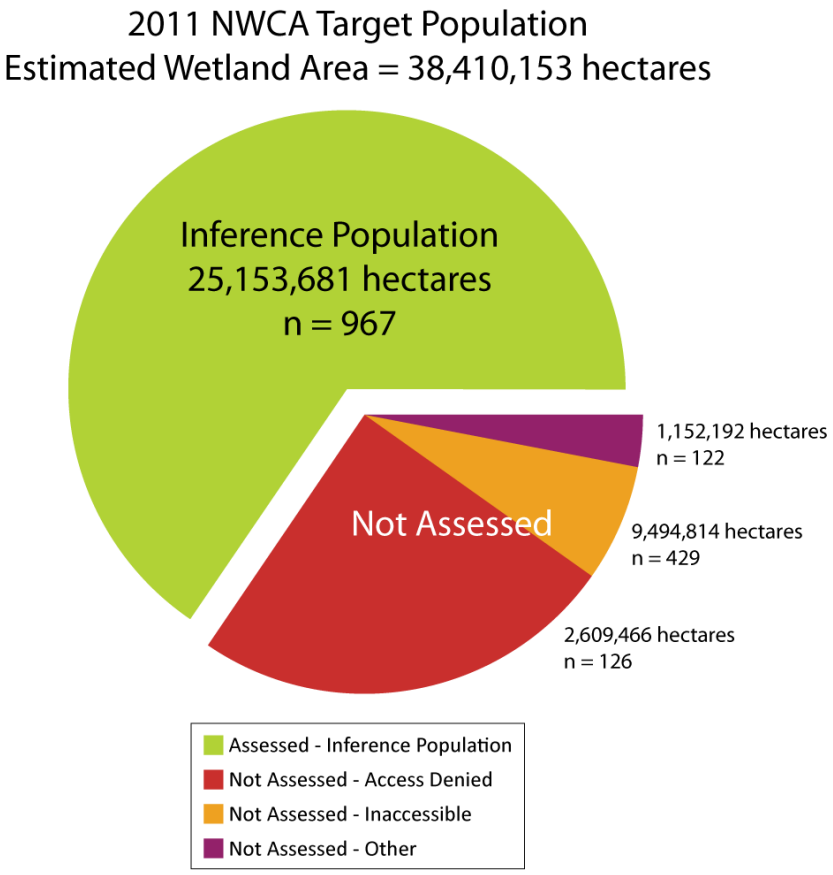
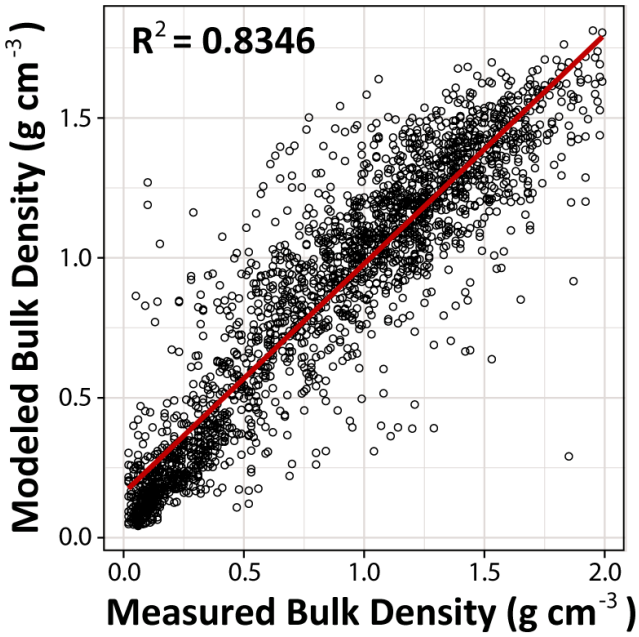


Supplementary Figure 1 | Wetland area included in the US target wetland population sampled in the 2011 National Wetland Condition Assessment. Of this, sites representing 28% of the area were unable to be sampled due to denied access (red), inaccessibility (orange), or other reasons (purple). The sampled wetland population (green) for which we were able to directly extrapolate estimates of carbon stocks is the 'inference population'. Modified from U.S. Environmental Protection Agency, *2011 National Wetland Condition Assessment Technical Report*[1].



