

BIODIVERSITY IS MORE THAN JUST THE FORESTS

Lose diversity and we will be deprived of future discovery of potential treatments for health problems



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TOO often when we talk about biodiversity, it evokes a notion of forest destruction or species extinction. To many, it is just about the environment. Little do we realise, however, that in fact biodiversity is the foundation for human health. It underpins the functioning of the ecosystems on which we depend for our food and fresh water. It contributes to local livelihoods, to traditional and modern medicines, and to economic development. It aids in regulating climate, floods and disease. It provides recreational benefits, and aesthetic and spiritual enrichment, supporting mental health.

The World Health Organisation offers an insightful analysis of the link between health and biodiversity, beginning with a definition of a healthy person as someone not simply free from illness but in a state of complete physical, mental and social wellbeing.

And, according to WHO: "People depend on biodiversity in their daily lives, in ways that are not always apparent or appreciated. Human health ultimately depends upon ecosystem products and services (such as availability of fresh water, food and fuel sources) which are requisite for good human health and productive livelihoods."

If ecosystem services can't meet our needs, significant human health impacts result. Also affected are livelihoods and income, leading to local migration and perhaps even political conflict.

Knowledge of plant and animal diversity provides major benefits, including drugs. When we lose diversity, we limit our future discovery of potential treatments for our health problems. Traditional medicines are used by an estimated 60 per cent of the world's people. And in some countries they are incorporated into the public health

system extensively. Medicinal plants are the most common element of traditional medicine, collected from the wild or cultivated.

Although synthetic medicines are available for many purposes, the global need and demand for natural medicinal products is strong, as is the field of biomedical research that relies on plants, animals and microbes to understand human physiology and to understand and treat human diseases.

One of the best known examples of the use of traditional knowledge in modern medicine is the Madagascar Rosy Periwinkle ("Pokok Bunga Tapak Dara" in Malay). Based on its wide usage in folk medicine, researchers began to dwell into its natural chemical properties in the 1950s. Scientific analysis of the rosy periwinkle led to the discovery of two previously unknown compounds – vincristine and vinblastine – which have been subsequently developed into potent medicines to save patients from leukaemia and Hodgkin's lymphoma, respectively.

Meanwhile, biodiversity plays a crucial role in human nutrition, the health experts say, through its influence on world food production. It ensures productive soils and genetic resources for the crops, livestock, and marine species we eat.

The nutritional values of varieties or breeds of the same food can differ dramatically, affecting the essential micro-nutrient content of our diet.

When we intensify and enhance food production – through irrigation schemes, the use of fertilisers, pesticides, or when we introduce crop varieties and cropping patterns that affect biodiversity, we can diminish our society's nutrition and health. When we lose species, we become more vulner-

able to ill health. Biodiversity not only stores the promise of new medical treatments and cures, it buffers humans from organisms and agents that cause disease.

By diluting the pool of virus targets and hosts, biodiversity reduces their impact on humans and provides a form of global health insurance.

At the same time, intrusion into the world's areas of high biodiversity disturbs these biological reservoirs and exposes people to new forms of infectious disease. Growing human contact with wildlife through invasion of forest habitat and the use of wildlife for food and folk remedies is responsible for the emergence of a series of lethal human diseases that originated in animals, most famously SARS, HIV-AIDS and Ebola. Preventing emerging diseases through biodiversity conservation is far more cost effective than developing vaccines to combat them later.

"Human activities are disturbing both the structure and functions of ecosystems and altering native biodiversity," says WHO.

"Major processes affecting infectious disease reservoirs and transmission include deforestation, land-use change, water management (e.g. through dam construction, irrigation, uncontrolled urbanisation or urban sprawl), resistance to pesticide chemicals used to control certain disease vectors, climate variability and change, migration and international travel and trade, and the accidental or intentional human introduction of pathogens."

The link between biodiversity and human health has been well-articulated at the global level, such as through the joint work programme of WHO and the UN Biodiversity Convention, and both issues are mentioned in the Sustainable Development Goals.

The question for Malaysians is how well are we following this wise slogan: "Think Global, Act Local"?

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