Forest creepers

Forests are characterized by lianas hanging most impressively from the tree crowns. But how do they get there, and why be a creeper?

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Creepers or climbers refer to a group of plants that are rooted in the ground, but that grow into more favourable positions (mainly to take advantage of optimal light conditions) with minimum investment in stems and with special adaptations to fix themselves to hosts. In contrast, stranglers like the Scrambling Fig (Ficus burtt-daviyi) and epiphytes start their lives in the host tree, not on the ground. Climbers come from many taxa although some families are better represented than others. Other names used for creepers or climbers are vines, scramblers and lianas. Liana (or liane) is a general term referring to any woody climbing plant. They are abundant in the tropics but are found in cooler climates as well. Vines mostly refer to smaller and herbaceous climbing plants and they often colonize forest gaps or forest margins. The soft Asparagus species (previously Myrsiphyllum) are capable of growing in shade. When some vines become woody, as old mature plants, they also may be referred to as lianas.

Lianas and vines have various growth adaptations that enable the plant to be successful. The two most important physical features of a climber are exaggerated internodal growth and a method to attach itself to a host. Their stems are variable in form and texture. Lianas vary in thickness and may be round, angular or winged in cross section. The bark may be thin, woody or corky. Its physiology shows few, and relatively large vessels channelling water to the canopy. The phloem is well developed and may be duplicated next to the pith. Although few of the vessels are associated with wood, the xylem commonly consists of several partly or completely separated filaments surrounded by softer tissue. This gives lianas their flexibility and tensile strength.

Why the climbing habit?
Most plants have the ability to orientate themselves to optimise their light requirements. Creepers have done this in various ways. Forest creepers start their life similar to trees by germinating and waiting as seedlings for the right habitat condition to enable further growth. When light is detected while the plant is in sub-optimal light conditions, it has the ability to grow elongated internodes that is seen as fast growth. Its special climbing mechanisms (e.g. tendrils) allow attachment to support. The main strategy of a climber is to achieve a very high canopy to stem ratio. This results in a higher proportion of photosynthetic biomass than is present in most woody plants* which equates to minimal energy invested for maximum gain.

Climbing mechanisms vary greatly. The following three forms are well represented in the forests of the Southern Cape and Tsitsikamma: scramblers twiners and tendril climbers. A fourth strategy, the root-climber (e.g. the Virginia Creeper) is not found locally. Root-climbers may use adventitious roots or ‘suction cups’ to hold on to their host plants.

Of the 74 climbing plants in the Knysna Afrotemperate Forests, 29 are scramblers. Scramblers are climbing plants that loosely ascend nearby vegetation by leaning on it, growing into it or hooking and holding onto supporting plants. Scramblers exclude twiners and tendril climbers. Scramblers inherently are fast growers, moving up the host plant as they attach themselves. There are mainly two types of scramblers. The hook climbers (seven local species) use thorns to hook and hold on to their hosts. The best known are Rubus (three species), Capparis sepiaria and Scutia myrtina. The last two mentioned species’ stems easily exceed 10 cm diameter and are long-lived plants. The scramblers without thorns are often species with stiff leaves protruding at almost right angles to their elongated stems enabling them to hang onto their hosts, e.g. Adenocline acuta.

ABOVE: Masses of creepers grow in the forest canopy. Photo: Johan Baard.