

On Borrowed Time

Glossary

The following references were used to construct the glossary:

Specht (1970), Luke and McArthur (1977), Holmes (1979), Collin (1988), Borowski and Borwein (1989), Begon *et al.* (1990, 1996), Fowler and Cohen (1990), Costermans (1994, 2000), Knox *et al.* (1994), Meffe and Carroll (1994), Thain and Hickman (1994), Collins (1995), and Department of Natural Resources and Environment (1996).

abiotic Pertaining to physical and inorganic components of the environment; non-living.

abundance The density of individuals within a local area. The terms rare and common (or abundant) describe extremes of abundance.

accumulation curves Plots of the cumulative number of species versus sampling or collection effort.

accumulator species Species that concentrate pollutants in their body tissues or in the environment immediately around them.

acid rain Rain with a very low pH (<5.6), resulting from emissions to the atmosphere of pollutants (oxides of sulphur and nitrogen).

adaptive management Management practices that accommodate uncertain future events.

aerial photo interpretation Mapping and measurement of features (eg. vegetation type or tree height) using aerial photos; typically these are taken sequentially from an aircraft so that they can be viewed stereo-scopically, resulting in a three-dimensional image.

aestivate To go into a state of dormancy during the summer or extended dry periods.

agrestal weeds Weeds of agricultural land.

algal bloom Enrichment of a water body with nutrients resulting in sudden growths (blooms) of planktonic algae that may produce toxins. See also eutrophication.

algorithm A logical arithmetical or computational step-by-step procedure, which if correctly applied ensures the solution to a problem.

alien species See **exotic species**.

allele One of two or more forms of a gene located in the same position on homologous chromosomes.

allelopathy Inhibition of one plant by chemicals produced by another plant.

allozyme One of several possible forms of an enzyme that is the product of a particular allele at a particular gene locus.

alpha (α) diversity The diversity for a community within a local area, composed of the number of species and their relative abundances.

alternative hypothesis Any hypothesis that does not conform with a given null hypothesis.

altitudinal migration Migration by animals or birds to lower or higher elevations depending on the season.

amino acid An organic molecule, which is a structural component of proteins.

analysis of variance Any of a number of techniques for resolving the observed variance between sets of data into components, especially to determine whether the difference between samples can be explained as random variation within the same underlying population.

angiosperm The division that is commonly referred to as flowering plants; strictly, those seed-bearing plants that develop their seeds from ovules within a closed cavity (the ovary).

annelid Soft-bodied, metamerically segmented, coelomate worm.

annual A plant species with a life cycle that takes approximately 12 months or less to complete (cf. perennial).

anther In a flower, that part of the stamen that houses developing male reproductive cells (pollen).

anthropocentric Any human-orientated perspective of the environment; regarding humans as central.

arable Land being or capable of being tilled for the production of crops.

arboreal Living in or among trees.

area of occupancy The area within the extent of occurrence that is occupied by a taxon, excluding cases of vagrancy. It includes the smallest area essential at any stage to the survival of a taxon (eg. nesting and feeding sites).

arithmetic mean See **true mean**.

arthropod Phylum of metamerically segmented animals with jointed legs and an exoskeleton (eg. insects and spiders).

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asexual reproduction Reproduction that does not involve fusion of gametes – offspring are clones of the parent organism.

assessment endpoints Formal expressions of the environmental values to be protected, which provide a means by which management goals can be identified, measured, audited and evaluated.

assignment test A method for estimating inter-population dispersal rates in which the individuals are assigned to a source population based on their 'assignment indices', which are defined as the expected frequencies of their genotypes in those populations. Individuals whose genotypes are more likely in populations other than the one they are found in are said to be 'misassigned' and may be interpreted as immigrants.

asymptotic dynamics of a population Very long-term dynamics; in an undisturbed ecosystem, approximating dynamics in a climax community.

Australasian region Biogeographic region including the Australian mainland and islands on the continental shelf, such as Tasmania and New Guinea.

autecology The biological relations between a single species and its environment; ecology of an individual species.

autocorrelation The condition occurring when successive items in a series are correlated; that is, they are not independent. For example, if samples close together experience relatively similar environmental conditions or are within the range of movement of a group of animals, then the appearance of a species in one sample will not be independent of the appearance of the same species at an adjacent site.

axiomatic Self evident; a logical system consisting of a set of statements that are stipulated to be true.

background rate of extinction The average rate of loss of species globally in geological time, outside the periods of mass extinction.

ballast water Water used to stabilise a vessel, especially one that is not carrying cargo.

base See **logarithm**.

base-pairs Two bases, one purine and one pyrimidine, which pair together in the genetic code of DNA and RNA.

benthic Organisms living at the bottom of a sea, lake or other aquatic ecosystem.

bequest values (of preserved wilderness areas) Based on the concern that large undisturbed landscapes should be available for future generations.

Bernoulli trial An experiment in which a single action, for example flipping a coin, is repeated in an identical manner over and over. The possible results of the action are classified as 'success' or 'failure'. The binomial formula is used to find probabilities for Bernoulli trials.

beta (β) diversity Represents the changes in species composition that occur along an ecological gradient within a community.

binary data Data with two options (eg. present or absent).

binomial coefficient Any of the numerical factors that multiply the successive terms in a binomial expansion (an expression of the form $(x + a)^n$).

binomial distribution Distribution that is appropriate when observations can be classified into one of two possible categories (eg. male or female); a statistical distribution giving the probability of obtaining a specified number of successes in a specified number of Bernoulli trials.

binomial naming A system devised by Linnaeus whereby the name of each kind of organism (each species) consists of two words: a genus name and a specific epithet.

bioassay organisms Used in laboratory conditions to determine the activity or effect of concentrations of pollutants by testing the effect of toxins on an organism and comparing this with the activity of an agreed standard.

biocentric ethic A view that argues for the value of all individuals. It suggests that all wild plants and animals are worthy of moral consideration and that humans have an ethical obligation towards them.

biocide A chemical (eg. a pesticide) capable of killing living organisms.

bioclimatic modelling An approach that can be used to predict the broad potential limits of the distribution of a species. The first step in bioclimatic modelling is to assemble information on the known distribution of a particular organism. Then a summary of the climatic conditions that characterise the locations where the target species has been recorded is generated. Maps of matched areas, or monoclimes, that highlight a species' predicted potential distribution are the final result.

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- bioclimatic** The effects of climatic conditions such as temperature, rainfall and radiation regimes on the distribution of living organisms.
- biodiversity surrogates** Measures such as species, assemblages, vegetation communities or climatic domains that are thought to indicate the distribution and abundance of unmeasured species, assemblages or other elements of biodiversity.
- biodiversity** Number, relative abundance, and genetic diversity of organisms from all habitats, including terrestrial, marine and other aquatic systems, and the ecological complexes and processes of which they are a part. This includes diversity within species, between species and of ecosystems.
- bioeconomics** The study of the interaction of economic and biological systems.
- biogeographic province** Regions of the world identified by their dominant animals and plants.
- biogeography** The study and interpretation of the geographical distribution of animals and plants.
- bioindicator species** A species that responds to environmental changes.
- biological control** The use of a predatory or parasitic organism (often the pest's natural enemy) to control a targeted pest species.
- biological diversity** See **biodiversity**.
- biological legacies** The biological material left after a natural disturbance such as a fire (eg. seeds and charred trees and logs).
- biological resources** Consist of natural and semi-natural ecosystems and the genetic resources of these systems.
- biological species** Groups of interbreeding (or potentially interbreeding) natural populations that are reproductively isolated from other such groups.
- biomass** The living or dry weight per unit area of organisms in a particular area.
- biome** Ecological communities with the same structure, delineated by climate, and usually defined by some dominant vegetative pattern.
- Biosphere Reserves** Reserves designated for a range of reasons, including research, monitoring, training, demonstration, and conservation.
- biosphere** The part of the earth and its atmosphere inhabited by living organisms.
- biotic** Pertaining to living organisms, and usually applied to the biological aspects of an organism's environment (ie. the influences of other organisms).
- boreal** A term meaning 'northern' that is often used in reference to the forests of northern Canada, northern Scandinavia and northern Russia.
- bottleneck** A decrease to a small population size, which results in a substantial decrease in genetic variability, usually over several generations.
- Brigalow** Refers to both the species *Acacia harpophylla* and to the vegetation communities it dominates.
- buffer** A protective margin of vegetation abutting a stream, wetland, rainforest or any other significant ecosystem, which protects it from potentially detrimental disturbances in the surrounding area.
- by-catch** Those fish captured during fishing operations targeted at other species.
- captive breeding** Breeding of animals in captivity.
- carrying capacity** The maximum number of individuals that a given environment can support indefinitely, usually determined by the organism's resource requirements.
- catastrophe (with reference to risk assessment)** Large, sudden, widespread change in the environment that causes extensive and relatively rapid change in vital rates such as fecundity and survival; such changes are usually precipitated by extreme environmental conditions such as floods, fires and droughts.
- census** A complete count of all individuals in a population.
- centinelan extinction** The loss of a species before it is known to (or described by) science.
- central tendency** The tendency of the values of a random variable to cluster around the mean, median and mode.
- CFCs** See **chlorofluorocarbons**.
- chenopod** Any flowering plant of the family Chenopodiaceae (eg. many halophytes of arid and coastal salt-affected land).
- chlorofluorocarbons (CFCs)** Compounds used as aerosol propellants and in refrigerators, air conditioners and freezers. Chlorine in CFCs reacts with and breaks down atmospheric ozone.
- chloroplast** An organelle containing light-absorbing pigments; has an important role in photosynthesis.
- chromosome analysis** Study of the chromosomes of an organism to determine its ancestry.

