

# BIODIVERSITY CONSERVATION ADVANCES GLOBAL HEALTH PRIORITIES

A growing body of evidence suggests that biodiversity and healthy ecosystems provide goods and services (e.g. wild foods, pollination, climate regulation) that significantly contribute to human health and wellbeing and serve as a foundation for sustainable development. However, poor management of natural systems compromises these benefits with potential negative impacts on community health, nutrition, food security, and resilience. Integrating biodiversity conservation and natural resources management into global health programs can help protect these investments and improve their effectiveness and sustainability.

## Nutrition and Food Security

**THE ISSUE:** The UN estimates that almost 800 million people are undernourished globally.

### LINKAGES TO BIODIVERSITY

- The FAO estimates that fish provides almost 20% of animal protein intake for 2.9 billion people globally; in some countries with highly productive wild fisheries like Cambodia, Ghana, and Sierra Leone, this figure exceeds 50%.<sup>1</sup>
- In rural Tanzania, wild foods are an important part of the local diet with over 90 species consumed including fruits, vegetables, fish, birds, insects, and mammals, particularly during the rainy season when communities are more food insecure.<sup>2</sup>
- In Malawi, children living in areas with net loss of forest from 2000 to 2010 were 19% less likely to consume a diverse diet and 29% less likely to consume vitamin A-rich foods compared with children in areas with no net change in forest cover.<sup>3</sup>
- In a study of 21 African countries, children living in areas with a higher percentage of tree cover (up to 45%) were found to have more nutritious, diverse diets.<sup>4</sup>

## Community Resilience

**THE ISSUE:** Poor households, especially in rural areas, are particularly vulnerable to economic and environmental shocks.

### LINKAGES TO BIODIVERSITY

- In Ghana, researchers found that the consumption and sale of non-timber forest products helped poorer households, especially those living near forests, to cope with shortages of food and cash.<sup>5</sup>
- Villages in India adjacent to intact mangroves were significantly less damaged by the 2004 Indian Ocean tsunami than those unshielded by vegetation.<sup>6</sup>
- In rural Honduras, a longitudinal study found that indigenous communities improved resilience to natural disasters such as floods through social and ecological interventions, including forest conservation and increasing access to natural capital.<sup>7</sup>

## Vulnerability to Infection and Illness

**THE ISSUE:** Infectious diseases such as malaria, diarrheal disease, and respiratory infections cause millions of deaths annually.

### LINKAGES TO BIODIVERSITY

- In the Brazilian Amazon, expansion of strict protected areas from 1990 to 2010 was associated with lower incidence of malaria, diarrheal disease, and acute respiratory illness.<sup>8</sup>
- In Malaysian Borneo, deforestation was found to be a key driver of increases in *Plasmodium knowlesi* malaria transmission.<sup>9</sup>
- In some regions of Africa, deforestation has been associated with increased transmission of malaria and schistosomiasis.<sup>10</sup>
- A meta-analysis on linkages between biodiversity and parasitic infections concluded that “human-induced declines in biodiversity could increase human and wildlife disease and decrease crop and forest production”.<sup>11</sup>

### THE OPPORTUNITY

Biodiversity conservation **maintains** ecosystem services that contribute to community nutrition and food security. Investing in strategies that reduce environmental threats such as deforestation and poor fisheries management can protect ecosystem productivity and function.



### THE OPPORTUNITY

Biodiversity conservation **strengthens** community resilience by preserving green infrastructure that protects communities from natural disasters and by providing natural resources they rely on during times of crisis. Investing in strategies that maintain green infrastructure and sustainably manage natural resources can provide safety nets for communities.



### THE OPPORTUNITY

Biodiversity conservation may **mitigate** ecosystem changes such as deforestation and biodiversity loss associated with increased transmission of some common infectious diseases. Investing in strategies that maintain intact ecosystems may regulate transmission of these diseases.



## Sources

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1. FAO, *The State of World Fisheries and Aquaculture*. Available from <http://www.fao.org/3/a-i3720e.pdf>. 2014.
2. Powell, B., et al. *Wild foods from Farm and Forest in the East Usambara Mountains*. *Ecol Food Nutr*, 2013. **52**: 451-478.
3. Johnson, K., et al. *Forest cover associated with improved child health and nutrition: evidence from the Malawi Demographic and Health Survey and satellite data*. *Global Health Sci Pract*, 2013. **1**(2): 237-248.
4. Ickowitz, A., et al. *Dietary quality and tree cover in Africa*. *Global Environ Chang*, 2014. **24**: 287-294.
5. Ahenkan. A. and Boon, E. *Improving nutrition and health through non-timber forest products in Ghana*. *J Health Popul Nutr* 2011. **29**(2): 141-48.
6. Danielsen, F., et al. *The Asian tsunami: a protective role for coastal vegetation*. *Science*, 2005. **310**(5748): 643.
7. McSweeney, K and Coomes, O.T. *Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras*. *Proc Natl Acad Sci USA*, 2011. **108**(13): 5203-5208.
8. Bauch, S.C., et al. *Public health impacts of ecosystem change in the Brazilian Amazon*. *Proc Natl Acad Sci USA*, 2014. **112**(24): 7414-7419.
9. Fornace, K.M., et al. *Association between landscape factors and spatial patterns in Plasmodium knowlesi infection in Sabah, Malaysia*. *Emerg Infect Dis*, 2016. e pub ahead of print.
10. Myers, S.S., et al. *Human health impacts of ecosystem alteration*. *Proc Natl Acad Sci USA*, 2013. **110**(47); 18753-18760.
11. Civitello, D.J., et al. *Biodiversity inhibits parasites: Broad evidence for the dilution effect*. *Proc Natl Acad Sci USA*, 2015. **112**(28); 8667-8671.

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*Nutrition and Food Security*: Kenyan women with grains. Photo by Matthew Erdmann.

*Community Resilience*: Anti-poaching youth campaign in Nepal. Photo by USAID.

*Vulnerability to Infection and Illness*: Children in Finca San Francisco, Guatemala. Photo by USAID.

### **BIODIVERSITY RESULTS AND INTEGRATED DEVELOPMENT GAINS ENHANCED (BRIDGE) PROJECT**

BRIDGE is a five-year USAID activity (2015-2020) managed by the Forestry and Biodiversity Office that supports the Agency and partners to better integrate biodiversity into other key development sectors for improved conservation and development outcomes. BRIDGE is implemented by DAI together with Conservation International, Relief International, and the Smithsonian Institution.

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