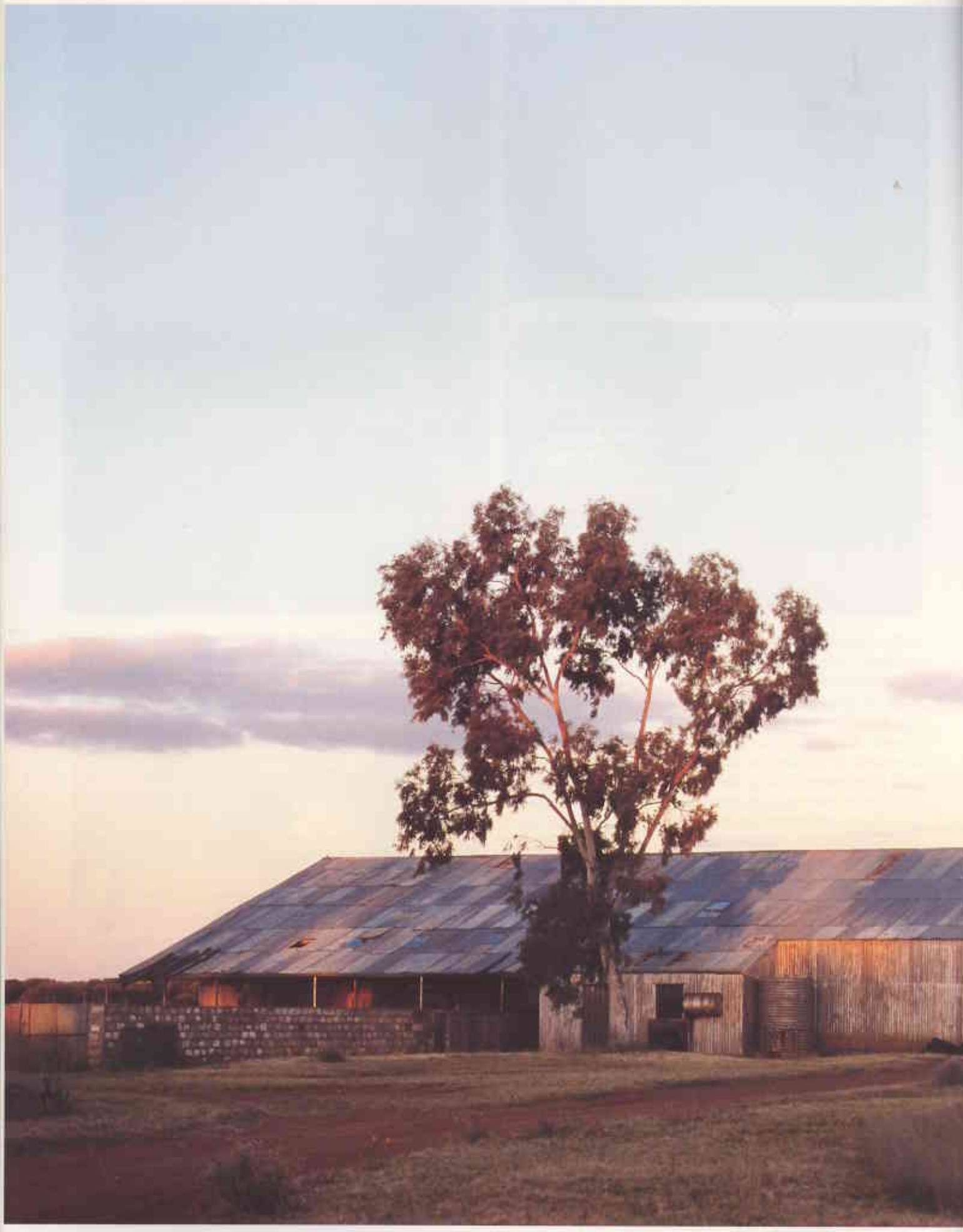


MURCHISON HAVEN

by Sue Patrick, Jon Brand and Mike Meinema

In about 1884, Frederick Clinch built a mud bat home at the head waters of Lake Monger in the Murchison. Little did he know that in just over a century it would become a focus for environmental research. His early house is now part of the homestead at Burnerbinmah Station, bought by the Department of Conservation and Land Management in 1995 to conserve and promote the regeneration of sandalwood in Western Australia, and to serve as a base for the study of local plant and animal life.

