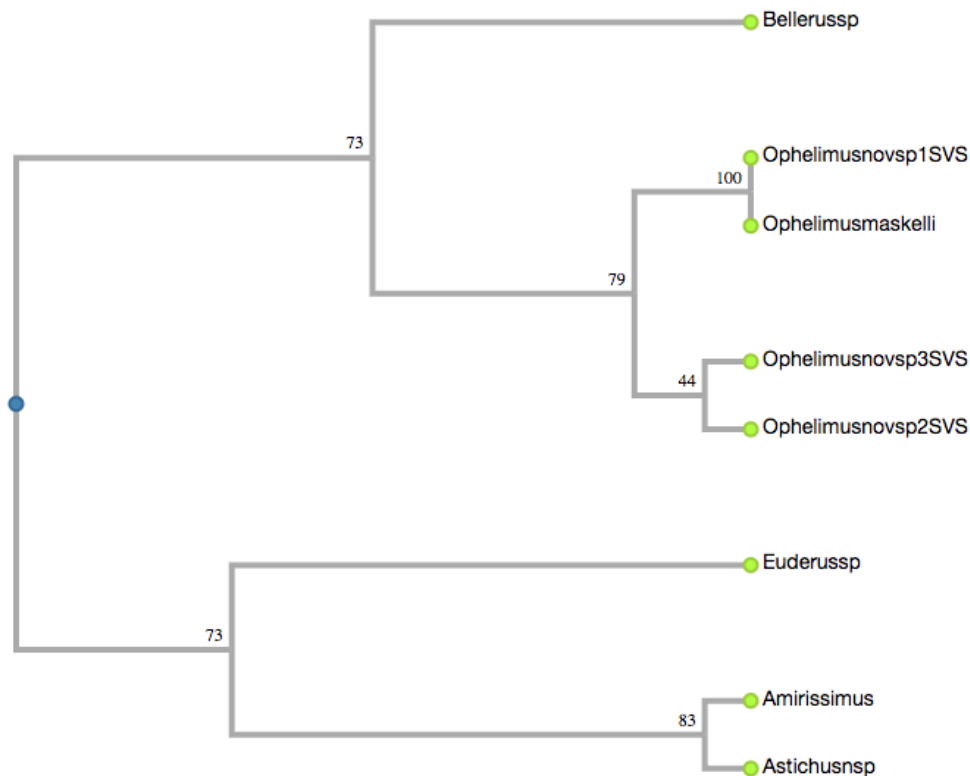


1 **Table S1.** Characters used for the morphological description of *Ophelimus* detected in Chile,
2 according to Burks et al. (2011),.

N°	Character	Code
1	Number of flagellomeres	Number or a letter from 6 to C (=12)
2	Number of separate claval segments in females	1 to 4
3	Shape of flagellomeres in males	0 = cylindrical and without branches
		1 = nodose, with a rounded expanded section bearing elongate setae
		2 = bearing two or three branches
		3 = cylindrical apically but with a slight basal expansion.
4	Shape of basiconic peg sensilla of flagellum	0 = symmetrical
		1 = slightly asymmetrical, angular
		2 = strongly asymmetrical, spearshaped
5	Carinae of pedicel:	0 = absent
		1 = present
6	Sulcus across vertex between median and lateral ocelli	0 = absent
		1 = present
7	Vertex posterior carina	0 = absent
		1 = present
8	Transverse facial sulcus	0 = absent
		1 = present and adjacent to the median ocellus
		2 = separated from the median ocellus by at least the diameter of the median ocellus
9	Subtorular grooves	0 = absent
		1 = present, extending from ventral edge of torulus
		2 = present, extending from lateral edge of torulus
10	Delimitation of clypeus:	0 = delimited at least by lateral grooves
		1 = not delimited
11	Clypeus width:	0 = not enlarged, width less than malar space (Fig. 20: cly); 1 enlarged, width greater than or equal to malar space (Fig. 21: cly).
12	Pronotal collar carina:	0 = absent
		1 = present
13	Semicircular ridge of pronotum laterally:	0 = absent
		1 = present
14	External completeness of notauli posteriorly	0 = reaching trans-scutal articulation
		1 = not reaching trans-scutal articulation, essentially absent
15	Pairs of mesoscutal midlobe bristles	Coded using the actual number, from 0 to 3 except that 3 includes counts of 3 or greater
16	Advancement of axillae	0 = dorsal axillar surface not completely advanced beyond anterior margin of scutellar disc

