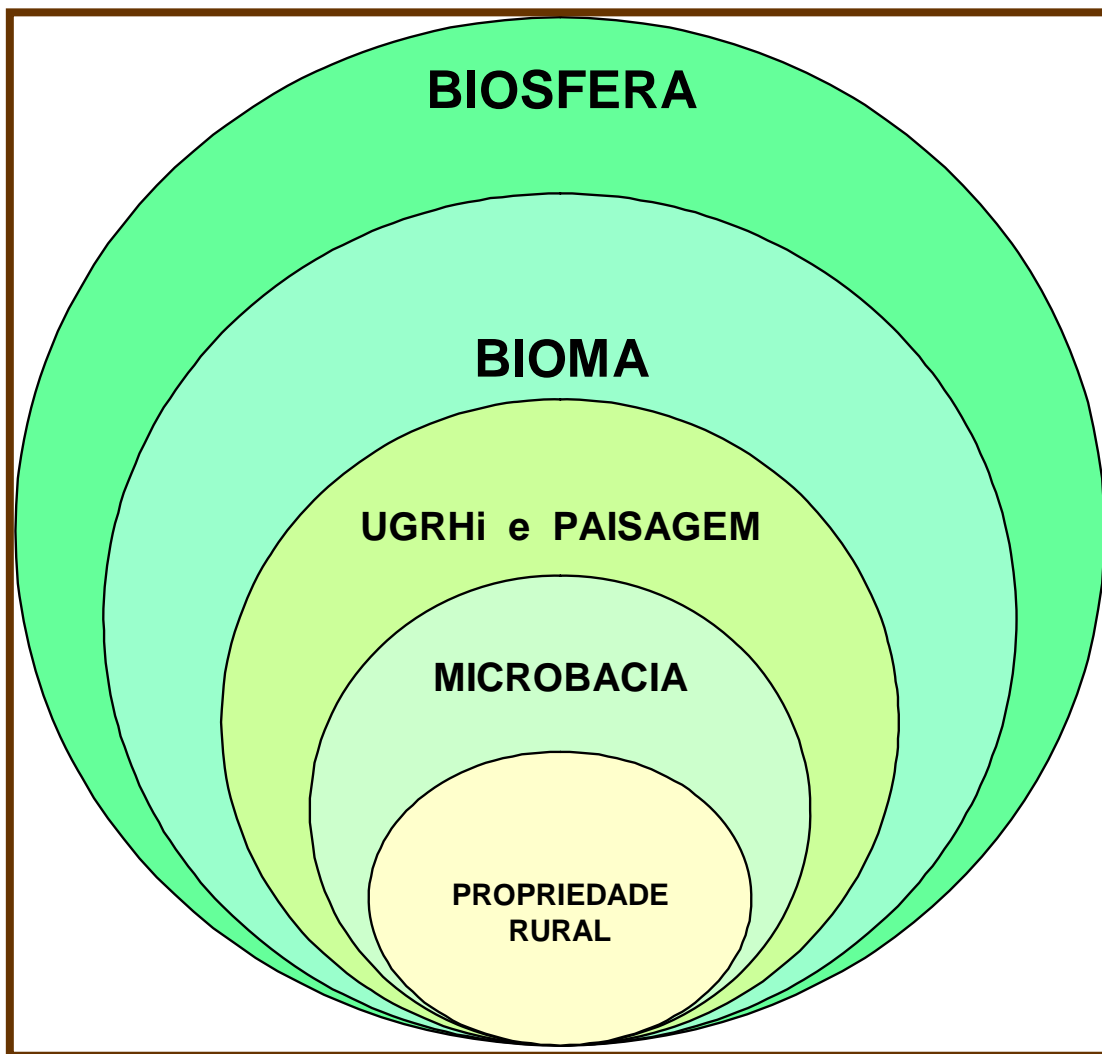


UGRHC	Área (ha)	%	Número de Fragmentos por Classe de Superfície						Total
			< 10 ha	10-20 ha	20-50 ha	50-100 ha	100-200 ha	> 200 ha	
Bacia Hidrográfica dos Rios Aguapeí / Peixe	134.709	5,3	4.050	1.015	807	251	150	85	6.358
Bacia Hidrográfica do Alto Paranapanema	338.001	14,9	9.674	2.035	1.595	582	278	192	14.356
Bacia Hidrográfica do Alto Tietê	134.260	23,8	2.919	677	518	192	98	87	4.491
Bacia Hidrográfica da Baixada Santista	207.293	71,8	1.178	254	286	133	80	114	2.045
Bacia Hidrográfica do Baixo Pardo / Grande	43.870	6,2	1.578	365	294	90	43	24	2.394
Bacia Hidrográfica do Baixo Tietê	54.040	3,5	2.005	517	380	119	54	28	3.103
Bacia Hidrográfica do Litoral Norte	159.080	83,5	1.398	337	287	156	90	114	2.382
Bacia Hidrográfica do Médio Paranapanema	107.326	6,4	4.105	1.031	688	247	118	54	6.243
Bacia Hidrográfica do Rio Mogi Guaçu	95.780	6,5	3.907	873	630	223	106	42	5.781
Bacia hidrográfica do Rio Paraíba do Sul e Serra da Mantiqueira	329.177	21,9	12.244	2.823	1.754	562	232	192	17.807
Bacia Hidrográfica do Rio Pardo	72.149	8,2	3.311	710	524	183	72	29	4.829
Bacia Hidrográfica dos Rios Piracicaba / Capivari / Jundiá	105.403	6,9	5.262	1.065	651	181	78	46	7.283
