



Australian Government
National Land & Water Resources Audit

Extract from Rangelands 2008 — Taking the Pulse
Contributors

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Glossary

2P grasses

Palatable, perennial grasses. A key component of critical stock forage in much of the pastorally productive rangelands.

3P grasses

Palatable, productive and perennial grasses. Synonymous with 2P grasses. Term used in the Queensland rangelands.

ACRIS-MU

The Management Unit of ACRIS. The unit coordinates ACRIS, undertaking duties such as collating relevant available data, conducting meta-analyses and reporting national syntheses of the data.

Advanced Very High Resolution Radiometer (AVHRR)

Radiometer on board the Polar Orbiting Environmental Satellite series of the United States National Oceanic and Atmospheric Administration. The AVHRR instrument has provided radiance data for investigating clouds, land–water boundaries, snow and ice extent, ice or snow melt inception, day and night cloud distribution, temperatures of radiating surfaces, and sea surface temperature. AVHRR data allow monitoring of vegetation conditions in many ecosystems, including rangelands.

age-dependency ratio

Socioeconomic indicator: the ratio of people younger or older than working age (under 15 or over 65 years) to the working-age population.

aquifer

An underground layer of soil, rock or gravel able to hold and transport water. Bores and wells are used to obtain water from aquifers.

arid zone

Remote and sparsely populated areas of inland Australia; defined by the presence of drought-tolerant vegetation and desert landforms as well as by low rainfall (median annual rainfall less than about 350 mm).

artificial water source

Waterpoint such as bore, tank on a pipeline, bore drain or dam constructed to provide water for livestock.

assessment cycle

The period between one assessment and the next for all or most of the monitoring sites in a region.

AussieGRASS

Australian Grassland and Rangeland Assessment by Spatial Simulation. A pasture growth model that takes account of climate variability, soil types (including fertility), pasture communities, recent fire history and grazing pressure. Pasture growth, total standing dry matter and cover are simulated on a ~5 km grid for all of Australia. ACRIS uses recent and historical AussieGRASS data to describe *seasonal quality*.

Australian Bureau of Agricultural and Resource Economics (ABARE)

An applied economic research agency that works with industry and government to provide stakeholders in Australia's rural and resource industries with up-to-date public policy analysis and commodity forecasts.⁶⁶

Australian Bureau of Statistics (ABS)

Australia's national statistical organisation. Statistics covering a wide range of economic and social matters are available.⁶⁷

Australian Collaborative Rangeland Information System (ACRIS)

A partnership between Australian, state and NT government natural resource management organisations that facilitates data collation and documentation for reporting on regional and national changes in the rangelands.

baseline condition

The health status of a biological system (or some component of the system) at the start of a reporting period. For example, in ACRIS reporting, the level of landscape function (dysfunctional, moderately functional, fully functioning) of an IBRA bioregion in 1992.

⁶⁶ <http://www.abareconomics.com> (accessed 21 November 2007)

⁶⁷ <http://www.abs.gov.au> (accessed 21 November 2007)

biodiversity

Variability among living organisms (including terrestrial, marine and other ecosystems and ecological complexes in which they are part), which includes diversity within species and between species and diversity of ecosystems.

biomass

The quantity of organic matter within an ecosystem (usually expressed as dry weight for unit area or volume).

biome

A climate and geographical area of ecologically similar communities of plants, animals, and soil organisms, often referred to as 'ecosystems'. Biomes are defined based on factors such as plant structures (eg trees, shrubs, grasses), leaf types (eg broadleaf, needleleaf), plant spacing (eg forest, woodland, savanna) and climate.

bioregion (biogeographic region)

A large, geographically distinct area of land and/or water that has assemblages of ecosystems forming recognisable patterns within that landscape.⁶⁸

biota

All of the organisms at a particular locality.

Brucellosis and Tuberculosis Eradication Campaign

A national program carried out between the 1970s and 1990s to eradicate brucellosis and tuberculosis from cattle herds in Australia. The campaign improved herd management across much of the cattle-grazed rangelands.

