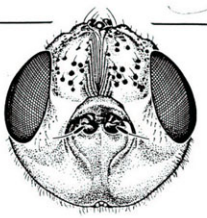
OISTROS



A newsletter for Calliphoridae, Oestridae, Rhinophoridae and Sarcophagidae

Issue 5 April 1997 Editors: Thomas Pape & Knut Rognes

Editorial

- by *T. Pape & K. Rognes*

With this issue we have sent out **OISTROS** a total of five times. Although only few contributions had arrived by the turn of the year, early 1997 changed this picture completely, and we very much appreciate the efforts made by all of you. We take this as an indication of the potential existing within our community, and hope to be treated similarly even next year!

The bibliographical update is large, as usual. Many items deal with physiology and have been listed only because *Calliphora vicina* happens to be the experimental animal. We may have to delete such physiological references from the update in order to save time and space.

E. PAUL CATTS, JR. (1930-1996)

- by *R.S. Zack.*

E. Paul Catts was born in Elizabeth, New Jersey on April 3, 1930 to Helen Gleason and Elmer Paul Catts, Sr. Growing up in an agricultural environment, the young Catts developed an appreciation for the biological aspects of life. Paul remained in the eastern United States and attended the University of Delaware where he received his BS. in Agriculture in 1952. He married Margaret Seavy in 1952; they divorced in 1978. Given political events of the time, Paul entered the military service where he served as a commissioned officer. Following his time in the military, Paul returned to the University of Delaware where he received his MS. in Entomology followed by his Ph.D. in parasitology from the University of California at Berkeley. Paul's primary area of concentration included biological aspects of bot flies, a subject that was to interest him throughout his life. Paul returned to the University of Delaware in 1964 as a member of the faculty. While at Delaware, Paul spent many hours on the coastal marshes studying biting flies. He combined his interests in insects and ecology and his extended field trips, especially to the Okefenokee swamps of Florida and occasionally to Hawaii, became the pinnacle of many a student's education. Paul's outgoing personality and his ability to develop well integrated, ecologically based courses, made him a favored instructor. He rose to the level of full professor within a short ten years. Paul married Dana Keiner in April of 1979. Shortly after their marriage, Paul made a major change in his life when he accepted the chairmanship of the Department of Entomology at Washington State University in 1980. While at Washington State University he continued to be an active teacher and researcher. Among others, he taught courses in insect ecology, medical entomology, insect morphology, and a very popular undergraduate course titled Insects and People. It was in this latter course where Paul was at his best as he shared his entomological expertise with an appreciative audience. Paul had previously received an Excellence in Teaching Award from the Entomological Society of America. Paul continued to conduct research in various aspects of biting flies and medical entomology in general. It was at WSU where Catts refined his interests in forensic entomology. He coauthored the book Entomology and Death: A Procedural Guide, and presented workshops to law enforcement agencies throughout the Pacific Northwest. It was not unusual for him to be cooperating on several death investigations and "evidence" would arrive on a weekly basis. Paul became a much sought after "expert witness" and appeared in several newspaper articles and on national television programs. Paul was a member of the American Mosquito Control Association and the American Academy of Forensic Sciences. Not only was Paul an accomplished entomologist, but he also was an exceptional wildlife and historical painter as well as a cartoonist. He made extensive use of his artistic abilities in his courses and presentations. He coauthored the book Insects Did It First which is a whimsical look at entomology illustrated with his cartoons. He was much in demand as a speaker for both professional

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and public functions including the Audubon Society, school and church groups, and various campus organizations. Paul will be missed by all who knew and interacted with him. He was one of those exceptional individuals that was respected and liked by everyone with whom he came into contact. Doing what he loved best, Paul succumbed of a heart attack while coaching the Washington State University lacrosse team. Paul had served as the team's coach for many years. Paul is survived by his wife Dana; three sons, Wade Paul Catts, Glenn Paul Catts, and Ketner Paul Catts; a daughter, Summer Catts; two sisters; one brother; and three grandchildren.

