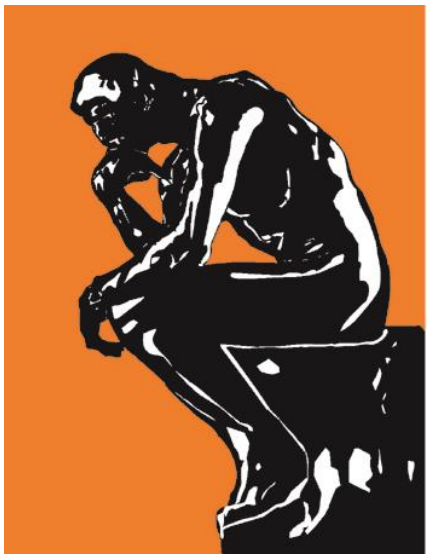
Kingfisher: Bridging the connection between nature and humans through science, art, literature, and experience

Quan-Hoang Vuong [1], Minh-Hoang Nguyen [1,2,*]

[1] Centre for Interdisciplinary Social Research, Phenikaa University, Yen Nghia Ward, Ha Dong District, Hanoi, Vietnam

[2] A.I. for Social Data Lab (AISDL), Vuong & Associates, Hanoi, Vietnam

* Correspondence: hoang.nguyenminh@phenikaa-uni.edu.vn (M.-H.N.)



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> "Kingfisher, ever a flamboyant individual, wears an exuberant outfit as though every day is a festival. Even as he toils away each day, fishing by the pond, he never forgets to check his reflection on the water. The more he looks, the more he thinks of himself highly; naturally, there is nothing to find fault with."
>
> In "The Most Beautiful Bird";
> *The Kingfisher Story Collection* (2022)

Introduction

The climate and biodiversity loss crises, mainly caused by anthropogenic activities, are close to the tipping points and require human actions to be resolved (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019; Lenton et al., 2019). Humans are not independent entities from the natural world. There are many ways that humans are connected to nature and interdependent with the Earth's ecosystem. However, due to the rapid urbanization process, a majority of people are now residing in urban areas, disconnecting them from the environment (Turner et al., 2004). Such disconnection is not necessarily physical but perceptual (Nguyen et al., 2023), as myriad ecosystem services and products provided by the forests, oceans, soils, and wildlife are *sine qua non* to the existence of urban areas (Davis, 1955; Elmqvist et al., 2013). Thus, enhancing individuals' bond with the natural world is crucial, as such bond plays a vital role in cultivating environmentally conscious attitudes and actions and promoting overall well-being (Tam, 2013). Otherwise, when people are perceptually disconnected from the natural world, it can lead to their disinterest in and refusal to support initiatives aimed at environmental preservation (Barrable & Booth, 2022).

Wildlife has multiple benefits to humans, from economic aspects to mental well-being. Besides those merits, they can act as a bridge that connects humans and the natural world through many pathways. In this essay, we will delve into some recent scientific findings to elaborate on the meaning of kingfisher, a familiar avian species in rural Asia, as a bridge in the human-nature relationship. Although the kingfisher is not the sole species that can act as the bridge, and many more natural entities can provide the same or even more benefits, we selected the kingfisher as a representative example because it helps create the perceptual connection between nature and us.

Kingfisher as an indicator of ecological changes

Ecosystems of wetlands, ponds, and waterlogged lowlands in nature play a vital role and function in the overall ecosystem. The kingfisher is often considered an indicator species of the effects of habitat alterations on the wetland ecosystem. Researchers often observe their behavior, population, and distribution to assess the status of wetland ecosystems and define conservation priorities. The study by Barik et al. (2022) indicates how kingfisher can be used as an indicator that helps better understand environmental changes. It examines kingfishers' occupancy status, spatial distribution of suitable areas, and habitat connectivity at a landscape level (particularly, East Kolkata Wetlands, India) to understand the significant changes in wetland areas and suggest priority areas for conservation interventions.

The kingfisher is a species facing ecological threats due to habitat fragmentation, degradation, and destruction, not limited to any particular location but essentially occurring worldwide. The degradation of the wetland habitat, air pollution, water pollution, and the socio-economic activities of humans encroaching into their occupancy have led to a decrease in the occupancy status and the narrowing of suitable habitats and habitat connectivity of the bird species. Human encroachment into the wetlands creates ecological stressors that directly disrupt the ecosystem's structure and function, affecting not only the kingfishers but also other bird species. If stressors accumulate over time, they can lead to the shrinkage of nesting sites, a decline in food sources, and disruptions in breeding and foraging habits.