Bacia Hidrográfica do Pontal do Paranapanema	79.704	6,7	586	196	220	98	54	51	1.205
Bacia Hidrográfica do Ribeira de Iguape e Litoral Sul	1.163.515	69,4	9.734	1.569	1.318	647	386	497	14.151
Bacia Hidrográfica do Rio São José dos Dourados	22.310	3,3	1.365	247	146	38	20	9	1.825
Bacia Hidrográfica do Sapucaí-Mirim / Grande	60.682	6,7	3.337	693	484	161	50	14	4.739
Bacia Hidrográfica dos Rios Sorocaba e Médio Tietê	133.039	11,0	4.446	985	707	221	121	79	6.559
Bacia Hidrográfica do Tietê / Batalha	75.927	5,7	2.762	763	582	147	76	40	4.370
Bacia Hidrográfica do Tietê-Jacaré	77.064	6,7	1.630	542	520	191	89	52	2.394
Bacia Hidrográfica do Turvo / Grande	64.039	4,0	4.644	737	469	158	51	15	6.074

Indicadores censitários

Indicador	1920	1940	1950	1960	1970	1980	1985	1995/ 1996
Número de estabelecimentos	648.153	1.904.589	2.064.642	3.337.769	4.924.019	5.159.851	5.801.809	4.859.865
Área total (mil ha)	175.105	197.720	232.211	249.862	294.145	364.854	374.925	353.611
Tamanho médio da propriedade	270,159	103,812	112,470	74,858	59,736	70,170	64,622	72,761

Fonte: IBGE (1990) para os dados de 1920 a 1980 e Censos Agropecuários do Brasil 1985 e 1995/1996.



