



*Drosera schizandra*  
in habitat



*Drosera prolifera*  
in habitat



*Drosera adelae* in habitat  
near Cardwell, N.Q.



Russell River above Windin Falls.  
Habitat of *Drosera schizandra*.

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# Rainforest *Drosera* of North Queensland

by Dr. P. S. Lavarack

National Parks and Wildlife Service

P. O. Box 190, North Quay, Australia 4000

## Introduction

Most species of the Droseraceae are plants of open well-lit environments, often growing in soil which is at least seasonally waterlogged.

The genus has reached its greatest development in temperate parts of the Australian continent with upwards of 40 species occurring in a limited area in south west Western Australia. In tropical Australia 9 species are recorded. Four of these (*D. burmannii* Vahl., *D. spatulata* Labill and *D. peltata* Smith) are widespread outside Australia, while one (*D. petiolaris* R. Br.) also occurs in New Guinea. Another (*D. banksii* R. Br.) apparently does not occur outside Australia, but is widespread across the north of the continent.

The remaining three species — *D. adela* F. Muell., *D. schizandra* Diels and *D. prolifera* C. T. White — are unusual in that they grow in hot, humid, shaded rainforest conditions. All three species show adaptation to low light situations in that the normally rather small leaves of most members of the Droseraceae have been replaced with large broad leaves.

## Distribution

The rainforest *Droseras* are found in the area of north Queensland from about Ingham (18° 42's) north to Cooktown (15° 28's) in the narrow coastal region extending about 20 km inland. This is an area of high rainfall and relatively high mountains close to the coast. It encompasses the largest and richest area of rainforest on the Australian continent and contains many endemic species. Within this range the three *Drosera* species are not widespread and show a most interesting distribution.

*Drosera adela* has been recorded only on Hinchinbrook Island and adjacent areas of the mainland. It grows in shade, but occasionally in sun, in beds of moss along creek banks at low altitudes.

*Drosera schizandra* has been recorded from only one or two streams in the western foothills of the Bellenden-Ker range at about 700m altitude. It grows on mossy creek banks in relatively cool, very shady rainforest conditions, usually under a canopy of ferns and sedges.

*Drosera prolifera* has been recorded on Thornton's Peak and the streams which rise on this mountain. It has been noted

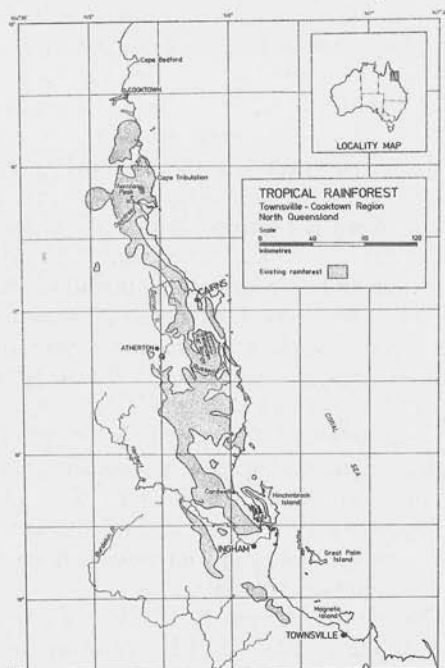


Figure 1

at varying altitudes from sea level to 1400m.

The distribution of these species is illustrated in Fig. 1. Other *Droseras* in east and north Australia show wide overlapping patterns of distribution but the three

rainforest species are unusual in that the distribution in each case is very small and quite distinct from the others. This is surprising as there is a more or less continuous range of apparently suitable habitats in the intervening areas.

### Ecology

Although all three species are found in the tropics, two at least (*D. schizandra* and *D. prolifera*) occur at moderate elevations where night-time temperatures in winter often fall to 10°C or lower. Day temperatures even in winter would usually reach at least 20°C. All three species grow beside streams in predominantly shady conditions with a still atmosphere. It is likely that the habitat immediately surrounding the plants is less variable than that in the forest. It is also likely to be cooler as in most cases the streams rise at high altitudes and are fast flowing.

