

Interface homme-animal- environnement dans le contexte urbain: Opportunités ou risques pour la santé?

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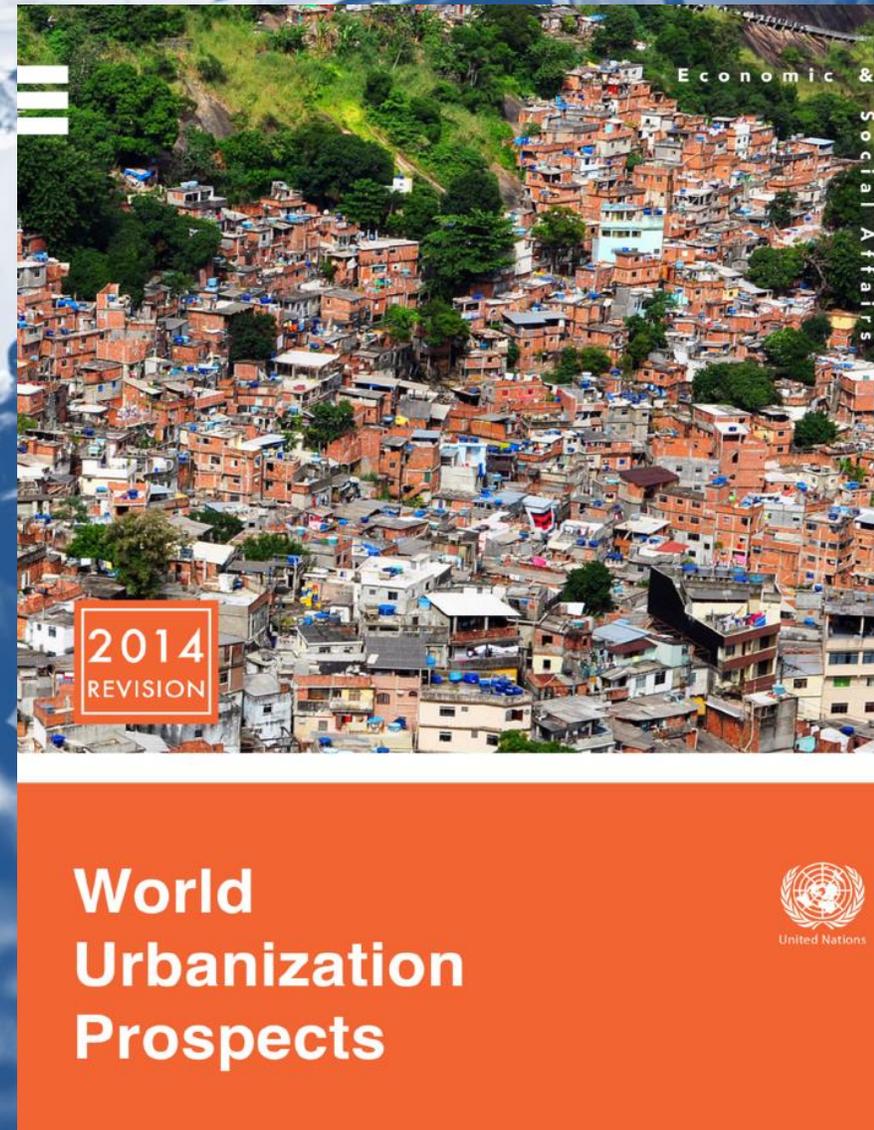


Source: Yves Ryncki / FCBG



Un monde urbain :

- Plus de la 1/2 de la population mondiale vit dans les villes et ce sera les 2/3 en 2050
- Europe : 73,4 % de la population est urbaine
- L'Asie et l'Afrique concentreront 90% de la croissance



Une planète urbanisée et anthropique implique des **changements dans notre mode de vie, dans la façon dont nous interagissons les uns avec les autres, mais aussi avec d'autres espèces et leurs écosystèmes** de l'échelle locale à l'échelle globale





Urbanisation

- Les villes se développent rapidement en envahissant des habitats naturels
- Dégradation, perte ou remplacement des écosystèmes naturels