Supplementary Figure 2 | Fit of the generalized boosted model used to predict bulk density. Regression (red line) shows the measured bulk density (g cm^{-3}) compared to the modeled bulk density (g cm^{-3}).

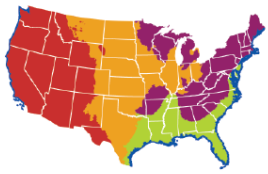
Supplementary Table 1 | Natural Resource Conservation Service Standard Soil Survey Laboratory Procedures. Modified from U.S. Environmental Protection Agency, *2011 National Wetland Condition Assessment Laboratory Operations Manual*[2]. The acronyms used in the table include the following: MDL for method detection limit, PQL for practical quantitation limit, nd for not detectable, and n/a for not available.

Method	Standard SSL Procedure	Analysis Description	Analyte	Units	MDL	PQL	Potential Sample Range	Accuracy Objective
Particle Size Distribution Analysis, <2mm, air dry	3A1a1a	Gravimetric pipet analysis	Clay	%	na	na	0 to 93.1	n/a
			Silt	%	na	na	0.1 to 100	n/a
			Sand	%	na	na	0 to 94.5	n/a
Calcium carbonate equivalent, <2mm	4E1a1a1a1	Closed-system measurement of evolved CO_2 after acid treatment	$CaCO_3$	%	0.5	2.5	nd to 105	n/a
Total Carbon	4H2a1-3	Elemental analyzer	C	%	0.04	0.2	nd to 62.43	0.01%
Cation exchange capacity (CEC)	4B1a1b1-4	Displacement of cations after washing; distillation and titration	CEC	cmol(+) kg^{-1}	0.1	0.6	nd to 252	0.1 cmol(+) kg-1
Electrical Conductivity (EC)	4F1a1a1a1	Measurement using an electric bridge	EC	mmhos cm^{-1}	0.001	0.005	nd to 167.4	0.01 mmhos cm-1
Bulk Density (Db)	3B1a-d	Volumetric oven-dry weight	Db	g cm^{-3}	na	na	0.06 to 2.53	0.01 g/cm^{-3}

Supplementary Table 2 | Mean carbon densities for mineral-soil and organic-soil dominated wetlands in freshwater inland and coastal tidal saline locations. The carbon densities (tC ha^{-1}) have been extrapolated to the inference population, with the area represented (10^6 ha) and the carbon stocks for the top 100 cm are reported (PgC). Note that the n-values reflect the subset of sites that had soil carbon and bulk density values for every described layer up to 100 cm deep. Means are presented with s.e.m.

Description	Mean C Density for 0-100 cm depth (tC ha^{-1})	n	Area Represented (10^6 ha)	PgC Stored in 0-100 cm depth
Tidal Saline, Mineral-Soil Wetlands	172 ± 15	124	1.0	0.17 ± 0.01
Freshwater Inland, Mineral-Soil Wetlands	155 ± 9	317	15.8	2.45 ± 0.14
Tidal Saline, Organic-Soil Wetlands	619 ± 222	53	0.5	0.29 ± 0.10
Freshwater Inland, Organic-Soil Wetlands	615 ± 63	65	5.9	3.64 ± 0.37

Supplementary Table 3 | Distribution of probability sites and acres represented in the 2011 National Wetland Condition Assessment.

