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September passes by - and still the weather in the UK veers between autumnal and full summer sunshine. While some of the smaller rhododendrons in my garden are always obliging with their gifts of out of season flowers, it is more unusual for the larger types to do this. *R. elegantulum* is one which often does, to my great delight - but *R. taliense x lacteum* is really excelling itself this year with a September display (photographed by J. Ian Young). In these Covid times, such seemingly small delights attain a greater importance in a life of isolation. And I, for one, am grateful for these glimmers of pleasure. The display of autumn bulbs, corms and tubers has been a comfort, too - Cyclamen are everywhere, Colchicum are making their presence felt and the dainty autumn flowering Crocus are out - these are my favourites. Oddly enough, in their article on the plants seen during their Covid-restricted outings, John Watson mentions that crocuses are never seen in Chilean gardens. John, Anita and their neighbour Helga have, however, spotted a wide range of plants over the last few months. Just as we are going to press with this issue of IRG comes the news that both John and Anita have been struck down by the Covid19 virus. Thankfully Anita has been less seriously affected, but John, who has serious underlying health concerns, has had to be taken to hospital as he was becoming more unwell. We fondly hope that they both recover fully and are back working with us soon.
Vojtěch Holubec, a star among Czech gardeners, reports on some of the South American plants which have piqued his interest as he travelled in the area. He shows many photos from his numerous expeditions on his website.

Cover photo: *Salix capraea* catkins, John M. Watson

Rhododendron taliense x lacteum flowering in the September garden. Photo J.I. Young

Short sorties in times of a pandemic

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The overall panorama

Together with daily aspects such as economy, employment, trade, education, health, sport and much else besides, vital and otherwise, botanical fieldwork and ecotourism have been hit savagely by the Covid crisis. In fact the latter activity has almost, if not to all intents entirely, ground to a halt. The reasons for this are several and interrelated. Predominant are travel reductions and restriction on movement. Air travel in particular has been reduced to a minimum, and airlines have gone out of business. Many hotels and restaurants are closed indefinitely, so too are the herbaria we know of, and on a personal level, people are confined at home in quarantine, or are only allowed out briefly for essential reasons. Although it can be easier to move around within the country you inhabit, often that is only just so.

All that applies to us here in Chile, where nearly 414 thousand people have been infected by the virus to date as I write, and 11,344 of them have died (El Mercurio 2020). Santiago, the capital, a short distance to the south of us, is enclosed by a cordon sanitaire, as are several cities, towns and communities in our Valparaiso Region [figs.1, 2]. It's impossible to visit or travel through these places without an effective reason such as medical appointments, purchasing essentials locally, or commercially transporting food and other necessities. What continues without being effected, as far as it can, is communication via the Internet, such as publication and also exchange of information.

fig.1: Southern South America with Chile and its regions shown. Our Valparaiso Region is outlined and named in red,

Now for ourselves

That's the background to our little report here. John and Anita write: Compared with so many others, our life is relatively as per normal, to our great good fortune. Our days of active plant exploration are over. Unlike those who've lost employment, or whose income has reduced, we get regular payments, albeit via our admittedly small pensions, but can just about manage, as before. Thanks to the Chilean Health Service and our many doctor and dentist friends, several of whom are also fellow plant fanatics, we get the best medical treatment and medications, often with the cost reduced or even waived. Nowadays we simply doddle along in the jeep, only able to photograph or collect plants a short distance away - though significantly further for Anita than for John. We have a large garden full of year-round interest, despite being almost impossible for us to manage - but we'd have to be taken away at gunpoint, it means so much to us!

We live in the countryside on the outskirts of our quite small local community, surrounded by farmland, and have very few immediate neighbours. We're not in quarantine (ahem! - Except John nominally on paper for being over 80, except with special permission for doctors' consultations, etc. But who is he to be bothered by such minor restrictions?) We therefore drive within the sanitary barriers at will around our local country lanes up to as far as the foothills to enjoy the surrounding mountainous scenery and wayside plants. Fairly frequent medical and dental appointments in our local towns of Los Andes and San Felipe also allow us to continue beyond them until our permission for the day expires. All in all our sorties cover an area averaging 15 km from home with a rare maximum up to 25 km [figs.2, 21].

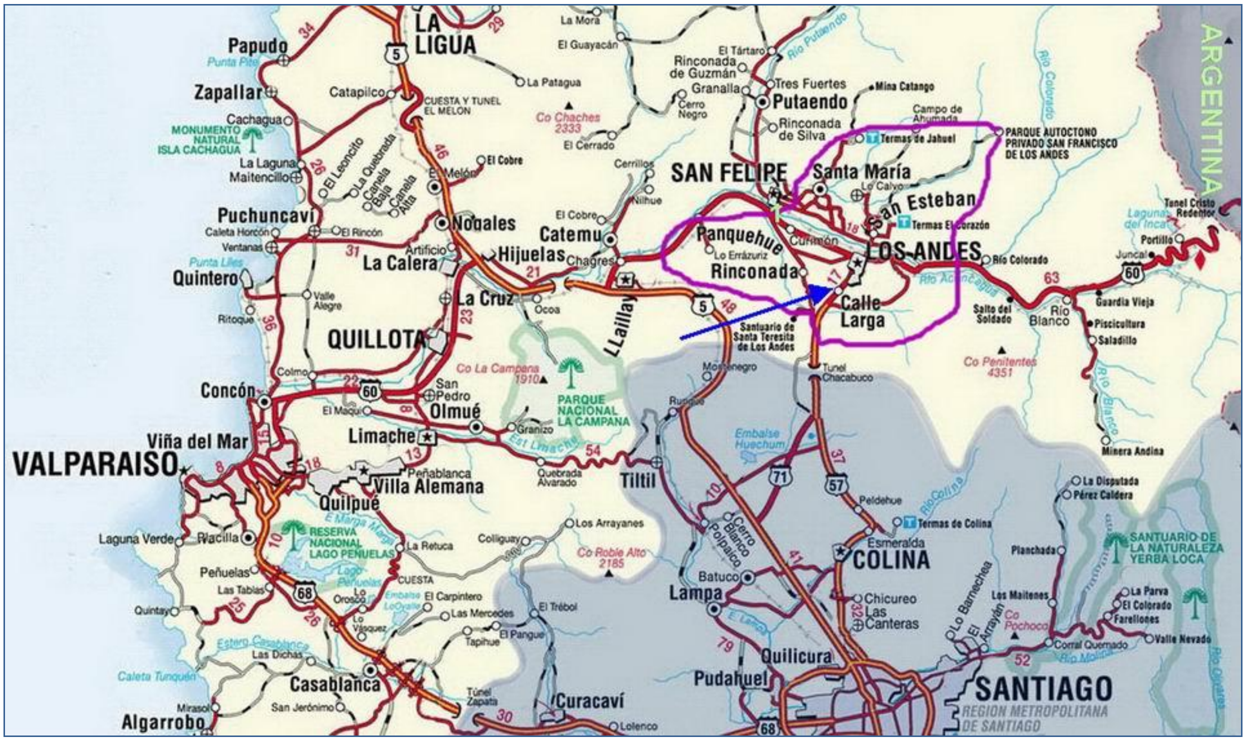

fig.2: Our local community, Calle Larga, is arrowed blue in the context of its wider geographical setting, with the area covered by our trips outlined violet.

Sadly, we're shut out from our beloved Chacbuco Pass flora (Watson & Flores 2018b) by the Santiago infection barrier, and there are no other roads up to it than the one main intercity highway. Another substantial hill bang in the centre of Los Andes also has a rich flora, but of course that's out of bounds as well. To complete the context, the emergency has been underway here, as everywhere, since early March, which is the same as September in the Northern Hemisphere, to the present end of August as we write, the equivalent of February. So it's been winter all the way, with the Andes and surrounding lower mountains spectacularly white-topped with snow [figs.22-24, 27, 57, 63].

John writes: Regular readers will notice a third co-author here, Helga Pettersson, our good friend and helpful near-neighbour, who lives 600 m further down the same road. She's become infected by our plant bug, and has accompanied us on various occasions exploring and seed collecting (e.g. Watson & Flores 2018b, 2020). Not only did she join us on a number of the following jaunts, but also made one or two valuable discoveries on her own which are included here. The illustrations include five of her photos, and two of the different plants she found are illustrated by my earlier photos.

What we've seen and done

Over a period of roughly two months we've made a number of outings from home, most of which were through new territory for us. The seven most productive for the wild flora are described and illustrated

here in chronological order. Their contents amount to 25 endemics, natives, adventives and a garden escape. They range from just outside our front wall to a maximum of some 30 km by road. The adventives presented here have all become absorbed into the Chilean flora without becoming weeds. Any malignant pests we've seen, such as dandelion and *Erodium cicutarium*, have been omitted.

But we consider that what amounts to a sortie for us is when we leave our front door. So we've used that as an excuse to start off with 13 of the best of our garden flowers which have been performing during the period of Covid restrictions. We feel particularly privileged to have experienced such pleasure, diversion and relaxation as a result of these attractive journeys and all the plants we've encountered and photographed. Where these were not up to publishable photographic standard, we've substituted our earlier shots of the same taxa.

