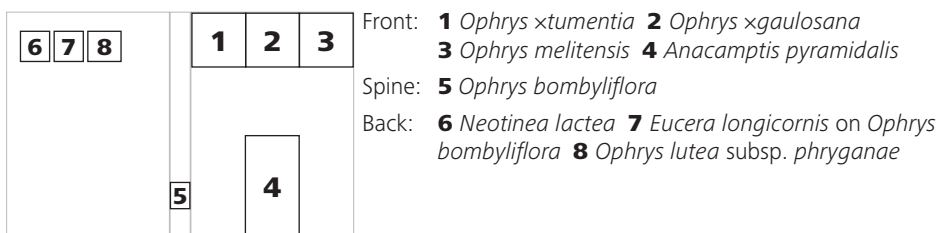


ORCHIDS OF THE MALTESE ISLANDS

a descriptive guide



by Stephen Mifsud



Copyright © 2018 by Stephen Mifsud and Green House
 All rights reserved

No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without permission in writing from the copyright owners.

The right of Stephen Mifsud to be identified as the Author of this work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988

Text © Stephen Mifsud
 Photos © Stephen Mifsud unless captioned otherwise.
 Illustrations © Simone Cutajar

Orchids of the Maltese Islands: a descriptive guide
 By Stephen Mifsud. For more information: <http://www.maltawildplants.com/>

Disclaimers:

The Author, the Publisher and the Editors cannot be held responsible for errors or any consequences arising from the use of the information contained in this book; the views and opinions do not necessarily reflect those of the Publisher and Editor, neither does the publication of advertisements constitute any endorsement by the Publisher, Author and Editors of this publication.

This publication has been partly funded by the Environment and Resources Authority (ERA). Any views expressed in this book are those of the editor(s) or author(s) and are not to be considered as the views of ERA.

The information and views set out by the beneficiary organisation, Green House through this project are its own and do not necessarily reflect the official opinion of the Ministry for the Environment, Sustainable Development and Climate Change and/or the Environmental Fund 2016 Committee. Neither the Ministry nor the Fund Committee nor any person acting on their behalf may be held responsible for the use which is or may be made of the information and views set out by the beneficiary organisation through this project.

Editors: Rebecca Elizabeth Kemp and Simone Cutajar
 Printers: Best Print Ltd.
 Publishing date: 30th October 2018
 Published by Green House
 ISBN 978-99957-1-367-6

Discussions

Anacamptis pyramidalis s. l.

Since its original description in 1913, *Anacamptis pyramidalis* subsp. *urvilleana* (Sommier & Caruana Gatto) Landwehr was always unquestionably considered as endemic to the Maltese Islands. In the late 2000s, however, some orchidologists started treating this orchid as an early-flowering taxon of *A. pyramidalis* (L.) Rich., an orchid which is widely distributed throughout southern Europe.

Whether the two species are distinct or not has never been questioned by Maltese botanists, and in fact the early-flowering subsp. *urvilleana* has been treated as one of the most attractive endemic orchid species of the Maltese Islands and distinct from *A. pyramidalis*. However, this legacy has been broken twice: first when it was removed from species rank and attributed as a variety of *A. pyramidalis* in the monograph of European orchids by KELLER & SCHLECHTER (1926); and more recently, when it was synonymised with *A. pyramidalis*. This was initiated by BUTTLER (1991), supported by DELFORGE (2006) and then published again by KRETZSCHMAR et al. (2007). This synonymy was then accepted in most species databases (namely the International Plant Names Index, The Plant List, Tropicos, EU-Nomen and the Kew's World Checklists of Selected Plant Families).

While Maltese botanists still treat subsp. *urvilleana* as a distinct orchid species (e.g. SULTANA, 2009; MIFSUD, 2002-2014; CASHA, 2014; LANFRANCO & BONETT, 2016), most foreign authors are following the treatment by KRETZSCHMAR et al. (2007), thus rejecting subsp. *urvilleana* as a distinct species. The most likely reason why subsp. *urvilleana* began to be treated as a synonym of *A. pyramidalis* is because of a similar species occurring in mainland Greece and Crete, *A. brachystachys* (D'Urville) Nyman. *A. brachystachys*, an early-flowering species of pyramidal orchid with paler flowers than *A. pyramidalis*, was first reported from Crete in 1822. Botanists later found that the differences between *A. pyramidalis* and *A. brachystachys* were weak, as the flowering periods of the two species overlap by only a few weeks and there are not many morphological differences between the two except for the paler flowers of *A. brachystachys*. As a result, *A. brachystachys* was synonymised to *A. pyramidalis* and when foreign authors applied this reasoning to similar early-flowering species throughout the Mediterranean region they may have assumed that subsp. *urvilleana* should also be synonymised, despite there being many morphological differences between *A. pyramidalis* and subsp. *urvilleana* as reported by MIFSUD (2016) and discussed hereunder.

