catch, and socioeconomic impacts of shrimp farming. Instead, we opted to focus on a number of direct environmental impacts of shrimp and salmon farming.

The decline in potential wild fisheries harvests was mentioned briefly. In our statement on nursery areas destroyed by aquaculture, we referred primarily to mangroves, but also to freshwater wetlands, seagrass beds, and coral reefs. Mangrove forests protect coral reefs by absorbing pollutants (*1*) and retaining silt and clay sediments from rivers and coastal waters (*2*) that interfere with reef productivity.

The destruction of nursery habitats caused by mangrove conversion has a direct impact on commercial species, species in the food chain that support commercial and subsistence-based fisheries, and wild post-larvae supplies (*3*). In addition, it reduces the supply of wild spawners and broodstock on which shrimp hatcheries in Asia and parts of Latin America depend.

Moreover, as Turner points out, mangrove conversion lowers the volume of by-catch, which is an important source of nutrition for some coastal communities (*1*). Perhaps more worrisome, shrimp farming has caused food insecurity, marginalization, unemployment, and other socio-economic disruptions among poor, rural communities through land privatization and expropriation, salinization of soil and water, and loss of mangrove goods and services (*4*). The latter includes erosion and flood control, water purification, fuelwood supplies, and a variety of food sources that are essential for the livelihood of subsistence communities (*5*).

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The Conditional Mutator Phenotype in Human Tumor Cells: Correction

In a previous report, "Conditional mutator phenotypes in hMSH2-deficient tumor cell lines" (5 Sept. 1997, p. 1523) (*1*), some of us (B.R. and M.M.) demonstrated that two hMSH2-deficient tumor cell lines exhibited a conditional mutator phenotype. When the cells were kept in a growing state, mutation rates were low. However, when the cells were allowed to come to confluence and stand in high-density, suboptimal growth conditions, the mutant frequency increased as much as 7900-fold. We suggested that this increase might have been the result of an accumulation of mutations occurring while the cells were maintained in suboptimal culture conditions.

An alternative explanation for the differences in mutant frequencies is suggested by more recent experiments. When these tumor cell lines were grown in medium supplemented with a new serum batch, both log-growing and high-density cultures displayed a high mutant frequency. To confirm that the serum was the component of the medium that led to the changes in mutant frequency, we grew cells from the same inoculum side by side in medium supplemented with our original serum or in medium supplemented with the new batch. Cells grown in our original serum showed a low mutant frequency, while those grown in the new batch had a substantially (>2000-fold) elevated frequency. When cells were grown in mixtures of the two kinds of serum, mutant frequency was again low. These data argue that the conditional mutator phenotype is the result of suppression of mutation in log-growing cells by factors in the original serum. Since high-density cultures accumulate mutations, we suggest that high-density cultures may not respond to this suppressive mechanism or that the factor responsible for suppression may become exhausted in the medium. Nevertheless these data demonstrate that serum factors may play an important role in governing mutation rate in some tumor cells.

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CORRECTIONS AND CLARIFICATIONS

The units of measurement in the graph accompanying the Policy Forum "Nature's subsidies to shrimp and salmon farming" by Rosamond L. Naylor *et al.* (*Science*'s Compass, 30 Oct., p. 883) were incorrect. They should have been "metric tons x 10^5." The correct graph appears in this issue on page 639.