The elephant's foot, in habitat and cultivation

Ralph Peckover

Introduction

The elephant's foot plant, namely *Dioscorea elephantipes* (Fig. 1), is a species of succulent with a swollen, mainly above-ground caudex, having separate male and female plants (dioecious). Over eighty years ago, together with *D. sylvatica* (Fig. 2) it was a source of dioscorine which was used to produce cortisone, and diosgenin, being a precursor for several hormones, including the synthesis of progesterone. The process was used in the early manufacturing of combined oral contraceptive pills. Fortunately, removal of plants from their habitat proved difficult, and when cheaper and more viable sources of these steroids became available, collection efforts ceased, though initially unsustainable collection nearly led to their extinction in the wild.

The plant named elephant's foot should, in my opinion, have been called the tortoise plant as the shape of the caudex, when viewed from above, is very similar to that of a tortoise shell. Elephant's foot is supposedly named so because when one looks at the base underneath the caudex it is similar to the underneath of an elephant's foot pad. The external parts of both the plant and the tortoise are protective in nature and are just the outside covering for the living material inside. A tortoise has plates which also look similar to the elephant's foot (Fig. 3) and in this plant you can see the similarity to that of a tortoise shell (Fig. 4).

I have always been intrigued by the way both the tortoise and the *Dioscorea* increase

▲ **Fig. 1 A range of sizes of *Dioscorea elephantipes***

◄ **Fig. 2 *D. sylvatica* here in the shape of Africa**

▲ **Fig. 3 A tortoise with similar shell to *Dioscorea elephantipes***

▲ **Fig. 4 The similarity of the plant to the tortoise shell**

▲ Fig. 5 Green meristematic tissue between the plates

▲ Fig. 6 The green clumps of leaves are individual plants (around 15 of them) in habitat

in size. Both have meristematic tissue between the plates, and this can be seen in the photo of a *Dioscorea*. New tissue grows along the edges, here a greenish colour between the plates (Fig. 5), and each plate increases in size. Similarly, a tortoise carapace increases in size, when conditions are favourable. This will occur in the plant when ample and regular rain falls, and for the tortoise when food is plentiful.

Although I have grown these plants for many years, I have only seen *D. sylvatica* in the wild at a few widely scattered places like Sodwana Bay, the Drakensberg foothills as well as in Gauteng province. *Dioscorea hemicrypta* looking very similar to *D. elephantipes* can be found near Oudtshoorn in the Eastern Cape but it is not as sought after as *D. elephantipes*.

An opportunity arose at the end of June 2023 through a friend who told me they had hundreds of dioscoreas on their farm in the Cederberg in the Western Cape.

A trip was organised and off we went into the mountains. After hiking for a kilometre, we saw the first plants between some rocks. The plants are found only on the cool, southern and eastern aspects of the mountains. This season, very extensive rains had fallen and everywhere was wet. My visit was on a day that was the first in many weeks that the sun shone, and it was also not cold.

Plants could be seen from the green mass of leaves above the caudices and in the photo, around 15 plants can be seen between the rocks (Fig. 6). To get a picture of the caudex, the old, dead vines had to be lifted carefully (Figs. 7 & 8). Although the outer skin is thick, the meristematic tissue between the plates is very sensitive to direct heat and the temperatures in the Cederberg often exceed 40°C in summer and would just cook this young tissue. Shading is thus essential and this is partly provided by the old vines.

Cultivation of plants

This plant grows in a winter rainfall area in the western part of South Africa where the rains generally fall from around March to September. I have found that in S. Africa, from January onwards, the vines begin to develop from the caudex and then around September the leaves turn yellow and the plant becomes dormant. Thus, watering can begin around February till the leaves turn yellow in September and then nothing given till the next growing cycle. Of course, in the UK and Europe the seasons are reversed and you should treat this as a

winter-grower, and begin watering in late August or September and continue until March. They are quite happy with a winter minimum temperature of 5°C.