NWCA Region	Number of Probability Sites Sampled	Hectares Represented by Sampled Probability Sites	Proportion of the Inference Population
National 	967	25,153,721	100%
Tidal Saline 	327	2,219,962	9%
Coastal Plains 	225	10,363,924	41%
Eastern Mountains and Upper Midwest 	138	8,064,371	32%
Interior Plains 	156	3,099,555	12%
West 	121	1,405,909	6%

Supplementary Table 4 | Least disturbed thresholds and most disturbed thresholds used to define sites along the disturbance gradient. Least disturbed thresholds are denoted by green text (or the upper number in each cell) and most disturbed thresholds are denoted by red text (or the lower number in each cell). Thresholds were set by for individual NWCA Reporting Groups (location/wetland type/vegetation combinations), which include estuarine wooded for the contiguous US (ALL-EW), estuarine herbaceous vegetation for the contiguous US (ALL-EH), Coastal Plains palustrine, riverine, and lacustrine woody (CPL-PRLW), Coastal Plains palustrine, riverine, and lacustrine herbaceous (CPL-PRLH), Eastern Mountains and Upper Midwest palustrine, riverine, and lacustrine woody (EMU-PRLW), Eastern Mountains and Upper Midwest palustrine, riverine, and lacustrine herbaceous (EMU-PRLH), Interior Plains palustrine, riverine, and lacustrine woody (IPL-PRLW), Interior Plains palustrine, riverine, and lacustrine herbaceous (IPL-PRLH), West palustrine, riverine, and lacustrine woody (W-PRLW), and West palustrine, riverine, and lacustrine herbaceous (W-PRLH). See Fig. 1 of the main text for a map of regions. Threshold units are based on the number of observations of the measure of disturbance, described in the Index Description column in Table 3 of the main text, with the exception of Relative Cover of Alien Plant Species (percentages).

Measure of Disturbance	ALL-EW	ALL-EH	CPL-PRLW	CPL-PRLH	EMU-PRLW	EMU-PRLH	IPL-PRLW	IPL-PRLH	W-PRLW	W-PRLH
Agriculture Disturbances	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.60	≤0.00 ≥0.25	≤0.00 ≥0.30	≤0.10 ≥0.30	≤0.15 ≥0.60	≤0.10 ≥0.60	≤0.60 ≥0.75
Residential and Urban Disturbances	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.60	≤0.00 ≥0.25	≤0.10 ≥0.30	≤0.10 ≥0.30	≤0.15 ≥0.60	≤0.10 ≥0.60	≤0.60 ≥0.75
Hydrologic Disturbances	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.60	≤0.00 ≥0.25	≤0.00 ≥0.30	≤0.10 ≥0.30	≤0.15 ≥0.60	≤0.10 ≥0.60	≤0.60 ≥0.75
Industrial Disturbances	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.60	≤0.00 ≥0.25	≤0.00 ≥0.30	≤0.00 ≥0.30	≤0.05 ≥0.60	≤0.00 ≥0.60	≤0.00 ≥0.75
Habitat Modifications	≤0.00 ≥0.25	≤0.00 ≥0.25	≤0.00 ≥0.50	≤0.20 ≥1.00	≤0.00 ≥0.50	≤0.10 ≥0.60	≤0.20 ≥0.60	≤0.15 ≥1.20	≤0.10 ≥0.80	≤1.00 ≥1.50
Buffer Summary	≤0.00 ≥0.75	≤0.00 ≥0.75	≤0.00 ≥1.00	≤0.20 ≥1.50	≤0.00 ≥1.00	≤0.10 ≥1.00	≤0.20 ≥1.00	≤0.30 ≥1.80	≤0.10 ≥1.00	≤1.20 ≥2.50
High Impact Hydrologic Disturbances	≤0 ≥1	≤0 ≥1	≤0 ≥1	≤0 ≥2	≤0 ≥1	≤0 ≥2	≤0 ≥1	≤1 ≥1	≤0 ≥2	≤1 ≥3
Moderate Impact Hydrologic Disturbances	≤0 ≥1	≤0 ≥1	≤0 ≥1	≤1 ≥2	≤0 ≥1	≤0 ≥2	≤1 ≥2	≤1 ≥2	≤1 ≥2	≤1 ≥3
Soil Heavy Metal Index	≤0 ≥2	≤0 ≥2	≤0 ≥2	≤0 ≥2	≤0 ≥2	≤1 ≥2	≤2 ≥2	≤2 ≥2	≤2 ≥3	≤1 ≥3
Relative Cover of Alien Plant Species	≤5% ≥50%	≤5% ≥50%	≤5% ≥50%	≤5% ≥50%	≤5% ≥50%	≤5% ≥50%	≤5% ≥50%	≤20% ≥50%	≤5% ≥50%	≤20% ≥50%

Supplementary Table 5 | Mean carbon densities by soil depth increments. Carbon densities are reported as tC ha^{-1}. Means are presented with s.e.m. See Table 1 in the main text for definitions of wetland types. Graphical representations of this table are presented in Figs. 2 and 3 in the main text.

