Orchids in Alaska from the Juneau Empire

Posted: Friday, October 02, 2009

By Mary Willson

There are perhaps 18,000 species (or 23,000, some reports differ!) of orchids in the world, occurring almost everywhere except the High Arctic, the most extreme deserts, the crests of the coldest mountains, and the sea. Their economic value lies in a vast and lucrative floriculture industry and in the production of natural vanilla flavoring. They are cultivated for the spectacular array of complex, often gaudy, sometimes bizarre, and sometimes elegant flowers and are often hybridized by aficionados to create yet more diverse floral exhibits.

Most tropical and subtropical orchids have storage organs (for water and nutrients) called pseudobulbs, ranging in size from pinheads to colossal ten-foot cylinders. In temperate regions, terrestrial orchids may have storage organs, called tubers, on the roots. Because these tubers, which may occur in pairs, were thought to resemble testes, the Greeks called them 'orchis,' their word for male gonads. That term came to be applied to the entire group.

All orchids produce millions of dust-like seeds that get blown about by breezes. Such tiny seeds don't have room for the storage of energy and nutrients that allow 'normal' seeds to germinate and grow. Instead, they rely on a symbiosis with certain fungi that provide the wherewithal for germination and growth, and so every seed must encounter a suitable fungus before it can germinate. (Adult orchids reportedly acquire other kinds of fungi.)

Despite the bewildering diversity of floral shapes, sizes, and colors, all orchid flowers have three sepals and three petals, one of which is much modified and distinctive (called the lip or labellum). Male and female sex organs are typically united in a single structure (called the column).

The pollen grains are contained in sacs (usually paired) called pollinia. In most orchids, a visiting insect must insert its head in the flower to dislodge the pollinia. These adhere to the insect by a sticky disc, so that the insect then flies about with two pollinia projecting from its head or tongue until it visits another flower of the same species. There the pollinia are inserted into the spaces that are receptive to pollen and the ovules (future seeds) get fertilized. Darwin, over a hundred years ago, studied how orchid flowers work: how the visiting insects acquire and deposit the pollinia.

Southeast Alaska has a small sampling of the huge global array of orchids. All of our species are terrestrial; none is epiphytic (in contrast to lower latitudes, where many orchids use other plants as platforms on which to grow, extracting water and nutrients from the air). Most of our species are probably pollinated by small-bodied wasps and flies, but some are pollinated by bees or moths.

Of the dozen-plus species in northern Southeast Alaska, arguably the prettiest is Calypso bulbosa, the fairy slipper. (In Greek mythology, Calypso was the sea nymph who kept Odysseus for seven years after he was shipwrecked and washed up on her island, and finally released him to return to his wife.) This widespread but short-lived species is so susceptible to disturbance that it is endangered in some places.

Calypso orchids are pollinated by bumblebees, who are fooled into visiting the nectarless flowers by some yellow hairs that resemble pollen (food, to the bees). The single leaf is produced in fall, overwinters, and dies away in summer. This orchid appears to be very scarce around Juneau, growing in only a few special places. The flowers should never be plucked, because the plant is so fragile that even gentle tweaks of the stem can break the underground parts and kill the plant.

We have several species of Platanthera (a.k.a. Habenaria), whose common name is bog orchid (for where it grows) or rein orchid (for the strap-like shape of certain flower parts). Some bog orchids have greenish, usually unscented flowers, but the white bog orchid is exceptionally fragrant. The tall flowering spikes of bog orchids can be found in our muskegs and at least some of them are probably pollinated by moths, as Darwin discovered for the species found in England. The related frog orchid (Coenoglossum viride) has been found occasionally in our alpine zones; it is small, with greenish flowers that may seem vaguely frog-like to some eyes.

A common orchid in conifer forest belongs to the genus Goodyera. Its wildly inappropriate common name is rattlesnake plantain. Although the markings on the leaves suggested snakeskin to some imaginative early settlers, in fact this plant has nothing whatever to do with snakes of any sort, nor is it related to true plantains. The whitish or greenish flowers grow in a spike, mostly oriented to one side of the stem.

Less common are the two species of Malaxis, which go by the unlovely names of adder's mouth and adder's tongue. The romantically named ladies' tresses (Spiranthes) bears whitish flowers arranged spirally along the spike; bees may pollinate the flowers, at least in some regions.

The two species of coralroot (Corallorhiza) in our woods are saprophytic, deriving their nutrition from decaying organic matter and not by photosynthesis, so they have no green parts. All one sees are the flowering spikes, pinkish in one species and yellowish in the other.

Finally, there are the twayblades (Listera), so called for the paired leaves midway on the flowering stalk. The inconspicuous spikes bear small yellowish or purplish flowers. A visiting insect has only to touch a certain spot in the flower to make the pollinia fly out explosively, along with a drop of glue that temporarily sticks the pollinia to the insect body. Darwin's careful observations and experiments showed that minute movements within each flower ensure that the receptive female surfaces are covered up until the pollinia are removed. Then they become exposed, so that a subsequent insect may deposit pollinia from another flower, ensuring cross-pollination.

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