ITEM	UNIDA DE	Nº DE UPAS				MÁXIMO	TOTAL
Área total	ha	277.124	100,0				19.999.484,50
Área com cultura perene	ha	84.382	30,4				1.332.694,10
Área com cultura semi- perene	ha	81.440	29,4				2.948.106,20
Área com cultura anual	ha	106.591	38,5				1.671.048,50
Área com pastagem	ha	217.791	78,6				10.274.801,20
Área de reflorestamento	ha	39.404	14,2				812.182,80
Área de vegetação natural	ha	108.881	39,3				1.954.150,50
Área inaproveitada	ha	52.617	19,0				324.132,20
Área inaproveitável	ha	45.961	16,6				300.797,40
Área complementar	ha						

100

277.124

19.999.484,50

ITEM	UNIDA DE	Nº DE UPAS		MÍNIMO	MÉDIA ¹	MÁXI MO	TOTAL
Área das UPAs com (0,1] ha	ha	3.765	1,36	x	0,64	x	2.428,30
Área das UPAs com (1, 2] ha	ha	6.018	2,17	x	1,57	x	9.468,00
Área das UPAs com (2,5] ha	ha	30.035	10,84	x	3,68	x	110.385,60
Área das UPAs com (5,10] ha	ha	37.340	13,47	x	7,73	x	288.479,40
Área das UPAs com (10,20] ha	ha	58.778	21,21	x	14,76	x	867.691,20
Área das UPAs com (20,50] ha	ha	71.070	25,65	x	32	x	2.274.151,10
Área das UPAs com (50,100] ha	ha	31.385	11,33	x	71,06	x	2.230.217,70
Área das UPAs com (100,200] ha	ha	19.151	6,91	x	140,39	x	2.688.551,80
Área das UPAs com (200,500] há	ha	13.277	4,79	x	305,37	x	4.054.429,90

0,01

0,05

0,6

1,4

4,3

11,4

11,2

13,4

42,36

92,93

20,3

62,62

96,37

ITEM	UNIDADE	Nº DE UPAS		MÍNIMO	MÉDIA ¹	MÁXIMO	TOTAL
Área das UPAs com (100,200] ha	ha	19.151	6,91	x	140,39	x	2.688.551,80
Área das UPAs com (200,500] ha	ha	13.277	4,79	x	305,37	x	4.054.429,90
Área das UPAs com (500,1.000] ha	ha	4.055	1,46	x	690,04	x	2.798.117,60
Área das UPAs com (1.000,2.000] ha	ha	1.602	0,58	x	1.363,62	x	2.184.519,50
Área das UPAs com (2.000,5.000] ha	ha	552	0,20	x	2.877,80	x	1.588.546,50
Área das UPAs com (5.000,10.000] ha	ha	68	0,02	x	6.729,30	x	457.592,50
Área das UPAs acima de 10.000 ha	ha	28	0,01	x	15.889,48	x	444.905,40

13,4 42,36 92,93

20,3 62,62 96,37

14,0

10,9

7,9

2,3

2,2 57,6 7,07

277.124

100

19.999.484,50

100

Table 1 Ecosystem services and functions used in this study

Number	Ecosystem service*	Ecosystem functions	Examples
1	Gas regulation	Regulation of atmospheric chemical composition.	CO ₂ -O ₂ balance, O ₃ for UVB protection, and SO _x levels.
2	Climate regulation	Regulation of global temperature, precipitation, and other biologically mediated climatic processes at global or local levels.	Greenhouse gas regulation, DMS production affecting cloud formation.
3	Disturbance regulation	Capacity, damping and integrity of ecosystem response to environmental fluctuations.	Storm protection, flood control, drought recovery and other aspects of habitat response to environmental variability mainly controlled by vegetation structure.
4	Water regulation	Regulation of hydrological flows.	Provisioning of water for agricultural (such as irrigation) or industrial (such as milling) processes or transportation.
5	Water supply	Storage and retention of water.	Provisioning of water by watersheds, reservoirs and aquifers.
6	Erosion control and sediment retention	Retention of soil within an ecosystem.	Prevention of loss of soil by wind, runoff, or other removal processes, storage of soil in lakes and wetlands.
7	Soil formation	Soil formation processes.	Weathering of rock and the accumulation of organic material.
8	Nutrient cycling	Storage, internal cycling, processing and acquisition of nutrients.	Nitrogen fixation, N, P and other elemental or nutrient cycles.
9	Waste treatment	Recovery of mobile nutrients and removal or breakdown of excess or toxic nutrients and compounds.	Waste treatment, pollution control, detoxification.
10	Pollination	Movement of floral gametes.	Provisioning of pollinators for the reproduction of plant populations.
11	Biological control	Trophic-dynamic regulations of populations.	Keystone predator control of prey species, reduction of herbivory by top predators.
12	Refugia	Habitat for resident and transient populations.	Nurseries, habitat for migratory species, regional habitats for locally harvested species, or overwintering grounds.
13	Food production	That portion of gross primary production extractable as food.	Production of meat, game, crops, nuts, nuts by hunting, gathering, subsistence farming or fishing.
14	Raw materials	That portion of gross primary production extractable as raw materials.	The production of lumber, fuel or fodder.
15	Genetic resources	Sources of unique biological materials and products.	Medicines, products for materials science, genes for resistance to plant pathogens and crop pests, ornamental species (pets and horticultural varieties of plants).
16	Recreation	Providing opportunities for recreational activities.	Eco-tourism, sport fishing, and other outdoor recreational activities.
17	Cultural	Providing opportunities for non-commercial uses.	Aesthetic, artistic, educational, spiritual, and/or scientific values of ecosystems.

