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BIOMETRICS AND IMPORTANCE OF THE EGG MASS OF THE PROCESSIONARY, *THAUMETAUPOEA PITYOCAMPA* SCHIFF ON THE CEDAR OF THE ATLAS, *CEDRUS ATLANTICA* MANETTI

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ABSTRACT

The study led on 113 egg mass of *Thaumetopoea pityocampa* coming from various cedar plantations of the North of Algeria showed lengths of egg mass of the population of the processionary on the cedar of Chélia more consequent (29+ 6mm) that those of the egg mass collected in the cedar plantation of Chréa (23+6mm). The frequential analysis lengths of the egg mass highlighted 5 classes for the batches collected in the three prospected sites. The data collected highlight a difference very highly significant between the batches tested (p=0, 0001). The egg mass coming from the prospected sites reveal a full number of 22237oeufs with an average of 175+49 eggs per laying. The fruitfulness of the population evolving/moving on the cedar plantation of Chréa is more consequent with that in the site of Theniat El Had. A diversity of 3 species of chalcidiens parasitoïdes pertaining to the order of Hyménoptères was noted starting from the analyzed biological material. The species *Baryscapus (Tetrastichus) servadeii, Ooencyrtus pityocampa* and *Trichogramma embryophagum* are active on the various examined and analyzed samples. The rate of calculated parasitism is very different between the localities, does not exceed 16,66% in the populations sampled with a predominance of *Baryscapus servadeii*. The combinations of the presence of the three parasitoïdes are noted on the biological material examined with a prevalence of the species *Baryscapus servadeii.* In the sites of Chréa and Theniat El Had, only the alternative *O. pityocampae* with *T.embryophagum* was not noted. The ends of the layings, badly protected by the scales are sought by the parasitoïdes. The parasitoïdes, *O.pityocampa* and *T.embryophagum* seem to be recognized not to return in specific competition. These antagonists seem to recognize parasitized eggs. On the basis of result obtained, an alternative of fight containing the species *Ooencyrtus pityocampa* proves to be interesting and very debatable.

KEYWORDS: Biometrics, Fruitfulness, Parasitoïdes, Processionary, Cedar of the Atlas

INTRODUCTION

The cedar of the Atlas or cedar atlantica is originating in North Africa. In Algeria, the cedar covers 30 400 hectares is 1, 3% of the forest surface of the country, on the Tellian Atlas, one meets the cedar plantations of Djurdjura (2000 ha), of Babors (1300 ha), Ouarsenis (1100 ha) and the Atlas Blidéen (1000 ha), on the Saharian Atlas, the cedar constitutes important settlements in Aures and Bélezma (17000 ha) like in the Mounts of Hodna (8000 ha). The cedar of the Atlas lives in the mountainous areas and the cedar plantations develop between an altitude of 1500 and 2500 m, with a preference for the slopes north and west more sprinkled much. Its port is pyramidal and widens with a summit flattened for the old trees. Its bark smooth and gray is clearly cracked brownish color gray. The buds are small and gray yellowish. Persistent needles blue gray broken down by tufts from 30 to 40 along the branches, the resinous cone of color purplished

crimson. The cedar plantations are subjected to all kinds of aggressions, in particular related to the anthropic pressure; they also undergo the effects of climate warming. They currently present worrying symptoms of deterioration which require of this fact a very particular monitoring. The processionary of the pine, *Thaumetopoea pityocampa*, is the principal insect defoliator of the pines and the cedar in the Mediterranean circumference (Tap *and Al* 2011). By their food voracity of the needles the caterpillars involve an often total defoliation of the tree, involving a consequent weakening of the settlements thus allowing the installation other secondary ravageurs, particularly of the xylophagous ones. Among the many antagonists of the processionary of the pine, the embryonic parasitoïdes are the principal regulators of the populations of *Thaumetopoea pityocampa*. The parasitoïdes which divides the eggs of the processionary of the pine are primarily of Hyménoptères pertaining to the chalcidiens. Among the écophases of the processionary of the pine, the data on the layings remain the determining factor of the state of the infestation and of the evolution of the gradation during time, it is what encouraged us in the choice of the subject.

MATERIALS AND METHODS

Sites of Study

Three sites were retained in the cedar plantations of the National park of Chréa, of the National park of Theniat El Had and of the cedar plantation of Chélia, the characteristics of the prospected stations are gathered in table 1.

