

Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia

(Chrysomelidae, Curculionidae,
Elateridae, and Staphylinidae)



Purnama Hidayat,
Fatimah Siddikah,
Kasmiatun et al.

Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia

**(Chrysomelidae, Curculionidae,
Elateridae, and Staphylinidae)**



Buku ini tidak diperjualbelikan.

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law.

Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia

**(Chrysomelidae, Curculionidae,
Elateridae, and Staphylinidae)**



**Purnama Hidayat,
Fatimah Siddikah,
Kasmiatun et al.**

BRIN Publishing

Buku ini tidak diperjualbelikan.

© 2022 EFForTS

Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems (Sumatra, Indonesia)

Cataloging in Publication

Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia (Chrysomelidae, Curculionidae, Elateridae, and Staphylinidae)/Purnama Hidayat, Fatimah Siddikah, Kasmiatun, Woro Anggraitoningsih Noerdjito, Rosyid Amrulloh, Muhammad Syaifullah Hiola, Lailatun Najmi, Rizky Nazarreta, Stefan Scheu, Damayanti Buchori, & Jochen Drescher–Jakarta: BRIN Publishing, 2022.

xxxi hlm. + 331 hlm.; 17,6 × 25 cm

ISBN 978-623-7425-70-0 (printed)

978-623-7425-71-7 (e-book)

1. Click Beetles

3. Sumatra

2. Weevils

4. Indonesia

595.7

Copy editor : Sarwendah Puspita Dewi
Proofreader : Sarwendah Puspita Dewi & Dhevi E.I.R. Mahelingga
Layouter : Hilda Yunita
Cover Designer : Imam Setyawan & Suryadi

First Print : June 2022



Published by
BRIN Publishing
Directorate of Repositories, Multimedia, and Scientific Publishing
Gedung B.J. Habibie, Jl. M.H. Thamrin No. 8,
Kb. Sirih, Kec. Menteng, Kota Jakarta Pusat,
Daerah Khusus Ibukota Jakarta 10340
Whatsapp: 0811-8612-369
E-mail: penerbit@brin.go.id
Website: penerbit.brin.go.id
f PenerbitBRIN
t Penerbit_BRIN
i penerbit_brin



In cooperation with:
Collaborative Research Center 990 - EFForTS
Georg-August-Universität Göttingen
J.F. Blumenbach Institut für Zoologie und Anthropologie
Untere Karspüle 2
37073 Göttingen
phone: +49 551 39 26054
website: <https://www.uni-goettingen.de/en/310995.html>



Buku ini merupakan karya buku yang terpilih dalam Program Akuisisi Pengetahuan Lokal Direktorat Repositori, Multimedia, dan Penerbitan Ilmiah, Badan Riset dan Inovasi Nasional.



Karya ini dilisensikan di bawah Lisensi Internasional Creative Commons Attribution-NonCommercial-ShareAlike 4.0.

Buku ini tidak diperjualbelikan.

TABLE OF CONTENTS

TABLE OF IMAGE	vii
PUBLISHER'S NOTE	xxv
FOREWORD	xxvii
PREFACE	xxix
 CHAPTER 1 INTRODUCTION	 1
 CHAPTER 2 LEAF BEETLES (COLEOPTERA: CHRYSOMELIDAE)	 5
Identification key to the subfamilies of Chrysomelidae	6
Identification key to the genera of Chrysomelidae	7
Subfamily Criocerinae	7
Subfamily Cryptocephalinae	7
Subfamily Eumolpinae	8
Subfamily Galerucinae	9
Subfamily Galerucinae (Tribe Alticinae)	11
List of Chrysomelidae morphospecies	12
Images of Chrysomelidae morphospecies	17



CHAPTER 3 TRUE WEEVILS (COLEOPTERA: CURCULIONIDAE) 95

Identification Key to the Subfamilies of Curculionidae 97

List of Curculionidae Morphospecies 99

Images of Curculionidae morphospecies 106

CHAPTER 4 CLICK BEETLES (COLEOPTERA: ELATERIDAE)217

Identification Key to the Subfamilies of Elateridae219

Identification Key to the Genera of Elateridae220

Subfamily Cardiophorinae.....221

Subfamily Dendrometrinae.....221

Subfamily Lissominae (only found Lissomus)221

Subfamily Melanotinae (only found Melanotus).....221

Subfamily Negastrinae222

Subfamily Elaterinae222

List of Elateridae morphospecies223

Images of the EForTS Elateridae Collection.....226

CHAPTER 5 ROVE BEETLES (COLEOPTERA: STAPHYLINIDAE)269

Identification Key to the Subfamilies of Staphylinidae270

List of Staphylinidae morphospecies.....271

Images of Staphylinidae morphospecies.....274

EPILOGUE313

REFERENCES315

INDEX319

ABOUT THE AUTHORS.....325

TABLE OF IMAGE

Figure 1.	The Four Land-Use Systems Investigated in the Framework of EForTS: 2 (a) Primary Degraded Forest (here: PT REKI), (b) Jungle Rubber, and Monoculture Plantations of (c) Rubber and (d) Oil Palm..... 2
Figure 2.	Location of EForTS study sites in Jambi Province, Sumatra, Indonesia. The plot design is mirrored in two landscapes within and adjacent to two lowland rainforests, i.e., the Bukit Duabelas National Park and the Harapan Rainforest (Junggebauer et al., 2021). 3
Figure 2.1	External Morphology (Ventral View) of Chrysomelidae (Re-drawing from Hubble, 2010) 7
Figure 2.2	<i>Basiprionota</i> sp.01 (Chrysomelidae: Cassidinae) Z02_ColChr025.....17
Figure 2.3	<i>Dactylispa</i> sp.01 (Chrysomelidae: Cassidinae) Z02_ColChr04918
Figure 2.4	<i>Notosacantha</i> sp.01 Chrysomelidae: Cassidinae) Z02_ColChr14218
Figure 2.5	<i>Polychalca</i> sp.01 (Chrysomelidae: Cassidinae) Z02_ColChr113.....19
Figure 2.6	<i>Chrysomela</i> sp.01 (Chrysomelidae: Chrysomelinae) Z02_ColChr108.....19
Figure 2.7	<i>Phratora</i> sp.01 (Chrysomelidae: Chrysomelinae) Z02_ColChr173.....20
Figure 2.8	<i>Lema</i> sp.01 (Chrysomelidae: Criocerinae) Z02_ColChr187.....20
Figure 2.9	<i>Lema</i> sp.02 (Chrysomelidae: Criocerinae) Z02_ColChr237.....21
Figure 2.10	<i>Lilioceris</i> sp.01 (Chrysomelidae: Criocerinae) Z02_ColChr003.....21
Figure 2.11	Cyrptocephalinae sp.01 (Chrysomelidae: Cryptocephalinae) Z02_ColChr23222
Figure 2.12	Lexiphanes sp.01 (Chrysomelidae: Cryptocephalinae) Z02_ColChr005.....22
Figure 2.13	<i>Melixanthus</i> sp.01 (Chrysomelidae: Cryptocephalinae) Z02_ColChr051...23



Figure 2.14	<i>Abirus</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr207.....	23
Figure 2.15	<i>Abirus</i> sp.02(Chrysomelidae: Eumolpinae) Z02_ColChr055.....	24
Figure 2.16	<i>Aulexis</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr023.....	24
Figure 2.17	<i>Aulexis</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr096.....	25
Figure 2.18	<i>Aulexis</i> sp.03(Chrysomelidae: Eumolpinae) Z02_ColChr031.....	25
Figure 2.19	<i>Aulexis</i> sp.04 (Chrysomelidae: Eumolpinae) Z02_ColChr188.....	26
Figure 2.20	<i>Basilepta</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr043.....	26
Figure 2.21	<i>Basilepta</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr116.....	27
Figure 2.22	<i>Basilepta</i> sp.03 (Chrysomelidae: Eumolpinae) Z02_ColChr021.....	27
Figure 2.23	<i>Basilepta</i> sp.04 (Chrysomelidae: Eumolpinae) Z02_ColChr171.....	28
Figure 2.24	<i>Basilepta</i> sp.05 (Chrysomelidae: Eumolpinae) Z02_ColChr030.....	28
Figure 2.25	<i>Basilepta</i> sp.06 (Chrysomelidae: Eumolpinae) Z02_ColChr035.....	29
Figure 2.26	<i>Basilepta</i> sp.07 (Chrysomelidae: Eumolpinae) Z02_ColChr087.....	29
Figure 2.27	<i>Brachypnoea</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr038.....	30
Figure 2.28	<i>Callisina</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr193.....	30
Figure 2.29	<i>Callisina</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr208.....	31
Figure 2.30	<i>Cleorina</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr010.....	31
Figure 2.31	<i>Cleorina</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr143.....	32
Figure 2.32	<i>Colaspoides</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr139.....	32
Figure 2.33	<i>Colaspoides</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr140.....	33
Figure 2.34	<i>Colaspoides</i> sp.03 (Chrysomelidae: Eumolpinae) Z02_ColChr168.....	33
Figure 2.35	<i>Colaspoides</i> sp.04 (Chrysomelidae: Eumolpinae) Z02_ColChr180.....	34
Figure 2.36	<i>Colaspoides</i> sp.05 (Chrysomelidae: Eumolpinae) Z02_ColChr052.....	34
Figure 2.37	<i>Colaspoides</i> sp.06 (Chrysomelidae: Eumolpinae) Z02_ColChr053.....	35
Figure 2.38	Eumolpinae sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr147.....	35
Figure 2.39	Eumolpinae sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr004.....	36
Figure 2.40	Eumolpinae sp.03 (Chrysomelidae: Eumolpinae) Z02_ColChr095.....	36
Figure 2.41	<i>Nodina</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr007.....	37
Figure 2.42	<i>Nodina</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr118.....	37
Figure 2.43	<i>Pachnephorus</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr044.....	38
Figure 2.44	<i>Pagria</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr032.....	38
Figure 2.45	<i>Phytorus</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr011.....	39
Figure 2.46	<i>Phytorus</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr181.....	39
Figure 2.47	<i>Phytorus</i> sp.03 (Chrysomelidae: Eumolpinae) Z02_ColChr169.....	40
Figure 2.48	<i>Platycorynus</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr205.....	40
Figure 2.49	<i>Platycorynus</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr101.....	41
Figure 2.50	<i>Platycorynus</i> sp.03 (Chrysomelidae: Eumolpinae) Z02_ColChr186.....	41
Figure 2.51	<i>Pseudometaxis</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr072.....	42
Figure 2.52	<i>Pseudopiomera</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr048.....	42

Figure 2.53	<i>Trichochrysea</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr102	43
Figure 2.54	<i>Trichochrysea</i> sp.02 (Chrysomelidae: Eumolpinae) Z02_ColChr068	43
Figure 2.55	<i>Xanthonia</i> sp.01 (Chrysomelidae: Eumolpinae) Z02_ColChr103.....	44
Figure 2.56	<i>Agelastica</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr120	44
Figure 2.57	<i>Aphthona</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr218	45
Figure 2.58	<i>Aphthona</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr026.....	45
Figure 2.59	<i>Aphthona</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr145.....	46
Figure 2.60	<i>Aphthona</i> sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr009.....	46
Figure 2.61	<i>Apophyllia</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr063	47
Figure 2.62	<i>Arthrotus</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr194.....	47
Figure 2.63	<i>Aulacophora</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr081	48
Figure 2.64	<i>Aulacophora</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr119	48
Figure 2.65	<i>Aulacophora</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr135.....	49
Figure 2.66	<i>Aulacophora</i> sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr144	49
Figure 2.67	<i>Aulacophora</i> sp.05 (Chrysomelidae: Galerucinae) Z02_ColChr203	50
Figure 2.68	<i>Aulacophora</i> sp.06 (Chrysomelidae: Galerucinae) Z02_ColChr211	50
Figure 2.69	<i>Aulacophora</i> sp.07 (Chrysomelidae: Galerucinae) Z02_ColChr082.....	51
Figure 2.70	<i>Aulacophora</i> sp.08 (Chrysomelidae: Galerucinae) Z02_ColChr083.....	51
Figure 2.71	<i>Aulacophora</i> sp.09 (Chrysomelidae: Galerucinae) Z02_ColChr202.....	52
Figure 2.72	<i>Aulacophora</i> sp.10 (Chrysomelidae: Galerucinae) Z02_ColChr176.....	52
Figure 2.73	<i>Aulacophora</i> sp.11 (Chrysomelidae: Galerucinae) Z02_ColChr085.....	53
Figure 2.74	<i>Aulacophora</i> sp.12 (Chrysomelidae: Galerucinae) Z02_ColChr217	53
Figure 2.75	<i>Cynorta</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr107.....	54
Figure 2.76	<i>Cynorta</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr163.....	54
Figure 2.77	<i>Cynorta</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr092.....	55
Figure 2.78	<i>Dercetina</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr191	55
Figure 2.79	<i>Doryscus</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr039	56
Figure 2.80	<i>Emathea</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr134.....	56
Figure 2.81	<i>Exora</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr046	57
Figure 2.82	<i>Galerucella</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr212.....	57
Figure 2.83	<i>Galerucella</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr223	58
Figure 2.84	<i>Galerucella</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr029.....	58
Figure 2.85	<i>Galerucella</i> sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr065	59
Figure 2.86	<i>Galerucella</i> sp.05 (Chrysomelidae: Galerucinae) Z02_ColChr179.....	59
Figure 2.87	Galerucinae sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr206	60
Figure 2.88	Galerucinae sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr001	60
Figure 2.89	Galerucinae sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr024	61
Figure 2.90	Galerucinae sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr064	61
Figure 2.91	Galerucinae sp.05 (Chrysomelidae: Galerucinae) Z02_ColChr037	62



Figure 2.92	<i>Galerucinae</i> sp.06 (Chrysomelidae: Galerucinae) Z02_ColChr238	62
Figure 2.93	<i>Galerucinae</i> sp.07 (Chrysomelidae: Galerucinae) Z02_ColChr239	63
Figure 2.94	<i>Galerucinae</i> sp.08 (Chrysomelidae: Galerucinae) Z02_ColChr022	63
Figure 2.95	<i>Hemipyxis</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr104	64
Figure 2.96	<i>Hemipyxis</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr221	64
Figure 2.97	<i>Hoplasoma</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr091	65
Figure 2.98	<i>Longitarsus</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr033	65
Figure 2.99	<i>Longitarsus</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr036	66
Figure 2.100	<i>Longitarsus</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr128	66
Figure 2.101	<i>Longitarsus</i> sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr079	67
Figure 2.102	<i>Longitarsus</i> sp.05 (Chrysomelidae: Galerucinae) Z02_ColChr167	67
Figure 2.103	<i>Luperaltica</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr013	68
Figure 2.104	<i>Luperoides</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr133	68
Figure 2.105	<i>Luperoides</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr219	69
Figure 2.106	<i>Mimastra</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr040	69
Figure 2.107	<i>Mimastra</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr122	70
Figure 2.108	<i>Mimastra</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr182	70
Figure 2.109	<i>Mimastra</i> sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr056	71
Figure 2.110	<i>Mimastra</i> sp.05 (Chrysomelidae: Galerucinae) Z02_ColChr078	71
Figure 2.111	<i>Monolepta</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr136	72
Figure 2.112	<i>Monolepta</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr016	72
Figure 2.113	<i>Monolepta</i> sp.03 (Chrysomelidae: Galerucinae) Z02_ColChr174	73
Figure 2.114	<i>Monolepta</i> sp.04 (Chrysomelidae: Galerucinae) Z02_ColChr018	73
Figure 2.115	<i>Monolepta</i> sp.05 (Chrysomelidae: Galerucinae) Z02_ColChr045	74
Figure 2.116	<i>Monolepta</i> sp.06 (Chrysomelidae: Galerucinae) Z02_ColChr190	74
Figure 2.117	<i>Monolepta</i> sp.07 (Chrysomelidae: Galerucinae) Z02_ColChr196	75
Figure 2.118	<i>Monolepta</i> sp.08 (Chrysomelidae: Galerucinae) Z02_ColChr123	75
Figure 2.119	<i>Monolepta</i> sp.09 (Chrysomelidae: Galerucinae) Z02_ColChr050	76
Figure 2.120	<i>Monolepta</i> sp.10 (Chrysomelidae: Galerucinae) Z02_ColChr141	76
Figure 2.121	<i>Monolepta</i> sp.11 (Chrysomelidae: Galerucinae) Z02_ColChr114	77
Figure 2.122	<i>Monolepta</i> sp.12 (Chrysomelidae: Galerucinae) Z02_ColChr124	77
Figure 2.123	<i>Monolepta</i> sp.13 (Chrysomelidae: Galerucinae) Z02_ColChr164	78
Figure 2.124	<i>Monolepta</i> sp.14 (Chrysomelidae: Galerucinae) Z02_ColChr170	78
Figure 2.125	<i>Monolepta</i> sp.15 (Chrysomelidae: Galerucinae) Z02_ColChr184	79
Figure 2.126	<i>Monolepta</i> sp.16 (Chrysomelidae: Galerucinae) Z02_ColChr090	79
Figure 2.127	<i>Monolepta</i> sp.17 (Chrysomelidae: Galerucinae) Z02_ColChr224	80
Figure 2.128	<i>Monolepta</i> sp.18 (Chrysomelidae: Galerucinae) Z02_ColChr059	80
Figure 2.129	<i>Monolepta</i> sp.19 (Chrysomelidae: Galerucinae) Z02_ColChr080	81
Figure 2.130	<i>Monolepta</i> sp.20 (Chrysomelidae: Galerucinae) Z02_ColChr098	81

Figure 2.131	<i>Monolepta</i> sp.21 (Chrysomelidae: Galerucinae) Z02_ColChr084	82
Figure 2.132	<i>Nesaecrepida</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr070	82
Figure 2.133	<i>Oides</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr153	83
Figure 2.134	<i>Oides</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr177	83
Figure 2.135	<i>Ophrida</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr216	84
Figure 2.136	<i>Pachyonychus</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr071	84
Figure 2.137	<i>Paleosepharia</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr094	85
Figure 2.138	<i>Paleosepharia</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr015	85
Figure 2.139	<i>Parchicola</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr226	86
Figure 2.140	<i>Phydanis</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr088	86
Figure 2.141	<i>Phyllobrotica</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr097	87
Figure 2.142	<i>Phyllotreta</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr093	87
Figure 2.143	<i>Psylliodes</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr042	88
Figure 2.144	<i>Sermylassa</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr117	88
Figure 2.145	<i>Sinoluperus</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr109	89
Figure 2.146	<i>Sphaeroderma</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr154	89
Figure 2.147	<i>Sumatrasia</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr214	90
Figure 2.148	<i>Sumatrasia</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr047	90
Figure 2.149	<i>Taumacera</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr110	91
Figure 2.150	<i>Taumacera</i> sp.02 (Chrysomelidae: Galerucinae) Z02_ColChr236	91
Figure 2.151	<i>Theopea</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr019	92
Figure 2.152	<i>Xenoda</i> sp.01 (Chrysomelidae: Galerucinae) Z02_ColChr027	92
Figure 3.1	External Morphology (Lateral View) of Curculionidae (re-drawing from Marvaldi and Lanteri 2005)	96
Figure 3.2	External Morphology (Dorsal View) of Curculionidae (re-drawing from Marvaldi and Lanteri, 2005)	96
Figure 3.3	External Morphology (Ventral View) of Curculionidae (re-drawing from Marvaldi and Lanteri 2005)	97
Figure 3.4	<i>Amercedes</i> sp.01 (Curculionidae: Baridinae) Z02_ColCur093	106
Figure 3.5	Baridinae sp.03 (Curculionidae: Baridinae) Z02_ColCur008	107
Figure 3.6	Baridinae sp.04 (Curculionidae: Baridinae) Z02_ColCur148	107
Figure 3.7	Baridinae sp.05 (Curculionidae: Baridinae) Z02_ColCur361	108
Figure 3.8	Baridinae sp.06 (Curculionidae: Baridinae) Z02_ColCur267	108
Figure 3.9	Baridinae sp.07 (Curculionidae: Baridinae) Z02_ColCur322	109
Figure 3.10	Baridinae sp.08 (Curculionidae: Baridinae) Z02_ColCur082	109
Figure 3.11	<i>Baris</i> sp.01 (Curculionidae: Baridinae) Z02_ColCur209	110
Figure 3.12	<i>Baris</i> sp.02 (Curculionidae: Baridinae) Z02_ColCur167	110
Figure 3.13	<i>Plesiobaris</i> sp.01 (Curculionidae: Baridinae) Z02_ColCur063	111
Figure 3.14	Ceutorhynchinae sp.01 (Curculionidae: Ceutorhynchinae) Z02_ColCur069	111



Figure 3.15	<i>Ceutorhynchinae</i> sp.02 (Curculionidae: Ceutorhynchinae)	
	Z02_ColCur016	112
Figure 3.16	<i>Ceutorhynchus</i> sp.01 (Curculionidae: Ceutorhynchinae)	Z02_ColCur103112
Figure 3.17	<i>Homorosoma</i> sp.01 (Curculionidae: Ceutorhynchinae)	Z02_ColCur058 113
Figure 3.18	<i>Rhinoncus</i> sp.01 (Curculionidae: Ceutorhynchinae)	Z02_ColCur049..... 113
Figure 3.19	<i>Brimoides</i> sp.01 (Curculionidae: Conoderinae)	Z02_ColCur061 114
Figure 3.20	<i>Brimoides</i> sp.02 (Curculionidae: Conoderinae)	Z02_ColCur154 114
Figure 3.21	<i>Brimoides</i> sp.03 (Curculionidae: Conoderinae)	Z02_ColCur155 115
Figure 3.22	<i>Brimoides</i> sp.04 (Curculionidae: Conoderinae)	Z02_ColCur175 115
Figure 3.23	Conoderinae sp.01 (Curculionidae: Conoderinae)	Z02_ColCur270 116
Figure 3.24	Conoderinae sp.02 (Curculionidae: Conoderinae)	Z02_ColCur340 116
Figure 3.25	Conoderinae sp.03 (Curculionidae: Conoderinae)	Z02_ColCur044 117
Figure 3.26	Conoderinae sp.04 (Curculionidae: Conoderinae)	Z02_ColCur151 117
Figure 3.27	Conoderinae sp.05 (Curculionidae: Conoderinae)	Z02_ColCur177 118
Figure 3.28	Conoderinae sp.06 (Curculionidae: Conoderinae)	Z02_ColCur351 118
Figure 3.29	Conoderinae sp.07 (Curculionidae: Conoderinae)	Z02_ColCur023 119
Figure 3.30	Conoderinae sp.08 (Curculionidae: Conoderinae)	Z02_ColCur070 119
Figure 3.31	Conoderinae sp.09 (Curculionidae: Conoderinae)	Z02_ColCur246 120
Figure 3.32	Conoderinae sp.10 (Curculionidae: Conoderinae)	Z02_ColCur311 120
Figure 3.33	Conoderinae sp.11 (Curculionidae: Conoderinae)	Z02_ColCur328 121
Figure 3.34	Conoderinae sp.12 (Curculionidae: Conoderinae)	Z02_ColCur084 121
Figure 3.35	Conoderinae sp.13 (Curculionidae: Conoderinae)	Z02_ColCur359 122
Figure 3.36	Conoderinae sp.14 (Curculionidae: Conoderinae)	Z02_ColCur019 122
Figure 3.37	Conoderinae sp.15 (Curculionidae: Conoderinae)	Z02_ColCur0411 123
Figure 3.38	Conoderinae sp.16 (Curculionidae: Conoderinae)	Z02_ColCur046 123
Figure 3.39	Conoderinae sp.17 (Curculionidae: Conoderinae)	Z02_ColCur150 124
Figure 3.40	Conoderinae sp.18 (Curculionidae: Conoderinae)	Z02_ColCur206 124
Figure 3.41	Conoderinae sp.19 (Curculionidae: Conoderinae)	Z02_ColCur219 125
Figure 3.42	Conoderinae sp.20 (Curculionidae: Conoderinae)	Z02_ColCur221 125
Figure 3.43	Conoderinae sp.21 (Curculionidae: Conoderinae)	Z02_ColCur376 126
Figure 3.44	Conoderinae sp.22 (Curculionidae: Conoderinae)	Z02_ColCur170 126
Figure 3.45	Conoderinae sp.23 (Curculionidae: Conoderinae)	Z02_ColCur203 127
Figure 3.46	Cossoninae sp.01 (Curculionidae: Cossoninae)	Z02_ColCur217 127
Figure 3.47	Cossoninae sp.02 (Curculionidae: Cossoninae)	Z02_ColCur296 128
Figure 3.48	Cossoninae sp.03 (Curculionidae: Cossoninae)	Z02_ColCur165 128
Figure 3.49	Cossoninae sp.04 (Curculionidae: Cossoninae)	Z02_ColCur317 129
Figure 3.50	Cossoninae sp.05 (Curculionidae: Cossoninae)	Z02_ColCur323 129
Figure 3.51	Cossoninae sp.06 (Curculionidae: Cossoninae)	Z02_ColCur373 130
Figure 3.52	<i>Cossonus</i> sp.01 (Curculionidae: Cossoninae)	Z02_ColCur017 130

Figure 3.53	<i>Cossonus</i> sp.02 (Curculionidae: Cossoninae) Z02_ColCur122	131
Figure 3.54	<i>Himantium</i> sp.01 (Curculionidae: Cossoninae) Z02_ColCur025.....	131
Figure 3.55	<i>Phloeophagus</i> sp.01 (Curculionidae: Cossoninae) Z02_ColCur217	132
Figure 3.56	Cryptorhynchinae sp.01 (Curculionidae: Cryptorhynchinae) Z02_ColCur009	132
Figure 3.57	Cryptorhynchinae sp.02 (Curculionidae: Cryptorhynchinae) Z02_ColCur176	133
Figure 3.58	Cryptorhynchinae sp.0s3 (Curculionidae: Cryptorhynchinae) Z02_ColCur056a.....	133
Figure 3.59	Cryptorhynchinae sp.04 (Curculionidae: Cryptorhynchinae) Z02_ColCur225	134
Figure 3.60	Cryptorhynchinae sp.05 (Curculionidae: Cryptorhynchinae) Z02_ColCur238	134
Figure 3.61	Cryptorhynchinae sp.06 (Curculionidae: Cryptorhynchinae) Z02_ColCur059	135
Figure 3.62	Cryptorhynchinae sp.07 (Curculionidae: Cryptorhynchinae) Z02_ColCur115	135
Figure 3.63	Cryptorhynchinae sp.08 (Curculionidae: Cryptorhynchinae) Z02_ColCur261	136
Figure 3.64	Cryptorhynchinae sp.09 (Curculionidae: Cryptorhynchinae) Z02_ColCur272	136
Figure 3.65	Cryptorhynchinae sp.10 (Curculionidae: Cryptorhynchinae) Z02_ColCur091	137
Figure 3.66	Cryptorhynchinae sp.11 (Curculionidae: Cryptorhynchinae) Z02_ColCur125	137
Figure 3.67	Cryptorhynchinae sp.12 (Curculionidae: Cryptorhynchinae) Z02_ColCur174	138
Figure 3.68	Cryptorhynchinae sp.13 (Curculionidae: Cryptorhynchinae) Z02_ColCur355	138
Figure 3.69	Cryptorhynchinae sp.14 (Curculionidae: Cryptorhynchinae) Z02_ColCur210	139
Figure 3.70	Cryptorhynchinae sp.15 (Curculionidae: Cryptorhynchinae) Z02_ColCur105	139
Figure 3.71	Cryptorhynchinae sp.16 (Curculionidae: Cryptorhynchinae) Z02_ColCur204	140
Figure 3.72	Cryptorhynchinae sp.17 (Curculionidae: Cryptorhynchinae) Z02_ColCur269	140
Figure 3.73	Cryptorhynchinae sp.18 (Curculionidae: Cryptorhynchinae) Z02_ColCur285	141
Figure 3.74	Cryptorhynchinae sp.19 (Curculionidae: Cryptorhynchinae) Z02_ColCur297	141
Figure 3.75	Cryptorhynchinae sp.21 (Curculionidae: Cryptorhynchinae) Z02_ColCur286	142



Figure 3.76	Cryptorhynchinae sp.22 (Curculionidae: Cryptorhynchinae) Z02_ColCur096	142
Figure 3.77	Cryptorhynchinae sp.23 (Curculionidae: Cryptorhynchinae) Z02_ColCur120	143
Figure 3.78	Cryptorhynchinae sp.25 (Curculionidae: Cryptorhynchinae) Z02_ColCur079	143
Figure 3.79	Cryptorhynchinae sp.26 (Curculionidae: Cryptorhynchinae) Z02_ColCur087	144
Figure 3.80	Cryptorhynchinae sp.27 (Curculionidae: Cryptorhynchinae) Z02_ColCur090	144
Figure 3.81	Cryptorhynchinae sp.28 (Curculionidae: Cryptorhynchinae) Z02_ColCur015	145
Figure 3.82	Cryptorhynchinae sp.29 (Curculionidae: Cryptorhynchinae) Z02_ColCur123	145
Figure 3.83	Cryptorhynchinae sp.30 (Curculionidae: Cryptorhynchinae) Z02_ColCur086	146
Figure 3.84	Cryptorhynchinae sp.31 (Curculionidae: Cryptorhynchinae) Z02_ColCur156	146
Figure 3.85	Cryptorhynchinae sp.32 (Curculionidae: Cryptorhynchinae) Z02_ColCur321	147
Figure 3.86	Cryptorhynchinae sp.33 (Curculionidae: Cryptorhynchinae) Z02_ColCur326	147
Figure 3.87	Cryptorhynchinae sp.37 (Curculionidae: Cryptorhynchinae) Z02_ColCur331	148
Figure 3.88	Cryptorhynchinae sp.38 (Curculionidae: Cryptorhynchinae) Z02_ColCur343	148
Figure 3.89	Cryptorhynchinae sp.39 (Curculionidae: Cryptorhynchinae) Z02_ColCur356	149
Figure 3.90	Cryptorhynchinae sp.40 (Curculionidae: Cryptorhynchinae) Z02_ColCur172	149
Figure 3.91	Cryptorhynchinae sp.41 (Curculionidae: Cryptorhynchinae) Z02_ColCur124	150
Figure 3.92	Cryptorhynchinae sp.42 (Curculionidae: Cryptorhynchinae) Z02_ColCur078	150
Figure 3.93	Cryptorhynchinae sp.43 (Curculionidae: Cryptorhynchinae) Z02_ColCur053	151
Figure 3.94	Cryptorhynchinae sp.44 (Curculionidae: Cryptorhynchinae) Z02_ColCur092	151
Figure 3.95	Cryptorhynchinae sp.45 (Curculionidae: Cryptorhynchinae) Z02_ColCur182	152
Figure 3.96	Cryptorhynchinae sp.46 (Curculionidae: Cryptorhynchinae) Z02_ColCur280	152

Figure 3.97	Cryptorhynchinae sp.47 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur314	153
Figure 3.98	Cryptorhynchinae sp.48 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur080	153
Figure 3.99	Cryptorhynchinae sp.49 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur089	154
Figure 3.100	Cryptorhynchinae sp.50 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur239	154
Figure 3.101	Cryptorhynchinae sp.51 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur022	155
Figure 3.102	Cryptorhynchinae sp.52 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur060	155
Figure 3.103	Cryptorhynchinae sp.53 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur114	156
Figure 3.104	Cryptorhynchinae sp.54 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur247	156
Figure 3.105	Cryptorhynchinae sp.55 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur378	157
Figure 3.106	Cryptorhynchinae sp.56 (Curculionidae: Cryptorhynchinae)	
	Z02_ColCur380	157
Figure 3.107	<i>Eurhoptus</i> sp.01 (Curculionidae: Cryptorhynchinae)	Z02_ColCur081 158
Figure 3.108	<i>Euscepes</i> sp.01 (Curculionidae: Cryptorhynchinae)	Z02_ColCur152 158
Figure 3.109	<i>Zascelis</i> sp.01 (Curculionidae: Cryptorhynchinae)	Z02_ColCur108 159
Figure 3.110	<i>Anthonomus</i> sp.01 (Curculionidae: Curculioinae)	Z02_ColCur134 159
Figure 3.111	<i>Anthonomus</i> sp.02 (Curculionidae: Curculioinae)	Z02_ColCur277 160
Figure 3.112	<i>Anthonomus</i> sp.03 (Curculionidae: Curculioinae)	Z02_ColCur330 160
Figure 3.113	<i>Anthonomus</i> sp.04 (Curculionidae: Curculioinae)	Z02_ColCur128 161
Figure 3.114	<i>Anthonomus</i> sp.05 (Curculionidae: Curculioinae)	Z02_ColCur131 161
Figure 3.115	<i>Anthonomus</i> sp.06 (Curculionidae: Curculioinae)	Z02_ColCur005 162
Figure 3.116	<i>Archarius</i> sp.01 (Curculionidae: Curculioinae)	Z02_ColCur116 162
Figure 3.117	<i>Curculio</i> sp.01 (Curculionidae: Curculioinae)	Z02_ColCur057 163
Figure 3.118	<i>Curculio</i> sp.02 (Curculionidae: Curculioinae)	Z02_ColCur158 163
Figure 3.119	<i>Curculio</i> sp.03 (Curculionidae: Curculioinae)	Z02_ColCur227 164
Figure 3.120	<i>Curculio</i> sp.04 (Curculionidae: Curculioinae)	Z02_ColCur274 164
Figure 3.121	<i>Curculio</i> sp.05 (Curculionidae: Curculioinae)	Z02_ColCur313 165
Figure 3.122	<i>Curculio</i> sp.06 (Curculionidae: Curculioinae)	Z02_ColCur168 165
Figure 3.123	<i>Curculio</i> sp.07 (Curculionidae: Curculioinae)	Z02_ColCur190 166
Figure 3.124	<i>Curculio</i> sp.08 (Curculionidae: Curculioinae)	Z02_ColCur374 166
Figure 3.125	<i>Curculio</i> sp.09 (Curculionidae: Curculioinae)	Z02_ColCur375 167
Figure 3.126	Curculioninae sap.01 (Curculionidae: Curculioinae)	Z02_ColCur237 167
Figure 3.127	Curculioninae sp.02 (Curculionidae: Curculioinae)	Z02_ColCur339 168



Figure 3.128	Curculioninae sp.03 (Curculionidae: Curculioinae) Z02_ColCur09	168
Figure 3.129	Curculioninae sp.04 (Curculionidae: Curculioinae) Z02_ColCur307	169
Figure 3.130	Curculioninae sp.05 (Curculionidae: Curculioinae) Z02_ColCur085	169
Figure 3.131	Curculioninae sp.06 (Curculionidae: Curculioinae) Z02_ColCur325	170
Figure 3.132	Curculioninae sp.07 (Curculionidae: Curculioinae) Z02_ColCur35a3	170
Figure 3.133	Curculioninae sp.08 (Curculionidae: Curculioinae) Z02_ColCur029	171
Figure 3.134	Curculioninae sp.09 (Curculionidae: Curculioinae) Z02_ColCur030	171
Figure 3.135	Curculioninae sp.10 (Curculionidae: Curculioinae) Z02_ColCur033	172
Figure 3.136	Curculioninae sp.11 (Curculionidae: Curculioinae) Z02_ColCur035	172
Figure 3.137	Curculioninae sp.12 (Curculionidae: Curculioinae) Z02_ColCur302	173
Figure 3.138	Curculioninae sp.13 (Curculionidae: Curculioinae) Z02_ColCur205	173
Figure 3.139	Curculioninae sp.14 (Curculionidae: Curculioinae) Z02_ColCur316	174
Figure 3.140	Curculioninae sp.15 (Curculionidae: Curculioinae) Z02_ColCur320	174
Figure 3.141	Curculioninae sp.16 (Curculionidae: Curculioinae) Z02_ColCur342	175
Figure 3.142	Curculioninae sp.17 (Curculionidae: Curculioinae) Z02_ColCur346	175
Figure 3.143	Curculioninae sp.18 (Curculionidae: Curculioinae) Z02_ColCur012	176
Figure 3.144	<i>Elaeidobius kamerunicus</i> (female) (Curculionidae: Curculioinae) Z02_ColCur295	176
Figure 3.145	<i>Elaeidobius kamerunicus</i> (male) (Curculionidae: Curculioinae) Z02_ColCur002	177
Figure 3.146	<i>Gymnetron</i> sp.01 (Curculionidae: Curculioinae) Z02_ColCur186	177
Figure 3.147	<i>Notolomus</i> sp.01 (Curculionidae: Curculioinae) Z02_ColCur018	178
Figure 3.148	<i>Orchestes</i> sp.01 (Curculionidae: Curculioinae) Z02_ColCur278	178
Figure 3.149	<i>Orchestes</i> sp.02 (Curculionidae: Curculioinae) Z02_ColCur071	179
Figure 3.150	<i>Orchestes</i> sp.03 (Curculionidae: Curculioinae) Z02_ColCur222	179
Figure 3.151	<i>Tachyerges</i> sp.01 (Curculionidae: Curculioinae) Z02_ColCur020	180
Figure 3.152	<i>Tychius</i> sp.01 (Curculionidae: Curculioinae) Z02_ColCur037	180
Figure 3.153	<i>Tychius</i> sp.02 (Curculionidae: Curculioinae) Z02_ColCur045	181
Figure 3.154	Dryophthorinae sp.01 (Curculionidae: Dryophthorinae) Z02_ColCur319181	
Figure 3.155	Dryophthorinae sp.02 (Curculionidae: Dryophthorinae) Z02_ColCur332182	
Figure 3.155	Dryophthorinae sp.02 (Curculionidae: Dryophthorinae) Z02_ColCur332182	
Figure 3.156	Dryophthorinae sp.03 (Curculionidae: Dryophthorinae) Z02_ColCur333183	
Figure 3.157	<i>Rhynchophorus</i> sp.01 (Curculionidae:) Z02_ColCur001	183
Figure 3.158	<i>Sitophilus</i> sp.01 (Curculionidae: Dryophthorinae) Z02_ColCur054	184
Figure 3.159	<i>Sitophilus</i> sp.02 (Curculionidae: Dryophthorinae) Z02_ColCur218	184
Figure 3.160	Entiminae sp.01 (Curculionidae: Entiminae) Z02_ColCur076	185
Figure 3.161	Entiminae sp.02 (Curculionidae: Entiminae) Z02_ColCur337	185
Figure 3.162	Entiminae sp.03 (Curculionidae: Entiminae) Z02_ColCur072	186
Figure 3.163	Entiminae sp.04 (Curculionidae: Entiminae) Z02_ColCur027	186
Figure 3.164	Entiminae sp.05 (Curculionidae: Entiminae) Z02_ColCur230	187

Figure 3.165	Entiminae sp.07 (Curculionidae: Entiminae) Z02_ColCur377	187
Figure 3.166	Entiminae sp.08 (Curculionidae: Entiminae) Z02_ColCur382	188
Figure 3.167	<i>Myloccerus</i> sp.01 (Curculionidae: Entiminae) Z02_ColCur047	188
Figure 3.168	<i>Myloccerus</i> sp.02 (Curculionidae: Entiminae) Z02_ColCur309	189
Figure 3.169	<i>Myloccerus</i> sp.03 (Curculionidae: Entiminae) Z02_ColCur183	189
Figure 3.170	<i>Myloccerus</i> sp.04 (Curculionidae: Entiminae) Z02_ColCur098	190
Figure 3.170	<i>Myloccerus</i> sp.04 (Curculionidae: Entiminae) Z02_ColCur098	190
Figure 3.171	Lixinae sp.02 (Curculionidae: Lixinae) Z02_ColCur345	191
Figure 3.172	<i>Lixus</i> sp.01 (Curculionidae: Lixinae) Z02_ColCur097	191
Figure 3.173	Molytinae sp.01 (Curculionidae: Molytinae) Z02_ColCur185	192
Figure 3.174	Molytinae sp.02 (Curculionidae: Molytinae) Z02_ColCur254	192
Figure 3.175	Molytinae sp.03 (Curculionidae: Molytinae) Z02_ColCur244	193
Figure 3.176	Molytinae sp.04 (Curculionidae: Molytinae) Z02_ColCur262	193
Figure 3.177	Molytinae sp.05 (Curculionidae: Molytinae) Z02_ColCur279	194
Figure 3.178	Molytinae sp.06 (Curculionidae: Molytinae) Z02_ColCur100	194
Figure 3.179	Molytinae sp.07 (Curculionidae: Molytinae) Z02_ColCur207	195
Figure 3.180	Molytinae sp.08 (Curculionidae: Molytinae) Z02_ColCur258	195
Figure 3.181	Molytinae sp.09 (Curculionidae: Molytinae) Z02_ColCur013	196
Figure 3.182	Molytinae sp.10 (Curculionidae: Molytinae) Z02_ColCur074	196
Figure 3.183	Molytinae sp.11 (Curculionidae: Molytinae) Z02_ColCur144	197
Figure 3.184	Molytinae sp.12 (Curculionidae: Molytinae) Z02_ColCur099	197
Figure 3.185	Molytinae sp.13 (Curculionidae: Molytinae) Z02_ColCur381	198
Figure 3.186	Molytinae sp.14 (Curculionidae: Molytinae) Z02_ColCur383	198
Figure 3.187	Molytinae sp.15 (Curculionidae: Molytinae) Z02_ColCur385	199
Figure 3.188	<i>Sthereus</i> sp.01 (Curculionidae: Molytinae) Z02_ColCur011	199
Figure 3.189	Platypodinae sp.02 (Curculionidae: Platypodinae) Z02_ColCur347	200
Figure 3.190	Platypodinae sp.03 (Curculionidae: Platypodinae) Z02_ColCur324	200
Figure 3.191	Platypodinae sp.04 (Curculionidae: Platypodinae) Z02_ColCur334	201
Figure 3.192	Platypodinae sp.05 (Curculionidae: Platypodinae) Z02_ColCur366	201
Figure 3.193	<i>Platypus</i> sp.01 (Curculionidae: Platypodinae) Z02_ColCur024	202
Figure 3.194	<i>Platypus</i> sp.02 (Curculionidae: Platypodinae) Z02_ColCur336	202
Figure 3.195	<i>Platypus</i> sp.03 (Curculionidae: Platypodinae) Z02_ColCur354	203
Figure 3.196	<i>Treptoplatypus</i> sp.01 (Curculionidae: Platypodinae) Z02_ColCur223	203
Figure 3.197	<i>Alniphagus</i> sp.01 (Curculionidae: Scolytinae) Z02_ColCur368	204
Figure 3.198	<i>Ambrosiodmus</i> sp.01 (Curculionidae: Scolytinae) Z02_ColCur067	204
Figure 3.199	<i>Hypothenemus</i> sp.01 (Curculionidae: Scolytinae) Z02_ColCur048	205
Figure 3.200	<i>Hypothenemus</i> sp.02 (Curculionidae: Scolytinae) Z02_ColCur117	205
Figure 3.201	<i>Hypothenemus</i> sp.03 (Curculionidae: Scolytinae) Z02_ColCur145	206
Figure 3.202	<i>Hypothenemus</i> sp.04 (Curculionidae: Scolytinae) Z02_ColCur365	206



Figure 3.203	<i>Phloeotribus</i> sp.01 (Curculionidae: Scolytinae) Z02_ColCur157	207
Figure 3.204	Scolytinae sp.01 (Curculionidae: Scolytinae) Z02_ColCur287	207
Figure 3.205	Scolytinae sp.02 (Curculionidae: Scolytinae) Z02_ColCur193	208
Figure 3.205	Scolytinae sp.02 (Curculionidae: Scolytinae) Z02_ColCur193	208
Figure 3.206	Scolytinae sp.03 (Curculionidae: Scolytinae) Z02_ColCur163	209
Figure 3.207	Scolytinae sp.04 (Curculionidae: Scolytinae) Z02_ColCur367	209
Figure 3.208	Scolytinae sp.05 (Curculionidae: Scolytinae) Z02_ColCur350	210
Figure 3.209	Scolytinae sp.06 (Curculionidae: Scolytinae) Z02_ColCur349	210
Figure 3.210	Scolytinae sp.07 (Curculionidae: Scolytinae) Z02_ColCur318	211
Figure 3.211	Scolytinae sp.10 (Curculionidae: Scolytinae) Z02_ColCur329	211
Figure 3.212	Scolytinae sp.12 (Curculionidae: Scolytinae) Z02_ColCur348	212
Figure 3.213	Scolytinae sp.13 (Curculionidae: Scolytinae) Z02_ColCur360	212
Figure 3.214	Scolytinae sp.15 (Curculionidae: Scolytinae) Z02_ColCur371	213
Figure 3.215	<i>Scolytogenes</i> sp.01 (Curculionidae: Scolytinae) Z02_ColCur136	213
Figure 3.216	<i>Scolytogenes</i> sp.02 (Curculionidae: Scolytinae) Z02_ColCur266	214
Figure 4.1	Clicking Mechanism of Click Beetles (adapted from Ribak & Weihs 2011; Bolmin et al. 2017)	218
Figure 4.2	External Morphology (Dorsal View) of Elateridae	218
Figure 4.3	External Morphology (Ventral View) of Elateridae	218
Figure 4.4.	Characters of Elateridae. Characters 4.4a, 4.4b, 4.4i-4.4l re-drawing from Del and Aguirre-Tapiero (2009); Characters 4.4c–4.4f redrawing from Dogger (1959); Characters 4.4g and 4.4h re-drawing from Hackston (2016)	219
Figure 4.5	<i>Adelocera</i> sp.01 (Elateridae: Agrypninae) Z02_ColEla002	226
Figure 4.6	<i>Adelocera</i> sp.02 (Elateridae: Agrypninae) Z02_ColEla020	227
Figure 4.7	<i>Adelocera</i> sp.03 (Elateridae: Agrypninae) Z02_ColEla027	227
Figure 4.8	<i>Adelocera</i> sp.04 (Elateridae: Agrypninae) Z02_ColEla050	228
Figure 4.9	<i>Adelocera</i> sp.05 (Elateridae: Agrypninae) Z02_ColEla081v	228
Figure 4.10	<i>Agraeus candezei</i> (Elateridae: Agrypninae) Z02_ColEla049	229
Figure 4.11	<i>Agraeus</i> sp.01 (Elateridae: Agrypninae) Z02_ColEla019	229
Figure 4.12	<i>Agraeus</i> sp.02 (Elateridae: Agrypninae) Z02_ColEla025	230
Figure 4.13	<i>Agraeus</i> sp.03 (Elateridae: Agrypninae) Z02_ColEla026	230
Figure 4.14	<i>Agraeus</i> sp.04 (Elateridae: Agrypninae) Z02_ColEla048	231
Figure 4.15	<i>Agraeus</i> sp.05 (Elateridae: Agrypninae) Z02_ColEla052	231
Figure 4.16	<i>Agraeus</i> sp.06 (Elateridae: Agrypninae) Z02_ColEla065	232
Figure 4.17	<i>Agraeus</i> sp.07 (Elateridae: Agrypninae) Z02_ColEla083	232
Figure 4.18	<i>Agrypnus</i> sp.01 (Elateridae: Agrypninae) Z02_ColEla040	233
Figure 4.19	<i>Agrypnus</i> sp.02 (Elateridae: Agrypninae) Z02_ColEla045	233
Figure 4.20	<i>Agrypnus</i> sp.03 (Elateridae: Agrypninae) Z02_ColEla047	234
Figure 4.21	<i>Alaus</i> sp.01 (Elateridae: Agrypninae) Z02_ColEla046	234

Figure 4.22	<i>Dilobitarsus pendleburyi</i> (Elateridae: Agrypninae) Z02_ColEla067	235
Figure 4.23	<i>Heteroderes</i> sp.01 (Elateridae: Agrypninae) Z02_ColEla011	235
Figure 4.24	<i>Heteroderes</i> sp.02 (Elateridae: Agrypninae) Z02_ColEla024	236
Figure 4.25	<i>Heteroderes</i> sp.03 (Elateridae: Agrypninae) Z02_ColEla037	236
Figure 4.26	<i>Heteroderes</i> sp.04 (Elateridae: Agrypninae) Z02_ColEla061	237
Figure 4.27	<i>Paracalais</i> sp.01 (Elateridae: Agrypninae) Z02_ColEla088	237
Figure 4.28	<i>Paracalais</i> sp.02 (Elateridae: Agrypninae) Z02_ColEla089	238
Figure 4.29	<i>Cardiophorus fasciatus</i> (Elateridae: Cardiophorinae) Z02_ColEla078	238
Figure 4.30	<i>Cardiophorus</i> sp.01 (Elateridae: Cardiophorinae) Z02_ColEla004	239
Figure 4.31	<i>Esthesopus</i> sp.01 (Elateridae: Cardiophorinae) Z02_ColEla015	239
Figure 4.32	<i>Esthesopus</i> sp.02 (Elateridae: Cardiophorinae) Z02_ColEla079	240
Figure 4.33	<i>Euplastius</i> sp.01 (Elateridae: Dendrometrinae) Z02_ColEla042	240
Figure 4.34	<i>Hypnoidus</i> sp.01 (Elateridae: Dendrometrinae) Z02_ColEla053	241
Figure 4.35	<i>Senodonia quadricollis</i> (Elateridae: Dendrometrinae) Z02_ColEla076	241
Figure 4.36	<i>Agonischius</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla056	242
Figure 4.37	<i>Agonischius</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla086	242
Figure 4.38	<i>Ampedus</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla001	243
Figure 4.39	<i>Ampedus</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla009	243
Figure 4.40	<i>Ampedus</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla032	244
Figure 4.41	<i>Ampedus</i> sp.04 (Elateridae: Elaterinae) Z02_ColEla038	244
Figure 4.42	<i>Ampedus</i> sp.05 (Elateridae: Elaterinae) Z02_ColEla068	245
Figure 4.43	<i>Ampedus</i> sp.06 (Elateridae: Elaterinae) Z02_ColEla082	245
Figure 4.44	<i>Dalopius</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla034	246
Figure 4.45	<i>Gamepenthes decemnotatus</i> (Elateridae: Elaterinae) Z02_ColEla072	246
Figure 4.46	<i>Gamepenthes</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla016	247
Figure 4.47	<i>Gamepenthes</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla021	247
Figure 4.48	<i>Gamepenthes</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla066	248
Figure 4.49	<i>Glyphonyx</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla010	248
Figure 4.50	<i>Glyphonyx</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla023	249
Figure 4.51	<i>Glyphonyx</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla036	249
Figure 4.52	<i>Glyphonyx</i> sp.04 (Elateridae: Elaterinae) Z02_ColEla051	250
Figure 4.53	<i>Glyphonyx zonatus</i> (Elateridae: Elaterinae) Z02_ColEla074	250
Figure 4.54	<i>Megapenthes</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla005	251
Figure 4.55	<i>Megapenthes</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla063	251
Figure 4.56	<i>Megapenthes</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla087	252
Figure 4.57	<i>Melanoxanthus bicolor</i> (Elateridae: Elaterinae) Z02_ColEla057	252
Figure 4.58	<i>Melanoxanthus fractus</i> (Elateridae: Elaterinae) Z02_ColEla029	253
Figure 4.59	<i>Melanoxanthus ruptus</i> (Elateridae: Elaterinae) Z02_ColEla059	253
Figure 4.60	<i>Melanoxanthus</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla012	254



Figure 4.61	<i>Melanoxanthus</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla017	254
Figure 4.62	<i>Melanoxanthus</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla039	255
Figure 4.63	<i>Melanoxanthus</i> sp.04 (Elateridae: Elaterinae) Z02_ColEla041	255
Figure 4.64	<i>Melanoxanthus</i> sp.05 (Elateridae: Elaterinae) Z02_ColEla055	256
Figure 4.65	<i>Melanoxanthus</i> sp.06 (Elateridae: Elaterinae) Z02_ColEla058	256
Figure 4.66	<i>Melanoxanthus</i> sp.07 (Elateridae: Elaterinae) Z02_ColEla071	257
Figure 4.67	<i>Melanoxanthus</i> sp.08 (Elateridae: Elaterinae) Z02_ColEla085	257
Figure 4.68	<i>Mulsanteus illotipes</i> (Elateridae: Elaterinae) Z02_ColEla006.....	258
Figure 4.69	<i>Mulsanteus</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla028	258
Figure 4.70	<i>Mulsanteus</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla084	259
Figure 4.71	<i>Pachyderes apicalis</i> (Elateridae: Elaterinae) Z02_ColEla044.....	259
Figure 4.72	<i>Pachyderes</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla014.....	260
Figure 4.73	<i>Pachyderes</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla033.....	260
Figure 4.74	<i>Simodactylus</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla075.....	261
Figure 4.75	<i>Xanthopenthes</i> sp.01 (Elateridae: Elaterinae) Z02_ColEla003.....	261
Figure 4.76	<i>Xanthopenthes</i> sp.02 (Elateridae: Elaterinae) Z02_ColEla018.....	262
Figure 4.77	<i>Xanthopenthes</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla031	262
Figure 4.77	<i>Xanthopenthes</i> sp.03 (Elateridae: Elaterinae) Z02_ColEla031	263
Figure 4.79	<i>Lissomus</i> sp.01 (Elateridae: Lissominae) Z02_ColEla043.....	263
Figure 4.80	<i>Melanotus</i> sp.01 (Elateridae: Melanotinae) Z02_ColEla022.....	264
Figure 4.81	<i>Melanotus</i> sp.02 (Elateridae: Melanotinae) Z02_ColEla035.....	264
Figure 4.82	<i>Quasimus</i> sp.01 (Elateridae: Megastriinae) Z02_ColEla030.....	265
Figure 4.83	<i>Zorochros</i> sp.01 (Elateridae: Megastriinae) Z02_ColEla007	265
Figure 4.84	<i>Zorochros</i> sp.02 (Elateridae: Megastriinae) Z02_ColEla008.....	266
Figure 5.1	External Morphology (dorsal view)	270
Figure 5.2	Aleocharinae sp.01 (Staphylinidae: Aleocharinae) Z02_ColSta003.....	275
Figure 5.3	Aleocharinae sp.02 (Staphylinidae: Aleocharinae) Z02_ColSta007.....	275
Figure 5.4	Aleocharinae sp.03 (Staphylinidae: Aleocharinae) Z02_ColSta017.....	276
Figure 5.5	Aleocharinae sp.04 (Staphylinidae: Aleocharinae) Z02_ColSta018.....	276
Figure 5.6	Aleocharinae sp.05 (Staphylinidae: Aleocharinae) Z02_ColSta006.....	277
Figure 5.7	Aleocharinae sp.06 (Staphylinidae: Aleocharinae) Z02_ColSta019.....	277
Figure 5.8	Aleocharinae sp.07 (Staphylinidae: Aleocharinae) Z02_ColSta020.....	278
Figure 5.9	Aleocharinae sp.08 (Staphylinidae: Aleocharinae) Z02_ColSta024.....	278
Figure 5.10	Aleocharinae sp.09 (Staphylinidae: Aleocharinae) Z02_ColSta025.....	279
Figure 5.11	Aleocharinae sp.10 (Staphylinidae: Aleocharinae) Z02_ColSta026.....	279
Figure 5.12	Aleocharinae sp.11 (Staphylinidae: Aleocharinae) Z02_ColSta029.....	280
Figure 5.13	Aleocharinae sp.12 (Staphylinidae: Aleocharinae) Z02_ColSta033.....	280
Figure 5.14	Aleocharinae sp.13 (Staphylinidae: Aleocharinae) Z02_ColSta040.....	281
Figure 5.15	Aleocharinae sp.14 (Staphylinidae: Aleocharinae) Z02_ColSta041.....	281

Figure 5.16	Aleocharinae sp.15 (Staphylinidae: Aleocharinae) Z02_ColSta042.....	282
Figure 5.17	Aleocharinae sp.16 (Staphylinidae: Aleocharinae) Z02_ColSta044.....	282
Figure 5.18	Aleocharinae sp.17 (Staphylinidae: Aleocharinae) Z02_ColSta045.....	283
Figure 5.19	Aleocharinae sp.18 (Staphylinidae: Aleocharinae) Z02_ColSta046.....	283
Figure 5.20	Aleocharinae sp.19 (Staphylinidae: Aleocharinae) Z02_ColSta047.....	284
Figure 5.21	Aleocharinae sp.20 (Staphylinidae: Aleocharinae) Z02_ColSta049.....	284
Figure 5.22	Aleocharinae sp.21 (Staphylinidae: Aleocharinae) Z02_ColSta051.....	285
Figure 5.23	Aleocharinae sp.22 (Staphylinidae: Aleocharinae) Z02_ColSta056.....	285
Figure 5.24	Aleocharinae sp.23 (Staphylinidae: Aleocharinae) Z02_ColSta057.....	286
Figure 5.25	Aleocharinae sp.24 (Staphylinidae: Aleocharinae) Z02_ColSta061.....	286
Figure 5.26	Aleocharinae sp.25 (Staphylinidae: Aleocharinae) Z02_ColSta062.....	287
Figure 5.27	Aleocharinae sp.26 (Staphylinidae: Aleocharinae) Z02_ColSta065.....	287
Figure 5.28	Aleocharinae sp.27 (Staphylinidae: Aleocharinae) Z02_ColSta068.....	288
Figure 5.29	Aleocharinae sp.28 (Staphylinidae: Aleocharinae) Z02_ColSta014.....	288
Figure 5.30	Aleocharinae sp.29 (Staphylinidae: Aleocharinae) Z02_ColSta048.....	289
Figure 5.31	<i>Oligota</i> sp.01 (Staphylinidae: Aleocharinae) Z02_ColSta012	289
Figure 5.32	<i>Edaphus nitidus</i> (Staphylinidae: Euaesthetinae) Z02_ColSta050.....	290
Figure 5.33	<i>Euaesthetus</i> sp.01 (Staphylinidae: Euaesthetinae) Z02_ColSta063.....	290
Figure 5.34	Megalopsidiinae sp.01 (Staphylinidae: Megalopsidiinae) Z02_ColSta058291	
Figure 5.35	Omaliinae sp.01 (Staphylinidae: Omaliinae) Z02_ColSta008.....	291
Figure 5.36	<i>Eleusis</i> sp.01 (Staphylinidae: Osoriinae) Z02_ColSta034.....	292
Figure 5.37	<i>Nacaeus</i> sp.01 (Staphylinidae: Osoriinae) Z02_ColSta005.....	292
Figure 5.38	Osoriinae sp.01 (Staphylinidae: Osoriinae) Z02_ColSta036	293
Figure 5.39	<i>Osorius</i> sp.01 (Staphylinidae: Osoriinae) Z02_ColSta073.....	293
Figure 5.40	<i>Plastus</i> sp.01 (Staphylinidae: Osoriinae) Z02_ColSta074.....	294
Figure 5.41	<i>Thoracophorus</i> sp.01 (Staphylinidae: Osoriinae) Z02_ColSta027.....	294
Figure 5.42	<i>Anotylus</i> sp.01 (Staphylinidae: Oxytelinae) Z02_ColSta013	295
Figure 5.43	<i>Oxytelinae</i> sp.01 (Staphylinidae: Oxytelinae) Z02_ColSta004	295
Figure 5.44	<i>Oxytelinae</i> sp.02 (Staphylinidae: Oxytelinae) Z02_ColSta059.....	296
Figure 5.45	<i>Oxytelinae</i> sp.03 (Staphylinidae: Oxytelinae) Z02_ColSta071.....	296
Figure 5.46	Paederinae sp.01 (Staphylinidae: Paederinae) Z02_ColSta010	297
Figure 5.47	Paederinae sp.02 (Staphylinidae: Paederinae) Z02_ColSta022	297
Figure 5.48	Paederinae sp.03 (Staphylinidae: Paederinae) Z02_ColSta023.....	298
Figure 5.49	Paederinae sp.04 (Staphylinidae: Paederinae) Z02_ColSta030.....	298
Figure 5.50	Paederinae sp.05 (Staphylinidae: Paederinae) Z02_ColSta038.....	299
Figure 5.51	Paederinae sp.06 (Staphylinidae: Paederinae) Z02_ColSta052.....	299
Figure 5.52	Paederinae sp.07 (Staphylinidae: Paederinae) Z02_ColSta053.....	300
Figure 5.53	Paederinae sp.08 (Staphylinidae: Paederinae) Z02_ColSta067.....	300
Figure 5.54	Palaminus sp.01 (Staphylinidae: Paederinae) Z02_ColSta001	301



Figure 5.55	<i>Palaminus</i> sp.02 (Staphylinidae: Paederinae) Z02_ColSta035.....	301
Figure 5.56	Piestinae sp.01 (Staphylinidae: Piestinae) Z02_ColSta011	302
Figure 5.57	Piestinae sp.02 (Staphylinidae: Piestinae) Z02_ColSta015	302
Figure 5.58	Piestinae sp.03 (Staphylinidae: Piestinae) Z02_ColSta021	303
Figure 5.59	Pselaphinae sp.01 (Staphylinidae: Pselaphinae) Z02_ColSta016	303
Figure 5.60	Pselaphinae sp.02 (Staphylinidae: Pselaphinae) Z02_ColSta032	304
Figure 5.61	Pselaphinae sp.03 (Staphylinidae: Pselaphinae) Z02_ColSta054.....	304
Figure 5.62	Pselaphinae sp.04 (Staphylinidae: Pselaphinae) Z02_ColSta066.....	305
Figure 5.63	Pselaphinae sp.05 (Staphylinidae: Pselaphinae) Z02_ColSta069	305
Figure 5.64	Scydmaeninae sp.01 (Staphylinidae: Scydmaeninae) Z02_ColSta064 ...	306
Figure 5.65	<i>Philonthus</i> sp.01 (Staphylinidae: Staphylininae) Z02_ColSta039.....	306
Figure 5.66	Staphylininae sp.01 (Staphylinidae: Staphylininae) Z02_ColSta009.....	307
Figure 5.67	Staphylininae sp.02 (Staphylinidae: Staphylininae) Z02_ColSta043.....	307
Figure 5.68	Steninae sp.01 (Staphylinidae: Steninae) Z02_ColSta070	308
Figure 5.69	<i>Coproporus</i> sp.01 (Staphylinidae: Tachyporinae) Z02_ColSta002.....	308
Figure 5.70	<i>Sepedophilus bisignatus</i> (Staphylinidae: Tachyporinae) Z02_ColSta028.	309
Figure 5.71	<i>Sepedophilus</i> sp.01 (Staphylinidae: Tachyporinae) Z02_ColSta037	309
Figure 5.72	Tachyporinae sp.01 (Staphylinidae: Tachyporinae) Z02_ColSta031.....	310
Figure 5.73	Tachyporinae sp.02 (Staphylinidae: Tachyporinae) Z02_ColSta055.....	310
Figure 5.74	Tachyporinae sp.03 (Staphylinidae: Tachyporinae) Z02_ColSta060.....	311
Figure 5.75	Tachyporinae sp.04 (Staphylinidae: Tachyporinae) Z02_ColSta072.....	311

Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia (Chrysomelidae, Curculionidae, Elateridae, and Staphylinidae)

1st Edition, February 2022

Purnama Hidayat¹, Fatimah Siddikah², Kasmiatun¹, Woro Anggraitoningsih Noerdjito³, Rosyid Amrulloh¹, Muhammad Syaifullah Hiola⁴, Lailatun Najmi¹, Rizky Nazarreta¹, Stefan Scheu⁵, Damayanti Buchori^{1,6}, Jochen Drescher⁵

¹ Department of Plant Protection, Faculty of Agriculture, IPB University, Jalan Kamper, Dramaga, Bogor 16680, Indonesia

² Unit Pelaksana Teknis Dinas (UPTD), Balai Perlindungan Tanaman Pangan dan Hortikultura (BPTPH). Dinas Tanaman Pangan dan Hortikultura Provinsi Jawa Barat. Jalan Ciganitri II, Lengkong, Kec. Bojongsoang, Kab. Bandung, Jawa Barat 40288

³ Indonesian Institute of Science, LIPI Cibinong Science Center, Cibinong, Bogor 16911, Indonesia

⁴ Balai Pengkajian Teknologi Pertanian (BPTP) Sulawesi Barat, Kompleks Perkantoran Pemerintah, Jalan Abdul Malik Pattana Endeng, Rangsang, Kec. Simboro Dan Kepulauan, Kabupaten Mamuju, Sulawesi Barat 91512, Indonesia

⁵ University of Göttingen, Department of Animal Ecology, J.-F.-Blumenbach-Institute for Zoology and Anthropology, Untere Karspüle 2, 37073 Göttingen, Germany

⁶ Center for Transdisciplinary and Sustainability Sciences (CTSS), IPB University, Jalan Raya Padjajaran, Bogor 16153, Indonesia

Correspondence: phidayat@apps.ipb.ac.id



The EForTS project is a Collaborative Research Centre funded by the German Research Council (DFG) and focuses on the ecological and socioeconomic dimensions of rainforest conversion. For more information, see Drescher et al. (2016) and www.uni-goettingen.de/EForTS.

Contributions

All beetle images were taken by Fatimah Siddikah under supervision of Stefan Scheu and Jochen Drescher. Identification keys were compiled by Rosyid Amrulloh (Chrysomelidae), Lailatun Najmi and Fatimah Siddikah (Curculionidae), Kasmiatun (Elateridae), and M. Syaifullah Hiola (Staphylinidae) under supervision of Purnama Hidayat and Damayanti Buchori. Taxonomic revisions of Curculionidae and Chrysomelidae was done by Woro Anggraitoningsih Noerdjito, Bona Pakpahan, Riko Fardiansah, and Suryadi. Compilation, text, and were the works of Purnama Hidayat, Fatimah Siddikah, Rizky Nazarreta, and Jochen Drescher.

Acknowledgments

Riko Fardiansah and Suryadi are acknowledged for providing drawings of beetles and their traits, and Tamara Hartke is acknowledged for contributing to the layout of the guide. Y. Toni Rohaditomo and Y. Bayu Suharto as well as Nop and Zulfi Kamal are thanked for their assistance during specimen collection. We thank village leaders, local plot owners, Harapan Rainforest, and Bukit Duabelas National Park for granting us access to and use of their properties. This study was conducted using samples collected based on Collection Permit No. S.710 / KKH-2 / 2013 (23. Dec. 2013) issued by the Ministry of Forestry (PHKA) based on recommendation No. 2122 / IPH.1 / KS.02 / X / 2013 (31.Oct. 2013) by the Indonesian Institute of Sciences (LIPI).

PUBLISHER'S NOTE

The BRIN Publishing has the duty and responsibility to help scientists in all fields of sciences to disseminate their research results in the form of books in an effort to make them available to public at large. As such BRIN Publishing helps to make the Indonesian population comprehend scientific research outcomes and able implement them in practice for the welfare of the people as well as making research findings available to scientific communities throughout the world. In this context, BRIN Publishing helps with the publication of the book entitled *Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia (Chrysomelidae, Curculionidae, Elateridae, and Staphylinidae)*, after having gone through the process of reviewing done by appropriate specialists and editing by the Board of Editors of BRIN Publishing.

This book provides important ecological information and key to subfamilies and genera of four beetle families that are found in different land-uses in Jambi. Not only presenting general characteristics of the beetle family in focus, this book also presents a key to subfamilies and/or genera, lists the (morpho)species, and shows images for all morphospecies encountered. In spite of the limited subfamilies provided, all specimens shown in this book have been identified to morphospecies to the best of the writers' current knowledge and skill.

The publisher hopes that this guidebook will provide a basis for ecological fieldwork in the region, so that knowledge gaps and overlaps, as well as further taxonomic venues for species descriptions, can be easier identified. Therefore, it will be able to serve related parties of entomology an entry point into beetle identification in Indonesia.

Buku ini tidak diperjualbelikan.

FOREWORD

Indonesian insect diversity is one of the richest in the world and until now, there has never been a comprehensive field guide to Indonesian insects, especially beetles. Beetles (Coleoptera) exhibit an exceptionally diverse order among insects with more than 380,000 described species worldwide. The number of beetle species in Indonesia is unclear; conservative estimations go from 25,000–40,000 species. This guidebook has been prepared with carefully vetted text and images of four selected beetle families, i.e., Elateridae (Click Beetles), Staphylinidae (Rove Beetles), Curculionidae (True Weevils), and Chrysomelidae (Leaf Beetles), which likely covers only a small proportion of the existing coleopteran fauna in the Indonesian tropical rainforests.

This is the first guidebook that provides important ecological information and key to subfamilies and genera of four beetle families that are found in different land-uses in Jambi area. *The Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia (Chrysomelidae, Curculionidae, Elateridae, and Staphylinidae)* is not only suitable for beetle specialists, but also for students, forest managers, and beginners or youngsters who want to learn about beetles. This book is presented in a language that is easily understood by everyone. In addition, pictures of more than 500 morphospecies are provided to boost this book's attractiveness.



Our knowledge about the Coleoptera of Jambi is more limited than that of other areas in Indonesia. Given this starting point, I have full confidence that this guidebook will surely be a torch illuminating the path of the researchers and students in the field and those interested in their species diversity and biology. I hope it will open opportunities to a wonderful interaction with the world of Coleoptera and future research.

Bogor, August 2020

Prof. Dr. Rosichon Ubaidillah M. Phill.

Researcher at Biology Research Center-BRIN
Museum Zoologicum Bogoriense-BRIN

PREFACE

This guidebook is a tangible manifestation of the intensive collaboration between Department of Plant Protection at IPB University and Department of Animal Ecology at University of Göttingen within the framework of EForTS, which has been carried out for ten years since 2012. In the EForTS project, the University of Göttingen, Germany, collaborates with three Indonesian Universities (i.e., IPB University, Jambi University, and Tadulako University). The project includes a wide range of disciplines such as ecology, forestry, agriculture, remote sensing, economics, human geography, and cultural anthropology. EForTS investigates the ecological and socio-economic dimensions of rainforest conversion to palm oil and rubber plantation in Jambi Province, Sumatra, Indonesia, focusing on smallholder plantations within and surrounding Harapan Rainforest and Bukit Duabelas National Park (Drescher et al. 2016; <http://www.uni-goettingen.de/crc990>).

While there are many taxonomic keys available for a multitude of vertebrate and invertebrate taxa, there are still hundreds of thousands of undescribed species to be found, especially in the tropical regions of the world. Jambi Province in the heart of Sumatra is a region in which taxonomic research has been sparse so far, despite large areas of highly diverse lowland rainforest that existed until several decades ago. Now, only a few fragments of lowland rainforest are left in Jambi Province, and agricultural ecosystems in the form of oil palm and rubber are dominating the lowland landscape. However, there appear to still exist many unknown species of arthropods, of which beetles are among the most diverse. Hence, in this book, we focus on the four families of beetles that were the most abundant and species-rich in our collection from Jambi Province. Following the Introduction, which presents the region of the study and sampling method, the book is divided



into four major sections, one for each beetle family. In each section, we present general characteristics of the beetle family in focus, present a key to subfamilies and/or genera, list the morphospecies found in our sampling, and show images for all morphospecies encountered.

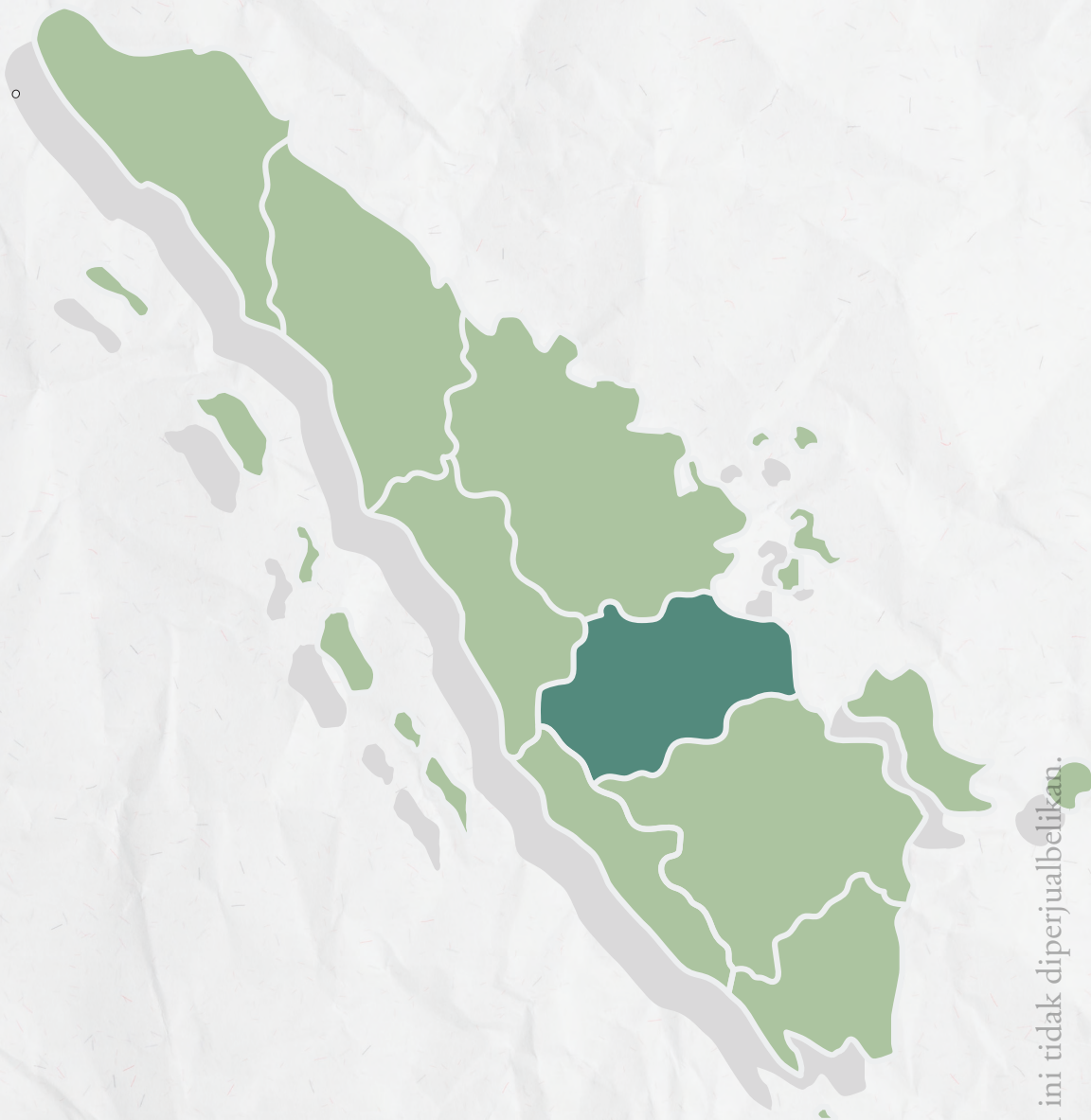
There are obvious shortcomings in this book which were unable to overcome at this stage. Among those are the identification keys for each of the four beetle families, which are limited to subfamilies in the Curculionidae and Staphylinidae, and to genus in the Chrysomelidae and Elateridae. The keys are redacted and combined versions of existing identification keys, and we suggest readers to refer to the source material in case of doubt. All specimens shown here have been identified to morphospecies to the best of our current knowledge and skill. Any taxonomic revisions or additional morphospecies from further collections in Jambi will be part of an updated version of this book.

We hope this book will be of use for those interested in the four beetle families presented here, may it be in Sumatra or other parts of Indonesia. We also hope this guidebook will provide a basis for ecological fieldwork in the region, so that knowledge gaps and overlaps, as well as further taxonomic venues for species descriptions, can be easier identified. Lastly, we hope this book serves students of entomology an entry point into beetle identification in Indonesia.

This book was funded by the German Research Foundation (Deutsche Forschungsgemeinschaft DFG) as part of the Collaborative Research Centre CRC990 - EFTS: "Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems"; <http://www.uni-goettingen.de/crc990>. We thank village leaders, local plot owners, PT Humusindo, Harapan Rainforest/PT REKI, and Bukit Duabelas National Park for granting us access to and use of their properties, and the Ministry of Research and Technology (RISTEK), the Ministry of Research, Technology, and Higher Education (RISTEKDIKTI), the Nature Conservation Agency (BKSDA), and the Indonesian Institute of Sciences (LIPI) and for issuing permits to study, collect, and export beetle specimen, and recommendation for those permits.

February 2022

The authors



Buku ini tidak diperjualbelikan.

INTRODUCTION

Beetles are the largest and most diverse group of insects in the world; about 40% of all the insects and 30% of all animals are beetles. About 350,000 described species of beetles are spread around the world (Grimaldi & Engel, 2005). About 30,000 species are found in United States and Canada (Triplehorn & Johnson, 2005), and 30,000 species are found in Australia but only 20,000 are scientifically described (Britton, 2019). Beetles can live anywhere and everywhere, and successfully populate all environments in the world except open oceans and permanently frozen Polar Regions. Some species live as predators, as herbivores on plants, and some as decomposers. The most important factor contributing to the success of beetles is the development of hardened or leathery forewings, called elytra, protecting the membranous hind wings when not in use and permitting them to colonize enclosed spaces and cryptic habitats as adults (Hangay & Zborowski, 2010; Lawrence & Britton, 2000).

Within the framework of EFForTS (Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems, Sumatra, Indonesia), we collected click beetles, leaf beetles, rove beetles, and true weevils from the canopy of trees in a nested replicated design in four land-use systems in Jambi Province, Sumatra, Indonesia: Primary degraded forest, jungle rubber (extensive rubber cultivation), and monoculture plantations of rubber and oil palm (Fig.1 a-d).

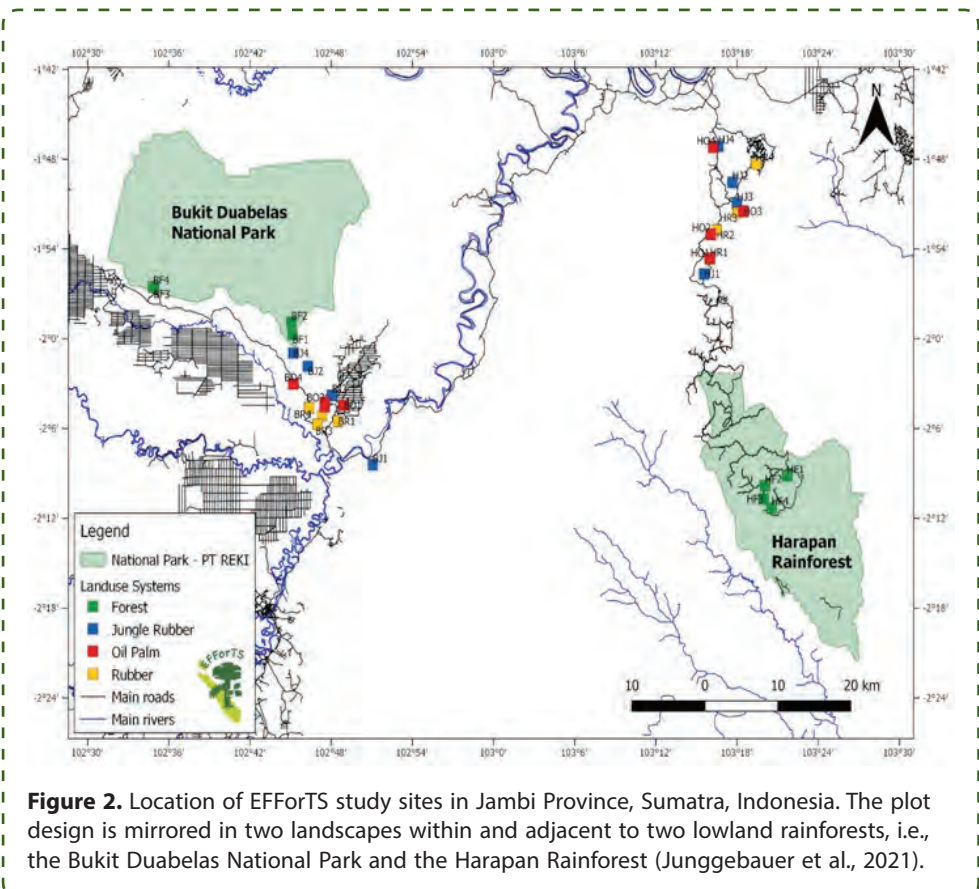
The EFForTS study sites are located in and around two forest reserves, i.e., the Bukit Duabelas National Park and the lowland rainforest restoration concession of PT Restorasi Ekosistem Indonesia (PT REKI), also called Harapan Rainforest. In each of the two 'land-

scapes', we established a mirrored design of four plots of each land-use type in each of the two landscapes, resulting in $4 \times 4 \times 2 = 32$ 'core plots' (Fig. 2). Each plot measures 50×50 m. Canopy beetles were collected from three sites per plot via canopy fogging (sixteen 1 m^2 traps underneath each site) both in the dry season in the year of 2013 and the rainy season in the year of 2013/14 (for details refer to Nazarreta et al. 2020).

More than 45,000 specimen of beetles were collected by EForTS, and individuals belonging to the four beetle families with the highest estimated abundance and richness were selected for further study: Chrysomelidae (leaf beetles), Curculionidae (true weevils), Elateridae (click beetles), and Staphylinidae (rove beetles). Chrysomelidae: 1,702 individuals belonging to 6 subfamilies, 64 genera, and 151 morphospecies; Curculionidae: 3,546 individuals belonging to 12 subfamilies, 34 genera, and 214 morphospecies; Elateridae: 4,301 individuals belonging to 7 subfamilies, 27 genera, and 80 morphospecies; and Staphylinidae: 4,095 individuals belonging to 14 subfamilies, 13 genera, and 74 morphospecies.

Considering the number of beetle species, it is not surprising that beetles come in a great diversity of shapes and sizes. Many species of beetles are phytophagous and can become pests in agricultural systems. They attack roots, leaves, flowers, fruits and stems, either as larvae or adults. Some species can damage stored food products, wood products, and fabrics. Chrysomelidae and Curculionidae are the most species rich among the phytophagous families of beetles. Both larvae and adults feed on living plant materials,





usually consuming leaves but also flowers including pollen, and the diversity of plant food materials is wider in Curculionidae than in Chrysomelidae (Anderson, 2002; Grimaldi & Engel, 2005; Riley et al., 2002). Staphylinidae is the second-largest family of beetles following Curculionidae, live rather uniformly as predators both as larvae and adults; prey species include Lepidoptera, Diptera and Homoptera, important pest taxa, thereby serving as important pest control agents colonizing virtually every type of habitat (Newton et al., 2001). Elateridae also live as predators, but many of the larvae bore into rotting wood and consume a wide range of diets including wood-boring larvae, plant roots and dead organic matter (Grimaldi & Engel, 2005; Johnson, 2002).

This guidebook provides a baseline for monitoring the largely undescribed beetle community of the lowlands of Sumatra, especially in the aforementioned ecosystems: lowland rainforest, jungle rubber, and monocultures of rubber or oil palm. Many of the morphospecies are unknown to science, and thus need further taxonomic (and biological or ecological) investigation. We hope this guidebook will interest taxonomists and ecologists alike and may represent a first step in exploring the diversity of beetles in tropical Indonesia.



Basiprionota sp. (Chrysomelidae: Cassidinae)

Image by Suryadi

LEAF BEETLES (COLEOPTERA: CHRYSMELIDAE)

Leaf beetles (Coleoptera: Chrysomelidae) consist of more than 2,700 genera containing ca. 13,500 species (www.gbif.org). The actual number of species of chrysomelid beetles, however, is estimated to be almost four times that, i.e. 60,000 (Jolivet, 2015). The number of chrysomelid beetles in the Indomalayan archipelago is unknown, and records are limited regionally. For example, Mohamedsaid found 325 species of chrysomelid beetles in Peninsular Malaysia (Mohamedsaid, 1989), 144 species in the Lesser Sunda Islands (Lombok, Sumbawa, Sumba, Flores, and Timor; Mohamedsaid, 2009) and 68 species of the subfamily Galerucinae on Bali (Mohamedsaid, 2001). To our knowledge, no other biodiversity inventories of Chrysomelidae are available from Indonesia.

Leaf beetles are distinguished by their oval-shaped and short-legged body, with the antennae about half of the body length. Leaf beetles have shell-like wing covers (elytra) that meet in a straight line over their abdomen (Fig. 2.1). Adults are small to medium-sized, with the length ranging from 1 to 17 mm. Body color varies, commonly the beetles are bright or metallic often dorsally bicolored with distinctive patterns, often with pale pronotum and dark elytra. Some species are covered with hairs or scales. Leaf beetles are phytophagous and one the most diverse insect families on plants. Adults feed on living plant material, typically on leaves but also flowers including pollen. Several kinds of leaf beetles have larvae with an elaborate shield held over the body or a hard-portable case worn like a top hat by individuals as they move around the plant (Riley et al., 2002; Hangay & Zborowski, 2010).



The identification key to subfamilies and genera of leaf beetles is adapted and modified from Jacoby (1908), Kimoto and Gresit (1979), Maulik (1936), and Mohamedsaid (2000). The identification of the specimens included has been verified by reference to the specimen collection in the Entomology Laboratory of Indonesian Institute of Sciences, LIPI.

IDENTIFICATION KEY TO THE SUBFAMILIES OF CHRYSOMELIDAE

The identification key to subfamilies and genera of leaf beetles is adapted and modified from Jacoby (1908), Kimoto and Gresit (1979), Maulik (1936), and Mohamedsaid (2000).

1. Eyes not deeply notched at the front. Head not extended into a 'muzzle' at the front. Other features variable, but not combined as above. Head clearly angled and constricted behind eyes. Pronotum without side margins. Elytra with punctures in rows. Claws with no appendage at the base, or with a small tooth. First antennal segment short. Scutellum hairless. Eyes notched on the inner edge..... **Criocerinae**
- 1'. Eyes not deeply notched at the front. Head not extended into a 'muzzle' at the front. Other features variable, but not combined as above. Head without this constriction. Pronotum usually with side margins..... **2**
2. Fourth abdominal sternite strongly constricted in the middle, if only slightly constricted, then antennae serrate. Females with a round dent in the 5th abdominal sternite..... **Cryptocephalinae**
- 2'. Fourth abdominal sternite not, or only slightly, constricted in the middle. Antennae not necessarily serrate. Females without a round dent in the center 5th abdominal sternite..... **3**
3. Antennal base widely separated and above mandibels..... **4**
- 3'. Antennal base between eyes or level with their front edges, close together..... **5**
4. Third tarsal segment split almost to its base. Front coxae rounded. Antennal segment enlarge more or less gradually towards the tip. No epiplural depressions **Eumolpinae**
- 4'. Third tarsal segment split no more than halfwar. Front coxae transverse, not rounded. Head not elongate in front antennal bases. Pronotum with side margins, not constricted at rear, where it is, at most, slightly narrower than front of elytra..... **Chrysomelinae**
5. Head at least partly visible from above, mouthparts directed forwards and downwards. Not flattened. Includes the flea beetles with enlarged hind femora and the ability to jump. **Galerucinae**
- 5'. Head covered by pronotum, not visible from above; mouthparts directed backwards. Flattened and often rounded, known as tortoise beetles..... **Cassidinae**

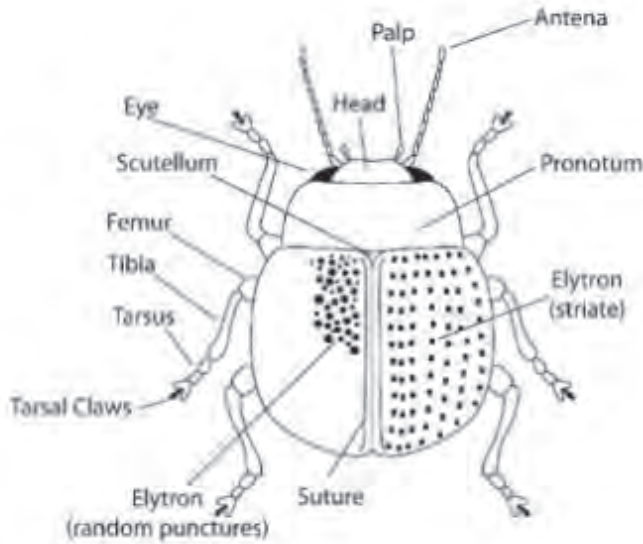


Figure 2.1 External Morphology (Ventral View) of Chrysomelidae (Re-drawing from Hubble, 2010)

IDENTIFICATION KEY TO THE GENERA OF CHRYSOMELIDAE

Subfamily Criocerinae

Key to genera of subfamily Criocerinae adapted and updated from Kimoto and Gressitt (1979).

1. Tarsal claws fused, prothorax generally broader than long, or as broad as long, occiput not abbreviated, not wider than long. ***Lema***
- 1'. Tarsal claws free, head as broad as long, head with transverse depression; prothorax constricted near middle. ***Lilioceris***

Subfamily Cryptocephalinae

Key to genera of subfamily Cryptocephalinae adapted and updated from Jacoby (1908).

1. Antenna short, terminal joints widened. Scutellum visible. Eyes not very closely approximate, never touching. Prosternum one-half as long again as broad, with projecting and hollowed anterior margin. ***Melixanthus***



- 1' Antenna short, prosternum wider than long. Anterior border of pronotum simple arcuate. ***Lexiphanes***

Subfamily Eumolpinae

Key to genera of subfamily Eumolpinae adapted and updated from Kimoto and Gressitt (1979).

1. Anterior margin of proepisterna straight or concave **2**
- 1' Anterior margin of proepisterna convex **9**
2. Claws appendiculate or simple, intermediate and posterior tibiae or intermediate tibia emarginate at apex, body above glabrous **3**
- 2' Claws bifid **6**
3. Antenna filiform **4**
- 3' Antenna with tergal segments strongly widened ***Callisina***
4. Head without sulcus above eye **5**
- 4' Head with sulcus above eye ***Pagria***
5. Prothorax as broad as elytron; body generally very small and rounded; antenna robust, nearly as long as in preapical ***Nodina***
- 5' Prothorax narrower than elytron at base; antenna slender, long and often more than 2/3 as long as body length ***Basilepta***
6. Head without sulcus above eye; body above clothed with hairs or scale like hairs; Lateral margin of prothorax marginate; intermediate and posterior tibiae, or intermediate tibia emarginate at apex ***Trichochrysea***
- 6' Lateral margin of prothorax not marginate; prothorax much broader than long **7**
7. Body clothed with scales above; prothorax with side entirely serrate ***Pseudometaxis***
- 7' Body clothed with hairs above **8**
8. Prothorax not toothed at side; mesosternum oblong or subquadrate; generally 2-3 mm in length in this fauna ***Xanthonia***
- 8' Prothorax with two or three fairly prominent teeth at side; interantennal space generally convex; body length nearly 3-4 mm ***Aulexis***
9. Dorsum sparsely or closely covered with hairs or scales **10**
- 9' Dorsum glabrous **11**

10. Dorsum with strong transverse rugosities, closely covered with scales; mid and hind tibiae notched on outer side near apex.....***Pachnephorus***
- 10'. Dorsum with strong transverse rugosities and short, adpressed sparse pubescence
Abirus
11. Mid and hind tibiae notched on outer side near apex..... **12**
- 11'. Mid and hind tibiae simple, not notched **13**
12. Claws bifid; fore femur with large tooth beneath; head without a deep groove above eye; elytron dilated posteriorly and with epipleuron convex.....***Phytorus***
- 12'. Claws appendiculate; antenna filiform, with terminal segments widened
Cleorina
13. Head without sulcus above eye; prothorax transverse, as broad or nearly as broad as elytron; posterior femur sometimes with distinct spine subapically.....
Colaspoides
- 13'. Head with broad sulcus above eye; sulcus above eye deep and broad, antenna with apical segment widened and flattened ***Platycorynus***

Subfamily Galerucinae

Key to genera of subfamily Galerucinae adapted and updated from Maulik S (1936).

1. Claws appendiculate **2**
- 1'. Claws bifid **11**
2. Wings present. Elytral punctures regularly and longitudinally striated. Each elytron with double rows of punctures with an indistinct short scutellar row; interstices between the double rows raised ***Theopea***
- 2'. Wings present. Elytral punctures confused. Prothorax not elongated. Pronotum without depression **3**
3. Insect length 7 x 5 mm; convex, narrowed towards the apex; antenna slender, extending to the middle elytron; third segment twice as long as the second fourth slightly longer than third; elytra deep violet ***Emathea***
- 3'. Small ovate beetles, sometimes larger; first segment of posterior tarsus long or shorter **4**
4. Anterior coxal cavity opened posteriorly **5**
- 4'. Anterior coxal cavity closed posteriorly **8**
5. Posterior tibia unspined **6**



- 5'. Middle and posterior tibiae spined; basal border of pronotum entirely marginate **7**
6. Posterior and anterior border of pronotum margined; elytron more less glabrous; mesosternum narrow and not connected with metasternum; elytral epipleuron wide basally and narrow apically; pronotum subquadrate, with distinct transverse depression dorsally..... **Mimastra**
- 6'. Anterior border of pronotum unmargined; dorsum glabrous; pronotal disc with distinct depression; elytron not carinate; gena much shorter than depth of eye; groove behind frontal tubercle disappearing toward the side **Taumacera**
7. First segment of posterior tarsus distinctly shorter than remainder combined; preapical segment of maxillary palpus not so large, slender, fourth not much smaller than third and not cubical; elytron without any reflexed area on suture; basal half of pygidium shiny, glabrous, body ovoid..... **Agelastica**
- 7'. First segment of posterior tarsus as long as, or longer than, remainder combined; elytra epipleuron wide at base; dorsal surface of body not covered with fine pubescence; anterior margin of labrum emarginate; frontal tubercles widely separated by frons; frons broad, depressed in middle without longitudinal inter-antennal ridge **Sinoluperus**
8. First segment of posterior tarsus much longer than remainder combined; tibia with a long spine at apex; elytral epipleuron suddenly narrowed at end of basal 1/3 and distinctly narrower at middle than 1/2 with in basal portion **Monolepta**
- 8'. First segment of posterior tarsus usually shorter than, or sometimes subequal to, remainder combined. Pronotum with basal margin entirely marginate; pronotum without longitudinal furrows **9**
9. Posterior tibia with a single spine at apex; Pronotum with a pair of distinct depression laterally; elytral punctures regularly; and longitudinal striated; posterior claw long, curved; dorsal surfaces covered with fine hairs **Doryscus**
- 9'. Posterior tibia with many short spine at apex **10**
10. Pronotum not very short, with or without a pair of depressions; elytron without rugosities; eye rather large, gena distinctly narrower than 1/3 of transverse diameter of an eye; anterior border of pronotum distinctly margined; body semispherical **Emathea**
- 10'. With same character but the body is oval or elongated; pronotum narrower than twice as wide as long; third antennal segment shorter than or subequal to second in length in male **Arthrotus**
11. Elytra without a clothing of hairs **12**
- 11'. Elytra with a clothing of hairs; head, pronotum and elytra brilliant metallic green or a mixture of green purple and violet; smallish dull brown insect, generally 5 x 2.5 mm, rarely 6.75 x 3.25 mm; elytra punctures deep, large and with intermediate smooth spaces, antennae comparatively more slender and longer..... **Galerucella**

12. Elytra smoothly punctate. Body ovate, narrowed in front, broadest in the middle, gradually and uniformly narrowed behind, 7.5–17 x 4.5–10.5 mm**Oides**
- 12'. Elytra smoothly punctate. Body convex, pronotum quadrate or broader than long.
13
13. Insect narrow, parallel-sided, never more than 9 x 3 mm, generally 7 x 3 mm, pronotum quadrate with side margined**Hoplasoma**
- 13'. Insect not parallel-side, broadened behind, never more than 11 mm, long usually 6-7 mm, pronotum broader than long; epipleuron abbreviated**Aulacophora**

Subfamily Galerucinae (Tribe Alticinae)

1. Antennae with ten segment, the last segment may have a tiny pointed extension which could be taken as an eleventh segment, but is not distinctly separated from the tenth segment; hind tarsus inserted some distance from the apex of the tibia; length 2.0-4.5 mm**Psylliodes**
- 1'. Antennae with 11 distinct segments; hind tarsus inserted at the tip of tibia; spur of the hind tibia coming to a single point, not forked; length 1.0-6.0 mm; pronotum without an impressed line or depression at the base; elytra randomly punctured; head not overhung by the pronotum**2**
2. Hind tarsus very long, nearly as long as the hind tibia, segment 1 slender, at least as long as the remaining segments and at least half as long as the tibia; hind tarsus usually bent back alongside the tibia after death.....**Longitarsus**
- 2'. First segment of the hind tarsi shorter than half the length of the hind tibia**3**
3. More elongated, moderately convex species; length less than 4 mm; hind angle of the pronotum often clearly projecting**4**
- 3'. More rounded species, more or less hemispherical in section dark, rather metallic species; pronotum short, two to three times as broad as long; antennae more thread-like, not distinctly widening apically; orange-brown to brown species
Sphaeroderma
4. Tubercles on the frons indistinct and not separated from the frons by a sharp line; distance between the bases of the antennae usually clearly less than the length of the first segment of the antennae; hind tibia narrow, only hollowed out close to where the tarsi are attached; elytra with a longitudinal orange-brown band on each (sometimes interrupted) or if elytra are uniformly dark, the legs are also black.....
Phyllotreta
- 4'. Tubercles on the frons usually distinct and sharply bordered, rounded or teardrop-shaped with the narrowing directed obliquely outwards; hind tibiae with an even furrow in the apical half; spur inserted on the outer corner of the tip of the hind tibia,



sometimes scarcely visible; distance between the bases of the antennae about equal to the length of the first segment of the antennae..... **Aphthona**

LIST OF CHRYSOMELIDAE MORPHOSPECIES

Due to the large number of undescribed species in Sumatra, this checklist of the leaf beetles collected by EForTS project canopy fogging in dry season in the year of 2013 and in rainy season in the year of 2013/14, contains a mix of confirmed Linnéan species and morphospecies which we defined *de novo*. Within each subfamily, the list is sorted alphabetically by morphospecies, and includes the following information:

- 1. morphospecies: Differentiate in terms of morphology. Linnéan name, or subfamily or genus plus species denominator.
- 2. MSp Code: Internal EForTS identifier, containing information regarding the respective EForTS project, higher-level taxonomic information, and the sorting number for each defined morphospecies.
- 3. Land Use: The land-use system in which each morphospecies was found, i.e., primary degraded forest (F), jungle rubber (J), rubber plantation (R) and/or oil palm plantation (O).
- 4. Total N: Number of individuals collected in dry season 2013 and rainy season 2013/2014.
- 5. Figures: Image number of the respective morphospecies.

Table 2.1 Chrysomelidae morphospecies

morphospecies	MSp Code	Land Use	Total N	Figures
Cassidinae				
<i>Basiprionota</i> sp.01	Z02_ColChr025	F	2	2.2
<i>Dactylispa</i> sp.01	Z02_ColChr049	F, J	4	2.3
<i>Notosacantha</i> sp.01	Z02_ColChr142	F	1	2.4
<i>Polychalca</i> sp.01	Z02_ColChr113	R	1	2.5
Chrysomelinae				
<i>Chrysomela</i> sp.01	Z02_ColChr108	J	1	2.6
<i>Phratora</i> sp.01	Z02_ColChr173	F	1	2.7
Criocerinae				
<i>Lema</i> sp.01	Z02_ColChr187	F, J	3	2.8
<i>Lema</i> sp.02	Z02_ColChr237	J	1	2.9
<i>Lilioceris</i> sp.01	Z02_ColChr003	O	1	2.10

Buku ini tidak diperjualbelikan.

morphospecies	MSp Code	Land Use	Total N	Figures
Cryptocephalinae				
Cryptocephalinae sp.01	Z02_ColChr232	O	4	2.11
<i>Lexiphanes</i> sp.01	Z02_ColChr005	F, J, O, R	23	2.12
<i>Melixanthus</i> sp.01	Z02_ColChr051	J	2	2.13
Eumolpinae				
<i>Abirus</i> sp.01	Z02_ColChr207	F	1	2.14
<i>Abirus</i> sp.02	Z02_ColChr055	J	9	2.15
<i>Aulexis</i> sp.01	Z02_ColChr023	F, J	7	2.16
<i>Aulexis</i> sp.02	Z02_ColChr096	F	2	2.17
<i>Aulexis</i> sp.03	Z02_ColChr031	F, J	4	2.18
<i>Aulexis</i> sp.04	Z02_ColChr188	F	1	2.19
<i>Basilepta</i> sp.01	Z02_ColChr043	F	7	2.20
<i>Basilepta</i> sp.02	Z02_ColChr116	F, J	10	2.21
<i>Basilepta</i> sp.03	Z02_ColChr021	F, J	36	2.22
<i>Basilepta</i> sp.04	Z02_ColChr171	F	2	2.23
<i>Basilepta</i> sp.05	Z02_ColChr030	F, J, O	45	2.24
<i>Basilepta</i> sp.06	Z02_ColChr035	F, J, O	42	2.25
<i>Basilepta</i> sp.07	Z02_ColChr087	F	9	2.26
<i>Brachypnoea</i> sp.01	Z02_ColChr038	F, J	4	2.27
<i>Callisina</i> sp.01	Z02_ColChr193	F	1	2.28
<i>Callisina</i> sp.02	Z02_ColChr208	F	1	2.29
<i>Cleorina</i> sp.01	Z02_ColChr010	F, J, O, R	32	2.30
<i>Cleorina</i> sp.02	Z02_ColChr143	F	1	2.31
<i>Colaspoides</i> sp.01	Z02_ColChr139	F	2	2.32
<i>Colaspoides</i> sp.02	Z02_ColChr140	F, J	7	2.33
<i>Colaspoides</i> sp.03	Z02_ColChr168	F	1	2.34
<i>Colaspoides</i> sp.04	Z02_ColChr180	F	1	2.35
<i>Colaspoides</i> sp.05	Z02_ColChr052	F, J, R	67	2.36
<i>Colaspoides</i> sp.06	Z02_ColChr053	F, J, R	66	2.37
Eumolpinae sp.01	Z02_ColChr147	O	1	2.38
Eumolpinae sp.02	Z02_ColChr004	F, J, O, R	28	2.39
Eumolpinae sp.03	Z02_ColChr095	F, J	3	2.40
<i>Nodina</i> sp.01	Z02_ColChr007	F, J, O, R	159	2.41
<i>Nodina</i> sp.02	Z02_ColChr118	F, J	55	2.42
<i>Pachnephorus</i> sp.01	Z02_ColChr044	F	1	2.43



morphospecies	MSp Code	Land Use	Total N	Figures
<i>Pagria</i> sp.01	Z02_ColChr032	F, J	15	2.44
<i>Phytorus</i> sp.01	Z02_ColChr011	F, J, O, R	212	2.45
<i>Phytorus</i> sp.02	Z02_ColChr181	F	2	2.46
<i>Phytorus</i> sp.03	Z02_ColChr169	F, J	4	2.47
<i>Platycorynus</i> sp.01	Z02_ColChr205	F	1	2.48
<i>Platycorynus</i> sp.02	Z02_ColChr101	F, J	7	2.49
<i>Platycorynus</i> sp.03	Z02_ColChr186	F	3	2.50
<i>Pseudometaxis</i> sp.01	Z02_ColChr072	J	6	2.51
<i>Pseudopiomera</i> sp.01	Z02_ColChr048	J	3	2.52
<i>Trichochrysea</i> sp.01	Z02_ColChr102	J, R	2	2.53
<i>Trichochrysea</i> sp.02	Z02_ColChr068	J	1	2.54
<i>Xanthonia</i> sp.01	Z02_ColChr103	J	1	2.55
Galerucinae				
<i>Agelastica</i> sp.01	Z02_ColChr120	J, R	9	2.56
<i>Aphthona</i> sp.01	Z02_ColChr218	F	1	2.57
<i>Aphthona</i> sp.02	Z02_ColChr026	F, J, O, R	9	2.58
<i>Aphthona</i> sp.03	Z02_ColChr145	F, R	3	2.59
<i>Aphthona</i> sp.04	Z02_ColChr009	R	1	2.60
<i>Apophyllia</i> sp.01	Z02_ColChr063	F, J	4	2.61
<i>Arthrotus</i> sp.01	Z02_ColChr194	F	1	2.62
<i>Aulacophora</i> sp.01	Z02_ColChr081	F, J, R	8	2.63
<i>Aulacophora</i> sp.02	Z02_ColChr119	F, J, R	4	2.64
<i>Aulacophora</i> sp.03	Z02_ColChr135	F	3	2.65
<i>Aulacophora</i> sp.04	Z02_ColChr144	F, J	3	2.66
<i>Aulacophora</i> sp.05	Z02_ColChr203	F	1	2.67
<i>Aulacophora</i> sp.06	Z02_ColChr211	F, J	2	2.68
<i>Aulacophora</i> sp.07	Z02_ColChr082	O	1	2.69
<i>Aulacophora</i> sp.08	Z02_ColChr083	F, J, O	5	2.70
<i>Aulacophora</i> sp.09	Z02_ColChr202	F	1	2.71
<i>Aulacophora</i> sp.10	Z02_ColChr176	F	1	2.72
<i>Aulacophora</i> sp.11	Z02_ColChr085	F	1	2.73
<i>Aulacophora</i> sp.12	Z02_ColChr217	F	2	2.74
<i>Cynorta</i> sp.01	Z02_ColChr107	J	2	2.75
<i>Cynorta</i> sp.02	Z02_ColChr163	F, J	13	2.76
<i>Cynorta</i> sp.03	Z02_ColChr092	R	1	2.77

morphospecies	MSp Code	Land Use	Total N	Figures
<i>Dercetina</i> sp.01	Z02_ColChr191	F	1	2.78
<i>Doryscus</i> sp.01	Z02_ColChr039	F, J	15	2.79
<i>Emathea</i> sp.01	Z02_ColChr134	F	25	2.80
<i>Exora</i> sp.01	Z02_ColChr046	J, O, R	12	2.81
<i>Galerucella</i> sp.01	Z02_ColChr212	F	1	2.82
<i>Galerucella</i> sp.02	Z02_ColChr223	F	1	2.83
<i>Galerucella</i> sp.03	Z02_ColChr029	F, J	4	2.84
<i>Galerucella</i> sp.04	Z02_ColChr065	J	2	2.85
<i>Galerucella</i> sp.05	Z02_ColChr179	F, J	1	2.86
<i>Galerucinae</i> sp.01	Z02_ColChr206	F	1	2.87
<i>Galerucinae</i> sp.02	Z02_ColChr001	F, J, O	45	2.88
<i>Galerucinae</i> sp.03	Z02_ColChr024	F, J	5	2.89
<i>Galerucinae</i> sp.04	Z02_ColChr064	F, J, O	16	2.90
<i>Galerucinae</i> sp.05	Z02_ColChr037	F, J	4	2.91
<i>Galerucinae</i> sp.06	Z02_ColChr238	J	2	2.92
<i>Galerucinae</i> sp.07	Z02_ColChr239	J	3	2.93
<i>Galerucinae</i> sp.08	Z02_ColChr022	F, J	13	2.94
<i>Hemipyxis</i> sp.01	Z02_ColChr104	J, O	5	2.95
<i>Hemipyxis</i> sp.02	Z02_ColChr221	F	2	2.96
<i>Hoplasoma</i> sp.01	Z02_ColChr091	F	1	2.97
<i>Longitarsus</i> sp.01	Z02_ColChr033	F, J, R	12	2.98
<i>Longitarsus</i> sp.02	Z02_ColChr036	F, J, O	19	2.99
<i>Longitarsus</i> sp.03	Z02_ColChr128	F, J, O	6	2.100
<i>Longitarsus</i> sp.04	Z02_ColChr079	J, R	2	2.101
<i>Longitarsus</i> sp.05	Z02_ColChr167	F, J	3	2.102
<i>Luperaltica</i> sp.01	Z02_ColChr013	J, O	7	2.103
<i>Luperoides</i> sp.01	Z02_ColChr133	F	1	2.104
<i>Luperoides</i> sp.02	Z02_ColChr219	F	1	2.105
<i>Mimastra</i> sp.01	Z02_ColChr040	F, J	4	2.106
<i>Mimastra</i> sp.02	Z02_ColChr122	J	5	2.107
<i>Mimastra</i> sp.03	Z02_ColChr182	F	1	2.108
<i>Mimastra</i> sp.04	Z02_ColChr056	J	2	2.109
<i>Mimastra</i> sp.05	Z02_ColChr078	F, J, O, R	10	2.110
<i>Monolepta</i> sp.01	Z02_ColChr136	F, J	3	2.111
<i>Monolepta</i> sp.02	Z02_ColChr016	F, J, R	92	2.112



morphospecies	MSp Code	Land Use	Total N	Figures
<i>Monolepta</i> sp.03	Z02_ColChr174	F	1	2.113
<i>Monolepta</i> sp.04	Z02_ColChr018	F, J, R	36	2.114
<i>Monolepta</i> sp.05	Z02_ColChr045	F, J, R	25	2.115
<i>Monolepta</i> sp.06	Z02_ColChr190	F, J	2	2.116
<i>Monolepta</i> sp.07	Z02_ColChr196	F	1	2.117
<i>Monolepta</i> sp.08	Z02_ColChr123	F, J	4	2.118
<i>Monolepta</i> sp.09	Z02_ColChr050	F, J, R	21	2.119
<i>Monolepta</i> sp.10	Z02_ColChr141	F	1	2.120
<i>Monolepta</i> sp.11	Z02_ColChr114	J, O, R	6	2.121
<i>Monolepta</i> sp.12	Z02_ColChr124	J	1	2.122
<i>Monolepta</i> sp.13	Z02_ColChr164	J	1	2.123
<i>Monolepta</i> sp.14	Z02_ColChr170	F, J	3	2.124
<i>Monolepta</i> sp.15	Z02_ColChr184	F	4	2.125
<i>Monolepta</i> sp.16	Z02_ColChr090	F, J	12	2.126
<i>Monolepta</i> sp.17	Z02_ColChr224	F, J	2	2.127
<i>Monolepta</i> sp.18	Z02_ColChr059	F, J	18	2.128
<i>Monolepta</i> sp.19	Z02_ColChr080	F, J, R	21	2.129
<i>Monolepta</i> sp.20	Z02_ColChr098	F, J	7	2.130
<i>Monolepta</i> sp.21	Z02_ColChr084	F, O	4	2.131
<i>Nesaecrepida</i> sp.01	Z02_ColChr070	J	5	2.132
<i>Oides</i> sp.01	Z02_ColChr153	F, J, R	3	2.133
<i>Oides</i> sp.02	Z02_ColChr177	F	1	2.134
<i>Ophrida</i> sp.01	Z02_ColChr216	F	1	2.135
<i>Pachyonychus</i> sp.01	Z02_ColChr071	J	1	2.136
<i>Paleosepharia</i> sp.01	Z02_ColChr094	F, J	11	2.137
<i>Paleosepharia</i> sp.02	Z02_ColChr015	F, J	5	2.138
<i>Parchicola</i> sp.01	Z02_ColChr226	J	15	2.139
<i>Phydanis</i> sp.01	Z02_ColChr088	F	1	2.140
<i>Phyllobrotica</i> sp.01	Z02_ColChr097	F	1	2.141
<i>Phyllotreta</i> sp.01	Z02_ColChr093	F, J	24	2.142
<i>Psylliodes</i> sp.01	Z02_ColChr042	F, J, R	9	2.143
<i>Sermylassa</i> sp.01	Z02_ColChr117	J	5	2.144
<i>Sinoluperus</i> sp.01	Z02_ColChr109	F, J	13	2.145
<i>Sphaeroderma</i> sp.01	Z02_ColChr154	R	1	2.146
<i>Sumatrasia</i> sp.01	Z02_ColChr214	F, J	2	2.147

morphospecies	MSp Code	Land Use	Total N	Figures
<i>Sumatrasia</i> sp.02	Z02_ColChr047	F, J	21	2.148
<i>Taumacera</i> sp.01	Z02_ColChr110	F, J	4	2.149
<i>Taumacera</i> sp.02	Z02_ColChr236	J	1	2.150
<i>Theopea</i> sp.01	Z02_ColChr019	F, J	6	2.151
<i>Xenoda</i> sp.01	Z02_ColChr027	F, J	92	2.152

IMAGES OF CHRYSOMELIDAE MORPHOSPECIES

For the majority of the EForTS morphospecies collection, specimens have been photographed using KEYENCE VHX-2000 digital microscope. Below, we display dorsally, laterally, and facial images of each morphospecies.



