



LETTERS

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Archaeobotanical Archiving

IN THEIR REPORT “EMERGENCE OF AGRICULTURE IN THE FOOTHILLS of the Zagros Mountains of Iran” (5 July, p. 65), S. Riehl *et al.* describe the advent of agriculture and domestication of wild plants in the Zagros Mountains, Iran. The authors write that the samples are currently archived at the University of Tübingen, but we believe that the site of conservation and archiving should be in Iran.

According to the First Code of Ethics, adopted by World Archaeological Congress Codes of Ethics, archaeologists and anthropologists agree to fulfill their commitments to the ethical principles governing the study of the human past (1). Among these principles is the importance



Sorting carbonized plant remains.

Response

WE SHARE GOLZARI'S CONCERN FOR THE conservation of Iran's cultural heritage. Two of us (M.Z. and N.J.C.) are the Iranian and German directors of the Chogha Golan excavations. Furthermore M.Z. is a graduate of Tehran University who has spent most of his professional career employed by the Iranian Department of Antiquities. The project served as an important training excavation for numerous Iranian students, who learned how to use state-of-the-art methods to carefully excavate this pre-ceramic tell. Our team has a formal partnership with the Iranian Department of Antiquities to conduct archaeobotanical research. We were granted a permit to export the botanical materials from Chogha Golan.

Given that there is no established facility

for conducting archaeobotanical research, nor a facility for long-term storage of archaeobotanical materials in Iran, the University of Tübingen, with its excellent infrastructure and long record of research in the fields of botany and archaeobotany, is an appropriate place to study the botanical remains from Chogha Golan. Our team, which is composed of Iranian and other international scholars, works closely with the Department of Antiquities in Iran, with whom we have a long relationship based on shared scientific goals, trust, and mutual respect. When our research has been completed, we will work closely with our colleagues at the Department of Antiquities to decide where and how to best archive the botanical material from Chogha Golan.

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of indigenous ancestral human remains to native peoples. Archaeologists are required to acknowledge that the indigenous cultural heritage rightfully belongs to the indigenous descendants of that heritage. Human remains, artifacts, or objects of special cultural significance of indigenous peoples should not be removed from their indigenous discovery site or country.

The archaeobotanical samples used in the Riehl *et al.* study reflect the thousands-year-old heritage of civilizations and should be conserved and archived where they were found in order to respect the rights of the indigenous descendants.

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Reference

1. The World Archaeological Congress, *First Code of Ethics* (Adopted by WAC Council in 1990 at WAC-2, Barquisimeto, Venezuela); www.worldarchaeologicalcongress.org/about-wac/codes-of-ethics/167-codes-of-ethics.

Alleviating Poverty in India: Biodiversity's Role

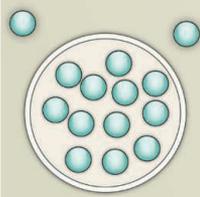
IN THEIR NEWS FOCUS STORY “SCIENCE FOR all” (31 May, p. 1032), P. Bagla and R. Stone describe advances in technology, medicine, and information technology geared toward alleviating poverty in India. However, they did not highlight the link between biodiversity conservation, judicious natural resource management, and the quality of life and upward economic mobility of poor people in (sub)tropical countries such as India.

Biodiversity loss is one of the greatest economic problems affecting the world (1) and is inextricably linked with development. In India, deforestation in the Himalaya is not only driving endemic extinctions (2), it is also affecting villages by causing periodic droughts (p. 1033) and extreme flooding events (3), which could be exacerbated by the effects of climate change on glaciers (4). Thirty-one percent of the world's coastal fishermen rely on the Bay of Bengal, an area enduring longstanding overfishing and



Promising gene therapy

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How crystals nucleate

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pollution that will likely worsen with increasing trade (5). Healthy ecosystems aid in climate change adaptation as well as disaster risk reduction (6); for example, mangroves protected coasts during the 2004 tsunami. Infectious disease and biodiversity loss in India are strongly linked (7, 8).

Given the synergy between biodiversity and sustainable development, the current scientific race against time can only take India so far in the fight against poverty if research on biodiversity conservation and relevant fields of social sciences do not experience comparable growth. Technological innovation and interdisciplinary collaboration on biodiversity research should be encouraged. For example, harnessing India's advancements in space research could improve satellite mapping of ecosystems and natural resources in difficult parts of the country (9). Changes are also needed in biodiversity and conservation policies (10). A country that boasts four biodiversity hotspots (11) and tremendous recent economic development (despite continuing income inequality and poverty) should be able to provide focus on biodiversity conservation. Intensive research in biodiversity conservation and related social sciences will inform India's national policy on long-term economic development while improving the quality of life of the underprivileged majority.