Table 1: Characteristics of the Sites of Study

Areas	Bioclimatic stage	Altitudes (m)	Geographic Coordinate	
			Longitude	Latitude
Chréa	sub-wet and wet	1400	2° 38 ' /3° 02 ' E	36° 19 ' /36° 30 ' NR
Chélia (Batna)	Semi arid	1933	6°37' 4.17 " E	35°18' 8.48 " NR
Theniet El Had	sub-wet and wet	1465	2°0' 7.33 " E	35°51' 19.64 " NR

ADOPTED METHODOLOGY

Collect and Examination of the Biological Material

A manpower of 113 egg mass was taken in the three sites retained during the year 2012 according to transects with a height accessible starting from the trees distributed on the unit from the cedar plantations. The collected samples are preserved individually in tubes test closed with cotton to ensure ventilation. The biological material thus prepared and daily controlled at the laboratory under the conditions of temperatures of 26+1°Cand a relative humidity of 60+5%. Emergences of the caterpillars and the parasitoïdes are noted during time in order to draw from information on the curves of emergences of the populations. After the total hatching of the eggs, we carry out the elimination of the protective scales in order to enter the categories of eggs under a binocular loupe.

METHODS OF ANALYSIS

The comparison Analyses of the averages to one factor were carried out to test the difference between the females fertility of the processionary moth. Frequential analyses are led so gathering the egg mass according to their lengths and number of eggs, in the same way cross analyses were carried out to draw from information on the relation between the eggs number and the sample length.

RESULTS

Biometrics and Analyses Biological Material

Analyses Lengths of the Egg Mass

The results of measurement lengths of the egg mass are consigned in table 2

Table 2: Descriptive Analysis Lengths of the Layings of the Processionary

Stations	Manpower of the Layings	Lengths Average of the Layings (mm)	Extreme Values (mm)	Coefficient of Variation (%)
Chélia	50	29 ± 6	15-47	21,42
Chréa	26	23 ± 6	14-38	27,82
Theniat El Had	37	26 ± 6	11-39	23,64
Total	113	26 ± 6	13-41	24,29

On the basis of counting and measurement carried out we proceeded to a comparison of the averages by analysis of the variance. The biological material collected on would yield vary 23+6mm with 29+6mm. The data collected in the cedar plantation of Chélia are more consequent is significant than the layings collected in the Chréa cedar plantation. The extreme values obtained vary from 11 mm in the station of Theniat El Had to 47mm in the cedar plantation of Chélia.

In order to draw from the more reliable results we proceeded to a comparison of the averages by ANOVA, (Figure1)

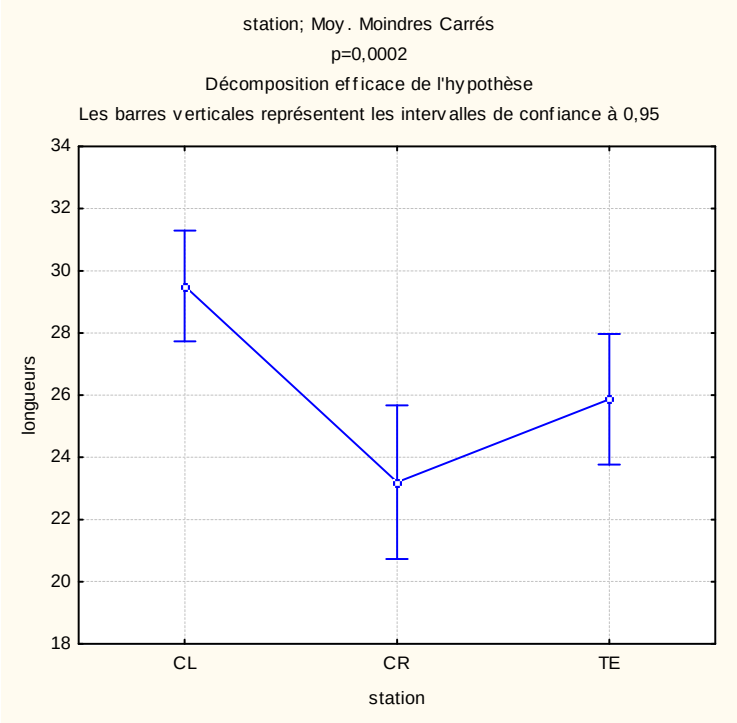

Figure 1: Comparison Average Lengths of the Layings in the Cedar Plantations

A difference very highly significant is noted between the lengths of the egg mass coming from the cedar plantations (p=0, 0001).

FREQUENTIAL ANALYSIS LENGTHS OF THE LAYINGS

The frequential analysis lengths of the layings highlighted 5 classes for the batches collected in the three prospected sites. The data collected highlight a difference very highly significant between the batches tested (p=0, 0001)

(Tab.3). The frequential analysis was carried out in order to gather the categories of the laying females in classes according to the length of the layings.