Garden comforts within our own boundary (John and Anita)

(Early July to the present)
What better to kick off with than the shortest possible 'outing' and one of the most rewarding - our own garden and some of the best there to have given us delight during this period of crisis and dismal news. A Google Earth plan-view of our property and its immediate surrounds may be found in the review of it published in this journal (Watson & Flores 2018a, p. 17, upper figure). The same article gives a fuller pictorial account of the entire garden and its contents throughout the year. It also contains different illustrations of four ornamentals depicted herein: *Narcissus* 'Tête-á-Tête', *Ipheion* 'Rolf Fiedler', *Tropaeolum* ×*tenuirostrum* and *Viola odorata*. Our beloved little overwintering hummingbirds have also been covered (Watson & Flores 2018b, figs.76, 77). The long, narrow plot runs N (sunny end with the house) to S (back end) and measures just over 140 m long by 26-30 m wide. A bit under the front third, including the house and containing the great majority of ornamentals, is divided from the small walnut production at the back by a cross-garden pergola. Due to John's present much reduced capacity to walk far, this is the only part covered here. In fact seven of the selection of twelve of our best as illustrated here may be seen from the house patio just outside without moving from a chair.

Tropaeolum ×*tenuirostre* is in fact a wild Chilean natural hybrid [fig.3]. Landscapers here urge planting natives. In general we prefer what they regard as usurping exotic 'foreigners'. However, this one came to us as an unsolicited surprise gift of dormant tubers in a load of leafmould we bought in, and is a sheer, long-flowering delight. Luckily we hadn't spread the leafmould around on the exposed beds before it put in its first appearance in a large wooden compost-containing crate. It has flourished there and increased ever since. Along with it also came the well-known red *T*. *tricolor*, which is one of its parents, the other being yellow *T*. *brachyceras*.

fig.3: *Tropaeolum x tenuirostre* (Tropaeolaceae). Endemic. (JMW).

fig.4: *Viola odorata* (Violaceae). Adventitious. (ARF).

fig.5: *Myosotis arvensis* (Boraginaceae). Adventitious. (JMW).

Two welcome species somehow introduced themselves without invitation, *Viola odorata* [fig.4] and *Myosotis arvensis* [fig.5]. Neither is Chilean, although both have escaped into the wild and are incorporated into the national flora catalogue (Rodríguez & Marticorena 2019). They self-seed for us in colonies without becoming a nuisance, and are more than welcome casual additions. *Cyclamen persicum* [fig.6], especially the hardier pink form, will survive out of doors without protection in a sheltered spot under smaller shrubs, and in the protective company of scattered dwarf herbs. We don't risk losing a choice colour variety such as the one here, though. It is pot grown and can be protected inside the house if temperatures below 0ºC are threatening. Hellebores such as *H. nigra* [fig.7] need no introduction and thrive and reproduce with us if given the right conditions. Those include under deciduous trees

such as our common birches, flowering and later fruiting blossom trees as the apricots and almonds here [fig.8], and even various camellias, such as vigorous *C.* ×*williamsii* [fig.9], a particular family favourite and visitor impresser.

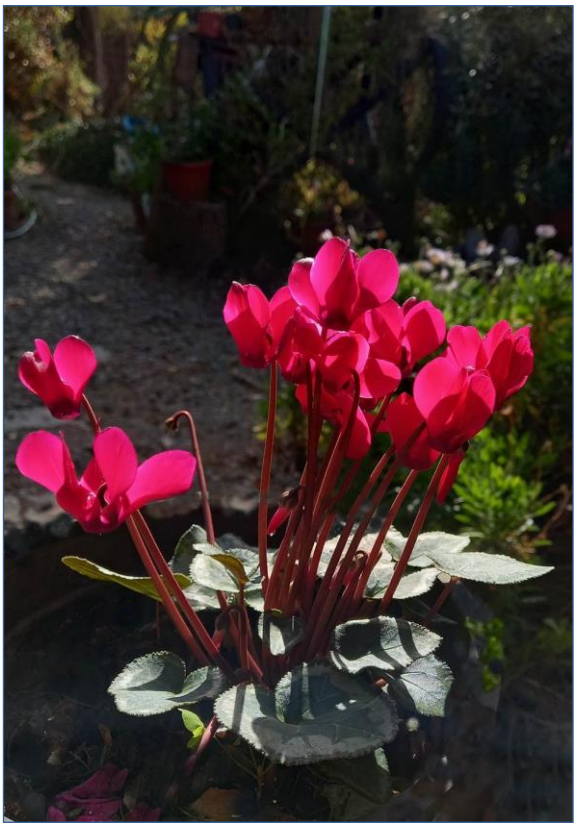

fig.6 far left : *Cyclamen persicum* cv. (Primulaceae). Pot cultivated ornamental. (ARF).

fig.7 left: *Helleborus niger* (Ranunculaceae). Garden ornamental. (JMW).

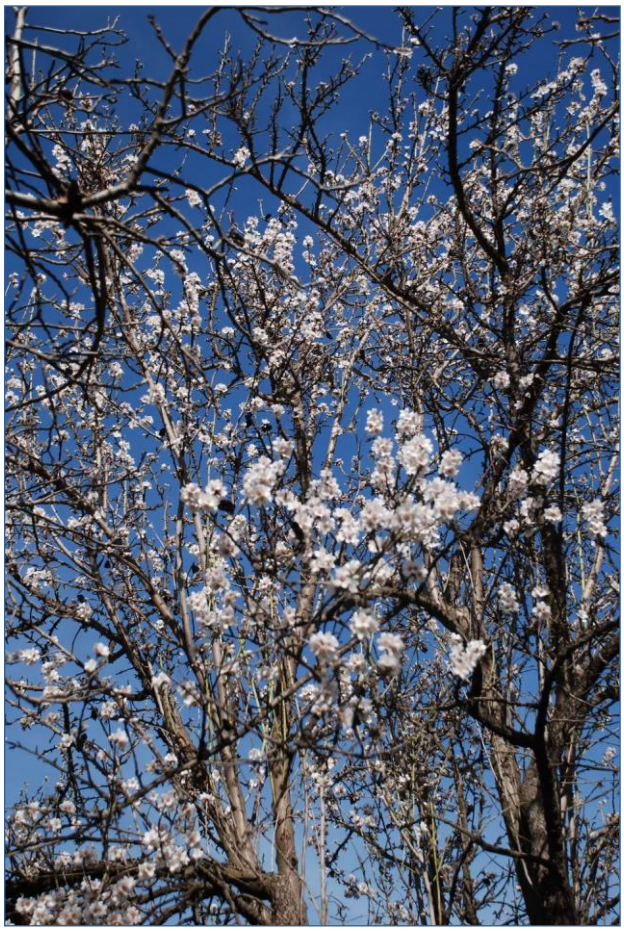

fig.8: Apricot and almond blossom, *Prunus armeniacus* and *P. dulcis* (Rosaceae). Fruit and blossom bearing garden trees. (JMW).

fig.9: *Camellia x williamsii* (Theaceae). Garden ornamental. (JMW).

fig.10: *Sephanoides sephaniodes*, the common South Amercan green-backed firecrown hummingbird. An invited winter resident with us. (ARF).

fig.11 left: *Chaenomeles* x *superba* (Rosaceae). Garden ornamental. (ARF).

fig.12 right : *Magnolia denudata.* (Magnoliaceae). Garden ornamental. (JMW).

We maintain up to

around 100 or so fearless little greenback firecrown hummingbirds, *Sephanoides sephaniodes* [figs.10], during their overwinter migration period down from the seasonally cold, flowerless Andes where they breed in spring and summer. In return they entertain us endlessly with their antics and amazing aerobatics. Their restless energy is sustained by five large sugarwater bottles, which Anita is kept busy refilling. These are suspended from the pergola of the house front and branches of nearby trees. In fact they consume about 50-80 kgs of sugar a season between them - but it's worth it! They supplement this with nectar from a wide variety of our plants, especially red shrubs, such as the camellia and *Chaenomeles* ×*superba* [fig.11] depicted here, which also adds a warm touch of early colour to the garden.

When we arrived, the previous owners wanted to dig up and take away a dark *Magnolia liliiflora* they'd planted a short while back beside the house, which was establishing well. Fortunately they accepted our offer to provide a largish containerised white one for their new garden bought from a nearby nursery instead. The original is now a very large shrub, and in our enthusiasm we bought three more, all different white ones - for ourselves. Sadly, dainty *M*. *stellata* didn't like us and gave up the ghost. But the two large-flowered ones, including *M*. *denudata* [fig.12] flourished, and their superb display distracts our attention away from the weed-ridden parts of the property.

Many hardy and some half-hardy 'bulbs', in fact most, take to our garden like ducks to water. Crocuses are a sad exception - apparently the change of hemisphere is lethal, because you will never see one anywhere in Chile. But Dutch irises, lilies, *Sprekelia*, tulips, amaryllis and *Zephyranthes*, among others, are indefatigable (Watson & Flores 2018a). Nothing, but nothing, loves it with us more than daffs and narcissus though. In 1997 we brought three bulbs of *Narcissus* 'Tête-à-Tête' over with us (seen here with *N*. 'Jetfire') [fig.13], and now we have so many colonies scattered all over the garden we give it away to all and sundry (see also Watson & Flores 2018a, p. 19, upper figures, p. 26, upper LH figure, p.32, upper figure). *Ipheion uniflorum* 'Rolf Fiedler' [fig.14] is another multiplier. A good while ago we dug a dormant lot out of a bed, sieved off the soil they grew in, and threw the fine tailings in a line down the side of a tractor pathway. It's now a solid spread of blue at the present time, as shown in (Watson & Flores 2018a, p.33, upper figure)! Frost vulnerable *Cuphea ignea* [fig.15] from tropical Mexico and the West Indies is only protected with a cover, or brought indoors in the event of a severe frost warning. Known for the appearance of its flowers as the cigar plant in English, and the cigarette plant in Spanish, we find it rather a paradox that the main tube of the flower is fiery red, whereas the tip is white, like the body of a cigarette! Shouldn't it be the other way round?

fig.13: *Narcissus* 'Tête-à-Tête' with *N*. 'Jetfire' behind (Amaryllidaceae). Ornamental garden hybrids. (JMW).

fig.14: *Ipheion uniflorum* 'Rolf Fiedler'. Native of Argentina and Uruguay introduced into cultivation. (JMW).

fig.15: *Cuphea ignea* (Lythraceae) Pot cultivated tender ornamental. (JMW).