"CALLIPHORIDAE AND SARCOPHAGIDAE" DURING ICD4, OXFORD, 1998

- by *K. Rognes.*

The Fourth International Congress of Dipterology will be held in Oxford, England, 6-13 September 1998. Those of the readers of Oistros interested in participating should send a message to this effect to:

Congress Administrator
Oxford International, ICD4
Summertown Pavilion
Middle Way
Oxford OX2 7LG
UNITED KINGDOM

[Phone: +44 1865 511550; Fax: +44 1865 511570; E-mail: 101475.1765@compuserve.com]

There will be a taxon-based section entitled "**Calliphoridae and Sarcophagidae**" which will be organised and chaired by me. I would like to call upon all those of you interested in these groups to strongly consider 1) participating in the Congress, and 2) make a presentation in this section.

FERENC MIHÁLYI (1906-1997)

- by *K. Rognes.*

Dr. Mihályi Ferenc, born October 6, 1906, died on January 26, 1997 in his 91st year. I had the pleasure of corresponding with him now and then during the last 10 years or so, since I begun my studies on the blowfly genus *Pollenia*. I also met him once, at the First International Congress of Dipterology, in Budapest in 1986. I will never forget his kind face and smiles on that occasion, nor the interest he showed in my studies of this genus, so much capturing his own fascination. Much of the Diptera collections of the Natural History Museum in Budapest were destroyed by fire in 1956 and Mihályi made great efforts to rebuild the collections, especially in the oestroid groups. Mihályi worked on many groups, and published parts for the Fauna Hungarica series on Culicidae (1955), Trypetidae (1960), Muscidae (1975), and Calliphoridae and Sarcophagidae (1979). On his 80th birthday the volume on Tachinidae was published. Before he died, despite severely reduced vision, he was able to finish his translation to German of the tachinid-volume which appeared in a privately printed edition in 1994.

FORENSIC ENTOMOLOGY IN LAUSANNE (CH)

- by *C. Wyss.*

INTRODUCTION

As an inspector in the scientific department of the criminal police of Lausanne (Switzerland), I became interested since 1993 in the beautiful science of forensic entomology. It was after reading several books on that subject, such as "La Faune Entomologique des Cadavres" by P. Megnin[1], "Entomologie et Médecine Légale" by Marcel Leclercq[2] and "Forensic Entomology" by Smith[3] that I started collecting my first specimens on a human body found in a wooded area north of Lausanne. Numerous larvae of all sizes were found in the natural openings. Some of the collected larvae were set aside to be reared while the rest was placed in 70° alcohol. Several days later, two species of flies, *Lucilia caesar* and *Sarcophaga argyrostoma* emerged.

JOINT VENTURE

I asked Daniel Cherix, Professor at the University of Lausanne and curator at the Museum of zoology to help me with identification of the collected flies. It was with a lot of enthusiasm and interest for this science which he didn't knew then, that he gave me his agreement. Since then we have been working in close collaboration

ENTOMOLOGICAL METHOD

Right from the time of death and all through the different stages that occur to a decaying body, various groups of insects are attracted and follow one another in relation to the modifications occurring to the corps.

There are four groups (or squads) which can be classified into 4 categories :

- Necrophagous
- Necrophilous
- Omnivorous (which feed in particular on fabric, hair, etc.)
- Opportunists (which use the body as a shelter)

It is the peculiar odours brought on by the decomposition of the body which selectively attracts the insects. After having prospered for a while, a group finds conditions starting to deteriorate and are little by little replaced by the next group.

The specific composition of each group at the time of its presence may vary, depending on the factors influencing the local entomological fauna, and the progress of a body's decay (city/country, within a building or outside, season, climatological and meteorological data, the conditions in which the body finds itself, in open air, buried or submerged).

Forensic entomology consists of the study of the relationships existing between the presence of insects and the state of decomposition of the human body. This discipline is based on the chronological analysis of the arrival on the body of those insect species and on the study of their life cycle.

FIELDWORK

By the end of 1996, we had done 50 assessments on human bodies. A little more than half of the corpses were

found in their home (apartment, house, etc.). The rest were found in different biotopes, in lowland, in the Jura and the Alps.

The entomological material was systematically collected on the death scene and at the Institute of Forensic Medicine in Lausanne.

For each case, a computer record of a multiple data inventory was made (biotope, temperature, species, etc.) and a report on PMI (post-mortem interval) written. The collected and reared insects were kept for the collection.

