Macrozamia communis

by Paul Kennedy

Macrozamia communis is a large cycad that is endemic to New South Wales and which can have either a subterranean caudex or a short columnar trunk (or an aerial extension of the caudex).

Macrozamia communis grows over extensive sections of coastal areas of New South Wales and the adjacent slopes of the Great Dividing Range (and, to a lesser extent, on the inland slopes of the Great Dividing Range). It has the most extensive distribution range of any cycad in New South Wales and is, by far, the most commonly occurring cycad in New South Wales.

The distribution range of *M. communis* extends from the Armidale region in northern New South Wales some 700 km south to near Bega on the far south coast and, also, some 160 km west to the Mudgee district in inland New South Wales. Sydney is located near the geographical center of the coastal distribution range of *M. communis.*

Climatic information relating to the above-mentioned cities and covering altitude, annual average rainfall, number of rain days and frost days per year, and minimum and maximum temperatures reached at least once per week in July and January, respectively, is as follows:

Place:	**Altitude** (m)	**Annual Average Rainfall** (mm)	**Rain Days**	**Frost Days**	**Temperature Range** **July** minimum	**January** maximum
Armidale	980	793	110	74	-4.3	31.1
Bega	11	879	94	61	-2.5	32.3
Mudgee	454	668	79	57	-3.2	35.5
Sydney	42	1216	139	Nil	5.7	28.9

The annual rainfall covering the overall distribution range of *M. communis* falls in a very uniform pattern with 50% falling in spring and summer and 50% falling in autumn and winter. The percentage seasonal rainfall pattern is as follows - Summer: 28%, Autumn: 28%, Winter: 22%, and Spring: 22%.

Macrozamia communis grows prolifically - in some areas abundantly - on the south coast of New South Wales and to a slightly lesser degree on the central coast,

north of Sydney. Compared with plants growing in coastal areas, plants which grow in inland areas are significantly smaller in size and are not nearly as plentiful.

Macrozamia communis reaches its maximum population density on stabilized sand dunes in close proximity to the ocean. It also grows in extensive colonies, at times reaching dense proportions, on steep hillsides and slopes of near coastal ranges.

In some dense stands on the south coast of New South Wales, *M. communis* grows in such abundance (see photos p. 19) that, in order to move through a stand, it is necessary to force your way through the overlapping fronds of numerous closely growing plants and, at the same time, protect your eyes from the sharply-tipped pinnae on fronds which can reach up to 2.4 m above ground level.

The density of plants in some of the above stands is such that the ground is often totally obscured by the multiple layers of fronds, and it is virtually impossible to see where, or on what, you are treading as you move, with great difficulty, through the crowded plants.

No other cycad in New South Wales (or, to my knowledge, in Australia) has a population density of the same magnitude as *M. communis* (see photo p. 19). In this respect, despite the fact that I have described *Lepidozamia peroffskyana* as growing "in abundance" with "adult plants growing so prolifically that the fronds of numerous plants growing very close together actually overlap each other", the population density of *M. communis* in certain areas on the south coast of New South Wales far exceeds the density of the the most populous stands of *L. peroffskyana* that I have seen.

Macrozamia communis increases significantly in size as it moves southward. Not only does the overall size of the plants increase, but there is a corresponding increase in the size of both cones and seeds. I have been advised by Keith Boyer, a New Zealand cycad enthusiast, that plants grown from seed collected near Batemans Bay (on the south coast) grow much better in the temperate climate of New Zealand than plants grown from smaller seeds collected from smaller plants near Gosford (on the central coast).

The principal characteristics of *M. communis* are as follows:

- plants with either a subterranean caudex, an aerial extension of the caudex, or a short columnar trunk; (*con't page 20*)

Figure Legend–page 19:

1) *Macrozamia communis* in habitat on south coast of New South Wales.

2) *"No other cycad in New South Wales...has a population density of the same magnitude as M. communis."*

3) Two *M. communis* in habitat, one with a rare, branched trunk (some lower fronds have been removed for a clearer view of divided trunk).

4) Sporophylls on female cones of *M. communis*–spines located toward apical section of cone may measure up to 7 cm.

5) Reddish colored seeds–*M. communis*.