Communities of all three species suffer inundation for several periods of up to a day or two each year by fast-flowing water. While the period between December and April is regarded as the wet season, the area in which these plants grow is subject to heavy rain at any period of the year. They have been observed growing on permanently moist rocks, in beds of moss and in moist sandy soil associated with fast-flowing water.

In summary, the conditions in which these rainforest species of *Drosera* grow are warm, humid with relatively little fluctuation in temperature and moisture, in areas of low light intensity and on a well drained substrate.

*Drosera prolifera* C. T. White — History

While *D. adela* and *D. schizandra* are rare plants, their existence has been well known since 1864 and 1906 respectively. *D. prolifera*, however, has been something of a mystery since its original collection by L. J. Brass in 1937 on Thornton's Peak and subsequent description by C. T. White (White 1940). It was again collected in 1940 by Flecker but was apparently not seen again for 33 years until

it was collected by Stocker, again on Thornton's Peak.

The author in 1973 saw plants of what must have been this species near the Roaring Meg, a stream which rises on Thornton's Peak. These plants were growing at about 500m elevation, considerably lower than the previous collections near the summit of the mountain (1400m). In June 1977 B. Gray of Atherton collected a few plants on the headwaters of Noah Creek, another stream rising on Thornton's Peak. He reported other occurrences in the same area. Some plants from this collection were grown by the present author who searched for this species in June 1978 and was successful, collecting specimens from a tributary of Noah Creek at about 200m altitude. As far as can be ascertained these are the only recorded sightings of this species.

The plants seen at Noah Creek were growing most prolifically along rock ledges underneath and beside a waterfall in a thin layer of organic material and mud held in place largely by the plants themselves. The area was exposed to a little early morning sun.

As the only figure of *Drosera prolifera* in existence is a sketch in the "Victorian Naturalist", a figure is included here. This figure (Fig. 2) is made from material now in the Queensland Herbarium.

### Relationships

There appears little doubt to the present writer that the three species are closely related. *D. adela* and *D. schizandra* are placed by Diels (1906) in the section *Arachnopus* along with *D. indica*. C. T. White in describing *D. prolifera* created a new section (*Prolifera*) to include this species stating: "The affinities of this section lie with Section *Arachnopus* Planchon, but differ markedly in the rotund long petiolate leaves." (White, loc. cit.) The other obvious difference lies in the production of small vegetative buds on the apex of the old flowering scape.

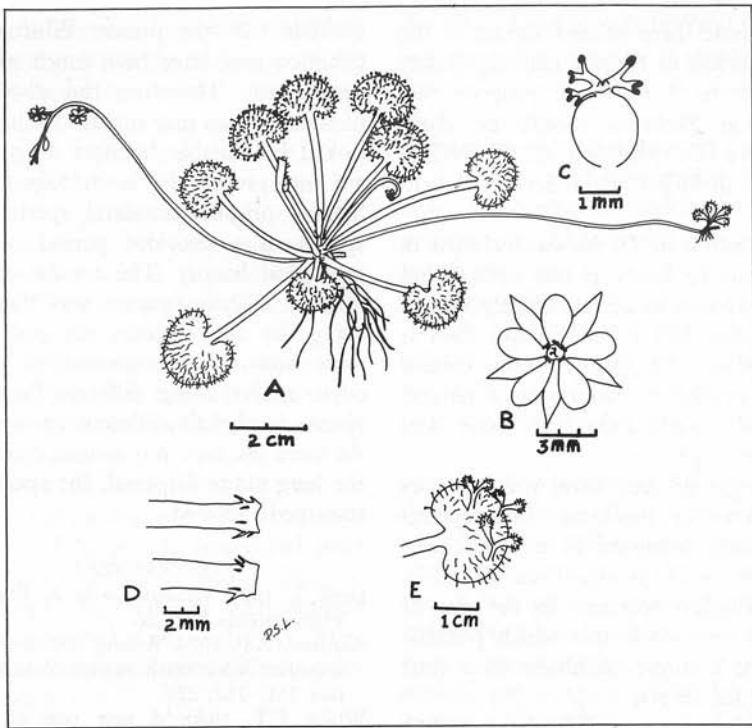


Fig. 2 *Drosera prolifera* C. T. White

- |           |                   |
|-----------|-------------------|
| A. Habit  | D. Leaf base      |
| B. Flower | E. Buds from leaf |
| C. Styles |                   |