Table 3: Analysis Frequential Lengths

Chélia		Thenia El had		Chréa	
Classes (mm)	Rate (%)	Classes (mm)	Rate (%)	Classes (mm)	Rate (%)
12-20	4	8-15,2	5,4	10-16,4	11,53
20-28	42	15,2-22,4	21,62	16,4-22,8	38,46
28-36	36	22,4-29,6	43,24	22,8-29,2	34,61
36-44	16	29,6-36,8	27,02	29,2-35,6	11,53
44-52	2	36,8-44	2,7	35,6-40	3,84

Frequential analysis lengths of the layings coming from Chélia definite five classes adjusting itself with a normal law. The calculated probability is very highly significant (p=0, 0001). The first class, represented by 2 cases, gathers the layings having lengths ranging between 12 and 20 Misters the second class gathers a maximum of observations, that is to say 21 layings, containing between 20 and 28 Misters the third contains 18 observations with lengths of the layings ranging between 28 and 36 Misters the fourth group formed by 8 cases having lengths of the layings ranging between 36 and 44mm. The last class is limited to one only big shot with a length of laying of 52 Misters.

In Chréa, five classes being adjusted with a normal law are noted. The calculated probability is very highly significant (p=0, 0001). The first class contains 3 cases of layings having lengths lain between 10 and 16,4mm. The second class represented by the maximum of observation with lengths of the layings lain between 16,4 and 22,8mm. The third class is characterized by 9 observations having lengths of the layings lain between 22,8 and 29,2mm. The fourth class notes 3 cases of layings having lengths lain between 29, 2 and 35,6mm. The last class is limited only to only one case with a length of laying of 42mm

The definite length of the layings coming from Thenia el had five classes adjusting itself with a normal law. The calculated probability is very highly significant (p=0, 0001). The first class, represented by 02 cases, gathers the layings having lengths ranging between 8 and 15,2 Misters the second class gathers 8 observations having lengths of the layings lain between 15,2 and 22,4mm. The third class presents a maximum of case, that is to say 16 layings, containing between 22,4 and 29,6 Misters the fourth class notes 10 observations having lengths of the layings lain between 29,6 and 36,8mm. The last class is limited to only one laying of which the length is of 44mm.

ANALYZES OF THE NUMBER OF EGGS

The results of the enumerations of eggs by laying are gathered in table 4.

Table 4: Descriptive Analysis of the Number of Eggs

Station	Number	Total staff complement of eggs	Average	Extreme values	Coeff. of variation (%)
Chélia	50	9545	191+ 47	82-281	24,79
Chréa	26	5745	221+ 59	126-342	26,94
Théniat El Had	37	6947	188+ 51	111-286	27,22
Total	113	22.237	200+ 52	106-303	26,31

On the whole, the layings examined on the 03 sites contain 22.237 eggs is an average of 200+52 eggs per laying. The number of eggs varies on average between 188+ 51 eggs in the station of Théniat El Had to 221+ 59 in the cedar

plantation of Chréa with coefficients of variation respectively of 27, 22% and 26, 94%. The noted extreme values are of 82 eggs for the biological material collected in the cedar plantation of Chélia and 342 eggs for the cedar plantation of Chréa.

On the basis of counting carried out we proceeded to a comparison of the averages by Anova to draw from information on the significance between the populations considered (figure 2).

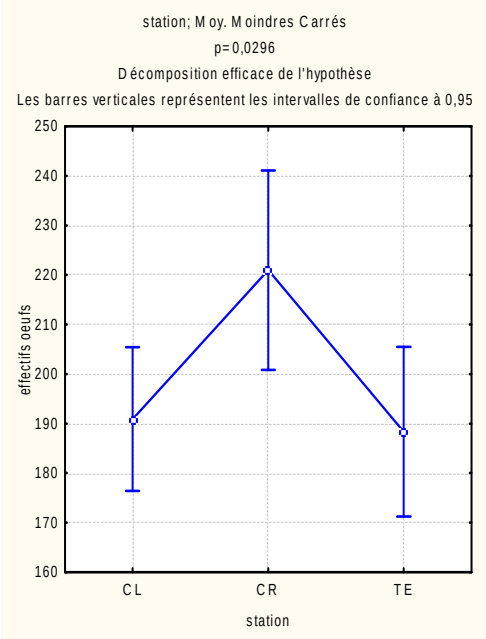

Figure 2: Comparison of Average Manpower of Eggs in the Cedar Plantations

A significant difference is noted between the number of eggs coming from the three cedar plantations (p=0,029).

FREQUENCY ANALYSIS OF COUNTED EGGS

The distribution of manpower of eggs highlighted 5 classes for the batches collected in 2 sites prospected except for the site of Chréa which counts four classes of the laying females (table 5).