To finish at home, but leaving plants aside, a short while back John was preparing to light our woodstove and noticed it was full of black wasps inside, which were shooed out of the front door - but not before one stung him painfully on the hand. These pestiferous Brazilian natives brought themselves in via a long distance transport lorry and have established in our area. They were making a nest in the smoke diffuser on top of our outside chimney pipe. When we came to light the fire that night, the house became instantly filled with choking smoke and water had to be thrown on the logs to douse the flames. It seems the nest had dislodged and blocked the metal pipe, and this was indeed so. In the morning a friend went up on the roof and handed down the charred remnants of the nest, full of dead wasps. The survivors were flying around like lost sheep, but the queen must have succumbed, or she'd have led them away to start anew [figs.16, 17].

fig.16: Woodstove chimney pipe with recent *Polybia ruficeps* social wasp infestation! (ARF).

fig.17: The *Polybia ruficeps* black wasp. An invasive species native to Brazil and Argentina. (ARF).

We've seen a variety of numerous attractive ornamentals in the gardens of others during our outings, but only escapes from cultivation have been photographed and included in the following survey.

fig.18: *Hoffmannseggia glauca* (Fabaceae). Native. (JMW).

fig.19: *Solanum eleagnifolium* (Solanaceae) fruit. Native. (ARF).

fig.20: *Solanum eleagnifolium* flowers. (JMW).

fig.21: Calle Larga, where we live, arrowed green, and the furthest point of each of our sorties numbered in chronological order.

A brief venture for starters: first finds and fine views

14/15 July. Location 1 on map [fig.21]:
By contrast with our garden, up to the beginning of August we saw no plants beginning the new season's flowering by the wayside. However, as a relief from the several previous consecutive drought years there's been a week of significant rainfall - snowfall on higher ground, and we've been thankfully watching the countryside gradually greening up with fresh vegetation.

But the very beginning of the pandemic restrictions was not exactly quite flowerless during our short journeys of necessity. *Hoffmannseggia glauca* [fig.18], which had been delighting us all summer long, was still in the last throes of its anthesis here and there by the roadside into June. This native wildflower belongs to an atypical genus of the pea family (Fabaceae) comprised of dainty small herbs and subshrublets, and is found in the Americas and southern Africa. We have in fact already illustrated another less common species, *H. doellii* from Argentina (Watson & Flores 2019, fig.9). Due largely to weedkiller management the present species is more than at home on many of our narrow country roadside verges. These are regularly sprayed, which kills off competing foliage before the *Hoffmannseggia* appears, and even though later applications destroy its top growth and flowering, the roots run so deep that it simply regrows and performs again shortly after. Nor should we forget the rather scruffy *Solanum eleagnifolium* shrublet [figs.19, 20], which occupies the outside sunny roadside base of our farmer neighbour's adobe wall right next to our house. It has been in fruit since before Covid struck to the present. Returning from Patagonia, Stephen Pern and John first saw it in great quantity while crossing Argentina at the end of 1987.

Most of our short outings to escape the confinement of home have been for a relaxing breath of fresh air and stimulating views of the magnificent snowy main Andes [figs.22, 23]. They include in the last of those two photos mighty Mt. Aconcagua, the highest mountain in the Southern Hemisphere, as it towers above nearby poplars. It can just about be seen from the very end of our garden, but the views as here from the main Los Andes to Santiago dual carriageway are far more impressive. Not all trips lacked plantly interest though. Several trees with attractive berries or fruits bordered the roads here and there, including smotherings of dull reds on introduced hawthorns. Perhaps rather more interesting because rarer and little known are *Melia azedarach* (Meliaceae) [figs.24, 25], an introduced SE Asian and Australasian; also the strange, knobbly, yellow citrus-like fruits of *Maclura pomifera* (Moraceae) [fig.26]. This very localised species native to Oklahoma, Texas and Arkansas, known as the Osage orange, has strong, flexible wood, formerly used by native Americans for bowmaking (Wikipedia 2020).

fig.22: The snow-covered lateral Andean range which contains our Aconcagua River valley to the north. (JMW).

fig.23: A winter view of impressive Mount Aconcagua across in Argentina to the E, rising above the main high Andes. (JMW).

fig.24: *Melia azederach* (Meliaceae). Adventitious, well established tree. (JMW).

fig.25: *Melia azederach* berries. (JMW).

fig.26: *Maclura pomifera* (Moraceae). Another adventitious tree. (JMW).

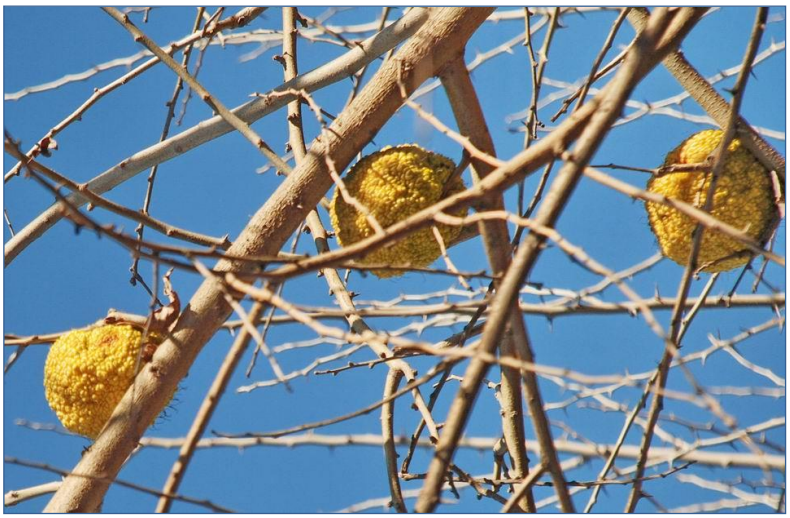

fig.27: The low snowline on nearby hills after a long and heavy precipitation. (ARF).

And down came the snow

17 July. Location 2 on map [fig.21]:
The specific preliminary single outing for John and Anita, a brief circuit with no plants, followed the day after a long, heavy snowfall. This not only covered the mountains, but the hills close by as well. John didn't bring his camera, but Anita took spectacular views on her mobile phone [fig.27]. To our

dismay this was stolen off a local shop counter shortly after, before they'd been downloaded. By great good fortune however, she'd sent them off to show our daughters in the UK, and they were able to copy them back. In the end our unknown kleptomaniac did us a good turn, as the replacement mobile takes much better pictures. For various reasons, including dull, cool weather and lack of wildflowers so early, no more worthwhile outings took place for the next three weeks.

Here, there and everywhere

8 August. Location 3 on map [fig.21]:
The first couple of very familiar waysiders during these sorties were encountered by all three of us a short way down the road from our homes. They are widespread introductions in Chile: *Oxalis pes-caprae* [figs.28, 29, 57], the Bermuda buttercup, and the Californian poppy, *Eschscholzia californica* [fig.30]. The former, native to South Africa, has established in a number of warmer countries as an invasive and serious weed, including in Cyprus, where John did his National Service. But it seems more restrained in Chile and brightens up many roadsides here and there in late winter and spring. In fact it's a welcome garden ornamental for some, including John and Anita. By contrast, showy, colourful *Eschscholzia* is massively ubiquitous in the central Chilean lowlands, appearing all along many verges, and forming seas of its gleaming orange to yellow on large stretches of pebble barrens and along railway tracks. It does nothing but add a huge contribution of colour to the Chilean flora though, since it doesn't oust any native flora and is not considered a pest. It too has brought itself to John and Anita's garden.

fig.28: *Oxalis pes-caprae* (Oxalidaceae). Adventitious, well established. (ARF).

fig.29: *Oxalis pes-caprae*. (ARF).

fig.30: *Eschscholzia californica* (Papaveraceae). Adventitious, well established. (JMW).

fig.31: *Echinopsis chiloensis* (Cactaceae). Endemic. (JMW).

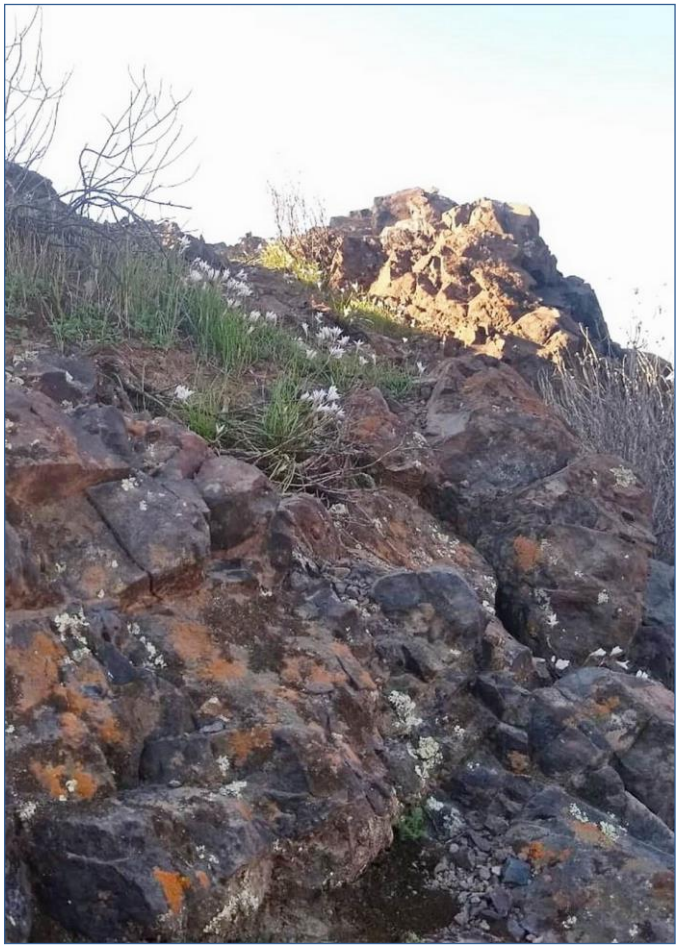

fig.32: *Tristagma bivalve* (Amaryllidaceae). Endemic. (HP).