N°	Character	Code
		1 = dorsal axillar surface completely advanced beyond anterior margin of scutellar disc
17	Pairs of scutellar disc setae	From 1 to 3 except that 3 includes counts of 3 or greater. 0 = absent
18	Scutellar grooves	1 = present as a U-shaped groove open anteriorly 2 = present as parallel grooves open both anteriorly and posteriorly
19	Pit along scuto-scutellar sulcus between axilla and scutellar disc	0 = absent. 1 = present.
20	Propleura	0 = posterior margins diverging angularly along prosternum 1 = posterior margins transverse, diverging at right angles at prosternum.
21	Mesepisternal projection over posterior margin of prepectus	0 = absent 1 = present
22	Expansion of mesepimeron over metapleuron	0 = mesepimeron not expanded over metapleuron 1 = mesepimeron expanded, overlapping metapleuron
23	Median carina of propodeum	0 = not flattened dorsally 1 = flattened dorsally
24	Setae of propodeal disc	0 = not curving mesad 1 = curving mesad
25	Protibial spur (=calcar)	0 = stout and curved 1 = slender and straight
26	Number of tarsomeres in fore leg	from 3 to 5.
27	Number of tarsomeres in mid leg compared with fore leg in males	0 = same; 1 = one less
28	Submarginal vein setae	where 3 includes counts of 3 or greater
29	Postmarginal vein length	0 = more than onethird stigmal vein length 1 = less than or equal to one-third stigmal vein length
30	Epipygium (Mt9) in females	0 = separate from Mt8 1 = fused with Mt8, forming a syntergum
31	Number of volsellar digital spines	1 = 1 volsellar spine; 2 = 2 or more volsellar spines



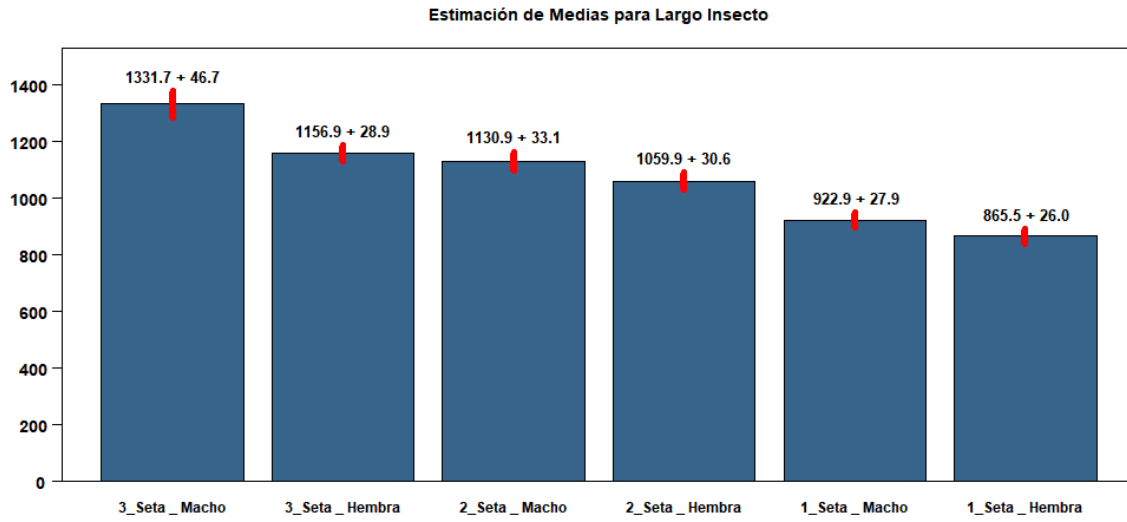
Numbers at each node represent bootstrap values (over 100)

Figure S1. Location of *Ophelimus nov sp*, Chile, in dendrogram made from the characters according to Burks 2011.

Table S2. Length of the sub marginal vein of *Ophelimus migdanorum nov sp*, both of 1, 2 and 3 SVS.