CALCULATION OF PMI

For the latest cases we have used the Marchenko method. The idea is to determine the date in which the eggs were laid based on how long it takes for the larvae to develop. The problem is that the total length of development of a fly from the egg stage to the adult stage varies depending on the temperature, which may have fluctuated during the days preceding the discovery of the body. To make up for this inconvenience, Marchenko came up with a method of calculation which takes into account mean temperatures. The idea is that when temperatures are below a certain level (threshold development), larvae do not grow. Only effective temperatures matter to them. Those are defined as the difference between the mean temperature (during 24 hours) and threshold of development. To be able to complete the totality of its development cycle, each species needs a heat constant (sum of the effective temperature necessary for a complete development). By knowing the heat constant, the threshold development (values calculated by Marchenko), the temperature prevailing during the days preceding the discovery of the body and the effective temperature sustained by the larvae during rearing, it is possible to find the day in which the eggs were laid.

The PMI was calculated for 31 cadavers for which death had occurred within 24 hours to 21 days. As for the 19 other bodies in which death had occurred within 1 to 22 months, estimations were made taking into consideration various publications as well as criteria outside of the field of forensic entomology such as date of disappearance, testimonies, other evidences, etc.

INVENTORY OF FLIES RECOVERED FROM HUMAN BODIES

1. based on body age
2. based on frequency of species

Taking into account all the gathered data, we could have extracted other interesting information, but that is not the aim of this article. We wanted to show to Dipterologists a few aspects of the behaviour of necrophagous flies in Switzerland, particularly in the french speaking region where we are competent to do criminal investigations.

Based on the work done up to now, we have compiled two inventories of the fly species discovered on 50 human bodies without regard to seasons. Some insects were not determined to the species, in particular some Sarcophagidae, Phoridae, Drosophilidae, Muscidae, Lauxaniidae, Dryomyzidae, Scatopsidae, Sepsidae and Trichoceridae.

FIRST INVENTORY

You will find in this inventory the number of days or months which occurred between the day of death and the day of the body's discovery with a list of flies which colonised it. The season as well as the environment and the altitude where the body was discovered is mentioned. Finally you will learn if the body was found inside (apartment, house, shed, etc.) or outside.

A few explanatory notes about the coding of the "biotopes". The coding comes from "La Typologie des Milieux de Suisse".

1. Freshwater biotopes with wild vegetation
2. Aquatic vegetation, swamps and wetlands
3. Cliffs, caves, rocks and screes. High mountain biotopes without vegetation
5. Edges, glades, moors, thickets and hedges
6. Forests
8. Plantation, fields, land under cultivation
9. Landscaped environment, parks, gardens

SECOND INVENTORY

The *Calliphora* family represents the majority of flies colonising the human body. *Calliphora vicina* and *vomitoria* are present the year around while *Lucilia, Chrysomya* and *Protophormia* are found only during the warm season. So it is with *Sarcophaga*.

The presence of *Chrysomya albiceps* is a novelty for Switzerland. This species was signalled in our country in 1962 when captured at the *Col de Bretolet* at an altitude of around 1700 meters. This unique specimen is part of the collection of the Museum of Zoology in Lausanne.

Our data suggest that this fly migrates into our regions in August, but only if climatological conditions are favourable. It was found in 1993, 1994 and 1995. But in 1996, none were found on human cadavers, nor in traps. August 1996 was rainy and relatively cold.

As for *Protophormia terraenovae*, we encountered it for the first time in 1996 at the end of spring and in summer on 3 bodies in the plain.

CONCLUSION

Forensic entomology is extremely useful in criminal investigations since it helps, when conditions are favourable, to establish the PMI.

The other aspects of forensic entomology are the numerous discoveries about biological elements of the various insects encountered. Two of those elements are presented in this article.

References:

[1]Megnin, P. 1894: *La faune des cadavres.* Encyclopédie Scientifique des Aide-Mémoire, G. Masson, Gauthier-Villars et Fils, Paris, 214 p.

[2]Leclercq, M. 1978: *Entomologie et Médicine Légale. Datation de la mort. Collection de médicine légale et de toxicologie médicale.* Masson, Paris, 100 p.

[3]Smith, K.G.V. 1986: *A manual of forensic entomology.* British Museum (Natural History), London. 205 p.