When the leaves are green and fully expanded, I have found that, depending on the size of the pot, a good watering once to twice a week is necessary for the caudex to expand. Otherwise the plant just sits there without any real growth to the caudex. A feeding with a balanced fertiliser with both macro and micro elements will ensure good healthy growth if given twice during the growing season.

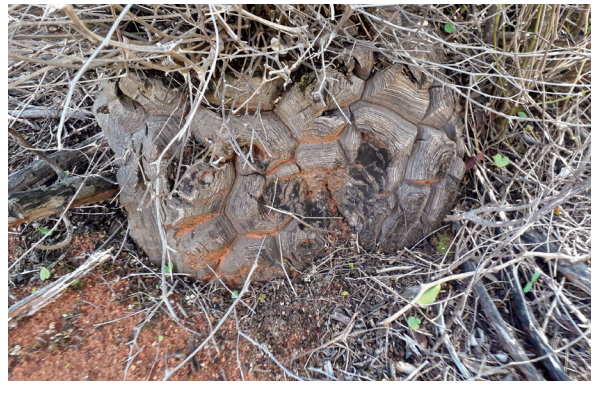
The vigorous, annual climbing stems (vines) can grow to as much as 2m in a season, and these can be trained around a wire hoop set in the pot, otherwise you will find that they climb over everything in your collection.

One point to consider is that when the container gets too small, the best thing to do is just to transplant this whole plant and soil into a larger one and then infill with the same type of well-drained soil mixture. If one cuts back the roots, sometimes the plant just does not send out new roots and within a season it is dead.

▲ Fig. 7 A more exposed caudex of a healthy plant, around 30cm in height

Pests

Here in Pretoria I have to contend with the two-spot mite and mealy bugs. For the two-spot mite, regular spraying with at least three to four different acaricides is necessary to keep this pest in check. All acaricides should be alternated to prevent the pest building up resistance. In the UK and many other countries these products are not available for the amateur grower.



▲ Fig. 8 Sand in the grooves of another healthy plant with some remains of fire damage

▲ Fig. 9 Two trays of seedlings sown in January 2023 with some showing the developing caudices

▲ Fig. 10 A 3-year-old seedling showing the developing plates

▲ Fig. 11 A plant around six years old in a 15cm pot

For the mealy bugs, Imidacloprid is added once a year and is highly effective as the bugs are always located in places not easily seen and are out of reach of contact pesticides. Of course, if one has only a few plants, the leaves can be wiped down with watered down methylated spirit which should control this pest. As Imidacloprid is not available for amateur horticultural use in the UK there are a number of alternative ways to control mealy bug and these have been covered in *CactusWorld* articles over the past few years.

Cultivation from seed

The seed, with its single winged appendage, can be stored for a few years in the fridge but it is probably better to sow the seed from the previous season around spring (September in S. Africa). Seed should be placed onto the medium and covered with around 1cm of sandy soil. The germination medium should be well drained and always kept moist but not wet (Fig. 9).

Usually the first leaf will appear within a month and if the seedlings are happy, further side shoots with more leaves will develop. From this point onwards a small caudex starts forming and can reach up to around 2cm diameter by the end of the first growing season.

The caudex skin is smooth at first but after around three years (Fig. 10) starts to show the characteristic form with plates forming and from then on, these plates get thicker each year (Fig. 11).

Dioscorea elephantipes is an interesting plant to have in any collection. Keep at least four plants if you want to produce seed as the plants are either male or female (dioecious). The pollen from the male plants can be placed on the receptive stigma of female plants using a thin paintbrush. Fruits mature in around five months when they turn light brown. They then split open and the six seeds are blown away by wind.

Editor's note: The common name elephant's foot is not exclusive to *Dioscorea elephantipes* as *Beaucarnea recurvata* is also called the elephant's foot or ponytail palm.

Email: peckoverralph@gmail.com