In particular, within the suitable aquatic habitat of the kingfisher, the role of macrophytic vegetation, especially emergent macrophyte species, which have their roots submerged in water but leaves extending above the water surface, plays a significant role. This ecosystem provides additional food sources for the kingfisher, as they are known to consume frogs, insects, crabs, amphibians, and sometimes even water snakes. Additionally, the tall plants growing in the marshy areas along the water's edge serve as "observation posts" in the mystical formula of "perch and pounce."

Another important factor is habitat connectivity, which refers to physical connectedness among highly suitable habitat patches of the species. For example, these are connected land routes and water areas, allowing individual birds to safely disperse, find tranquility and safety, yet still "socialize" without expending too much energy. In the long run, the connectivity of habitats becomes a matter of survival for the kingfisher, as unfamiliar and unsuitable areas can incur additional costs and even increase the risks of being captured or killed (Harris & Reed, 2002; Yoder et al., 2004).

There is still additional intriguing information available; however, rather than delving further, we shall conclude the importance of the kingfisher as an indicator species in the wetland ecosystems by the key points provided by the authors:

"Conservation intervention on these high priority zones will not only be beneficial for kingfishers, but also for other avifauna having similar resource requirements as well as the wetland parse."

Kingfisher and its role in community science

Not everyone has had the opportunity to witness a kingfisher, especially children who have grown up entirely in urban settings with limited exposure to nature, often referred to as the "digital natives" generation. Kingfisher can be an example of bridging generations through environmental education. For this generation to recognize and understand a kingfisher and its values, environmental education sources from the previous generation are necessary. This is the subject of a study by Mugambiwa et al. (2023).

In Sothern and Western Africa, heavy rains often occur during the nesting and egg-laying season of kingfishers, so indigenous people have accumulated the experience to help determine the nesting behavior of kingfishers and the timing of heavy rains. They also draw conclusions that the calls of kingfisher in this context mimic the loud, tumultuous sound of rain during the peak season. Knowledge about the behavior of bird species aids in recognizing and predicting environmental alternations, especially in weather.

The study of Mugambiwa et al. (2023) underscores the importance of enhancing attention to the natural world and indicators that can change based on cross-generational experiences and knowledge. In fact, indigenous communities have systematically accumulated environmental information through generations, formed knowledge systems, and can contribute to "community science" (Binley et al., 2021). Besides kingfishers' behaviors, the knowledge system also allows indigenous people to anticipate environmental alternations based on the timing of fruiting on certain local trees, the water level in streams, the nesting behavior of other birds, and insect behavior (Roncoli et al., 2001). Moreover, they have also adapted their behavior to past environmental, weather, and ecological changes (Chanza, 2015; Nyong et al., 2007), providing valuable lessons for modern science. Neglecting this source of wisdom represents a significant loss for scientific endeavors aimed at addressing climate change and biodiversity crises.

Riverbanks, wing flatter glimpses, and the humanistic roots of wisdom.

The study of Reason and Gillespie (2023) discusses how humans can "live in and experience a world of sentient beings." Its title explicitly mentions "kingfisher," so the bird must be pretty significant in this matter.

In the article, the authors reflect on their experiences with a kingfisher and how they perceive its presence as a natural lesson. From a humanistic perspective, the presence and behavior of the kingfisher in the natural environment can be deemed as a response from the river, indicating profound connections and dialogues between humans and the vast natural world. The authors conceive that the kingfisher can also awaken humans' ability to perceive the existence of and engage with a world filled with sentient beings. Through this, they can recognize and feel the responses and interactions with nature.

As a symbolic representation conveying the message of human-nature connection and serving as the focal point of discussion around the perceptual observations and experiences of the authors, kingfisher bears the weight of its mention in the article's title. Here, the river symbolizes life, akin to the Vietnamese proverb: "Nhất cận thị, nhì cận giang" ("First, near market; then, near river"), signifying life, societal prosperity, and livelihood. However, the article's perspective leans towards the benevolent presence of the sentient world, not only

through the kingfisher but also the waters, within the shared happiness of people, a kind of connection with nature.

