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New records and emergence period of *Callidiellum rufipenne* (Motschulsky, 1860) [Coleoptera: Cerambycidae: Cerambycinae: Callidiini] in Argentina

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Emergence data and emergence period of different populations of *Callidiellum rufipenne* (Motschulsky, 1860) [Coleoptera: Cerambycidae: Cerambycinae: Callidiini] in Argentina are given. From such data it can be seen that southern populations have a late emergence period, sinchronized with the spring of the Southern Hemisphere. In change, a northern population emerges earlier, at the end of the winter, previously to all native species of Cerambycidae that lives in the same area. New localities are added for the country.

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Key words: Wood borer, *Cupressus*, South America.

INTRODUCTION

DI IORIO (2004a) mentioned a single specimen of *Callidiellum rufipenne* (Motschulsky, 1860) [Cerambycinae: Callidiini] found in Argentina (Buenos Aires: Pilar) in July 2003. Later it had been mentioned as established by the first time in Argentina in dead branches of *Cupressus macrocarpa* Hartw. by TURIENZO (2006a). From new materials obtained in different localities, the emergence data and emergence period of different populations are given. From such data it can be seen that these populations have different emergence data sinchronized or not with the emergence seasons in the Southern Hemisphere.

MATERIALS AND METHOD

During 2005, first emergence data from Pereyra Iraola (Buenos Aires) were given by TURIENZO (2006a) [8 males (ODI), 3 females (ODI)]. On August 29th of 2006, Turienzo & Di Iorio found closed pupal chambers in wind-fallen broken branches in the same place. These new materials were maintained in rearing cages at ambient temperature. The emergences corresponding to 2006 are present in Table 2. O.R. Di Iorio identified the species for the first time, all specimens had been deposited in his collection (ODI). All known host-plant associations and localities are resumed in Table 3. All plant names and abbreviations of authors are according to WIERSEMA & LEÓN (1999).

RESULTS & DISCUSSION

New records

Cupressus macrocarpa: ARGENTINA. Buenos Aires: Pdo. Berazategui, Parque Pereyra Iraola, 13-VIII-2005, Turienzo & Di Iorio leg., 8 males (ODI), 3 females (ODI) (TURIENZO, 2006a), + 44 males (ODI), 36

Table 1. **Emergences of *Callidiellum rufipenne* during 2005.**

Emergence date	Amount of specimens and sexes	Emergence time	Temperature and relative humidity at emergence
13-VIII-05	1 male	——	
19-VIII-05	2 males	16:00 hs	23.1° C, ——
21-VIII-05	4 males, 3 females	——	——
22-VIII-05	1 male	15:50 hs	21.6 ° C, ——
25-VIII-05	2 males	——	——
27-VIII-05	1 male, 1 female	——	——
29-VIII-05	1 male	15:31 hs	18.2 ° C, ——
30-VIII-05	2 males	14:00 hs	19.3 ° C, ——
	1 female	14:05 hs	19.6 ° C, ——
	3 males	14:50 hs	19.6 ° C, ——
	1 male	15:05 hs	19.1 ° C, ——
	1 male	15:12 hs	19.6 ° C, ——
	2 males	15:38 hs	19.6 ° C, ——
	1 female	16:50 hs	16.8 ° C, ——
3-IX-05	2 males	11:23 hs	14.9 ° C, ——
	2 males, 1 female	15:30 hs	18.0 ° C, ——
4-IX-05	2 males, 1 female	14:50 hs	20.9 ° C, ——
	3 females	16:40 hs	20.6 ° C, ——
6-IX-05	1 male	12:50 hs	21.7 ° C, 43 %
	1 female	13:25 hs	22.6 ° C, 37 %
	2 males	13:35 hs	22.1 ° C, 39 %
	1 female	13:55 hs	22.0 ° C, 37 %
	4 females	14:05 hs	22.1 ° C, 39 %
	1 male	14:15 hs	22.3 ° C, 39 %
	1 female	14:25 hs	22.6 ° C, 37 %
	1 female	14:40 hs	23.4 ° C, 36 %
	2 males	15:10 hs	24.7 ° C, 33 %
	1 female	16:00 hs	24.4 ° C, 32 %
	1 female	16:10 hs	24.3 ° C, 32 %
	1 male	18:00 hs	20.3 ° C, 45 %
7-IX-05	3 males, 2 females	——	——
8-IX-05	1 female	12:45 hs	25.5 ° C, 32 %
	1 female	13:15 hs	26.8 ° C, 30 %
	1 male	13:39 hs	27.3 ° C, 29 %
	3 males, 2 females	14:00 hs	28.5 ° C, 28 %
	1 male, 2 females	14:45 hs	29.7 ° C, 30 %
	1 males, 1 females	18:00 hs	23.6 ° C, 36 %
9-IX-05	1 female	——	——
18-IX-05	1 male	14:15 hs	24.9 ° C, ——
	1 male, 1 female	14:24 hs	25.3 ° C, ——
	1 female	17:53 hs	22.0 ° C, 34 %
19-IX-05	1 male	13:40 hs	18.4 ° C,
	1 male, 1 female	16:25 hs	18.3 ° C,
21-IX-05	1 male	13:53 hs	25.2 ° C, 57 %
	1 female	14:22 hs	25.9 ° C, 60 %
	1 female	14:55 hs	26.5 ° C, 51 %
	1 female	15:46 hs	26.3 ° C, 46 %
22-IX-05	1 male	13:15 hs	21.7 ° C, 63 %
TOTAL	49 males, 37 females		
Sex ratio	1.32 : 1.00		

