

Table S1. Soil diversity (pedodiversity) is represented by taxonomic diversity at the soil order level in the contiguous United States of America (USA).

| Soil Order | Area (km ²) | Area (%) | General Characteristics and Constraints |
|--------------|-------------------------|--------------|--|
| | 1,857,740.0 | 28.4 | Slightly Weathered |
| Entisols | 820,179.8 | 13.4 | Embryonic soils with an ochric epipedon |
| Inceptisols | 767,051.7 | 12.5 | Young soils with an ochric or umbric epipedon |
| Histosols | 97,224.9 | 1.6 | Organic soils with $\geq 20\%$ organic carbon |
| Andisols | 57,761.2 | 0.9 | Volcanic soils |
| | 3,436,342.0 | 56.2 | Moderately Weathered |
| Aridisols | 53,8450.4 | 8.8 | Dry soils. Common in desert areas |
| Vertisols | 145,189.9 | 2.4 | Soils with swelling clays |
| Alfisols | 1,053,727.4 | 17.2 | Clay-enriched B horizon with B.S. $\geq 35\%$ |
| Mollisols | 1,698,974.9 | 27.8 | Carbon-enriched soils with B.S. $\geq 50\%$ |
| | 942,348.4 | 15.4 | Strongly Weathered |
| Spodosols | 207,924.4 | 3.4 | Coarse-textured soils with albic and spodic horizons |
| Ultisols | 734,424.0 | 12.0 | Highly leached soils with B.S. $< 35\%$ |
| Total | 6,120,908.6 | 100.0 | |

Note: B.S. = base saturation. Entisols, Inceptisols, Andisols, Aridisols, Vertisols, Alfisols, Mollisols, Spodosols, and Ultisols are mineral soils. Histosols are mostly organic soils.

Table S2. An overview of the accounting framework used by this study for monitoring the United Nations (UN) land degradation neutrality (LDN) targets in the contiguous United States of America (USA) (adapted from Groshans et al. 2019 [26]).

| OWNERSHIP (e.g., government, private, foreign, shared, single, etc.) | | | | | |
|---|--|---|--|--|--|
| Time (e.g., information disclosure, etc.) | STOCKS / SOURCE ATTRIBUTION | | FLOWS | | VALUE |
| | Biophysical Accounts (Science-Based) | Administrative Accounts (Boundary-Based) | Monetary Account(s) | Benefit(s)/ Damages | Total Value |
| | Soil extent: | Administrative extent: | Ecosystem good(s) and (dis)service(s): | Sector: | Types of value: |
| | Past (e.g., post-development disclosures) Current (e.g., status) Future (e.g., pre-development disclosures) | - Soil orders (Entisols, Inceptisols, Histosols, Andisols, Aridisols, Vertisols, Alfisols, Mollisols, Spodosols, Ultisols) - Country (Contiguous USA); - States (48 states) | - Regulation (e.g., carbon sequestration); - Provisioning (e.g., food production) - Cultural (e.g., parks, etc.) | - Loss of ecosystem good(s) and services | - Market-based value of ecosystem goods and services; - Market value of damages to ecosystem goods and services |
| Conflicts of Interest (COI) | | | | | |
| United Nations (UN) Sustainable Development Goal (SDG) 15: Life on Land | | | | | |
| Loss and Damage (L&D) | | | | | |
| Liability (Responsibility) | | | | | |

Table S3. Land use/land cover (LULC) classes by soil order for the contiguous United States of America (USA) in 2016.

