Types of ecosystem services

Pereira and Cooper, 2006

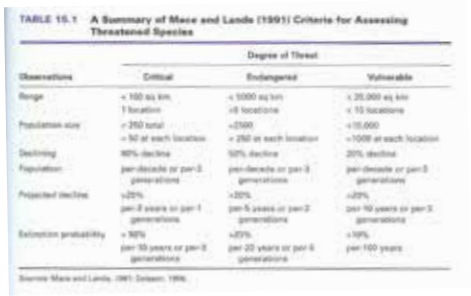
Ethical considerations of conservation

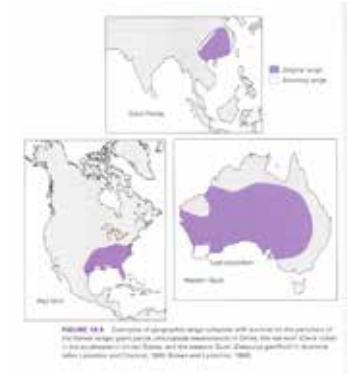
Postulates about ethical value of nature

1. diversity is good
2. complexity in ecosystems is good
3. natural evolutionary development is good
4. biological diversity should be valued for and protected for itself regardless of utilitarian values

from Michael Soule, cofounder of Society for Conservation Biology

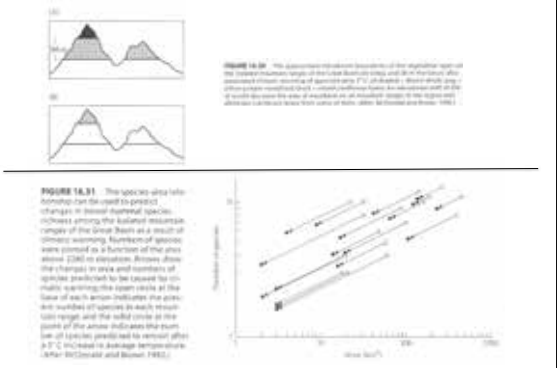
Criteria for assessing threatened species



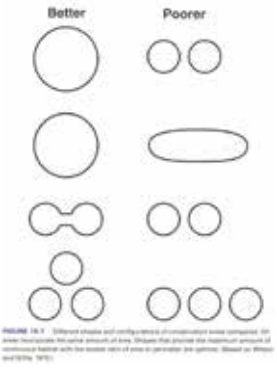


Range Collapse

Species-area curves and extinctions



Shapes of conservation areas



Gap analysis

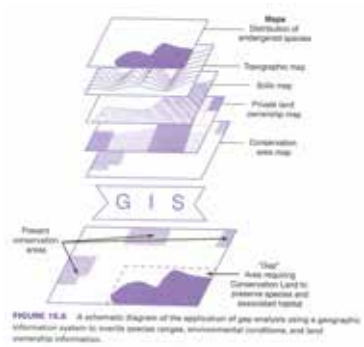


FIGURE 15.8 A schematic diagram of the application of gap analysis using a geographic information system to overlay species ranges, environmental conditions, and land ownership information.

Gap analysis for US

Restoration goals and outcomes

FIGURE 15.9 A graphical representation of restoration aims and tradeoffs (after National Research Council, 1992). In this case the goal is restoration of habitat to support giant pandas.

Efforts to conserve keystone species

Meyer's hot spots for conservation priority based on endemism + habitat loss

Kump et al. 2004

TABLE 18-1

The 25 Hotspots identified by Norman Myers and Colleagues

Hotspot	*Remaining primary vegetation (km²) (% of original extent)*	*Plant species*	*Endemic plants (% of the 300,000 global plants)*	*Endemic vertebrates (% of 25,298 global vertebrates)[a]*
Tropical Andes	314,500 (35.0)	45,000	20,000 (6.7)	1,567 (5.7)
Mesoamerica	23[illegible],000 (20.0)	24,000	5,000 (1.7)	1,159 (4.2)
Caribbean	29,060 (11.3)	12,000	7,000 (2.3)	779 (2.1)
Brazil's Atlantic Forest	91,950 (7.5)	20,000	8,000 (2.7)	367 (1.1)
Choc/Darien/Western Ecuador	65,000 (34.2)	9,000	2,250 (0.8)	405 (1.5)
Brazil's Cerrado	356,000 (20.0)	10,000	4,400 (1.5)	117 (0.4)
Central Chile	90,000 (90.0)	3,429	1,065 (0.3)	61 (0.2)
California Floristic Province	86,000 (24.7)	4,426	2,125 (0.7)	71 (0.3)
Madagascar[b]	39,058 (9.9)	12,000	9,704 (3.2)	771 (2.9)
Eastern Arc & Coastal Forests of Tanzania/Kenya	2,000 (6.7)	4,000	1,500 (0.5)	121 (0.4)
Western African Forests	126,500 (10.0)	9,000	2,250 (0.8)	270 (1.0)
Cape Floristic Province	18,000 (24.3)	8,200	5,682 (1.9)	53 (0.2)
Succulent Karoo	30,000 (26.8)	4,849	1,940 (0.6)	45 (0.2)
Mediterranean Basin	110,000 (4.7)	25,000	13,000 (4.3)	235 (0.9)
Caucasus	50,000 (10.0)	6,300	1,600 (0.5)	59 (0.2)
Sundaland	125,000 (7.8)	25,000	15,000 (5.0)	701 (2.6)
Wallacea	52,000 (15)	10,000	1,500 (0.5)	529 (1.9)
Philippines	9,025 (3.0)	7,620	5,832 (1.9)	518 (1.9)
Indo-Burma	100,000 (4.0)	13,500	7,000 (2.3)	528 (1.9)
South-Central China	64,000 (8.3)	12,000	3,500 (1.2)	178 (0.7)
Western Ghats/Sri Lanka	12,450 (6.8)	4,780	2,180 (0.7)	359 (1.3)
SW Australia	33,336 (10.8)	5,469	4,331 (1.4)	103 (0.4)
New Caledonia	1,230 (28.0)	3,332	2,551 (0.9)	84 (0.3)
New Zealand	59,400 (72.0)	2,300	1,965 (0.6)	136 (0.5)
Polynesia/Micronesia	18,024 (23.8)	4,557	3,334 (1.1)	225 (0.8)
Totals	2,122,891 (12.2)	*	133,149 (44)	9045 (35.0)

[a]Excludes fish.
[b]Madagascar includes nearby islands of Mauritius, Reunion, Seychelles, and Comoros.
*Totals cannot be calculated because of overlap between hotspots.

Kump et al. 2004