Table 5: Frequential Analysis of Counted Eggs

Chélia		Thenia El had		Chréa	
Classes	**Rate (%)**	**Classes**	**Rate (%)**	**Classes**	**Rate (%)**
82-112	10	111-128	13,51	126-170	23,07
112-164	16	128-176	24,32	170-240	30,76
164-216	42	176-224	40,54	240-310	42,3
216-268	28	224-272	16,21	310-342	3,84
268-281	4	272-286	5,4		

Frequential analysis of eggs quantified on the layings coming from cedar of Chélia definite five classes adjusting itself with a normal law. The calculated probability is very highly significant (p=0, 0001). The first class, represented by 5 cases, gathers the layings having between 52 to 104 eggs. The second class represented by 8 cases, gathers the layings having between 104 to 156 eggs. The third class gathers a maximum of observations, that is to say 21 layings, containing between 156 and 208 eggs. The fourth class gathers the layings having 208 to 260 eggs with 14 layings. The last class is limited to 2 layings of which the number of eggs lies between 260 and 312.

On the other hand, the frequential analysis of eggs quantified on the layings coming from the cedar plantation of

Chréa defines four classes adjusting itself in a normal law. The calculated probability is very highly significant (p=0, 0001). The first class, represented by 6 cases, gathers the layings having between 70 to 140 eggs. The second the class gathers the layings having 140 to 210 eggs with 8 observations. The third class represented by a maximum of observation, is 11 cases, and gathers the layings having between 210 to 280 eggs. The fourth class gathers the layings having 280 to 350 eggs with 1 laying.

Layings coming from the cedar plantation of Thenia El Had, the definite analysis frequential five classes adjusting itself with a normal law. The calculated probability is very highly significant (p=0,0001). The first class, represented by 5 cases, gathers the layings having between 96 to 114 eggs. The second class represented by 9 cases, gathers the layings having between 114 to 192 eggs. The third class gathers a maximum of observations, that is to say 15 layings, containing between 192 and 240 eggs. The fourth class gathers the layings having 240 to 288 eggs with 6 layings. The last class is limited to 2 layings of which the number of eggs lies between 288 and 336.

RELATION BETWEEN THE LENGTHS OF THE LAYINGS AND THE NUMBER OF EGGS

The reports/ratios of the analyses crossed between the lengths of the calculated layings and the number of eggs are illustrated in figures 3 and 4. It is noted that on the level of the 2 stations prospected it ya a relation between the lengths and the number of eggs except for the cedar plantation of Chélia p=0, 2286.

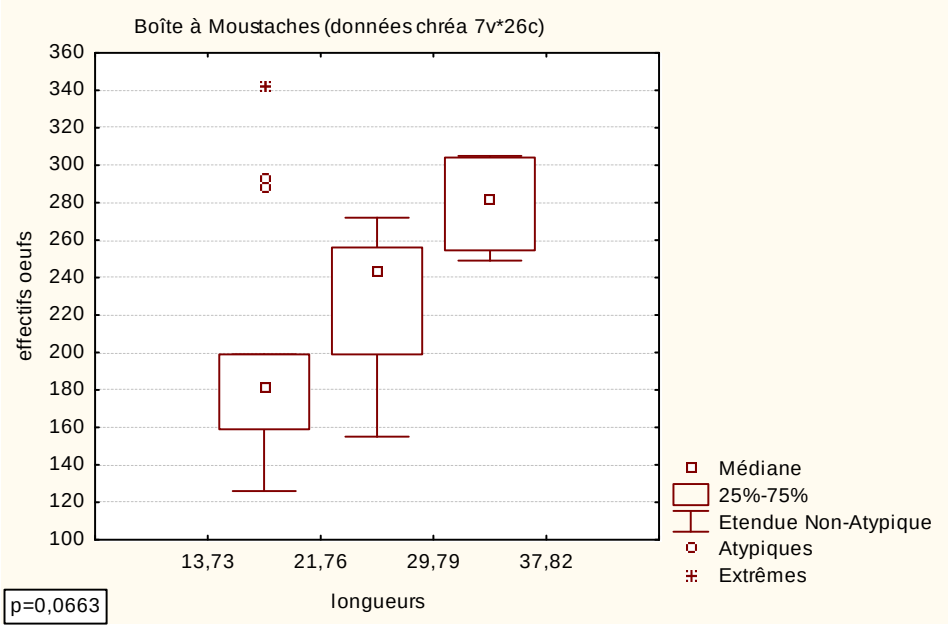

Figure 3: Distribution of the Number of Eggs According to the Lengths of the Layings in the Forest of Chréa

In the area of Chréa, presence of three categories of classes lengths of layings in relation to the number of eggs, it appears that with the first category the median value is of 180 eggs for the class the lengths of the layings from 13,73 to 21,76 mm, with an extreme value of 340oeufs. The examination of the class ranging between 21,67 and 29,79 mm highlights a median value of 242 eggs with a variability going from 158 to 275 eggs is noted. With the third category, representative lengths higher than 37, 82 mm with a median value of 280 eggs. The median values grow of a category lengths to the other.