Biodiversité urbaine

- Les parcs urbains constituent des points chauds (*hotspots*) de biodiversité (São Paulo : 435 espèces animales; Calcutta : 273 espèces d'oiseaux)
- Un grand nombre d'espèces animales et de plantes persistent malgré un déclin des espèces natives
- Certaines espèces trouvent de nouvelles opportunités dans la ville

Aronson et al, 2014, Nielsen et al, 2014

«*Rewilding cities* » pour la conservation et pour la reconnexion de l'homme avec la nature: (ex. *Biophilic cities* comme Edmonton au Canada)





A coyote prowls downtown Chicago. Coyotes are a hidden but growing presence in the Windy City.

THE CONCRETE JUNGLE

Ecologists go urban to study the impact of creatures large and small **By Kate Baggaley**

Stanley Gehrt took a late-night drive to the cemetery on

Gehrt is not the first scientist to be surprised by how wildlife can flourish in urban habitats. Most people associate living things with pristine lands far from subways and parking lots, and consider urban territory to be a degraded, beat-up version of nature. But cities are fully functioning ecosystems, and humans are not their only citizens.



Animaux de compagnie

- USA: 67 % des foyers ont au moins un animal de compagnie
- Europe: 38 % des foyers
 - 106 millions de chats
 - 87 millions de chiens
 - 28 millions de petits mammifères
 - 9 millions de reptiles

(APPA 2019, EDIAP, 2019)





Notre santé et celle des animaux et des écosystèmes sont interdépendantes

Besoin d'une approche intégrée à la santé

Approche **One Health**

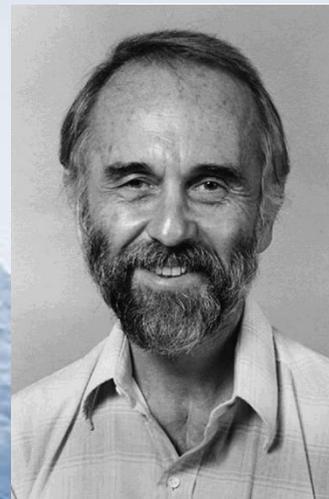
Peu reconnue dans le contexte urbain (e.g. programme Villes –Santé de l'OMS - plus de 20 ans et 1000 villes autour du monde)

Une seule médecine "One Medicine"

par Calvin Schwabe

"Il n'y a pas de différence de paradigme entre la médecine humaine et la médecine vétérinaire : les deux sciences partagent une base commune de connaissances en anatomie, en physiologie, en pathologie et sur l'origine des maladies dans toutes les espèces"

Schwabe C. (1984 3rd Edition)
Veterinary Medicine and Human Health.
Williams and Wilkins, Baltimore



