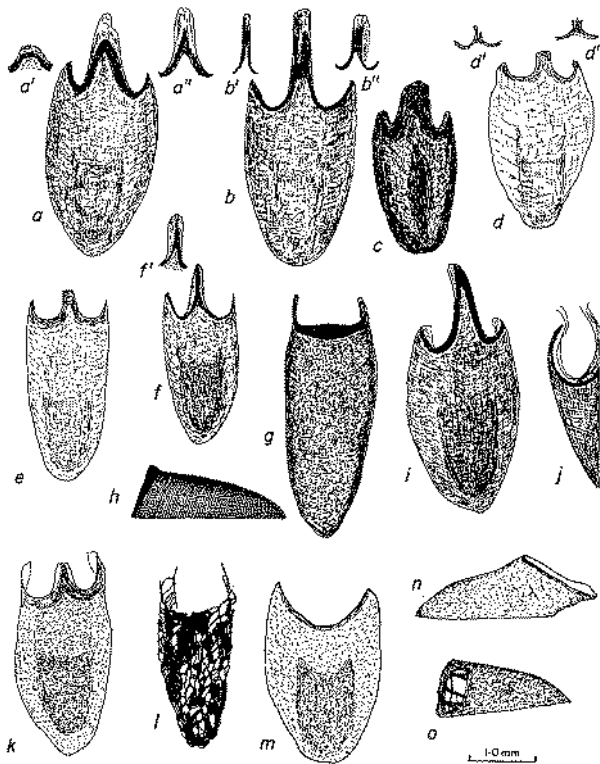


# s The British Simuliid Group Bulletin

Number 28

August 2007



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## **The British Simuliid Group Bulletin**

**ISSN: 136 333 76**

DSC Shelfmark 2424 100000n

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The British Simuliid Group Bulletin is an informal publication intended to disseminate information about the Simuliidae. It is published twice each year and is distributed free to all members of the British Simuliid Group.

Content covers papers presented at the Group's Annual Meeting, which is usually held in September, short research notes, notices and accounts of meetings, and articles of anecdotal or general interest that would not normally be found in international journals. Geographical cover is world-wide, and is not restricted to the British Isles. Reports of research carried out by graduates, young scientists and newcomers to the subject are particularly encouraged. It is an ideal medium for offering new ideas and stimulating discussion because of the very short interval between acceptance and publication.

Published and distributed by  
The Department of Entomology  
The Natural History Museum, Cromwell Rd, London SW7 5BD  
[www.nhm.ac.uk](http://www.nhm.ac.uk)

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The British Simuliid Group Bulletin is issued in simultaneously available identical copies for permanent scientific record and conforms to the requirements of the International Code of Zoological Nomenclature.

## THE BRITISH SIMULIID GROUP

The British Simuliid Group (BSG) is an informal gathering of scientists of any discipline, from many countries, who have an interest in the Simuliidae. The group's members include entomologists, parasitologists, environmentalists, ecologists and medics, with interests in ecology, bionomics, taxonomy, cytotaxonomy, disease transmission, freshwater biology etc. Our aim is to assemble as diverse a group as possible in order to encourage a wide interchange of ideas and information.

At present the BSG has about 130 members in the UK, Europe, Africa, Australia, New Zealand and the Americas. Membership is FREE - if you are not already a member of the BSG all you have to do is give us your name and postal and e-mail addresses. Annual meetings have been held at different locations in the UK since 1978. Abstracts of papers presented are published in our Bulletin which is sent to all members of the group.

The Group also runs an electronic news list with the name "Simuliidae" which is now on JISCmail. To join "Simuliidae" send the following command as one line of text in an e-mail message without subject heading- join Simuliidae your-firstname lastname to: jiscmail@jiscmail.ac.uk. Membership of "Simuliidae" does not automatically make you a member of the BSG. You have to join each separately. The simuliidae list owners are the Hon. Secretary and the Editor of the Bulletin. Recent back numbers of the Bulletin can be viewed on the World Wide Web at URL:

<http://www.blackfly.org.uk>.