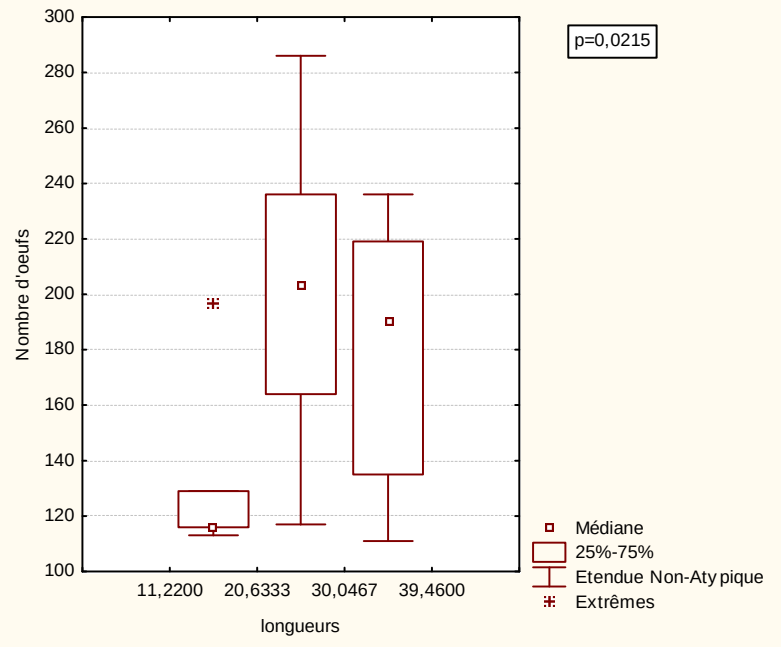

Figure 4: Distribution of the Number of Eggs According to the Lengths of the Layings in the Forest of Theniat El Had

In Theniat El Had, three categories of classes lengths of layings in relation to the number of eggs are considered, it appears that with the first category the median value is of 118 eggs for the class the lengths of the layings from 11,22 to 20,63 mm, with an extreme value of 219 eggs is noted. The examination of the class ranging between 20,63 and 30,04 mm highlights a median value of 202 eggs with a greater variability going from 119 to 285 eggs. With the third category, representative lengths higher than 39,46 mm with a median value of 190 eggs and a variability of the extents going from 110 to 238 eggs are noted.

ANALYSES CATEGORIES OF EGGS

On the whole 113 examined layings count 22.237 eggs. The results are consigned in figure 5.

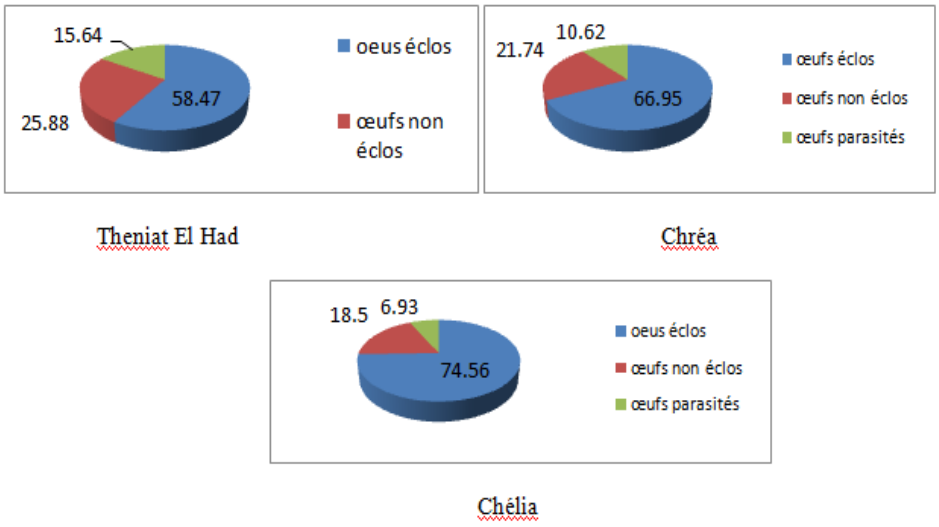

Figure 5: Percentages of the Categories of Eggs of *T. Pityocampa* in the 3 Prospected Sites

Analyses Hatched Eggs

The number of eggs hatched in the cedar a plantation varies on average from 110+55 in the national park of Theniat El Had is a rate from 58, 47% to 149+67 with the national park of Chréa with a rate of 66, 67%. The noted extreme values are of 3 eggs in the site of Theniat El Had and 280 eggs with Chréa.

Analyses Not Hatched Eggs

In the cedar plantations the number of not hatched eggs varies from 35+30 in the forest of Chélia with 49+35 in the national park of Theniat El Had.

Analyses Parasitic Eggs

The biological material resulting from the cedar plantations, the number of parasitized eggs varies from 8+9 eggs with Chélia with 24+ 25 eggs parasitized in the national park of Theniat El Had.

Impact of the Parasitoïdes of the Processionary Catarpilar

The biological material put in observation revealed an embryonic entomological diversity of three hyménoptères chalcidiens. *Baryscapus servadeii*, *Ooencyrtus pityocampae and Trichogramma embryophagum* were found in the three visited sites.

Frequency of Presence of the Parasitoïdes

It is important to stress that a laying can be parasitized, by one, two or three species simultaneously. All the combinations are noted in our experimentation. (Table from 6 to 8).

CASE OF THE CEDAR PLANTATION OF CHELIA

Table 6: Frequency of Parasitism of the Layings by the Indexed Species with Chélia

Station	**Chélia**						
EFF of the layings	50						
EFF of the not parasitised layings	10						
Species	*B.servadeii*	*O.pityocampa*	*T.embryophagum*	*B. servadeii + O. pityocampa*	*B. servadeii+ O.pityocampa+ T.embryophagum*	*O. pityocampa + T.embryophagum*	*B. servadeii+ T.embryophagum*
EFF of the parasitised big shots	36	32	32	27	19	2	4
Frequency of % presence	23,68	21,05	21,05	17,76	12,5	1,31	2,63

On 50 layings put in observation, 10 were not parasitized, that is to say a calculated rate of 80% of the layings gave at least a parasite. It is important to stress that the percentage represents the layings which underwent a parasitism. In the examined biological material, namely *B. servadeii*, *O. pityocampa* and *T. embryophagum*, there exist layings which are fairly attacked, respectively 23, 68%,21,05% and 21,05%. The combinations of the presence of the three parasitoïdes are noted on the biological material examined with a predominance of the species *Baryscapus servadeii*, representing a rate 23,68% of the global manpower. The frequency of presence of *B. servadeii* and *O. pityocampa* amounts to 17,76%. The other combinations of presence are limited between 1,31 and 2,63% the ends of the layings are sought by the identified parasitoïdes.

Case of the Cedar Plantation of Chrea

Table 7: Frequency of Parasitism of the Layings by the Indexed Species with Chréa

Station	**Chréa**					
EFF of the layings	26					
EFF of the not parasitised layings	5					
Species	*B. servadeii*	*O. pityocampa*	*T. embryophagum*	*B.servadeii + O.pityocampa*	*B.servadeii+ O.pityocampa+ T.embryophagum*	*B.servadeii+ T.embryophagum*
EFF of the parasitised big shots	19	10	12	8	7	4
Frequency of % presence	31,66	16,66	20	13,33	11,66	6,66

On 26 layings put in observation, 5 were not parasitized, that is to say a calculated rate of 80, 76% of the layings gave at least a parasite. It is important to stress that the percentage represents the layings which underwent a parasitism. In the examined biological material, there exist layings which are attacked than of others.

The combinations of the presence of the three parasitoïdes are noted on the biological material examined with a predominance of the species *Baryscapus servadeii*, representing a rate 31, 66% of the global manpower. The frequency of presence of *B. servadeii* and *T. embryophagum* amounts to 6,66%. The other combinations of presence are limited between 13, 33 and 11, 66% Cependant only the alternative *O. pityocampae* with *T.embryophagum* were not noted. The ends of the layings are sought by the identified parasitoïdes. On the basis of these result, it is important to stress that the parasitoïdes, *O.pityocampa* and *T.embryophagum* seem to be recognized not to return in specific competition. These antagonists seem to recognize parasitized eggs.

Case of the Cedar Plantation of Theniat El Had

Table 8: Frequency of parasitism of the layings by the indexed species with Theniat El Had

Station	Theniat El Had					
EFF of the layings	37					
EFF of the not parasitised layings	5					
Species	*B.servadeii*	*O.pityocampa*	*T.embryophagum*	*B.servadeii + O.pityocampa*	*B.servadei + O.pityocampa + T.embryophagum*	*B.servadeii + T.embryophagum*
EFF of the parasitised big shots	30	16	18	12	10	6
Frequency of % presence	32,6	17,39	19,56	13,04	10,86	6,52

On 37 layings put in observation, 5 layings only do not contain a parasitoïdes, that is to say a calculated rate of 86, 48% of the layings gave at least a parasite. It is important to stress that the percentage represents the layings which underwent a parasitism. In the examined biological material, there exist layings which are strongly attacked, others fairly attacked.

The combinations of the presence of the three parasitoïdes are noted on the biological material examined with a predominance of the species *Baryscapus servadeii*, representing a rate 32, 60% of the global manpower. The frequency of presence of *B. servadeii* and *T. embryophagum* amounts to 6, 52%. The other combinations of presence are limited between 13, 04 and 10,86% Cependant only the alternative *O. pityocampae* with *T.embryophagum* were not noted. The ends of the layings are sought by the identified parasitoïdes. On the basis of these result, it is important to stress that the parasitoïdes, *O.pityocampa* and *T.embryophagum* seem to be recognized not to return in specific competition. These antagonists seem to recognize parasitized eggs.

DISCUSSIONS AND CONCLUSIONS

The analysis of the layings of the processionary catarpilar coming from various cedar plantations of the North of Algeria made it possible to highlight the impact of the embryonic parasitoïdes of this defoliator. On the whole, 113 layings were collected. The frequential analysis was carried out in order to gather the categories of the laying females in classes according to the length of the layings.

The layings coming from the 3 prospected sites reveal a full number of 22237 eggs, that is to say an average of 175+49 eggs per laying. The layings coming from the cedar plantations count of 188+51 for the site of Theniat El Had to 221+59 eggs for the cedar of the Atlas of Chréa. The fruitfulness of the population evolving/moving on cedar is important. The plant host probably influences the fruitfulness of the females. Comparable results were obtained on samples coming from the cedar plantation of Chréa by Sebti (2011), which notes an average of 231 per laying. These results show that the year in question is remembered by a very high manpower of the population and confirms the phase of gradation of the species. Huchon and Demolin (1970) specify that when the number of eggs is close to 300 the dynamic potentiality of the

population becomes particularly high. In the case of a tested population the number is limited to 70 eggs according to the same authors.

The reports/ratios of the cross analyzes show a relation between the lengths of the calculated layings and the number of eggs with a highly significant probability, this on the level of the 2 prospected stations. In the same way there exists a relation between the lengths of the needles and the branches and the number of eggs with highly significant coefficients of correlation (Zamoum, 1998)**.** In the cedar plantations, the number of hatched eggs varies on average from 110+55 in the cedar plantation of the National park of Theniat El Had to 149+67 with the National park of Chréa. The number of not hatched eggs is of 49+35 in Theniat El Had and of 48 ± 49 eggs in the site of Chréa. Sebti (2011), note which the number of hatched eggs is very high in Chréa is a rate of 89, 64%. The not hatched eggs do not exceed 6,16%. According to the same author, the causes are ascribable with a failure of the embryonic development or emergence or with the parasites. Total parasitism reaches only 4, 19%. On the other hand during our study, the year 2012, was remembered by a reduction in the number of hatched eggs is a rate of 66, 95%. The not hatched eggs were rather high is a rate of 21, 74%. Total parasitism also increased either a rate of 10, 62%. The data analysis collected watch of the very different rates of parasitism between the localities, the rate of parasitism do not exceed 15, 64% in the sampled populations with Theniat El Had. A parasitic effectiveness at *Trichogramma embryophagum* was noted in the three cedar plantations, the frequency of presences of this species with Chélia is of 21, 05%, in Chréa of 20% and Theniat El Had, of 19, 56%. In general, this species although it is polyphagous, it is characterized by a weak frequency of parasitism. It affects a low number of layings compared to the others parasitoïdes, but it destroys most of eggs. Several studies already showed very fluctuating rates of parasitism according to the area where the layings were taken. In Bulgaria, the rate of parasitism observed in the processionary catarpilar varies from 19, 3 to 38, 9% (Tsankov *and Al,* 1996a, 1998). In Italy, according to the areas, the rate of parasitism was noted between 6% and 30% (Tiberi, 1990). The parasitoïdes constitute the most important biological factor which can assign success to the blossoming (Debach and Rosen, 1991). The study led on the biological material considered highlighted an embryonic entomological diversity of three species of parasites oophages. *Baryscapus servadeii*, *Ooencyrtus pityocampae* and *Trichogramma embryophagum.* The species *Baryscapus servadeii*, regarded as the specialist and *Ooencyrtus pityocampae the* general practitioner were noted in the 3 prospected stations. The species *Trichogramma embryophagum* also was obtained starting from the layings collected in the three prospected cedar plantations. The frequency of parasitism of this species remains very rare. On this subject, Beritima (2013) noted this same species with Théniat El Had. The two most active species *Baryscapus servadeii* and *Ooencyrtus pityocampae* were announced by Gachi (1989) on the layings of the processionary catarpilar of the cedar, *Thaumetopoea bonjeani*, in the Belezma settlements. In Algeria and in Marcoc it is *B. servadeii* which has abundance more important than *O. pityocampae* (Schmidt *and Al*, 1997; Tsankov *and Al,* 1995). It is important to stress that *Baryscapus servadeii* is the specific host of the processionary catarpilar, *T.pityocampa* (Gachi *and Al,* 1986). The action of the parasitoïdes remainders raised before and after the culminations of the populations of *Thaumetopoea pityocampa*. In the course of time the parasitic auxiliaries develop a strategy to return a balance naturally if the biotope of their evolution is not attacked by anthropic actions It is important to stress that a laying can be parasitized, by one, two or three species. In the examined biological material, there exist layings which are strongly attacked, others fairly attacked. The combinations of the presence of the two species or three parasitoïdes are noted on the biological material examined with a predominance of the species *Baryscapus servadeii*, in the 3 stations (Chélia, Chréa and Theniat El Had) representing presence rates respectively of 47,72%,61,90%,23,68%, of the global manpower. According to (Biliotti, 1958), the low parasitic effectiveness of *Ooencyrtus pityocampae* would be due