| NLCD Land Cover Classes (LULC), Soil Health Continuum | 2016 Total Area by LULC (% from total country area) | Degree of Weathering and Soil Development | | | | | | | | | |
|---|--|--|------------------|----------------|---------------|----------------|---------------|----------------|----------------|----------------|---------------|
| | | Slight | | | | Moderate | | | | Strong | |
| | | Enti- sols | Incepti- sols | Histo- sols | Andi- sols | Verti- sols | Alfi- sols | Molli- sols | Aridi- sols | Spodo- sols | Ulti- sols |
| | | 2016 Area by Soil Order (% from Total Area in Each LULC) | | | | | | | | | |
| Woody wetlands | 5.1 | 16.1 | 21.1 | 16.5 | 0.1 | 3.1 | 12.2 | 6.5 | 0.2 | 8.4 | 15.7 |
| Shrub/Scrub | 19.1 | 20.3 | 7.6 | 0.1 | 0.8 | 2.1 | 7.8 | 26.5 | 31.6 | 0.7 | 2.5 |
| Mixed forest | 4.3 | 8.4 | 24.4 | 1.2 | 0.7 | 0.4 | 18.5 | 3.6 | 0.0 | 15.1 | 27.7 |
| Deciduous forest | 11.1 | 6.1 | 23.0 | 0.6 | 0.1 | 0.5 | 26.3 | 8.8 | 0.0 | 8.0 | 26.6 |
| Herbaceous | 15.0 | 22.4 | 8.5 | 0.1 | 0.4 | 3.6 | 9.8 | 39.3 | 12.2 | 0.7 | 2.9 |
| Evergreen forest | 10.4 | 9.8 | 21.3 | 0.7 | 6.3 | 0.7 | 16.0 | 15.7 | 1.4 | 6.1 | 22.2 |
| Emergent herbaceous wetlands | 1.5 | 22.2 | 9.3 | 23.3 | 0.2 | 3.5 | 6.5 | 29.1 | 1.3 | 2.1 | 2.5 |
| Hay/Pasture | 7.6 | 6.1 | 10.7 | 0.3 | 0.1 | 2.8 | 35.0 | 21.4 | 0.6 | 2.0 | 21.1 |
| Cultivated crops | 19.6 | 7.3 | 6.2 | 0.6 | 0.0 | 3.7 | 21.3 | 53.0 | 2.2 | 0.6 | 5.2 |
| Developed, open space | 3.3 | 10.5 | 12.7 | 0.8 | 0.5 | 2.0 | 22.3 | 22.1 | 2.9 | 4.4 | 21.8 |
| Developed, low intensity | 1.6 | 14.8 | 11.1 | 1.0 | 0.3 | 2.6 | 24.0 | 20.2 | 3.3 | 4.1 | 18.7 |
| Developed, medium intensity | 0.7 | 21.2 | 12.1 | 0.8 | 0.3 | 4.0 | 20.2 | 20.2 | 4.3 | 3.4 | 13.4 |
| Developed, high intensity | 0.2 | 25.2 | 10.2 | 0.7 | 0.2 | 4.7 | 19.4 | 20.1 | 3.3 | 3.0 | 13.3 |
| Barren land | 0.5 | 52.9 | 8.6 | 0.5 | 0.7 | 2.6 | 3.7 | 5.4 | 19.3 | 1.8 | 4.5 |
| Total | 100% | 13.4 | 12.5 | 1.6 | 0.9 | 2.4 | 17.2 | 27.8 | 8.8 | 3.4 | 12.0 |

Note: NLCD = National Land Cover Database. Inceptisols, Entisols, Andisols, Vertisols, Alfisols, Mollisols, Aridisols, Spodosols, and Ultisols are mineral soils. Histosols are most often organic soils.

Table S4. Change in land use/land cover (LULC) classes by soil order for the contiguous United States of America (USA) between 2001 and 2016.

| NLCD Land Cover Classes (LULC), Soil Health Continuum | Change in Total Area by LULC (2001-2016) (%) | Degree of Weathering and Soil Development | | | | | | | | | |
|---|--|---|------------------|----------------|---------------|----------------|---------------|----------------|----------------|----------------|---------------|
| | | Slight | | | | Moderate | | | | Strong | |
| | | Enti- sols | Incepti- sols | Histo- sols | Andi- sols | Verti- sols | Alfi- sols | Molli- sols | Aridi- sols | Spodo- sols | Ulti- sols |
| | | Change in Area by Soil Order, 2001-2016 (%) | | | | | | | | | |
| Woody wetlands | 0.2 | 0.4 | -0.5 | 1.7 | 0.1 | 1.6 | 0.1 | 0.4 | 0.0 | 0.1 | -0.6 |
| Shrub/Scrub | 0.1 | -0.3 | 7.5 | 21.1 | 28.6 | -1.3 | 3.7 | -2.8 | -2.4 | 46.8 | 23.9 |
| Mixed forest | 0.2 | -0.3 | 0.0 | -1.5 | -3.8 | -0.5 | 0.6 | -0.7 | 1.9 | -0.7 | 1.2 |
| Deciduous forest | -3.1 | -4.3 | -2.2 | -3.3 | 1.0 | -4.8 | -2.2 | -1.6 | -1.1 | -3.3 | -4.7 |
| Herbaceous | 0.9 | 0.3 | 4.2 | 8.9 | 49.2 | -5.6 | 1.4 | -1.4 | 5.1 | 1.4 | 14.0 |
| Evergreen forest | -3.0 | -3.4 | -5.2 | -1.8 | -7.4 | 1.2 | -2.7 | -4.2 | -2.7 | -2.8 | 1.0 |
| Emergent herbaceous wetlands | -0.6 | -1.8 | 2.8 | -3.8 | 0.5 | -7.1 | -2.3 | 3.2 | 2.3 | -6.0 | 4.6 |
| Hay/Pasture | -7.9 | -8.7 | -6.8 | -10.4 | -6.3 | -6.2 | -7.7 | -9.0 | -6.4 | -5.1 | -8.1 |
| Cultivated crops | 4.0 | 4.7 | 3.9 | -0.4 | 0.1 | 4.5 | 4.3 | 3.9 | 6.3 | 2.5 | 1.8 |
| Developed, open space | 3.2 | 2.5 | 2.7 | 3.1 | 0.3 | 3.8 | 3.0 | 2.7 | 10.3 | 1.7 | 4.1 |
| Developed, low intensity | 7.2 | 5.3 | 6.4 | 5.6 | 1.5 | 11.5 | 6.7 | 6.6 | 13.4 | 6.4 | 9.6 |
| Developed, medium intensity | 24.6 | 16.3 | 18.4 | 21.9 | 10.1 | 34.6 | 27.9 | 23.9 | 33.5 | 26.5 | 36.8 |
| Developed, high intensity | 28.1 | 16.1 | 22.5 | 30.1 | 15.4 | 34.5 | 35.7 | 29.3 | 47.7 | 29.4 | 39.8 |
| Barren land | 0.1 | 0.2 | -0.8 | 9.2 | 0.3 | 3.3 | -1.4 | 10.4 | -1.3 | -2.3 | -5.9 |