Bureau of Rural Sciences (BRS)

The scientific bureau within the Australian Government Department of Agriculture, Fisheries and Forestry. Provides scientific advice to government on agricultural, food, fisheries and forestry industries.⁶⁹

CAR (comprehensiveness, adequacy and representativeness)

A term used by conservation agencies.

Comprehensiveness: a measure of how many of the different regional ecosystems in a bioregion are protected within that bioregion.

Adequacy: the capacity of protected areas to sustain protection of biodiversity values.

Representativeness: an assessment of whether the variation in regional ecosystems is covered in the protected area system.

Collaborative Australian Protected Areas Database (CAPAD)

A database containing information on all protected areas in Australia, including their International Union for Conservation of Nature management categories.⁷⁰

concordance

Statistical procedure for apportioning values among different intersecting regionalisations according to the area of each region. Population statistics for a geographically large statistical local area might be assigned to three intersecting bioregions based on the proportional area of each IBRA. This is area-weighted concordance.

condition

The status or health of a biological system or some component of the system. 'Condition' is generally related to purpose (eg for grazing or conservation). There are many ways of defining and assessing rangeland condition and it is often a subjective process. One approach is to compare the level of a specific indicator (eg vegetation cover) at a particular location to its potential within that vegetation type or compare it to other locations.

conservation

For biodiversity: the protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.

conservation estate

Those parts of the environment formally reserved for conservation of native species, ecosystems and recreation.

critical stock forage

The abundance of those plants vital for sustaining livestock production. For ACRIS reporting, these are 2P, 3P and 'decreaser' plant species.

decile

The relative position or rank of a set of values based on a 10-point categorisation. Used by ACRIS to report *seasonal quality* based on the long-term rainfall record or historical level of pasture growth (as simulated by AussieGRASS).

⁶⁸ <http://www.environment.gov.au/parks/nrs/science/bioregion-framework/ibra/index.html> (accessed 4 April 2008)

⁶⁹ <http://www.daff.gov.au/brs> (accessed 22 November 2007)

⁷⁰ <http://www.environment.gov.au/parks/nrs/science/capad/index.html> (accessed 26 November 2007)

decreaser species

Forage species known to decrease in abundance when grazing pressure is excessive.

DSE (dry sheep equivalent)

A standard unit used to compare the feed requirements of different classes of stock, to assess the carrying capacity and potential productivity of a given area of grazing land or to describe in a standardised way the grazing pressure on that land. The unit represents the amount of feed required by a two-year old, ~45 kg merino sheep (wether or non-lactating, non-pregnant ewe) to maintain its weight.

Dust Storm Index (DSI)

An index developed from Bureau of Meteorology observations to quantify the occurrence and severity of dust storms.

DustWatch

An Australia-wide network of volunteer observers who make simple observations (similar to those used by the Bureau of Meteorology) of the timing and characteristics of dust storms.⁷¹

ecological community

An assemblage of native species that inhabits a particular area in nature.

ecosystem

A dynamic complex of plant, animal and microorganism communities and their non-living environment that interacts as a functional unit.

ecosystem resilience

The capacity of an ecosystem to cope with disturbances, such as drought, fire or grazing, without shifting into a qualitatively different state.

ecosystem services

The collective benefits that society derives from the resources and processes supplied by natural ecosystems. Services can be divided into five categories: provisioning, such as the production of food and water; regulating, such as the control of climate and disease; supporting, such as nutrient cycles and crop pollination; cultural, such as spiritual and recreational benefits; and preserving, which includes guarding against uncertainty through the maintenance of diversity.

El Niño Southern Oscillation

A global coupled ocean–atmosphere phenomenon. El Niño is an extensive warming of the central and eastern Pacific Ocean that leads to a major shift in weather patterns across the Pacific. In Australia (particularly eastern Australia), El Niño events are associated with an increased probability of drier conditions. La Niña is the opposite set of conditions. The Southern Oscillation is the atmospheric component (see ‘Southern Oscillation’).

employment diversity

A socioeconomic indicator based on the number of people employed by the three main employment sectors in a region.

endemic

Native to a particular area and found nowhere else in the wild.

