Erratum to: Estimating Benefits in a Recovering Estuary: Tampa Bay, Florida

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The last two paragraphs beginning on page s13 and ending on page s14 of the original article are revised as follows to account for the molecular weight difference between carbon and carbon dioxide:

Valuation of carbon and nitrogen removal for mitigating climate change and maintaining good water quality helps translate gains in the production of several different ecosystem goods into a weighted indicator of overall gains based on beneficiary perceptions of value at a given time. On a per-unit basis, denitrification is currently of much higher value than carbon sequestration, and its potential benefits are more localized. The annual production values of salt marsh and mangrove habitat's ability to sequester carbon increased by \$15 thousand and \$87 thousand, respectively, between 1990 and 2007/2008 (Fig. 2). These same habitats gained \$66 thousand and \$94 thousand worth of additional annual nitrogen removal capability (Fig. 2). Seagrass habitat's value for annual carbon sequestration and nitrogen removal are estimated to have increased by \$461 thousand (Fig. 2) and \$7.4 million (Fig. 2), respectively, between 1982 and 2010.

The combined value for carbon sequestration and nitrogen removal via denitrification generated per year by salt marsh,

mangrove, and seagrass habitats in Tampa Bay increased by just under \$3.5 million between 1990 and 2010 (Fig. 2), and this is using the more conservative nitrogen removal replacement cost value (Table 3). Taking another conservative estimate that our 1990 estimated annual value production (\$21 million per year) continued through 1999 without the measured habitat expansion, and our 1999 estimated annual value (\$22 million per year) continued through 2008, cumulatively, these bay habitats are estimated to have generated ecosystem goods with benefits worth over \$387 million in that 18-year period. Tampa Bay related beneficiaries are looking at gaining another \$7 million per year worth of continued annual ecosystem goods production, on top of the 2008 estimate of \$24 million per year, as restoration continues towards set goals (Fig. 2). Total estimated annual value generated by the three bay habitats in 2008 was over \$24 million per year and could reach over \$31 million per year, when restoration goals are met.

The first complete paragraph on page s16 of the original article is revised as follows to account for the molecular weight difference between carbon and carbon dioxide:

The sensitivity surrounding the valuation of ecosystem services warrants a discussion of how certain our estimates are (Turner et al. 2010; Johnson et al. 2012). The lack of uncertainty estimates for carbon sequestration and denitrification value precludes us from formally quantifying error propagation, even for our fairly simple calculations, so we present here the upper and lower bounds of value for these two ecosystem services. We estimate a range of total carbon sequestration value between \$586 thousand and almost \$12 million per year, once habitat restoration goals are reached. This range is derived from using low and high estimates for both the amount of carbon burial (mean±SD) per area for each habitat type

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(Table 1) combined with low and high estimates of the social cost of carbon (\$5–65).

Table 4 is revised as follows:

Table 4 Tampa Bay habitat annual carbon sequestration

Carbon sequestration (10^3 kg C yr ⁻¹)	1982	1990	1999	2007-8	2010	Difference between latest assessment and restoration goal	Upon reaching habitat protection and restoration goal
Salt marsh	NA	3,678	3,928	3,877	NA	1,678	5,555
Mangrove	NA	12,663	13,488	13,846	NA	0	13,846
Seagrass	12,091	14,088	15,032	16,557	18,372	3,158	21,530
(All above)	NA	30,429	32,449	34,280	NA	4,836	40,931

NA not available

Figure 2 is revised as follows to correct the carbon sequestration units:

Fig. 2 Annual ecosystem goods production value estimates by habitat type (1982–2010) and extending to when restoration goals are met. ¹As determined by social costs of carbon (\$20 per metric ton carbon dioxide). ²As determined by replacement/abatement costs (\$18 per kg N)