Helga's contribution from our nearby cactus hill

18 August. Location 3 on map [fig.21]:
Those last two species were seen for the first time this year at the foot of a small hill bearing a quantity of tall columnar *Echinopsis chiloensis* [fig.31] more close-set than we've ever seen anywhere before. Although its base is only a step or two away from the jeep, scaling the hill is now beyond John and Anita, the former in particular, though not for Helga. One day, alone and on the spur of the moment, she parked her car and climbed to the top out of curiosity and for the view from it. She found choice plants there that amazed John and Anita when they were shown Helga's photos of them shortly after. They'd had no idea, and had only seen two of them nearby previously on the richly flowery hill in Los Andes town, which is now a designated nature reserve. The third had been many kms further afield for them. First she noticed a line of white

flowers running down the slope between boulders from the summit rock [fig.32]. Her closer shot revealed it to be *Tristagma bivalve* [figs.33, 50, 51], a dwarf amaryllid, not exactly rare, but quite unexpected here. The next plant to come to her attention there, but in bud still, was *Pasithea coerula* [figs.34, 35], a lovely herbaceous blue-flowered member of the Asphodelaceae shown previously in IRG 94 (Watson & Flores 2017, p. 21, lower figure), which again we Watsons have never seen in the immediate neighbourhood. The final cactus hill surprise package was common but choice *Olsynium* (syn. *Sisyrinchium*) *junceum* [fig.36]. It all went to show just how much more you can encounter by exploring on foot ... if you can !

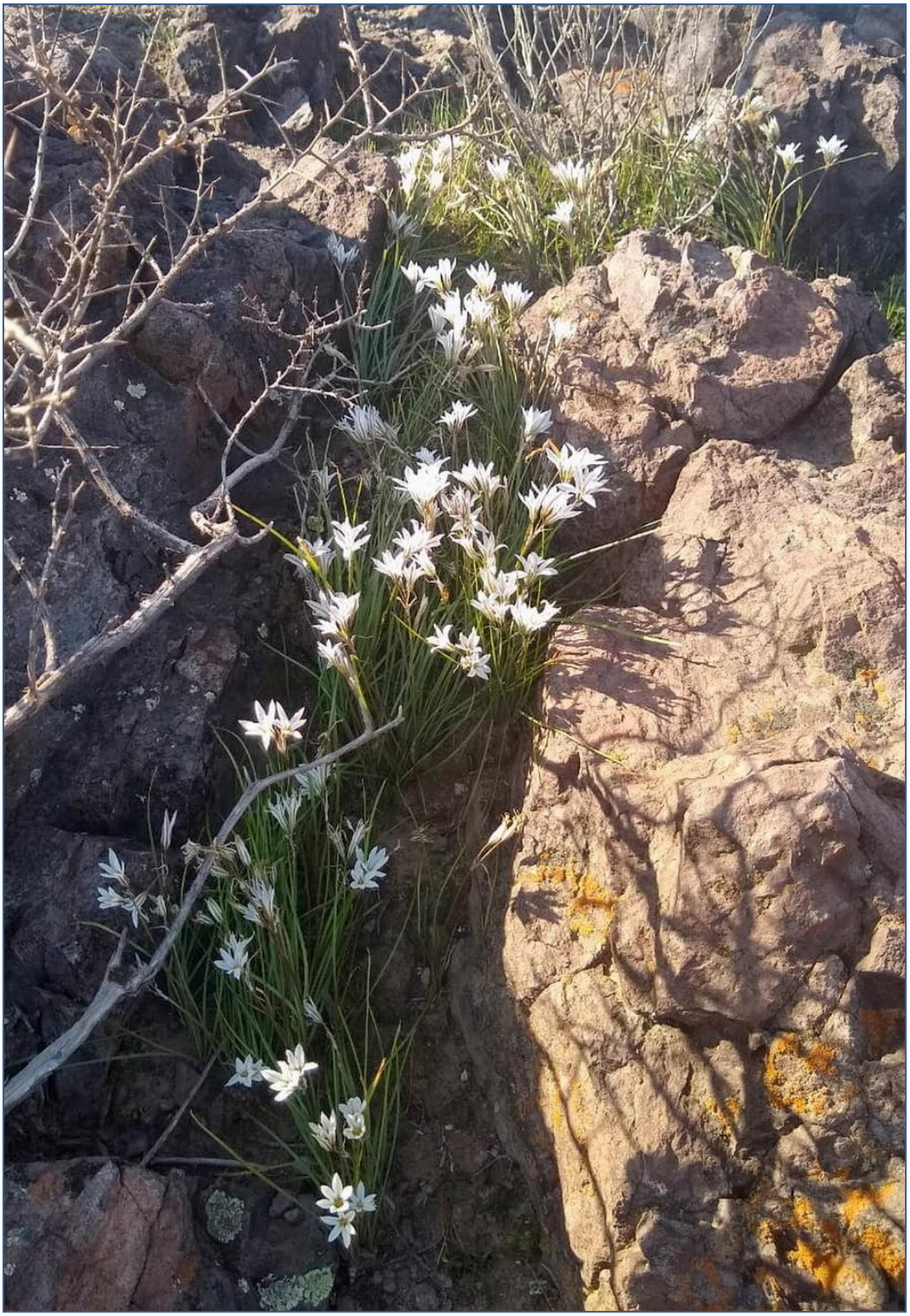

fig.33: *Tristagma bivalve*. (HP).

figs.34, 35: (Helga's find.) *Pasithea coerula* (Asphodelaceae). Native. (JMW).

fig.36: (Helga's find.) *Olsynium junceum* (Iridaceae). (JMW).

fig.37: *Columbina picui.* Native. (JMW).

fig.38: *Solanum crispum* (Solanaceae). Native. (ARF).

fig.39: *Solanum crispum*. (JMW).

fig.40: *Prunus americanus* (Rosaceae). Adventitious tree or shrub. (JMW).

fig.41: *Adesmia aegiceras* (Fabaceae). Native. (ARF).

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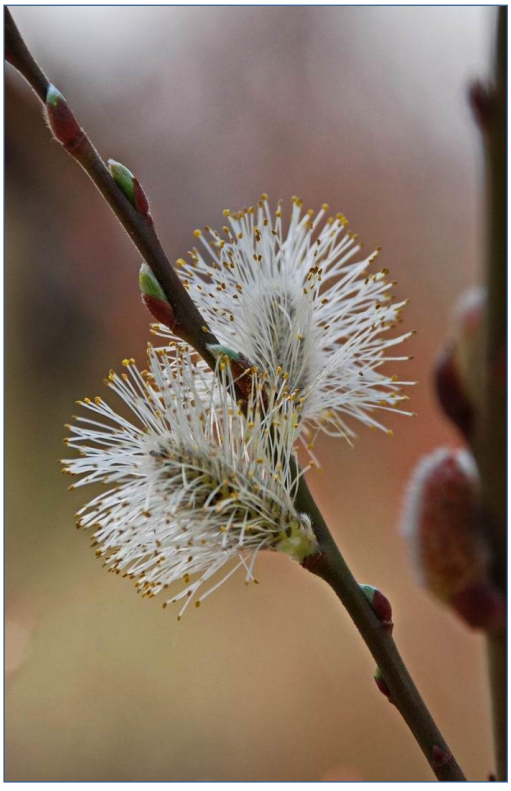
The first big haul

20 August. Location 4 on map [fig.21]:
John and Anita write: Our next venture was more ambitious. We used the Los Andes bypass to join up with the main route over to Argentina via the Portillo or Cristo Redentor tunnel [map, fig.2]. Of course we couldn't get far along due to cordon sanitaire checks, and the pass itself was blanketed in deep snow anyway (while the popular ski centre up there, of great importance at this time to local and international tourism, is shut down by the pandemic). Nevertheless, although we could only drive a bit under a quarter of the way, the road rose to a significantly higher level where more wayside flowers appeared. At one point as we drove along, a flock of *Columbina picui*, the little Picui ground dove [fig.37] rose up from the road in front of us. As we passed we noticed that a quantity of tasty (for them) grain had spilled from one of the lorries crossing the international pass. These adaptable and daring little birds are seen everywhere, including parks and cities, not least in our gardens, where they feed eagerly right beside the house on the unusable walnut remnants of John and Anita's crop.

During our outings we'd been noticing for a while in passing the first flowers of the common early flowering little shrub *Solanum crispum* [figs.38, 39], with its rich violet flowers resembling those of the potato. But they'd been too inaccessible, or we were travelling too fast to stop in time until now. At last there they were, waiting for us in full display right by the roadside. A little plum or cherry smothered in small white single blossoms had been flowering almost everywhere we'd been, but always in, or adjacent to houses or farm boundaries before, and we hadn't stopped to photograph it, unsure whether it was planted or an escape. Now, and from here on, we frequently saw it well away from inhabited places, so knew it had got into the wild. But what was it? At first we thought the common sloe, *Prunus spinosa*, but could now see at close-quarters it wasn't 'spinosa'. A little investigation revealed it to be *P. americana* [fig.40]. Curiously, considering its relative abundance overall here, it isn't recorded for the flora of Chile (Rodríguez & Marticorena 2019), presumably because nobody has ever collected a herbarium reference specimen. Another common little shrub, which accompanies us much of the time now and brightens up the late winter landscapes, is *Adesmia aegiceras* (Fabaceace) [fig.41], smothered in its gorse-like yellow flowers - but fortunately without the forbidding protective armament (which a number of other adesmias do possess).



figs.42 ,43: *Salix caprea* and catkins(Salicaceae). Adventitious tree. (JMW).

