

The insectivorous genus
Pinguicula (*Lentibulariaceae*)
in the Greater Antilles

S. Jost Casper

Published by the

Botanic Garden and Botanical Museum Berlin

as

Englera 35

Serial publication of the Botanic Garden and Botanical Museum Berlin

February 2019



Englera is an international monographic series published at irregular intervals by the Botanic Garden and Botanical Museum Berlin (BGBM), Freie Universität Berlin. The scope of Englera is original peer-reviewed material from the entire fields of plant, algal and fungal taxonomy and systematics, also covering related fields such as floristics, plant geography and history of botany, provided that it is monographic in approach and of considerable volume.

EDITOR: Nicholas J. Turland

TEXT EDITORS: Hermann Manitz, Mark Spencer

PRODUCTION EDITOR: Michael Rodewald

PRINTING AND BOOKBINDING: Laserline Druckzentrum Berlin KG

ENGLERA ONLINE ACCESS: Previous volumes at least three years old are available through JSTOR:
<https://www.jstor.org/journal/englera>

ENGLERA HOMEPAGE: <https://www.bgbm.org/englera>

SUBMISSION OF MANUSCRIPTS: Before submitting a manuscript please contact Nicholas J. Turland, Editor of Englera, Botanic Garden and Botanical Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany; e-mail: n.turland@bgbm.org

SUBSCRIPTION: Verlagsauslieferung Soyka, Goerzallee 299, 14167 Berlin, Germany; e-mail: kontakt@soyka-berlin.de; <https://shop.soyka-berlin.de/bgbm-press>

EXCHANGE: BGBM Press, Botanic Garden and Botanical Museum Berlin, Freie Universität Berlin, Königin-Luise-Str. 6–8, 14195 Berlin, Germany; e-mail: bgbmpress@bgbm.org

© 2019 BOTANIC GARDEN AND BOTANICAL MUSEUM BERLIN, FREIE UNIVERSITÄT BERLIN

All rights (including translations into other languages) reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

ISSN 0170-4818

ISBN 978-3-946292-30-2

CITATION: Casper S. J. 2019: The insectivorous genus *Pinguicula* (*Lentibulariaceae*) in the Greater Antilles. – Berlin: Botanic Garden and Botanical Museum Berlin, Freie Universität Berlin. – Englera 35.

ADDRESS OF THE AUTHOR: Prof. Dr. S. Jost Casper, Herbarium Haussknecht, Friedrich-Schiller-Universität Jena, Fürstengraben 1, 07737 Jena, Germany.

COVER DESIGN: A selection from the photographs of *Pinguicula* species appearing in this work. See the relevant plates for further details.

Contents

Summary and key words	7
Abbreviations	7
Acknowledgements	9
Introduction	11
The species	13
Key to the Greater Antillean <i>Pinguicula</i> species	13
1. <i>Pinguicula albida</i> C. Wright ex Griseb.	14
2. <i>Pinguicula baezensis</i> Casper, sp. nov.	23
3. <i>Pinguicula bissei</i> Casper	27
4. <i>Pinguicula caryophyllacea</i> Casper	31
5. <i>Pinguicula casabitoana</i> J. Jiménez Alm.	47
6. <i>Pinguicula cubensis</i> Urquiola & Casper	50
7. <i>Pinguicula filifolia</i> C. Wright ex Griseb.	54
7.1. <i>Pinguicula filifolia</i> subsp. <i>filifolia</i>	54
7.2. <i>Pinguicula filifolia</i> subsp. <i>alba</i> Y. Domínguez, Panfet & V. Miranda	63
8. <i>Pinguicula infundibuliformis</i> Casper	64
9. <i>Pinguicula jackii</i> Barnhart	68
10. <i>Pinguicula jaraguana</i> Casper	73
11. <i>Pinguicula lignicola</i> Barnhart	78
12. <i>Pinguicula lippoldii</i> Casper	85
13. <i>Pinguicula lithophytica</i> Panfet & P. Temple	90
14. <i>Pinguicula moaensis</i> Casper, sp. nov.	93
15. <i>Pinguicula orthoceras</i> Casper, sp. nov.	97
The ‘ <i>Pinguicula benedicta</i> puzzle’: the dubious taxon <i>P. benedicta</i> and the <i>P. benedicta</i> species group	100
General aspects	105
1. Selected characters	105
1.1. Growth form and habit	105
1.2. Floral morphology	105
1.3. Pollen and seeds	107
1.4. Floral hairs	108
1.5. Chromosomes	109
2. Chorological and palaeogeographical aspects	110
2.1. Recent chorological aspects	110
2.2. Palaeogeographical aspects	111
2.3. Pleistocene cooler periods and species diversification	112
3. The recent pattern of species differentiation	114
4. Possible relationship, based on floral morphology, of Antillean <i>Pinguicula</i> species and species groups to other taxa	114
5. Summary of molecular systematics and morphologically based classification	115
References	119
Index to new names appearing in this volume	123
Index to scientific names	125



