Table 1.1

Means and, in brackets, standard errors for important discriminating variables for fish assemblage classes in 198 sites in the Taieri River. In particular, compare the '*Galaxias* only' and 'brown trout only' classes. *Galaxias* are found on their own if there are large waterfalls downstream of the site (and at relatively high elevations where the stream bed has an intermediate representation of cobbles). Brown trout, on the other hand, generally occur where there are no downstream waterfalls (at slightly lower elevations and with a bed composition similar to the *Galaxias* class).

		VARIABLES		
SITE TYPE	NUMBER OF SITES	NUMBER OF WATERFALLS DOWNSTREAM	ELEVATION (m ABOVE SEA LEVEL)	% OF THE BED COMPOSED OF COBBLES
Brown trout only	71	0.42 (0.05)	324 (28)	18.9 (2.1)
Galaxias only	64	12.3 (2.05)	567 (29)	22.1 (2.8)
No fish	54	4.37 (0.64)	339 (31)	15.8 (2.3)
Trout + *Galaxias*	9	0.0 (0)	481 (53)	46.7 (8.5)

FROM TOWNSEND & CROWL, 1991

Table 1.2

Estimated annual costs (billions of dollars) associated with invaders in the United States.

TYPE OF ORGANISM	NUMBER OF INVADERS	MAJOR CULPRITS	LOSS AND DAMAGE	CONTROL COSTS	TOTAL COSTS
Plants	5,000	Crop weeds	24.4	9.7	34.1
Mammals	20	Rats and cats	37.2	NA	37.2
Birds	97	Pigeons	1.9	NA	1.9
Reptiles and amphibians	53	Brown tree snake	0.001	0.005	10.006
Fishes	138	Grass carp, etc.	1.0	NA	1.0
Arthropods	4,500	Crop pests	17.6	2.4	20.0
Mollusks	88	Asian clams	1.2	0.1	1.3
Microbes (pathogens)	>20,000	Crop pathogens	32.1	9.1	41.2

NA, not available.

AFTER PIMENTEL ET AL., 2000

Table 1.3

Annual chemical budgets for forested catchment areas at Hubbard Brook (kg ha^{-1} yr^{-1}). Inputs are for dissolved materials in precipitation or in dryfall (gases or associated with particles falling from the atmosphere). Outputs are losses in stream water as dissolved material plus particulate organic material in the streamflow. The source of the excess chemicals (where outputs exceeded inputs) was weathering of parent rock and soil. The exception was nitrogen (as ammonium or nitrate ions) – less was exported than arrived in precipitation because of nitrogen uptake in the forest.

	NH_4^+	NO_3^-	SO_4^{2-}	K^+	Ca^{2+}	Mg^{2+}	Na^+
Input	2.7	16.3	38.3	1.1	2.6	0.7	1.5
Output	0.4	8.7	48.6	1.7	11.8	2.9	6.9
Net change*	+2.3	+7.6	−10.3	−0.6	−9.2	−2.2	−5.4

AFTER LIKENS ET AL., 1971

*Net change is positive when the catchment gains matter and negative when it loses it.

Table 1.4

Modeled percentages of animal carcasses with lethal levels of diclofenac required to cause population declines at rates, λ, observed for long-billed vultures (LBW) or oriental white-backed vultures (OWBW) in India and Pakistan between 2000 and 2003. A value of 0.132%, for example, means that only 1 in 757 carcasses needs to be contaminated to cause the vulture decline. For each population, results are given for three feasible baseline adult survival rates, *S* (i.e. in the absence of diclofenac) and three values of the interval between vulture feeding bouts in days, *F*.

		PERCENTAGE OF CARCASSES WITH LETHAL LEVEL		
	F	***S* = 0.90**	***S* = 0.95**	***S* = 0.97**
LBV India	2	0.132	0.135	0.137
	3	0.198	0.202	0.205
	4	0.263	0.271	0.273
OWBV India	2	0.339	0.347	0.349
	3	0.508	0.521	0.526
	4	0.677	0.693	0.699
OWBV Pakistan	2	0.360	0.368	0.372
	3	0.538	0.551	0.558
	4	0.730	0.734	0.743

FROM GREEN ET AL., 2004

Table 2.1

A reciprocal transplant experiment of the sea anemone *Actinia tenebrosa*. a, b and c are the three replicates in each colony. In each case the proportion of adults that were found brooding young is shown. Transplants back to the home sites are shown in bold print.