To round off our day we added two small trees to the pictorial collection. In damp spots and beside water grew introduced pussy willow *Salix caprea* [figs.42, 43], smothered in its silky silver catkins. The other, *Acacia caven* [fig.44], a native, forms widespread savannah up to and including the foothills in central Chile

with its Mediterranean climate. It was such a joy to see its fragrant yellow pom-poms again, as it has been too desperately dry and arid in recent years for these to be produced.

fig.44: *Acacia caven* (Fabaceae). Native. (JMW)

fig.45: One of our 'escape roads' out into the countryside. (JMW).


figs.46, 47: *Vinca major* (Apocynaceae). Adventitious garden escape. (ARF).


figs.48, 49: *Viola pusilla* (Violaceae). Endemic. (JMW).

Keep right on to the end of the road

21 August. Location 5 on map [fig.21]:
The next outing when John and Anita hit the road [fig.45] followed a medical appointment in Los Andes, when we headed way out NW. The police permission allowed us to travel right through and beyond town with ease afterwards! We took a long, long lane which led eventually to a small private nature park, the Parque Autoctono Privada San Francisco de Los Andes. After passing through the thinly populated borders of the road we at last got to open countryside. On and on through fresh greenery it went, without a sign of a flower. It began to be more than a relief that we'd at least already encountered a garden escape, *Vinca major* [fig.46, 47], again one of our home ornamentals too. This one **is** recorded as an adventive for the national flora (Rodríguez & Marticorena 2019)! But that was

way back and we were getting pretty desperate as the winding road rose up through the hills. At last we reached a couple of isolated large houses, and Anita reminded John we'd seen *Viola pusilla* [fig.48, 49] and *V. subandina* there many years ago, when we both came to live in Chile together. And sure enough, there they were, on an earth bank, although only *V. pusilla* had any sign of buds and first flowers so early. We were thankful to see it! It was introduced to IRG regulars in IRG 103 (Watson & Flores 2018b, fig.10). Few though the day's flowers were for all that effort, one more yet to come made it all worthwhile. On sloping ground at the very base of a large outcrop Anita spotted the white flowers of *Tristagma bivalve* [figs.50, 51], as already found earlier by Helga much nearer home [figs.32, 33]. It was our turn now.

figs.50, 51: *Tristagma bivalve*. (ARF).

And a picnic thrown in for good measure

22 August. Location 6 on map [fig.21]:
The following day the three of us made our most ambitious journey together along the base of the southern E-W lateral range of the mountains. We were looking for a possible local route up to the Chacabuco Pass above which would circumvent the lockdown area. There wasn't one, but that didn't spoil our fun.

Extensive carpets of yellow covering the short green grass soon came into view, but as we slowed right down, and before we had time to identify it, we saw one of Chile's most colourful birds, the red-breasted loica, *Sturnella loyca* [fig.52], a close relative of the starling, foraging close by on the grass. Of course, we had to grab cameras post haste and try for it out of the windows before it moved away or flew off, not easy with most animals, insects, and above all birds. Usually, you've just got them in focus ready to take, and off they go. With great satisfaction we succeeded this time.

fig.52: *Sturnella loyca*. Native. (JMW).

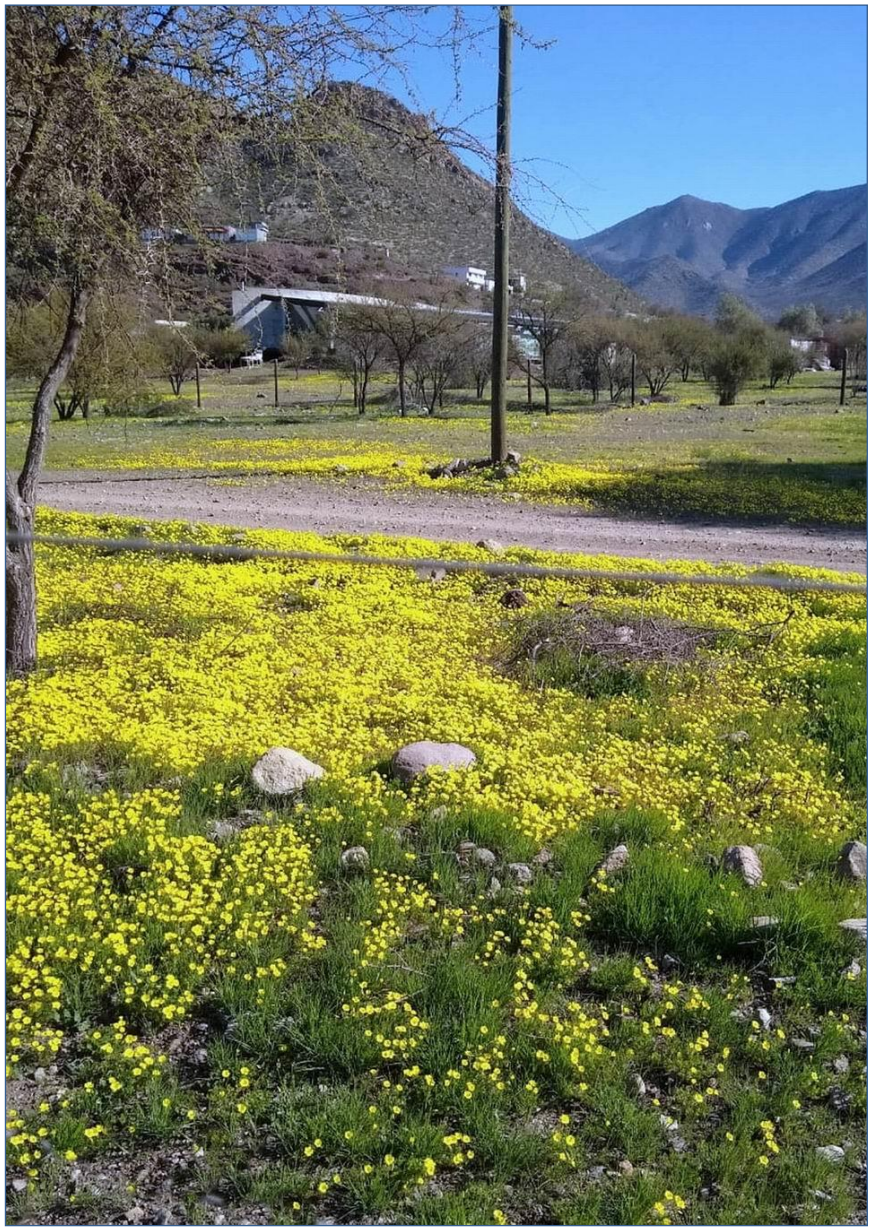


fig.53: *Oxalis pes-caprae.* (HP).

The large patches of yellow stretching well back beyond the open wire netting fence for a few hundred metres [fig.53] turned out be no less than *Oxalis pes-caprae* again, but never before have we seen it in such vast quantities in Chile. The netting bordered the road, and it was only just possible to photograph by pressing the lens right up against one of its spaces. A sign warned of an electric fence immediately behind, which Anita accidentally touched, to her 'shocking' cost! Helga managed the best shots. But that species wasn't the only abundant yellow one. Growing along the roadside (fortunately in front of that fence) were substantial colonies of a small-flowered adventive *Calendula arvensis* [fig.54, 55], which we've seen before by the road to the north, a very long way distant. We were near to a group of these by a house wall, when we noticed what appeared to be three windblown leaves swirling round together. It wasn't difficult to recognise them as interacting *Vanessa carye* [fig.56], the common southern painted lady, very similar to our northern one and also featured in Watson & Flores (2018b, fig.16), seen on *Tropaeolum azureum*. They relish yellow-flowered composites, and were obviously drawn here by the marigolds. In John and Anita's garden they can't resist our yellow *Chrysanthemum indicum*, as on the photo, and may be seen all winter long on favourable days, as is the case with various nymphalid butterflies everywhere.

fig.54: *Calendula arvensis* (Asteraceae). Adventitious. (ARF).

fig.55: *Calendula arvensis* (ARF).

