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Supplementary appendix

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Appendix for "Diversity and evidence gaps among potential win–win solutions for conservation and human infectious disease control"

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General overview of our subject-wide evidence synthesis approach:

In this project, we collected, evaluated, and synthesized information about 46 proposed win–win solutions using a method called a "subject-wide evidence synthesis" (Fig. 1). This method was designed for evidence synthesis in situations where (i) there is no *a priori* list of interventions to review (the intervention list is generated by the review); (ii) there are too many interventions to review each using a systematic literature review (because doing so would be prohibitively costly); and (iii) the evidence among interventions is too limited or variable to perform a meta-analysis for each intervention.[1] The subject-wide evidence synthesis method first uses a classic systematic literature review to identify a landscape of possible interventions (Phase 1, Section 1 below), and then evidence for each intervention is assessed using a secondary targeted review process called a "rapid review" (Phase 2, Section 2 below).[1] This two-phase method sacrifices some of the quantitative rigor from a classic systematic literature review and meta-analyses of a few interventions in order to identify and assess a broader suite of interventions supported by evidence of variable quality and quantity.[1] In this section of the Supplementary Methods, we generally describe the two phases as they applied to our synthesis of proposed win–win solutions, and then we explain each phase in more detail below.

The first step in our subject-wide evidence synthesis was to use a systematic literature review to create a list of win–win solutions proposed to both reduce human infectious disease burdens and advance conservation goals (Fig. 1, Section 1 below). In a preliminary scoping review, we discovered that many relevant, peer-reviewed papers would not include terms like "win–win solution", "intervention", "synergy", or "co-benefit". Instead of relying on these terms to find relevant literature, we performed a broader systematic literature review of peer-reviewed papers with terms related to conservation, ecology, infectious diseases, and humans. This search method was more inclusive but also returned many papers that did not hypothesize outcomes for conservation and/or human infectious diseases. To more efficiently sort the relevant from irrelevant papers, we used the colandr machine learning algorithm, which learns from researchers' decisions to include or exclude papers and sorts the remaining papers by relevance.[2] Using this combination of researcher classification and machine learning sorting, we filtered the initial list of 12,270 papers to a list of 617 papers containing proposed or measured outcomes for both

conservation and human infectious diseases (see PRISMA diagram in Supplemental Fig. 1). Many of these papers were about the same few solutions, and many more did not include proposed win–win solutions (e.g., papers that were about trade-offs where human health was improved through environmental degradation). Therefore, we used full-text analysis to again exclude irrelevant papers. We then group papers that involved similar "levers" or mechanisms into collective case studies. This created a final list of 46 unique proposed win–win solutions to evaluate with targeted reviews (Table 1).

The second step in our subject-wide evidence synthesis was to perform a rapid review of each intervention and summarize the resulting information (Fig. 1, see Section 2 below). We began each rapid review with a list of 20 qualitative categories of information that we wanted to summarize (e.g., collateral impacts caused by the intervention on the environment, social acceptability of the intervention), and we iteratively searched the peer-reviewed and gray literature for information relevant to these categories. As one or two investigators performed these reviews and summarized the resulting information, a single lead investigator (SRH) iteratively reviewed each summary to ensure that all rapid reviews were being performed in a consistent way across investigators. When the investigators and lead investigator were satisfied with the collective case study summary, it was sent to at least one expert for a friendly peer review. Based on the expert's feedback, the summary was again revised by the investigator and double-checked again by the lead investigator. Finally, the information contained within each summary was evaluated and classified in several ways (e.g., identifying the primary conservation threat) so that we could synthesize this information across proposed solutions.

Systematic literature review to create a list of proposed win–win solutions

Our systematic literature review was based on five types of search terms: conservation terms, ecological qualifier terms, infectious disease terms, human qualifier terms, and exclusion terms (see each list below). This methodology generally followed a previous evidence mapping study conducted by McKinnon et al.,[3] but we modified that study's search terms to focus specifically on outcomes related to human infectious diseases and to include some additional terms that we deemed important based on an initial scoping review of relevant papers. In particular, the conservation terms were compiled from McKinnon et al.[3] and the list of conservation threats identified by the International Union for the Conservation of Nature,[4] plus two terms that were frequently and prominently used in highly-relevant papers that we found in an initial scoping review of the literature: "environmental change" and preserv*. The ecological qualifier terms came from McKinnon et al.[3] and a list of biomes,[5] plus the term "ecosystem function", which we found in several relevant papers in an initial scoping review. The human qualifiers came from McKinnon et al.,[3] but we did not include some of their terms that returned results that were not relevant to our search (i.e., community, fisher, collaborator), and we added terms related to children/childhood. Finally, the infectious disease terms came from lists maintained by the National Institute of Allergy and Infectious Disease[6] and the World Health Organization,[7] plus three terms we deemed relevant

based on an initial scoping review: “disease control”, “disease risk”, and “infection risk”. We also excluded any papers about “oxygen species”, which were abundant and not relevant to our study. The final search string took the form of ("conservation qualifier term 1" OR "conservation qualifier term 2") AND ("ecology term 1" OR "ecology term 2") AND ("infectious disease term 1" OR "infectious disease term 2") AND ("human qualifier term 1" OR "human qualifier term 2") NOT (“oxygen species”).

CONSERVATION TERMS: ("capacity-building" OR "invasive species" OR “climate change” OR “ecosystem service*” OR “fire suppression” OR “population decline*” OR “re-introduction” OR agriculture OR aquaculture OR conserv* OR dam OR ecotourism OR effluent OR “environmental change*” OR extinction* OR extirpation OR farm* OR fishing OR harvesting OR hunting OR law* OR logging OR management OR mining OR outreach OR policy* OR pollution OR preserv* OR reintroduction OR reservation OR stewardship OR sustainab* OR transportation OR war)

ECOLOGICAL QUALIFIER TERMS: AND (marine OR freshwater OR coastal OR forest* OR ecosystem* OR species OR habitat* OR biodiversity OR ecolog* OR landscape OR seascape OR “coral reef*” OR “natural resource*” OR grassland OR savanna OR desert OR taiga OR tundra OR wetland OR aquatic OR estuary OR river OR stream OR lake OR pond OR jungle OR “ecosystem function”)

HUMAN QUALIFIER TERMS: AND (human* OR childhood OR children OR household OR people)

INFECTIOUS DISEASE TERMS: AND (Tuberculosis OR Mycobacterium OR “sexually transmitted disease*” OR Syphilis OR Chlamydia OR Gonorrhoea OR Trichomoniasis OR Herpes OR Herpesvirus OR “Haemophilus ducreyi” OR “Klebsiella granulomatis” OR Papillomavirus OR HIV OR AIDS OR Diarrhoeal OR diarrhea* OR Shigella OR Salmonella OR Cholera OR “Escherichia coli” OR “Yersinia enterocolitica” OR Campylobacter OR “Clostridium difficile” OR “Entamoeba histolytica” OR “Balantidium coli” OR Giardia OR Cryptosporidium OR Isospora OR Sarcocystis OR Rotavirus OR Adenovirus OR “Norwalk agent” OR “Whooping cough” OR Pertussis OR Diphtheria OR Measles OR Tetanus OR Meningitis OR Streptococcus OR “Naegleria fowleri” OR Encephalitis OR “Murray Valley virus” OR “Kunjin virus” OR “La Crosse virus” OR “Rocio virus” OR “Louping ill virus” OR “Powassan virus” OR Hepatitis OR Malaria OR Plasmodium OR trypanosom* OR “Chagas disease” OR schistosom* OR Leishmania* OR “Lymphatic filariasis” OR Onchocerciasis OR Cysticercosis OR Echinococcus OR Dengue OR Trachoma OR “Yellow fever” OR Rabies OR Nematode OR Ascariasis OR Trichuriasis OR Hookworm OR Food-borne OR Foodborne OR Food-bourne OR Trematod* OR Strongyloid* OR Enterobiasis OR Anisakiasis OR “Intestinal capillariasis” OR Trichostrongyliasis OR Leprosy OR Zoonosis OR Zoonotic OR Whipworm

OR Chikungunya OR Ehrlichiosis OR Influenza OR Leptospirosis OR "Lyme disease" OR Norovirus OR Plague OR Scabies OR Rotavirus OR Toxocar* OR "West nile virus" OR Toxoplasm* OR "Sin nombre virus" OR "Hanta virus" OR "Zika virus" OR Ebola OR Drucunculiasis OR "Infectious disease" OR Arbovirus OR Vectorborne OR Parasit* OR "Disease control").