Burnerbinmah Station, its name meaning red ground, is north-west of Paynes Find in the Murchison Region. The original lease (much smaller than the current station) was taken up by John Morrisey in 1878. Other leaseholders followed, and seven adjoining leases were acquired. In about 1884, Frederick Clinch travelled more than 200 kilometres inland from the coast, south of Geraldton, to take up the lease. He rode on horseback through Ninghan country, following the high water mark of a large flood the previous year along the upper reaches of Lake Monger. He made camp at the spot where the homestead of Burnerbinmah Station stands today.

In 1918, the station, covering 59 000 hectares between Yalgoo, Mt Magnet and Paynes Find, was transferred to his three eldest sons, Charles, Fred and Jack. It was transferred again, in 1924, to Charles and Jack (Albert) Clinch. At about this time Jack married Neata Palmer. Her father built them a new home close to the original homestead. Although it was later abandoned, this homestead remains standing today.

Life was hard for the pastoralists of those days. Alex Palmer, in his history of the station, relates that Charles showed great fortitude as a young man. Working at a mill one day, he was bitten on two fingers by a snake, which he knew to be very poisonous. He chopped both fingers off at the knuckle, with a hatchet, and after bandaging the hand, returned on horseback to the homestead, where he collapsed. According to Jack, their father dressed the hand and kept Charles walking for several hours afterwards. He survived this ordeal. From 1951 to 1983 Burnerbinmah Station was held by a daughter of the Clinch family, Neata, and her husband, David Craven. Don and Rhonda Anderson took over the lease in 1983.

FILLING IN THE GAP

The station lies within the southern part of the Murchison Region which has an arid climate of unpredictable summer and winter rainfall. There are few conservation reserves in this part of the arid zone or Eremaean Botanical Province. No lands managed by the Department of Conservation and Land Management (CALM) occur within 100 kilometres of the station, and plant life in the area is poorly known.

Burnerbinmah is less rugged than many of its neighbours, and many plant communities are represented within its

Previous page
Main: The shearing shed at Burnerbinmah, once a focus for wool production now a useful venue for meetings.
Photo – Sue Patrick
Insets: (left) Spring flowering cotton bush (*Ptilotus obovatus*) grows widely over the station.
Photo – Daphne Edinger
(right) Rosy velleia (*Velleia rosea*), a low growing plant that flowers in September.
Photo – Jiri Lochman

Historical photos: (from top left clockwise) Members of the Craven family with their horse Springarra at Burnerbinmah (c1940). Barnes' truck loaded with Burnerbinmah wool in the 1940s. The great flood of 1948, which reached to the fence of the homestead. The original homestead (c1940), which is still in use.
Photos – Courtesy of D & R Anderson

Left: The abandoned homestead, which was built about 1920.
Photo – Sue Patrick

boundaries. Close to Lake Monger there are large areas of alluvial plains, dunes and floodplains, with salt tolerant vegetation, bluebush, saltbush and samphire flats and open mulga (*Acacia aneura)* shrubland. The lake serves as a major saline drainage system bisecting the station. On higher land, to the west and east, there are low breakaways, granite hills and exposures, calcareous plains and broad valleys that support a wide variety of plant communities. Acacia shrublands grow on the shallower soils of granite exposures, and low mulga woodlands in the broad valleys. On sandier soils, white cypress pine *(Callitris glaucophylla)* grows in the mulga woodlands. Small areas of spinifex sandplain add to the species richness, as do several wetland areas, which include Cooryalgo Pool, with permanent fresh water, a gorge and creek (west of the pool) lined with swamp sheoak *(Casuarina obesa),* and several rock holes on the eastern side of the lease. Two areas of mallee woodland, mainly rough-barked mallee (*Eucalyptus hypochlamydea),* add further diversity.