		TRANSPLANTED TO SITES AT:		
SITE OF ORIGIN		GREEN ISLAND	SALMON POINT	STRICKLAND BAY
Green island	a	**0.42**	0.68	0.78
	b	**0.80**	0.63	0.75
	c	**0.67**	0.62	0.61
Salmon Point	a	0.11	**0.42**	0.13
	b	0.18	**0.43**	0.28
	c	0.00	**0.50**	0.40
Strickland Bay	a	0.11	0.06	**0.33**
	b	0.00	0.06	**0.27**
	c	0.04	0.20	**0.27**

FROM AYRE, 1985

Table 3.1

Slugs (*Agriolimax reticulatus*) graze on the leaves of clover (*Trifolium repens*). There are forms of clover that release hydrogen cyanide when the cells are damaged. Slugs nibble clover leaves and reject cyanogenic forms but continue to consume the leaves of non-cyanogenic forms. Two plants, one of each form, were grown together in plastic containers and slugs were allowed to graze for seven successive nights. The table shows the numbers of leaves in different conditions after slug grazing. +/– indicate deviation from random expectation; the difference from random expectation is significant at $P < 0.001$.

	CONDITIONS OF LEAVES AFTER GRAZING			
	NOT DAMAGED	NIBBLED	UP TO 50% OF LEAF REMOVED	MORE THAN 50% OF LEAF REMOVED
Cyanogenic plants	160 (+)	22 (+)	38 (–)	9 (–)
Non-cyanogenic plants	87 (–)	7 (–)	30 (+)	65 (+)

AFTER DIRZO & HARPER, 1982

Table 5.1

A simplified cohort life table for the annual plant *Phlox drummondii*. The columns are explained in the text.

AGE INTERVAL (DAYS) x–x'	NUMBER SURVIVING TO DAY X a_x	PROPORTION OF ORIGINAL COHORT SURVIVING TO DAY X l_x	SEEDS PRODUCED IN EACH STAGE F_x	SEEDS PRODUCED PER SURVIVING INDIVIDUAL IN EACH STAGE m_x	SEEDS PRODUCED PER ORIGINAL INDIVIDUAL IN EACH STAGE $l_x m_x$
0–63	996	1.000	0.0	0.00	0.00
63–124	668	0.671	0.0	0.00	0.00
124–184	295	0.296	0.0	0.00	0.00
184–215	190	0.191	0.0	0.00	0.00
215–264	176	0.177	0.0	0.00	0.00
264–278	172	0.173	0.0	0.00	0.00
278–292	167	0.168	0.0	0.00	0.00
292–306	159	0.160	53.0	0.33	0.05
306–320	154	0.155	485.0	3.13	0.49
320–334	147	0.148	802.7	5.42	0.80
334–348	105	0.105	972.7	9.26	0.97
348–362	22	0.022	94.8	4.31	0.10
362–	0	0.000	0.0	0.00	0.00
Total			2408.2		2.41

$$R_0 = \Sigma\, l_x m_x = \frac{\Sigma\, F_x}{a_0} = 2.41.$$

AFTER LEVERICH & LEVIN, 1979

Table 5.2

A simplified cohort life table for female yellow-bellied marmots, *Marmota flaviventris*, in Colorado. The columns are explained in the text.

