

Ariocarpus retusus

Two extreme geographical ecotypes of the Mexican living rock and a new northernmost record of the species



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◀ Until recently the population of robust *A. retusus* plants from Castaños, Coahuila was considered to be the northernmost habitat of the species.

A *riocarpus* is relatively small genus of attractive Mexican cacti, and although even the most extreme splitters now recognize up to 16 species and subspecies, the variability within the genus far exceeds the names that exist, and many local forms deserve recognition, at least

Across its wide distribution range countless populations of *Ariocarpus retusus* are encountered. But in its extremes we find some of its most curious adaptations. We have visited numerous montane populations typical of this popular Mexican rock cactus, so we were surprised recently to find plants in Coahuila living in low-elevation thornscrub. These plants occur so low in altitude, and so far out of the normal range of the species, that the find constitutes a new record for the species and poses some new questions about this most coveted Mexican plant. At another extreme, on the same trip, we visited plants that grow in the high-elevation pine forests of Nuevo León.

at the varietal level. *A. retusus* is the largest of the *Ariocarpus* species, and it is also among the most widespread, being found in many parts of the Mexican states of Coahuila, Nuevo León, Zacatecas, and San Luis Potosí.

Ignoring the related *Ariocarpus trigonus*, the *A. retusus* complex can be divided into three basic groups, exemplified by subspecies *retusus*, subspecies *scapharostroides*, and subspecies *confusus*. (These grouping can be difficult to clearly delineate, although individual plants are obviously different from each other, and it is for this reason that we refer to this species as a “complex.”). For convenience, hobbyists tend to refer to these subspecies or forms as if they were species, and since many names were originally published as such, we are free to do so (the plants in the field are far

more varied and complicated the little bit of name shuffling in journals could possibly ever suggest). The *retusus* sub-grouping is particularly varied, and many forms found in the wild (such as those named *elongatus* and *furfuraceus*) have been formally recognized.

The most recent comprehensive publication on the genus, Pilbeam and Weightman's *Ariocarpus et cetera*, published in 2006, does not offer detailed information about the distribution of *A. retusus* ssp *retusus*, but Anderson's 15-years-old *Threatened Cacti of Mexico* does. There we learn that the species occurs in the Chihuahuan Desert, between 1300–2000 meters above sea level in areas north of Saltillo in the state of Coahuila and south to the city of San Luis Potosí. More details are revealed in the 2002 *Kaktusy* special issue on the genus, where the northernmost occurrence is described near the town of Monclova, and southernmost localities extend to the vicinity of Rio Verde in San Luis Potosí state, with a highest occurrence at an altitude of 2400 meters.

Botanizing in Mexico is one of the cactophile's great pleasures, and the hope of discovering something new is ever present—and occasionally fulfilled. In the spring of 2007, Richard Kalas (of Albuquerque) and I were on a week-long trip to northern Mexico. Needing to stretch our stiff backs and limbs after a long drive in Richard's Jeep, we chose low limestone hill to stop. The area was covered with dense, prickly vegetation, which made our stretching experience quite painful, but the unexpected discovery of two small *A. retusus* plants was its own reward.



TOP This *A. retusus* plant, found Feb 11, 2007, was an unexpected discovery some 100 km north of the species' northernmost known distribution limit.

BOTTOM The habitat of our newly discovered northernmost locale of *A. retusus* consists of low limestone hills completely covered with a dense vegetation of spiny bushes, yuccas, and agaves, which makes it hard to explore.

At first we did not realize the importance of our finding. It was only later, after reviewing the literature, that we became aware of the importance of this discovery, as this new locality is situated some 100 km north of any previously reported *A. retusus* and is further distinguished by its elevation: 500 m above sea level. *Ariocarpus retusus* normally grows above 800 m. Since the plants were small and difficult to look for in hostile scrub, we decided to re-visit the site the following fall, when a banner of flowers would mark each plant.

When assessing populations of cryptic plants like this Rock Cactus, flowers are at least as useful as they are beautiful, and so, restless and full



▲ **LEFT** *A. retusus* plants (like the flowering specimen in the foreground) grow in open, dry areas near and within loose stands of Johann's Pine at this unusual habitat north of La Ascención, Nuevo León (2350 m). Beneath the trees the plants were totally absent. **RIGHT** Although *A. retusus* (here in flower north of La Ascención) prefers dry, stony clearings in the pine forest, it may be surrounded by low grass, which eventually dries out. Snow-white flowers are typical for the species and make the well camouflaged plants easy to spot from a distance in the fall.

of expectations, we returned to Coahuila in September, located our new *A. retusus* site, and parked the car with high hopes of finding our plants. You can imagine our disappointment when no flowers were sighted. We were barely able to find the two plants from our previous trip! There were no buds, no flowers, nothing. We were left to wonder if *Ariocarpus retusus* landed here a little out of place, without climatic conditions sufficient to induce flowering. Or perhaps the elevational difference shifts this population's flowering time to much later in the year. And since ariocarpus seeds are spread mostly by ants, we have to imagine that either these plants were moved here by some other means (bird droppings?), or that populations that connect this locality to those further south have long since disappeared... or remain to be discovered.

