PHOTO: GREG C. GRACE/ALAMY STOCK PHOTO

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China's dams threaten green peafowl

The green peafowl (*Pavo muticus*)—the only native peafowl in China—is classified as Endangered on the International Union for Conservation of Nature (IUCN) Red List (*1*) and categorized as Critically Endangered on China's Biodiversity Red List (*2*). Over the past three decades, due to excessive hunting, habitat loss, resource competition, pesticide poisoning, deforestation, and inbreeding, green peafowls have sharply declined from between 800 and 1100 to fewer than 500 individuals in China (*1*, *2*). China's rush to build dams in Yunnan Province puts its remaining green peafowl populations in grave danger (*2*–*4*).

The Red River upstream district, China's last green peafowl habitat, is abundant in water resources and well suited to the construction of hydropower stations (*2*, *5*). Accordingly, the Jiasajiang Level 1 Hydropower Station was listed as a key project by the Yunnan provincial government in 2015 and scheduled to begin operation in 2021 (*4*). An environmental impact assessment failed to comprehensively describe the station's impact on biodiversity (*6*), and therefore the project began on schedule. Noise generated by the construction of the hydropower station disturbed the green peafowl and forced them to migrate to resource-limited areas (*2*). Once the station is complete, the dam will flood the last remaining habitat for green peafowl (*4*). As a result, the species will likely go extinct in China.

In addition to playing an important cultural role (*7*), green peafowls are a valuable genetic resource and an important component of China's biodiversity (*1*, *8*, *9*). The Chinese government has set up a provincial nature reserve to protect green peafowls (*5*), but the species will need additional conservation efforts. The Ministry of Ecology and Environment should be informed of the risks, and the authorities should conduct an immediate reevaluation of the ecological impact of this project, especially concerning the habitat of the green peafowls. Work on the Jiasajiang Level 1 Hydropower Station should stop until the assessment is complete. In the meantime, China should also increase the designated nature reserves, invest more to improve the green peafowl habitat, and increase patrols to control illegal hunting within protected areas.

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Dam construction could put China's native green peafowl (*Pavo muticus*) at risk of extinction.

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Science-based wildlife disease response

In 2007, the current outbreak of African swine fever (ASF), which severely affects wild boar populations and pigs, reached the Caucasus region. Since then, the virus has spread into eastern Europe and some places in central and western Europe (such as Belgium) through wild boar, domestic pigs, and human activities. The virus has raised serious concerns in countries with large pork industries, which may suffer economic losses due to trade restrictions (*1*). To control the outbreak, national authorities have taken drastic but likely ineffective measures that disregard the science of wildlife management.

Poland, for example, has massively increased culling of wild boar to minimize ASF spread and the risk of transmission to domestic pigs, despite opposition by experts (*2*, *3*). The policy does not include population monitoring that could evaluate its effectiveness (*4*). It also does not limit wild boar access to agricultural crops and

game feed, which is a key driver of population growth (*5*). Meanwhile, Denmark is building a 70-km border fence to exclude cross-border migration of wild boar (*6*). The fence will disrupt wildlife habitats (*6*), but it will not stop the virus from spreading through the transportation of live pigs, wild boar, or pig- and wild boar–derived tissues and products or through the movement of other objects carrying the virus, such as human clothing (*1*). Factors that govern wild boar abundance and virus spread are not bound by national borders. Instead of haphazard policies, we urge governments to agree on a coordinated response that adheres to the principles of modern wildlife management (*7*).

Adaptive wildlife management strategies consider the human dimension and prevent unsound reactive management. Improved wildlife population monitoring (*4*) and analysis are the best ways to determine which approaches to wildlife management are successful ecologically, economically, and socially. Sustainable management will depend on local circumstances and national wildlife management regulations, but science-based strategies can be implemented at the continental scale. Legislators across Europe should consult scientists and wildlife and animal health agencies before making decisions about wildlife policy. European countries should coordinate population monitoring and management. Shared responsibility for wildlife management among countries will enable funding for research that can critically evaluate its success. The ASF crisis can serve as a chance to develop a science-based wildlife policy for Europe.

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Special educational needs and fieldwork

Special educational needs and disabilities can limit students interested in fields traditionally characterized by a large fieldwork component due to real or perceived physical barriers (*1*). Although much effort has been made to reduce the barriers and accommodate different types of disabilities and special educational needs (*2*), inclusivity is still challenging when it comes to fieldwork (*3*). Because many fieldwork experiences cannot be recreated in the lab, it is important to provide fieldwork opportunities that do not rely on the assumption of able-bodiedness among students (*4*). This should not be considered a limiting factor, because redesigning a field course to increase its inclusivity can result in an improved learning experience for all students and instructors. Academic departments should actively participate in discussions about program accessibility, rather than leaving affected students and the university's disability resources to find a solution (*5*).

The development of new techniques and the implementation of simple actions can represent a step forward in enhancing inclusion and equal opportunities in relation to fieldwork. Increasing the awareness of accessibility by all staff and students, as well as focusing on students'

PHOTO: TOUCH MAPPER

Tactile maps can help students overcome obstacles to fieldwork.

abilities rather than on their challenges, can make a real difference to the field experience and encourage more students to view disciplines that require fieldwork as viable career options (*3*). For instance, eliminating inaccessible locations, redesigning the field stops, and rearranging the schedule to reduce frequent transfers in and out of the bus will reduce the mental and physical stress on students. A sign-language interpreter can support field activities to help students with limited hearing. The use of audio field guides describing the field stops can improve the field experience for students who are blind, partially sighted, or who have specific learning disabilities. Tactile maps can represent a valid alternative to 2D maps to help students to perceive topography and geological structures. In addition, the use of real-time telepresence allows mobility-impaired students in a safer area to see and interact with the rest of the group even if they are located at some distance from the site. Finally, virtual technology can support field activities by simulating the experience of being in the field.

It is not always possible to overcome all potential barriers, and in some cases lab-based alternatives may have to suffice. However, these actions can help to reduce the experience gap for students with special educational needs and disabilities.

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TECHNICAL COMMENT ABSTRACTS

Comment on "Designing river flows to improve food security futures in the Lower Mekong Basin"

John G. Williams, Peter B. Moyle, Ashley S. Halls

Sabo *et al.* (Research Articles, 8 December 2017, p. 1270) used statistical relationships between flow and catch in a major Lower Mekong Basin fishery to propose a flow regime that they claim would increase catch, if implemented by proposed dams. However, their catch data were not adjusted for known variation in monitoring effort, invalidating their analysis.

Full text: dx.doi.org/10.1126/science.aav8755

Response to Comment on "Designing river flows to improve food security futures in the Lower Mekong Basin"

John L. Sabo, Gordon W. Holtgrieve, Albert Ruhi, Mauricio E. Arias, Peng Bun Ngor, Vittoria Elliott, Timo Räsänen, So Nam

Williams *et al.* claim that the data used in Sabo *et al.* were improperly scaled to account for fishing effort, thereby invalidating the analysis. Here, we reanalyze the data rescaled per Williams *et al.* and following the methods in Sabo *et al*. Our original conclusions are robust to rescaling, thereby invalidating the assertion that our original analysis is invalid.

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