AGE CLASS (YEARS) x	NUMBER ALIVE AT THE START OF EACH AGE CLASS a_x	PROPORTION OF ORIGINAL COHORT SURVIVING TO THE START OF EACH AGE CLASS l_x	NUMBER OF FEMALE YOUNG PRODUCED BY EACH AGE CLASS F_x	NUMBER OF FEMALE YOUNG PRODUCED PER SURVIVING INDIVIDUAL IN EACH AGE CLASS m_x	NUMBER OF FEMALE YOUNG PRODUCED PER ORIGINAL INDIVIDUAL IN EACH AGE CLASS $l_x m_x$
0	773	1.000	0	0.000	0.000
1	420	0.543	0	0.000	0.000
2	208	0.269	95	0.457	0.123
3	139	0.180	102	0.734	0.132
4	106	0.137	106	1.000	0.137
5	67	0.087	75	1.122	0.098
6	44	0.057	45	1.020	0.058
7	31	0.040	34	1.093	0.044
8	22	0.029	37	1.680	0.049
9	12	0.016	16	1.336	0.021
10	7	0.009	9	1.286	0.012
11	3	0.004	0	0.000	0.000
12	2	0.003	0	0.000	0.000
13	2	0.003	0	0.000	0.000
14	2	0.003	0	0.000	0.000
15	1	0.001	0	0.000	0.000
Total			519		0.670

AFTER SCHWARTZ ET AL., 1998

$$R_0 = \sum l_x m_x = \frac{\sum F_x}{a_0} = 0.67.$$

Table 8.1

Species identification of salmonid samples obtained by fisheries officers in Canada because the material was believed to have been obtained illegally.

CASE (YEAR)	TISSUES	RESULT	LEGAL OUTCOME	FINE ($)
1 (1995)	Blood/scales/slime from containers	Coho	Conviction	1500
2 (1998)	Muscle	Chum Chinook Coho	Conviction	1800
3 (1998)	Muscle	Coho	Conviction	?
4 (1999)	Muscle	Atlantic Chinook Coho	No charges	–
5 (2000)	Muscle	Coho	Guilty plea	7500
6 (2000)	Muscle	Sockeye	Conviction	1000

AFTER WITHER ET AL., 2004

Table 8.2

Stock identification of salmonid samples obtained by fisheries officers in Canada because the material was believed to have been obtained illegally. IF&T refers to the Interior Fraser and Thompson tributaries.

CASE (YEAR)	SPECIES	RESULTS	OUTCOME	FINE ($)
1 (1998)	Sockeye	96.5% Fraser; 96.5% IF&T	Guilty plea	2,000
2 (1999)	Sockeye	100% Fraser; 100% IF&T	Conviction	15,000
3 (1999)	Chinook	91.4% Fraser	No conviction, under appeal	
4 (2000)	Sockeye	100% Fraser; 100% IF&T	Guilty plea	8,000
5 (2001)	Sockeye	97.8% Fraser; 97.8% IF&T	Guilty plea	3,000

AFTER WITHER ET AL., 2004

Table 8.3

For each of 12 bacterial replicates (B1–B12) and their 12 respective phage replicates (ϕ1–ϕ12), entries in the table are the proportion of bacteria resistant to the phage at the end of a period of coevolution (50 transfers ≈ 400 bacterial generations). Coevolving pairs are shown along the diagonal in bold. Note that bacterial strains are usually most resistant to the phage strain with which they coevolved.

	BACTERIAL REPLICATES											
PHAGE REPLICATES	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B10**	**B11**	**B12**
ϕ1	**0.8**	0.9	1	1	1	1	1	1	0.85	0.85	0.75	0.65
ϕ2	0.1	**1**	0.3	1	0.85	0.25	1	1	0.85	0.9	0.8	0.65
ϕ3	0.75	0.75	**1**	1	1	0.9	1	1	0.85	0.9	0.9	0.65
ϕ4	0.15	0.9	0.8	**1**	0.85	0.6	0.6	1	0.85	1	0.85	0.35
ϕ5	0.25	0.9	1	1	**1**	0.9	1	0.8	0.85	1	0.8	0.65
ϕ6	0.2	1	0.85	0.8	0.75	**0.8**	0.85	0.9	0.85	0.75	0.45	0.25
ϕ7	0.2	0.75	0.6	1	0.4	0.45	**1**	0.9	0.85	1	0.75	0.35
ϕ8	0	0.95	0.55	0.95	0.35	0.25	0.8	**1**	0.85	1	0.7	0.25
ϕ9	0	0.7	0.55	0.45	0.7	0.35	1	1	**0.85**	1	0.5	0.1
ϕ10	0	0.7	0.9	0.7	0.55	0.9	1	1	0.7	**1**	0.5	0.4
ϕ11	0	0.5	0.9	0.75	0.7	1	1	0.95	0.75	1	**1**	0.35
ϕ12	0	0.15	0	0.1	0.65	0.35	1	1	0.7	0.8	0.85	**0.4**

AFTER BUCKLING & RAINEY, 2002

Table 9.1

Life table data for the Canadian Colorado potato beetle.