Table 2. **Emergence data of *Callidiellum rufipenne* during 2006 from different localities in the province of Buenos Aires, Argentina.**

Emergence date	Specimens and sex	Temperature and relative humidity [emergence date]
Pdo. Berazategui, Parque Pereyra Iraola, 29-VII-06		
12/14-VIII-06	6 m, 6 f	Not recorded
15-VIII-06	1 m	Not recorded
16-VIII-06	1 m, 3 f	Not recorded
19-VIII-06	2 m, 2 f	Not recorded
20-VIII-06	1 m, 2 f	13.9 °C, 43 % RH [13:15 hs]
24-VIII-06	7 m, 4 f	Not recorded
25-VIII-06	3 m, 2 f	Not recorded
26-VIII-06	1 f	18.1 °C, 65 % RH [13:53 hs]
27-VIII-06	1 f	Not recorded
31-VIII-06	1 m, 1 f	25.2 °C, 38 % RH [14:46 hs]
	1 f	25.6 °C, 36 % RH [15:18 hs]
8-IX-06	4 m, 1 f	25.7 °C, 32 % RH [14:54 hs]
	1 m, 1 f	23.6 °C, 32 % RH [16:40 hs]
9-IX-06	2 f	Not recorded
11-IX-06	1 m, 3 f	27.0 °C, 30 % RH [0:05 hs]
	2 f	28.6 °C, 28 % RH [1:19 hs]
12-IX-06	1 m	26.4 °C, 23 % RH [16:55 hs]
14-IX-06	1 m, 1 f	20.0 °C, 20 % RH [11:10 hs]
15-IX-06	1 f	Not recorded
18-IX-06	2 f	Not recorded
19-IX-06	1 f	26.0 °C, 37 % RH [17:00 hs]
20-IX-06	3 f	Not recorded
SEX RATIO	30 males, 40 females	
Pdo. General Pueyrredón, Acantilados, 17- XII- 05		
8-IX-06	1 m	25.4 °C, 35 % RH [14:31 hs]
17-IX-06	1 m	Not recorded
20-IX-06	1 m	Not recorded
Pdo. Mar Chiquita, Nahuel Ruca, 19-III-06		
11-IX-06	1 m	27.1 °C, 30 % RH [12:00 hs]
12-IX-06	1 m	Not recorded
14-IX-06	1 m, 1 f	26.2 °C, 30 % RH [13:50 hs]
16-IX-06	1 m	26.8 °C, 20 % RH [16:20 hs]
17-IX-06	1 m, 2 f	26.9 °C, 27 % RH [13:39 hs]
18-IX-06	3 m	Not recorded
19-IX-06	1 f	25.2 °C, 42 % RH [13:30 hs]
	2 f	25.6 °C, 37 % RH [16:30 hs]
20-IX-06	1 f	Not recorded
21-IX-06	1 f	27.2 °C, 29 % RH [13:36 hs]
25-IX-06	1 m	24.4 °C, 37 % RH [12:45 hs]
26-IX-06	1 m	21.5 °C, 41 % RH [11:30 hs]
	1 f	26.7 °C, 31 % RH [15:00 hs]
27-IX-06	1 m	18.7 °C, 55 % RH [11:40 hs]
	1 m	Not recorded
30-IX-06	1 m	27.5 °C, 37 % RH [13:45 hs]
	1 f	22.8 °C, 41 % RH [19:41 hs]
5-X-06	1 m	24.8 °C, 33 % RH [14: 26 hs]
6-X-06	1 m	Not recorded
7/8-X-06	1 m, 1 f	Not recorded
10-X-06	1 f	25.9 °C, 54 % RH [12:30 hs]
SEX RATIO	16 males, 12 females	

females (ODI) (Table 1), 29-VII-2006, Turienzo & Di Iorio leg., 30 males, 38 females [wind-fallen broken branches] (Table 2); Pdo. Mar Chiquita, Laguna Nahuel Ruca, 19-III-2006, Di Iorio & Turienzo leg., several old larval tunnels with emergence holes from the previous year, 2 males (ODI) inside their pupal chambers, 13 males, 12 females (ODI) [wind-fallen broken branches] (Table 2); Pdo. General Pueyrredón, Acantilados, 17-XII-2005, Di Iorio & Turienzo, several larval tunnels with emergence holes from the previous year, 3 males (ODI) [dead branches on living trees] (Table 2).

Known geographical distribution and host plant

All localities known from *C. rufipenne* in Argentina are restricted up to now to Buenos Aires province (Fig. 1). The author was looking for this plant-insect association in different parts of Buenos Aires, Santa Fe, Córdoba and Neuquén provinces, in different species of the genus *Cupressus*, but no more localities or host plants were obtained. By the moment, *C. rufipenne* is established in old implanted *Cupressus macrocarpa* dead branches, generally broken by strong winds, and fallen to the ground or pending from living trees.

Sex ratios

From Pdo. Berazategui, Parque Pereyra Iraola, the sex ratio (male / female) was 1.32 : 1 (N = 86) for 2005, and 0.75 : 1 (N =70) for 2006. From Pdo. Mar Chiquita, Nahuel Rucá, the sex ratio was 1.3 : 1 (N = 28) for 2006. No sex ratio can be taken from Pdo. General Pueyrredón, Acantilados, because only 3 specimens were obtained and all were males.

Emergence data and emergence period

Emergence period is established during middle August to middle September in Parque Pereyra Iraola (the northern locality), and during September in the others localities, Acantilados and Nahuél Rucá, in the south (Fig. 1).

This complete the information of emergence data given by DI IORIO (2004a) and TURIENZO (2006a). The first one said that adults emerge in July because one male had been taken for the locality of Pilar (the northern city in which this species was found) (Fig. 1). TURIENZO (2006a) mentioned emergences during middle August during day.

Parasitoids

CAMPADELLI & SAMA (1988) record biological control agents native from Italy belonging to the family Ichneumonidae (Hymenoptera). In this case, only one species of Braconiidae, native from Argentina (not identified), were obtained from Pereyra. A similar situation had ocurred with the exotic *Phoracantha semipunctata* (F.), whose larval populations are decreased by native Braconidae, indicating that these parasitoids are ecologic-specific and not species-specific.

DISCUSSION

Host plant range

GADEK & QUINN (1993) gave cladograms that provided support for the recognition of a basically northern subfamily (Cupressoideae) and a southern subfamily (Callitroideae) (Fig. 2). The family Taxodiaceae, generally accepted as the sister group of the Cupressaceae, was used as the outgroup (one species in the genus *Cryptomeria*). That is what exactly reflect the host plants choosen by *Callidiellum rufipenne* (Fig. 2), with 2 species in the genus *Juniperus* (*virginiana* and *communis*), 1 species in *Cupressus* (*macrocarpa*), 3 species in *Chamaecyparis* (*obtusa*, *pisifera* and *nootkatensis*), one in *Thuja* (*occidentalis*), and one more in *Thujopsis* (*dolabrata*) (Table 3). By the preceding reasons, mentioned hosts in the genera *Abies* and *Pinus* (Pinaceae) needs a further corroboration.

In United States, this longhorned beetle had been found in living plants one single time, but in its native range dead branches are used for larval development (PASEK, 2000). In the Southern Hemisphere it was

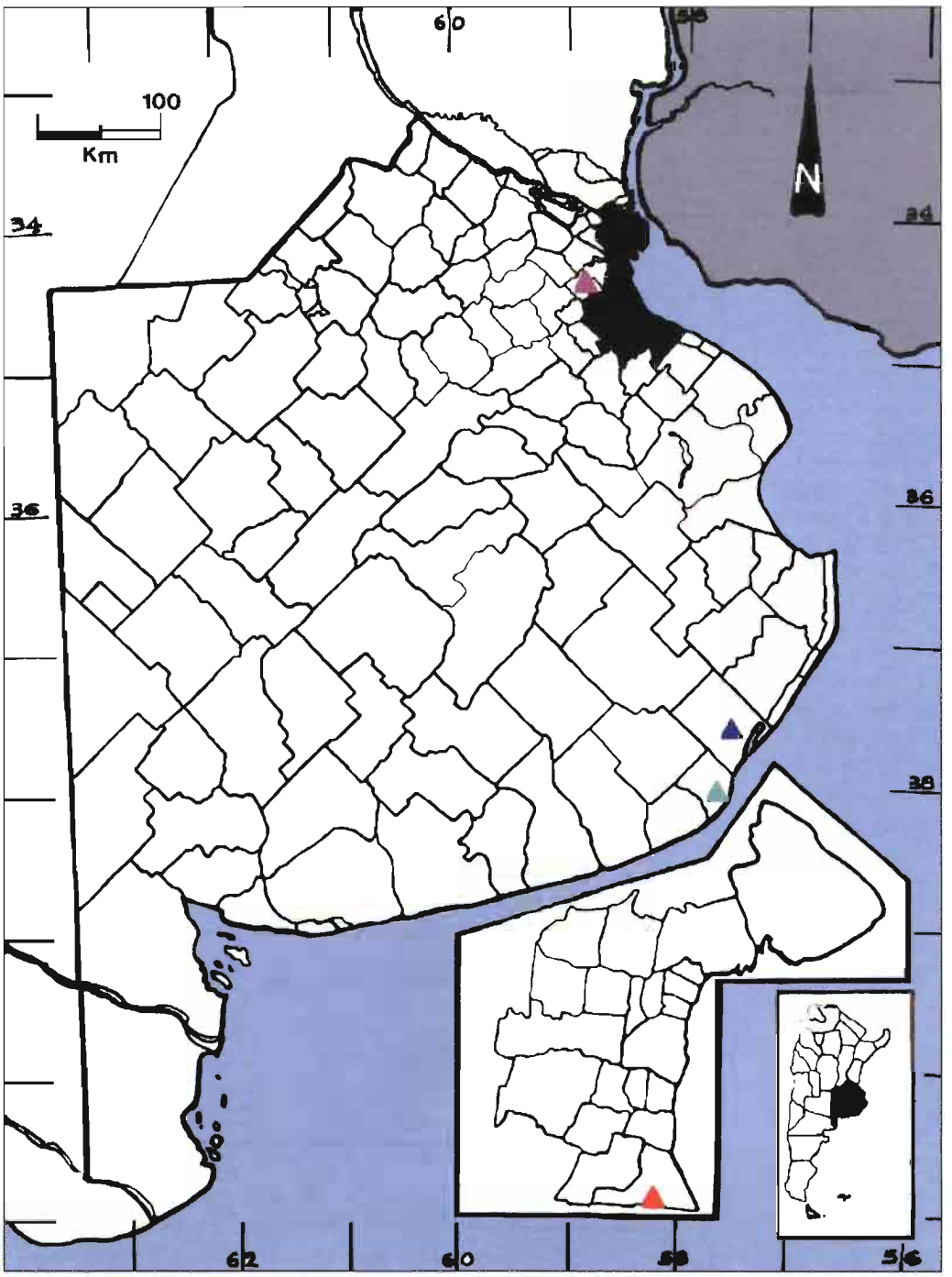

Figure 1. Distribution of *Callidiellum rufipenne* in the province of Buenos Aires (Argentina), from north to south: pink triangle, Pdo. Pilar (Di Iorio, 2004a); red triangle, Pdo. Berazategui, Parque Pereyra Iraola (Turienzo, 2006a); blue triangle, Pdo. Mar Chiquita, Laguna Nahuél Rucá; green triangle, Pdo. General Pueyrredón, Acantilados.

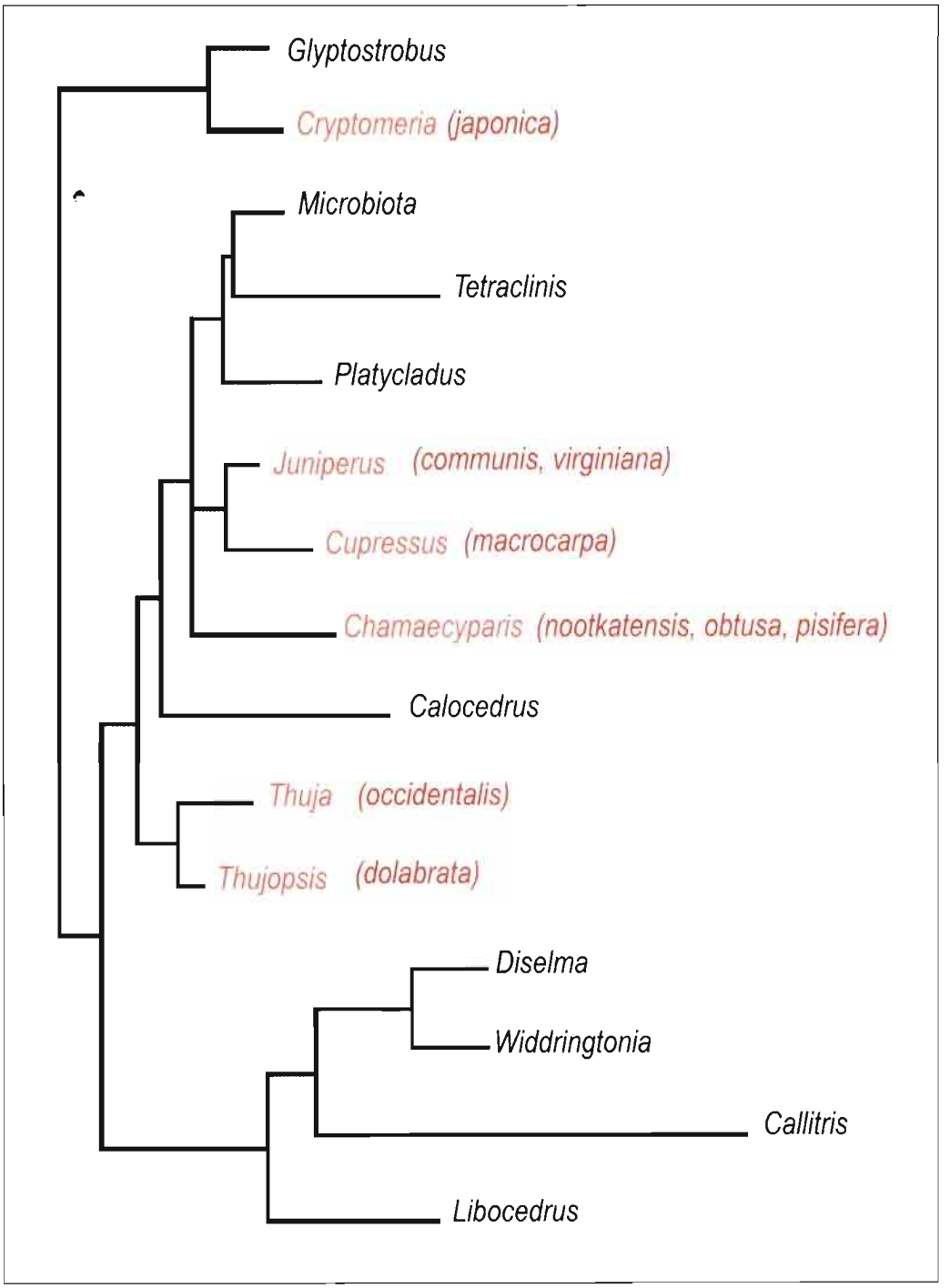

Figure 2. Phylogenetic relations in Cupressaceae family (taken from GADEK & QUINN, 1993), with the host plants choosen by *Callidiellum rufipenne* marked in red.

Table 3. ***Callidiellum rufipenne* originally mentioned on native and exotic Coniferae.**

	Hosts Plant	Localities when stated and references
P	*Abies* spp.	Asia (LINSLEY GRESSIT, 1951); (APHIS, 1999)
C	*Chamaecyparis nootkatensis* (D. Don.) Sudw.	North America (EPPO, 2003)
C	*Chamaecyparis obtusa* (Siebold & Zucc.) Endl.	Japan (LINSLEY GRESSIT, 1951)
C	*Chamaecyparis pisifera* (Siebold & Zucc.) Endl.	(APHIS,1999)
C	*Cupressus macrocarpa* Hartw.	Spain: unconfirmed (EPPO, 2003); (PASEK, 2000) Argentina: Buenos Aires Province: Parque Pereyra Iraola (TURIENZO, 2006a)
T	*Cryptomeria japonica* (L.f) D. Don	Japan (LINSLEY GRESSIT, 1951); U.S. Ports (intercepted) (APHIS, 1999)
C	*Juniperus communis*	Italy (SAMA, 1988); (APHIS, 1999); (EPPO, 2003)
C	*Juniperus virginiana* L.	Eastern United States: Manteo (APHIS, 1999); North America (EPPO, 2003)
P	*Pinus* spp.	Asia (APHIS, 1999)
C	*Thuja occidentalis* L.	United States: Connecticut (APHIS, 1999); North America (EPPO, 2003)
C	*Thujopsis dolabrata* (Thunb. ex L.f.) Siebold & Zucc.	(APHIS, 1999)

C Correspond to Cupressaceae
T Correspond to Taxodiaceae
P Correspond to Pinaceae

always found in *Cupressus macrocarpa* dead branches, a native conifer from Bahia Monterrey, California (USA), in danger of extinction in its original place (LUCAS & SYNGE, 1978). In Argentina, *C. macrocarpa* is one of the most cultivated conifers, mainly in the center of the country, and is also present in Patagonia with the purpose to protect the soil (DE MAGISTRIS, 2003). No other Cerambycidae is registered by the moment in this plant (DI IORIO, 2004b), so no competitors are able by the moment.

Emergence period

In the Northern Hemisphere, *C. rufipenne* emerges from mid April to late May in Japan (SHIBATA, 1994), corresponding to Spring. In China, it emerges in March (late Winter and beginning of Spring) (LINSLEY GRESSIT, 1951). If we compare the emergence data from 2005 and 2006 from the same locality (Pdo. Berazategui, Parque Pereyra Iraola), the emergence period is exactly the same, from middle August to near the end of September. This data correspond to the end of winter in the Southern Hemisphere, where no one native species of Cerambycidae emerges until the beginning of October (Spring) (DI IORIO, pers. com.). In change, in two of the southernmost populations (Nahuel Rucá; Acantilados), *C. rufipenne* began to emerge at the beginning of September (end of Winter) through the beginning of October (beginning of Spring) (Table 2). At the extreme north of the known distribution (Buenos Aires: Pilar), one specimen was already emerged in July (middle Winter) (DI IORIO, 2004a). In this manner, a latitudinal gradient of emergences can be seen, in which the southern populations emerges latter, similarly to the native species of Cerambycidae in the same province, or similarly to the emergence period in its native range (China) (LINSLEY GRESSIT, 1951).

Generations per year

After the emergences from Pereyra (Table 2), woods were examined in January 2007. Fully grown larvae of a next generation obtained in captivity were present building subcortical tunnels. At the beginning of March 2007, they began to build the pupal

chambers. This is coincident with the previous finding of adults inside the pupal chambers in March 2006 at Nahuel Rucá. The next generation from Pereyra will emerge in the next August, giving as result one generation per year.

Final Comment

In the last years, asiatic beetles of different families were incorporated to the Argentinean fauna (DI IORIO, 2004a; 2005; TURIENZO, 2006a; 2006b). There is not doubts that these introductions are relatively new, perhaps since the 90´s years, when the international commerce with asian countries was more intensive. More investigations and biological data are need to make a clear and more comprehensive evaluation of this insects to know if they are plague or not, and their possible impact on native plants.

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RESUMEN

TURIENZO P. 2007. Nuevos registros y período de emergencia de *Callidiellum rufipenne* (Motschulsky, 1860) [Coleoptera: Cerambycidae: Cerambycinae: Callidiini] en la Argentina. *Bol. San. Veg. Plagas*, **33**: 341-349.

Se dan a conocer datos y períodos de emergencia para diferentes poblaciones de *Callidiellum rufipenne* (Motschulsky, 1860) [Coleoptera: Cerambycidae: Cerambycinae: Callidiini] en Argentina. De estos se puede observar que las poblaciones situadas más hacia el sur, tienen un período de emergencia más tardío, sincronizado con la primavera del Hemisferio Sur. En cambio, la población situada más al norte, emerge tempranamente, al final del invierno, previamente a todas las especies nativas de Cerambycidae que viven en la misma área. Nuevas localidades se agregan para el país.

Palabras clave: taladro de la madera, *Cupressus*, America del Sur.

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