We used these English search terms to query two databases: Thomson Reuters Web of Science and NCBI PubMed. We put the keyword string within Web of Science's "topic" field (includes title, abstract, and keywords) and within PubMed's "title/abstract" field. Both searches were completed on 14 March 2018 and returned 10,094 and 3,723 references, respectively (Supplementary Fig. 1). There were no restrictions on the publication dates for included records. We downloaded the results as .bib and .nbib files, used Zotero to consolidate references, and uploaded all results to colandr (see below). After colandr removed duplicates, we were left with 12,270 references (Supplementary Fig. 1).

We used colandr[2]—an open access, machine-learning assisted literature review platform—to review the titles and abstracts of all records and classify those that hypothesized or measured outcomes for both human infectious disease and conservation (Supplementary Fig. 1). Each title and abstract were read by two people who independently determined whether the paper did or did not hypothesize or measure outcomes for both sectors. Any papers that were scored differently (include vs. exclude) by the two readers were discussed until a conservative consensus was reached. As papers were classified to be included vs. excluded, the machine-learning algorithm sorted the remaining papers by relevance based on keywords, such that readers were prioritizing screening the most relevant papers first. After the first 500 records were screened, we continued to find relevant papers, but few new proposed solutions were found (i.e., the papers were about solutions that we had already encountered at least once). After screening the 1,000th paper, no new solutions were found as we continued screening through thousands more abstracts. Therefore, we assumed that all proposed solutions in the literature had been found by the time we reached the 4,940th paper, and we excluded all records that had been sorted as less relevant by colandr and had not been screened by that point (7,330 records; Supplementary Fig. 1). When we finished screening records based on whether they included hypothesized or measured outcomes for both conservation and human infectious diseases, we had a list of 617 records to include in our full-text analysis (Supplementary Fig. 1).

During full-text analysis, we found that many (n=234) of the 617 papers did not include proposed win–win solutions, where we define win–win solutions as levers that act on positive correlations between human health and conservation to restore degraded systems (Fig. 1).[8–10] For example, in Australia, deforestation of flowering eucalypts caused bats to reduce nomadic movements among forests and roost near anthropogenic food sources in cities and pastures. New bat distributions increased bat–human conflicts, including increasing Hendra virus spillover from bats to horses and

then to humans[11]—a lose–lose scenario. We removed all such lose–lose scenarios during our full-text analysis unless at least one paper also suggested a relevant solution. For example, to improve bat and human health, a landscape-level revegetation project has been initiated to support nomadic bat movements, which is expected to reduce spillover risk—a win–win solution. Unlike this lose–lose to win–win trajectory, other papers focused on preventing degradation by maintaining baseline conditions, and those solutions would be better classified as win–neutral or neutral–neutral solutions.[10] For example, many papers focused on conserving intact forests (i.e., no change in forest cover), because preventing deforestation is expected to prevent contacts and spillover between wildlife and people.[12–16] In our review, we retained win–neutral or neutral–neutral solutions that maintained healthy baselines and win–win solutions that reduced human infectious disease burdens while improving ecosystem structure or function. In all these cases included in our final list of 46 solutions, health and conservation were proposed to be better with the intervention than without it.

Some of the 234 papers that we removed during our full-text analysis were generally about improving both conservation and reducing infectious disease burdens, but the underlying mechanisms were too diffuse or poorly articulated for us to cover in a subsequent review. These covered five important topics that should still be considered by future research and management in these sectors: (i) interventions to mitigate global climate change, which exacerbates both ecosystem degradation and human infectious diseases at local and global scales;[17,18] (ii) interventions to prevent forest/habitat fragmentation separately from habitat loss/degradation, because fragmentation and edge habitats have been linked to zoonotic spillover;[19,20] (iii) efforts to improve interdisciplinary collaboration through the relatively new One Health, EcoHealth, and Planetary Health fields;[21,22] (iv) efforts to improve surveillance of wildlife and/or people to detect disease outbreaks earlier;[23,24] and (v) selective breeding or genetic modification of wildlife or livestock to reduce susceptibility to diseases shared by wildlife, livestock, and people.[25,26] After excluding papers about these diffusely synergistic examples and the papers that did not include at least one proposed win–win solution, we were left with 383 papers (Supplementary Fig. 1).

Finally, we used our full-text analysis to turn the list of 383 papers containing proposed win–win solutions into a list of 46 unique proposed solutions (Supplementary Fig. 1). In particular, we combined papers or examples where the underlying "lever" or mechanism creating the conservation outcomes and human infectious disease outcomes were the same into collective case studies. For example, there were many papers about the dilution effect, a proposed mechanism whereby restoring or conserving wildlife biodiversity can reduce human disease risk.[27] Most of these papers were specific to Lyme disease, but several other papers considered the same underlying dilution effect mechanism in other disease systems—"diluting" sylvatic transmission from the most competent wildlife host species. These were all combined in one collective case study on the general and Lyme-specific dilution effect. There were also a few papers regarding the dilution effect and Chagas disease, which relied on a slightly different lever (most Chagas

transmission is peridomestic, complicating the relationship between wildlife biodiversity, sylvatic transmission, and human risk), so we created a second, separate collective case study for studies related to the Chagas-specific dilution effect. Using our collective expert opinions, we continued combining papers in this way until all 46 unique proposed solutions were listed.

Rapid reviews and collective case study summaries

To develop a standardized method for reviewing and summarizing collective case studies, a team of four individuals wrote and iteratively revised one-page summaries for two collective case studies that focused on research from members of the working group: one on restoring prawns to reduce schistosomiasis and one on restoring/conserving forests to reduce childhood diarrhea. Based on this process, the team iteratively developed a standardized list of important informational categories that could be used to examine all collective case studies in the same critical, structured way, and this list was later critiqued and revised by 15 people at an in-person group meeting. The final list of 20 categories included in these one page summaries were as follows: human infectious disease (HID), conservation problem, intervention, target (of the intervention), mechanism (by which the intervention works), HID evidence, conservation evidence, location and spatial scale, temporal scale, health success metrics, conservation success metrics, human co-benefits, conservation co-benefits, collateral human impacts, collateral conservation impacts, social acceptability, equity considerations, practicality or challenges, status, research needs/gaps. Definitions of each of these categories were described in an instruction document (also see below). The instruction document also defined eight types of evidence (see below), established a one-page (single-spaced) limit for summaries, and noted that because cost-effectiveness or economic studies were anticipated to be rare, any such studies should be explicitly noted in the collective case study summaries. This instruction document and the two example one-page collective case study summaries were provided to all collective case study investigators.