Figure 2.2 *Basiprionota* sp.01
(Chrysomelidae: Cassidinae) Z02_ColChr025

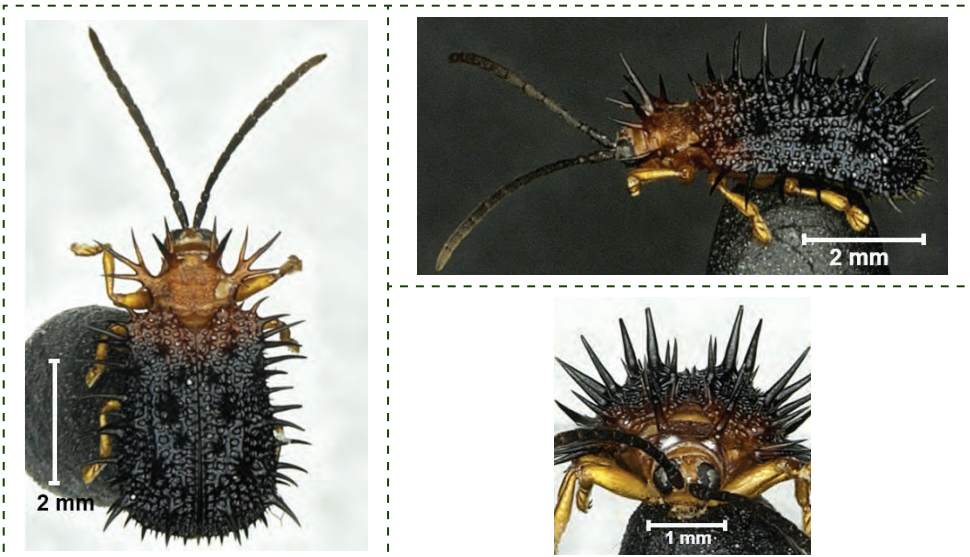


Figure 2.3 *Dactylispa* sp.01
(Chrysomelidae: Cassidinae) Z02_ColChr049

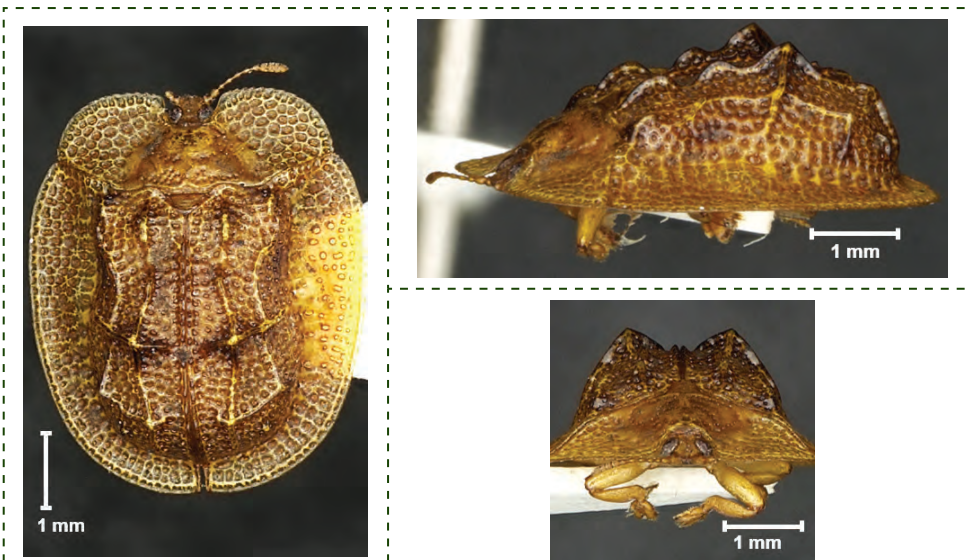


Figure 2.4 *Notosacantha* sp.01
(Chrysomelidae: Cassidinae) Z02_ColChr142



Figure 2.5 *Polychalca* sp.01
(Chrysomelidae: Cassidinae) Z02_ColChr113



Figure 2.6 *Chrysomela* sp.01
(Chrysomelidae: Chrysomelinae) Z02_ColChr108

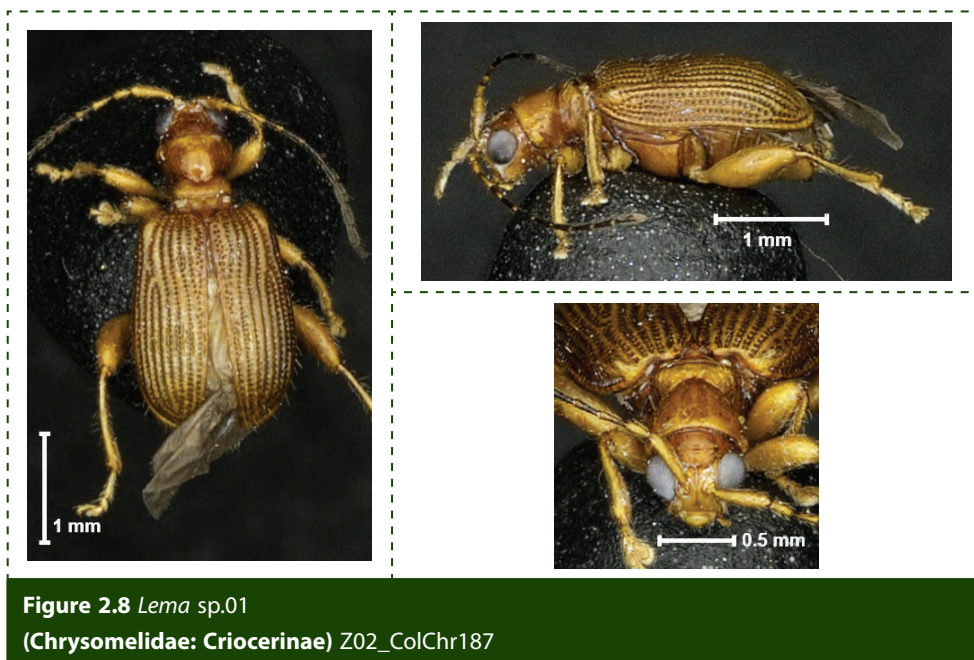
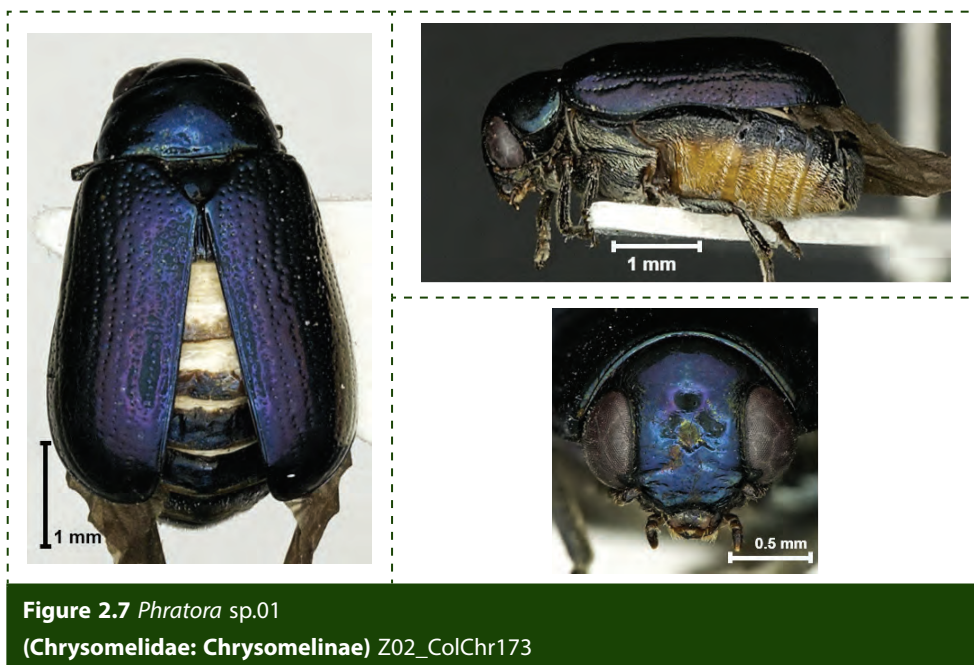
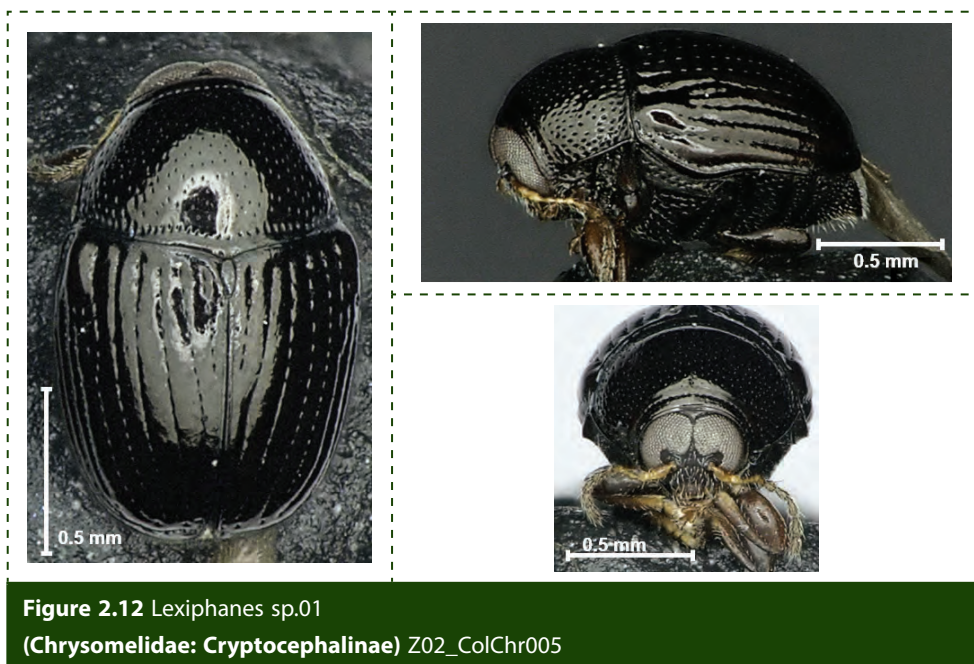
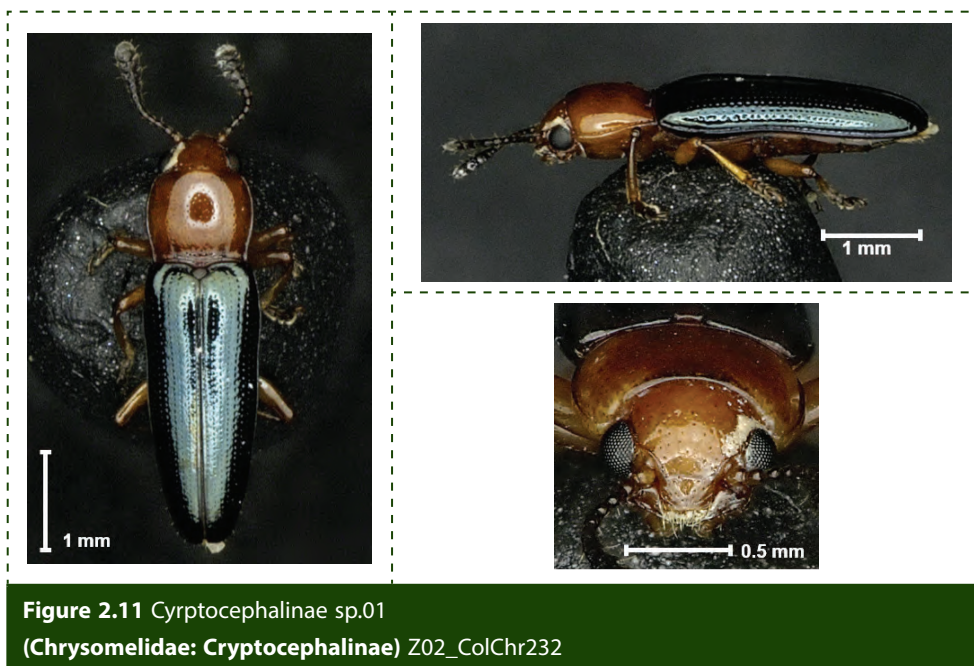




Figure 2.9 *Lema* sp.02
(Chrysomelidae: Criocerinae) Z02_ColChr237



Figure 2.10 *Liliocerus* sp.01
(Chrysomelidae: Criocerinae) Z02_ColChr003



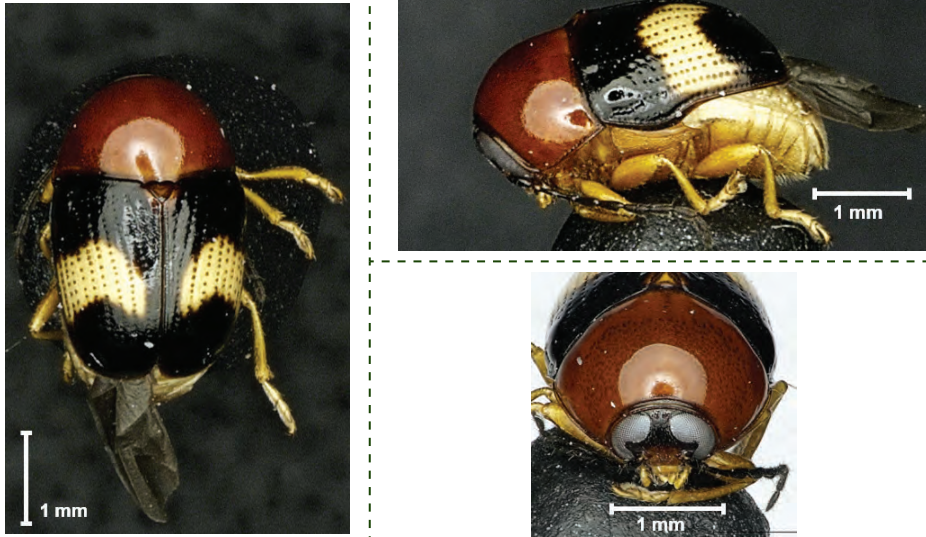


Figure 2.13 *Melixanthus* sp.01
(Chrysomelidae: Cryptocephalinae) Z02_ColChr051

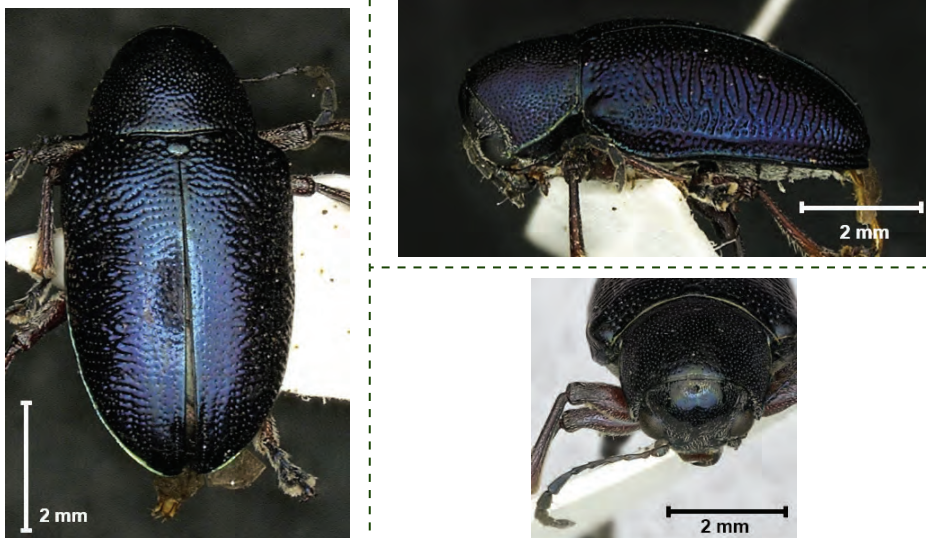


Figure 2.14 *Abirus* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr207

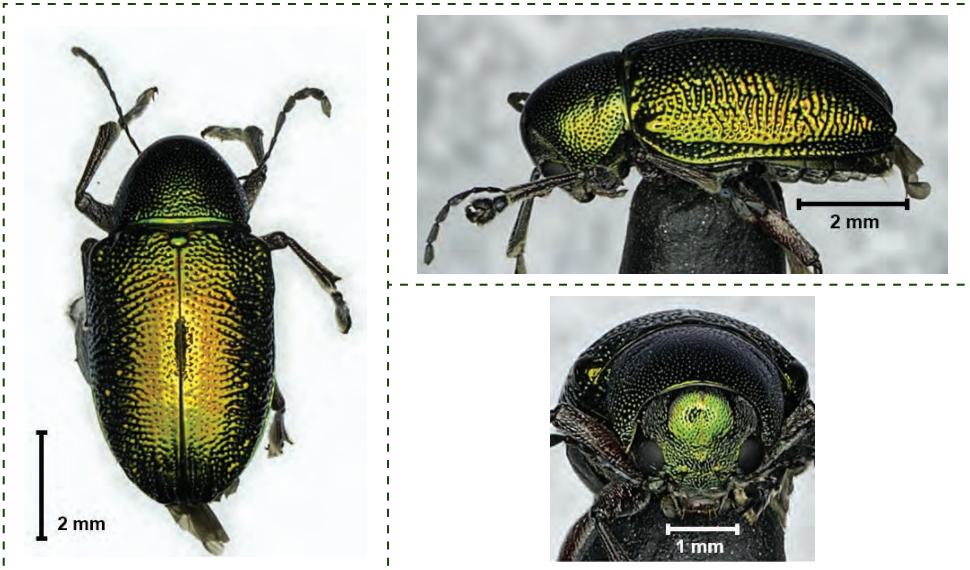


Figure 2.15 *Abirus* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr055



Figure 2.16 *Aulexis* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr023

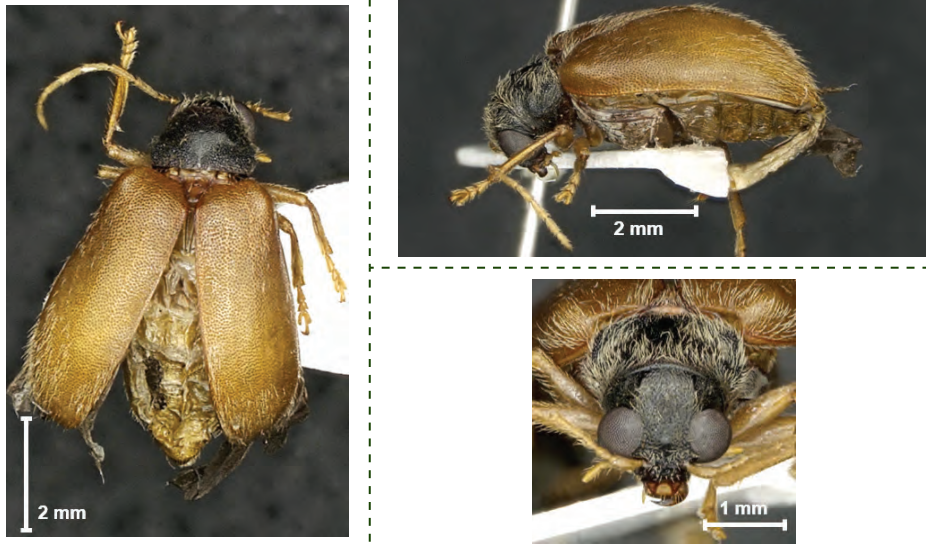


Figure 2.17 *Aulexis* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr096



Figure 2.18 *Aulexis* sp.03
(Chrysomelidae: Eumolpinae) Z02_ColChr031

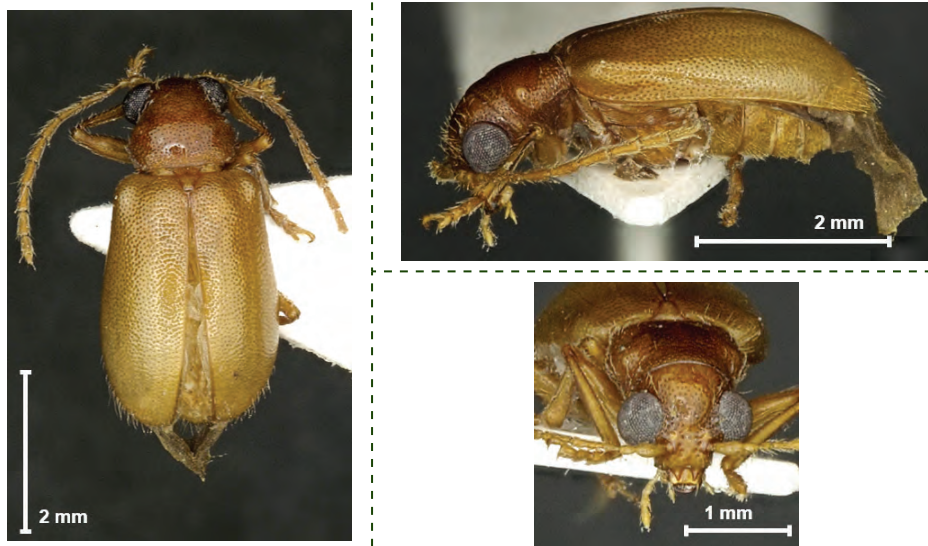


Figure 2.19 *Aulexis* sp.04

(Chrysomelidae: Eumolpinae) Z02_ColChr188

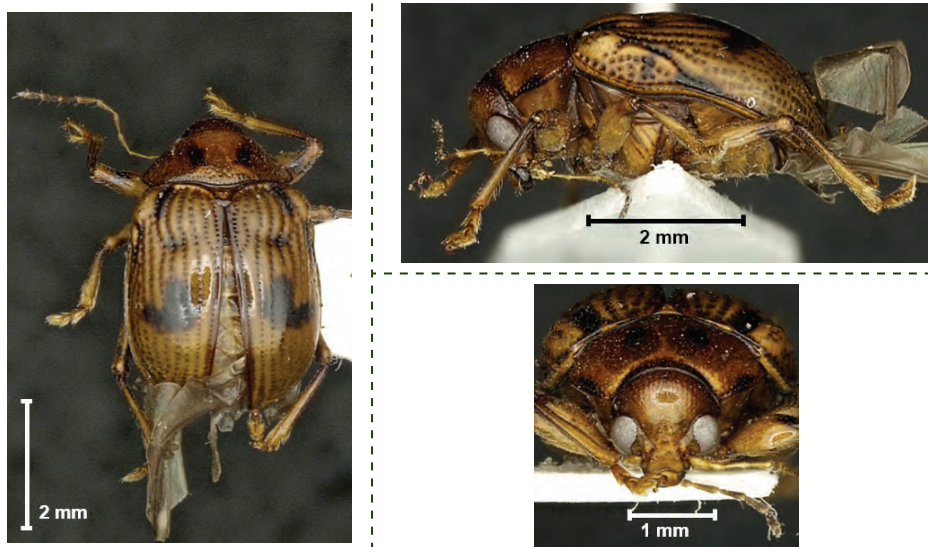


Figure 2.20 *Basilepta* sp.01

(Chrysomelidae: Eumolpinae) Z02_ColChr043

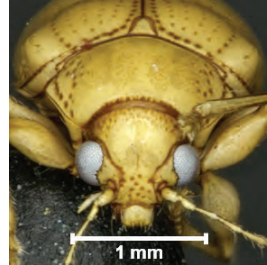


Figure 2.21 *Basilepta* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr116

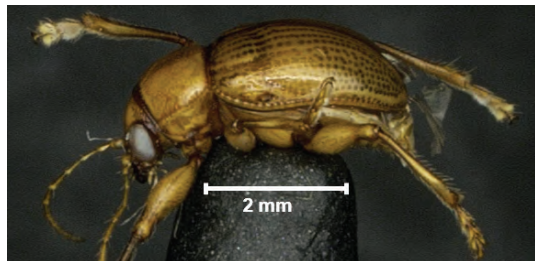


Figure 2.22 *Basilepta* sp.03
(Chrysomelidae: Eumolpinae) Z02_ColChr021



Figure 2.23 *Basilepta* sp.04

(Chrysomelidae: Eumolpinae) Z02_ColChr171



Figure 2.24 *Basilepta* sp.05

(Chrysomelidae: Eumolpinae) Z02_ColChr030

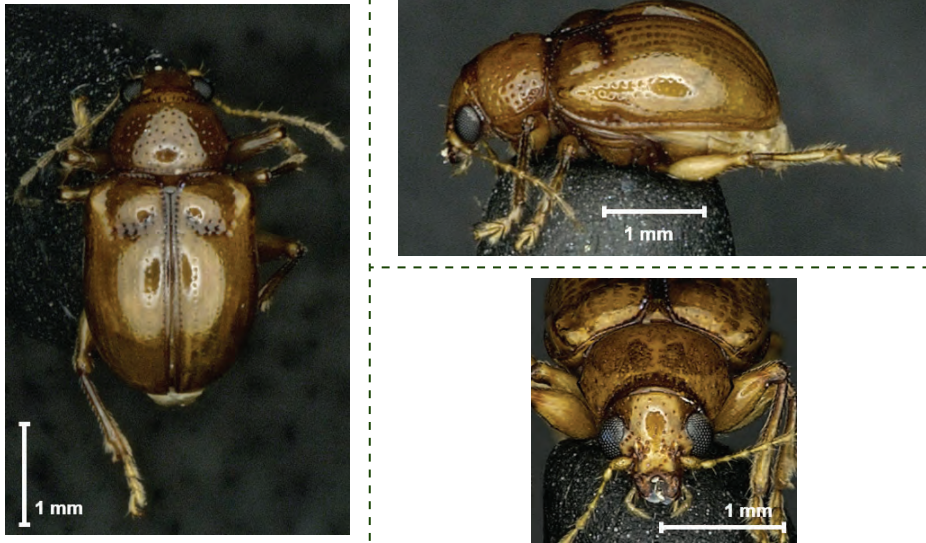


Figure 2.25 *Basilepta* sp.06
(Chrysomelidae: Eumolpinae) Z02_ColChr035

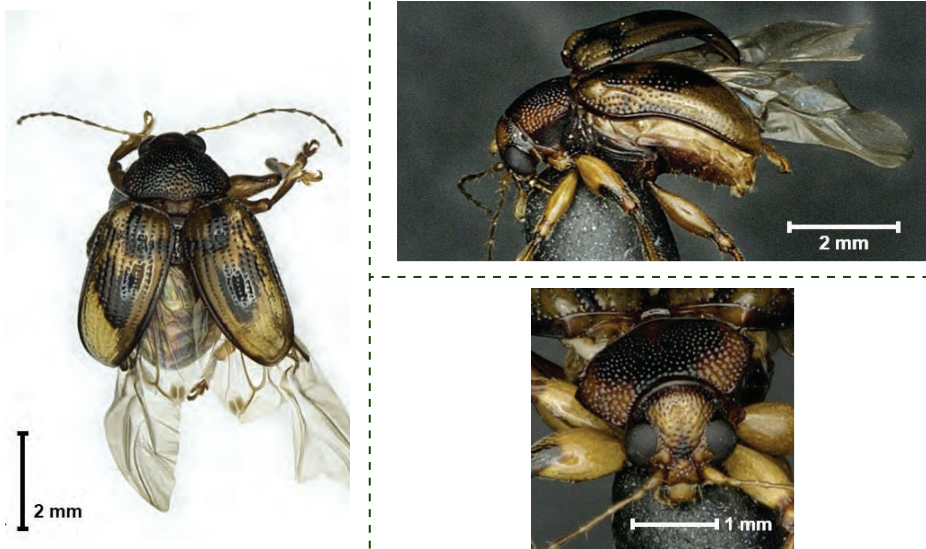


Figure 2.26 *Basilepta* sp.07
(Chrysomelidae: Eumolpinae) Z02_ColChr087

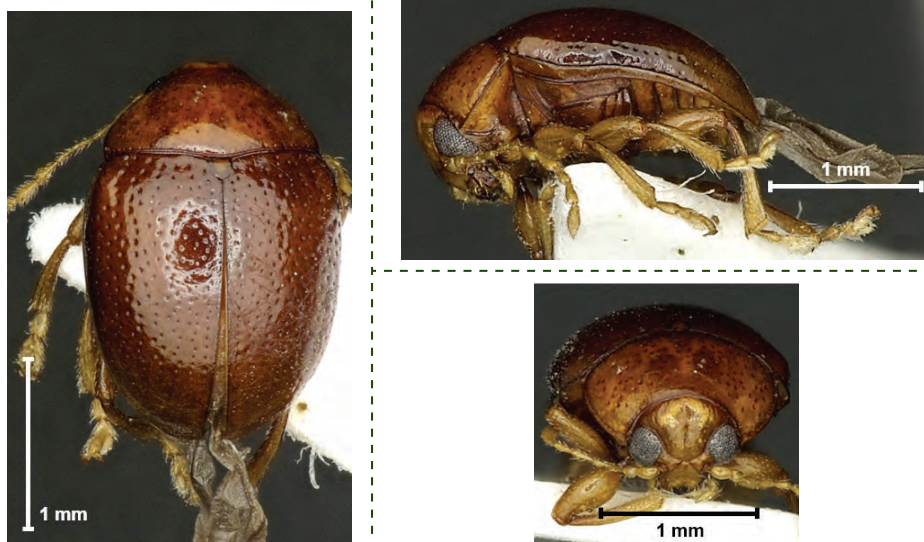


Figure 2.27 *Brachypnoea* sp.01

(Chrysomelidae: Eumolpinae) Z02_ColChr038

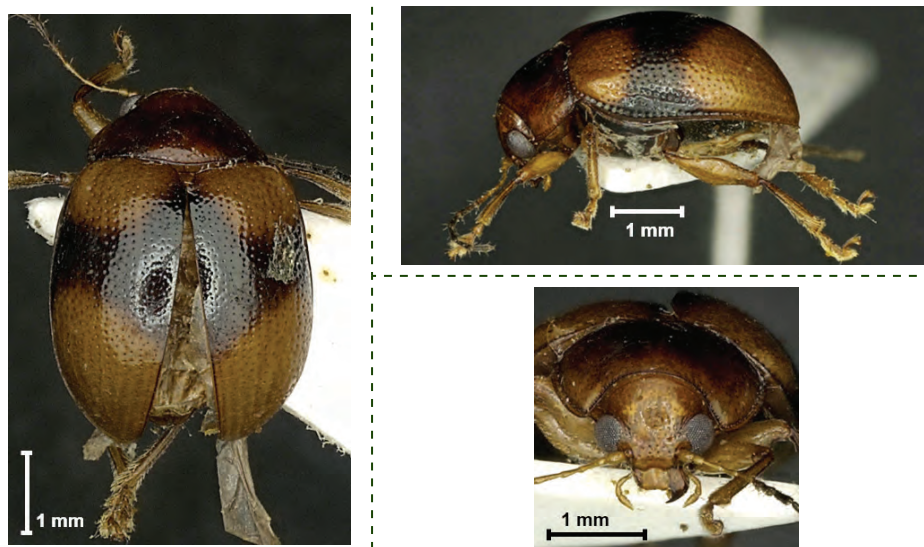


Figure 2.28 *Callisina* sp.01

(Chrysomelidae: Eumolpinae) Z02_ColChr193

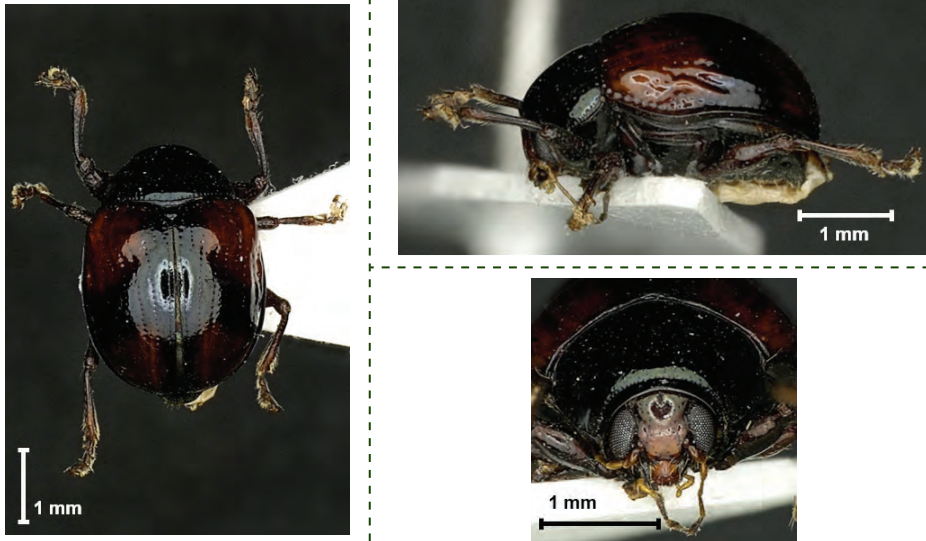


Figure 2.29 *Callisina* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr208

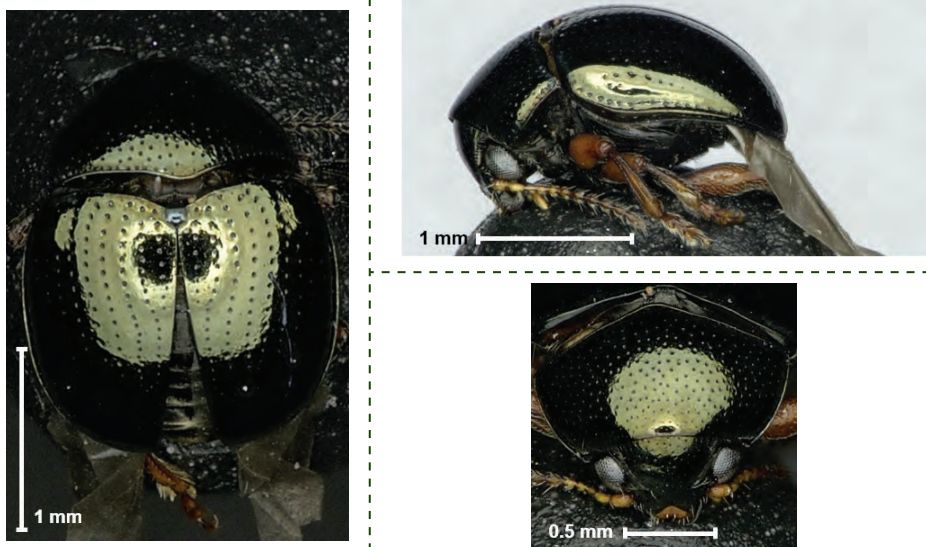
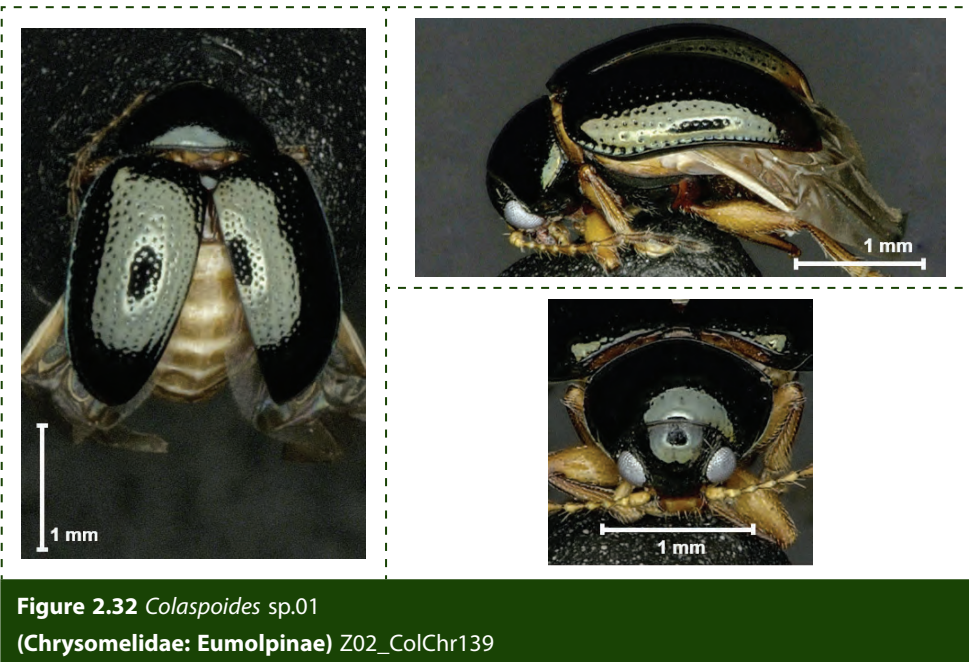
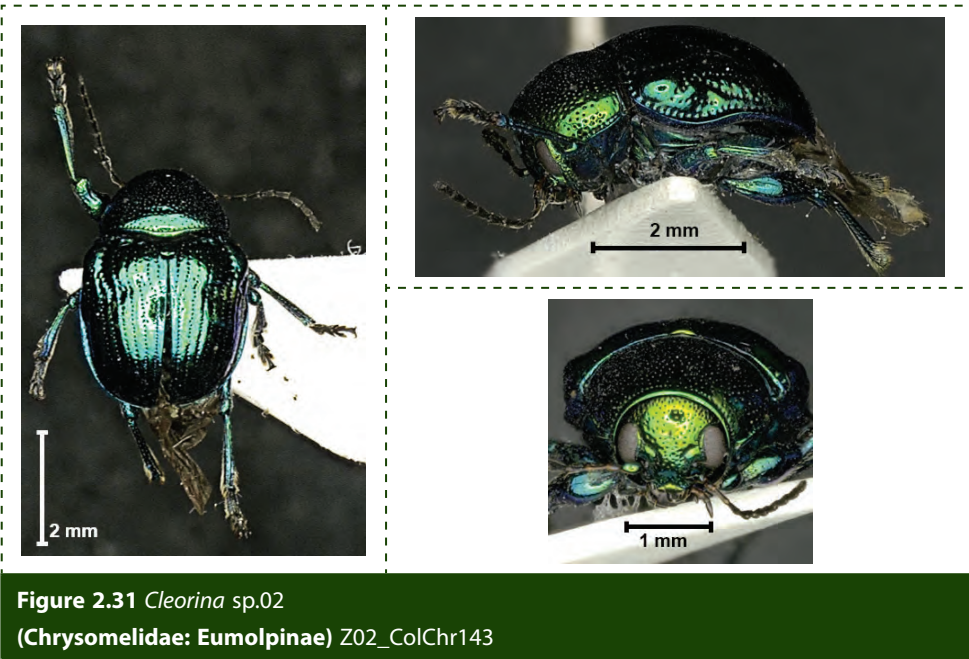


Figure 2.30 *Cleorina* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr010



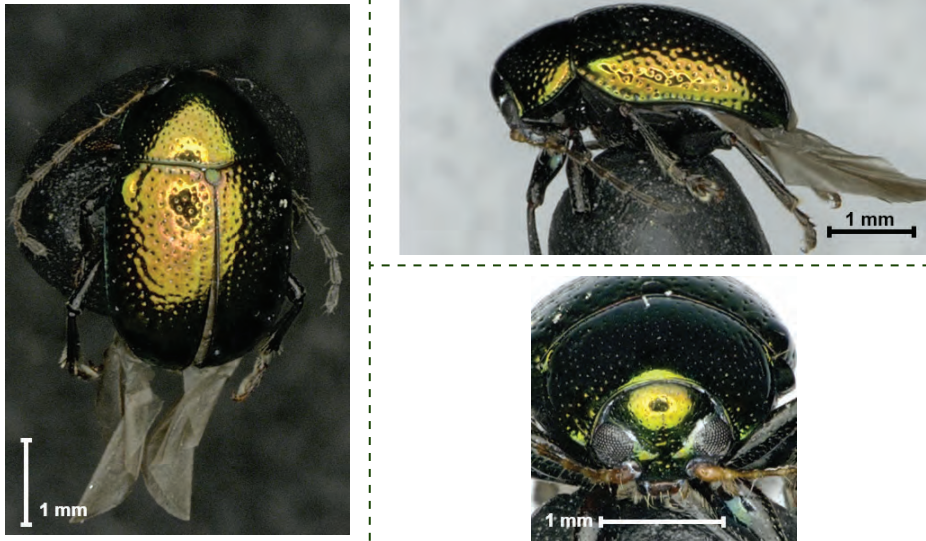


Figure 2.33 *Colaspoides* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr140

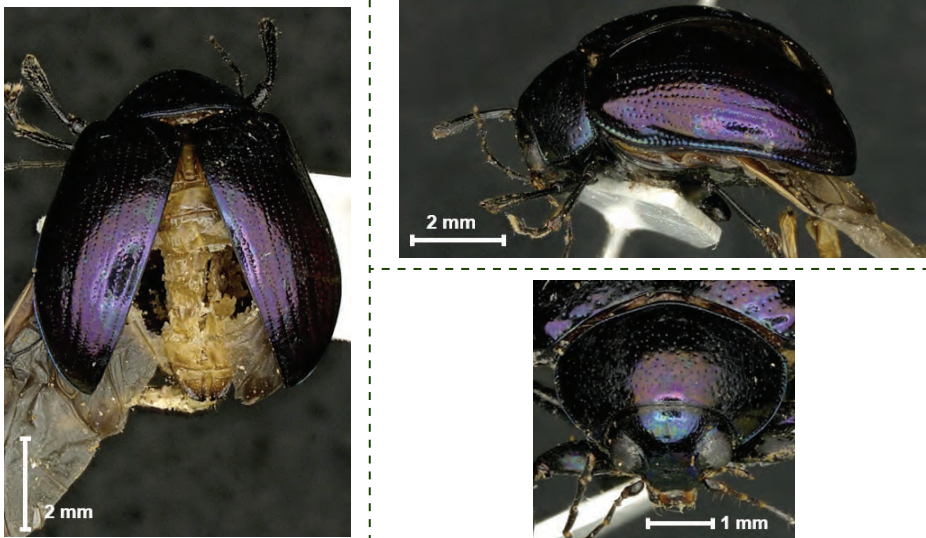


Figure 2.34 *Colaspoides* sp.03
(Chrysomelidae: Eumolpinae) Z02_ColChr168

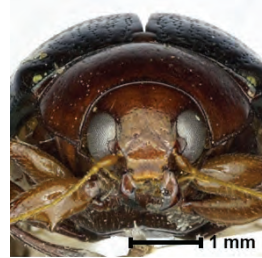


Figure 2.35 *Colaspoides* sp.04
(Chrysomelidae: Eumolpinae) Z02_ColChr180

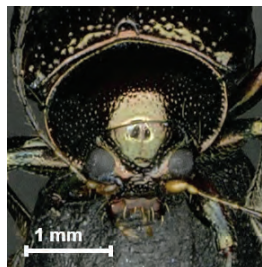
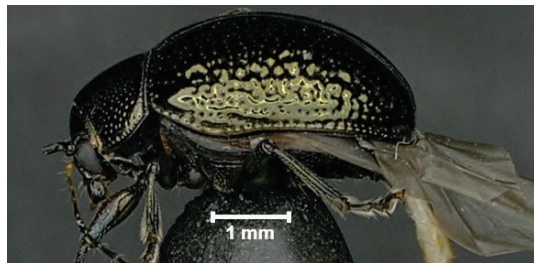


Figure 2.36 *Colaspoides* sp.05
(Chrysomelidae: Eumolpinae) Z02_ColChr052

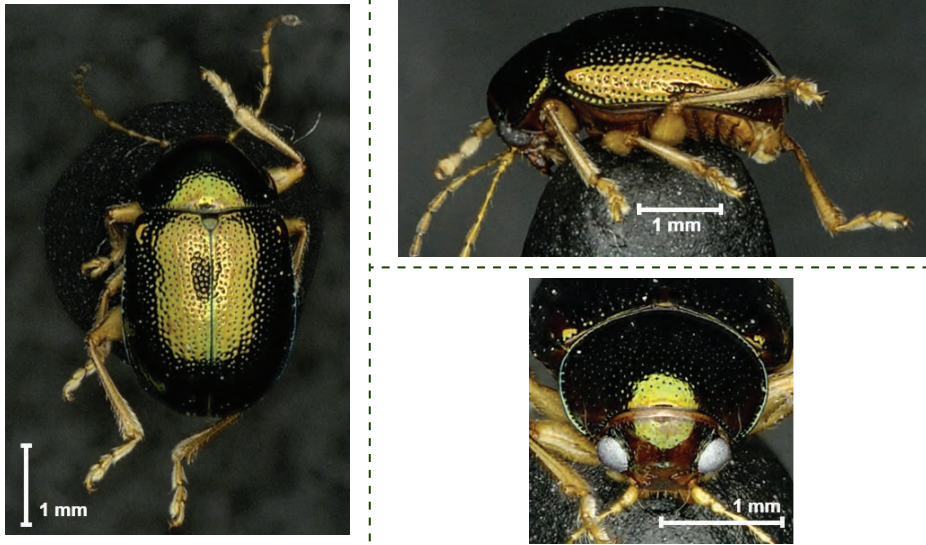


Figure 2.37 *Colaspoides* sp.06
(Chrysomelidae: Eumolpinae) Z02_ColChr053

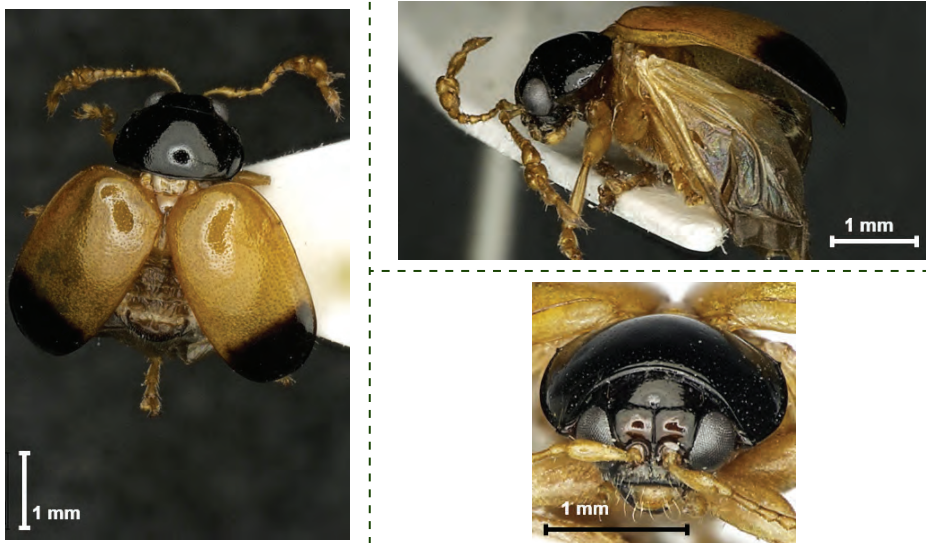
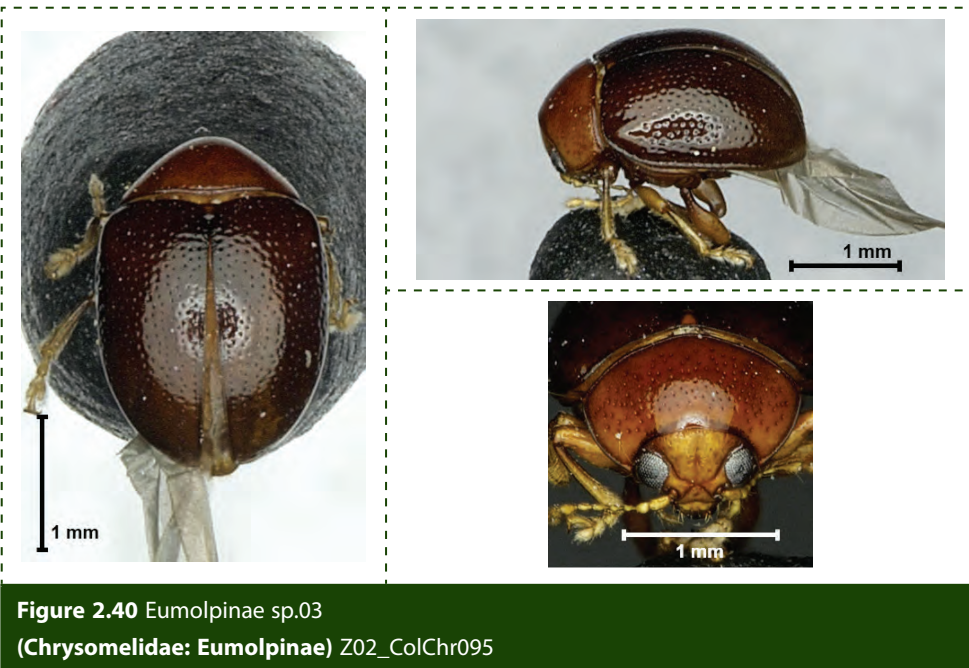


Figure 2.38 *Eumolpinae* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr147



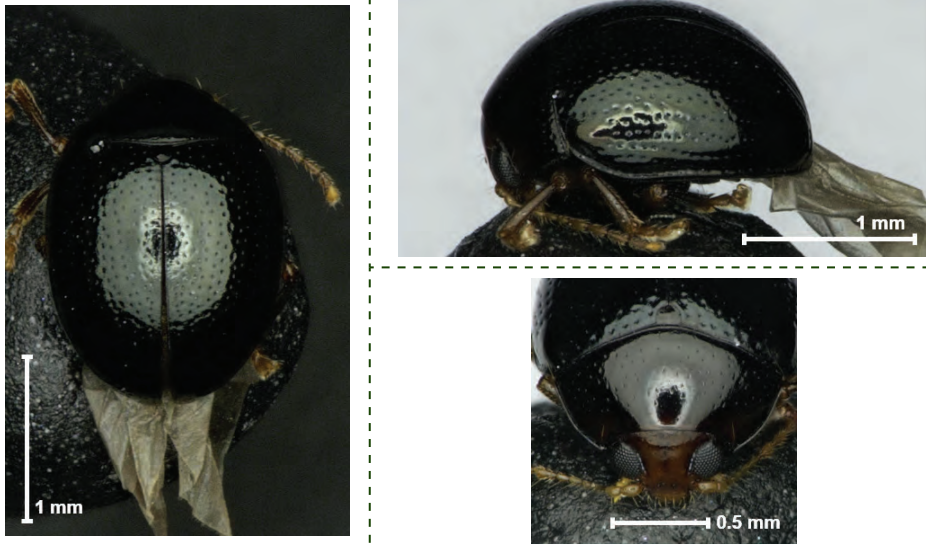


Figure 2.41 *Nodina* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr007

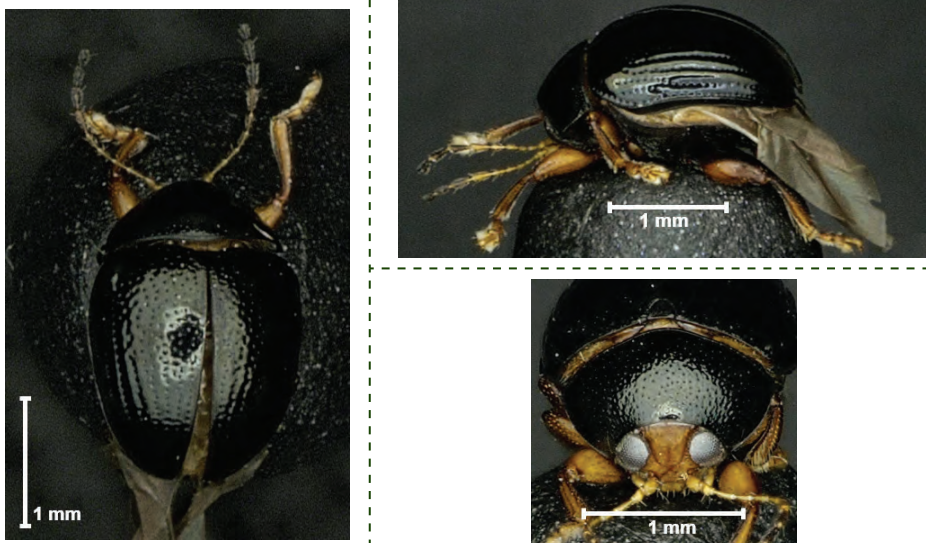


Figure 2.42 *Nodina* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr118

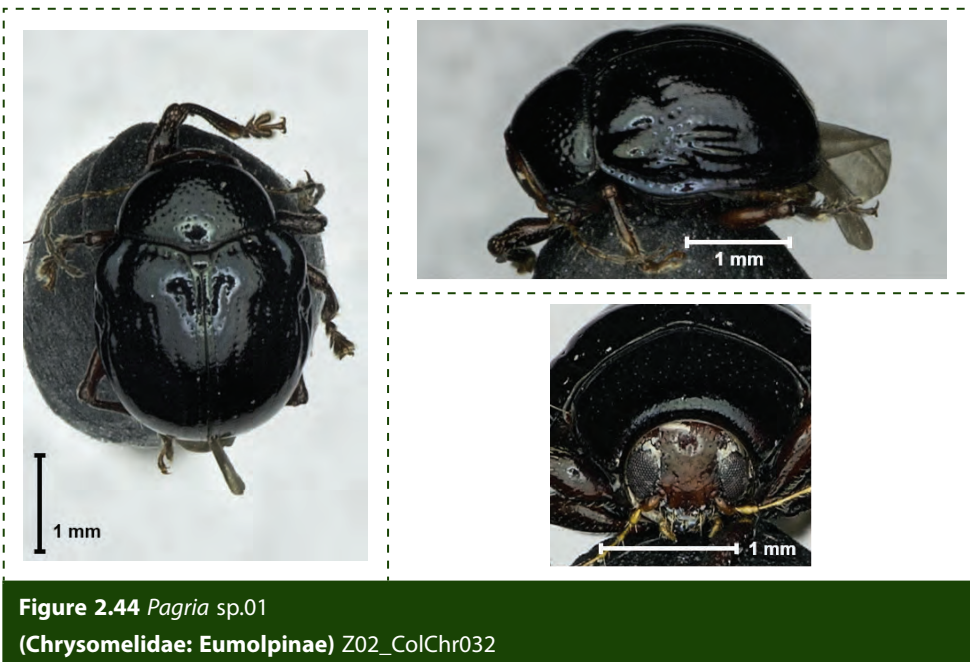
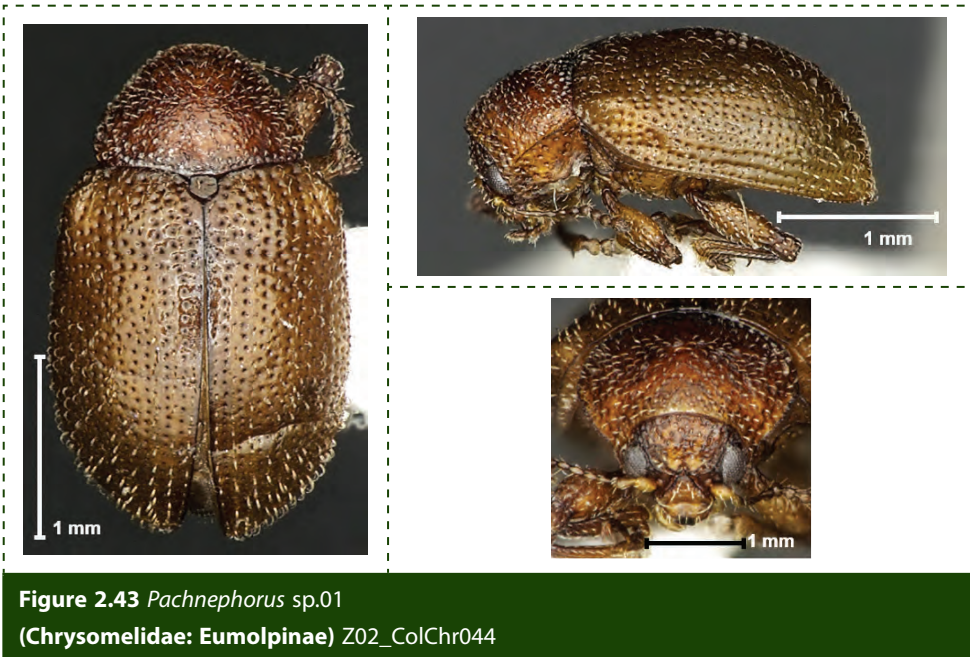




Figure 2.45 *Phytorus* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr011

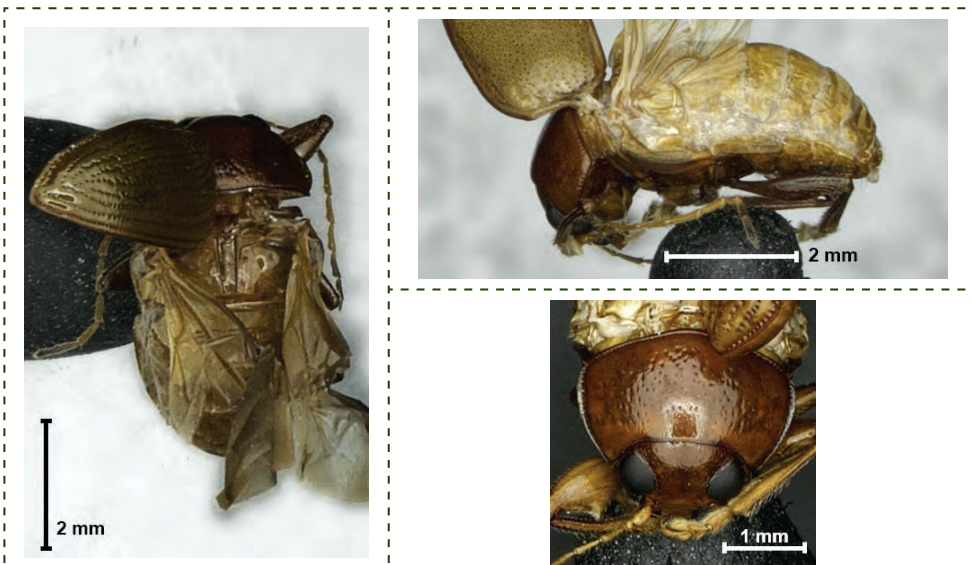
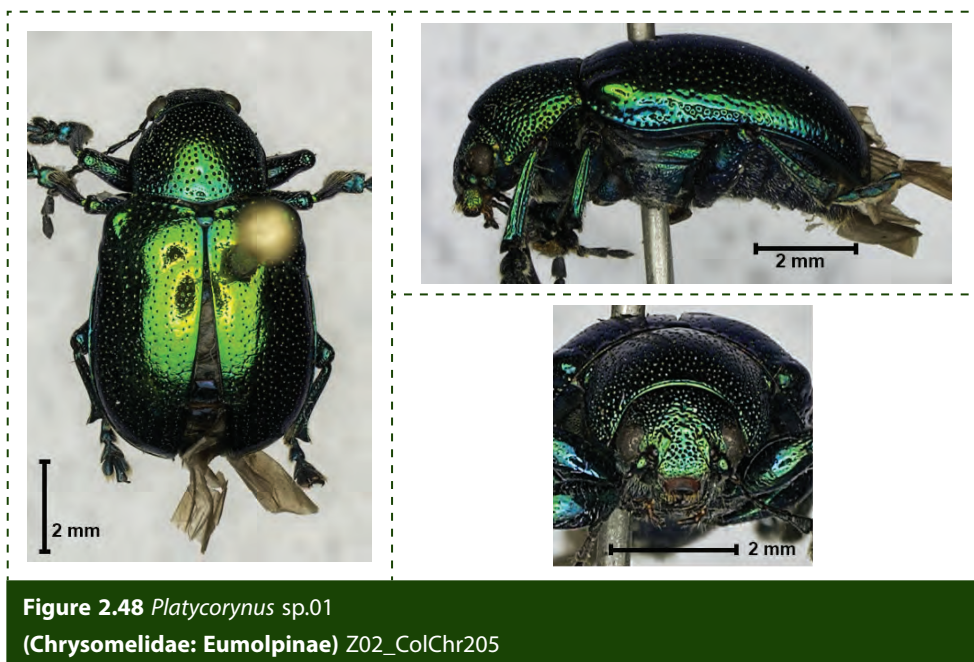
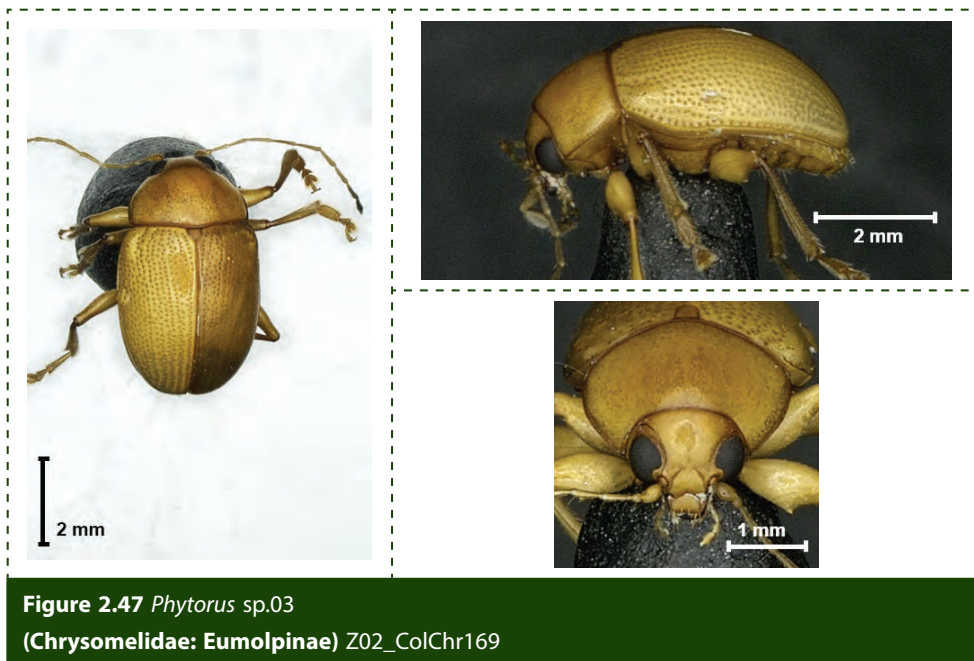


Figure 2.46 *Phytorus* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr181



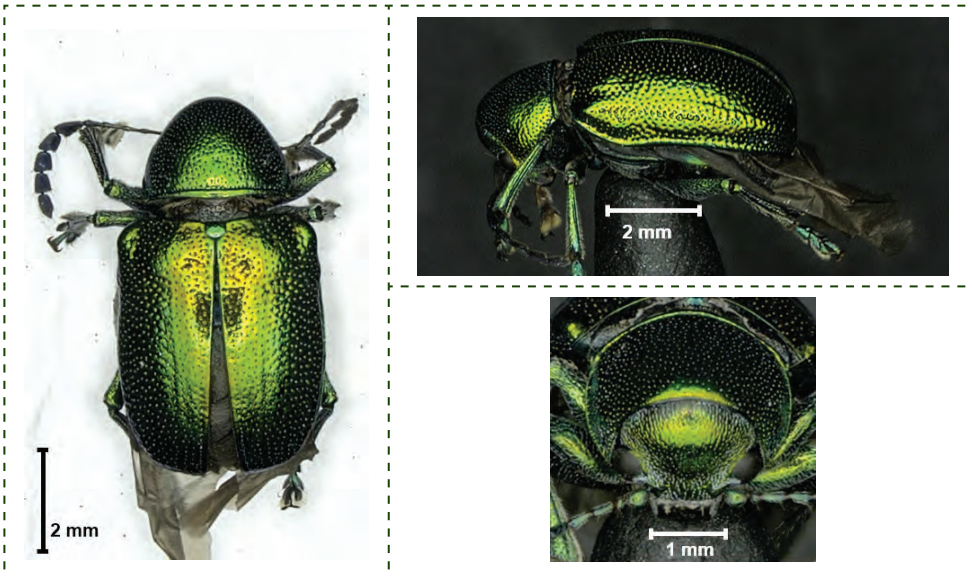


Figure 2.49 *Platycorynus* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr101

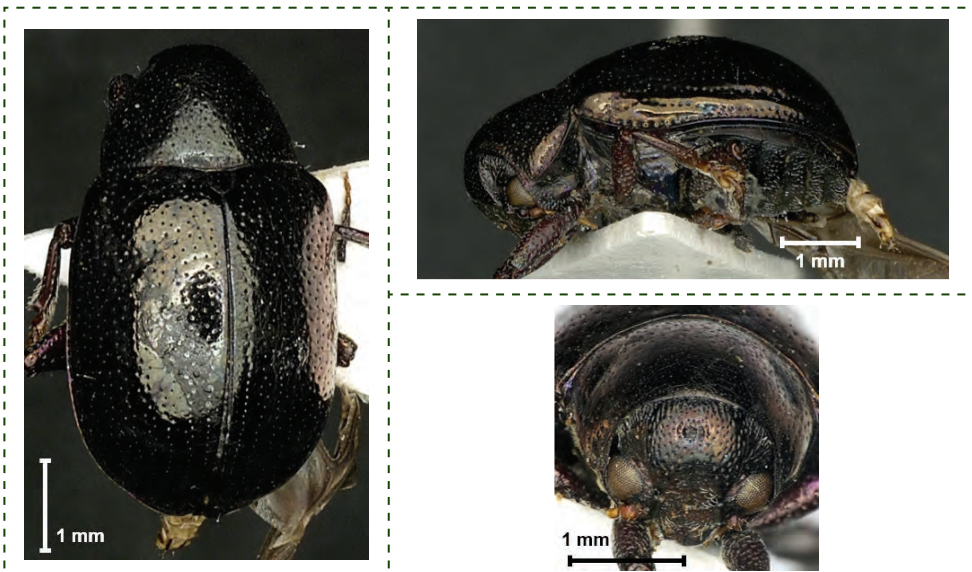


Figure 2.50 *Platycorynus* sp.03
(Chrysomelidae: Eumolpinae) Z02_ColChr186

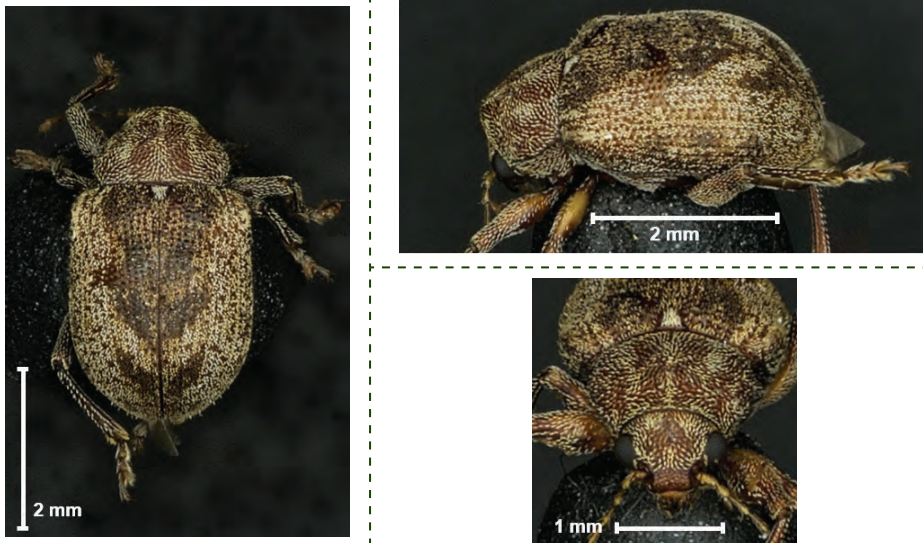


Figure 2.51 *Pseudometaxis* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr072

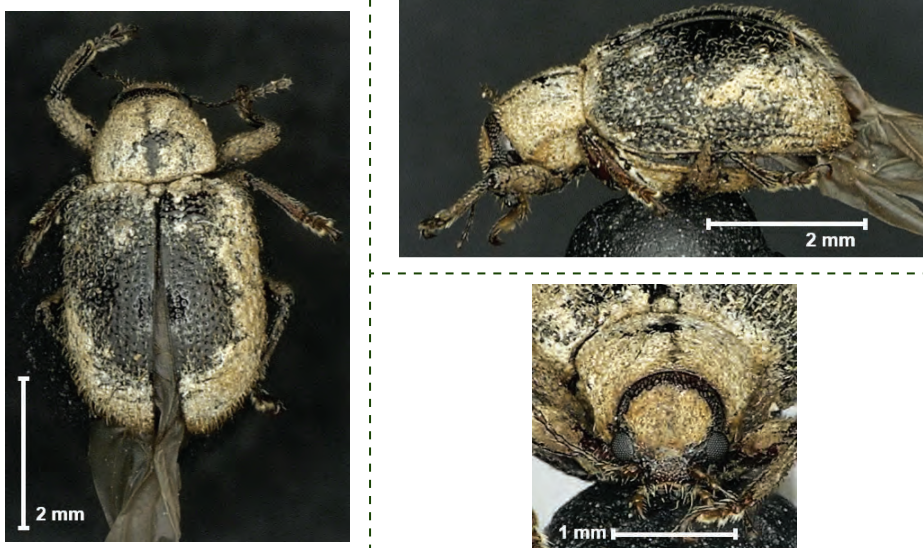


Figure 2.52 *Pseudopiomera* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr048



Figure 2.53 *Trichochrysea* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr102



Figure 2.54 *Trichochrysea* sp.02
(Chrysomelidae: Eumolpinae) Z02_ColChr068

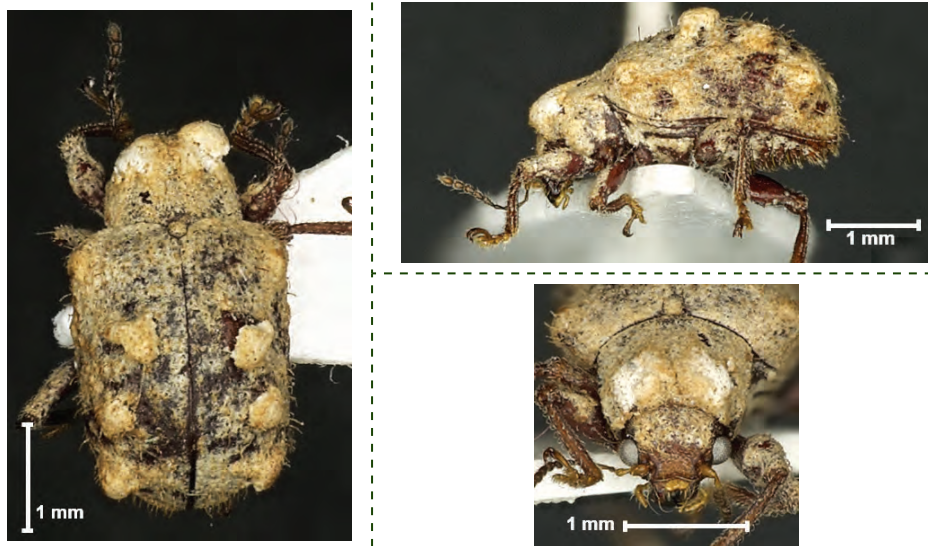


Figure 2.55 *Xanthonia* sp.01
(Chrysomelidae: Eumolpinae) Z02_ColChr103



Figure 2.56 *Agelastica* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr120

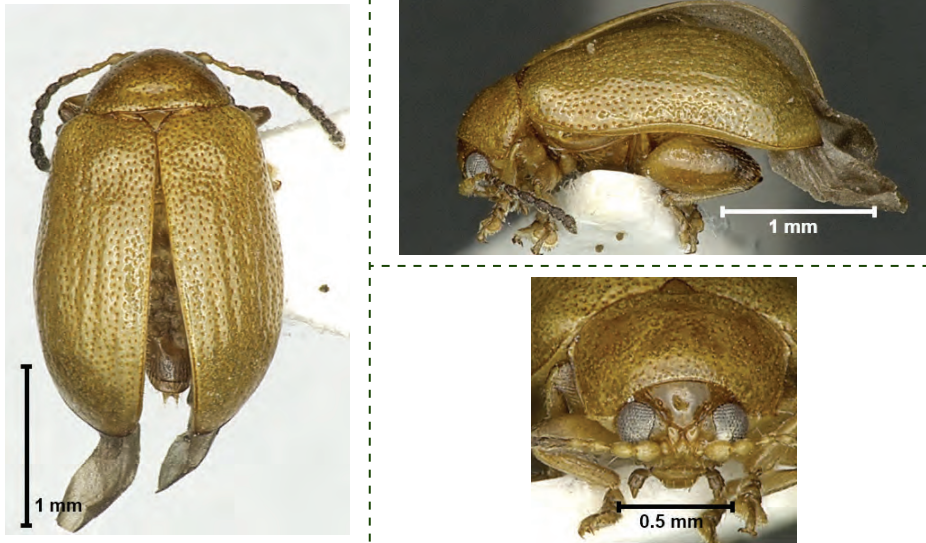


Figure 2.57 *Aphthona* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr218

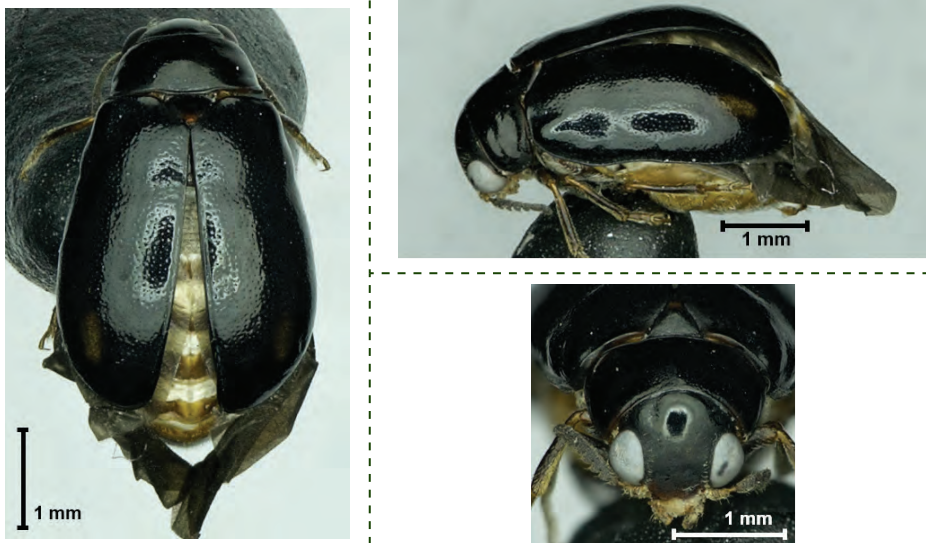


Figure 2.58 *Aphthona* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr026

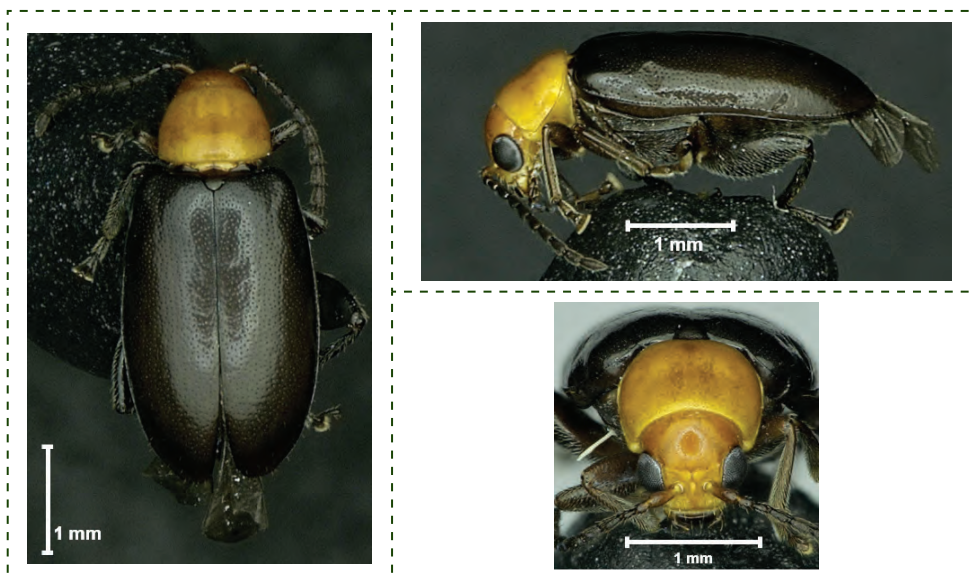


Figure 2.59 *Aphthona* sp.03

(Chrysomelidae: Galerucinae) Z02_ColChr145

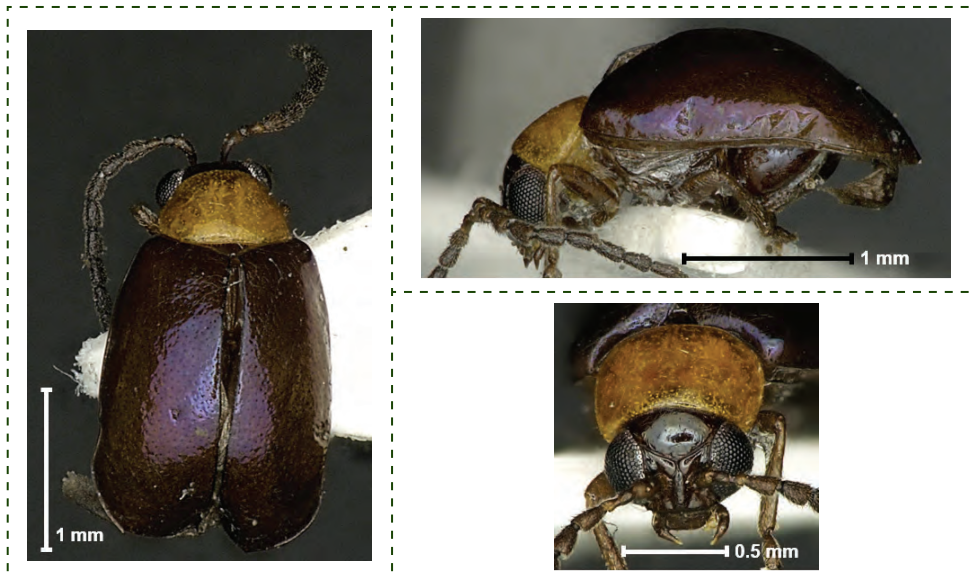


Figure 2.60 *Aphthona* sp.04

(Chrysomelidae: Galerucinae) Z02_ColChr009

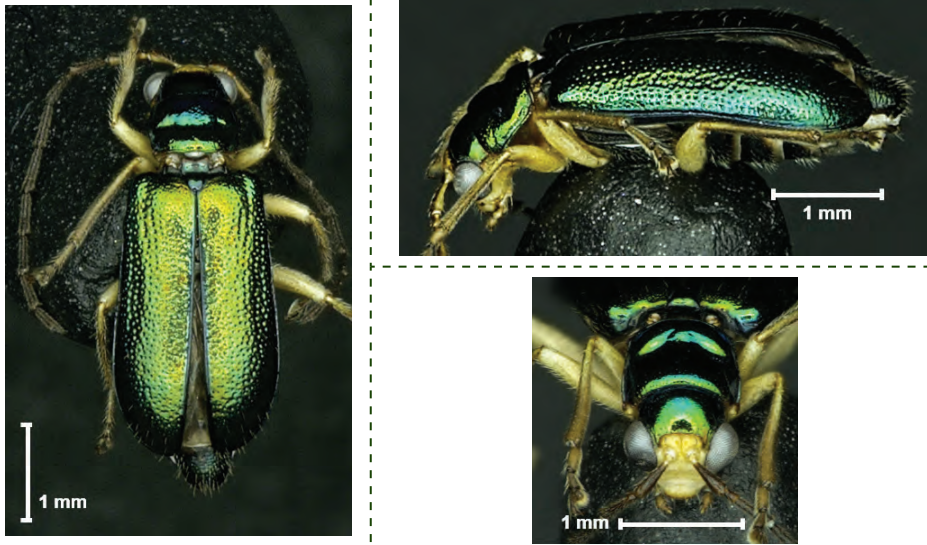


Figure 2.61 *Apophyllia* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr063



Figure 2.62 *Arthrotus* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr194

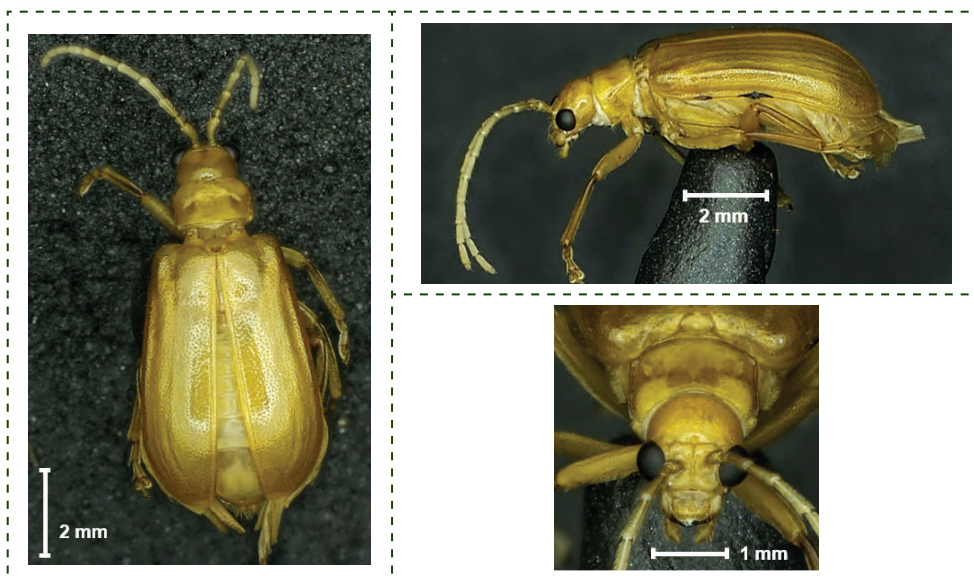


Figure 2.63 *Aulacophora* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr081

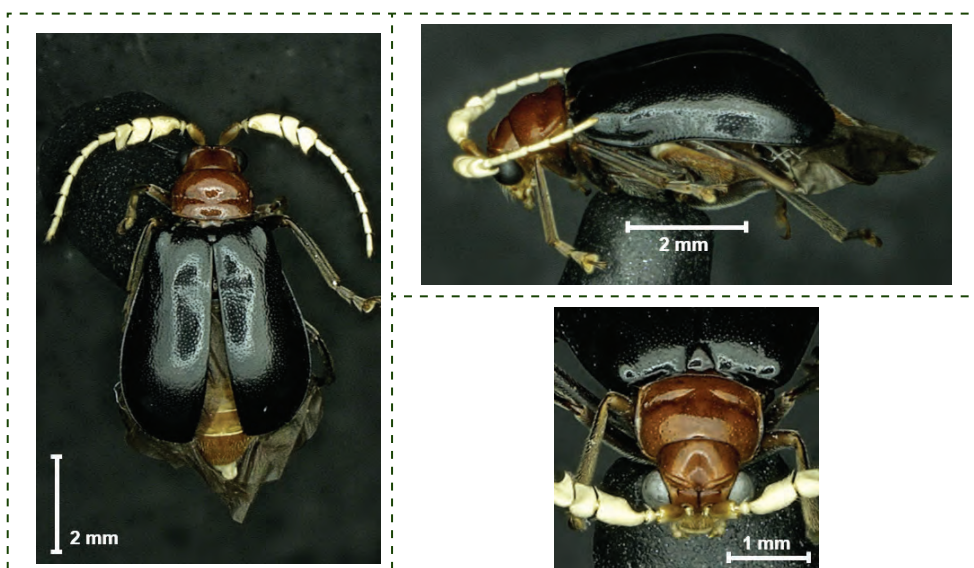


Figure 2.64 *Aulacophora* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr119

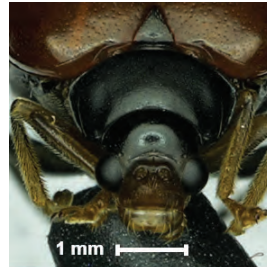
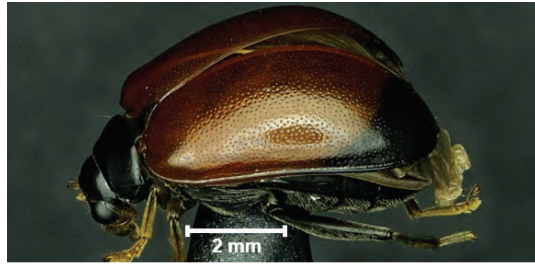


Figure 2.65 *Aulacophora* sp.03
(Chrysomelidae: Galerucinae) Z02_ColChr135

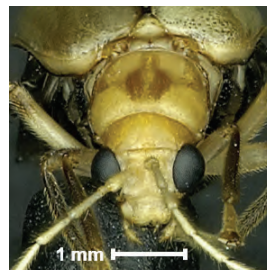


Figure 2.66 *Aulacophora* sp.04
(Chrysomelidae: Galerucinae) Z02_ColChr144

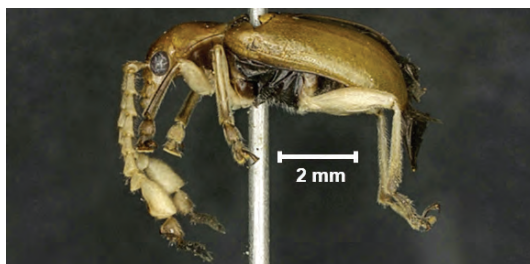


Figure 2.67 *Aulacophora* sp.05
(Chrysomelidae: Galerucinae) Z02_ColChr203



Figure 2.68 *Aulacophora* sp.06
(Chrysomelidae: Galerucinae) Z02_ColChr211

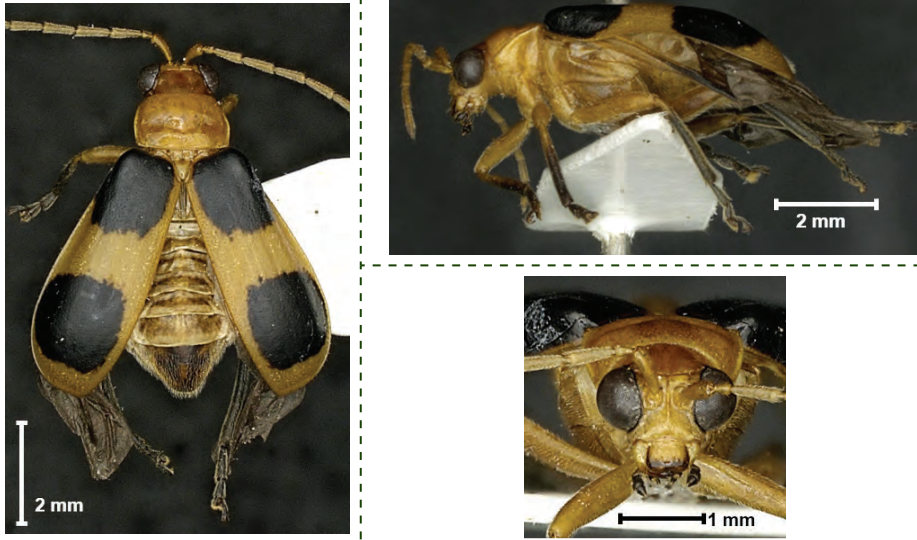


Figure 2.69 *Aulacophora* sp.07
(Chrysomelidae: Galerucinae) Z02_ColChr082

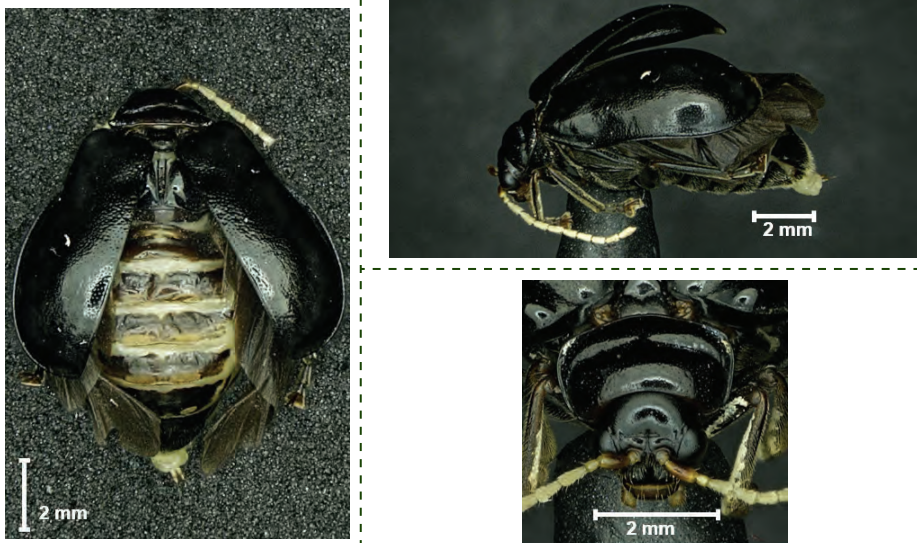


Figure 2.70 *Aulacophora* sp.08
(Chrysomelidae: Galerucinae) Z02_ColChr083

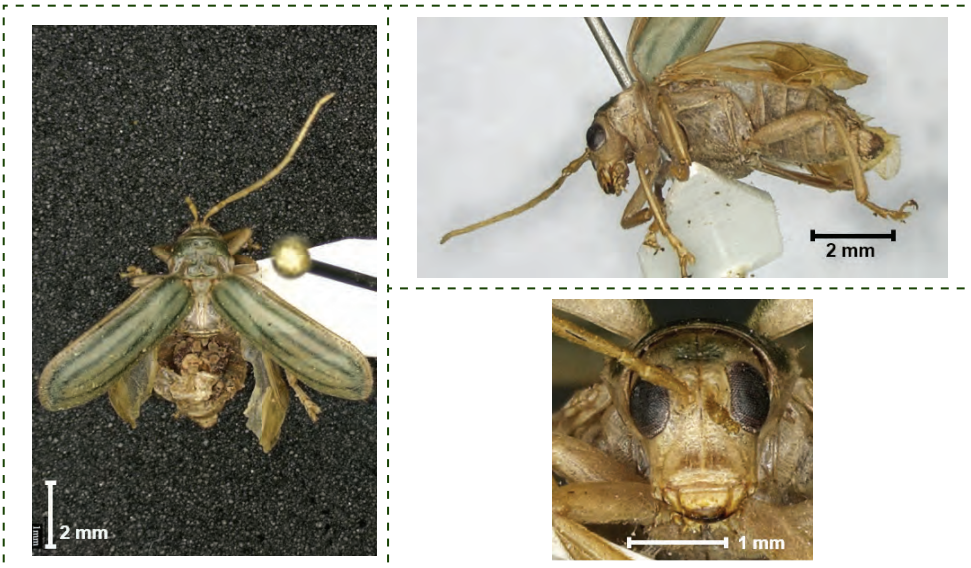


Figure 2.71 *Aulacophora* sp.09
(Chrysomelidae: Galerucinae) Z02_ColChr202

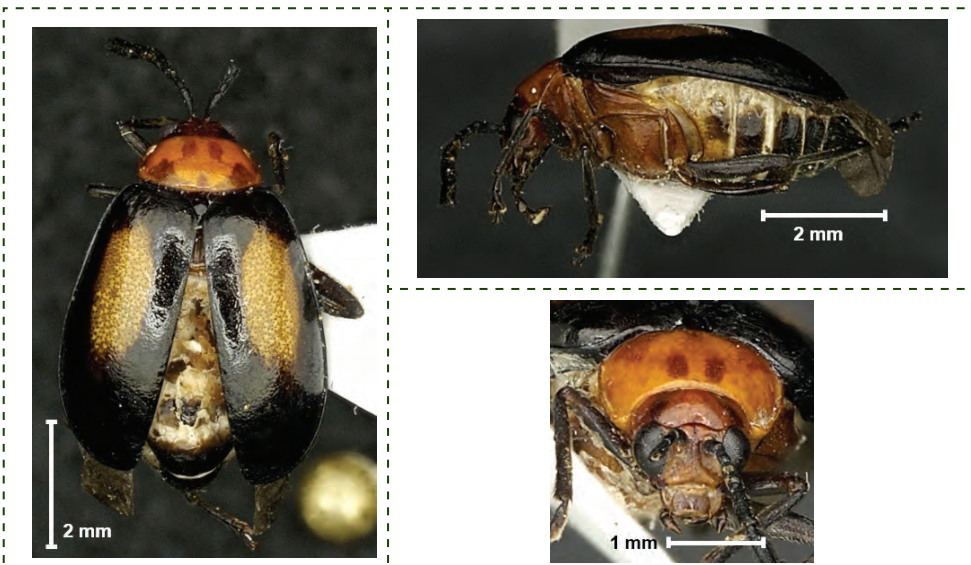


Figure 2.72 *Aulacophora* sp.10
(Chrysomelidae: Galerucinae) Z02_ColChr176

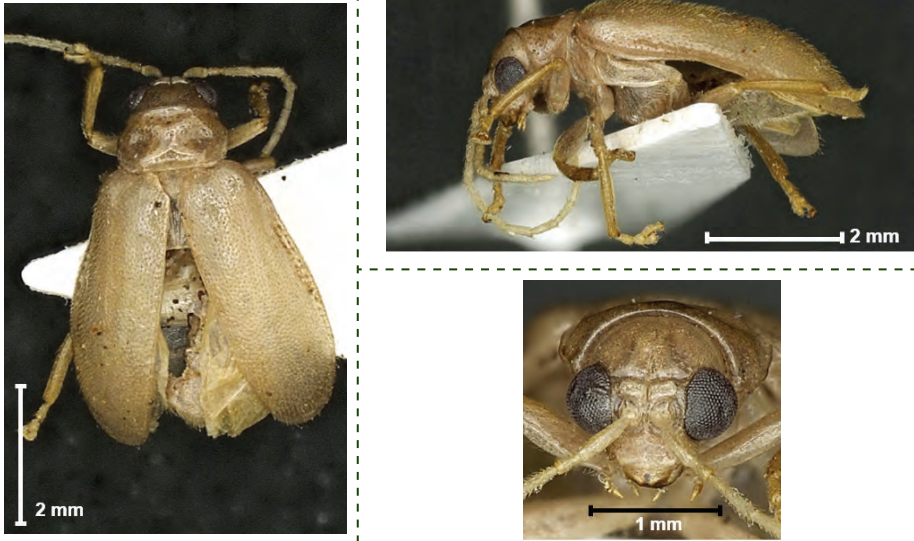


Figure 2.73 *Aulacophora* sp.11
(Chrysomelidae: Galerucinae) Z02_ColChr085

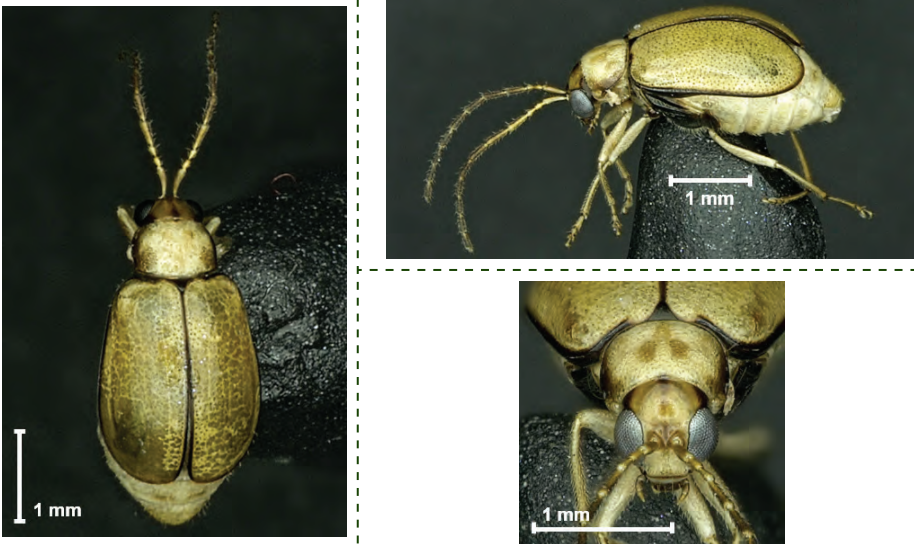


Figure 2.74 *Aulacophora* sp.12
(Chrysomelidae: Galerucinae) Z02_ColChr217

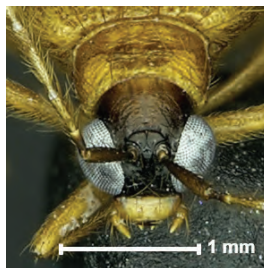


Figure 2.75 *Cynorta* sp.01

(Chrysomelidae: Galerucinae) Z02_ColChr107

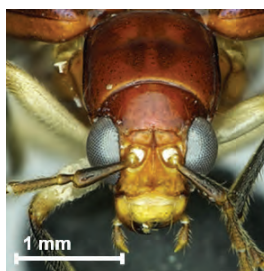


Figure 2.76 *Cynorta* sp.02

(Chrysomelidae: Galerucinae) Z02_ColChr163

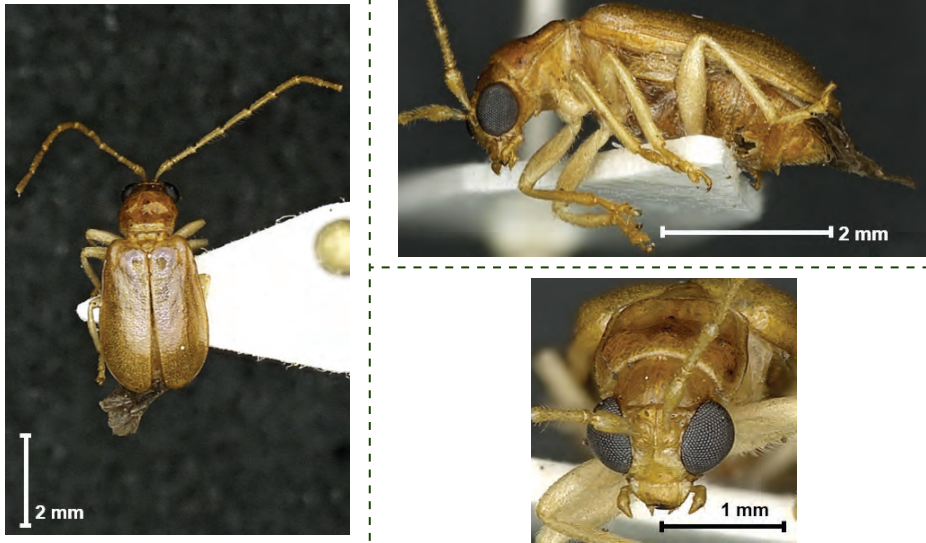


Figure 2.77 *Cynorta* sp.03
(Chrysomelidae: Galerucinae) Z02_ColChr092

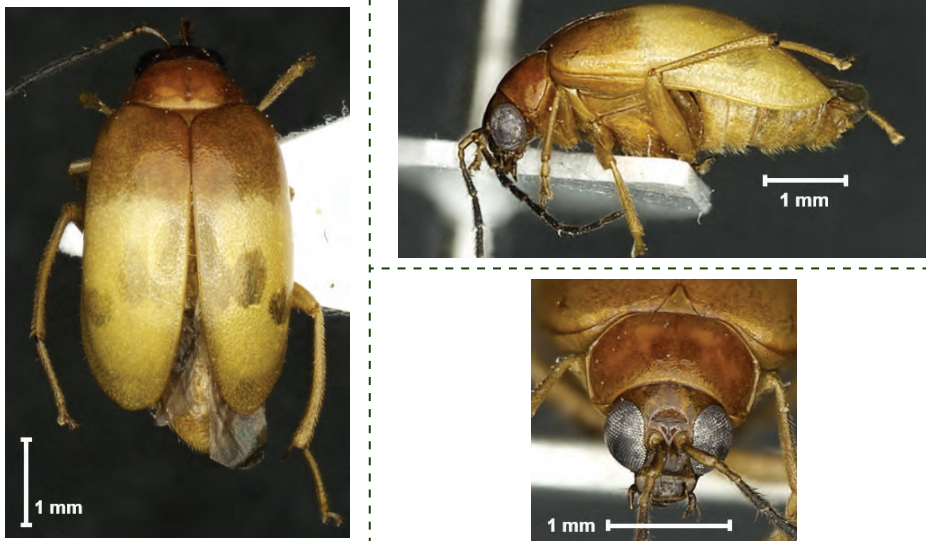
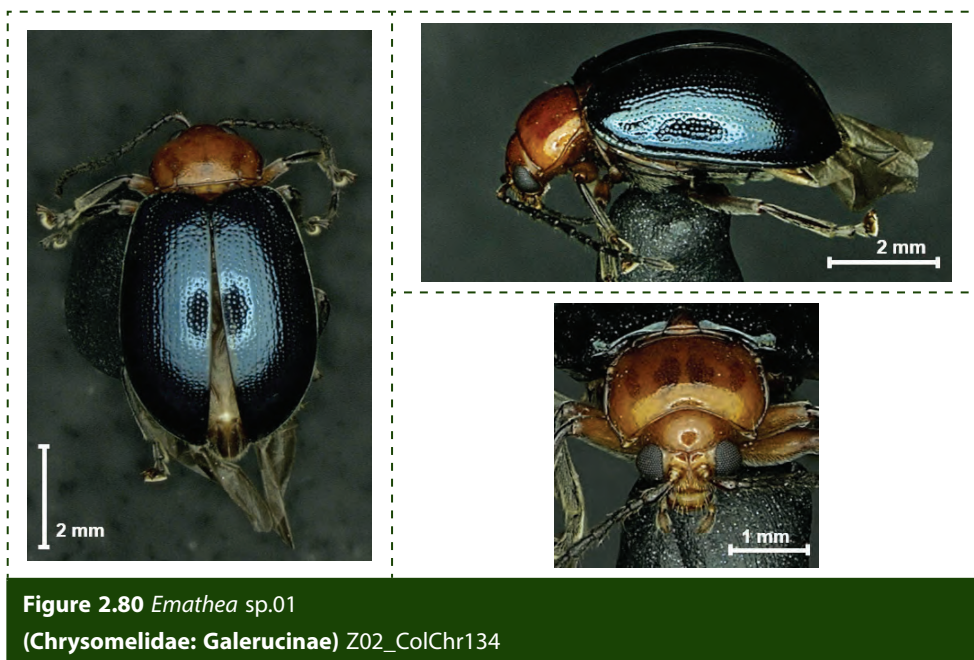
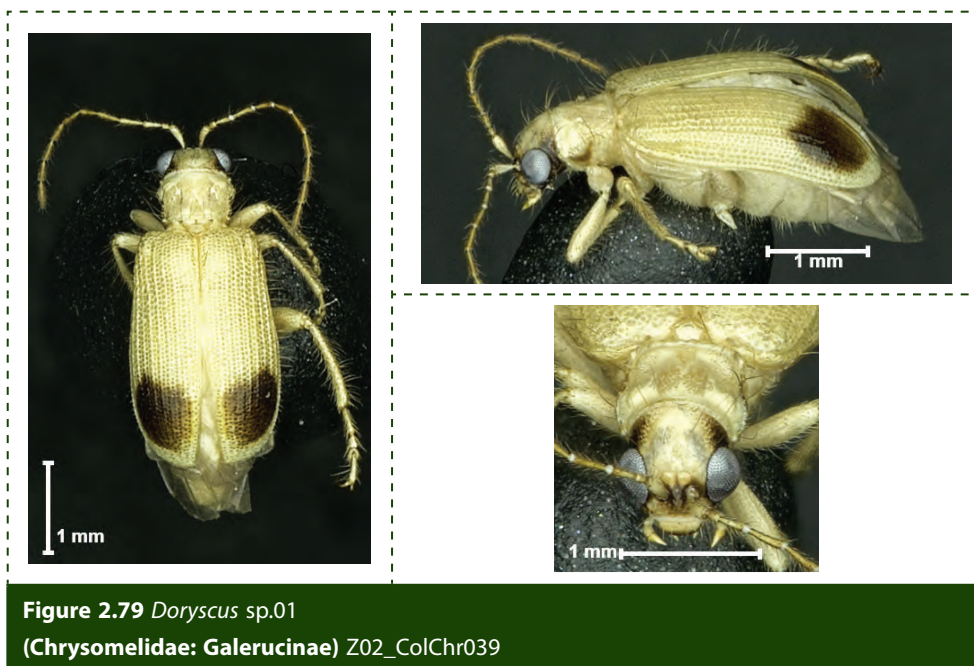


Figure 2.78 *Dercetina* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr191



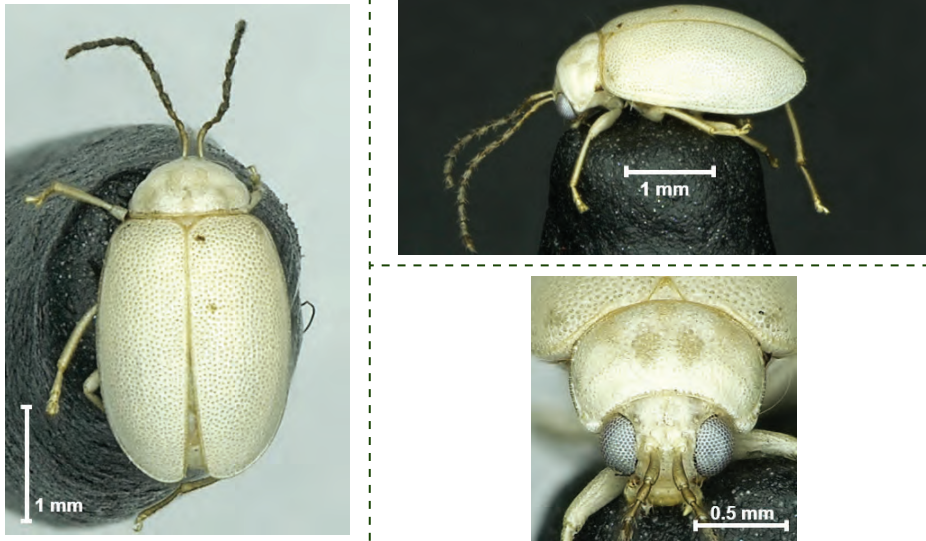


Figure 2.81 *Exora* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr046



Figure 2.82 *Galerucella* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr212

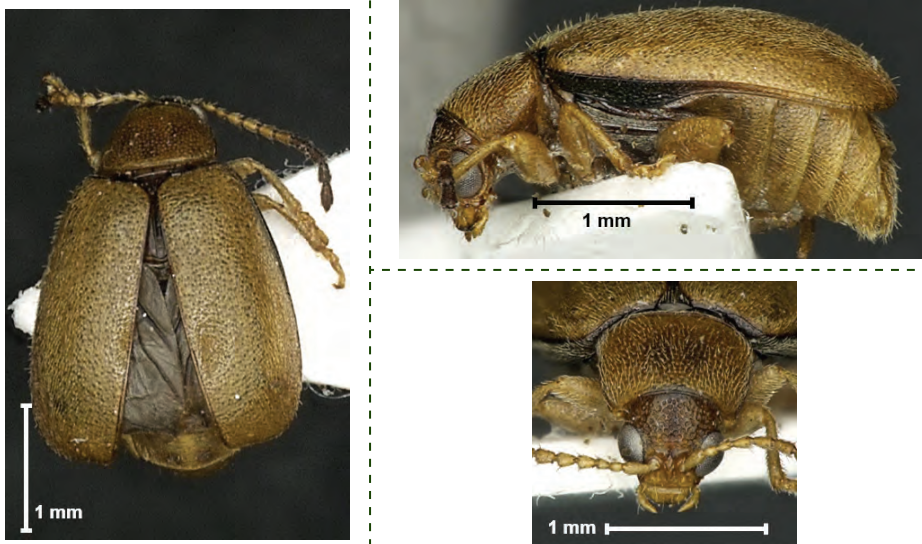


Figure 2.83 *Galerucella* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr223

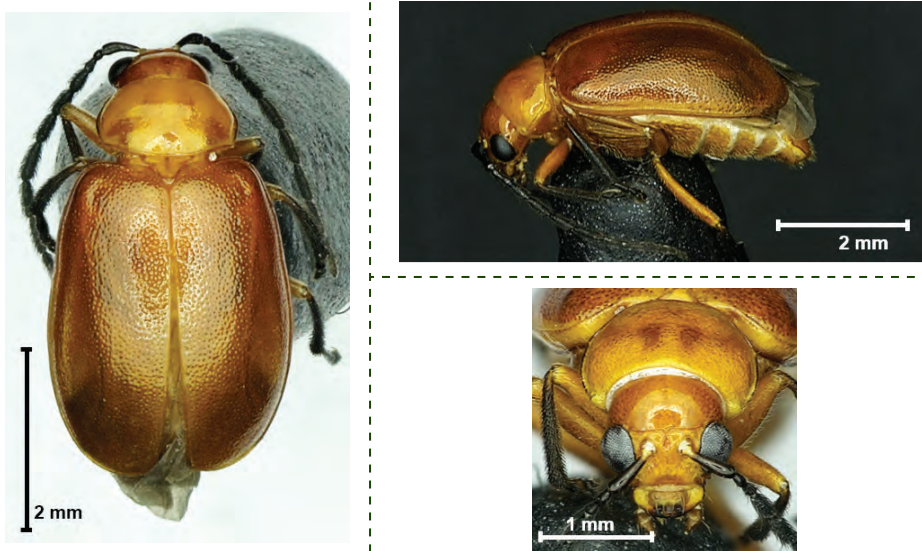


Figure 2.84 *Galerucella* sp.03
(Chrysomelidae: Galerucinae) Z02_ColChr029

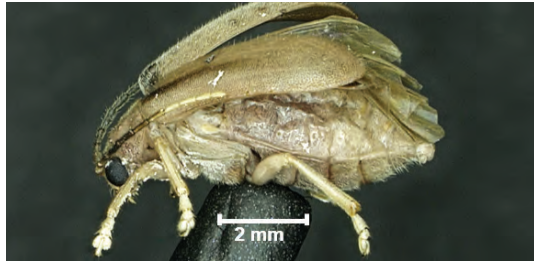


Figure 2.85 *Galerucella* sp.04
(Chrysomelidae: Galerucinae) Z02_ColChr065



Figure 2.86 *Galerucella* sp.05
(Chrysomelidae: Galerucinae) Z02_ColChr179

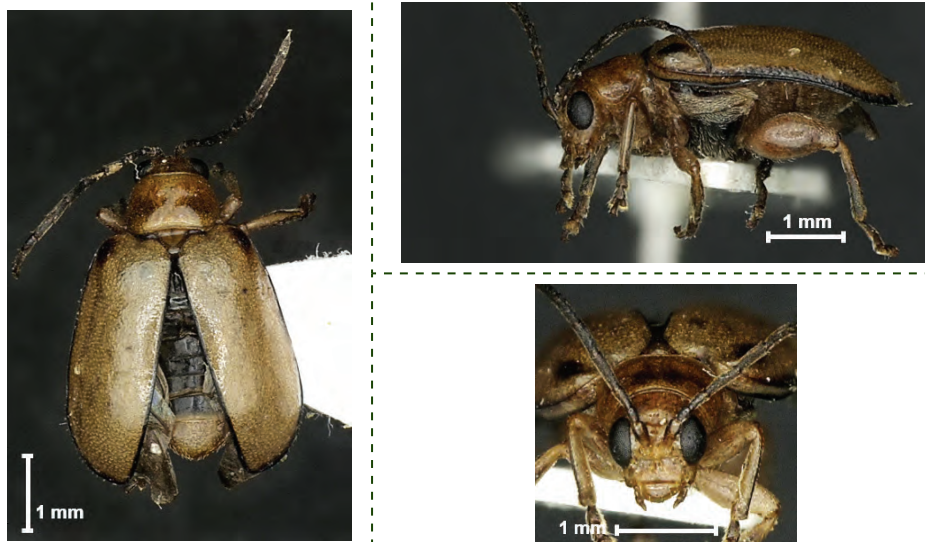


Figure 2.87 Galerucinae sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr206



Figure 2.88 Galerucinae sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr001

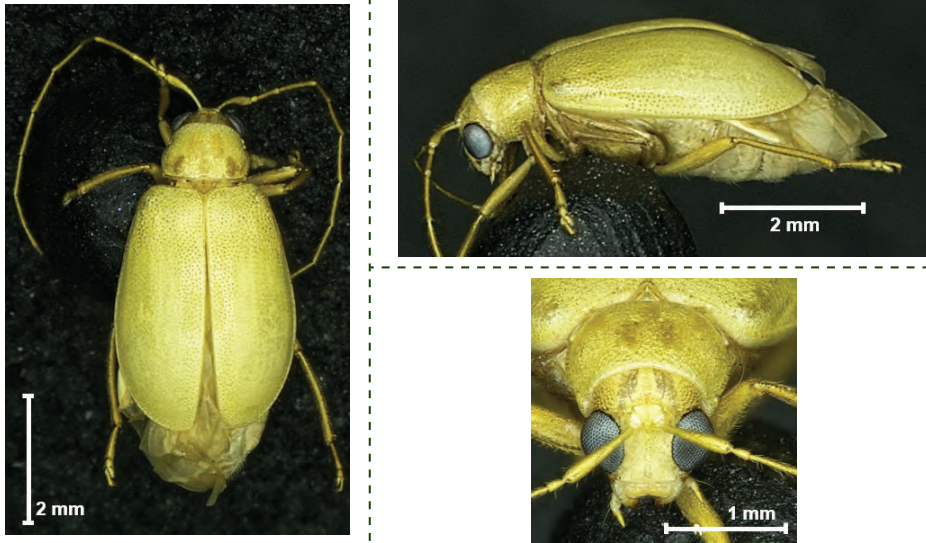


Figure 2.89 Galerucinae sp.03
(Chrysomelidae: Galerucinae) Z02_ColChr024

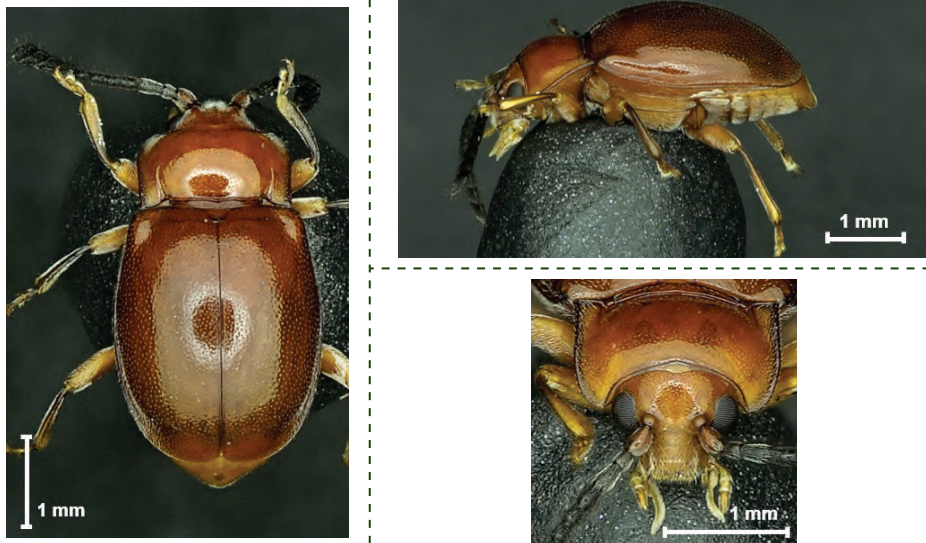


Figure 2.90 Galerucinae sp.04
(Chrysomelidae: Galerucinae) Z02_ColChr064

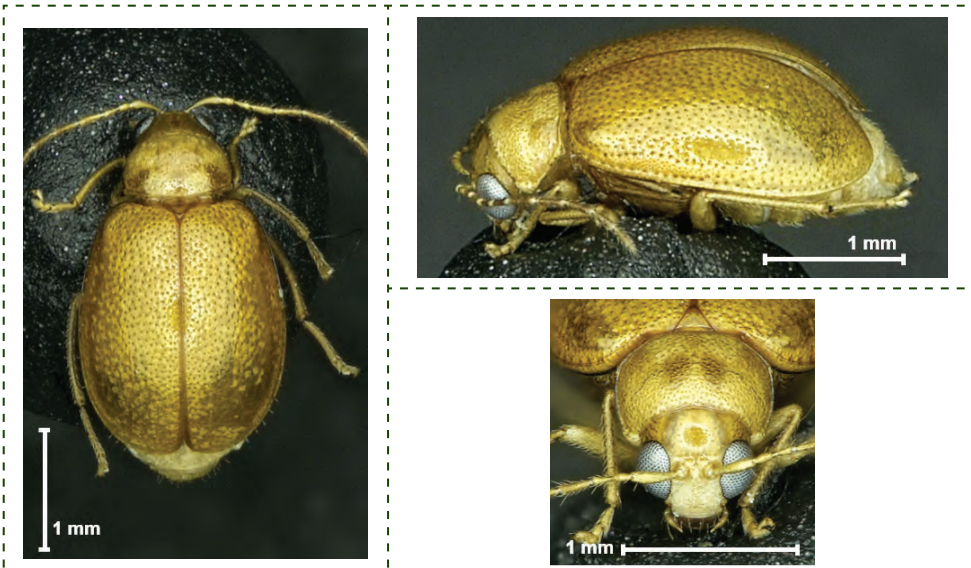


Figure 2.91 Galerucinae sp.05
(Chrysomelidae: Galerucinae) Z02_ColChr037

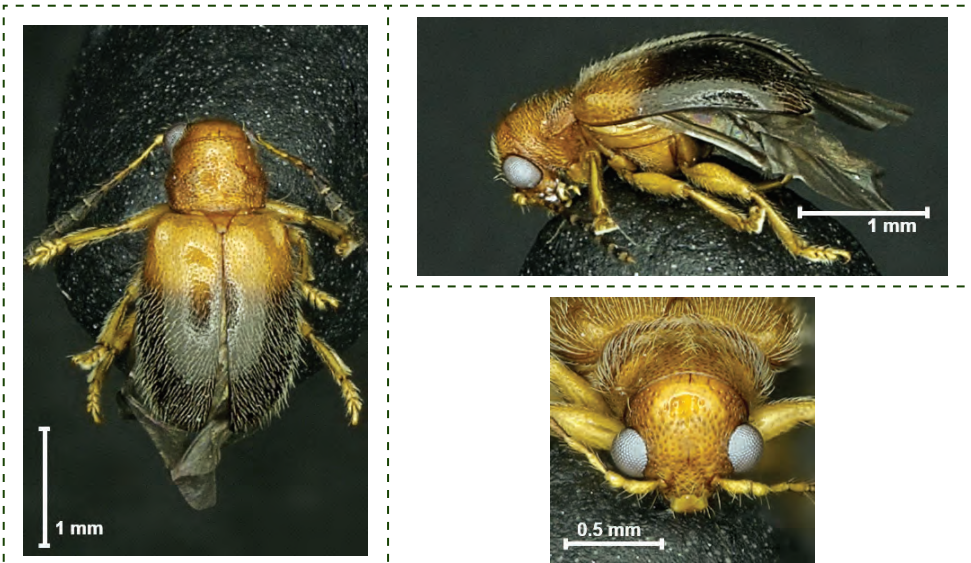


Figure 2.92 Galerucinae sp.06
(Chrysomelidae: Galerucinae) Z02_ColChr238



Figure 2.93 Galerucinae sp.07
(Chrysomelidae: Galerucinae) Z02_ColChr239

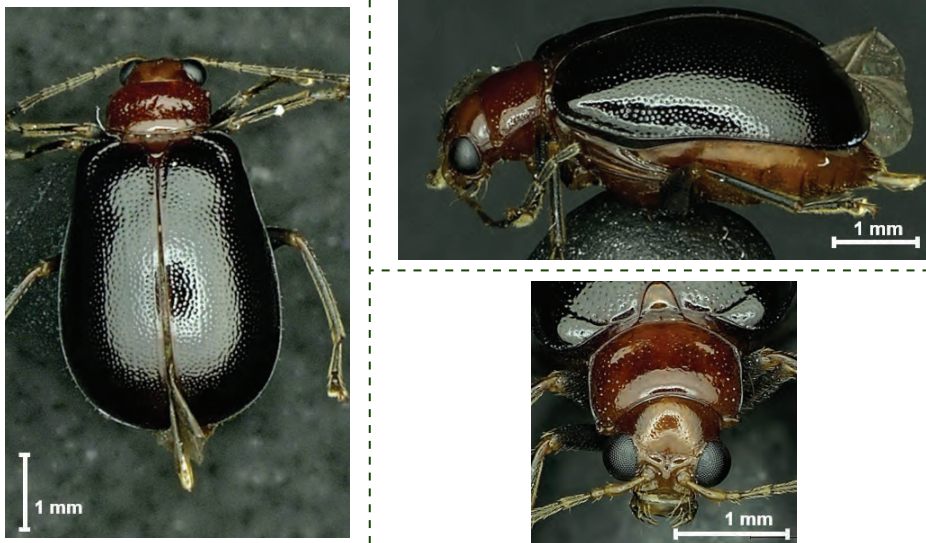


Figure 2.94 Galerucinae sp.08
(Chrysomelidae: Galerucinae) Z02_ColChr022

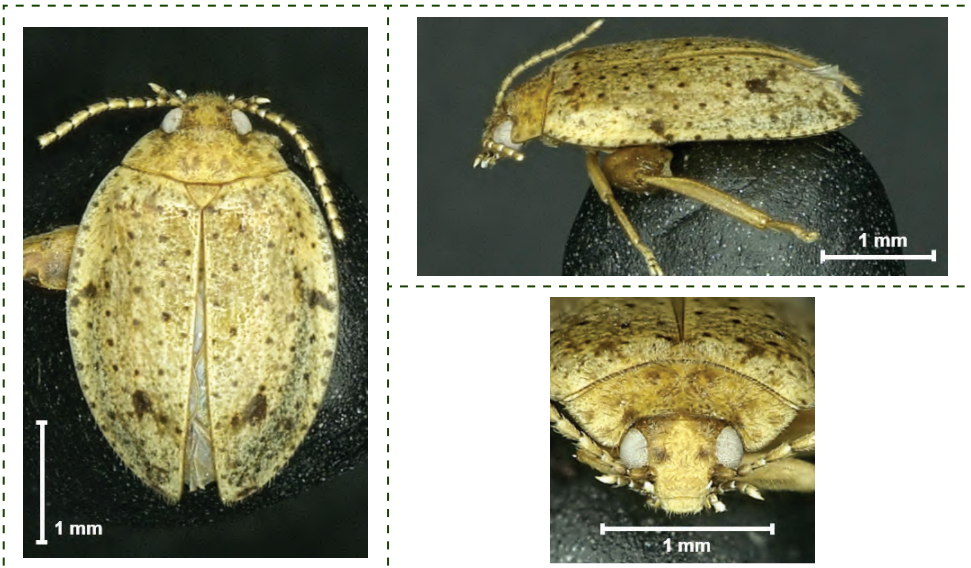


Figure 2.95 *Hemipyxis* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr104

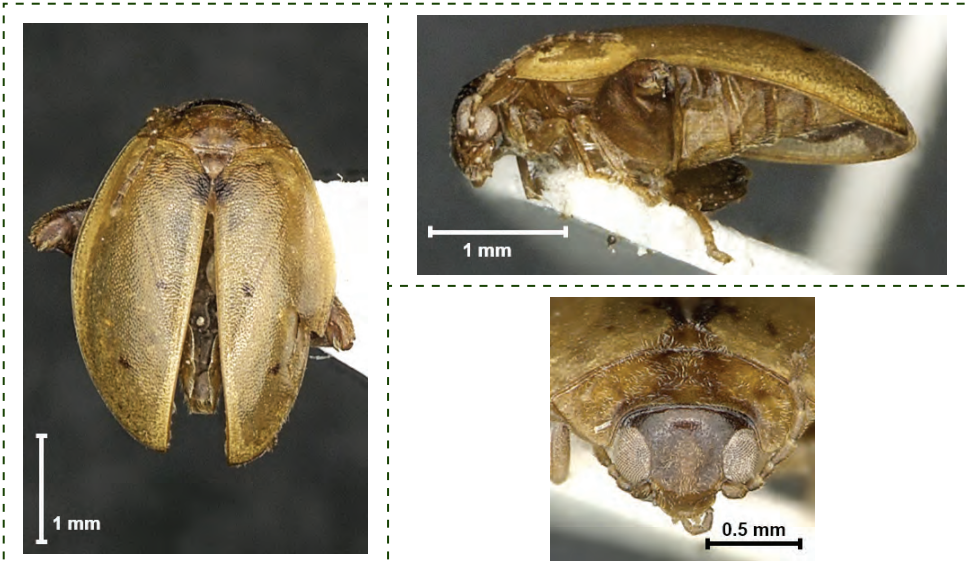


Figure 2.96 *Hemipyxis* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr221

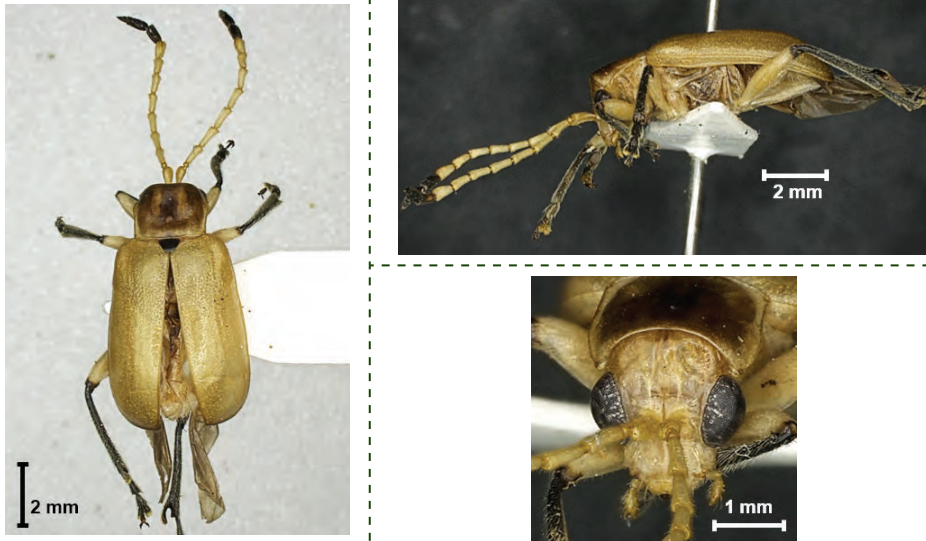


Figure 2.97 *Hoplasoma* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr091

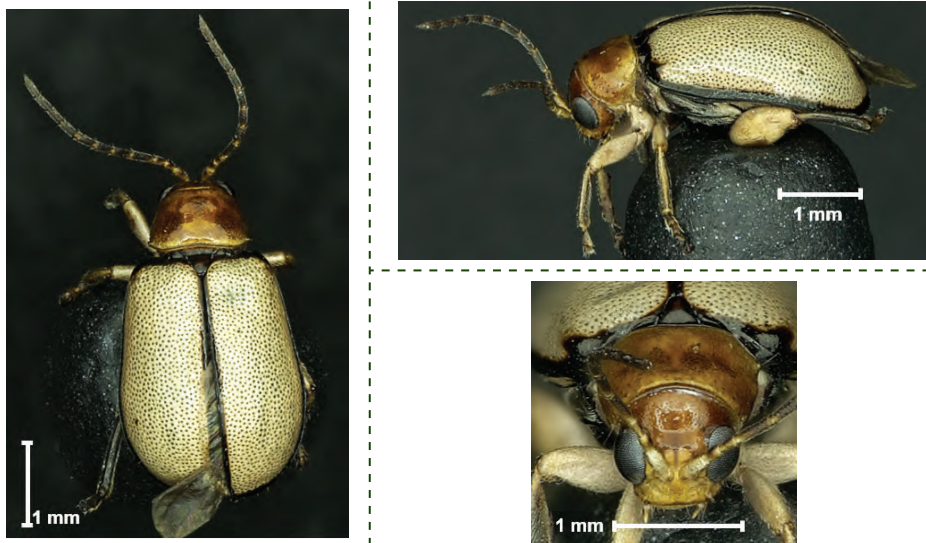
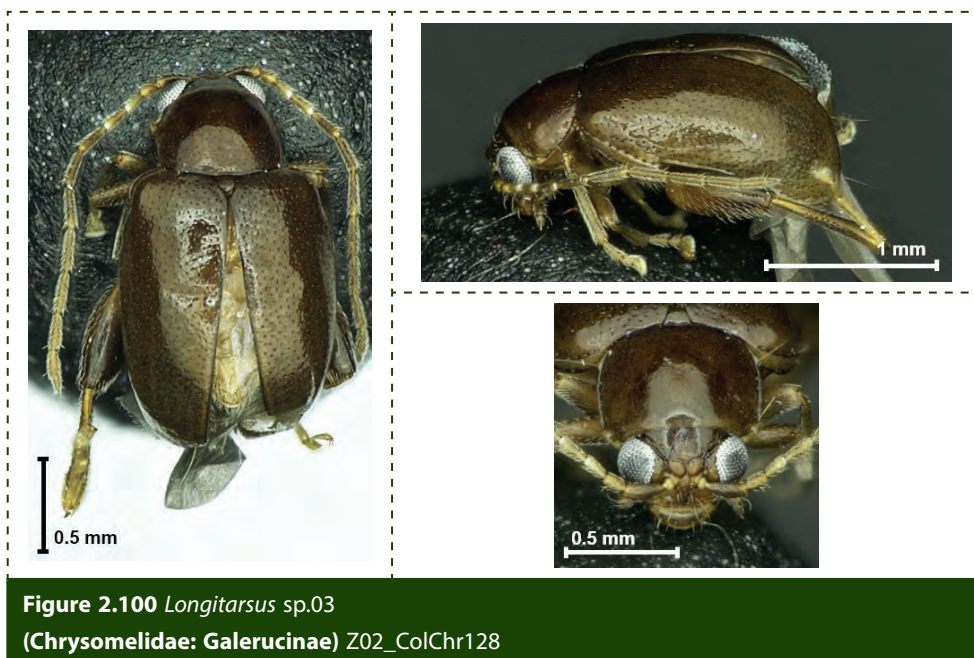
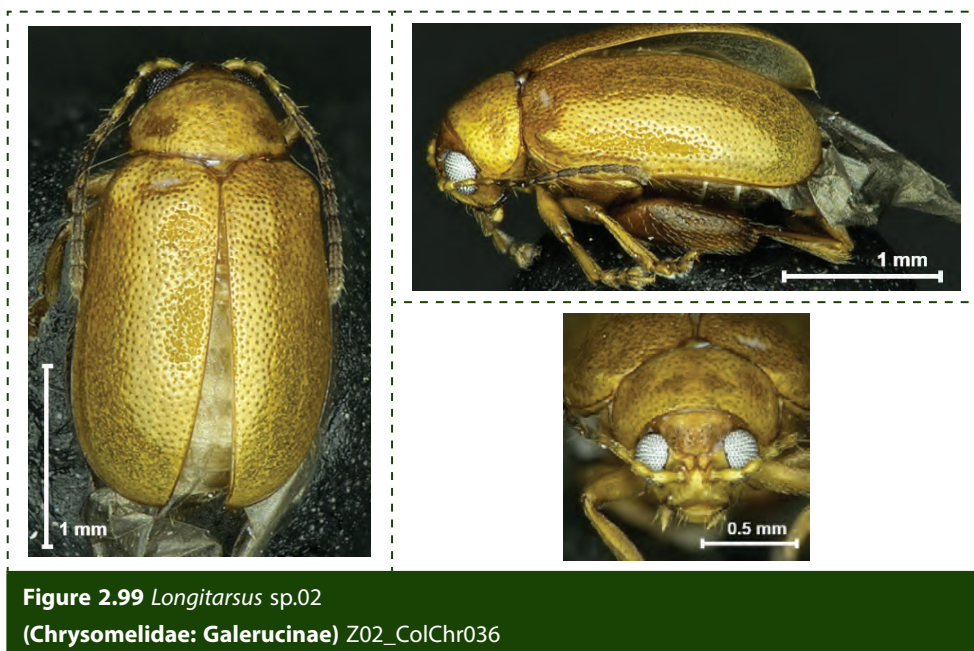


Figure 2.98 *Longitarsus* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr033



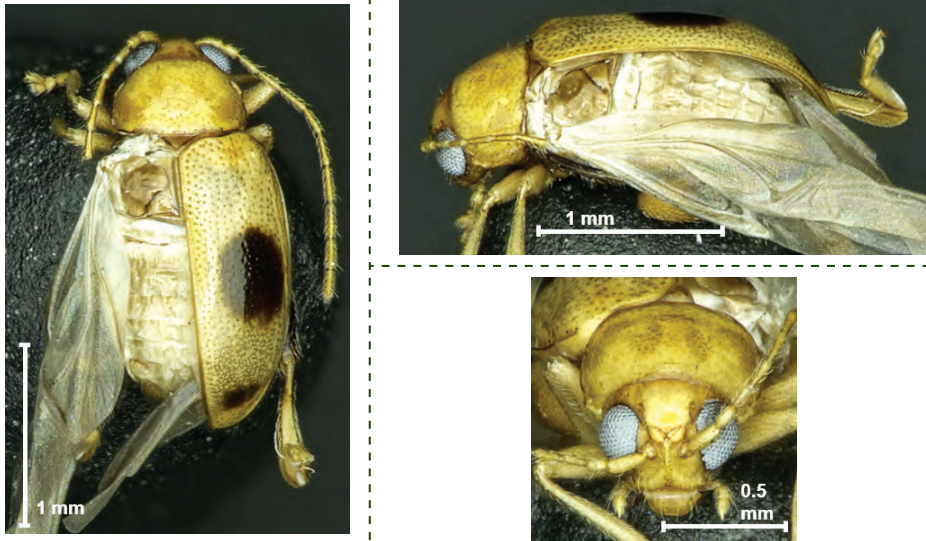


Figure 2.101 *Longitarsus* sp.04
(Chrysomelidae: Galerucinae) Z02_ColChr079



Figure 2.102 *Longitarsus* sp.05
(Chrysomelidae: Galerucinae) Z02_ColChr167



Figure 2.103 *Luperaltica* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr013

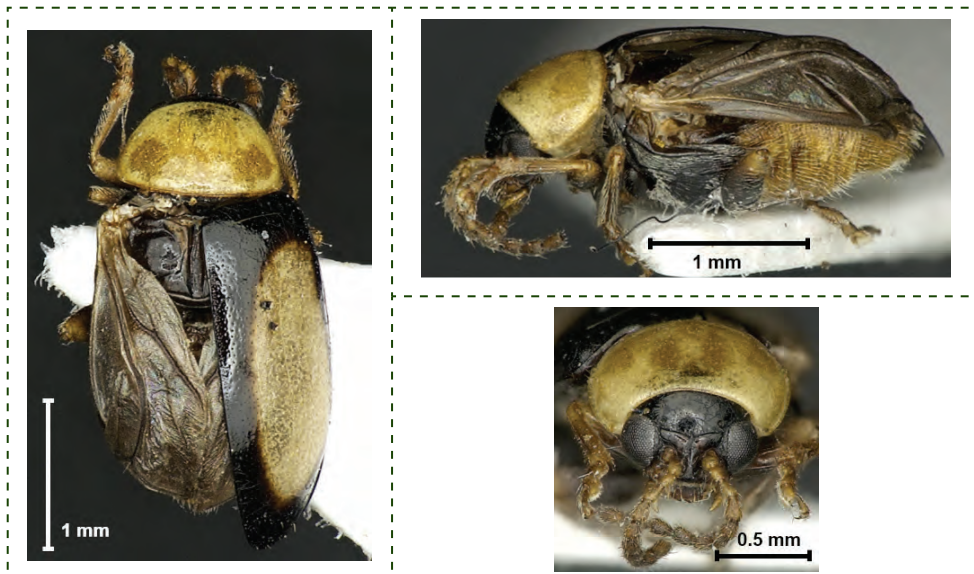


Figure 2.104 *Luperoides* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr133

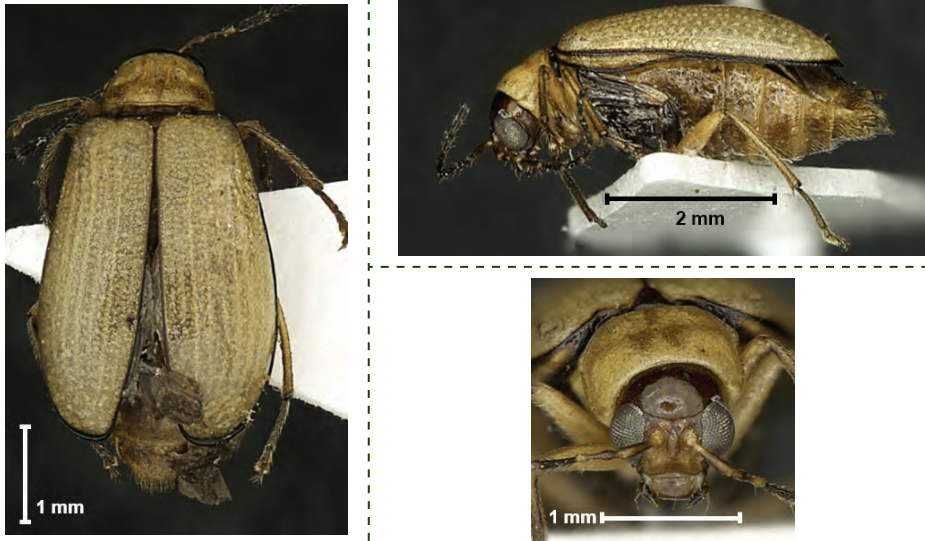


Figure 2.105 *Luperoides* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr219

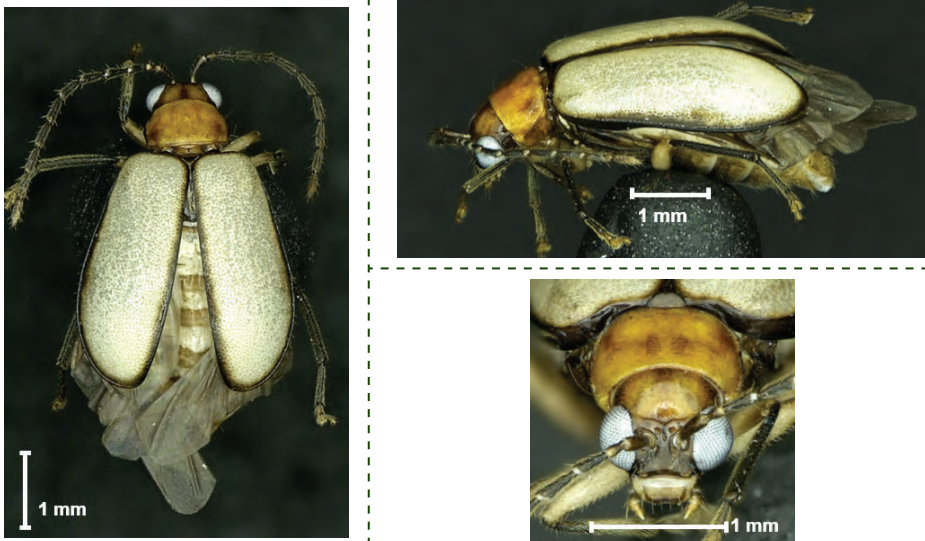


Figure 2.106 *Mimastra* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr040

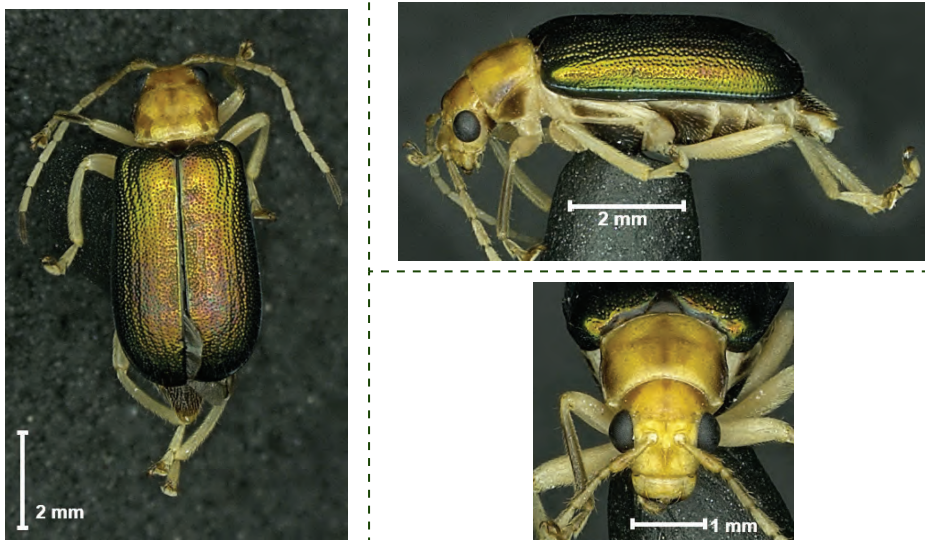


Figure 2.107 *Mimastra* sp.02

(Chrysomelidae: Galerucinae) Z02_ColChr122

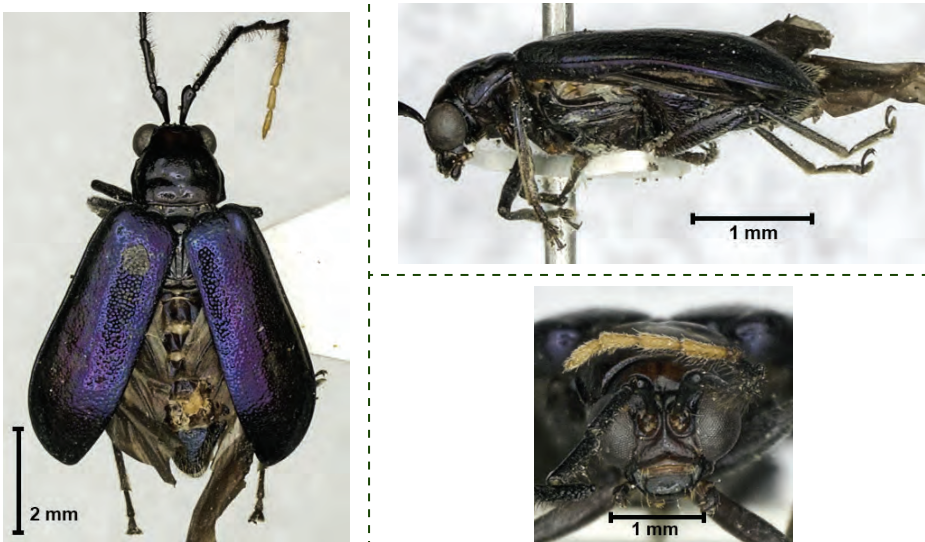


Figure 2.108 *Mimastra* sp.03

(Chrysomelidae: Galerucinae) Z02_ColChr182

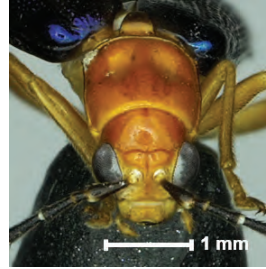
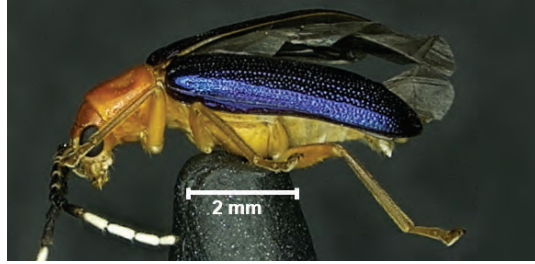


Figure 2.109 *Mimastra* sp.04
(Chrysomelidae: Galerucinae) Z02_ColChr056



Figure 2.110 *Mimastra* sp.05
(Chrysomelidae: Galerucinae) Z02_ColChr078



Figure 2.111 *Monolepta* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr136

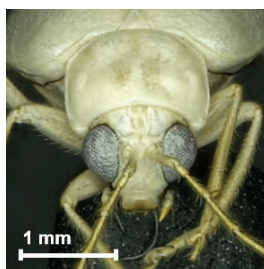


Figure 2.112 *Monolepta* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr016

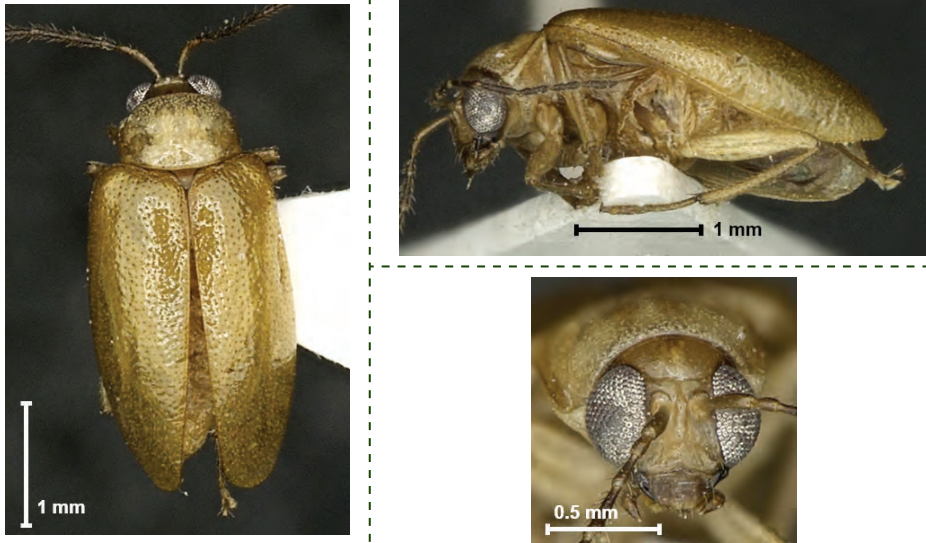


Figure 2.113 *Monolepta* sp.03
(Chrysomelidae: Galerucinae) Z02_ColChr174

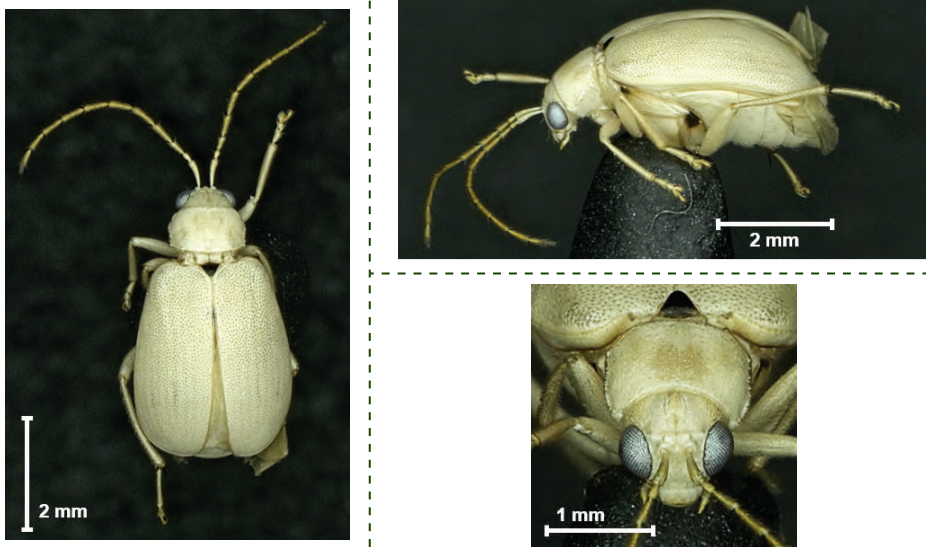


Figure 2.114 *Monolepta* sp.04
(Chrysomelidae: Galerucinae) Z02_ColChr018



Figure 2.115 *Monolepta* sp.05

(Chrysomelidae: Galerucinae) Z02_ColChr045

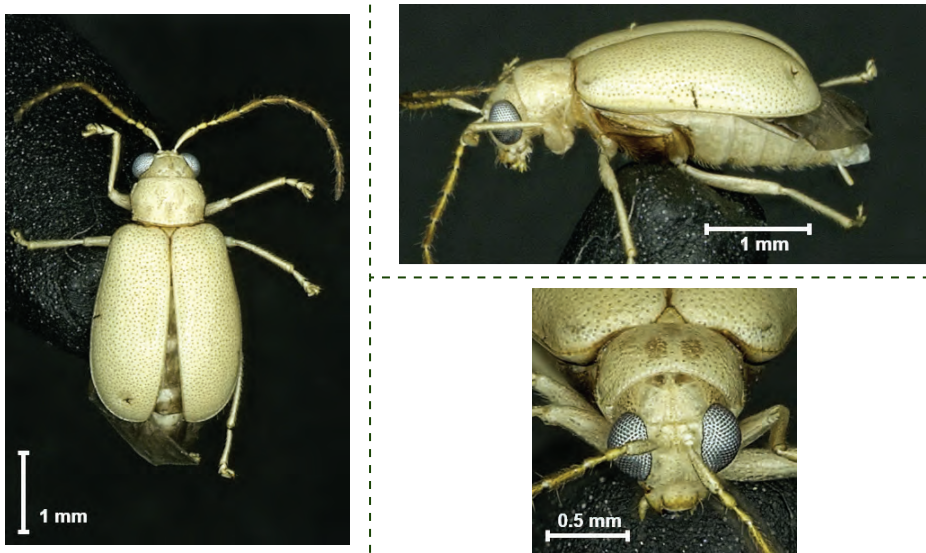


Figure 2.116 *Monolepta* sp.06

(Chrysomelidae: Galerucinae) Z02_ColChr190

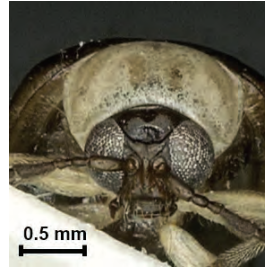


Figure 2.117 *Monolepta* sp.07
(Chrysomelidae: Galerucinae) Z02_ColChr196

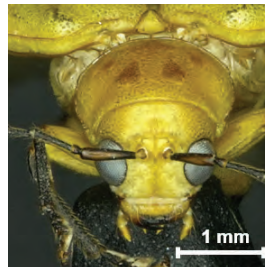


Figure 2.118 *Monolepta* sp.08
(Chrysomelidae: Galerucinae) Z02_ColChr123

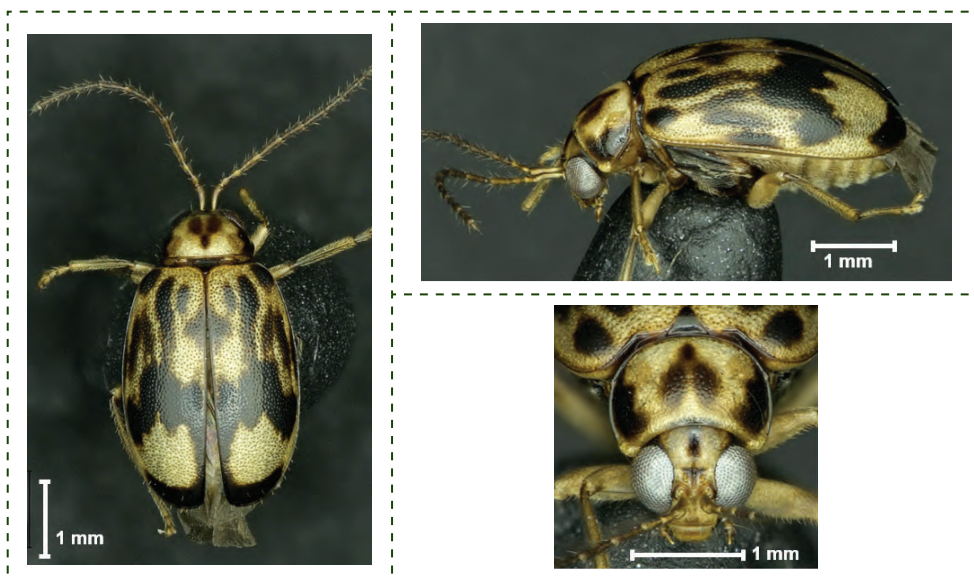


Figure 2.119 *Monolepta* sp.09

(Chrysomelidae: Galerucinae) Z02_ColChr050

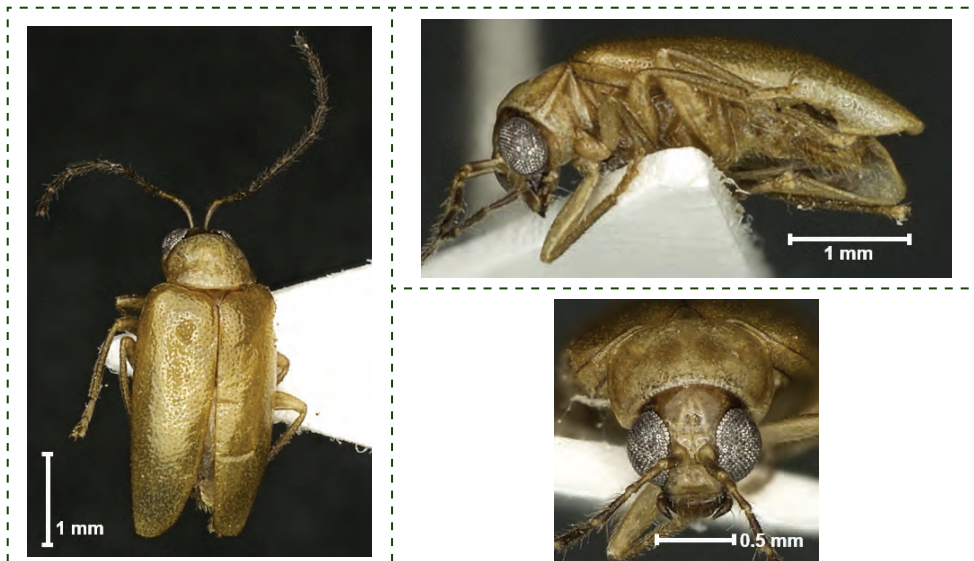


Figure 2.120 *Monolepta* sp.10

(Chrysomelidae: Galerucinae) Z02_ColChr141

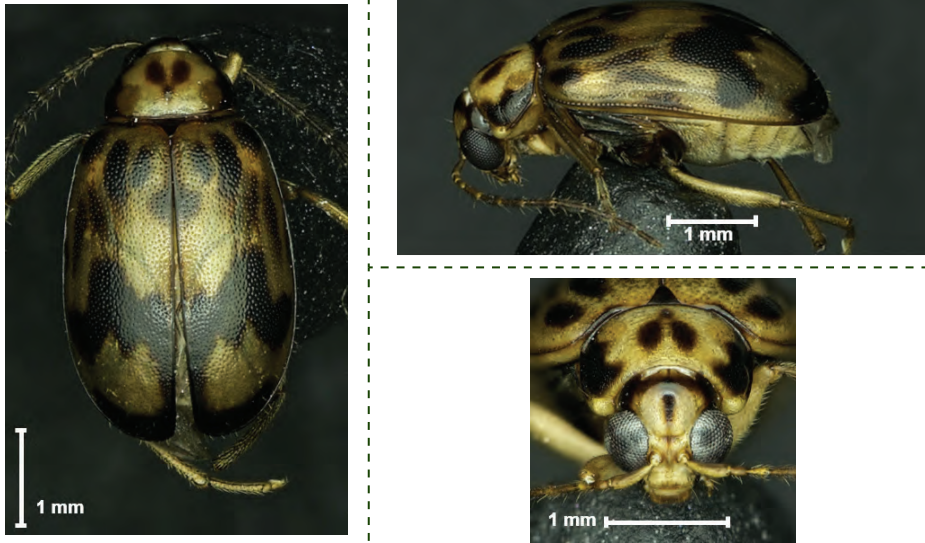


Figure 2.121 *Monolepta* sp.11
(Chrysomelidae: Galerucinae) Z02_ColChr114

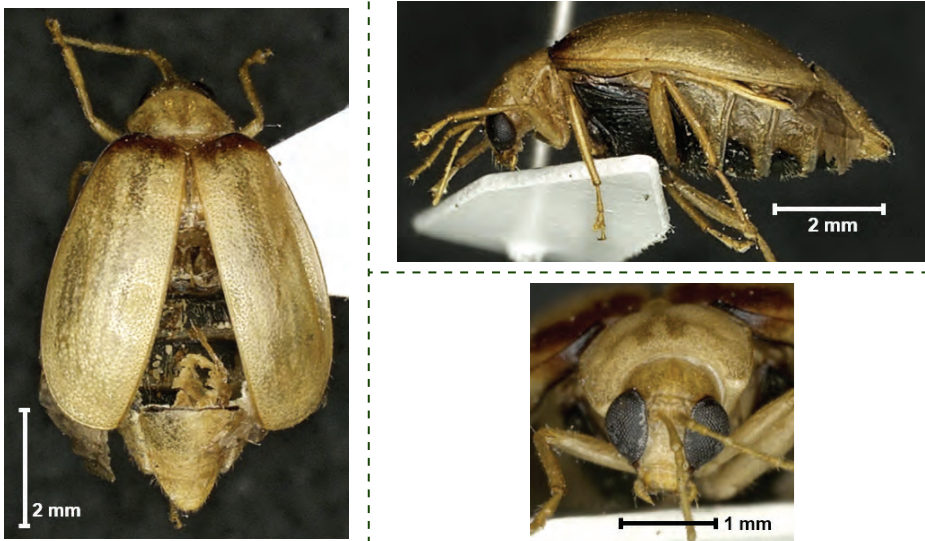


Figure 2.122 *Monolepta* sp.12
(Chrysomelidae: Galerucinae) Z02_ColChr124



Figure 2.123 *Monolepta* sp.13
(Chrysomelidae: Galerucinae) Z02_ColChr164

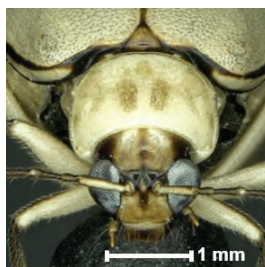
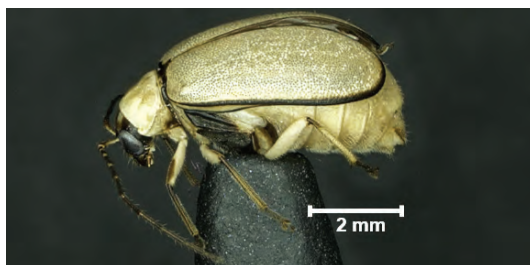


Figure 2.124 *Monolepta* sp.14
(Chrysomelidae: Galerucinae) Z02_ColChr170



Figure 2.125 *Monolepta* sp.15
(Chrysomelidae: Galerucinae) Z02_ColChr184



Figure 2.126 *Monolepta* sp.16
(Chrysomelidae: Galerucinae) Z02_ColChr090

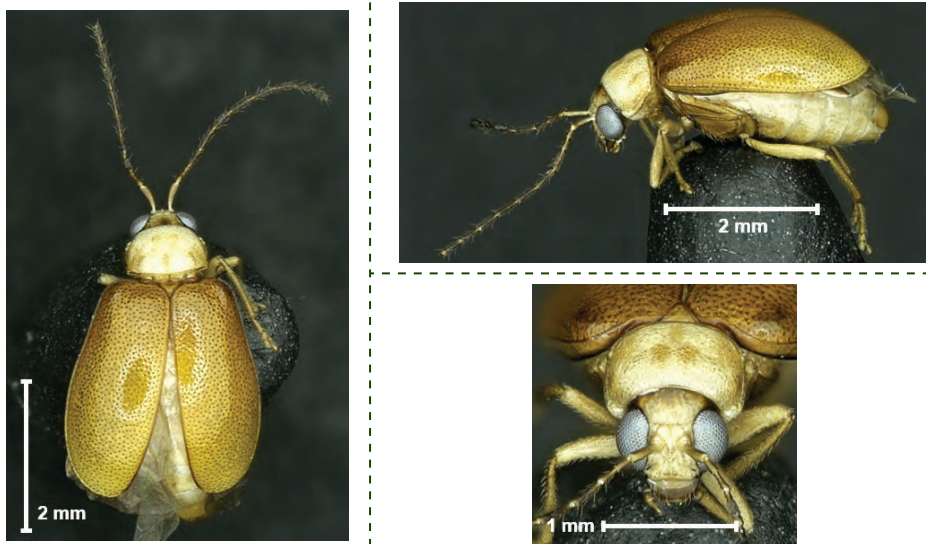


Figure 2.127 *Monolepta* sp.17
(Chrysomelidae: Galerucinae) Z02_ColChr224

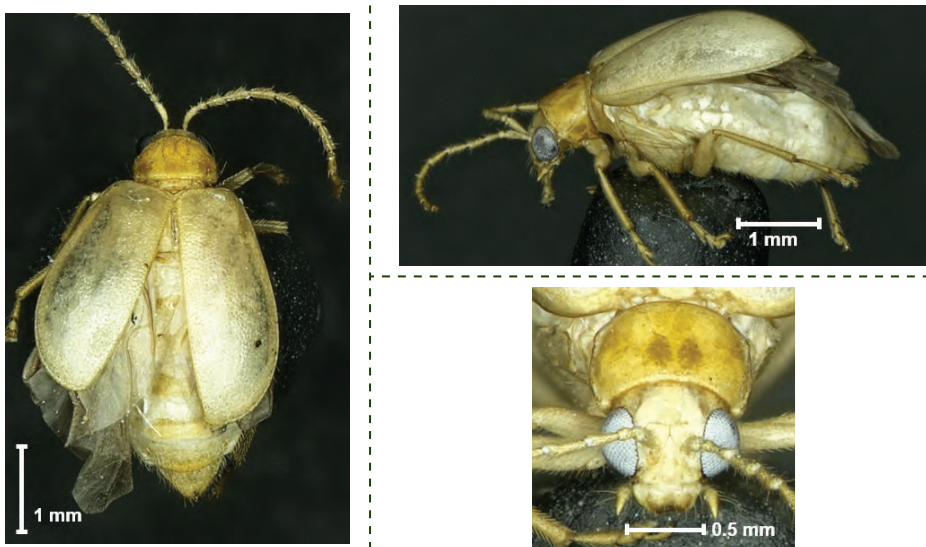


Figure 2.128 *Monolepta* sp.18
(Chrysomelidae: Galerucinae) Z02_ColChr059

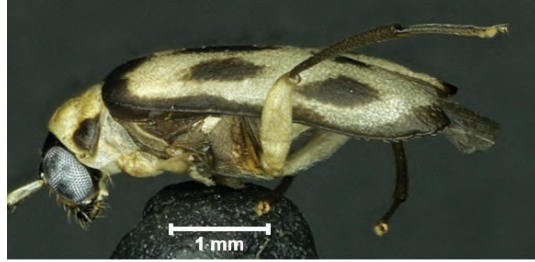


Figure 2.129 *Monolepta* sp.19
(Chrysomelidae: Galerucinae) Z02_ColChr080

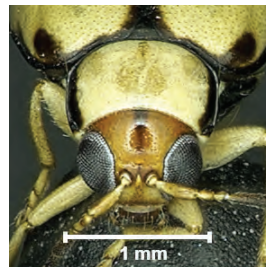
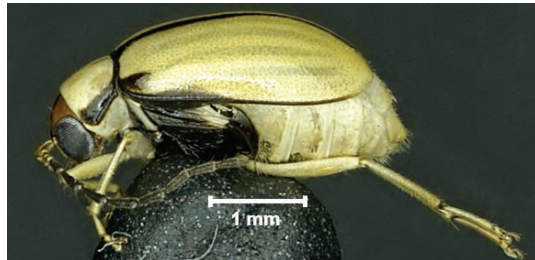


Figure 2.130 *Monolepta* sp.20
(Chrysomelidae: Galerucinae) Z02_ColChr098

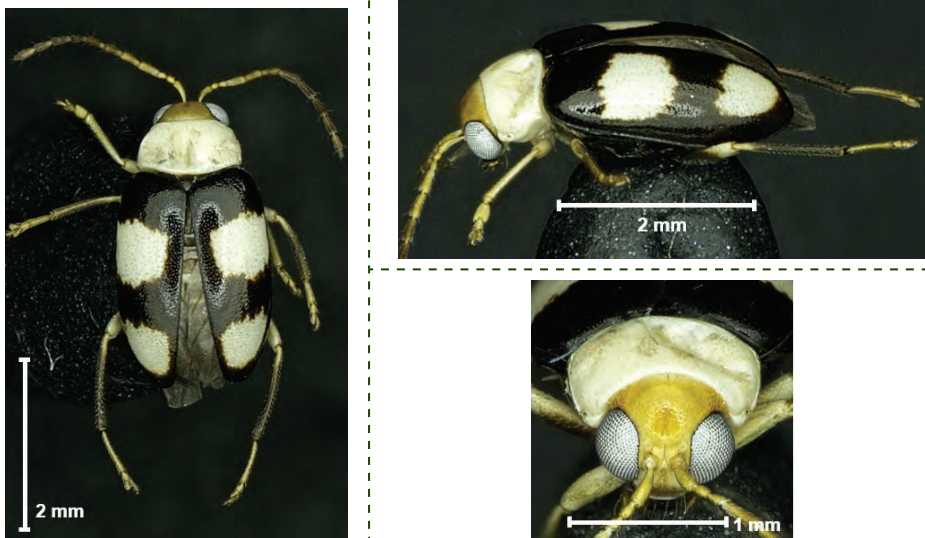


Figure 2.131 *Monolepta* sp.21
(Chrysomelidae: Galerucinae) Z02_ColChr084



Figure 2.132 *Nesaecrepida* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr070

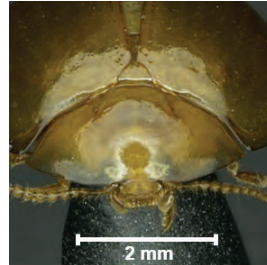
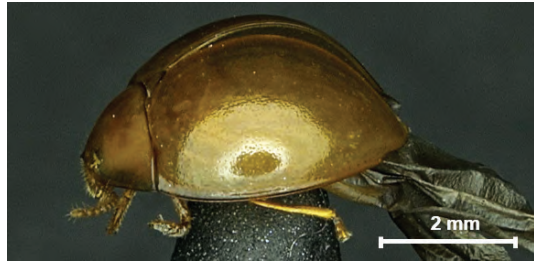


Figure 2.133 *Oides* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr153

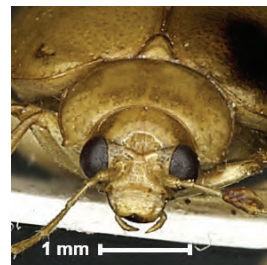


Figure 2.134 *Oides* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr177

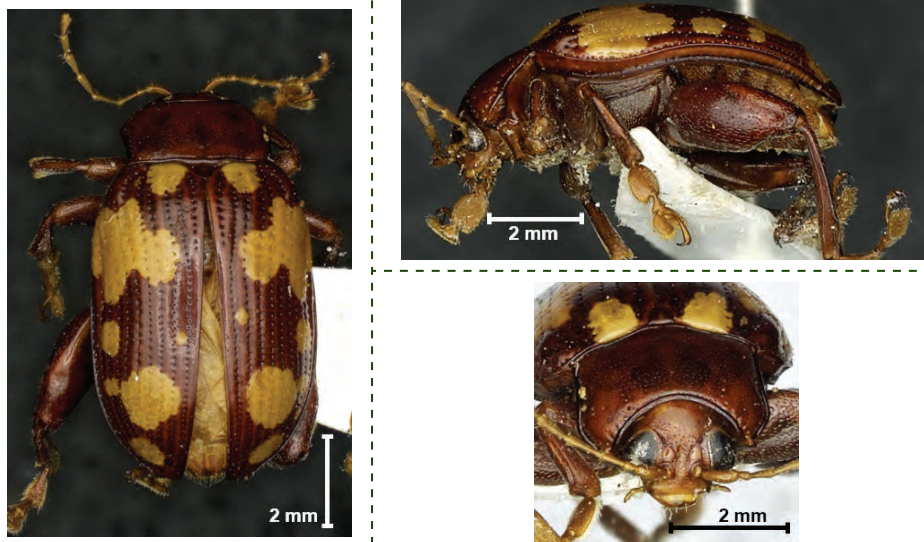


Figure 2.135 *Ophrida* sp.01

(Chrysomelidae: Galerucinae) Z02_ColChr216

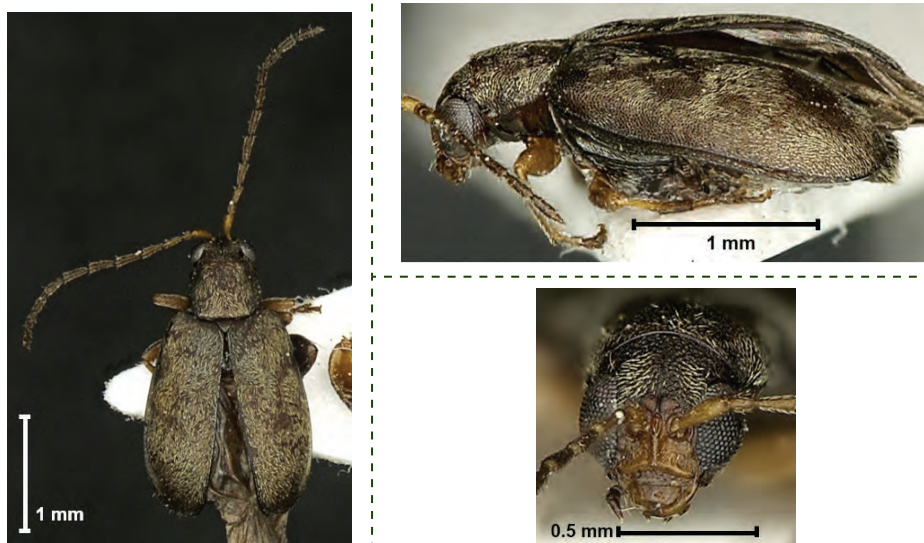


Figure 2.136 *Pachyonychus* sp.01

(Chrysomelidae: Galerucinae) Z02_ColChr071

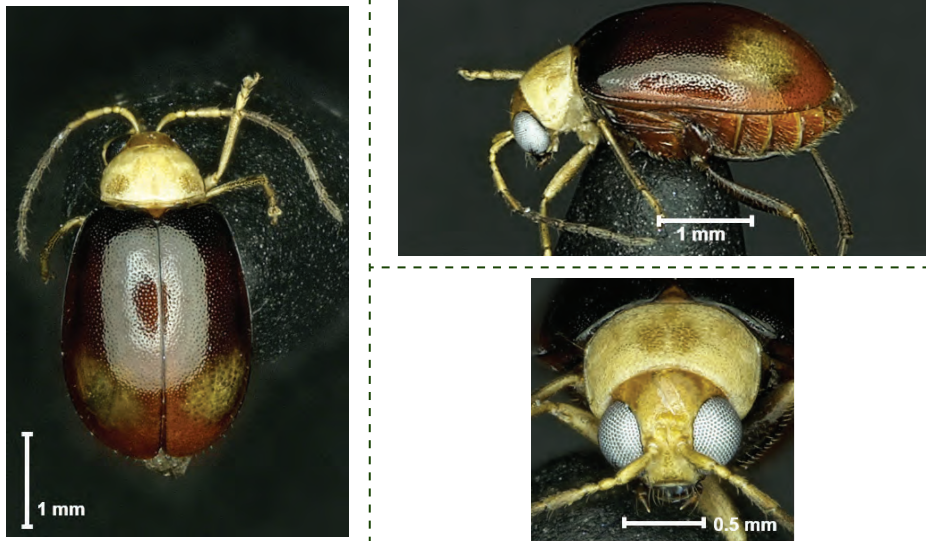


Figure 2.137 *Paleosepharia* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr094

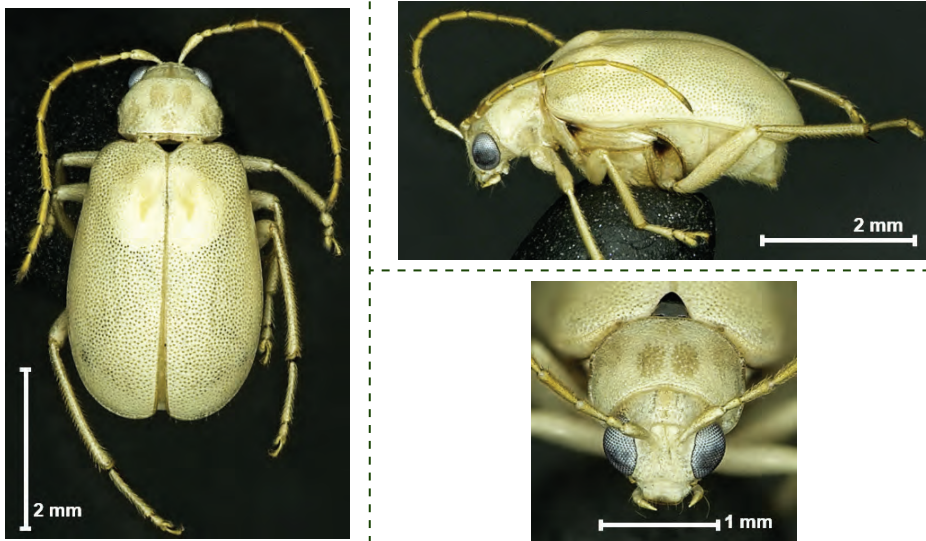


Figure 2.138 *Paleosepharia* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr015



Figure 2.139 *Parchicola* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr226

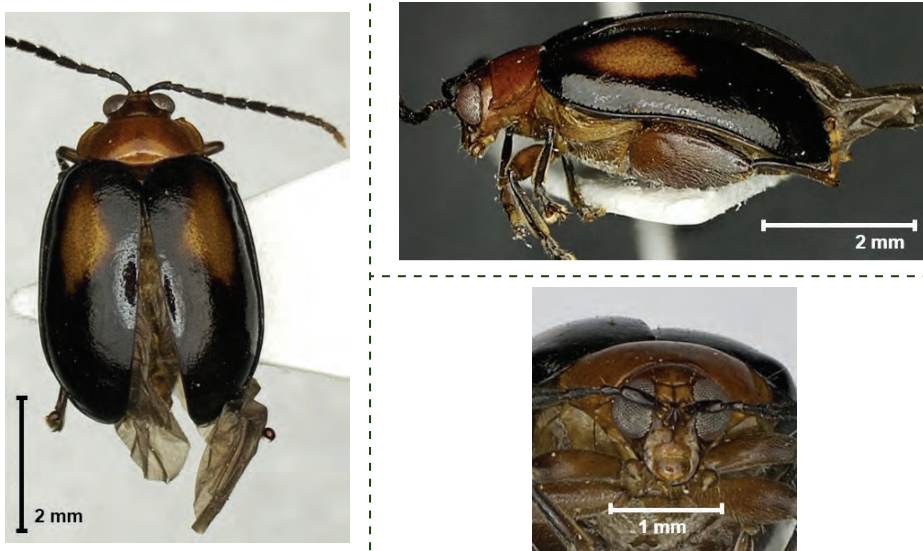


Figure 2.140 *Phydania* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr088



Figure 2.141 *Phyllobrotica* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr097



Figure 2.142 *Phyllotreta* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr093

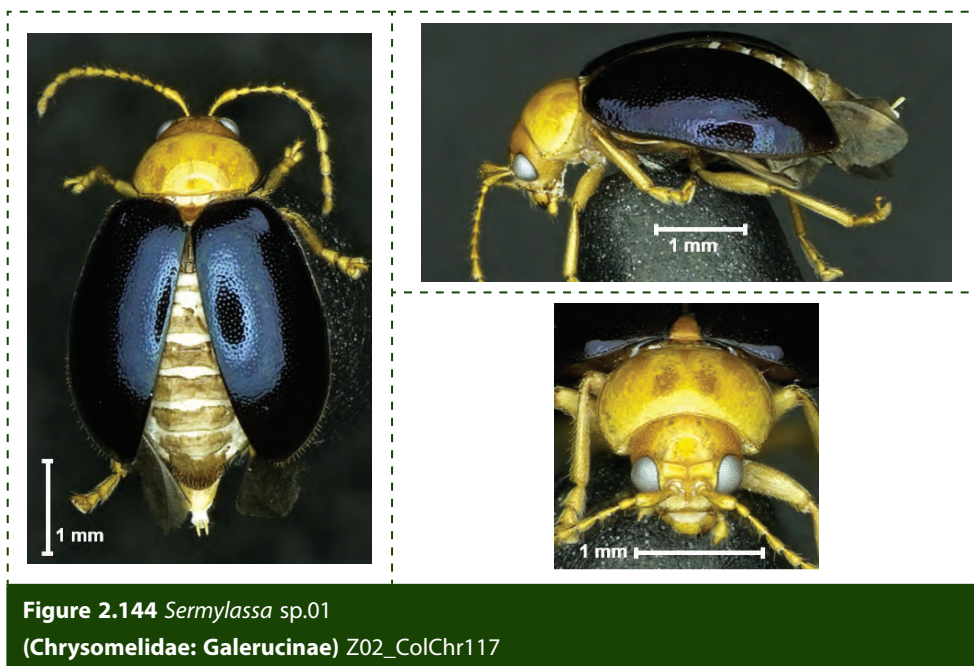
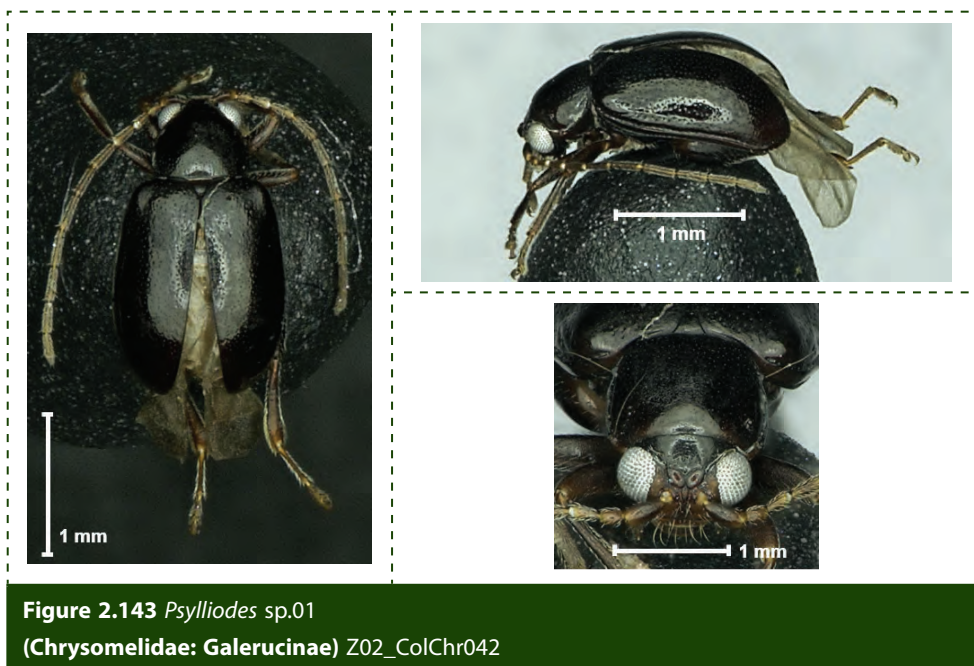
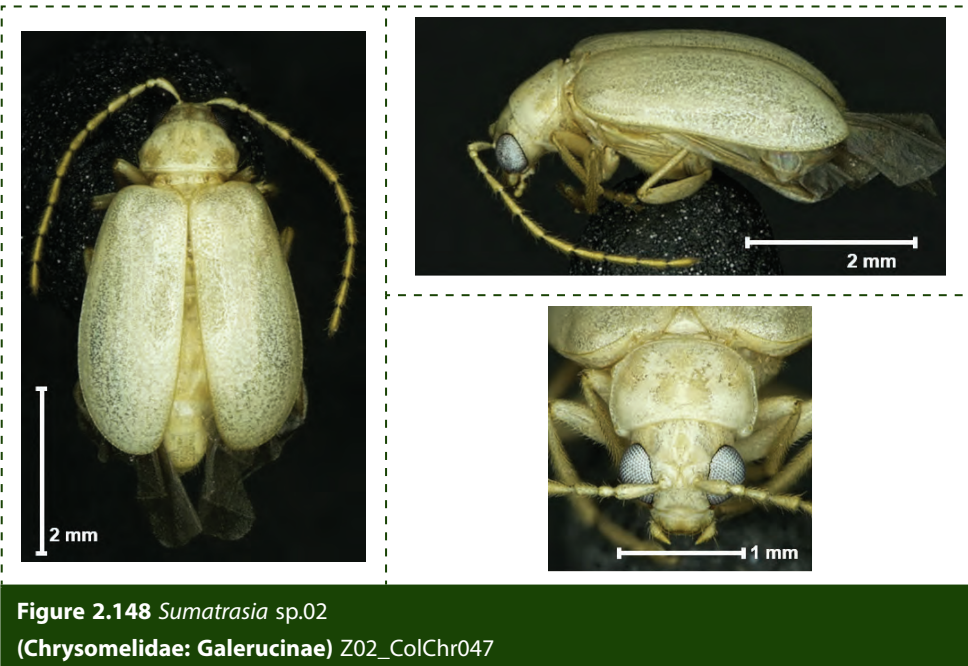
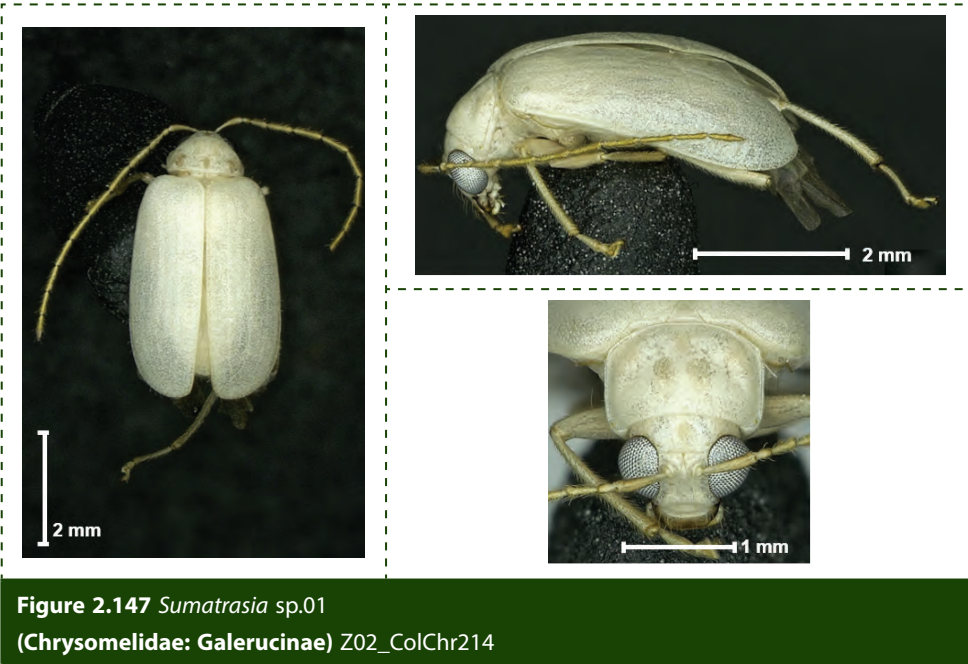




Figure 2.145 *Sinoluperus* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr109



Figure 2.146 *Sphaeroderma* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr154



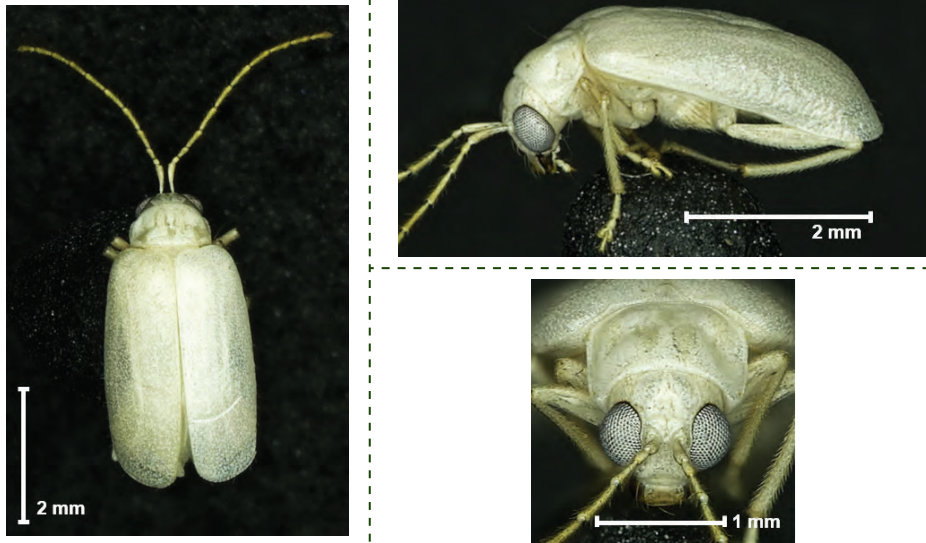


Figure 2.149 *Taumacera* sp.01
(Chrysomelidae: Galerucinae) Z02_ColChr110

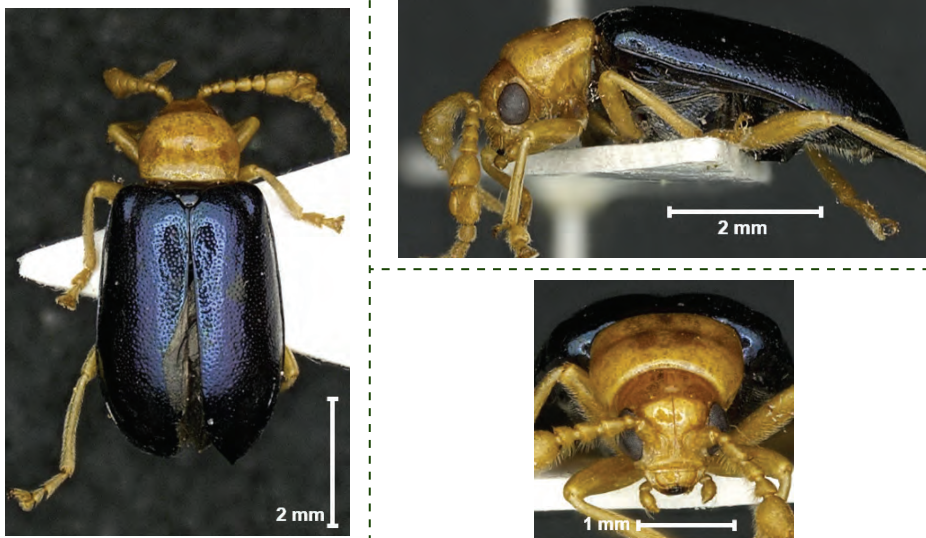


Figure 2.150 *Taumacera* sp.02
(Chrysomelidae: Galerucinae) Z02_ColChr236



Figure 2.151 *Theopea* sp.01

(Chrysomelidae: Galerucinae) Z02_ColChr019



Figure 2.152 *Xenoda* sp.01

(Chrysomelidae: Galerucinae) Z02_ColChr027

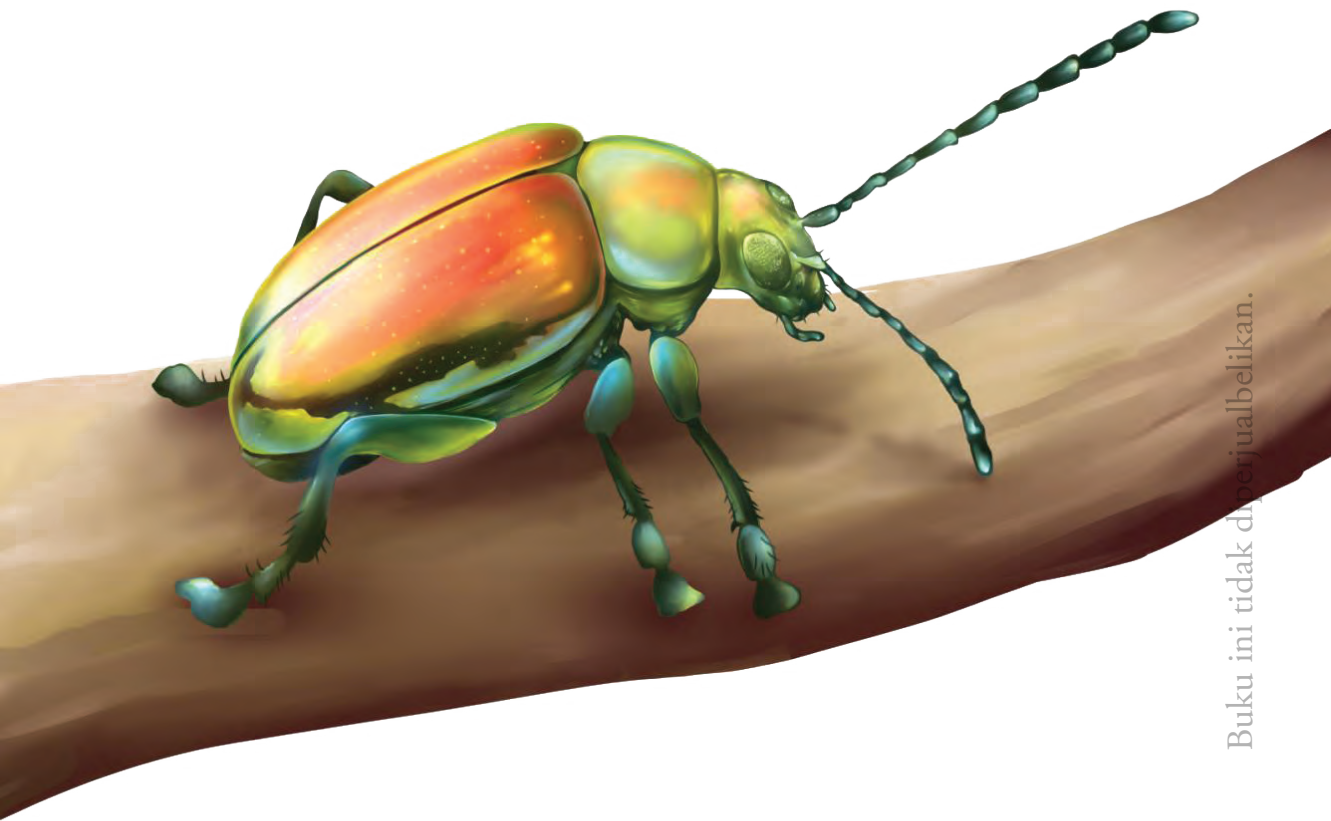


Figure by Bona Pakpahan



Curculio sp. (Curculionidae: Curculioninae)

Image by Suryadi

TRUE WEEVILS (COLEOPTERA: CURCULIONIDAE)

True weevils or snout beetles (Coleoptera: Curculionidae) are one of the most diverse families of insects, with more than 75,000 described species from more than 6,000 genera (www.gbif.org), and possibly thousands of undescribed species (Bouchard et al., 2017). In the only large-scale study we found, Sprick and Floren (2018) collected almost 10,000 individuals of the superfamily Curculionoidea, including almost 8,000 specimens of true weevils, from mixed dipterocarp forests in Sabah, Malaysia. With the help of specialists, Sprick and Floren (2018) sorted this collection into more than 1,100 morphospecies from 309 genera, most of which were unknown to science. Information regarding species diversity of Curculionidae in Indonesia is virtually non-existent, especially when it comes to whole biodiversity inventories.

True weevils are easily recognizable by their elongate rostrum (or snout) and geniculate antennae with small clubs. Many species do not have wings, whereas others are excellent fliers. Weevils have considerable diversity in shape and size, with the length of adults ranging from 1 to 40 mm. Body shapes include broadly oval to elongate, slightly flattened, most covered with scales, some with metallic sheen or contrasting patterns. Their color is variable, but typically black or dark brown but also of other colors. Weevils can be found associated with just about any kind of plant in any terrestrial habitat. Most species are strictly phytophagous and associated with a narrow range of hosts, in many cases only living on a single plant species. Weevils are one of the most diverse groups of organisms. Probably because of the development of the snout, which is used not only for feeding but also for boring holes in which eggs are laid (Anderson, 2002; Hangay & Zborowski, 2010).

The identification key to subfamilies of true weevils is adapted and modified from Anderson (2002). The identification of the specimens included was verified by reference to the specimen collection in the Entomology Laboratory of Indonesian Institute of Sciences, LIPI.

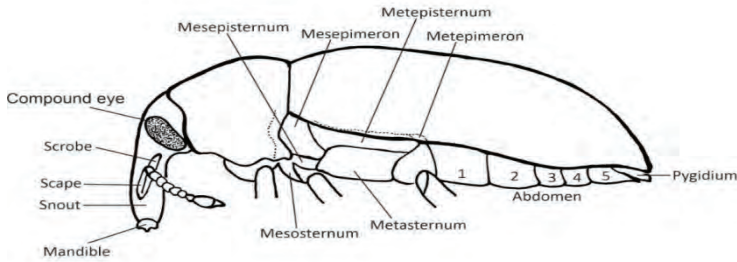


Figure 3.1 External Morphology (Lateral View) of Curculionidae (re-drawing from Marvaldi and Lanteri 2005)

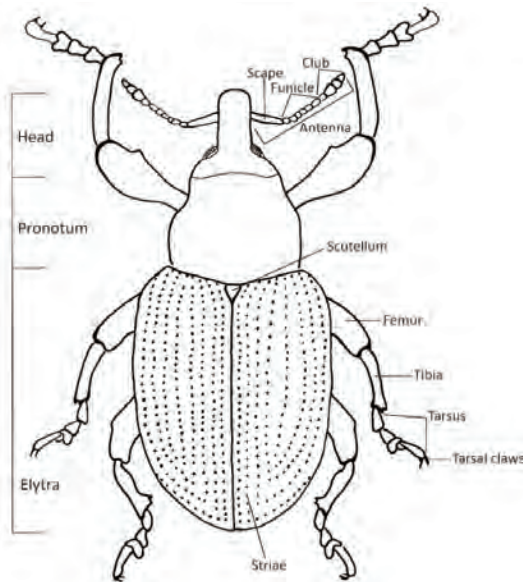


Figure 3.2 External Morphology (Dorsal View) of Curculionidae (re-drawing from Marvaldi and Lanteri, 2005)

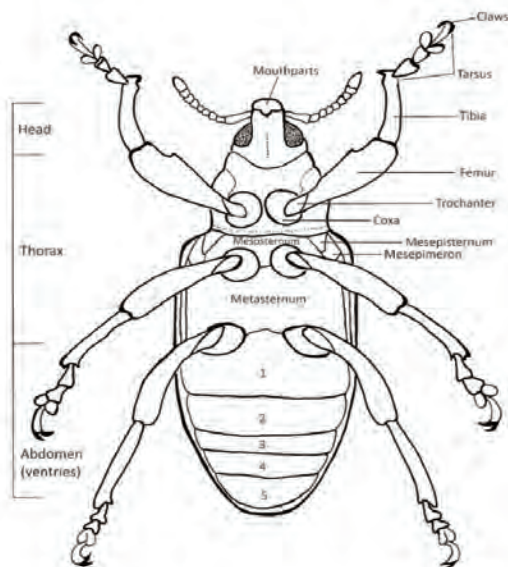


Figure 3.3 External Morphology (Ventral View) of Curculionidae (re-drawing from Marvaldi and Lanteri 2005)

IDENTIFICATION KEY TO THE SUBFAMILIES OF CURCULIONIDAE

The identification key to subfamilies of true weevils is adapted and modified from Anderson (2002).

1. Pregular suture present; head with rostrum virtually absent**2**
- 1'. Pregular suture absent; head with rostrum variable from very long and cylindrical to short and broad**3**
2. Tarsus with article 1 as long as article 2-5 combined; head as wide as pronotum; antennal club without sutures**Platypodinae**
- 2'. Tarsus with article 1 not longer than articles 2 or 3; head narrower than pronotum, often concealed by pronotum when viewed dorsally; antennal club with sutures ..
Scolytinae
3. Tarsus with claws widely separated by dermal lobes extended between from both dorsal and ventral surfaces at the apex of article 5; antenna inserted near base of



- rostrum, with scape long; antenna with club of two basic parts, with basal glabrous and glossy portion**Dryophthorinae**
- 3'. Tarsus with claws single, connate at base, or separate, but with dorsal and ventral surface at the apex of article 5 not extended between the base of tarsal claws; antenna inserted variously along the length of rostrum; antenna with club various, but mostly with three articles; funicle with 5, 6 or 7 articles**4**
4. Mesepimeron strongly ascended, truncated by elytral humeri and visible in dorsal view between pronotum and elytra.....**5**
- 4'. Mesepimeron not ascended, not visible in dorsal view pronotum and elytra**6**
5. Pygidium covered by elytra; rostrum longer than pronotum, straight and slender;
Baridinae
- 5'. Pygidium not covered by elytra; rostrum various in length, straight or slightly curved**Ceutorhynchinae**
6. Rostrum in repose received into the ventral channel which is limited to prosternum or extended beyond into mesosternum or metasternum**7**
- 6'. Rostrum in repose not received into the ventral channel, but many rests between front, middle, and or hind coxae **11**
7. Eyes are large, elongate-oval, subcontiguous dorsally frons very narrow
Conoderinae
- 7'. Eyes are small to moderate in size, more or less rounded, more widely separated dorsally, frons broad**8**
8. Rostrum very short, not much longer than wide, broad, and flat dorsal, subquadrate in form; body size mostly medium to large (>5 mm)**Lixinae**
- 8'. Rostrum moderately long, many times longer than wide, elongate and narrow
9
9. Ventral channel extended beyond prosternum into mesosternum or metasternum
Cryptorhynchinae
- 9'. Ventral channel limited to prosternum, even though the rostrum in repose may overlie mesosternum or metasternum and some abdominal ventrites..... **10**
10. Hind tibia with outer face at apex lacks apical comb from setae lateral to base apical tooth; body with distinct and dense suberect or erect broad scales, body of some specimens with crustose coating**Cossoninae**
- 10'. Hind tibia with outer face at apex with apical comb from setae lateral to base apical tooth; body with vestiture of appressed scales or suberect or erect hair-like scales, lacking smooth varnish-like coating over scales, or obvious vestiture lacking; legs more robust.....**Molytinae**

11. Rostrum more elongate slender and cylindrical; eyes rounded; antenna with scape, not or just reaching anterior margin of eye**Curculioninae**
- 11'. Rostrum short and broad, usually quadrate or subquadrate; Eyes more or less elongate-oval; antenna with scape just reaching or passing anterior margin of eye.....**Entiminae**

LIST OF CURCULIONIDAE MORPHOSPECIES

Due to a large number of undescribed species in Sumatra, this checklist of the true weevils collected by EForTS project canopy fogging in dry season 2013 and rainy season 2013/14, contains a mix of confirmed Linnéan species and morphospecies which we defined *de novo*. Within each subfamily, the list is sorted alphabetically by morphospecies, and includes the following information:

1. Morphospecies: Differentiate in terms of morphology. Linnéan name, or subfamily or genus plus species denominator.
1. MSp Code: Internal EForTS identifier, containing information regarding the respective EForTS project, higher-level taxonomic information, and the sorting number for each defined morphospecies.
2. Land Use: The land-use system in which each morphospecies was found, i.e., primary degraded forest (F), jungle rubber (J), rubber plantation (R), and/or oil palm plantation (O).
3. Total N: Number of individuals of each morphospecies 2013–2014.
4. Figures: Image number of the respective morphospecies. NA: No image available in this guide.

Table 3.1 Curculionidae morphospecies

Morphospecies	MSp Code	Land Use	Total N	Figures
Baridinae				
<i>Amercedes</i> sp.01	Z02_ColCur093	F	9	3.4
Baridinae sp.03	Z02_ColCur008	J	1	3.5
Baridinae sp.04	Z02_ColCur148	J	1	3.6
Baridinae sp.05	Z02_ColCur361	F	1	3.7
Baridinae sp.06	Z02_ColCur267	F	8	3.8
Baridinae sp.07	Z02_ColCur322	F, J	4	3.9
Baridinae sp.08	Z02_ColCur082	F, J	5	3.10
<i>Baris</i> sp.01	Z02_ColCur209	F	2	3.11



Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Baris</i> sp.02	Z02_ColCur167	F, J, O	24	3.12
<i>Plesiobaris</i> sp.01	Z02_ColCur063	J	1	3.13
Ceutorhynchinae				
Ceutorhynchinae sp.01	Z02_ColCur069	J	3	3.14
Ceutorhynchinae sp.02	Z02_ColCur016	J	2	3.15
<i>Ceutorhynchus</i> sp.01	Z02_ColCur103	F, J	56	3.16
<i>Homorosoma</i> sp.01	Z02_ColCur058	F, J	6	3.17
<i>Rhinoncus</i> sp.01	Z02_ColCur049	F	2	3.18
Conoderinae				
<i>Brimoides</i> sp.01	Z02_ColCur061	F, J	8	3.19
<i>Brimoides</i> sp.02	Z02_ColCur154	F, J, R	34	3.20
<i>Brimoides</i> sp.03	Z02_ColCur155	F, J	3	3.21
<i>Brimoides</i> sp.04	Z02_ColCur175	F	7	3.22
Conoderinae sp.01	Z02_ColCur270	F, J	5	3.23
Conoderinae sp.02	Z02_ColCur340	F	1	3.24
Conoderinae sp.03	Z02_ColCur044	F, J	9	3.25
Conoderinae sp.04	Z02_ColCur151	J	5	3.26
Conoderinae sp.05	Z02_ColCur177	F	3	3.27
Conoderinae sp.06	Z02_ColCur351	J	1	3.28
Conoderinae sp.07	Z02_ColCur023	F, J	4	3.29
Conoderinae sp.08	Z02_ColCur070	J	1	3.30
Conoderinae sp.09	Z02_ColCur246	F, J	10	3.31
Conoderinae sp.10	Z02_ColCur311	F	1	3.32
Conoderinae sp.11	Z02_ColCur328	F	1	3.33
Conoderinae sp.12	Z02_ColCur084	F, J, R	8	3.34
Conoderinae sp.13	Z02_ColCur359	F	3	3.35
Conoderinae sp.14	Z02_ColCur019	O	1	3.36
Conoderinae sp.15	Z02_ColCur041	O	10	3.37
Conoderinae sp.16	Z02_ColCur046	F, J	10	3.38
Conoderinae sp.17	Z02_ColCur150	F, J	22	3.39
Conoderinae sp.18	Z02_ColCur206	F, J	6	3.40
Conoderinae sp.19	Z02_ColCur219	J	2	3.41
Conoderinae sp.20	Z02_ColCur221	J	3	3.42
Conoderinae sp.21	Z02_ColCur376	F, J	2	3.43
Conoderinae sp.22	Z02_ColCur170	F, J	4	3.44
Conoderinae sp.23	Z02_ColCur203	F	1	3.45

Morphospecies	MSp Code	Land Use	Total N	Figures
Cossoninae				
Cossoninae sp.01	Z02_ColCur217	F, J, O	12	3.46
Cossoninae sp.02	Z02_ColCur296	O, R	22	3.47
Cossoninae sp.03	Z02_ColCur165	F	1	3.48
Cossoninae sp.04	Z02_ColCur317	F, J	12	3.49
Cossoninae sp.05	Z02_ColCur323	J	1	3.50
Cossoninae sp.06	Z02_ColCur373	F	2	3.51
<i>Cossonus</i> sp.01	Z02_ColCur017	F, J, O, R	42	3.52
<i>Cossonus</i> sp.02	Z02_ColCur122	F, J, R	14	3.53
<i>Himatium</i> sp.01	Z02_ColCur025	F, J	8	3.54
<i>Phloeophagus</i> sp.01	Z02_ColCur217	F	2	3.55
Cryptorhynchinae				
Cryptorhynchinae sp.01	Z02_ColCur009	F, J, R	57	3.56
Cryptorhynchinae sp.02	Z02_ColCur176	F	4	3.57
Cryptorhynchinae sp.03	Z02_ColCur056	F, J	5	3.58
Cryptorhynchinae sp.04	Z02_ColCur225	R	1	3.59
Cryptorhynchinae sp.05	Z02_ColCur238	J, R	2	3.60
Cryptorhynchinae sp.06	Z02_ColCur059	F, J	5	3.61
Cryptorhynchinae sp.07	Z02_ColCur115	F, J, O, R	22	3.62
Cryptorhynchinae sp.08	Z02_ColCur261	F, J	7	3.63
Cryptorhynchinae sp.09	Z02_ColCur272	F, J	9	3.64
Cryptorhynchinae sp.10	Z02_ColCur091	F, J	22	3.65
Cryptorhynchinae sp.11	Z02_ColCur125	F	2	3.66
Cryptorhynchinae sp.12	Z02_ColCur174	F	1	3.67
Cryptorhynchinae sp.13	Z02_ColCur355	J	1	3.68
Cryptorhynchinae sp.14	Z02_ColCur210	F	4	3.69
Cryptorhynchinae sp.15	Z02_ColCur105	F	11	3.70
Cryptorhynchinae sp.16	Z02_ColCur204	F	13	3.71
Cryptorhynchinae sp.17	Z02_ColCur269	F	1	3.72
Cryptorhynchinae sp.18	Z02_ColCur285	F, J	10	3.73
Cryptorhynchinae sp.19	Z02_ColCur297	F, O	5	3.74
Cryptorhynchinae sp.21	Z02_ColCur286	J, R	3	3.75
Cryptorhynchinae sp.22	Z02_ColCur096	F	6	3.76
Cryptorhynchinae sp.23	Z02_ColCur120	F	1	3.77
Cryptorhynchinae sp.25	Z02_ColCur079	F	1	3.78
Cryptorhynchinae sp.26	Z02_ColCur087	J	1	3.79



Morphospecies	MSp Code	Land Use	Total N	Figures
Cryptorhynchinae sp.27	Z02_ColCur090	F, J, R	5	3.80
Cryptorhynchinae sp.28	Z02_ColCur015	F, J	5	3.81
Cryptorhynchinae sp.29	Z02_ColCur123	F	4	3.82
Cryptorhynchinae sp.30	Z02_ColCur086	F, J	8	3.83
Cryptorhynchinae sp.31	Z02_ColCur156	F	1	3.84
Cryptorhynchinae sp.32	Z02_ColCur321	J	1	3.85
Cryptorhynchinae sp.33	Z02_ColCur326	J, O	3	3.86
Cryptorhynchinae sp.34	Z02_ColCur344	F, J	2	NA
Cryptorhynchinae sp.35	Z02_ColCur327	F	2	NA
Cryptorhynchinae sp.37	Z02_ColCur331	F	1	3.87
Cryptorhynchinae sp.38	Z02_ColCur343	F	2	3.88
Cryptorhynchinae sp.39	Z02_ColCur356	F	3	3.89
Cryptorhynchinae sp.40	Z02_ColCur172	F	2	3.90
Cryptorhynchinae sp.41	Z02_ColCur124	F, J	8	3.91
Cryptorhynchinae sp.42	Z02_ColCur078	F, J	2	3.92
Cryptorhynchinae sp.43	Z02_ColCur053	F, R	4	3.93
Cryptorhynchinae sp.44	Z02_ColCur092	F	13	3.94
Cryptorhynchinae sp.45	Z02_ColCur182	F	1	3.95
Cryptorhynchinae sp.46	Z02_ColCur280	F	1	3.96
Cryptorhynchinae sp.47	Z02_ColCur314	F, J	3	3.97
Cryptorhynchinae sp.48	Z02_ColCur080	F	1	3.98
Cryptorhynchinae sp.49	Z02_ColCur089	F, J, O, R	9	3.99
Cryptorhynchinae sp.50	Z02_ColCur239	J	1	3.100
Cryptorhynchinae sp.51	Z02_ColCur022	J	2	3.101
Cryptorhynchinae sp.52	Z02_ColCur060	J	5	3.102
Cryptorhynchinae sp.53	Z02_ColCur114	F	1	3.103
Cryptorhynchinae sp.54	Z02_ColCur247	J	1	3.104
Cryptorhynchinae sp.55	Z02_ColCur378	F	2	3.105
Cryptorhynchinae sp.56	Z02_ColCur380	F	1	3.106
<i>Eurhoptus</i> sp.01	Z02_ColCur081	F, J	18	3.107
<i>Euscepes</i> sp.01	Z02_ColCur152	F, J	2	3.108
<i>Zascelis</i> sp.01	Z02_ColCur108	F, J	20	3.109
Curculioninae				
<i>Anthonomus</i> sp.01	Z02_ColCur134	F, J	34	3.110
<i>Anthonomus</i> sp.02	Z02_ColCur277	J	1	3.111
<i>Anthonomus</i> sp.03	Z02_ColCur330	F	3	3.112

Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Anthonomus</i> sp.04	Z02_ColCur128	F, J	29	3.113
<i>Anthonomus</i> sp.05	Z02_ColCur131	F	3	3.114
<i>Anthonomus</i> sp.06	Z02_ColCur005	F, J, O, R	142	3.115
<i>Archarius</i> sp.01	Z02_ColCur116	F, J	19	3.116
<i>Curculio</i> sp.01	Z02_ColCur057	F	4	3.117
<i>Curculio</i> sp.02	Z02_ColCur158	F	3	3.118
<i>Curculio</i> sp.03	Z02_ColCur227	F	14	3.119
<i>Curculio</i> sp.04	Z02_ColCur274	J, R	6	3.120
<i>Curculio</i> sp.05	Z02_ColCur313	F	1	3.121
<i>Curculio</i> sp.06	Z02_ColCur168	F	26	3.122
<i>Curculio</i> sp.07	Z02_ColCur190	F	4	3.123
<i>Curculio</i> sp.08	Z02_ColCur374	J	1	3.124
<i>Curculio</i> sp.09	Z02_ColCur375	J	1	3.125
<i>Curculioninae</i> sp.01	Z02_ColCur237	F, J, O, R	58	3.126
<i>Curculioninae</i> sp.02	Z02_ColCur339	F,	2	3.127
<i>Curculioninae</i> sp.03	Z02_ColCur095	F	17	3.128
<i>Curculioninae</i> sp.04	Z02_ColCur307	O	1	3.129
<i>Curculioninae</i> sp.05	Z02_ColCur085	J	39	3.130
<i>Curculioninae</i> sp.06	Z02_ColCur325	J	1	3.131
<i>Curculioninae</i> sp.07	Z02_ColCur353	J	4	3.132
<i>Curculioninae</i> sp.08	Z02_ColCur029	F	2	3.133
<i>Curculioninae</i> sp.09	Z02_ColCur030	J	5	3.134
<i>Curculioninae</i> sp.10	Z02_ColCur033	F	1	3.135
<i>Curculioninae</i> sp.11	Z02_ColCur035	F, J	6	3.136
<i>Curculioninae</i> sp.12	Z02_ColCur302	F, J	9	3.137
<i>Curculioninae</i> sp.13	Z02_ColCur205	F	1	3.138
<i>Curculioninae</i> sp.14	Z02_ColCur316	J	1	3.139
<i>Curculioninae</i> sp.15	Z02_ColCur320	J	1	3.140
<i>Curculioninae</i> sp.16	Z02_ColCur342	F	1	3.141
<i>Curculioninae</i> sp.17	Z02_ColCur346	J	1	3.142
<i>Curculioninae</i> sp.18	Z02_ColCur012	F, J, O, R	11	3.143
<i>Elaeodobius kamerunicus</i> (male)	Z02_ColCur295	J, O, R	1631	3.144
<i>E. kamerunicus</i> (female)	Z02_ColCur002			3.145
<i>Gymnetron</i> sp.01	Z02_ColCur186	F, J	16	3.146
<i>Notolomus</i> sp.01	Z02_ColCur018	F, J, O, R	72	3.147



Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Orchestes</i> sp.01	Z02_ColCur278	J, O, R	6	3.148
<i>Orchestes</i> sp.02	Z02_ColCur071	J	5	3.149
<i>Orchestes</i> sp.03	Z02_ColCur222	F, J	4	3.150
<i>Tachyerges</i> sp.01	Z02_ColCur020	F, J	54	3.151
<i>Tychius</i> sp.01	Z02_ColCur037	F, J	26	3.152
<i>Tychius</i> sp.02	Z02_ColCur045	F, J	11	3.153
Dryophthorinae				
Dryophthorinae sp.01	Z02_ColCur319	J	1	3.154
Dryophthorinae sp.02	Z02_ColCur332	F	1	3.155
Dryophthorinae sp.03	Z02_ColCur333	F	1	3.156
<i>Rhynchophorus</i> sp.01	Z02_ColCur001	O	5	3.157
<i>Sitophilus</i> sp.01	Z02_ColCur054	F	8	3.158
<i>Sitophilus</i> sp.02	Z02_ColCur218	F, J	1	3.159
Entiminae				
Entiminae sp.01	Z02_ColCur076	F, J	6	3.160
Entiminae sp.02	Z02_ColCur337	F, J	2	3.161
Entiminae sp.03	Z02_ColCur072	F, J	1	3.162
Entiminae sp.04	Z02_ColCur027	F, J	2	3.163
Entiminae sp.05	Z02_ColCur230	F, J	84	3.164
Entiminae sp.07	Z02_ColCur377	F	1	3.165
Entiminae sp.08	Z02_ColCur382	F, J	33	3.166
<i>Myloccerus</i> sp.01	Z02_ColCur047	F	3	3.167
<i>Myloccerus</i> sp.02	Z02_ColCur309	F	1	3.168
<i>Myloccerus</i> sp.03	Z02_ColCur183	J	10	3.169
<i>Myloccerus</i> sp.04	Z02_ColCur098	F, J	21	3.170
Lixinae				
Lixinae sp.02	Z02_ColCur345	J	1	3.171
<i>Lixus</i> sp.01	Z02_ColCur097	F, J	15	3.172
Molytinae				
Molytinae sp.01	Z02_ColCur185	F, J	6	3.173
Molytinae sp.02	Z02_ColCur254	F, J	6	3.174
Molytinae sp.03	Z02_ColCur244	J	2	3.175
Molytinae sp.04	Z02_ColCur262	F, J	6	3.176
Molytinae sp.05	Z02_ColCur279	F	2	3.177
Molytinae sp.06	Z02_ColCur100	F, J	10	3.178

Morphospecies	MSp Code	Land Use	Total N	Figures
Molytinae sp.07	Z02_ColCur207	F, J	6	3.179
Molytinae sp.08	Z02_ColCur258	F, J	5	3.180
Molytinae sp.09	Z02_ColCur013	J	1	3.181
Molytinae sp.10	Z02_ColCur074	F, J	8	3.182
Molytinae sp.11	Z02_ColCur144	F, J	6	3.183
Molytinae sp.12	Z02_ColCur099	F	3	3.184
Molytinae sp.13	Z02_ColCur381	F	2	3.185
Molytinae sp.14	Z02_ColCur383	J	1	3.186
Molytinae sp.15	Z02_ColCur384	J	2	3.187
<i>Sthereus</i> sp.01	Z02_ColCur011	F, J	14	3.188
Platypodinae				
Platypodinae sp.02	Z02_ColCur347	J	1	3.189
Platypodinae sp.03	Z02_ColCur324	F, J	3	3.190
Platypodinae sp.04	Z02_ColCur334	F	1	3.191
Platypodinae sp.05	Z02_ColCur366	O	1	3.192
<i>Platypus</i> sp.01	Z02_ColCur024	F, J, O, R	33	3.193
<i>Platypus</i> sp.02	Z02_ColCur336	F, J, O	11	3.194
<i>Platypus</i> sp.03	Z02_ColCur354	J, O	2	3.195
<i>Treptoplatypus</i> sp.01	Z02_ColCur223	F, O	2	3.196
Scolytinae				
<i>Alniphagus</i> sp.01	Z02_ColCur368	J, R	2	3.197
<i>Ambrosiodmus</i> sp.01	Z02_ColCur067	F, J, R	8	3.198
<i>Hypothenemus</i> sp.01	Z02_ColCur048	F, J, O, R	40	3.199
<i>Hypothenemus</i> sp.02	Z02_ColCur117	F, J	5	3.200
<i>Hypothenemus</i> sp.03	Z02_ColCur145	F, O	5	3.201
<i>Hypothenemus</i> sp.04	Z02_ColCur365	F, R	4	3.202
<i>Phloeotribus</i> sp.01	Z02_ColCur157	F, O	2	3.203
Scolytinae sp.01	Z02_ColCur287	F, J, O, R	5	3.204
Scolytinae sp.02	Z02_ColCur193	F, J	3	3.205
Scolytinae sp.03	Z02_ColCur163	F, J, O	7	3.206
Scolytinae sp.04	Z02_ColCur367	J	1	3.207
Scolytinae sp.05	Z02_ColCur350	J	1	3.208
Scolytinae sp.06	Z02_ColCur349	J, R	3	3.209
Scolytinae sp.07	Z02_ColCur318	F, J, O, R	21	3.210
Scolytinae sp.10	Z02_ColCur329	F, J	5	3.211



Morphospecies	MSp Code	Land Use	Total N	Figures
Scolytinae sp.12	Z02_ColCur348	J	2	3.212
Scolytinae sp.13	Z02_ColCur360	F, R	2	3.213
Scolytinae sp.15	Z02_ColCur371	F	1	3.214
<i>Scolytogenes</i> sp.01	Z02_ColCur136	F, J, O	64	3.215
<i>Scolytogenes</i> sp.02	Z02_ColCur266	F, J	23	3.216

IMAGES OF CURCULIONIDAE MORPHOSPECIES

For the majority of the EFForTS morphospecies collection, specimens have been photographed using KEYENCE VHX-2000 digital microscope. Below, we display dorsally, laterally, and facial images of each morphospecies.

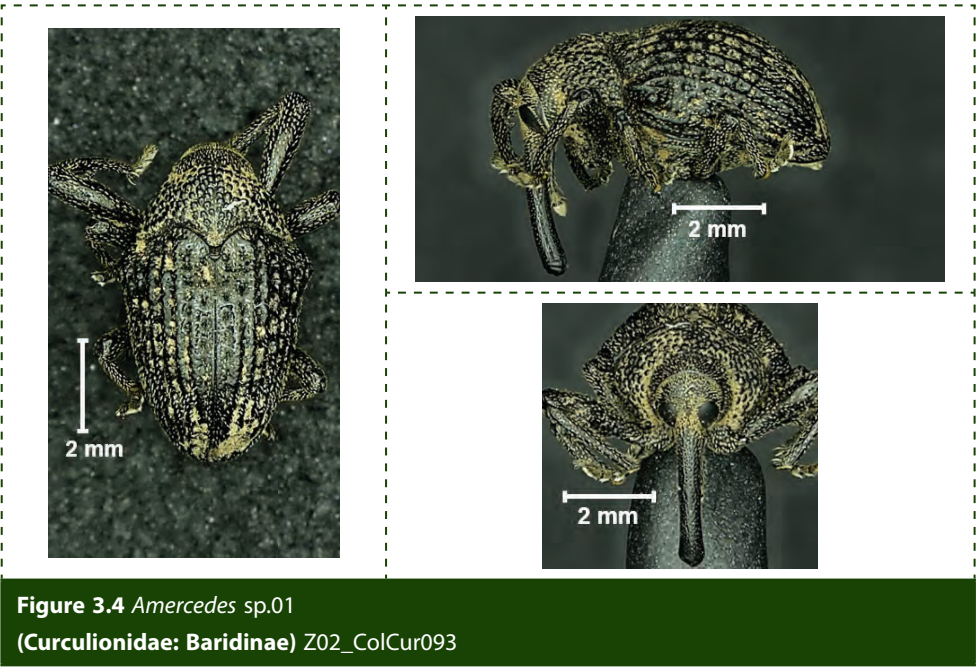


Figure 3.4 *Amercedes* sp.01
(Curculionidae: Baridinae) Z02_ColCur093

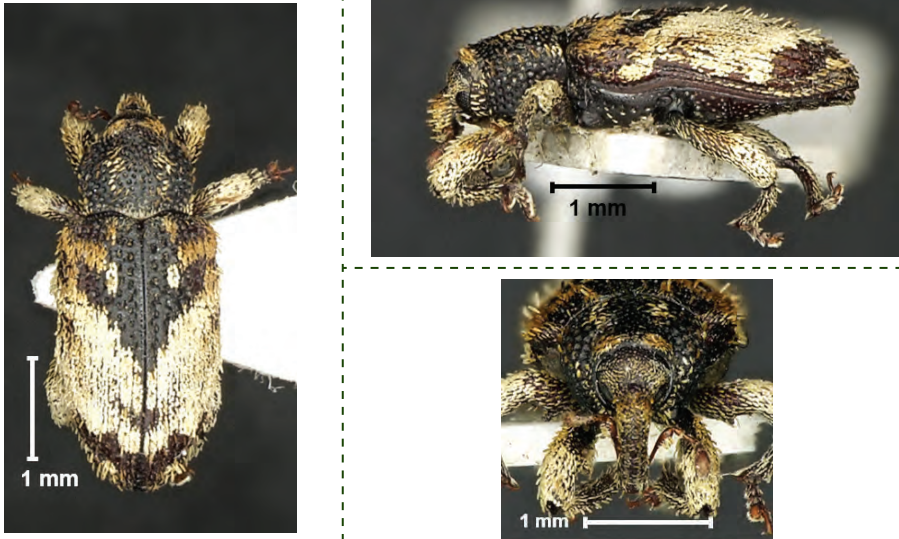


Figure 3.5 Baridinae sp.03
(Curculionidae: Baridinae) Z02_ColCur008

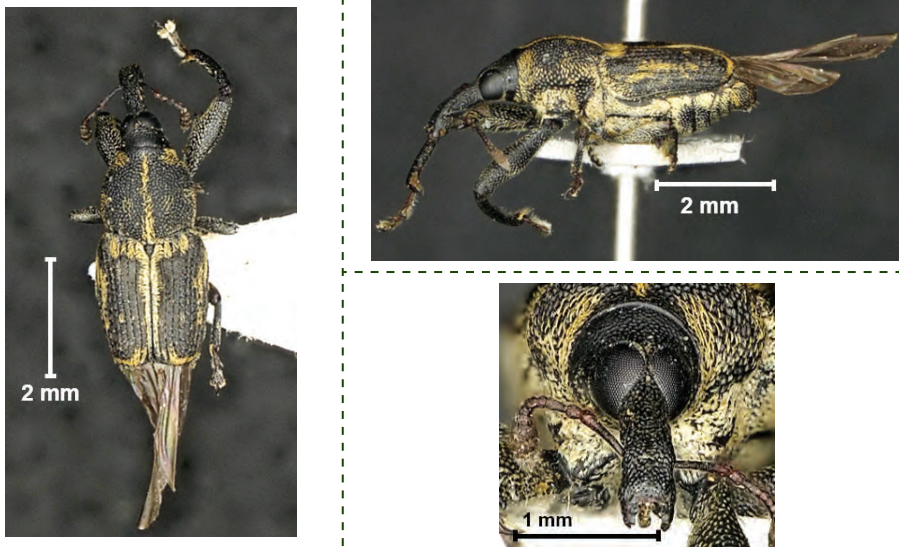


Figure 3.6 Baridinae sp.04
(Curculionidae: Baridinae) Z02_ColCur148

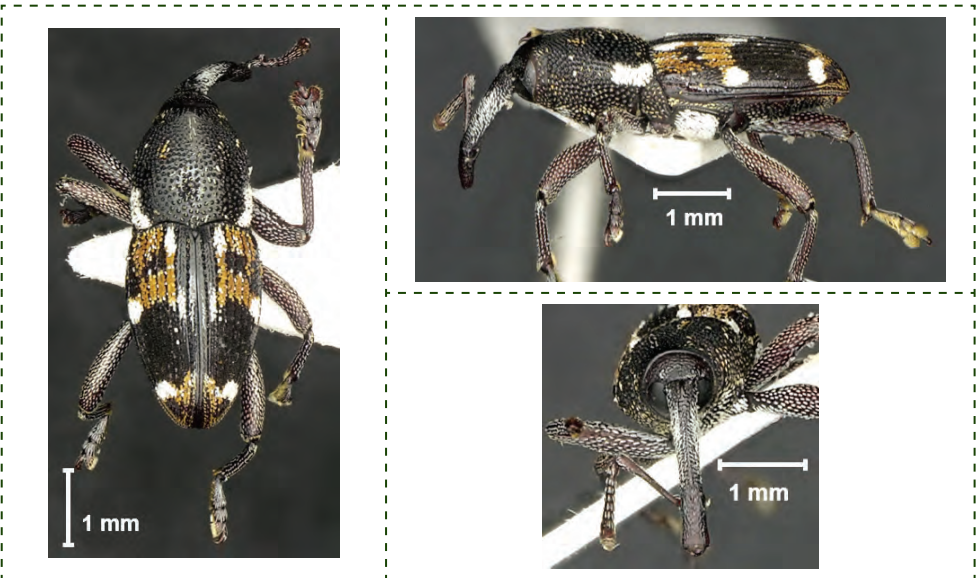


Figure 3.7 Baridinae sp.05
(Curculionidae: Baridinae) Z02_ColCur361



Figure 3.8 Baridinae sp.06
(Curculionidae: Baridinae) Z02_ColCur267

Buku ini tidak diperjualbelikan.

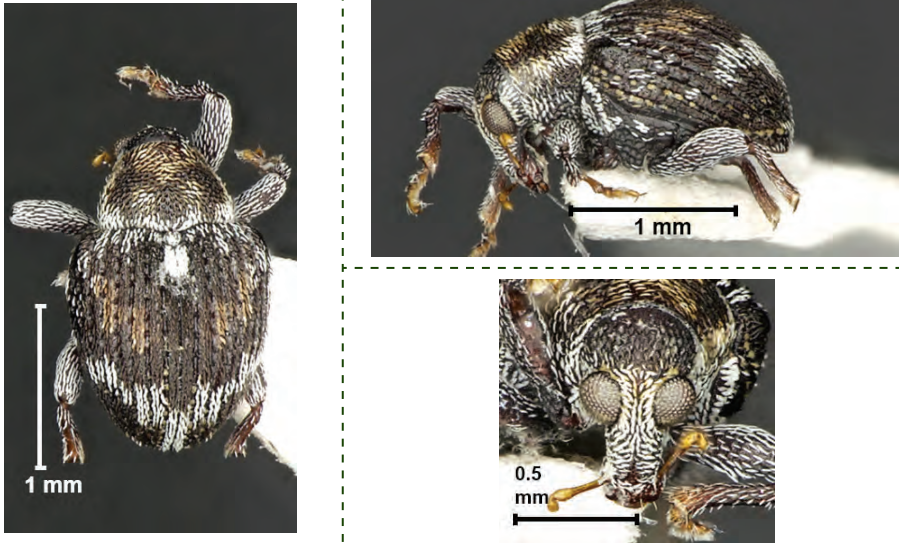


Figure 3.9 Baridinae sp.07
(Curculionidae: Baridinae) Z02_ColCur322

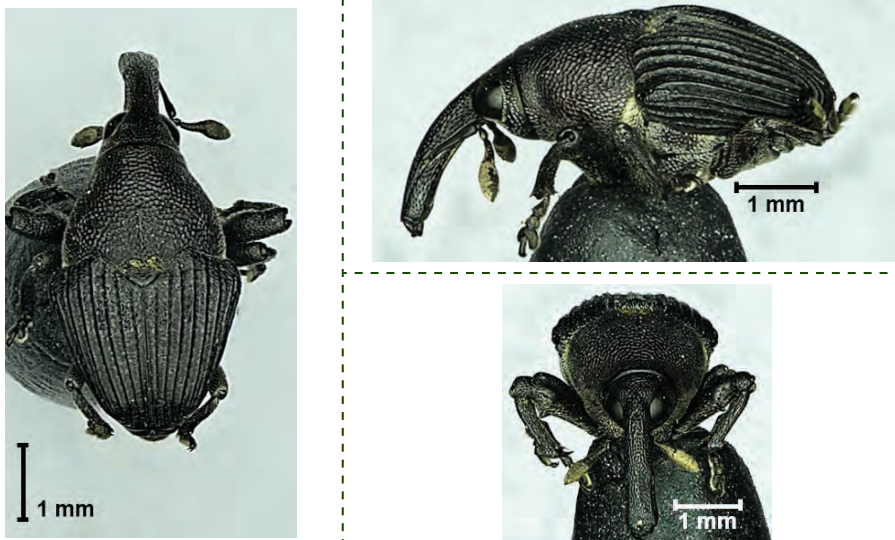


Figure 3.10 Baridinae sp.08
(Curculionidae: Baridinae) Z02_ColCur082

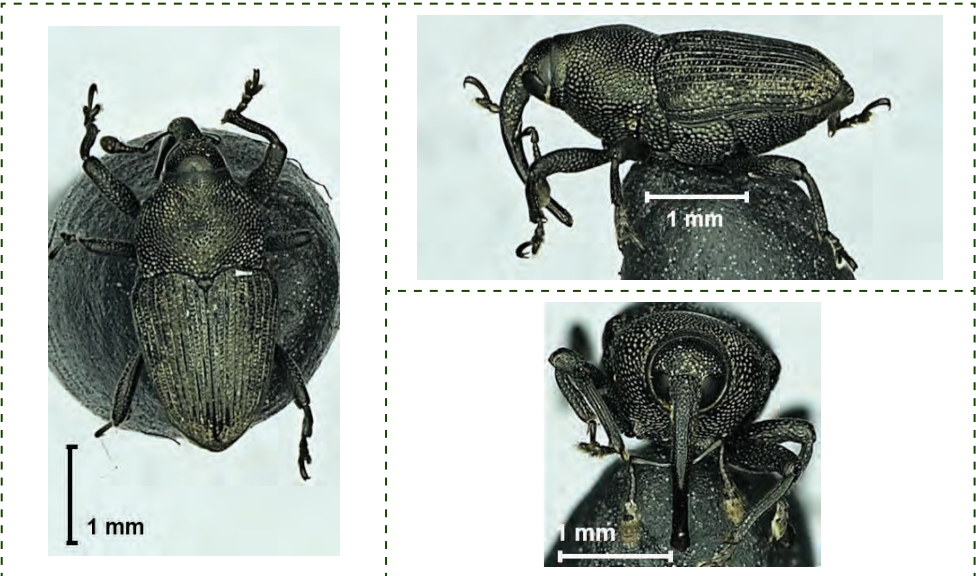


Figure 3.11 *Baris* sp.01
(Curculionidae: Baridinae) Z02_ColCur209

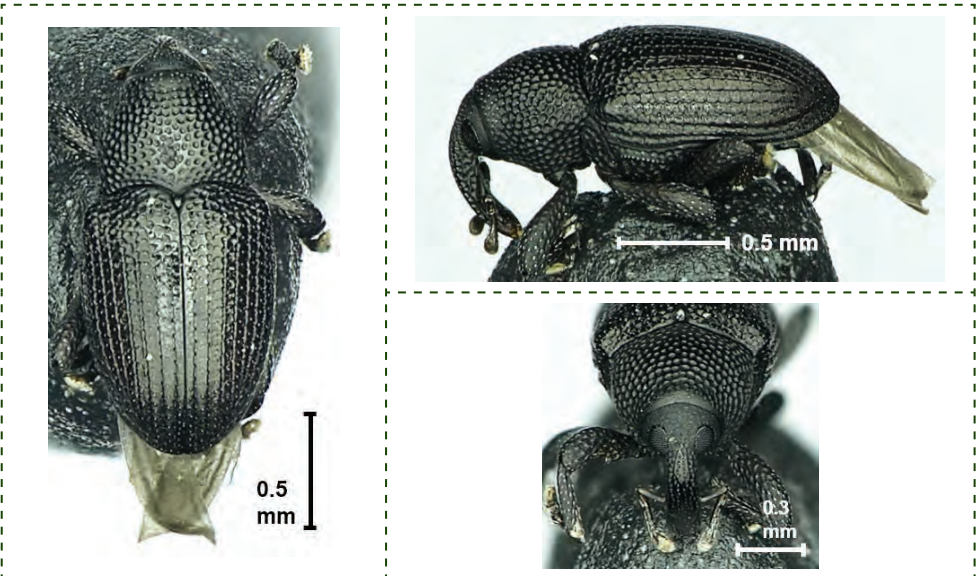


Figure 3.12 *Baris* sp.02
(Curculionidae: Baridinae) Z02_ColCur167

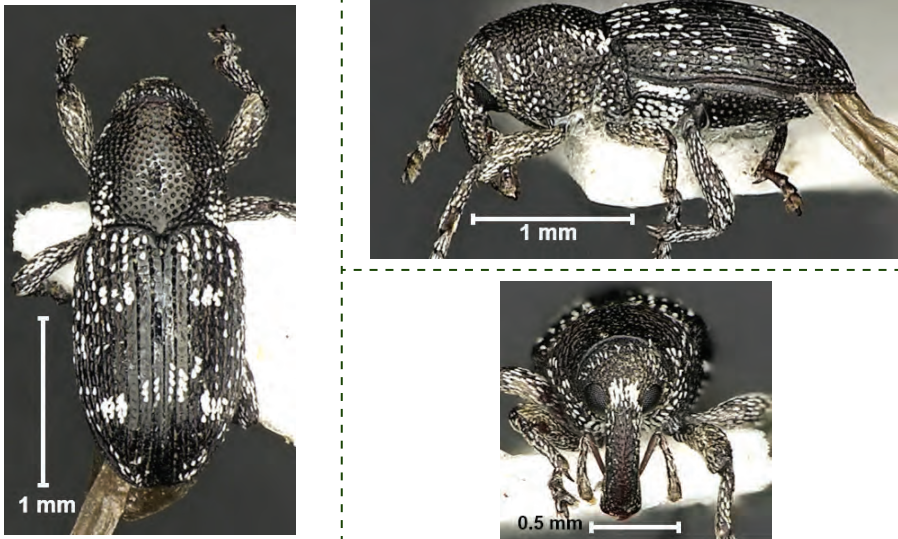


Figure 3.13 *Plesiobaris* sp.01
(Curculionidae: Baridinae) Z02_ColCur063

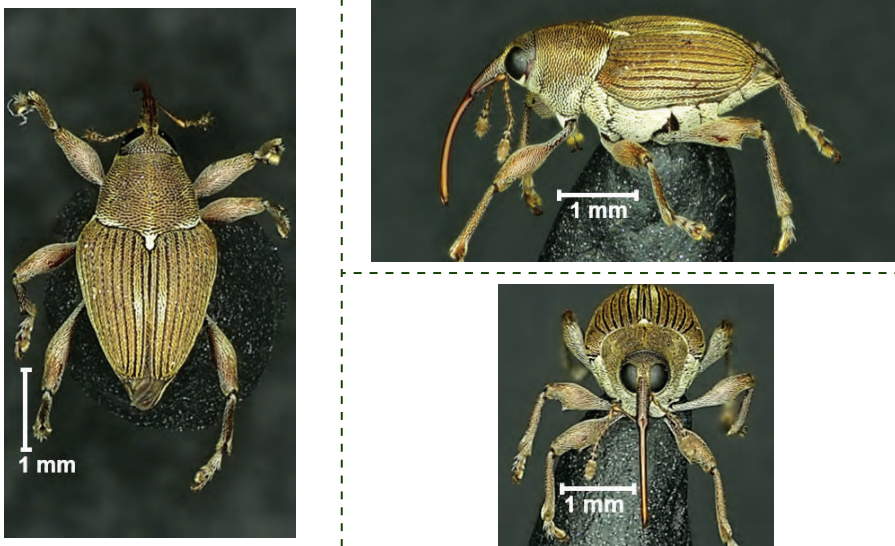


Figure 3.14 *Ceutorhynchinae* sp.01
(Curculionidae: Ceutorhynchinae) Z02_ColCur069



Figure 3.15 *Ceutorhynchinae* sp.02
(Curculionidae: *Ceutorhynchinae*) Z02_ColCur016

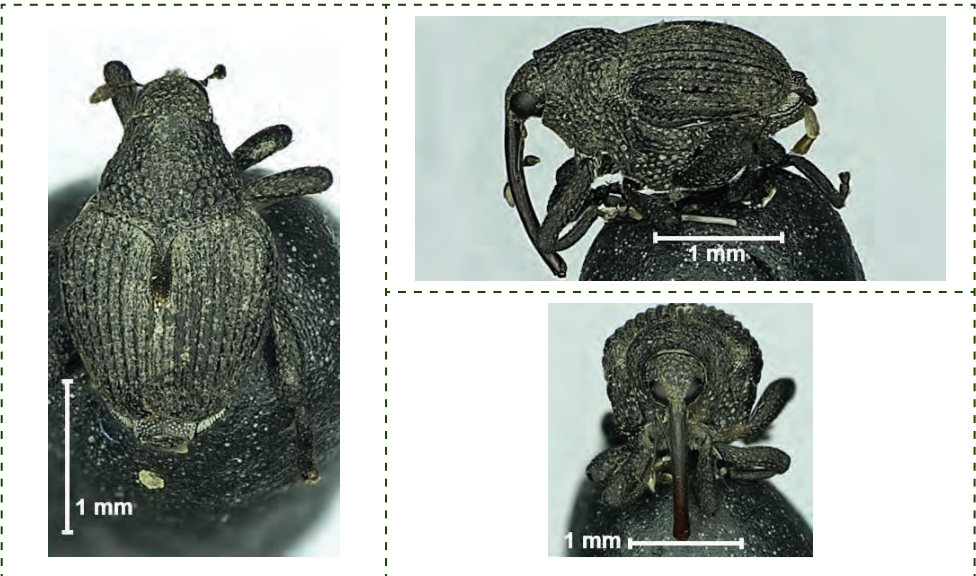


Figure 3.16 *Ceutorhynchus* sp.01
(Curculionidae: *Ceutorhynchinae*) Z02_ColCur103

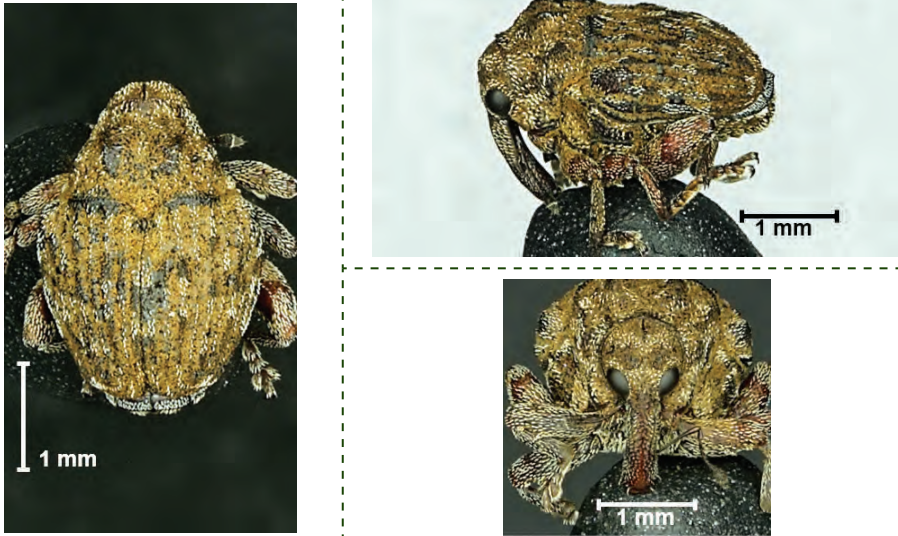


Figure 3.17 *Homorosoma* sp.01
(Curculionidae: Ceutorhynchinae) Z02_ColCur058

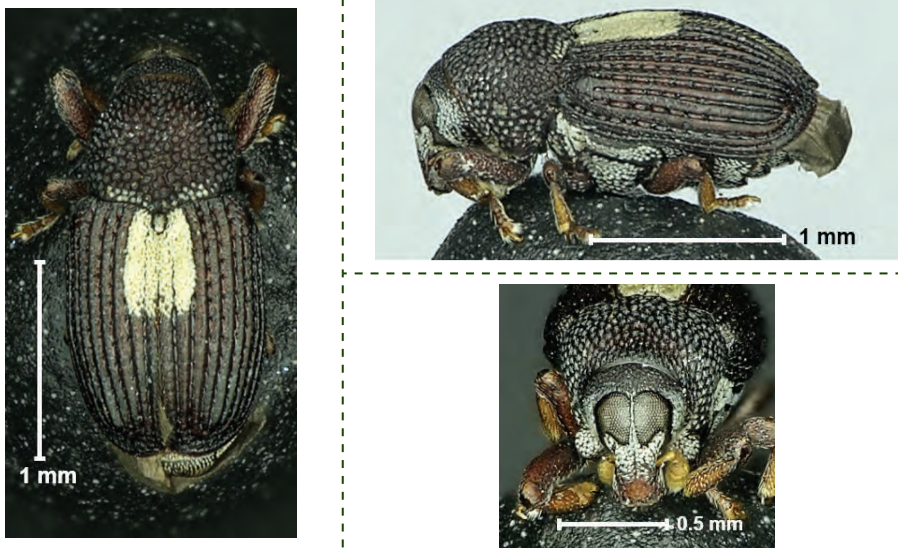


Figure 3.18 *Rhinoncus* sp.01
(Curculionidae: Ceutorhynchinae) Z02_ColCur049

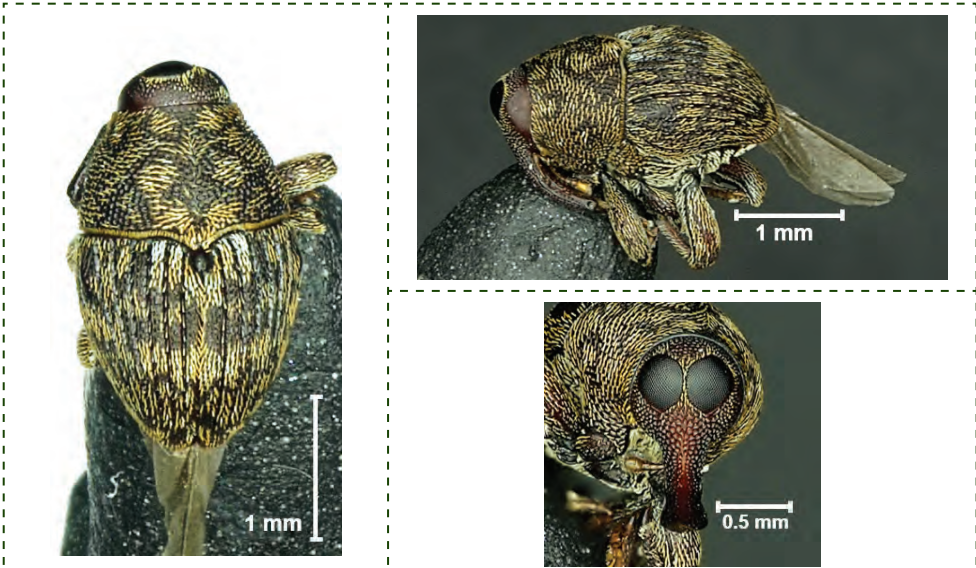


Figure 3.19 *Brimoides* sp.01
(Curculionidae: Conoderinae) Z02_ColCur061

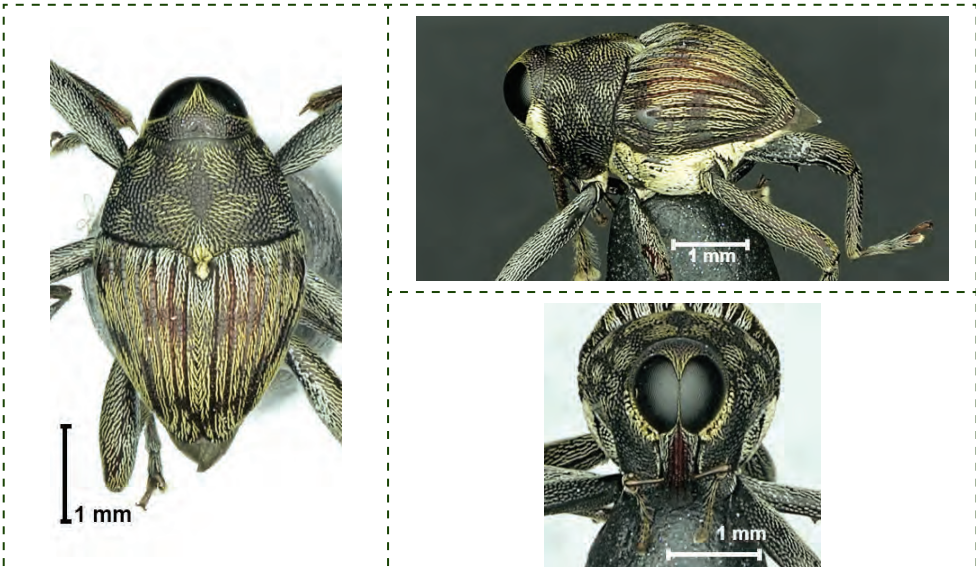


Figure 3.20 *Brimoides* sp.02
(Curculionidae: Conoderinae) Z02_ColCur154



Figure 3.21 *Brimoides* sp.03
(Curculionidae: Conoderinae) Z02_ColCur155

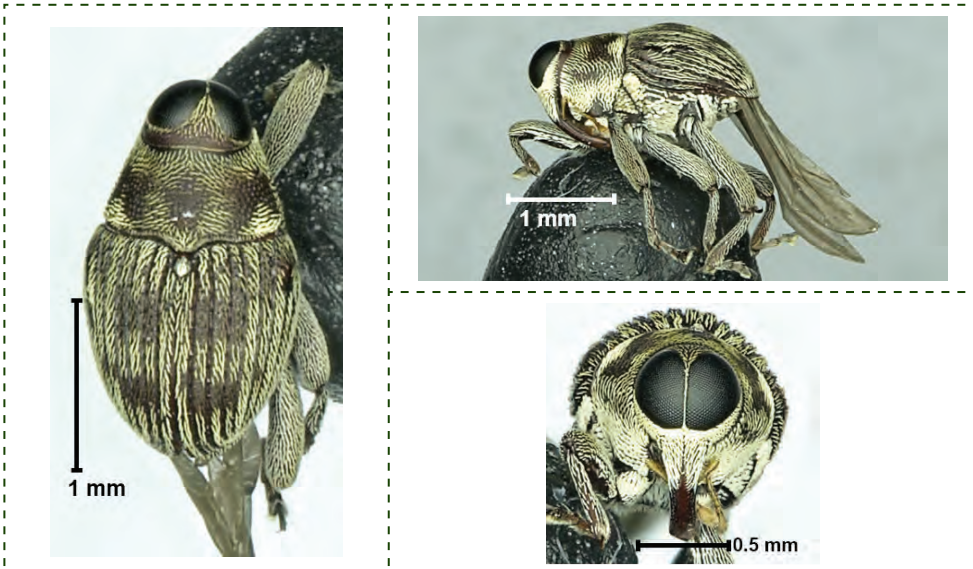


Figure 3.22 *Brimoides* sp.04
(Curculionidae: Conoderinae) Z02_ColCur175

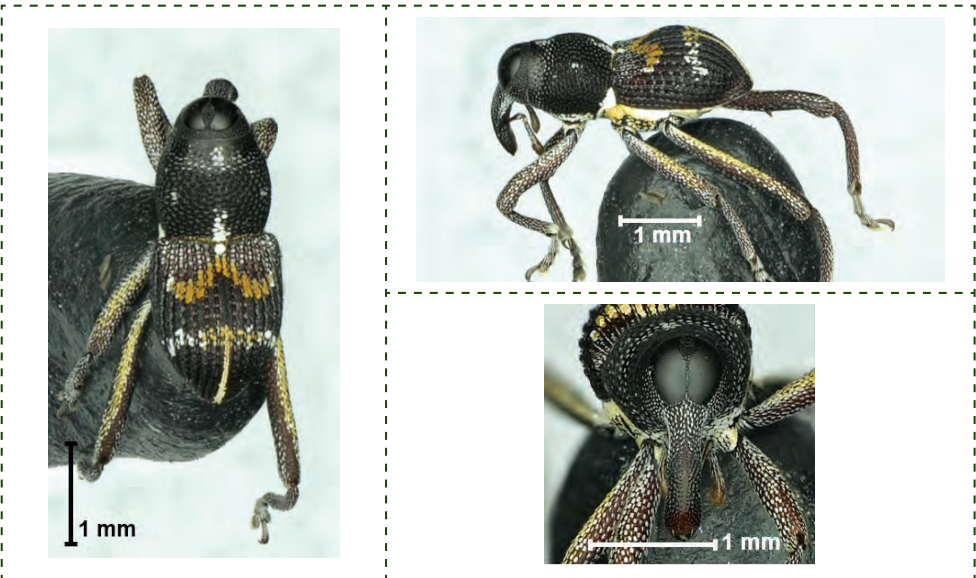


Figure 3.23 Conoderinae sp.01
(Curculionidae: Conoderinae) Z02_ColCur270

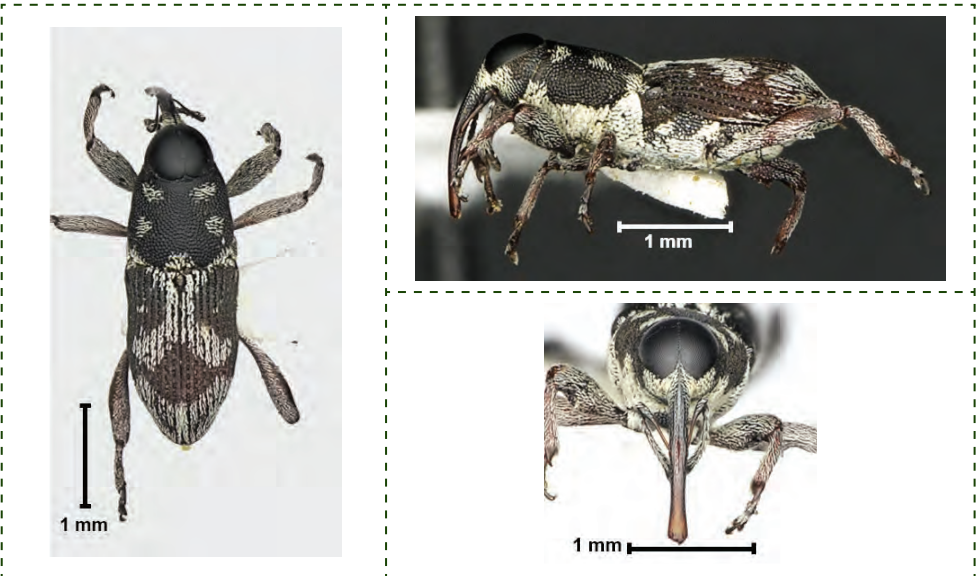


Figure 3.24 Conoderinae sp.02
(Curculionidae: Conoderinae) Z02_ColCur340

Buku ini tidak diperjualbelikan.

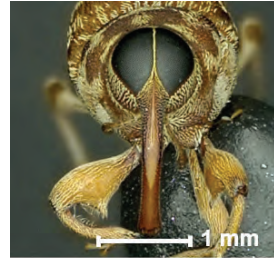
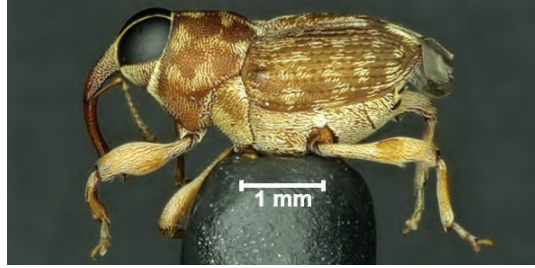


Figure 3.25 Conoderinae sp.03
(Curculionidae: Conoderinae) Z02_ColCur044



Figure 3.26 Conoderinae sp.04
(Curculionidae: Conoderinae) Z02_ColCur151



Figure 3.27 Conoderinae sp.05
(Curculionidae: Conoderinae) Z02_ColCur177

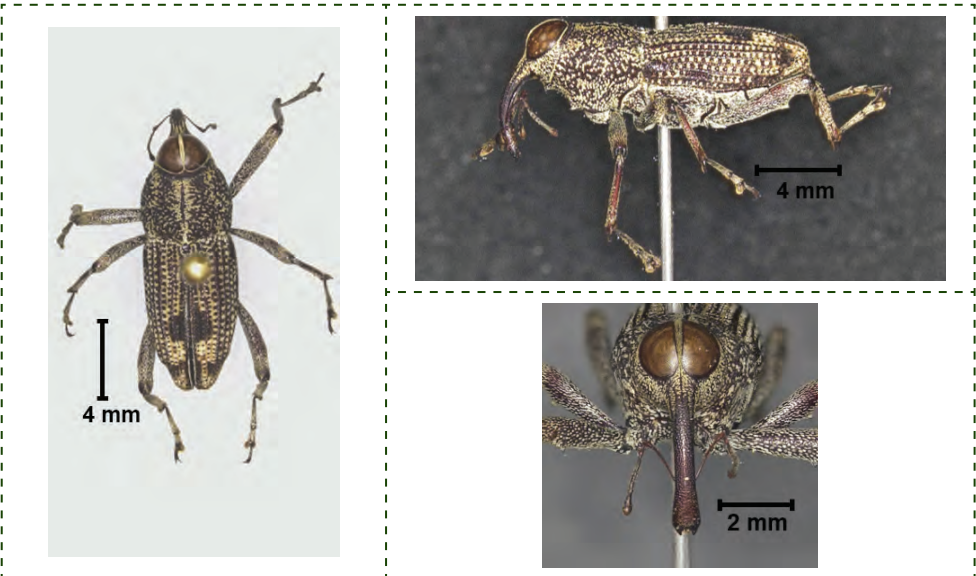


Figure 3.28 Conoderinae sp.06
(Curculionidae: Conoderinae) Z02_ColCur351

Buku ini tidak diperjualbelikan.



Figure 3.29 Conoderinae sp.07
(Curculionidae: Conoderinae) Z02_ColCur023

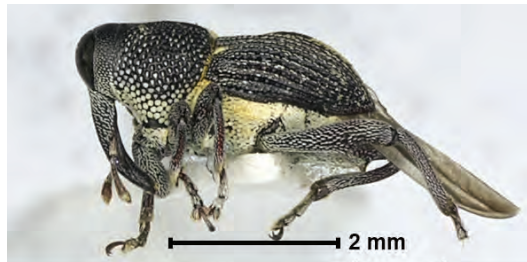


Figure 3.30 Conoderinae sp.08
(Curculionidae: Conoderinae) Z02_ColCur070

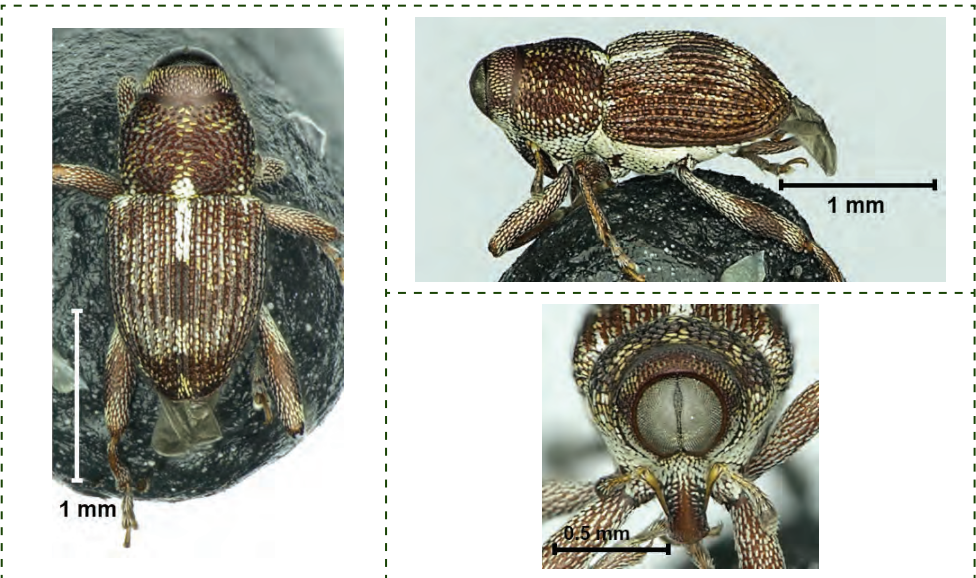


Figure 3.31 Conoderinae sp.09
(Curculionidae: Conoderinae) Z02_ColCur246



Figure 3.32 Conoderinae sp.10
(Curculionidae: Conoderinae) Z02_ColCur311

Buku ini tidak diperjualbelikan.

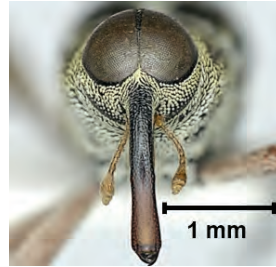
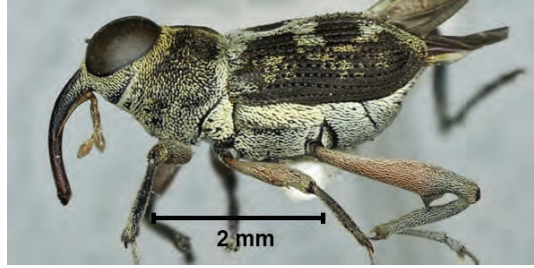


Figure 3.33 Conoderinae sp.11
(Curculionidae: Conoderinae) Z02_ColCur328



Figure 3.34 Conoderinae sp.12
(Curculionidae: Conoderinae) Z02_ColCur084

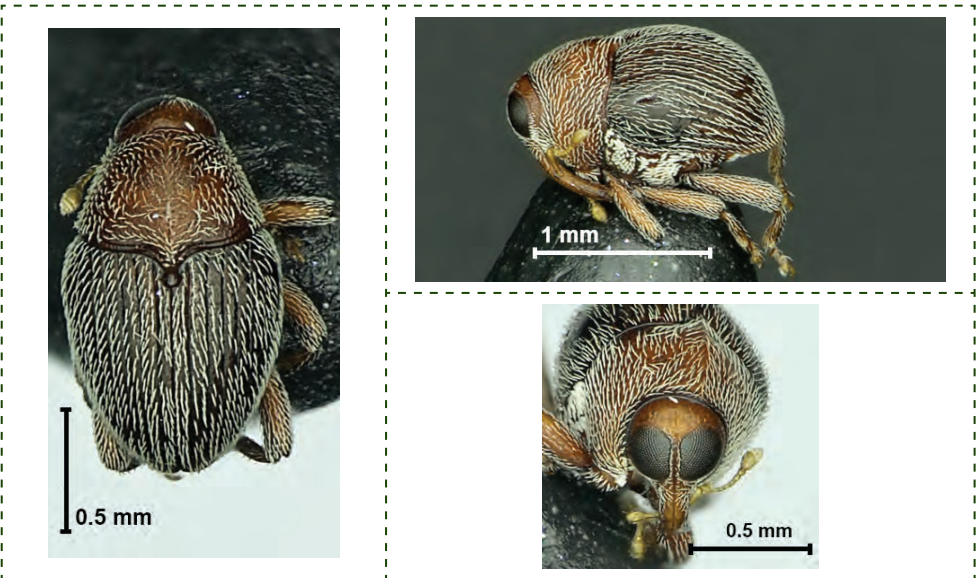


Figure 3.35 Conoderinae sp.13
(Curculionidae: Conoderinae) Z02_ColCur359

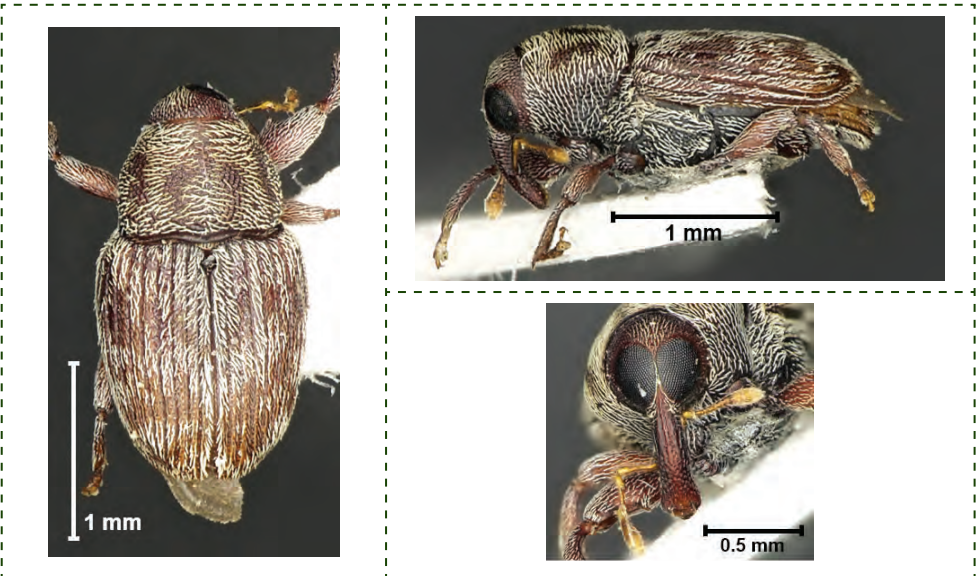


Figure 3.36 Conoderinae sp.14
(Curculionidae: Conoderinae) Z02_ColCur019

Buku ini tidak diperjualbelikan.

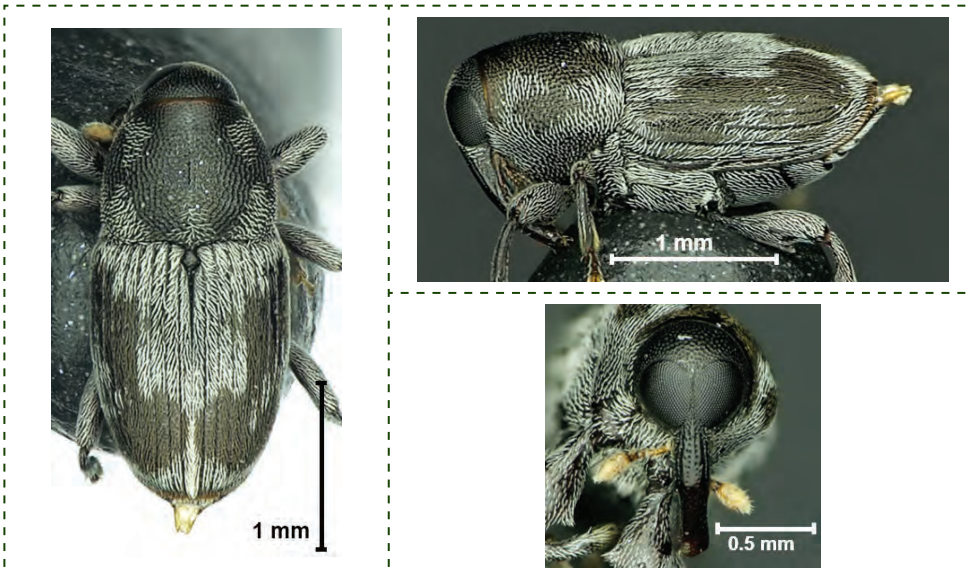


Figure 3.37 Conoderinae sp.15
(Curculionidae: Conoderinae) Z02_ColCur0411



Figure 3.38 Conoderinae sp.16
(Curculionidae: Conoderinae) Z02_ColCur046

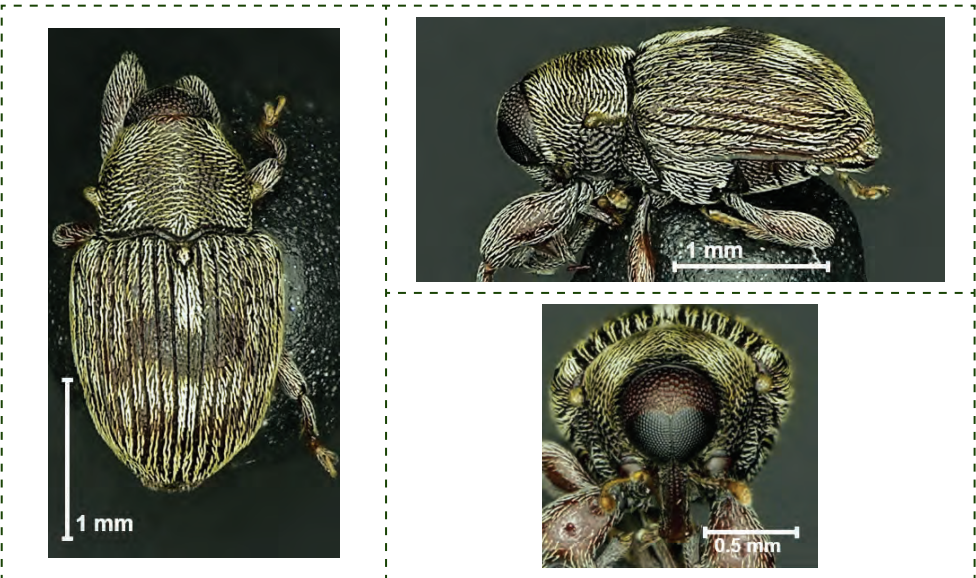


Figure 3.39 Conoderinae sp.17
(Curculionidae: Conoderinae) Z02_ColCur150

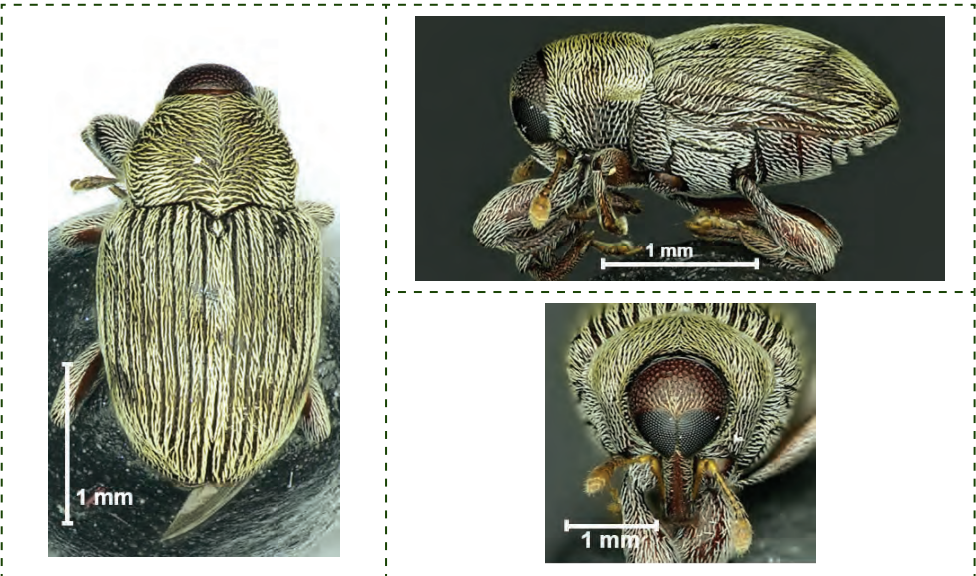


Figure 3.40 Conoderinae sp.18
(Curculionidae: Conoderinae) Z02_ColCur206

Buku ini tidak diperjualbelikan.

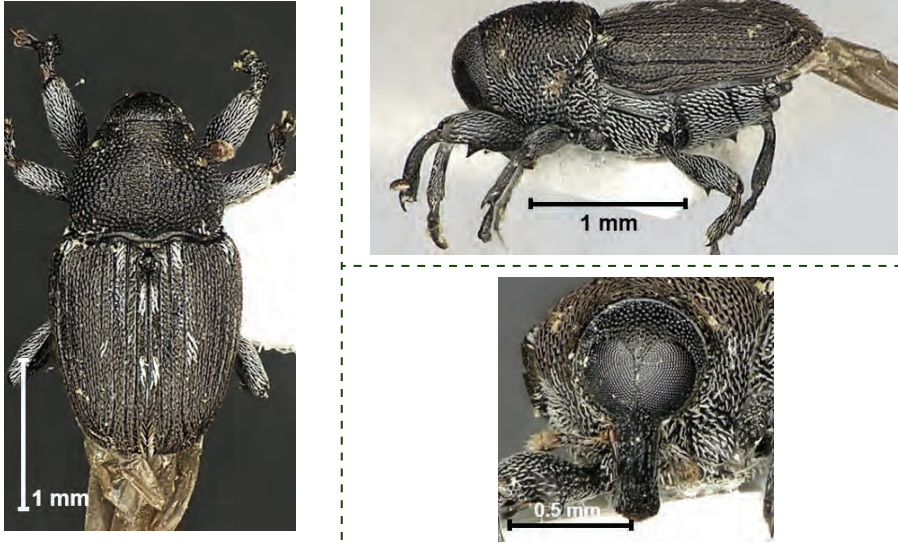


Figure 3.41 Conoderinae sp.19
(Curculionidae: Conoderinae) Z02_ColCur219

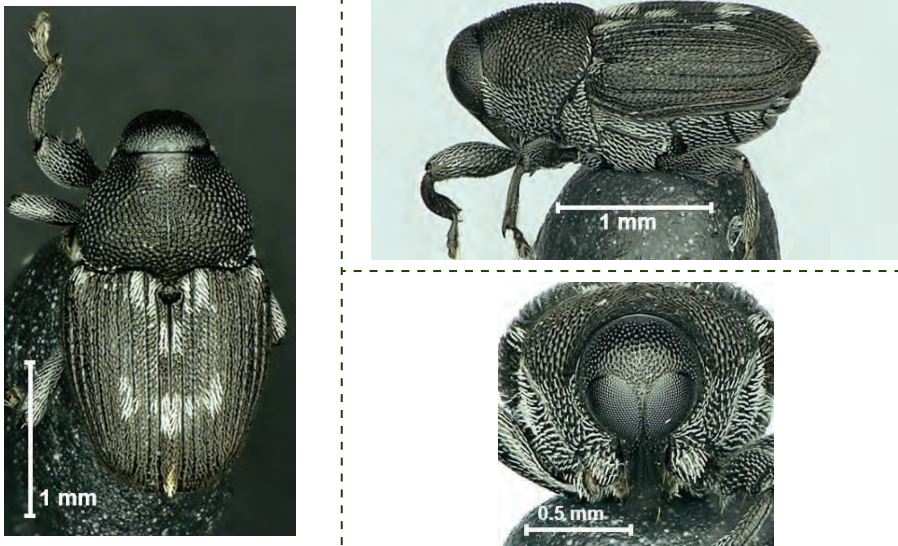


Figure 3.42 Conoderinae sp.20
(Curculionidae: Conoderinae) Z02_ColCur221

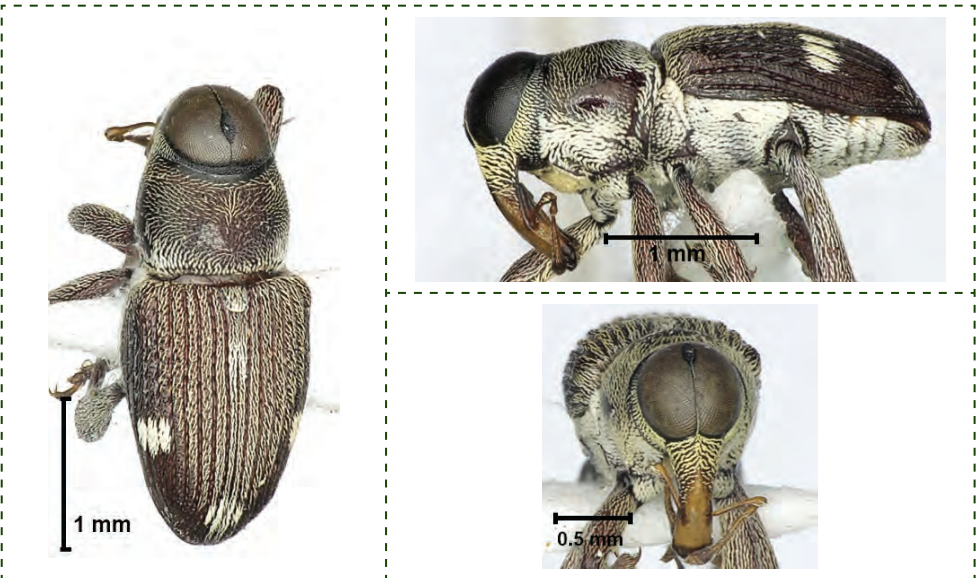


Figure 3.43 Conoderinae sp.21
(Curculionidae: Conoderinae) Z02_ColCur376

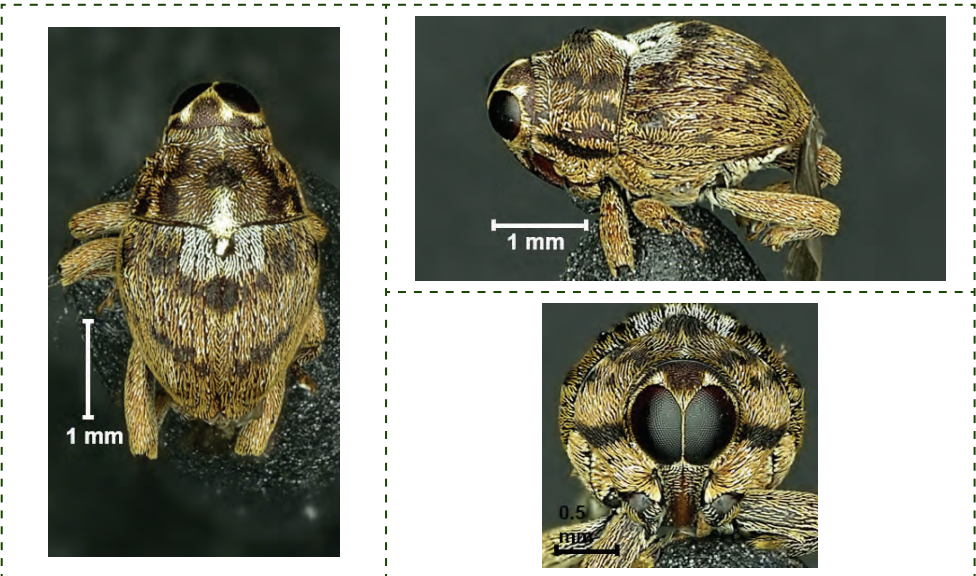


Figure 3.44 Conoderinae sp.22
(Curculionidae: Conoderinae) Z02_ColCur170

Buku ini tidak diperjualbelikan.

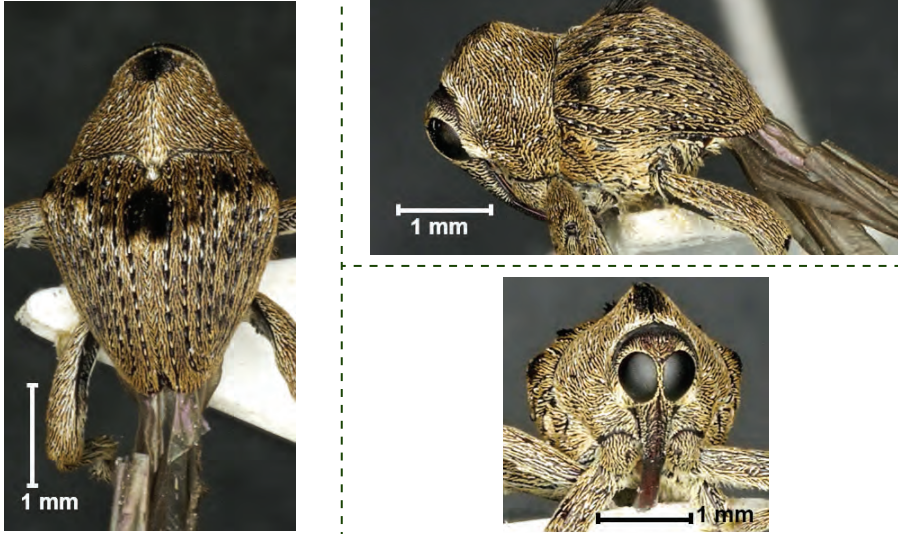


Figure 3.45 Conoderinae sp.23
(Curculionidae: Conoderinae) Z02_ColCur203

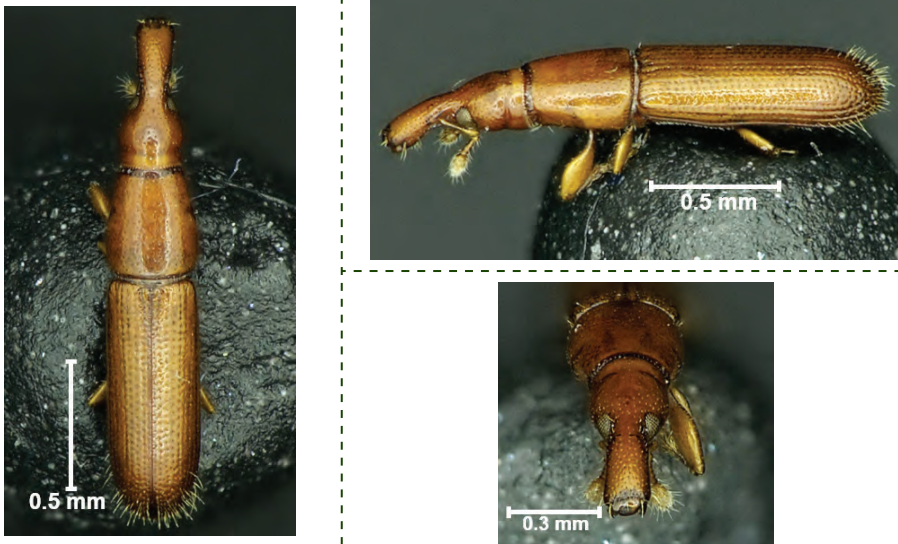


Figure 3.46 Cossoninae sp.01
(Curculionidae: Cossoninae) Z02_ColCur217

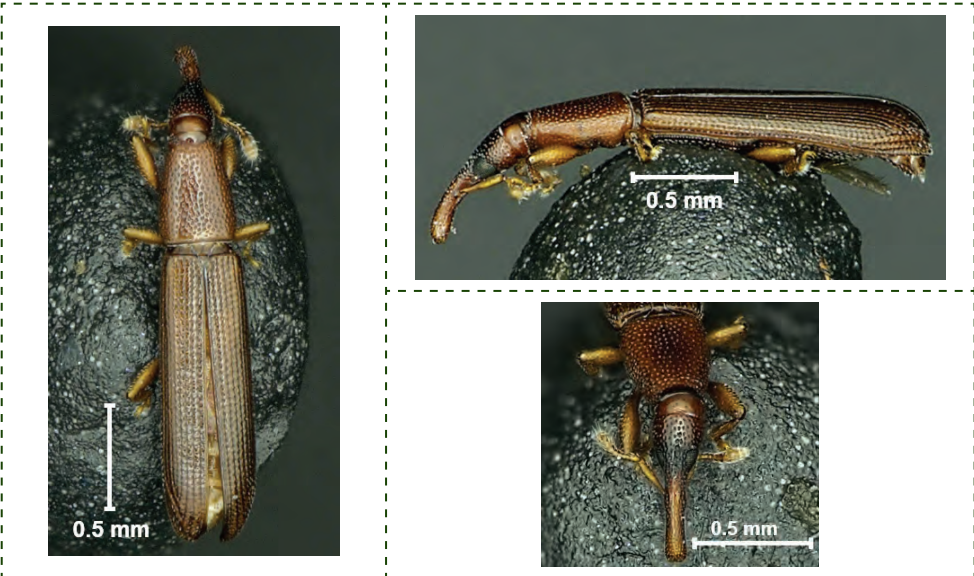


Figure 3.47 *Cossoninae* sp.02
(Curculionidae: *Cossoninae*) Z02_ColCur296

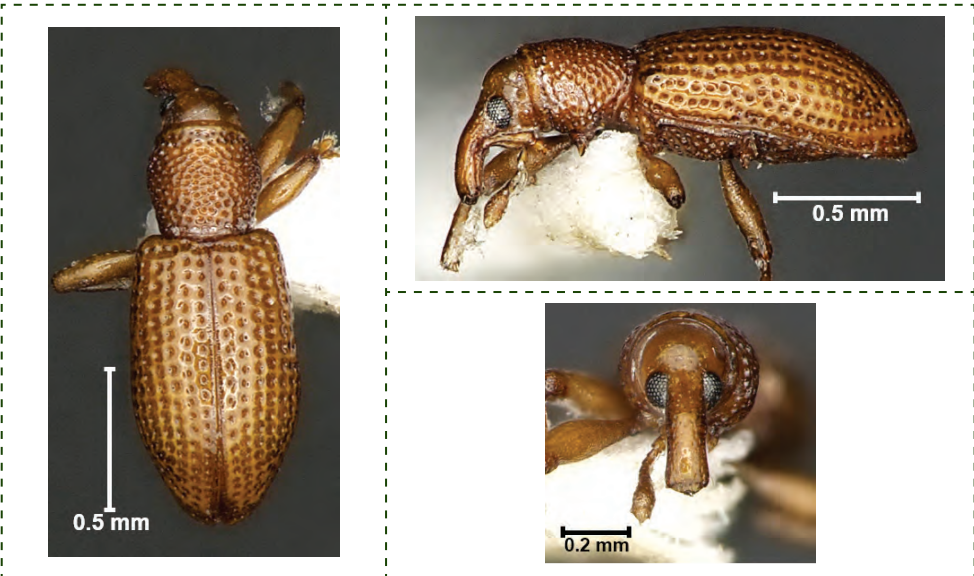


Figure 3.48 *Cossoninae* sp.03
(Curculionidae: *Cossoninae*) Z02_ColCur165

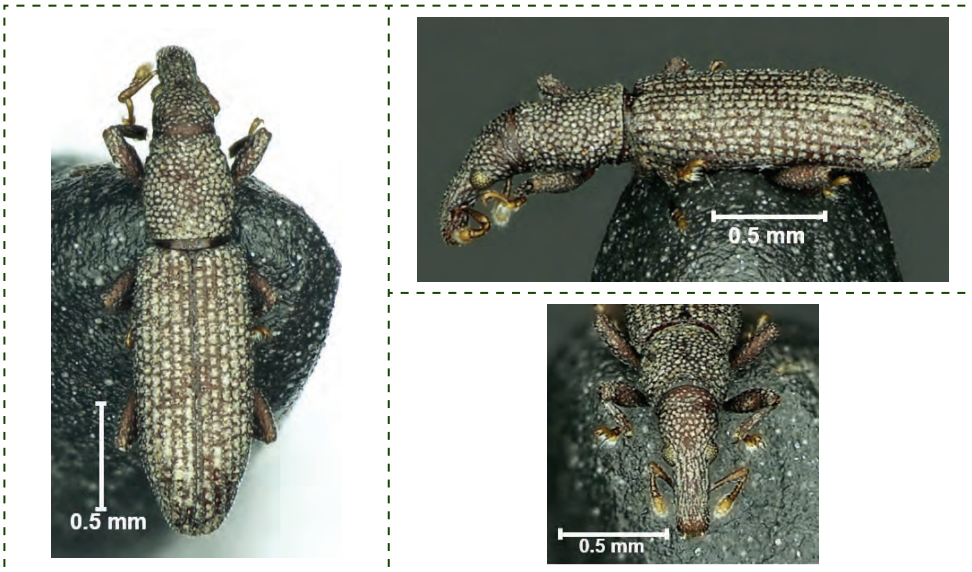


Figure 3.49 *Cossoninae* sp.04
(Curculionidae: *Cossoninae*) Z02_ColCur317

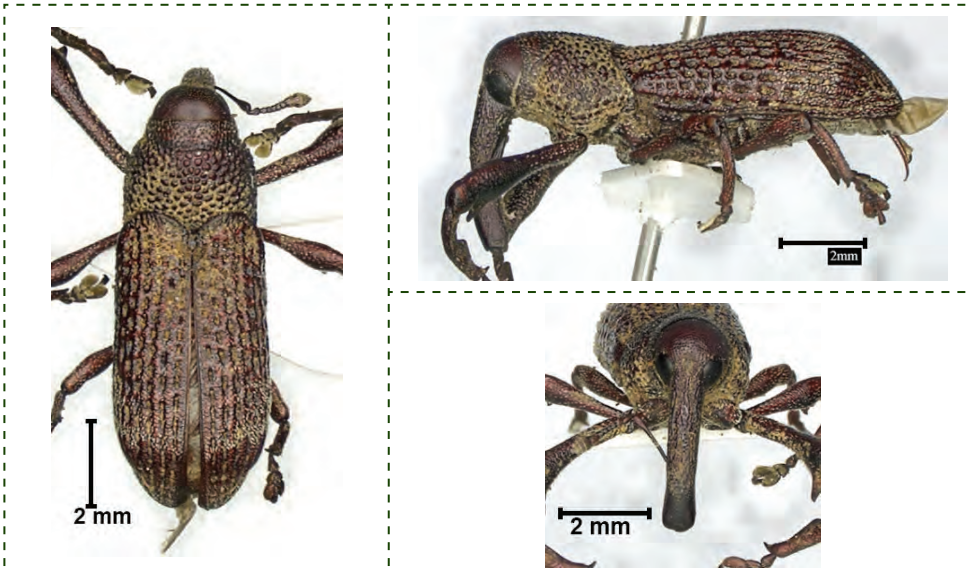


Figure 3.50 *Cossoninae* sp.05
(Curculionidae: *Cossoninae*) Z02_ColCur323

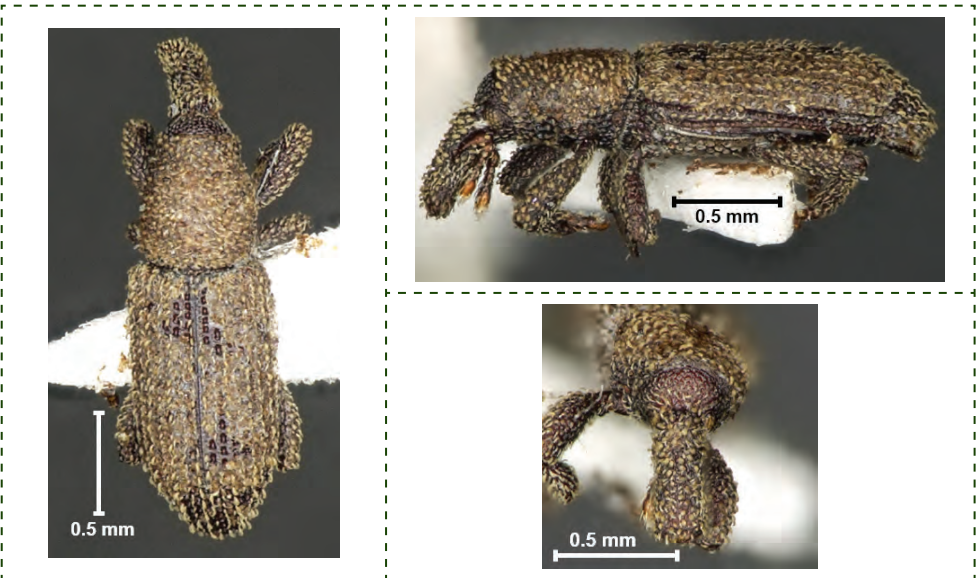


Figure 3.51 *Cossoninae* sp.06
(Curculionidae: *Cossoninae*) Z02_ColCur373

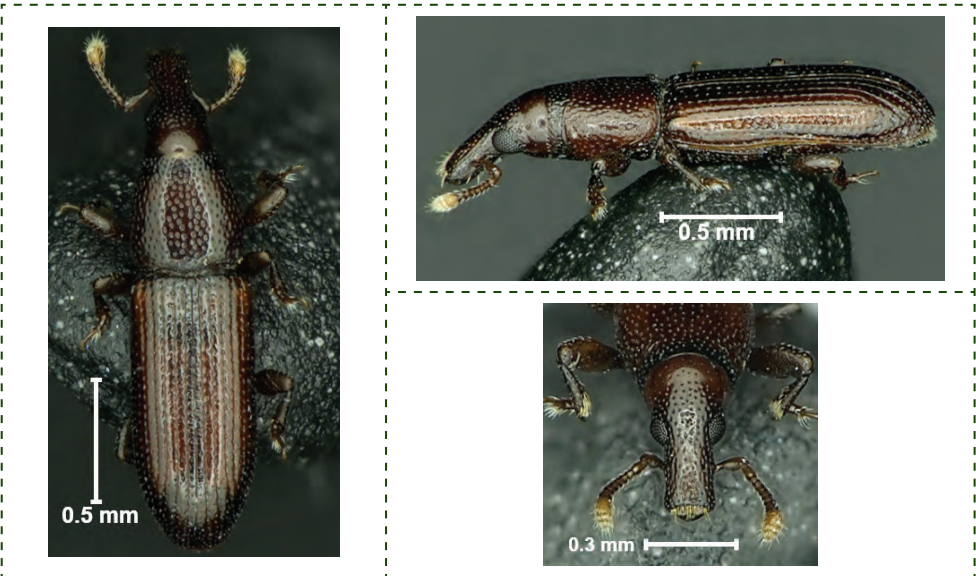


Figure 3.52 *Cossonus* sp.01
(Curculionidae: *Cossoninae*) Z02_ColCur017

Buku ini tidak diperjualbelikan.

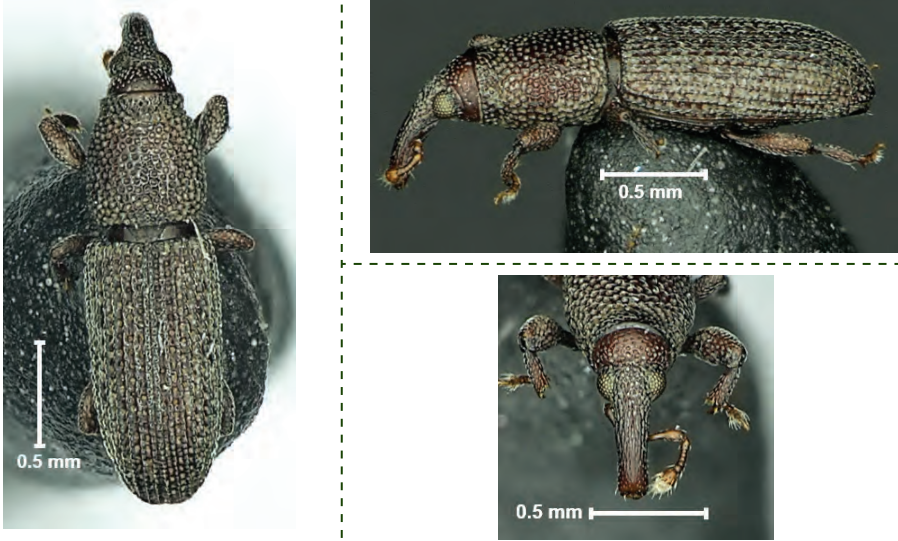


Figure 3.53 *Cossonus* sp.02
(Curculionidae: Cossoninae) Z02_ColCur122

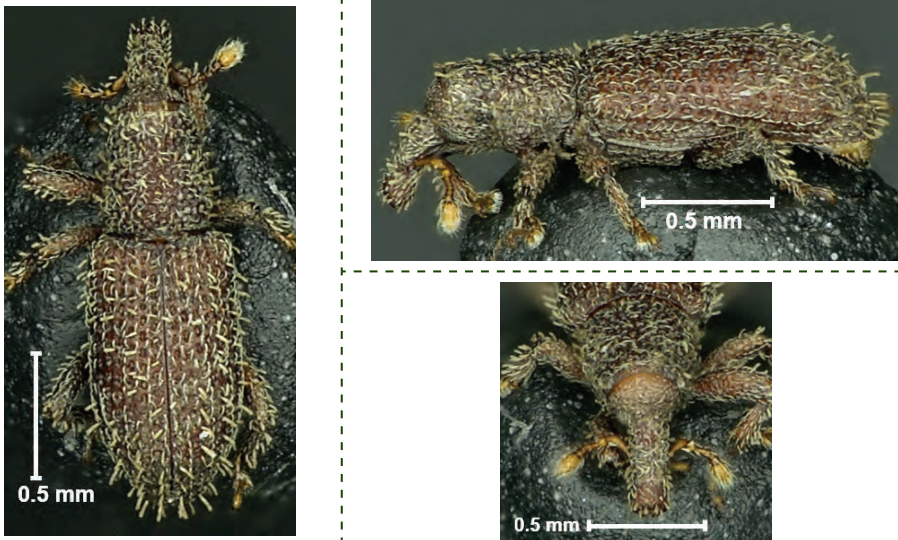


Figure 3.54 *Himatium* sp.01
(Curculionidae: Cossoninae) Z02_ColCur025

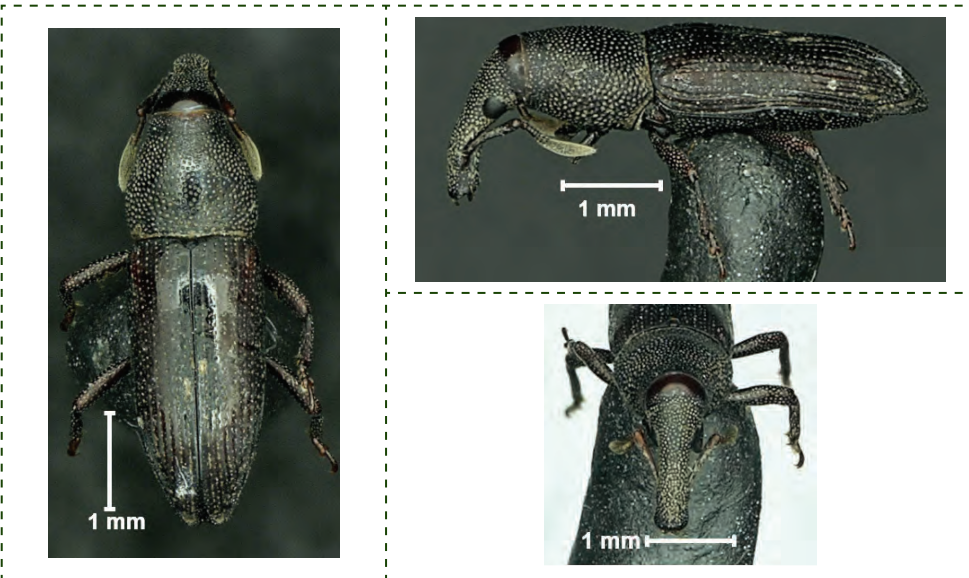


Figure 3.55 *Phloeophagus* sp.01
(Curculionidae: **Cossoninae**) Z02_ColCur217



Figure 3.56 *Cryptorhynchinae* sp.01
(Curculionidae: **Cryptorhynchinae**) Z02_ColCur009

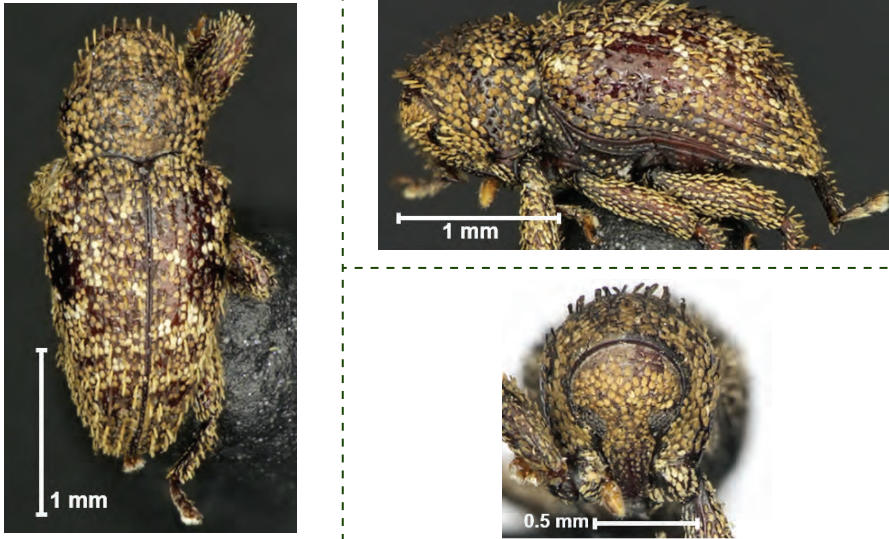


Figure 3.57 *Cryptorhynchinae* sp.02
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur176

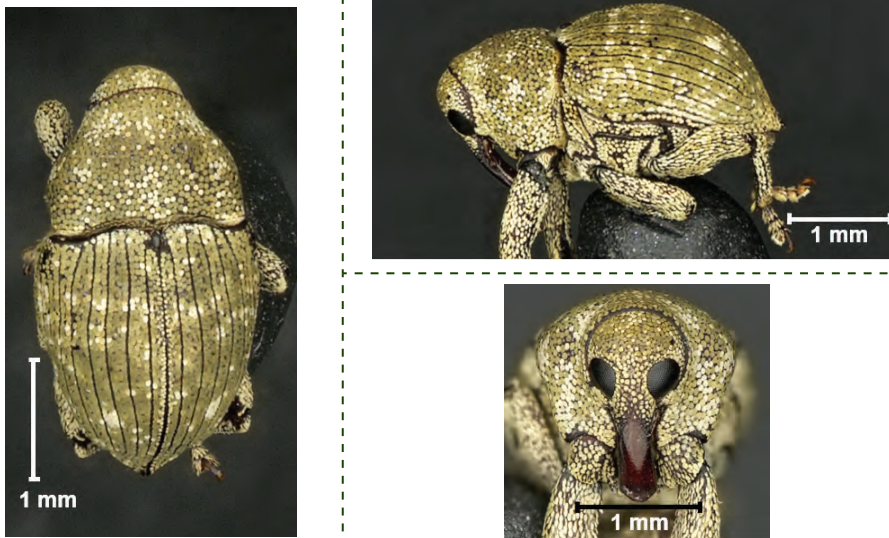


Figure 3.58 *Cryptorhynchinae* sp.0s3
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur056a



Figure 3.59 Cryptorhynchinae sp.04
(Curculionidae: Cryptorhynchinae) Z02_ColCur225

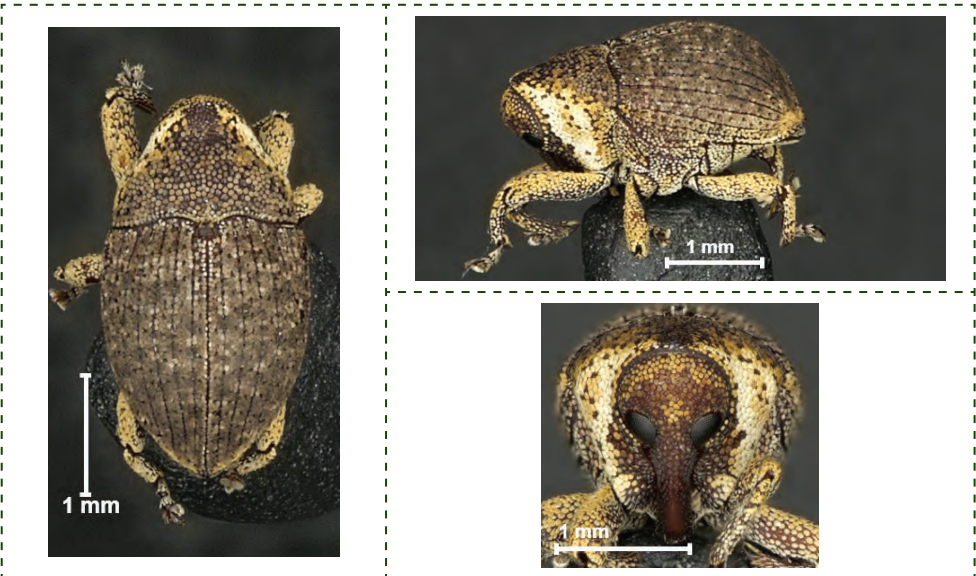


Figure 3.60 Cryptorhynchinae sp.05
(Curculionidae: Cryptorhynchinae) Z02_ColCur238

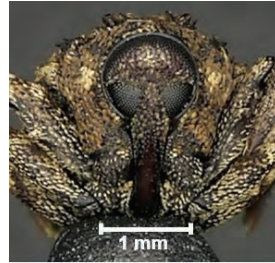
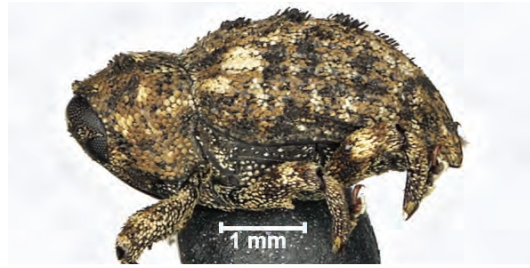


Figure 3.61 *Cryptorhynchinae* sp.06
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur059

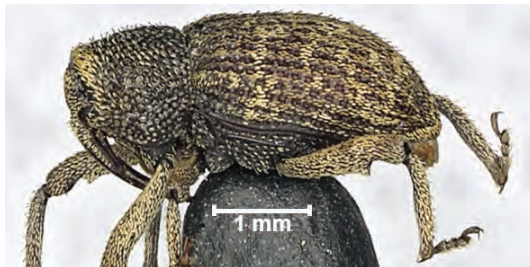
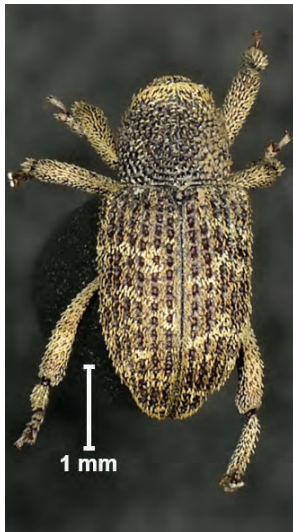


Figure 3.62 *Cryptorhynchinae* sp.07
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur115

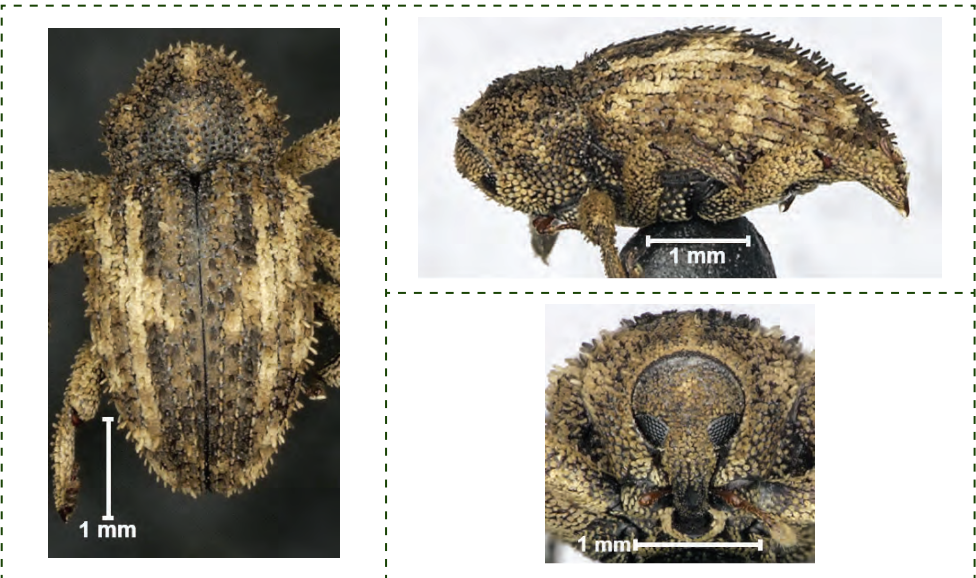


Figure 3.63 Cryptorhynchinae sp.08
(Curculionidae: Cryptorhynchinae) Z02_ColCur261

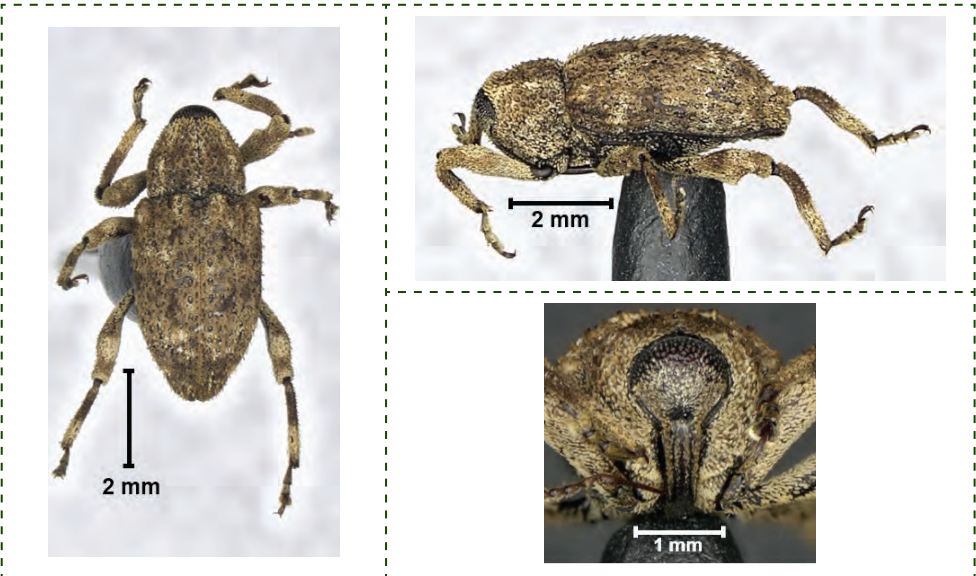


Figure 3.64 Cryptorhynchinae sp.09
(Curculionidae: Cryptorhynchinae) Z02_ColCur272

Buku ini tidak diperjualbelikan.



Figure 3.65 *Cryptorhynchinae* sp.10
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur091

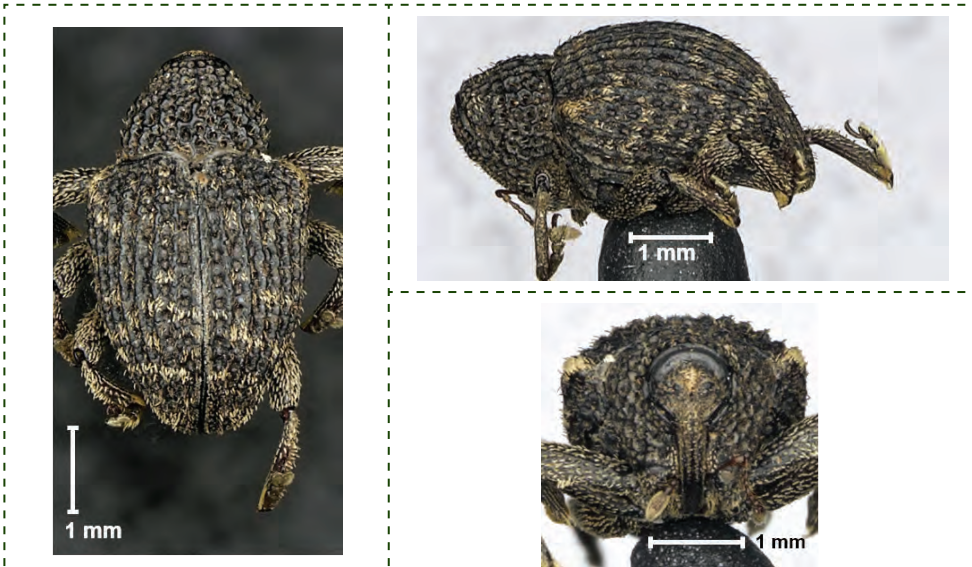


Figure 3.66 *Cryptorhynchinae* sp.11
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur125

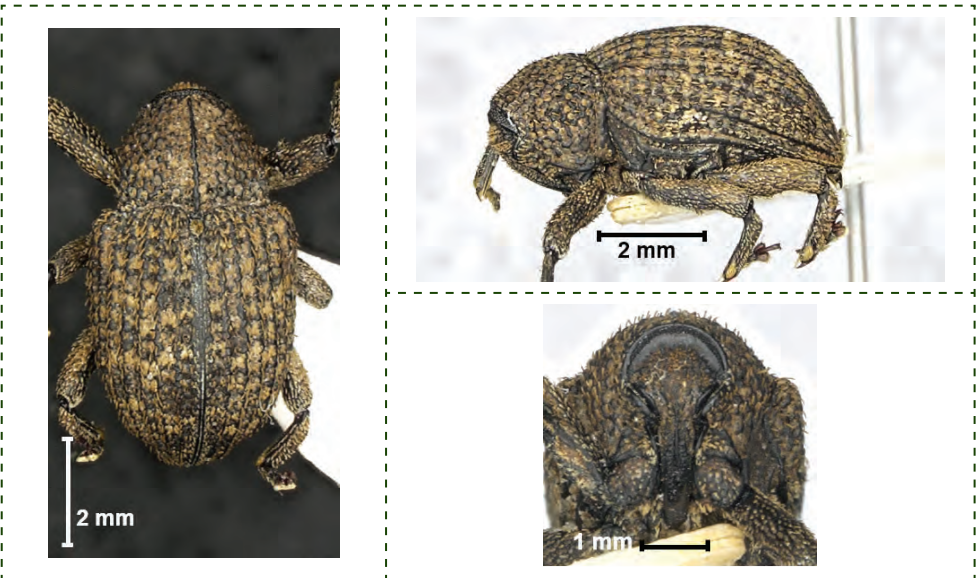


Figure 3.67 Cryptorhynchinae sp.12
(Curculionidae: Cryptorhynchinae) Z02_ColCur174

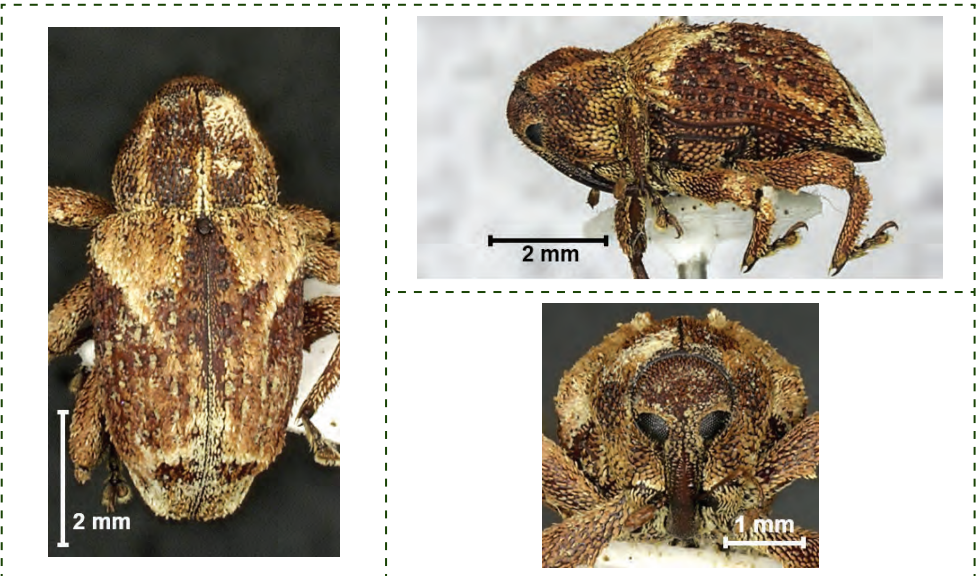


Figure 3.68 Cryptorhynchinae sp.13
(Curculionidae: Cryptorhynchinae) Z02_ColCur355

Buku ini tidak diperjualbelikan.



Figure 3.69 Cryptorhynchinae sp.14
(Curculionidae: Cryptorhynchinae) Z02_ColCur210

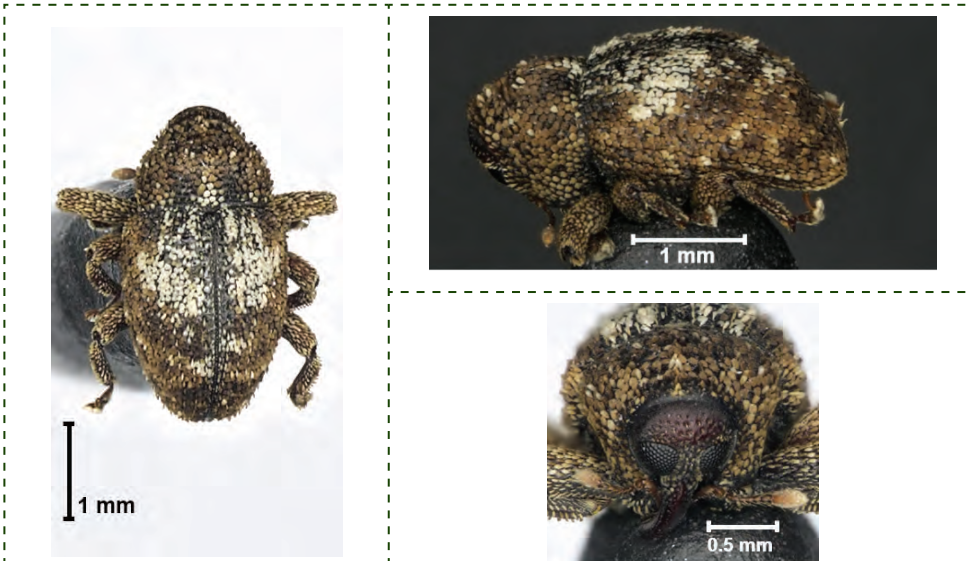


Figure 3.70 Cryptorhynchinae sp.15
(Curculionidae: Cryptorhynchinae) Z02_ColCur105

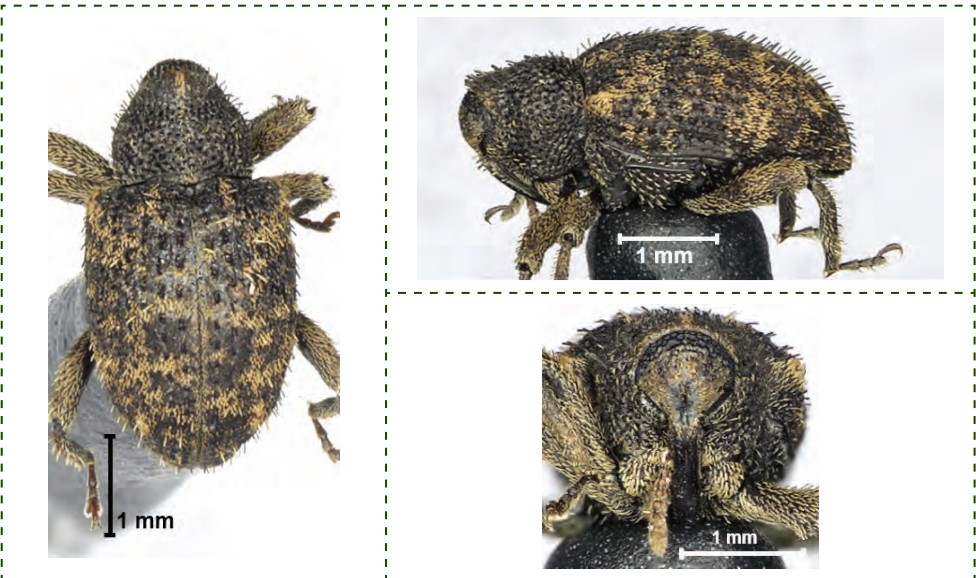


Figure 3.71 Cryptorhynchinae sp.16
(Curculionidae: Cryptorhynchinae) Z02_ColCur204

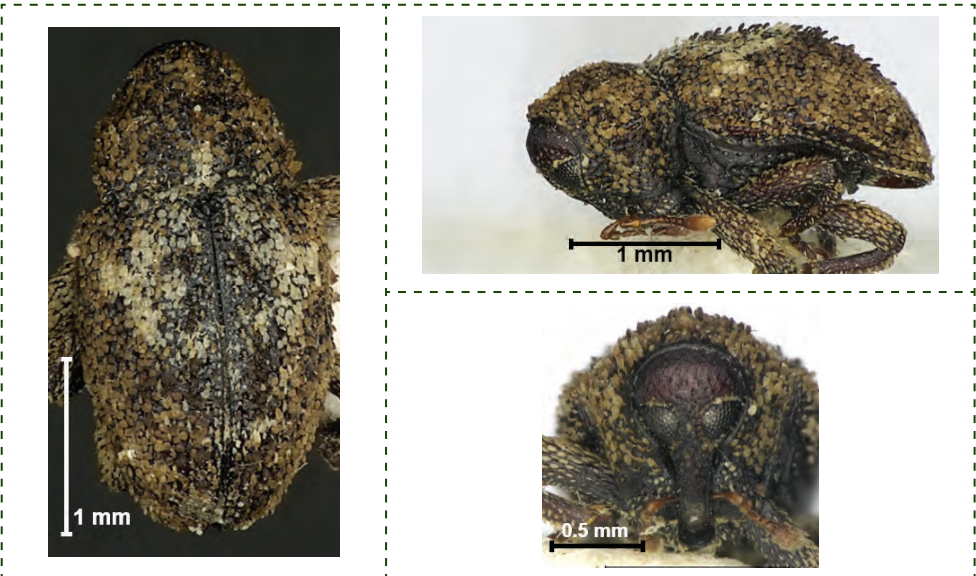


Figure 3.72 Cryptorhynchinae sp.17
(Curculionidae: Cryptorhynchinae) Z02_ColCur269

Buku ini tidak diperjualbelikan.

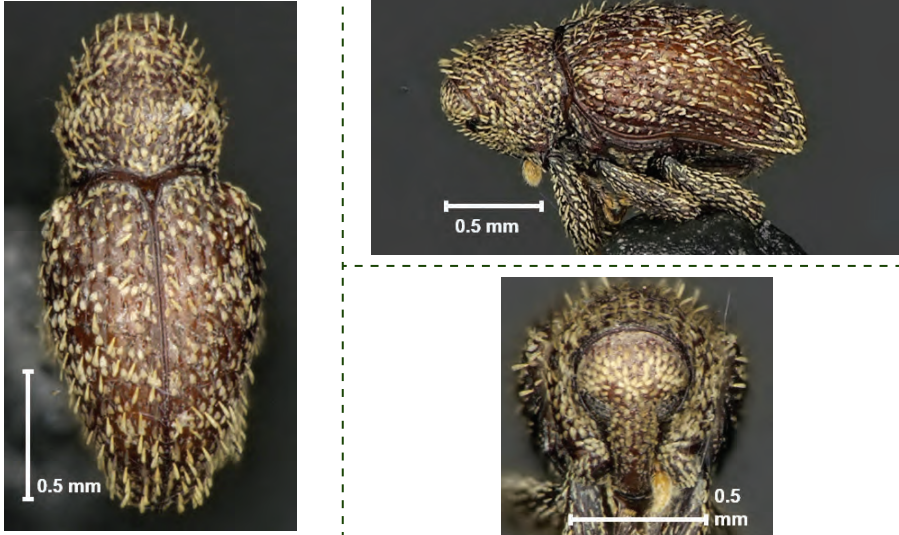


Figure 3.73 *Cryptorhynchinae* sp.18
(Curculionidae: **Cryptorhynchinae**) Z02_ColCur285

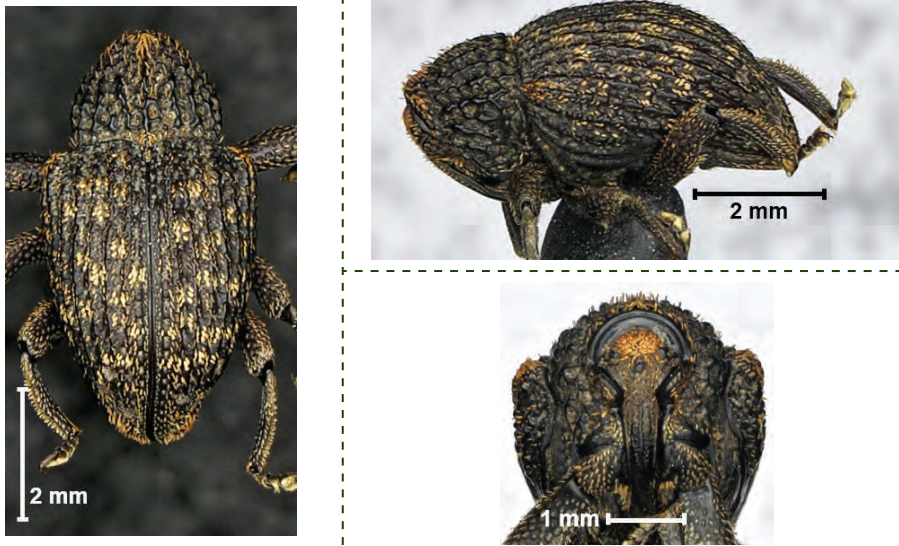


Figure 3.74 *Cryptorhynchinae* sp.19
(Curculionidae: **Cryptorhynchinae**) Z02_ColCur297



Figure 3.75 Cryptorhynchinae sp.21
(Curculionidae: Cryptorhynchinae) Z02_ColCur286

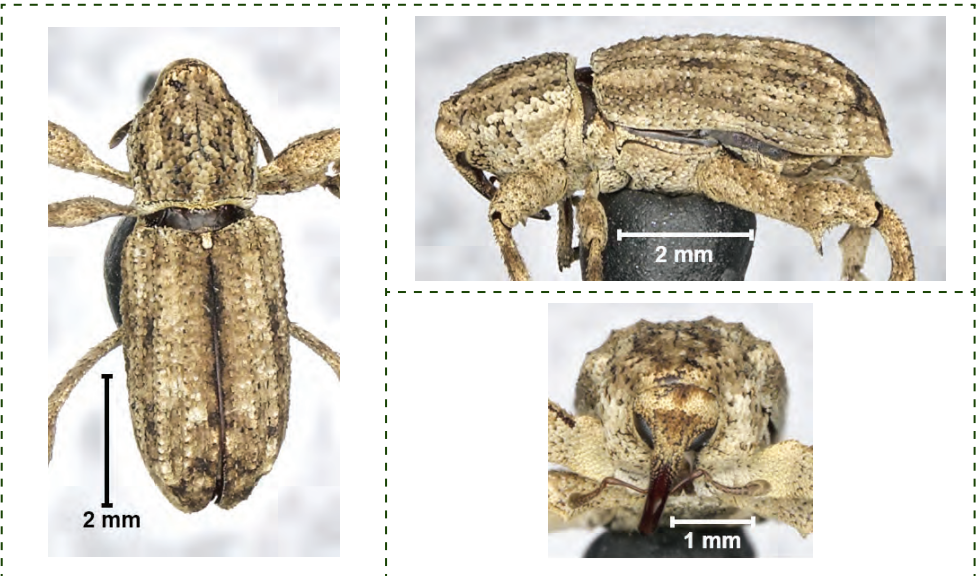


Figure 3.76 Cryptorhynchinae sp.22
(Curculionidae: Cryptorhynchinae) Z02_ColCur096

Buku ini tidak diperjualbelikan.

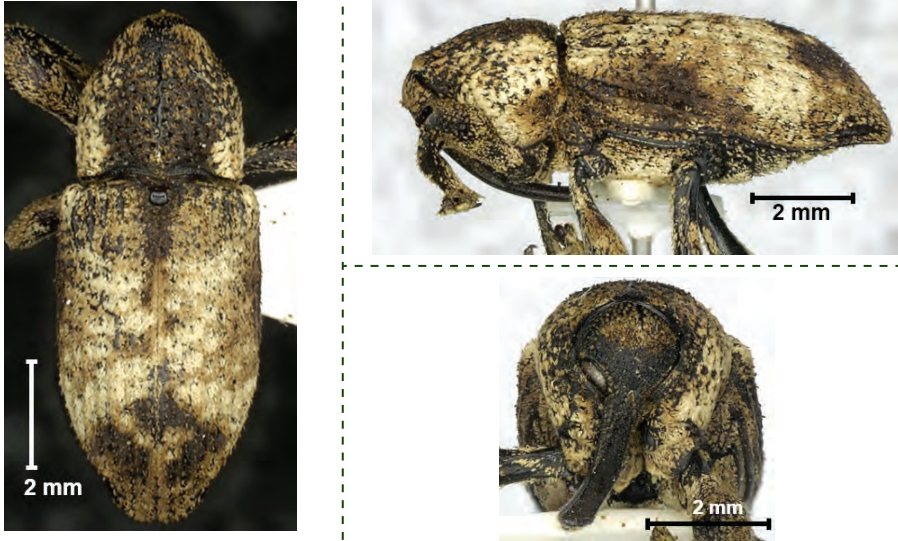


Figure 3.77 *Cryptorhynchinae* sp.23
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur120

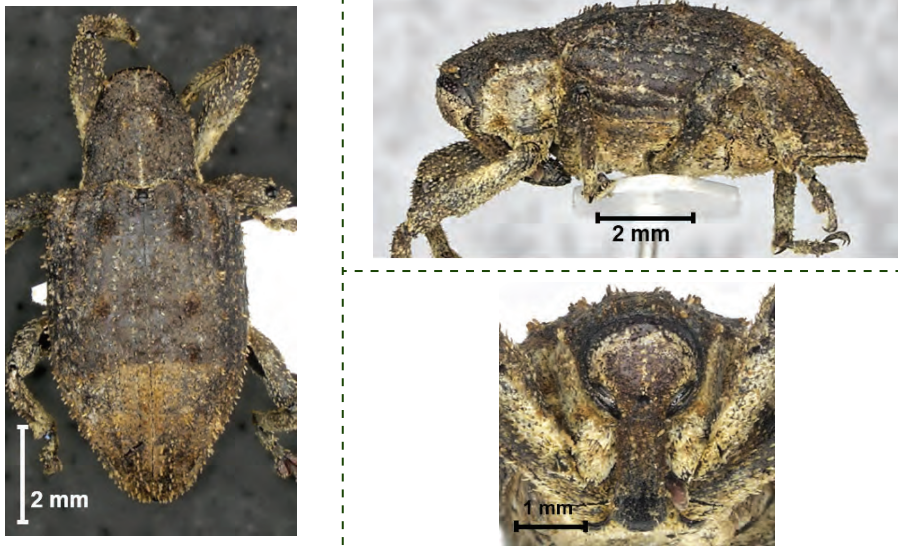


Figure 3.78 *Cryptorhynchinae* sp.25
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur079

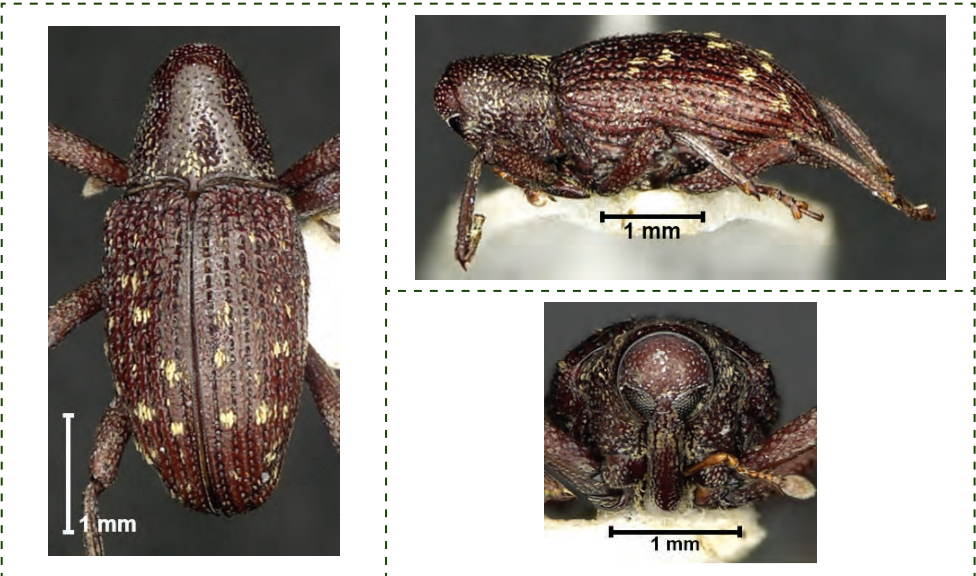


Figure 3.79 Cryptorhynchinae sp.26
(Curculionidae: Cryptorhynchinae) Z02_ColCur087



Figure 3.80 Cryptorhynchinae sp.27
(Curculionidae: Cryptorhynchinae) Z02_ColCur090

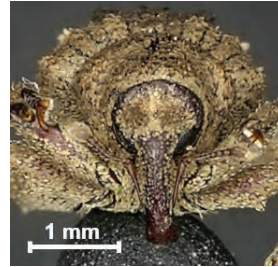
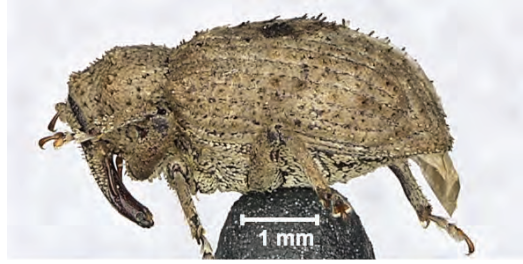


Figure 3.81 Cryptorhynchinae sp.28
(Curculionidae: Cryptorhynchinae) Z02_ColCur015



Figure 3.82 Cryptorhynchinae sp.29
(Curculionidae: Cryptorhynchinae) Z02_ColCur123

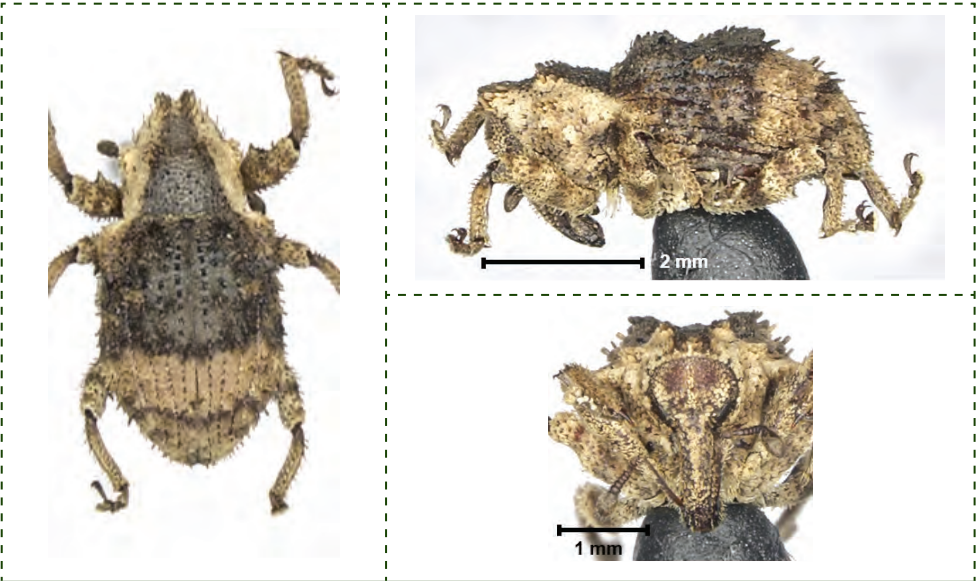


Figure 3.83 Cryptorhynchinae sp.30
(Curculionidae: Cryptorhynchinae) Z02_ColCur086

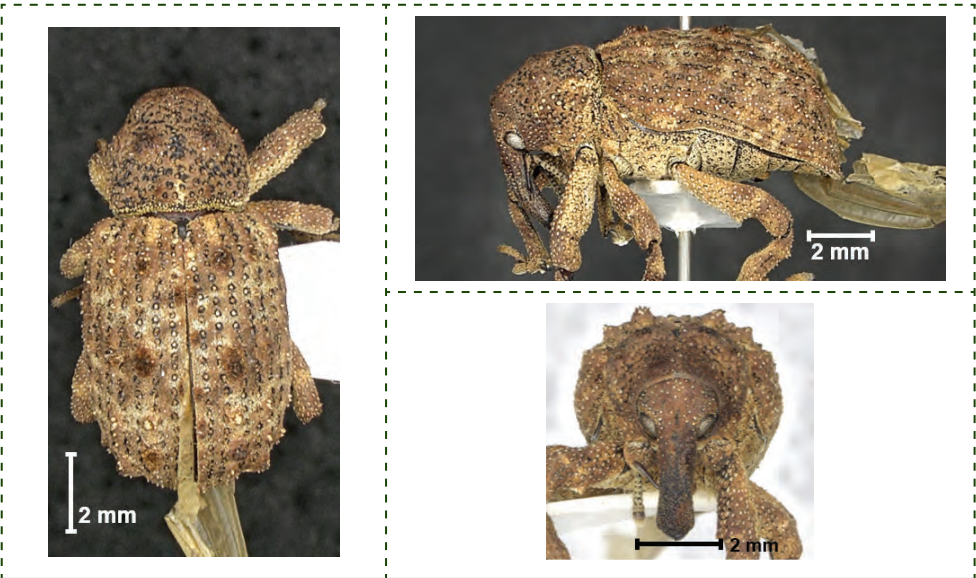


Figure 3.84 Cryptorhynchinae sp.31
(Curculionidae: Cryptorhynchinae) Z02_ColCur156

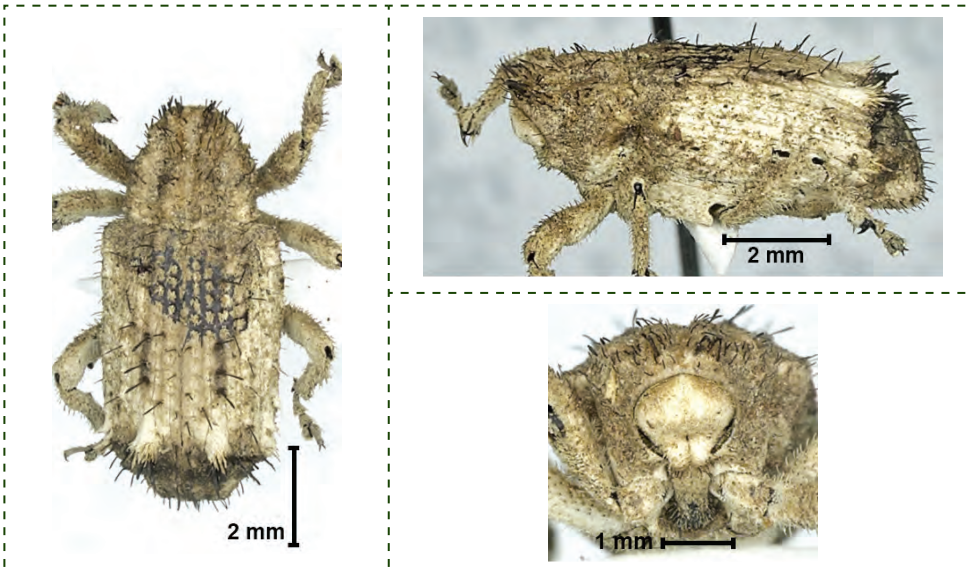


Figure 3.85 *Cryptorhynchinae* sp.32
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur321

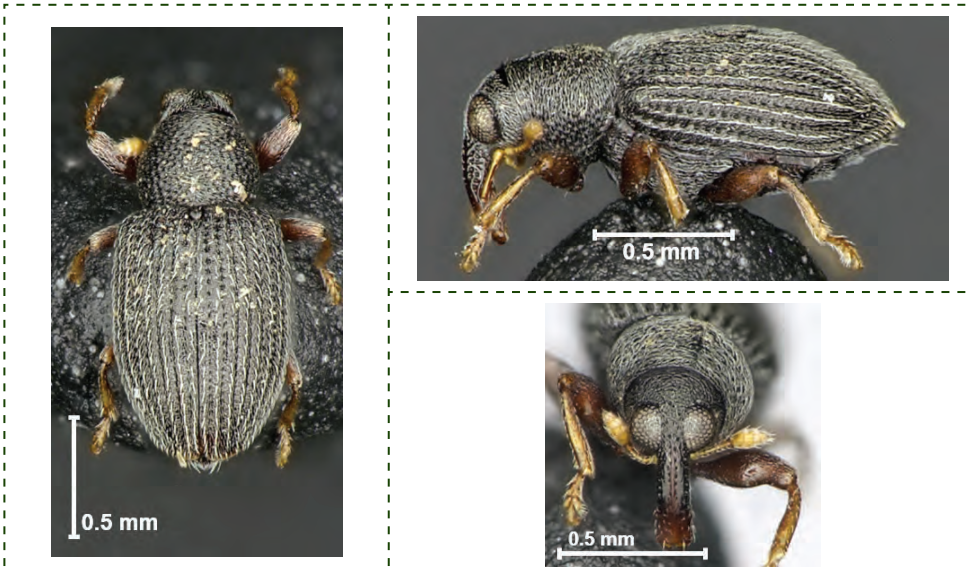


Figure 3.86 *Cryptorhynchinae* sp.33
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur326



Figure 3.87 Cryptorhynchinae sp.37
(Curculionidae: Cryptorhynchinae) Z02_ColCur331



Figure 3.88 Cryptorhynchinae sp.38
(Curculionidae: Cryptorhynchinae) Z02_ColCur343



Figure 3.89 Cryptorhynchinae sp.39
(Curculionidae: Cryptorhynchinae) Z02_ColCur356

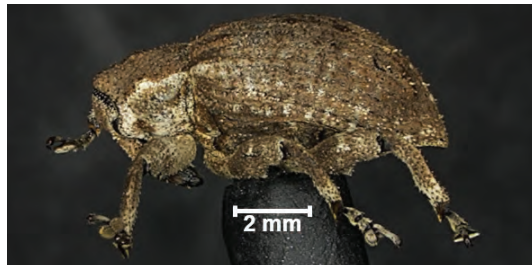


Figure 3.90 Cryptorhynchinae sp.40
(Curculionidae: Cryptorhynchinae) Z02_ColCur172

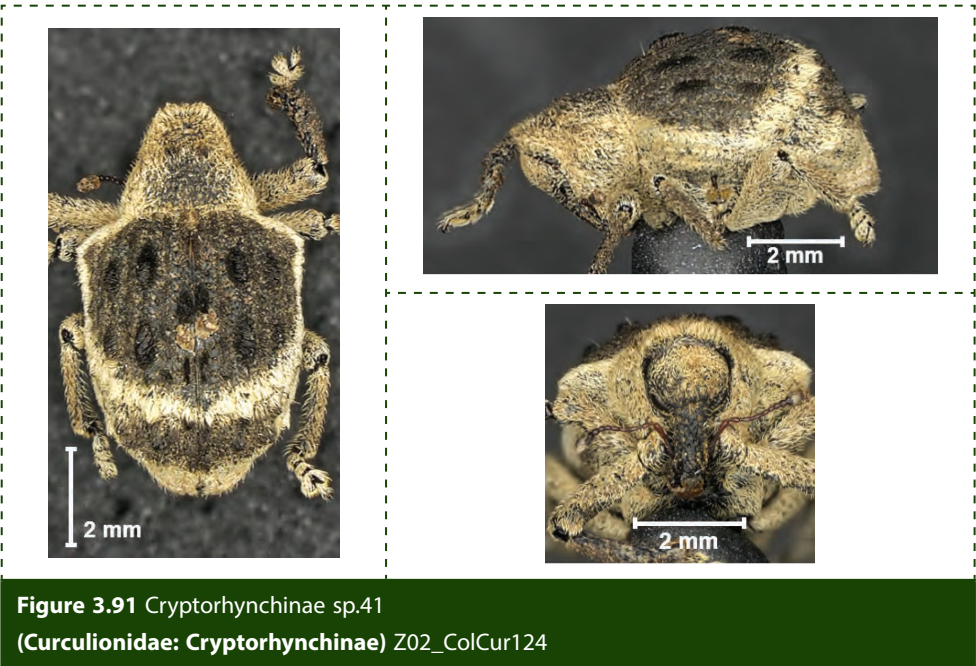


Figure 3.91 Cryptorhynchinae sp.41
(Curculionidae: Cryptorhynchinae) Z02_ColCur124

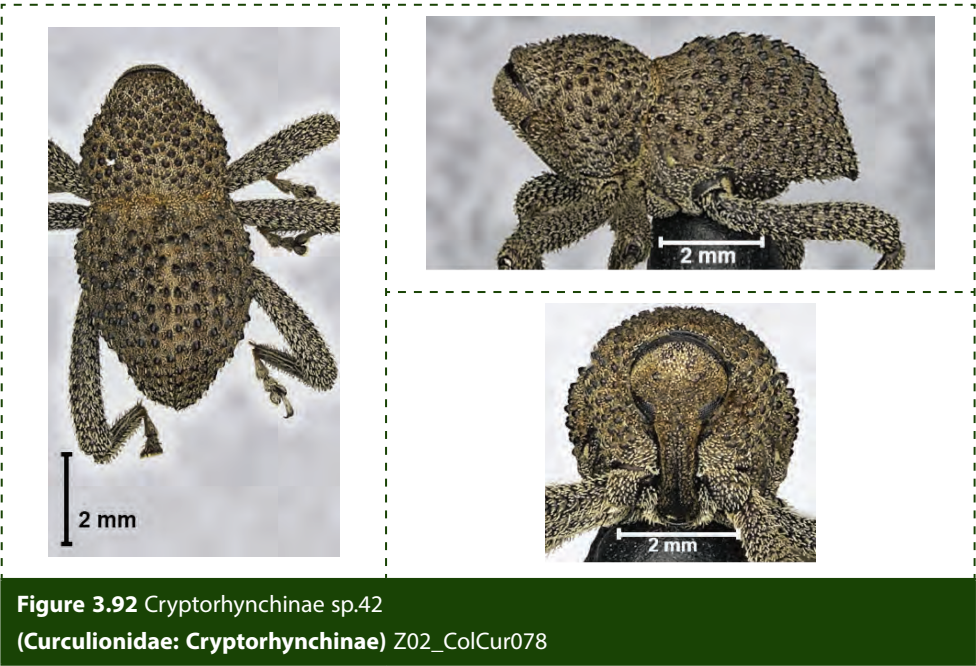


Figure 3.92 Cryptorhynchinae sp.42
(Curculionidae: Cryptorhynchinae) Z02_ColCur078

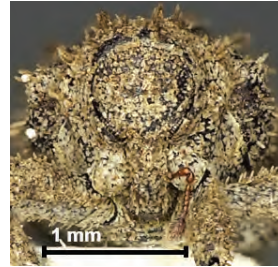
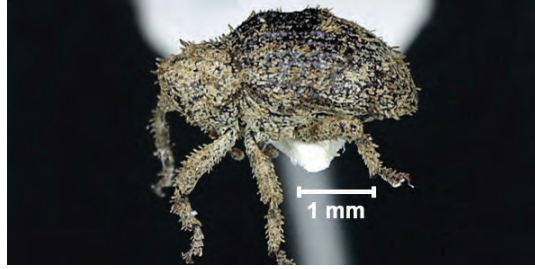


Figure 3.93 Cryptorhynchinae sp.43
(Curculionidae: Cryptorhynchinae) Z02_ColCur053

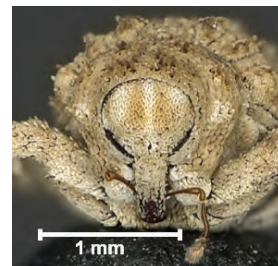
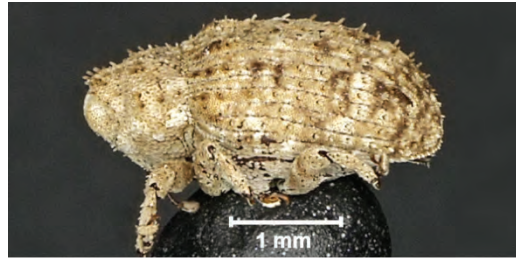


Figure 3.94 Cryptorhynchinae sp.44
(Curculionidae: Cryptorhynchinae) Z02_ColCur092

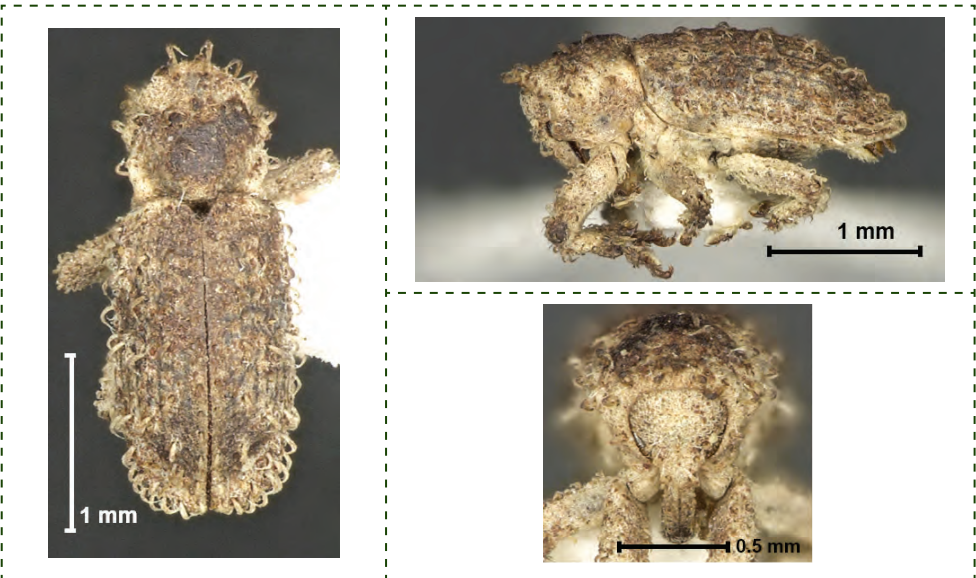


Figure 3.95 Cryptorhynchinae sp.45
(Curculionidae: Cryptorhynchinae) Z02_ColCur182

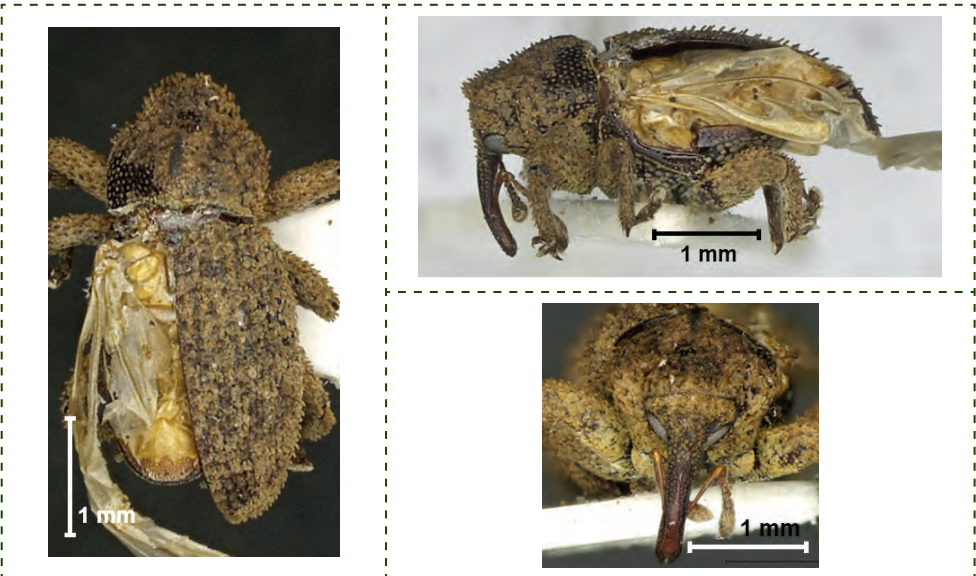


Figure 3.96 Cryptorhynchinae sp.46
(Curculionidae: Cryptorhynchinae) Z02_ColCur280

Buku ini tidak diperjualbelikan.

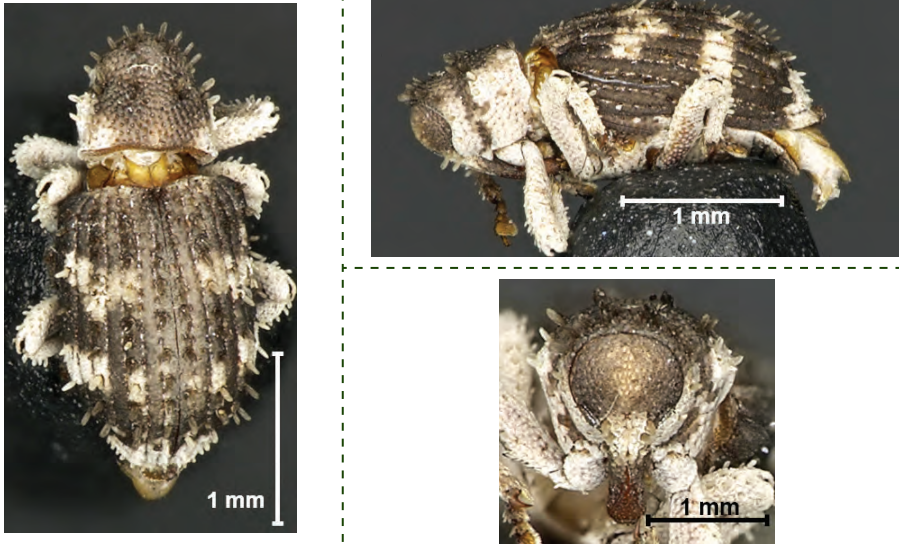


Figure 3.97 *Cryptorhynchinae* sp.47
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur314

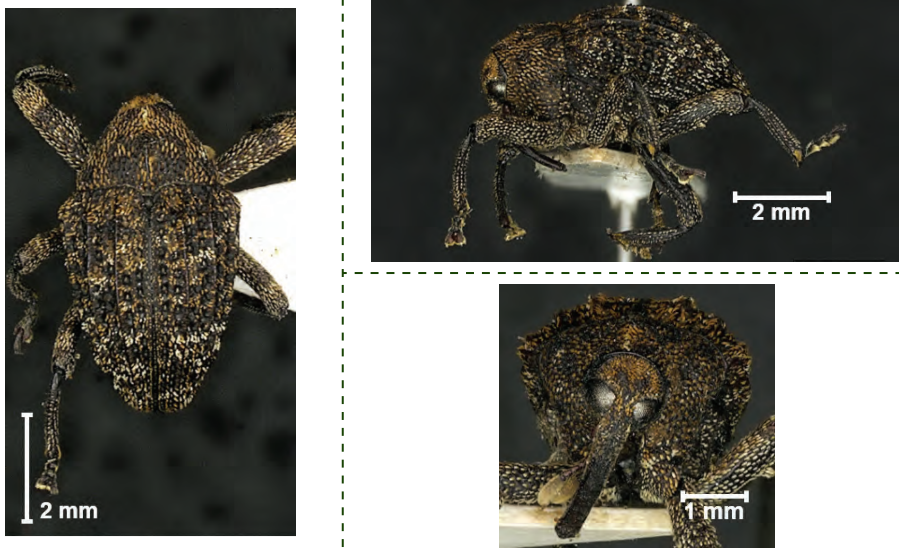


Figure 3.98 *Cryptorhynchinae* sp.48
(Curculionidae: *Cryptorhynchinae*) Z02_ColCur080

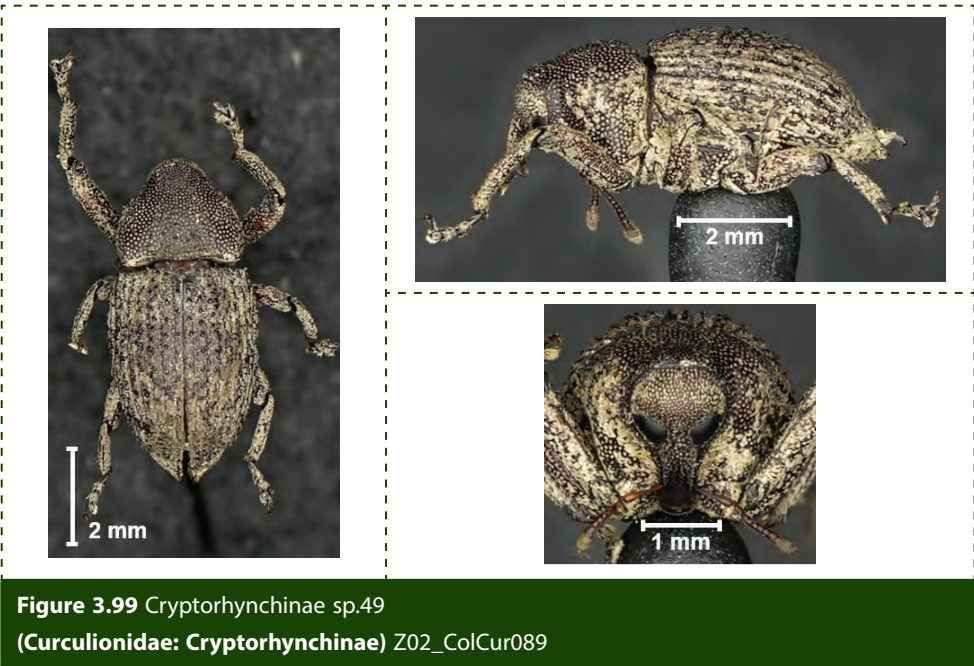


Figure 3.99 Cryptorhynchinae sp.49
(Curculionidae: Cryptorhynchinae) Z02_ColCur089

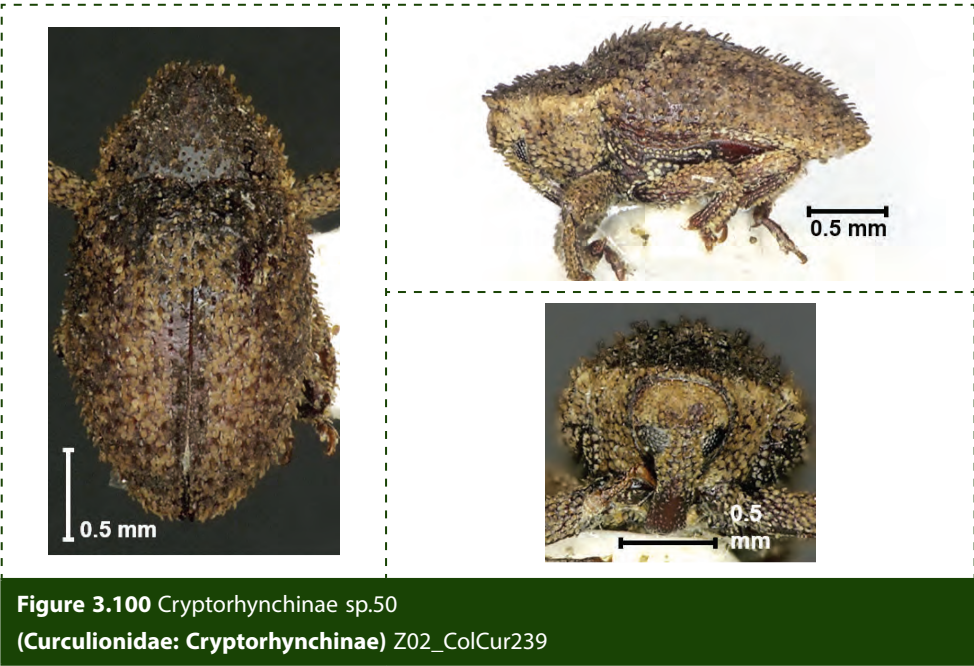


Figure 3.100 Cryptorhynchinae sp.50
(Curculionidae: Cryptorhynchinae) Z02_ColCur239



Figure 3.101 Cryptorhynchinae sp.51
(Curculionidae: Cryptorhynchinae) Z02_ColCur022

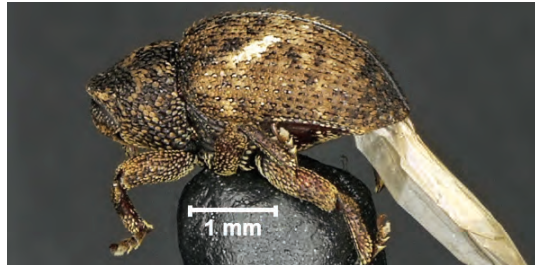


Figure 3.102 Cryptorhynchinae sp.52
(Curculionidae: Cryptorhynchinae) Z02_ColCur060

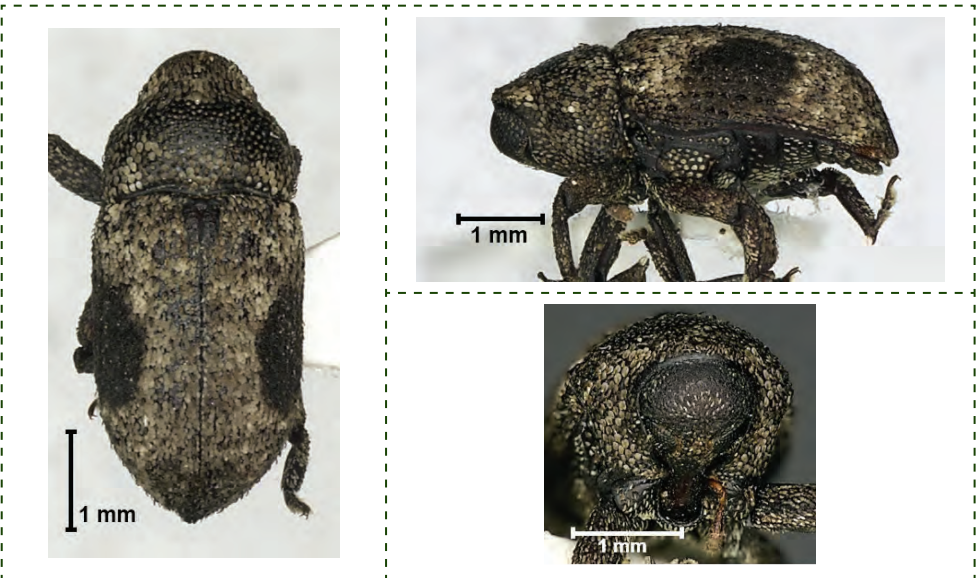


Figure 3.103 Cryptorhynchinae sp.53
(Curculionidae: Cryptorhynchinae) Z02_ColCur114

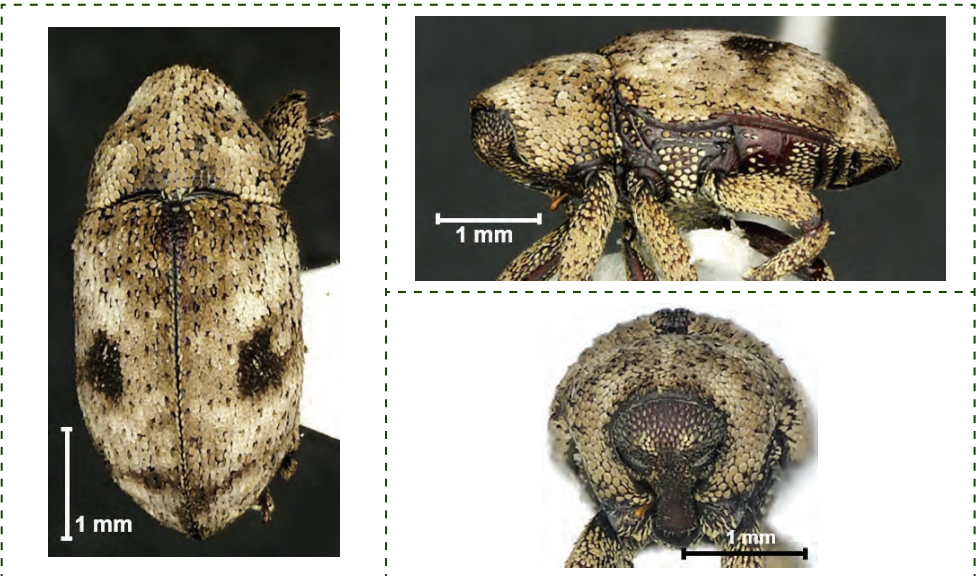


Figure 3.104 Cryptorhynchinae sp.54
(Curculionidae: Cryptorhynchinae) Z02_ColCur247

Buku ini tidak diperjualbelikan.

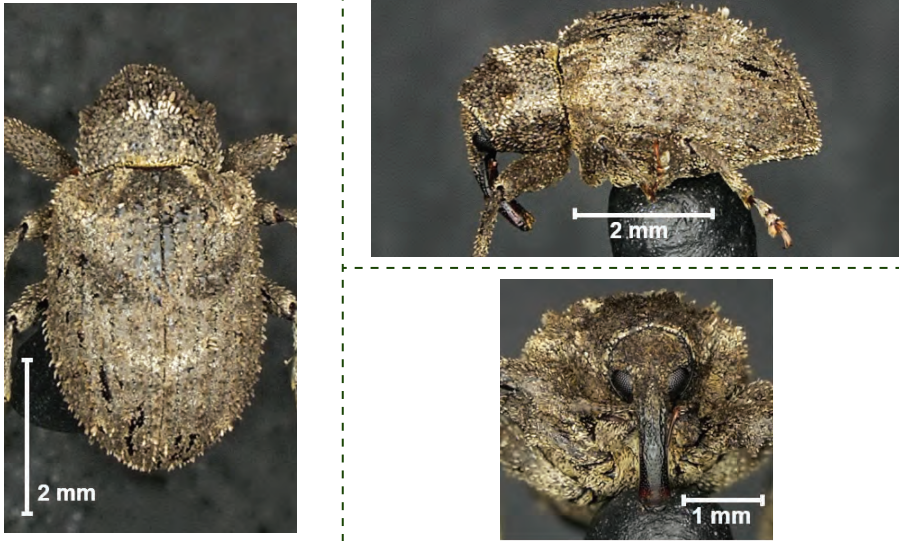


Figure 3.105 Cryptorhynchinae sp.55
(Curculionidae: Cryptorhynchinae) Z02_ColCur378



Figure 3.106 Cryptorhynchinae sp.56
(Curculionidae: Cryptorhynchinae) Z02_ColCur380



Figure 3.107 *Eurhoptus* sp.01
(Curculionidae: Cryptorhynchinae) Z02_ColCur081

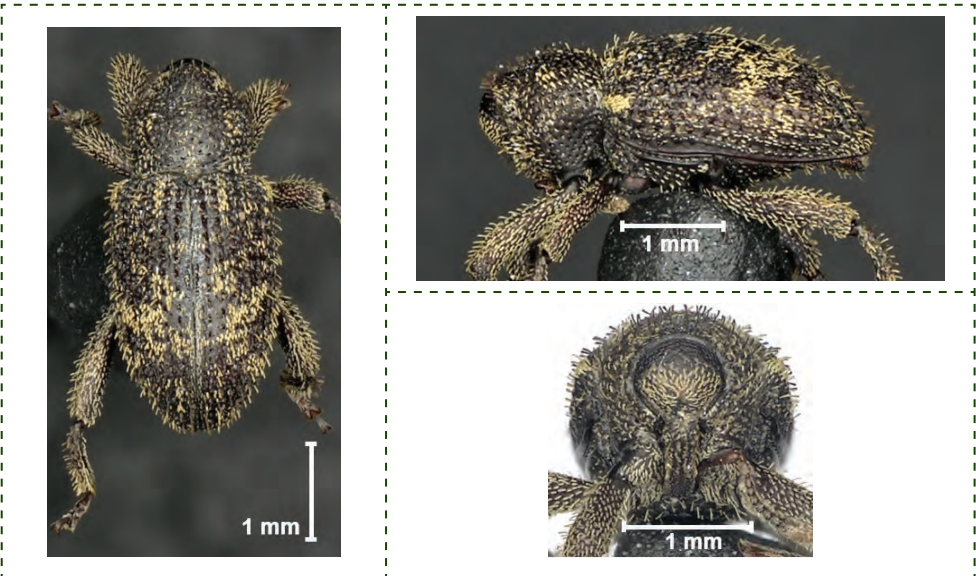


Figure 3.108 *Euscepes* sp.01
(Curculionidae: Cryptorhynchinae) Z02_ColCur152

Buku ini tidak diperjualbelikan.



Figure 3.109 *Zascelis* sp.01
(Curculionidae: Cryptorhynchinae) Z02_ColCur108



Figure 3.110 *Anthonomus* sp.01
(Curculionidae: Curculioinae) Z02_ColCur134

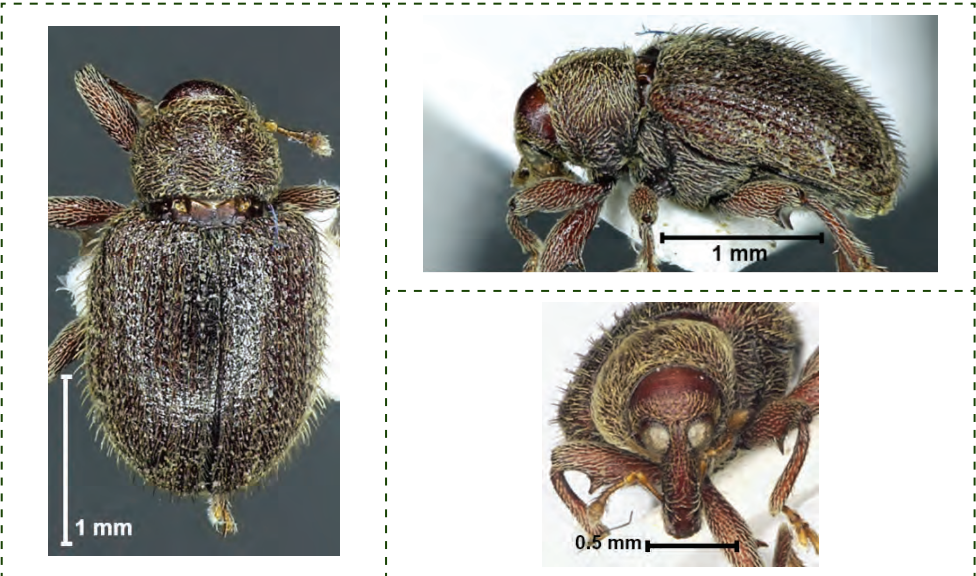


Figure 3.111 *Anthonomus* sp.02
(Curculionidae: Curculioidae) Z02_ColCur277

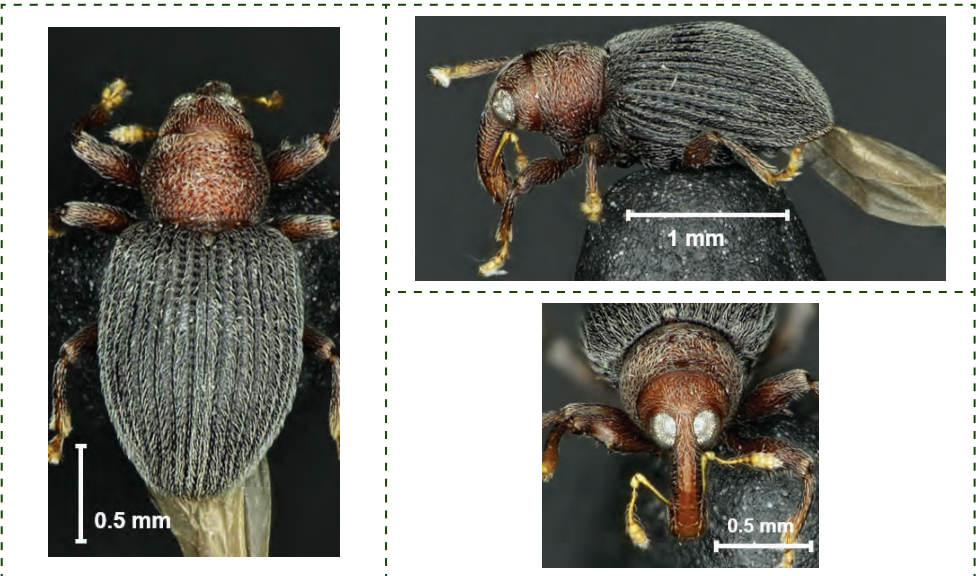


Figure 3.112 *Anthonomus* sp.03
(Curculionidae: Curculioidae) Z02_ColCur330

Buku ini tidak diperjualbelikan.

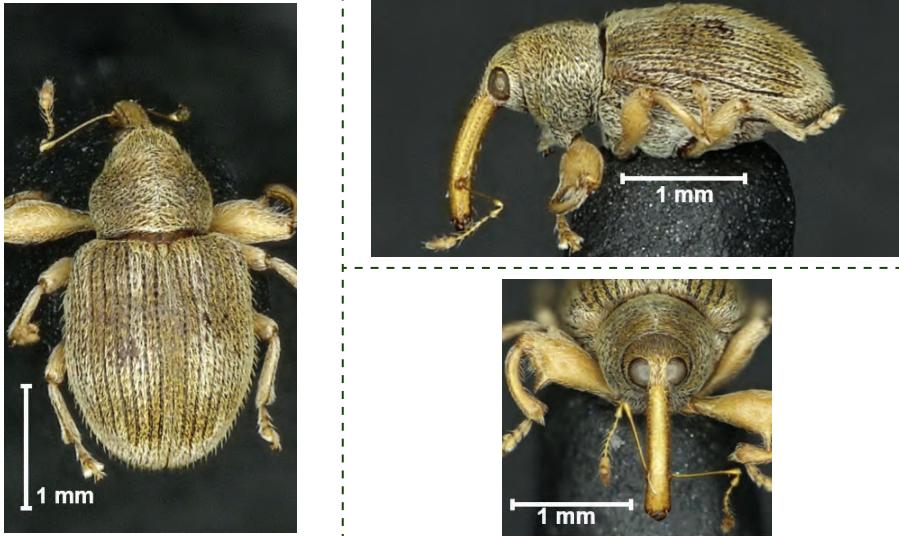


Figure 3.113 *Anthonomus* sp.04
(Curculionidae: Curculioidae) Z02_ColCur128

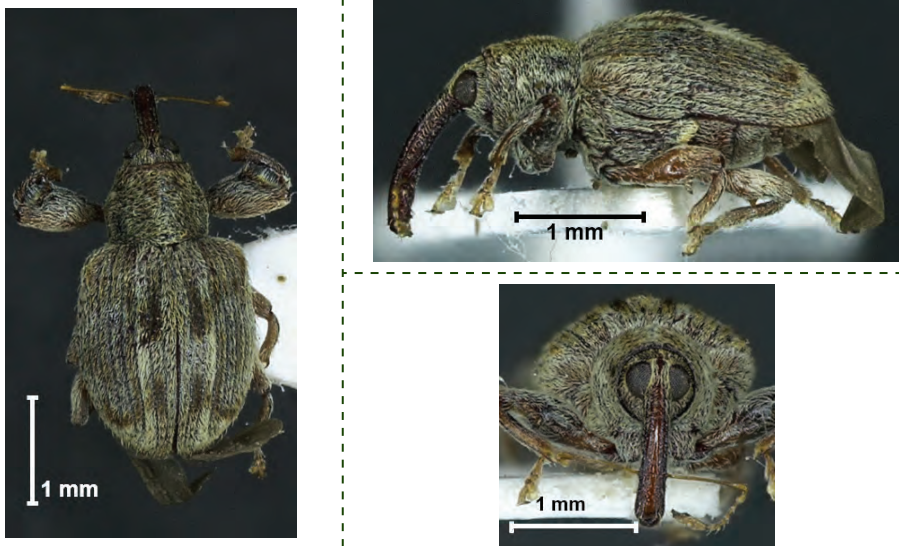


Figure 3.114 *Anthonomus* sp.05
(Curculionidae: Curculioidae) Z02_ColCur131

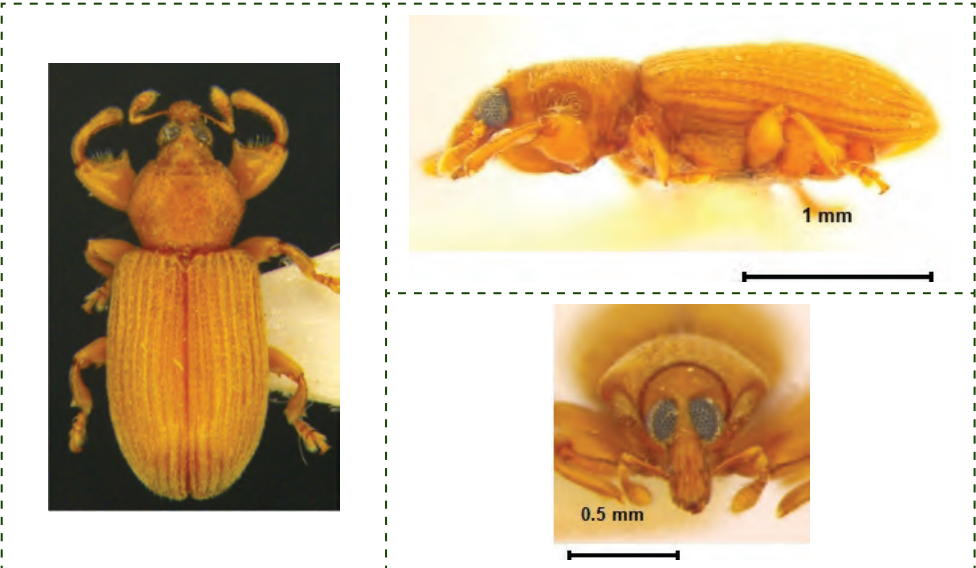


Figure 3.115 *Anthonomus* sp.06
(Curculionidae: Curculioinae) Z02_ColCur005

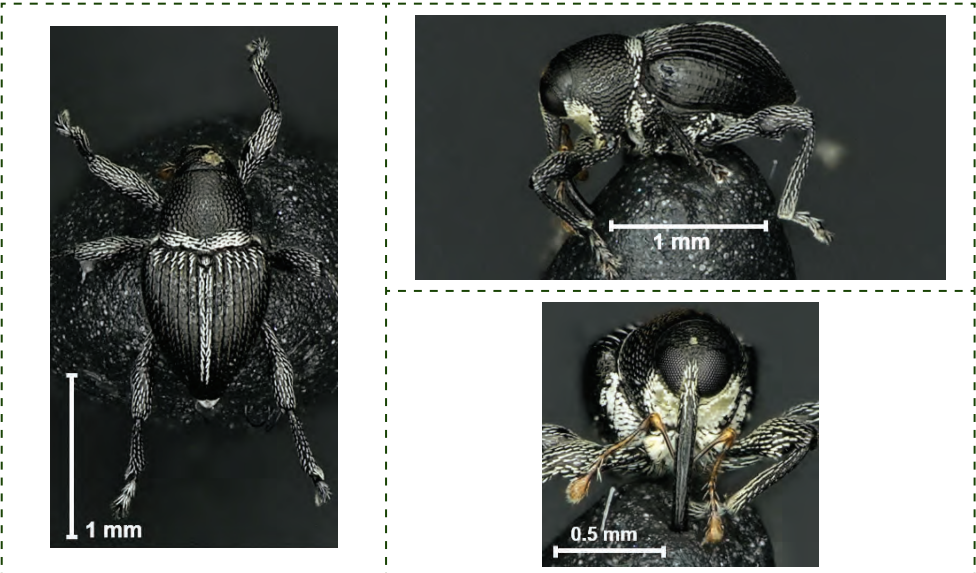


Figure 3.116 *Archarius* sp.01
(Curculionidae: Curculioinae) Z02_ColCur116

Buku ini tidak diperjualbelikan.

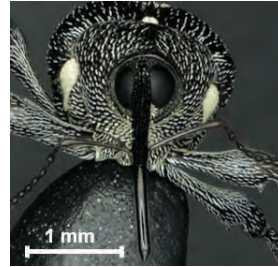


Figure 3.117 *Curculio* sp.01
(Curculionidae: Curculioinae) Z02_ColCur057

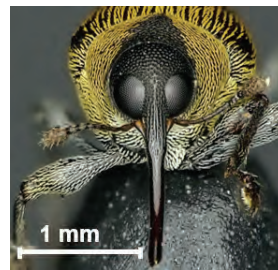
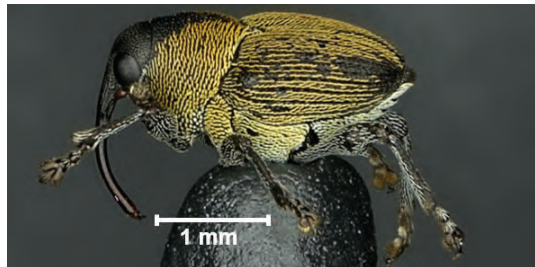


Figure 3.118 *Curculio* sp.02
(Curculionidae: Curculioinae) Z02_ColCur158

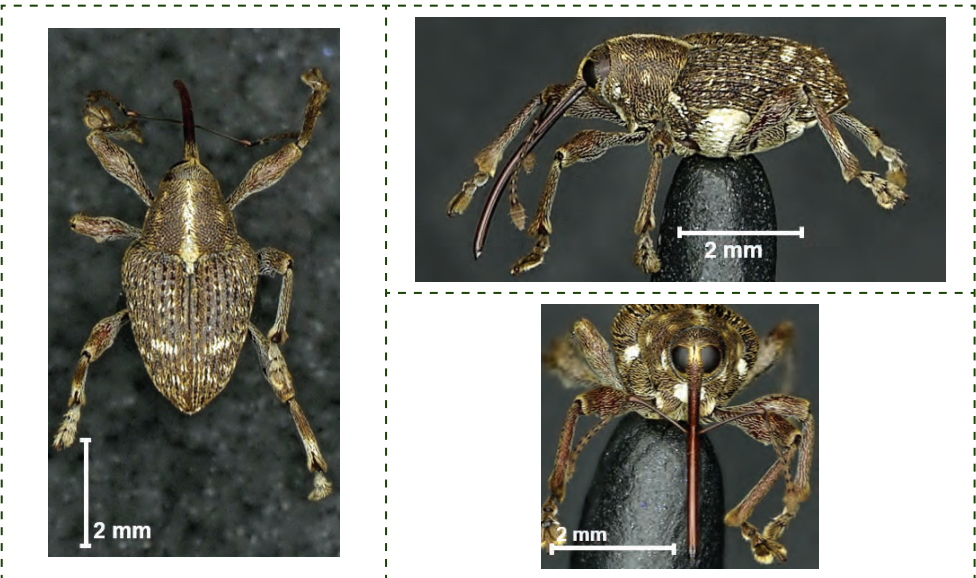


Figure 3.119 *Curculio* sp.03
(Curculionidae: Curculioidae) Z02_ColCur227

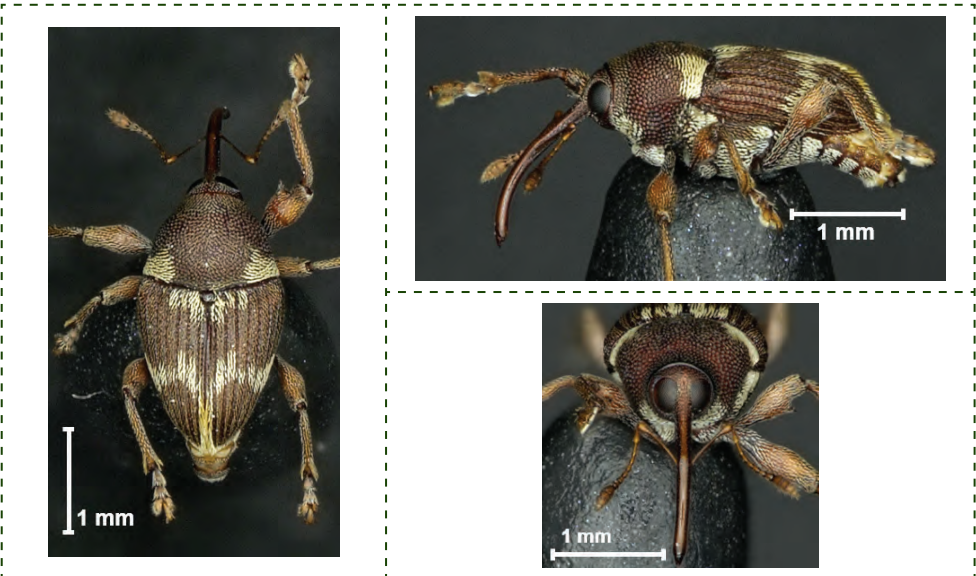


Figure 3.120 *Curculio* sp.04
(Curculionidae: Curculioidae) Z02_ColCur274

Buku ini tidak diperjualbelikan.



Figure 3.121 *Curculio* sp.05
(Curculionidae: Curculioidae) Z02_ColCur313

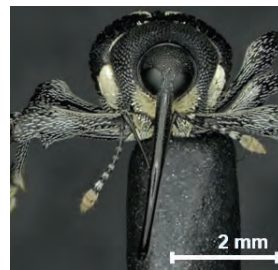


Figure 3.122 *Curculio* sp.06
(Curculionidae: Curculioidae) Z02_ColCur168



Figure 3.123 *Curculio* sp.07
(Curculionidae: Curculioinae) Z02_ColCur190

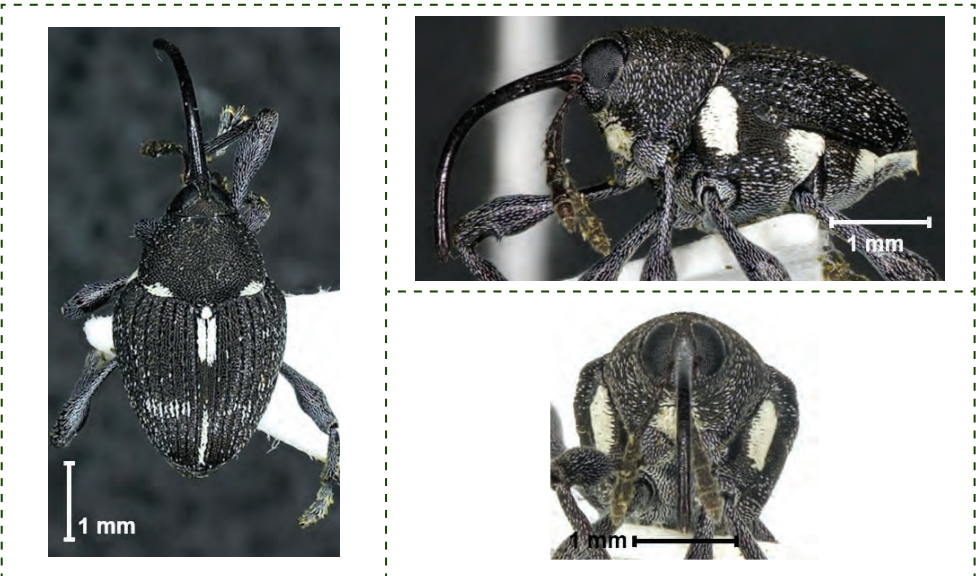


Figure 3.124 *Curculio* sp.08
(Curculionidae: Curculioinae) Z02_ColCur374

Buku ini tidak diperjualbelikan.

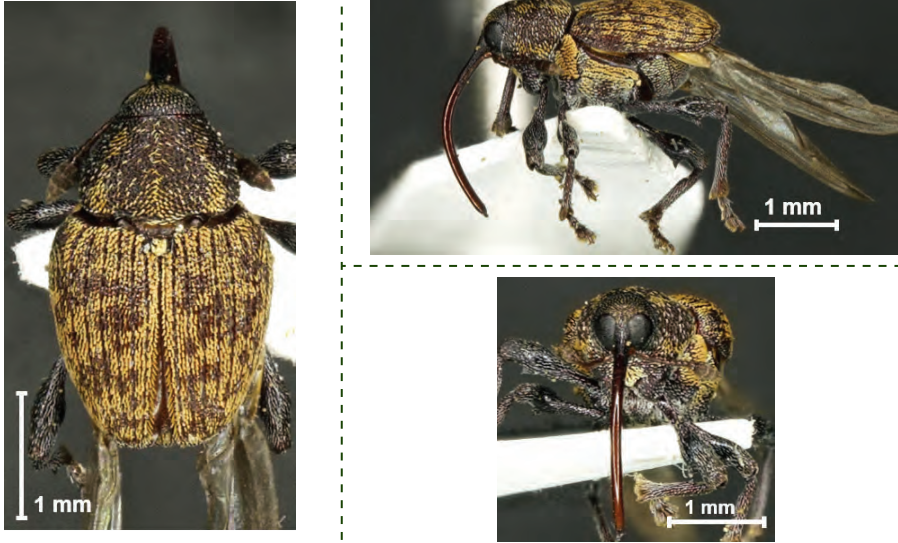


Figure 3.125 *Curculio* sp.09
(Curculionidae: Curculioidae) Z02_ColCur375

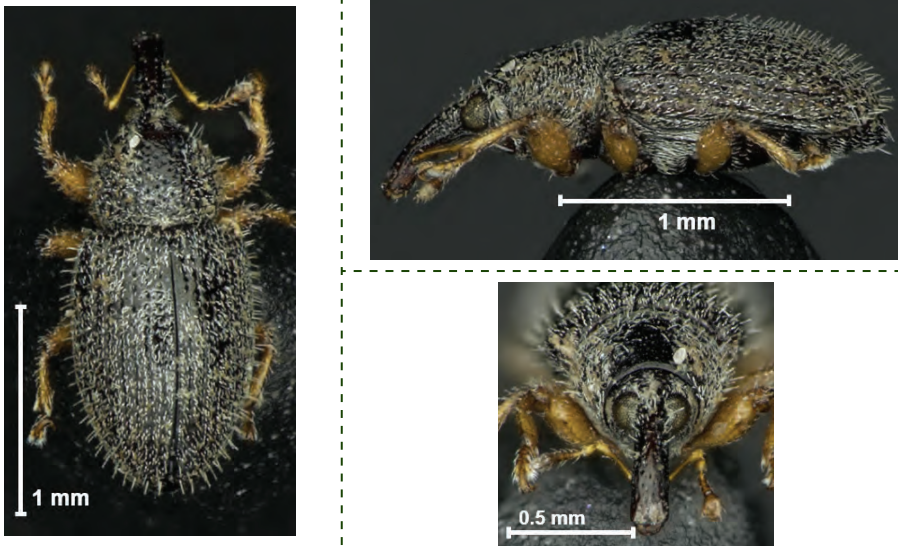


Figure 3.126 Curculioninae sap.01
(Curculionidae: Curculioidae) Z02_ColCur237

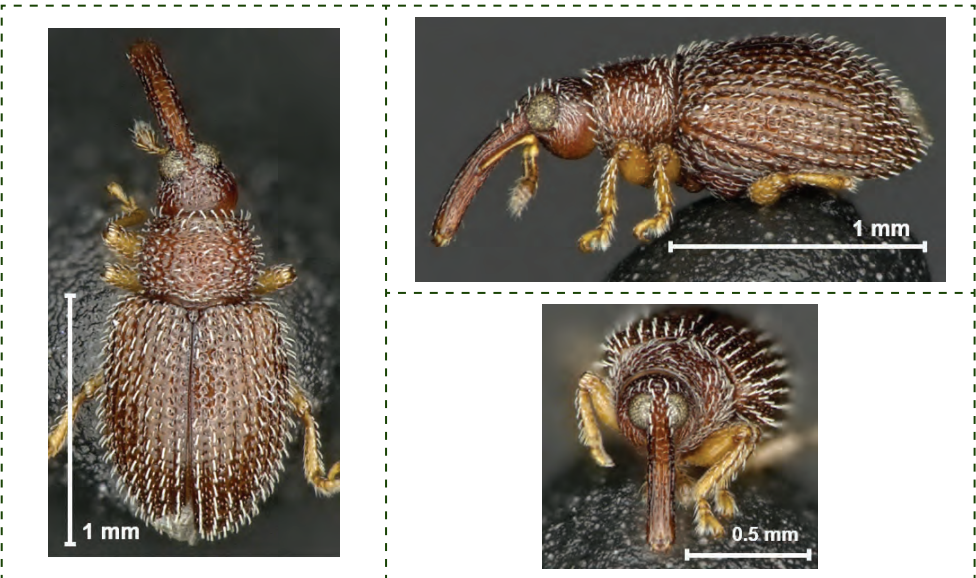


Figure 3.127 Curculioninae sp.02
(Curculionidae: Curculioinae) Z02_ColCur339

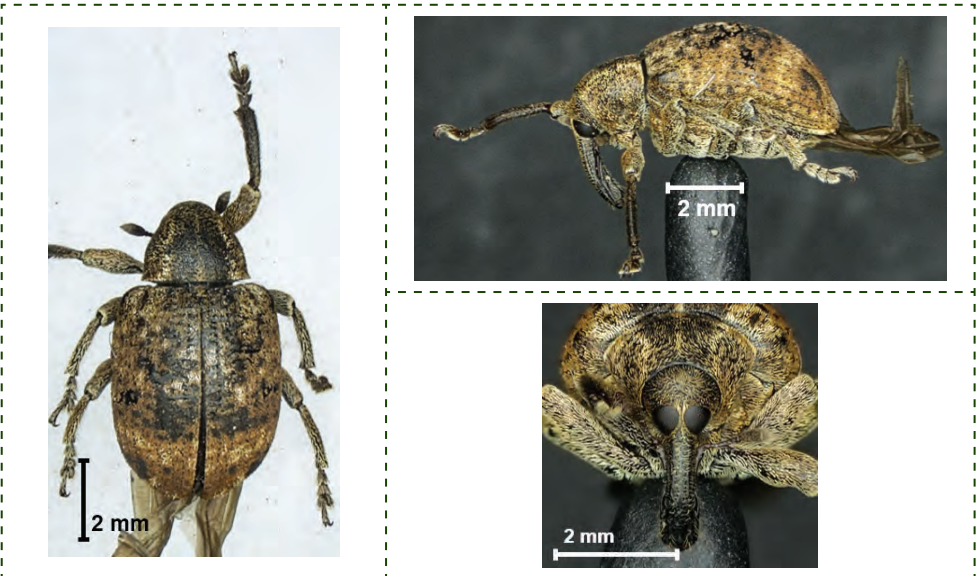


Figure 3.128 Curculioninae sp.03
(Curculionidae: Curculioinae) Z02_ColCur09

Buku ini tidak diperjualbelikan.

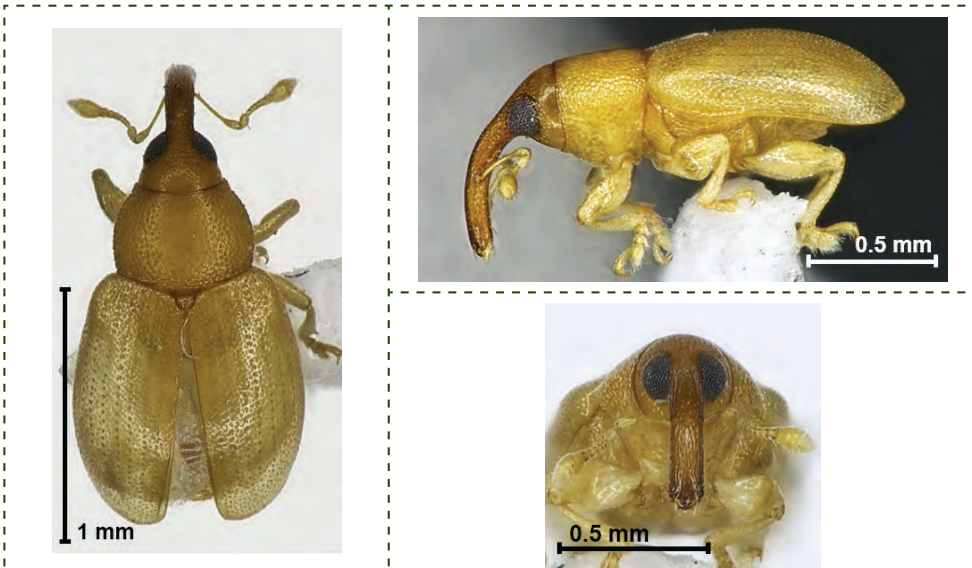


Figure 3.129 Curculioninae sp.04
(Curculionidae: Curculioinae) Z02_ColCur307



Figure 3.130 Curculioninae sp.05
(Curculionidae: Curculioinae) Z02_ColCur085

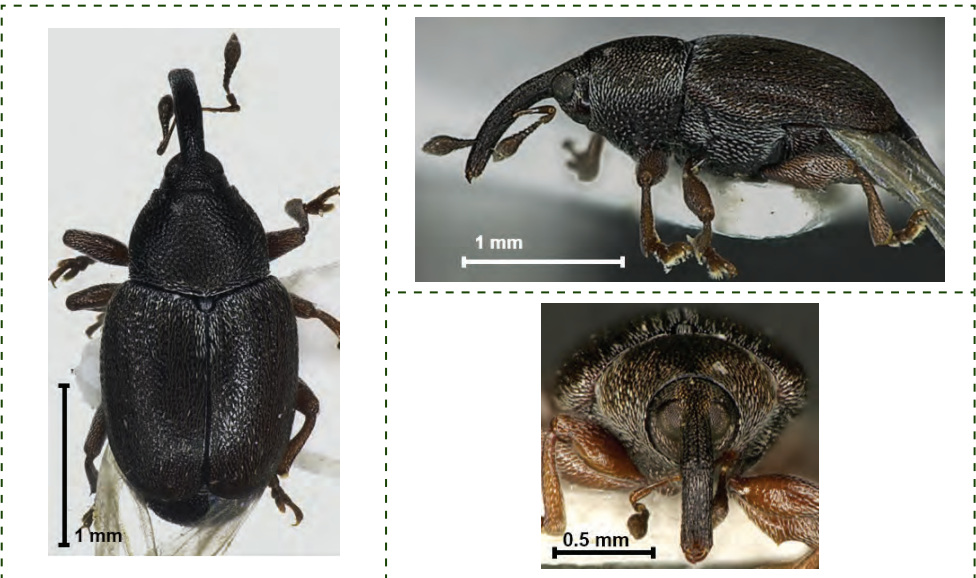


Figure 3.131 Curculioninae sp.06
(Curculionidae: Curculioinae) Z02_ColCur325



Figure 3.132 Curculioninae sp.07
(Curculionidae: Curculioinae) Z02_ColCur35a3

Buku ini tidak diperjualbelikan.

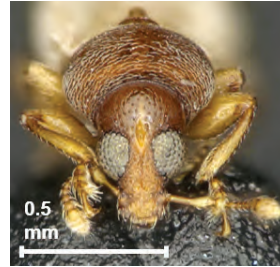
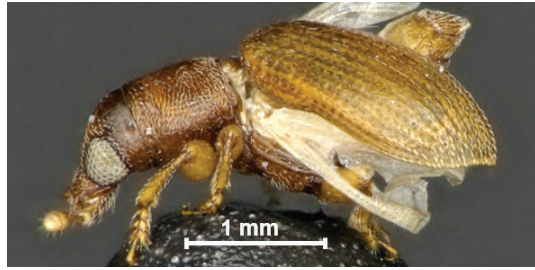


Figure 3.133 Curculioninae sp.08
(Curculionidae: Curculioinae) Z02_ColCur029

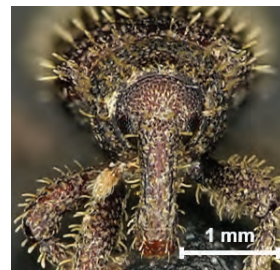


Figure 3.134 Curculioninae sp.09
(Curculionidae: Curculioinae) Z02_ColCur030

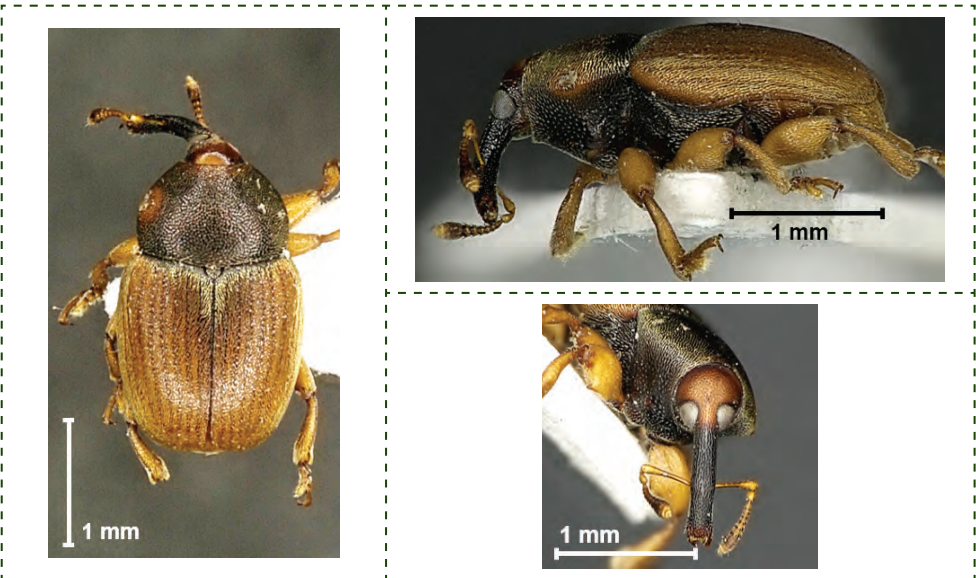


Figure 3.135 Curculioninae sp.10
(Curculionidae: Curculioinae) Z02_ColCur033

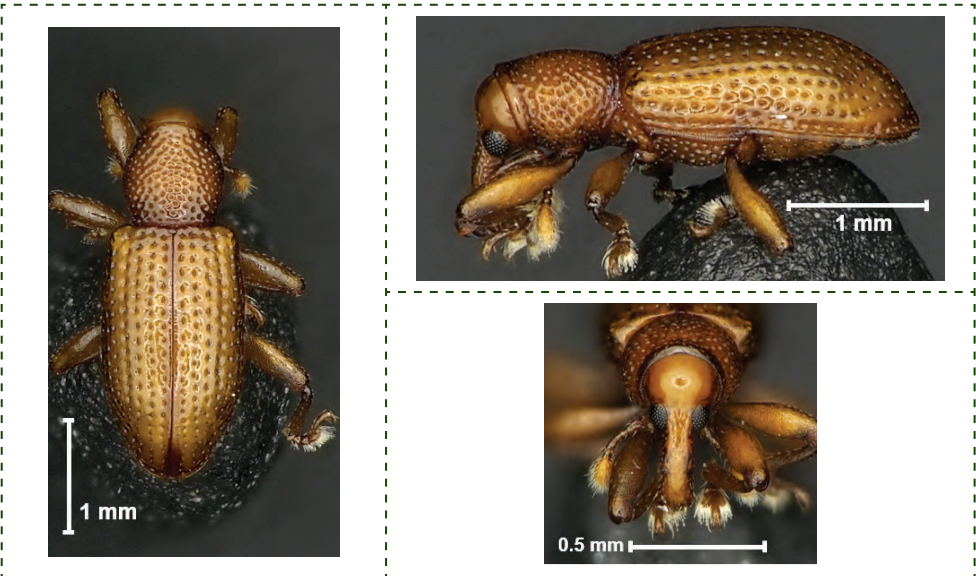


Figure 3.136 Curculioninae sp.11
(Curculionidae: Curculioinae) Z02_ColCur035

Buku ini tidak diperjualbelikan.

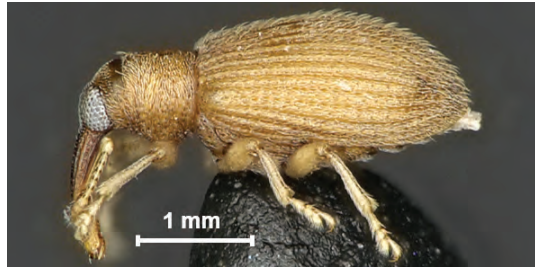


Figure 3.137 Curculioninae sp.12
(Curculionidae: Curculioinae) Z02_ColCur302



Figure 3.138 Curculioninae sp.13
(Curculionidae: Curculioinae) Z02_ColCur205



Figure 3.139 Curculioninae sp.14
(Curculionidae: Curculioinae) Z02_ColCur316

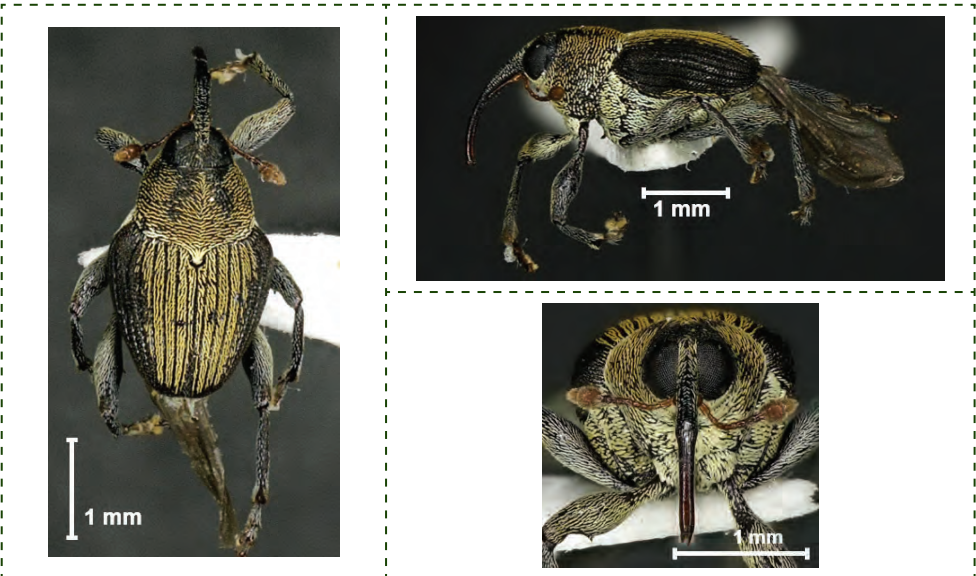


Figure 3.140 Curculioninae sp.15
(Curculionidae: Curculioinae) Z02_ColCur320

Buku ini tidak diperjualbelikan.



Figure 3.141 Curculioninae sp.16
(Curculionidae: Curculioinae) Z02_ColCur342

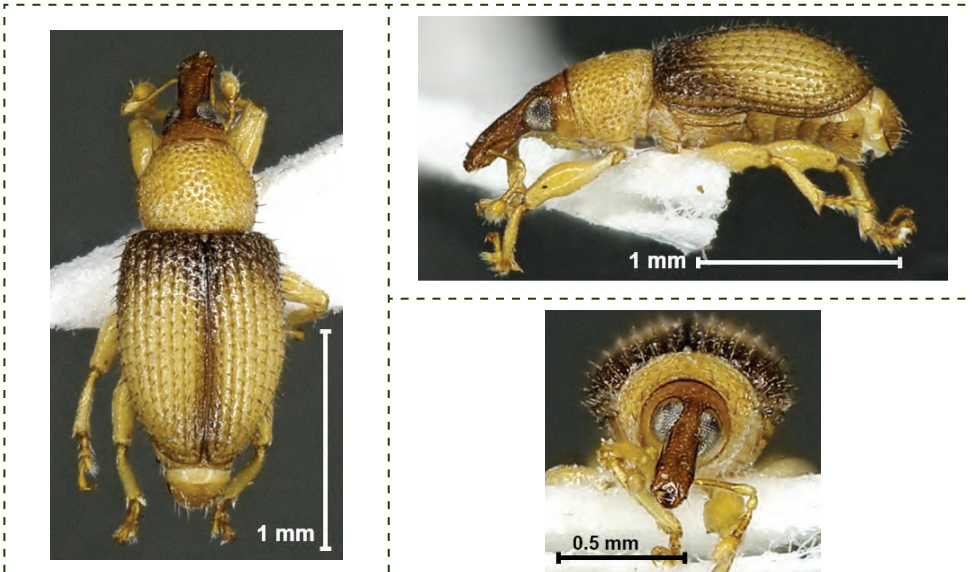


Figure 3.142 Curculioninae sp.17
(Curculionidae: Curculioinae) Z02_ColCur346

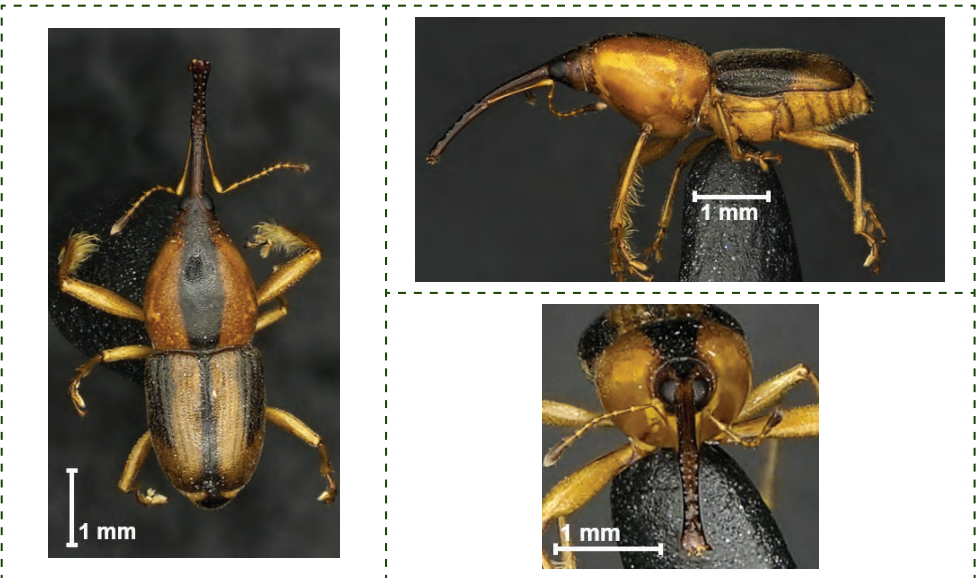


Figure 3.143 Curculioninae sp.18
(Curculionidae: Curculioinae) Z02_ColCur012

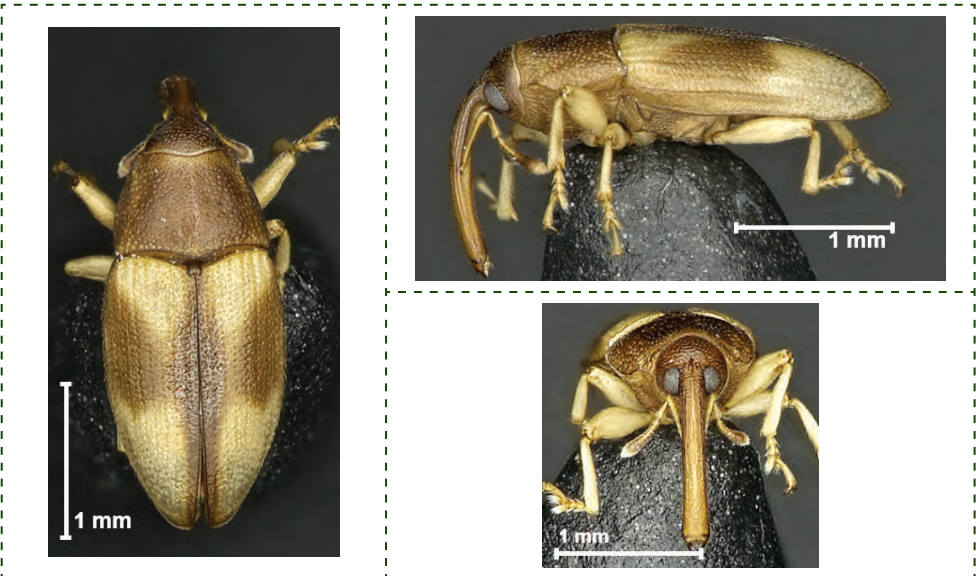


Figure 3.144 *Elaeidobius kamerunicus* (female)
(Curculionidae: Curculioinae) Z02_ColCur295

Buku ini tidak diperjualbelikan.

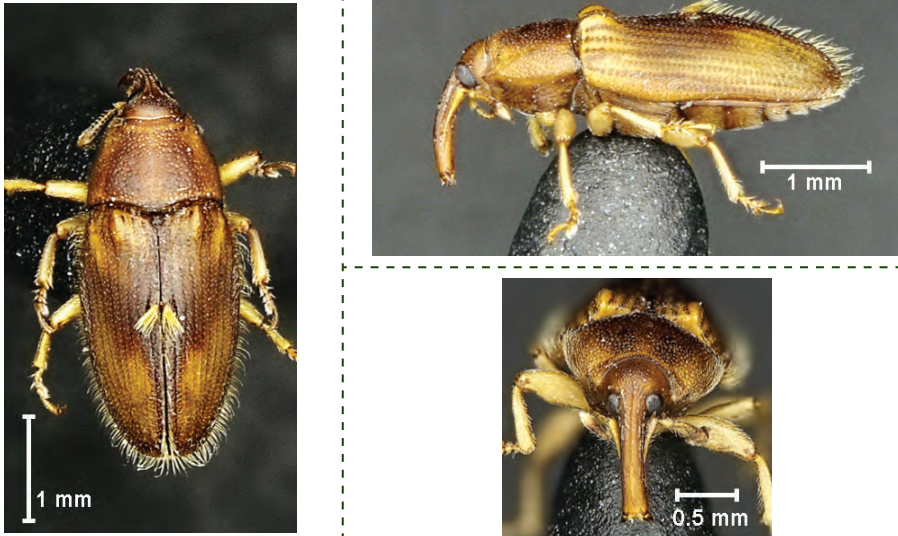


Figure 3.145 *Elaeidobius kamerunicus* (male)
(Curculionidae: Curculioinae) Z02_ColCur002



Figure 3.146 *Gymnetron* sp.01
(Curculionidae: Curculioinae) Z02_ColCur186

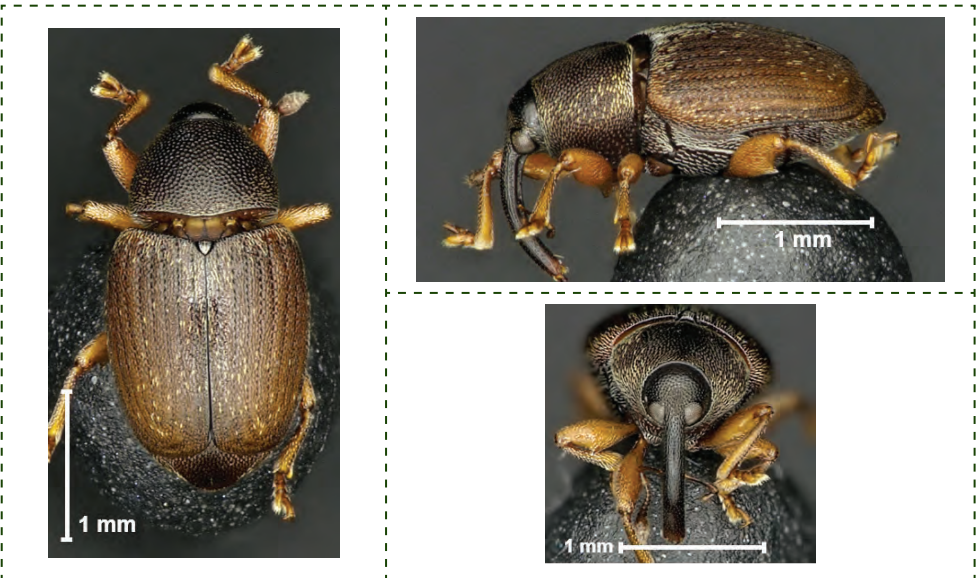


Figure 3.147 *Notolomus* sp.01
(Curculionidae: Curculioidae) Z02_ColCur018

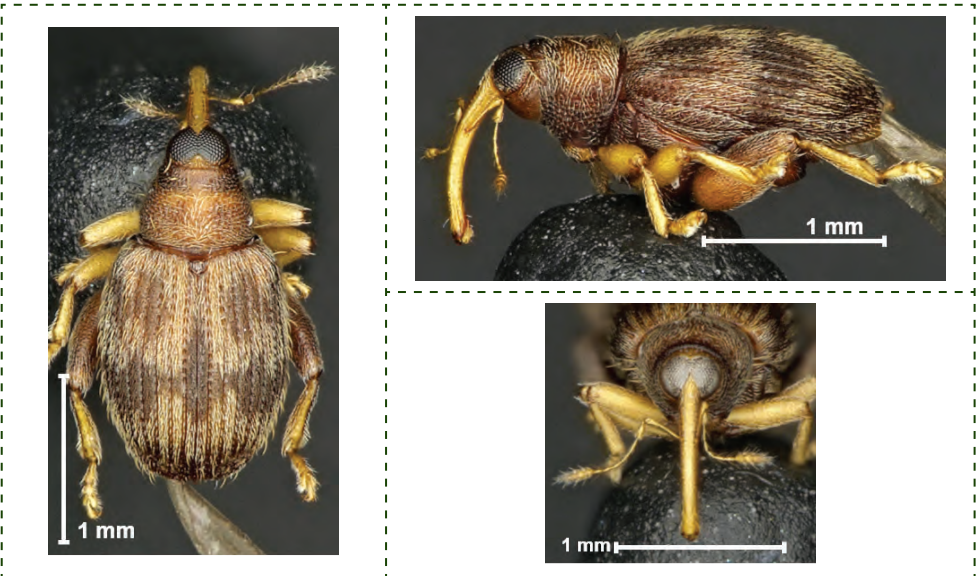


Figure 3.148 *Orchestes* sp.01
(Curculionidae: Curculioidae) Z02_ColCur278

Buku ini tidak diperjualbelikan.



Figure 3.149 *Orchestes* sp.02
(Curculionidae: Curculioidae) Z02_ColCur071



Figure 3.150 *Orchestes* sp.03
(Curculionidae: Curculioidae) Z02_ColCur222

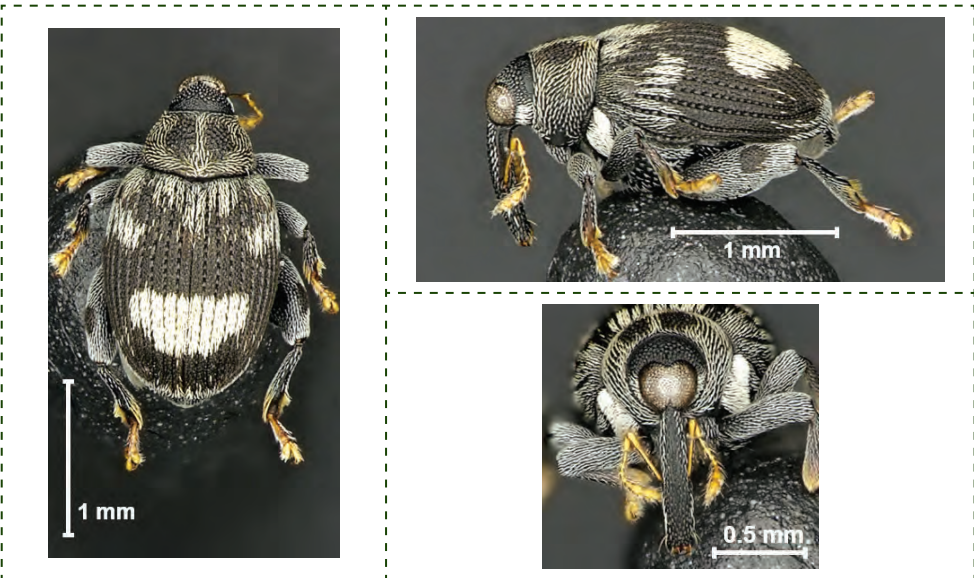


Figure 3.151 *Tachyerges* sp.01
(Curculionidae: Curculioinae) Z02_ColCur020

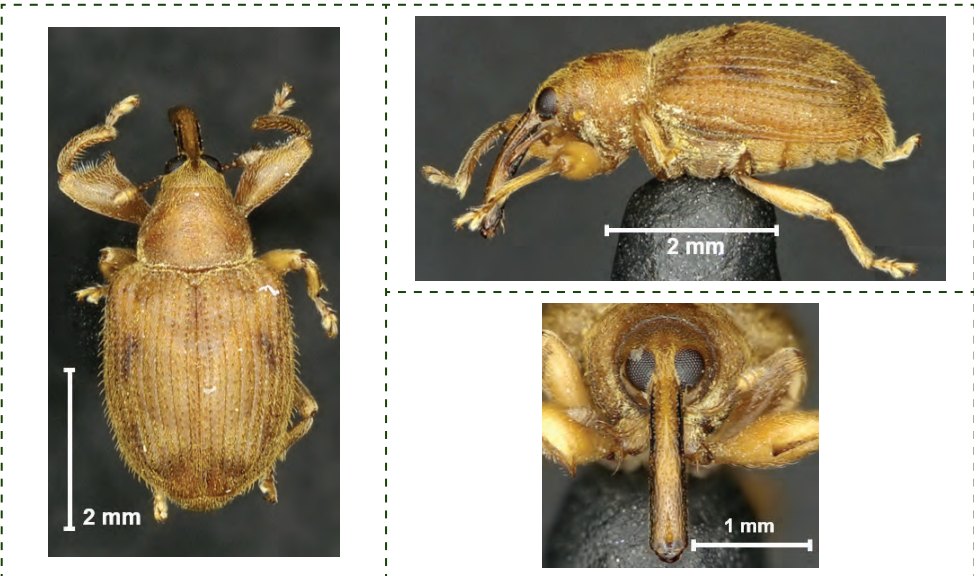


Figure 3.152 *Tychius* sp.01
(Curculionidae: Curculioinae) Z02_ColCur037

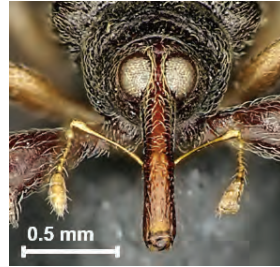


Figure 3.153 *Tychius* sp.02
(Curculionidae: Curculioidae) Z02_ColCur045

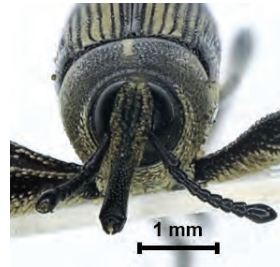
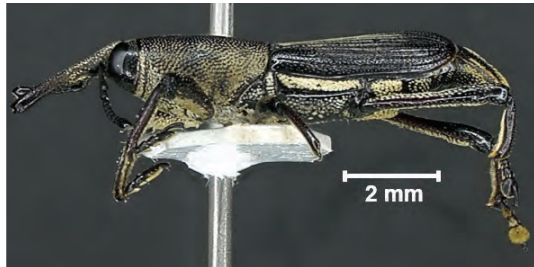


Figure 3.154 *Dryophthorinae* sp.01
(Curculionidae: Dryophthorinae) Z02_ColCur319

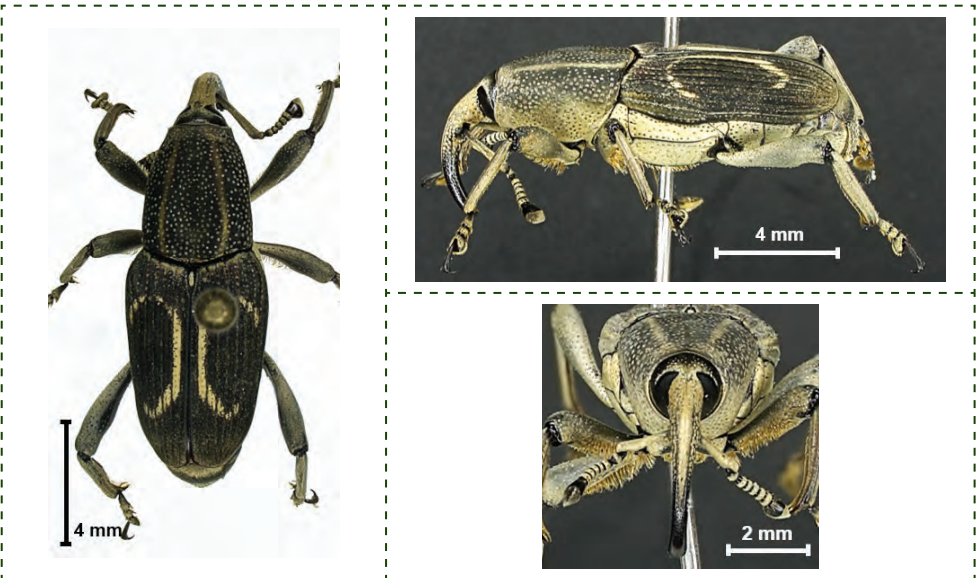


Figure 3.155 Dryophthorinae sp.02
(Curculionidae: Dryophthorinae) Z02_ColCur332

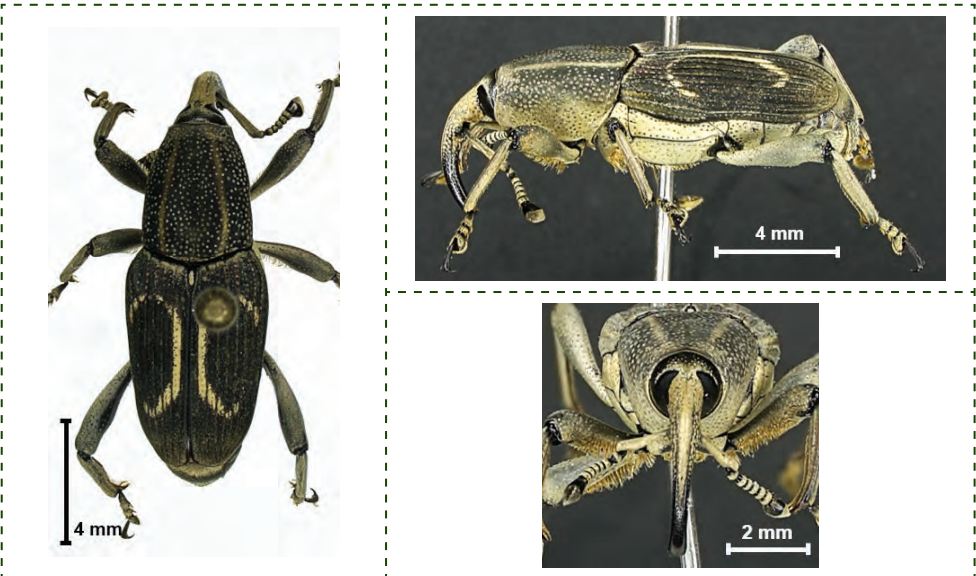


Figure 3.155 Dryophthorinae sp.02
(Curculionidae: Dryophthorinae) Z02_ColCur332

Buku ini tidak diperjualbelikan.

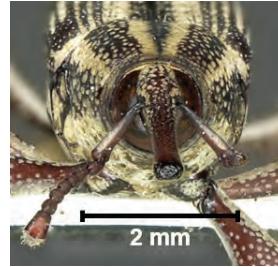


Figure 3.156 *Dryophthorinae* sp.03
(Curculionidae: *Dryophthorinae*) Z02_ColCur333

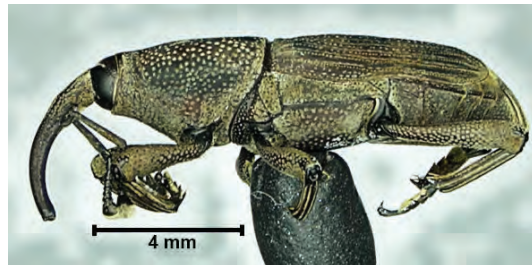


Figure 3.157 *Rhynchophorus* sp.01
(Curculionidae:) Z02_ColCur001

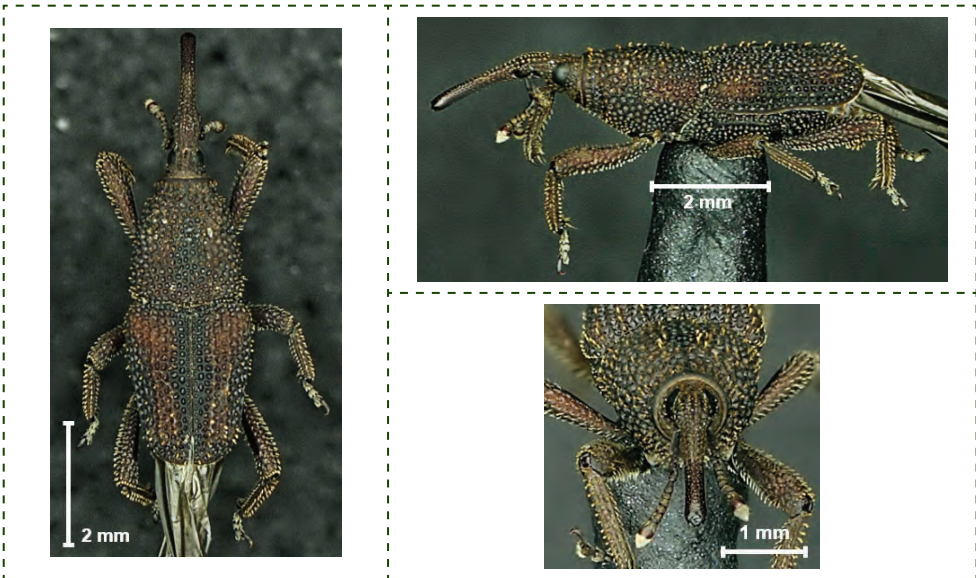


Figure 3.158 *Sitophilus* sp.01
(Curculionidae: Dryophthorinae) Z02_ColCur054

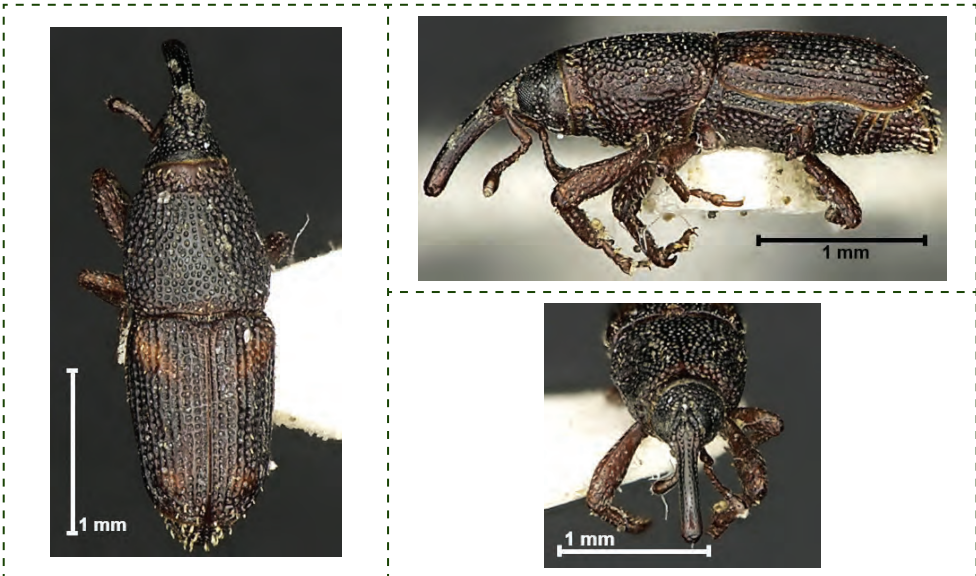


Figure 3.159 *Sitophilus* sp.02
(Curculionidae: Dryophthorinae) Z02_ColCur218

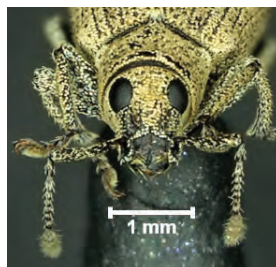


Figure 3.160 Entiminae sp.01
(Curculionidae: Entiminae) Z02_ColCur076

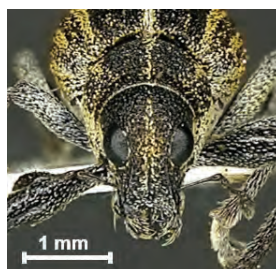


Figure 3.161 Entiminae sp.02
(Curculionidae: Entiminae) Z02_ColCur337

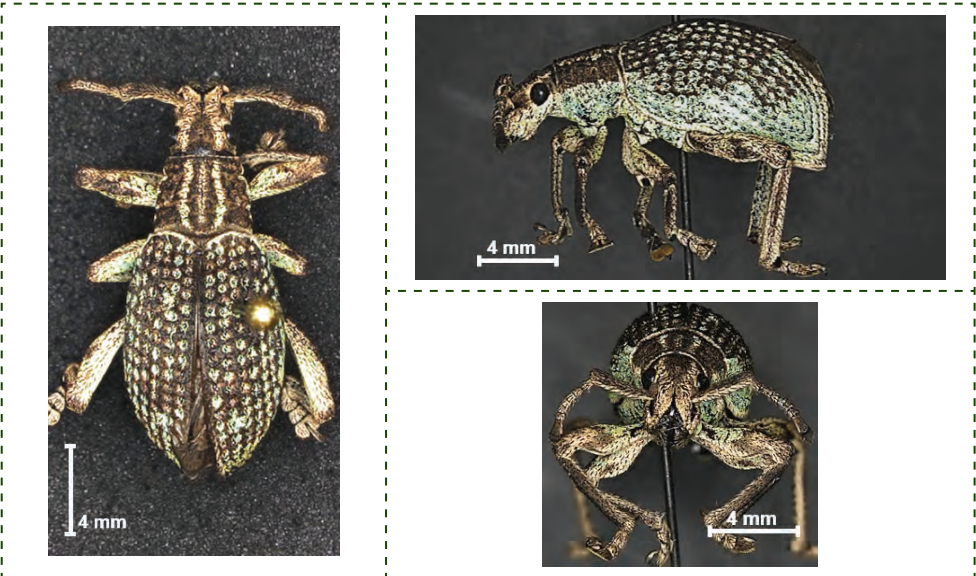


Figure 3.162 Entiminae sp.03
(Curculionidae: Entiminae) Z02_ColCur072

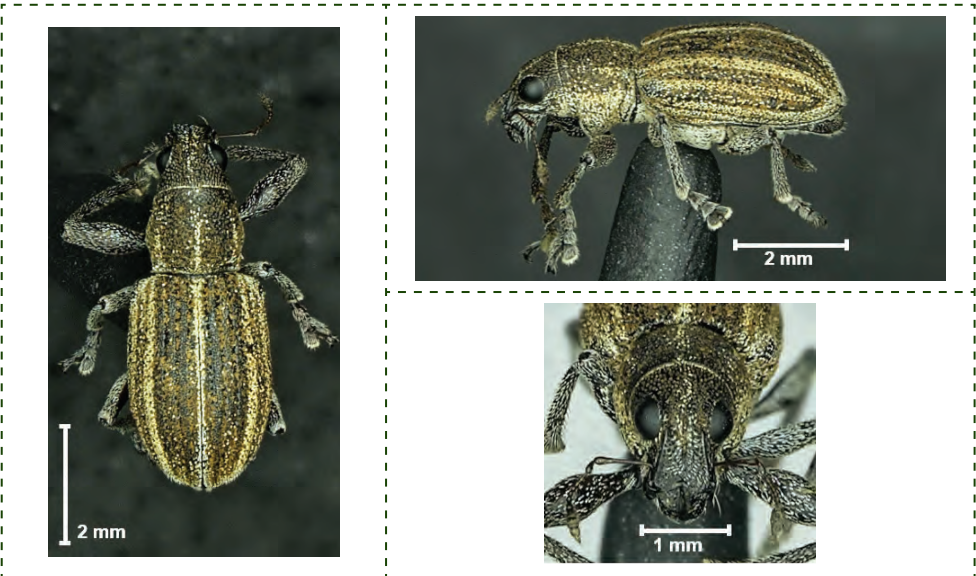


Figure 3.163 Entiminae sp.04
(Curculionidae: Entiminae) Z02_ColCur027

Buku ini tidak diperjualbelikan.

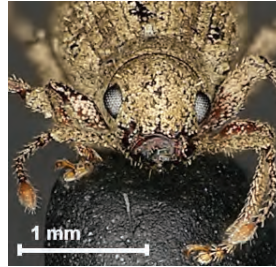


Figure 3.164 Entiminae sp.05
(Curculionidae: Entiminae) Z02_ColCur230

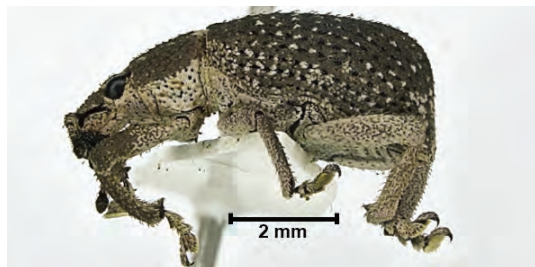


Figure 3.165 Entiminae sp.07
(Curculionidae: Entiminae) Z02_ColCur377

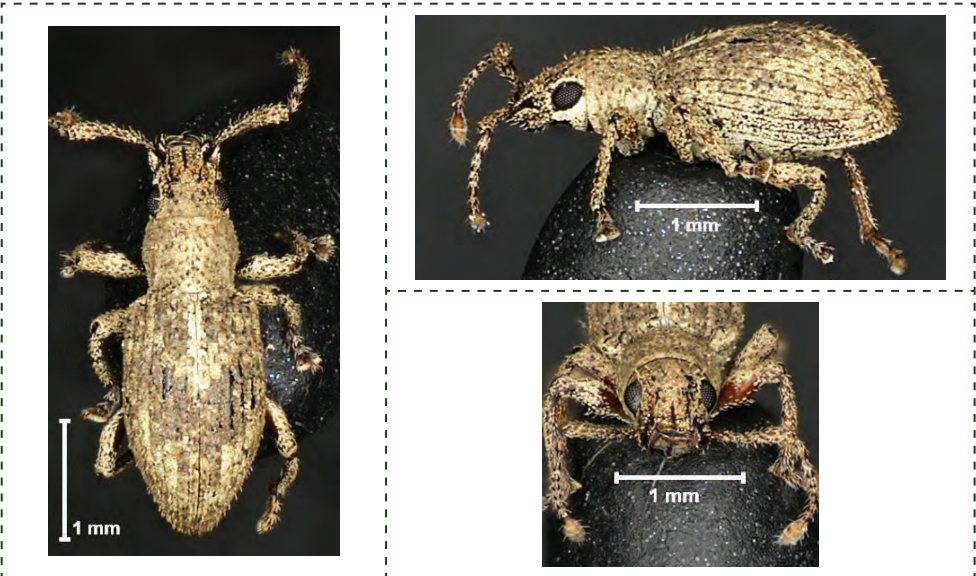


Figure 3.166 Entiminae sp.08
(Curculionidae: Entiminae) Z02_ColCur382

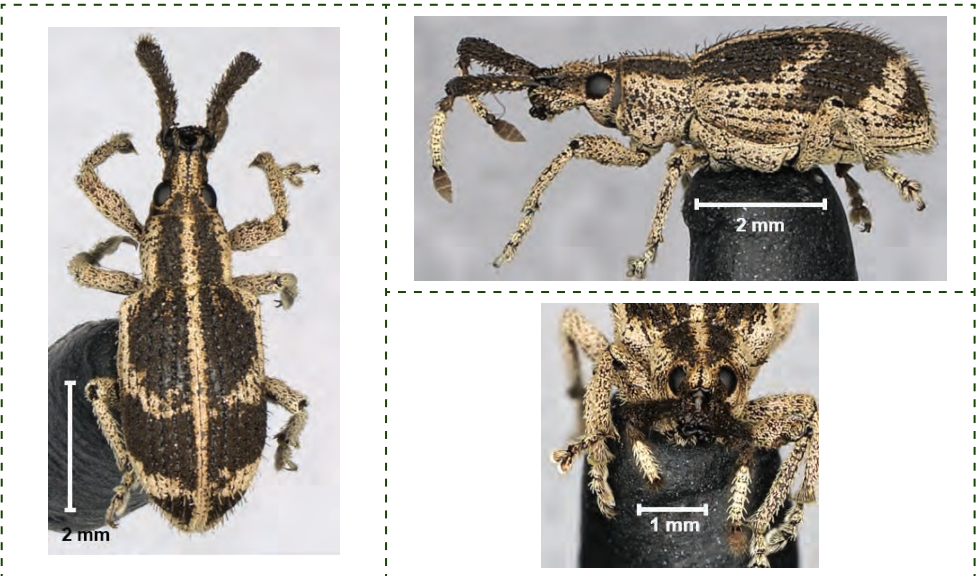


Figure 3.167 Myllocerus sp.01
(Curculionidae: Entiminae) Z02_ColCur047



Figure 3.168 *Myllocerus* sp.02
(Curculionidae: Entiminae) Z02_ColCur309

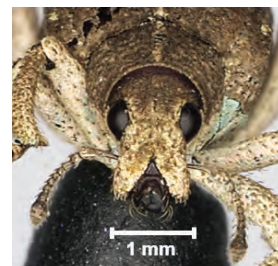


Figure 3.169 *Myllocerus* sp.03
(Curculionidae: Entiminae) Z02_ColCur183



Figure 3.170 *Myllocerus* sp.04
(Curculionidae: Entiminae) Z02_ColCur098



Figure 3.170 *Myllocerus* sp.04
(Curculionidae: Entiminae) Z02_ColCur098

Buku ini tidak diperjualbelikan.

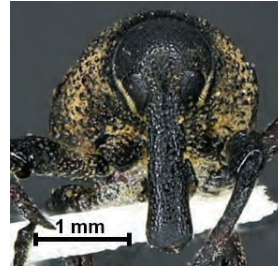
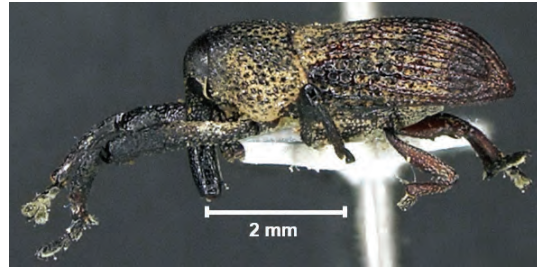


Figure 3.171 *Lixinae* sp.02
(Curculionidae: Lixinae) Z02_ColCur345



Figure 3.172 *Lixus* sp.01
(Curculionidae: Lixinae) Z02_ColCur097

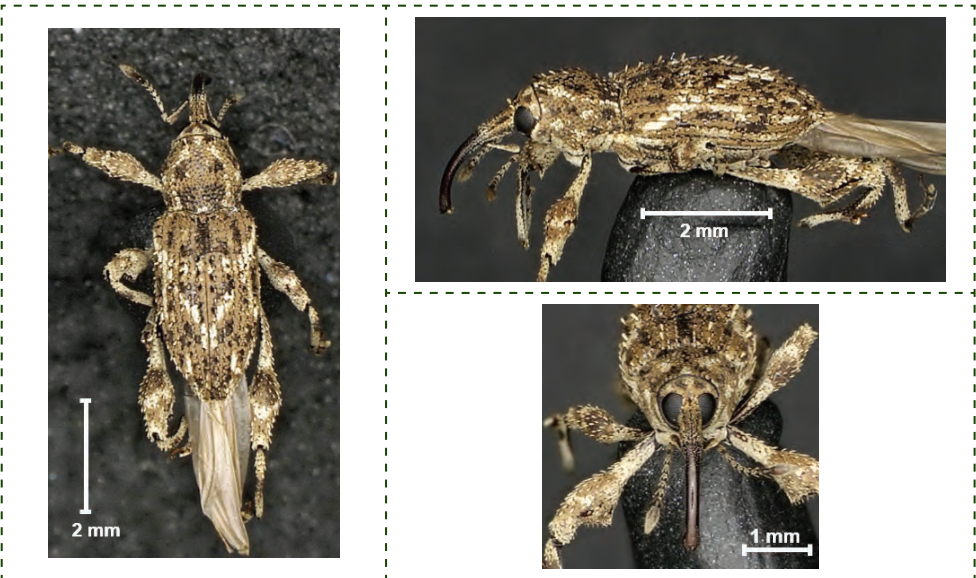


Figure 3.173 Molytinae sp.01
(Curculionidae: Molytinae) Z02_ColCur185

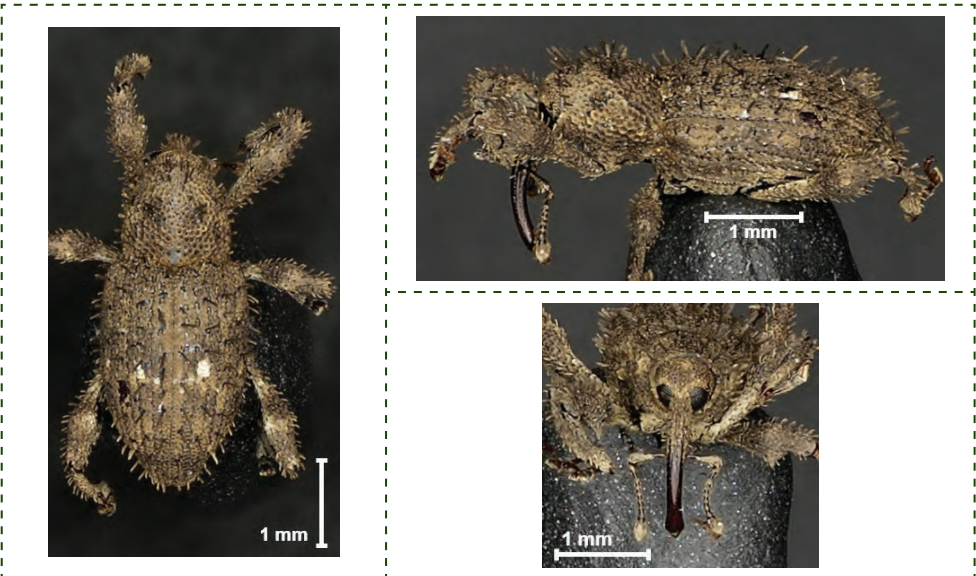


Figure 3.174 Molytinae sp.02
(Curculionidae: Molytinae) Z02_ColCur254

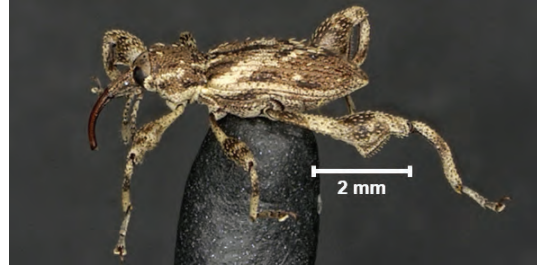


Figure 3.175 Molytinae sp.03
(Curculionidae: Molytinae) Z02_ColCur244

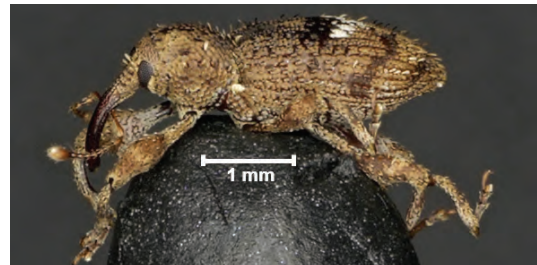


Figure 3.176 Molytinae sp.04
(Curculionidae: Molytinae) Z02_ColCur262

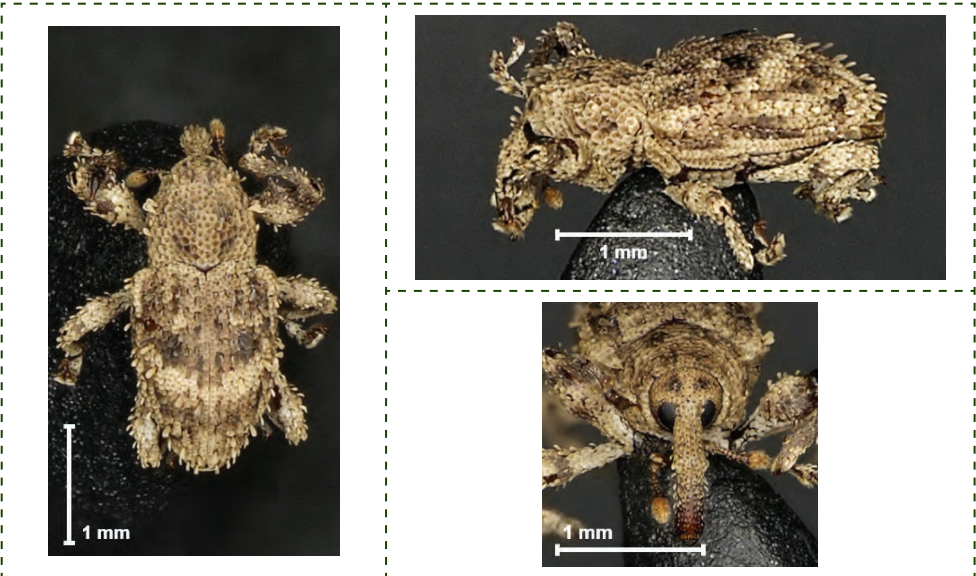


Figure 3.177 Molytinae sp.05
(Curculionidae: Molytinae) Z02_ColCur279



Figure 3.178 Molytinae sp.06
(Curculionidae: Molytinae) Z02_ColCur100

Buku ini tidak diperjualbelikan.

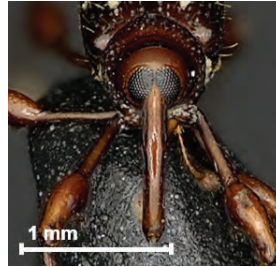


Figure 3.179 Molytinae sp.07
(Curculionidae: Molytinae) Z02_ColCur207

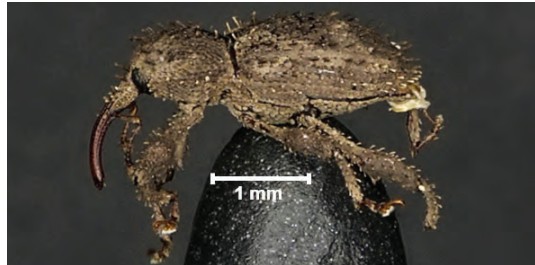


Figure 3.180 Molytinae sp.08
(Curculionidae: Molytinae) Z02_ColCur258

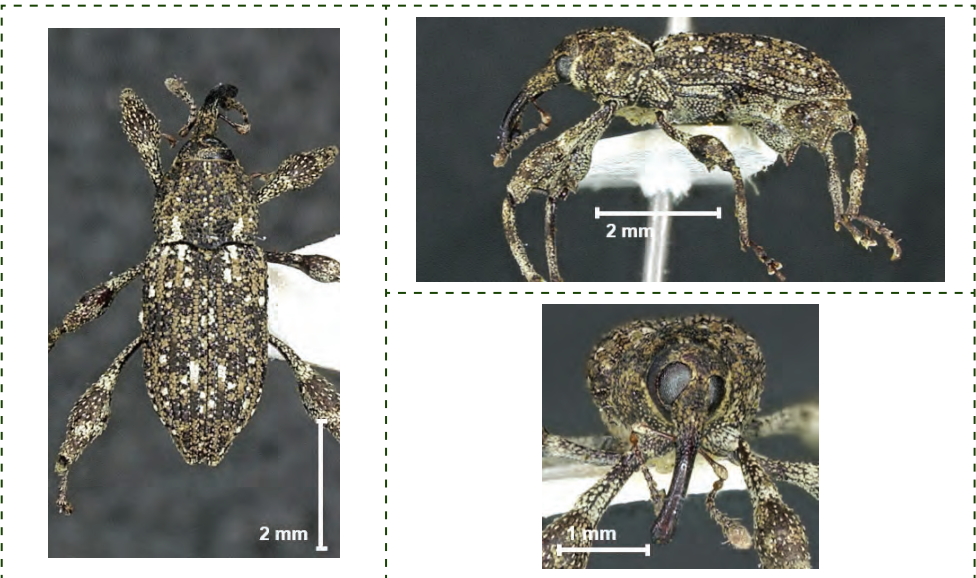


Figure 3.181 Molytinae sp.09
(Curculionidae: Molytinae) Z02_ColCur013

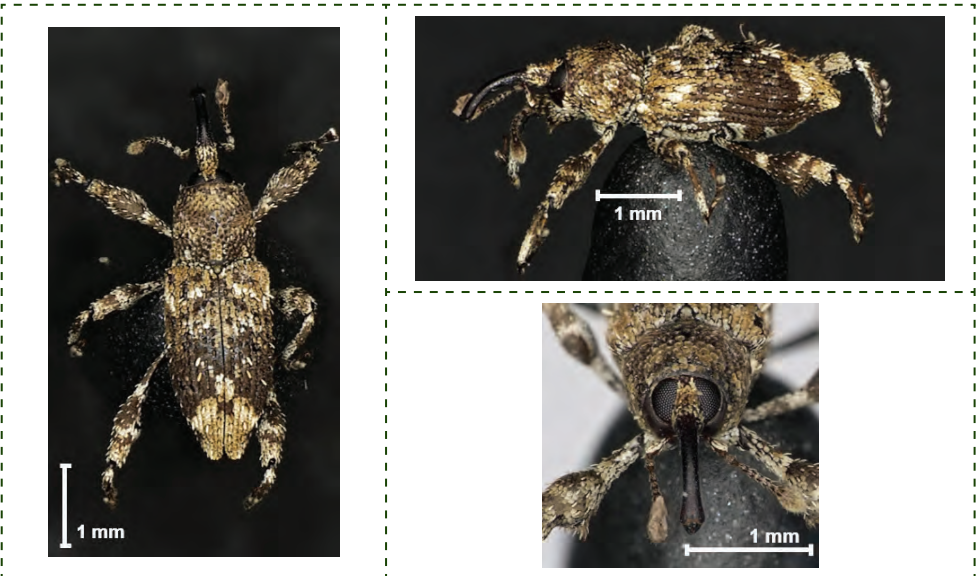


Figure 3.182 Molytinae sp.10
(Curculionidae: Molytinae) Z02_ColCur074

Buku ini tidak diperjualbelikan.

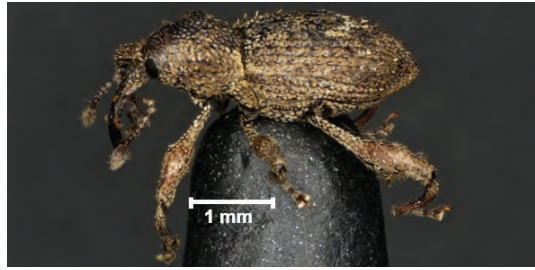


Figure 3.183 Molytinae sp.11
(Curculionidae: Molytinae) Z02_ColCur144

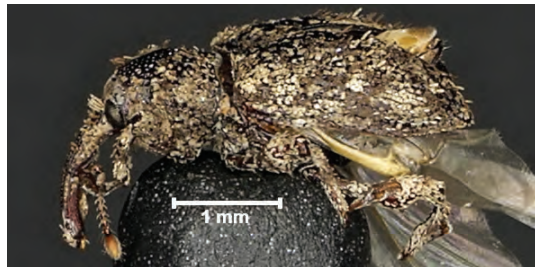


Figure 3.184 Molytinae sp.12
(Curculionidae: Molytinae) Z02_ColCur099

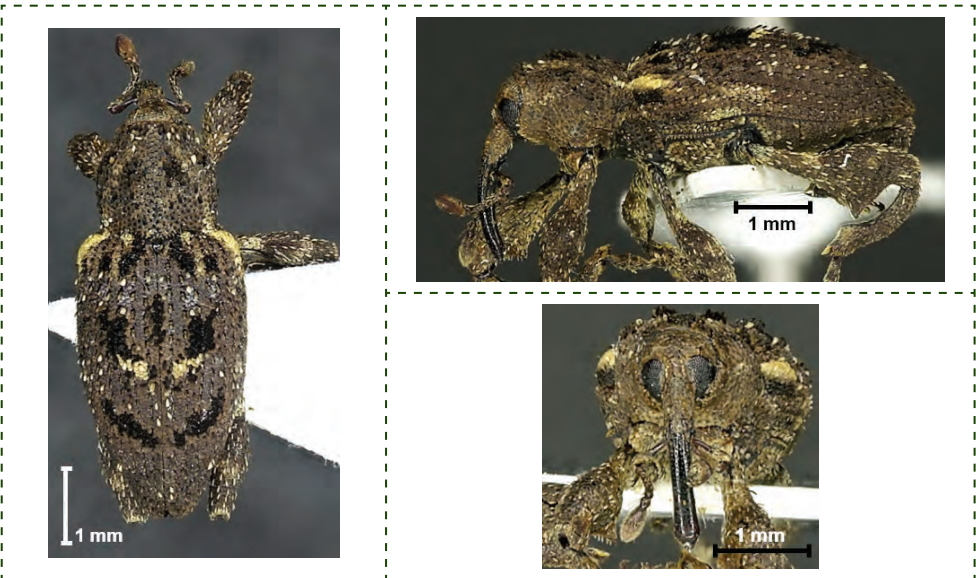


Figure 3.185 Molytinae sp.13
(Caurculionidae: Molytinae) Z02_ColCur381



Figure 3.186 Molytinae sp.14
(Curculionidae: Molytinae) Z02_ColCur383

Buku ini tidak diperjualbelikan.



Figure 3.187 *Molytinae* sp.15
(Curculionidae: Molytinae) Z02_ColCur385

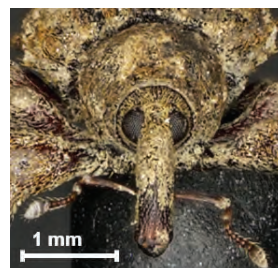
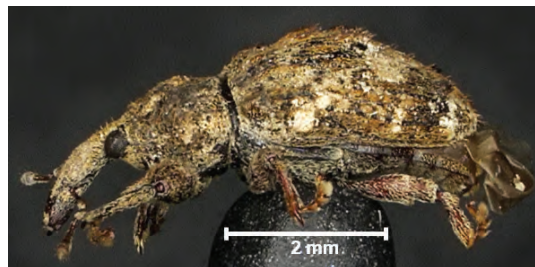


Figure 3.188 *Sthereus* sp.01
(Curculionidae: Molytinae) Z02_ColCur011

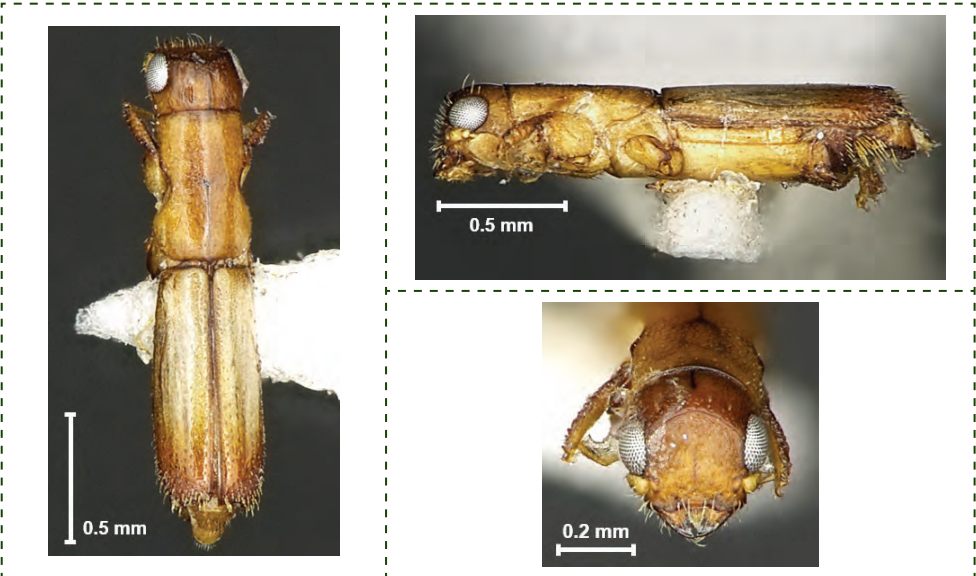


Figure 3.189 Platypodinae sp.02
(Curculionidae: Platypodinae) Z02_ColCur347

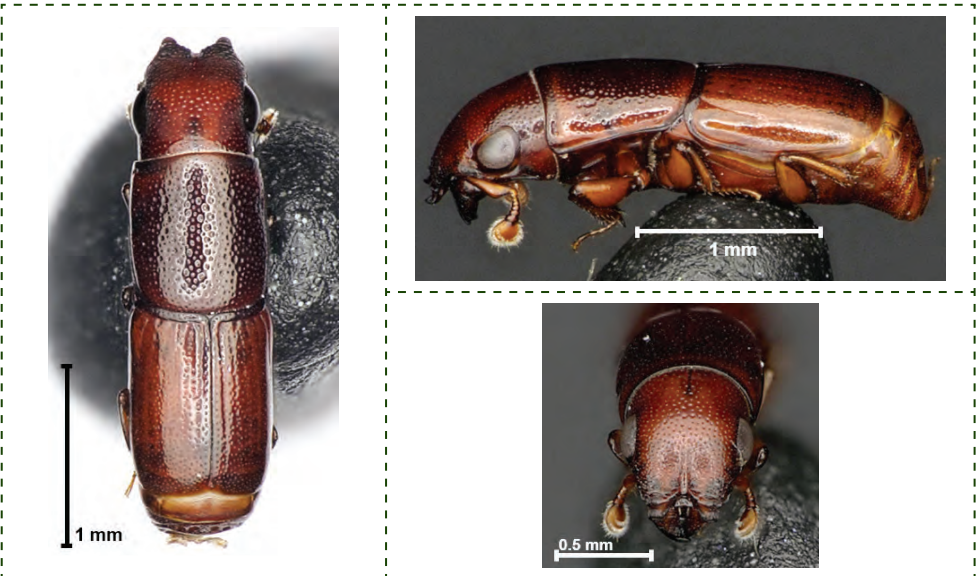


Figure 3.190 Platypodinae sp.03
(Curculionidae: Platypodinae) Z02_ColCur324

Buku ini tidak diperjualbelikan.

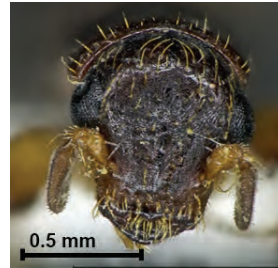


Figure 3.191 Platypodinae sp.04
(Curculionidae: Platypodinae) Z02_ColCur334



Figure 3.192 Platypodinae sp.05
(Curculionidae: Platypodinae) Z02_ColCur366

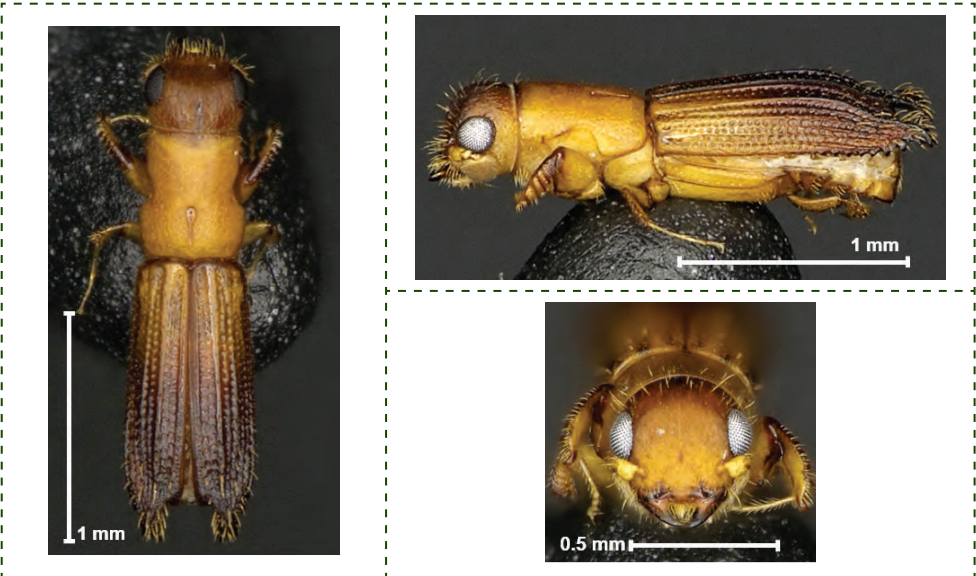


Figure 3.193 *Platypus* sp.01
(Curculionidae: Platypodinae) Z02_ColCur024

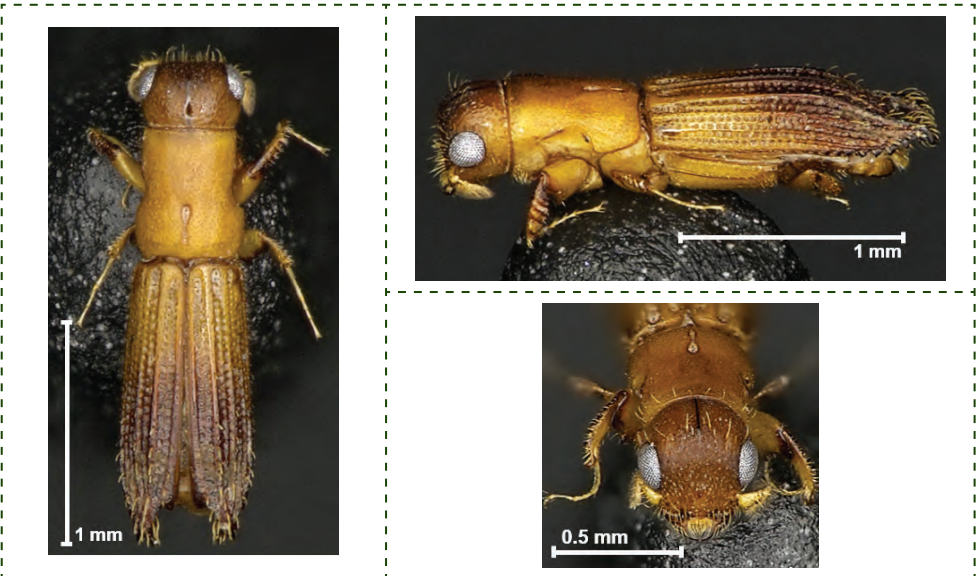


Figure 3.194 *Platypus* sp.02
(Curculionidae: Platypodinae) Z02_ColCur336

Buku ini tidak diperjualbelikan.



Figure 3.195 *Platypus* sp.03
(Curculionidae: Platypodinae) Z02_ColCur354



Figure 3.196 *Treptoplatypus* sp.01
(Curculionidae: Platypodinae) Z02_ColCur223



Figure 3.197 *Alniphagus* sp.01
(Curculionidae: Scolytinae) Z02_ColCur368

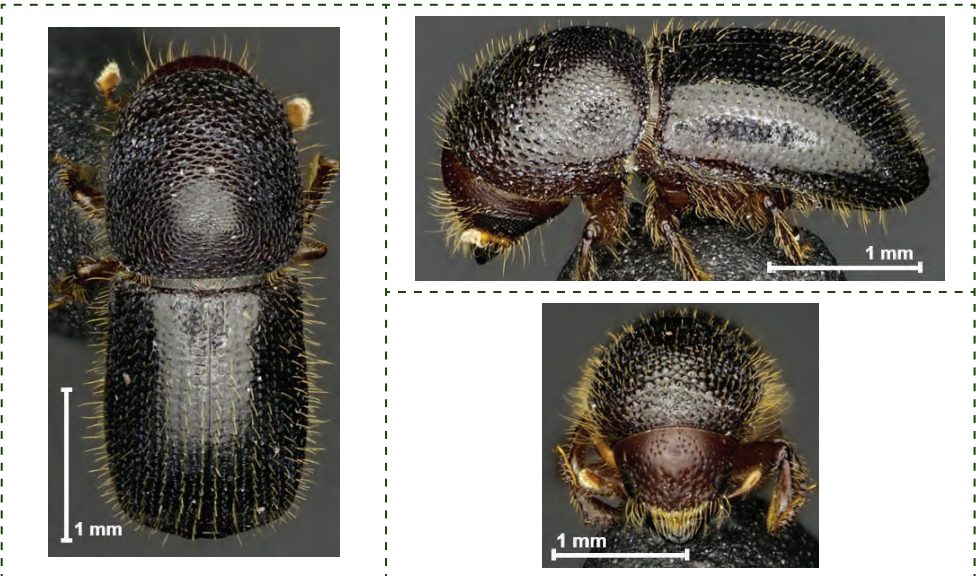


Figure 3.198 *Ambrosiodmus* sp.01
(Curculionidae: Scolytinae) Z02_ColCur067

Buku ini tidak diperjualbelikan.



Figure 3.199 *Hypothenemus* sp.01
(Curculionidae: Scolytinae) Z02_ColCur048

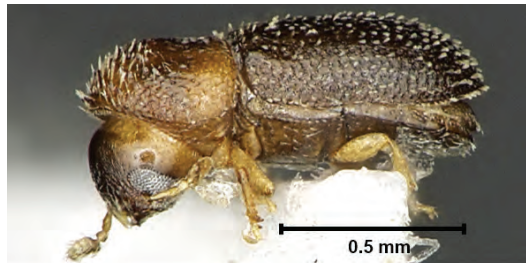


Figure 3.200 *Hypothenemus* sp.02
(Curculionidae: Scolytinae) Z02_ColCur117

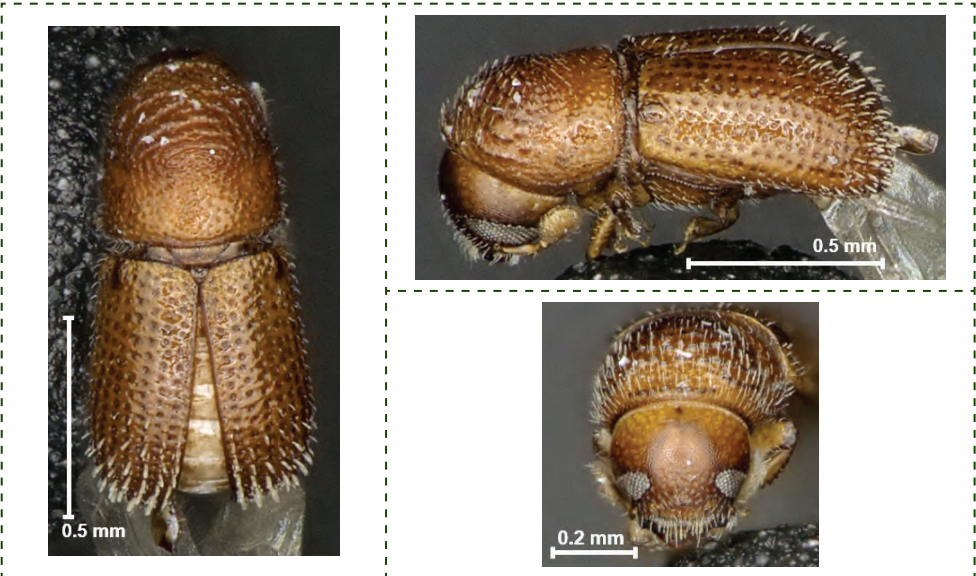


Figure 3.201 *Hypothenemus* sp.03
(Curculionidae: Scolytinae) Z02_ColCur145

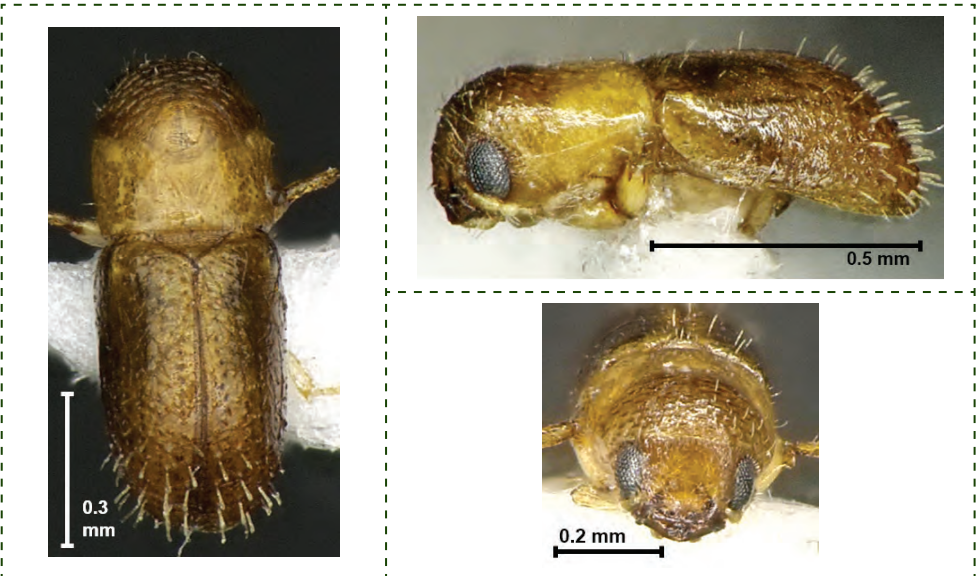


Figure 3.202 *Hypothenemus* sp.04
(Curculionidae: Scolytinae) Z02_ColCur365

Buku ini tidak diperjualbelikan.

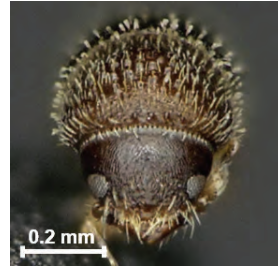


Figure 3.203 *Phloeotribus* sp.01
(Curculionidae: Scolytinae) Z02_ColCur157



Figure 3.204 *Scolytinae* sp.01
(Curculionidae: Scolytinae) Z02_ColCur287

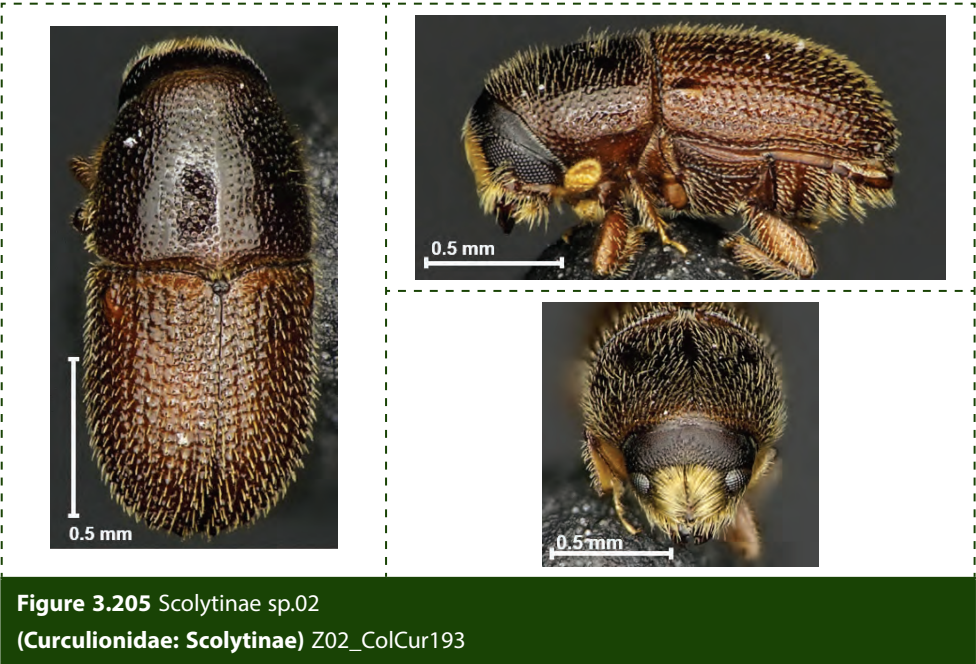


Figure 3.205 Scolytinae sp.02
(Curculionidae: Scolytinae) Z02_ColCur193

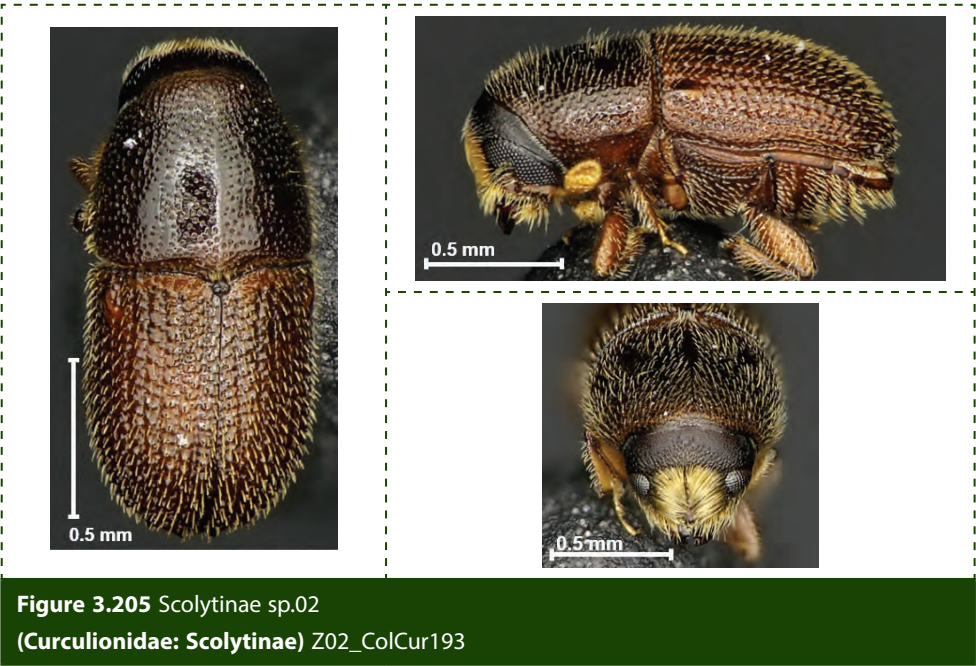


Figure 3.205 Scolytinae sp.02
(Curculionidae: Scolytinae) Z02_ColCur193

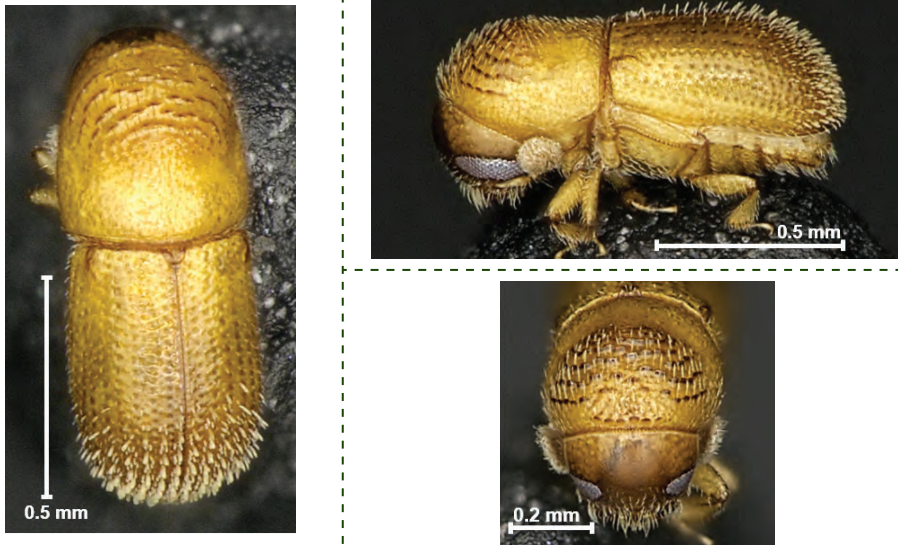


Figure 3.206 Scolytinae sp.03
(Curculionidae: Scolytinae) Z02_ColCur163

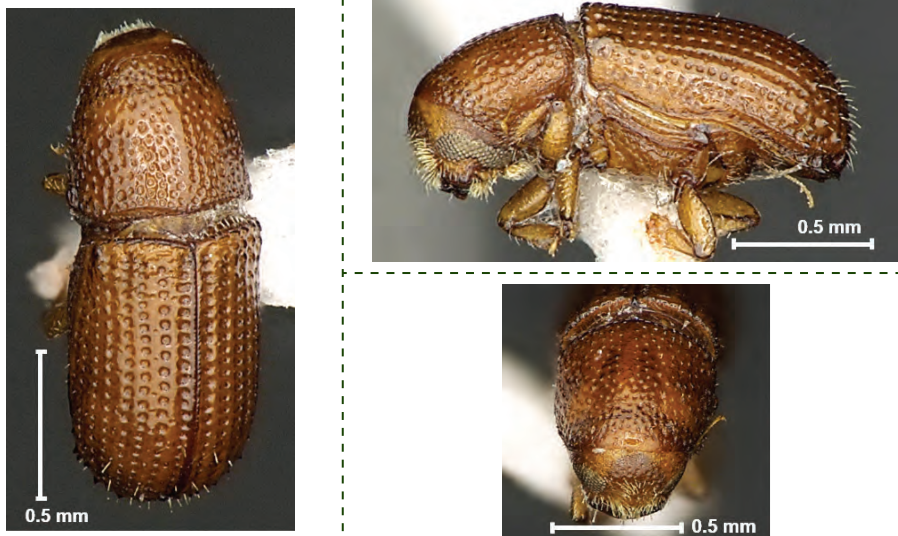


Figure 3.207 Scolytinae sp.04
(Curculionidae: Scolytinae) Z02_ColCur367

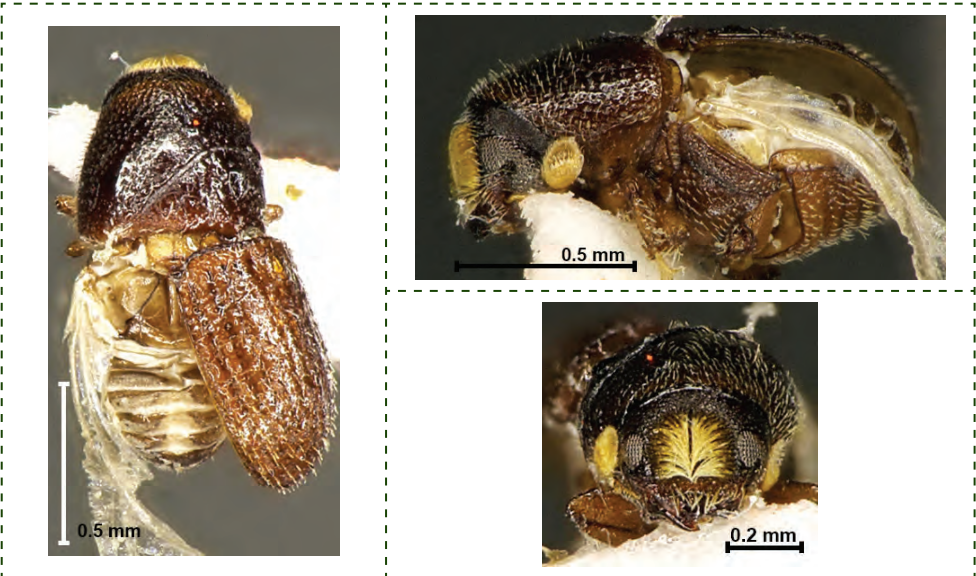


Figure 3.208 Scolytinae sp.05
(Curculionidae: Scolytinae) Z02_ColCur350



Figure 3.209 Scolytinae sp.06
(Curculionidae: Scolytinae) Z02_ColCur349

Buku ini tidak diperjualbelikan.

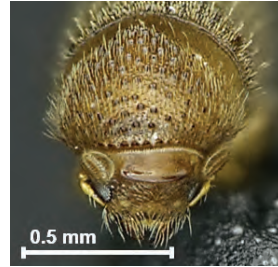


Figure 3.210 Scolytinae sp.07
(Curculionidae: Scolytinae) Z02_ColCur318



Figure 3.211 Scolytinae sp.10
(Curculionidae: Scolytinae) Z02_ColCur329

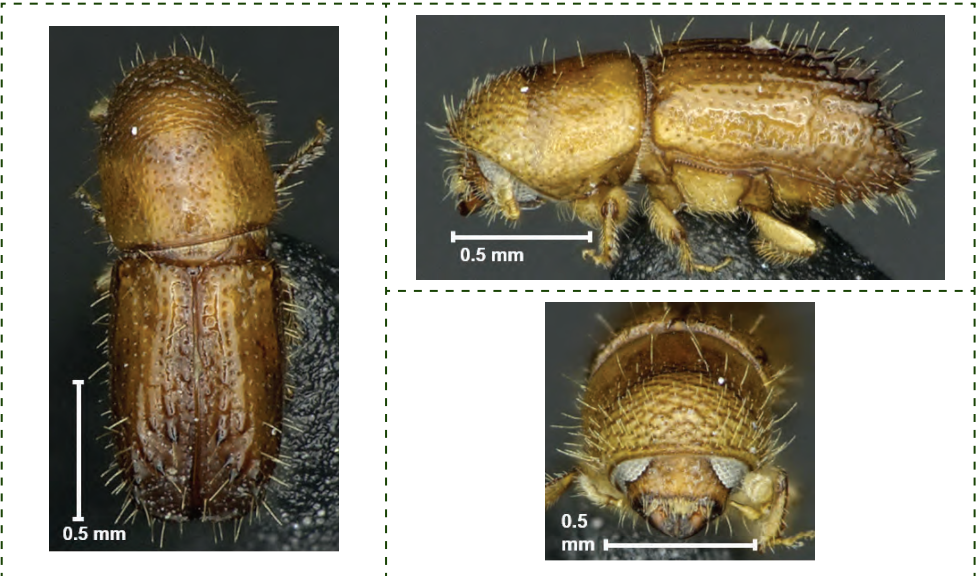


Figure 3.212 Scolytinae sp.12
(Curculionidae: Scolytinae) Z02_ColCur348

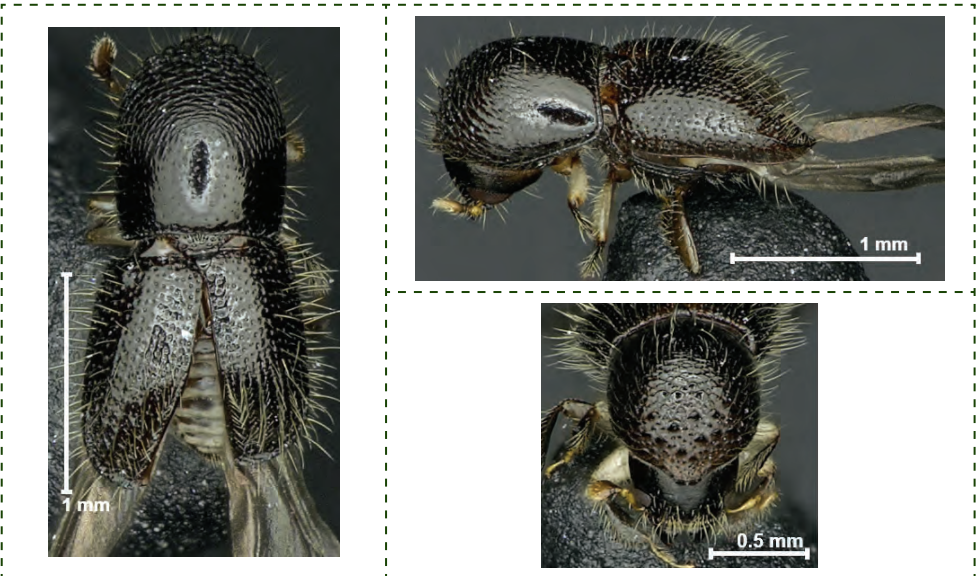


Figure 3.213 Scolytinae sp.13
(Curculionidae: Scolytinae) Z02_ColCur360

Buku ini tidak diperjualbelikan.



Figure 3.214 *Scolytinae* sp.15
(Curculionidae: Scolytinae) Z02_ColCur371

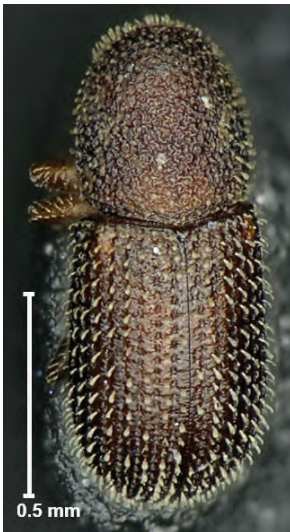


Figure 3.215 *Scolytogenes* sp.01
(Curculionidae: Scolytinae) Z02_ColCur136

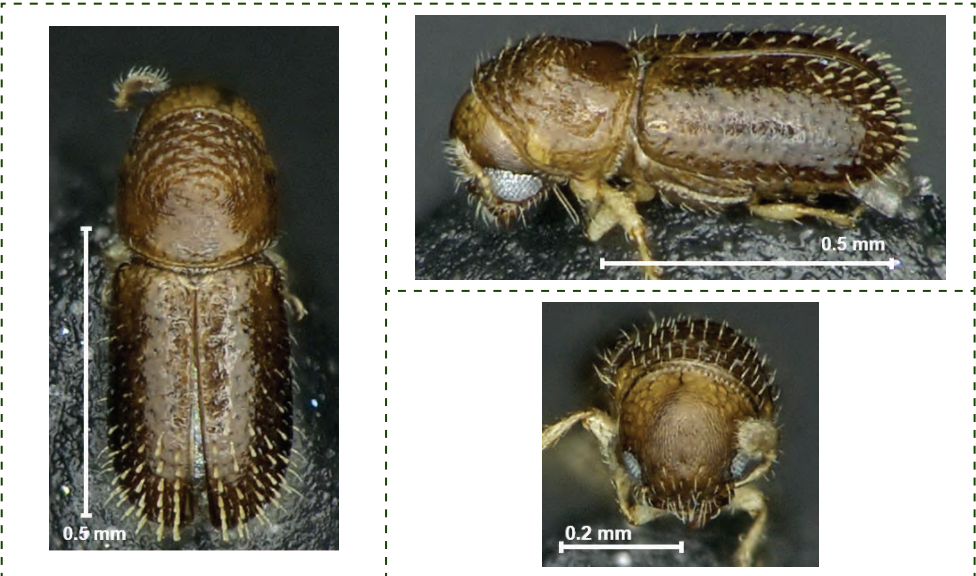


Figure 3.216 *Scolytogenes* sp.02
(Curculionidae: Scolytinae) Z02_ColCur266



Figure by Bona Pakpahan



***Pachyderes* sp.** (Elateridae: Elaterinae)

Image by Suryadi

CLICK BEETLES (COLEOPTERA: ELATERIDAE)

Click beetles (Coleoptera: Elateridae), are a large and cosmopolitan beetle family of about 3,400 described species from more than 400 genera (www.gbif.org). A sizeable part of the currently described Elateridae beetle fauna is from Australian records (667 spp., Hangay & Zborowski 2010). Hundreds, if not thousands of elaterid beetle species, are found in South America, with 140 spp. in Ecuador (Aguirre-Tapiero & Johnson, 2014), almost 800 spp. in Brazil (Casari, 2012a–b, 2013), 327 in Colombia (Aguirre-Tapiero, 2009; Aguirre-Tapiero & Johnson, 2014), and 157 in Peru (Aguirre-Tapiero & Johnson, 2014). Data in Elateridae from Indonesia is very scarce, and Bos et al., (2007) found only 11 spp. from 24 individuals in cacao agroforests in Sulawesi.

Click beetles come in a variety of colors and patterns, but are mostly long and slender beetles with longitudinal grooves along their elytra. Many are black or dark brown, but other species may also be brown, reddish-brown with shading in between. Most click beetles are 12–30 mm long, few species may grow up to 45 mm. Unlike most beetles, the connection between the first and second section of the thorax is flexible, and elaterid beetles can move their heads and first pair of legs separately from the rest of the body (Calder, 1996; Johnson, 2002). Elateridae or Click Beetles were named after their ability to perform evasive maneuvers by snapping their thorax and abdomen, thereby emanating a clicking sound, and jumping up to 20 cm into the air (Fig. 4.1).

The identification key of click beetles to subfamilies and genera was adapted and modified from Dogger (1959), Stibick (1979), Calder (1996), Johnson (2002), Chakraborty

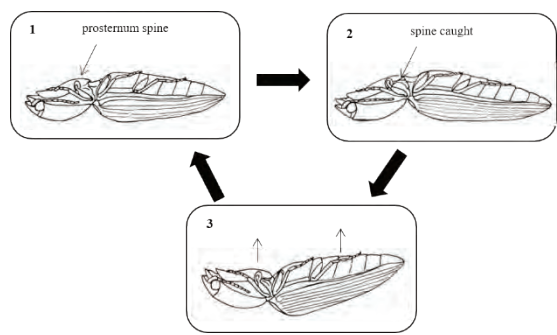


Figure 4.1 Clicking Mechanism of Click Beetles (adapted from Ribak & Weihs 2011; Bolmin et al. 2017)

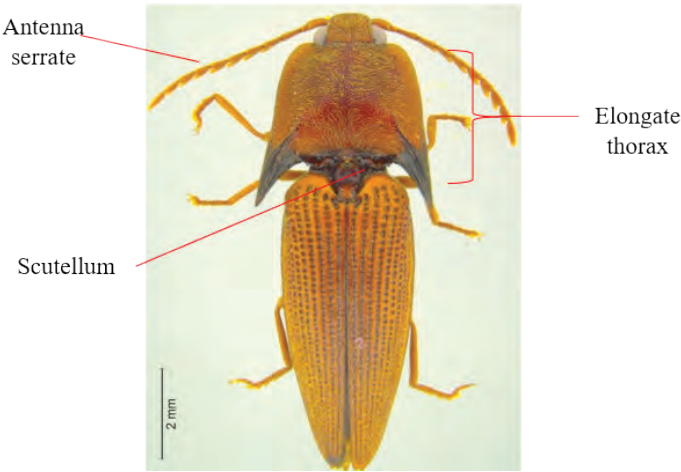


Figure 4.2 External Morphology (Dorsal View) of Elateridae

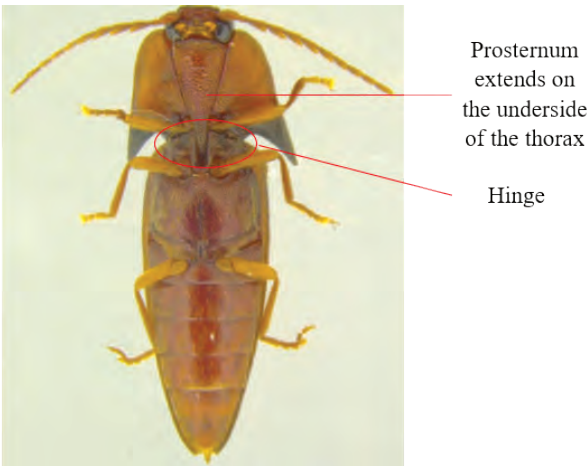


Figure 4.3 External Morphology (Ventral View) of Elateridae

Buku ini tidak diperjualbelikan.

and Chakrabarti (2006), and Hackson (2016). The identification of the specimens included has been verified by reference to the specimen collection of the Entomology Laboratory of Indonesian Institute of Science, LIPI.

IDENTIFICATION KEY TO THE SUBFAMILIES OF ELATERIDAE

The identification key to subfamilies of click beetles is adapted and modified from Dogger (1959), Stibick (1979), Calder (1996), Johnson (2002), Chakraborty and Chakrabarti (2006), and Hackson (2016).

1. Head capsule flattened or concave; Mouthparts forwardly directed (prognathous) and usually projecting anteriorly; Compound eyes present, strongly prominent (Fig.4.4a).....**Dendrometrinae**
- 1'. Head capsule convex; Mouthparts are pointing downward (hypognathous) and not projecting anteriorly; Compound eyes present, but not too prominent (Fig.4.4b)..**2**

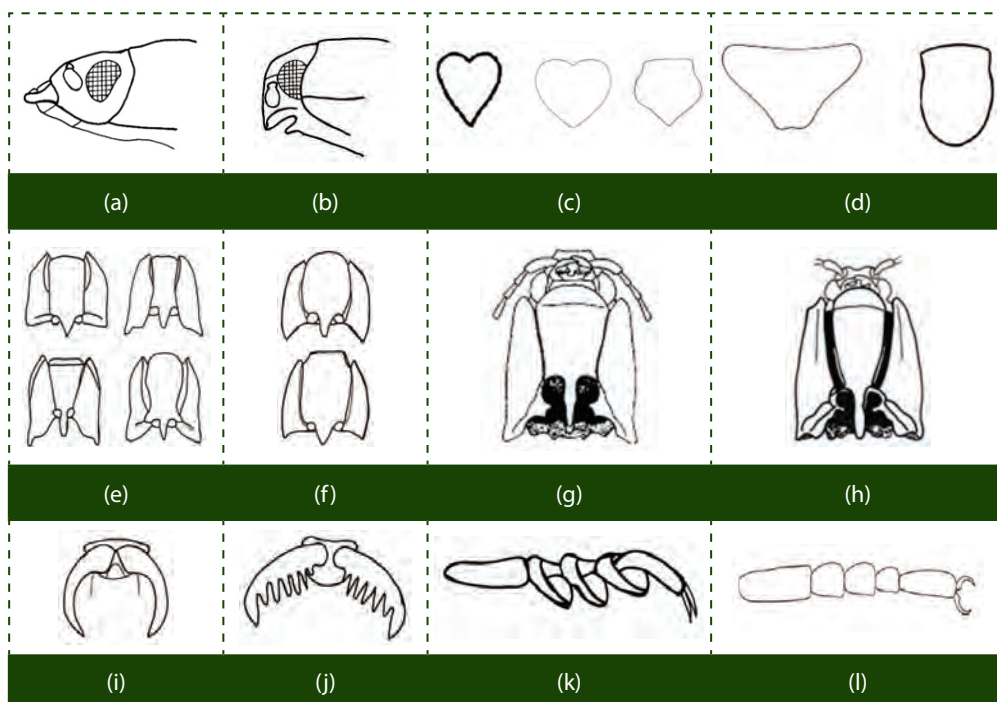


Figure 4.4. Characters of Elateridae. Characters 4.4a, 4.4b, 4.4i-4.4l re-drawing from Del and Aguirre-Tapiero (2009); Characters 4.4c-4.4f redrawing from Dogger (1959); Characters 4.4g and 4.4h re-drawing from Hackson (2016)



- 2. Scutellum heart-shaped due to an impression or indentation in the middle of the front margin (Fig.4.4c).....**Cardiophorinae**
- 2'. Scutellum variable in shape, not heart-shaped (Fig.4.4d)**3**
- 3. Body length >5 mm; Prosternal sutures straight or concave (Fig.4.4e)**4**
- 3'. Body length < 5mm; Prosternal sutures arcuate or convex (Fig.4.4f).....**6**
- 4. Prosternal sutures forming antennal grooves; Elytra and pronotum covered with narrowly flattened bristles (Fig.4.4g).....**Agrypninae**
- 4'. Prosternal sutures closed to open anteriorly; Elytra and pronotum covered with slight bristles (Fig.4.4h)**5**
- 5. Claws simple (with a single tooth) (Fig.4.4i)**Elaterinae**
- 5'. Claws pectinate (with a comb of small teeth on the underside) (Fig.4.4j)**Melanotinae**
- 6. Tarsal segments with ventral membrane lobes (Fig.4.4k) **Lissominae**
- 6'. Tarsal segments filiform (Fig.4.4l) **Negastriinae**

IDENTIFICATION KEY TO THE GENERA OF ELATERIDAE

The identification key to genera of click beetles is adapted and modified from Dogger (1959), Stibick (1979), Calder (1996), Johnson (2002), Chakraborty and Chakrabarti (2006), and Hackson (2016).

Subfamily Agrypninae

- 1. Body elongates; moderately convex to subcylindrical.....**2**
- 1'. Body short, depressed to shallowly convex**6**
- 2. Pronotum with four tubercles elevated strongly; Frontal carina V-shaped in anterior view.....**Dilobitarsus**
- 2'. Pronotum flattened laterally (no tubercles); Frontal carina U-shaped or V-shaped in anterior view**3**
- 3. Body brownish or black with scale-like setae, covered with lots of yellow or pale gray hairs; Elytral striae convergent and coalescent apically.....**4**
- 3'. Body black, finely pubescent, setae narrow, covered with slight hairs (hairs not too visible); Elytral striae parallel to subparallel throughout length.....
Heteroderes
- 4. Eye spots in pronotum**5**
- 4'. No eye spots in pronotum **Agrypnus**

Buku ini tidak diperjualbelikan.

5. Pronotum with two small rounded black patches distinctly (eyespot); Elytra with bark and black elongated patches at lateral margins; Lateral margin pronotum almost straight, anterior margin of head distinctly concave in dorsal view

Paracalais

- 5'. Pronotum with two small rounded yellow patches in the middle (eyespot); Elytra covered by yellow hairs, no patches at lateral margins; Lateral margin of pronotum round in dorsal view, anterior margin of the head almost straight, slightly concave in dorsal view

Alaus

6. The shape of scutellum pentagonal; Eyes small and almost invisible; Some species have a strong lateral bulge at pronotum and elytra

Agraeus

- 6'. The shape of scutellum varies from pentagonal, triangular, or shield-shaped; Eyes small, but some visible or invisible; No bulge in pronotum and elytra.....

Adelocera

Subfamily Cardiophorinae

1. Tarsal segments with membranous ventral pads or projecting lobes
- Esthesopus***
- 1'. Tarsal segments without membranous pads or lobes (tarsal segments filiform or with ventral pads).....
- Cardiophorus***

Subfamily Dendrometrinae

1. Setae present on the base of claws; Tarsal segment with membranous pads or lobes
- Senodonia***
- 1'. Setae absent on base of claws; Tarsal segment without membranous pads or lobes
- 2**
2. Mesepisternum and mesepimeron reaching mesocoxal cavity
- Euplastius***
- 2'. Mesepisternum and sometimes mesepimeron not reaching mesocoxal cavity
- Hypnoidus***

Subfamily Lissominae (only found *Lissomus*)

- Body small, length 3.5 – 7.0 mm; Claws without setae; Tarsal segments with ventral membrane lobes; Mesosternal and metasternal suture is present



Subfamily Melanotinae (only found *Melanotus*)

- Body large, elongate and black, length over 10 mm; Claws pectinate; Pronotum with lateral basal groove; Mesocoxae open to mesepimeron only

Subfamily Negastrinae

- 1. Elytra completely or partly striate **Zorochros**
- 1'. Elytra without any stiate **Quasimus**

Subfamily Elaterinae

- 1. Head in normal size; Pronotum normal in comparison to elytra; Hind angles in various types (not strongly developed) **2**
- 1'. Head distinctly smaller in comparison to pronotum; Pronotum much wider than elytra; Hind angles very strongly developed **Pachyderes**
- 2. Mandibles bidets rarely tridentate; the Last segment of maxillary palp oval or elongated **3**
- 2'. Mandibles triangularly extended at the base, intended at the apical margin; the Last segment of maxillary palp triangular or flatly rounded **Agonischius**
- 3. Antennae serrate or filiform and not covered with hairs **4**
- 3'. Antennae serrate, covered with long and conspicuously protruding hairs in most of the species **Mulsanteus**
- 4. Tarsal segment simple, no membrane lobes or lamellae on tarsomeres **5**
- 4'. Tarsal segments with spongiose pads or membrane lobes on one or more tarsomeres **Simodactylus**
- 5. Clypeus without carina; Intraocular carinae present **6**
- 5'. Clypeus with two oblique carinae, converging forming an inverted V-shaped; Intraocular carina absent **Glyphonyx**
- 6. Frontal margin and supra-antennal carina coincident across frons **7**
- 6'. Frontal margin depressed, forming a frontoclypeal area; Supra-antennal carina arcuate anterad, extending along lateral margin of frontoclypeal area **Dalopius**
- 7. Procoxal cavities partly closed behind by projection of proepisternum or anterior margin more or less angulate; Prosternal process more or less grooved between procoxae; Elytral apex rounded rarely truncate **8**
- 7'. Procoxal cavities broadly open behind and wide anteriorly; Prosternal process flat between procoxae; Elytral apex entire **Ampedus**
- 8. Body length <10mm; Antennae just reaching posterior angles of pronotum **9**

8. Body length >10mm, Antennae extending beyond posterior angles of pronotum
Xanthopenthes
9. Hind tarsus same length or shorter than hind tibia **10**
9. Hind tarsus longer than hind tibia***Megapenthes***
10. Elytra and pronotum usually with various colors and patterns***Melanoxanthus***
10. Elytra with yellow circular or subcircular pattern (some species have a circular pattern in pronotum)..... ***Gamepenthes***

LIST OF ELATERIDAE MORPHOSPECIES

Due to a large number of undescribed species in Sumatra, this checklist of the click beetles collected by EForTS project canopy fogging in dry season 2013 and rainy season 2013/14, contains a mix of confirmed Linnéan species and morphospecies which we defined *de novo*. Within each subfamily, the list is sorted alphabetically by morphospecies, and includes the following information:

1. Morphospecies: Differentiate in terms of morphology. Linnéan name, or genus plus species denominator.
2. MSp Code: Internal EForTS identifier, containing information regarding the respective EForTS project, higher-level taxonomic information, and the sorting number for each defined morphospecies.
3. Land Use: The land-use system in which each morphospecies was found, i.e., primary degraded forest (F), jungle rubber (J), rubber plantation (R), and/or oil palm plantation (O).
4. Total N: Number of individuals of each morphospecies 2013–2014.
5. Figures: Image number of the respective morphospecies.

Table 4.1 Elateridae morphospecies

Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Agrypninae</i>				
<i>Adelocera</i> sp.01	Z02_ColEla002	F, J, O, R	1884	4.5
<i>Adelocera</i> sp.02	Z02_ColEla020	F, J, O	24	4.6
<i>Adelocera</i> sp.03	Z02_ColEla027	F, J	13	4.7
<i>Adelocera</i> sp.04	Z02_ColEla050	F, J, O, R	1066	4.8
<i>Adelocera</i> sp.05	Z02_ColEla081	J, O	7	4.9
<i>Agraeus candezei</i>	Z02_ColEla049	F, J	2	4.10
<i>Agraeus</i> sp.01	Z02_ColEla019	F, J	12	4.11



Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Agraeus</i> sp.02	Z02_ColEla025	R, O	5	4.12
<i>Agraeus</i> sp.03	Z02_ColEla026	F, J, O, R	21	4.13
<i>Agraeus</i> sp.04	Z02_ColEla048	F	1	4.14
<i>Agraeus</i> sp.05	Z02_ColEla052	F, J, O, R	9	4.15
<i>Agraeus</i> sp.06	Z02_ColEla065	F	2	4.16
<i>Agraeus</i> sp.07	Z02_ColEla083	J, O, R	4	4.17
<i>Agrypnus</i> sp.01	Z02_ColEla040	F	1	4.18
<i>Agrypnus</i> sp.02	Z02_ColEla045	F, J, R	13	4.19
<i>Agrypnus</i> sp.03	Z02_ColEla047	J	3	4.20
<i>Alaus</i> sp.01	Z02_ColEla046	F, J	6	4.21
<i>Dilobitarsus pendleburyi</i>	Z02_ColEla067	F	1	4.22
<i>Heteroderes</i> sp.01	Z02_ColEla011	F, J, R	23	4.23
<i>Heteroderes</i> sp.02	Z02_ColEla024	F, J, O, R	55	4.24
<i>Heteroderes</i> sp.03	Z02_ColEla037	F, J, R	14	4.25
<i>Heteroderes</i> sp.04	Z02_ColEla061	F	1	4.26
<i>Paracalais</i> sp.01	Z02_ColEla088	J	2	4.27
<i>Paracalais</i> sp.02	Z02_ColEla089	J	1	4.28
Cardiophorinae				
<i>Cardiophorus fasciatus</i>	Z02_ColEla078	F	1	4.29
<i>Cardiophorus</i> sp.01	Z02_ColEla004	F	7	4.30
<i>Esthesopus</i> sp.01	Z02_ColEla015	F, J	209	4.31
<i>Esthesopus</i> sp.02	Z02_ColEla079	F	15	4.32
Dendrometrinae				
<i>Euplastius</i> sp.01	Z02_ColEla042	O	1	4.33
<i>Hypnoidus</i> sp.01	Z02_ColEla053	F	2	4.34
<i>Senodonia quadricollis</i>	Z02_ColEla076	F	1	4.35
Elaterinae				
<i>Agonischius</i> sp.01	Z02_ColEla056	J	2	4.36
<i>Agonischius</i> sp.02	Z02_ColEla086	J	1	4.37
<i>Ampedus</i> sp.01	Z02_ColEla001	F, J	6	4.38
<i>Ampedus</i> sp.02	Z02_ColEla009	F, J, R	30	4.39
<i>Ampedus</i> sp.03	Z02_ColEla032	F	2	4.40
<i>Ampedus</i> sp.04	Z02_ColEla038	F, J	25	4.41
<i>Ampedus</i> sp.05	Z02_ColEla068	F	1	4.42
<i>Ampedus</i> sp.06	Z02_ColEla082	J	2	4.43
<i>Dalopius</i> sp.01	Z02_ColEla034	F, J, O	6	4.44

Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Gamepenthès decemnotatus</i>	Z02_ColEla072	F, J	2	4.45
<i>Gamepenthès</i> sp.01	Z02_ColEla016	F, J, R	11	4.46
<i>Gamepenthès</i> sp.02	Z02_ColEla021	F	5	4.47
<i>Gamepenthès</i> sp.03	Z02_ColEla066	F, J	9	4.48
<i>Glyphonyx</i> sp.01	Z02_ColEla010	F, J, O, R	34	4.49
<i>Glyphonyx</i> sp.02	Z02_ColEla023	F, J, R	70	4.50
<i>Glyphonyx</i> sp.03	Z02_ColEla036	F, J, R	10	4.51
<i>Glyphonyx</i> sp.04	Z02_ColEla051	F, J, R	3	4.52
<i>Glyphonyx zonatus</i>	Z02_ColEla074	F, J	5	4.53
<i>Megapenthès</i> sp.01	Z02_ColEla005	F, J, R	36	4.54
<i>Megapenthès</i> sp.02	Z02_ColEla063	F, J	6	4.55
<i>Megapenthès</i> sp.03	Z02_ColEla087	J	1	4.56
<i>Melanoxanthus bicolor</i>	Z02_ColEla057	J	1	4.57
<i>Melanoxanthus fractus</i>	Z02_ColEla029	F, J, R	7	4.58
<i>Melanoxanthus ruptus</i>	Z02_ColEla059	R	1	4.59
<i>Melanoxanthus</i> sp.01	Z02_ColEla012	F, J, O, R	353	4.60
<i>Melanoxanthus</i> sp.02	Z02_ColEla017	F	3	4.61
<i>Melanoxanthus</i> sp.03	Z02_ColEla039	J	5	4.62
<i>Melanoxanthus</i> sp.04	Z02_ColEla041	J	1	4.63
<i>Melanoxanthus</i> sp.05	Z02_ColEla055	F	6	4.64
<i>Melanoxanthus</i> sp.06	Z02_ColEla058	J	1	4.65
<i>Melanoxanthus</i> sp.07	Z02_ColEla071	F	3	4.66
<i>Melanoxanthus</i> sp.08	Z02_ColEla085	J	1	4.67
<i>Mulsanteus illotipes</i>	Z02_ColEla006	F, J	4	4.68
<i>Mulsanteus</i> sp.01	Z02_ColEla028	F	7	4.69
<i>Mulsanteus</i> sp.02	Z02_ColEla084	J	3	4.70
<i>Pachyderes apicalis</i>	Z02_ColEla044	J	1	4.71
<i>Pachyderes</i> sp.01	Z02_ColEla014	F, J, O	3	4.72
<i>Pachyderes</i> sp.02	Z02_ColEla033	O	1	4.73
<i>Simodactylus</i> sp.01	Z02_ColEla075	F	1	4.74
<i>Xanthopenthès</i> sp.01	Z02_ColEla003	F, J	27	4.75
<i>Xanthopenthès</i> sp.02	Z02_ColEla018	F, J	4	4.76
<i>Xanthopenthès</i> sp.03	Z02_ColEla031	F, J	13	4.77
<i>Xanthopenthès</i> sp.04	Z02_ColEla054	F	1	4.78
Lissominae				
<i>Lissomus</i> sp.01	Z02_ColEla043	J	2	4.79



Morphospecies	MSp Code	Land Use	Total N	Figures
<i>Melanotinae</i>				
<i>Melanotus</i> sp.01	Z02_ColEla022	F, J, R	26	4.80
<i>Melanotus</i> sp.02	Z02_ColEla035	F, J, R	5	4.81
<i>Megastrinae</i>				
<i>Quasimus</i> sp.01	Z02_ColEla030	F, J, O, R	124	4.82
<i>Zorochros</i> sp.01	Z02_ColEla007	F	16	4.83
<i>Zorochros</i> sp.02	Z02_ColEla008	F	8	4.84

IMAGES OF THE EFFORTS ELATERIDAE COLLECTION

For the majority of the EFForTS morphospecies collection, specimens have been photographed using KEYENCE VHX-2000 digital microscope. Below, we display dorsally, laterally, and facial images of each morphospecies.

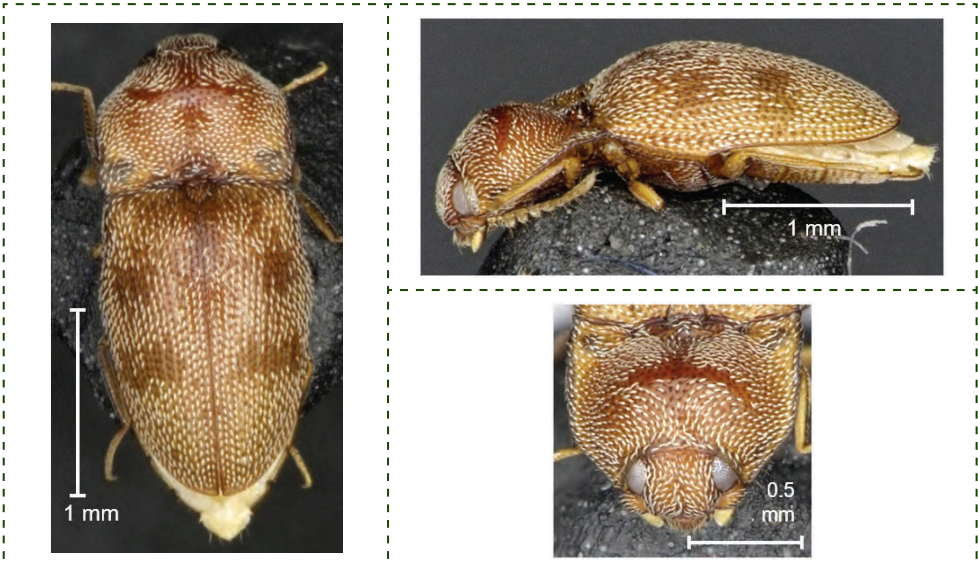


Figure 4.5 *Adelocera* sp.01
(Elateridae: Agrypninae) Z02_ColEla002

Buku ini tidak diperjualbelikan.

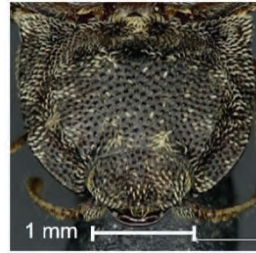


Figure 4.6 *Adelocera* sp.02
(Elateridae: Agrypninae) Z02_ColEla020



Figure 4.7 *Adelocera* sp.03
(Elateridae: Agrypninae) Z02_ColEla027

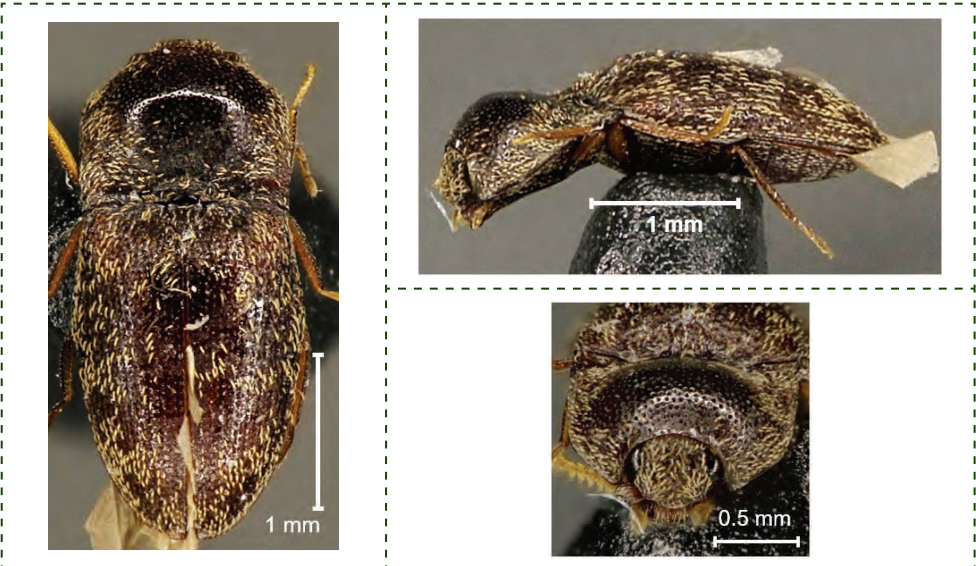


Figure 4.8 *Adelocera* sp.04
(Elateridae: Agrypninae) Z02_ColEla050

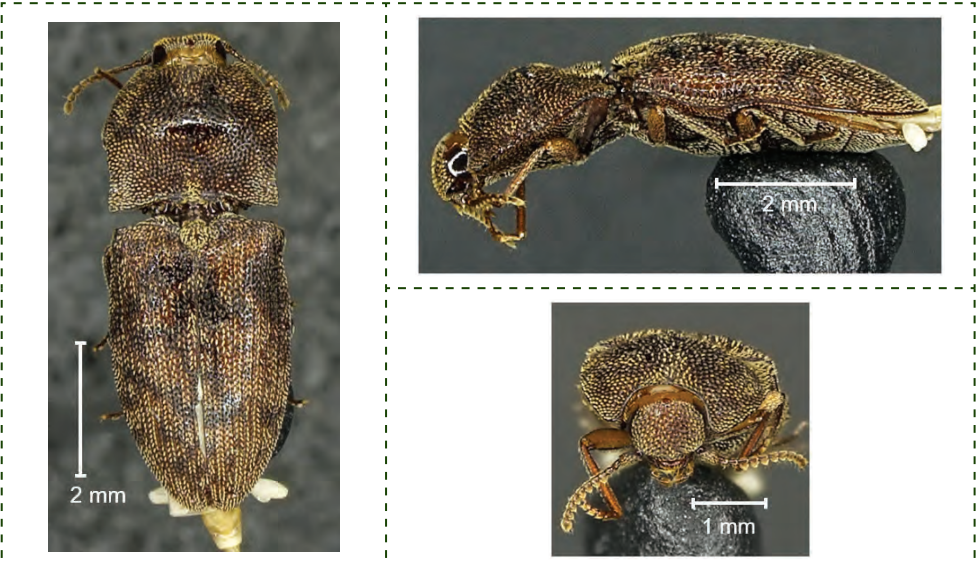


Figure 4.9 *Adelocera* sp.05
(Elateridae: Agrypninae) Z02_ColEla081v

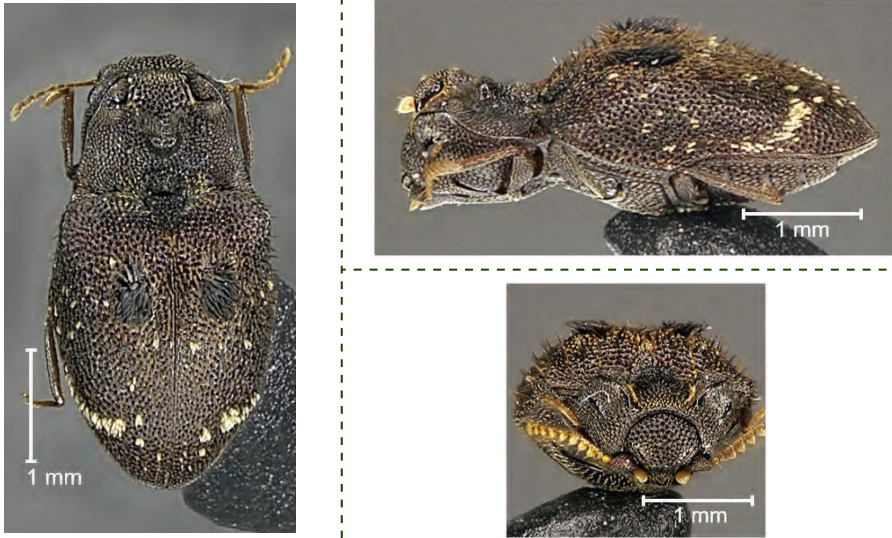


Figure 4.10 *Agraeus candezei*
(Elateridae: Agrypninae) Z02_ColEla049



Figure 4.11 *Agraeus* sp.01
(Elateridae: Agrypninae) Z02_ColEla019

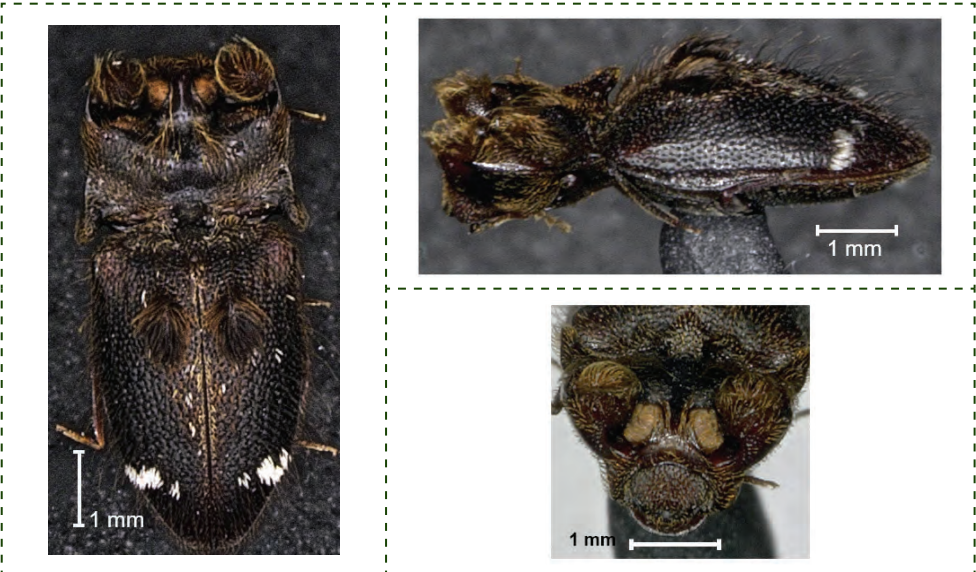


Figure 4.12 *Agraeus* sp.02
(Elateridae: Agrypninae) Z02_ColEla025



Figure 4.13 *Agraeus* sp.03
(Elateridae: Agrypninae) Z02_ColEla026



Figure 4.14 *Agraeus* sp.04
(Elateridae: Agrypninae) Z02_ColEla048

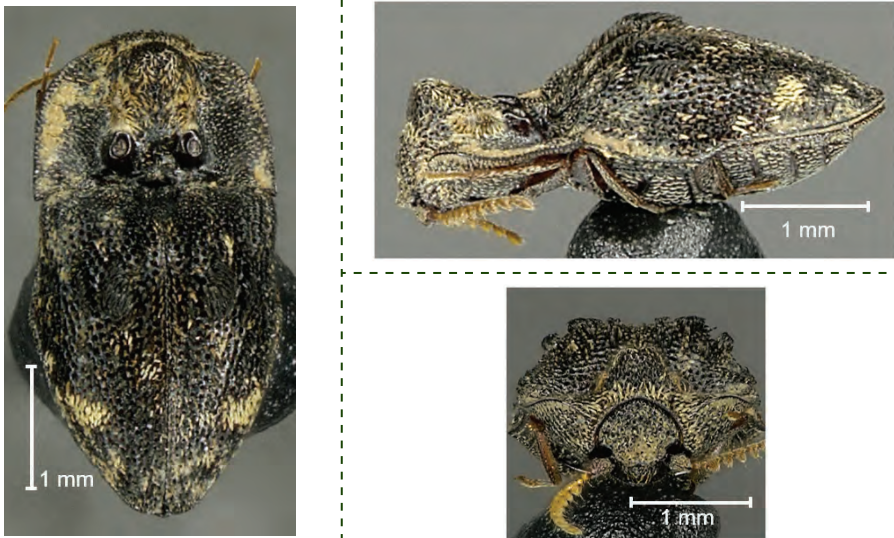


Figure 4.15 *Agraeus* sp.05
(Elateridae: Agrypninae) Z02_ColEla052

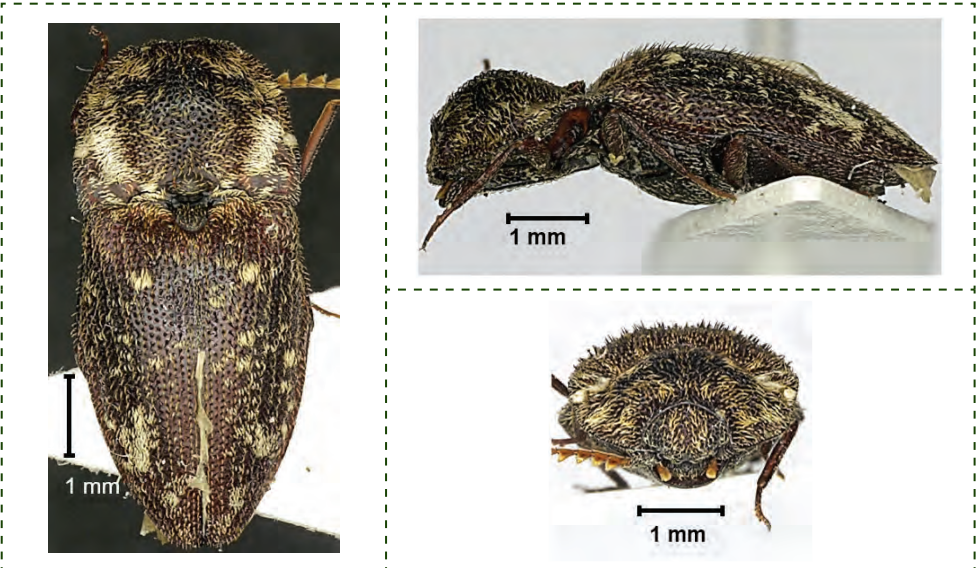


Figure 4.16 *Agraeus* sp.06
(Elateridae: Agrypninae) Z02_ColEla065

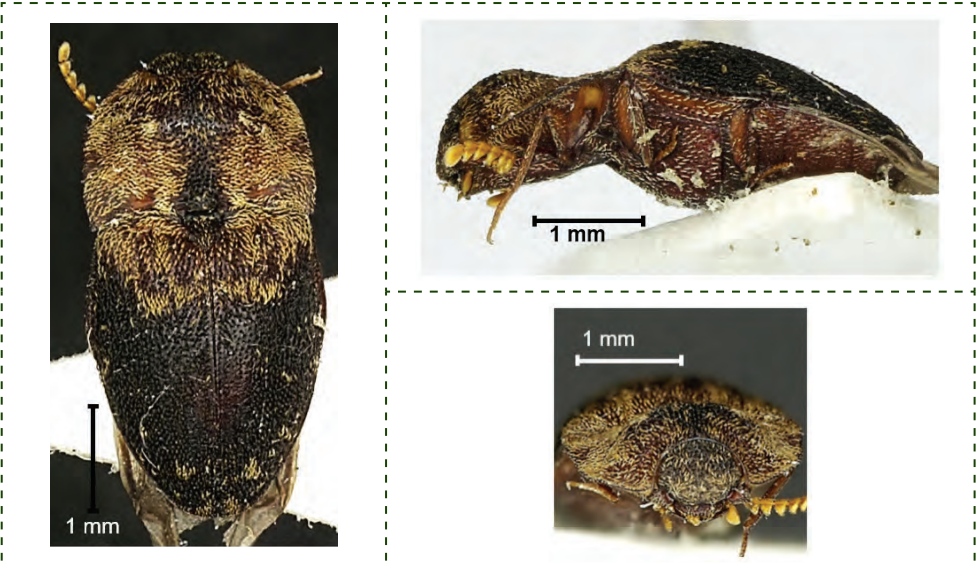


Figure 4.17 *Agraeus* sp.07
(Elateridae: Agrypninae) Z02_ColEla083

Buku ini tidak diperjualbelikan.



Figure 4.18 *Agrypnus* sp.01
(Elateridae: Agrypninae) Z02_ColEla040



Figure 4.19 *Agrypnus* sp.02
(Elateridae: Agrypninae) Z02_ColEla045



Figure 4.20 *Agrypnus* sp.03
(Elateridae: Agrypninae) Z02_ColEla047

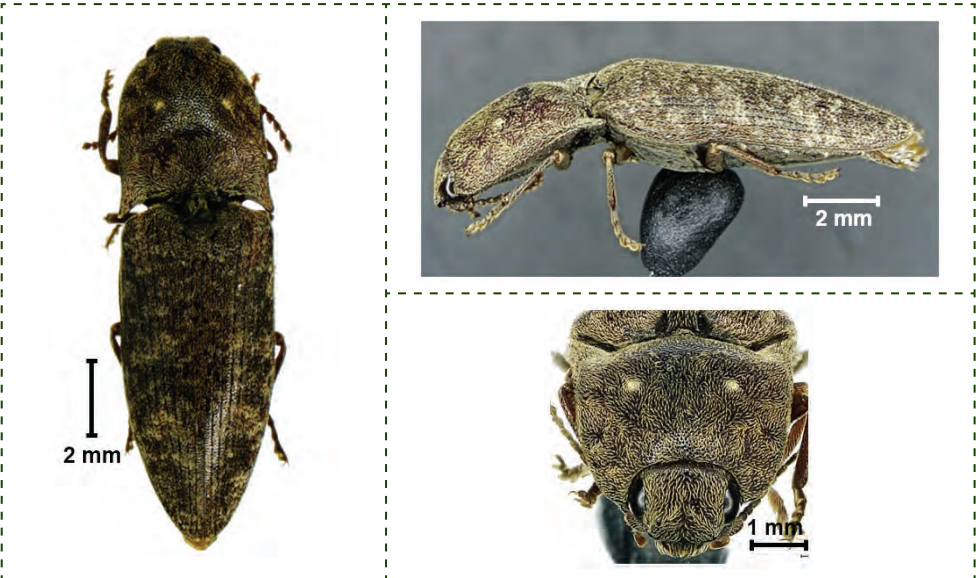


Figure 4.21 *Alaus* sp.01
(Elateridae: Agrypninae) Z02_ColEla046



Figure 4.22 *Dilobitarsus pendleburyi*
(Elateridae: Agrypninae) Z02_ColEla067

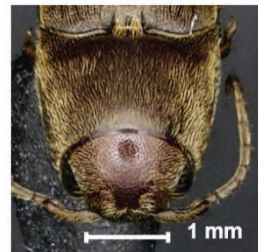


Figure 4.23 *Heteroderes* sp.01
(Elateridae: Agrypninae) Z02_ColEla011

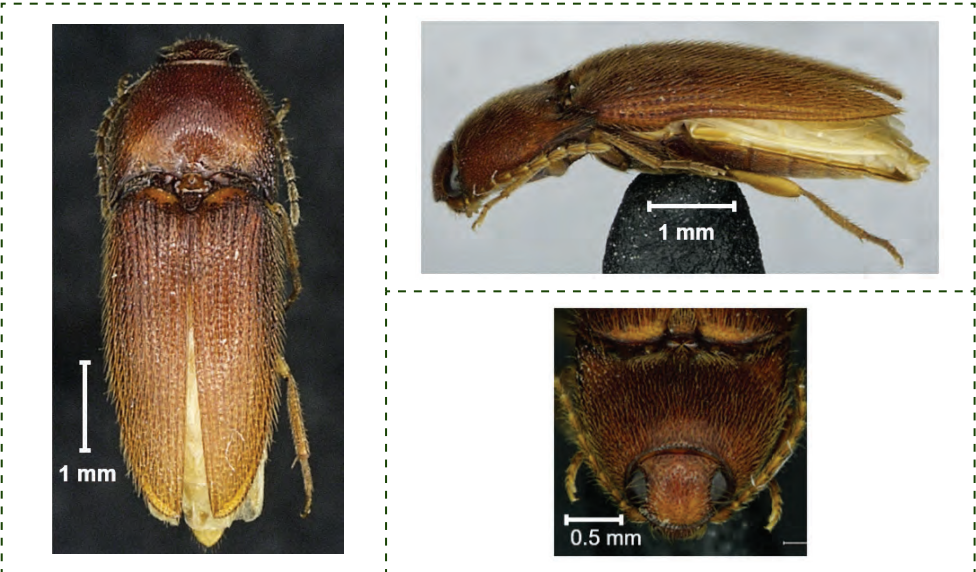


Figure 4.24 *Heteroderes* sp.02
(Elateridae: Agrypninae) Z02_ColEla024

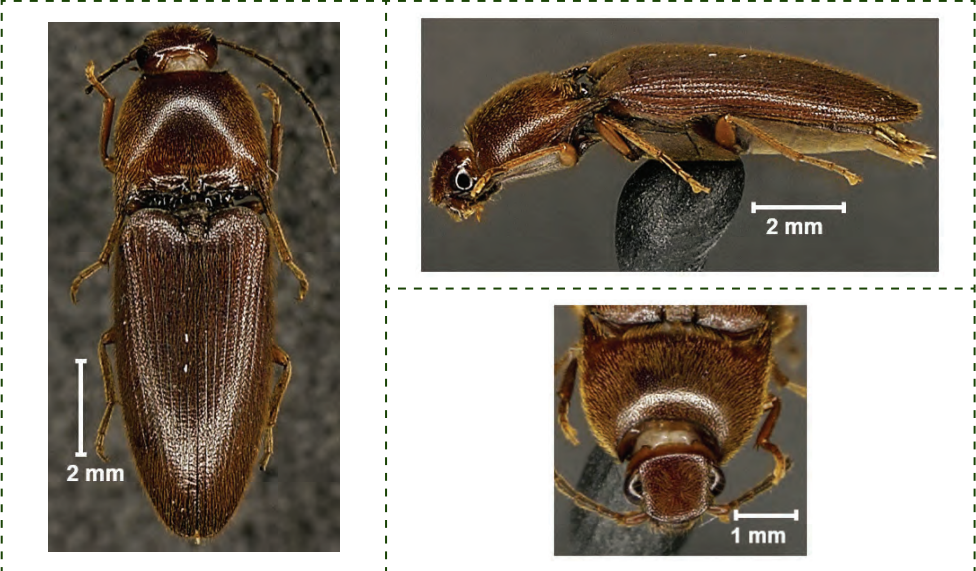


Figure 4.25 *Heteroderes* sp.03
(Elateridae: Agrypninae) Z02_ColEla037

Buku ini tidak diperjualbelikan.



Figure 4.26 *Heteroderes* sp.04
(Elateridae: Agrypninae) Z02_ColEla061



Figure 4.27 *Paracalais* sp.01
(Elateridae: Agrypninae) Z02_ColEla088

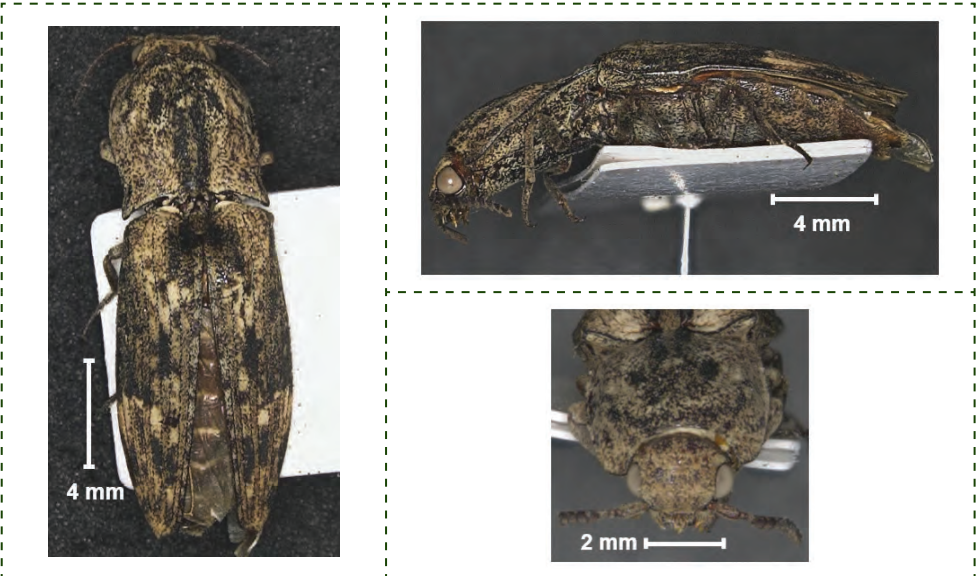


Figure 4.28 *Paracalais* sp.02
(Elateridae: Agrypninae) Z02_ColEla089

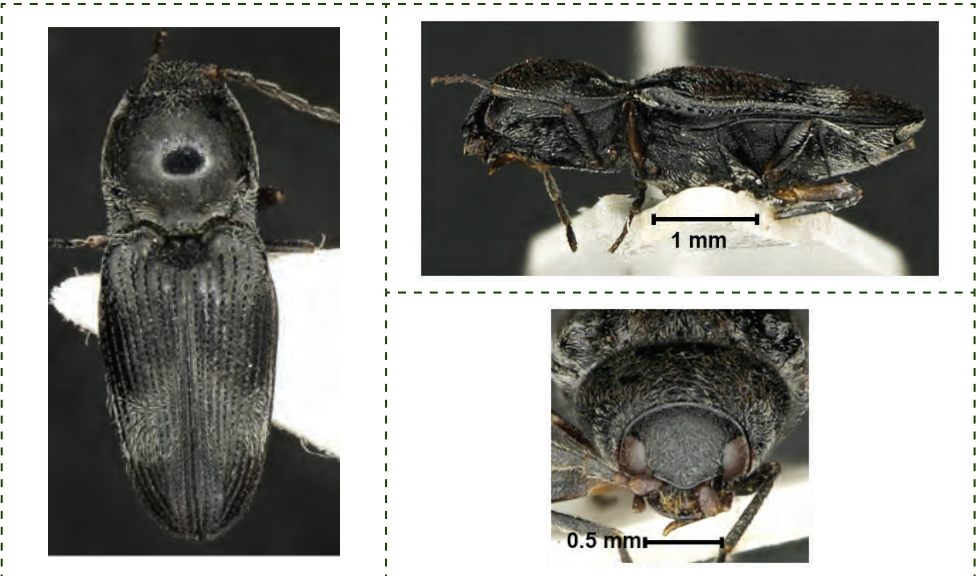


Figure 4.29 *Cardiophorus fasciatus*
(Elateridae: Cardiophorinae) Z02_ColEla078

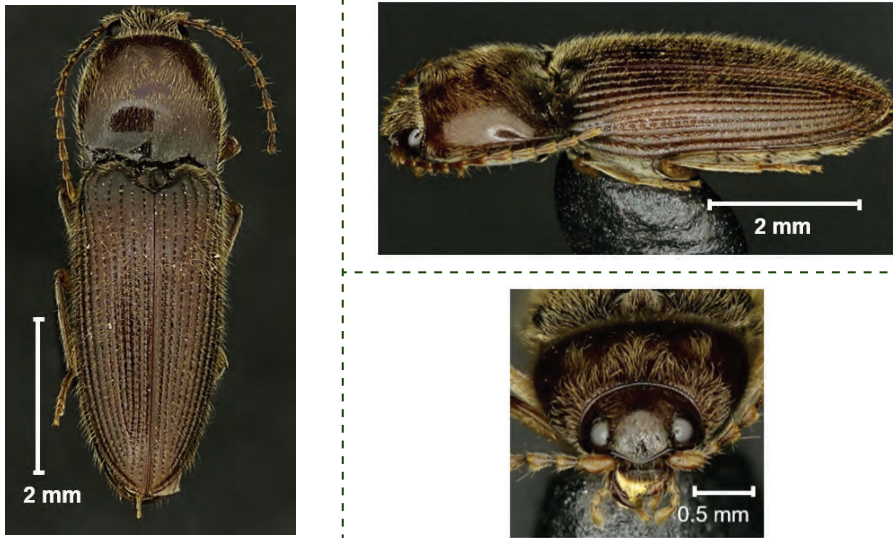


Figure 4.30 *Cardiophorus* sp.01
(Elateridae: Cardiophorinae) Z02_ColEla004



Figure 4.31 *Esthesopus* sp.01
(Elateridae: Cardiophorinae) Z02_ColEla015



Figure 4.32 *Esthesopus* sp.02
(Elateridae: Cardiophorinae) Z02_ColEla079

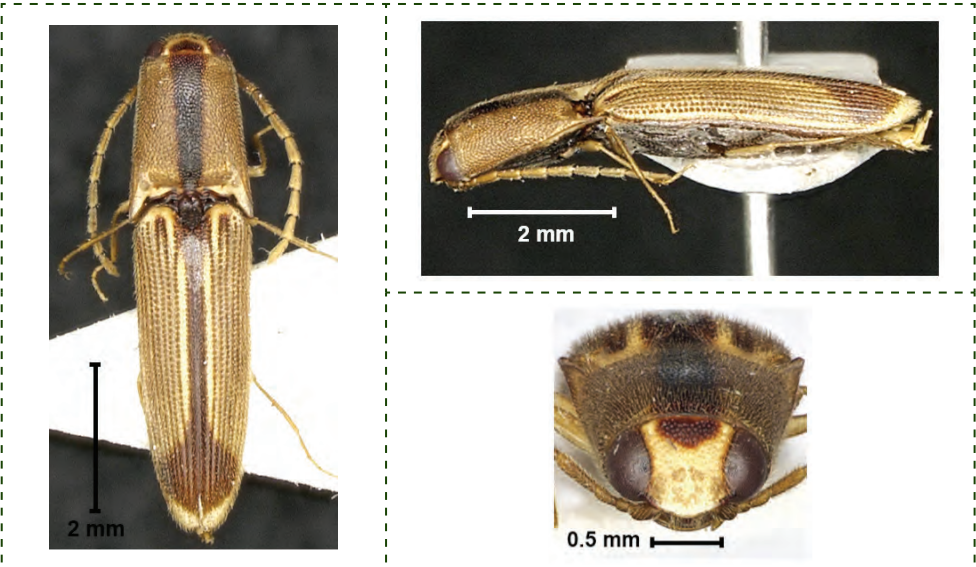


Figure 4.33 *Euplastius* sp.01
(Elateridae: Dendrometrinae) Z02_ColEla042



Figure 4.34 *Hypnoidus* sp.01
(Elateridae: Dendrometrinae) Z02_ColEla053

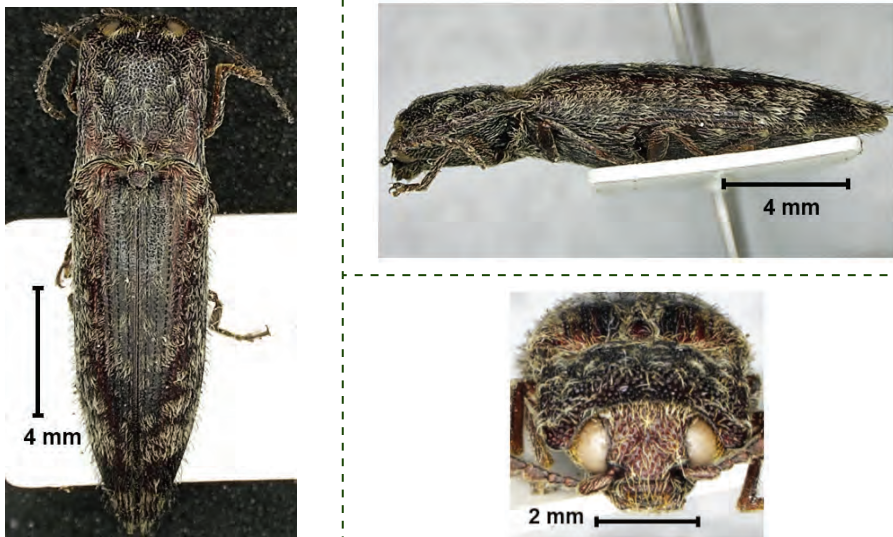


Figure 4.35 *Senodonia quadricollis*
(Elateridae: Dendrometrinae) Z02_ColEla076

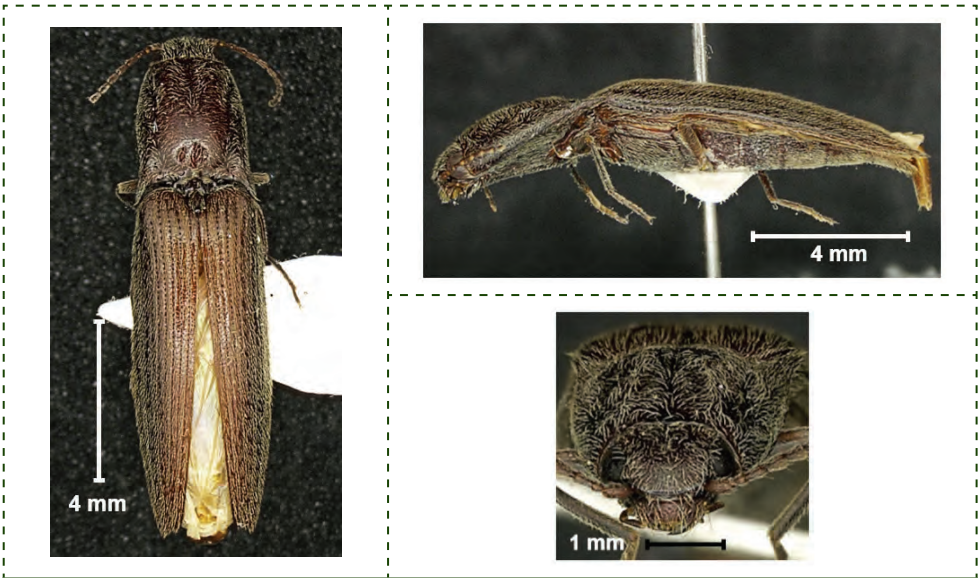


Figure 4.36 *Agonischius* sp.01
(Elateridae: Elaterinae) Z02_ColEla056

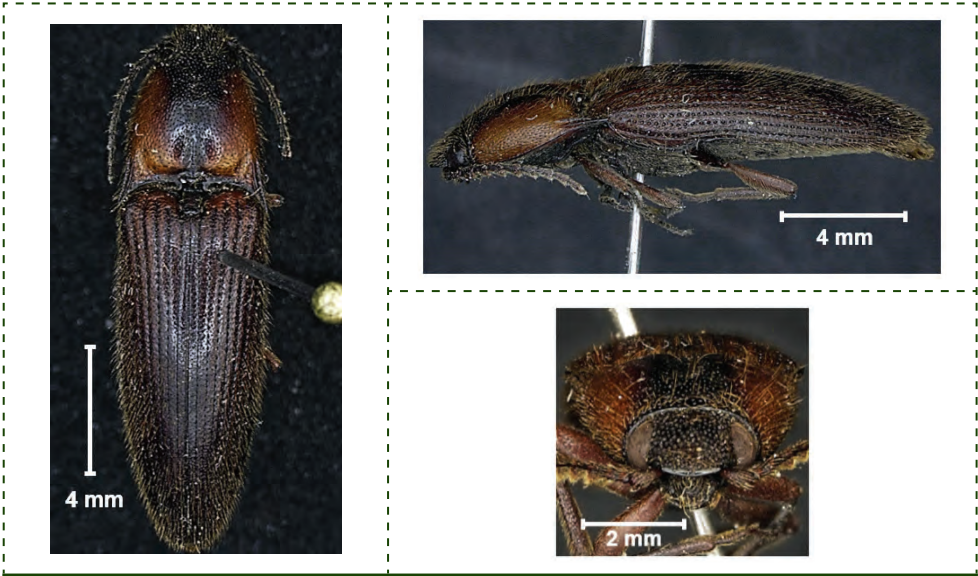


Figure 4.37 *Agonischius* sp.02
(Elateridae: Elaterinae) Z02_ColEla086

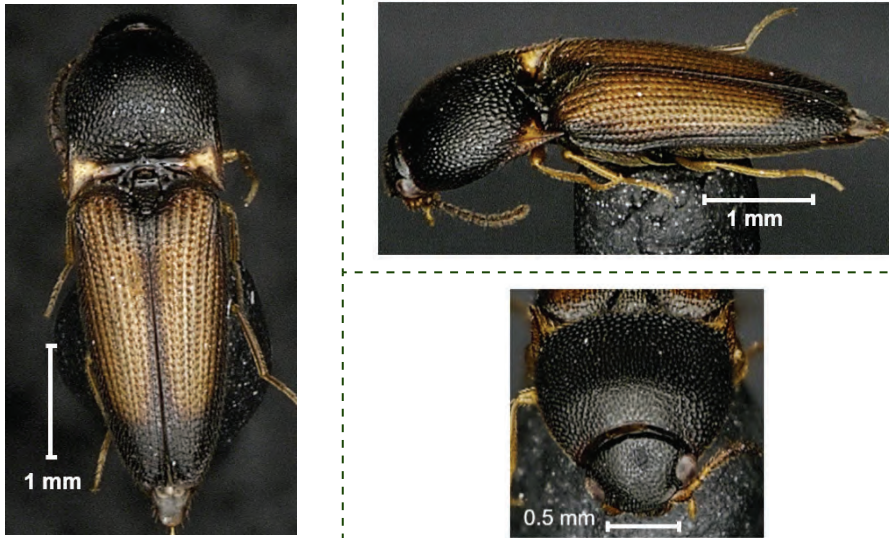


Figure 4.38 *Ampedus* sp.01
(Elateridae: Elaterinae) Z02_ColEla001

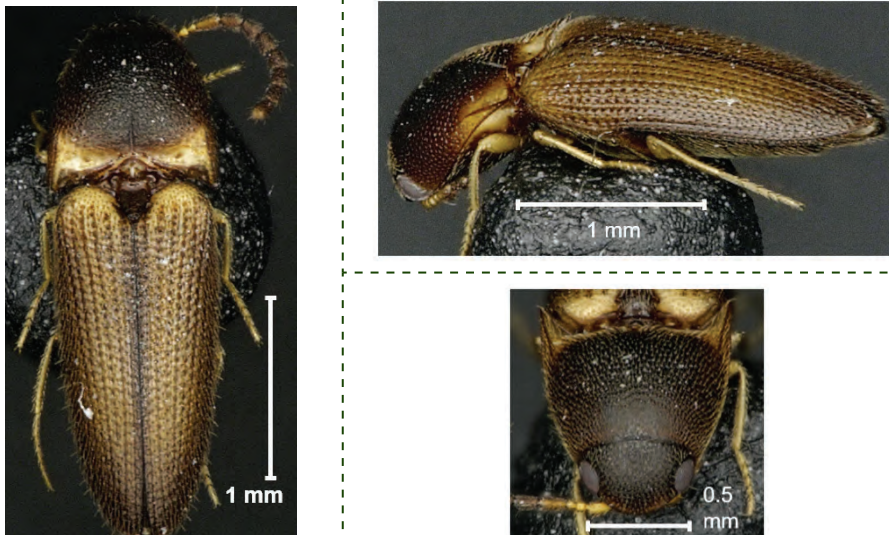


Figure 4.39 *Ampedus* sp.02
(Elateridae: Elaterinae) Z02_ColEla009



Figure 4.40 *Ampedus* sp.03
(Elateridae: Elaterinae) Z02_ColEla032

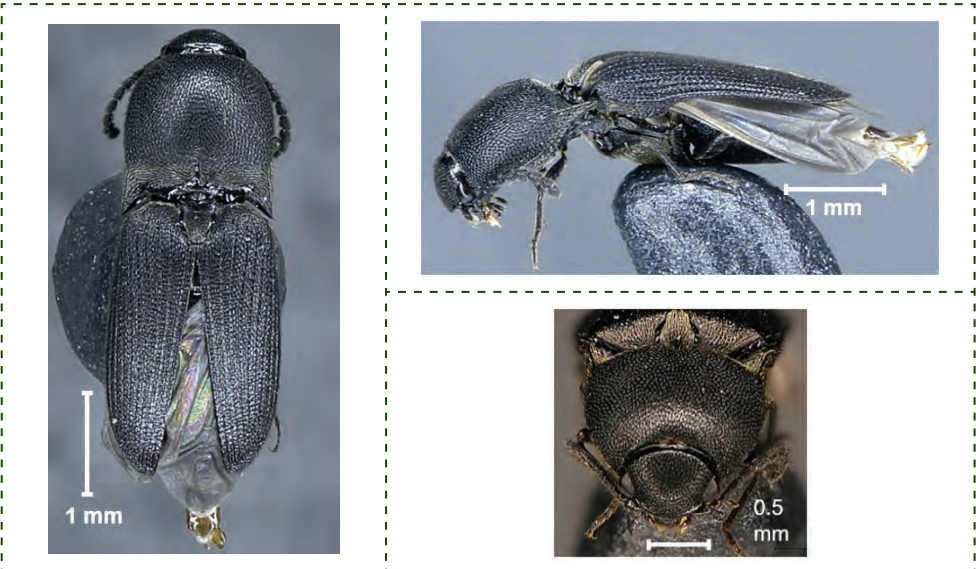


Figure 4.41 *Ampedus* sp.04
(Elateridae: Elaterinae) Z02_ColEla038



Figure 4.42 *Ampedus* sp.05
(Elateridae: Elaterinae) Z02_ColEla068



Figure 4.43 *Ampedus* sp.06
(Elateridae: Elaterinae) Z02_ColEla082



Figure 4.44 *Dalopius* sp.01
(Elateridae: Elaterinae) Z02_ColEla034

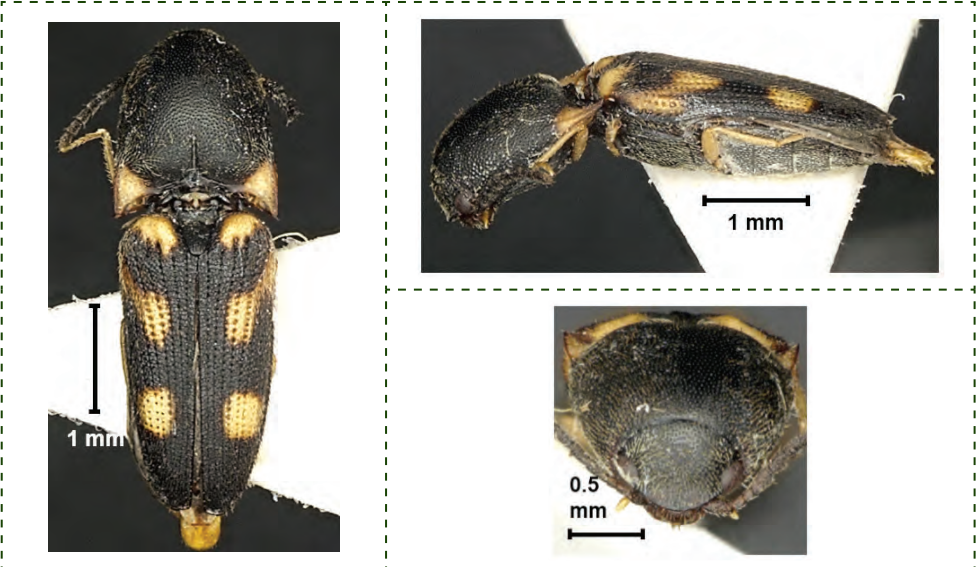


Figure 4.45 *Gamepenthès decemnotatus*
(Elateridae: Elaterinae) Z02_ColEla072

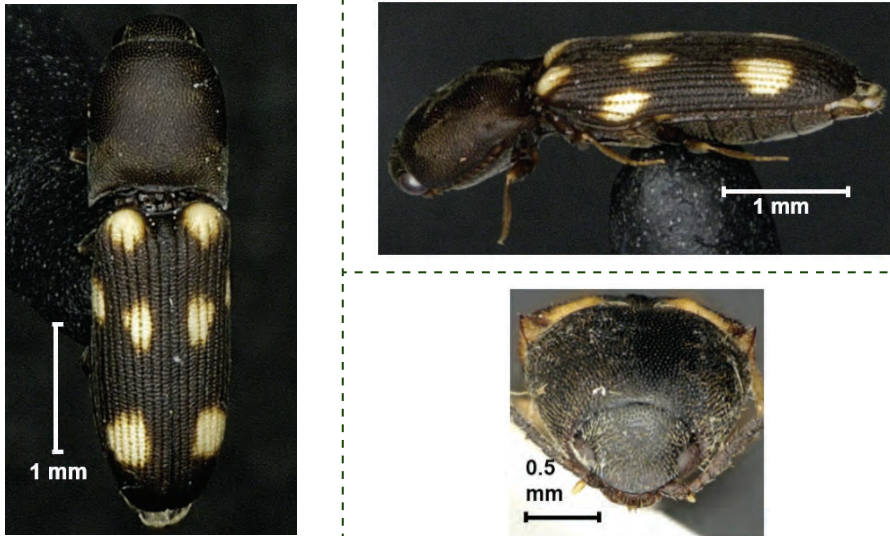


Figure 4.46 *Gamepenthes* sp.01
(Elateridae: Elaterinae) Z02_ColEla016

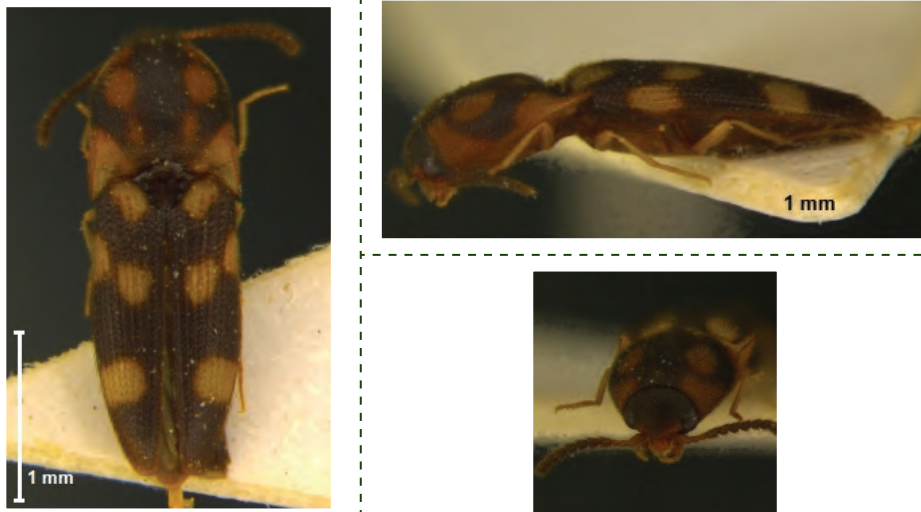


Figure 4.47 *Gamepenthes* sp.02
(Elateridae: Elaterinae) Z02_ColEla021



Figure 4.48 *Gamepenthes* sp.03
(Elateridae: Elaterinae) Z02_ColEla066

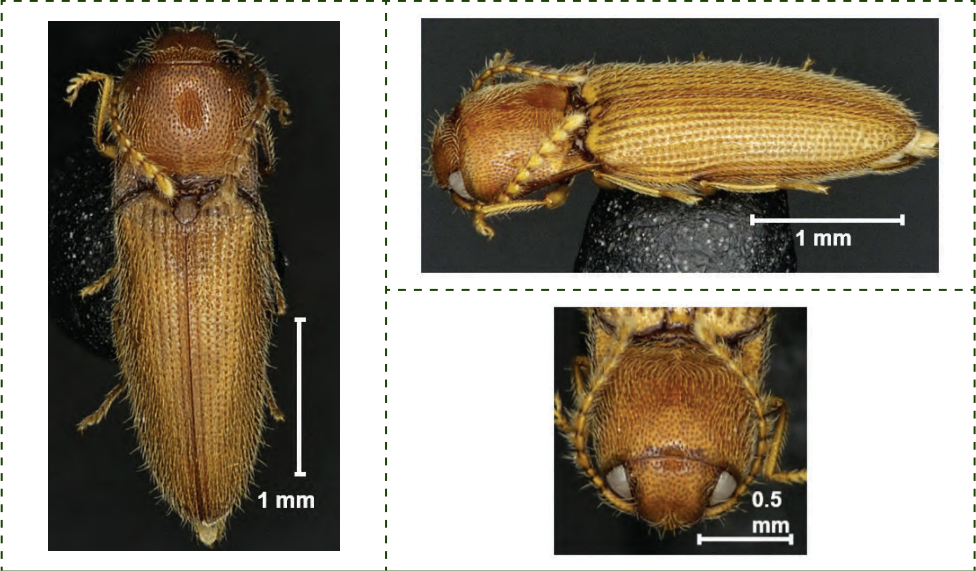


Figure 4.49 *Glyphonyx* sp.01
(Elateridae: Elaterinae) Z02_ColEla010



Figure 4.50 *Glyphonyx* sp.02
(Elateridae: Elaterinae) Z02_ColEla023



Figure 4.51 *Glyphonyx* sp.03
(Elateridae: Elaterinae) Z02_ColEla036

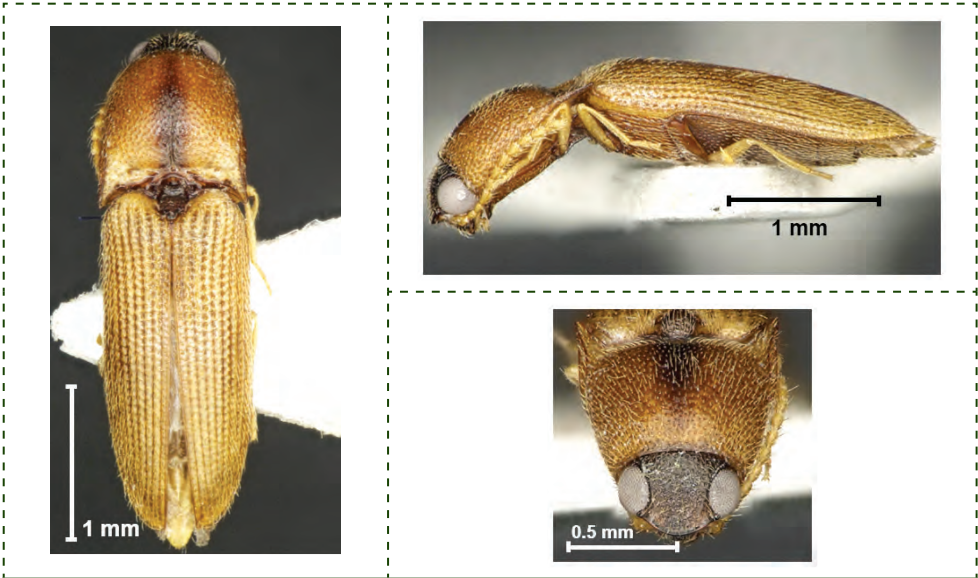


Figure 4.52 *Glyphonyx* sp.04
(Elateridae: Elaterinae) Z02_ColEla051

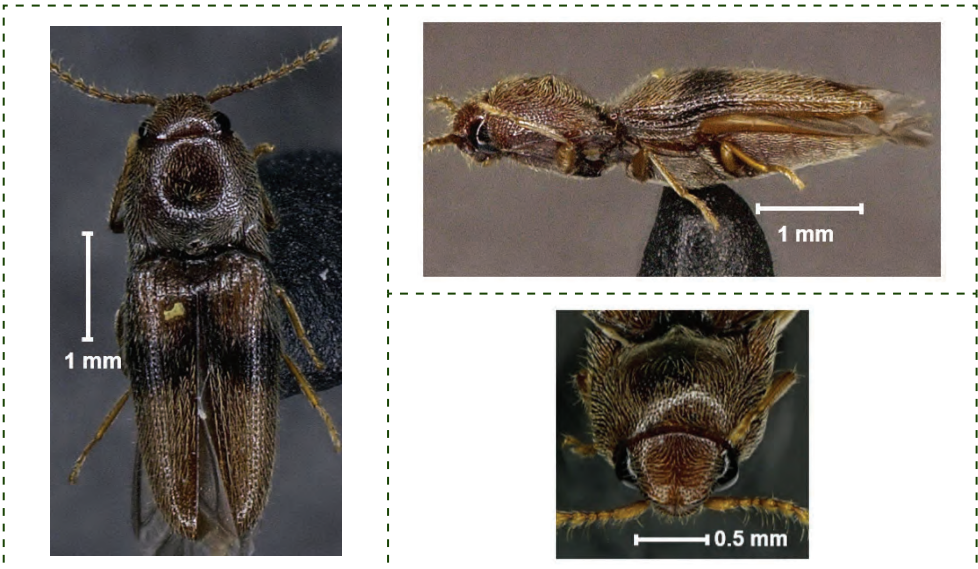


Figure 4.53 *Glyphonyx zonatus*
(Elateridae: Elaterinae) Z02_ColEla074

Buku ini tidak diperjualbelikan.

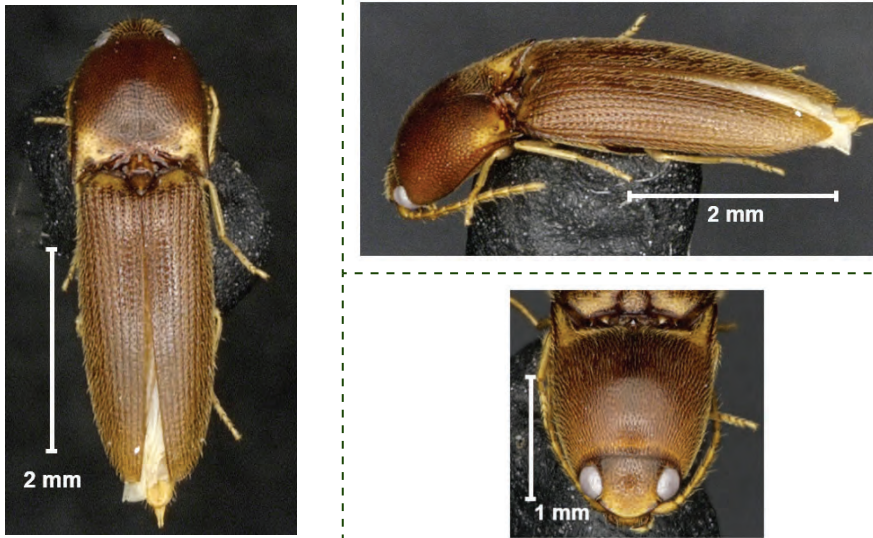


Figure 4.54 *Megapenthes* sp.01
(Elateridae: Elaterinae) Z02_ColEla005

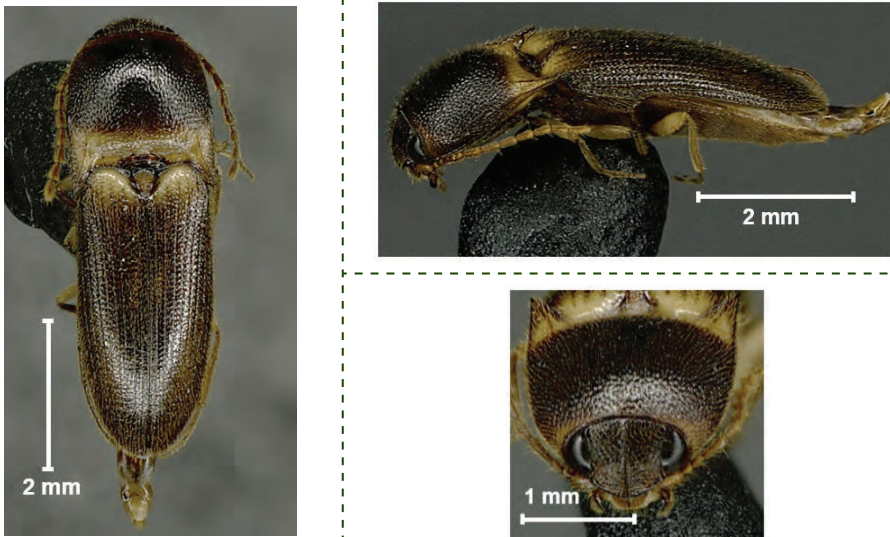


Figure 4.55 *Megapenthes* sp.02
(Elateridae: Elaterinae) Z02_ColEla063

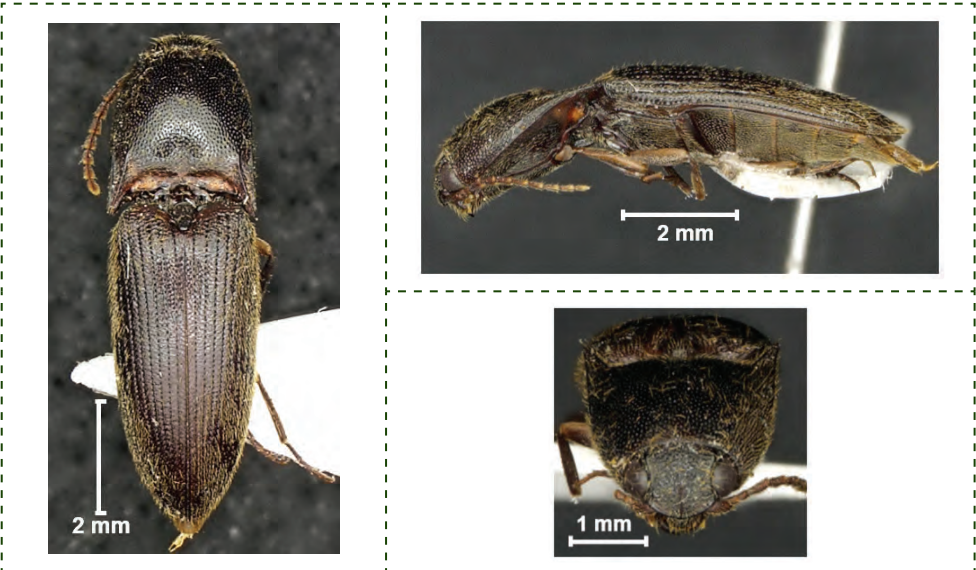


Figure 4.56 *Megapenthes* sp.03
(Elateridae: Elaterinae) Z02_ColEla087



Figure 4.57 *Melanoxanthus bicolor*
(Elateridae: Elaterinae) Z02_ColEla057

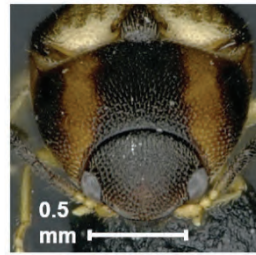


Figure 4.58 *Melanoxanthus fractus*
(Elateridae: Elaterinae) Z02_ColEla029



Figure 4.59 *Melanoxanthus ruptus*
(Elateridae: Elaterinae) Z02_ColEla059

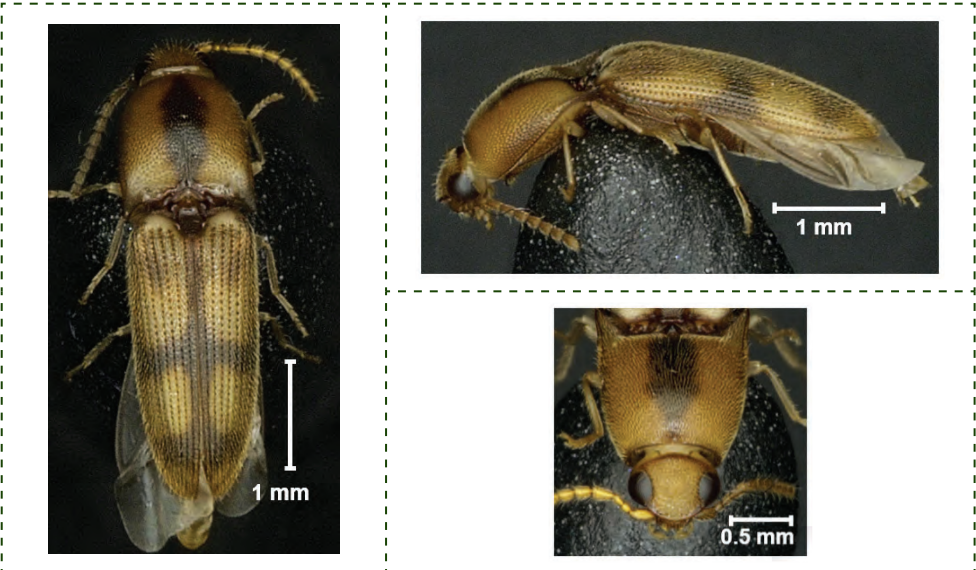


Figure 4.60 *Melanoxanthus* sp.01
(Elateridae: Elaterinae) Z02_ColEla012

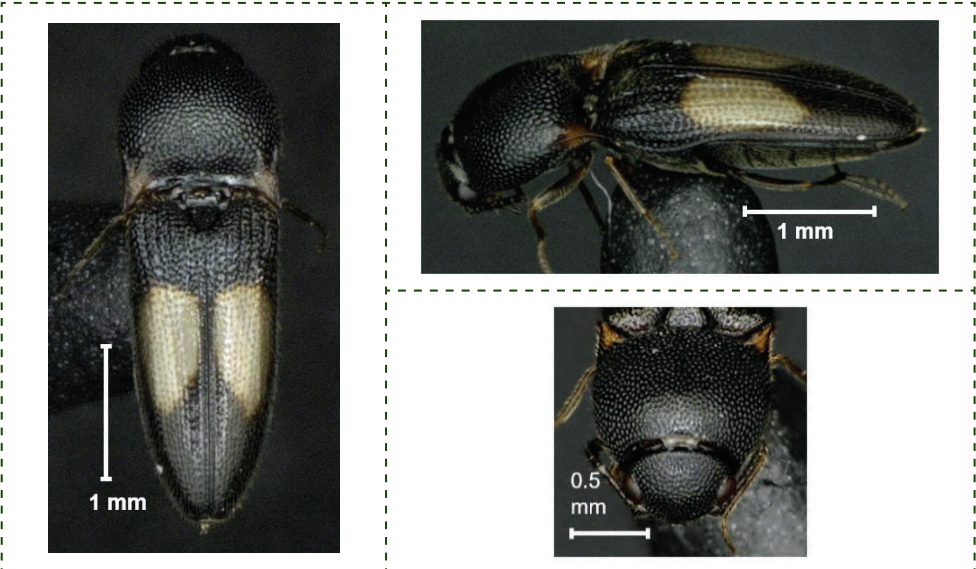


Figure 4.61 *Melanoxanthus* sp.02
(Elateridae: Elaterinae) Z02_ColEla017



Figure 4.62 *Melanoxanthus* sp.03
(Elateridae: Elaterinae) Z02_ColEla039

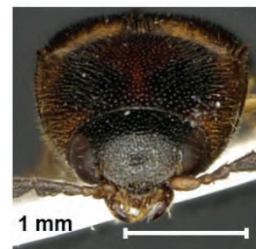


Figure 4.63 *Melanoxanthus* sp.04
(Elateridae: Elaterinae) Z02_ColEla041

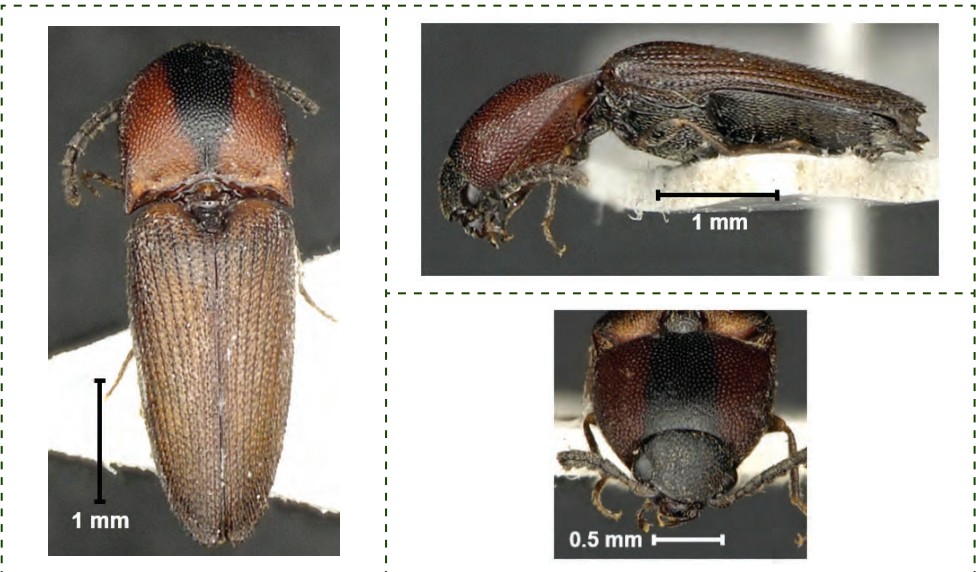


Figure 4.64 *Melanoxanthus* sp.05
(Elateridae: Elaterinae) Z02_ColEla055



Figure 4.65 *Melanoxanthus* sp.06
(Elateridae: Elaterinae) Z02_ColEla058

Buku ini tidak diperjualbelikan.

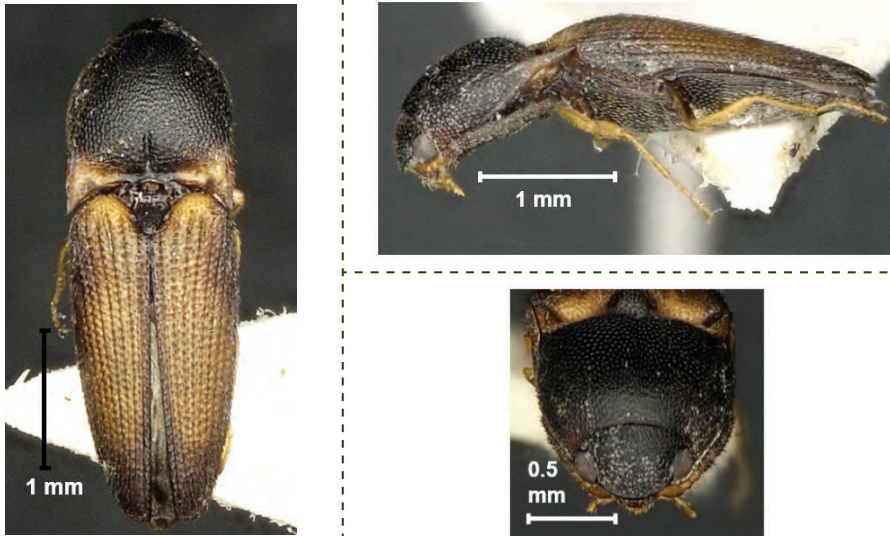


Figure 4.66 *Melanoxanthus* sp.07
(Elateridae: Elaterinae) Z02_ColEla071

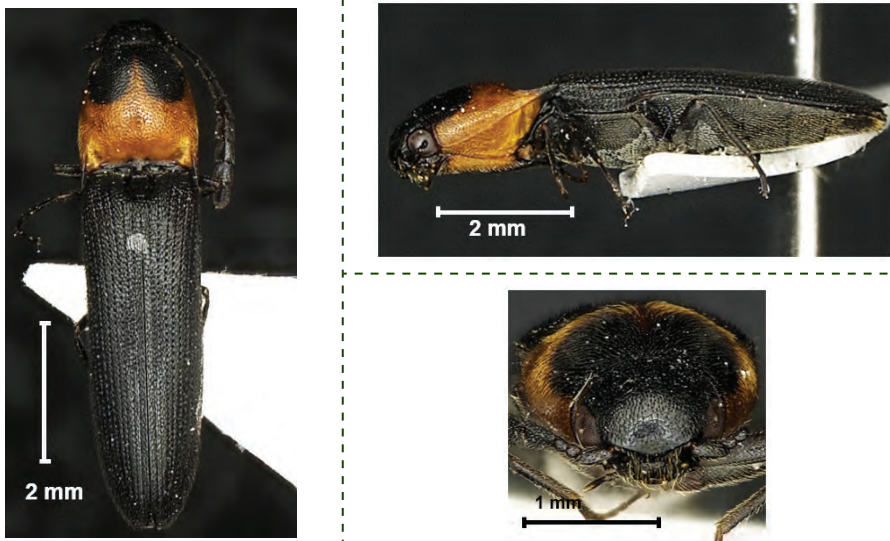


Figure 4.67 *Melanoxanthus* sp.08
(Elateridae: Elaterinae) Z02_ColEla085

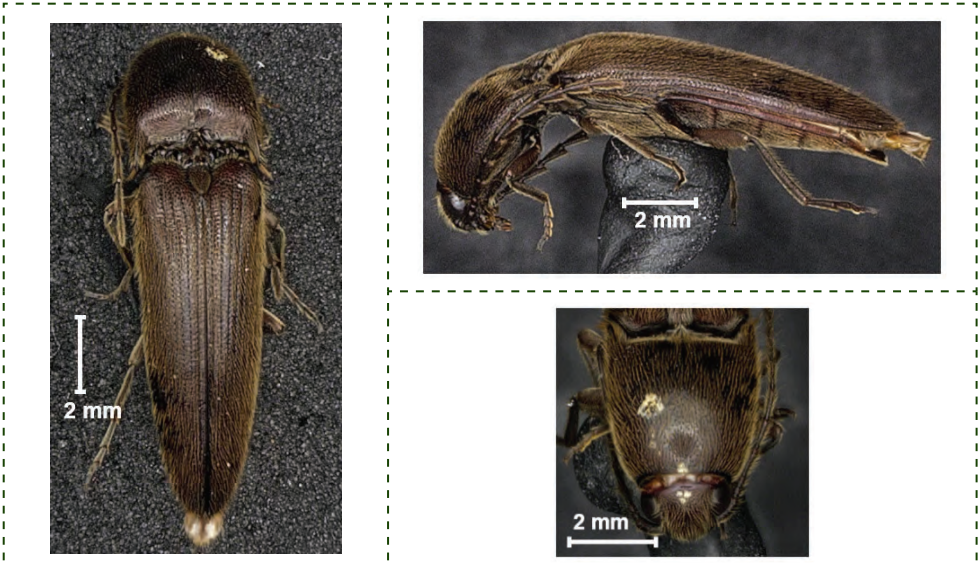


Figure 4.68 *Mulsanteus illotipes*
(Elateridae: Elaterinae) Z02_ColEla006

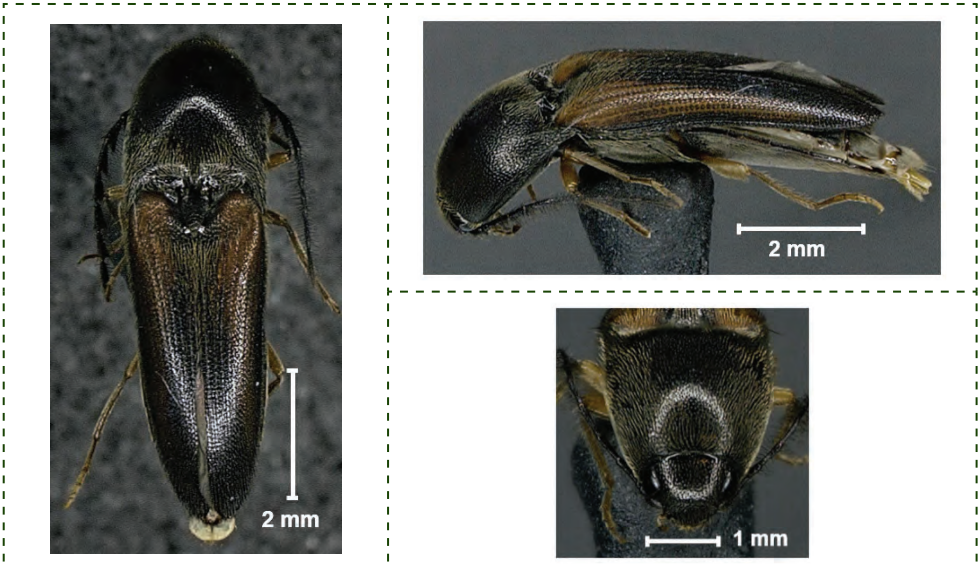
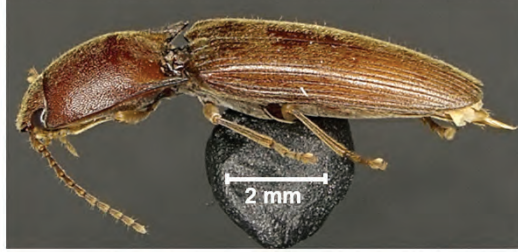


Figure 4.69 *Mulsanteus* sp.01
(Elateridae: Elaterinae) Z02_ColEla028

Buku ini tidak diperjualbelikan.



Figurea 4.70 *Mulsanteus* sp.02
(Elateridae: Elaterinae) Z02_ColEla084

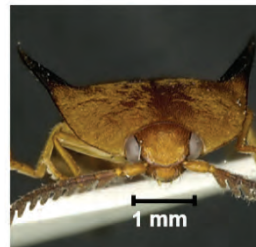


Figure 4.71 *Pachyderes apicalis*
(Elateridae: Elaterinae) Z02_ColEla044

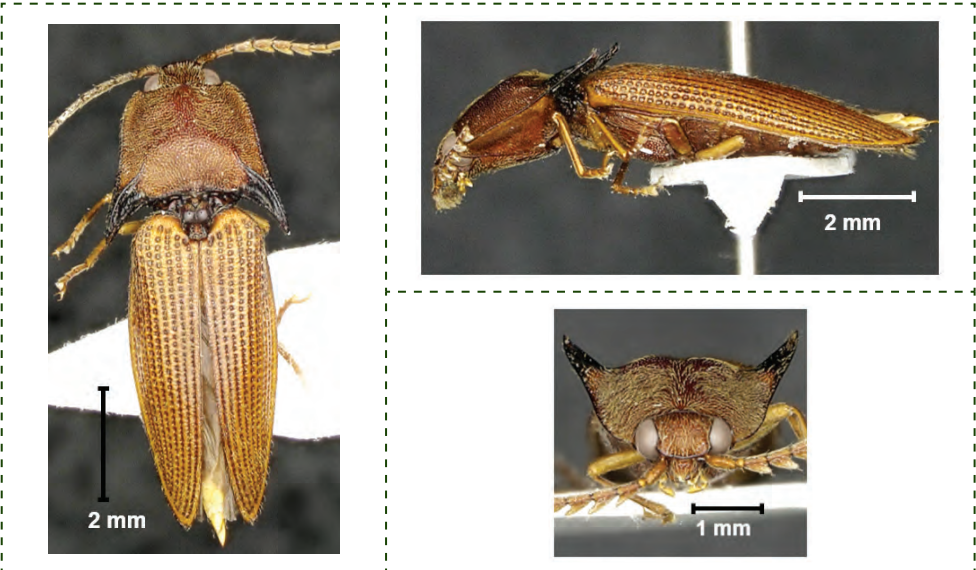


Figure 4.72 *Pachyderes* sp.01
(Elateridae: Elaterinae) Z02_ColEla014



Figure 4.73 *Pachyderes* sp.02
(Elateridae: Elaterinae) Z02_ColEla033

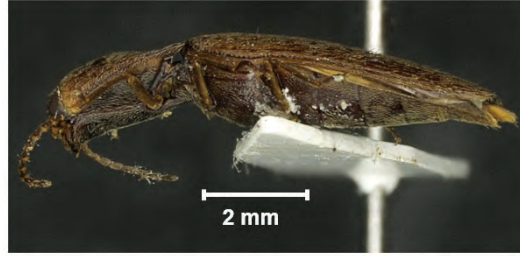


Figure 4.74 *Simodactylus* sp.01
(Elateridae: Elaterinae) Z02_ColEla075

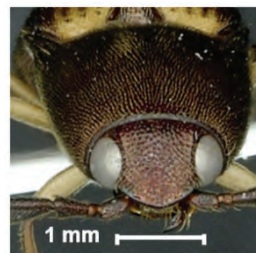


Figure 4.75 *Xanthopenthes* sp.01
(Elateridae: Elaterinae) Z02_ColEla003



Figure 4.76 *Xanthopenthes* sp.02
(Elateridae: Elaterinae) Z02_ColEla018

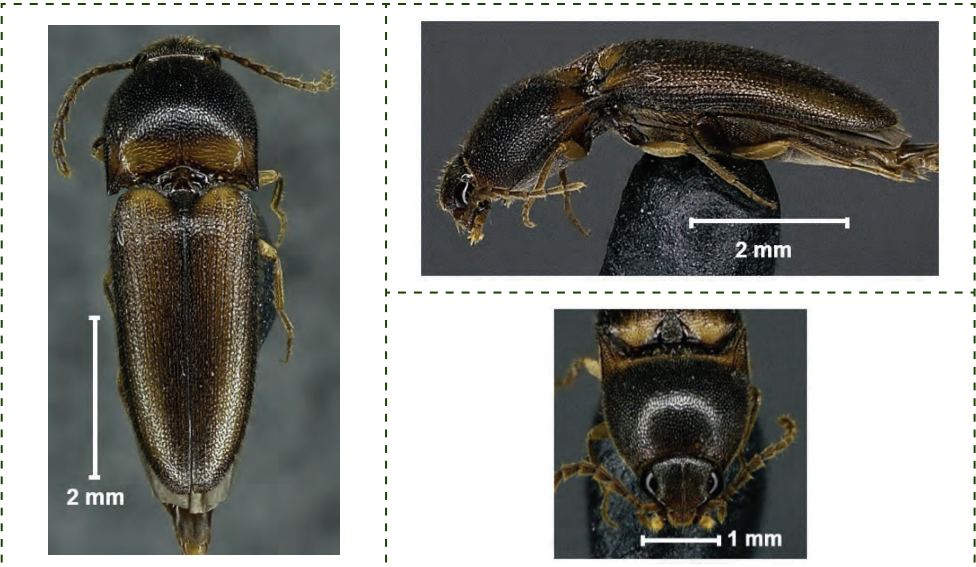


Figure 4.77 *Xanthopenthes* sp.03
(Elateridae: Elaterinae) Z02_ColEla031

Buku ini tidak diperjualbelikan.



Figure 4.77 *Xanthopenthes* sp.03
(Elateridae: Elaterinae) Z02_ColEla031

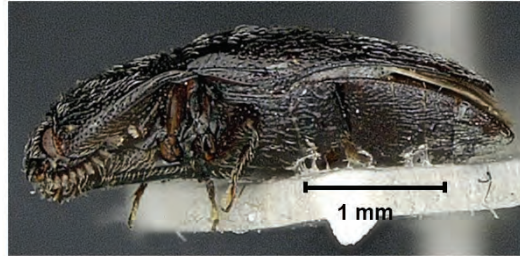


Figure 4.79 *Lissomus* sp.01
(Elateridae: Lissominae) Z02_ColEla043

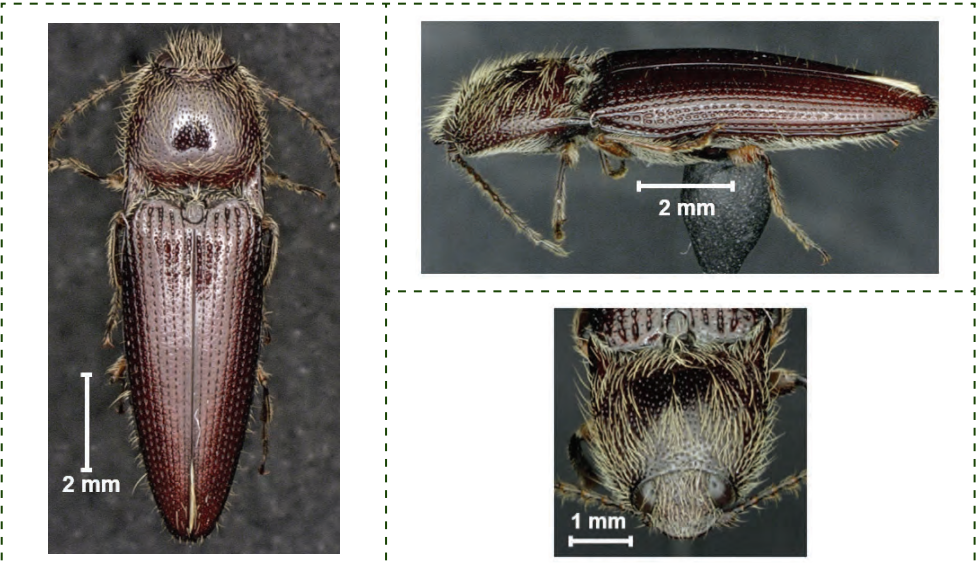


Figure 4.80 *Melanotus* sp.01
(Elateridae: Melanotinae) Z02_ColEla022

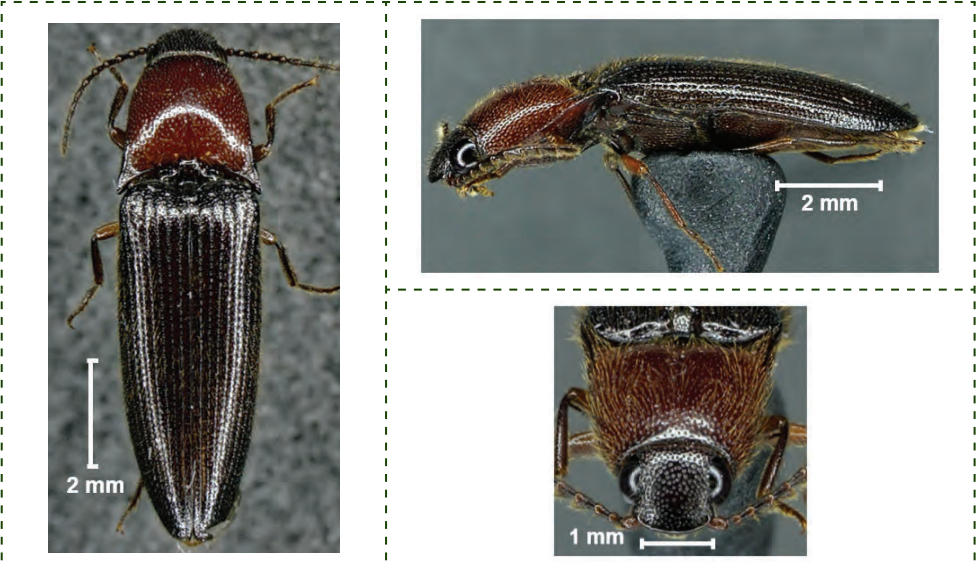


Figure 4.81 *Melanotus* sp.02
(Elateridae: Melanotinae) Z02_ColEla035

Buku ini tidak diperjualbelikan.

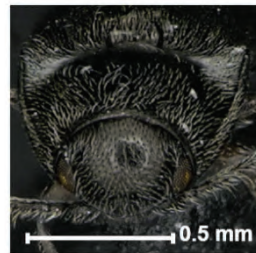


Figure 4.82 *Quasimus* sp.01
(Elateridae: Megastriinae) Z02_ColEla030



Figure 4.83 *Zorochros* sp.01
(Elateridae: Megastriinae) Z02_ColEla007

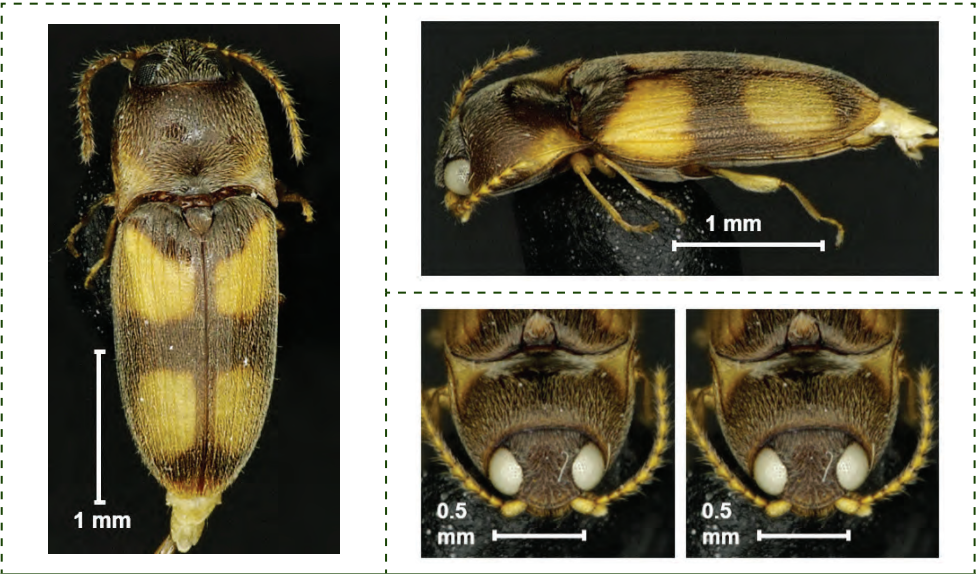


Figure 4.84 *Zorochros* sp.02
(Elateridae: Megastriinae) Z02_ColEla008



Figure by Bona Pakpahan



Edaphus nitidus (Staphylinidae: Euaesthetinae)

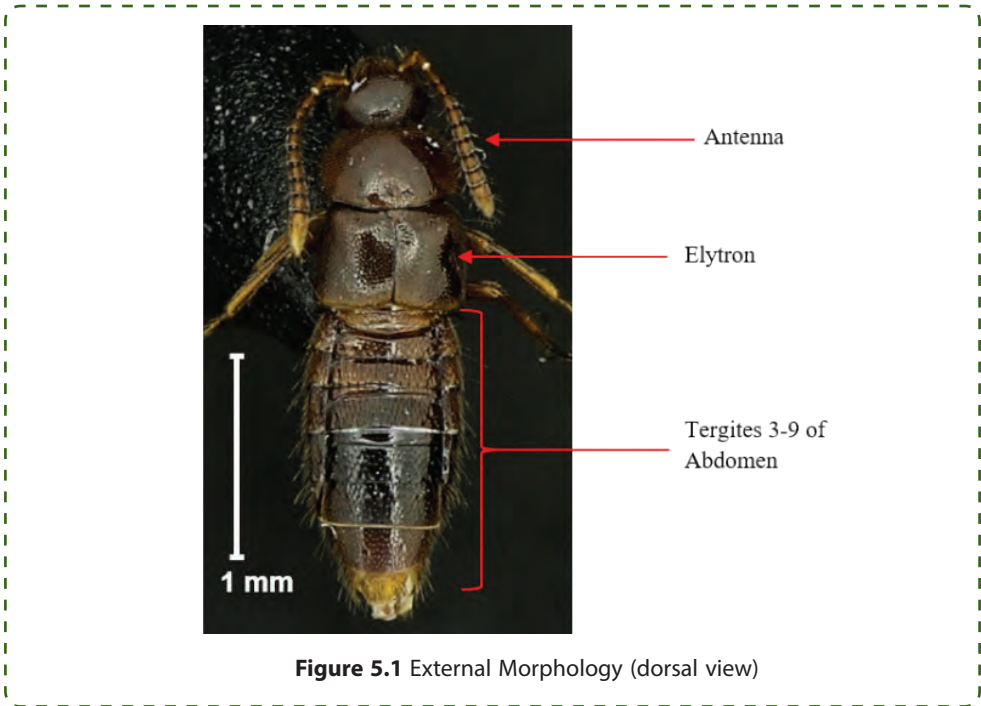
Image by Suryadi

Buku ini tidak diperjualbelikan.

ROVE BEETLES (COLEOPTERA: STAPHYLINIDAE)

Rove beetles (Coleoptera: Staphylinidae) are the second most diverse beetle family after the Curculionidae with more than 65,000 described species in more than 4,000 genera (GBIF.org). As with many groups, the center for Staphylinid beetle radiation is the global tropics (GBIF.org), but there are considerable species numbers in the temperate zones as well: According to ukbeetles.com, there are more than 4,000 staphylinid beetle species in Northern America, >4,000 in Europe, ca. 2,500 in Australia and about 1,000 in New Zealand (Staphylinidae and references therein [August 27, 2021]). Albeit some information regarding Staphylinid occurrences in online databases like GBIF, no comprehensive species list of Staphylinidae exists for Southeast Asia, let alone Indonesia.

In general, rove beetles are identified by their short elytra and elongated body. They look like earwigs (Dermaptera), but earwigs have two cerci while rove beetles have none. Most rove beetles are dull-colored, with the body being brown or black, but in some species the pronotum and basal segments of the abdomen are orange, and in others, the elytra are red, blue, or metallic green. Larvae of rove beetles are campodeiform or staphyliniform, they are elongated and flattened with a well-developed epicranial stem on the head. Adults show different characters according to their habitat. Most species that live in soil have lost their eyes and have reduced legs and antennae. Some species that live in holes, burrows, and nests of mammals have developed longer legs and antennae. Species that live in the vegetation have broad adhesive tarsi to help them climb on stems and leaves. Whereas others that live under the bark of deadwood are dorsoventrally flattened.



Immature stages develop in a few days to a few weeks and the adults are long-lived. The length of adult rove beetles ranges from less than 1 mm to 40 mm, most species are under 7 mm long. Abdominal segments are surrounded by sclerotized plates with membranous connections. Despite the beetles having small elytra, they can easily fly and disperse quickly, as indicated by the name “rove beetles” (Fig. 5.1) (Hangay & Zborowski, 2010; Newton et al.,2001).

The identification key of rove beetles to subfamilies is adapted and modified from Tottenham (1954) and Chung (2003).

IDENTIFICATION KEY TO THE SUBFAMILIES OF STAPHYLINIDAE

The identification key to subfamilies of rove beetles is adapted and modified from Tottenham (1954) and Chung (2003).

- 1. Elytra covering most of the abdomen, leaving at most 1-2 segments of the abdomen exposed.....**Scydmaeninae**
- 1'. Elytra shortened so that at least 3 segments of the abdomen are exposed.....**2**
- 2. Tarsi with 3 segments; Elytra usually much broader than pronotum; the Last segment of the antennae often conspicuously enlarged **Pselaphinae**

Buku ini tidak diperjualbelikan.

2.	Tarsi with 5 segments	3
3.	The last segment of the maxillary palps is very small	4
3.	The last segment of the maxillary palps is normal	5
4.	Body broad; Head flat; Pronotum covered by hair.....	Aleocharinae
4.	Last segment of the maxillary palps normal.....	Tachyporinae
5.	Body nearly parallel-sided and flattened dorsoventrally.....	Piestinae
5.	Body not flattened dorsoventrally	6
6.	Abdomen without paratergite at margin head as wide as thorax.....	Osoriinae
6.	Abdomen with paratergite at margin.....	7
7.	Head with distinct narrow neck	8
7.	Head without distinct narrow neck.....	9
8.	Antennae inserted above or outside base of mandibles	Staphylininae
8.	Antennae inserted inside base of mandibles	Paederinae
9.	Eyes large.....	10
9.	Eyes small	11
10.	Body long and slender; Antennae weakly clubbed; Eyes bulging	Steninae
10.	Body comparatively short; Abdomen not cylindrical	Megalopsidiinae
11.	Pronotum shape variable; Tarsi with 3 segments	12
11.	Pronotum shape squarish; Tarsi with 5 segments	Omaliinae
12.	Pronotum shape like a shield; Abdomen with 7 segments (excluding genital segment).....	Oxytelinae
12.	Pronotum shape like a tube; Antenna with 2 segmented clubs	Euaesthetinae

LIST OF STAPHYLINIDAE MORPHOSPECIES

Due to a large number of undescribed species in Sumatra, this checklist of the rove beetles collected by EFForTS project canopy fogging in dry season 2013 and rainy season 2013/14, contains a mix of confirmed Linnéan species and morphospecies which we defined *de novo*. Within each subfamily, the list is sorted alphabetically by morphospecies, and includes the following information:

1. Morphospecies: Differentiate in terms of morphology. Linnéan name, or subfamily or genus plus species denominator.



- 2. MSp Code: Internal EFForTS identifier, containing information regarding the respective EFForTS project, higher-level taxonomic information, and the sorting number for each defined morphospecies.
- 3. Land Use: The land-use system in which each morphospecies was found, i.e., primary degraded forest (F), jungle rubber (J), rubber plantation (R), and/or oil palm plantation (O).
- 4. Total N: Number of individuals of each morphospecies 2013-2014.
- 5. Figures: Image number of the respective morphospecies.

Table 5.1 Staphylinidae morphospecies

(Morpho-)species	MSp Code	Land Use	Total N	Figures
Aleocharinae				
Aleocharinae sp.01	Z02_ColSta003	F, J, R, O	161	5.2
Aleocharinae sp.02	Z02_ColSta007	F, J, R, O	72	5.3
Aleocharinae sp.03	Z02_ColSta017	F, J	23	5.4
Aleocharinae sp.04	Z02_ColSta018	F, J, R	52	5.5
Aleocharinae sp.05	Z02_ColSta006	F, J, R, O	20	5.6
Aleocharinae sp.06	Z02_ColSta019	F, J, R, O	74	5.7
Aleocharinae sp.07	Z02_ColSta020	J	1	5.8
Aleocharinae sp.08	Z02_ColSta024	F, J, R	23	5.9
Aleocharinae sp.09	Z02_ColSta025	F, J, R	11	5.10
Aleocharinae sp.10	Z02_ColSta026	F, J, R	26	5.11
Aleocharinae sp.11	Z02_ColSta029	F	1	5.12
Aleocharinae sp.12	Z02_ColSta033	O	1	5.13
Aleocharinae sp.13	Z02_ColSta040	J, O	2	5.14
Aleocharinae sp.14	Z02_ColSta041	J, O	5	5.15
Aleocharinae sp.15	Z02_ColSta042	F, J	10	5.16
Aleocharinae sp.16	Z02_ColSta044	F, J, R	17	5.17
Aleocharinae sp.17	Z02_ColSta045	F, J, R, O	109	5.18
Aleocharinae sp.18	Z02_ColSta046	F, O	17	5.19
Aleocharinae sp.19	Z02_ColSta047	F, J, R, O	104	5.20
Aleocharinae sp.20	Z02_ColSta049	F, J, O	5	5.21
Aleocharinae sp.21	Z02_ColSta051	F, J, O	22	5.22
Aleocharinae sp.22	Z02_ColSta056	F	4	5.23
Aleocharinae sp.23	Z02_ColSta057	F, J, R, O	10	5.24
Aleocharinae sp.24	Z02_ColSta061	F, O	69	5.25

Buku ini tidak diperjualbelikan.

(Morpho-)species	MSp Code	Land Use	Total N	Figures
Aleocharinae sp.25	Z02_ColSta062	F, J	19	5.26
Aleocharinae sp.26	Z02_ColSta065	F	3	5.27
Aleocharinae sp.27	Z02_ColSta068	R	94	5.28
Aleocharinae sp.28	Z02_ColSta014	F, R, O	8	5.29
Aleocharinae sp.29	Z02_ColSta048	F	6	5.30
<i>Oligota</i> sp.01	Z02_ColSta012	F, J, R, O	114	5.31
Euaesthetinae				
<i>Edaphus nitidus</i>	Z02_ColSta050	F, J	21	5.32
<i>Euaesthetus</i> sp.01	Z02_ColSta063	F, J	19	5.33
Megalopsidiinae				
Megalopsidiinae sp.01	Z02_ColSta058	F	2	5.34
Omaliinae				
Omaliinae sp.01	Z02_ColSta008	F, J, R, O	183	5.35
Osoriinae				
<i>Eleusis</i> sp.01	Z02_ColSta034	F, J, O	5	5.36
<i>Nacaeus</i> sp.01	Z02_ColSta005	F, J, R, O	237	5.37
Osoriinae sp.01	Z02_ColSta036	F, J	23	5.38
<i>Osorius</i> sp.01	Z02_ColSta073	J	2	5.39
<i>Plastus</i> sp.01	Z02_ColSta074	F, J	2	5.40
<i>Thoracophorus</i> sp.01	Z02_ColSta027	F, J	9	5.41
Oxytelinae				
<i>Anotylus</i> sp.01	Z02_ColSta013	F, J, R	12	5.42
Oxytelinae sp.01	Z02_ColSta004	J, R, O	16	5.43
Oxytelinae sp.02	Z02_ColSta059	F, J, R	4	5.44
Oxytelinae sp.03	Z02_ColSta071	F, J, R, O	12	5.45
Paederinae				
Paederinae sp.01	Z02_ColSta010	J, R, O	343	5.46
Paederinae sp.02	Z02_ColSta022	F, J, R	34	5.47
Paederinae sp.03	Z02_ColSta023	J	7	5.48
Paederinae sp.04	Z02_ColSta030	F, J, R, O	96	5.49
Paederinae sp.05	Z02_ColSta038	F, J	18	5.50
Paederinae sp.06	Z02_ColSta052	F, J	20	5.51
Paederinae sp.07	Z02_ColSta053	F, J, R	25	5.52
Paederinae sp.08	Z02_ColSta067	F, J	13	5.53
<i>Palaminus</i> sp.01	Z02_ColSta001	F, J, R, O	804	5.54
<i>Palaminus</i> sp.02	Z02_ColSta035	F, J	20	5.55



(Morpho-)species	MSp Code	Land Use	Total N	Figures
Piestinae				
Piestinae sp.01	Z02_ColSta011	F, J, R, O	28	5.56
Piestinae sp.02	Z02_ColSta015	F, J, R	92	5.57
Piestinae sp.03	Z02_ColSta021	F, J	8	5.58
Pselaphinae				
Pselaphinae sp.01	Z02_ColSta016	F, J, R, O	202	5.59
Pselaphinae sp.02	Z02_ColSta032	F, J, R	22	5.60
Pselaphinae sp.03	Z02_ColSta054	F, J, R, O	27	5.61
Pselaphinae sp.04	Z02_ColSta066	F, J	34	5.62
Pselaphinae sp.05	Z02_ColSta069	F, J, R	11	5.63
Scydmaeninae				
Scydmaeninae sp.01	Z02_ColSta064	F, J, O	28	5.64
Staphylininae				
Philonthus sp.01	Z02_ColSta039	F, O	15	5.65
Staphylininae sp.01	Z02_ColSta009	F, J, R, O	124	5.66
Staphylininae sp.02	Z02_ColSta043	F	1	5.67
Steninae				
Steninae sp.01	Z02_ColSta070	J	2	5.68
Tachyporinae				
Coproporus sp.01	Z02_ColSta002	F, J, R, O	277	5.69
Sepedophilus bisignatus	Z02_ColSta028	F, J, R, O	27	5.70
Sepedophilus sp.01	Z02_ColSta037	F, J	5	5.71
Tachyporinae sp.01	Z02_ColSta031	F, J, R	158	5.72
Tachyporinae sp.02	Z02_ColSta055	F	9	5.73
Tachyporinae sp.03	Z02_ColSta060	O	2	5.74
Tachyporinae sp.04	Z02_ColSta072	R	13	5.75

IMAGES OF STAPHYLINIDAE MORPHOSPECIES

For the majority of the EForTS morphospecies collection, specimens have been photographed using KEYENCE VHX-2000 digital microscope. Below, we show dorsally, laterally, and facial images of each morphospecies.

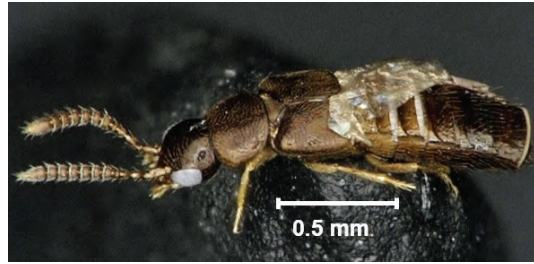


Figure 5.2 Aleocharinae sp.01
(Staphylinidae: Aleocharinae) Z02_ColSta003



Figure 5.3 Aleocharinae sp.02
(Staphylinidae: Aleocharinae) Z02_ColSta007

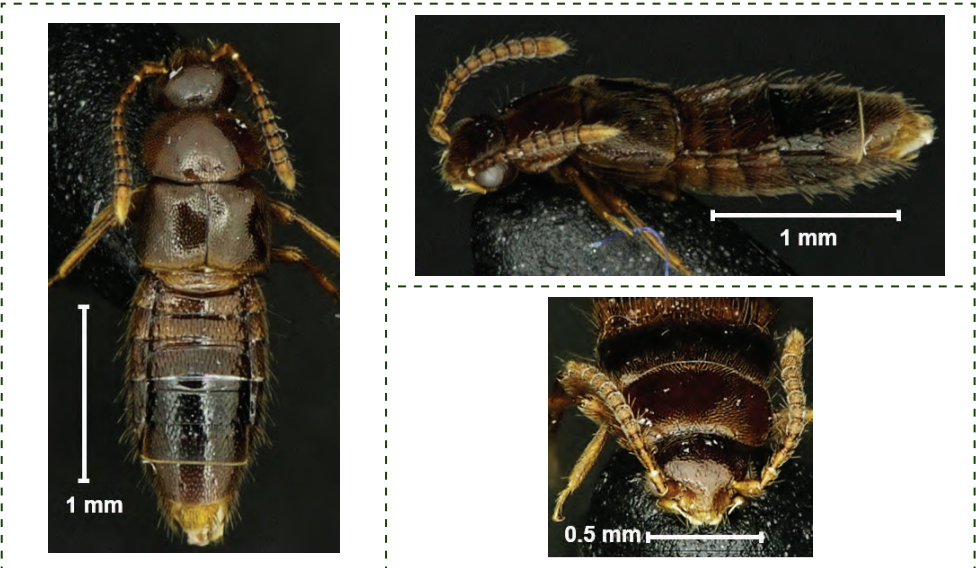


Figure 5.4 Aleocharinae sp.03
(Staphylinidae: Aleocharinae) Z02_ColSta017

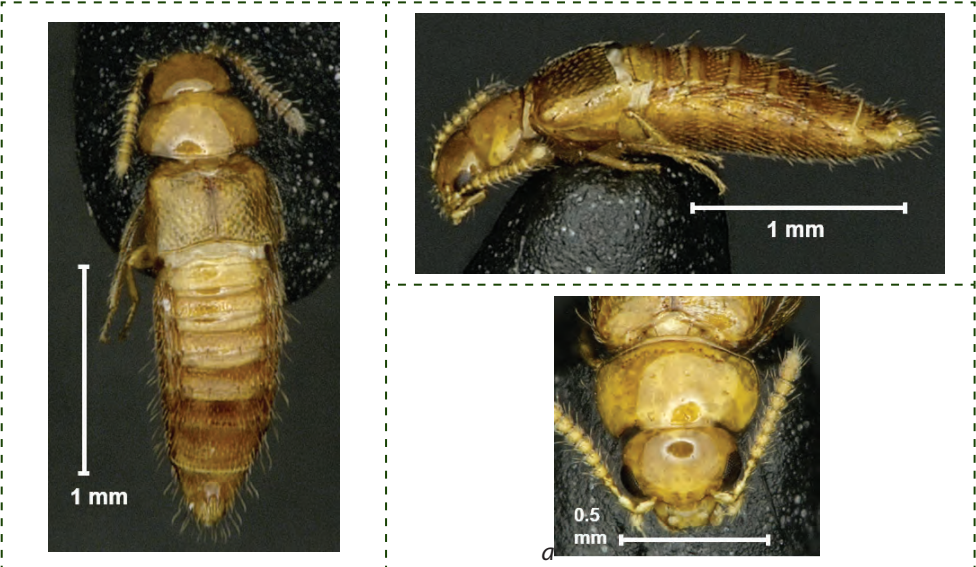


Figure 5.5 Aleocharinae sp.04
(Staphylinidae: Aleocharinae) Z02_ColSta018

Buku ini tidak diperjualbelikan.

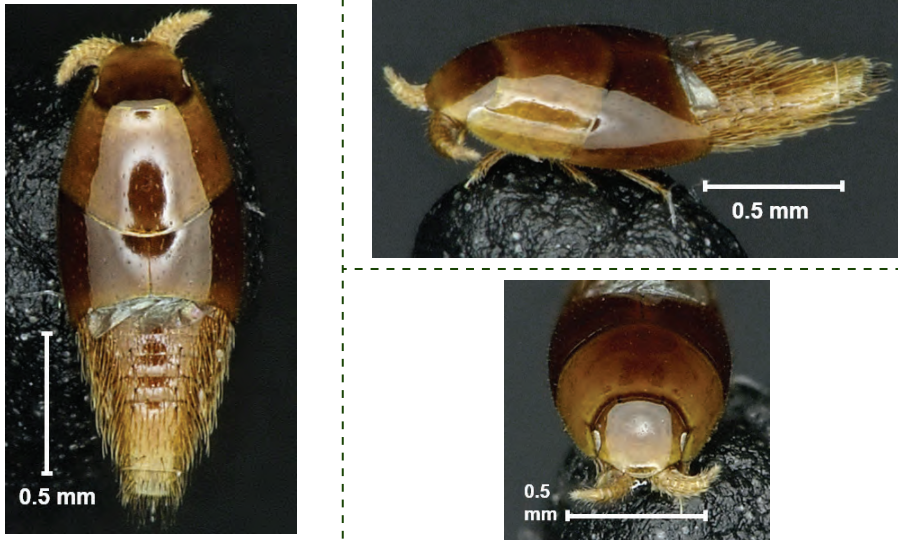


Figure 5.6 Aleocharinae sp.05
(Staphylinidae: Aleocharinae) Z02_ColSta006

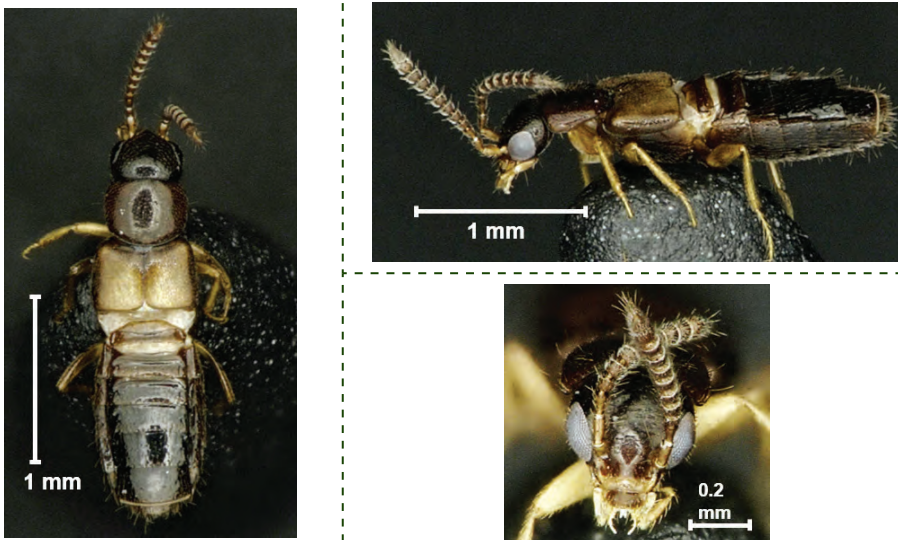


Figure 5.7 Aleocharinae sp.06
(Staphylinidae: Aleocharinae) Z02_ColSta019

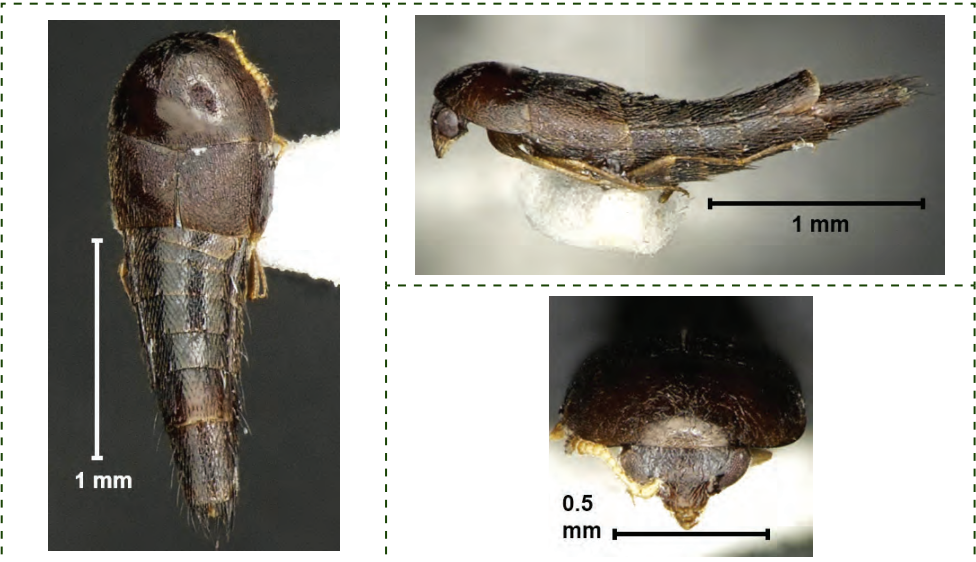


Figure 5.8 Aleocharinae sp.07
(Staphylinidae: Aleocharinae) Z02_ColSta020

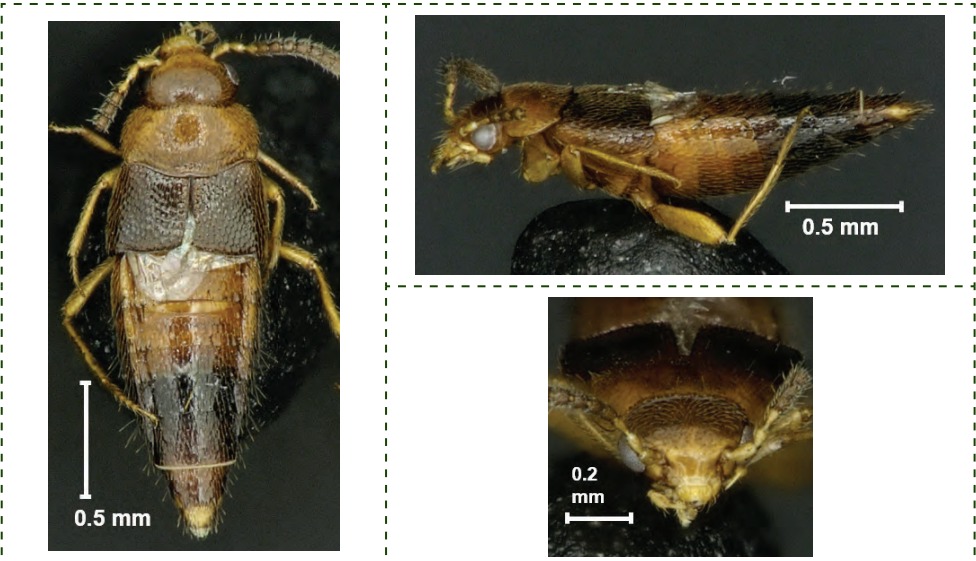


Figure 5.9 Aleocharinae sp.08
(Staphylinidae:Aleocharinae) Z02_ColSta024

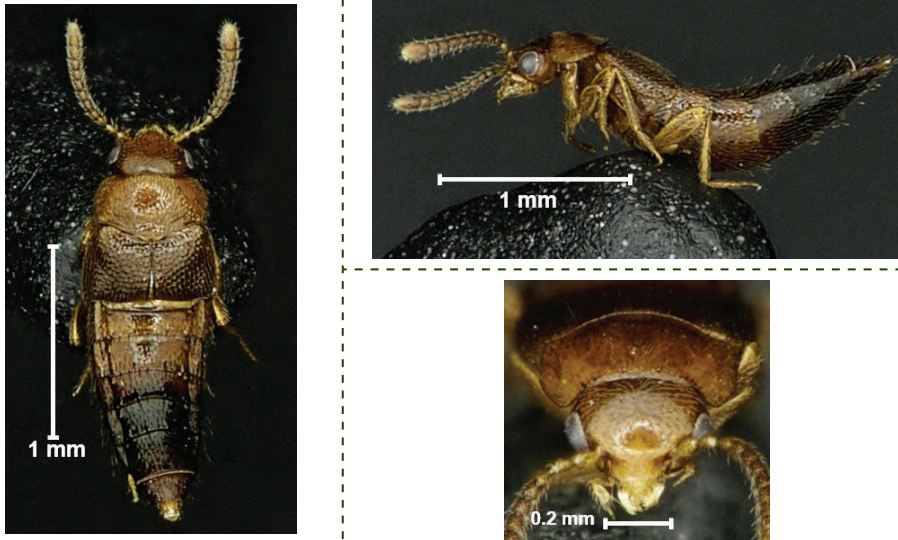


Figure 5.10 Aleocharinae sp.09
(Staphylinidae: Aleocharinae) Z02_ColSta025



Figure 5.11 Aleocharinae sp.10
(Staphylinidae: Aleocharinae) Z02_ColSta026

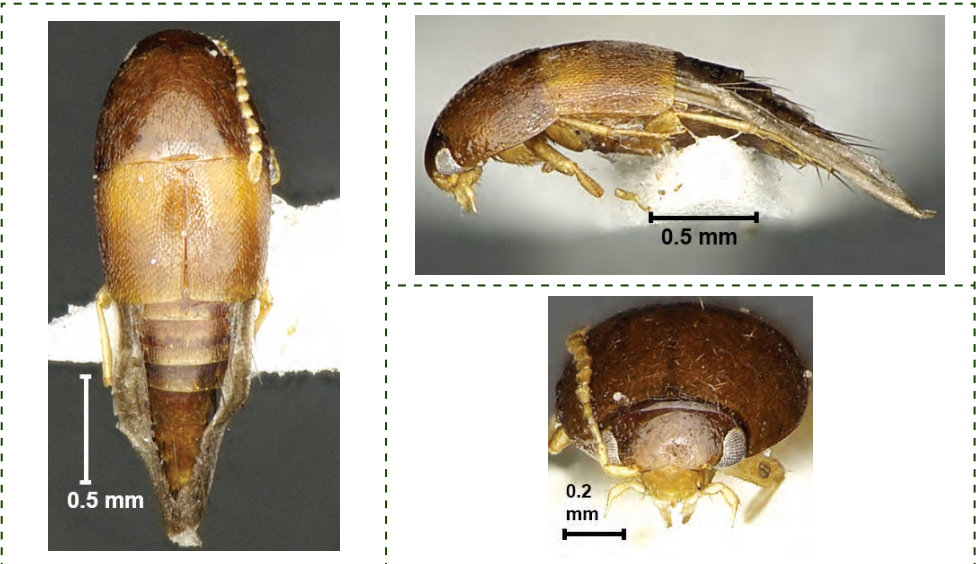


Figure 5.12 Aleocharinae sp.11
(Staphylinidae: Aleocharinae) Z02_ColSta029

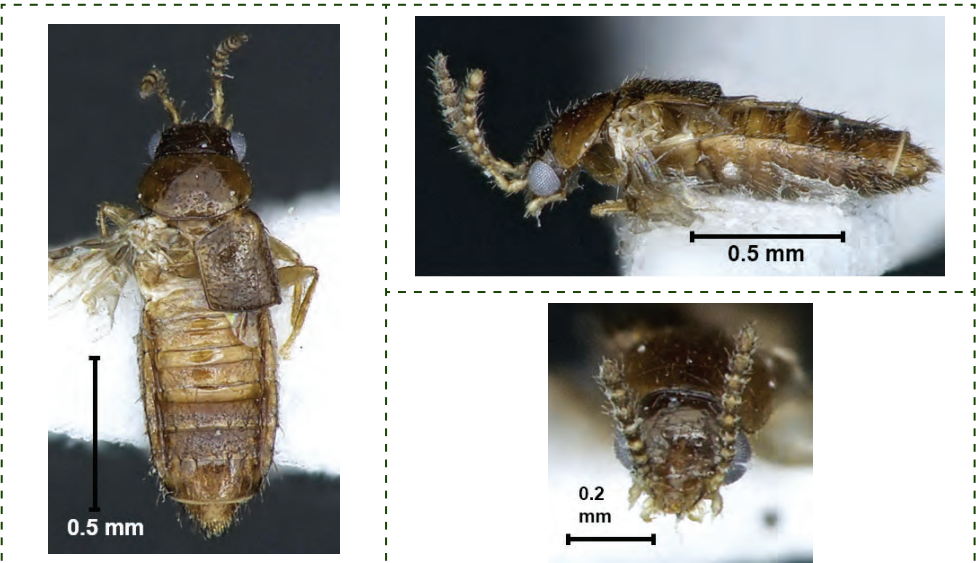


Figure 5.13 Aleocharinae sp.12
(Staphylinidae: Aleocharinae) Z02_ColSta033

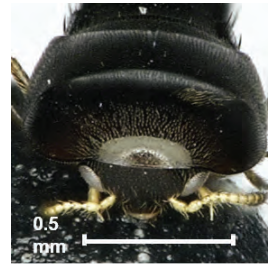
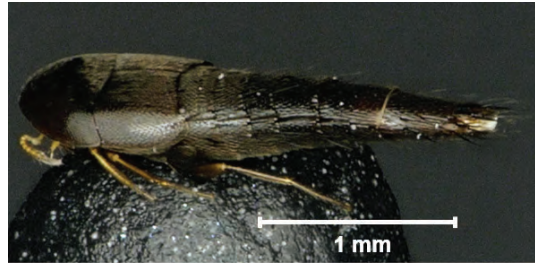


Figure 5.14 Aleocharinae sp.13
(Staphylinidae: Aleocharinae) Z02_ColSta040

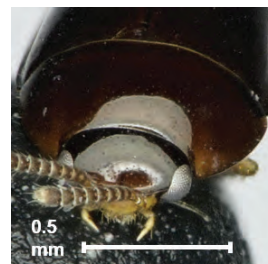
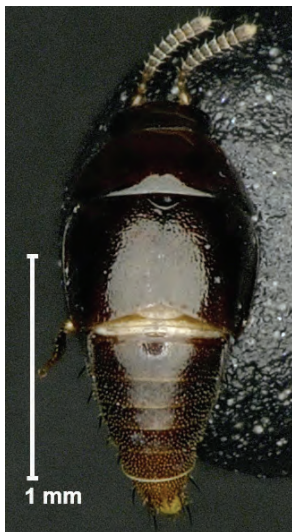


Figure 5.15 Aleocharinae sp.14
(Staphylinidae: Aleocharinae) Z02_ColSta041

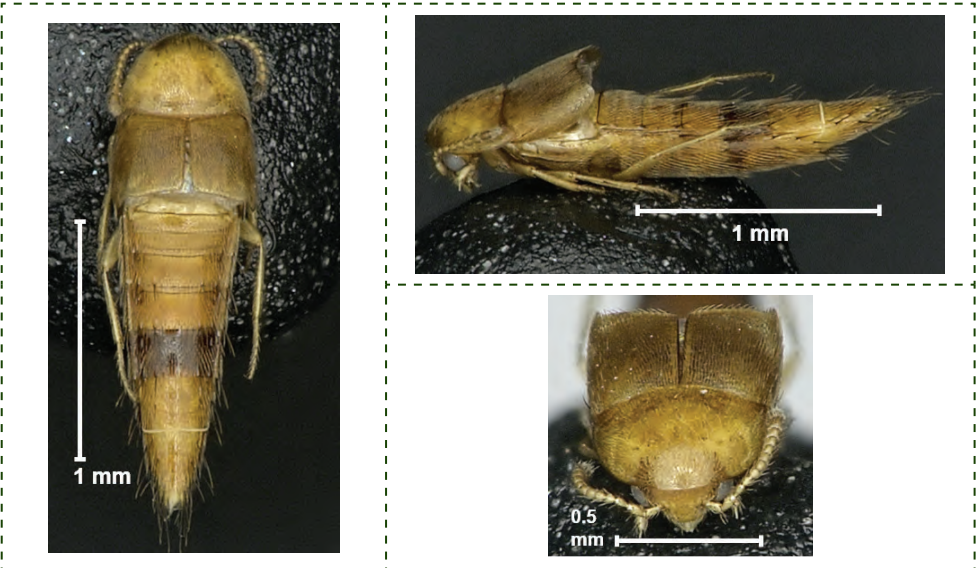


Figure 5.16 Aleocharinae sp.15
(Staphylinidae: Aleocharinae) Z02_ColSta042

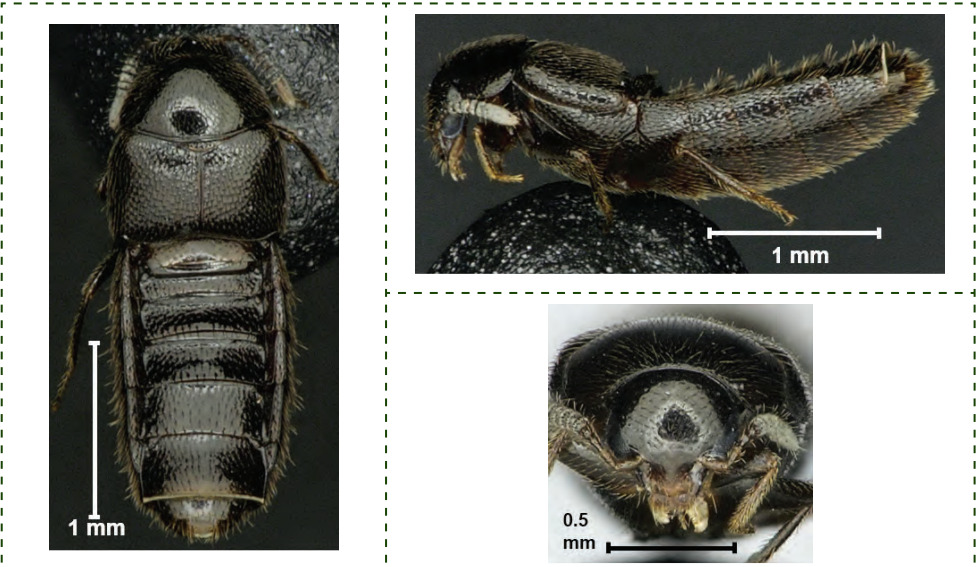


Figure 5.17 Aleocharinae sp.16
(Staphylinidae: Aleocharinae) Z02_ColSta044

Buku ini tidak diperjualbelikan.

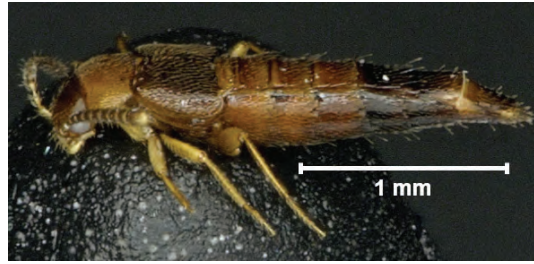
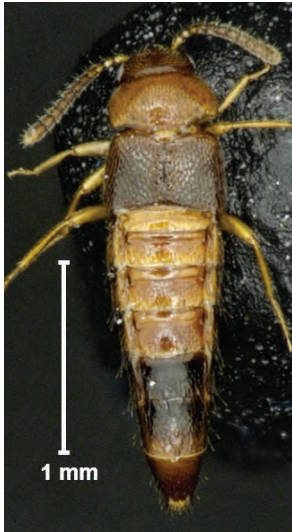
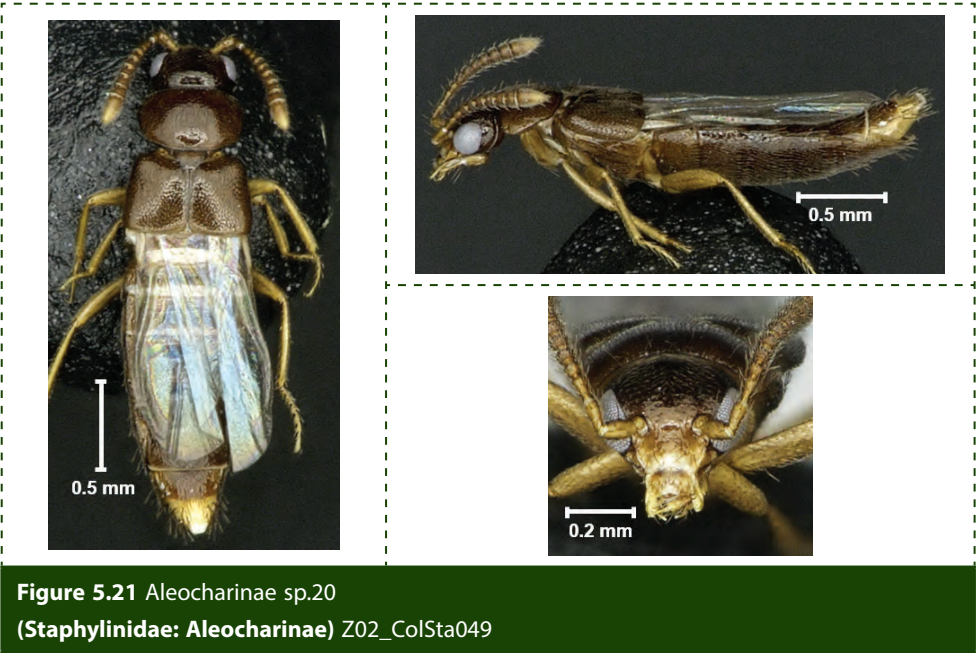
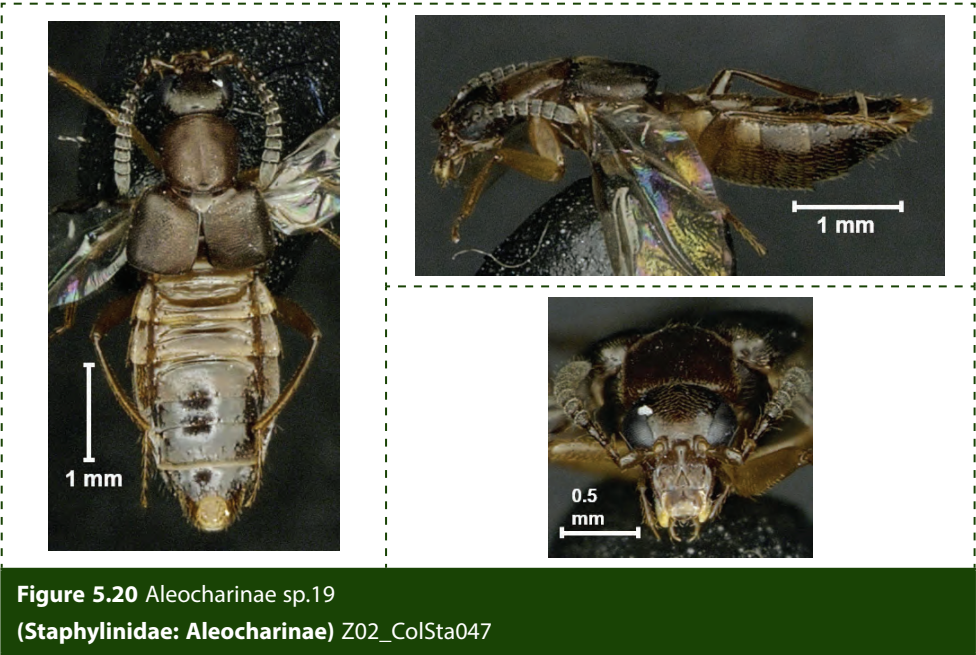


Figure 5.18 Aleocharinae sp.17
(Staphylinidae: Aleocharinae) Z02_ColSta045



Figure 5.19 Aleocharinae sp.18
(Staphylinidae: Aleocharinae) Z02_ColSta046



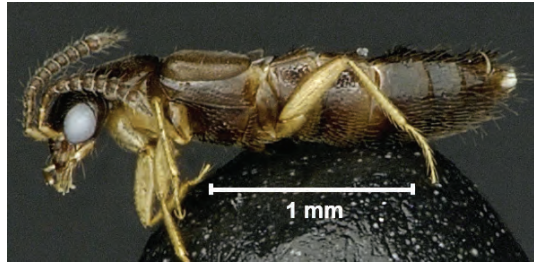


Figure 5.22 Aleocharinae sp.21
(Staphylinidae: Aleocharinae) Z02_ColSta051

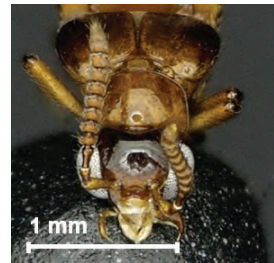


Figure 5.23 Aleocharinae sp.22
(Staphylinidae: Aleocharinae) Z02_ColSta056

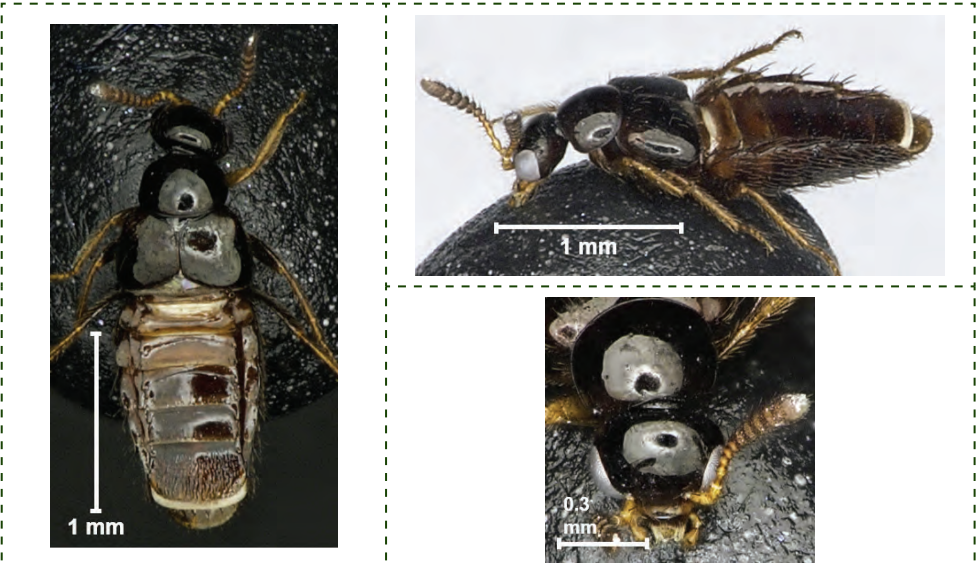


Figure 5.24 Aleocharinae sp.23
(Staphylinidae: Aleocharinae) Z02_ColSta057

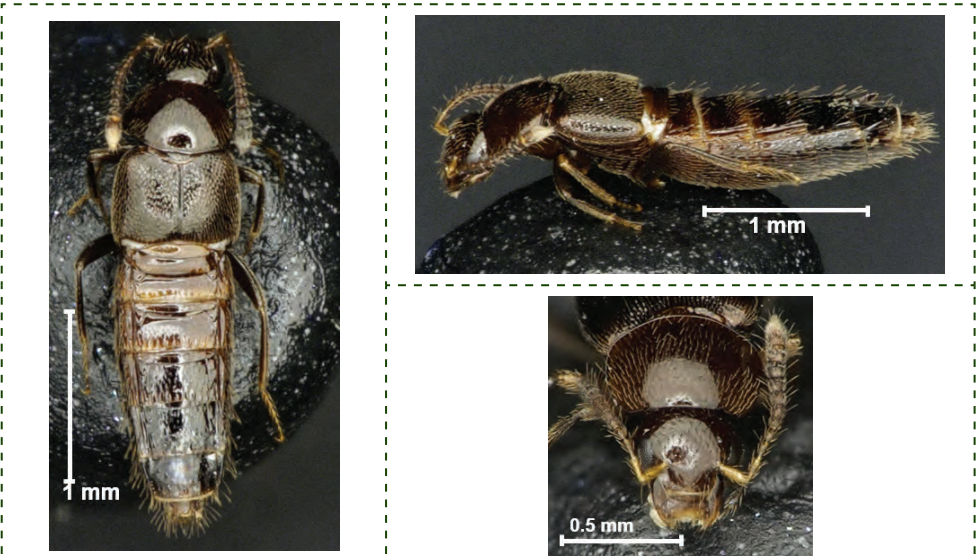


Figure 5.25 Aleocharinae sp.24
(Staphylinidae: Aleocharinae) Z02_ColSta061

Buku ini tidak diperjualbelikan.