Environment Protection and Biodiversity Conservation Act 1999

National legislation to protect the environment, particularly matters of ‘National Environmental Significance’ (‘Protected’ matters). It streamlines national environmental assessment and approvals processes, protects Australian biodiversity and integrates the management of important natural and cultural places.

environmental indicators

The physical, chemical, biological or socioeconomic measures that best represent the key elements of a complex ecosystem or environmental issue. Indicators can organise environmental information both spatially and over time.

feral herbivore

A domesticated herbivore that has escaped into the wild and now lives and breeds there. Feral herbivores such as goats, horses, donkeys and camels add to total grazing pressure in the rangelands.

fire regime

The pattern of fires at a location, including the frequency and intensity of fire. ACRIS also reports fire extent.

fire scar

Recently burned areas that are visible in aerial photographs and satellite images. The often sharp boundary between burnt and unburnt country is used to map fire extent and calculate fire frequency.

⁷¹ <http://www.dustwatch.edu.au> (accessed 26 November 2007)

forb

Non-grassy, herbaceous flowering plant.

freehold

Tenure under which land is held for life and owned by individuals or entities.

grass–tree balance

The proportion of grasses and trees in a grazed landscape and the interactions between the two.

grazing gradient analysis

A remote sensing-based method for determining past grazing effects on land condition. In the arid and semiarid rangelands, grazing effects diminish with increasing distance from water. This reduction can be detected as a gradient of increasing vegetation cover in satellite imagery.

grazing land management

Customised practical training courses delivered in Queensland and the NT to help grazing land managers improve profitability in a sustainable way.

groundwater

Water beneath the ground that flows naturally to the earth's surface via seeps or springs and can be collected with wells or bores.

habitat condition

In the context of ACRIS reporting, the extent and type of groundcover available as habitat for biota.

Interim Biogeographic Regionalisation for Australia (IBRA)

Divides the Australian continent into 85 bioregions, 52 of which are either wholly or partly in the rangelands. Most IBRAs are divided into sub-IBRAs. See also 'Bioregion'.⁷²

increaser species

Plant species known to increase their abundance when grazing pressure is excessive.

index for socioeconomic disadvantage

A socioeconomic index derived from attributes that indicate relative social and economic hardship. Variables included are low income, low educational attainment, unskilled occupations, high unemployment, one-parent

families, renting households and proportion of Aboriginal or Torres Strait Islander people.

Indigenous

Of or relating to the Aboriginal and Torres Strait Islander peoples of Australia.

Indigenous land management organisation

Formal groups that provide information, advice and other forms of support to assist Indigenous custodians in managing their land.

Indigenous land use agreement

An agreement about the use and management of land and waters made between one or more native title groups and other parties. The agreements provide flexibility in resolving native title issues. An Indigenous land use agreement allows developments on land to happen independently of any application for a determination of native title or before a determination of native title is made. The agreements help to create and foster good relations between commercial proponents, government parties and native title groups.⁷³

Indigenous Protected Area (IPA)

Land specifically managed for biodiversity conservation objectives which also accommodates the cultural priorities of Indigenous people.

International Union for Conservation of Nature (IUCN)

International organisation whose mission is to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.⁷⁴

invasive species

A species spreading beyond its accepted normal distribution and which threatens valued environmental, agricultural or personal resources by the disruption it causes.

kangaroo management zones

Fourteen designated geographic regions for the management of kangaroos in NSW.

La Niña

Warming of the western equatorial Pacific warm pool, north of New Guinea, accompanied by cooling in the equatorial eastern Pacific Ocean. La Niña is often

⁷² <http://www.environment.gov.au/parks/nrs/science/bioregion-framework/ibra/index.html> (accessed 26 November 2007)

⁷³ http://www.nntt.gov.au/publications/1021435535_10212.html (accessed 26 November 2007)

⁷⁴ <http://www.iucn.org/en/about/> (accessed 26 November 2007)

associated with above-average rainfall in eastern Australia. La Niña produces the opposite set of conditions to El Niño. See also 'El Niño Southern Oscillation'.

land cover change analysis

Trends in land cover derived from satellite imagery. In the NT, this type of analysis is the principal form of Tier 2 monitoring in the tropical savanna. Cover is derived from yearly Landsat images, and trends in pixel cover values are tracked through time. Cover for different image dates is also spatially averaged by mapped land type and management unit (eg paddock) to help identify grazing effects.