Note: NLCD = National Land Cover Database. Inceptisols, Entisols, Andisols, Vertisols, Alfisols, Mollisols, Aridisols, Spodosols, and Ultisols are mineral soils. Histosols are most often organic soils.

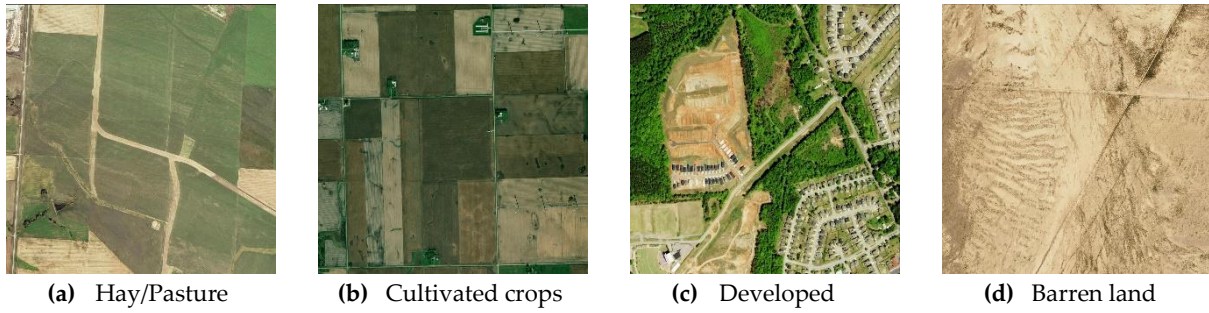


Figure S1. High-resolution aerial photos showing examples of land classes (LULC) which were used to determine anthropogenically degraded land (LD) in the contiguous USA by assuming that degraded lands are represented by the land classes (LULC) for agriculture (hay/pasture, and cultivated crops), development (developed, open space; developed, low intensity; developed, medium intensity; developed, high intensity) and barren lands. Representative examples were located using a land cover map of the contiguous United States of America (USA) for 2016 (based on data from the Multi-Resolution Land Characteristics Consortium (MRLC) with detailed descriptions of the land classes [25]).

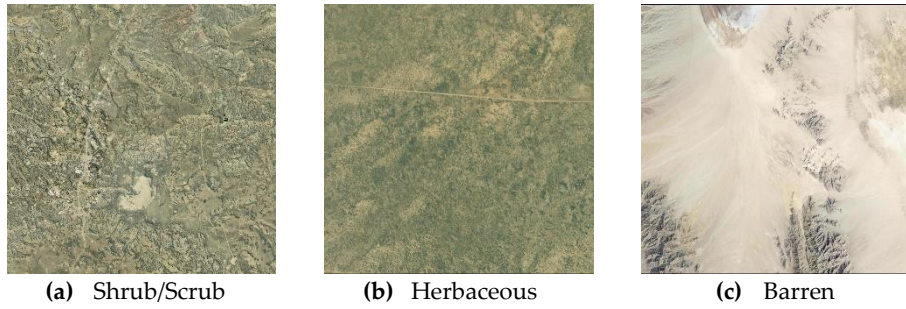


Figure S2. High-resolution aerial photos showing examples of land classes (LULC) which were used to determine potential land for nature-based solutions (NBS) in the contiguous USA by assuming that these lands are represented by the land classes (LULC) for barren land, shrub/scrub, and herbaceous land cover classes. Representative examples were located using a land cover map of the contiguous United States of America (USA) for 2016 (based on data from the Multi-Resolution Land Characteristics Consortium (MRLC) with detailed descriptions of the land classes [25]).