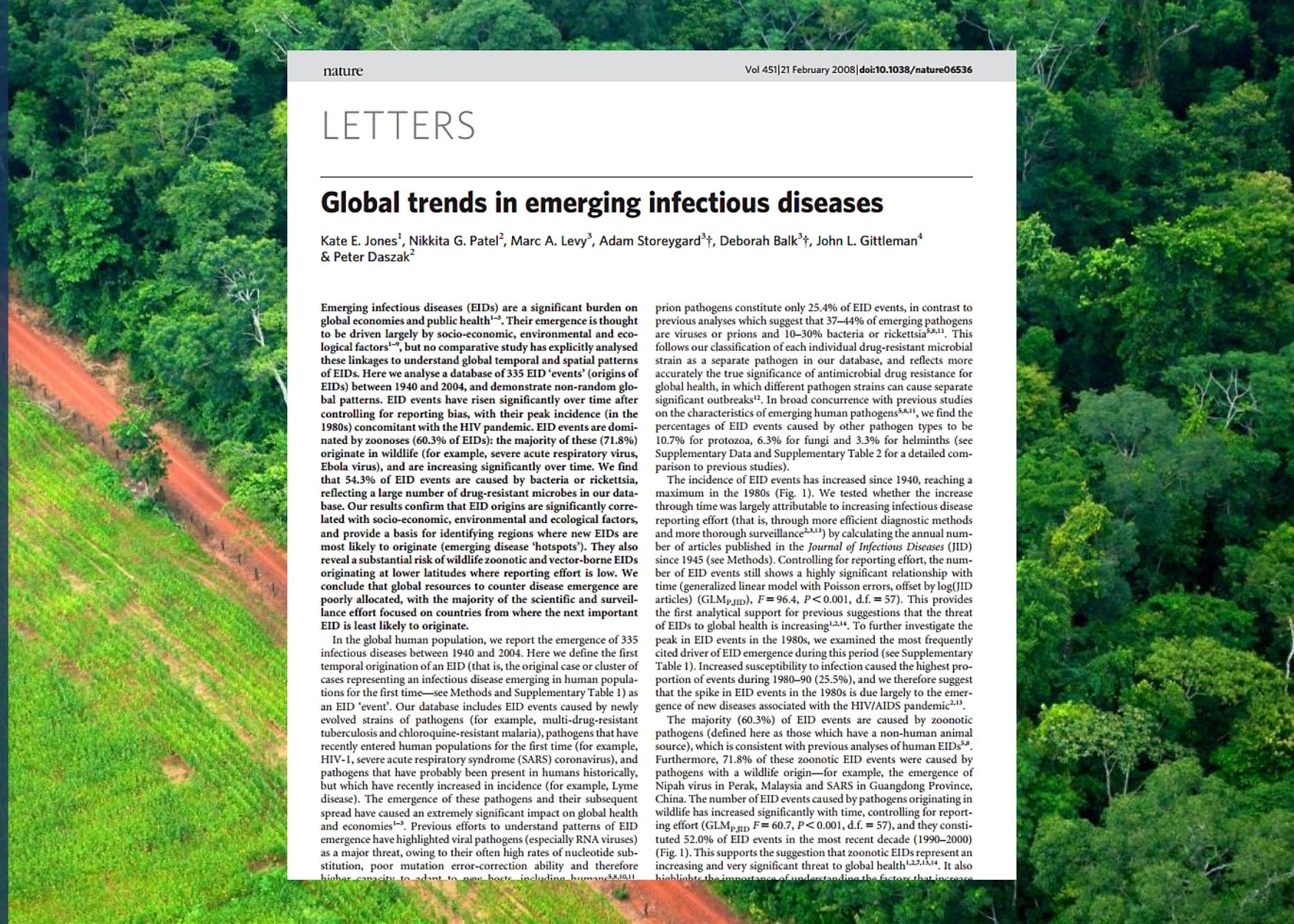
VETERINARY MEDICINE AND HUMAN HEALTH

THIRD EDITION

Calvin W. Schwabe, D.V.M.

Les nouvelles opportunités pour l'approche *One Health*

- Nombre croissant des maladies infectieuses émergentes
 - 60% sont des zoonoses
 - 72% de ces zoonoses viennent de la faune sauvage (Grippe aviaire, Ebola, MERS, Zika etc.)
- Impact de l'activité humaine sur les écosystèmes



LETTERS

Global trends in emerging infectious diseases

Kate E. Jones¹, Nikkita G. Patel², Marc A. Levy³, Adam Storeygard³†, Deborah Balk³†, John L. Gittleman⁴ & Peter Daszak²

Emerging infectious diseases (EIDs) are a significant burden on global economies and public health^{1–3}. Their emergence is thought to be driven largely by socio-economic, environmental and ecological factors^{1–3}, but no comparative study has explicitly analysed these linkages to understand global temporal and spatial patterns of EIDs. Here we analyse a database of 335 EID 'events' (origins of EIDs) between 1940 and 2004, and demonstrate non-random global patterns. EID events have risen significantly over time after controlling for reporting bias, with their peak incidence (in the 1980s) concomitant with the HIV pandemic. EID events are dominated by zoonoses (60.3% of EIDs): the majority of these (71.8%) originate in wildlife (for example, severe acute respiratory virus, Ebola virus), and are increasing significantly over time. We find that 54.3% of EID events are caused by bacteria or rickettsia, reflecting a large number of drug-resistant microbes in our database. Our results confirm that EID origins are significantly correlated with socio-economic, environmental and ecological factors, and provide a basis for identifying regions where new EIDs are most likely to originate (emerging disease 'hotspots'). They also reveal a substantial risk of wildlife zoonotic and vector-borne EIDs originating at lower latitudes where reporting effort is low. We conclude that global resources to counter disease emergence are poorly allocated, with the majority of the scientific and surveillance effort focused on countries from where the next important EID is least likely to originate.

