

Big Aggregations of the Ladybird Beetles at the Mediterranean Sea Shore, Baltim, Kafr El-Sheikh, Egypt

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ABSTRACT

The phenomenon of ladybird beetle (Coleoptera: Coccinellidae) aggregation was noticed during April, May and June, 2013 at the Mediterranean sea shore of Baltim city, Kafr El-Sheikh Governorate, Northern Delta, Egypt. The occurring coccinellid species were surveyed. The survey included the sandy sea shore and the adjacent vegetations; wheat, clover and weeds. Massive aggregations of the coccinellids were found along the sea coast for about 110 km, extending from Baltim city (Kafr El-Sheikh Governorate) up to Rasheed city (Beheira Governorate). Ten coccinellid species were recorded; *Coccinella undecimpunctata* L., *C. novemnotata* Herbst., *C. septempunctata* L., *Cydonia vicina isis* Mul., *Hippodamia convergens* Guerin-Meneville, *H. tredecimpunctata* L., *H. variegata* (Goeze), *Hippodamia* sp., *Rodalia cardinalis* Mul., and *Scymnus* spp. The phenomenon didn't occur in year 2014 but re-occurred in year 2015 and again disappeared in 2016. The most dominant species was *C. undecimpunctata* (90.55 and 86.84%), followed by *C. novemnotata* (6.30 and 12.39%) in 2013 and 2015, respectively. All other coccinellid species were collected in little numbers. In 2013, the majority of coccinellids (46.30 and 18.74%) were recorded by late April and 3rd week of May, respectively. In the same year, the wheat plantations harbored 75.15%. *C. septempunctata*, followed by *C. undecimpunctata* (17.52%) and *H. tredecimpunctata* (6.53%). In clover, the most dominant species was *C. undecimpunctata* (51.71%), followed by *H. tredecimpunctata* (17.11%), and then *Hippodamia* spp. (12.63%). In weeds, *C. undecimpunctata* was the most occurring (42.73%), followed by *Scymnus* spp. (29%). In 2015, *C. undecimpunctata* was the most dominant in wheat, clover and weeds, with values of 90.49, 80.71 and 49.92%, respectively. *C. vicina isis* and *Scymnus* spp. were detected only in weeds

Keywords: ladybird beetles, Aggregation, Mediterranean Sea Shore, Egypt.

INTRODUCTION

Appearance of ladybird beetles in great numbers, may reach to several thousand individuals, on the shores of seas, oceans and lakes is a phenomenon that has been recorded by several authors (e.g. Oliver 1943, Nalepa *et al* 1998, Acorn 2007 and Hodek *et al* (2007).

LeConte (1950) was the first to document this phenomenon, when he reported that several species of Coleoptera were pushed to the shores, particularly on sand beaches, by the effect of winds and water waves after being drowned in a lake. Simpson and Wellborn (1975) observed a big mixed aggregation of lady beetles and alfalfa weevils (*Hypera postica*) along a reservoir in Colorado. Big aggregations of coccinellids have been reported in England (Marviner 1939 and Riggall 1953), United States (Hagen 1962) and Egypt (Oliver 1943). As for Egypt, Oliver (1943) recorded swarms of ladybirds in the Libyan Desert coast of Egypt between Hammam and Abusir.

Bold (1873) reported that swarms of ladybirds, particularly *Coccinella undecimpunctata* L. appear in great numbers in some years. The large numbers of the beetles may cover stones, bricks and plant debris located at sandy beaches. The author did not know from where these ladybird beetles have come, and why. These problematic questions are still without a clear answer. Lee (1980) noticed big accumulations of ladybeetles, specially *Hippodamia convergens* Guerin-Meneville and *H. tredecimpunctata* L. during fall and spring, but for a short time; 2-3 weeks. He thought that migration activity may happen as a result to blowing insects into the water and pushing them to the shores, consequently, forming mass aggregations. Hodek *et al* (1993) and Hodek (1996) explained two causes that may result in such big accumulations of coccinellids. The first reason is the synchronization of moving out from overwintering sites to reach to the neighboring shores in huge swarms. The second reason is the high availability of food sources leading to forming very high dense populations of coccinellids, followed by great reductions in food resources. Denmark and Losey (2010) indicated that either

cause could contribute to ladybug a washup. Turnock and Wire (2004) detected several ladybirds, mainly *Hippodamia tredecimpunctata* and *Coccinella undecimpunctata*, under leaf litter in late October on the shore of Lake Manitoba, Canada.