Landcare

A national program to foster improved and sustainable land management. See also 'National Landcare Program'.

Landsat TM

The Thematic Mapper sensor on board the Landsat series of earth-observing satellites. Data have been available in seven spectral bands at 30-m pixel size since the mid-1980s.

landscape function

The ability of landscapes to capture, conserve and use scarce water and nutrients.

leasehold

Tenure under which land is occupied by individuals or entities under a lease agreement with a state or territory government. Conditions of the lease often include the use to which the land can be put.

lithosol

A shallow soil, comprising mostly bedrock or rock fragments with some weathered material. Generally, these soils are young and show little development of profiles.

livestock density

The number of sheep and/or cattle per unit of land area — typically expressed in the rangelands as dry sheep equivalents per square kilometre or hectares per animal equivalent.

macropod

Marsupial belonging to the Macropodidae family, which includes kangaroos, wallabies, tree kangaroos, pademelons and several other groups.

management action target

Under the Natural Heritage Trust, management practices that indicate progress towards agreed NRM outcomes as part of regional NRM plans and investment strategies (eg an agreed length of fencing erected to better manage riparian areas).

mesic

Describes wetter areas in the rangelands (eg habitats with a moderate or well-balanced supply of moisture).

meta-analysis

Higher-order analysis based on available results from a set of related studies or reports. For example, the national synthesis of change for many information types in this report derives from the separate datasets and analyses reported by jurisdictional partners within ACRIS.

multi-criteria analysis (MCA)

A transparent decision-making process developed for complex problems where there is no one clear or agreed outcome. Input data are weighted using value judgments incorporating public opinion and policy and management goals to provide variable outcomes.

Multiple Regression Bare Ground Index (MRBGI)

A remote sensing-based index of the amount of bare ground (as opposed to groundcover); being tested to monitor land condition in the Queensland rangelands.

National Land & Water Resources Audit (the Audit)

An Australian Government agency that works with other national agencies and all states and territories to report on the condition of Australia's land, water and biological resources.⁷⁵

National Landcare Program

A national program that supports the Landcare movement and the sustainable use and management of natural resources. The program encourages landholders to undertake Landcare and related conservation works by supporting collective action by communities.⁷⁶

⁷⁵ <http://www.nlwra.gov.au/> (accessed 27 November 2007)

⁷⁶ <http://www.daff.gov.au/natural-resources/landcare/national-landcare-programme> (accessed 4 February 2008)

National Monitoring and Evaluation Framework (NM&EF)

The process established under the Natural Heritage Trust and National Action Plan for Salinity and Water Quality to assess progress by regional NRM groups towards agreed condition targets across broad thematic areas ('Matters for Target'). Uses a range of environmental indicators, such as land salinity, soil condition, native vegetation, water quality and invasive species.

National Reserve System Program

The program established under the Natural Heritage Trust to establish a comprehensive, adequate and representative (CAR) system of terrestrial protected areas.⁷⁷

Natural Heritage Trust (NHT)

The body established by the *Natural Heritage Trust of Australia Act 1997* to stimulate conservation, sustainable use and repair of Australia's natural environment.

natural resource management (NRM)

Actions that improve the long-term sustainability of Australia's natural resources, soil, water, plants and animals. See also 'NRM groups'.

Natural Resource Policies and Programs Committee

High-level committee reporting to the Natural Resource Management Ministerial Council; focuses on high-priority, national issues, including NRM decision-making, biodiversity decline, soil and water quality decline, water policy, climate change and adaptation, and invasive species.

net emigration of young people

A socioeconomic indicator of the numbers of people aged between 15 and 24 leaving rural and regional areas.

non-pastoral agricultural activity (and value)

Agricultural activities other than cattle for meat and sheep for meat and wool (and the value of those activities). Typically, field crops, horticulture and products from livestock other than sheep and cattle.

Normalised Difference Vegetation Index (NDVI)

A measure of the response of vegetation to rainfall based on the level of photosynthetic activity (plant

greenness). Derived from satellite imagery, typically AVHRR (1-km pixel resolution), MODIS (~250-m to 1-km pixel resolution) and Landsat TM (30-m pixel resolution).

NRM (natural resource management) groups

The regional groups responsible for implementing Natural Heritage Trust investments to improve land management and biodiversity conservation. There are 12 groups entirely or predominantly within the rangelands and a further 15 groups partly within the rangelands.

pastoral activity (also pastoral value)

The raising of cattle for meat and sheep for meat and wool (and the value of that activity).

Pastoral Monitoring System

The program for monitoring land condition on SA pastoral leases.

perennial grass frequency

The frequency of occurrence of longer-lived grasses recorded in quadrats at sites as part of jurisdictional pastoral monitoring programs. Quadrat size varies according to the monitoring program but is typically 0.25 or 1 square metre. A perennial grass species recorded as present in 40 of 50 quadrats has an 80% frequency of occurrence.

pixel

A single point in a graphic image (eg a satellite image). Abbreviated form of 'picture element' (using the common abbreviation 'pix' for 'picture').

plant species richness

The number of different plant species in an area (eg a monitoring site). There are different indices of plant species richness.

potable water

Water pure enough for humans to drink.

profit at full equity

A socioeconomic indicator that measures return on all resources used in a farm business. Defined as farm business profit, plus rent, interest and finance lease payments, less depreciation on leased items.

property management plans

Formal plans (often including maps) developed by landholders to document property resources and management practices, and to design property changes.

⁷⁷ <http://www.environment.gov.au/parks/nrs/index.html>
(accessed 27 November 2007)

protected area

An area dedicated to the conservation of biodiversity.

proxy indicators

Indirect measures of a target or desired outcome (eg the CAR system of reserves as a proxy for biodiversity conservation).

Ramsar Convention

The Convention on Wetlands, signed in Ramsar, Iran, in 1971, providing the framework for the conservation and wise use of wetlands and their resources. Wetlands are referred to as 'Ramsar wetlands' if they are included in the Ramsar list.

rangeland

Native grasslands, shrublands and woodlands (including tropical savanna woodlands) that cover a large proportion of the arid and semiarid zones. Regular cropping is not practised and the predominant agricultural use, if any, is grazing by sheep and cattle on native vegetation.

Rangeland Assessment Program (RAP)

The program for monitoring the NSW rangelands.

rapid mobile data collection (RMDC)

A method for collecting a high volume and frequency of point data along road traverses in Queensland. A vehicle-mounted global positioning system is connected to a laptop computer running customised software for entering observed data about attributes of the land and vegetation.

red earths

The characteristic soil type of mulga country in the arid rangelands. Deep bright red soils of sandy loam to sandy clay loam texture. These soils are very old and have low fertility.

reference area

A relatively undisturbed area used as a benchmark to judge the condition or health of another area. For example, the groundcover or species composition of an area close to water might be compared with that of a water-remote area to determine the effects of grazing.

refugia

Refuge areas for biodiversity, particularly during times of environmental stress (eg drought).

regional ecosystem

Vegetation communities in a bioregion consistently associated with a particular combination of geology, landform and soil. The concept of regional ecosystems is used for vegetation and biodiversity mapping and management in Queensland.

reliability (reliability scores etc)

The confidence the ACRIS Management Committee has in reporting a result for information products reporting change. A semiquantitative scoring system is used to make this assessment as objective as possible.

remote sensing

Recording of information about an object or phenomenon by a recording or real-time sensing device not in direct contact with the object. Typically, space or airborne instruments are used to measure electromagnetic radiation (eg sunlight) reflected from the earth's surface (passive remote sensing).

resilience

As defined by the Resilience Alliance⁷⁸, the 'capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient ecosystem can withstand shocks and rebuild itself when necessary. Resilience in social systems has the added capacity of humans to anticipate and plan for the future.'

Resource Capture Index (RCI)

An index used as part of formal assessment of landscape function. It is the proportion of each transect occupied by resource-conserving patches, as distinct from interpatches (ie the proportion of the measured transect that is able to regulate nutrient and water flow). A patch is an area of perennial vegetation, or logs, rocks or stones as semipermanent obstructions to overland flow of water. Interpatches are areas of bare ground, litter or annual (or ephemeral) vegetation.

resource condition

The relative health of natural resources (soil, vegetation, water). See also 'Condition'.

⁷⁸ <http://www.resalliance.org/1.php> (accessed 27 November 2007)

resource condition target

Under the Natural Heritage Trust, specified outcomes for the health or state of natural resources as part of regional NRM plans and investment strategies (for example, improvement in regional water quality or vegetation health).

seasonal quality

Used by the ACRIS Management Committee to describe the relative value of recent climate (principally, rainfall) in biological functioning. Relative value (quality) is judged with reference to the longer-term record. 'Biological functioning' broadly means vegetation growth as a basic resource for both livestock (forage) and fauna (food, shelter) and for soil protection.

seasonally adjusted (also 'seasonally interpreted')

Method used by ACRIS to distinguish the effects of recent rainfall on reported change from those due to grazing management and other causes. For landscape function and critical stock forage, ACRIS emphasises the percentage of reassessed sites that showed improvement following poorer *seasonal quality* (decline expected) and the percentage of reassessed sites that showed decline following better seasons (increase expected).

semiarid zone

Remote and sparsely populated areas of Australia in which median rainfall varies from about 350 mm up to 800 mm in the north and about 500 mm in the east. The variability of annual rainfall is moderate to high. In the north, annual evaporation rates are high. Northern vegetation is typically savanna.

SILO (gridded rainfall)

Online source of a range of historical gridded and interpolated climate data for the Australian continent. Daily rainfall from available records interpolated to a 0.05-degree (~5 km × ~5 km) grid covering Australia.⁷⁹

simulated pasture utilisation

Estimated proportion of pasture growth modelled by AussieGRASS that is consumed by grazing animals. This method has been used by Queensland to indicate levels of stock forage and inferred sustainable management.

site density index

The area of pastoral country within a bioregion (or sub-IBRA) divided by the number of pastoral monitoring sites within that area. The index is used to indicate the density of monitoring sites and as input into a calculated reliability score for reporting change in landscape function and critical stock forage.

site-based monitoring

The collection of repeated measurements (or the making of repeated assessments) at fixed locations on the ground.

site-by-year assessment (or site-by-year combination)

The number of repeated assessments at a site or at a group of sites. For example, if change is being reported for three repeat assessments at 12 sites within a bioregion, there are 36 separate site-by-year assessments.

soil crack specialist

Faunal species well adapted to surviving the shrink-and-swell cycles of self-mulching clay soils (ie cracking clays).

soil surface condition

The relative state or quality of the soil surface for capturing rainwater and for conserving soil moisture, nutrients and seeds for plant growth. Soil surface condition is a component of formal landscape function assessment. For each broad soil type, soil surfaces in good condition are stable (ie resist erosion), have high levels of infiltration and have good nutrient cycling properties (including good litter cover).

Southern Oscillation

A fluctuation in atmospheric circulation, in particular over the tropical areas of the Pacific and Indian oceans. In general, when atmospheric pressures are high over the eastern Pacific Ocean they tend to be low in the eastern Indian Ocean and vice versa. The fluctuation between the two produces a marked variation in parameters such as sea surface temperature and rainfall over a wide area of the Pacific. The oscillation has a cycle of two to seven years. The phenomenon is influenced by El Niño.

space- and time-averaged utilisation

The average level of AussieGRASS simulated pasture utilisation for a spatial unit (eg a sub-IBRA) over a specified period. In AussieGRASS, pasture growth

⁷⁹ <http://www.bom.gov.au/silo/> (accessed 23 April 2006)

and utilisation are simulated for 0.05-degree grid cells on a yearly basis. This can be reported as an average value for each rangeland sub-IBRA over (for example) a 10-year period. See 'Simulated pasture utilisation'.

standard error (SE)

A statistical measure of variation about the computed mean (or average), calculated as the standard deviation of sample values (eg perennial grass frequency at sites) divided by the square root of the sample size (number of sites sampled).

