Yehuda Benayahu
Department of Zoology,
Tel Aviv University,
Ramat Aviv 69978, Israel
Gitai Yahel
Amatzia Genin
H. Steinitz Marine Biological Laboratory,
Hebrew University,
Post Office Box 469,
Eilat 88103, Israel

References and Notes

1. K. E. Fabricius, Y. Benayahu, A. Genin, *Science* **268**, 90 (1995).
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 ± 0.270 gram of AFDW per milliliter; conversion factor for carbon/chlorophyll a, 60; respiration, 6.46 ± 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.

Mark F. Schumaker
Department of Pure and
Applied Mathematics,
Washington State University,
Pullman, WA 99164–3113, USA
E-mail: schumaker@beta.math.wsu.edu

References

1. J. Kärger, M. Petzold, H. Pfeifer, S. Ernst, J. Weitkamp, *J. Catal.* **136**, 283 (1992).
2. B. Roux, B. Prod'hom, M. Karplus, *Biophys. J.* **68**, 876 (1995).
3. P. C. Jordan, *ibid.* **58**, 1133 (1990).
4. S.-W. Chiu, J. A. Novotny, E. Jakobsson, *ibid.* **64**, 98 (1993).

■

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

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
College of Business and Management, University of Maryland, College Park, MD 20742, USA

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
John L. Gittleman
Gareth J. Russell
Thomas M. Brooks
Department of Ecology and Evolutionary Biology, University of Tennessee, 125 Austin Peay Building, Knoxville, TN 37996, USA

References

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

Letters to the Editor

Letters may be submitted by e-mail (at science_letters@aaas.org), fax (202-789-4669), or regular mail (*Science*, 1200 New York Avenue, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for reasons of clarity or space. They may appear in print and/or on the World Wide Web. Letter writers are not consulted before publication.