AGE INTERVAL	NUMBERS PER 96 POTATO HILLS	NUMBERS DYING	MORTALITY FACTOR	FACTOR LOG$_{10}N$	*k*-VALUE	
Eggs	11,799	2,531	Not deposited	4.072	0.105	(k_{1a})
	9,268	445	Infertile	3.967	0.021	(k_{1b})
	8,823	408	Rainfall	3.946	0.021	(k_{1c})
	8,415	1,147	Cannibalism	3.925	0.064	(k_{1d})
	7,268	376	Predators	3.861	0.023	(k_{1e})
Early larvae	6,892	0	Rainfall	3.838	0	(k_2)
Late larvae	6,892	3,722	Starvation	3.838	0.337	(k_3)
Pupal cells	3,170	16	Parasitism	3.501	0.002	(k_4)
Summer adults	3,154	–126	Sex (52%♀)	3.499	–0.017	(k_5)
Females × 2	3,280	3,264	Emigration	3.516	2.312	(k_6)
Hibernating adults	16	2	Frost	1.204	0.058	(k_7)
Spring adults	14			1.146		
					2.926	(k_{total})

Table 9.2

Summary of the life table analysis for Canadian Colorado beetle populations (see Box 9.1).

		MEAN	COEFFICIENT OF REGRESSION ON k_{TOTAL}
Eggs not deposited	k_{1a}	0.095	−0.020
Eggs infertile	k_{1b}	0.026	−0.005
Rainfall on eggs	k_{1c}	0.006	0.000
Eggs cannibalized	k_{1d}	0.090	−0.002
Egg predation	k_{1e}	0.036	−0.011
Larvae 1 (rainfall)	k_2	0.091	0.010
Larvae 2 (starvation)	k_3	0.185	0.136
Pupae (parasitism)	k_4	0.033	−0.029
Unequal sex ratio	k_5	−0.012	0.004
Emigration	k_6	1.543	0.906
Frost	k_7	0.170	0.010
	k_{total}	2.263	

AFTER HARCOURT, 1971

Table 9.3

Key factor (or key phase) analysis for wood frog populations in the United States: Maryland (two ponds, 1977–1982), Virginia (seven ponds, 1976–1982) and Michigan (one pond, 1980–1993). In each area, the phase with the highest mean k-value, the key phase and any phase showing density dependence are highlighted in bold.

AGE INTERVAL	MEAN k-VALUE	COEFFICIENT OF REGRESSION ON k_{TOTAL}	COEFFICIENT OF REGRESSION ON LOG (POPULATION SIZE)
Maryland			
Larval period	1.94	**0.85**	**Pond 1 : 1.03 ($P = 0.04$)** Pond 2 : 0.39 ($P = 0.50$)
Juvenile: up to 1 year	0.49	0.05	0.12 ($P = 0.50$)
Adult: 1–3 years	**2.35**	0.10	0.11 ($P = 0.46$)
Total	4.78		
Virginia			
Larval period	**2.35**	**0.73**	0.58 ($P = 0.09$)
Juvenile: up to 1 year	1.10	0.05	−0.20 ($P = 0.46$)
Adult: 1–3 years	1.14	0.22	**0.26 ($P = 0.05$)**
Total	4.59		
Michigan			
Larval period	1.12	**1.40**	1.18 ($P = 0.33$)
Juvenile: up to 1 year	0.64	1.02	0.01 ($P = 0.96$)
Adult: 1–3 years	**3.45**	−1.42	**0.18 ($P = 0.005$)**
Total	5.21		

AFTER BERVEN, 1995

Table 9.4

For three species of reef fish, the numbers of each species observed occupying sites, or parts of sites, that had been vacated during the immediately prior period between censuses through the loss of residents of each species. The sites vacated through loss of 120 residents were reoccupied by 131 fish; the species of the new occupant is not dependent on the species of the previous resident ($\chi^2 = 5.88$; $P > 0.1$).

