

Pinguicula pumila and *Drosera brevifolia*. Unfortunately, we did not find any, nor did we find any other carnivorous plants, probably because it was so dry in the part of the field we visited last. We went back to the car disappointed and thought - maybe another time.

A few days later my sister and I went back to Atlanta, and, once again, I enjoyed the sight of *Sarracenia alata* and *Sarracenia leucophylla* along the highways in southern Mississippi and Alabama.

Note about the author: Christoph is one of CPN's younger enthusiasts. He is 15 years old and has been interested in carnivorous plants since he was 13.

FIELD TRIP TO GASQUET, CALIFORNIA

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After six months of talking about it, I was off on a six day camping trip to Del Norte County, CP capital of California. Joining me was my friend Charmaine Rable, landscaper and horticulturalist of the resort where I work. On previous vacations I had briefly stopped along Hwy. 199 while on my way to other destinations, just long enough to find one good stand of *Darlingtonia* and *Drosera rotundifolia*. This time, with four days to spend in one location, I hoped to see *Pinguicula macroceras nortensis* and the rumored red-leaved variety, as well as *D. anglica*, a plant I have never seen. Charmaine was familiar with my small, but varied collection of CP, and found it hard to believe such plants actually "grew in the wild." We were in for a frantic holiday, with both disappointments and a totally unexpected surprise.

Del Norte County, in the extreme northwest of California, is the wettest part of the state, receiving as much as 70 to 100 inches of rain from October to May. The summer is generally dry, with warm days and cool, foggy nights. Winter may see some freezing, especially at higher altitudes. CP can survive the dry summers mostly by growing along the many cold water springs, seeps and creeks that are common in the mountainous terrain.

Before even hunting out a campground, we decided to make a quick stop at the one *Darlingtonia* stand I knew of, near the east limit of Gasquet, a town of 400. The highway parallels the Smith River, a turquoise ribbon that winds through the rugged serpentine mountains which are covered with pines and firs. In April the river is rather wild and noisy, a great contrast to the serene wilderness. Rhododendren and azalae brightened the woods with color, and many unusual wildflowers were in bloom. Any *Darlingtonia* stand is impressive to look at; this one was especially so, as the plants were flowering and the early morning light glowed in the puffed hoods as though they were lanterns. The cobras grew densely in an area no more than 200 feet across, where a bubbling cold creek breaks off into streams and seeps. The ground is a base of crushed gravel, with the *Darlingtonia* rooted in a dense, but porous, peat made not of sphagnum, but other decaying mosses and plants. At first sight, most of the peat mounds are crusty dry and sun-warmed, but pushing your finger into it reveals cold wetness a bare inch below the surface. Glittering *D. rotundifolia* carpet the ground, so different from east coast bogs I have seen where this sundew only grows in sphagnum. Here, the bright red plants are barely 1½" across, growing on the "dry" peat, in the wet gravel, on rotting wood, moss covered rocks, and greasy clay overgrown with grasses. Only April, and flower stalks were already pushing above the rosettes. Here *rotundifolia* is dormant only

from November to February. They will continue to flower as late as early October, as I had seen the previous fall. Intermixed with the *Darlingtonia* flowers were dry capsules brimming with seed. They appeared so old I could only presume they were leftovers from the previous year, and how they remained unscattered through winter was beyond me.

We followed the stream on the other side of the highway down a steep, wooded slope towards the river. There were several surprises, one after the other: a campground I hadn't even known existed, some friendly snakes, a mat of shade covered sphagnum, and plenty of *Darlingtonia*. It was strange to see this lonely mat of sphagnum - stranger to see no sundews taking advantage of it. (Sundews came up from this moss when planted at home, apparently remaining dormant longer than those receiving full sun.) A few cobras grew in the sphagnum, and the moss only grew in a ten-foot wide area where the stream was slow moving. We set up camp here. *Darlingtonia* grew thick along a shaded stream not 25 feet from our tents.

The next day we set out to find some *Pinquicula*, and I nearly drove Charmaine crazy with my constant cry of "Seep!" We must have stopped twenty times along roadside cliffs where water trickled and mosses grew, but *Pinquicula* seemed to be elusive. Pretty soon Charmaine was crying out "Seep!" as well. Exhausted after a few hours, we went to the Gasquet ranger station. Although the wall was covered with a botonist's photos of local flora - including butterworts and their location - the rangers looked at us as though we were hunting for *Cannibus*, a local law enforcement problem. But they were friendly and helpful, browsing with us through manuals that covered the rich local wildlife of the region, including many descriptive pages and photos of *Darlingtonia*. They directed us to the location where the photo of *Pinquicula* on the wall was taken, which was old and labeled "*vulgaris*."

There, a few miles up river, we searched and searched, but no butterworts. The river had formed a beautiful canyon, and roaring creeks ran into it. We did find more friendly snakes, alligator lizards locked in prehistoric combat, beautiful ferns and succulents growing side by side. Then a short distance upriver we finally found what we were looking for - but on the other side of the raging waters! With binoculars we were in awe of a spectacular sight: tall cliffs with twenty-foot-wide clumps of *Darlingtonia* hanging in air over the edge, a misting, rainbow-covered waterfall, and hundreds of *Pinquicula macroceras*, their violet flowers teasing us with their safety. We tried to cross the river, fools that we were, and turned back in frustration. Another location had to be found.

