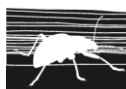


# Quaternary Entomology Dispatch



## Editorial

Dear colleagues,

I am pleased to present the latest edition of our newsletter!

We have had some very sad news last summer with the passing away of one of our colleagues, Dr. Eileen Reilly. Our newsletter therefore begins with an obituary in the memory of Eileen. Many thanks to Stephen Davis for writing this text.

This edition includes news from Svetlana Kuzmina, presenting her latest project examining insect remains from 16<sup>th</sup>-century Moscow, in collaboration with colleagues from Canada and Russia. Jesper Petersen also presents his contribution to a fascinating project looking at biological remains preserved in tar patches from a medieval shipwreck in Denmark, and Stefano Vanin introduces the FLEA – the Forensic Lab for Entomology and Archaeology, with a short piece including details about the lab's name, its research focus and a list of publications.

As usual, this newsletter includes a list of recent publications - many thanks to all of you who send me their new papers! Thanks also to all participants to this edition of the newsletter.

Keep sharing and happy reading!

Véronique Forbes ([veroforbes@gmail.com](mailto:veroforbes@gmail.com))

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## In memoriam, Dr Eileen Reilly 1970-2018

By **Stephen Davis** ([stephen.davis@ucd.ie](mailto:stephen.davis@ucd.ie))

Eileen Reilly, who has passed away at the untimely age of 48 was Ireland's foremost palaeoentomologist and one of our best known and widely respected environmental archaeologists. Eileen graduated from University College Dublin in 1992 with a joint degree in archaeology and geography, and like so many of today's insect specialists went to Sheffield to undertake the MSc in Environmental Archaeology and Palaeoeconomy in 1995. From her MSc onwards Eileen was in almost continual demand as a palaeoentomologist, working first on some of Ireland's most important urban excavations (e.g. at Temple Bar), then expanding in to the peatlands (with her work at Lisheen a particular highlight) and internationally (e.g. Novgorod). She undertook her PhD at Trinity College Dublin with a focus on woodland environments, then returned to being a consulting palaeoentomologist, a role at which she excelled. In the last decade Eileen had made a specialism of urban assemblages, and worked on important assemblages from Viking Dublin (Fishamble Street) and elsewhere in Europe. The results from Eileen's post-doctoral research project *Dirt, Dwellings and Culture: Reconstructing Living Conditions in Early Medieval Ireland and Northwestern Europe AD 600-1100* will be published in her forthcoming book, "Living Conditions in Early Medieval Europe: A Case Study from Viking Age Fishamble Street, Dublin" (to be published by Archaeopress in Oxford in 2019).

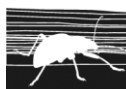
Eileen was truly a pioneer of environmental archaeology in Ireland, and continued to be the nation's most active practitioner of palaeoentomology at the time of, and indeed right up to her death. She analysed a prodigious quantity of samples in her lifetime, and her contribution as a specialist is hard to overstate. There was so much more to Eileen than just this however, and she is sorely missed by her friends, family and colleagues.

From a personal perspective Eileen's outstanding contributions are in her work on urban assemblages, including almost all of the insect analysis undertaken from Viking Dublin, and her work on the multidisciplinary project at Lisheen (and subsequent phases) which identified a number of locally extirpated Urwald species. She has left an enormous hole in Irish palaeoecology, and the discipline as a whole is far poorer without her.

Eileen is survived by her husband Ronan O'Brien, her daughter Áine (9), her father Willie, sister Abina, brothers Bill and Joe, and extended family and friends.

A more complete obituary can be found in the Irish Times, here:

<https://www.irishtimes.com/life-and-style/people/archaeologist-who-used-beetles-to-unlock-past-1.3592276?mode=amp>



## News from our colleagues

### News from Russia/Canada

From **Svetlana Kuzmina** ([kuzmina@ualberta.ca](mailto:kuzmina@ualberta.ca))

This year I started a project (in collaboration with Elena Ponomarenko from Ottawa, a freelancer geologist) in a field that is new to me. Instead of the familiar Pleistocene insects from Beringia, I am looking at almost recent (16<sup>th</sup> century) archaeological material from Moscow. The samples were excavated from the central part of the city during its reconstruction before the world football championship. Experts from the Moscow Archaeological Bureau identified the site as an ancient latrine.