In the global human population, we report the emergence of 335 infectious diseases between 1940 and 2004. Here we define the first temporal origination of an EID (that is, the original case or cluster of cases representing an infectious disease emerging in human populations for the first time—see Methods and Supplementary Table 1) as an EID 'event'. Our database includes EID events caused by newly evolved strains of pathogens (for example, multi-drug-resistant tuberculosis and chloroquine-resistant malaria), pathogens that have recently entered human populations for the first time (for example, HIV-1, severe acute respiratory syndrome (SARS) coronavirus), and pathogens that have probably been present in humans historically, but which have recently increased in incidence (for example, Lyme disease). The emergence of these pathogens and their subsequent spread have caused an extremely significant impact on global health and economies^{1–3}. Previous efforts to understand patterns of EID emergence have highlighted viral pathogens (especially RNA viruses) as a major threat, owing to their often high rates of nucleotide substitution, poor mutation error-correction ability and therefore higher capacity to adapt to new hosts, including humans^{2,4,5}.

prion pathogens constitute only 25.4% of EID events, in contrast to previous analyses which suggest that 37–44% of emerging pathogens are viruses or prions and 10–30% bacteria or rickettsia^{2,4,11}. This follows our classification of each individual drug-resistant microbial strain as a separate pathogen in our database, and reflects more accurately the true significance of antimicrobial drug resistance for global health, in which different pathogen strains can cause separate significant outbreaks¹². In broad concurrence with previous studies on the characteristics of emerging human pathogens^{3,8,11}, we find the percentages of EID events caused by other pathogen types to be 10.7% for protozoa, 6.3% for fungi and 3.3% for helminths (see Supplementary Data and Supplementary Table 2 for a detailed comparison to previous studies).

The incidence of EID events has increased since 1940, reaching a maximum in the 1980s (Fig. 1). We tested whether the increase through time was largely attributable to increasing infectious disease reporting effort (that is, through more efficient diagnostic methods and more thorough surveillance^{2,3,13}) by calculating the annual number of articles published in the *Journal of Infectious Diseases* (JID) since 1945 (see Methods). Controlling for reporting effort, the number of EID events still shows a highly significant relationship with time (generalized linear model with Poisson errors, offset by log(JID articles) (GLM_{P,JID}), $F = 96.4$, $P < 0.001$, d.f. = 57). This provides the first analytical support for previous suggestions that the threat of EIDs to global health is increasing^{1,2,14}. To further investigate the peak in EID events in the 1980s, we examined the most frequently cited driver of EID emergence during this period (see Supplementary Table 1). Increased susceptibility to infection caused the highest proportion of events during 1980–90 (25.5%), and we therefore suggest that the spike in EID events in the 1980s is due largely to the emergence of new diseases associated with the HIV/AIDS pandemic¹⁵.

The majority (60.3%) of EID events are caused by zoonotic pathogens (defined here as those which have a non-human animal source), which is consistent with previous analyses of human EIDs^{2,8}. Furthermore, 71.8% of these zoonotic EID events were caused by pathogens with a wildlife origin—for example, the emergence of Nipah virus in Perak, Malaysia and SARS in Guangdong Province, China. The number of EID events caused by pathogens originating in wildlife has increased significantly with time, controlling for reporting effort (GLM_{P,JID} $F = 60.7$, $P < 0.001$, d.f. = 57), and they constituted 52.0% of EID events in the most recent decade (1990–2000) (Fig. 1). This supports the suggestion that zoonotic EIDs represent an increasing and very significant threat to global health^{1,2,7,13,14}. It also highlights the importance of understanding the factors that increase

Santé des écosystèmes

**Santé
humaine**

**Santé des autres
animaux**

Interface homme-animal-environnement dans nos villes:
Opportunités pour la santé ou risques émergents ?

