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In This Issue

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Boarn to Be Wild

The wild boar can act as a persistent Aujeszky's disease reservoir but limited data are available on its epidemiology in free-ranging animals living in areas where industrial swine herds are limited. **Chiari *et al.*** sampled 3260 sera during eight hunting seasons and found that wild boar population age structure seemed to be the most relevant factor affecting seroprevalence.

In a paper by **Coelho *et al.*,** it was found that meat juice from carcasses of *Toxoplasma gondii* infected wild boar may represent an alternative sample to blood.

Goedbloed *et al.* reported that a fraction of free-living European wild boar (*Sus scrofa*) was genetically identified as recent wild boar-domestic pig hybrids. Antibody prevalence against the bacterial pathogen *Mycoplasma hyopneumoniae* was positively associated with domestic hybrid status.

No Monkeying Around

In tropical Africa, high exposure to non-human primates (NHP) increases the risk for zoonotic disease emergence. By analyzing demographic and NHP contact data from 504 humans in the rural Taï region in Western Côte d'Ivoire, where zoonotic retrovirus transmission was described previously, **Mossoun *et al.*** found high participants' contact rates to NHP (e.g., 62% consumed monkeys). Men with origin or ethnic background in Côte d'Ivoire were most frequently exposed and therefore at elevated risk. A high incidence of zoonotic pathogens, bushmeat trade and human migration in the region stress the need for prevention strategies to reduce the risk of emerging zoonoses.

Under Surveillance

Citizen science (CS) can help optimize wildlife health surveillance. Reports of wildlife morbidity and mortality from the public facilitate large-scale surveillance, both in time and space, which would otherwise be financially infeasible. Near-universal access to digital media has revolutionized reporting modalities and facilitated rapid and economical means of sharing feedback with participants. **Lawson *et al.*** reviewed CS schemes for wildlife disease surveillance and highlight their scope, benefits, logistical considerations, financial implications, and potential limitations. The need to adopt a collaborative and multidisciplinary approach to wildlife health surveillance is increasingly recognized and the general public can make a significant contribution through CS.

Picky Eaters

Perry and Grace consider the factors that influence demand for animal source foods (ASF) by outlining the ideologies that are salient in ASF choices and exploring the underlying consumption drivers that constrain people's ability to make the choices they prefer. The authors discuss options for influencing food choice, arguing that the track record for policy and public provision is poor. Social marketing has been more successful but also has challenges in wide application. Food choices do respond predictably to incentives, and understanding these may have more effect in shifting food choices in desired directions than evidence or ideology.

Doggone Vets

Dog population control is a challenge for many communities with limited access to, financial resources for, or

cultural acceptance of veterinary services. This digital storytelling project by **Schurer *et al.*** demonstrate that perceptions of veterinary services in First Nations communities are improved when residents are invited to participate in dog population management initiatives. These initiatives require a One Health framework that recognizes dogs as valued members of First Nations communities, and contribute to their physical, cultural, and mental wellbeing. Risks associated with dogs (dogbites, infectious disease transmission) were perceived to decrease after most dogs were desexed, dewormed, and vaccinated.

Hedgehog Infection

The frequency of interactions between humans and wildlife is increased by anthropogenic changes to wildlife habitats, exposing both groups to novel pathogens. Whilst there is considerable focus on the risks of zoonotic disease from wildlife, there are few examples of the converse where wildlife contract anthroponotic infections. **Franklinos *et al.*** present the first case of the invasive human pathogen, *Streptococcus pyogenes emm* 28, infecting a non-human species; a free-living wild European hedgehog in which it caused significant disease and death. As close associations between wild hedgehogs and people in England are common, it is hypothesized that this case might have resulted from anthroponotic infection.

Under Fire

Eisenman *et al.* studied the health and social impacts of wildfires at the wildland-urban interface and examined predictors of psychological distress, including loss of solace from the landscape after a major wildfire. Socio-economically advantaged populations who reside seasonally living side-by-side with less-advantaged permanent residents, or "locals" often characterize communities at the wildland-urban interface. This study also investigates differences in well-being between these groups. Results hint at recovery programs bridging psychology and land management.

Raise the Hoof

The interaction between pig raisers and their pigs could increase the risk of zoonotic disease transmission in Bangladesh since pig raising is embedded in cultural beliefs and practices, and is an important income source for pig raisers. Pig raisers have limited economic resources to change the current practices that may put them at risk of exposure to diseases from their pigs. **Nahar *et al.*** propose an intervention that improves the financial situation and reduces the risk of zoonotic disease that may be of interest to pig raisers.