The appearance of coccinellid aggregations does not occur periodically. Nedved (2006) found overwintering aggregations of two ladybird species; *Tytthaspis sedecimpunctata* and *Certomegilla undecimpunctata* in the spring of 2005 in south Bohemia (Czech Republic), but they were absent at the same site the following winter.

Some authors investigated the sexual status of coccinellids during overwintering. Susset *et al* (2018) reported that the males of *Hippodamia undecimpunctata* (Schneider) were found having big amounts of viable sperms (70-95%) in the reproduction organs throughout the overwintering period. However, the majority of females (85-95%) had empty spermatheca at the beginning of aggregation in fall. Most of females (65-91%) had numerous viable sperms in their spermatheca at the time of dispersal from the aggregation in early spring.

The present study aimed to monitor the phenomenon of coccinellid aggregations at Baltim sea shore, and at the adjacent vegetations. The coccinellid species were surveyed and identified

MATERIALS AND METHODS

By mid-April of 2013, massive aggregations of ladybird beetles were observed on the Mediterranean sea shore facing Baltim City, about 84 km north of Kafr El-Sheikh city, Kafr El-Sheikh Governorate, Egypt. This phenomenon was monitored along the Mediterranean sea coast for about 110 km, extending from Baltim City, Metobus city, Kafr El-Sheikh Governorate up to Rasheed city, Beheira Governorate.

Sampling ladybird beetles from sandy shore

In the springs of 2013 and only one site was sampled, while in 2015 there were three sites sampled, the ladybird beetles occurring in areas of 1 m², along the

Mediterranean sea shore for about 45 km were surveyed. The collected insects were put into plastic jars with fine porous caps till identification.

Sampling ladybird beetles from plants

From the winter crops, wheat and clover, as well as weeds, weekly samples of ladybird beetles were collected using sweep net, as 50 double strokes pr sample during April, May and June in 2013 and 2015. These samples were taken to find out if the coccinellid species occurring in the plantations are the same found on the sea shore.

Ladybird beetles occurring at different locations at the sea shore

Three sites along the sea shore were investigated to find out the distribution of the coccinellids.

First location: This site was chosen as facing to Baltim City. At this site, there were vegetable plantations and fruit trees. Because these plantations are insecticide – treated periodically, they were excluded from sampling. The sampled plants were only wheat, clover and weeds. The dominant weeds were sweet clover, *Melilotus indicus* L., Egyptian mallow, *Malva parviflor*, goosefoot, *Chenopodium* sp., toothed dock, *Romex dentatus* L., sow thistle, *Soncus oleraceus* L., and Bermudagrass, *Cynodon dactylon* L.

Second location: This site was adjacent to Borg El-Borollos town, about 15 km west of Baltim city. There were neither clover nor wheat plantations.

There the same aforementioned weeds, in addition to field bindweed, *Covolvulus arvensis* L. and buffel grass, *Cenchrus ciliaris* L.

Third location: This site was at Al-Mekassaba village, about 30 km west of Baltim city. The only vegetation at this site was buffel grass.

When sampling at each of the abovementioned sites, a plastic spade was used to collect occurring insects at one square meter per sample. The sampling was practiced in April, May and June.

Identifications: The collected insects were kept in plastic jars covered with fine porous caps till identification at the Systematic Laboratory, Plant Protection Research Institute, Cairo. Egypt and Oldrich Nedved, Prof Ju , Bronisovska 1970, Ceske Budejovice, Czect

RESULTS AND DISCUSSION

Results

Surveyed coccinellids

During the period extending from April to June, eight coccinellid species were surveyed 2013, and ten species were surveyed in 2015, at Baltim sea shore, Kafr El-Sheikh Governorates (Table1). Both *Rodalia cardinalis* and *Scymnus* sp were not detected in the first season.

In 2013, the most dominant species were *Coccinella undecimpunctata* with 90.55% out of total individuals of different coccinellid species, followed by *C. novemnotata* L. (6.30%). However, all remaining coccinellids were collected in very few numbers, with abundance ranging between 0.07 and 0.99%.