TABLE 1. Comparison of *Anacamptis pyramidalis* subsp. *urvilleana* and *Anacamptis pyramidalis* s. str. from Malta (adapted from MIFSUD, 2016) and recent observations.

Diagnostic characters	<i>A. pyramidalis</i> subsp. <i>urvilleana</i>	<i>A. pyramidalis</i> s. str.
Flowering period in Malta	End of February to mid-April	End of April to beginning of June
Flowering peak in Malta	Mid-March	Mid-May
Flower colour	Rosy to baby pink, white forms frequent	Bright purple, sometimes deeply vivid; white forms very rare
Lip length (mm) (FIG. 1)	4–6	6–8
Lateral sepal length (mm) (FIG. 1)	4–6	6–9
Upper petal length (mm) (FIG. 1)	4–5	6–7
Spur length (mm) (FIG. 1)	6–10(-11)	11–18(-20)
Shape of lobes of lip	Variable, but generally rounded and ovate or oblong with rounded sides	Variable, but generally oblong with straight parallel sides, less often with arching sides
Overall shape of inflorescences of mature plants	Elongated conical-cylindrical	Conical-pyramidal, shorter
Number of flowers in an averagely sized inflorescence	60–80(–100) (FIG. 2)	25–60 (FIG. 3)
Grouping	Solitary or in clumps up to 8 (FIG. 4)	Solitary, less of often in clumps up to 4
Scent	Sweet, nectar-like, moderately faint but detectable	Foxy, disagreeable or not particularly pleasant
Chromosome count from Maltese material ¹	2n=36	2n=72
Chr. count from material collected in south Italy ²	n/a	2n=36, 54, 63, 72

¹DEL PRETE et al. (1991)

²BIANCO et al. (1991); DEL PRETE et al. (1991); D'EMERICO et al. (1993)

These differences in opinion between foreign and local orchidologists highlight a lack of knowledge regarding subsp. *urvilleana* and the early-flowering waves of *A. pyramidalis* abroad, since foreign authors probably do not know enough about subsp. *urvilleana* and local botanists do not have much experience with *A. pyramidalis* outside of Malta. The work by MIFSUD (2016), summarised in **TABLE 1**, attempts to address this potential knowledge gap by giving a detailed account of the phenological, morphological and possible karyological differences between subsp. *urvilleana* and *A. pyramidalis*.

Based on these distinctions between the two pyramidal orchids, the cautious ranking of a variety for subsp. *urvilleana* was considered to be the most suitable and was advocated by MIFSUD (2016) owing to: the lack of geographical separation; the morphological differences were overall considered subtle; the possible but remote overlap of the flowering period (**FIG. 5**); and the need for a karyological study more selective to *A. pyramidalis* s. l. in Malta. MIFSUD (2016) sought to bring back the recognition of the endemic orchid within the major European classification systems, in particular Euro+Med, eMonocot and Kew's World Checklists of Selected Plant Families. Kew's World Checklists of Selected Plant Families has since updated their database to reflect the distinction of subsp. *urvilleana* as a variety, but unfortunately, the varietal ranking is not treated with any taxonomic importance in these classifications and they consequently do not recognise any taxa below the subspecies rank.