The work is still in progress, but what is obvious for now is that the sediment is full of insects, seeds, birch bark, ceramic sherds, hair and charcoal fragments. Most of the insect remains belong to Staphylinidae, Scarabaeidae and Histeridae; there are also some fly puparia fragments but beetles strongly dominate the assemblage. This research represents the first documentation of subfossil insects from a historic latrine in Russia. Many thanks to my former employer, Paleontological Institute RAS in Moscow, who provided me with a temporary working place for this project.

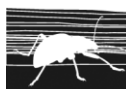


## Ongoing research project

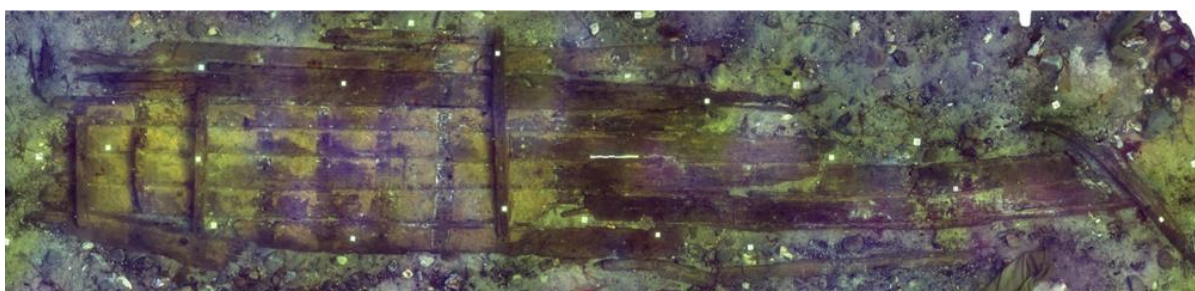
### Insects from tar patches in a medieval shipwreck from Kalverev Syd, Denmark

By **Jesper Petersen** (Natural History Museum of Denmark, [jesperpetersen@snm.ku.dk](mailto:jesperpetersen@snm.ku.dk))

Last year, the Viking Ship Museum in Roskilde excavated and salvaged the remains of a medieval shipwreck (figure 1), ahead of the construction of a new bridge between the two Danish islands, Sjælland and Falster (Thomsen 2017). Dendrochronological analysis dates the ship to 1250-1255 AD (Daly 2017). Although no cargo or ballast was identified in the ship, the inner sides of the planks were coated with a thick layer of tar, which contained a variety of botanical and animal remains. After the ship was salvaged, samples of tar were collected at various locations all over the wreck to be analyzed. The botanical and pollen analysis (Henriksen et al. 2018) revealed that the ship had transported non-threshed rye and barley, and possibly hemp or hops. Additionally, the samples included fish scales, feathers, seeds from apples, raspberry and elderberry, and a large number of hazelnut shells. The insect analysis (Petersen 2018) revealed 56 taxa dominated by species associated with pasture and dung, including six species of dung beetles (*Aphodius*), dor beetles (*Trypocopris vernalis*) and a large number of puparia from the yellow dung fly (*Scathophaga stercoraria*). Mould beetles and aquatic



beetles were also common in most of the samples. Only a few pests were found, including the dark mealworm beetle (*Tenebrio obscurus*), which is often found in grain, and the European lyctus beetle (*Lyctus linearis*), a pest of wooden constructions, which is extinct in Denmark today. Overall, the insect analysis suggests that the ship was used for transporting domestic animals, grain and possibly also firewood or timber. All results from the different analyses will be combined and published in an article in the future.



**Figure 1.** Orthophoto of the shipwreck on the seafloor. The yellow patches on the planks are layers of tar 0-2 cm thick. Almost 10 meters of the wreck is preserved including the stern on the far right. Photo: Viking Ship Museum

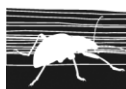
A video with information about the shipwreck is available below (with English subtitles): <https://www.vikingskibsmuseet.dk/fagligt/marinarkaeologi/marinarkaeologiske-undersogelser/middelalderskibet-fra-kalverev-maaske-det-missing-link/nyt-om-middelalderskibet-fra-kalverev/>

I would like to thank Jan Pedersen and Thomas Pape from the Natural History Museum of Denmark who helped with the identifications and Paul C. Buckland for suggestions for some of the problematic specimens.

### References

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- Petersen, J. (2018) *Insektanalyse af Kalverev Syd skibsvraget (VIR 2794)*. *ArchaeoScience* XXI. Statens Naturhistoriske Museum, Københavns Universitet.
- Thomsen, M.H. (2017) *Kalverev Syd. Beretning for udgravning af middelalderlig vragdel, VIR 2794*. Vikingskibsmuseet, Roskilde.