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- chromosome** Any of the microscopic rod-shaped structures that appear in a cell nucleus during cell division, consisting of nucleoprotein arranged into units (genes) that are responsible for the transmission of hereditary characteristics.
- cladogram** A graphical representation of the evolutionary relationships among taxa.
- classification table** A table comparing predictions and observations, and showing the number of true positive, true negative, false positive and false negative predictions.
- clear-felling** Method of harvesting in which an entire stand is removed in one felling with regeneration obtained artificially, by natural seeding from adjacent stands, or from trees cut in the clearing operation.
- climax community** Community of organisms, with composition more or less stable and in equilibrium with existing natural environmental conditions; the presumed end point of a successional sequence; a community that has reached a steady state.
- clone** An organism or group of organisms of identical genotype that are descended from a common ancestor by asexual reproduction.
- cloning** Production of a set of genetically identical individuals or cells, or production of a set of identical DNA molecules from a single starting molecule.
- closed forest** Forest that has a tallest stratum of trees 10-30 metres tall and dense foliage cover (a closed canopy).
- coefficient of variation** A measure of the relative variation of a distribution independent of the units of measurement; the standard deviation divided by the mean.
- co-extinction** The loss of a species that occurs when the species on which it is strongly dependent becomes extinct. An example is the loss of a species-specific parasite that goes extinct with the extinction of its host.
- co-linearity** Lying in the same straight line. In statistics, referring to variables that are highly correlated.
- colour banding** A field study method, used particularly for birds, in which coloured bands are attached to the legs to facilitate the recognition of individual animals.
- community** All living things in a particular area. In an ecological sense, an assemblage of interdependent populations of different species (plants and animals) interacting with one another, and living in a particular area.
- competition** An interaction between two or more organisms or species, in which, for each, the birth and/or growth rates are depressed and/or the death rates increased by the other organism or species because they both strive for the same resource, which is in limited supply.
- complementarity (of reserves)** The degree to which a given area contributes previously unrepresented features (eg. species or environmental classes) to a reserve system.
- comprehensiveness (of reserves)** The degree to which a system of reserves samples the full range of biodiversity, including community, species and genetic variation.
- confidence intervals** An interval of values bounded by confidence limits derived by sampling, within which the true value of a population parameter is stated to lie with specified probability. Confidence intervals provide an estimate of the reliability of a prediction.
- configuration** The spatial arrangement of the patches or units in a landscape.
- congener** Belonging to the same genus.
- conifer** Any gymnosperm tree or shrub typically bearing cones and evergreen leaves.
- connectivity (of reserves)** Refers to the ease with which organisms move between particular landscape elements; the number of connections between patches, relative to the maximum number of potential connections.
- conspecific** Belong to the same species.
- consumptive use** The value of the products of nature that do not pass through a market.
- Convention on Wetlands of International Importance** (Also known as the Ramsar Convention) An international agreement signed in Ramsar (Iran) in 1971 to enhance the protection of wetland habitats.
- cooperative breeders** Those species in which more than two individuals provide care in rearing their young.
- correlation coefficient** A statistic measuring the degree of correlation between two variables. The closer the correlation coefficient is to 1 or -1, the greater the correlation; if the association between two variables is random, the correlation coefficient is equal to zero.

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correlation The extent of correspondence between the ordering of two variables. Correlation is positive when two variables move in the same direction and negative or inverse when they move in opposite directions.

corridor (for wildlife) A strip of habitat that facilitates fauna movement between otherwise isolated patches of habitat.

cost-benefit analyses Examination, in economic terms, of the advantages and disadvantages of a particular course of action

cpDNA (chloroplast DNA) DNA found in plants that encodes chloroplast ribosomal RNA, transfer RNA, and part of RuBP carboxylase. Many mutations affecting the chloroplast are transmitted maternally.

critical weight range species Taxa that weigh between 0.035 and 5.5 kilograms.

critically endangered A category of risk that species are assigned to if they are in the highest risk category (*species most likely to become extinct).

cross-validation In regression, holding back some data and then using those data to test how well the model predicts new observations.

crown cover The percentage of the surface of a site above which there is the crowns of trees or shrubs. See also **projective foliage cover**.

cryostorage techniques Storage of seeds or other plant material in liquid nitrogen.

cryptic species Distinct species that show few or no morphological differences.

culling Reducing the size of a herd, flock or population of a species by killing a proportion of its members.

current account That part of the balance of payments (the difference over a given time between total payments to foreign nations and total receipts from foreign nations) composed of the balance of trade (difference in value between total export and total imports of goods) and the invisible balance (the difference in value between total exports of services plus payment of property incomes from abroad and total imports of services plus payment abroad of property incomes).

custodial responsibility The need for current generations of humans to manage natural resources to ensure the maintenance of benefits of the environment and biological resources for future generations.

decision tree A graphical representation of decision pathways, usually within a computer program, that specifies the actions to be taken when certain conditions arise.

declining-population paradigm A model that deals largely with the deterministic influences that influence population persistence (eg. ongoing habitat loss). See also small population paradigm.

deep ecology An environmental philosophy that believes in the inherent rights of nature, and human existence that does minimal damage to natural systems.

defoliation The loss of leaves from a plant.

deforestation Clearing of trees or depletion of crown cover to less than (arbitrarily) 10%.

deleterious allele A form of a gene occupying a specific locus (position) on a chromosome that has a detrimental effect on an individual's fitness.

deme Any group of inter-breeding individuals that possess a suite of clearly definable genetic or morphological characteristics.

demersal Living or occurring in deep water on or near the bottom of a sea or lake.

demographic stochasticity (with particular reference to risk assessment) The variation in the average chances of survivorship and reproduction that occur because of the demographic structure of populations made up of a finite, integer number of individuals; the random sampling of distributions for variables that must logically take a discrete integer value.

demographic uncertainty See **demographic variation**.

demographic variation The variation in the chances of survival and reproduction that arise because a population is small, discrete and structured; a consequence of sampling a finite number of integers; a synonym of demographic stochasticity.

dendritic Having a branching form.

dependent variable See *response variable*.

detector species Species that exhibit changes in such things as behaviour, mortality patterns and age-class structure in response to environmental changes.

deterministic model A model in which there is no representation of variability.

dieback Death of trees or shrubs characterised by death of the young shoots, which later spreads to the larger branches; in rural areas, the more or less concurrent deaths of large numbers of remaining trees in agricultural land, or in forests affected by disease.

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diploid Having two sets of chromosomes.

discounting An economic term describing a process in which future monetary values are translated into present-day monetary values.

disequilibrium Gene frequencies in a population that deviate substantially from those expected in a large randomly mating population without migration, mutation or selection, sometimes maintained by selection or linkage (see linkage disequilibrium).

dispersal The movement of individuals among spatially separate patches of habitat, including all immigration and emigration events.

DNA (deoxyribonucleic acid) The self-replicating molecule of nucleic acid that forms the genetic hereditary material of all cells, some organelles, and many viruses; a major component of chromosomes and the sole component of plasmids.

DNA fingerprinting Technique that makes use of the hypervariable repetitive DNA sequences of genes to identify the relatives of individuals.

DNA sequencing Determination of a DNA sequence, either by the chemical cleavage method or by controlled interruption of enzymatic replication. Various automatic methods and machines based on these methods are available.

dominant The plant species in the upper stratum of a formation, which has the greatest foliage cover.

dryland salinisation The percolation of salt near to or on the soil surface following the removal of native vegetation; water is discharged from the ground water system and moves more or less vertically upwards through salt-laden sublayers of the soil, taking the salt with it.

ecocentric ethic A point of view whereby the object of concern is the biotic community as a whole.

ecological extinction The situation where given species still occurs in a community, but the numbers of the taxon are so depleted that it no longer interacts significantly with other species.

ecological footprint A method used to estimate the impacts of humans based on the amount of land required to provide the energy and natural resources to support a person.

ecological redundancy The degree to which a given species can be substituted by different species to provide particular ecosystem functions.

ecologically redundant species Species for which their loss appears to have no flow-on negative impacts on the function of an ecosystem and/or does not result in other changes in community composition.

ecology The study of the relationships between organisms and groups of organisms and their biotic and abiotic environments.

ecosystem services The ecological services to human societies provided by ecosystems, for example provision of clean water and air, and pollination of crop plants.

ecosystem An ecological community together with the physical environment with which its members interact.

ecotone The boundary line or transitional area in between two ecological communities. *See also edge effect.*

ecotourism Tourist activity specifically for environmental values.

ecotype A subset or population of individuals within a species that are adapted to different environmental conditions from other subsets or populations, and are therefore different in structure or physiology.

edaphic Environmental conditions determined by physical, chemical and biological characteristics of the soil or substratum.

edge effect All changes at an ecosystem boundary and within adjacent ecosystems; an increase in species diversity in places where two habitats meet; the negative influence of a disturbed habitat edge on the interior conditions of a habitat, or on species that use the interior habitat.

effect size The level of impact that is required to be detected by a study, given that there is an effect. The magnitude of change that we wish to detect confidently, if there is a change.

effective population size The number of individuals in a hypothetical randomly mating population that would have the same rate of loss of genetic variation as the population under consideration.

EIS See **environmental impact statement.**

electrophoresis A process used to separate molecules (proteins or DNA fragments) to identify genotypes in populations. Samples are placed on a gel through which an electric current is passed. Molecules migrate through the gel depending on their charge, weight and configuration. The gel is treated (termed blotting) so that the patterns formed by the migrating molecules can be visualised.

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embryo A young developing organism.

empirical Derived from or relating to experiment and observation rather than theory.

endangered A classification or risk intermediate between critical and vulnerable.

endemic Any species that is naturally highly localised or with a restricted geographic distribution; species native to a specified region.

Environment Protection and Biodiversity Conservation Act (1999) An Australian Federal Government act introduced in July 2000 under which actions likely to have a significant impact on matters of national environmental significance are prohibited unless prior approval is granted by the Federal Minister for Environment and Heritage.

environmental audit Monitoring or testing of the predictions of an environmental impact statement.

environmental domains The classification of an area into zones differentiated by different climatic regimes, slope, and soils. Environmental domains enclosed a continuous range of physical environmental parameters that are expected to be important in determining the distributions of species.

environmental flows Water released into managed river systems with the objective of contributing to ecosystem health, maintaining ecosystem processes and enhancing the viability of riparian and in-stream flora and fauna.

environmental impact statement (EIS) (or environmental effects statement) Procedure that involves preparation of a document describing the existing environment, predictions of the kind, risks and magnitude of the likely environmental effects of a proposal, recommendations to mitigate the effects, recommendations on whether and how the proposal should proceed, and the involvement of government officers and public interest groups in assessing the accuracy and completeness of the document.

environmental uncertainty See **environmental variation**.

environmental variation The unpredictable temporal variability in the environment. *See also environmental stochasticity.*

environmental weeds Those plant species that invade natural vegetation.

enzyme Biological catalyst, usually a protein, which increases the rate of a reaction.

EPBC Act See **Environment Protection and Biodiversity Conservation Act (1999)**

ephemeral Transitory, short-lived.

epicormic bud See **epicormic growth**.

epicormic growth A shoot or branch growing from a dormant bud on the trunk of a tree, usually as a result of damage to the tree.

epiceal Living or growing on or close to the surface of the ground.

estuary The widening of a channel of a river where it enters the sea, with a mixture of fresh and salty water.

ESU See **evolutionary significant unit**.

Ethiopian region Biogeographic region comprising Africa south of the Sahara.

eukaryote Organism made up of cells with a nucleus and other membrane-bound organelles (eg. protozoans, algae, fungi, plants and animals), as opposed to prokaryotes (bacteria and blue-green algae), which do not.

eusocial (of insects) Species of insects in which members of a colony cooperate in the care of the young and exhibit reproductive divisions of labour, with more or less sterile individuals working on behalf of others involved in reproduction. Most colonies have an overlap of at least two generations able to contribute to colony activities.

eutrophication Rapid increase in the nutrient status of a body of water, which can be natural or occur as a by-product of human activity (eg. run-off of fertilisers), and is often accompanied by massive growth of dominant species (see algal bloom). Excessive production stimulates respiration, increasing dissolved oxygen demand and leading to anaerobic conditions.

evapotranspiration The return of water vapour to the atmosphere by evaporation from land and water surfaces and by the transpiration of vegetation.

event trees Logic trees that link possible outcomes following an initiating event, constructed around a series of dichotomies (yes/no). Each node is an event (or a decision). The focus is on a primary (initiating) event and consequences are traced forwards from it. Branches can show possibilities or specify the probabilities of alternative outcomes.

evolutionarily significant unit (ESU) A population that is reproductively isolated from other populations of the same species and which has a unique evolutionary history and genetic value.

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exogenous Having an external origin; developing or originating outside an organism or species.

exoskeleton Skeleton covering the outside of the body, or located in the skin.

exotic species (Also termed alien or introduced species) In Australia, usually those species introduced accidentally or deliberately since European settlement.

expert judgements Judgements and opinions by relevant people with specialist knowledge, often used when empirical and theoretical information is scarce; estimates of parameters and ecological relationships that are undocumented, qualitative and largely subjective.

explanatory variable A variable in a mathematical equation whose value determines the dependent variable; the variable that defines a set of distinct experimental conditions, or that an experimenter deliberately manipulates in order to observe its relationship with some other quantity.

exploiter species Species that are abundant in polluted areas because competing species have failed to survive, or because they make use of the polluted environment or the pollutants themselves.

exponential growth Population growth in which the size of the population grows exponentially.

extensive land-use zone A term based on a land classification in Australia where land-use practices have largely involved vegetation utilization (rather than clearing; eg. grazing). See also **intensive land-use zone**.

extent of occurrence The area containing all known observations of a species.

extinct An extinct species is one that no longer has any living individuals.

extinction debt The time lag between the extinction of a species and habitat loss or some other kind of human disturbance. This translates to a difference between the current number of species in an area and the expected, lower number of species that will occur at equilibrium.

extirpation Localised extinction.

factorial The product of all the positive integers from one up to and including a given integer.

family Any of the taxonomic groups into which an order is divided and which contains one or more genera with a number of features in common.

fault trees Logic trees that show the necessary conditions to initiate a specified event. Fault trees express 'failure logic' and the contributing causes (and, optionally, associated probabilities for an unwanted event).

faunal relaxation The loss of species from a patch of habitat following patch isolation.

fecundity Fertility, fruitfulness; probability of giving birth; the number of eggs, or seeds, or generally offspring in the first stage of the life cycle, produced by an individual.

feldmark A highly specialised and restricted vegetation community found in extreme alpine areas (eg. the main range of Kosciuszko National Park of southern New South Wales) that is characterised by either very wind-exposed ridges or late summer-lying snowdrift on leeward slopes.

feral Wild, or escaped from cultivation or domestication and reverted to the wild state; often implies that the species is exotic.

field gene banks Areas of land in which collections of growing plants have been assembled in populations containing as wide a sample of genetic variation as possible, ensuring that material is conserved for breeding, reintroduction and research.

fire intensity The amount of heat released at a point on a fire edge.

fire regime The sequence of fires in an area. Differences in fire regimes are characterised by differences in fire intensity, fire type, fire frequency and the season in which a fire occurs.

flagship species A charismatic species that attracts public attention, financial resources or additional conservation efforts to promote the protection of an area (eg. a nature reserve or national park) or the protection of a suite of other associated (less charismatic) taxa.

flexibility (of reserves) Allows different areas to be substituted in a reserve system if they contribute the same values to the reserve system.

floristics The branch of botany concerned with the types, numbers and distribution of plant species in a particular area.

focal species approach A method used to guide landscape restoration efforts by identifying the species most at risk from a given threatening process. Remediation programs are then focused on that species under the assumption that other less threatened species will also be conserved by the remediation action.

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- forest type maps** Developed for most of the productive forests of Australia, these are based on the distribution of commercial tree species, together with their growth stage and condition.
- founders** The few individuals of a species who establish a new population.
- fragmentation** A process of landscape alteration in which natural areas are subdivided into smaller patches.
- frequency distribution** A set of values of a variable divided into classes of associated rates of occurrence (frequencies).
- frugivore** Fruit-eating animal.
- fuel reduction burn** See **prescribed fire**.
- fully fished** A descriptive term for a fishery in which fishing pressure is close to optimum.
- functional extinction** See **ecological extinction**.
- functional groups** Suites of taxa that are classified based on an understanding of the ecology of the species attributed to each functional group (eg. hot climate specialists, opportunists, and large solitary foragers).
- fundamental niche** That region of the environment within which a species could persist indefinitely.
- fynbos** The South African term for low shrubby heath that is typical of nutrient-depleted sands in Mediterranean climates; analogous to Western Australian kwongan and Californian chaparral.
- gamete** Mature male and female germ cells that fuse to form the zygote; a haploid reproductive cell that can undergo fertilisation.
- gametophyte** Haploid stage of a plant life cycle that produces gametes.
- gamma (γ) diversity** The turnover of species that occurs between spatially separate sites, within a more or less homogeneous vegetation type or habitat; measures the rate at which the composition of a community changes as a function of geographical distance, rather than ecological distance.
- GDP** See **gross domestic product**.
- gene flow** The uni- or bi-directional exchange of genes through cross-fertilisation within or between populations due to the migration of individuals and subsequent successful reproduction, which results in the spread of genes among populations.
- gene locus** See **locus**.
- gene pool** The sum total of genes (ie. the alleles present and their frequencies) in a sexually reproducing population.
- generalised linear model** A generalised procedure for estimating linear relationships among variables, which is composed of three components. The linear predictor is the sum of the effects of the independent variables. The error function is related to the type of data being examined. The link function relates the linear predictor to the predictor value and it transforms the mean to produce a linear model; that is, a linear combination of explanatory variables determined by the error distribution.
- genetic algorithm** A computer-based procedure that mimics the processes of genetic evolution to evolve rules relating dependent variables to explanatory variables.
- genetic differentiation** The increasing variation between populations within a species, usually resulting from geographic isolation and selection or genetic drift.
- genetic distance** A measure of the degree of difference of the genotypes between individuals in a population, between populations in a species, or between species in a higher taxon.
- genetic diversity** The heritable variation that exists between individuals within populations, between population within species, and between species. This genetic diversity may be represented by different sequences of base-pairs on strands of DNA, by different chromosome numbers and arrangements between population or between species, or by the different phenotypic traits exhibited by individuals within populations.
- genetic drift** Gene frequency changes in small isolated breeding populations due to random sampling of genes between generations.
- genetic load** The average number of alleles that reduce fitness per individual in a population.
- genetic neighbourhoods** Genotypic arrays within a species that are non-randomly distributed in space; the average distance dispersed by reproductive adults between their birth and the birth of their offspring; the size of the area within which individuals mate at random.
- genetic pollution** In a particular species, the spread of alleles derived from occasional hybridization with closely related species.
- genetic stochasticity** In population viability analysis, the unpredictable variation in population vital rates (births and deaths) that arises from the different genetic composition of individuals in a species.

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- genetic swamping** Process by which the genes of one species spread through the genome of another species.
- genetic variation** Represented by the presence of alternative alleles at a single locus, or by differences among individuals in quantitative traits that are determined by many genes.
- genetically modified organism** An organism that contains a gene or genes from an unrelated organism that could not be transferred to the species by traditional breeding or reproductive methods.
- genome** The total genetic material within a cell or individual.
- genotype** The entire genetic constitution of an organism, or the genetic composition at a specific gene locus or set of loci, or a group of organisms with the same genetic constitution.
- genotype-environment interaction** Variation in response to genotype that depends on the environment in which the individual occurs.
- geocoding** The process of assigning latitude, longitude and elevation values for location records.
- geographic range/extent of occurrence** The spatial limits of the localities at which a species has been recorded in a region of interest.
- geometric mean** The average value of a set of n integers, terms or quantities, expressed as the n th root of their product.
- geomorphology** Branch of geology concerned with the structure, origin and development of the topographical features of the earth's crust.
- germ plasm** The part of a germ cell (germ cells are the cells that give rise to the gametes) that contains the hereditary material (chromosomes and genes).
- germinate** To sprout, grow, develop or form new tissue.
- glaciation** To cover or become covered with glaciers or masses of ice.
- global extinction** The loss of all members of a species from all populations of that species.
- global warming** (or the greenhouse effect) The accumulation of gases (carbon dioxide, methane, nitrous oxide and chlorofluorocarbons) in the atmosphere, which increases the reflective capacity of the atmosphere, thus retaining heat on earth.
- Gondwanaland** Supercontinent that existed in the past and consisted of all southern land masses.
- goodness of fit** The extent to which observed sample values of a variable agree with the values derived from predictions.
- grafting** A process by which a relatively small part of one organism is transplanted either onto another part of the same organism or onto a different organism or a part of it.
- graminoid** Pertaining to grass; grass-like.
- granivore** A species that feeds on seeds or grain..
- grassland** Land such as prairie on which grass predominates.
- greenhouse effect** See **global warming**.
- gross domestic product (GDP)** The total value of all goods and services produced domestically by a nation during a year. It is equal to gross national product minus net investment incomes from foreign nations.
- ground water** Underground water that is held in the soil and in pervious rocks; the source of fresh water beneath the earth's surface. Usually refers to only that part of the subsurface water in the zone of saturation. The top of this saturated zone is termed the watertable.
- guild** A group of species that exploit the same class of environmental resources in a similar way and between which competition can be expected.
- habitat evaluation procedure (HEP)** A process in which attributes of a species' habitat are assigned weights reflecting their relative importance.
- habitat specificity** A term describing the degree of generalisation or specialisation of a species' habitat requirements.
- habitat suitability indices (HIS)** Predictive tools to evaluate the quality of habitat for wildlife management; a framework that uses (usually subjective) descriptions of the biology and life history of a species to identify regions of high-quality habitat (see also habitat evaluation procedure).
- habitat variegation model** A conceptual model of landscape cover in which four landscape Alteration states are recognised; intact, variegated, fragmented and relictual.
- habitat** The subset of physical environmental factors that permit an organism to survive and reproduce. Implicitly these factors are associated with a geographic location.
- haploid** A cell or an individual possessing only one set of chromosomes (eg. an egg or sperm, or the worker class in ant and bee species).

On Borrowed Time

- harmonic mean** A kind of average of a set of n numbers in which the reciprocals of the numbers in the set are added, the sum is divided by n , and the reciprocal of the result is taken.
- heath** Vegetation composed mainly of shrubs, usually with few or no trees, and often on nutrient-deficient sands.
- heavy metals** Metals such as lead, cadmium and zinc, with isotopes that have relatively high atomic weights and which, if present in soil or water, inhibit plant growth and are toxic to marine and terrestrial vertebrates and invertebrates.
- HEP** See **habitat evaluation procedure**.
- herbfield** Vegetation dominated by prostrate annual plants or perennial plants whose aerial parts do not persist throughout the year.
- heritable variation** The proportion of variation of a given trait that can be attributed to genetic factors.
- heterogeneity** Refers to something composed of unrelated parts, or elements not of the same type.
- heterosis** (Also known as hybrid vigour) The enhanced vigour and improved performance in fitness-related traits that is observed in individuals with relatively many heterozygous loci (as a result of outbreeding).
- heterozygous** The situation in which an individual has two different alleles at a given gene locus.
- heuristic algorithms** Algorithms based on past experience.
- heuristic** Using or obtained by reasoning from past experience, often since no precise causal mechanism is known.
- holotype** The type specimen used in the taxonomic description of a species.
- homoclimes** Areas that experience similar climatic conditions.
- homozygous** The situation in which an individual has two of the same alleles at a given gene locus.
- host-specificity** Physiological or behavioural restrictions of parasites that limit them to a few individuals, a single species, or a few related species.
- hotspots** Areas that are species rich for a particular taxon.
- HIS** See **habitat suitability indices**.
- hummock grasslands** Areas where grasses of the genera *Triodia* and *Plectachne* are dominant. Soil builds up around each clump of grass, forming a hummock; the ground in between hummocks is usually bare.
- hybrid vigour** See **heterosis**.
- hybrid zone** A geographic area between two populations or species in which hybrids between the parent populations/species proliferate – often a result of the breakdown of geographic or reproductive isolation.
- hybridisation** Breeding resulting in offspring between two different varieties or species.
- hypogean** Occurring or living below the surface of the ground.
- IBRA** See **Interim Biogeographic Regionalisation for Australia**.
- Improved pastures** Pastures that have been improved in terms of nutritional value by fertilising, planting legumes, or planting higher producing species of grasses or other pasture species.
- Invitro storage** The storage of species in laboratory conditions.
- invitro** Refers to biological processes occurring experimentally in isolation from a species' environment; usually refers to laboratory conditions.
- inbreeding coefficient (F)** The probability that the pair of alleles carried by the male and female gametes are identical and derived from a common ancestor, or a measure of the reduction in heterozygosity that results from inbreeding.
- inbreeding depression** A loss of vigour among offspring that occurs when closely related individuals mate; results from elevated levels of homozygosity of deleterious recessive alleles and from a low average level of heterozygosity.
- inbreeding** A tendency for breeding between individuals who are more closely related than are randomly selected individuals.
- incertitude** Uncertainty that arises from a lack of knowledge, which can be reduced by acquiring more data and better understanding.
- independent variable** See **explanatory variable**.
- indicator species** Species that are highly sensitive to a particular land-use activity and whose presence is also likely to indicate habitat quality for a range of other species, communities or ecosystem processes.
- indigenous** An organism originating or occurring naturally in a particular locality or habitat; not introduced.
- influence diagrams** Diagrams that show cause and effect relationships in a system, reflecting mental models and conceptual compartments used by people to simplify and understand complex dynamics.

On Borrowed Time

intensive land-use zone A term for a land classification in Australia where land-use practices have largely involved vegetation clearing (eg. cropping, forestry plantations, urban development). See also extensive land-use zone.

intergenerational responsibility The notion that the current generation holds biodiversity values in trust for future generations, so that they retain the option to use them or preserve them.

Interim Biogeographic Regionalisation for Australia (IBRA) A biogeographic classification of the Australian terrestrial landmass based on the key physical processes (eg. climate) that drive ecological processes and which, in turn, are thought to influence biological productivity and biodiversity.

intragenerational responsibility The notion that a human population in a particular region holds biodiversity values in trust for people in other regions, so that others retain the option to contribute to decisions to use them or preserve them.

intrinsic co-adaptation The correlated variation and adaptation of sets of genes involved in maintaining the fitness of organisms; interactions between loci in co-adapted gene complexes.

intrinsic values (biocentric and ecocentric values) Ethical positions that place value on species and communities, independent of people.

introduced species See **exotic species**.

introduction The accidental or deliberate movement of an organism to an area previously unoccupied by that organism.

introgression Hybridisation Between two species in which the genes of one species gradually diffuse into the gene pool of another.

intron Intervening non-coding sequence present in the coding region of a eukaryotic gene that is transcribed but excised before translation. There are usually about 10 introns per gene.

invertebrate Any animal lacking a backbone.

irreplaceability (in reserve selection) The extent to which complete representativeness can be achieved if a given area is not included in a suite of protected areas; the potential contribution a given area makes to a reservation goal.

irrigation salinity Salinisation caused by salt stored in the soil or ground water being mobilised by irrigated water moving through the soil profile. In addition, water applied through irrigation may raise the level of the watertable, which may then either evaporate, leaving the salts at, or close to, the soil surface, or move through the soil profile and enter a watercourse. These processes leave salt at the soil surface and increase the salinity of watercourses.

island biogeography See **theory of island biogeography**.

island model See **theory of island biogeography**.

isoenzymes See **isozymes**.

isotherm A line on a map that joins places that have the same mean temperature.

isozymes (Also known as isoenzymes) Variant of a given enzyme coded by a single locus, separable by methods such as electrophoresis.

iterative Refers to the repeated application of a mathematical procedure, where each step is applied to the output of the preceding step.

keystone species Those species which, if removed, precipitate important changes in ecosystem structure and function.

land degradation The process whereby land deteriorates because of either the natural agents of wind, water, gravity and temperature, or the actions of humans. Land degradation is characterised by a reduction in soil depth and/or water quality.

landscape context A term describing the conditions and characteristics of the landscape surrounding a site.

landscape continuum model See **habitat variegation model**.

landscape contour model A conceptual model of landscape cover in which empirical measures of habitat suitability are represented spatially on a map by contour lines to delineate the potential distribution of species.

landscape indices Spatial metrics or measures of patterns of landscape characteristics.

larva A juvenile free-living form of many animals that develops into a different adult form by metamorphosis.

latitudinal migration Annual migration from north to south, in response to changing seasons.

On Borrowed Time

- least-squares regression** A method for determining the best value of an unknown quantity by relating one or more sets of measurements by seeking the solution for which the sum of the squares of the differences between the observed and the theoretical values is least.
- lekking system** An animal mating system in which there is a communal mating ground.
- Levins structure** A kind of metapopulation characterised by all of the patches being (approximately) the same size. Localised extinctions in the patches are recovered by recolonisation resulting from migration from other patches in the system.
- lichen** Small plants formed by the symbiotic association of a fungus and an alga, and which occur as crusting patches or bushy growths on tree trunks, bare ground, rocks etc.
- lignotuber** A woody swelling at the base of some species of plants (especially mallee-form eucalypts), which is found underground or partly underground. Lignotubers contain reserves that assist a plant to recover if its aerial parts are destroyed.
- linear algebra** The branch of mathematics concerned with variables that are not raised to any power, consisting only of constant multiples of the variables (eg. linear equations, matrices, determinants, vector spaces).
- linear programming** The study of optimisation problems that can be solved by seeking the maximum or minimum values of a linear function of non-negative variables subject to constraints expressed as linear equalities or inequalities.
- linear regression** A regression that is linear in the unknown parameters, whatever the order of the known parameters.
- linkage disequilibrium** The condition in which alleles associate non-randomly because they are close together on a chromosome, or because the combination is under selective pressure.
- liverworts** Any of a class of bryophytes growing in wet places and resembling green seaweeds or leafy mosses.
- local extinction** The loss of all individuals in a population inhabiting a relatively isolated patch of habitat. See also extirpation.
- locus** The position of a gene on a chromosome. At any particular gene locus there are two alleles, or copies of the gene inherited from the two parents.
- log scale** The measurement scale, distances along which are proportional to the logarithms of the marked indices.
- logarithm** The power to which a base must be raised to yield a given number.
- logic trees** Diagrams displaying cause and effect relationships in a system. See also fault tree, event tree, decision tree.
- logistic equation** An equation describing an s-shaped (sigmoidal) relationship between two variables.
- logistic regression** A regression that works by developing a prediction of the probability of an event (eg. the presence or absence of a species) and fitting an s-shaped curve to the series of observations such that a prediction based on that curve is most likely to be correct.
- macroinvertebrates** Relatively large invertebrates in a community, within an arbitrary size range (eg. 2-20 millimetres body width in soil invertebrates).
- macropod** Marsupials that are characterised by powerful hindlimbs and long hindfeet, usually having a fast hopping gait.
- mainland-island structure** A kind of metapopulation that has two major features: a large 'mainland' area in which populations are secure and very rarely (if ever) suffer extinction, and an array of small patches in which extinctions are common events. The mainland provides a source to recolonise the patches following localised extinctions.
- mallee** Small (generally less than 6 metres tall) eucalypt trees with multiple stems arising from a single root stock or lignotuber from which the tree can regenerate following drought or fire.
- management goals** The broad socially-mandated objectives of a management action or practice.
- management indicator species** Species that reflect either the impacts of a disturbance regime or active management efforts to mitigate the effects of such a disturbance regime.
- management units** Demographically independent (genetic) populations with distinctive allele frequencies.
- mangroves** Any of various tropical evergreen trees or shrubs that have stilt like intertwining aerial roots and form dense thickets along coasts, usually on muddy substrates.
- mariculture** A type of fish farming where sea fish or shell-fish are grown in farms in seawater.
- marker** A gene or DNA sequence with a known location in the genome and known effect, which is used to track the inheritance or behaviour of other genes.

On Borrowed Time

mass effects Cases where a species occurs in places other than its primary habitat because of a flux of its propagules from adjacent areas of primary habitat.

mass extinctions Substantial biodiversity losses that are global in extent, taxonomically broad, and rapid relative to the average duration of the taxa involved.

matrix The dominant or most extensive patch type in a landscape, which has the most extensive cover, and which exerts a major influence on landscape dynamics. The term is also often used to describe the heavily modified areas (eg. agricultural fields) within which remnants of native vegetation remain in fragmented landscapes.

maximum sustainable yield The largest amount of a renewable natural resource that can be taken, while ensuring the indefinite availability of that resource. Harvest is at the population size representing the maximum rate of recruitment into the population, based on a logistic growth curve.

mean Average.

measurement endpoints (and test endpoints) Indices of the environment that are the goal of field measurements or laboratory tests.

mechanical disturbance Refers to disturbance of soil that is caused by machinery or the action of water, as opposed to chemical disturbance.

mechanistic Of or reflecting the simple causal interactions among the components of a system.

median time to extinction The time by which half the species within a taxon have become extinct.

median The middle number, or average of the two middle numbers, in an ordered sequence of numbers.

megadiverse nations The seventeen countries that together harbour 60-70% of the earth's species.

megafauna The largest arbitrary size categorisation of animals in a community (eg. those with body width larger than 20 millimetres in soil invertebrates, or relatively large mammal species). The term is also used to describe the large vertebrates that lived during the Pleistocene and became extinct during that time as a consequence of hunting, climate change or both.

Mendelian genetics The view that in eukaryote genomes, alleles separate into different nuclei during meiosis, after which any member of a pair or alleles has equal probability of finding itself in the nucleus with either of the members of any other pair (if the loci are unlinked). Ratios of characters among offspring are predictable, given knowledge of the parental genotypes.

meristem A plant tissue responsible for growth whose cells divide and differentiate to form the tissues and organs of the plant.

meta-analysis An analytical approach where the results of many similar studies are assessed to identify general patterns among them.

metapopulation A set of populations (or subpopulations) of the same species, usually more or less isolated from one another in discrete patches of habitat, which interact via individuals moving (dispersing) between local populations.

microclimate The atmospheric conditions affecting an individual, a small group of organisms, or a localised area of the environment, especially when they differ from the climate of the rest of the area; local climatic conditions dependent on vegetation, soil conditions and small-scale topography.

microinvertebrates The smallest arbitrary size categorisation of invertebrates in a community.

microsatellites Tandem repeats of a simple DNA sequence on a chromosome; smaller and more random than minisatellites, they provide a tool for genetic mapping and kinship studies.

migration The regular annual movement of animals between different habitats, each of which is occupied for specific parts of the year; movement of individuals or whole populations from one region to another.

minimum convex polygon The smallest polygon containing all sites in which no internal angle exceeds 180 degrees.

minimum expected population The smallest size to which a population is most likely to fall in a given period (eg. 10 years).

minimum viable population The smallest isolated population that has a reasonable probability of surviving for some time into the future given foreseeable demographic, genetic and environmental stochasticities, and natural catastrophes.

On Borrowed Time

- minisatellites** Tandem repeats of a simple DNA sequence on a chromosome, providing a useful genetic marker in DNA fingerprinting.
- mitochondria** Organelles of cells containing circular DNA molecules, RNA and small ribosomes, site of cellular respiration.
- mode** The value that has the highest frequency in a set of values.
- molluscs** Phylum of bilaterally symmetrical soft unsegmented invertebrates. Molluscs are largely aquatic and often have a shell.
- monitoring** Sampling and analysis designed to ascertain the extent of compliance with a predetermined standard or the degree of deviation from an expected norm.
- monoculture** Refers to a large area covered by a single plant species (or for crops, single variety).
- monogamous** Having only one mate.
- monotonic** Unvarying, or changing in a single direction.
- monotypic** Having only one species in the genus.
- montane** Of or inhabiting mountainous areas below the subalps; a region that is generally above 900 metres above sea level in Australia, and receives some snow each year.
- Monte Carlo simulation** Usually, a computer-based stochastic simulation model representing the dynamics and uncertainties in a system, designed to estimate the probabilities of specific outcomes.
- morphological species concept** Concept whereby species are defined by a set of morphological characters that are shared by members of that species, and are distinguished from other species by morphological discontinuities.
- morphology** The form and structure of an organism.
- mtDNA (mitochondrial DNA)** DNA of the mitochondria that evolves rapidly, with a mutation rate up to 10 times that of nuclear DNA.
- mudflat** A tract of low muddy land that is covered at high tide and exposed at low tide.
- multidimensional niche** The range of tolerances of a species to abiotic factors that affect its survival and reproduction.
- multiple regression** A regression function that gives the expected value of a random variable, x , or any function of x , given that an event, B , is known to have occurred, in terms of more than one other random variable.
- multivariate** Involving a number of distinct, though not necessarily independent, random variables.
- mutation** A spontaneous change in the genotype of an organism at the gene, chromosome, or genomic level, often occurring during DNA replication. Mutations usually refer to alterations to new allelic forms, and so are the ultimate origin of genetic variation.
- mutational meltdown** Phenomenon that occurs when populations are reduced and breeding pressure leads to the selection of mates with deleterious recessive genes who otherwise would not have mated. Deleterious genes are passed on the next generation, leading to even fewer mate choices, further increasing the odds that individuals with relatively harmful mutations will breed.
- mutualistic** Interspecific relationship in which both organisms benefit without sustaining injury; frequently a relationship of complete dependence.
- narrow-sense heritability** The proportion of the variation in a character that is genetically influenced and can be modified by natural selection.
- natal territory** The territory where an individual organism was born.
- national park** An area where the primary objective of land management is nature conservation and/or human recreation.
- naturalised** Refers to exotic species that are able to persist and subsequently reproduce in the wild.
- Nearctic region** Biogeographical region consisting of Greenland and North America south to mid-Mexico.
- negative exponential** A function and a statistical distribution that is useful for describing processes with maxima near the origin, and with a long right-hand tail.
- neighbourhood** The area within which individuals mate at random; the average distance dispersed by reproductive adults between their birth and the birth of their offspring, or the average dispersal distance of seed or pollen.
- Neotropical region** Biogeographical region of the world including South America and lower Central America.

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- nested subset theory** An approach examining changes in the composition of biotic assemblages on islands and fragments of habitat in which species-poor small islands (or habitat fragments) support depauperate subsets of species found on species-rich larger islands. The ordered addition of species with increasing island or fragment size is termed 'nestedness'.
- net primary productivity** The total energy accumulated by plants during photosynthesis (total photosynthetic production minus respiration).
- niche** The total range of conditions within which individuals of a species can survive, grow and reproduce.
- nitrogen fixation** Conversion of gaseous atmospheric nitrogen (N_2) by certain bacteria (and a little by lightning, ultraviolet radiation and combustion) to inorganic or organic compounds (ammonia, nitrites and nitrates).
- non-equilibrial dynamics** Describes a situation in which populations fluctuate because environmental stochasticity disrupts the equilibrium.
- non-parametric statistics** Statistics that study data measured on a nominal or an ordinal scale.
- non-probabilistic uncertainty methods** Mathematical logical methods that calculate quantities and bounds without relying on probabilities. Examples include fuzzy numbers and interval arithmetic.
- non-vascular plant** Plant without a vascular system (ie. algae, fungi and bryophytes).
- normal distribution** A continuous symmetrical distribution of a random variable with its mean, median and mode equal (the histogram verges towards a smooth, symmetrical, bell-shaped curve).
- normal forest** A forest in which each age class is represented by a fixed area, so that the forest produces an approximately constant supply of wood products.
- noxious weed** See **weed**.
- nucleotides** Molecules incorporated into nucleic acids; components of RNA and DNA.
- null hypothesis** The hypothesis that the treatment has no effect; that is, there is no difference between the various groups in the experiment – the observed pattern of data and an expected pattern are effectively the same, differing only by chance.
- nutrient** Particular nourishing substance required by an organism, which must be obtained from its environment; includes organic compounds (carbohydrates, amino acids and fats), vitamins and minerals.
- oligate seeding plant** A plant species that relies exclusively on seed to reproduce; that is, a species with no means of vegetative reproduction.
- old growth forest** Forests that are both little disturbed and ecologically mature. Old growth forests differ significantly from young forests in features such as the size and shape of the understorey, the dominant tree species, and ecological processes (such as rates and paths of energy and nutrient flows, water cycling, tree population dynamics of coarse woody debris and leaf litter).
- oligotrophic** Lakes, rivers and soils that are low in nutrients.
- open forest** Forest in which the tallest stratum is composed of trees with 30-70% projective foliage cover.
- open shrubland** Vegetation in which the tallest stratum is composed of shrubs and the projective foliage cover of the shrubs is less than 10%.
- open woodland** Vegetation in which the tallest stratum is composed of trees less than 30 metres tall and the projective foliage cover is less than 10%.
- open-access management** Management systems for natural resources in which there is no restriction on who can take or harvest a resource.
- opportunistic** Describes a species that is capable of exploiting spasmodically occurring environments.
- optimum catch** See **maximum sustainable yield**.
- option demand** The desire by non-users to retain the option to use a resource at some time in the future.
- ordinate** The vertical or 'y' coordinate of a point in a two-dimensional graphical system.
- ordination** An arrangement or order; a mathematical system for categorising communities on a graph so that those that are most similar in species composition appear closest together.
- organismal diversity** The diversity of organisms at any given taxonomic level (eg. genera, families).
- Oriental region** Biogeographical region consisting of south eastern Asia from India to Borneo, Java and the Philippines.

On Borrowed Time

- orthodox seeds** Seeds that can be stored for long periods at sub-zero temperatures if their moisture contents are reduced below 10%.
- outbreeding depression** Reduced fitness of progeny from inter-population crosses resulting from the breakdown of co-adapted gene complexes.
- outbreeding** Breeding between individuals that have been isolated from one another in more or less separate gene pools.
- over-fished** A descriptive term for a fishery in which few fish are left or for which there are too many fish being taken for the fishery to be sustainable.
- ovule** Structure found in seed plants that develops into a seed following fertilisation.
- Palaeartic region** Biogeographic region consisting of Europe, North Africa and Asia south to the Himalayas and the Red Sea.
- panmictic** Characterised by, or resulting from, random matings; completely mixed.
- parameter** An arbitrary constant that determines the specific form of a mathematical expression; a characteristic constant in a statistical population, for example its variance or mean; any constant or limiting factor; a variable that is not being considered and that may for present purposes be regarded as a constant.
- parametric analysis** Method of analysis by which data are measured on a scale of measurement in which the differences between the values can be quantified so that arithmetic operations are applicable to them.
- parasite** An organism that lives and feeds on or in another organism (the host).
- parthenogenetic species** Species that use a method of reproduction whereby eggs develop without fertilisation. Parthenogenesis has been observed in some plants, invertebrates and even vertebrates (eg geckoes and snakes).
- passerines** An order of birds characterised by a perching habit.
- patch** A term used in landscape ecology to describe a relatively homogenous non-linear area that differs markedly in vegetation structure and composition from its surroundings (or the matrix).
- pathogen** An organism capable of causing disease.
- patristic distances** The branch lengths of a cladogram.
- PCR** See **polymerase chain reaction**.
- perennial** Descriptive of a plant that lives for at least several years, and usually flowers each year (as opposed to annual plants, which only live for 1 year).
- phenotype** The physical expression of a trait of an organism that may be due to genetics, environment, or an interaction of the two.
- phenotypic variation** The variation between individuals in the same population.
- phyletic** Of, or relating to, the evolutionary development of organisms.
- phylogenetic differentiation** Variation between groups or species that results from evolutionary processes, reflecting common ancestry.
- phylogenetic species concept** The concept whereby species are the basis of evolutionary lineages; a hypothesis of the true genealogical relationships among species based on the concept of shared, derived characteristics.
- phylum** Taxonomic category particular to animals, which includes one or more classes and is included within a kingdom.
- phytogeographic** Relating to the science concerned with the geographical distribution of plants (phytogeography).
- plant exudates** Material discharged through pores or incisions in plants (eg. resins).
- Poisson distribution** The number of (relatively rare) events occurring randomly in a fixed time at an average rate of λ . In a Poisson distribution, the mean is equal to the variance.
- Poisson regression model** A form of generalised linear model in which the underlying distribution is the Poisson distribution. This model is often appropriate for use when the data are skewed and discontinuous, as is usually the case with counts (the response variable is a frequency count of the number of 'incidents').
- pollution indicator species** Species that reflect the effects of pollution on biota.
- polyandrous** Relating to female animals that mate with more than one male in a breeding season; flowers that have a large number of stamens.
- polygamous** Relating to male animals that have more than one mate during a breeding season; plants that have male, female and hermaphrodite flowers on the same plant, or on separate plants of the same species.
- polymerase chain reaction (PCR)** A chain reaction that creates molecules that are an exact replica of a smaller molecule and are directly obtainable from it.

On Borrowed Time

polymorphic Describes a situation where a given gene locus has two or more alleles within a population.

population bottleneck See **bottleneck**.

population viability analysis An analysis of a population's chances of decline or extinction within a specified time frame.

population A group of conspecific individuals, commonly forming a breeding unit within which the exchange of genetic material is more or less unrestricted; a group sharing a particular habitat at a particular time.

precautionary principle Argues for the cautious use of biodiversity and the environment, and that the consequences of a development action need to be demonstrated to be negligible..

precision (of a prediction) The ratio of the actual to the predicted magnitude of impact, with the smaller of the two as the numerator.

predation The consumption of one organism by another, where the consumed organism is alive when the consumer first attacks it.

prescribed fire Fires that are deliberately lit with the aim of reducing the amount of available fuel (ie. live and dead vegetative matter) in forests or grasslands.

presumed extinct The status of species that have not been definitely located in nature for some time, despite thorough searching.

primary production The total organic material synthesised in a given time by the autotrophs (organism independent of outside sources for organic food materials) of an ecosystem; the rate at which biomass is produced per unit area by plants.

primary salinity Refers to soils that are believed to have been saline for thousands of years as the result of natural landscape processes (eg. salt pans and clay pans).

primer in PCR, a primer is a synthetic DNA sequence that complements the flanking regions of a piece of DNA, and binds to the DNA before replication commences to ensure that replication begins at the right places.

principle of inter-generational equity See **custodial responsibility**.

probability distribution A function that constitutes a measure of probability.

probability A measure of the relative frequency or likelihood of occurrence, and therefore of the degree of confidence with which we can predict that an event will occur. Values are derived from a theoretical distribution or from observations.

probe A known, labelled fragment of DNA or RNA used to detect and identify corresponding sequences in nucleic acids by hybridising with them.

productive use values Values for biological resources that are commercially harvested (ie. directly measurable economic values).

projective foliage cover The percentage of the surface of a site above which there is foliage or branches.

prokaryote Organisms (typically bacteria or blue-green algae) with cells that lack a membrane-bound nucleus (cf. eukaryote).

propagate To reproduce, or cause to reproduce.

provenance The location or source of genetic material (a term usually employed for botanical samples).

pseudoextinction The transformation of species in the fossil record by mutation, natural selection and speciation that gives the appearance of a loss or gain of species.

P-value The probability that a given test statistic takes either the observed value or one that is less likely under the null hypothesis. If the *P*-value is fixed in advance, this is the significance level of the test.

quadrat Delineated area (rectangular or square) of vegetation chosen for sampling or study.

quartile One of three values of a variable dividing its distribution into four groups with equal frequencies (the 25th, 50th and 75th percentiles).

quasi-extinction The risk of decline within some specified time frame to some small population threshold (a lower bound that may be unacceptable for conservation, management, economic or aesthetic purposes).

radio-tracking A field study method for animals in which radio transmitters are attached externally or internally to enable the spatial location of an individual to be determined.

rainforest Dense (closed canopy), broad-leaved forest vegetation with a more or less continuous tree canopy of variable height, and with a characteristic diversity of species and life forms.

On Borrowed Time

Ramsar Convention See **Convention on Wetlands of International Importance**.

random numbers A sequence of numbers with the property that no member can be predicted from the preceding elements.

random sample A sample devised to avoid any interference from any property of the elements selected. In a random sample, each object in the population has an equal probability of being sampled, so the sample can be taken to be representative of the population.

range The spatial distribution of a species. The terms restricted (or local) and widespread describe extremes of spatial distribution.

rare Generally refers to species that have low abundance, limited distribution, or both.

rarefaction A method for estimating the mean and variance of the number of species in tow regions when the sampling effort differs.

rarity A combined measure of the prevalence of a species, reflecting its abundance, range or spatial distribution, and its occurrence in different kinds of habitats.

ratchet effect A term used in natural resource management in which direct and indirect subsidies mean that economic investment is maintained in good years and disinvestment does not occur in poor years. The effect can lead to subsidised industries that over-harvest their resources.

ratio estimation A method of estimating abundance that assumes that a fixed number of species exist in a taxon for every one of the species in another taxon.

ratites Large flightless birds.

rDNA DNA that codes for ribosomal RNA. Ribosomes are the site of protein synthesis in cells and RNA takes coded information from DNA and translates it into specific enzymes and proteins.

realised niche The niche that is available to a species after biotic factors such as competition, predation and facilitation affect its potential and abundance.

recalcitrant seeds Seeds that cannot survive low temperatures or dehydration.

recessive (of phenotypic traits) Refers to traits that are only expressed when the genes determining them are homozygous.

recolonisation A metapopulation process in which individuals re-establish in a habitat patch where previous populations have become extinct.

recombination The process in sexual reproduction in which DNA is exchanged during meiosis between homologous chromosomes.

recovery indicator species Species that reflect the extent of recovery of an ecosystem following disturbance.

recruitment The number of new individuals in a population between two census periods; usually the sum of fecundity of all reproductive age classes.

re-establishment reintroduction Situation where captive-bred individuals are used to re-establish an extinct wild population.

regeneration The renewal of habitat by natural or artificial means.

regression analysis The analysis or measure of the mathematical association between a dependent variable and one or more independent variables, usually formulated as an equation in which the independent variables have parametric coefficients, which may enable future values of the dependent variables to be predicted.

regrowth A young, usually even-aged, forest stand that has regenerated after harvesting or fire.

reintroduction The release into natural habitat of captive-bred animals, garden-raised plants, or wild-caught animals or plants.

relative abundance The number of individual specimens of an organism seen over a certain period of time in a certain place.

relative richness The number of species per unit area, or per unit of sampling effort.

remnant vegetation An isolated patch of original vegetation in a landscape that has been altered by human activity such as agriculture.

representativeness The extent to which a reserve system contains examples of all the natural features of a region.

rescue effect The recolonisation of habitat patches by immigrants; the maintenance of a population by migration from other, partially isolated, populations.

response variable The dependent variable; that is, a variable whose value is determined by that taken by the independent variable.

resprouting plant A plant capable of regeneration after it has lost its aerial part (eg. to fire or grazing).

restocking reintroduction Situation where a declining population is supplemented with captive-bred stock.

On Borrowed Time

restriction endonucleases Endonucleases produced by micro-organisms that recognize short sequences of DNA, cutting the double helix at a particular point. Different endonucleases recognize different DNA sequences, providing a means for DNA cloning and gene mapping.

restriction fragment polymorphisms (RFLPs) Variation in the length of fragments of DNA, which is generated by the present or absence of restriction sites, and which is used to distinguish different individuals. RFLPs are detected by separating fragments using electrophoresis.

RFLPs See **restriction fragment polymorphisms**.

riparian Of, on, or inhabiting the bank of a river.

risk assessment The process of estimating the probability of an adverse event, or the measurement of the probability of an event and the magnitude of its consequences.

rotation length The planned number of years between the regeneration of a forest stand and its final harvesting for wood products.

ruderal weeds Weeds of wasteland or disturbed places.

run-off That portion of rainfall that runs into streams as surface water rather than being absorbed by the soil.

saline (of soil) Refers to soil that contains such a quantity of salt that plant growth is significantly reduced.

salinisation The process whereby the concentration of total dissolved solids in water and soil is increased due to natural or human-induced processes. See also **primary salinity, secondary salinity, salinity, dryland salinity and irrigation salinity**.

salt marsh In estuaries and tidal marsh areas, salt marshes are broad flat areas that extend to the extreme limit of tidal influence and support both flowering plants and algae.

savanna Open grasslands with scattered broad-leaved deciduous and evergreen trees.

scansorial Formed or adapted for climbing; habitually climbing.

scarcity A statistical measure of the frequency of a species in samples, summarising its abundance, range and specificity of habitat requirements.

sclerophyll Referring to plants characterised by rigid, often small leaves and small internodes. Sclerophyll plants are able to survive low soil nutrients, water stress and fire.

scrub Vegetation consisting of stunted trees, bushes and other plants growing in an arid area.

secondary salinity Refers to areas of previously productive land that are now salt-affected to the point where plant growth is inhibited. Usually results from irrigation or excessive clearing.

sedge A grass-like plant that grows on wet ground and has rhizomes, triangular stems, and minute flowers in spikelets.

seepage salting Any salinisation process induced by the action of water flowing slowly through the soil (eg. irrigation salinity).

selective tree harvesting Removal of mature trees, either as single scattered individuals or in small groups at relatively short intervals, repeated indefinitely, by means of which the continuous establishment of regeneration is encouraged and an uneven-aged stand is maintained.

selfing Self-pollination or self-fertilisation.

senescing Advancing in age; the complex of aging processes that eventually lead to death.

sensitivity analysis Manipulation of parameters, dependencies and other assumptions in a model, to measure the degree to which model output and decisions depend on uncertainties in these factors.

sensitivity of statistical tests The response or change induced in the output of a statistical test by variations in parameters; usually measured as the proportional change in model predictions that result from a small change in each parameter; used to identify parameters that are most important in determining the model predictions.

sentinel species Highly susceptible species that provide an early warning of a pollutant.

service value The ecological functions and processes on which consumptive and productive values of ecosystems depend (eg. photosynthetic fixation, and soil production and protection).

shifting mosaic A temporal pattern of occupancy of local populations in a metapopulation that changes over time as patches become extinct and are recolonised.

On Borrowed Time

- shrub** A woody perennial plant, smaller than a tree, with several major branches arising from near the base of the main stem.
- shrubland** Vegetation community whose tallest stratum is composed of shrubs and that has only sparse projective foliage cover.
- sigmoidal** Relating to an s-shaped response curve in which there is an initial acceleration phase followed by a subsequent deceleration phase leading to a plateau.
- silviculture** The theory and practice of managing forest establishment, composition and growth to achieve specified objectives.
- sink population** A population in which local mortality exceeds local reproductive success.
- site-type indicator** Species that are thought to indicate certain types of environmental conditions (eg. particular rock or soil types).
- skewed distribution** A distribution that does not have equal probabilities above and below the mean.
- SLOSS (single large or several small)** The question of whether one large reserve is better than several smaller ones with the same total area.
- small-population paradigm** A model that deals largely with the stochastic influences (eg. demographic and genetic stochasticity) that influence small populations. See also **declining-population paradigm**.
- smelter** An industrial plant for extracting metals from ores by heating.
- sodicity** The amount of exchangeable sodium cations in water or soil.
- soil acidification** The reduction in soil pH by human activities to such an extent that plant growth is inhibited. Acid soils are those with a pH value of less than 6.5. Soils can be acidified by human-induced processes such as acid rain, removal or organic matter (for example by cropping) and therefore of nutrients, and through-leaching by irrigation. Few plants are able to grow or reproduce if the pH falls below 4.0-4.5. High acidity affects plants directly by damaging protoplasm (if pH falls below 3) or affecting metabolism, and indirectly (if pH falls below 6) by increasing the availability of toxins (eg. heavy metals), and by inhibiting some important processes (eg. nitrogen fixation).
- soil structure** Describes the extent to which soil particles are cemented together by humus, inorganic salts, and mucilage to form clumps, and the size and shape of these clumps.
- source population** A population that because of its size and the quality of its habitat produces a net number of emigrants.
- spatial autocorrelation** A statistical measure describing cases when the probability of occurrence of a species at two sites is dependent on the distance between those sites. A measure of the degree to which environmental conditions at two locations co-vary.
- spatial contagion index** Index designed to examine the spatial extent and adjacency of landscape units or patches.
- spatial correlation** Measures the amount of association between measurements of a variable made at points a given distance apart. See also **autocorrelation**.
- spatial variation** (with reference to risk assessment) The variation in environmental conditions between spatially separate patches of habitat; the different conditions experienced by each of several populations in a metapopulation.
- spawn** To produce or deposit eggs.
- speciation** Any of the processes by which new species form.
- species (abundance) curve** A term describing the abundance and frequency of species in samples. These curves are typically right-skewed because many assemblages are dominated by many individuals of the same species, with a large number of other species being uncommon or rare and represented by only a few individuals.
- species diversity** Variability (richness and abundance) of biota in an area; an index of community diversity that takes into account both species richness and the relative abundance of species.
- species richness** (sometimes called species diversity) The total number of species within a community or a defined area.
- species-area curves** Curves illustrating the relationship between number of species and area or amount of habitat.
- specificity** (of habitat) The range of ecological conditions, both physical and biotic, within which a species can survive. The terms generalised (or wide) and specialised (or narrow) describe extremes of habitat specificity.

On Borrowed Time

- spoil heaps** Heaps of waste material produced by an excavation.
- stags** Large old dead trees that remain standing in a forest standard deviation. A measure of dispersion of a frequency distribution, obtained by extracting the square root of the mean of the squared deviations of the observed values from their mean.
- State forest** In Australia, State forests comprise publicly owned land that is managed for the conservation of flora and fauna; for the protection of water catchments and water quality; for the provision of timber and other forest products on a sustainable basis; for the protection of landscape, archaeological and historical values; and to provide recreational and educational opportunities.
- statistical power** The likelihood of correctly rejecting the null hypothesis. Statistical power depends on the sample size used in the test, the effect size to be detected, and the variability inherent in the data.
- stepwise regression** A procedure for building multiple regression models in which alternative models are explored, and terms included or excluded depending on their explanatory power.
- stigma** The terminal cells of a pistil of a flower that receive and recognise pollen grains during interactions that can lead to fertilisation.
- stochastic perturbation** An unpredictable change in a parameter, environmental variable or ecosystem process.
- stochastic** Any random process; a process governed by probabilistic laws.
- stomata** Specialised pores in the epidermis of leaves and stems that allow uptake of carbon dioxide from the atmosphere for photosynthesis and through which transpiration occurs.
- stratified** A sample that is not drawn at random from the whole population, but is drawn separately from a number of disjoint levels of the population in order to ensure a more representative sample.
- stratum** A layer in a plant community or formation produced by the occurrence of an aggregation of plants of similar growth habit at approximately the same level, or a sampling unit in a stratified random sample.
- studbook** A record of all the captive individuals of a given species that is often used in managing captive breeding stock.
- subculturing** To transfer a small portion of, for example, bacterial culture, onto a new medium.
- subpopulation** A subgroup in a population; geographically isolated groups of a population.
- subspecies** a taxonomic term referring to a group of individuals within a species that have certain distinguishing characteristics and that form a breeding group.
- subtropical** The region lying between the tropics and the temperate lands.
- succession** Process of replacement over time of one ecological community by another.
- surrogate** An entity (eg. a plant community, soil type, or climate domain) that is thought to act as an indicator of another ecological characteristic (eg. the occurrence of a particular species or community), or an aggregate measure (eg. overall species diversity).
- sustainability** Refers to management practices that attempt to meet economic objectives in ways that do not degrade the environment; meeting the needs of the present without compromising the ability of future generations to meet their own needs; using, conserving and enhancing resources so that ecological processes in ecosystems are maintained.
- symbiotic** Describes a situation where two organisms live together in a close relationship that is beneficial to at least one of them.
- synonym** Redundant names used to describe a species, which result from a taxon being described more than once, usually by different people.
- synonymy** The character of being synonymous, equivalence; in taxonomy, a specific epithet ascribed to a species that has previously been formally recognised.
- systematic pressure** In population viability analysis, a process that drives a species into decline and eventual extinction, more or less deterministically and continuously.
- systematics** The study of systems and taxonomy, including identification, the practice of classification, and nomenclature.
- t-distribution** A continuous distribution obtained from a ratio of a normal and a chi-square variable, approximating the normal distribution for a small population.
- tailings dams** Dams designed to retain wastes left over after processes such as ore crushing on a mine site.
- taxon** The organisms comprising a particular taxonomic entity (eg. class, family, genus or species).
- taxonomy** Methods and principles used for the classification of organisms.

On Borrowed Time

temperate Having a climate intermediate between tropical and polar; moderate to mild in temperature.

test endpoints Measures of environmental impact, usually of a chemical or toxicant, made on specific ecological variables such as the growth rate of plants or the survival of juvenile fish, usually under laboratory conditions.

tetrapod Vertebrate with four limbs with separate fingers and toes.

theory of island biogeography A paradigm used to explain species-area relationships for islands, based on island size and island isolation from mainland sources of colonists. The balance between extinction and colonisation is a function of island size and isolation, resulting in an equilibrium number of species.

thermal pollution Entrainment of relatively warm air or water into the environment, usually from industrial or urban sources, with detrimental consequences for biota or ecological processes.

thinning The removal of part of a forest stand or crop, with the aim of increasing the growth rate or health of retained plants.

threatening process A process that detrimentally impacts on, or could detrimentally impact on, the survival, abundance, distribution, or potential for evolutionary development of a native species or ecological community.

threshold suitability values Values below which a species simply cannot exist and above which an increase in a given measure will make little or no difference in habitat suitability.

tolerance The ability of a species to withstand of range of conditions.

trans-equatorial migration Movement in which animals cross the equator on a seasonal basis to breed or feed.

transgene Any gene introduced into a plant or animal using the techniques of genetic engineering.

transgenic variety A variety that contains a gene or genes from an unrelated organism (eg. a bacterial gene in a plant) that could not be transferred to the species using traditional breeding techniques; an organism containing a gene that has been artificially transferred from a member of another species.

translocation The transfer of plants and animals from one part of their range to another.

transpiration Loss of water from a plant by evaporation through stomata in leaves.

trophic level Position of an organism in the food chain as assessed by the number of energy transfer steps to reach that level.

tropical rainforest The richest biome in terms of both plant and animal diversity. Neither water nor low temperatures are limiting for photosynthesis in tropical rainforest. Trees are evergreen with leathery leaves, the herbaceous layer is poorly developed because of low light, there are many vines and epiphytes, and there is little litter because nutrient cycling rates are high.

true mean (arithmetic mean) Calculated by dividing the sum of a set of observations by the number of observations.

turbidity Level of cloudiness of a suspension.

two-tailed test A statistical test concerned with the hypothesis that an observed value of a test statistic differs significantly from a given value, where an error in either direction is relevant.

type I error Error made when a true null hypothesis is rejected, to conclude incorrectly that there is a difference among the groups examined. In the context of environmental impact assessment, a type I error would involve the study leading to a conclusion that an impact has occurred when in fact it has not.

type II error Error made when a false null hypothesis is accepted, to conclude incorrectly that there is no difference among the groups examined. A type II error would involve an environmental impact assessment leading to a conclusion that an impact has not occurred when in fact it has.

ubiquitous Having or seeming to have the ability to be everywhere at once.

ubiquity (with reference to sampling) The frequency of species in samples (ie. the proportion of samples in which a species is found).

umbrella species A species whose protection would automatically also provide protection for other species or even an entire community.

uncertainty Quantitative and qualitative unpredictability around judgements, predictions, estimates or decisions.

under-fished A descriptive term for a fishery that can sustain higher catches than those being presently taken.

understorey A general term for the plants (usually shrubs) of a community occurring at levels lower than the top stratum (usually trees).

On Borrowed Time

ungulate Hoofed animal, usually her-forming and adapted for grazing.

utilitarian view A philosophy on valuing biological resources from the perspective of producing products of use and value for humans.

vagrant species Species that are found within an area but are not permanent members of the assemblage of species at that point, or species that do not breed and do not have self-sustaining populations within the area of interest.

validation A test of a predictive model involving a comparison of predictions with new data.

variability Quantitative unpredictability in natural processes, or difference among measurements.

variables Characteristics of a population that differ from individual to individual, which can have numbers or values assigned to them so they can be measured. Variables can be continuous (eg. values for daily temperature), or they can be categorical, where values are assigned to discrete categories (sometimes called factors; eg. classes of rock types).

variance A measure of the dispersion of a random variable, obtained by taking the square of the standard deviation.

vascular plant Plant that possesses conducting tissue for the transmission or circulation of fluid (ie. ferns, gymnosperms and angiosperms).

vegetation mapping Mapping involving the interpretation of aerial photographs, stratification of the landscape into relatively uniform units, ground sampling for vegetation structure and floristic composition (usually for vascular plants), classification of ground samples, description of map units, and, finally, detailed mapping of each of the vegetation types.

vertebrate Any animal of a subphylum characterised by a bony skeleton and a well-developed brain.

volcanism The processes that collectively result in the formation of volcanoes and their products.

vulnerable A classification of risk less than endangered, but usually suggesting that the species will require active management action if it is to persist.

watertable The boundary between the unsaturated and saturated soil.

weed A plant that is considered undesirable by humans because it threatens the persistence of native plants or competes with other plants that are used for food or fibre, or to graze domestic livestock.

wetlands Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh brackish or salt, including areas of marine waters, the depth of which at low tide does not exceed 6 metres.

Wheat belt An area in which Wheat is the chief agricultural product.

wilderness A natural, uncultivated, uninhabited region with non-consumptive values such as aesthetic and spiritual aspects, or scientific, educational, recreational or water resource uses.

wildfire An unplanned fire.

windrows A row or line of heaped waste wood, usually stacked prior to burning in harvested forests or on land cleared for agriculture.

woodland Land that is mostly covered with woods or dense growths of trees and shrubs.

World Heritage Areas Reserve areas designated by the Convention Concerning the Protection of the World Cultural and Natural Heritage as areas of 'outstanding universal value'.

zygote Diploid cells resulting from the fusion of male and female gametes.