After the final list of 46 collective case studies and the instruction document were completed, each collective case study was assigned to one summary investigator (or occasionally a team of two investigators). Investigators then conducted a targeted literature review of published peer-reviewed papers (using search terms that they deemed relevant) and Internet-searchable gray literature to find all relevant information in the 20 categories listed above. There were no restrictions on the publication dates for included records. Searches for peer-reviewed literature relied on Web of Science and Google searches, and investigators also examined the reference lists of relevant papers to find other peer reviewed literature. Investigators used this information to structure and write a one-page summary, iteratively returning to searching until all 20 information categories had been sufficiently covered. In the absence of literature, investigators were encouraged to use their expert opinion and knowledge of the system to suggest possible outcomes for categories such as equity considerations or collateral impacts, but to be clear that literature was missing for those categories. For instance, forest conservation has historically involved disenfranchising local people, so all summaries related to this topic note this *potential* equity concern, even if the literature for the

collective case study did not discuss equity. Alternatively, when information was missing or a category was not relevant to the case study, acceptable responses included "unknown" or "not applicable". If different sources provided contrary information or evidence, investigators described all reported evidence, and highlighted the sentences including the contradictory evidence in yellow, such that all future readers would note the contradiction.

Roughly 25% of each one-page summary was devoted to detailed descriptions of the evidence available to support the proposed HID outcomes and conservation outcomes from the intervention. Authors used uppercase designations before sentences in these evidence sections to specify the type of evidence being reported: ANECDOTE, HYPOTHESIS, OBSERVATIONAL STUDY (e.g., no experimental manipulation or treatment applied), BEFORE-AFTER STUDY (comparing pre- to post- intervention or natural experiment outcomes, usually for one or a few sites), EXPERIMENT (where applicable, randomized control trials were designated as their own category, separate from experiments), THEORETICAL MODEL, SYSTEMATIC LITERATURE REVIEW, META-ANALYSIS, and REVIEW. At least one secondary group member reviewed each evidence section to be sure that no evidence was missing, especially by checking for any relevant conservation evidence types on conservationevidence.com and by looking for any published systematic literature reviews on the Cochrane Database of Systematic Reviews. Any additional studies found on these websites were added to the one-page summary. The reference section, which was separate from the one-page summary, was then organized by the evidence categories. Within this organization scheme, a single reference could be placed under multiple categories, and helpful but non-critical references were placed under a SUPPORTING INFORMATION category.

Once drafted, the one-page summary was iteratively revised based on feedback from a single lead investigator (SRH), who ensured that all summaries were written in a consistent way, following the standardized format. The summary was then informally reviewed by at least one external researcher or practitioner familiar with the intervention and/or socio-ecological system described by the collective case study. Friendly reviews were solicited over email, where we specifically contacted authors of recent, relevant, peer-reviewed literature or practitioners involved in intervention implementation. In the email, we requested that friendly reviewers not only check the summaries for accuracy, but also to help us identify any crucial gaps in our case studies, especially missing collateral impacts or logistical challenges and related ongoing projects that were not yet published. Specific comments and general feedback from friendly reviewers were then incorporated into the one-page summaries.

After the literature review, writing, peer-review, and revision were completed—a process that took approximately 40 person-hours per collective case study—the final summaries were all included on a public-facing website: https://ecohealthsolutions.stanford.edu/research/win-win-solutions-people-and-nature

Evaluation and synthesis: categorizing information from the rapid reviews

To synthesize knowledge across the 46 proposed win–win solutions, we first needed to categorize information from each collective case study in a way that was comparable across the diverse solutions. In particular, we wanted to be able to describe diversity and evidence gaps among solutions with regards to their geographic distributions, the conservation threats they addressed, the human infectious diseases they addressed, the type of "lever" or mechanism used to achieve the conservation and health outcomes, the type and strength of evidence available to support the proposed conservation and health outcomes, and 11 criteria that we identified as indicative of "viable" solutions. Below we describe how we consistently categorized each literature summary according to these themes. The full dataset resulting from these categorizations is available on the open access website containing the collective case study summaries.

Geographical Information:

Because our collective case study summaries typically incorporated several case studies (e.g., several different community conservation programs in several different African countries have incorporated HIV/AIDS initiatives), few of the collective case studies could be assigned to specific geographical coordinates. Instead, we classified the extent of each collective case study in a categorical way, using designations for multi-continent (global), multi-country within a continent, or single country solutions. We then chose a single, generalized geographical location to represent the collective case study on a map (Figure 3A). For country-specific collective case studies, this point was placed in the middle of the country or in the most relevant town/village/national park. For multi-country and multi-continent collective case studies, this point was placed in a single country where a particularly notable case study occurred. As a result, the map in Figure 3A does not show every location where a collective case study could be applied, but rather the conservative diversity of locations where the relevant interventions/studies have been applied.

Conservation Threats:

The IUCN categorizes 12 types of conservation threats: residential & commercial development; agriculture & aquaculture; energy production & mining; transportation & service corridors; biological resource use; human intrusions & disturbance; natural system modification; invasive & other problematic species, genes & diseases; pollution; geological events; climate change & severe weather; or other.[4] We used this list and the IUCN's definitions of each to determine which threats were relevant to each collective case study, as well as which threat was of primary relevance to the collective case study.

Pathogen Type:

Humans have had documented infections from more than 1,400 known parasite or pathogen species,[13] which belong to many disparate taxonomic clades and nonliving groups (viruses and prions). To better understand which parts of this parasite biodiversity were and were not captured

by existing win–win solutions, we recorded whether each collective case study involved the following major taxonomic groups: prions (infectious proteins), viruses, bacteria, protozoa, fungi, arthropods, and helminths. Collective case studies often involved more than one human infectious disease, and thus they could also involve more than one major parasite group. Even when multiple pathogens or parasites were involved, we could usually identify one major transmission pathway involved in each collective case study (direct contact, waterborne, vector-borne, zoonotic from livestock, or zoonotic from wildlife), so we also recorded this major transmission pathway.

Lever Type:
As we reviewed the proposed solutions, we found that many involved one of the seven IUCN conservation action classes: land/water protection; land/water management; species management; education & awareness; law & policy; livelihoods, economic & other incentives; or external capacity building. Using the IUCN's definitions of these action classes, we designated which was most relevant to each solution. However, it seemed inappropriate to call many of the solutions "conservation levers", which implies that a conservation intervention primarily acts on ecosystems and then has some secondary or simultaneous benefit for human health. Instead, many of the solutions were public health interventions (e.g., vector control) that had some secondary or simultaneous benefit for conservation (i.e., a health lever for conservation). We therefore also categorized the solutions by lever type to summarize how many were primarily conservation levers for health, health levers for conservation, or levers for health and conservation (interventions not specific to health or conservation but beneficial to both in this context).

Evidence Quality:
There was notable variation among the proposed solutions in the types of evidence available to support their proposed outcomes: some had never been the focus of a primary peer-reviewed study (i.e., they had only been hypothesized to work in a review or perspective paper), some had been studied frequently enough that they had previously been the focus of a meta-analysis, some were supported by the same consistent outcomes in all studies, some had contradictory outcomes across studies, etc. To describe this variation, we evaluated the quality of evidence for the proposed outcomes in each collective case study using an evidence rubric that we modified from a rubric used by the Bridge Collaborative (Table S1).[28] Using this three-part rubric, authors assigned a 0 to 3 rating regarding the evidence diversity, evidence consistency (also see Viability Criteria below), and evidence applicability. The scores for each of these categories were then combined into a metric of overall evidence confidence, where the overall score was the minimum score for any given category (e.g., 3, 1, 2 would receive an overall score of 1, or "low"). After the investigators of each summary had evaluated the evidence using this rubric, their evaluation was checked by two other investigators. Whenever independent evaluations differed, they were discussed until consensus was achieved. Evidence evaluation for the proposed human infectious disease outcomes and conservation outcomes was done separately, such that each collective case study could be placed on the two-dimensional matrix in Figure 3.