## The FLEA - Forensic Lab for Entomology and Archaeology

By **Stefano Vanin** (School of Applied Sciences, University of Huddersfield, Huddersfield, UK, [S.Vanin@hud.ac.uk](mailto:S.Vanin@hud.ac.uk))

It was a warm day of spring at the museum of Anatomy of the University of Pisa (<https://www.mau.sma.unipi.it/>), when, inspecting some South American *fardos* (cloth wrappings into which bodies were laid) belonging to the collection "Regnoli" to find insects associated with body decomposition and funerary offerings, a gold shining fragment of an insect emerged from the dark brown material associated with the human remains preserved and protected in the *fardo* like in an untouchable casket. It was not an insect associated with the decomposition, neither with the offerings, it was the dry cuticle of an ectoparasite in the genus *Pulex*. Words and names are important, especially when they start dancing in the mind of a "bug hunter": words are contents and containers, are sounds, and can be acronyms. It is thus, playing with the English common name of these amazing (for their biological adaptations), and terrible (for their ability of spreading diseases) insects, that the FLEA, the Forensic Lab for Entomology and Archaeology, was born.



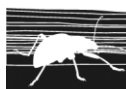
FLEA is currently based at the School of Applied Sciences of the University of Huddersfield in the peaceful landscape of West Yorkshire, UK.

The research developed by the FLEA research group combines the morphological and the molecular approach for accurate species identification of entomological samples both from nowadays forensic cases, mainly from Italy, and archaeological samples from all over the world. In fact, at present, the "FLEA people" are carrying out studies on samples collected from Italian mummies and urban contexts, and from Peruvian and Saharan archaeological excavations.

The aims of the studies can be summarized thus:

- 1) Description of the entomo/arthropod-fauna associated with human and animal remains and with offerings, to aid our understanding of funerary practices, the transformation of the "biodiversity" through time, as well as to implement information useful in forensic cases, especially old cases. Human habits and hygienic conditions are also traced back in time based on such "delicate biological remains".
- 2) Research on ectoparasites and characterization of the DNA of potential pathogens carried by them.

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- 3) Detailed description of puparia and other immature developmental stages of poorly investigated, or very “confused” taxa, mainly Diptera, and analysis of the taphonomic process affecting the survival and the transformation of puparia depending on the environmental and historical context.
- 4) Optimization of techniques and protocols for DNA extractions and amplification from archaeological contexts.



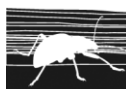
Figure 2. The FLEA research group.

In the FLEA, three PhD students, Giorgia Giordani, Fabiola Tuccia and Jennifer Pradelli, and two Master (by Research) students, Prashasti Sing and Subham Mukherjee are working under the direction of Dr Stefano Vanin (Fig. 2) following the motto “per aspera ad majora” in order to explore and divulgate the fascinating worlds of Forensic Entomology and Funerary Archaeoentomology. The vision of the FLEA in fact is that the two disciplines, Forensic Entomology and Funerary Archaeoentomology, are separate and well distinct despite sharing the same bulk of knowledge related to insect colonization of bodies and carrions, and using some common techniques for the collection and analysis of the samples. In fact, for us it does not make any sense referring to Forensic Entomology in an archaeological context, since the word forensic refers only to legal mandates. In order to increase awareness of the discipline, the FLEA, in collaboration with the GIEF (Italian Association for Forensic Entomology), organized the first and the second International Conference of Funerary Archaeoentomology (ICFAE) in Huddersfield (UK) in 2015 and in Treviso (Italy) in 2017. This year the FLEA is collaborating with Jean Bernard Huchet in the organization of **the third ICFAE that will be held in Bordeaux (France) in June 2018 (for further information see [www.eafe.org](http://www.eafe.org))**.

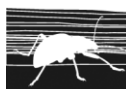
The FLEA is an open and sparkling environment where PhD students and researchers from abroad are used to spend periods of training, to develop new research experiences and improve their knowledge. At the same time, the personnel of the FLEA is happy travelling to learn, create new collaborations, sampling and help share awareness of this fascinating discipline.