6) *M. communis*–yellow seeds.


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- a normally unbranched trunk - though plants do branch on an extremely rare basis (see photo p. 19; but note that some of the lower fronds on the plant were removed so as to permit a clear view of the divided trunk);
- dark green colored fronds which become dull with age;
- an untwisted rhachis;
- entire and sharply-tipped pinnne which are angled forward (at an angle of 45-60 degrees to the rhachis) and which extend in a horizontal plane from the rhachis;
- pinnae which progressively reduce in size and become spinelike towards the base of the rhachis; and
- a prominent whitish callous at the point where the pinnae join the rhachis (though plants in the Sydney suburb of Menai sometimes have pinkish callouses).

Macrozamia communis can have up to 100+ fronds which can reach up to two metres in length and which, at first, stand more or less upright but then, with age, tend to spread in a graceful arching manner to produce a palm-like appearance - though plants are often seen in suburban Sydney with the fronds tied in a tight bunch, presumably to facilitate lawn mowing and allow ease of movement around the plants (by avoiding the sharply-tipped pinnae).

When a trunk is produced it normally reaches up to (and rarely exceeds) a height of 1.2 m above ground level and measures up to 0.6 m in diameter. This height range accords with an extensive 1940 study by Brough and Taylor into the life cycle of *M. communis* (which was then known as *M. spiralis)* - though I have sighted one *M. communis* plant with a trunk which stood 1.5 m above ground level.

Macrozamia communis seeds are normally reddish colored, but in some stands on the central coast (north of Sydney) they can either be red or yellow or, sometimes, an (intermediate) orange color (see photos page 19). Plants producing different colored seeds can be found growing side by side in the one stand. Red colored seeds predominate, with yellow seeds being reasonably plentiful, but with orange seeds being uncommon. I have only seen yellow colored seeds in one location on the south coast, though Forestry Commission brochures indicate that plants on the far south coast, which I have not seen in cone, can have either red or yellow colored seeds.

Coning is irregular, though it sometimes occurs in successive years in some large stands (although the same plants are probably not involved), while at other times there is a two to three year gap in the coning cycle.

In the dense stands on the south coast, multiple female cones are much more numerous than single cones and plants with two to three cones are normal, while plants with four cones are not uncommon. At maturity, female cones measure up to 40 cm long and 18 cm in diameter, weigh approximately 5 kg and contain approximately 150 seeds. *M. communis* seeds measure up to 3.5 cm in length and 2.2 cm in diameter.

The sporophylls on female cones are heavily spined (see photo p. 19), with an elongated spine measuring up to 7 cm long on those sporophylls which are located toward the apical section of the cones.

Male plants normally produce more cones than female plants, and up to ten male cones on a plant have been recorded, though the norm is in the three to five range. Male cones measure up to approximately 40 cm long and 12 cm in diameter and are also spined, with spines measuring up to 5 cm on the apical section of the cones.

In the Newcastle/Cessnock area there are several large stands of a significantly smaller ("dwarf") *M. communis* plant, with one of these stands growing between two disjunct stands of *M. flexuosa.* The plants in these stands are similar in size to the *M. diplomera* plants which grow in northwestern New South Wales. Seeds from these "dwarf" plants are marginally smaller than seeds from the much smaller, nearby *M. flexuosa* plants and are significantly smaller than seeds from coastal *M. communis* plants.

On a comparative basis the average maximum height range of these "dwarf" *M. communis* plants compared with other coastal habitat *M. communis* plants is as follows:

- Newcastle/Cessnock "dwarf" 0.6-0.8 m
- Central Coast (Gosford area) 1.2-1.8 m
- South Coast (Batemans Bay area) 1.8-2.4 m

Macrozamia communis usually grows under a eucalypt canopy. On the south coast it grows principally under a canopy of *Eucalyptus maculata* (the "spotted gum"). Where *E. maculata* is present, *M. communis* is normally the dominant understory plant, although scattered *Banksia* sp. trees are often present. On the central coast, the principal canopy cover is provided by *Angophora costata* (the "Sydney red gum").

Macrozamia communis grows in areas of wet sclerophyll forest at the northern extremity of its distribution range, while on the south coast it grows in areas of dry sclerophyll forest.