	REOCCUPIED BY:		
RESIDENT LOST	***E. APICALIS***	***P. LACRYMATUS***	***P. WARDI***
Eupomacentrus apicalis	9	3	19
Plectroglyphidodon lacrymatus	12	5	9
Pomacentrus wardi	27	18	29

AFTER SALE, 1979

Table 9.5

Some representative photosynthetic rates (mg CO_2 dm^{-2} h^{-1}) of plants in a successional sequence. Late-successional trees are arranged according to their relative successional position.

PLANT	RATE
Summer annuals	
Abutilon theophrasti	24
Amaranthus retroflexus	26
Ambrosia artemisiifolia	35
Ambrosia trifida	28
Chenopodium album	18
Polygonum pensylvanicum	18
Setaria faberii	38
Winter annuals	
Capsella bursa-pastoris	22
Erigeron annuus	22
Erigeron canadensis	20
Lactuca scariola	20
Herbaceous perennials	
Aster pilosus	20
Early-successional trees	
Diospyros virginiana	17
Juniperus virginiana	10
Populus deltoides	26
Sassafras albidum	11
Ulmus alata	15
Late-successional trees	
Liriodendron tulipifera	18
Quercus velutina	12
Fraxinus americana	9
Quercus alba	4
Quercus rubra	7
Aesculus glabra	8
Fagus grandifolia	7
Acer saccharum	6

AFTER BAZZAZ, 1979

Table 11.1

Net primary production (NPP) per year summed for each of the major biomes and for the planet in total (in units of petragrams of carbon).

MARINE	NPP	TERRESTRIAL	NPP
Tropical and subtropical oceans	13.0	Tropical rain forests	17.8
Temperate oceans	16.3	Broadleaf deciduous forests	1.5
Polar oceans	6.4	Mixed broad/needleleaf forests	3.1
Coastal	10.7	Needleleaf evergreen forests	3.1
Salt marsh/estuaries/seaweed	1.2	Needleleaf deciduous forests	1.4
Coral reefs	0.7	Savannas	16.8
		Perennial grasslands	2.4
		Broadleaf shrubs with bare soil	1.0
		Tundra	0.8
		Desert	0.5
		Cultivation	8.0
Total	48.3	Total	56.4

FROM GEIDER ET AL., 2001

Table 11.2

Characteristics of representative trees of two contrasting species growing within 1 km of each other on the Solling Plateau, Germany.

	BEECH	NORWAY SPRUCE
Age (years)	100	89
Height (m)	27	25.6
Leaf shape	Broad	Needle
Annual production of leaves	Higher	Lower
Photosynthetic capacity per unit dry weight of leaf	Higher	Lower
Length of growing season (days)	176	260
Net primary productivity (metric tons of carbon per hectare per year)	8.6	14.9

AFTER SCHULZE, 1970; SCHULZE ET AL., 1977A, 1977B

The record of insects as biological control agents against insect pests and weeds.

	INSECT PESTS	WEEDS
Control agent species	563	126
Pest species	292	70
Countries	168	55
Cases where agent has become established	1063	367
Substantial successes	421	113
Successes as a percentage of establishments	40	31

AFTER WAAGE & GREATHEAD, 1988

Table 13.1

Balancing the global carbon budget (in 10^9 metric tons per year) in 1980 to account for increases in atmospheric carbon caused by human activities. In the row labeled 'Missing' the minus sign indicates the need to identify an unknown uptake of carbon of the size shown. This has now been identified as fertilization of terrestrial vegetation by atmospheric carbon dioxide so that an increase of the order of what was estimated as 'missing' can be accounted for by an increase in the amount of carbon locked in extra vegetation biomass (Kicklighter et al., 1999).