Icy One Health Perspectives in the Arctic

Human habitation in the Arctic remains highly dependent on availability of subsistence food resources from wildlife and native plant species. The impacts of climate warming in the Arctic are critically important for indigenous peoples who depend on subsistence food resources from wild animals that contain environmental contaminants and zoonotic pathogens or parasites that can cause acute or chronic disease. **Dudley *et al.*** ascertain that understanding and mitigating the One Health effects of climate warming in Arctic ecosystems will require a detailed knowledge of the synergistic interactions between human activities, environmental contaminants, pathogen and parasite ecology, and disease transmission pathways in terrestrial and marine biotas.

An Interdisciplinary Approach to EIDs

In an attempt to address the challenge of emerging infectious diseases, the National Science Foundations of both China and the United States convened a small working group of infectious disease experts with experience in the ecology of microbial pathogens and disease emergence, including Severe Acute Respiratory Syndrome (SARS), influenza, and a number of other diseases. **Mazet *et al.*** detail the international call by these two countries for multisectoral engagement that could transcend the high-quality, but largely scientifically siloed, approach to infectious diseases that has been occurring globally.

Interesting Intestines

Cross-species disease transmission between wildlife and humans is an important topic for public health and wildlife conservation. Among pathogens shared by great apes and humans, intestinal parasites can have serious health con-

sequences. In this study, **Narat *et al.*** describe the intestinal parasitology of wild bonobos, almost unknown, and assess the risk of transmission with local people in a fragmented habitat. Coproscopic examination and molecular biology analyses have shown no evidence of transmission.

Virginia in the Lymelight

Lyme disease incidence rates are increasing across the United States. Virginia, in particular, has seen an exponential growth both in the rate of cases and in the geographical spread of cases across the state. To investigate this trend and to better understand the role that ecological and demographic factors play in facilitating the spread of Lyme disease, **Seukep *et al.*** explore how the occurrence of specific variables such as land cover types and their junctures, small forest fragments, and demographic characteristics such as age, income, and population density are correlated to the emergence of Lyme disease in Virginia.

Coyote Parasitism Structure

Urbanization can cause unprecedented ecological responses leading to altered host-parasite interactions in developed landscapes. This paper by **Watts *et al.*** explores the links between urban habitat heterogeneity, canid dietary behavior, land cover, and coyote parasitism. Using multivariate redundancy analyses, the authors identified that both dietary behavior and urban land cover factors were significant predictors explaining coyote parasite community structure. Grassland and domestic canids likely hold important roles in the exposure of coyote hosts to parasitism in cities. It was concluded that urbanization may control critical ecological factors that influence transmission among wildlife metapopulations with potential for human risks.

Human and Ecosystem Health

Human-induced environmental change is a threat to the health of current and future human populations. The ecosystem services approach links ecosystem health to human well-being, with ecosystem services frameworks providing a means to integrate the environment and human health. To advance dual conservation and human health goals, **Ford *et al.*** argue the ecosystem services frameworks need to give greater prominence to human health, and its inter-relationships with ecosystem health across time and space.

MSC Approaches in Asia

Multisectoral, socio-economic, systems-based, collaborative (MSC) research (e.g., EcoHealth, One Health) has been promoted as a means to decrease impacts of emerging infectious diseases (EIDs). **Burns and Stephen** evaluated how MSC approaches align with current priorities for EID research in Asia and found that key research priorities were understanding host-pathogen-environment interactions, improving technologies, changing people's behaviorism, and evaluating the effectiveness of interventions. The authors conclude that MSC research may be most useful for motivating behavior change, documenting change in complex systems that drive disease emergence, and evaluating the effectiveness of interventions in 'real world' settings.

Tunnel VIZIONS

Rabaa *et al.* describe an established multidimensional platform in Vietnam aimed to tackle scientific issues surrounding the origins and emergence of zoonotic infections. The Vietnam Initiative on Zoonotic Infections (VIZIONS), in which several international institutions collaborate alongside Vietnamese organizations, is combining clinical data, epidemiology, high-throughput sequencing, and social sciences to address key one health questions that cannot be addressed independently. The overarching objective is to develop an integrated and sustainable approach to the surveillance of pathogens circulating in both human and animal populations. This infrastructure will facilitate systematic investigations of pathogen ecology and evolution, enhance the understanding of viral cross-species transmission events, and allow for the identification of relevant risk factors and drivers of zoonotic disease emergence.

Animal-Assisted Interventions

The use of animal-assisted interventions (AAI) in therapeutic programs is a growing phenomenon yet the empirical evidence base is limited. **Chalmers and Dell** propose that the public health framework of One Health can be

adapted to advance AAI research. One Health's perspective on the environment is primarily ecological and the environment has received minimal attention in AAI research. Applying this framework to AAIs permits reflection on how AAIs contribute to human wellbeing, to the welfare of the animal and to considerations of the environment. The authors discuss how this framework has been used in their AAI research and work with Indigenous people.