S2 Supplementary tables

Table S1: Number of ecosystem health outcomes of each metric type, grouped by broad metric category.

Broad metric category	Metric type	Number of outcomes
Biomass	Habitat density	37
	Stem density	8
	Canopy cover	6
	Litter cover	5
	Habitat extent	24
	Biomass	40
Conservation status	Conservation status	1
Diversity	Species richness	33
	Species evenness	16
	Species diversity	25
	Generic richness	1
	Family and above richness	2
	Functional diversity	17
	Habitat diversity	6
Ecosystem composition	Species abundance	21
	Organism density	3
	Taxa presence	24
	Community composition	13
Ecosystem functioning and population dynamics	Resistance	3
	Recovery rate	4
	Survival rate	12
	Growth rate	6
	Phenology	1
	Elevation rate	6
	Reproductive rate	5
	Age structure	19
	Ecological vulnerability	2
	Functional identity	15
Habitat quality	Habitat quality	16
Landscape structure	Connectivity and fragmentation	5
Unspecified	Perceived overall change	9

Table S2: Results of the robustness assessment: percentage of interventions with each outcome direction for subsets of interventions.

Dataset subset	Percentage of intervention-level ecosystem health outcomes					No. interventions
	Positive	Negative	Mixed	No effect	Unclear	
Excluding interventions with poor or absent methods, or no comparator.	71	4	11	3	11	92
Excluding interventions with poor or absent methods, or no comparator; and interventions with only one broad ecosystem health metric category.	71	5	15	5	3	59
Excluding interventions with poor or absent methods, or no comparator; and interventions with only one or two broad ecosystem health metric categories.	51	7	30	7	4	27
Excluding interventions with poor or absent methods, or no comparator; and interventions with only one, two or three broad ecosystem health metric categories.	46	0	31	15	8	13

Table S3: Details on intervention type, habitat type, geographical regions and taxa studied for the species richness data used in the meta-analysis, across 30 interventions. In some cases, species richness was reported separately for different components of an intervention, so we subdivided these interventions for the meta-analysis.

Feature of intervention or outcome	Category of feature	Number of interventions
Intervention type	Protection	1
	Restoration	10
	Management	4
	Combination	9
	Created habitats	5
	Mixed created/non-created	1
Habitat type	Forest	10
	Other terrestrial	15
	Coastal/freshwater	4
	Terrestrial combination	1
Geographical region	Africa	13
	Asia + Pacific	9
	Europe	5
	Latin America + Caribbean	1
	North America	2
Taxa studied	Plants	27
	Animals	3

Table S4: Examples of potential synergies and trade-offs between ecosystem health and climate change adaptation and mitigation outcomes.

Intervention	Ecosystem health	Adaptation	Mitigation
Water park consisting of a constructed wetland, buffer tanks, and recreational space (Liquete et al. 2016)	Positive: Higher biodiversity and landscape diversity than the control site, and several species including threatened invertebrates and a priority bird species were present that were absent at the control site.	Positive: Improved water quality in terms of reduced dissolved organic carbon and nitrogen load, and flood mitigation.	Not assessed.
Fire management, involving strategic burning of parts of savannah in the early dry season with the aim of suppressing more severe fires later in the dry season (Russell-Smith et al. 2015).	Positive: Increased the chance of survival of tree, shrub, small mammal and bird taxa, as determined by thresholds of fire frequency and extent.	Positive: Reduced the frequency of wildfire, the size of fire patches and the continuous burnt area.	Positive: Greenhouse gas emissions by an estimated 1067 tCO2e/yr.
Decentralized government forestry policy, involving planting of trees on barren land, conserving degraded forests, and granting local people formal rights to use forest products (Paudyal et al. 2019).	Mixed: Area of dense forest, wetlands, and water bodies increased; habitat provision based on 7 indicators showed, for example, improvement in number of flora and fauna and integrity of aquatic ecosystems, but an increase in presence invasive plants and increased human-wildlife conflict.	Positive: Increased groundwater recharge and dry season flow, and provision of raw materials from dense forest, as well as reduced erosion and sedimentation in a lake.	Positive: Increased area of dense forest with over 100m^3C/ha.
Ban on shifting cultivation in less degraded forests, permitting harvesting of timber and non-timber forest products in restricted areas (Fedele et al. 2018)	No effect: Higher tree species richness in protected than logged forest, but not statistically significant.	Negative: Water availability, water quality and harvested value of forest products were lower after the intervention.	Positive: Higher aboveground carbon in protected than logged forest (200tC/ha compared to 110tC/ha).
Lowland wet grassland, reedbeds and fens across 22 RSPB reserves in England managed for biodiversity conservation and flood management (Fisher et al. 2011).	Positive: Increased population size of target bird species compared to control areas, and indicators for favourable conservation status of wetland were met or progress was made towards them.	Unclear: Effect of intervention on flooding was unclear and context dependent.	Mixed: Maintenance of waterlogged soils, burying felled trees in such soils, and compaction of soil by livestock reduced carbon dioxide emissions from organic soils. But, methane emissions increased from livestock enteric fermentation or bacterial fermentation in waterlogged soils, and nitrous oxide emissions increased from denitrification in wet, compacted soils.