While the ranking between variety and subspecies in Orchidaceae is quite arbitrary and without a well-defined taxonomic application, the taxonomic ranking of the Maltese pyramidal orchid is now recommended to be raised from a variety to that of a subspecies, as was already proposed by LANDWEHR (1977) and as applied in this book. This treatment was put forward as a result of new considerations and observations obtained from recent studies since the publication of MIFSUD (2016), of which the following three important rationales are discussed:

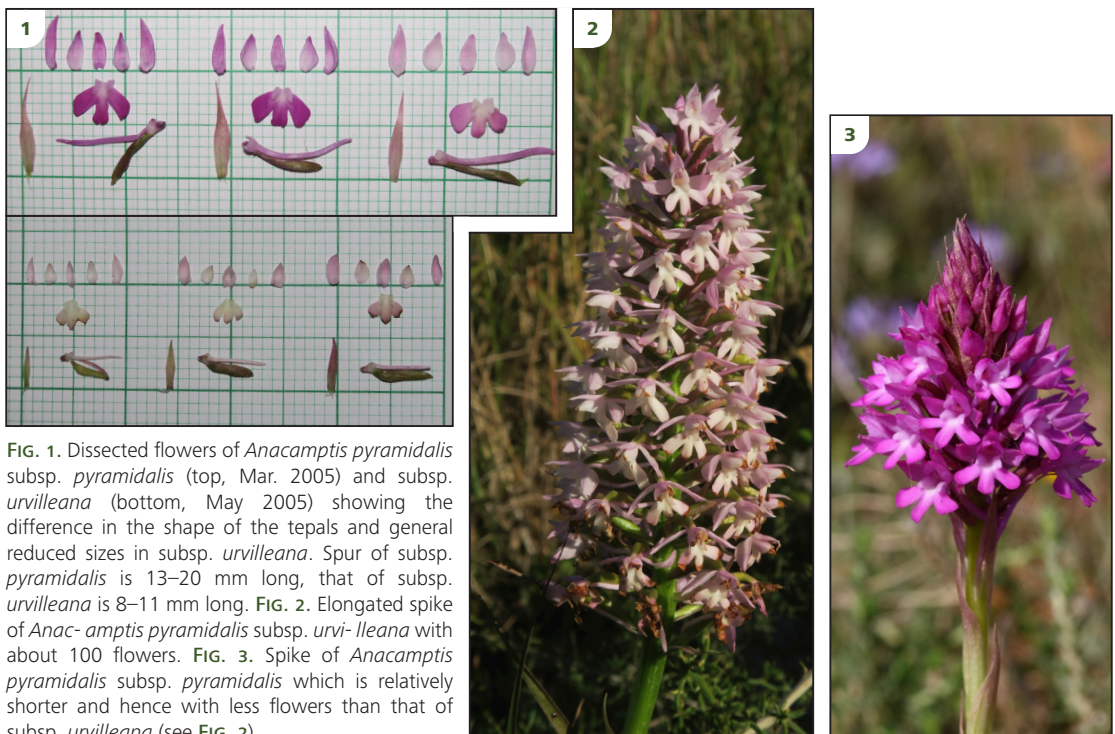


FIG. 1. Dissected flowers of *Anacamptis pyramidalis* subsp. *pyramidalis* (top, Mar. 2005) and subsp. *urvilleana* (bottom, May 2005) showing the difference in the shape of the tepals and general reduced sizes in subsp. *urvilleana*. Spur of subsp. *pyramidalis* is 13–20 mm long, that of subsp. *urvilleana* is 8–11 mm long. **FIG. 2.** Elongated spike of *Anacamptis pyramidalis* subsp. *urvilleana* with about 100 flowers. **FIG. 3.** Spike of *Anacamptis pyramidalis* subsp. *pyramidalis* which is relatively shorter and hence with less flowers than that of subsp. *urvilleana* (see **FIG. 2**).

- 1 Two new morphological differences that were not tackled in the work of Mifsud (2016) widen the difference between the two *Anacamptis* species. Having smaller flowers and relatively longer inflorescences, subsp. *urvilleana* produces an average of 70–80 flowers compared to the 40–50 by *A. pyramidalis*. Moreover, it was observed by Stephen Mifsud in 2017 that subsp. *urvilleana* gives off a mild sweet scent in comparison to the disagreeable one emitted by *A. pyramidalis*, described by some orchidologists as foxy. Both of these characteristics have a significant impact on their pollinator-attracting strategies, which is the core aspect of orchid evolution. While the pollinating insects of both plants have not been documented for Malta, the differences in flower size (especially the length of the spur and the stigmatic cavity), the scent, the colour of the corolla and the flowering period indicates that the two pyramidal orchids have different pollinator(s).