	EXTREME LOW ESTIMATE	MEDIAN ESTIMATE	EXTREME HIGH ESTIMATE
Release to atmosphere			
Fossil fuel combustion	4.7	5.2	5.7
Cement production	0.1	0.1	0.1
Tropical forest clearance	0.4	1.0	1.6
Non-tropical forest clearance	−0.1	0.0	0.1
Total release	5.1	6.3	7.5
Accounted for			
Atmospheric increase	−2.9	−2.9	−2.9
Ocean uptake	−2.5	−2.2	−1.8
Missing?	−0.3	+1.2	+2.8

AFTER DETWILER & HALL, 1988

Table 13.2

Four scenarios that explore plausible futures for ecosystems and human well-being based on different assumptions about sociopolitical forces of change and their interactions. Greenhouse gas emissions [carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and 'Other'] are expressed as gigatons of carbon-equivalents (GtC-eq).

	GREENHOUSE GAS EMISSIONS TO 2050	PREDICTED TEMPERATURE RISE TO 2050 AND 2100	LAND USE CHANGES TO 2050	NITROGEN TRANSPORT IN RIVERS TO 2025	ECOSYSTEM SERVICES TO 2025
Global orchestration A globally connected society focused on global trade and economic liberalization. Assumes a reactive approach to ecosystem problems. Takes strong steps to reduce poverty and inequality and to invest in public goods such as infrastructure and education. Economic growth is the highest of the four scenarios, while population in 2050 is lowest (8.1 billion)	CO_2: 20.1 GtC-eq CH_4: 3.7 GtC-eq N_2O: 1.1 GtC-eq Other: 0.7 GtC-eq	2050: +2.0°C 2100: +3.5°C	Slow forest decline to 2025, 10% more arable land	Increased nitrogen in rivers	Provisioning services improved, regulating and cultural services degraded
Order from strength A regionalized and fragmented world, concerned with security and protection, emphasizing primarily regional markets, paying little attention to public goods and taking a reactive approach to ecosystem problems. Economic growth rate is the lowest (particularly in developing countries) while population growth is the highest of the scenarios (9.6 billion in 2050)	CO_2: 15.4 GtC-eq CH_4: 3.3 GtC-eq N_2O: 1.1 GtC-eq Other: 0.5 GtC-eq	2050: +1.7°C 2100: +3.3°C	Rapid forest decline to 2025, 20% more arable land	Increased nitrogen in rivers	All ecosystem services heavily degraded
Adapting mosaic River catchment-scale ecosystems are the focus of political and economic activity. Local institutions are strengthened and local ecosystem management strategies are common, with a strongly proactive (and learning) approach. Economic growth is low initially but increases with time. Population in 2050 is high (9.5 billion)	CO_2: 13.3 GtC-eq CH_4: 3.2 GtC-eq N_2O: 0.9 GtC-eq Other: 0.6 GtC-eq	2050: +1.9°C 2100: +2.8°C	Slow forest decline to 2025, 10% more arable land	Increased nitrogen in rivers	All ecosystem services improved
Technogarden A globally connected world relying on environmentally sound technology, using highly managed, often engineered, ecosystems to deliver ecosystem services, and taking a proactive approach to ecosystem management. Economic growth is relatively high and accelerating, while the 2050 population is midrange (8.8 billion). This is the only scenario to assume a climate policy (stabilizing CO_2 at 550 ppm)	CO_2: 4.7 GtC-eq CH_4: 1.6 GtC-eq N_2O: 0.6 GtC-eq Other: 0.2 GtC-eq	2050: +1.5°C 2100: +1.9°C	Forest increase to 2025, 9% more arable land	Decreased nitrogen in rivers	Provisioning and regulating services improved, cultural services degraded

FROM TOWNSEND, 2007; BASED ON MILLENNIUM ECOSYSTEM ASSESSMENT, 2005

Table 14.1

Values used as inputs for simulations of koala populations at Oakey (declining) and Springsure (secure). Values in brackets are standard deviations due to environmental variation; the model procedure involves the selection of values at random from the range. Catastrophes are assumed to occur with a certain probability; in years when the model 'selects' a catastrophe, reproduction and survival are reduced by the multipliers shown (e.g. in a year with a catastrophe, reproduction is reduced to 55% of what it would otherwise have been).