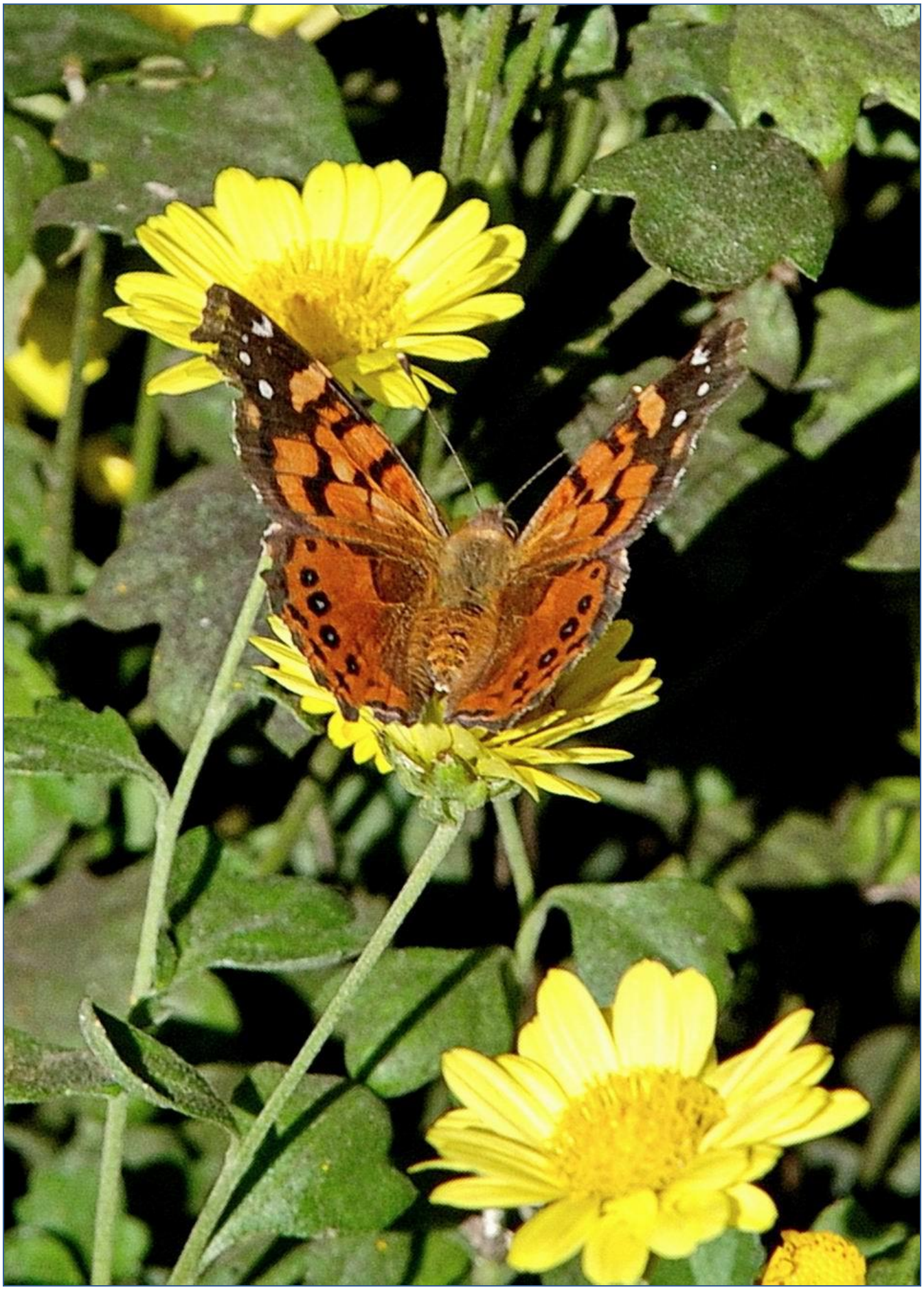


fig.56: *Vanessa carye*. Native. (JMW).

fig.57: The picnic - Helga and John. Note Covid mask in chinstrap mode! (ARF).

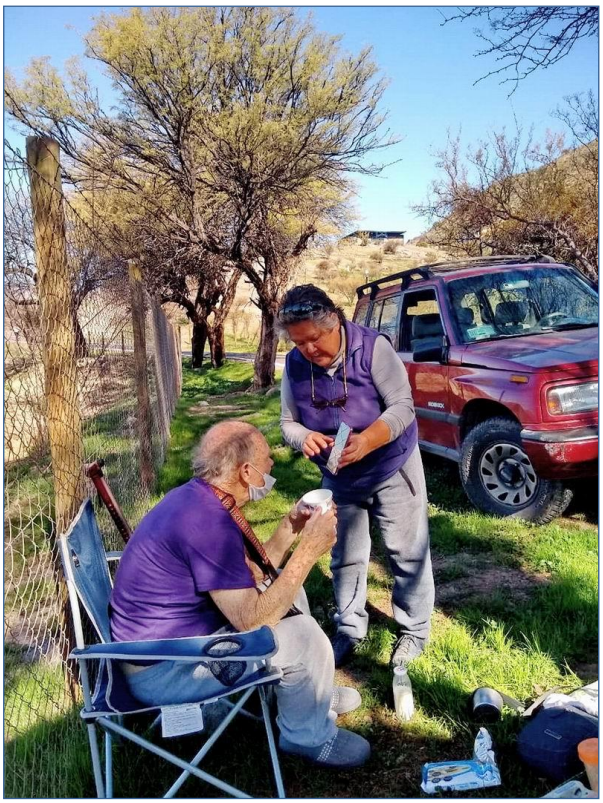


fig.58: The picnic - John and Anita with our faithful and reliable old Suzuki jeep waiting patiently behind. (HP).

Now came a welcome novelty for these outings, a most enjoyable picnic on a flat grass verge in the warm afternoon sunshine, the girls sitting on comfortable piles of flat rock, with a folding canvas chair placed for enfeebled John [fig.57, 58]. We'd seen many groups of fumatory during the earlier sorties, but with few in any sort of flowering state as yet. Several species of the genus are superabundant adventives in Chile, but being fragile annuals, represent no sort of threat. We'd noticed a patch alongside as the jeep was being driven off the road to park, and John with his camera and a pair of walking sticks for support, made his way back to them as the picnic was finishing off. They turned out to be the graceful, ferny *Fumaria parviflora* [fig.59, 60]. It fell to his camera, but Anita photographed even better specimens later, one of them included as our portrait here.

fig.59: John photographing a clump of *Fumaria* with the aid of his walking sticks. (ARF).

fig.60: *Fumaria parviflora* (Papaveraceae). Adventitious, well established. (ARF).

Refreshed, we turned round and began the journey back, where two ultimates of interest drew us to a halt. A distant hillside of annual native *Oxalis laxa* [fig.61, 62], as may be seen in abundance on the way up to the Chacabuco Pass (Watson & Flores 2018b, figs.4-7) rivalled, though by no means surpassed, the earlier *O. pes-caprae* fields.

fig.61: *Oxalis laxa* (Oxalidaceae). Native. (JMW).

fig.62: *Oxalis laxa*. (JMW).

The very last bonne bouche had nothing to do with the flora. We noticed a small agricultural reservoir through the roadside hedge, which was irresistibly full of geese and ducks [fig.63]. It was necessary to drive in a little way through an open gateway, along a rough track and then carry on by foot round the water's edge to get near enough for a clear view, but Helga's triumphant result here shows it was all worthwhile.

fig.63: The artificial agricultural irrigation lagoon with its flotilla of geese and a few ducks. (HP)

The most recent jaunt with added gastronomic treats

24 August. Location 7 on map [fig.21]:
John and Anita finish up: This was our most recent outing before we were cut short by a series of medical appointments and minor ops for John. One, an oesophogram at San Felipe hospital, when a black, snake-like rubber tube was thrust down his locally anesthetized throat wasn't a whole heap of fun, to say the least, and took four days to recover from completely. Our permission would have permitted us to pass through the town and out into the countryside beyond - if John hadn't felt like death warmed up! But now he's right up to what passes nowadays for blooming fit again, so we're ready and eager to set out on the second group of sorties.

But the actual final excursion on the 24th covered here was one of our furthest from home, and took us as far N as we've been so far. While still on the main road we noticed stretches of the little yellow-flowered native borage, *Amsinckia calycina* [fig.64] in full bloom dotted thickly among the dense grasses of the verge, and with its cymes still attractively uncurling. It's so inconspicuous, that one or a few on their own would never have caught our eyes as we drove past.

fig.64: *Amsinckia calycina* (Boraginaceae). Native. (JMW).

figs.65: *Plagiobothrys procumbens* (Boraginaceae). Native. (JMW).

fig.66: *Plagiobothrys procumbens*. (ARF).

After that promising beginning, as per our previous longest, we suffered the same frustration on reaching the open countryside of driving endlessly without seeing anything but a few species we'd already encountered. Again it was crossing our minds to turn back when at last when John noticed a solitary, large yellow flower. It could have been a dandelion (not wanted in this review!) so it took a little while before he decided to ask Anita to stop. That meant reversing slowly back down the narrow, open lane. As we did so, John, peering at the ground from the passenger seat, noticed a minute white-flowered prostrate plant, and said we ought to investigate. Just as well, because it turned out to be our second native borage of the day, *Plagiobothrys procumbens* [figs.65, 66]. Like *Amsinckia,* the genus is confined to the Americas, although a small number of the former also inhabit Australia. But what of the yellow flower? After we hoped we'd done photographic justice to the inconspicuous little white job, we continued backing until we reached the spot. Just as well we did, because it turned out to be another Chilean endemic, *Haplopappus velutinus* [figs.67, 68], indeed a composite like dandelion. This large shrubby and subshrubby genus is native to South America. Although nothing like as exciting as the others so far that day, we chalked up another in the shape of *Erodium moschatum* [figs.69, 70], at least a far more restrained, delicate and ferny-leaved adventive than the cursed *E*. *cicutarium.* What more fitting to round off our day and this account than a plant which ties in directly with the very first of the same genus *Tropaeolum* depicted here [fig.3]? This was endemic *T*. *tricolor* [fig.71], which is thoroughly familiar for being long and well established in cultivation of course, and has also appeared in a previous account (Watson & Flores 2018b, figs.12, 13). But it just happens to be one of the parents of our home T. ×*tenuirostrum*. *T*. *tricolor* cropped up here and there as we drove along, the slender, green stems, twining up fences and shrubs or laid out prostrate, and its strings of elegant long-spurred red flowers could hardly have been bettered as a finale. It came to us in that same load of leafmould, and the two taxa, red and yellow, intermingle in their garden spot.

figs.67, 68: *Haplopappus velutinus* (Asteraceae) bud and flower. Endemic. (ARF).

fig.69: Erod*ium moschatum* (Geraniaceae). Adventitious, well established. (ARF).

fig.71: *Tropaeolum tricolor* (Tropaeolaceae). Endemic. (JMW).