Biodiversité urbaine : bénéfices pour la santé

Biophilie : « les humains ont une tendance innée à se chercher des liens avec la nature et avec d'autres formes de vie »

E. Wilson, 1984





Espaces verts et biodiversité urbaine : bénéfiques pour la santé

- Relaxation psychologique
- Réduction stress, anxiété, dépression
- «Forest bathing & Forest therapy»
- Amélioration du capital social
- Exposition à la faune sauvage urbaine et bien-être

Bolon et al, 2019 : Espaces verts et forêts en ville: bénéfiques et risques pour la santé humaine selon l'approche «Une seule santé» (One Health). Santé Publique



Espaces verts et biodiversité urbaine : bénéfices pour la santé

- Augmentation de l'activité physique
- Lutte contre l'obésité, le diabète de type 2 et les maladies cardiovasculaires
- Promotion de *One Health*

Animaux de compagnie: surpoids et obésité

- 34 % parmi une population de 21'754 chiens américains
- 33.5 % parmi 2'661 chiens australiens
- 44 % parmi 2'391 chiens en Chine dans la ville de Beijing

*(Lund et al., 2006, McGreevy et al., 2005, Mao et al., 2013)
Bartges et al, 2017: One Health Solutions to Obesity in People and Their Pets*





L'agriculture urbaine et ses opportunités pour la santé :

- Sécurité alimentaire et nutrition
- Emploi, éducation
- Lien avec la nature
- Prévention des allergies (exposition précoce des enfants aux animaux)
- Activité physique

Différentes initiatives d'agriculture urbaine à travers le monde : Projet Cocorico à Genève, ferme de Paris etc.

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Hen-keeping - a cracking new therapy for older people

A project that lets people keep hens is reducing depression, loneliness and the need for antipsychotic medication for those in sheltered housing and care homes



Lien homme-animal

Santé mentale et rôle de «facilitateur social»: anxiété, dépression, introversion etc.

Hodgson & Darling (2011) **Zoeyia**: An essential component of «One Health». *Can Vet J*

Biodiversité urbaine : risques pour la santé

Zoonoses virales émergentes associées aux chauves-souris :

- 2002 SRAS Chine
- 2014 Ebola Afrique de l'Ouest
- 2019 Covid-19 Chine



Les vecteurs d'infections virales (ex. *Aedes*, *Culex* etc.) s'adaptent à l'habitat urbain (ex. Zika, Dengue)



Aux États-Unis et en Europe:

- Virus du Nil occidental
- Echinococcose
- Maladie de Lyme
- etc





Contents lists available at [ScienceDirect](#)

International Journal for Parasitology: Parasites and Wildlife

journal homepage: www.elsevier.com/locate/ijppaw

Invited Review

The role of wildlife in the transmission of parasitic zoonoses in peri-urban and urban areas

Ute Mackenstedt ^{a,*}, David Jenkins ^b, Thomas Romig ^a

^a Parasitology Unit, University of Hohenheim, Emil-Wolff-Straße 34, 70593 Stuttgart, Germany

^b School of Animal and Veterinary Sciences, Charles Sturt University, Locked Bag 588, Wagga Wagga, NSW 2678, Australia

Ticks and the city: ectoparasites of the Northern white-breasted hedgehog (*Erinaceus roumanicus*) in an urban park.

Földvári G¹ , Rigó K, Jablonszky M, Biró N, Majoros G, Molnár V, Tóth M

Author information ▶

Ticks and Tick-borne Diseases, 24 Sep 2011, 2(4):231-234

DOI: [10.1016/j.ttbdis.2011.09.001](https://doi.org/10.1016/j.ttbdis.2011.09.001) PMID: 22108019

Vector-Borne and Zoonotic Diseases, Vol. 13, No. 6 | Original Articles



Rats, Cities, People, and Pathogens: A Systematic Review and Narrative Synthesis of Literature Regarding the Ecology of Rat-Associated Zoonoses in Urban Centers

Chelsea G. Himsworth , Kirbee L. Parsons, Claire Jardine, and David M. Patrick

Published Online: 31 May 2013 | <https://doi.org/10.1089/vbz.2012.1195>

Wilderness in the 'city' revisited: different *urbes* shape transmission of *Echinococcus multilocularis* by altering predator and prey communities