Viability Criteria:

During the evaluation process, it became clear that most collective case studies had major data gaps among the 20 information categories that we reviewed and/or the proposed solution had some potential or documented negative impacts on socio-ecological systems that could make the solution unacceptable for some stakeholders. We discussed these issues at in-person working group meetings and via subsequent online discussions, through which we defined and iteratively revised a set of 11 criteria for viable solutions that one could potentially assess across all solutions: Harmless, Contained, Consistent, Feasible, Acceptable, Impactful, Effective, Affordable, Scalable, Sustainable, and Cost-effective (Fig. 4). Below we define each of the criteria. For five criteria (Harmless, Contained, Consistent, Feasible, Acceptable), the collective case study investigator used the information from the review to evaluate whether the criterion was met (Yes) or unmet (No), or whether there was not enough information to evaluate with certainty (Data Deficient). If needed, the investigator completed additional literature reviews or updated the one-page summary to clarify this information. Two additional investigators then independently checked these evaluations for all 46 collective case studies to ensure consistent decision-making. Whenever independent evaluations differed, they were discussed until consensus was achieved. We did not evaluate the other six criteria (Impactful, Effective, Affordable, Scalable, Sustainable, and Cost-effective), because evaluation would be context-dependent for different individuals/organizations intent upon funding, researching, or implementing each intervention.

Harmless (i.e., no negative externalities for people): The intervention does not notably disenfranchise the poor or people with limited political or social power. Note that an intervention that benefits some people more than others can still be harmless under this definition, as long as the intervention does not benefit some people at the expense of other people.

Contained (i.e., no negative externalities for natural systems): The intervention has no notable collateral impacts for ecosystem structure or function, or if potential collateral impacts exist, there are known methods to mediate or avoid them.

Consistent: The intervention has not had or is not likely to have the opposite effect on the human infectious disease target (e.g., increase instead of decrease burdens) or the conservation target (e.g., reduce ecosystem integrity instead of increase ecosystem integrity). Note that evidence showing no effect on a target does not qualify as inconsistency; the effect must be in the opposite direction from that desired to say it is not consistent. Interventions that are not consistent should not be implemented unless very specific scenarios where consistency is assured can be found.

Feasible: The intervention could be successful if implemented today, given existing evidence, structural and logistical capacity, and technology.

Acceptable: The intervention is already socially acceptable or could be easily made acceptable by making modifications to appease particular stakeholder groups.

Impactful: The intervention has a large enough impact on human health or conservation that it is worth doing. Individuals or organizations will evaluate this criterion differently for any collective case study depending on their specific goals.

Effective: The intervention has worked, or it is likely enough to work that it is worth doing. Individuals or organizations will evaluate this criterion differently for any collective case study depending on their willingness to invest in an intervention that might have no effect.

Affordable: The intervention could be paid for in full by the people tasked to pay for the intervention. Individuals or organizations might evaluate this criterion differently for any collective case study depending on their budgets.

Scalable: The intervention has been or could be scaled up to cover most/all of the spatial extent of the problem. Individuals or organizations might evaluate this criterion differently for any collective case study depending on their specific definitions of the extent of the problem (e.g., national organization covering extent in country vs. international organization covering global extent).

Sustainable: The intervention has been or could be implemented long enough to achieve human health and conservation goals. Individuals or organizations might evaluate this criterion differently for any collective case study depending on their specific goals (e.g., reduce disease burdens 50% vs. eradicate disease).

Cost-effective: The intervention has a big enough impact to justify the cost. Individuals or organizations might evaluate this criterion differently for any collective case study depending on their goals and budgets.

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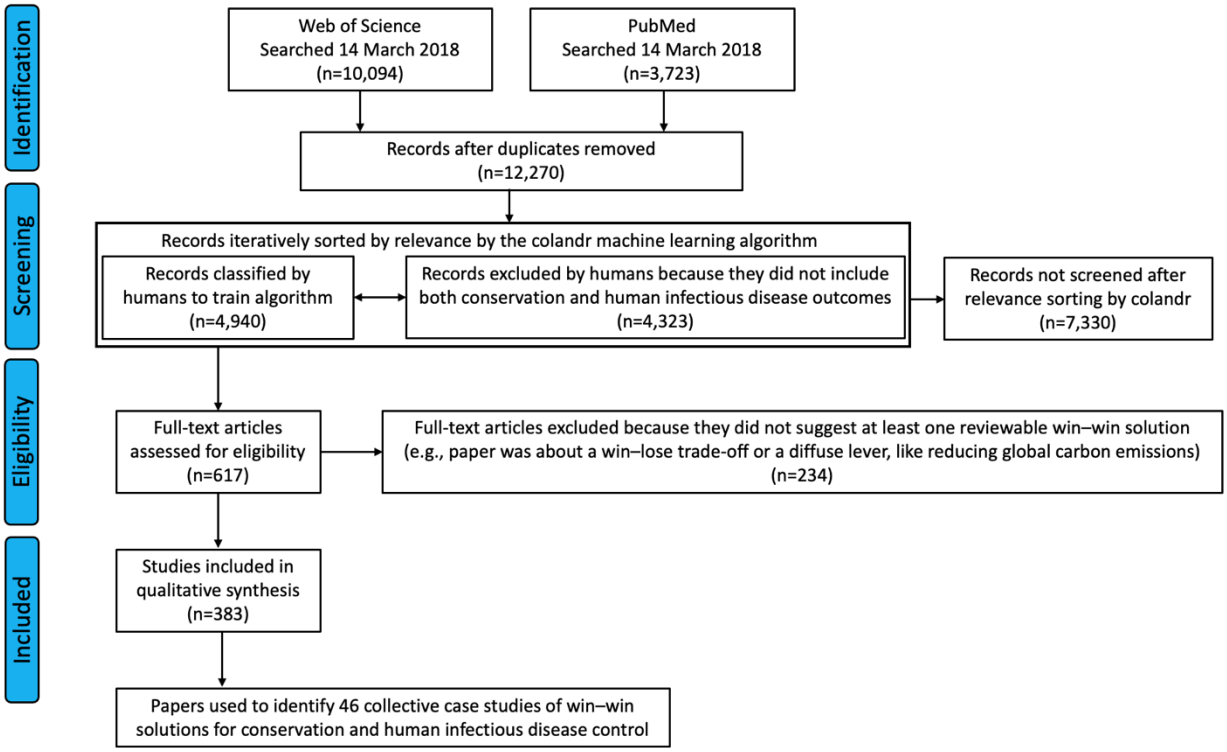
Supplementary Fig. 1. This PRISMA diagram outlines the first step in our subject-wide evidence synthesis, which was a systematic literature review used to create a list of win–win solutions proposed to both reduce human infectious disease burdens and advance conservation goals. Using a combination of human classification and machine learning, we filtered a list of 12,270 peer-reviewed papers and book chapters, ending with a list of 383 records that contained at least one proposed win–win solution.



Supplementary Table 1. The three-part rubric used to evaluate the evidence for the proposed human infectious disease outcomes and the proposed conservation outcomes for each collective case study.