Table S5: Number of outcomes for each climate impact (CI) that were positive, negative or mixed, and that were coupled with positive, negative or mixed ecosystem health outcomes. Since these results are at the outcome level, interventions with mixed climate change adaptation outcomes overall may be represented in this table either as a single mixed outcome for one climate impact or more than one outcome across different climate impacts.

Climate impact[1]	Number of outcomes								
	Positive ecosystem health			Negative ecosystem health			Mixed ecosystem health		
	Positive CI	Negative CI	Mixed CI	Positive CI	Negative CI	Mixed CI	Positive CI	Negative CI	Mixed CI
Biomass cover loss	12	1			1				
Coastal erosion	5								
Coastal inundation	5								
Desertification	1								
Drought	1	1		1			1		2
Freshwater flooding	7					1			
Increased pests	1								
Loss of food production	23	1							2
Loss of other ecosystem goods	5	1	1	1			4		
Loss of timber production	5				2				
Mudslides/Landslides	1						1		
Other climate impact	2								
Reduced soil quality	5								
Reduced water availability	10	5	1		2				
Reduced water quality	2	2			1		1		
Soil erosion	15		1				1		2
Storm surge	3								
Wildfire	3								
Wind damage	2								

[1] The following climate impacts that were identified in Chausson, Turner et al. (2020) were not found for any of the interventions that had ecosystem health outcomes: avalanche, decreasing wet season, land degradation, increased incidence/changing distribution of disease, glacial retreat and decreased snow cover, invasive species damage, longer dry season, change in phenology, waterlogging of soil, coastal saltwater intrusion, urban heat island.

Table S6: Outcome directions for interventions with all three outcome types reported: ecosystem health, climate change adaptation, and climate change mitigation.

Intervention ID	Study	Outcome Direction		
		Ecosystem health	Adaptation	Mitigation
INT-071-1	Ahammad et al. 2013	Positive	Positive	Positive
INT-025-4	Russell-Smith et al. 2015	Positive	Positive	Positive
INT-102-1	Krauss et al. 2017	Positive	Positive	Positive
INT-033-1	Mekuria et al. 2015	Mixed	Mixed	Unclear
INT-038-1	Schmiedel et al. 2017	Positive	Positive	Positive
INT-229-1	Jiang and Zhang 2016	Positive	Mixed	Positive
INT-124-1	Brown et al. 2011	Positive	Positive	Positive
INT-157-1	Fisher et al. 2011	Positive	Unclear	Mixed
INT-174-1	Balthazar et al. 2015	Mixed	Mixed	Mixed
INT-252-1	Fedele et al. 2018	Negative	Mixed	Negative
INT-252-2	Fedele et al. 2018	Positive	Negative	Positive
INT-252-3	Fedele et al. 2018	Positive	Negative	Positive
INT-253-1	Paudyal et al. 2019	Positive	Positive	Positive
INT-264-1	Siraw et al. 2020	Positive	Positive	Positive
INT-260-1	Mora-Garcia et al. 2020	Positive	Positive	Positive

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