Ophelimus	Genero	Media_Submarg_VenaAla	
3_Seta	Male	300.1 (±14.7)	a
3_Seta	Female	245.6 (±13.3)	b
2_Seta	Female	245.3 (±09,0)	b
2_Seta	Male	241.2 (±12.7)	bc
1_Seta	Male	225.8 (±04.4)	bc
1_Seta	Female	213.5 (±06.4)	c
Media	General	245.2 (±10.1)	

Values in parentheses indicate standard error. The different letters indicate statistically significant differences between mean parasitism levels per locality within the same year of evaluation ($p \leq 0.05$). In table Note the difference in size according to the amount of SVS.



11

12

Figure S2. Length of insects for males and females with 1, 2 and 3 mushrooms in the SVS.

Table S3. Dimensions of morphological structures for individuals of *Ophelimus migdanurum* nov sp, of 1, 2 and 3 setae.

Resumen 1 setae	Body Length		Weing length		Submarginal vein length		Abdomen length		Flagelo length	
	Female	Macle	Female	Male	Female	Male	Female	Male	Female	Male
Average	865.47	922.93	768,52	787,47	213,46	225,79	409,53	430,07	205,79	169,58
Desviation	100.87	108.20	74,24	41,02	24,76	16,86	57,23	45,25	75,56	12,71
Coef	0.12	0.12	0,10	0,05	0,12	0,07	0,14	0,11	0,37	0,07
Máximo	1105.00	1124.00	888,58	859,78	264,38	250,00	548,00	503,00	363,07	185,07
Mínimo	712.00	781.00	641,00	690,45	166,00	191,00	331,00	345,00	142,00	146,89
Moda	845.00	878.00	888,58	815,00	222,14	228,84	363,00	408,00	363,07	146,89
Median	857.00	878.00	792,00	794,00	214,00	225,14	415,00	427,00	174,00	172,00
Resumen 2 setae	Female	Macle	Female	Male	Female	Male	Female	Male	Female	Male
Average	1059.93	1130.93	874,95	900,46	245,28	241,20	512,00	547,07	188,17	194,33
Desviation	118.45	128.06	65,67	99,59	34,88	49,04	58,94	66,40	15,88	20,04
Coef	0.11	0.11	0,08	0,11	0,14	0,20	0,12	0,12	0,08	0,10
Máximo	1253.00	1346.00	998,00	1.046,98	294,60	311,00	583,00	672,00	217,00	237,09
Mínimo	846.00	945.00	791,00	713,00	190,00	161,00	383,00	456,00	167,00	160,00
Moda	1016.00	1028.00	806,00	957,19	294,60	238,82	554,00	473,00	200,00	194,71
Median	1018.00	1140.00	871,00	911,00	240,00	257,00	523,00	536,00	186,00	189,50
3 setae	Female	Macle	Female	Male	Female	Male	Female	Male	Female	Male
Average	1156.93	1331.67	933,97	1.075,01	245,63	300,10	568,67	627,07	181,82	221,16
Desviation	111.96	180.78	102,87	191,83	51,34	56,84	82,18	75,37	8,35	38,10
Coef	0.10	0.14	0,11	0,18	0,21	0,19	0,14	0,12	0,05	0,17
Máximo	1413.00	1841.00	1.089,00	1.513,00	373,32	384,00	700,00	780,32	195,00	336,10
Mínimo	930.00	1118.00	755,00	837,00	189,00	217,00	389,00	509,00	162,00	184,00
Moda	1211.00	1339.00	984,67	1.120,60	189,00	322,57	677,00	702,67	181,00	213,51
Median	1134.00	1318.00	911,00	1.017,59	238,00	316,35	564,00	631,79	182,00	217,26

Table S4. Provision of the Holotype, alotype and paratypes, of *Ophelimus migdanorum* nov sp.

Serie Tipo	N°	Género	Región	Provincia	Comuna	Predio	Fecha	Montaje	Museo
Holotipo	1	Hembra	Biobío	Ñuble	Chillán Viejo	San Vicente	09.2017	Puntilla	UCCC
Alotipo	1	Macho	Biobío	Ñuble	Chillán Viejo	San Vicente	09.2017	Puntilla	UCCC
Paratipo	3	Hembras	Valparaíso	Valparaíso	Casa Blanca	Rosario	10.2017	1 Puntilla	MNHN
	2	Machos						2 Glicerina	MIPlagas
	2	Machos	O'Higgins	Cardenal Caro	Litueche	Sierramar	12.2017	Puntilla	UCCC
	2	Machos	O'Higgins	Cardenal Caro	Litueche	Sierramar	12.2017	Puntilla	UCCC
	3	Hembras	Maule	Cauquenes	Cauquenes	San Eduardo	11.2017	Glicerina	MIPlagas
	1	Macho						Puntillas	MNHN
	2	Hembras	Biobío	Ñuble	Chillán Viejo	Los Crisoles	03.2017	Glicerina	MNHN
	2	Machos						Glicerina	MNHN
	3	Hembras	Araucanía	Cautín	Nueva Imperial	San Carlos	11.2017	Glicerina	MNHN

Table S5. Analyzed COI sequences.