Table 1. List of surveyed coccinellid adults at the Mediterranean sea shore, Baltim City, Kafr El-Sheikh Governorate, Egypt, in the springs of 2013 and 2015

Species	2013		2015	
	Av No per 1 m2	Abundance%	Av No per 1 m2	Abundance%
<i>Coccinella undecimpunctata</i> L.	396.31	90.55	1539.19	86.84
<i>Coccinella novemnotata</i> Herbst.	27.58	6.30	219.60	12.39
<i>Coccinella septempunctata</i> L.	4.33	0.99	2.60	0.15
<i>Cydonia vicina isis</i> Mul	0.30	0.07	0.10	0.01
<i>Hippodamia convergens</i> Guerin- Meneville	1.60	0.37	0.83	0.05
<i>Hippodamia tredecimpunctata</i> L.	4.28	0.98	4.14	0.23
<i>Hippodamia variegata</i> (Goeze)	0.91	0.21	3.23	0.18
<i>Hippodamia</i> sp	2.34	0.54	2.44	0.14
<i>Rodalia cardinalis</i> Mul	0.00	0.00	0.24	0.01
<i>Scymnus</i> spp	0.00	0.00	0.09	0.01
Total	437.65		1772.46	

Similar results were obtained in the spring of 2015. *C. undecimpunctata* was the most dominant with 86.84%, followed by *C. novemnotata* with 12.39% abundance The remaining coccinellids were obtained with very little abundance, ranging between 0.01 and 0.23%.

The aggregations of the coccinellids were previously observed by Hodek (1996) who indicated that many species of ladybirds form aggregations of tens to forty million individuals. Also, Turnock and Wise (2004) detected high densities of ladybirds under leaf litter in late October on the shore of Lake Manitoba, Canada. They counted 105 adults/m², mainly *Hippodamia tredecimpunctata* L. and *Coccinella undecimpunctata*. They found that coccinellid survival rate in this suboptimal overwintering site was about 15%, while it was 46% under a remnant grove.

Population fluctuation

Weekly mean numbers of collected coccinellids in both years of study are presented in Tables (2 and 3).

In 2013 season (Table 2), the majority of coccinellids were recorded by late April up to the third week of May, with 15.70, 46.30, 13.04 and 18.74% on April 25th, May 4th and May 15th and May 22nd, respectively. The collected individuals were very few by late May up to June 10th: 2.35, 0.60 and 0.15 on May 26th, June 3rd and June 10th , respectively.

The results obtained in 2015 season (Table 3) were similar to those of 2013 season. The majority of ladybird beetles were collected on April 27th (22.90%), May 5th (44.66%) and May 11th (21.56%).

Thus, it is clear that the collected coccinellids were particularly high by late April, and first half of May, but were very few during the first half of June.

Table 2. Weekly numbers of coccinellids per 1 m² at Baltim Mediterranean sea shore, Kafr El-Sheikh Governorate in spring of 2013

Date	<i>C. undecimpunctata</i>	<i>C. novemnotata</i>	<i>C. septempunctata</i>	<i>C. vicina nilotica</i>	<i>H. convergens</i>	<i>H. tredecimpunctata</i>	<i>H. variegata</i>	<i>Hippodamia</i> sp	Total	Occurrence %
April 18	108.10	9.10	0.00	0.00	0.00	0.00	0.00	2.20	119.40	3.13
April 25	512.30	58.10	4.20	0.00	4.10	12.50	5.10	3.10	599.40	15.70
May 4	1602.10	111.30	24.30	2.40	8.70	14.30	0.00	5.20	1768.30	46.30
May 15	642.30	28.20	4.10	0.00	0.00	3.20	0.00	0.00	497.80	13.04
May 22	202.40	9.30	2.00	0.00	0.00	1.10	0.00	3.10	715.70	18.74
May 26	77.60	4.60	0.00	0.00	0.00	2.10	2.20	3.10	89.60	2.35
June 3	22.10	0.00	0.00	0.00	0.00	1.00	0.00	0.00	23.10	0.60
June 10	3.60	0.00	0.00	0.00	0.00	0.00	0.00	2.00	5.60	0.15
Grand Total									3818.90	

Table 3. Weekly numbers of coccinellids per 1 m² at Baltim Mediterranean sea shore, Kafr El-Sheikh Governorate in spring of 2015