Plate 1. *Pinguicula lignicola*, epiphytic on *Buxus* in the Sierra de Moa, Prov. Holguín, Cuba. – Photo: H. Dietrich.

Summary

In the Greater Antilles, there are 15 species of the insectivorous genus *Pinguicula* L. (*Lentibulariaceae*). This work discusses their taxonomy, ecology and biogeography. Fourteen species are native to Cuba and one to Hispaniola. In Cuba, the genus is found in three regions: Pinar del Río and Isla de la Juventud (three species), Cienfuegos (two species) and the former province of Oriente (nine species). Three new species are described: *P. baezensis* Casper, *P. moaensis* Casper and *P. orthoceras* Casper. The taxonomic status of *P. benedicta*, frequently mentioned in botanical literature, is discussed. Two truly epiphytic species, *P. casabitoana* (Hispaniola) and *P. lignicola* (eastern Cuba), as well as the ‘bird-lime-twig-leaved’ (‘leimrutenblättrige’) *P. filifolia* (western Cuba), are of particular biological interest. *Pinguicula* is a relatively recent member of the Greater Antillean flora, the genus probably having arrived prior to the end of the Pliocene (c. 3.7 mya) and diversified when the Panamanian land bridge was formed (2.5–2.3 mya). Combining floral morphology and phytogeographical data, two main radiations can be distinguished: (1) taxa with indistinctly 2-lipped, subisolobate corollas (e.g. *P. albida*, *P. baezensis*, *P. casabitoana*, *P. filifolia*, *P. jackii* and *P. lithophytica*), occupying all three Cuban distribution centres and Hispaniola; and (2) taxa of the *Pinguicula benedicta* species group with distinctly 2-lipped, unequal to subequal lobed corollas that are restricted to a limited area of eastern Cuba.

Key words: biogeography, chromosomes, Cuba, Greater Antilles, Hispaniola, *Lentibulariaceae*, morphology, new species, *Pinguicula*, *Pinguicula baezensis*, *Pinguicula moaensis*, *Pinguicula orthoceras*, taxonomy

Abbreviations

$2n$	diploid chromosome number
a.s.l.	above sea level
BGJ	Botanical Garden Jena
BW-film	black and white film
C-film	colour film
DBJ	photo library at the Institute of Systematic Botany of the University Jena
E	equatorial diameter of pollen grain
Fig.	figure (a distribution map in the present study)
fig., figs.	figure, figures (in other works)
HFC	Herbarium Flora de Cuba (not to be confused with the Index Herbariorum code ‘HFC’ for the Herbário Fernando Cardoso da Silva in Colombo, Brazil)
kya	thousand years ago
mun.	‘municipio’, municipality
mya	million years ago
n	haploid chromosome number
P	polar axis of pollen grain
pl., pls.	plate, plates
prov.	‘provincia’, province
SEM	Scanning Electron Microscopy
s.n.	‘sine numero’, without number
x	base number of chromosome set