Inventaire des Diptères découverts sur des cadavres humains entre 1993-1996 dans l'ordre chronologique et par rapport à la période de la mort

Nb jours	Nb mois	Familles	Genres	Espèces	Saison	Milieu	Altitude	Intérieur	Nature
		Calliphoridae	Calliphora	Calliphora vomitoria	Automne	1	418		ossi
		Phoridae	Megaselia	Megaselia rufipes	Printemps	9	500	ossi	
		Phoridae	Megaselia	Megaselia rufipes	Eté	9	629	ossi	
1		Calliphoridae	Lucilia	Lucilia caesar	Eté	6	845		ossi
1		Muscidae	Hydrotaea	Hydrotaea ursuina	Eté	6	530		ossi
3		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	422	ossi	
3		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	422	ossi	
4		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	375	ossi	
4		Calliphoridae	Calliphora	Calliphora vomitoria	Eté	6	538		ossi
4		Calliphoridae	Chrysomya	Chrysomya albiceps	Eté	9	375	ossi	
4		Calliphoridae	Lucilia	Lucilia caesar	Eté	6	538		ossi
4		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	375	ossi	
4		Phoridae	Conicera	Conicera spp	Eté	6	538		ossi
4		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	375	ossi	
5		Calliphoridae	Calliphora	Calliphora vicina	Automne	6	825	ossi	
6		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	420	ossi	
6		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	433	ossi	
6		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	480	ossi	
6		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	480	ossi	
6		Calliphoridae	Calliphora	Calliphora vomitoria	Automne	9	420	ossi	
6		Calliphoridae	Lucilia	Lucilia caesar	Eté	6	660		ossi
6		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	6	660		ossi
7		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	550	ossi	
7		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	498	ossi	
7		Calliphoridae	Calliphora	Calliphora vicina	Printemps	9	402	ossi	
7		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	970	ossi	
7		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	538	ossi	
7		Calliphoridae	Calliphora	Calliphora vomitoria	Automne	9	550	ossi	
7		Calliphoridae	Chrysomya	Chrysomya albiceps	Eté	9	495	ossi	
7		Calliphoridae	Lucilia	Lucilia caesar	Eté	9	495	ossi	
7		Calliphoridae	Lucilia	Lucilia caesar	Automne	9	550	ossi	
7		Calliphoridae	Lucilia	Lucilia illustris	Automne	9	550	ossi	
7		Fanniidae	Fannia	Fannia scalaris	Printemps	9	402	ossi	
7		Fanniidae	Fannia	Fannia scalaris	Eté	9	538	ossi	
7		Muscidae	Musca	Hydrotaea dentipes	Automne	9	550	ossi	
7		Muscidae	Orthera	Orthera leucozonia	Eté	9	495	ossi	
7		Phoridae	Megaselia	Megaselia rufipes	Eté	9	538	ossi	
7		Phoridae	conicera	conicera spp	Eté	9	970	ossi	
7		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	538	ossi	
8		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	405	ossi	
8		Calliphoridae	Chrysomya	Chrysomya albiceps	Eté	5	830		ossi
8		Calliphoridae	Lucilia	Lucilia caesar	Eté	5	830		ossi
8		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	405	ossi	
9		Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	580	ossi	
9		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	501	ossi	
9		Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	616	ossi	
9		Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	616	ossi	
9		Calliphoridae	Calliphora	Calliphora vicina	Printemps	9	375	ossi	
9		Calliphoridae	Chrysomya	Chrysomya albiceps	Eté	9	501	ossi	
9		Calliphoridae	Lucilia	Lucilia caesar	Eté	9	501	ossi	
9		Calliphoridae	Lucilia	Lucilia illustris	Printemps	9	375	ossi	
9		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	501	ossi	
9		Calliphoridae	Lucilia	Lucilia sericata	Printemps	9	375	ossi	
9		Calliphoridae	Lucilia	Lucilia sericata	Printemps	9	375	ossi	
9		Calliphoridae	Protophormia	Protophormia terrae-novae	Printemps	9	375	ossi	
9		Muscidae	Muscina	Muscina pabulorum	Eté	9	501	ossi	
9		Muscidae	Muscina	Muscina stabulans	Eté	9	501	ossi	
9		Muscidae	Orthera	Orthera cupreus	Printemps	9	375	ossi	
9		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	501	ossi	
10		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Printemps	9	375	ossi	
10		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	400	ossi	
10		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	400	ossi	
10		Calliphoridae	Calliphora	Calliphora vicina	Automne	9	400	ossi	
10		Calliphoridae	Calliphora	Calliphora vomitoria	Automne	9	400	ossi	
10		Calliphoridae	Lucilia	Lucilia caesar	Automne	9	400	ossi	
10		Drosophilidae	Drosophila	Drosophila funebris	Automne	9	400	ossi	
10		Fanniidae	Fannia	Fannia manicata	Automne	9	400	ossi	
10		Muscidae	Orthera	Orthera cupreus	Automne	9	400	ossi	
10		Muscidae	Orthera	Orthera leucozonia	Automne	9	400	ossi	
10		Phoridae	Megaselia	Megaselia sp	Automne	9	400	ossi	
12		Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	496	ossi	
12		Calliphoridae	Calliphora	Calliphora vicina	Automne	5	580		ossi
12		Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	421	ossi	
12		Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	421	ossi	
12		Calliphoridae	Calliphora	Calliphora vomitoria	Automne	5	580		ossi
14		Calliphoridae	Calliphora	Calliphora vomitoria	Automne	3	1700		ossi
16		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	627	ossi	
16		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	627	ossi	
16		Calliphoridae	Calliphora	Calliphora vomitoria	Eté	9	627	ossi	
16		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	627	ossi	