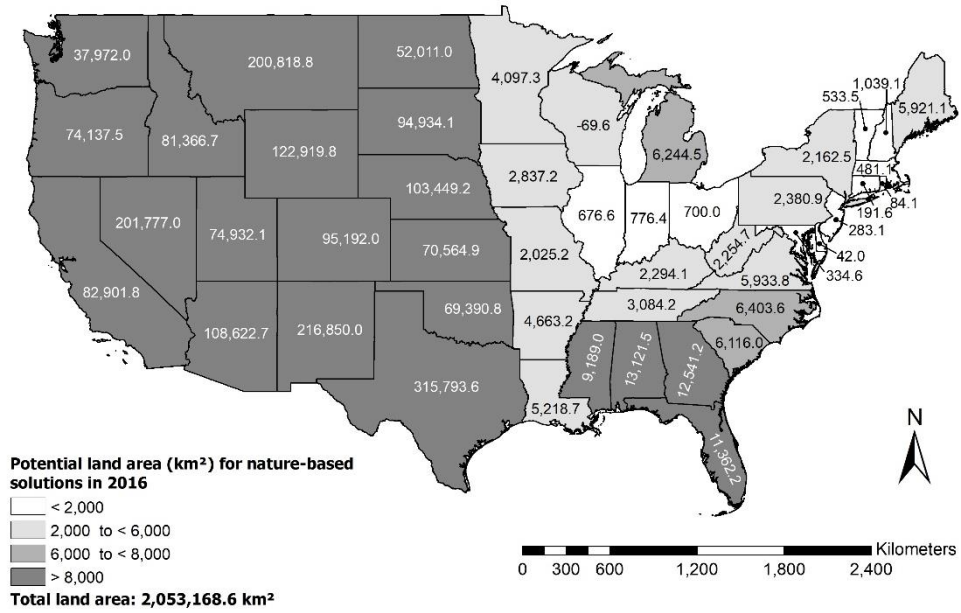


Figure S3. The status of potential land for nature-based solutions (NBS) is presented as the total potential NBS land area (km²) in each state in 2016 for the contiguous United States of America (USA) (data for the 48 contiguous states). Potential land for NBS is limited to barren land, shrub/scrub, and herbaceous land cover classes, to provide potential land areas without impacting current land uses.

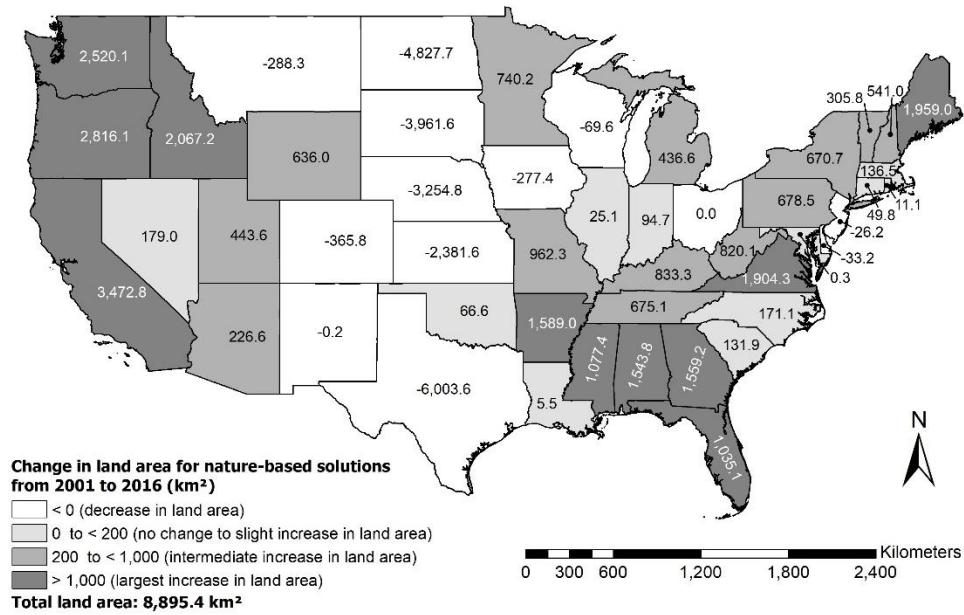


Figure S4. Change in the status of potential land for nature-based solutions (NBS) is presented as the change in the total potential NBS land area (km²) over time (2001-2016) in each state for the contiguous United States of America (USA) (data for the 48 contiguous states). Potential land for NBS is limited to barren land, shrub/scrub, and herbaceous land cover classes, to provide potential land areas without impacting current land uses.