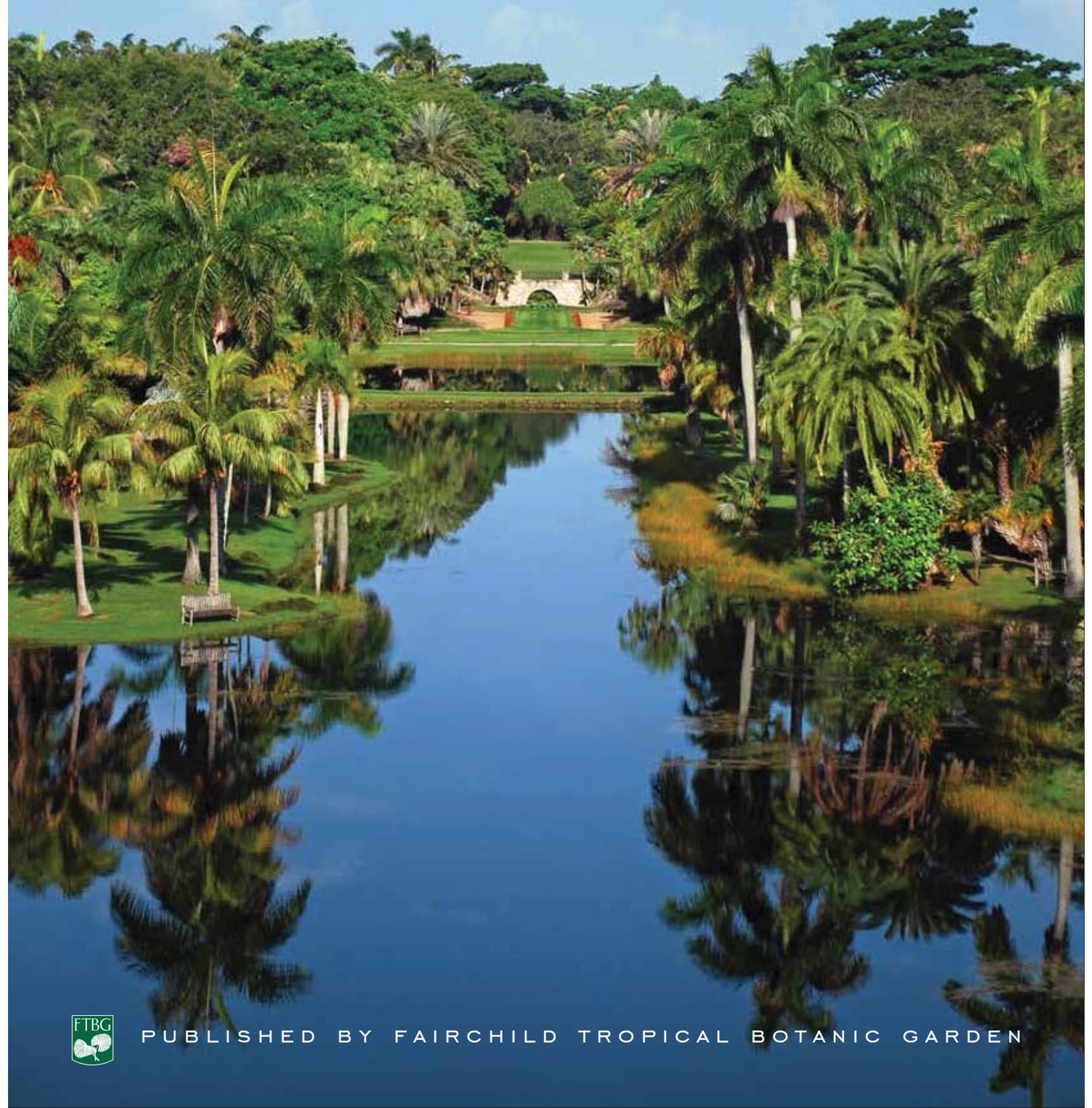


the TROPICAL GARDEN



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Summer in the Arctic (plant) life finds a way

Text and photos by Kenneth Setzer





Among the many hardships of arctic living—cold, wind, darkness, aridity, low nutrition—plants have found many workaround strategies to flourish in unusual ways.

I was fortunate recently to travel to Greenland and Arctic Canada, places on the map I had long pored over and wondered, “What’s it like near the top of the world?”