Stefano Liccioli^{1,2,*}, Patrick Giraudoux³, Peter Deplazes⁴, and Alessandro Massolo^{1,5,*}

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³ Chrono-environment Lab, UMR6249 and Institut Universitaire de France University of Franche-Comté and CNRS, Besançon, France

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Aux USA, selon l'OMS (2018) :

- Environ 4,5 millions de personnes mordues par un chien chaque année
 - 885 000 consultent un médecin;
 - 30 000 ont recours à une chirurgie réparatrice
 - 3 à 18% contractent des infections
 - 10 à 20 décès sont à déplorer

Chiffres comparables dans d'autres pays à revenu élevé (Australie, Canada, France etc.)

Asie/Afrique: 59 000 décès par an dus à la rage

Details [WHO \(2018\)](#)





Les animaux d'élevage et l'agriculture urbaine:

- Pollution et gestion des déchets
- Attraction de prédateurs : serpents, ratons laveurs, renards (poules)
- Zoonoses (salmonellose, grippe aviaire etc.)

Elevage de volailles : défi pour la santé publique

Outbreaks of *Salmonella* Infections Linked to Backyard Poultry



Investigation Notice

Posted December 17, 2020 at 4:50 PM ET

This outbreak investigation is over. Although the investigation is over, people can still get a *Salmonella* infection from chickens and ducks in backyard flocks. Stay healthy around your backyard flock by washing your hands, keeping your birds outdoors, and supervising young children around your flock.

In 2020, CDC and public health officials in all 50 states investigated 17 multistate outbreaks of *Salmonella* illnesses linked to contact with poultry in backyard flocks. The number of illnesses reported this year was higher than the number reported during any of the past years' outbreaks linked to backyard flocks.

Janv-Dec 2020

- 1 722 personnes infectées
- 24 % sont des enfants de moins de 5 ans
- 333 personnes hospitalisées
- 1 décès

CDC, details [ici](#)

Les animaux dans les villes peuvent provoquer des conflits sociaux, ce qui est le cas avec les renards à Londres



India

Leopard enters Indian school and injures five people before capture

Big cat wanders into grounds of school in Bangalore before being shot with tranquilliser dart

Agence France-Presse in Bangalore

Monday 8 February 2016 13.02 GMT



Shares

246



Leopard enters Indian school, injuring several people before being captured - video

Five people have been injured during an attempt to capture a leopard that

Advertisement



Most popular in US



Trump repeats crowd member's 'pussy' insult as New Hampshire votes



Home > Vol 5 (2015) > Löhmus

Making green infrastructure healthier infrastructure

Mare Löhmus, PhD, Associate Professor^{1,2*} and John Balbus, MD, MPH³

> Article

Abstract

Cities and biodiversity – is more always protective?

'Unintended' biodiversity

– urban pests and

disease vectors

Urban bodies of water

and wetlands

Conclusions

Disclaimer

¹Institute for Environmental Medicine, Karolinska Institutet, Stockholm, Sweden; ²Centre for Occupational and Environmental Medicine, Stockholm County Council, Stockholm, Sweden; ³National Institute of Environmental Health Sciences, Bethesda, MD, USA

ABSTRACT

Increasing urban green and blue structure is often pointed out to be critical for sustainable development and climate change adaptation, which has led to the rapid expansion of greening activities in cities throughout the world. This process is likely to have a direct impact on the citizens' quality of life and public health. However, alongside numerous benefits, green and blue infrastructure also has the potential to create unexpected, undesirable, side-effects for health. This paper considers several potential harmful public health effects that might result from increased urban biodiversity, urban bodies of water, and urban tree cover projects. It does so with the intent of improving awareness and motivating preventive measures when designing and initiating such projects. Although biodiversity has been found to be associated with physiological benefits for humans in several studies, efforts to increase the biodiversity of urban environments may also promote the introduction and survival of vector or host organisms for infectious pathogens with resulting spread of a variety of diseases. In addition, more green connectivity in urban areas may potentiate the role of rats and ticks in the spread of infectious diseases. Bodies of water and wetlands play a crucial role in the urban climate adaptation and mitigation process. However, they also provide habitats for mosquitoes and toxic algal blooms. Finally, increasing urban green space may also adversely affect citizens allergic to pollen. Increased awareness of the potential hazards of urban green and blue infrastructure should not be a reason to stop or scale back projects. Instead, incorporating public health awareness and interventions into urban planning at the earliest stages can help insure that green and blue infrastructure achieves full potential for health promotion.

