Is One Health really useful? Exploring the biodiversity–sustainable livelihood nexus

Eric Boa and Jeff Bentley

Eric Boa is an Honorary Research Fellow at the University of Aberdeen. He has worked in international development throughout the global South since the 1980s, with experience in sustainable agriculture, plant health, extension services and wild edible mushrooms. His career began with long-term posts in Bangladesh and Indonesia before managing projects while at the Natural Resources Institute and CAB International. He has been an Honorary Fellow at the Institute for Biological Sciences at the University of Aberdeen since 2013.

e.boa@abdn.ac.uk

Jeff Bentley (PhD, University of Arizona) is an agricultural anthropologist who has worked extensively with farmers and researchers in Latin America, Africa, South Asia and Portugal. He is fascinated by farmer creativity and how language helps to shape the human experience. Jeff has worked for Agro-Insight, Access Agriculture, New Mexico State University and Zamorano University (Honduras). He has consulted for CAB International, the International Potato Center, International Maize and Wheat Improvement Center, and the CGIAR Research Program on Roots, Tubers and Bananas (RTB), among others. He lives in Cochabamba, Bolivia.

jefferywbentley@hotmail.com

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Abstract

One Health has merit and appeal for those examining the competing needs to address broader concerns on climate change, according to a study for the Global Centre on Biodiversity for Climate. Three scenarios (North Kivu of the Democratic Republic of the Congo, the Mekong River Basin and the Altiplano of Bolivia) explored the value of a One Health approach to address an equitable balance between the competing needs of conservation and use of biodiversity in poor communities.

In early 2024, we reviewed, on behalf of the Global Centre on Biodiversity for Climate (GCBC)[3], how a One Health approach might address the conservation and sustainable use of biodiversity. It is important to strike a balance between the direct dependence of many poor households on wild lands for food, fuel, medicines and income, and the need to conserve the biodiversity of these environments. One Health has always stressed the relationship between the management of human and animal health, especially zoonotic diseases. However, conservation and the use of wild lands for livelihoods have long been seen as part of One Health, as well (see Zinsstag *et al*, 2020).

This GCBC study asked if One Health could shed light on the sustainable use and conservation of biodiversity, and how to manage competing interests, using three different scenarios or case studies (one each from Africa, Asia and Latin America). The study struggled to find a single measure of environmental or ecosystem health, terms widely used by the One Health community (Cumming & Cumming, 2015).

One Health offers a "an integrated, unifying approach to sustainably balance and optimise the health of people, animals and ecosystems" (FAO *et al*, 2021), according to the Food and Agricultural Organization of the United Nations (FAO), the World Health Organization (WHO) and the World Organisation for Animal Health (WOAH), all members of a major international One Health partnership established in 2011. The United Nations Environmental Programme (UNEP) joined this partnership only in 2021, forming the One Health quadripartite.

One Health has embraced 'the environment' for many years, noting that all aspects of the living and physical world affect the health of humans and non-humans. The late admission of UNEP to the partnership indicates the scale of the challenges remaining in integrating conservation and sustainable use of biodiversity into a One Health framework. The widespread and

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enthusiastic adoption of One Health by organisations outside human and animal health heightens the need to seek greater clarity on the implications for the conservation and sustainable use of biodiversity.

Agriculture comes under environmental health in One Health models (see Figure 1). Applying One Health to plant health has been as difficult as focussing the approach on livelihoods and biodiversity conservation (Danielsen *et al*, 2020). Effective crop protection, healthy seeds, healthy soils and sound agronomic practices are critical to sustainable agriculture and food security, and thus human wellbeing. Yet demonstrating a direct link between plant health and the health of humans (or animals) is ambiguous. We found it helpful to relate conservation and use of biodiversity to human wellbeing, which includes physical health. WHO defines human health as "a state of complete physical, mental and social well-being *and not merely the absence of disease or infirmity*" (WHO, 1946; our emphasis).

Figure 1. One Health highlights links between the health of people, animals, the environment, and other living things
(Source: GCBC, 2024. Used with permission.)

The relationship between human wellbeing and the natural environment has been examined in depth by Dasgupta (2001), but not as part of One Health. It is easy to become embroiled in debates about how environmental health might be the starting point of One Health research. We wanted to suggest practical steps that advanced the use of One Health in real life, using biodiversity–sustainable livelihoods scenarios. Each scenario is based on regions where we have worked and knew of biodiversity challenges: North Kivu in the Democratic Republic of the Congo; the Mekong River Basin (China, Myanmar, Lao People's Democratic Republic, Thailand, Cambodia and Viet Nam); and the Altiplano of Bolivia.

The scenarios were used to identify future One Health case studies featuring the conservation and sustainable use of biodiversity. Several possibilities for One Health actions emerged in North Kivu for bringing conservation, agriculture and mining into closer and more regular contact. The conservationists who manage Virunga National Park in North Kivu liaise with farming communities around its 650 km border to limit poaching and reduce unregulated land clearance for farming. Esco Kivu, a cocoa exporter, has trained over 30 000 farmers in sustainable agriculture. Farms are certified yearly to mitigate impacts of cocoa farms on forest areas and biodiversity. There is limited and irregular dialogue between Virunga National Park and Esco Kivu despite shared interests and priorities.

Mining contributes to the economy of North Kivu, while seriously polluting the water. Esco helps to provide health services to farmers and their families. Promoting dialogue between the three sectors is not for the faint-hearted in a region beset by armed conflict. Yet there are opportunities to promote conservation and sustainable use that would require only modest funding. The link between environmental health and human wellbeing are widely recognised. Dialogue would aim to identify shared problems and integrated solutions that built on and expand inter-sector cooperation.

Some relatively simple steps would promote this cooperation and show how a One Health approach can be used to balance conservation and sustainable use of biodiversity. Nudges by GCBC and other bodies would help clearly define the importance of biodiversity within One Health.

The other two case studies also show that One Health can examine the connections between the environment, and the health of humans and other living things, to suggest solutions instead of conflict.

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