As a general rule (thought this is not an ironclad rule) *M. communis* usually forms a subterranean caudex on coastal sand dunes adjacent to the sea shore (due to the action of contractile roots), whereas in shallow soils and on quartzite and sandstone ridges it tends to form an aerial extension of the caudex or a short columnar trunk.

At Batemans Bay on the south coast, *M. communis* is ubiquitous and can be found growing in numerous dense and extensive stands; there are literally thousands upon thousands of plants growing within a 20 km radius of Batemans Bay (even though many stands have been decimated in the name of progress to make way for homes, farms, or tourist developments).

In 1985, I took Cynthia Giddy, who was visiting Australia for the first time, to Batemans Bay to look at *M. communis.* Cynthia was amazed at the prolific number of *M. communis* plants which were growing in the area, particularly in one stand which was situated on a flat area of stabilized sand very close to the sea shore and in which plants were growing in abundance.

Cynthia was also surprised at:

- the extent of the eucalypt canopy cover,
- the natural regeneration which was taking place (there were literally hundreds of self-germinated seedlings around many of the female plants),
- the fact that the plants were growing on beach sand almost immediately adjacent to the ocean, and

- the fact that the plants were growing on vacant land a mere 25 m from a public road.

Kangaroos are fairly common in the Batemans Bay area and (along with possums) are responsible for eating the flesh off seeds which have fallen from disintegrating cones. In this regard, these marsupial animals are very efficient seed-cleaners.

On an affinity basis, *M. communis* has a degree of relationship to the smaller Queensland species *M. miquelii* and the larger (newly named) New South Wales species *M. johnsonii*, but it is probably more akin in size to the Western Australian species *M. riedlei*. (Note - *M. johnsonii* was previously known as the "New South Wales form," or the "green form," of *M. moorei*.)

Macrozamia miquelli plants from suburban Brisbane (and also from Fraser Island) are not unlike *M. communis* in general outlook but are smaller in overall size and also have smaller cones and much smaller and differently shaped seeds. In addition, the pinnae on *M. communis* are broader and more rigid than those of *M. miquelii*.

Macrozamia johnsonii has larger seeds and much larger cones than *M. communis* and, as well, has longer fronds and also produces spine-like appendages which replace the pinnae on the lower sections of its rhachises. The trunks on *M. johnsonii* are both taller and stouter than *M. communis*, with the tallest *M. johnsonii* plant that I have seen having a trunk standing 2.4 m above ground level.

Macrozamia communis and *M. riedlei* (of suburban Perth) are generally of comparable physical size, but there are noticeable differences between the two species:

- first, *M. riedlei* has a diamond shaped rhachis with the pinnae rising from opposite sides of the diamond to form a broad "V" shaped profile, whereas the pinnne on *M. communis* extend in a horizontal plane from a rhachis with a generally flat upper surface, and
- second, there is a significant color difference between the two species, with *M. riedlei* being a much lighter green; also, it is not uncommon to see *M. riedlei* plants with a mixture of normal green fronds as well as some glaucous (blue) fronds.

Confusion has occurred, and apparently still exists, in respect to the identification of *M. communis* and *M. spiralis*, despite the reclassification of the nomenclature of Australian Zamiaceae by L. A. S. Johnson in 1959, when *M. communis* was created to cover what was previously known in New South Wales as *M. spiralis*.

Compared with *M. communis*, *M. spiralis* is a small *Macrozamia* (Section Parazamia) species that grows in a pattern of scattered individual plants or, sometimes, small clumps of plants. It normally has an average of 8 to 12 fronds, which stand up to 60 to 90 cm above ground level. It has absolutely no affinity with *M. communis*.

The extensive coastal and inland distribution range of *M. communis* overlaps (either totally or partially) the distribution ranges of a number of *Macrozamia* (Section Parazamia) species, including *M. spiralis*, *M. secunda*, *M. flexuosa*, and *M. plurinervia*, and hybrids have occurred, or have been reported, with all of these species, except the latter.TCN *This article appeared in a slightly different format in Palms and Cycads and is reprinted by kind permission of the author, as well as the co-editor, Tom Turner.*