Matrix	Genbank Signs	Identity
AUSCL414-12 Eulophidae COI-5P	AUSCL414-12 Eulophidae COI-5P	Ophelimus Australia
AUSCL774-12 Eulophidae COI-5P	AUSCL774-12 Eulophidae COI-5P	Ophelimus Australia
AUSCL782-12 Eulophidae COI-5P	AUSCL782-12 Eulophidae COI-5P	Ophelimus Australia
Astichus sp. D0693 HM365048.1	HM365048.1 Astichus sp. D0693	Outgroup
Bellerus sp. D2028 HM365049.1	HM365049.1 Bellerus sp. D2028	Subtribu Eutiineae
Euderus sp. BOLD-2016 KR802660.1	KR802660.1 Euderus sp. BOLD-2016 voucher BIOUG01330-F01	Subtribu Eutiineae
Euderus sp. D0703 HM365047.1	HM365047.1 Euderus sp. D0703	Subtribu Eutiineae
HM374819.1	HM374819.1 Euderus sp. BBHYM381-09	Subtribu Eutiineae
HM414503.1	HM414503.1 Euderus sp. BBHEC936-10	Subtribu Eutiineae
JX096404.1	JX096404.1 Ophelimus maskelli isolate 3755	
JX096405.1	JX096405.1 Ophelimus maskelli isolate 3756	<i>Ophelimus maskelli</i> Genbank
JX096406.1	JX096406.1 Ophelimus maskelli isolate 6552	Ophelimus maskelli Genbank
JX096407.1	JX096407.1 Ophelimus maskelli isolate 6553	Ophelimus maskelli Genbank
JX096408.1	JX096408.1 Ophelimus maskelli isolate 6554	Ophelimus maskelli Genbank
JX096409.1	JX096409.1 Ophelimus maskelli isolate 6555	Ophelimus maskelli Genbank
JX096410.1	JX096410.1 Ophelimus maskelli isolate 6557	Ophelimus maskelli Genbank
JX096411.1	JX096411.1 Ophelimus maskelli isolate 6558	Ophelimus maskelli Genbank
JX096412.1	JX096412.1 Ophelimus maskelli isolate 6560	Ophelimus maskelli Genbank
JX096413.1	JX096413.1 Ophelimus sp. NR-2012 isolate 3739	<i>Ophelimus mediterraneus</i>