Hence, the value of sentient nature leads to the conclusion that a significant part of human true happiness lies in dialogue and seeking attunement to the natural world. When this reciprocal connection is not established, happiness will become impossible, and environmental education goals remain incomplete. Without this connection, nature becomes commonplace, merely a lifeless backdrop, limiting the capacity for meaningful dialogue with plants, rivers, and birds. Consequently, climate changes and crises may be reduced to lifeless statistics, incapable of unleashing the vast adaptive potential of humans. The authors also recommend that individuals reflect on their connection to the natural world through mindfulness, personal philosophical values exploration, and ecological awareness integration.

During this process, creative art plays an intriguing role. The article itself can be considered a piece that falls within the genre closely associated with literature, where the authors used metaphors and evocative descriptions to harness the power to stimulate imagination and thinking for environmental education (Reason & Gillespie, 2023). The use of metaphors to convey and reinforce the "wisdom" complements the power of empirical science (Barik et al., 2022) and community science (Mugambiwa et al., 2023). This enhancement can be partly achieved through the atmosphere created by creative arts, discussion of cognitive assumptions, and questioning the reductionist narratives about nature prevalent in modern societies due to the rise of consumerism.

Final remarks

In ecosystems and biodiversity research, the kingfisher, a petite bird often found in rivers and lakes, can offer substantial scientific insights into the progression of biodiversity and environmental shifts. The images, memories, and feelings associated with these birds also serve as a foundation for bridging natural observations and education about the environment and humanities. Thus, it is conclusive that with the kingfisher as a symbolic representation, wildlife has a vital position in reestablishing the realm of forgotten connection between humans and the natural world. The enhanced human-nature bonding will contribute to a transformation of human value systems, shifting away from the prevailing eco-deficit culture and towards an eco-surplus one (Nguyen & Jones, 2022a, 2022b; Vuong, 2021a, 2021b).

Given the current urbanization rate, building a perceptual connection among urban residents is not easy due to the unavailability of natural information within the cities. Improving the urban areas' biodiversity level, increasing nature-based recreation opportunities, and diffusing environment-related scientific content, creative arts, and literature are potential

alternatives for resolving the problem, especially among children and youth (Li & Sullivan, 2016; Palmberg & Kuru, 2000). Among the alternatives, composing and diffusing creative arts or literature, like climate fiction (cli-fi), can even directly orient the readers' attitudes toward the environment, improve their knowledge, and raise their awareness of the climate crisis (Schneider-Mayerson, 2018; Vuong, 2020). However, this method should be conducted carefully, as some climate fiction can lead to negative emotional responses from many readers, which can potentially hinder efforts of environmental engagement or persuasion (Schneider-Mayerson, 2018).

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References

Barik, S., Saha, G. K., & Mazumdar, S. (2022). Conservation prioritization through combined approach of umbrella species selection, occupancy estimation, habitat suitability and connectivity analysis of kingfisher: A study from an internationally important wetland complex (Ramsar site) in India. *Ecological Informatics*, *72*, 101833. https://doi.org/10.1016/j.ecoinf.2022.101833

Barrable, A., & Booth, D. (2022). Disconnected: What can we learn from individuals with very low nature connection? *International Journal of Environmental Research and Public Health*, *19*(13), 8021.

Binley, A. D., Proctor, C. A., Pither, R., Davis, S. A., & Bennett, J. R. (2021). The unrealized potential of community science to support research on the resilience of protected areas. *Conservation Science and Practice*, *3*(5), e376. https://doi.org/10.1111/csp2.376

Chanza, N. (2015). Indigenous-based adaptation: An imperative for sustainable climate change strategies for Africa. In N. Chanza (Ed.), *Harnessing cultural capital for sustainability: A pan Africanist perspective* (pp. 85-134). Langaa Publishing House.

Davis, K. (1955). The origin and growth of urbanization in the world. *American Journal of Sociology*, *60*(5), 429-437.

Elmqvist, T., Fragkias, M., Goodness, J., Güneralp, B., Marcotullio, P. J., McDonald, R. I., . . . Seto, K. C. (2013). *Urbanization, biodiversity and ecosystem services: challenges and opportunities: a global assessment*. Springer Nature.

