

**Supplementary:**

A1. Rosenbaum Bounds Table A1 below presents results for the Rosenbaum bounds test for sensitivity to unobservable factors. The indicator  $\Gamma$  measures how much the odds of unprotected polygons being protected would need to change due to unobservable covariates for our matching results and inferences to change. The critical p-values for each PA category indicate if results would still be significant.

**Table A1**

**Sensitivity test for unobservable bias\*, Land cover change 2000–2005**

$\Gamma$	Critical p-values for treatment effects		
	Protected	Strict	Mixed-use
1	<0.001	<0.001	<0.001
1.1	<0.001	<0.001	<0.001
1.2	<0.001	<0.001	<0.001
1.3	<0.001	<0.001	<0.001
1.4	<0.001	<0.001	<0.001
1.5	<0.001	<0.001	0.005
1.6	<0.001	<0.001	0.103
1.7	<0.001	<0.001	
1.8	<0.001	0.001	
1.9	0.003	<0.001	
2	0.339	<0.001	
2.1		<0.001	
2.2		<0.001	
2.3		<0.001	
2.4		<0.001	
2.5		0.003	
2.6		0.027	
2.7		0.116	

\*Null or no effect

A2. 10% Samples Table A2 below presents results for three runs using random 10% samples. Results for all three support the estimates and conclusions from our analysis. They address spatial autocorrelation concerns as well, via the sampling. Results show that, accounting for enforcement and location influences, the strict PAs have greater impact than the mixed-use, for all samples and dependent variables.

**Table A2**

	10% Sample (1)			10% Sample (2)			10% Sample (3)		
	Protected	Strict	Mixed-use	Protected	Strict	Mixed-use	Protected	Strict	Mixed-use
<u>2000-2005 Natural Land Cover Loss</u>									
Pre-match Regression (all the data)	-3.5%	-5.7%	-2.6%	-3.4%	-6.1%	-2.4%	-3.5%	-6.2%	-2.5%
SE	(0.002)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
# observations	162,728	153,825	160,430	162,582	153,643	160,260	162,692	153,778	160,435
Post-match Regression (most similar)	-3.4%	-7.1%	-2.0%	-3.1%	-4.7%	-2.7%	-3.0%	-5.5%	-2.8%
SE	(0.003)	(0.008)	(0.004)	(0.003)	(0.007)	(0.004)	(0.004)	(0.007)	(0.004)
# observations	18,585	4,048	14,562	18,611	4,015	14,543	18,438	3,970	14,474
<u>2005 Natural Land Cover</u>									
Pre-match Regression (all the data)	4.0%	7.1%	2.7%	3.7%	7.0%	2.4%	3.7%	7.4%	2.3%
SE	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)	(0.003)
# observations	192,378	182,681	189,846	192,378	182,689	189,847	192,378	182,684	189,892
Post-match Regression (most similar)	4.3%	8.2%	2.6%	3.9%	6.3%	3.3%	3.9%	7.3%	3.3%
SE	(0.003)	(0.008)	(0.004)	(0.003)	(0.007)	(0.004)	(0.004)	(0.007)	(0.004)
# observations	20,749	4,598	16,106	20,719	4,556	16,086	20,546	4,482	15,997