And it was found the next day, at Sheep Pen Creek further east towards the Jedediah Smith Redwood State Park. I had recalled photos in CPN of *Pinquicula* taken at the creek and a ranger gave us directions. And there, roadside next to a covered bridge, grew thousands of *P. macroceras ssp. nortensis* in bloom. They were green leaved, growing typically on shaded, moss-covered rock; some were upside down under ledges with water continuously dripping off of them. The leaves, long and narrow, had barely an upturned margin, making the plants look large and flat. The distinctive flowers, with their widely-separated and long, lower corolla lobes, were a richer violet than photos I had seen, and they had a white throat patch and beard. Just a hundred feet away was a beautiful sight. Here the plants grew along a seeping slope of gravelly, clay-like, blue-grey serpentine, soft and as greasy to the touch as the butterworts themselves, without any other plantlife around them. And they were red! Growing in full sun, the leaves were short, triangular, and deeply marooned, some almost a chocolate color. The contrast of their violet flowers with white throats against the background rosette of bloody leaves made them seem an alien species.

And an alien species was indeed what we found on the surprising last day of our trip. Back at our campsite, our first ironic surprise was a tiny colony of red-leaved *P. macroceras nortensis* growing a stone's throw from camp, right on the highway near the *Darlingtonia* patch. Under our noses all the time; CP will do that to you.

But the biggest surprise was back in the Cobra stand. Charmaine, by now as obsessed as any veteran CPer, was crawling on hands and knees studying *rotundifolia* with a magnifying

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REVIEW OF RECENT LITERATURE

Ayuga, C.E., E. Carretero & P. Bermejo. Contribution to the study of flavonoids in *Drosera rotundifolia*. An. R. Acad. Farm. 51 (2): 321-326. 1985.

The authors continue to identify new compounds of the flavonoid type which could be used for identification.

Damtoft, S., S.R. Jensen & B.J. Nielsen. Iridoid glucosides from *Utricularia australis* and *Pinguicula vulgaris* (Lentibulariaceae). Phytochemistry (Oxf) 24(10): 2281-2284. 1985.

The authors found similar iridoid compounds in both of the above species in this family.

Farkas, M.J. and R.A. Brust. Phenology of the mosquito *Wyeomyia smithii* in Manitoba and Ontario Canada. Can. J. Zool. 64(2): 285-290. 1986.

The water-filled pitchers of *S. purpurea* were studied in bogs near The Pas and Patricia Beach, Manitoba, and Kenora, Ontario. Larvae enter a third-instar diapause by mid-August and remain over the winter until the following spring.

Survival over the winter was about 9% to 68% in one winter and about 50% in another season. Winter snow insulates the larvae at these sites. A small percentage of the summer generation at each site continued their development to adults and give rise to another generation.

Joel, D.M. and H.S. Heide-Jorgensen. Ultrastructure and development of the pitcher epithelium of *Sarracenia*. Isr. J. Bot. 34(2-4): 331-350. 1985.

The bottom zone cells of this pitcher plant have dense cytoplasm, a large nucleus and many mitochondria and chloroplasts. The hypodermal cells have simple pits traversed by many plasmodesmata that connect each hypodermal cell with the neighboring rectangular epidermal cell, hypodermal and mesophyll cells.

Nicholls, K.W., B.A. Bohm & R. Ornduff. flavanoids and affinities of the Cephalotaceae. Biochem. Syst. Ecol. 13(3): 261-264. 1985.

The flavonol-based chemical profile found in *Cephalotus* resembles the profile

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glass. And so was I, when suddenly to my shock I saw a cluster of about ten giant-sized sundews! "*Drosera capensis*!" I cried. In Gasquet? "No! It must be *anglica*! Can't be! Is it some transplanted hybrid? *Anglica x filiformis*? *x linearis*? Some new, unknown species?" I was baffled. The attractive plants, growing on short stalks, had extremely narrow petioles, as long as the thin leafblade, covered with bright red tentacles. The entire plant was over 7 inches across. We scoured the area, but we could find no others. I examined the peat it grew in for signs of a transplant. It was an unfamiliar tan muck, but the plants could have come up from root-cuttings or seed. I wondered why, if put there by some CPer, no other species were tried. Perhaps they were, but were better hidden. I collected two plants, then took leaf cuttings and pressed them into the peat where they grew so more would multiply. And I wondered what they were the whole trip home.

Back in Sonoma County, I called Joe Mazrimas and described the plant to him. "Sounds like *Drosera capensis* narrow-leaf," he told me. So my first guess was right. "They survive the winters up there?" I asked. "They'll survive just about anything!" Joe laughed. I had never seen the true narrow-leaf variety of *capensis*, even though I grew for a local nursery, plants cloned from an original (what I thought to be *capensis* N.L.) purchased a few years ago that were sold under the narrow-leaf name. I'm surprised at the variation and the hardiness. Even though I never did find any *D. anglica* on this trip, it certainly was exciting.

Joe also told me that the red-leaved butterworts lose their color when moved from their native habitat. From the couple of plants now in my collection, he was right about that as well.

So to whoever planted cape sundews in Gasquet (and he or she may well be reading this), the plants are doing just fine, and my apologies for taking a couple of them. By this time next year, I'm sure there will be a few dozen more.