Inventaire des Diptères découverts sur des cadavres humains entre 1993-1996 dans l'ordre chronologique et par rapport à la période de la mort

Nb jours	Nb mois	Familles	Genres	Espèces	Saison	Milieu	Altitude	Instituer	Nature
16		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	627	oui	
16		Calliphoridae	Prosophornia	Prosophornia serrae-novae	Eté	9	627	oui	
16		Calliphoridae	Prosophornia	Prosophornia serrae-novae	Eté	9	627	oui	
16		Calliphoridae	Prosophornia	Prosophornia serrae-novae	Eté	9	627	oui	
16		Fanniidae	Fannia	Fannia manicata	Eté	9	627	oui	
16		Fanniidae	Fannia	Fannia scalaris	Eté	9	627	oui	
16		Muscidae	Muscina	Muscina assimilis	Eté	9	627	oui	
16		Muscidae	Muscina	Muscina pabulorum	Eté	9	627	oui	
16		Muscidae	Ophyra	Ophyra capensis	Eté	9	627	oui	
16		Muscidae	Ophyra	Ophyra leucosioma	Eté	9	627	oui	
16		Phoridae	Megaselia	Megaselia sp	Eté	9	627	oui	
16		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	627	oui	
20		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	560		oui
20		Calliphoridae	Calliphora	Calliphora vomitoria	Eté	9	560		oui
20		Calliphoridae	Lucilia	Lucilia caesar	Eté	9	560		oui
21		Calliphoridae	Calliphora	Calliphora vicina	Eté	9	435	oui	
21		Calliphoridae	Lucilia	Lucilia caesar	Eté	9	435	oui	
21		Calliphoridae	Lucilia	Lucilia sericata	Eté	9	435	oui	
21		Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	435	oui	
21		Sarcophagidae	Sarcophaga	Sarcophaga sp	Eté	9	435	oui	
40		Calliphoridae	Calliphora	Calliphora vomitoria	Eté	8	700		oui
40		Calliphoridae	Lucilia	Lucilia caesar	Eté	8	700		oui
40		Muscidae	Ophyra	Ophyra leucosioma	Eté	8	700		oui
30	1	Calliphoridae	Calliphora	Calliphora vicina	Eté	9	385	oui	
30	1	Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	385	oui	
60	2	Calliphoridae	Calliphora	Calliphora vicina	Eté	6	490		oui
60	2	Calliphoridae	Lucilia	Lucilia caesar	Eté	6	490		oui
60	2	Fanniidae	Fannia	Fannia scalaris	Eté	6	490		oui
60	2	Muscidae	Musca	Musca sp	Eté	6	490		oui
60	2	Muscidae	Ophyra	Ophyra capensis	Eté	6	490		oui
60	2	Muscidae	Ophyra	Ophyra leucosioma	Eté	6	490		oui
60	2	Phoridae	Megaselia	Megaselia sp	Eté	6	490		oui
60	2	Prochiliidae	Prochila	Prochila fenestrata	Eté	6	490		oui
95	3	Calliphoridae	Calliphora	Calliphora vicina	Printemps	6	819		oui
95	3	Calliphoridae	Calliphora	Calliphora vicina	Eté	9	627	oui	
95	3	Calliphoridae	Calliphora	Calliphora vomitoria	Printemps	6	819		oui
95	3	Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Eté	9	627	oui	
	4	Calliphoridae	Calliphora	Calliphora vicina	Printemps	9	376	oui	