to the presence of the scales recovering eggs of *T. pityocampa*. The sizes and the structure of the protective scales exploit a determining role the impact of the parasitoïdes and their strategy of occupation on eggs of the big shot host. The indexed embryonic parasitoïdes have an impact space-time some on the populations of the processionary catarpilar and can play a promising part in the regulation of the populations during the phases of gradations. Breedings of *Ooencurtus pityocampa* and lâchers in phase of progradation are to be recommended to limit the damage of the processionary catarpilar, or the expenditure of the treatments *Bacillus thuriengiensis* is very consequent during the last decade. A mechanical fight, by the harvest of the sleeves of layings can contributes to the reduction in the populations. An investigation over several years makes it possible to in general draw more information on the gradation of the parasitoïdes and embryonic in particular.

The creation of biological laboratory of fight in the various forest stations, Is, Western and Center could render service to the sector forest in general and limited the treatments to *Bacillus thuriengiensis*, which in spite of their effectiveness disturb the environmental context of the forest in general.

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REFERENCES

1. Berretima, W., (2013). Ecological and biometric characteristics of the layings of the processionary catarpilar in some cedar plantations of Algeria of Master North, ENSA. El-Harrach 68p.
2. Biliotti E., (1958). Parasites and predatory of *Thaumetopoea pityocampa* Schiff. (Lepidoptera).Entomophaga. 3 (1): 23-34.
3. Debach, p. and Rosen, D. (1991). Biological control by natural enemy Cambridge University near, Cambridge.
4. Gachi Mr., et al. (1986). On the presence in Algeria of the processionary catarpilar of the cedar *T. bonjeani* Powell *{thaumetopoeidaé Lepidoptera). Year. Rech. Forest. Algeria* I, 53-63.
5. Huchon H., Demolin G. (1970) bioecology of the processionary catarpilar of the pine. Potential dispersion, current dispersion. Rev. For. France XXII, n°spécial “the biological fight in forest”, 220-234.
6. Robinet, C, et al. (2011). Human-mediated length-distance jumps off the fucks processionary moth in Europe.Biological Invasions. PPP: 1-13.
7. Sebti S. (2011). Biological and ecological characteristics of the Processionary catarpilar, *Thaumetopoea pityocampa* Schiff (*Lepidoptera*: *Thaumetopoeidae*) on the Cedar of the Atlas *Cedrus atlantica* Manetti in the National park of Chrea, Mag thesis, Univ. Saad Dahleb, Blida, p: 1-128.
8. Tiberi, R. (1990). Egg parasitoids off the fucks processionary Caterpillar, *Thaumetopoea pityocampa* (Den and Schiff) (Lep, Thaumetopoeidae) in Italy-Distribution and activity in different areas. Newspaper off Applied Entomology-Zeitschrift Fur Angewandte Entomology, 110,14-18.
9. Tsankov, G., Schmidt, G.H., & Mirchev, P. (1995). Impact off parasitoids in egg-batches off Thaumetopoea pityocampa (Tooth. and Schiff.) in Algeria. Bollettino di Zoologia Agraria E di Bachicoltura, 27,53-60.

10. Tsankov, G., Schmidt, G.H., & Mirchev, P. (1996a). Parasitism off egg-batches off the fucks processionary moth Thaumetopoea pityocampa (Den & Schiff) (Lep, Thaumetopoeidae) in various areas off Bulgaria. Newspaper off Applied Entomology-Zeitschrift Fur Angewandte Entomology, 120, 93-105.
11. Tsankov, G., Schmidt, G.H., & Mirchev, P. (1998) Studies one the egg parasitism in Thaumetopoea pityocampa over has period off furnace years (1991-1994) atMarikostino/Bulgaria. Anzeiger Fur Schadlingskunde Pflanzenschutz Umweltschutz, 71, 1-7.
12. Zamoum Mr., (1998). Data on the bio ecology, the factors of mortality and the dynamics of the populations of *Thaumetopoea pityocampa Denis and Schiffermüller (Lep., Thaumetopoeidae)* in the sub-Saharan pine plantations of the area of Djelfa (Algeria). Thesis of Doctorate, Univ of sciences of Rennes I, France, 247 p.