The difference in the leaves is not as clear-cut as White suggests as close observation of colonies of *D. adelae* and *D. schizandra* will reveal that juvenile plants of both these species have leaves which are rotund and clearly petiolate. Very small plants of all three species are indistinguishable. The flowers of the three species also are very similar. In fact *D. schizandra* and *D. adelae* resemble *D. prolifera* much more closely than *D. indica* with respect to the structure of the styles and stamens. The stamens in *D. prolifera* are broad, club shaped, almost petaloid with the apex a similar colour to the petals. The anther cells are widely separated as is the case in *D. schizandra* and *D. adelae*. Figure 3 shows a comparison between these four species.

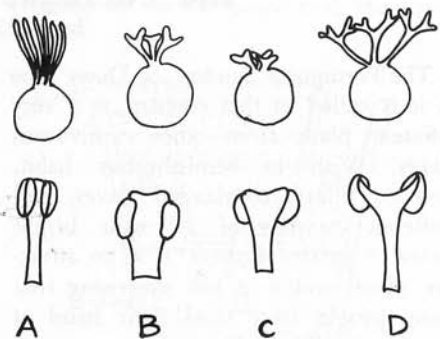


Fig. 3  
Stamens and styles of four species of *Drosera* compared. A - *Drosera indica*; B - *D. prolifera*; C - *D. adelae*; D - *D. schizandra*

Thus these three species appear to the present author to form a natural, closely related group. I therefore propose that the Section Prolifera should be abandoned and *D. prolifera* C. T. White should be included in the Section Archnopus.

The position of *D. indica*, included in Archnopus by Diels, is less certain, but it would appear to be less closely related to *D. adelae* and *D. schizandra* than is *D. prolifera*. Obviously some careful study is needed to determine a natural system of classification for these and related species.

The origin of these three species raises some interesting problems. Each species is apparently restricted to a small area, in the case of *D. prolifera* and *D. schizandra* a single catchment; in the case of *D. adelae* to a small area which possibly constituted a single catchment in a time of lower sea levels.

It has been shown (Kershaw, 1974) that the climate in this region is emerging from a period of high rainfall. It is

possible that the present rainforest distribution may have been much more discontinuous. Therefore the distributions of these species may not always have been linked by suitable habitats. It is consistent with present day knowledge to postulate an original ancestral species, widespread in a previous period of recent geological history. The continuous range of this ancestor species was then interrupted by one or more dry periods and these now-isolated communities proceeded to evolve along different lines in response to slightly different environments. As there are now no obvious mechanisms for long range dispersal, the species have remained isolated.

#### REFERENCES

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(Received 11/14/78)

## **\*On Growing *Drosera lusitanica*, The Portuguese Dewy Pine**

by Adrian Slack

The Portuguese Sundew, or Dewy Pine as it is called in that country, is a very different plant from other carnivorous plants. With its semi-shrubby habit, crowded linear red-glanded leaves, and clustered corymbs of 1" wide bright yellow 5 petaled flowers, it is an attractive plant, and it is not surprising that many people have tried their hand at growing it. There have been many instant failures amongst which must be included some of my own early attempts, while "success" has not often lasted for more than 2 years. Indeed, a belief has grown up amongst some growers in the

U.S.A. that the plant is a biennial. It does, in fact, grow to a ripe old age in its native homes in S. Spain, Portugal and Morocco, where it is generally a plant of dry rocky hills in coastal regions, and therefore requires a rather different growing technique to any employed on your other plants. Here is one method that works.

First, its basic hates are: wet collar, poor drainage, poor light and, especially, root disturbance. Never transplant it; it may survive this maltreatment for months, only to make a sudden departure; a strange truth only discovered after many trials and losses. If you mist your

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