Date	<i>C. undecimpunctata</i>	<i>C. novemnotata</i>	<i>C. septempunctata</i>	<i>C. vicina nilotica</i>	<i>H. convergens</i>	<i>H. tredecimpunctata</i>	<i>H. variegata</i>	<i>Hippodamia</i> sp	Total	Occurrence %
April 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
April 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
April 20	540.50	23.80	0.70	0.70	0.30	3.70	0.20	1.10	571.00	4.22
April 27	2323.90	1701.10	2.90	0.00	1.60	15.30	10.50	2.80	4058.10	22.90
May 5	7559.90	303.50	15.40	0.00	0.40	9.40	14.20	12.00	7914.80	44.66
May 11	3660.30	131.80	4.90	0.00	4.20	8.40	4.80	6.70	3821.10	21.56
May 18	975.90	35.00	1.40	0.70	1.50	2.30	1.60	1.10	1019.50	5.75
May 25	233.60	0.80	0.70	0.30	0.30	1.30	1.00	0.70	238.70	1.35
June 2	82.70	0.00	0.00	0.00	0.00	1.00	0.00	0.00	83.70	0.47
June 11	15.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.10	0.09
Grand Total									17722.00	

Occurrence of coccinellids in winter crops and weeds

In 2013 season (Table 4), the wheat plantations harboured *C. septempunctata* as the most dominant coccinellid (75.15% out of total), followed by *C. undecimpunctata* (17.52%) and *Hippodamia tredecimpunctata* (6.53%). The remaining coccinellids were captured in very few numbers. In clover, the most dominant species was *C. undecimpunctata* (51.71%),

followed by *C. tredecimpunctata* (17.11%), and then, *Hippodamia* sp (12.63%). The remaining coccinellids were captured in very few numbers. In weeds, *C. undecimpunctata* was the most occurring (42.73%), *Scymnus interruptus* (17.14%) and *Scymnus syriacus* (11.86%). It was clear that wheat plantations harboured the highest population of coccinellids, while clover and weeds harboured too much lower coccinellid population.

Table 4. Population density of coccinellids in winter crops and weeds at Baltim Mediterranean sea shore, Kafr El-Sheikh Governorate in the spring of 2013

Species	Numbers/ 100 double strokes					
	wheat		Clover		Weeds	
	AV. No.	%	AV. No.	%	AV. No.	%
<i>Coccinella undecimpunctata</i> L.	65.20	17.52	24.90	51.71	22.50	42.37
<i>Coccinella novemnotata</i> Herbst.	0.00	0.00	4.50	9.16	4.90	9.23
<i>Coccinella septempunctata</i> L.	279.70	75.15	5.10	10.39	3.20	6.03
<i>Cydonia vicina</i> isis	0.00	0.00	0.00	0.00	0.00	0.00
<i>Hippodamia tredecimpunctata</i> L.	24.30	6.53	8.40	17.11	4.10	7.72
<i>Hippodamia variegata</i> (Goeze)	4.00	1.07	0.00	0.00	0.00	0.00
<i>Hippodamia</i> sp	0.00	0.00	6.20	12.63	3.00	5.65
<i>Scymnus interruptus</i>	0.00	0.00	0.00	0.00	9.10	17.14
<i>Scymnus syriacus</i>	0.00	0.00	0.00	0.00	6.30	11.86
Total	372.20		49.10		53.10	

In 2015 season (Table 5), *C. undecimpunctata* was the most dominant in wheat, clover and weeds, with values of 90.49, 80.71 and 49.92%, respectively. It is worth mentioning that both *Cydonia vicina isis undecimpunctata*

and *Scymnus syriacus* were detected only in weeds but were not detected in wheat and clover and weeds harboured much lower coccinellid population.

Table 5. Population density of coccinellids in winter crops and weeds at Baltim Mediterranean sea shore, Kafr El-Sheikh Governorate in the spring of 2015

Species	Numbers/ 100 double strokes					
	wheat		Clover		Weeds	
	No	%	No	%	No	%
<i>Coccinella undecimpunctata</i> L.	271.20	90.49	82.50	80.71	32.30	49.92
<i>Coccinella novemnotata</i> Herbst.	8.30	2.77	4.20	4.06	8.10	12.52
<i>Coccinella septempunctata</i> L.	0.00	0.00	8.10	7.83	0.00	0.00
<i>Cydonia vicina isis</i>	0.00	0.00	0.00	0.00	4.00	6.18
<i>Hippodamia tredecimpunctata</i> L.	16.10	5.37	4.40	4.25	6.60	10.20
<i>Hippodamia variegata</i> (Goeze)	4.10	1.37	4.30	4.15	3.80	5.87
<i>Hippodamia</i> sp	0.00	0.00	0.00	0.00	2.70	4.17
<i>Scymnus interruptus</i>	0.00	0.00	0.00	0.00	0.00	0.00
<i>Scymnus syriacus</i>	0.00	0.00	0.00	0.00	7.20	11.13
Total	299.70		103.50		64.70	

Population density of coccinellids at different locations at Mediterranean sea shore, Kafr El-Sheikh Governorate

Coccinellids Population density was highest at Location 3, followed by Location 2 and Location 1 (Table 6), with values of 3510.60, 2737.00 and 2207.40 individuals / m², respectively. The vegetations in the first location were wheat, clover and weeds. The second location had neither wheat nor clover, but had several weed species, including the weed, buffel grass, *Cenchrus ciliaris* L. The third location had only the buffel grass.