Keywords: *urban planning; urban wildlife; green infrastructure; blue infrastructure; ecosystem services; biodiversity; risk management; infectious diseases; climate change; adaptation*

Download Article

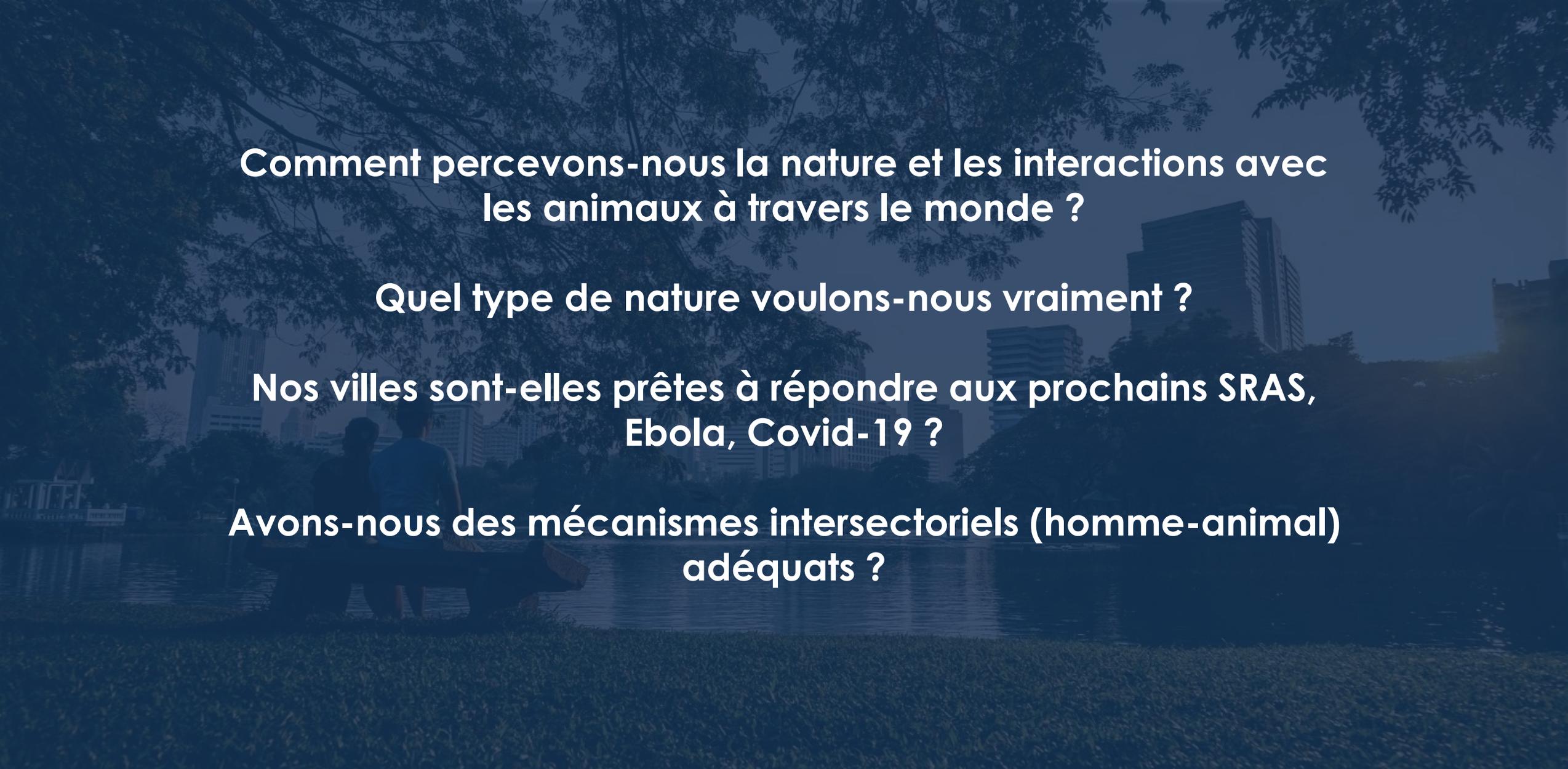
Cite Article

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Keywords

[africa](#) [antibiotic resistance](#) [antibodies](#) [antimicrobial resistance](#) [arbovirus](#) [cattle](#) [e_coli](#) [enterobacteriaceae](#) [epidemiology](#) [esbl](#) [infection](#) [mosquito](#) [one health](#) [outbreak](#) [pandemic](#) [pigs](#) [rift valley fever](#) [sweden](#) [zoonoses](#) [zoonosis](#) [zoonotic](#)

*“Une prise de conscience accrue des dangers potentiels des infrastructures urbaines vertes et bleues ne devrait pas être une raison pour arrêter ou réduire les projets. Au lieu de cela, **intégrer une sensibilisation à la santé publique dans la planification urbaine** dès les premiers stades peut contribuer à garantir que les infrastructures vertes et bleues atteignent leur plein potentiel de promotion de la santé.*”



Comment percevons-nous la nature et les interactions avec les animaux à travers le monde ?

Quel type de nature voulons-nous vraiment ?

Nos villes sont-elles prêtes à répondre aux prochains SRAS, Ebola, Covid-19 ?

Avons-nous des mécanismes intersectoriels (homme-animal) adéquats ?

Des opportunités pour la participation des citoyens favorisent la promotion de la santé humaine, animale et environnementale ainsi que la découverte et la contribution à la science

The screenshot shows the Chicago Wildlife Watch website. At the top, there is a navigation bar with the logo '*** CHICAGO *** WILDLIFE WATCH' and links for 'Classify', 'Profile', 'About', 'Education', 'Blog', 'Press', and 'Talk'. On the right, it says 'A Zooniverse project' with 'SIGN UP | SIGN IN' and 'English'.

