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#### References and Notes

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2. M. R. Landry, W. K. Peterson, V. L. Fagerness, *Mar. Ecol. Prog. Ser.* **115**, 55 (1994); M. R. Landry, C. J. Lorenzen, W. K. Peterson, *ibid.*, p. 73; W. T. Peterson, S. J. Painting, L. Hutchings, *J. Plankton Res.* **12**, 259 (1990).
3. Colony,  $0.555 \pm 0.270$  gram of AFDW per milliliter; conversion factor for carbon/chlorophyll a, 60; respiration,  $6.46 \pm 1.32$  milligrams of carbon per gram of AFDW [K. E. Fabricius, A. Genin, Y. Benayahu, *Limnol. Oceanogr.* **40**, 1290 (1995)]. Epifluorescent microscopy confirmed that algae or epizoon did not adhere to the surface of colonies.



#### Diffusion to a Different Drummer

In their interesting report "NMR studies of single-file diffusion in unidimensional channel zeolites" (3 May, p. 702), Volka

Kukla *et al.* refer to the application of single-file diffusion to ion transport in membrane channels. But there appears to be an important difference between these processes, at least in the relatively well-characterized case of the ion channel gramicidin. In zeolites, vacancies are assumed to effectively diffuse through a string of molecules independently (1). The pore of gramicidin contains about 10 molecules in single file, including waters and perhaps one or two ions (2). Molecular dynamics simulations suggest that the movements of ions and waters within the pore are synchronized (2, 3). Under these conditions, a standard diffusion coefficient governs the long-time behavior of the center of mass mean square displacement (4)

$$\langle z^2(t) \rangle = 2Dt$$

where  $z$  is the spatial coordinate along the pore axis,  $t$  is time, and  $D$  is the diffusion coefficient of the pore contents.

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2. B. Roux, B. Prod'homme, M. Karplus, *Biophys. J.* **68**, 876 (1995).
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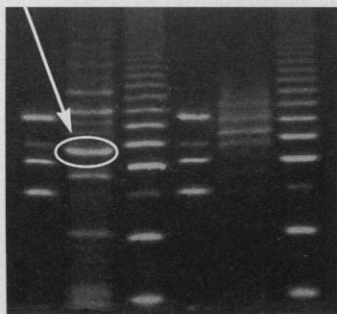
#### Extinction Rates

In their 21 July 1995 article, "The future of diversity" (Frontiers in biology: Ecology, p. 347), Stuart L. Pimm *et al.* incorrectly attribute to me the assertion that "one (or a few) species per year" are going extinct. They go on to say that "Simon's claims . . . are not scientifically credible." In the very book they cite is the following disclaimer (1, p. 206):

It is entirely inaccurate to say, as Mr. Myers does [the book is a debate between Norman Myers and me], that I have made any estimates of extinction rates. I have never written or spoken such a sentence.

My position is as different as can be from what Pimm *et al.* and others repeatedly say I said, to wit: There *only is evidence* for one or a few species a year going extinct, mainly birds or mammals. Of course, many other species

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are going extinct. And it makes common sense that the extinction rate has been increasing both recently and throughout the long sweep of history. But there is no solid evidence about the rate. And there is no evidence at all that the rate has been increasing in the past century; this calls into question Pimm *et al.*'s assertion that a higher human population has caused a faster rate of extinction.

**Julian L. Simon**

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#### References

1. N. Myers and J. L. Simon, *Scarcity or Abundance* (Norton, New York, 1994).

**Response:** We are pleased that Simon agrees that "many other species are going extinct." Simon's earlier statement was that "existing data on the observed rates of species extinction are almost ludicrously inconsistent with the doomsters' claims" (1, p. 43). Our article's figure 2 showed that observed extinction rates are broadly similar across disparate taxa and consistent with the rates of those whom Simon deems "doomsters." A recent U.S. report corroborates and expands this consistency to include (in increasing order of rate) birds,

mammals, tiger beetles, reptiles, dragonflies and damselflies, ferns, conifers, flowering plants, freshwater fish, amphibians, crayfish, and freshwater mussels (2).

We agree that "it makes common sense that the extinction rate has been increasing both recently and throughout the long sweep of history," but would be very interested to learn of Simon's alternative explanation for this increase. Of the hundreds of scientists who have documented these extinctions, we are not aware of one who denied that they were caused directly or indirectly by human impact (3).

**Stuart L. Pimm**

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2. *TNC Priorities for Conservation: 1996 Annual Report Card for U.S. Plant and Animal Species* (Nature Conservancy, Arlington, VA, 1996).
3. V. H. Heywood, Ed., *Global Biodiversity Assessment* (Cambridge Univ. Press, Cambridge, UK, 1995).

#### Corrections and Clarifications

In the Random Samples item "Science, technology medal winners" (21 June, p. 1747), the names of Department of Commerce Secretary Mickey Kantor and National Medal of Technology winner Stephanie Louise Kwolek were misspelled.

In the News & Comment article "Demand outstrips supply" by Eliot Marshall (21 June, p. 1730), the name of G. Christian Overton, director of the bioinformatics program at SmithKline Beecham, was incorrect.

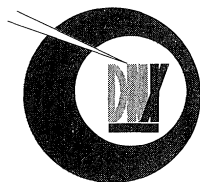
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