At all locations, the most occurring coccinellids were *C. undecimpunctata* followed by *C. novemnotata* L. The coccinellids, *Cydonia vicina isis*, *Hippodamia variegata*, *Hippodamia* spp, *Rodalia cardinalis* and *Scymnus* spp were not detected at Location 1, All species were detected at Location 2, except *Cydonia vicina isis*. At Location 3, all coccinellids were captured , except *Rodalia cardinalis* and *Scymnus* spp.

Table 6. Population density of coccinellids at different locations at Mediterranean sea shore, Kafr El-Sheikh Governorate in the spring of 2015

Species	Numbers / m2					
	Location 1		Location 2		Location 3	
	No	%	No	%	No	%
<i>Coccinella undecimpunctata</i> L.	2106.80	95.44	2577.50	94.17	2962.90	84.40
<i>Coccinella novemnotata</i> Herbst.	94.50	4.28	114.10	4.17	531.5	15.10
<i>Coccinella septempunctata</i> L.	2.50	0.11	7.50	0.27	3.00	0.09
<i>Cydonia vicina isis</i>	0.00	0.00	0.00	0.00	0.50	0.004
<i>Hippodamia tredecimpunctata</i> L.	3.60	0.16	14.40	0.53	7.90	0.23
<i>Hippodamia variegata</i> (Goeze)	0.00	0.00	7.70	0.28	1.90	0.054
<i>Hippodamia</i> sp	0.00	0.00	7.30	0.27	2.90	0.82
<i>Rodalia cardinalis</i>	0.00	0.00	8.00	0.29	0.00	0.00
<i>Scymnus</i> spp	0.00	0.00	0.50	0.02	0.00	0.00
Total / m ²	2207.40		2737.00		3510.60	

Location 1: facing to Baltim city.

Location 2: adjacent to Borg El-Borollos town, about 15 km west of Baltim city.

Location 3: at Al-Mekassaba village, about 30 km west of Baltim city

Discussion

LeConte (1850) was the first author to observe that coleopteran insects aggregate in large numbers on the sandy shores of lakes and seas, and attributed that to the effect of winds and waves after these insects are being drowned in large areas of water. In 1873, Bold monitored the insects that form big aggregations, and mentioned identified several species of lady beetles. He pointed out that *Coccinella undecimpunctata* may cover stones, bricks and other occurring objects at the sites. The colour of these materials appear red as a reflection to the huge numbers of beetles.

The author arises a big question, from where the insects came and why, he reports that the answer is still a puzzle. In such concern, Needham (1900) suggests that this phenomenon may have occurred as a result to the thunderstorm that struck the locality one day before. When the ladybeetles were found on the sea shores going out from

water, the authors (Marriner, 1939; Oliver, 1943; Hagen, 1962; Hodek *et al.*, 1993 and Acorn 2007) indicated to this phenomenon as " washup".

Lee (1980) reported that both *Hippodamia convergens* and *H. tredecimpunctata*, were commonly observed on the shores of lakes in the Upper Midwest during the autumn and spring. The beetles stay on the shore for a short duration; 2-3 weeks. They occur in huge numbers, inactive mating, empty digestive system, abnormal sex ratio towards more females and the behavioral tendency to form aggregations. These insects were observed migrating for long distances to and from overwintering sites in California. On the other hand, Schaefer *et al.* (1987) suggest a passing weather condition or wind may be blowing ladybugs into the water.

Hodek *et al* (1993) provided two explanations for the phenomenon of massive flight of coccinellids. The first is

that beetles go out simultaneously from their overwintering sites in huge numbers. The second is the super dominance of resources which results in explosions of coccinellid populations leading to rapid decline in food availability. Thus, the starving insects may actively move towards large bodies of water after their foods are depleted, possible to gather on the shores to drink. The aggregations of the coccinellids were previously observed by Hodek (1996) who indicated that many species of ladybirds form aggregations of tens to forty million individuals. The potentiality of *C. undecimpunctata* individuals to form bigger aggregations than those of *C. septempunctata* was explained by Hodek (1960), may be to high tolerance of the former species to unfavorable conditions.