Overall Evidence Confidence	Evidence Types and Diversity	Evidence Consistency	Evidence Applicability
High	3: Diverse evidence, including at least one intervention study, leaves little uncertainty regarding the outcome and the underlying mechanisms.	3: consistent	3: evidence addresses the contexts relevant to the problem
Medium	2: Several lines of evidence, including experimental manipulations, address most of the important questions and underlying mechanisms that affect the outcome of interest.	2: mostly consistent; inconsistency easy to explain	2: existing studies mostly occur at the geographical locations, spatial and temporal scales, or socio-ecological contexts relevant to the problem
Low	1: There are a few observational studies (e.g., before-after or correlational studies) that support hypotheses or model predictions. The existing studies leave major knowledge gaps and/or the underlying mechanisms for observed outcomes are not tested.	1: moderate to major inconsistency; inconsistency difficult to explain	1: existing studies mostly do not occur at the geographical locations, spatial and temporal scales, or socio-ecological contexts relevant to the problem
None	0: None. There are only hypotheses and/or anecdotes (e.g., in review/opinion papers).	NA	NA

Supplementary Table 2. The 383 papers from the systematic literature review that contained at least one proposed win–win solution, which were used to create the final list of 46 proposed solutions.

Title	Authors	Journal or Book	Year
Consolidation Of International Guidelines For The Management Of Canine Populations In Urban Areas And Proposal Of Performance Indicators.	Garcia et al.	*Rev Panam Salud Publica*	2012
Ecosystem Health And Human Health.	Cecchi and Mancini	*Ann 1St Super Sanita*	2005
Use Of Remote Sensing To Study The Influence Of Environmental Changes On Malaria Distribution In The Brazilian Amazon.	Vasconcelos et al.	*Cad Saude Publica*	2006
A Framework For The Integration Of Ecosystem And Human Health In Public Policy: Two Case Studies With Infectious Agents	Koren and Crawford-Brown	*Environmental Research*	2004
A Framework For The Study Of Zoonotic Disease Emergence And Its Drivers: Spillover Of Bat Pathogens As A Case Study	Wood et al.	*Philosophical Transactions Of The Royal Society B Biological Sciences*	2012
A Global Assessment Of Closed Forests, Deforestation And Malaria Risk	Guerra et al.	*Annals Of Tropical Medicine And Parasitology*	2006
A Long-Term Monitoring Study Of Chlorophyll, Microbial Contaminants, And Pesticides In A Coastal Residential Stormwater Pond And Its Adjacent Tidal Creek	DeLorenzo et al.	*Environmental Monitoring And Assessment*	2012
A Meta-Analysis Suggesting That The Relationship Between Biodiversity And Risk Of Zoonotic Pathogen Transmission Is Idiosyncratic	Salkeld et al.	*Ecology Letters*	2013
A One Health Message About Bats Increases Intentions To Follow Public Health Guidance On Bat Rabies	Lu et al.	*Plos One*	2016
A Research Framework For Identifying Potential Linkages Between Isolated Wetlands And Disease Ecology	Kirkman et al.	*Ecological Research*	2011
A Review Of Biodiversity Outcomes From Possum-Focused Pest Control In New Zealand	Byrom et al.	*Wildlife Research*	2016
A Review Of The Global Conservation Status Of Bats	Mickleburgh et al.	*Oryx*	2002
A Review Of The Interactions Between Free-Roaming Domestic Dogs And Wildlife	Hughs and Macdonald	*Biological Conservation*	2013
A Review Of Zoonotic Infection Risks Associated With The Wild Meat Trade In Malaysia	Cantlay et al.	*Ecohealth*	2017
A Study On Use Of Animals As Traditional Medicine By Sukuma Tribe Of Busega District In North-Western Tanzania	Vats and Thomas	*Journal Of Ethnobiology And Ethnomedicine*	2015

Abandonment, Ecological Assembly And Public Health Risks In Counter-Urbanizing Cities	Gulachenski et al.	*Sustainability*	2016
Abundance And Distribution Of Sylvatic Dengue Virus Vectors In Three Different Land Cover Types In Sarawak, Malaysian Borneo	Young et al.	*Parasites & Vectors*	2017
Adult Mortality And Natural Resource Use In Rural South Africa: Evidence From The Agincourt Health And Demographic Surveillance Site	Hunter et al.	*Society & Natural Resources*	2011
Advances In Aquaculture Vaccines Against Fish Pathogens: Global Status And Current Trends	Dadar et al.	*Reviews In Fisheries Science & Aquaculture*	2017
All Health Is Local: Biodiversity, Ethics, And Human Health	Butkus	*Ethics Policy & Environment*	2015
An Appraisal Of Bird-Mediated Ecological Functions In A Changing World	Morante-Filho and Faria	*Tropical Conservation Science*	2017
An Ecological Risk Assessment For Insecticides Used In Adult Mosquito Management	Davis et al.	*Integrated Environmental Assessment And Management*	2007
An Ethnomedicinal Study Of The Seri People; A Group Of Hunter-Gatherers And Fishers Native To The Sonoran Desert	Narchi et al.	*Journal Of Ethnobiology And Ethnomedicine*	2015
An Ethnozoological Study In The Adjoining Areas Of Mount Abu Wildlife Sanctuary, India.	Jaroli et al.	*J Ethnobiol Ethnomed*	2010
Animal And Human Health Implications Of Avian Influenza Infections	Capua and Alexander	*Bioscience Reports*	2007
Animal Origins Of Sars Coronavirus: Possible Links With The International Trade In Small Carnivores	Bell et al.	*Philosophical Transactions Of The Royal Society Of London Series B-Biological Sciences*	2004
Anthrax Kills Wild Chimpanzees In A Tropical Rainforest	Leendertz et al.	*Nature*	2004
Anthropogenic Environmental Change, Mosquito-Borne Diseases And Human Health In New Zealand	Derraik and Slaney	*Ecohealth*	2007
Antimicrobial Resistance To 14 Antimicrobials In Marine Coastal Waters Around Northern Ireland: Use Of The Novel Relative Resistance Index As A Marker Of Ecological Status	Moore et al.	*Journal Of Marine Research*	2013
Antimicrobial Test Of Five Ethnomedicinal Plants In An Ancestral Forest Area	Bandibas and Roxas	*Global Journal Of Environmental Science And Management-Gjesm*	2017
Approaches To Valuing Plant Medicines - The Economics Of Culture Or The Culture Of Economics	Brown	*Biodiversity And Conservation*	1994
Aquatic Ecosystems, Human Health, And Ecohydrology	Lara	*Treatise On Estuarine And Coastal Science, Vol 10: Ecohydrology And Restoration*	2011

