TABLE 24.7
Annual Secondary Production of Principal Regions of the Earth
These estimates are very approximate, being based on estimates of animal consumption of plants to compute herbivore consumption, and of assimilation efficiencies to compute gross secondary production. Some of the estimates are little more than intelligent guesses, probably being too high. (From Whittaker and Likens, 1973.)

Ecosystem Type	Total Net Primary Production (10^9 metric tons C/yr)	Animal Consumption (%)	Herbivore Consumption (10^6 metric tons C/yr)	Net Secondary Production (10^6 metric tons C/yr)
Tropical rain forest	15.3	7	1100	110
Tropical seasonal forest	5.1	6	300	30
Temperate evergreen forest	2.9	4	120	12
Temperate deciduous forest	3.8	5	190	19
Boreal forest	4.3	4	170	17
Woodland and shrubland	2.2	5	110	11
Savanna	4.7	15	700	105
Temperate grassland	2.0	10	200	30
Tundra and alpine	0.5	3	15	1.5
Desert scrub	0.6	3	18	2.7
Rock, ice, and sand	0.04	2	0.1	0.01
Agricultural land	4.1	1	40	4
Swamp and marsh	2.2	8	175	18
Lake and stream	0.6	20	120	12
Total land	48.3	7	3258	372
Open ocean	18.9	40	7600	1140
Upwelling zones	0.1	35	35	5
Continental shelf	4.3	30	1300	195
Algal bed and reef	0.5	15	75	11
Estuaries	1.1	15	165	25
Total oceans	24.9	37	9175	1376
Total for biosphere	73.2	17	12433	1748

TABLE 24.9
World Production of Detritus
Detritus production is calculated from estimates of net primary production by assuming how much is eaten by herbivores, etc. *(From Reiners, 1973.)*

Ecosystem Type	World Net Primary Production (dry wt.) (10^9 tons/yr)	Percentage of Production to Detritus	World Detritus (dry wt.) (10^9 tons/yr)	Carbon (10^9 tons/yr)
Swamp and marsh	4.0	90	3.6	1.8
Tropical forest	40.0	95	38.0	19.0
Temperate forest	23.4	95	22.2	11.1
Boreal forest	9.6	97	9.3	4.6
Woodland and shrubland	4.2	80	3.4	1.7
Savanna	10.5	60	6.3	3.2
Temperate grassland	4.5	50	2.2	1.1
Tundra and alpine	1.1	95	1.0	0.5
Desert scrub	1.3	95	1.2	0.6
Extreme desert	0.07	97	0.1	0.03
Agricultural land	9.1	50	4.6	2.3
Totals	107.8		91.9	45.9