poisoning. Consequently, macroscavengers such as vultures have to be fast in their search for an appealing dish (referring to food resources, not mating opportunities). By soaring and having an acute sense of smell, vultures can descend on a dead animal before the microbes have gotten too far. Carrion represents a substantial part of nutrient flows in many ecosystems, so understanding the conflict it generates is important. Good data are needed, and game theory may be applicable.

Biologists gave up decades ago on the notion that harmony underlies nature's bounty. The harmonies are usually best understood as the outcome of conflicts at some level. Of course, through the spoken word and the printed page, humans can be encouraged to devise their own harmonies, and Székely and colleagues note in that connection that many shorebird populations need conservation measures. *BioScience*, in keeping with its tag line—"Organisms from molecules to the environment"—seeks to publish more accounts of work on organismal biology, and the ideas in this issue are a gratifying feast (referring to intellectual stimulation).

TIMOTHY M. BEARDSLEY
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