Way out where we were in the countryside, we noticed many cultivated olive groves, and when we saw a small refreshment place offering fresh olives for sale, Anita stopped to buy some. As a surprise, she noticed they also sold ice cream in variety, and came back with a large piled-up dish of a delicious one for us to share.

As often on these trips, we arrived back home just as the sun was setting and lighting the sky up colourfully as it sank behind the low mountain range to our west [fig.72].

fig.72: Diminishing shower clouds at sunset as we arrive back from a sortie. (ARF).

Last words

Who knows for how long this emergency situation will continue? There's no end in sight as we write. Although things are gradually improving in some countries, including Chile, elsewhere there are fresh outbreaks. Our eyes are realistically open to the fact that we may perforce continue to be looking around our present limited local area during its spring, summer and autumn flowering period ... So watch out for possible future episodes of this account!

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Vojtěch Holubec pictured in America at a book signing for “The Tien Shan and its Flowers” – photo Bobby J. Ward.

Behind the plants on the volcanoes of Chile: Vojtěch Holubec

If Phileas Fogg had been a botanist, he would never have managed to complete his world tour in 80 days, mainly because of his crossing of Patagonia. The flora of mountainous South America is so varied, rich, exotic and fantastic that one can only advance at a botanically slow pace. It is difficult to decide whether to choose Chile or Argentina, the two countries share the southern Andes, and yet their flora is very different, but equally varied and rich. Let's uncover the veil of the secrets of Chile.

Chile measures only 144 kilometres across, but reaches 4,329 kilometres in length from the northernmost to the southernmost point. 18 million people live here. The name of the country probably comes from the original indigenous name chili from the Quechua language and means "the best". The area was inhabited by many Indian tribes; in the central part mainly Mapuche.
The backbone of the whole country is the Andes, in the northern parts of Chile they reach over 6000 metres above sea level, gradually decreasing to the south. The highest mountain in Chilean territory is Ojos del Salado, measuring 6891 metres and on the Argentine side of Aconcagua, 6960 metres high. From about 34 ° 30 'south latitude, a number of extinct and active volcanoes occur in the Andean belt.

The Andes were expelled from the Mesozoic during the Cretaceous, 138 million to 65 million years ago. The cause of the uplift and wrinkling of the sedimentary rocks was the slow shifting of the Pacific ice under the South American mainland. Tectonic faults are visible almost along the entire length of the mountains, which are still the cause of earthquakes and volcanic activity.
Chile's climate depends on latitude, distance from the sea and the existence of rain shadows. Precipitation ranges from just 2 mm per year in the Atacama Desert, through about 360 mm per year in the central part, to more than 3,000 mm in southern Patagonia. Due to the large differences in altitude, the rainforests can be located only a few kilometres from the snow-covered peaks.

Visiting a larger number of places can be most easily realised by renting a car. From the main backbone highway leading from almost the whole country to the south, you can take exits east to the mountains to the border of Argentina. The connections between the valleys along the Andes off the highway are usually just dirt and macadam roads. The most easily accessible are numerous ski areas with cable cars and accommodation capacity. Most of these winter resorts are open even in summer, in many areas there are chair lifts for cyclists, which simplifies access to the mountains for tourists, but makes it difficult to move on the roads.

Central Chile
From the capital Santiago de Chile, you can easily drive to a number of ski resorts in the area below the highest mountain, Aconcaqua. The surroundings of the city are densely populated and used for agriculture. The horizon to the east features an amazing panorama of the Andes. The middle positions of the mountains are covered by arid steppes with thorny shrubs and cacti. In the late summer period in February, the massive yellow-flowered and thorn-armoured pillows of the *Chuquiraga oppositifolia* (Asteraceae) flourished here. Although beautiful, it is not advisable to caress them, as their thorns easily penetrate the skin and under the nails. The low semi-woody shrubs of *Viviana marifolia* complement the arid community with a pink colour.

The mountain steppes mix with the scree and the alpine communities at an altitude of about 2300 m, where the ski lifts also begin. Due to the fact that it is exclusively a volcanic environment, over 80% of habitats are deposits of volcanic porous ash and possibly rocky outcrops. The number of plants is usually very low (just several plants per m2). There are even fewer plants in the rocks due to arid conditions. There are surprisingly few grass species, the most common being decorative barley (*Hordeum comosum*), only 15-20 cm tall with blackening finely bristly ears. Many species of plants with conspicuous large flowers or bright pastel colours appear on the dust. ***Alstroemeria pallida***, related to the cut alstromeria in the flower shop, shines in the distance with the sweet pink surroundings of the flowers laid on the rubble. ***Rhodophiala rhodolirion*** exhibits broad lily pinkish-red or whitish flowers on short stems as if accidentally stuck in rubble, or pierced by prickly shrubs of *Adesmia*. Adesmias are legumes that replace our *Astragalus* and *Oxytropis*. *A. corymbosa* is a recumbent herb with brown finely pinnate leaves decorated with a flood of yellow flowers. *A. arachnipes* is amazingly softly hairy, *A. schneiderii* is armoured with sharp spines. ***Tropaeolum incisum*** is another extremely striking scree plant with a flood of yellow-orange flowers. Its small tuber is set more than half a metre deep in moving scree.

Alstroemeria pallida

 Charity registered in Scotland SC000942 ISSN 2053-7557

Rhodophiala rhodolirion

Tropaeolum incisum

 Charity registered in Scotland SC000942 ISSN 2053-7557

In Chile and Argentina, the mountain screes are dominated by plants from the Apiaceae families. One-metre wide green buns invite you to relax by sunbathing in the mountain sun: *Laretia acaulis*, *Azorella madreporica, A. monantha, **A. trifurcata*** and others. Others are thorny, such as *Mulinum echinus*, and are not suitable for rest. Small carrots (Apiaceae), *Pozoa coriacea,* with recumbent stems and leathery round leaves are ubiquitous. It is not advisable to touch plants from the Loasaceae family, they have stinging trichomes similar to our nettles. Yet they are very beautiful. For example, ***Caiophora coronata*** forms large tufts 0.5 m in diameter, bordered by a wreath of huge white flowers. In contrast, the miniature ***Loasa sigmoidea*** forms cushions dotted with regular flat yellow flowers.

Caiophora coronata

Loasa sigmoidea

Blumenbachia prietea exhibits individual large white flowers over a desperately stinging rosette. Another richly represented family is Asteraceae. *Hypochaeris tenuifolius* look similar to our dandelions. *Haplopappus diplopappus, H. glutinosus* and *H. paucidentatus* are almost everywhere, forming flat pillows. The genus *Chaetanthera* includes unprecedented mountain beauties (*Ch. renifolia,* ***Ch. villosa*****),** whose capes of large yellow or white flower completely cover the small and very neat leaves of the leaves. Their relatives are also miniature annuals and perennial white asters (*Ch. pusilla / Oriastrum pusillum*), only 2-3 cm tall. They balance their small dimensions with quantity and create whitish spots on the rubble. Common tufted rosettes include *Perezia carthamoides* with white or bluish or yellowish flowers.

The inseparable plants of the talus slopes of South America are succulents. ***Oxalis adenocephala*** occurs in a colour palette from white to dark red, the most common being pink.

Miniature sorrel ***O. compacta*** tends to have pink or yellow flowers. *O. erythrorhiza* forms large buns of softly hairy rosettes studded with yellow flowers. On the ridges you can meet small gray buns of the fat-leaved *Cistanthe frigida* or the cruciferous *Nototriche compacta*.

Chaetanthera villosa

Chaetanthera chilensis

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Oxalis adenocephala

Oxalis compacta

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Oxalis adenocephala in habitat.

Even in the dry volcanic landscape there are streams and torrents. Their shores are decorated with monkey flowers (*Mimulus luteus*) in yellow, orange and scarlet. The crimson curtains of *Ourisia coccinea* flowers vibrate in the splashing water along rapid streams and waterfalls. Slippers (*Calceolaria filicaulis* or the more robust *C. filicaulis* var *luxurians*) can be seen everywhere on the banks. Robust relatives of *Calceolaria cavanillesii* grow on the humid northern rocks. Buttercups are also present in the Andes: *Caltha sagittata* covers its wetlands with its10 cm high carpets with whitish flowers. Species of the genus *Calandrinia*, related to the Lewisias grown in our country, are within reach of moisture from streams. *C. affinis,* filamentous ***C. colchaguensis****,* are yellow or orange, *C. caespitosa* have pink to reddish flowers.

Calandrinia colchaguensis

Misses?
Perhaps the most exotic plants for non-South Americans are rosettes reminiscent of European Sempervivum. Until the ignorant person focuses on the flowers, he struggles. They are rosulate violets. Solid rosettes are planted in a circle with violet flowers. The most common violet is ***Viola cotyledon*** (right) with firm sticky rosettes and blue or whitish large flowers. *V. atropurpurea* and ***V. montagnei*** have small black and purple flowers, but the rosettes are different. *V. farkasiana, V. montagnei,* ***V. phillippii***, and ***V. rosulata*** have softly hairy leaves.

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Viola montagnei

Viola phillippii

Dead or asleep? Napping volcanoes in the south.
Many volcanoes in Chile rest to scare the ignorant, unprepared to drive away, and bake potential gamblers alive. Road signs showing escape routes from volcanoes are quite common. Signs near the volcanoes with a wooden hand showing the current danger of eruption (small to extreme) provoke tourists to turn the hand to the extreme. Of course, it occurred to me too, but the hand was secured with a nail. The display panels are provided with paintings by naive painters, as it seems during the eruption, in short, hell on earth.