* We include ecosystem 'goods' along with ecosystem services.

Table 2 Summary of average global value of annual ecosystem services

Biome	Area (ha × 10 ⁶)	Ecosystem services (1994 US\$ ha ⁻¹ yr ⁻¹)															Total value per ha (\$ha ⁻¹ yr ⁻¹)	Total global flow value (\$yr ⁻¹ × 10 ⁹)				
		1 Gas regulation	2 Climate regulation	3 Disturbance regulation	4 Water regulation	5 Water supply	6 Erosion control	7 Soil formation	8 Pollution cycling	9 Waste treatment	10 Fertilisation	11 Biological control	12 Habitat refugia	13 Food production	14 Raw materials	15 Genetic resources			16 Recreation	17 Cultural		
Marine	39,322																	611	23,948			
Open ocean	33,200	28						18					5		5	3		26	292	8,381		
Coastal	1,432			86				2,677				36	6	86	4		82	82	4,052	12,568		
Estuaries Savannah/ mangroves	80			587				27,038				26	21	581	25		281	28	22,832	418		
Coastal reefs	200							89,002						2					99,894	1,991		
Shelf	2,058			2,750				1,421		58			5	7	229	27		3,898	1	6,875	125	
Terrestrial	15,212																				804	12,219
Forest	4,898		183	2	2	3	86	30	87			2		43	138	56	66	2	869	4,308		
Tropical	1,088		223	5	6	8	248	30	82	87				32	218	41	87	2	27,881	3,931		
Temperate/boreal	2,888		88		0	0	10	10	87			4		80	26		26	2	322	994		
Grass/steppelands	3,888	7	5		3		29	1	87	28	23			67		0	2	227		958		
Wetlands	330	100		4,529	5	3,800			4,271					364	258	106		524	661	14,785	4,675	
Total marsh/ mangroves	55			1,829					8,895					89	488	162		658		26,288	1,640	
Chenopods/ floridians	56	266		2,843	33	1,800			1,889					428	47	49		49	1,511	88,680	3,228	
Lakes/rivers	200				5,338	2,117			688									232		26,488	1,700	
Desert	1,825																					
Tundra	242																					
Ice/muck	1,842																					
Cropland	1,480											14	26		14					82	128	
Urban	302																					
Total	54,625	1,341	484	1,779	126	1,887	678	60	122,95	2,277	11	47	64	1,266	721	79	815	3,075		32,288		

Numbers in the body of the table are in \$ha⁻¹yr⁻¹. Row and column totals are in \$yr⁻¹ × 10⁹; column totals are the sum of the products of the per ha services in the table and the area of each biome, not the sum of the per ha services themselves. Shaded cells include services that do not occur or are known to be negligible. Open cells indicate lack of available information.