The drought resistant nature of much of the station has meant that the vegetation has suffered less during dry periods than some of its neighbours. It has been grazed since 1884, carrying up to 12 000 sheep with some cattle and horses. Sheep numbers fell to about 4 000 in the last decade and they were removed early in 1996. Windmills and water points were closed down, but feral goats continue to exert some grazing pressure. Despite an active control

Top right: The nest of a wedge-tailed eagle (*Aquila audax*) in a mulga tree (*Acacia aneura*), above everlastings.
Photo – Sue Patrick

Centre right: (main) One of the station tracks runs through a pink carpet of rosy velleia.
Photo – Daphne Edinger
(inset left) Corrialgo Pool, an area of permanent fresh water, lined with vegetation. (inset right) Cotton bush (*Ptilotus obovatus*) grows protected from grazing at the base of a shrub, surrounded by pompom everlasting (*Cephalipterum drummondii*).
Photos – Sue Patrick

Right: Grasby's wattle (*Acacia grasbyi*) has minni-ritchi bark flaking in curls from the stem and branches.
Photo – Daphne Edinger

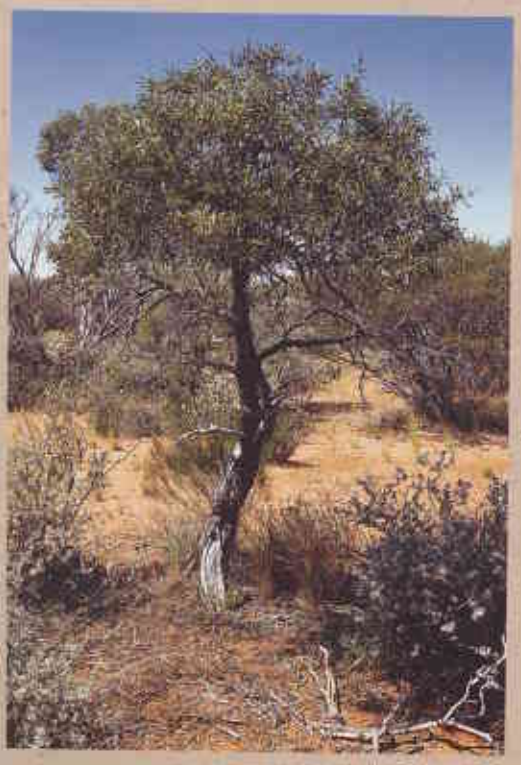
SANDALWOOD, FRAGRANT TREASURE

Burnerbinmah contains many stands of the highly valued Western Australian sandalwood (*Santalum spicatum*). Aromatic timber from WA sandalwood was one of the primary export earners for our fledgling State. Early settlers soon realised the value of the local sandalwood, and large quantities were harvested in the Wheatbelt. Today, the industry is much smaller, and harvesting occurs mainly on pastoral leases on the Goldfields and in the Midwest. Western Australian sandalwood is exported to countries in south-east Asia, where it is powdered and used to make joss sticks.

Observations and sandalwood inventory show that regeneration is generally very poor on developed and grazed pastoral leases. Sandalwood is heavily grazed by domestic and feral herbivores, such as sheep, goats and rabbits. To conserve sandalwood and promote regeneration in the rangelands, CALM has purchased a number of pastoral leases in addition to Burnerbinmah. These include: Jaurdi, Mt Elvire and Goongarrie on the Goldfields. The returns from sandalwood harvesting operations throughout the State will fund conservation and management of the species.

Sandalwood sampled on Burnerbinmah in March 1996 was made up of relatively large mature trees. There were no sandalwood saplings or seedlings present. The smallest sandalwood tree was 170 centimetres in height, and the smallest stem diameter was 65 millimetres, 15 centimetres above the ground. Sandalwood is a slow growing species and stem diameters only increase one to two millimetres (at 15 cm) per annum in the Murchison and Goldfields. Therefore, it is likely that the sandalwood trees sampled on Burnerbinmah were at least 40 years old. The absence of regeneration is probably due to heavy grazing by sheep and goats for more than 100 years. Removal of stock should enable sandalwood seedlings to survive and grow into small trees.