- 2 The two orchids are not geographically isolated and share more or less the same habitat in Malta, although *A. pyramidalis* is more adapted to colonise disturbed rocky areas than subsp. *urvilleana*. However, the possibility for cross-pollination is unlikely since they have markedly different flowering periods with an infrequent and possibly insignificant flowering overlap, specifically on the rare occasion that the winter period is particularly long (promoting the endurance of subsp. *urvilleana*) with an abrupt change to the summer period (promoting the earlier blossoming of *A. pyramidalis*). Hence, while they are sympatric (sharing the same geographical area) and reasonably syntopic (co-existing in the same habitat) they are rarely synchronic (occurring at the same time). Without a frequent exchange of gametes between the two orchids, subsp. *urvilleana*, a presumed descendent of *A. pyramidalis*, could evolve freely in comparison to situations abroad where the two flowering waves of *A. pyramidalis* s. l. are not isolated and there is a frequent exchange of genes and fertile offspring.

- 3 A similar situation to the one in Malta exists on the island of Mallorca (the largest island of the Balearic Islands), where there is an early pale purple flowering wave (FIG. 6) starting roughly at the beginning of February (FIG. 7) and ending in mid-March and a second wave with more deeply purple flowers blooming from mid-April to May (pers. comm., SVEN JONASSON, 2017). Examination by Stephen Mifsud of photographic evidence and measurements of the early wave of orchids from Mallorca provided by Sven Jonasson led to the conclusion that this early-flowering population has flower dimensions within the range of *A. pyramidalis* s. str. For example, most of the spurs of the early-flowering wave were 10–18 mm long (FIG. 8) and the lips were as large as the nominal *A. pyramidalis*. Some of the inflorescences were short and pyramidal, others elongated like subsp. *urvilleana*, although they superficially seemed to be less dense and less compact than subsp. *urvilleana*. The lobes of the lip were on average more rectangular with smooth curves, rather than rounded as they generally are in



FIG. 4. *Anacamptis pyramidalis* subsp. *urvilleana* growing in clumps, the typical growth form for the species.



FIG. 5. *Anacamptis pyramidalis* subsp. *pyramidalis* (left) and subsp. *urvilleana* (right) found growing together at Marfa on 8 Apr. 2018. Differences in the flower morphology and sizes are quite distinct.



FIG. 6. Early wave of *Anacamptis pyramidalis* s. str. on 29 Mar. 2017 from Mallorca in the Balearic Islands, Spain. FIG. 7. *A. pyramidalis* subsp. *pyramidalis* from Mallorca flowering very early on 10 Feb. 2017. Both photographs by Sven Jonasson.

recorded its presence from Malta when he came to visit and explore the Maltese Islands in the 19th century. Consequently, it is understood that according to D'Urville the pyramidal orchids in the Maltese Islands do not correspond to var. *brachystachys*.

Interestingly, the general trend of an early wave of *A. pyramidalis* s. l. producing paler and slightly smaller flowers followed by a second wave of *A. pyramidalis* s. str. with more vivid colours also occurs in other countries in Europe, namely Portugal, Greece (including Crete) and in Italy (only in Sicily) (FIG. 9). However, it is likely that the early-flowering population in Malta has evolved and speciated into a distinct orchid. While with our present knowledge the subspecies ranking seems to be the most suitable, results from genetic and karyological studies, statistical isometric comparative analysis and pollinator interactions may be the ultimate tools to justify the promotion of this orchid to species level as originally proposed by SOMMIER & CARUANA GATTO (1915). Meanwhile, the subspecies ranking should be enough to warrant the conservation of the endemic Maltese pyramidal orchid, as well as better recognition and taxonomic significance at an international level.



FIG. 8. Dissected flowers of *Anacamptis pyramidalis* subsp. *pyramidalis* from Mallorca showing large flowering parts (spur 11–20 mm long). Photo by Sven Jonasson.



FIG. 9. *Anacamptis pyramidalis* subsp. *pyramidalis* from Ragusa, Sicily found with pink flowers on 7 Apr. 2014. At first glance it appears to be subsp. *urvilleana* but the large anatomical parts of the flower (e.g. spur 15 mm long) clearly belong to subsp. *pyramidalis*.