Matrix	Genbank Signs	Identity
JX096416.1	JX096416.1 <i>Ophelimus</i> sp. NR-2012 isolate 3745	<i>Ophelimus mediterraneus</i>
JX096417.1	JX096417.1 <i>Ophelimus</i> sp. NR-2012 isolate 3746	<i>Ophelimus mediterraneus</i>
JX096418.1	JX096418.1 <i>Ophelimus</i> sp. NR-2012 isolate 6533	<i>Ophelimus mediterraneus</i>
JX096419.1	JX096419.1 <i>Ophelimus</i> sp. NR-2012 isolate 6534	<i>Ophelimus mediterraneus</i>
JX096420.1	JX096420.1 <i>Ophelimus</i> sp. NR-2012 isolate 6535	<i>Ophelimus mediterraneus</i>
JX096421.1	JX096421.1 <i>Ophelimus</i> sp. NR-2012 isolate 6536	<i>Ophelimus mediterraneus</i>
JX096422.1	JX096422.1 <i>Ophelimus</i> sp. NR-2012 isolate 6537	<i>Ophelimus mediterraneus</i>
JX096423.1	JX096423.1 <i>Ophelimus</i> sp. NR-2012 isolate 6538	<i>Ophelimus mediterraneus</i>
JX096424.1	JX096424.1 <i>Ophelimus</i> sp. NR-2012 isolate 6540	<i>Ophelimus mediterraneus</i>
JX096425.1	JX096425.1 <i>Ophelimus</i> sp. NR-2012 isolate 6541	<i>Ophelimus mediterraneus</i>
JX096426.1	JX096426.1 <i>Ophelimus</i> sp. NR-2012 isolate 6542	<i>Ophelimus mediterraneus</i>
JX096427.1	JX096427.1 <i>Ophelimus</i> sp. NR-2012 isolate 6544	<i>Ophelimus mediterraneus</i>
JX096428.1	JX096428.1 <i>Ophelimus</i> sp. NR-2012 isolate 6545	<i>Ophelimus mediterraneus</i>
JX096429.1	JX096429.1 <i>Ophelimus</i> sp. NR-2012 isolate 6546	<i>Ophelimus mediterraneus</i>
JX096430.1	JX096430.1 <i>Ophelimus</i> sp. NR-2012 isolate 6547	<i>Ophelimus mediterraneus</i>
JX096431.1	JX096431.1 <i>Ophelimus</i> sp. NR-2012 isolate 6549	<i>Ophelimus mediterraneus</i>
JX096432.1	JX096432.1 <i>Ophelimus</i> sp. NR-2012 isolate 6551	<i>Ophelimus mediterraneus</i>
JX096433.1	JX096433.1 <i>Ophelimus</i> sp. NR-2012 isolate 6562	<i>Ophelimus mediterraneus</i>
JX096434.1	JX096434.1 <i>Ophelimus</i> sp. NR-2012 isolate 6564	<i>Ophelimus mediterraneus</i>

Matrix	Genbank Signs	Identity
JX096435.1	JX096435.1 <i>Ophelimus</i> sp. NR-2012 isolate 6565	<i>Ophelimus mediterraneus</i>
JX096436.1	JX096436.1 <i>Ophelimus</i> sp. NR-2012 isolate 6566	<i>Ophelimus mediterraneus</i>
JX096437.1	JX096437.1 <i>Ophelimus</i> sp. NR-2012 isolate 6569	<i>Ophelimus mediterraneus</i>
JX096438.1	JX096438.1 <i>Ophelimus</i> sp. NR-2012 isolate 6569	<i>Ophelimus mediterraneus</i>
JX096439.1	JX096439.1 <i>Ophelimus</i> sp. NR-2012 isolate 6571	<i>Ophelimus mediterraneus</i>
JX096440.1	JX096440.1 <i>Ophelimus</i> sp. NR-2012 isolate 6572	<i>Ophelimus mediterraneus</i>
JX096441.1	JX096441.1 <i>Ophelimus</i> sp. NR-2012 isolate 6573	<i>Ophelimus mediterraneus</i>
JX096442.1	JX096442.1 <i>Ophelimus</i> sp. NR-2012 isolate 6574	<i>Ophelimus mediterraneus</i>
JX096443.1	JX096443.1 <i>Ophelimus</i> sp. NR-2012 isolate 6575	<i>Ophelimus mediterraneus</i>
JX096444.1	JX096444.1 <i>Ophelimus</i> sp. NR-2012 isolate 6577	<i>Ophelimus mediterraneus</i>
JX096445.1	JX096445.1 <i>Ophelimus</i> sp. NR-2012 isolate 6578	<i>Ophelimus mediterraneus</i>
JX096446.1	JX096446.1 <i>Ophelimus</i> sp. NR-2012 isolate 6579	<i>Ophelimus mediterraneus</i>
KR787323.1	KR787323.1 <i>Euderus</i> sp. BOLD-2016 voucher 08BBHYM-1515	Subtribu Eutiineae
KR787784.1	KR787784.1 <i>Euderus</i> sp. BOLD-2016 voucher BIOUG16937-G07	Subtribu Eutiineae
KR791285.1	KR791285.1 <i>Euderus</i> sp. BOLD-2016 voucher BIOUG04552-E05	Subtribu Eutiineae
KR792605.1	KR792605.1 <i>Euderus</i> sp. BOLD-2016 voucher BIOUG01330-B02	Subtribu Eutiineae
KR800427.1	KR800427.1 <i>Euderus</i> sp. BOLD-2016 voucher BIOUG17368-D06	Subtribu Eutiineae
KR800623.1	KR800623.1 <i>Euderus</i> sp. BOLD-2016 voucher BIOUG04324-B05	Subtribu Eutiineae
KR923436.1	KR923436.1 <i>Euderus</i> sp. BOLD-2016 voucher BIOUG19267-C05	Subtribu Eutiineae

Matrix	Genbank Signs	Identity
KR923450.1	KR923450.1 Euderus sp. BOLD-2016 voucher BIOUG19347-F04	Subtribu Eutiineae
KR929529.1	KR929529.1 Euderus sp. BOLD-2016 voucher BIOUG19992-F01	Subtribu Eutiineae
KR930333.1	KR930333.1 Euderus sp. BOLD-2016 voucher BIOUG19267-G08	Subtribu Eutiineae
KR931581.1	KR931581.1 Euderus sp. BOLD-2016 voucher BIOUG19345-F08	Subtribu Eutiineae
KU496740.1	KU496740.1 Euderus sp. KNWR 5141	Subtribu Eutiineae
MF899935.1	MF899935.1 Euderus sp. BIOUG12155- B04	Subtribu Eutiineae
MG336688.1	MG336688.1 Euderus sp. BIOUG25051- C12	Subtribu Eutiineae
MG338619.1	MG338619.1 Astichus arithmeticus voucher BIOUG31095-B03	Subtribu Eutiineae
MG339229.1	MG339229.1 Astichus arithmeticus voucher BIOUG05705-F02	Subtribu Eutiineae
MG339457.1	MG339457.1 Euderus sp. BIOUG25593- F05	Subtribu Eutiineae
MG341180.1	MG341180.1 Euderus sp. BIOUG25593- E02	Subtribu Eutiineae
MG341593.1	MG341593.1 Euderus sp. BIOUG26216- E03	Subtribu Eutiineae
MG341685.1	MG341685.1 Euderus sp. BIOUG25599- C01	Subtribu Eutiineae
MG342013.1	MG342013.1 Astichus arithmeticus voucher BIOUG21505-B04	Subtribu Eutiineae
MG446079.1	MG446079.1 Euderus sp. BIOUG25484- E09	Subtribu Eutiineae
MG479492.1	MG479492.1 Euderus sp. BIOUG12942- B10	Subtribu Eutiineae
MG480257.1	MG480257.1 Euderus sp. BIOUG17999- F11	Subtribu Eutiineae
MG481343.1	MG481343.1 Euderus sp. BIOUG21221- B02	Subtribu Eutiineae
MG481600.1	MG481600.1 Euderus sp. BIOUG20087- H02	Subtribu Eutiineae

Matrix	Genbank Signs	Identity
MG482438.1	MG482438.1 Euderus sp. BIOUG17995-C03	Subtribu Eutiineae
MG483373.1	MG483373.1 Euderus sp. BIOUG20564-B11	Subtribu Eutiineae
MG485352.1	MG485352.1 Euderus sp. BIOUG04072-C07	Subtribu Eutiineae
MG485471.1	MG485471.1 Euderus sp. BIOUG04127-B04	Subtribu Eutiineae
MG487653.1	MG487653.1 Euderus sp. BIOUG20669-D05	Subtribu Eutiineae
MG836466.1	MG836466.1 Euderus albitarsis isolate H26P2	Subtribu Eutiineae
MG836467.1	MG836467.1 Euderus albitarsis isolate H26P3	Subtribu Eutiineae
MG836468.1	MG836468.1 Euderus albitarsis isolate H26P4	Subtribu Eutiineae
MG836469.1	MG836469.1 Euderus albitarsis isolate HE26P4	Subtribu Eutiineae
MG836470.1	MG836470.1 Euderus cushmani isolate HE26P10	Subtribu Eutiineae
Ophelimus maskelli isolate D1559 HM365046.1	HM365046.1 Ophelimus maskelli isolate D1559	Ophelimus maskelli Genbank
Ophelimus sp1 Chile rep.2 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp1 Chile rep.3 F	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp1 Chile rep.3 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp2 Chile rep.1 F	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp2 Chile rep.1 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp2 Chile rep.2 F	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp2 Chile rep.2 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp2 Chile rep.3 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile

Matrix	Genbank Signs	Identity
Ophelimus sp3 Chile rep.1 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Ophelimus sp3 Chile rep.2 R	Accession code pending (Submission # 2254296)	<i>Ophelimus nov. sp.</i> Chile
Basic data matrix used for the analysis with the methods of maximum probability (ML) and Bayesian Inference (BI).		