	4	Drosophilidae	Drosophila	Drosophila funebris	Printemps	9	376	oui	
	4	Phoridae	Megaselia	Megaselia rufipes	Printemps	9	376	oui	
126	4	Calliphoridae	Calliphora	Calliphora vomitoria	Printemps	1	333		oui
141	5	Calliphoridae	Calliphora	Calliphora vicina	Hiver	9	623	oui	
141	5	Calliphoridae	Calliphora	Calliphora vomitoria	Hiver	9	623	oui	
141	5	Muscidae	Muscina	Muscina pabulorum	Hiver	9	623	oui	
164	6	Calliphoridae	Calliphora	Calliphora vicina	Printemps	9	530	oui	
164	6	Calliphoridae	Lucilia	Lucilia sericata	Printemps	9	530	oui	
164	6	Calliphoridae	Prosophornia	Prosophornia serrae-novae	Printemps	9	530	oui	
164	6	Phoridae	Megaselia	Megaselia rufipes	Printemps	9	530	oui	
164	6	Sarcophagidae	Sarcophaga	Sarcophaga argyrostoma	Printemps	9	530	oui	
193	7	Calliphoridae	Chrysomya	Chrysomya albiceps	Hiver	6	640		oui
193	7	Fanniidae	Fannia	Fannia manicata	Hiver	6	640		oui
193	7	Lauxaniidae (Sapromyzidae)			Hiver	6	640		oui
193	7	Muscidae	Ophyra	Ophyra leucosioma	Hiver	6	640		oui
193	7	Phoridae	Megaselia	Megaselia sp	Hiver	6	640		oui
193	7	Trichoceridae			Hiver	6	640		oui
256	9	Calliphoridae	Chrysomya	Chrysomya albiceps	Printemps	6	661		oui
256	9	Fanniidae	Fannia	Fannia manicata	Printemps	6	661		oui
256	9	Lauxaniidae (Sapromyzidae)			Printemps	6	661		oui
256	9	Prochiliidae	Prochila	Prochila fenestrata	Printemps	6	661		oui
256	9	Scenidae			Printemps	6	661		oui
285	10	Prochiliidae	Prochila	Prochila cinctipes	Eté	6	586		oui
288	10	Drosophilidae			Printemps	8	362		oui
288	10	Fanniidae	Fannia	Fannia manicata	Printemps	8	382		oui
288	10	Fanniidae	Fannia	Fannia scalaris	Printemps	8	382		oui
288	10	Lauxaniidae (Sapromyzidae)			Printemps	8	382		oui
288	10	Muscidae	Hydrotaea	Musca sp	Printemps	8	382		oui
288	10	Muscidae	Sp	Musca sp	Printemps	8	382		oui
288	10	Prochiliidae	Prochila	Prochila cinctipes	Printemps	8	382		oui
288	10	Scenopinidae			Printemps	8	382		oui
288	10	Scenidae			Printemps	8	382		oui
288	10	Scenidae	Syntia	Syntia pipiens	Printemps	8	382		oui
294	10	Calliphoridae	Lucilia	Lucilia sp	Hiver	6	527		oui
294	10	Fanniidae	Fannia	Fannia manicata	Hiver	6	527		oui
294	10	Prochiliidae	Prochila	Prochila fenestrata	Hiver	6	527		oui
294	10	Sarcophagidae	Sarcophaga	Sarcophaga sp	Hiver	6	527		oui
294	10	Sphaeroceridae	Thoracochaeta	Thoracochaeta zosterae	Hiver	6	527		oui
294	10	Scenidae	Syntia	Syntia pipiens	Hiver	6	527		oui
318	11	Drosophilidae			Printemps	3	2160		oui
318	11	Fanniidae	Fannia	Fannia scalaris	Printemps	3	2160		oui
318	11	Lauxaniidae (Sapromyzidae)			Printemps	3	2160		oui