VARIABLE	OAKEY	SPRINGSURE
Maximum age	12	12
Sex ratio (proportion male)	0.575	0.533
Litter size of 0 (%)	57.00 (±17.85)	31.00 (±15.61)
Litter size of 1 (%)	43.00 (±17.85)	69.00 (±15.61)
Female mortality at age 0	32.50 (±3.25)	30.00 (±3.00)
Female mortality at age 1	17.27 (±1.73)	15.94 (±1.59)
Adult female mortality	9.17 (±0.92)	8.47 (±0.85)
Male mortality at age 0	20.00 (±2.00)	20.00 (±2.00)
Male mortality at age 1	22.96 (±2.30)	22.96 (±2.30)
Male mortality at age 2	22.96 (±2.30)	22.96 (±2.30)
Adult male mortality	26.36 (±2.64)	26.36 (±2.64)
Probability of catastrophe	0.05	0.05
Multiplier, for reproduction	0.55	0.55
Multiplier for survival	0.63	0.63
% males in breeding pool	50	50
Initial population size	46	20
Carrying capacity, *K*	70 (±7)	60 (±6)

AFTER PENN ET AL., 2000

Table 14.2

An example of a projection matrix (using the simulation modeling tool called RAMAS-STAGE) for a particular *Silene regia* population from 1990 to 1991, assuming successful germination of seedlings. The numbers represent the proportion changing from the stage in the column to the stage in the row (bold values represent plants remaining in the same stage). 'Alive undefined' represents individuals with no size or flowering data, usually as a result of mowing or herbivory. The numbers in the top row are seedlings produced by flowering plants. The finite rate of increase, λ, for this population is 1.67. (Note that a population will increase when λ > 1, and decrease when λ < 1.) The site is managed by regular burning.

	SEEDLING	VEGETATIVE	SMALL FLOWERING	MEDIUM FLOWERING	LARGE FLOWERING	ALIVE UNDEFINED
Seedling	–	–	5.32	12.74	30.88	–
Vegetative	0.308	**0.111**	0	0	0	0
Small flowering	0	0.566	**0.506**	0.137	0.167	0.367
Medium flowering	0	0.111	0.210	**0.608**	0.167	0.300
Large flowering	0	0	0.012	0.039	**0.667**	0.167
Alive undefined	0	0.222	0.198	0.196	0	**0.133**

AFTER MENGES & DOLAN, 1998

Table 14.3

The core distributions (km^2) of cacti in Mexico under current conditions and as predicted for three climate change scenarios. Species in the first category of cacti are currently completely restricted to the 10,000 km^2 Tehuacán-Cuicatlán Biosphere Reserve. Those in the second category have a current range more or less equally distributed inside and outside the reserve. The current ranges of species in the final category extend widely beyond the reserve boundaries.

SPECIES CATEGORY	CURRENT	+1.0°C –10% RAIN	+2.0°C –10% RAIN	+2.0°C –15% RAIN
Restricted to the reserve				
Cephalocereus columna-trajani	138	27	0	0
Ferocactus flavovirens	317	532	100	55
Mammillaria huitzilopochtli	68	21	0	0
Mammillaria pectinifera	5,130	1,124	486	69
Pachycereus hollianus	175	87	0	0
Polaskia chende	157	83	76	41
Polaskia chichipe	387	106	10	0
Intermediate distribution				
Coryphantha pycnantha	1,367	2,881	1,088	807
Echinocactus platyacanthus f. grandis	1,285	1,046	230	1,148
Ferocactus haematacanthus	340	1,979	1,220	170
Pachycereus weberi	2,709	3,492	1,468	1,012
Widespread distribution				
Coryphantha pallida	10,237	5,887	3,459	2,920
Ferocactus recurvus	3,220	3,638	1,651	151
Mammillaria dixanthocentron	9,934	7,126	5,177	3,162
Mammillaria polyedra	10,118	5,512	3,473	2,611
Mammillaria sphacelata	3,956	5,440	2,803	2,580
Neobuxbaumia macrocephala	2,846	4,943	3,378	1,964
Neobuxbaumia tetetzo	2,964	1,357	519	395
Pachycereus chrysacanthus	1,395	1,929	872	382
Pachycereus fulviceps	3,306	5,405	2,818	1,071

AFTER TÉLLEZ-VALDÉS & DÁVILA-ARANDA, 2003