Turnock and Wise (2004) detected high densities of ladybirds under leaf litter in late October on the shore of Lake Manitoba, Canada. They counted 105 adults/m², mainly *Hippodamia tredecimpunctata* L. and *Coccinella undecimpunctata*. They found that coccinellid survival rate in this suboptimal overwintering site was about 15%, while it was 46% under a remnant grove.

Nedved (2006) indicated that removal of shelters of coccinellids may oblige them to move to new shelters, and thus, the insects may disappear at locations in some years. Acorn (2007) noted that ladybug washups appear with regularity in some regions, but are mostly absent from others. Denemark and Losey (2010) showed that the frequency, composition, and duration of washups in the Finger Lakes may explain that lake breeze phenomenon attracts coccinellids to fall into the water in several thousand or more.

Susset *et al* (2018) reported that the males of *Hippodamia undecimpunctata* (Schneider) were found having big amounts of viable sperms (70-95%) in the reproduction organs throughout the overwintering period. However, the majority of females (85-95%) had empty spermatheca at the beginning of aggregation in fall. Most of females (65-91%) had numerous viable sperms in their spermatheca at the time of dispersal from the aggregation in early spring.

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التجمعات الكبيرة لحشرات أبي العيد على شاطئ البحر المتوسط ببليطيم – محافظة كفر الشيخ - مصر

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تمت ملاحظة تجمعات حشرات أبي العيد خلال شهور إبريل ومايو ويونيو عام ٢٠١٣ على شاطئ البحر المتوسط ببليطيم محافظة كفر الشيخ – شمال الدلتا - مصر ، كما تم تعريف الأنواع الموجودة. حصرت الأنواع على كل من الشاطئ الرملي والنباتات المجاورة (برسيم – قمح – حشائش). أظهرت الدراسة وجود أعداد كبيرة جدا من بعض الأنواع على طول الشاطئ الممتد لمسافة ١١٠ كم ، من مدينة بلطيم (محافظة كفر الشيخ) وحتى مدينة رشيد (محافظة البحيرة). تم تعريف عشرة أنواع هي: أبو العيد ٧ نقاط - أبو العيد ٩ نقاط - أبو العيد ١١ نقطة - أبو العيد ١٣ نقطة - أبو العيد الأسود - هيوداميا كونفرجنس - هيوداميا فاريجاتا - جنس هيوداميا - فيداليا - اسكمنس. في ربيع عام ٢٠١٤ ، تمت زيارة المنطقة لاكتشاف وجود الظاهرة من عدمه ، ولكن لم تلاحظ أي تجمعات لحشرات أبي العيد ، ولكن سجلت الظاهرة مرة أخرى عام ٢٠١٥ ، واختفت ثانية عام ٢٠١٦. كانت حشرات أبو العيد ١١ نقطة هي الأكثر تواجدا (٩٠.٥٥ ، ٨٦.٨٤ %) ثم أبو العيد ٩ نقاط (٦.٣٠ ، ١٢.٣٩ %) في عامي ٢٠١٣ ، ٢٠١٥ على التوالي وتم حصر باقي الأنواع بأعداد قليلة وبخصوص تقلبات أعداد أبي العيد في عام ٢٠١٣: وجدت غالبية الأنواع (٦.٣٠ ، ١٢.٣٩ %) في أواخر إبريل والأسبوع الثالث من مايو على التوالي. وفي نفس العام كانت زراعات القمح تحتوي على أبو العيد ٧ نقاط بنسبة ٧٥.١٥ % ، تلتها أعداد أبي العيد ١١ نقطة (١٧.٥٢ %) ثم أبو العيد ١٣ نقطة (٦.٥٣ %). وكان أكثر الأنواع سيادة في زراعات البرسيم هو أبو العيد ١١ نقطة (٥١.٧١ %) وأبو العيد ١٣ نقطة (١٧.١١ %) ثم الجنس هيوداميا (١٢.٦٣ %). وفي الحشائش كان أبو العيد ١١ نقطة هو الأكثر سيادة (٤٢.٧٣ %) ثم الاسكمنس (٢٩.٠٠ %). وفي عام ٢٠١٥ كان أبو العيد ١١ نقطة هو الأكثر سيادة في القمح والبرسيم والحشائش بنسب ٤٩.٩٢ ، ٨٠.٧١ ، ٩٠.٤٩ % على التوالي. وتم حصر النوعين أبو العيد السود والاسكمنس في الحشائش فقط.