Sandalwood is a root hemi-parasite—although it is capable of photosynthesis, it requires some mineral nutrients and water from host plants to survive. Fine feeder roots attach to host roots through a cup-shaped organ called a haustoria. The haustoria can be up to two centimetres in length, and a single tree can produce hundreds of haustoria. Seed enrichment trials are being conducted to identify suitable host plants and land types to grow sandalwood in the rangelands. Long-term trials will monitor the growth and survival of sandalwood in the region for the next 10 years.



Above: Three-month-old sandalwood seedling growing beneath Grasby's wattle.

Left: Sandalwood tree growing on a washplain with acacia scrubland.

Photos – Jon Brand

program, it is unlikely that goats will ever be completely eradicated without goat-proof barriers on all boundaries.

LEARNING ABOUT THE PLANTS

In 1994, work began on a Wildlife Management Program for Declared Rare and Poorly Known Flora in the CALM Geraldton District. This extends from the coast near Dongara to the vermin fence north of Kalbarri and inland for more than 500 kilometres to beyond Sandstone. All but a few of the 35 declared rare plants occuring in the district grow on the wetter coastal strip. However, many of the 266 poorly known plants grow only in the arid zone where, until Burnerbinmah was purchased, there were no conservation reserves to protect their populations.

In September 1996, a *LANDSCOPE Expedition* travelled to Burnerbinmah. These expeditions, offered by *LANDSCOPE* in association with the University of Western Australia Extension program, provide paying volunteers with an opportunity to work on CALM research projects. They aim to promote wider cooperation in addressing conservation and land management challenges in Western Australia.

A thorough plant survey was planned, to see which of the declared rare and poorly known plants were growing at Burnerbinmah. Fortunately, it was a good year, with plentiful rain at strategic times, particularly for the spring-flowering ephemeral plants.

The 12 expeditioners divided into three teams, and were able to record and sample a total of 28 quadrats, each 20 metres square. These were placed throughout the station, to cover as many of the land types and plant communities as possible.

A species list of 350 plants was identified, and many interesting and important records were made. Six of the poorly known or 'priority taxa' were found; four were not previously known to occur in the district. These included *Hyalosperma stoveae*, a very small member of the daisy family, which has only been found once before in Western Australia, and only four times in all. The discoveries highlighted the fact that plants in Western Australia, and particularly in this area, are not well

known, and that intensive collecting brings to light small, unobtrusive plants that would otherwise seldom be collected. It was helpful to conduct the work in a wet year when so many of the ephemeral species were well represented. Six other plants that were collected had not been known to occur in the area. A further six were poorly collected generally, but known to be relatively common.

In March 1997, with the help of the Western Australian Naturalists' Club, records of summer flowering species were made. A second *LANDSCOPE Expedition,* in August, aimed to find earlier flowering plants. As conditions were drier, access was available to areas not visited in 1996. All the original quadrats were rechecked, and six more quadrats were sampled. It was good to observe that in some areas the vegetation appeared to be thriving, partly in response to the rain during the previous year, but also as a result of the reduction in grazing pressure.

Without the valuable help of *LANDSCOPE* expeditioners, this type of work would not be possible. Further volunteer effort from three of the 1996 expedition participants has produced the list of 370 species so far identified. Voucher specimens have also been incorporated into CALM's Western Australian Herbarium, to add to our knowledge of the flora of the State. Additionally, a reference herbarium set up at the station will be a valuable identification tool at the station. Work continues on the collections made in March and August of 1997, and there are high hopes that more important discoveries will result, particularly from the March expedition, as summer flowering species are poorly collected.

Top right: Some members of the *LANDSCOPE Expedition* team in August 1997.
Photo – Cleve Hassal.