Figure 5.26 Aleocharinae sp.25
(Staphylinidae: Aleocharinae) Z02_ColSta062



Figure 5.27 Aleocharinae sp.26
(Staphylinidae: Aleocharinae) Z02_ColSta065



Figure 5.28 Aleocharinae sp.27
(Staphylinidae: Aleocharinae) Z02_ColSta068

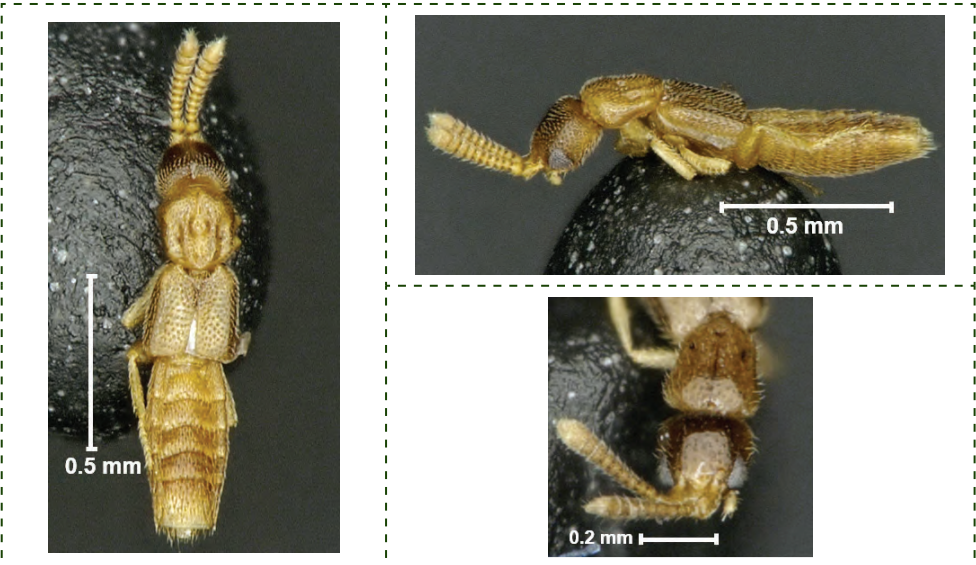


Figure 5.29 Aleocharinae sp.28
(Staphylinidae:Aleocharinae) Z02_ColSta014

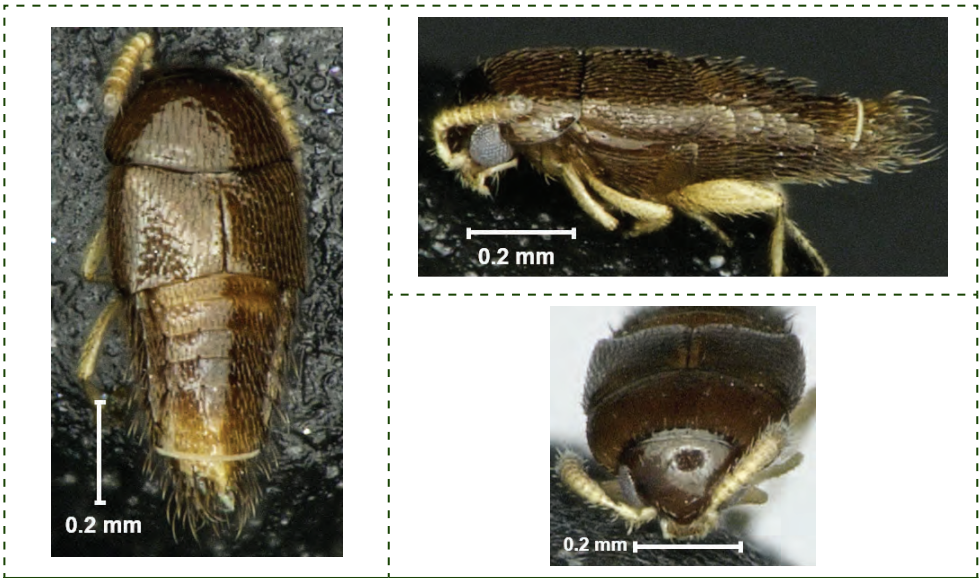


Figure 5.30 *Aleocharinae* sp.29
(Staphylinidae: Aleocharinae) Z02_ColSta048

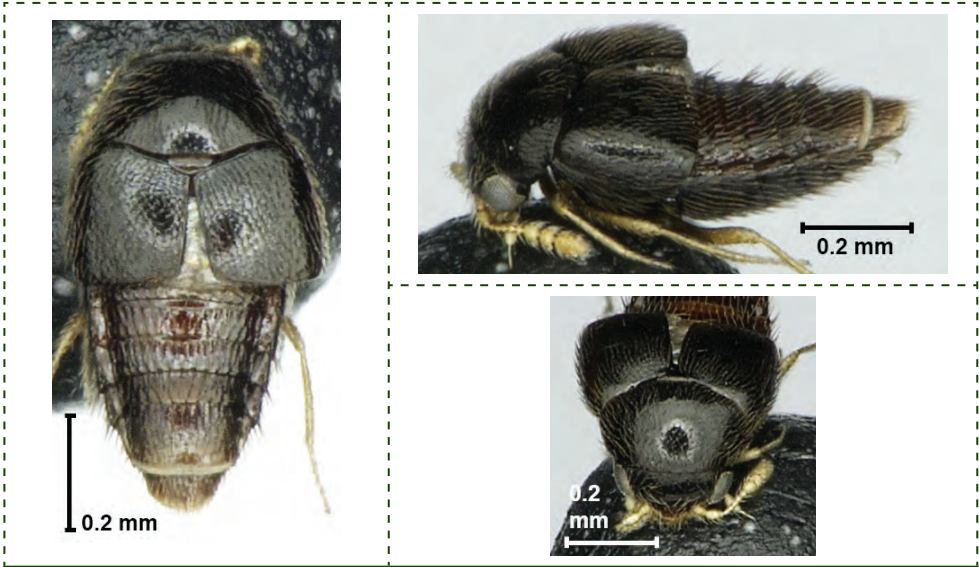


Figure 5.31 *Oligota* sp.01
(Staphylinidae: Aleocharinae) Z02_ColSta012

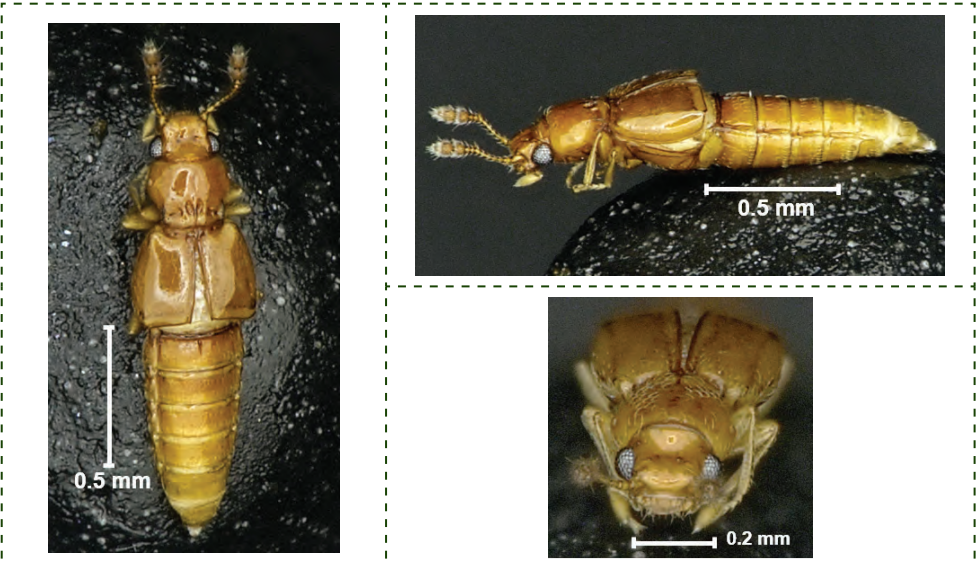


Figure 5.32 *Edaphus nitidus*
(Staphylinidae: Euaesthetinae) Z02_ColSta050



Figure 5.33 *Euaesthetus* sp.01
(Staphylinidae: Euaesthetinae) Z02_ColSta063

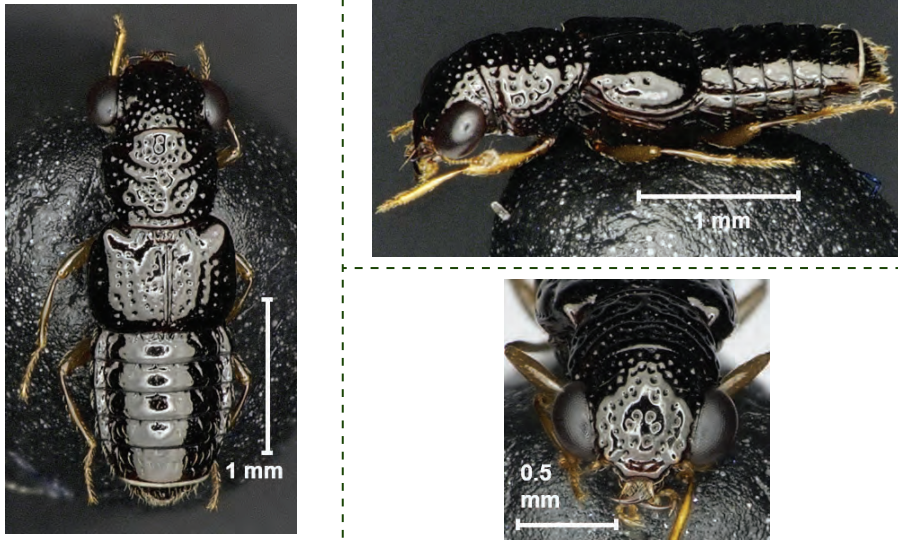


Figure 5.34 Megalopsidiinae sp.01
(Staphylinidae: Megalopsidiinae) Z02_ColSta058

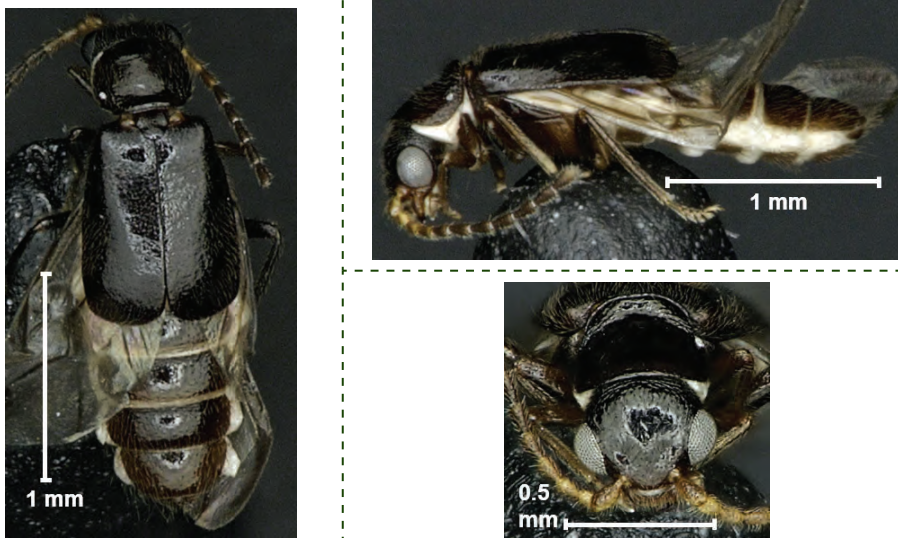


Figure 5.35 Omaliinae sp.01
(Staphylinidae: Omaliinae) Z02_ColSta008

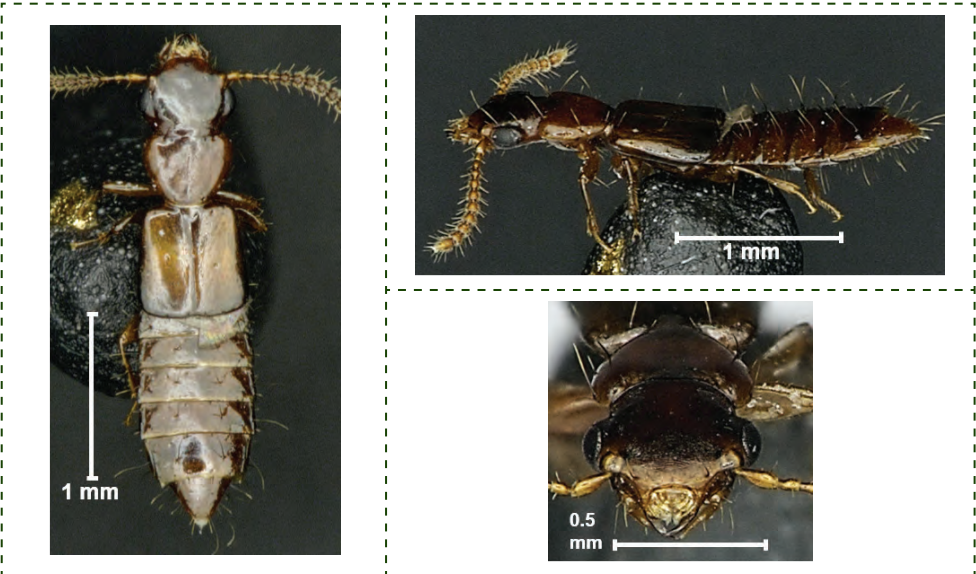


Figure 5.36 *Eleusis* sp.01
(Staphylinidae: Osoriinae) Z02_ColSta034

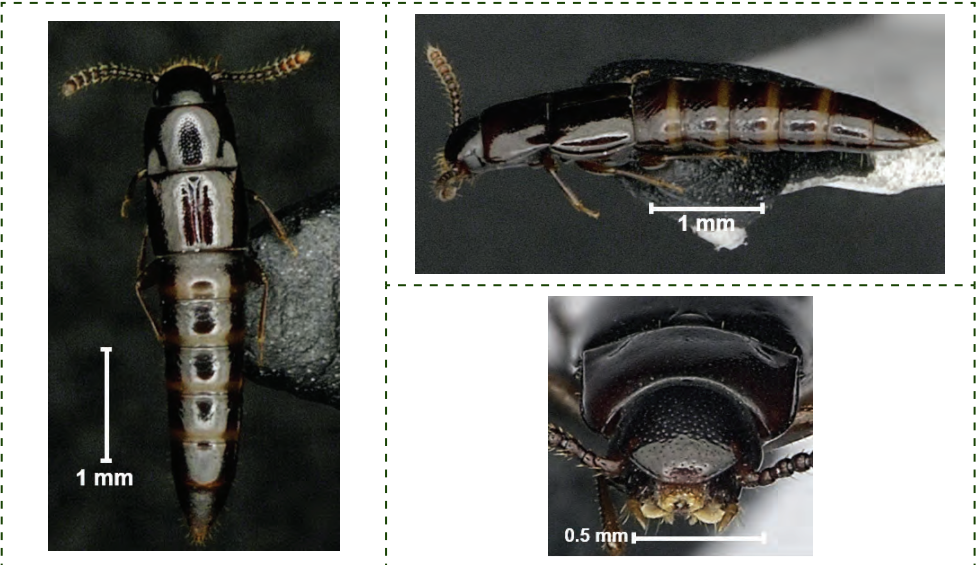


Figure 5.37 *Nacaeus* sp.01
(Staphylinidae: Osoriinae) Z02_ColSta005

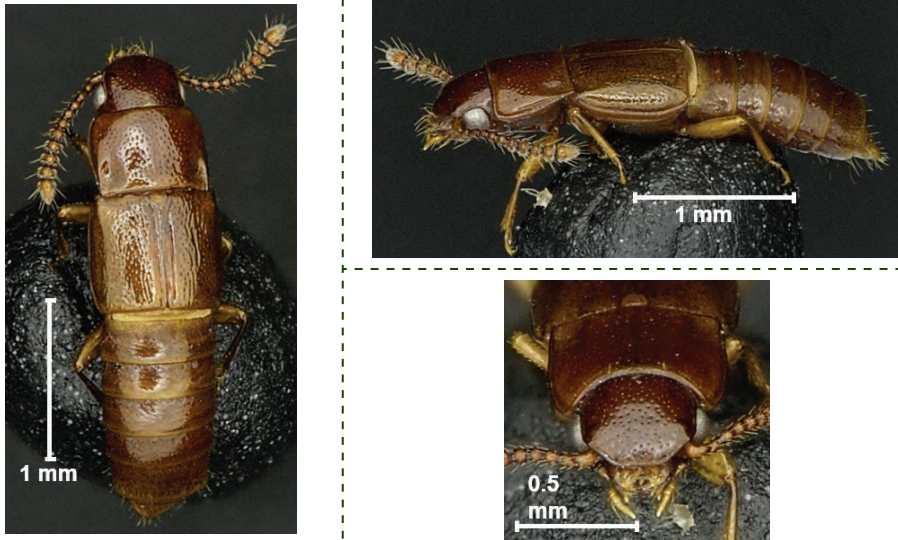


Figure 5.38 *Osoriinae* sp.01
(Staphylinidae: **Osoriinae**) Z02_ColSta036

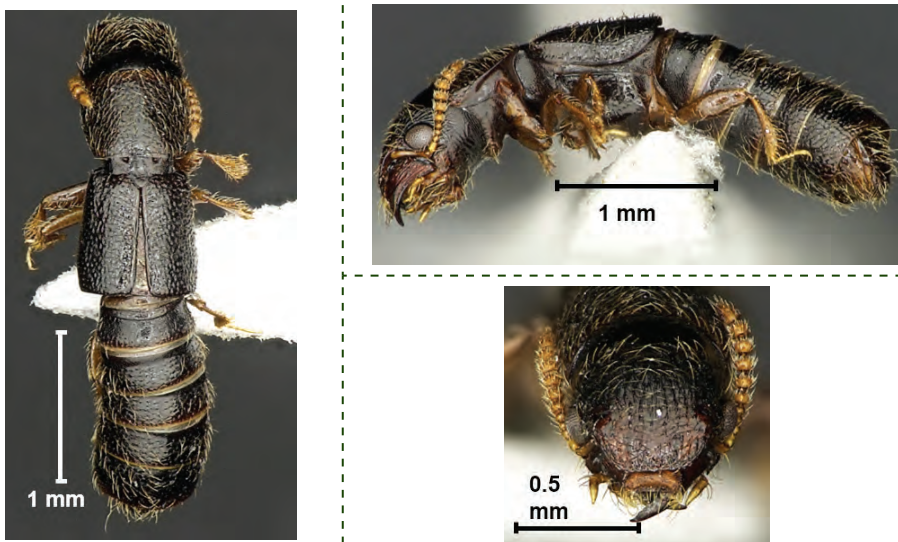


Figure 5.39 *Osorius* sp.01
(Staphylinidae: **Osoriinae**) Z02_ColSta073

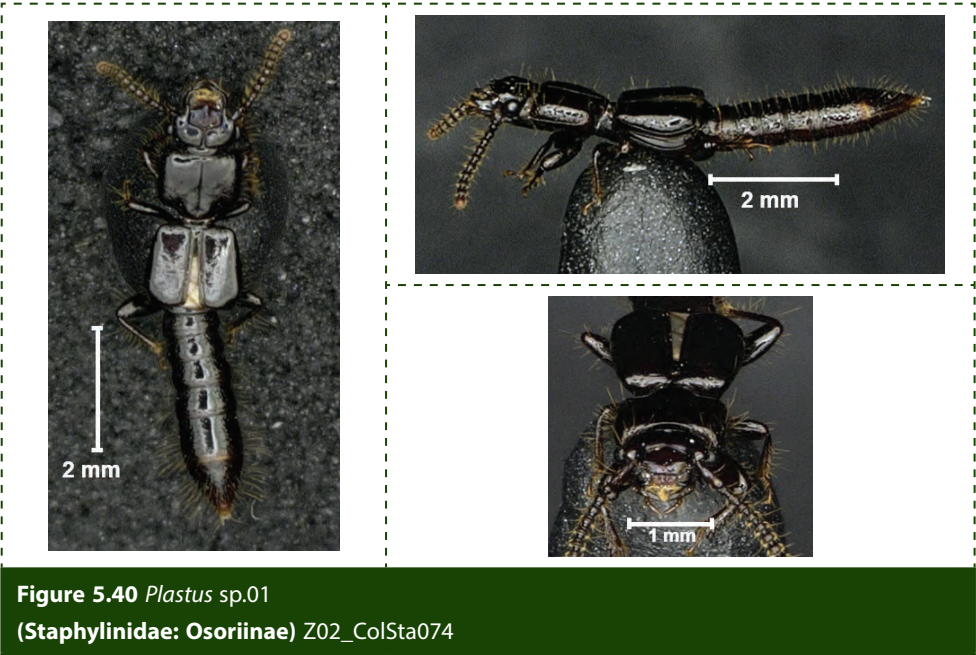


Figure 5.40 *Plastus* sp.01
(Staphylinidae: Osoriinae) Z02_ColSta074

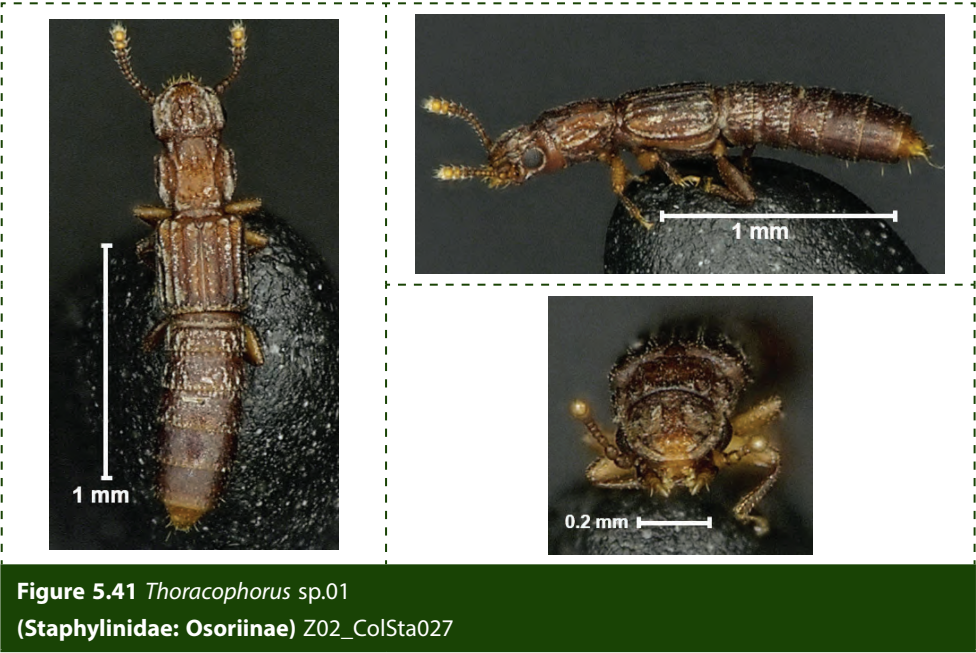


Figure 5.41 *Thoracophorus* sp.01
(Staphylinidae: Osoriinae) Z02_ColSta027



Figure 5.42 *Anotylus* sp.01
(Staphylinidae: Oxytelinae) Z02_ColSta013

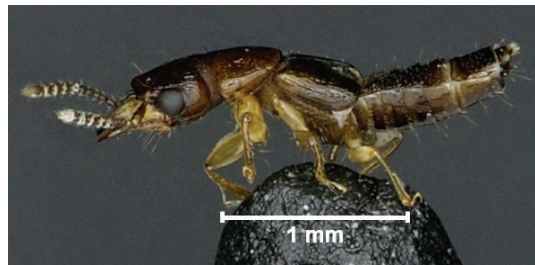


Figure 5.43 *Oxytelinae* sp.01
(Staphylinidae: Oxytelinae) Z02_ColSta004

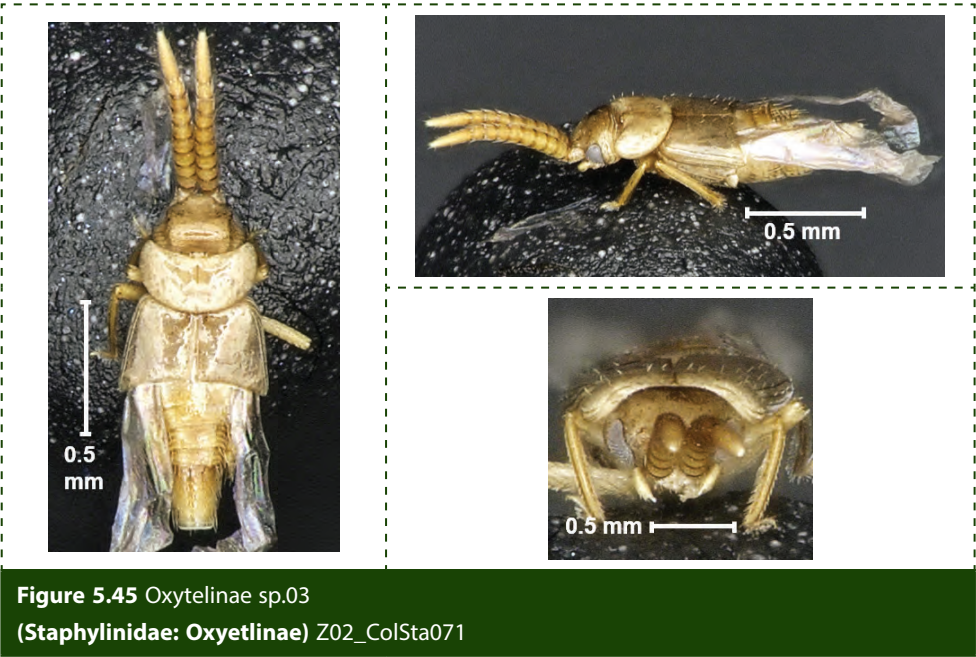
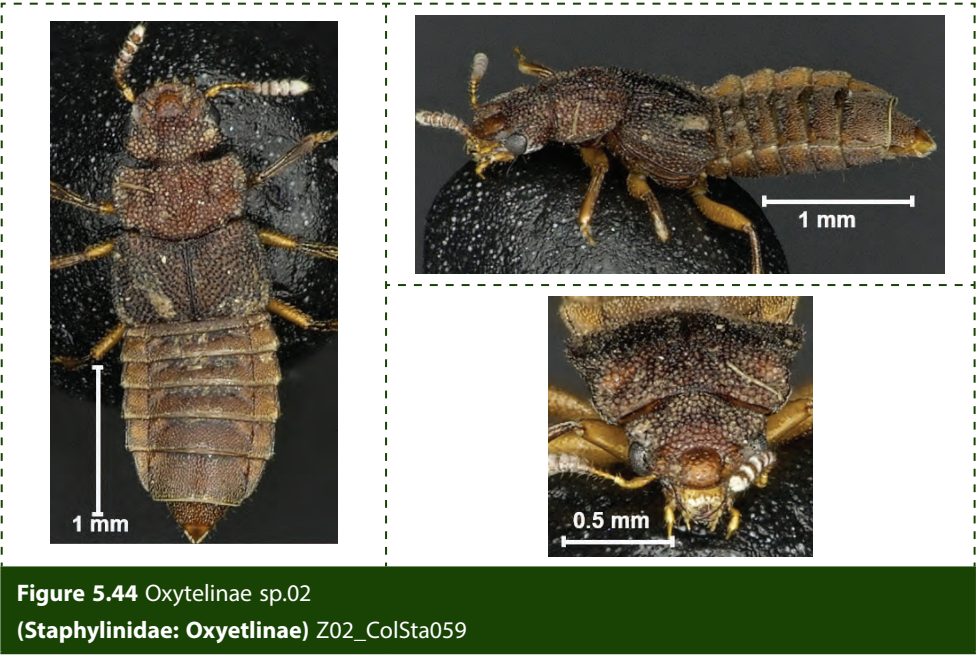




Figure 5.46 Paederinae sp.01
(Staphylinidae: Paederinae) Z02_ColSta010



Figure 5.47 Paederinae sp.02
(Staphylinidae: Paederinae) Z02_ColSta022

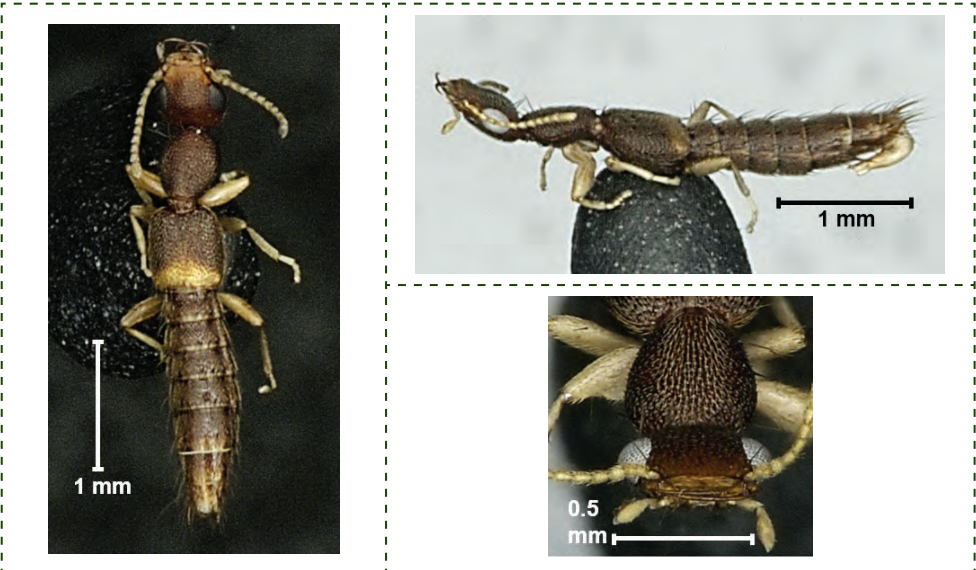


Figure 5.48 Paederinae sp.03
(Staphylinidae: Paederinae) Z02_ColSta023

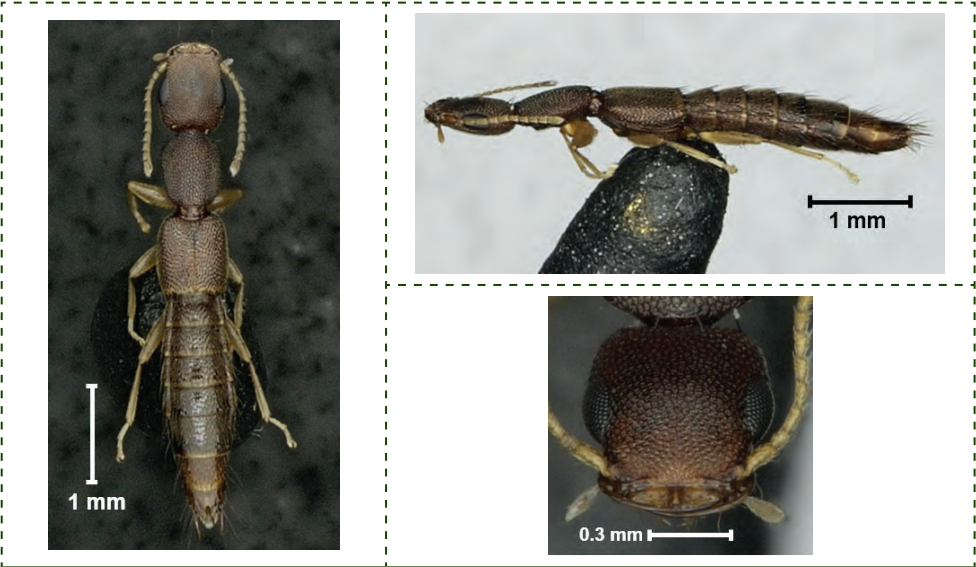


Figure 5.49 Paederinae sp.04
(Staphylinidae: Paederinae) Z02_ColSta030

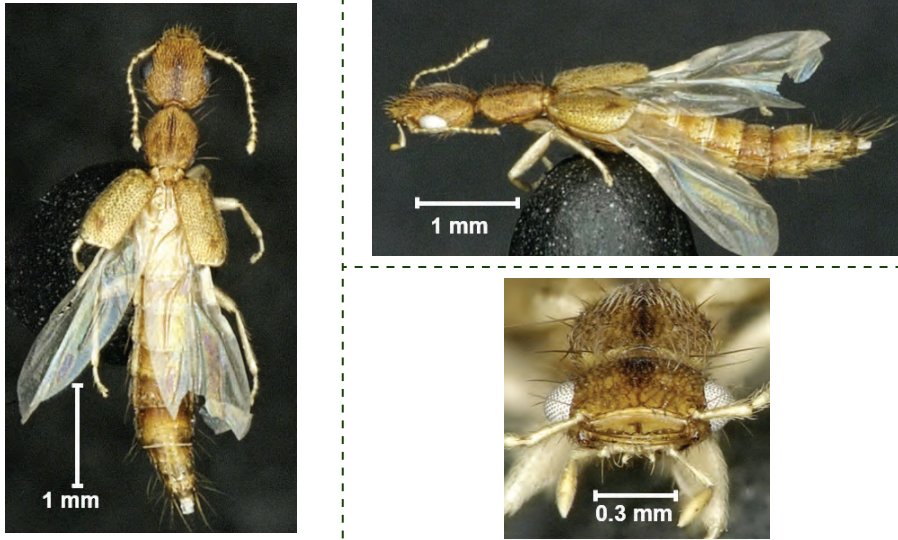


Figure 5.50 *Paederinae* sp.05
(*Staphylinidae: Paederinae*) Z02_ColSta038

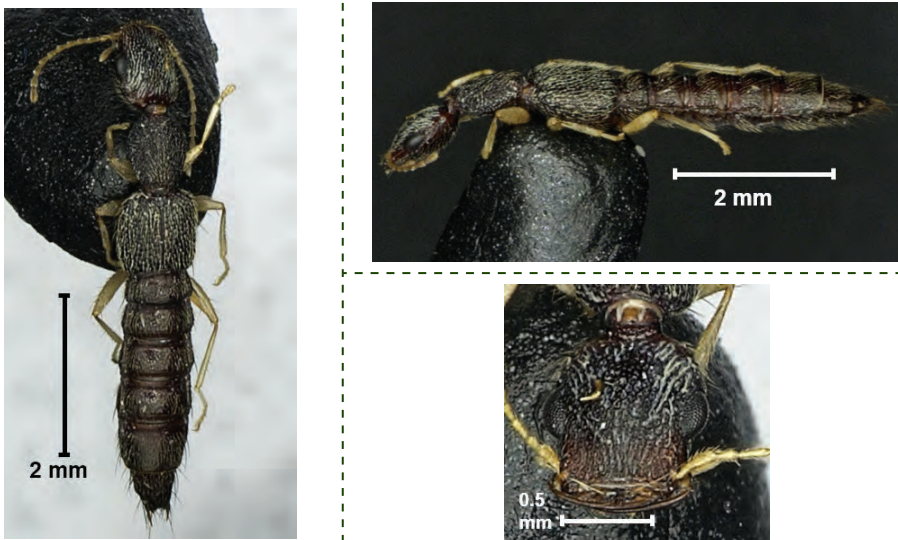
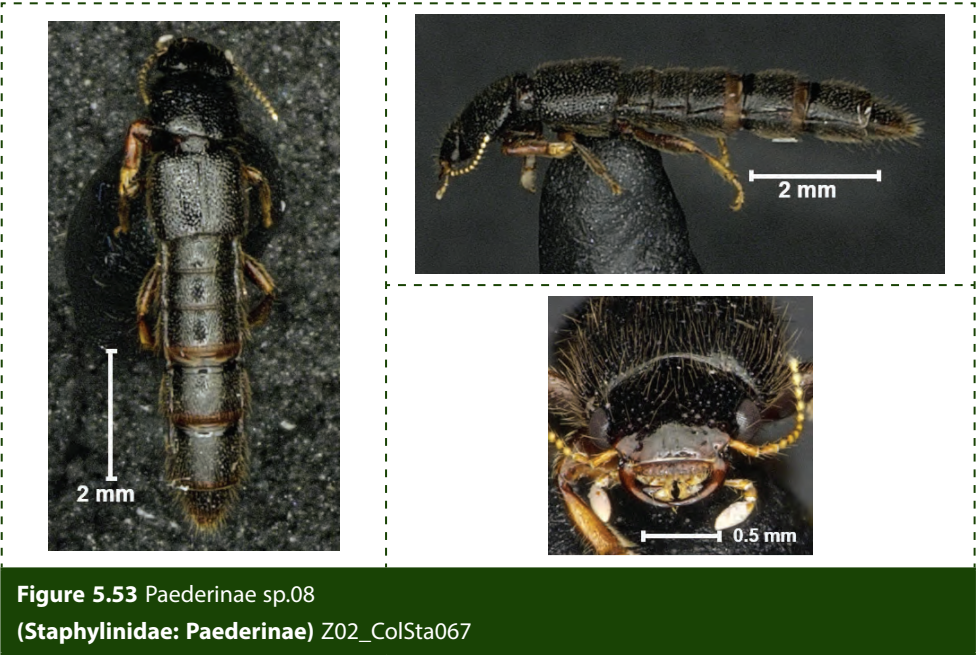
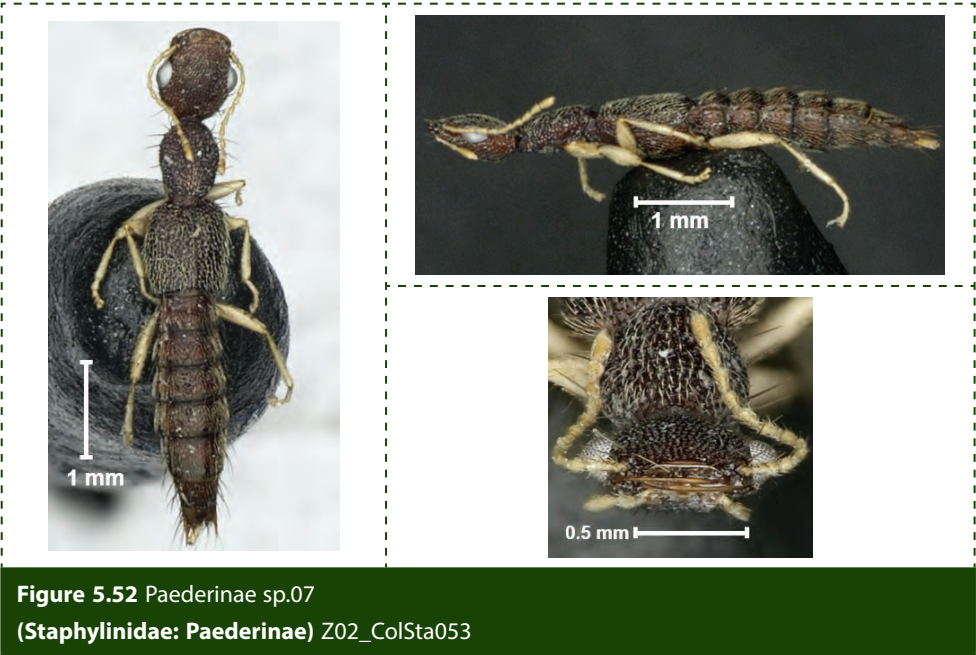


Figure 5.51 *Paederinae* sp.06
(*Staphylinidae: Paederinae*) Z02_ColSta052



Buku ini tidak diperjualbelikan.



Figure 5.54 *Palaminus* sp.01
(Staphylinidae: Paederinae) Z02_ColSta001



Figure 5.55 *Palaminus* sp.02
(Staphylinidae: Paederinae) Z02_ColSta035

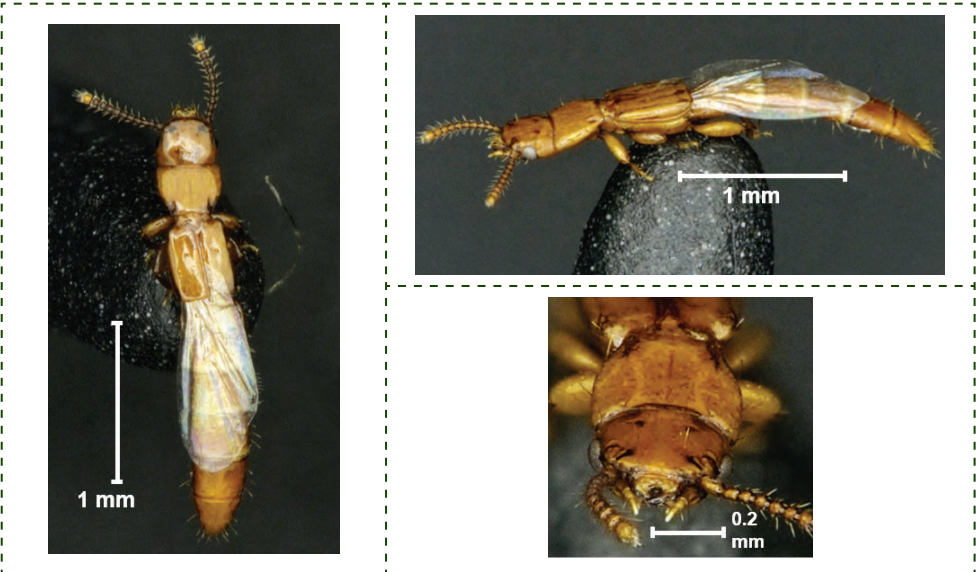


Figure 5.56 *Piestinae* sp.01
(*Staphylinidae: Piestinae*) Z02_ColSta011

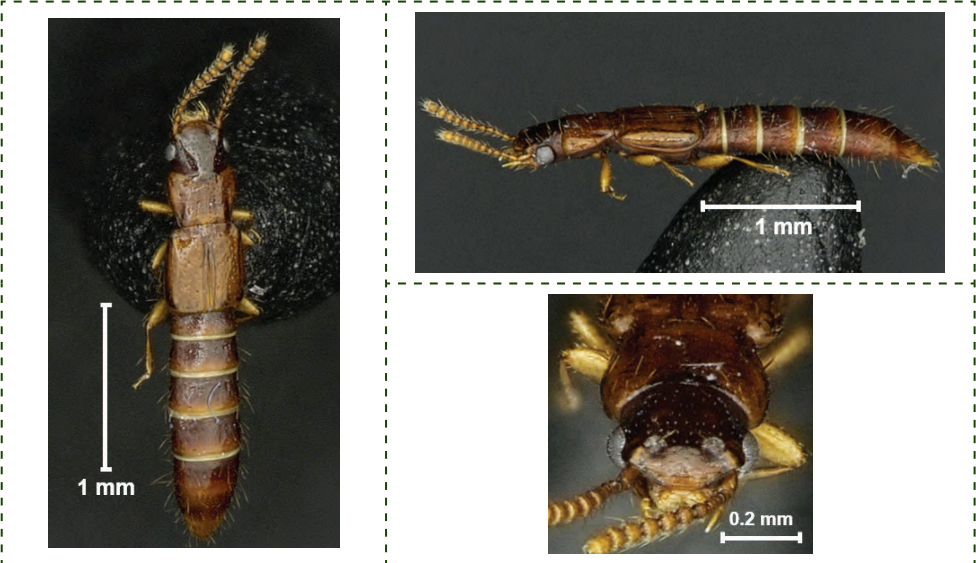


Figure 5.57 *Piestinae* sp.02
(*Staphylinidae: Piestinae*) Z02_ColSta015

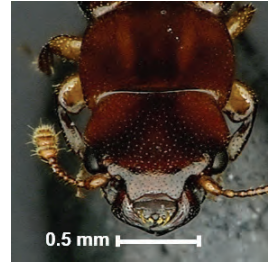
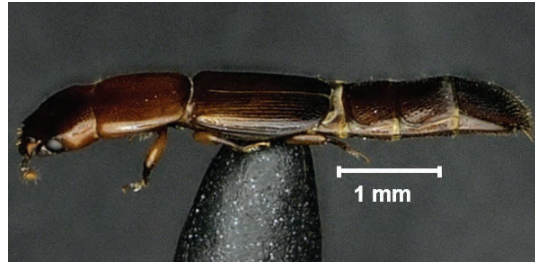
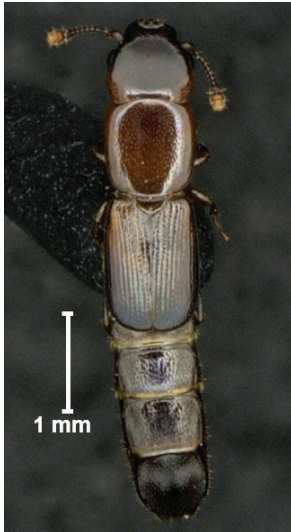


Figure 5.58 *Piestinae* sp.03
(*Staphylinidae: Piestinae*) Z02_ColSta021



Figure 5.59 *Pselaphinae* sp.01
(*Staphylinidae: Pselaphinae*) Z02_ColSta016

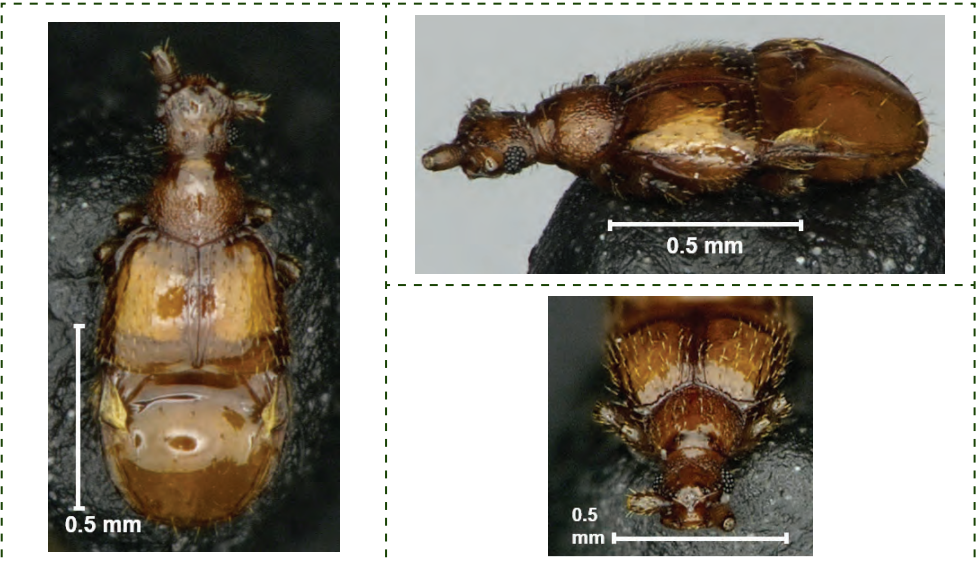


Figure 5.60 *Pselaphinae* sp.02
(*Staphylinidae: Pselaphinae*) Z02_ColSta032

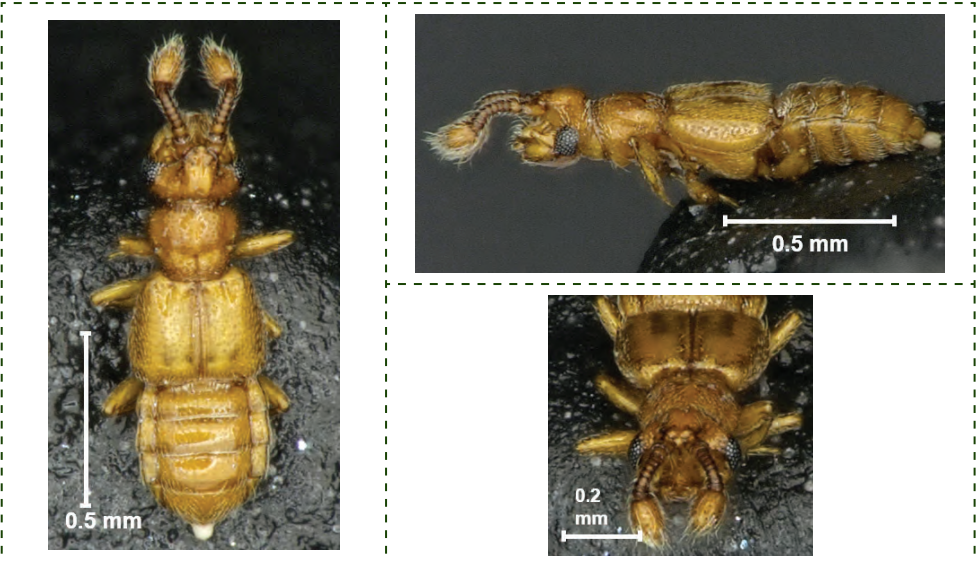


Figure 5.61 *Pselaphinae* sp.03
(*Staphylinidae: Pselaphinae*) Z02_ColSta054

Buku ini tidak diperjualbelikan.

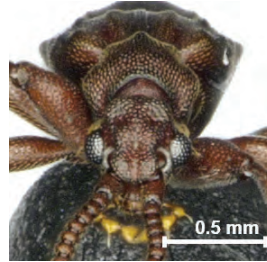
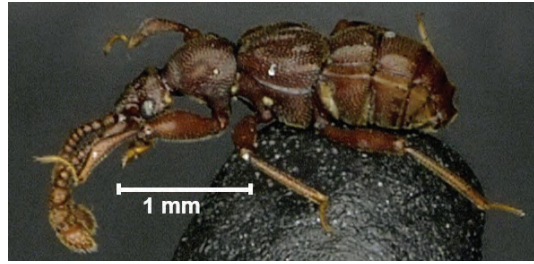


Figure 5.62 Pselaphinae sp.04
(Staphylinidae: Pselaphinae) Z02_ColSta066

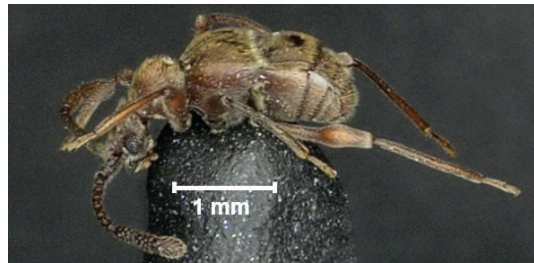


Figure 5.63 Pselaphinae sp.05
(Staphylinidae: Pselaphinae) Z02_ColSta069

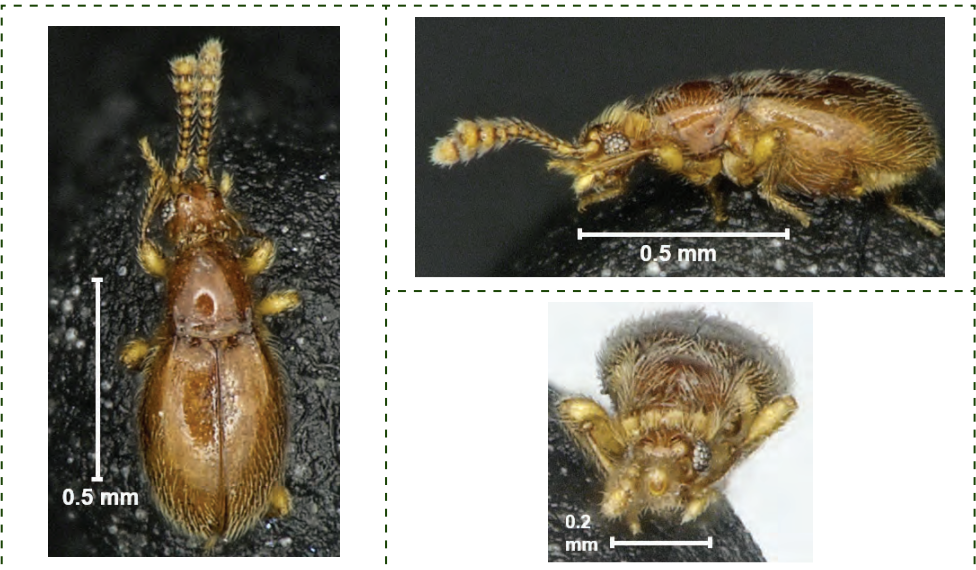


Figure 5.64 *Scydmaeninae* sp.01
(*Staphylinidae: Scydmaeninae*) Z02_ColSta064

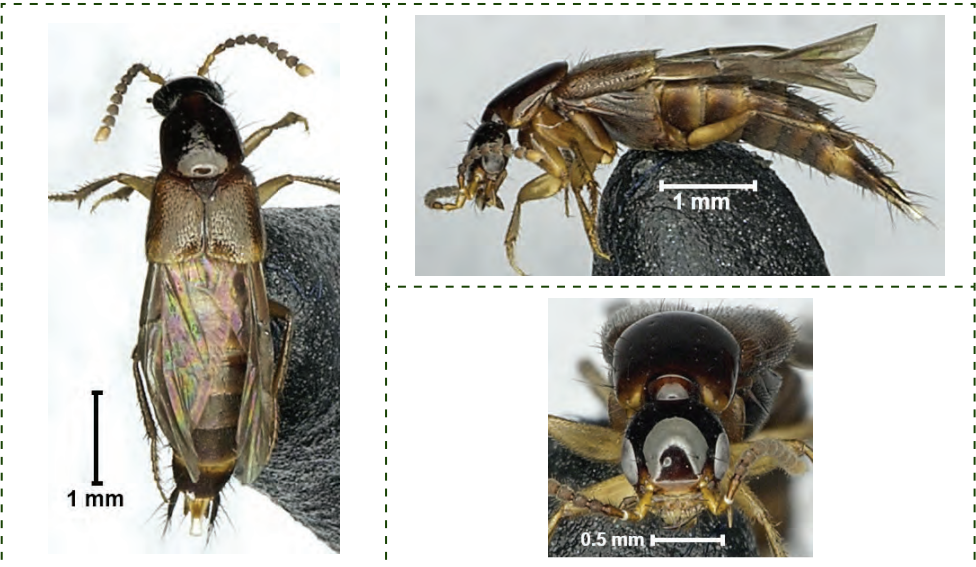


Figure 5.65 *Philonthus* sp.01
(*Staphylinidae: Staphylininae*) Z02_ColSta039

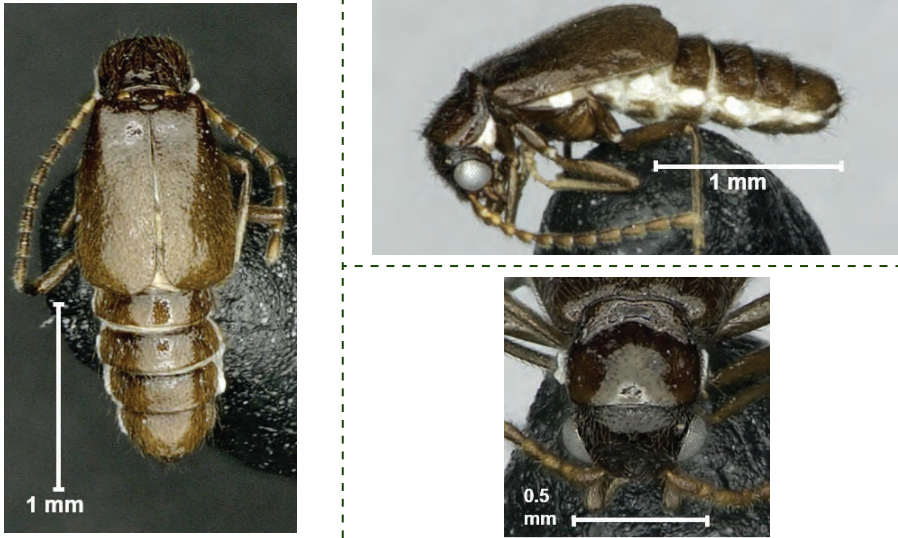


Figure 5.66 Staphylininae sp.01
(Staphylinidae: Staphylininae) Z02_ColSta009

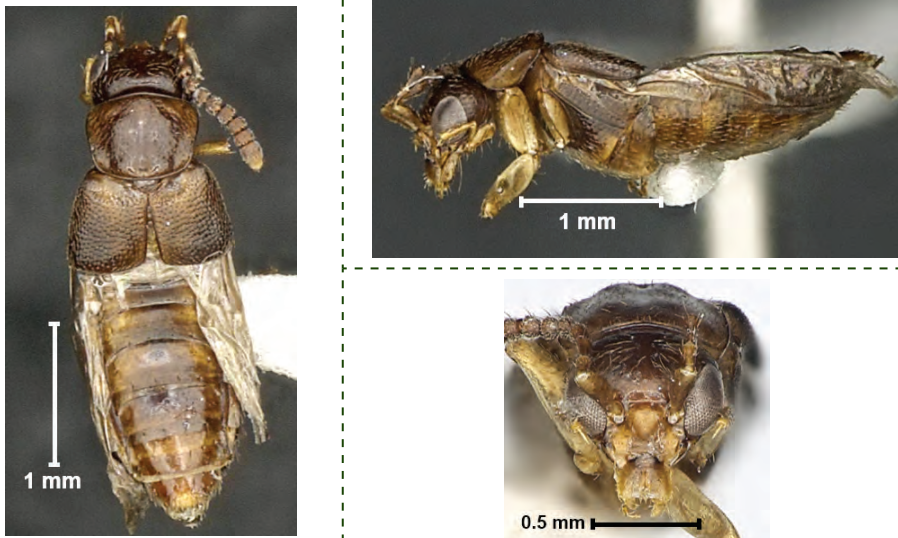


Figure 5.67 Staphylininae sp.02
(Staphylinidae: Staphylininae) Z02_ColSta043

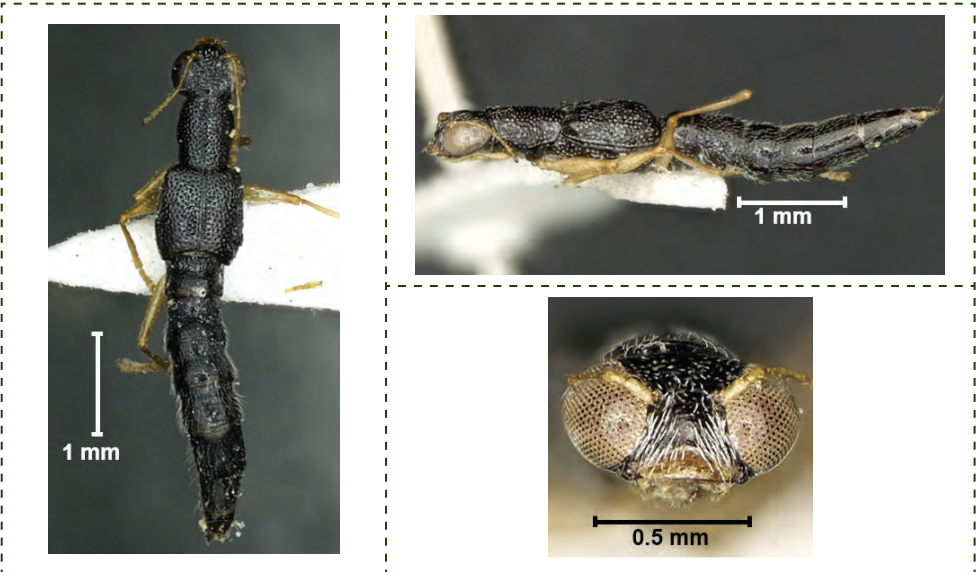


Figure 5.68 *Steninae* sp.01
(*Staphylinidae: Steninae*) Z02_ColSta070

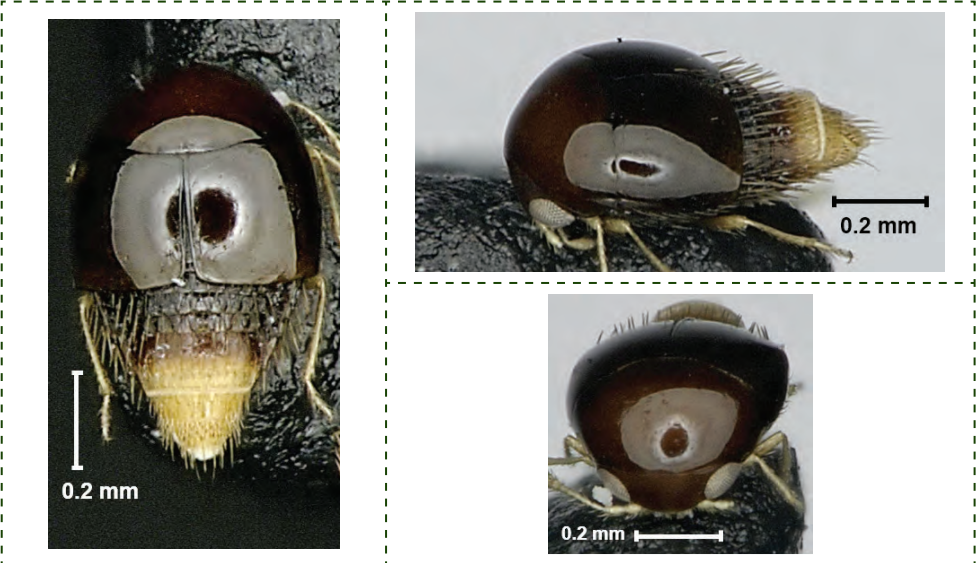


Figure 5.69 *Coproporus* sp.01
(*Staphylinidae: Tachyporinae*) Z02_ColSta002

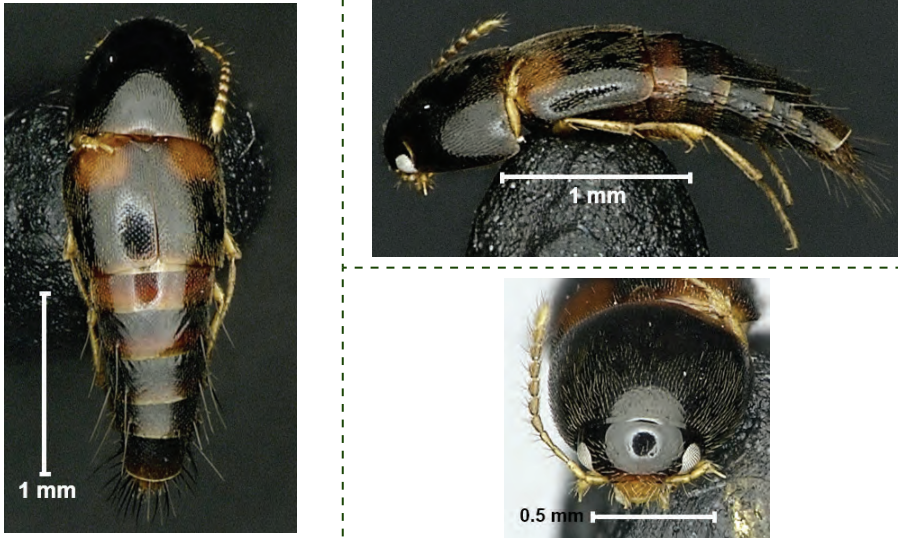


Figure 5.70 *Sepedophilus bisignatus*
(Staphylinidae: Tachyporinae) Z02_ColSta028

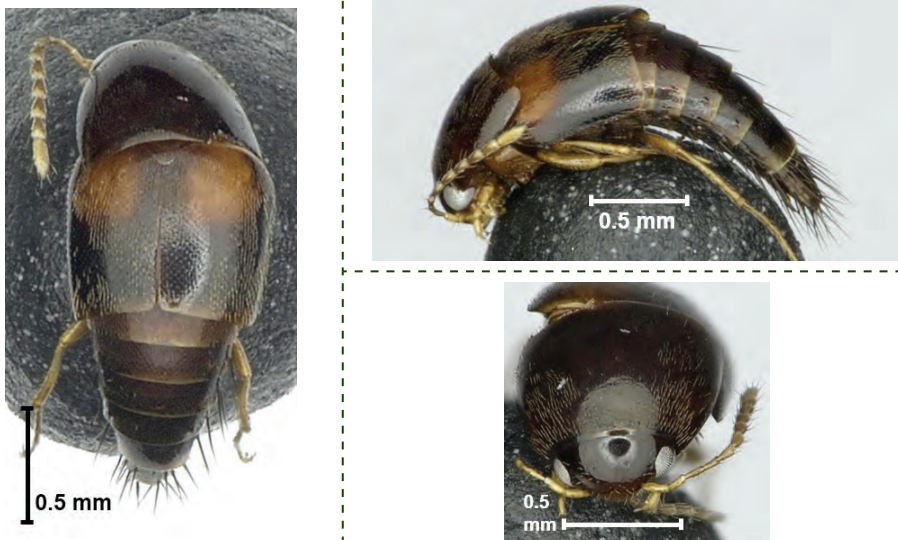


Figure 5.71 *Sepedophilus* sp.01
(Staphylinidae: Tachyporinae) Z02_ColSta037

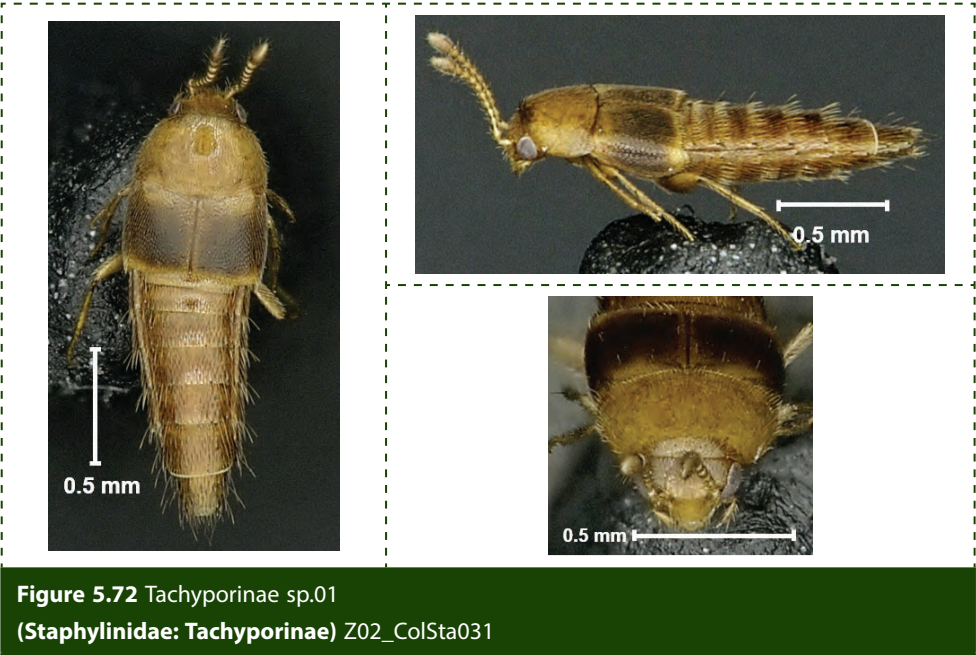


Figure 5.72 Tachyporinae sp.01
(Staphylinidae: Tachyporinae) Z02_ColSta031

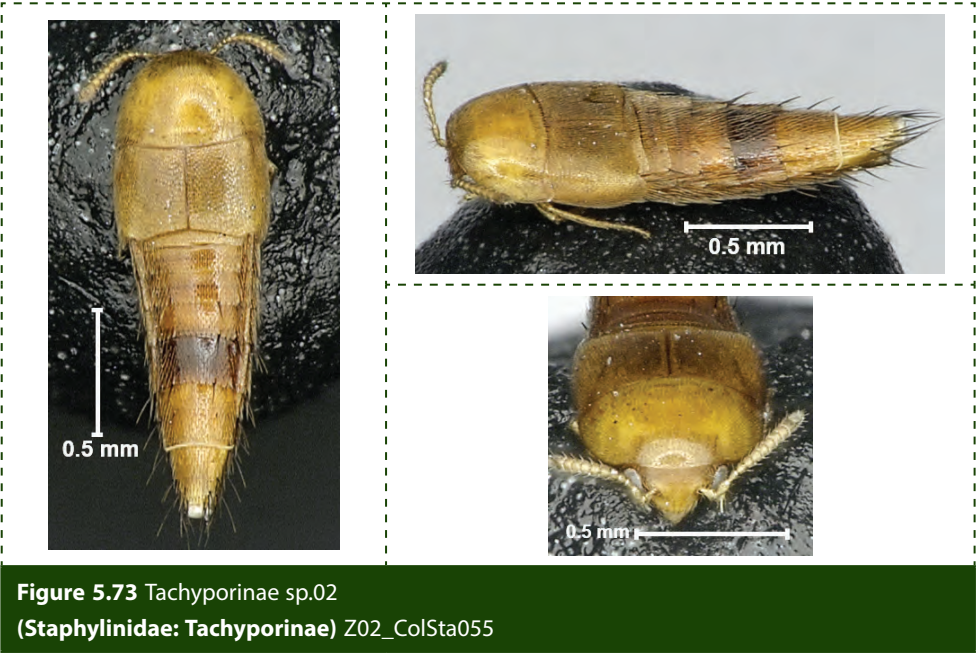


Figure 5.73 Tachyporinae sp.02
(Staphylinidae: Tachyporinae) Z02_ColSta055

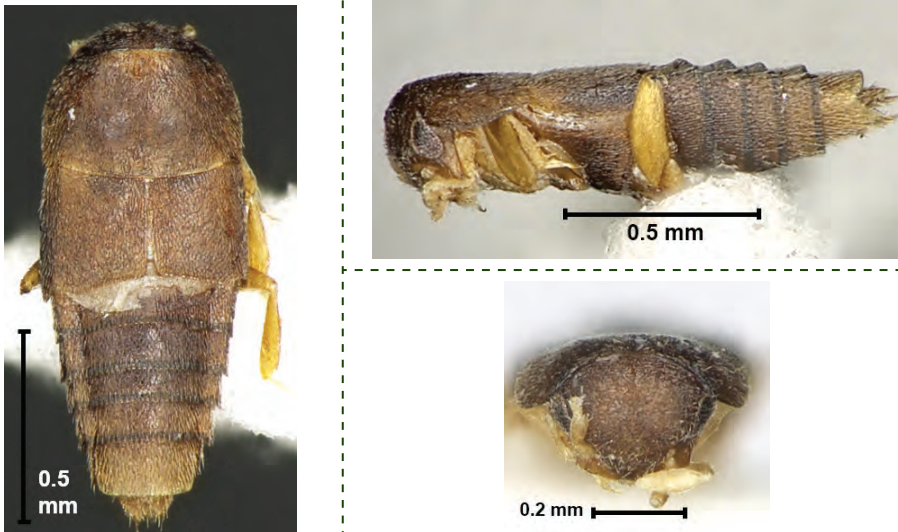


Figure 5.74 Tachyporinae sp.03
(Staphylinidae: Tachyporinae) Z02_ColSta060

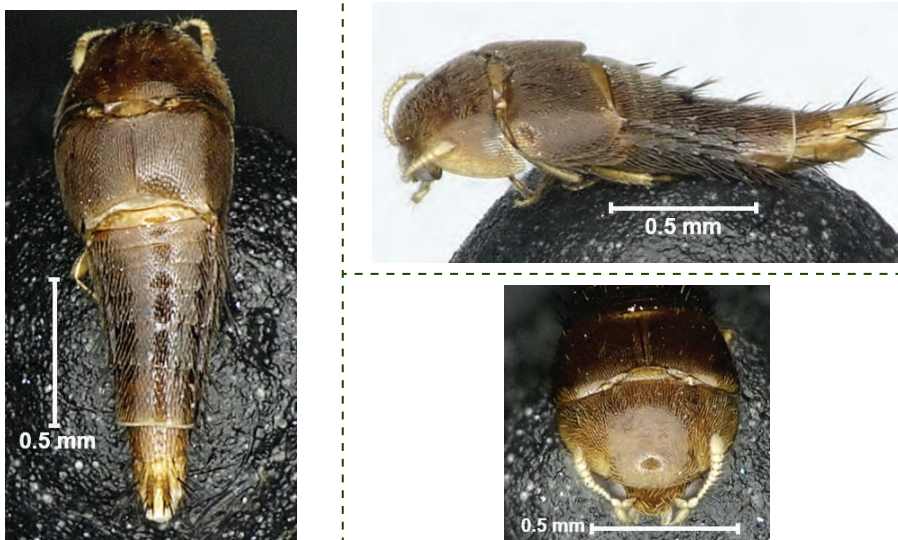


Figure 5.75 Tachyporinae sp.04
(Staphylinidae: Tachyporinae) Z02_ColSta072



Figure by Bona Pakpahan

Buku ini tidak diperjualbelikan.

EPILOGUE

Beetles are insects of the order Coleoptera, which is the largest order of animals with more than 350,000 species worldwide. Beetles are easy to distinguish from other insect groups by their heavily sclerotized forewings called elytra. Beetles can be found in all terrestrial ecosystems of the world, with the exception of the permafrost North and South Poles; even in freshwater and saltwater ecosystems. Beetles interact in ecosystems in a variety of ways: Some consume live and dead plant tissue, fungi, feces or animal remains, while others are predators of eggs, larvae, or adults of other insects. Many phytophagous species of beetles can become pests in agricultural ecosystems. They feed off roots, leaves, flowers, fruits, and stems, either as larvae or adults. Other species can damage stored food items, timber and wooden products, and fabrics. And yet other species of beetles are considered natural enemies that prey on plant pests by consuming aphids, thrips, and other types of insects. Beetles are thus not only one of the most taxonomically rich arthropod orders, but also one with the highest functional diversity by contributing to vital ecosystem services such as decomposition, herbivory, pollination, or seed dispersal.

Indonesia is a tropical country with extensive rainforests which sustain immense biodiversity of flora and fauna, including beetles. However, increasingly more rainforest area is subjected to primary resource extraction such as meat and timber, has to make way for fossil fuel extraction in oil fields or coal mines, or is converted into agricultural systems such as acacia, rubber, or oil palm. All of these ecosystems are inhabited by beetles, of



which the taxonomy, and thus biology, is still mostly unknown. This, however, would be crucial in order to understand the ecological role the individual beetle species play in their respective ecosystems, and how they influence ecosystem functioning and services. The present guide thus represents a first step to understanding the mostly unknown beetle community of Sumatra by providing a taxonomic account of beetle specimen collected within the research framework of CRC990–EForTS in Jambi Province.

Specifically, we focus on the four most abundant and species-rich beetle families of our collection, i.e., the chrysomelid leaf beetles, curculionid weevils, elaterid click beetles and staphylinid click beetles, together comprising more than 500 species from almost 150 genera. By presenting our methods, species lists, identification keys and images, we hope to be of service to entomologists in need of updated identification keys, as well as attract expert and layman taxonomists willing to contribute to species determinations and descriptions, and ecologists interested in biodiversity research and conservation.

REFERENCES

- Aguirre-Tapiero M.P., & Johnson P.J. (2014). A preliminary checklist, classification, and four new country records for the Elateridae (Coleoptera) of Ecuador. *Insecta Mundi* 0350: 1–11.
- Anderson, R. S. (2002). Curculionidae. In *American Beetles, Volume 2*, edited by Arnett, R. H., Thomas, M. C., Skelley, P. E., and Frank, J. H., 722–815. CRC Press.
- Bolmin, O., Duan C., Urrutia, L., Abdulla, A. M., Hazel, A. M., Alleyne, M., Dunn, A. C., & Wissa, A. (2017). Pop! Observing and modeling the legless self-righting jumping mechanism of click beetles. In Mangan, M., Cutkosky, M., Mura, A., Verschure, P., Prescott, T., Lepora, N. (eds) biomimetic and biohybrid systems. *Living Machines 2017. Lecture notes in computer science*, vol 10384. Springer, Cham. https://doi.org/10.1007/978-3-319-63537-8_4.
- Bos, M.M., Steffan-Dewenter, I., & Tscharntke, T. (2007). The contribution of cacao agroforests to the conservation of lower canopy ant and beetle diversity in Indonesia. *Biodivers Conserv* 16: 2429–2444. Doi: 10.1007/s10531-007-9196-0.
- Bouchard, P., Smith, A. B. T., Douglas, H., Gimmel, M. L., Brunke, A. J., & Kanda, K. (2017). Biodiversity of Coleoptera. In: Footitt R. G. and Adler P. H. eds. *Insect Biodiversity: Science and Society*. 2ed. New York, John Wiley & Sons, vol 1, p.337–417.
- Britton, D. (2019). "Beetles: Order Coleoptera". Australian Museum. Accessed October 10, 2021. <https://australian.museum/learn/animals/insects/beetles-order-coleoptera/>
- Calder, A. A. (1996). *Click Beetles: Genera of The Australian Elateridae (Coleoptera)*. CSIRO Publishing.



- Casari, S. A. (2012a). New genera of Dicrepidini from the Neotropical Region (Coleoptera, Elateridae, Elaterinae, Ampedini). *Zootaxa* 3721(2): 143–156.
- Casari, S. A. (2012b). A new species and redescription of three species of *Atractosomus* Lacordaire from Brazil (Elateridae, Elaterinae). *Revista Brasileira de Entomologia* 56(4): 419–430.
- Casari, S. A. (2013). New genera of Dicrepidini from the Neotropical Region (Coleoptera, Elateridae, Elaterinae, Ampedini). *Zootaxa* 3721(2): 143–156.
- Chakraborty, P. & Chakrabarti, S. (2006). A contribution to the fauna of Click-Beetles (Coleoptera: Elateroidea: Elateridae) of West Bengal. *Rec. zool. Surv. India*, Occ. Paper No.254:1–220.
- Chung, A.Y. (2003). *Manual for Bornean Beetle (Coleoptera) Family Staphylinidae Identification*. Darwin Initiative.
- Del, M. & Aguirre-Tapiero, P. (2009). Clave de identificación de géneros conocidos y esperados de Elateridae leach (coleoptera: elateroidea) en Colombia. *Boletín del Museo de Entomología de la Universidad del Valle*. 10(2): 25–35.
- Drescher, J., Rembold, K., Allen, K., Beckschäfer, P., Buchori, D., Clough, Y., Faust, H., Fauzi, A.M., Gunawan, D., Hertel, D., Irawan, B., Jaya, I.N.S., Klarner, B., Kleinn, C., Knohl, A., Kotowska, M.M., Krashevskaya, V., Krishna, V., Leuschner, C., Lorenz, W., Meijide, A., Melati, D., Nomura, M., Pérez-Cruzado, C., Qaim, M., Siregar, I.Z., Steinebach, S., Tjoa, A., Tschardt, T., Wick, B., Wiegand, K., Kreft, H. & Scheu, S. (2016). Ecological and socio-economic functions across tropical land use systems after rainforest conversion. *Philosophical Transactions of the Royal Society B-Biological Sciences* 371: art. 20150275.
- Dogger, J. R. (1959). The Elateridae of Wisconsin: A list of the species found in Wisconsin and keys to the identification of genera of adults and larvae. *Wisconsin Academy of Science, Arts, and Letters*. 48, 103–120.
- Grimaldi, D. & Engel, M. S. (2005). *Evolution of the insects*. Cambridge University Press.
- Hackson, M. (2016). Translated and adapted from Dr. Arved Lompe (2015), Käfer Europas, Elateridae.
- Hangay, G. & Zborowski, P. (2010). *A Guide to the Beetles of Australia*. CSIRO Publishing.
- Hubble, D. (2010). *Keys to the Adults of Seed and Leaf Beetles of the British Isles (Coleoptera: Bruchidae, Orsodacnidae, Megalopodidae, & Chrysomelidae)*. FSC Publications.
- Jacoby, M. (1908). The Fauna of British India, including Ceylon and Burma. Coleoptera: Chrysomelidae Vol 1. Taylor and Francis.
- Johnson, P. J. (2002). Elateridae. In *American Beetles, Volume 2*, edited by Arnett, R. H., Thomas, M. C., Skelley, P. E., and Frank, J. H., 160–173. CRC Press.
- Jolivet, P. (2015). Together with 30 years of Symposia on Chrysomelidae! Memories and personal reflections on what we know more about leaf beetles. *Zookeys* 547:35–61.

- Junggebauer, A., Hartke, T.R., Ramos, D., Schaefer, I., Buchori, D., Hidayat, P., Scheu, S., & Drescher, J. (2021). Changes in diversity and community assembly of jumping spiders (Araneae: Salticidae) after rainforest conversion to rubber and oil palm plantations. *PeerJ* 9: e11012 doi.org/10.7717/peerj.11012.
- Kasmiatun, Nazarreta, R., Hidayat, P., & Buchori, D. (2020a). Diversity and species composition of click beetles (Coleoptera: Elateridae) at different land-use types in Harapan Rainforest landscape, Jambi, Indonesia. *IOP Conference Series: Earth and Environmental Science*. 468: 012015. https://doi.org/10.1088/1755-1315/468/1/-012015.
- Kasmiatun, Nazarreta, R., & Buchori, D. (2020b). Diversity and species composition of elaterid beetles (Coleoptera: Elateridae) in tropical rainforests in Bukit Duabelas National Park and Hutan Harapan, Jambi. *Indonesia Journal of Entomology*. 17(1): 33–44. https://doi.org/10.5994/jei.17.1.33.
- Kimoto, S. & Gressit, J.L. (1979). Chrysomelidae (Coleoptera) of Thailand, Cambodia, Laos and Vietnam. *Pac Ins*. 20: 191–256.
- Lawrence, J. F. & Britton, E. B. (2000). Coleoptera. In *Insect Australia Second Edition Volume II*, 543–683. Melbourne University Press.
- Marvaldi, A. E. & Lanteri, A. A. (2005). Key to higher taxa of South American weevils based on adult characters (Coleoptera: Curculionoidea). *Revista Chilena de Historia Natural*. 78: 65–87.
- Maulik, S. (1936). *The Fauna of British India including Ceylon and Burma. Coleoptera. Chrysomelidae (Galerucinae)*. Taylor and Francais.
- Mohamedsaid, M. S. (2000a). Kumbang daun subfamily Sagrinae (Coleoptera: Chrysomelidae) di Semenanjung Malaysia. *Sains Malaysiana* 18(3): 155–165.
- Mohamedsaid, M. S. (2000b). The Galerucinae beetles from Tibow Sabah (Coleoptera: Chrysomelidae). *Serangga* 5: 309–314.
- Mohamedsaid, M. S. (2001). The Chrysomelid beetles of the subfamily Galerucinae from Bali, Indonesia (Coleoptera: Chrysomelidae). *Serangga* 6(1): 137–169.
- Mohamedsaid, M. S. (2009). Chrysomelidae of the Lesser Sunda Islands: Wallace's Line and the Crossing of Worlds. In: Jolivet, P., Santiago-Blay, J., and Schmitt, M. eds. *Research on Chrysomelidae*. Leiden: Brill, vol 1, p.57–104.
- Najmi, L., Buchori, D., Triwidodo, H., Noerdjito, W. A., & Rizali, A. (2018). Diversity of curculionid beetles at different land-use types in Hutan Harapan landscape, Jambi. *Indonesian Journal of Entomology*. 15(2): 65–73. http://dx.doi.org/10.5994-/jei.15.2.59.
- Nazarreta, R., Buchori, D., Hashimoto, Y., Hidayat, P., Scheu, S., & Drescher, J. (2021). *A Guide to the Ants of Jambi (Sumatra, Indonesia)– Identification key to Ant Genera and Images of the EFForTS collection*. 1st edition. Lembaga Ilmu Pengetahuan Indonesia (LIPI).
- Nazarreta, R., Hartke, T. R., Hidayat, P., Scheu, S., Buchori, D., & Drescher, J. (2020). *Rainforest conversion to smallholder plantations of rubber or oil palm leads to species loss and*



- community shifts in canopy ants (Hymenoptera: Formicidae)*. *Myrmecological News*. 30: 176–186. https://doi.org/10.25849/myrmecol.news_030:175.
- Newton, A. F., Margaret, K., Thayer, Ashe, J. S., & Chandler D. S. (2001). "Staphylinidae." In *American Beetles, Volume 1*, edited by Arnett R. H., and Thomas M. C., 272–418. North America: CRC Press.
- Ribak, G., & Weihs, D. (2011). Jumping without using legs: the jump of the click beetles (Elateridae) is morphologically constrained. *PloS ONE*. 6(6): e20871. <https://doi.org/10.1371/journal.pone.0020871>.
- Riley, E. G., Clark, S. M., Wills Flowers, R., & Gilbert, A. J. (2002). Chrysomelidae. In *American Beetles, Volume 2*, edited by Arnett, R. H., Thomas, M. C., Skelley, P. E., and Frank, J. H., 617–691. CRC Press.
- Siddikah, F., Nazarreta, R., & Buchori, D. (2020). Seasonal abundance of weevils (Coleoptera: Curculionidae) in different land-use types in Hutan Harapan and Bukit Duabelas National Park, Jambi. *Indonesian Journal of Entomology*. 17(3): 113–124. DOI: 10.5994/jei.17.3.113.
- Sprick, P., & Floren, A. (2018). Diversity of Curculionoidea in Humid Rain Forest Canopies of Borneo: A Taxonomic Blank Spot. *Diversity* 10(4): 116. DOI:10.3390/d10040116
- Staphylinidae. UK Beetles. Accessed August 27, 2021. <https://www.ukbeetles.co.uk/staphylinidae>.
- Stibick, J. N. L. (1979). Classificaion of the Elateridae (Coleoptera): Relationships and classification of the subfamilies and tribes. *Journal of Pasific Insect*. 20, 145–186.
- Triplehorn, C. A. & Johnson, N. F. (2005). *Borror and DeLong's Introduction to the study of Insects 7th Edition*. Thompson Brooks/Cole.
- Tottenham, C.E. (1954). *Handbooks for The Identification of British Insects (Coleoptera: Staphylinidae)*. Royal Entomological Society of London.

INDEX

abdomen, 5, 269, 270
Abirus, 13
Adelocera, 223
adults, 2, 270
Agelastica, 14
Agonischius, 224
Agraeus, 223, 224
Agrypninae, 220
Agrypnus, 224
Alaus, 224
Aleocharinae, 272, 273
Alniphagus, 105
Ambrosiodmus, 105
Amercedes, 99
Ampedus, 224
angulate, 222
Anotylus, 273
antenna, 8, 9
antennae, 5, 6, 10, 11, 269, 270
Antennae, 6, 11, 222, 223, 271
anterior, 7, 10, 99, 220, 221, 222
Anthonomus, 102, 103
apex, 8, 9, 10, 11, 97, 98, 222

Aphthona, 12, 14
apical, 9, 11, 98, 222
apically, 10, 11
appendiculate, 8, 9
arcuate, 220, 222
Arthrotus, 14
ascended, 98
Aulacophora, 14
Aulexis, 13

Baridinae, 99, 100
basal, 10, 98, 222, 269
Basilepta, 13
Basiprionota, 12
beetles, 1, 2, 3, 6, 9, 12, 99, 223, 269, 271
bideted, 222
Brachypnoea, 13
Brimoides, 100

Callisina, 13
campodeiform, 269
Cardiophorinae, 221
Cardiophorus, 224



- carina*, 220, 222
carinae, 222
cavity, 9
cerci, 269
Ceutorhynchinae, 100
Ceutorhynchus, 100
Chrysomela, 12
Chrysomelidae, 2
circular, 223
Claws, 6, 8, 9, 220, 221, 222
Cleorina, 13
Clypeus, 222
coalescent, 220
Colaspoides, 9, 13
concave, 219, 221
connate, 98
Conoderinae, 100
convergent, 220
convex, 8, 9, 11, 219, 220
Coproporus, 274
Cossoninae, 101
Cossonus, 101
coxae, 6
Criocerinae, 7
Cryptocephalinae, 8, 13
Cryptorhynchinae, 101, 102
Curculio, 103
Curculioninae, 103
Cynorta, 14

Dactylispa, 12
Dalopius, 225
Dendrometrinae, 221
denominator, 12, 99, 223, 271
de novo, 12, 99, 223, 271
Dercestes, 15
Dermaptera, 269
Dilobitarsus, 224; *Dilobitarsus pendleburyi*, 224
dorsal, 10, 17, 97, 98, 106, 221, 226, 274
dorsoventrally, 269, 271
Dorsum, 8, 9
Doryscus, 15
Dryophthorinae, 104
earwings, 269

Edhapus; *nitidus*, 273
Elaeidobius; *kamerunicus*, 103
Elateridae, 2
Elaterinae, 220, 223
Eleusis, 273
elongate, 6, 10, 11, 98, 99, 220, 222
elytra, 5, 9, 10, 11, 221, 222, 269
Elytra, 6, 10, 11, 220, 221, 222, 223, 270
Elytral, 9, 220, 222
Emathea, 15
Entiminae, 104
epicranial, 269
epipleuron, 9, 10, 11
Esthesopus, 224
Euaesthetinae, 273
Euaesthetus, 273
Eumolpinae, 13
Euplastius, 224
Eurhoptus, 102
Euscepes, 102
Exora, 15

filiform, 9, 221, 222
flattened, 6, 219, 220, 271
frons, 10, 11, 98
frontoclypeal, 222
Funicle, 98

Galerucella, 15
Galerucinae, 11, 15
Gamepenthes, 225
genus, 2
Glyphonyx, 225
groove, 9, 10, 222
Gymnetron, 103

Hemipyxis, 15
Heteroderes, 224
Himatium, 101
Homorosoma, 100
Hoplosoma, 15
humeri, 98
Hypnoidus, 224
hypognathous, 219

- Hypothenemus*, 105
Intraocular, 222

labrum, 10
lamellae, 222
larvae, 2, 5
lateral, 98, 221, 222
leaf beetles, 1, 5
Lema, 12
Lexiphanes, 13
Lilioceris, 12
Linnéan, 12, 99, 223, 271
Lissominae, 221
Lissomus, 221, 226
Lixinae, 104
Lixus, 104
lobes, 97, 221
Longitarsus, 15
Luperaltica, 15
Luperoides, 15

mammals, 269
Mandibles, 222
maxillary palp, 222
maxillary palps, 271
Megalopsidiinae, 271, 273
Megapenthes, 225
Melanotinae, 222
Melanotus, 222, 226
Melixanthus, 13
membrane lobes, 221, 222
mesepimeron, 221, 222
Mesepisternum, 221
Mesocoxae, 222
mesocoxal, 221
Mesosternal, 221
mesosternum, 8, 10, 98
metasternal, 221
metasternum, 10, 98
Mimastra, 15
Molytinae, 104, 105
Monolepta, 15, 16
morphospecies, 2, 3, 12, 17, 95, 99, 106, 223, 226, 271, 272, 274
Mulsanteus, 225

muzzle, 6
Myloccerus, 104
Nacaeus, 273
Negastriinae, 222
Nesaecrepida, 16
Nodina, 13
Notolomus, 103
Notosacantha, 12

oblique, 222
Oides, 16
Omaliinae, 273
Orchestes, 104
Osoriinae, 273
Osorius, 273
ovate, 9, 11
Oxytelinae, 273

Pachnephorus, 13
Pachyderes, 225
Pachynonychus, 16
Paederinae, 273
Pagria, 14
Palaminus, 273
Paleosepharia, 16
Paracalais, 224
paratergite, 271
Parchicola, 16
pectinate, 220, 222
pests, 2
Philonthus, 274
Phloeophagus, 101
Phratora, 12
Phydanis, 16
Phyllobrotica, 16
Phyllotreta, 12, 16
phytophagous, 2, 5
Phytorus, 14
Piestinae, 273, 274
Plastus, 273
Platypodinae, 105
Platypus, 105
Plazycorynus, 14
pollens, 5
Polychalca, 12



- posterior*, 8, 9, 10, 223
- posteriorly*, 9
- Pregular suture*, 97
- procoxae*, 222
- Procoxal*, 222
- proepisterna*, 8
- proepisternum*, 222
- prognathous*, 219
- pronotum*, 5, 6, 8, 10, 11, 97, 98, 220, 221, 222, 223, 269, 270
- Prosternal*, 220, 222
- Prosternum*, 7, 8
- prothorax*, 7, 8, 9
- Pselaphinae*, 274
- Pseudonetoxis*, 14
- Pseudopiomera*, 14
- Psylliodes*, 16
- pubescence*, 10
- pubescent*, 220
- punctures*, 6, 9, 10
- pygidium*, 10
- quadrate*, 11
- Quasimus*, 226
- repose*, 98
- Rhinoncus*, 100
- Rhynchophorus*, 104
- robust*, 8
- rostrum*, 97, 98
- Rostrum*, 98, 99
- rove beetles*, 1, 269
- rugosities*, 9, 10
- sclerotized*, 270
- Scolytinae*, 105, 106
- Scolytogenes*, 106
- Scutellum*, 6, 7, 220, 221
- Scydmaeninae*, 274
- Senodonia*, 224
- Sepedophilus; bisignatus*, 274
- Sermylassa*, 16
- serrate*, 6, 222
- setae*, 98, 220, 221
- Setae*, 221
- Simodactylus*, 225
- Sinoluperus*, 16
- Sitophilus*, 104
- species*, 1, 5, 11, 12, 17, 99, 106, 221, 223, 226, 269, 271, 272, 274
- Sphaeroderma*, 11, 16
- spongiose*, 222
- Staphylinidae*, 2
- staphyliniform*, 269
- Staphylininae*, 274
- Steninae*, 274
- sternit*, 6
- sternite*, 6
- striae*, 220
- subcircular*, 223
- subcontiguous*, 98
- subfamilies*, 2
- subquadrate*, 8, 10, 98
- sulcus*, 8, 9
- Sumatrasia*, 16, 17
- Supra-antennal*, 222
- suture*, 10, 97, 221
- sutures*, 220
- Tachyerges*, 104
- Tachyporinae*, 274
- Tarsal*, 7, 220, 221, 222
- Tarsi*, 270, 271
- tarsus*, 9, 10, 11, 223
- Taumacera*, 11, 17
- Theopea*, 17
- Thoracoporus*, 273
- Thorax*, 323
- tibia*, 8, 9, 10, 11, 98
- Treptoplatypus*, 105
- Trichochrysea*, 14
- tridentate*, 222
- true weevils*, 1
- truncated*, 98
- tubercles*, 10, 220
- Tychius*, 104
- Variolose*, 323
- ventral*, 97, 98, 220, 221
- Ventriles*, 323

Weevils, 95

Xanthonia, ix, 8, 14, 44, 323

Xanthopenthes, 223, 225, 261, 262, 263,
323

Xenoda, 17, 92, 323

Zascelis, 102, 159, 323

Zeugophorinae, 323

Zorochrus, 226



Buku ini tidak diperjualbelikan.

Foto: Jochen Drescher

ABOUT THE AUTHORS



Purnama Hidayat

Dr. Purnama Hidayat is a lecturer at the Division of Entomology, Department of Plant Protection, Faculty of Agriculture, IPB University. He is also the head of Insect Teaching and Research Collection in the department. His research interests are on insect biodiversity and taxonomy, especially agricultural and beneficial insects. He is also interested in the integrated pest management (IPM) of

agricultural pests. He got his Bachelor's degree in the Department of Plant Protection, IPB University, Indonesia in 1985. He earned his Master's degree in the Department of Entomology, University of Wisconsin-Madison, the USA in 1992 and earned his Doctorate degree from the same university in 1996.

E-mail: phidayat@apps.ipb.ac.id



Fatimah Siddikah

Fatimah Siddikah is a research assistant for the CRC990/EFForTS group Z02. She earned her Bachelor's degree in the Department of Plant Protection, IPB University, Indonesia in 2017. Now she's working in UPTD BTPH Dinas Tanaman Pangan dan Hortikultura Provinsi Jawa Barat. She is interested in beetles and published a paper about the diversity and community composition of weevils (Coleoptera: Curculionidae) specifically in oil palm and rubber plantation in the Indonesian Journal of Entomology (Siddikah et al., 2020).

E-mail: fatimah.siddikah@yahoo.com



Kasmiatun

Kasmiatun currently works as a research assistant for the CRC990/EFForTS group Z02. She earned her Bachelor's degree in the Department of Plant Protection, IPB University, Indonesia in 2018. She is interested in beetles and published a paper about the diversity and community composition of click beetles (Coleoptera: Elateridae) in the IOP Conference Series (Kasmiatun et al., 2020a) and Indonesian Journal of

Entomology (Kasmiatun et al., 2020b).

E-mail: kasmiatun15@gmail.com



Woro Anggraitoningsih Noerdjito

Prof. Woro Anggraitoningsih Noerdjito is a researcher in the Laboratory of Entomology, Zoology Division, Research Center for Biology, Indonesian Institute of Sciences, Cibinong West Java, Indonesia. Her research interests are entomology, insect ecology, and beetles. She has indeterminate many journals and books relating to beetles, ecology, diversity, and many more. She earned her bachelor's degree in Faculty of Biology Gadjah Mada University, in 1973, then continued in Biology from Faculty of Mathematics and Natural Sciences Indonesia University, 1998. After that, she earned her Ph. D's in Insect Ecology from Kanazawa University, Japan in 1998. She holds a Professor's of research in 2006.

E-mail: woronoerdjito@yahoo.com



Rosyid Amrulloh

Rosyid Amrulloh currently works as a journalist in Public Relations Department, IPB University. He is also a staff of Multimedia in the Center for Transdisciplinary and Sustainability Sciences (CTSS), IPB University. His undergraduate research was about the leaf beetles (Chrysomelidae) from CRC990/EFForTS samples. He earned his Bachelor's degree in the Department of Plant Protection, IPB University, Indonesia in 2020.

E-mail: rosyid_45@apps.ipb.ac.id



Muhammad Syaifullah Hiola

Muhammad Syaifullah Hiola has been a research assistant of CRC990/EFForTS group Z02. He studied Agrotechnology at Gorontalo University, Indonesia from 2010-2014. Then continued his Master's degree in Entomology Department, IPB University, Indonesia in 2015-2019. He has an interest in beetles and his thesis was about the abundance, richness, and community composition of rove beetles (Coleoptera: Staphylinidae).

E-mail: syaifullahhiola@gmail.com



Lailatun Najmi

Lailatun Najmi was a research assistant of the CRC990 - EForTS research project Z02. She earned her Bachelor's degree in the Department of Biology, Faculty of Mathematics and Natural Sciences, Andalas University, Indonesia in 2012. She then pursued her Master's degree at the Entomology Department, IPB University, Indonesia from 2013 to 2017. She also is interested in beetles and authored a paper about

weevils (Coleoptera: Curculionidae), specifically their diversity and community composition (Najmi et al., 2018).

E-mail: laila.najmi88@gmail.com



Rizky Nazarreta

Rizky Nazarreta is a research assistant for the CRC990/ EFForTS group Z02. She earned her Bachelor's degree in the Department of Plant Protection, IPB University, Indonesia in 2012. She then continued her Master's degree in Entomology Department, IPB University, Indonesia in from 2014 to 2017. During her thesis, Rizky focused on canopy ants and was the first author on a paper and a field guide to the canopy ants of

Jambi Province (Nazarreta et al., 2019; Nazarreta et al., 2020).

E-mail: rizky.nazarreta@yahoo.com



Stefan Scheu

Prof. Stefan Scheu is the head of the Animal Ecology Group, JFB-Institute for Zoology and Anthropology, University of Göttingen, Germany. He is interested in the diversity, ecology and evolution of soil animals, decomposer communities, rhizosphere ecology, and food web ecology. He earned his Diploma in Biology at the University of Göttingen. Then continued as a Postdoc at the JFB-Institute for Zoology and Anthro-

pology, University of Göttingen and at the University of Calgary, Canada. In 1997 he was appointed as Professor of Zoology and Ecology at Darmstadt University of Technology, Germany. Since 2008, he holds the Chair in Animal Ecology at the University of Göttingen.

E-mail: sscheu@gwdg.de



Damayanti Buchori

Prof. Damayanti Buchori is a lecturer at the Department of Plant Protection, Faculty of Agriculture, IPB University. She is also the Head of Biological Control Laboratory at the Department of Plant Protection and Head of the Center for Transdisciplinary and Sustainability Sciences (CTSS), IPB University. She was featured as one of the Inspirational Women's Scientists in Asia by the Academic Association and

Scientific Society in Asia in 2018. Her research interests lie in the interphase of conservation-agricultural issues with a special focus on insect diversity and land-use change, biological control, pollination ecology, and sustainability sciences. She is also active in work related to science-based policies. She began her Bachelor's education in the Department of Pest and Plant Diseases, IPB University, Indonesia in 1984 and received her Master's from the Entomology Department, University of Illinois, the USA in 1989. In 1993, she received her Ph.D. from the Biology Department, Indiana University, USA. She holds a Professor of Entomology and Plant Pests since 2014.

E-mail: damayanti@apps.ipb.ac.id



Jochen Drescher

Dr. Jochen Drescher is a postdoctoral researcher at the Department of Animal Ecology, Faculty of Biology and Psychology, Göttingen University, Germany. Jochen Drescher started his studies at the RWTH Aachen, Germany, earning his pre-diploma in 2003. In 2006, he received his full diploma from the Department of Animal Ecology and Tropical Biology, Würzburg University, Germany, where he also completed his doctoral studies in 2011. After an interim position at the Department of Animal Ecology I, Bayreuth University, Germany, he joined the EForTS project at Göttingen University in mid-2012 as a postdoctoral research fellow.

E-mail: jochen.drescher@biologie.uni-goettingen.de



Buku ini tidak diperjualbelikan.



Buku ini tidak diperjualbelikan.

Image by Bona Pakpahan

Guidebook of Beetles and Weevils of Jambi, Sumatra, Indonesia

(Chrysomelidae, Curculionidae, Elateridae, and Staphylinidae)

Indonesia is known to be the home of an incredibly biodiverse fauna, with thousands and thousands of amazing animal species. This is particularly true for the Arthropoda, which is the phylum of multi-legged invertebrates such as insects, spiders, scorpions, centipedes, and millipedes. Despite continuous taxonomic efforts to systematically describe and name newly discovered species, most Indonesian arthropods remain unknown to science.

This book, as a product of the intensive collaboration between the Department of Plant Protection at IPB University and the Department of Animal Ecology at University of Göttingen within the EFForTS project, is aimed at the nexus between ecological research and taxonomical discovery. Through cooperative publication with BRIN Publishing, this book focuses on four major beetle families from Jambi Province in the heart of Sumatra, containing ecological background, identification keys to subfamily and genera, and a photographic collection of more than 500 thus far mostly undocumented species encountered in lowland rainforest and plantations of rubber and oil palm. Despite boasting highly biodiverse ecosystems, taxonomic discoveries from Jambi Province have thus far been virtually nonexistent, which this book aims to alleviate.

The publication of this book is thus greatly hoped to provide a useful tool and reference for beetle identification species descriptions from the region, and helps to boost the limited number of identification books about arthropods, especially beetles, in Indonesia.

Happy reading!



Published by:
BRIN Publishing
Directorate of Repositories, Multimedia, and Scientific Publishing
Gedung BJ Habibie, Jln. M.H. Thamrin No. 8,
Kb. Sirih, Kec. Menteng, Kota Jakarta Pusat,
Daerah Khusus Ibukota Jakarta 10340
Whatsapp: 0811-8612-369
E-mail: penerbit@brin.go.id
Website: penerbit.brin.go.id

DOI: 10.55981/brin.321



ISBN 978-623-7425-70-0



9 786237 425700

Buku ini tidak diperjualbelikan.