Aquatic Eutrophication Promotes Pathogenic Infection In Amphibians	Johnson et al.	*Proceedings Of The National Academy Of Sciences Of The United States Of America*	2007
Aquatic Food Security: Insights Into Challenges And Solutions From An Analysis Of Interactions Between Fisheries, Aquaculture, Food Safety, Human Health, Fish And Human Welfare, Economy And Environment	Jennings et al.	*Fish And Fisheries*	2016
Aquatic Invasive Species And Emerging Infectious Disease Threats: A One Health Perspective	Conn	*Aquatic Invasions*	2014
Are Predators Good For Your Health? Evaluating Evidence For Top-Down Regulation Of Zoonotic Disease Reservoirs	Ostfeld and Holt	*Frontiers In Ecology And The Environment*	2004
Assessment Of Community Awareness And Risk Perceptions Of Zoonotic Causes Of Abortion In Cattle At Three Selected Livestock-Wildlife Interface Areas Of Zimbabwe	Ndengu et al.	*Epidemiology And Infection*	2017
Assessment Of Didecyldimethylammonium Chloride As A Ballast Water Treatment Method	van Slooten et al.	*Environmental Technology*	2015
Asymmetric Effects Of Native And Exotic Invasive Shrubs On Ecology Of The West Nile Virus Vector Culex Pipiens (Diptera: Culicidae)	Gardner et al.	*Parasites & Vectors*	2015
Avian Influenza H5N1 And The Wild Bird Trade In Hanoi, Vietnam	Brooks-Moizer et al.	*Ecology And Society*	2009
Bark In The Park: A Review Of Domestic Dogs In Parks	Weston et al.	*Environmental Management*	2014
Bat Rabies, Public Health And European Bat Conservation	Racey et al.	*Zoonoses And Public Health*	2013
Behavioural Differences: A Link Between Biodiversity And Pathogen Transmission	Dizney and Dearing	*Animal Behaviour*	2016
Biodiversity And Disease: A Synthesis Of Ecological Perspectives On Lyme Disease Transmission	Wood and Lafferty	*Trends In Ecology And Evolution*	2013
Biodiversity And Emerging Diseases	Maillard and Gonzalez	*Ann N Y Acad Sci*	2006
Biodiversity And Human Health: Evidence For Causality?	Hough	*Biodiversity And Conservation*	2014
Biodiversity And Leptospirosis Risk: A Case Of Pathogen Regulation?	Derne et al.	*Medical Hypotheses*	2011
Biodiversity Can Help Prevent Malaria Outbreaks In Tropical Forests	Laporta et al.	*Plos Neglected Tropical Diseases*	2013
Biodiversity Decreases Disease Through Predictable Changes In Host Community Competence	Johnson et al.	*Nature*	2013
Biodiversity Loss Affects Global Disease Ecology	Pongsiri et al.	*Bioscience*	2009

Biodiversity Loss And The Rise Of Zoonotic Pathogens	Ostfeld	*Clinical Microbiology And Infection*	2009
Biodiversity, Endemism, Sense Of Place, And Public Health: Inter-Relationships For Australian Inland Aquatic Systems	Horwitz et al.	*Ecosystem Health*	2001
Biological Control Agent For Mosquito Larvae: Review On The Killifish, Aphanius Dispar Dispar (Ruppel, 1829)	Al-Akel and Suliman	*African Journal Of Biotechnology*	2011
Biological Invaders Are Threats To Human Health: An Overview	Mazza et al.	*Ethology Ecology & Evolution*	2014
Biology And Impacts Of Pacific Island Invasive Species. 7. The Domestic Cat (Felis Catus)	Duffy and Capece	*Pacific Science*	2012
Broadening The Application Of Evolutionarily Based Genetic Pest Management	Gould	*Evolution*	2008
Can Integrating Wildlife And Livestock Enhance Ecosystem Services In Central Kenya?	Allan et al.	*Frontiers In Ecology And The Environment*	2017
Cascade Of Ecological Consequences For West Nile Virus Transmission When Aquatic Macrophytes Invade Stormwater Habitats	Mackay et al.	*Ecological Applications*	2016
Changing Patterns Of Emerging Zoonotic Diseases In Wildlife, Domestic Animals, And Humans Linked To Biodiversity Loss And Globalization	Aguirre	*Ilar J*	2017
Characteristics And Risk Perceptions Of Ghanaians Potentially Exposed To Bat-Borne Zoonoses Through Bushmeat	Kamins et al.	*Ecohealth*	2015
Chemical Contaminants In Feedlot Wastes: Concentrations, Effects And Attenuation	Khan et al.	*Environment International*	2008
Climate Change And Health: Transcending Silos To Find Solutions	Machalaba et al.	*Annals Of Global Health*	2015
Climate Change, Biodiversity, Ticks And Tick-Borne Diseases: The Butterfly Effect	Dantas-Torres	*International Journal For Parasitology-Parasites And Wildlife*	2015
Coastal Development And Precipitation Drive Pathogen Flow From Land To Sea: Evidence From A Toxoplasma Gondii And Felid Host System	VanWormer et al.	*Scientific Reports*	2016
Common Themes In Changing Vector-Borne Disease Scenarios.	Molyneux	*Trans R Soc Trop Med Hyg*	2003
Community Disassembly, Biodiversity Loss, And The Erosion Of An Ecosystem Service	Ostfeld and LoGiudice	*Ecology*	2003
Community-Based Conservation Reduces Sexual Risk Factors For Hiv Among Men.	Naidoo and Johnson	*Global Health*	2013
Comparison Between A Nature Reserve And Adjacent Communal Land In Xeric Succulent Thicket: An Indigenous Plant User'S Perspective	Fabricius and Burger	*South African Journal Of Science*	1997
Comparison Of Human And Southern Sea Otter (Enhydra Lutris Nereis) Health Risks	Adell et al.	*Water Research*	2016

For Infection With Protozoa In Nearshore Waters			
Consequences Of Non-Intervention For Infectious Disease In African Great Apes	Ryan and Walsh	*Plos One*	2011
Conservation Biology In Asia: The Major Policy Challenges	McNeely et al.	*Conservation Biology*	2009
Conservation Medicine And A New Agenda For Emerging Diseases	Daszak et al.	*Impact Of Ecological Changes On Tropical Animal Health And Disease Control*	2004
Conservation Medicine.	Deem et al.	*Ann N Y Acad Sci*	2000
Conservation Of Biodiversity As A Strategy For Improving Human Health And Well-Being	Kilpatrick et al.	*Philosophical Transactions Of The Royal Society B-Biological Sciences*	2017
Conservation, Development And The Management Of Infectious Disease: Avian Influenza In China, 2004-2012	Wu and Perrings	*Philosophical Transactions Of The Royal Society B-Biological Sciences*	2017
Control And Prevention Of Rabies In Animals: Paradigm Shifts	Rupprecht et al.	*Developments In Biologicals*	2006
Cooperative Actions To Achieve Malaria Control Without The Use Of Ddt	Chanon et al.	*International Journal Of Hygiene And Environmental Health*	2003
Counting The Cost Of Vulture Decline - An Appraisal Of The Human Health And Other Benefits Of Vultures In India	Markandya et al.	*Ecological Economics*	2008
Current Status, Distribution, And Conservation Of Brown Bear (Ursidae) And Wild Canids (Gray Wolf, Golden Jackal, And Red Fox; Canidae) In Turkey	Ambarli et al.	*Turkish Journal Of Zoology*	2016
Declines In Large Wildlife Increase Landscape-Level Prevalence Of Rodent-Borne Disease In Africa	Young et al.	*Proceedings Of The National Academy Of Sciences Of The United States Of America*	2014
Deer Browse Resistant Exotic-Invasive Understory: An Indicator Of Elevated Human Risk Of Exposure To Ixodes Scapularis (Acari: Ixodidae) In Southern Coastal Maine Woodlands.	Elias et al.	*J Med Entomol*	2006
Deforestation - Effects On Vector-Borne Disease	Walsh et al.	*Parasitology*	1993
Demarcating Forest, Containing Disease: Land And Hiv/Aids In Southern Zambia	Frank and Unruh	*Population And Environment*	2008
Design And Management Of Free Water Surface Constructed Wetlands To Minimize Mosquito Production	Walton	*Wetlands Ecology And Management*	2012