	0 – 10 cm	*0 – 30 cm*	*31 – 60 cm*	*61 – 90 cm*	*91 – 120 cm*
Conterminous US	35.6 ± 1.6	104.7 ± 4.9	82.5 ± 6.1	69.8 ± 7.4	42.8 ± 4.9
Region					
Tidal Saline	27.5 ± 4.2	92.3 ± 13.3	74.5 ± 14.8	81.4 ± 25.4	91.9 ± 40.0
Coastal Plains	29.0 ± 1.7	80.0 ± 5.0	53.6 ± 4.9	37.1 ± 5.5	27.3 ± 5.4
Eastern Mts & Upper Midw	49.5 ± 3.8	153.2 ± 12.0	135.3 ± 16.2	122.0 ± 18.3	67.6 ± 11.7
Interior Plains	32.3 ± 1.8	88.2 ± 5.5	53.3 ± 8.5	31.3 ± 5.3	22.3 ± 6.0
West	19.2 ± 2.2	56.7 ± 6.3	53.2 ± 6.8	53.4 ± 8.2	53.0 ± 9.1
Carbon Type					
Blue	27.5 ± 4.2	92.3 ± 13.3	74.5 ± 14.8	81.4 ± 25.4	91.9 ± 40.0
Teal	36.2 ± 1.7	105.6 ± 5.1	83.1 ± 6.5	69.2 ± 7.7	40.6 ± 4.6
Disturbance Category					
Least Disturbed-US	42.3 ± 2.2	127.2 ± 7.3	104.1 ± 10.9	89.3 ± 12.7	86.9 ± 19.6
Intermediate Disturbed-US	33.9 ± 2.3	101.4 ± 7.0	81.4 ± 8.9	70.9 ± 10.1	40.5 ± 7.2
Most Disturbed-US	33.9 ± 4.1	93.2 ± 13.2	68.0 ± 14.9	53.0 ± 17.0	21.6 ± 2.6
Wetland Type					
EH	25.9 ± 4.6	87.9 ± 14.7	77.5 ± 16.4	84.1 ± 26.8	93.2 ± 40.4
EW	38.5 ± 4.0	123.0 ± 13.4	54.5 ± 13.2	44.6 ± 11.3	14.7 ± 4.5
PRL-EM	34.7 ± 2.2	101.4 ± 7.1	82.6 ± 10.4	54.9 ± 12.3	46.8 ± 16.6
PRL-SS	34.4 ± 4.3	106.4 ± 13.5	94.8 ± 14.8	75.9 ± 14.3	57.1 ± 12.8
PRL-FO	37.9 ± 2.6	109.0 ± 8.0	80.4 ± 10.1	72.4 ± 12.0	31.6 ± 5.3
PRL-f	14.9 ± 0.6	35.1 ± 5.6	21.3 ± 7.0	18.9 ± 5.2	11.4 ± 4.1
PRL-UBAB	30.9 ± 7.1	89.7 ± 26.9	101.8 ± 37.5	101.6 ± 44.7	119.7 ± 56.5

Supplementary References

1. U.S. Environmental Protection Agency, *2011 National Wetland Condition Assessment Technical Report* (EPA Publication 843-R-15-006, 2016), https://www.epa.gov/national-aquatic-resources-surveys/nwca
2. U.S. Environmental Protection Agency, *National Wetland Condition Assessment: Laboratory Operations Manual* (EPA Publication 843-R-10-002, 2016), https://www.epa.gov/national-aquatic-resources-surveys/nwca