The main header features a cityscape background. On the left, it says 'Welcome to Chicago Wildlife Watch' with a small inset image of a chipmunk. On the right, it says 'Help us understand how animals—from coyotes to chipmunks—share this great city with us.' with 'Learn more' and 'Get started' buttons.

Below the header is a statistics section titled 'CHICAGO WILDLIFE WATCH Statistics' with four metrics:

Metric	Value
Active Users	7,070
Classifications	2,501,495
Images Total	891,807
Complete	78%

Source: [Chicago Wildlife Watch](https://www.chicagowildlifewatch.org/)

Observations



Le monde

28,386,928

OBSERVATIONS

241,013

ESPÈCES

102,241

IDENTIFICATEURS

Carte Grille Liste Endroits intéressants

Océan Pacifique Nord

Océan Atlantique

Océan Indien

Océan Austral

Légende de La Carte



Microcentrum

Jacaranda Ave, Car



Sceloporus oliv

West Arlington, Ar



Famille Parmeli

Buchanan, TN 382

• 24 oct. 2019



Croissant Perlé

(*Phyciodes tharos*)

West Arlington, Ar



Junonia Coenia



Source: [Mario Ruckh](#)

Original Paper

Wet Markets and Food Safety: TripAdvisor for Improved Global Digital Surveillance

Nicole E Kogan^{1,2}, BSc; Isabelle Bolon², DVM, PhD, MPH; Nicolas Ray^{2,3}, PhD; Gabriel Alcoba⁴, MD, MPH; Jose L Fernandez-Marquez⁵, PhD; Martin M Müller⁶, MSc; Sharada P Mohanty⁶, MSc; Rafael Ruiz de Castañeda², PhD

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Source: [MOOC Global Health at the Human-Animal-Ecosystem Interface, Coursera](#)



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coursera



Merci !

Source: Yves Ryncki / FCBG