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References

1. D. Helm, C. Hepburn, *Oxford Rev. Econ. Pol.* **28**, 1 (2012).
2. M. K. Pandit, N. S. Sodhi, L. P. Koh, A. Bhaskar, B. W. Brook, *Biodiversity Conserv.* **16**, 153 (2007).
3. R. Deshpande, "Earth sciences secretary blames Uttarakhand rains on climate change," *The Times of India* (22 June 2013).
4. T. Bolch *et al.*, *Science* **336**, 310 (2012).
5. Anonymous, "The Bay of Bengal: New bay dawning," *The Economist* (27 April 2013).
6. R. Munang, I. Thiaw, K. Alverson, J. Liu, Z. Han, *Curr. Opin. Environ. Stability* **5**, 47 (2013).
7. D. Taylor, Q. Rahman, *Environ. Health Perspect.* **104**, 266 (1996).
8. F. Keesing *et al.*, *Nature* **468**, 647 (2010).
9. N. J. Singh, S. Bagchi, *J. Appl. Ecol.* **50**, 4 (2013).
10. G. Shahabuddin, "The endangered wildlife biologist,"

Nature, Wildlife, People: A Symposium on Wildlife Protection and People's Livelihoods #577 (2007); www.india-seminar.com/2007/577/577_ghazala_shahabuddin.htm.

11. Conservation International, "The Biodiversity Hotspots" (20 July 2013); www.conservation.org/where/priority_areas/hotspots/asia-pacific/Pages/asia-pacific.aspx.

Protecting the Right To Benefit from Science

IN THEIR POLICY FORUM "A HUMAN RIGHT TO science" (14 June, p. 1291), A. Chapman and J. Wyndham describe action the science and engineering community can take to implement Article 15 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR) (1), which details the right to benefit from science. However, they do not address one salient detail: To date, the United States (along with Cuba, Belize, Comoros, Palau, San Marino, and South Africa) has signed but not yet ratified the ICESCR (2).

Until the United States fully accepts the terms of the ICESCR, including Article 15, activism of the sort recommended by Chapman and Wyndham is likely to have limited impact. Their call for action by the science and engineering community is entirely appropriate and timely; however, it appears that the first target of that activism should be the U.S. Senate.

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References

1. International Covenant on Economic, Social, and Cultural Rights (www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx).
2. United Nations Treaty Collection (http://treaties.un.org/Pages/ViewDetails.aspx?src=Treaty&mtdsq_no=IV-3&chapter=4&lang=en).

Letters to the Editor

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Response

AS MATSUURA POINTS OUT, THE UNITED STATES is not a party to the ICESCR (1) and, therefore, is not legally bound to implement the treaty, including its Article 15 recognizing the right to enjoy the benefits of scientific progress. Nonetheless, opportunities do exist for the U.S. science and engineering community to contribute to the implementation of this right. Although it has not ratified the ICESCR, the United States did sign this human rights treaty in 1977. The legal implication is that the United States must not violate the "object and purpose" of the ICESCR. In this vein, former U.S. Assistant Secretary of State Michael Posner (2) and Science Adviser to the Secretary of State William Colglazier have stated publicly that the United States "as a policy matter" upholds the "values and principles" of the right to benefit from science (3).

There are three ways the U.S. science and engineering community can contribute to the implementation of Article 15:

(i) The UN body that monitors implementation of the ICESCR regularly reviews reports of states outlining how they implement their obligations. Any group may submit a "shadow report" to supplement this information. U.S. scientists and engineers could provide information about the persecution of scientists, budgetary restrictions, or positive strides in strengthening science education.

(ii) Every 4.5 years, the UN Human Rights Council reviews the human rights record of all members of the United Nations. This universal periodic review is not limited to a review of treaties ratified by a country. As part of this process, the U.S. science and engineering community could submit information about U.S. policies and programs relating to science and their impact on and implications for human rights.

(iii) The framework provided by Article 15 need not be legally binding to inform U.S. policies and programs. Taking specific elements of Article 15, the science and engineering community could work with relevant agencies to assess or develop programs that reflect the principles of Article 15 and inform policy development.

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References

1. International Covenant on Economic, Social, and Cultural Rights (www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx).