

## Valleys and watercourses



The intensely-cultivated Gnejna Valley, with the typical terraced sides

Although Malta has no rivers, our islands are literally scarred from end to end by deep furrows, the exact name of which still eludes us.

The Maltese word is *wied*, which couldn't be more generic; although the word finds its roots in the North African *wadi* (dried up riverbed) it encompasses anything from a ditch or a stream to a deep gorge and valley.

The English translation of this is even more elusive and is often a bone of contention when it comes to carrying out studies, such as Environment Impact Assessments (EIAs), with valleys, watercourses and river valleys.

The large welter of valleys to be found in our islands is mainly due to the sedimentary nature of these islands, with the complete absence of igneous or metamorphous rocks.

Sedimentary rocks are the most malleable in terms of their being the most easily eroded by heavy rainfall which eventually carves out gorges and channels in them.

Watercourses represent the major expression of freshwater habitat in the Maltese Islands, which is also marginally represented by rainwater pools which form after heavy rainfall in hollows and depressions on coralline limestone karstland.

Such rockpools may also be replenished by spring water, even though the majority of them are rain-fed and hence very transient as they dry up in summer.

Springs, known in Maltese as *ghajn* (pl, *ghejjun*), also feed a number of valleys besides rockpools, such as Bahrija, Girgenti, San Martin, Wied il-Luq in Buskett and Xlendi, all of which exhibit running water all year round.

While valleys, such as Ramla Valley, are bolstered only by rain water, others, such as Wied il-Ghasel, are the recipients of both spring and rainwater.

### Importance of watercourses

Watercourses should be preserved for a number of factors - the rich biodiversity they harbour epitomised in the words of Schembri and Lanfranco (1993): "By virtue of the shelter provided by their sides and their water supply, river valleys are one of the richest habitats on the island".

The fact that 22.2 per cent (i.e. 14 out of 63) of sites branded as having conservation value in the Maltese Islands fall within the category of valleys or watercourses also testifies to the ecological importance of such a habitat.

Two of the most conspicuous species of these habitats are the Painted Frog (*Discoglossus pictus*), Malta's only amphibian, and the endemic local race of the Mediterranean Freshwater Crab (*Potamon fluviatilis lanfranco*).

The latter requires a year-round supply of running freshwater and is thus limited to this habitat type, therefore being very rare with a restricted distribution (it is currently only restricted to four or five sites).

Along a few watercourses there are still remnants of broad-leaved deciduous riparian woodland with White Poplar (*Populus alba*), Mediterranean Willow (*Salix pedicellata*), and Grey-leaved Elm (*Ulmus canescens*), ash (*Fraxinus angustifolia*) sometimes accompanied by Bay Laurel (*Laurus nobilis*).

Both the Mediterranean willow and the white willow are very rare in Malta, with only one remaining old specimen representing the latter species in our islands.

Such woodland harbours a rich undergrowth, composed mainly of rushes (members of the Cyperaceae family) and reeds, the largest of which is *Arundo donax* (the giant reed), which forms extensive reed beds, together with the common reed (*Phragmites australis*).

Plants requiring copious amounts of water are called hydrophytes, and these are mainly found in freshwater pools, rather than in running water.

These include the bull-rushes (*Typha*) which are important to purify eutrophic (i.e. enriched in nutrients, such as sewage) water, the extremely rare Mediterranean starfruit (*Damasium bourgaei*), the water plantain (*Alisma plantago-aquatica*), the algae *Chara vulgaris* which has a distinctive onion-like smell and the water crowfoot *Ranunculus* spp. which has two types of leaves - one type is submerged below and the other type emerges above water.

Due to their stature, some plant species are branded as shrubs, rather than trees, and these compose the riparian shrubland, being composed of species like the chaste tree (*Vitex agnus-castus*, which is much more widespread in Gozo than in Malta and whose fruit was thought to suppress sexual urges - hence the popular name) and the oleander.

As witnessed every year by motorists along the Msida Valley, valleys in their natural state are a vintage buffer against flooding problems, which in turn exacerbate erosion problems.

Farmers tend to narrow the flow paths to harness the water flow in valleys, thus concentrating the speed of flow and increasing the speed of run-off, further contributing to the erosion of watercourse banks, exemplified by the formation of deep gulleys.

Last but not least, pristine valleys have a high aesthetic appeal, and, especially in heavily urbanised areas, are highly cherished green lungs, such as Wied Ghollieqa and Wied Ghomor.

## Valleys in our islands

According to Haslam and Borg (1998), there are three main valley systems in our islands - the River Ghasel, River Kbir and River Sewda systems, which between them include 28 different minor valleys.

Among the very few remaining valleys which are relatively unblemished by human activity one must mention Wied Babu in Zurrieq (a relatively 'dry' valley, since water flows for only a very short period during the year, while the valley sides support a large number of orchids and the national plant *Widnet il-Bahar*); Wied il-Luq in Buskett, Wied Anglu/Wied Faham in Gharghur which is cut in lower coralline limestone; Wied Has-Saptan in Birzebuga which is home to a large population of wild pear; Bahrija Valley, Selmun Valley, Wied Migrah Ferha and Wied I-Ghasri in Gozo which reaches its climax in a breath-taking cobble beach; Wied il-Lunzjata in Xlendi, important both for its faunistic complements and also for its faulting and erosion displays, and Mgarr ix-Xini also in Gozo, surely the most treasured among our gems, both for its geomorphologic and ecological importance and also for its sheer beauty, epitomised in an aerial photo carried on the cover page of the book by Pedley et al. (2002).

Other valleys which are also relatively undeveloped but whose sides have been moulded into terraced fields include Wied San Blas and Ramla Valley in Gozo; Gnejna Valley, Wied Santi in Mgarr, Wied Zhuber in Mellieha, Mistra Valley and Wied I-Ahmar in Comino.

The names of some of the valleys in our islands also raise some eyebrows due to their esoteric nature. Whilst some pay tribute to some floral or faunal species, such as Wied Ghajn Rihana (myrtle) in Burmarrad, Wied Busbies (giant fennel) in Rabat, Wied Ghollieqa (bramble) in Kappara/San Gwann, Wied il-Luq (white poplar trees with their characteristic white-underside leaves) in Buskett and Wied il-Ghasel (honey due to the past presence of many bee colonies) in Mosta.

Others are enshrouded in historical or religious tradition such as Wied I-Ispanza (hope due to the well-known story about Our Lady saving a Mosta girl escaping from raiding corsairs) in Mosta - the chapel dates from 1760; Wied Liemu (reprimand) in Rabat and Wied Migra I-Ferha (warm welcome, due to the purported advent of the Norman Count Roger from Sicily in 1091 to expel the Arabs in the only accessible site along Dingli Cliffs).

Other names are testimony to religious devotion, such as Wied I-Lunzjata in Xlendi, named after the Annunciation of Our Lady, Wied San Gorg in St Julian's (probably dedicated to St George, patron saint of England, due to the prolific English presence in those environs), and Wied San Niklaw in Mellieha.

A number of chapels also embellish our valleys, such as the ones dedicated to St. Paul Shipwrecked in Wied Qlejgha, to St Paul the Hermit (eked out of a cave in Wied tal-Mosta) and to Our Lady of the Letter in Wied Bingemma.

## Threats to our valleys

Despite the accepted high conservation value of watercourses, endorsed even by the Structure Plan and although only 0.73 per cent of our land surface actually belongs to such a habitat type, a number of well-known dangers threaten the integrity of these freshwater habitats.

Over-development is the major threat, already claiming a significant number of valleys in our islands. In fact, while residential activity has smothered the upper valley sides of Wied Ghomor

in Swieqi, Wied Ghollieqa in San Gwann, Wied Mejxu in Pembroke, Wied Massa in Marsascala and Ghajnsielem Valley in Gozo, industrial activity has mainly wrought havoc to the River Kbir system, obliterating lower parts of Wied il-Kbir close to Marsa; while commercial activity has led to the asphaltting of the Msida Valley watercourse.

Tourism also exploits valley footprints, especially close to the sea, as has happened in Wied Ghajn Zhuber in Mellieha and Wied San Martin in St Paul's Bay, with the Busietta Gardens development being one of the few tarnishing an 'inland' valley part (at the Wied il-Faham/Wied Anglu river system)

Yet another threat to our valleys are ill-conceived recreational pastimes, such as offroading, concentrated in the River Kbir system but also common elsewhere, and collection of flora or fauna, such as the 'charismatic' painted frog and freshwater crab, which are decimated by young and adults alike at Chadwick Lakes and other sites.

While farming practices may be important in buoying our watercourses through, for example, the restoration of rubble walls (incidentally, part of the watercourse at Wied il-Kbir is smothered under stones derived from crumbling rubble walls), they may also contribute towards the degradation of valleys, such as through the burning of reeds at Bahrija Valley; through agricultural land reclamation schemes, such as at Wied I-Ahmar in Comino; through the planting of exotic tree species and through the excessive consumption of flowing water for agricultural purposes.

Quarrying is yet another chimera, such as at Wied Maghlaq near Ghar Lapsi, part of which is smothered by falling debris from a nearby disused quarry. Quarrying has already caused irreversible damage to the upper reaches of Wied I-Ghasel.

Dumping plagues a number of valleys, such as Wied Blandun in Fgura, while raw sewage replaces unpolluted freshwater in some valleys - the most blatant example of this is Wied Zhuber next to Hal Far, where sewage literally flows out of a disused sewage treatment plant down the valley sides into the sea.

A former threat (but which has left some unpalatable legacies) is that of government schemes aimed at 'managing' valleys with no scientific advice whatsoever.

Such schemes, born as a reaction to the 1979 floods, were heralded with hilarious names, such as Rizq il-Widien in the early and mid-80s, and led to the disappearance of a number of floral species, besides endowing us with a crumbling infrastructure, such as dams and bridges.

Another more subtle but even more inexorable threat is the decreasing level of water replenishment, both due to a decrease in rainfall (our average rainfall count shows an interannual variation of 27 per cent, ranging from 789 mm in 1999/2000 to just 311 mm (or 61 per cent of the mean) in the following 2000/2001 season, and also due to water consumption (mainly for agricultural purposes).

Even though use of our aquifer resources are on the decrease, they still account for 50.7 per cent of our total water consumption (or a total of 17.08 million cubic metres in 2000/2001), besides the purported large number of undeclared bore-holes tapping into springs which nourish some of our watercourses.

According to Haslam and Borg (1998), several proofs exist as to the former glory of our watercourses. These include the water-worn river beds which are now far too dry for water to wear stone like this, abnormally wide valley beds and the staggering number of dams and bridges built over watercourses which nowadays do not warrant them, such as at Mistra Valley.

To date, only Wied Blandun, Wied Ghomor, Wied I-Lunzjata, Mgarr ix-Xini and Bahrija Valley have been scheduled, with the scheduling of other valleys, such as Wied Babu, still in the pipeline. Let's augur that such scheduling is extended to even more valleys in future.

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