Some of the most recent papers produced by the “fleas” are listed here:

Bortolini, S., Tuccia, F., Giordani, G., Maistrello, L. & Vanin S. (2018) **Longer the sequence higher the probability of correct identification of forensic important species?** *PeerJ* (online soon)



- Giordani, G., Grzywacz, A. & Vanin S. (2018) **Characterization and identification of puparia of *Hydrotaea Robineau-Desvoidy, 1830* (Diptera: Muscidae) from forensic and archaeological contexts.** *Journal of Medical Entomology* doi: 10.1093/jme/tjy142
- Vanin, S. & Huchet, J.-B. (2017) **Forensic Entomology and Funerary Archaeoentomology.** In Schotsmans, E.M.J., Marquez-Grant, N. & Forbes, S. (Eds) *Taphonomy of Human Remains: Analysis of the Death and the Depositional environments*, First edition, chapter 13, pp 176-186. John Wiley & Sons Ltd.
- Viero, A., Montisci, M., Pelletti, G. & Vanin, S. (2018) **Crime Scene and Body Alterations Caused by Arthropods: Implications in Death Investigation.** *International Journal of Legal Medicine*. doi: 0.1007/s00414-018-1883-8
- Giordani, G., Tuccia, F., Zoppis, S., Vecchiotti, C. & Vanin, S. (2018) **Record of *Leptometopa latipes* (Diptera: Milichiidae) from a human cadaver in the Mediterranean area.** *Forensic Sciences Research*. doi: 10.1080/20961790.2018.1490473
- Mercuri, A.M., Fornaciari, R., Gallinaro, M., Vanin, S. & di Lernia, S. (2018) **Plant behaviour from human imprints and the cultivation of wild cereals in Holocene Sahara.** *Nature Plant*, 4: 71-81; doi:10.1038/s41477-017-0098-1
- Bugelli, V., Gherardi, M., Focardi, M., Pinchi, V., Vanin, S. & Campobasso, C.P. (2018) **Decomposition pattern and insect colonization in two cases of suicide by hanging.** *Forensic Sciences Research*, online doi: 10.1080/20961790.2017.1418622
- Giordani, G., Tuccia, F., Floris, I. & Vanin, S. (2018) **Archaeoentomological study reveals the presence of the extinct species *Phormia regina* (Diptera: Calliphoridae) from Sardinia.** *PeerJ* 6:e4176; DOI 10.7717/peerj.4176
- Bugelli, V., Papi, L., Fornaro, S., Stefanelli, F., Chericoni, S., Giusiani, M., Vanin, S. & Campobasso, C.P. (2017) **Entomotoxicology in burnt bodies: a case of maternal filicide-suicide by fire.** *International Journal of Legal Medicine* 131 (5):1299-1306 doi: 10.1007/s00414-017-1628-0.
- Lo Pinto, S., Giordani, G., Tuccia, F., Ventura, F. & Vanin, S. (2017) **First records of *Synthesiomyia nudiseta* (Diptera: Muscidae) from forensic cases in Italy.** *Forensic Science International* 276: e1-e7 doi: 10.1016/j.forsciint.2017.05.003.
- Bostock, E., Green, E.W., Kyriacou, C.P. & Vanin, S. (2017) **Chronobiological studies on body search, oviposition and emergence of *Megaselia scalaris* (Diptera, Phoridae) in controlled conditions.** *Forensic Science International* 275 155–159 <http://dx.doi.org/10.1016/j.forsciint.2017.03.002>
- Vanin, S., Migliaccio, M., Tadini Buoninsegni, L., Mangini, M., Bugelli, V., Pinchi, V. & Focardi, M. (2017) **A case of insect colonization before the death.** *Journal of Forensic Sciences* 62 (2): 1665-1667 doi: 10.1111/1556-4029.13481
- Tuccia, F., Giordani, G. & Vanin, S. (2016) **A general review of the most common COI primers for Calliphoridae identification in Forensic Entomology.** *Forensic Science International-Genetics* 24:eg-e11 doi: 10.1016/j.fsigen.2016.07.003
- Tuccia, F., Giordani, G. & Vanin, S. (2016) **A combined protocol for identification of maggots of forensic interest.** *Science & Justice* 56(4):264-268 doi: 10.1016/j.scijus.2016.04.001



Vanin, S. (2016) **Advances in Forensic Entomology in missing persons investigations**. In Morewitz, S.J. & Sturdy Colls, C. (Eds). *Handbook of Missing Persons*, pp. 309-317. Springer.



## Recent publications

Ashastina, K., Kuzmina, S., Rudaya, N., Troeva, E., Schoch, W.H., Romermann, C., Reinecke, J., Otte, V., Savvinov, G., Wesche, K. & Kienast, F. (2018) **Woodlands and Steppes: Pleistocene Vegetation in Yakutia's most Continental Part Recorded in the Batagay Permafrost Sequence**. *Quaternary Science Reviews* 196: 38-61.

Giordani, G., Grzywacz, A. & Vanin, S. (2018, in press) **Characterization and Identification of Puparia of *Hydrotaea Robineau-Desvoidy*, 1830 (Diptera: Muscidae)**. *Journal of Medical Entomology* XX (X): 1-10.

