

Research Article

A first record of *Chara vulgaris* var. *papillata* Wallroth. Ex A. Braun (Charales) in the Maltese Islands (Central Mediterranean)

Jonathan Henwood¹

¹Sagħtar, Triq l-Irdum, Dingli, Malta

Abstract. The Maltese list of characeans includes *Chara vulgaris* of which the most commonly occurring variant is *C. vulgaris* var. *longibracteata*. A less common variant, *C. vulgaris* var. *papillata*, has been recorded for the first time locally in mats of *Chara vulgaris* examined from il-Qattara pool and Qawra (Dwejra, Gozo).

Keywords Stoneworth - *Chara vulgaris* var. *Papillata* - il-Qattara.

1 Introduction

Numerous freshwater wetlands found in the Maltese islands (ranging from small rockpools accumulating in karst depressions to freshwater wetlands and artificial reservoirs) are commonly colonised by macroscopic Charales. Locally these are represented by the genera *Chara*, *Tolypella* and *Nitella*. The following is the locally occurring species list (Lanfranco, 1969; Lanfranco, 2002):

- *Tolypella glomerata* (Desvaux) von Leonhardi 1863
- *Tolypella nidifica* (Muller) von Leonhardi 1857¹
- *Chara vulgaris* Linnaeus 1753 *sensu lato*
- *Chara vulgaris* var. *longibracteata* (Kutzing) Groves et Bullock-Webster
 - = *Chara vulgaris* var. *foetida* A. Braun forma *subinermis* A. Braun
 - = *Chara foetida* A. Braun forma *subinermis* A. Braun β *longibracteata* A. Braun

Correspondence to: J. Henwood (jonathan.henwood@gmail.com)

© 2014 Xjenza Online

¹This species is similar to *T. glomerata*, however possessing larger gametangia (Bryant and Stewart, 2002). (Lanfranco, 2002) attributes all records of *T. nidifica* to *T. glomerata* due to probable misidentification.

- *Chara vulgaris* var. *gymnophylla* (A. Braun) Nyman
 - = *Chara gymnophylla* A. Braun 1834
- *Chara globularis* Linnaeus var. *globularis* f. *globularis* Thuillier 1799
 - = *Chara globularis* Thuillier 1799
 - = *Chara fragilis* Desvaux
- *Nitella flexilis* (Linnaeus) Agardh 1824²

The following brief notes deal with the discovery of *Chara vulgaris* var. *papillata* in the island of Gozo. Material collected has been deposited in the herbarium of the author.

2 Methods

Material examined: Fresh material was collected from shallow areas of il-Qattara pool (Dwejra, Gozo: 36°3'3.47"N 14°11'32.41"E) in February 2005, where material persisted until May. Material was also collected from a watercourse in the Qawra area (36°3'6.44"N 14°11'31.78"E) at the same time, where the alga persisted until April when the watercourse dried. Token specimens collected from mats in the two locations were examined with the naked eye and under the stereomicroscope at magnifications ranging from $\times 7$ to $\times 30$.

Description of material: Thallus up to 50cm, greyish-green, highly encrusted. Cortex with a single secondary row between each primary row; papillate spine cells up to 1mm (visible with the naked eye) sticking out from the cortex. Cortex is aulocanthous.

3 Discussion and Conclusions

C. vulgaris is a variable species and a number of described varieties occur (Bryant and Stewart, 2002). The various forms may interchange over time both within the

²This characean has never been observed after being recorded by (Gulia, 1877).



Figure 1: View of specimen habit ($\times 7$). Scale bar: 5mm.

same population and within individuals. Different varieties may therefore represent ecomorphic expressions of the same species.

Within all varieties, spine cells are deciduous, persisting toward the apex of the branch. In the identified variety, the characteristic feature is the length of the spine cells (wider than the branches) which are also clearly deciduous (persisting only on the newer end of the stem). Spine cells have been variously described as either lying within the groove formed by the primary rows (Moore, 1986) or sticking out (Groves and Bullock-Webster, 1924), as is the case with the discovered specimens.

Il-Qattara is a permanent freshwater pool first described by (Schembri et al., 1987) and consequently by (Anderson and Schembri, 1989). More recently it was described by (Gauci, 1996) and (Camilleri, 2006) as being colonised by hydrophilic flora (including numerous algae) and fauna. (Camilleri, 2006) notes that salinity varies gradually, from 0.26 during the wet season to 1.35 during the warm season, confirming its freshwater characteristics. *C. vulgaris* var. *papillata* was recorded during the time of year where salinity ranged from 0.82 to 1.10. In contrast to il-Qattara pool, the watercourse in the Qawra area is ephemeral and exists through overspill from il-Qattara pool and runoff from



Figure 2: Detail of stems ($\times 10$). Note spine cells and encrustation. Scale bar: 1mm.

surrounding higher ground and from Wied Għorof/Wied Merell, Wied Sufar and Wied il-Kbir (the latter also drains into il-Qattara pool). The watercourse desiccates once rain-induced runoff ceases. Therefore, it is evident that specimens in this area dry out due to lack of water availability. Conversely, the demise of specimens in il-Qattara pool may be attributed to a number of factors, of which gradual increases in salinity and temperature may play a role.

In both the il-Qattara and Qawra sites, specimens have been noted growing in dense mats within shallow water, mixed with *C. globularis*, *C. vulgaris* var. *longibracteata* and *Cladophora* spp. This observation is concordant with the findings by (Camilleri, 2006) for the month of May. The growth of mixed varieties of *C. vulgaris* within the same population is consistent with literature and indicative of ecomorphosis within the population. Extensive surveys of the pool and watercourse carried out in March 2009 noted only the *longibracteata* variety.

The finding of the *papillata* variety, restricted to one location within the island of Gozo is of significance to the Characean flora of the Maltese Islands. It may result from ambient conditions which allow increased plasticity within the population of *C. vulgaris* when compared with populations of the same species in other areas.

Acknowledgments

The author would like to acknowledge the help of Mr Edwin Lanfranco.

References

- Anderson E., Schembri P. (1989). Coastal zone survey of the Maltese Islands report. Beltissebħ: Planning Services Division, Works Department.
- Bryant J., Stewart N. (2002). Phylum Chlorophyta, Order Charales. In John D., Whitton B., Brook A., editors, *The Freshwater Algal Flora of the British Isles: An Identification Guide to Freshwater and Terrestrial Algae*. Cambridge University Press and The Natural History Museum, Cambridge.
- Camilleri M. (2006). *Ecology of the perennial freshwater pool at il-Qattara*. B.Sc Hons Dissertation, University of Malta.
- Gauci M. (1996). A survey of the natural and semi-natural freshwaters in Gozo.
- Groves J., Bullock-Webster G. (1924). *The British Charophyta Vol. 2, Characeae*. The Ray Society, London.
- Gulia G. (1877). *Maltese Botany in Il Barth (1871-1877)*.
- Lanfranco E. (1969). *A revised check-list of Maltese algae*. National Press, Washington.
- Lanfranco E. (2002). A contribution to the freshwater macroalgal flora of the Maltese Islands. *Central Mediterranean Naturalist*, 3(4), 203–206.
- Moore J. (1986). *Charophytes of Great Britain and Ireland*. B.S.B.I.