Harris, R. J., & Reed, J. M. (2002). Behavioral barriers to non-migratory movements of birds. Annales Zoologici Fennici,

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. (2019). *Nature's Dangerous Decline 'Unprecedented' Species Extinction Rates 'Accelerating'*. The United Nations. Retrieved 24/06 from https://www.unenvironment.org/news-and-stories/press-release/natures-dangerous-decline-unprecedented-species-extinction-rates

Lenton, T. M., Rockström, J., Gaffney, O., Rahmstorf, S., Richardson, K., Steffen, W., & Schellnhuber, H. J. (2019). Climate tipping points—too risky to bet against. *Nature*, *575*(7784), 592-595. https://doi.org/10.1038/d41586-019-03595-0

Li, D., & Sullivan, W. C. (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape and Urban Planning*, *148*, 149-158. https://doi.org/10.1016/j.landurbplan.2015.12.015

Mugambiwa, S. S., Rankoana, S. A., & Tirivangasi, H. M. (2023). Climate governance beyond the government: Indigenous knowledge systems in rural Zimbabwe's climate change adaptation. *International Journal of Development and Sustainability*, *12*(6), 238-249.

Nguyen, M.-H., & Jones, T. E. (2022a). Building eco-surplus culture among urban residents as a novel strategy to improve finance for conservation in protected areas. *Humanities & Social Sciences Communications*, *9*, 426. https://doi.org/10.1057/s41599-022-01441-9

Nguyen, M.-H., & Jones, T. E. (2022b). Predictors of support for biodiversity loss countermeasures and bushmeat consumption among Vietnamese urban residents. *Conservation Science and Practice*, *4*(12), e12822. https://doi.org/10.1111/csp2.12822

Nguyen, M.-H., Le, T.-T., & Vuong, Q.-H. (2023). Ecomindsponge: A novel perspective on human psychology and behavior in the ecosystem. *Urban Science*, *7*(1), 31. https://doi.org/10.3390/urbansci7010031

Nyong, A., Adesina, F., & Osman Elasha, B. (2007). The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel. *Mitigation and Adaptation strategies for global Change*, *12*(5), 787-797.

Palmberg, I. E., & Kuru, J. (2000). Outdoor activities as a basis for environmental responsibility. *The Journal of Environmental Education*, *31*(4), 32-36. https://doi.org/10.1080/00958960009598649

Reason, P., & Gillespie, S. (2023). The teachings of mistle thrush and kingfisher. *Australian Journal of Environmental Education*, 293-306. https://doi.org/10.1017/aee.2023.4

Roncoli, C., Ingram, K., & Kirshen, P. (2001). The costs and risks of coping with drought: livelihood impacts and farmers[1] responses in Burkina Faso. *Climate Research*, *19*(2), 119-132. https://doi.org/10.3354/cr019119

Schneider-Mayerson, M. (2018). The influence of climate fiction: an empirical survey of readers. *Environmental Humanities*, *10*(2), 473-500. https://doi.org/10.1215/22011919-7156848

Tam, K.-P. (2013). Concepts and measures related to connection to nature: Similarities and differences. *Journal of Environmental Psychology*, *34*, 64-78.

Turner, W. R., Nakamura, T., & Dinetti, M. (2004). Global urbanization and the separation of humans from nature. *BioScience*, *54*(6), 585-590.

Vuong, Q.-H. (2020). From children's literature to sustainability science, and young scientists for a more sustainable Earth. *Journal of Sustainability Education*, *24*(3), 1-12. http://www.susted.com/wordpress/content/from-childrens-literature-to-sustainability-science-and-young-scientists-for-a-more-sustainable-earth_2020_12/

Vuong, Q.-H. (2021a). The semiconducting principle of monetary and environmental values exchange. *Economics and Business Letters*, *10*(3), 284-290. https://doi.org/10.17811/ebl.10.3.2021.284-290

Vuong, Q.-H. (2021b). Western monopoly of climate science is creating an eco-deficit culture. *Economy, Land & Climate Insight*. https://elc-insight.org/western-monopoly-of-climate-science-is-creating-an-eco-deficit-culture/

Vuong, Q.-H. (2022). *The kingfisher story collection*. https://www.amazon.com/Kingfisher-Story-Collection-Quan-Hoang-Vuong-ebook/dp/B0BG2NNHY6

Yoder, J. M., Marschall, E. A., & Swanson, D. A. (2004). The cost of dispersal: predation as a function of movement and site familiarity in ruffed grouse. *Behavioral Ecology*, *15*(3), 469-476. https://doi.org/10.1093/beheco/arh037