Designing Graduate Training Programs In Conservation Medicine-Producing The Right Professionals With The Right Tools	Kaufman et al.	*Ecohealth*	2008
Detection Of Fecal Indicator Bacteria In Ship Ballast Water	Elcicek and Cakmakci	*Sigma Journal Of Engineering And Natural Sciences-Sigma Muhendislik Ve Fen Bilimleri Dergisi*	2016
Detection Of Hepatitis E Virus And Other Livestock-Related Pathogens In Iowa Streams	Givens et al.	*Science Of The Total Environment*	2016
Differences In Forest Use And Colonization By Neotropical Tree-Hole Damselffies (Odonata : Pseudostigmatidae): Implications For Forest Conversion	Fincke and Hedström	*Studies On Neotropical Fauna And Environment*	2008
Dioecious Caesalpinia Bonduc (L.) Roxb. Calls For Conservation In Burachapori Wildlife Sanctuary, Assam	Balasubramanian et al.	*Tropical Ecology*	2016
Disease Ecology, Health And The Environment: A Framework To Account For Ecological And Socio-Economic Drivers In The Control Of Neglected Tropical Diseases	Garchitorena et al.	*Philosophical Transactions Of The Royal Society B-Biological Sciences*	2017
Disease Emergence And Invasions	Hatcher et al.	*Functional Ecology*	2012
Disease Management Strategies For Wildlife	Wobeser et al.	*Rev Sci Tech*	2002
Disease Risk Analysis: A Tool For Primate Conservation Planning And Decision Making	Travis et al.	*American Journal Of Primatology*	2006
Does Biodiversity Protect Humans Against Infectious Disease?	Wood et al.	*Ecology*	2014
Does Deforestation Promote Or Inhibit Malaria Transmission In The Amazon? A Systematic Literature Review And Critical Appraisal Of Current Evidence	Lima et al.	*Philosophical Transactions Of The Royal Society B-Biological Sciences*	2017
Does Life History Mediate Changing Disease Risk When Communities Disassemble?	Joseph et al.	*Ecology Letters*	2013
Does The Impact Of Biodiversity Differ Between Emerging And Endemic Pathogens? The Need To Separate The Concepts Of Hazard And Risk	Hosseini et al.	*Philosophical Transactions Of The Royal Society B-Biological Sciences*	2017
Drivers For Occasional Spillover Event Of Ebola Virus	EFSA (European Food Safety Authority)	*Efsa Journal*	2015
Drivers Of Bushmeat Hunting And Perceptions Of Zoonoses In Nigerian Hunting Communities	Friant et al.	*Plos Neglected Tropical Diseases*	2015
Drug Development And Conservation Of Biodiversity In West And Central Africa: A	Schuster et al.	*Pharmaceutical Biology*	1999

Model For Collaboration With Indigenous People			
Dryland Salinity And The Ecology Of Ross River Virus: The Ecological Underpinnings Of The Potential For Transmission	Carver et al.	*Vector-Borne And Zoonotic Diseases*	2009
Ebola And The Decline Of Gorilla Gorilla Gorilla And Chimpanzee Pan Troglodytes Populations In Minkebe Forest, North-Eastern Gabon	Huijbregts et al.	*Oryx*	2003
Ebola In Great Apes - Current Knowledge, Possibilities For Vaccination, And Implications For Conservation And Human Health	Leendertz et al.	*Mammal Review*	2017
Echinococcus Multilocularis--A Zoonosis Of Anthropogenic Environments?	Romig et al.	*J Helminthol*	2006
Ecological And Toxicological Effects Of Inorganic Nitrogen Pollution In Aquatic Ecosystems: A Global Assessment	Camargo and Alonso	*Environment International*	2006
Ecological Correlates Of Risk And Incidence Of West Nile Virus In The United States	Allan et al.	*Oecologia*	2009
Ecological Determinants Of Health: Food And Environment On Human Health	Li	*Environmental Science And Pollution Research*	2017
Ecology And Biogeography Of Marine Parasites	Rohde	*Adv Mar Biol*	2002
Ecology And Demography Of Free-Roaming Domestic Dogs In Rural Villages Near Serengeti National Park In Tanzania	Czupryna	*Plos One*	2016
Ecosystem Services Connect Environmental Change To Human Health Outcomes	Bayles	*Ecohealth*	2016
Ecotourism With Utilization Of Wild Animals-Its Impact On Conservation Medicine And Risk Assessment In Hokkaido, Japan	Asakawa	*Ecotourism: Management, Development, And Impact*	2010
Effect Of Estuarine Wetland Degradation On Transport Of Toxoplasma Gondii Surrogates From Land To Sea	Shapiro	*Applied And Environmental Microbiology*	2010
Effect Of Landscape Structure On Anopheline Mosquito Density And Diversity In Northern Thailand: Implications For Malaria Transmission And Control	Overgaard et al.	*Landscape Ecology*	2003
Effects Of An Invasive Forest Pathogen On Abundance Of Ticks And Their Vertebrate Hosts In A California Lyme Disease Focus	Swei et al.	*Oecologia*	2011
Effects Of Environmental Change On Emerging Parasitic Diseases	Patz et al.	*International Journal For Parasitology*	2000
Effects Of Environmental Change On Malaria In The Amazon Region Of Brazil	Takken et al.	*Proceedings Of The Frontis Workshop On Environmental Change And Malaria Risk: Global And Local Implications*	2005

Effects Of Transparent Exopolymer Particles And Suspended Particles On The Survival Of Salmonella Enterica Serovar Typhimurium In Seawater	Davidson et al.	*Fems Microbiology Ecology*	2015
Efficiency Of A Subsurface Constructed Wetland System Using Native Southwestern Us Plants	Maschinski et al.	*Journal Of Environmental Quality*	1999
Emerging Diseases In Freshwater Systems	Okamura and Feist	*Freshwater Biology*	2011
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Emerging Infectious Disease Risk: Shared Drivers With Environmental Change	Machalaba and Karesh	*Revue Scientifique Et Technique-Office International Des Epizooties*	2017
Emerging Infectious Diseases : The Example Of The Indian Ocean Chikungunya Outbreak (2005-2006)	Flahault	*Bulletin De L Academie Nationale De Medecine*	2007
Emerging Infectious Diseases Of Wildlife And Species Conservation.	Medina-Vogel	*Microbiol Spectr*	2013
Emerging Issues And Challenges In Conservation Of Biodiversity In The Rangelands Of Tanzania	Kideghesho et al.	*Nature Conservation-Bulgaria*	2013
Emerging Risks From Bat Bushmeat In West Africa	Kamins et al.	*Trends In Game Meat Hygiene: From Forest To Fork*	2014
Emerging Urban Pests And Vector-Borne Diseases In Brazil	Campos	*Urban Pest Management: An Environmental Perspective*	2011
Empirical Evidence Of The Public Health Benefits Of Tropical Forest Conservation In Cambodia: A Generalised Linear Mixed-Effects Model Analysis	Pienkowski et al.	*The Lancet Planetary Health*	2017
Endoparasite Control Strategies: Implications For Biodiversity Of Native Fauna	Spratt	*International Journal For Parasitology*	1997
Engaging Research With Policy And Action: What Are The Challenges Of Responding To Zoonotic Disease In Africa?	Bardosh et al.	*Philosophical Transactions Of The Royal Society B-Biological Sciences*	2017
Environmental Change And Disease Dynamics: Effects Of Intensive Forest Management On Puumala Hantavirus Infection In Boreal Bank Vole Populations	Voutilainen et al.	*Plos One*	2012
Environmental Risk And Toxicology Of Human And Veterinary Waste Pharmaceutical Exposure To Wild Aquatic Host-Parasite Relationships	Morley et al.	*Environmental Toxicology And Pharmacology*	2009
Epidemiological Significance Of Bats (Chiroptera) In Europe, With Emphasis On Their Bloodsucking Ectoparasites As	Krisztina and Hornok	*Magyar Allatorvosok Lapja*	2016