Centre right: Don Anderson talks to members of the Western Australian Naturalists' Club at Coonthiago Rockhole.
Photo – Sue Patrick

Right: A paperbark (*Melaleuca* sp.) on one of the numerous claypans along the drainage system.
Photo – Daphne Edinger

Left: The spiny-tailed skink (*Egernia depressa*) is one of many reptiles found on the station.
Photo – Sue Patrick

Below left: Euros (*Macropus robustus*) live on rocky areas of Burnerbinmah.
Photo – Peter Marsack/Lochman Transparencies

ANIMAL LIFE

The station provides habitat for a wide range of animals. Larger mammals include the red kangaroo and euro, while smaller species are represented by the spinifex hopping-mouse and two dunnart species. Goats, foxes and rabbits are less desirable residents. One-hundred-and-five bird species have been recorded; five were added to the list by the WA Naturalists' Club during their Easter visit, and new records continue to be made. Of the reptiles, Gould's monitor is plentiful and often encountered during summer, but the larger perentie is seldom seen. Skinks, geckos, dragon lizards and several snake species have also been recorded. The permanent pools provide a breeding place for tortoises and frogs, as well as many freshwater invertebrates. Twenty-seven butterfly species have been found here, but further work is needed to find out more about the animal life.

THE FUTURE

Until its purchase by CALM, sheep and wool production were the primary goals of the station. Shearing teams, windmill and water runs, and mustering were part of everyday life. The future for Burnerbinmah has a completely different outlook. Fencing checks are still conducted, but now it is to ensure that feral goats and neighbouring stock are kept out of the station, rather than keeping Burnerbinmah's stock in. The shearers quarters now cater for a variety of CALM staff and other groups involved in surveying and recording, and the shearing shed provides a great venue for meetings and evening slide shows.

Don and Rhonda Anderson have taken the opportunity to stay on at the station as caretakers and CALM volunteers. This provides them with an opportunity to continue a lifestyle they enjoy. As honorary CALM officers, they provide security for the station, and serve as a vital contact point for neighbouring stations.

CALM has embarked on a feral goat control program in conjunction with members of the Yalgoo Land Conservation District Committee and neighbouring pastoralists. Continuing success in the reduction of feral goats will provide the best possible protection for the regenerating flora and fauna, particularly sandalwood. Burnerbinmah has also been identified for future inclusion in CALM's Western Shield nature conservation initiative.

The station will provide pastoralists, naturalists, school groups and other visitors to the Midwest with a window into the flora and fauna of the area. It is hoped that the successful regeneration of its vegetation will encourage support for the conservation of more land within the pastoral region.

Sue Patrick is a senior research scientist in CALM's Science and Information Division. She will revisit the plants of Burnerbinmah during a *LANDSCOPE Expedition* 'New Moon over the Murchison' with Government Astronomer Dr James Biggs, from 17-24 October, 1998. Sue can be contacted at CALM's Western Australian Herbarium on (08) 9334 0485 or by email at suep@calm.wa.gov.au

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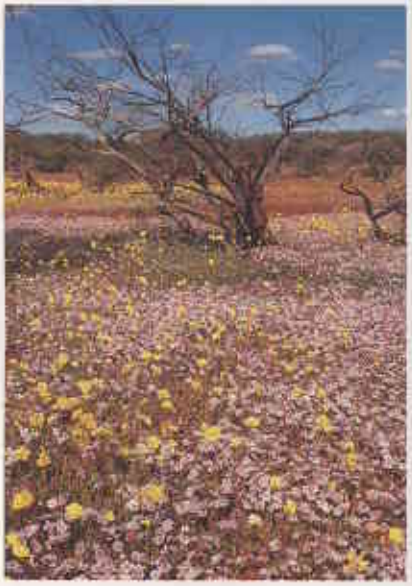
The waters off Western Australia's south coast are home to a rich diversity of marine plants and animals. Read about them on page 28.



Burnerbinmah Station, in WA's Murchison Region, fills an important gap in the State's flora and fauna reserve system. See page 42.

LANDSCOPE

VOLUME THIRTEEN NUMBER 2, SUMMER 1997–1998

Was it created by a meteorite crashing to Earth, or more slowly over time? Find about Curiosity Swamp on page 50.

Imagine a commercially-owned and managed sanctuary in the hills east of Perth and you have 'Karakamia Sanctuary'. Find out how it was created on page 17.

The Western Blue Gum, a commercial variety of the Tasmanian bluegum, was developed for WA conditions, but tree breeders continue to improve the strain. See page 36.

FEATURES

REGULARS

COVER

Is the forest red-tailed black-cockatoo rare or just rarely seen? Find out the answer to these questions on page 10.

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