State-wide Landcover and Trees Study (SLATS)

A Queensland monitoring program that provides policymakers, industry, community interest groups and landholders with accurate information on woody vegetation cover; changes in cover; and mapping and statistical information.⁸⁰

statistical local area (SLA)

A reporting unit for Australian Bureau of Statistics statistical (including socioeconomic) data. The boundaries for each SLA are the boundaries of incorporated bodies of local government where those exist. SLAs cover the whole of Australia without gaps or overlaps.

stocking density

See 'livestock density'.

surfaces of interpolated rainfall

See 'SILO (gridded rainfall)'.

sustainable

An activity that can be carried out without damaging the long-term health and integrity of natural and cultural environments.

threatened

Of or relating to a species or community that is vulnerable, endangered or presumed extinct (as defined in legislation).

threatening process

A process that threatens, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community.

Tier 1 / Tier 2

The program for monitoring land condition on NT pastoral leases. The Tier 1 system is a photopoint monitoring program supported by visual estimates of pasture species composition (by biomass and cover) and evidence of erosion and weeds. Tier 2 uses more rigorous remote sensing-based methods supported by on-ground validation.

time-integrated average

The average of a series of measurements made over time.

total grazing pressure (TGP)

The cumulative effect of all grazing herbivores on an area of land. Grazing animals may include domestic livestock (sheep, cattle), macropods (kangaroos) and feral animals (goats, rabbits, horses, donkeys, camels etc). If numbers (or density) by species are known, then total grazing pressure can be expressed in standardised units (eg dry sheep equivalents per square kilometre).

total standing dry matter (TSDM)

The amount (biomass) of standing vegetation present (usually, the pasture or herbage layer). Expressed as weight per unit area (typically, kilograms per hectare). Plant moisture is removed (by oven-drying harvested samples or by estimating moisture content) to standardise reporting.

transformer weeds

Invasive plants that change the character, condition, form or nature of ecosystems over a substantial area relative to the extent of that ecosystem.

Transect Recording and Processing System (TRAPS)

A methodology for recording changes in tree and shrub abundance at fixed 1-ha sites.

triple bottom line

Method for measuring organisational (and societal) success in achieving specified or desired economic, environmental and social outcomes. All three outcomes are amalgamated to report an overall outcome.

utilisation (pasture)

The proportion of pasture growth eaten by livestock, kangaroos and feral herbivores (goats, donkeys, horses, camels etc). The term is specifically

⁸⁰ <http://www.nrw.qld.gov.au/slats/> (accessed 27 November 2007)

used as part of Queensland's reporting of critical stock forage (as part of the Sustainable management theme) based on AussieGRASS simulations of pasture growth and estimated consumption (utilisation) by livestock and other grazing animals.

waterpoint

Source of drinking water for livestock. Waterpoints are typically bores, wells, dams (earth tanks), tanks and troughs on pipelines, and natural water supplies (rivers, waterholes, springs, freshwater lakes etc).

water-remote areas

Areas distant (eg more than 8 km) from waterpoints used by livestock. These areas are grazed infrequently and are presumed to have low levels of grazing impact. Water-remote areas may provide refugia for grazing-sensitive species.

Weeds of National Significance (WoNS)

An agreed list of the 20 most serious weeds in Australia, based on an assessment of their invasiveness, production impacts, potential for spread and impacts on socioeconomic and environmental values.

Western Australian Rangeland Monitoring System (WARMS)

The regional-scale, small-plot program used in WA to monitor the condition of its grazed rangelands.

woody weeds

Invasive or undesirable (generally unpalatable) trees and/or shrubs that decrease carrying capacity and livestock production.

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