Volcano Antuco

Mutisia oligodon in habitat.

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Mutisia oligodon – pink.

Mutisia cf *oligodon*

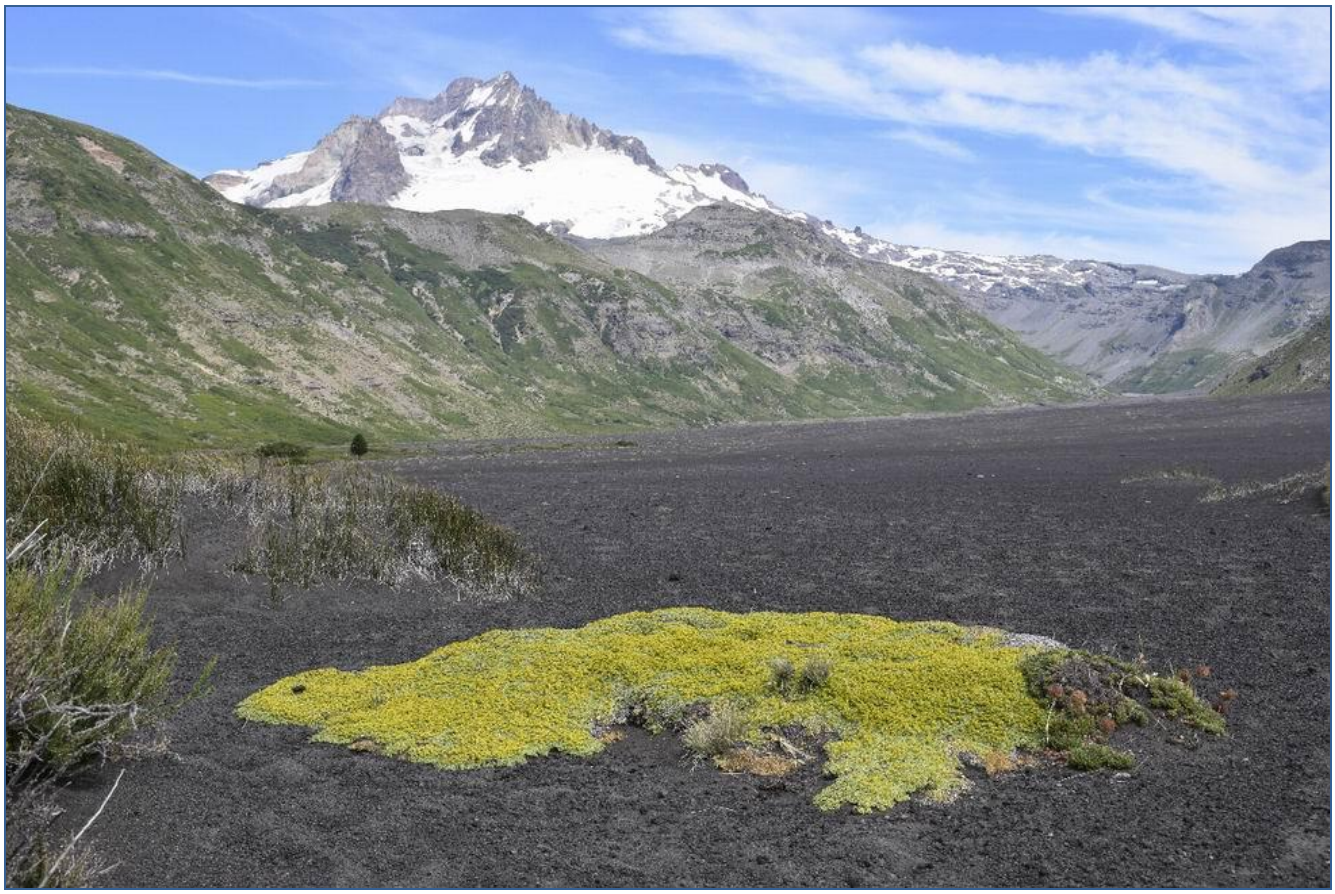
Volcano Llaimo

On the contrary, the monument under the Antuco volcano in the Volcán Llaima group is much more drastic. One sleepy morning, she baked the entire military garrison and the tourists alive. On the slopes are monuments to people who were unexpectedly caught in the field by a pyroclastic cloud of hot gas. To this day, the thick layers of volcanic ash are either completely devoid of vegetation or inhabited by only a few pioneer species. *Ephedra chilensis* offers sweet white berries for refreshments in the heat of a black volcanic cauldron. The large buns of ***Mutisia oligodon*** boast magnificent huge pink flowers. Old, yellow ***Senecio chilensis*** with white-feathered leaves are swarming in hot ash, similar to *Haplopappus paucidentatus* and *H. diplopappus*. The aniline dark pink flowers of ***Montiopsis gayana*** and ***M. sericea*** from the family Portulacaceae complement the colour palette of yellow asteraceae. Many metres of completely flat stands of ***Azorella trifurcata*** on the far side of the volcano, where there was no fresh ash, proved to be the optimal basis for the position of the tent. It was possible to botanize and photograph here lying down directly from the tent.

Montiopsis gayana

Montiopsis sericea

 Charity registered in Scotland SC000942 ISSN 2053-7557



Azorella trifurcata with the volcano Antuco in the distance.

The volcano Planchón over the Laguna del Teno.

The volcano Planchón over the Laguna del Teno just glowered lazily, fortunately over the Argentine side. The almost endless rocky and ash driveway seemed invincible. On the way back, the car was buried in the ashes, and if it weren't for a piece of discarded rail suitable as a crowbar, we would still be there. However, the divine nature was worth the hardship. Arrivals to the lagoon are guarded by bouquets of ***Schizanthus grahamii*** (Solanaceae) with its startling flowers.

Schizanthus grahamii

Euphrasia andicola

A field of diverse old volcanic ash was a flowering garden. From the family of Rubiaceae, compact cushions of *Oreopolus glacialis* sprung with cross-yellow flowers grew here. The exotic yellow surroundings belonged to *Quinchamalium chilense* (Santalaceae). The species ***Euphrasia andicola*** has unusually large yellow flowers.

From the family Asteraceae there were several species of *Nassauvia* with white flowers: *N. glomerata, N. lagascae* and *N. revoluta.* Other flowers were added: white-flowered *Loasa filicifolia* and ***L. lateritia*** with beautiful orange-scarlet flowers. Endemic lily-shaped ***Famatina maulensis*** with red tubular flowers grew in the rocks. A flood of yellow slipper flowers (***Calceolaria valdiviana***) arranged in one plane formed shelves in the rock ledges. Relative to our Edelweiss, but without supporting bracts, was *Gamochaeta nivalis*. Several heather species used a layer of accumulated humus: *Empetrum rubrum, Gaultheria pumila* and *G. caespit*osa. The rubble is covered by a small shrub *Baccharis sagittalis* or the sessile *B. magellanica* (Asteraceae), both with white flowers.

Calceolaria valdiviana at Teno.

The volcano above the Chinese-sounding Shangrila valley rattles like a big plane at regular intervals, releasing a cloud of black smoke. An ignorant person quickly seeks shelter or flees to the valley, but after several such performances, it becomes commonplace. In the sparse Nothofagus forest you can see peas (*Lathyrus subandinus*), liana with orange flowers (*Mutisia decurrens*) and Orchids with yellow large flowers (*Gavilia chica*). Cacti (*Maihuenia poeppigii*) grow here with a respectable area of 2 m2 forming flat pillows with yellow flowers or reddish fruits. A little higher, a huge lava flow crosses the road like a wall of mountains. To one's astonishment, the ericaceous *Gaultheria phyllarifolia* with white flowers grow in the crevices. Prickly shrubs of *Berberis empetrifolia* are dotted with small yellow flowers and later blue-black berries. On black sand, rosettes of *Viola rosulata* with white flowers shine into a wreath.

Viola rosulata

Loasa lateritia

 Charity registered in Scotland SC000942 ISSN 2053-7557

Famatiana maulensis

Araucaria araucana

Lanin - Nothofagus forests

Lanín Volcano (4700 m) is a high dominant of the southern part of the Andes shining with its snow cap into the region. In the steppes below the volcano, it's full of life, small guanaco llamas like to pose on the rocks by the road, and less sharp poor Ñandús (South American Ostrich) run miles in front of the car before realizing they have to dodge, all watching the bombs warily from behind a bush. Armadillos dig holes into which a passing pilgrim or botanist can easily fit. Lanín is surrounded by relict forests of ***Araucaria araucana***, which evolutionarily dates from the Jurassic and Cretaceous periods, during the reign of the dinosaurs. It is usually dioecious and the female cones look like cannonballs, the males are slightly smaller. The indigenous people bake the seeds and eat them like nuts, although they have a somewhat unusual, kerosene-like taste. The deciduous forests here are formed by ***Nothofagus***. *N. antarctica* is a smaller tree and is recognizable from afar by dead bleached branches. As the altitude increases, it decreases to low-lying bushes. On the glades grow yellow or orange, taller and very conspicuous *Astroemeria aurea*. Common strawberries (*Fragaria chiloensis*), the forerunners of modern cultivated strawberries, have relatively large and tasty fruits. Anemones (*Anemone multifida*) are white or red flowered and thrive among volcanic bombs along with *Cheilanthes peduncularis* ferns. The yellow *Viola magellanica* are remotely reminiscent of the European double-flowered violet.

Chilean nature abounds in exotic beauty and species richness and, in this virtual context, provides an adrenaline rush and retreat far from the diseases and dangerous infections of civilization. V.H.

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Mutisia sigmoidea

Mutisia sp.