Holden, A.R., Barclay, M.V. & Angus, R.B. (2018) **Rancho La Brea Fossil Indicates Native Nearctic Status for *Necrobia violacea* (Linnaeus) (Coleoptera: Cleridae), a Species Previously Considered a Synanthropic Introduction to North America**. *The Coleopterists Bulletin* 72 (3): 558-561.

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[Rancho La Brea Fossil Indicates Native Nearctic Status for \*Necrobia violacea\* \(Linnaeus\) \(Coleoptera: Cleridae\), a Species Previously Considered a Synanthropic Introduction to North America | The Coleopterists Bulletin - bioone.org](#)

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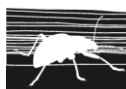
Abstract. The cosmopolitan beetle *Necrobia violacea* (Linnaeus) (Cleridae), formerly thought adventive in the New World through European trade, is reported from a sealed assemblage within the skull of a western camel (*Camelops hesternus* Leidy, Camelidae) from the famous Rancho La Brea Tar Pits in southern California and radiocarbon dated to approximately 44,000 years ago.

Kuzmina, S.A. (2017) **Macroentomology Analysis: Methods, Opportunities, and Examples of Reconstructions of Paleoclimatic and Paleoenvironmental Conditions in the Quaternary of the Northeastern Siberia**. *Contemporary Problems of Ecology* 10 (4): 336–349. Pleiades Publishing Ltd., 2017. [Original Russian Text S.A. Kuzmina, 2017, published in *Sibirskii Ekologicheskii Zhurnal*, 2017, No. 4, pp. 381–398.]

Panagiotakopulu, E., Schofield, E., Edwards, K. & Buckland, P. (2018) **Thule Inuit Environmental Impacts on Kangeq, Southwest Greenland**. *Quaternary International*. 10.1016/j.quaint.2018.09.011

Panagiotakopulu, E., Buckland, P. & Wickler, S. (2018) **Is There Anybody in There? Entomological Evidence from a Boat Burial at Øksnes in Vesterålen, Northern Norway**. *Plos One* 13 (7): e0200545. doi.org/10.1371/journal.pone.0200545





Panagiotakopulu, E. & Buckland, P. (2018) **Early Invaders – Farmers, the Granary Weevil and Other Uninvited Guests in the Neolithic**. *Biological Invasions* 20 (1): 219-233.

Thompson, J.E., Martín-Vega, D., Buck, L.T., Power, R.K., Stoddart, S. & Malone, C. (2018) **Identification of Dermestid Beetle Modification on Neolithic Maltese Human Bone: Implications for Funerary Practices at the Xemxija Tombs**. *Journal of Archaeological Science: Reports* 22: 123–131. Doi: 10.1016/j.jasrep.2018.09.016

## Conference proceedings

Huchet, J.-B. (2018) **Lésions ostéolytiques sur crânes humains perpétrées par les termites souterrains (*Insecta : Isoptera*)**. XXXIII<sup>ème</sup> Colloque du GALF (Groupement des Anthropologues de Langue française) : De l'Evolution à l'Anthropologie médico-légale. Coimbra, Portugal (22-23 novembre 2018). DOI: 10.13140/RG.2.2.19375.38569 (Poster)

Huchet, J.-B., Backwell, L., Dirks, P., Jashashvili, T. & Berger, L. (2018) **Etude taphonomique, paléochronologique et paléoforensique d'*Australopithecus sediba* à partir des insectes fossiles et de leurs traces d'activité (Malapa, province de Gauteng, Afrique du Sud)**. XXXIII<sup>ème</sup> Colloque du GALF (Groupement des Anthropologues de Langue française) : De l'Evolution à l'Anthropologie médico-légale. Coimbra, Portugal (22-23 novembre 2018).

## About the Quaternary Entomology mailing list

Back in 2011, Scott Elias and I (Véro Forbes) set up a mailing list to facilitate communication amongst researchers in Quaternary Entomology. The list allows subscribers, including experienced workers in the field but also students, to exchange news and ideas and to query their colleagues about any questions, problems or requests they may have. Our mailing list is hosted by Jiscmail, a national academic service based in the UK.

The mailing list is used to distribute editions of the Quaternary Entomology Dispatch. **The next edition of QED is scheduled for September 2019.**

**To subscribe to the mailing list, please visit:**

<https://www.jiscmail.ac.uk/cgi-bin/webadmin?Ao=QUATERNARYENTOMOLOGY>