While most of us are familiar with polar bears and walruses, the plants of the Arctic are usually overlooked—though the fact they cannot hunt or move to better locations, yet still survive, makes them even more remarkable.

Plant strategies for surviving the Arctic make sense: seek shelter from cold, drying wind and stay small. There are even Arctic succulents to deal with low precipitation. Shelter can include growing on the protected, leeward side of boulders and in rock crevices and depressions in the tundra. Perhaps counterintuitively, good snow cover can save plants by providing insulation throughout winter. Low snowfall, easily blown away, can mean death for plant communities.

PREVIOUS PAGES
The town of Sisimiut,
Greenland.

BELOW
Ursus maritimus, the polar
bear, wanders the pack
ice in search of prey.





On my trip, I found rich habitat where soil had fallen from a hillside or dune, leaving a steep but protected area for plants. Moss and lichen are ubiquitous; lichen can colonize bare rock, and where moss takes hold, it lays the foundation for moisture and organic matter to accumulate, providing a micro nursery that lets flowering plants move in.

1 A boulder on the tundra of Dundas Harbor in Devon Island, Nunavut, Canada—on nearly the same longitude as Miami—clearly supports on its sheltered side a mound of diversity including rock tripe lichen (*Umbilicaria* sp.) and sunburst lichen (*Xanthoria elegans*) on the rock itself; as well as moss, white worm lichen (*Thamnolia vermicularis*), Arctic willow (*Salix arctica*) and others on the mound of accumulated soil and detritus.

Another strategy/requirement in the arctic is to stay small, since conditions are warmer and less windy near the soil surface. It's amazing to see willow and birch that are only a few inches tall, at most, creeping along the ground in the high Arctic polar desert. In one depression in the tundra, I observed a miniature willow forest yards long but no more than 2 feet wide.



2



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- 2 This female Arctic willow has claimed the sheltering base of a boulder in Pond Inlet in northern Baffin Island, Nunavut, Canada.

Some plants adopt a cushion form, which lets them use their own dead leaves as insulation; instead of blowing away, they accumulate and serve to trap warm air and wind-blown organic matter.

- 3 Moss campion (*Silene acaulis*), common in Arctic and subarctic fellfields, is a classic cushion plant. It employs a long, fast-growing taproot to colonize unstable, frost-heaved soil.

Greenland's west coast and Baffin Island's east coast harbor a good deal of plant biodiversity. These areas were ice age refugia—ice-free during the Last Glacial Maximum when the glaciers were at their greatest extent about 26,000 years ago. Species could survive in these refugia, and after glaciers retreated, could spread outwards from them.

Areas under bird nesting sites and near decaying animals are also oases of fertility that support dense plant life. In other locations, tundra soil lacks nutrients; dead plants do accumulate as peat, but only very slowly decay to replenish the soil.

- 4 Cottongrass (*Eriophorum scheuchzeri*), in Ilulissat, Greenland, is a common sight in damp areas and, like other cushion plants, cottongrass collects wind-blown detritus, forming large tussocks that other plants can exploit for the accumulated organic matter, moisture, shelter and stabilized soil.

A neat tactic for attracting insect pollinators is used by mountain avens (*Dryas* sp.) and Arctic poppy (*Papaver* sp.) The flowers of these plants are heliotropic, moving to face the sun. Bumblebees and flies necessary for pollination are attracted to linger a bit longer in the warmed flower's interior.

- 5 Mountain avens (*Dryas integrifolia*) is a common northern plant, but interesting as a favorite food for muskoxen and as the eponym for the Younger Dryas, a period of sudden, extreme cooling that appeared after the warming at the end of the last ice age, about 14,500 years ago. *Dryas* pollen is common in sediment from this time; it apparently endured the shift from ice age to warmth, back suddenly to ice age conditions and ultimately to today's warmer climate.

Many of these survival tactics appear similar to those used by warm desert plants: hold the little water you get, stay small, seek shelter. (See "Getting to Know Namibia," on page 22 for more about desert plants). Though it lacks the trees and the green conditions we are accustomed to, the Arctic harbors life and diversity, able to survive months of sub-zero darkness, in surprising abundance—albeit in small scale—close to the sun-warmed surface of the tundra. 

