ucation as predictors of children joining the workforce. The key role of poverty in predicting child labor is also illustrated by the impact of the acute economic recession that affected Cote d'Ivoire between 1985 and 1988. Here, child labor increased from 962 to 1593 hours per year, with the greatest increases being in families of lowest income (*3*). Thus, there appear to be specific variables; poverty is one, associated with children participating in labor and lacking education.

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted by e-mail (science_letters@aaas.org), the Web (www.letter2science.org), or regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

Coral Reef Biodiversity and Conservation

IN THEIR REPORT, "MARINE BIODIVERSITY hotspots and conservation priorities for coral reefs," C. M. Roberts *et al.* (15 Feb., p. 1280) present a strategy for marine conservation based on centers of endemicity. They define "endemics" as species that occur in ≤10 square grids of ocean that contain coral reefs (each cell being 5×10^4 km^2), regardless of the spatial distribution of occupied cells. As a consequence, endemicity and location are confounded. Where all grid cells containing reefs are contiguous, an endemic would have a geographic range the size of the Great Barrier Reef, the largest reef system in the world. Alternatively, on isolated oceanic reefs, an endemic occupying 10 dispersed cells could stretch across an ocean. Ignoring this distinction, Roberts *et al.* attempt to show concordance in patterns of endemicity among fish, corals, snails, and lobsters. However, many of these "multitaxa centers of endemism" have no endemic corals. As the architects of reefs upon which so many other species depend, corals cannot be dismissed as an unimportant exception. Furthermore, Roberts *et al.* confuse centers of marine endemicity and centers of high biodiversity (i.e., true hotspots), stating that "centers of endemism are major biodiversity hotspots" (p. 1280). Instead, many of the apparent centers of endemism they identify are very small marginal locations with low overall diversity (e.g., Cape Verde Islands and Easter Island). Furthermore, in an era of global warming, we caution against using conservation strategies that focus heavily on endemics. It would be interesting to use climate modeling to predict which coral reef regions are most at risk and to what extent they differ from the 18 locations identified by Roberts *et al.*

Roberts *et al.* also state the advantages of

integrating terrestrial and marine conservation programs, yet they mention no linkage between the Great Barrier Reef and the adjoining mainland of Australia, where clearing of rainforest, savanna, and mangroves is a growing concern. Conversely, they match Lord Howe Island with the "adjacent" terrestrial hotspot of New Zealand (which is farther away than either Australia or New Caledonia). It is difficult to see the practicality of "[e]xtending terrestrial conservation efforts seaward" (p. 1284) across 2000 km of cold Southern Ocean between New Zealand's fjords and Lord Howe Island's balmy coral reefs. Arguably, counts of species or endemics tell us very little about the biology or conservation status of different regions. Knowledge of regional-scale variation in functional groups and the processes affecting their abundances would provide a far better foundation for protecting coral reefs.

CREDIT: C. M. ROBERTS *ET AL.*

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ROBERTS *ET AL.* CALL ATTENTION TO THE existence of two contrasting types of coral reef areas, those with high levels of species diversity (richness) and those possessing a high percentage of endemic species. Although the authors identify the high-diversity areas and the fact that many of them are threatened by human activity, they devote most of their attention to places that exhibited a high percentage of endemism. Considering the limited resources available to conservation agencies, should the areas of endemism, where many short-range species reside, receive the most emphasis?

Almost all reef areas that harbor relatively large numbers of endemics are located on the fringes of the tropics, and many of them are confined to small oceanic islands. Typically, these are places with a low species diversity but with a high percentage of endemics. Studies of historic patterns of extinction and replacement (*1*) suggest that the endemic species found in such places are often phylogenetic relicts that have accumulated over vast periods of time. Although relict species are of considerable scientific interest because they are able to reveal past stages in the history of the group concerned, the fact remains that they usually exist in small populations that are on their way to extinction. They generally have low genetic variability and have often been subjected to the debilitating effects of genetic drift. They may be said to exist in evolutionary traps.

If we wish to preserve the most species per conservation area, the location of choice would need to be where the species diversity is the greatest. The highest diversity in the shallow marine world is found in a relatively small area of the Indo-West Pacific called the East Indies Triangle (*2*). The triangle extends from the Philippines, southeast to the Malay Peninsula and eastward to New Guinea. Most groups of tropical marine animals are represented by more species here than in any other place in the world. As Roberts *et al.* have shown, it is also an area that is being severely impacted by human activity. Conserving more area here can lessen the interference with the long-term process of global evolutionary change and increase the benefit to future human generations.

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Response

OUR REPORT CLEARLY HIGHLIGHTS THE importance of areas rich in species, particularly the "coral triangle" of Southeast Asia. This region is rich in widespread species and endemics. It includes three of the hotspots we identified: (i) Southern Japan, Taiwan, and Southern China; (ii) the Philippines; and (iii) the Sunda Islands. Together, they contain 13% of the world's coral reefs and 55% of reefs from the 10 most threatened centers of endemism (hotspots). The coral triangle also includes areas where you can still protect relatively intact reefs, such as much of New Guinea.

We disagree that narrowly restricted endemic species are evolutionary relicts on a fast track to extinction. (Briggs seems to con-

tradict his argument when noting that such relicts have accumulated "over vast periods of time.") Many of our centers of endemism appear to be areas of evolutionary innovation (*1*). Other things being equal, restricted-range species are more vulnerable to extinction than widespread species and require focused conservation effort.

Our measure of range size (number of grid cells with reef habitat in a species' range) could lead to larger centers of endemism being defined in regions where reefs are sparse, compared with regions where they are more extensive, but our results show that this did not happen. We give equal weight to all four taxa and do not dismiss corals, as suggested by Baird *et al.* Not all centers of endemism are rich in endemics for all taxa, but conservation efforts in them must protect reefs as ecosystems, including all species present.

Threats to reefs constitute a key part of our analysis. The Great Barrier Reef lies within the world's largest marine park and so does not qualify as a hotspot requiring urgent conservation effort. We presume that it is already receiving the attention it needs. We emphasize the importance of integrating terrestrial and marine conservation, because many of the threats facing reefs originate inland. Although protection of Lord Howe's reefs will clearly not depend on land use in distant New Zealand, conservation of the Great Barrier Reef will not succeed without addressing land-based threats. Nor would it be effective in many of the other regions where terrestrial and marine hotspots abut, such as the Philippines or Southern Mascarene Islands. Finally, efforts to mitigate climate change are needed to secure the future of all the world's reefs, but place-based initiatives must get under way even as the world warms. Our findings point to the most pressing priorities and, in spreading conservation action among many places, should ultimately leave us with more options (and species) in a warmer world than if conservation were concentrated only in the richest regions.

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CORRECTIONS AND CLARIFICATIONS

RANDOM SAMPLES: "Plastic invasion" (26 April 2002, p. 653): The study described analyzed roughly 6000 pieces of beach debris, not 200, and Antarctic waters (not the continent) are predicted to warm 2°C over the next century.

LETTERS: "Another look at MgB_2 and YBCO wires" by R. A. Hawsey and D. E. Peterson (26 April, p. 655). The penalty in refrigeration resulting from a reduction in operating temperature from 68 to 25 K is a factor of 3 to 4, not 3 to 4% as stated in the letter.