We are not ready yet to disclose the exact

locality of this unusual find, since more research is necessary, and many questions remain unanswered: How big is the population? Is it isolated from the main distribution range of *A. retusus*, or is there continuity? Does the species extend even farther to the north? Is the population flourishing or barely surviving? Should we be worried about its conservation? Is the small size of the two plants common for the population, or are there bigger ones too?

Accompanying *A. retusus* at our new location are *Ancistrocactus brevihamatus* ssp *brevihamatus*, *Mammillaria lasiacantha*, *Agave lechuguilla*, *Yucca* sp, and a *Dasyliirion* species. Since the previous northernmost known location at Castaños belongs to the eastern part of the Saltillo–Paila–Big Bend vegetation association, which includes *Ancistrocactus brevihamatus* ssp *pallidus*, *Echinomastus mariposensis*, *Escobaria zilziana* “lloydii,” *Epi-*

ECOTYPE

Within a species, an ecotype is a genetically unique and possibly isolated population that is adapted to its local environment. An ecotype, as such, has no formal taxonomic standing, although the forms represented by such ecotypes are often considered distinct and collectable.

thelantha unguispina, and others, it was thought that *A. retusus* could not extend farther north into areas with different plant associations. In fact, the replacement of *Ancistrocactus brevipilatus* ssp *pallidus* at our new location by subspecies *brevipilatus* is in itself rather interesting, as that subspecies is associated with borderline areas of the so-called Tamaulipas lowlands and is an entirely unusual and novel a companion of *A. retusus*. Thus, we are curious to learn more about how this new northernmost ecotype fits into the current scheme of the *A. retusus* complex. Is there a connection to their closest relatives, the robust plants from Castaños? Or could the plants here be a type of “*confusus*”, a supposed hybrid exhibiting characters of both ssp *retusus* and ssp *trigonus*? And just how did these plants manage to jump over into a different plant association?

From low thornscrub to high pine forest

There is another rare *A. retusus* ecotype that has been known now for just a couple of years, and although on our several trips to Mexico we have visited many places where *A. retusus* grows, none is as beautiful as the highland population between La Ascención and San Felipe in the state of Nuevo León. The habitat itself reminds me places where my fellow Europeans might pick mushrooms in the fall—only it’s much drier here, and instead of mushrooms we find cacti: *Coryphantha delicata*, *Turbinicarpus* (*Gymnocactus*) *beguinii*, *Mammillaria for-*

3. This beautiful cactus accompanying *A. retusus* at this site is called *Turbinicarpus beguinii* (although it has been called *Gymnocactus* and *Rapicactus* in the past). It has dense glassy-white spines with black tips and is often found in pine forest clearings throughout its distribution range.

5. Nearby, but occupying a different niche, *M. formosa* often grows in the shade of the pine trees, often partially or completely covered with pine needles. The smaller *M. weingartiana* is even more difficult to find when shrunk down into the soil.

6. *Ancistrocactus brevipilatus* ssp *brevipilatus* is a newly-identified a companion of *A. retusus* at this new low-altitude site. It blooms very early (ancistrocacti are usually first flowering cacti in their habitat) and was loaded with flowers in early February.



mosa, *M. heyderi* ssp *meiacantha*, *M. weingartiana*, *Neolloydia conoidea*, and *Thelocactus buecki* among them. This forest of Johann's Pinyon Pine (*Pinus johannis*) lies at an elevation of 2350 m, and it is surprisingly rich in cactus species. Nevertheless, it took us a while to find the ariocarpus here. After a considerable effort—enough time had passed that we were about to give up—we finally spotted them. These were relatively small plants, and many of them were bearing almost-white flowers, typical of the species. Apparently, *A. retusus* is not very widespread at this habitat. It is found only in isolated micro-populations scattered through the forest, wherever clearings in the vegetation allow enough sun to penetrate to the ground.

The typical environment of *A. retusus* consists of a sloping rocky terrain of limestone or gypsum, with desert and semi-desert formations of *matorral*

xerofilo (xerophytic scrubland) or *pastizal* (grassland edges), where trees are less common, making this montane forest a distinctive spot for an already distinctive cactus.

The jump of *A. retusus* over the borderline of the Tamaulipas lowlands, as well as finding it growing high in the pine forests opened our eyes and gave us new insight into the *A. retusus* complex. It seems this species has been able to adapt, or at least cling to some existence, to a wide variety ecological niches. And that's lucky for us, as Mexico is still full of surprises. Despite the constant trickle of cactus enthusiasts trekking across this exotic country every year, there is always more to explore. Mexico is only slowly revealing its botanical treasures over to us, and this keeps our minds busy planning further adventures. 🌵