Potential Transmitters Of Vector-Borne Pathogens			
Epidemiological Study Of Zoonoses Derived From Humans In Captive Chimpanzees	Kooriyama et al.	*Primates*	2013
Epidemiology Of Contagious Diseases, Ecology Of Mammals, Health, Management And Conservation Biology: Concluding Remarks.	Artois et al.	*Rev Sci Tech*	1993
Estimating Burdens Of Neglected Tropical Zoonotic Diseases On Islands With Introduced Mammals	de Wit et al.	*American Journal Of Tropical Medicine And Hygiene*	2017
Ethno-Botanical Study Of Medicinal Plants Of Paddar Valley Of Jammu And Kashmir, India	Gupta et al.	*African Journal Of Traditional Complementary And Alternative Medicines*	2013
Ethnobotany And Phytomedicine Of The Upper Nyong Valley Forest In Cameroon	Jiofack et al.	*African Journal Of Pharmacy And Pharmacology*	2009
Evidence For Human Streptococcus Pneumoniae In Wild And Captive Chimpanzees: A Potential Threat To Wild Populations	Köndgen et al.	*Scientific Reports*	2017
Evidence Of Land-Sea Transfer Of The Zoonotic Pathogen Campylobacter To A Wildlife Marine Sentinel Species	Baily et al.	*Molecular Ecology*	2015
Examining The Links Between Biodiversity And Human Health: An Interdisciplinary Research Initiative At The Us Environmental Protection Agency	Pongsiri and Roman	*Ecohealth*	2007
Exotic Grass Invasion Reduces Survival Of Amblyomma Americanum And Dermacentor Variabilis Ticks (Acari : Ixodidae)	Civitello et al.	*Journal Of Medical Entomology*	2008
Exploring Connections Among Nature, Biodiversity, Ecosystem Services, And Human Health And Well-Being: Opportunities To Enhance Health And Biodiversity Conservation	Sandifer et al.	*International Journal Of Sustainable Development And World Ecology*	2015
Exploring The Links Between Hiv/Aids And Forests In Malawi: Morbidity, Mortality, And Changing Dependence On Forest Resources	Timko	*Advances In Medical Sociology*	2013
Export Agriculture Is Feeding Malaria: A Cross-National Examination Of The Environmental And Social Causes Of Malaria Prevalence	Austin	*Population And Environment*	2013
Exposure To Infectious Agents In Dogs In Remote Coastal British Columbia: Possible Sentinels Of Diseases In Wildlife And Humans	Bryan	*Canadian Journal Of Veterinary Research-Revue Canadienne De Recherche Veterinaire*	2011

Extraction Of Non-Timber Forest Products As A Coping Strategy For Hiv/Aids-Afflicted Rural Households In South-Eastern Zimbabwe	Mutenje	*Ajar-African Journal Of Aids Research*	2011
Flying-Foxes In The Australian Urban Environment-Community Attitudes And Opinions.	Field et al.	*One Health*	2015
Food Safety Hazards And The Application Of The Principles Of The Hazard Analysis And Critical Control Point (Haccp) System For Their Control In Aquaculture Production	Reilly et al.	*Aquaculture Research*	1997
Foraging Behaviour And Landscape Utilisation By The Endangered Golden-Crowned Flying Fox (Acerodon Jubatus), The Philippines	de Jong et al.	*Plos One*	2013
Forest Cover Associated With Improved Child Health And Nutrition: Evidence From The Malawi Demographic And Health Survey And Satellite Data	Johnson et al.	*Global Health: Science And Practice*	2013
Forests, Women And Health: Opportunities And Challenges For Conservation	Wan et al.	*International Forestry Review*	2011
Frequency Of Zoonotic Bacteria Among Illegally Traded Wild Birds In Rio De Janeiro	Matias et al.	*Brazilian Journal Of Microbiology*	2016
Freshwater Ecology And Biodiversity In The Tropics: What Did We Learn From 30 Years Of Onchocerciasis Control And The Associated Biomonitoring Of West African Rivers?	Lévêque et al.	*Hydrobiologia*	2003
Functional Consequences Of Invasive Species In Coastal And Estuarine Systems	Levin and Crooks	*Treatise On Estuarine And Coastal Science, Vol 7: Functioning Of Ecosystems At The Land-Ocean Interface*	2011
Fundamental Knowledge About Insect Reproduction: Essential To Develop Sustainable Pest Management	van Lenteren	*Invertebrate Reproduction & Development*	1999
Future Novel Threats And Opportunities Facing Uk Biodiversity Identified By Horizon Scanning	Sutherland et al.	*Journal Of Applied Ecology*	2008
Future Of Keeping Pet Reptiles And Amphibians: Towards Integrating Animal Welfare, Human Health And Environmental Sustainability	Pasmans et al.	*Veterinary Record*	2017
Gastrointestinal Bacterial Transmission Among Humans, Mountain Gorillas, And Livestock In Bwindi Impenetrable National Park, Uganda	Rwego et al.	*Conservation Biology*	2008
Gastrointestinal Parasite Infections And Self-Medication In Wild Chimpanzees Surviving In Degraded Forest Fragments Within An Agricultural Landscape Mosaic In Uganda	McLennan et al.	*Plos One*	2017

Genetic Evolution Of Influenza H9N2 Viruses Isolated From Various Hosts In China From 1994 To 2013	Li et al.	*Emerging Microbes & Infections*	2017
Global Change And Human Susceptibility To Disease	Daily and Ehrlich	*Annual Review Of Energy And The Environment*	1996
Global Change And Human Vulnerability To Vector-Borne Diseases	Sutherst	*Clinical Microbiology Reviews*	2004
Global Diversity Of Copepods (Crustacea : Copepoda) In Freshwater	Boxshall and Defaye	*Hydrobiologia*	2008
Good Governance In `One Health' Approaches	Lanford and Nunn	*Revue Scientifique Et Technique-Office International Des Epizooties*	2012
Growing Population And Ecosystem Change Increase Human Schistosomiasis Around Lake Malawi	Van Bocxlaer	*Trends In Parasitology*	2014
Guidelines To Strengthen The Program Of Malaria In Remote Areas With Indigenous Population In The Caura, Venezuela	Bevilacqua et al.	*Boletin De Malariologia Y Salud Ambiental*	2009
Habitat Properties Are Key Drivers Of Borrelia Burgdorferi (S.L.) Prevalence In Ixodes Ricinus Populations Of Deciduous Forest Fragments	Ehrmann et al.	*Parasites & Vectors*	2018
Habituating The Great Apes: The Disease Risks	Woodford et al.	*Oryx*	2002
Halophytic Life In Brazilian Salt Flats: Biodiversity, Uses And Threats	Costa and Herrera	*Sabkha Ecosystems Vol V: The Americas*	2016
Hendra In The News: Public Policy Meets Public Morality In Times Of Zoonotic Uncertainty	Degeling and Kerridge	*Social Science & Medicine*	2013
Henipaviruses: Emerging Paramyxoviruses Associated With Fruit Bats	Field et al.	*Wildlife And Emerging Zoonotic Diseases: The Biology, Circumstances, And Consequences Of Cross-Species Transmission*	2007
High-Resolution Gps Tracking Of Lyle'S Flying Fox Between Temples And Orchards In Central Thailand	Weber et al.	*Journal Of Wildlife Management*	2015
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