Inquiries about the Group and its activities should be made to John Davies, address inside front cover and e-mail [daviesjb@liverpool.ac.uk](mailto:daviesjb@liverpool.ac.uk)

### Notes for Contributors

To avoid copy-typing, the editor (address above) would prefer to receive contributions on disc or by e-mail, or typewritten. Details as follows:-

1. Via conventional mail on IBM PC formatted 720Kb or 1.4Mb 3.5 inch diskettes, as unmodified word processor files (most common DOS or Windows word processor formats are acceptable) or as RTF, PDF, ASCII or DOS text files (We usually have to change pagination and heading format, anyway). Mark the disc with the format, word processor name and file name(s). Complicated tables and figures can be accepted as separate graphics files (not OLE embedded, please!) but we may ask for a hard copy as a check that all detail has been retained. Remember that figures should have legends and small detail drawn large enough to be visible when reduced to 100mm by 70mm. Diskettes will be returned on request.
2. By electronic mail via the Internet. Send your file in MSWord .DOC or in .RTF or .PDF format or as an ASCII file (also known as DOS or txt File), and e-mail it either as part of the message or preferably as an attachment to: [daviesjb@liverpool.ac.uk](mailto:daviesjb@liverpool.ac.uk).

If neither of the above methods are available, then post to me printed copy on A4 paper (210x297 mm), single spaced, ready for scanning. Heading styles as in the Bulletin. Format for References is flexible. Please refer to the Bulletin for the form appropriate to your article. Scientific Communications should quote the full title and journal name, but Notes and Abstracts may optionally omit titles and show only the abbreviated journal name.

## FROM THE EDITOR

This number of the *Bulletin* is largely given over to the obituary of Lewis Davies promised in *Bulletin* No. 27. Lewis is usually thought of as an original member of the British Simuliid Group, but he was not home from his last Crozet Islands trip until May 1979 and so missed the founder-meeting of the Group in London the previous month. However, by now his allegiance to Simuliids was weakening and although he ‘signed up’ for BSG and attended a few meetings, his mind was moving back to his first love, the blowflies. His reasons are given in a letter to Jon Bass included in the postscript obituary.

I have recently been contacted by Trefor Williams, who members will recall was a founder member of our Group and was also editor of the early *Newsletters* and the first three *Bulletins* between 1979 and June 1994. Trefor states that his interests have now moved so far away from the Simuliidae that he sees no point in continuing his membership, and wishes us success and good fortune in future endeavours. We regret his departure and wish him the same.

Please remember the next BSG Annual Meeting on Wednesday 12 September 2007 in Oxford – details on another page. Please remember to contact John Davies or Adrian Pont about details of your attendance, presentation or to book your place for the dinner in September.

**John Davies**

### **The Blackfly Vernacular Names Project**

The lists of common or vernacular names for blackflies has now been posted on the internet in the form of “Wiki” pages. This allows anyone visiting the pages to contribute by adding to or suggesting amendments by typing directly onto the pages without contacting the author. It is hoped that this will make it easier for visitors to add to the list, particularly for those countries not so far represented.

The pages can be found at: **[www.blackflies.objectis.net/NamesZW](http://www.blackflies.objectis.net/NamesZW)**  
Or by visiting **[www.blackfly.org.uk](http://www.blackfly.org.uk)** and following the link

# Lewis Davies (1924-2006) - A Remembrance

Roger W. Crosskey

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Time is thinning the ranks of the entomologists who cut their research teeth on blackflies in the 1950s, a remarkable period in which ‘simuliidology’ emerged as a respectable field of scientific endeavour. Sadly Lewis has now gone: he died on 9th December 2006 aged 82. Besides the family, friends and scientific colleagues who knew and valued him personally are the many who have known his name only from his publications and have not had the privilege of hearing his soft Welsh accent or enjoying his (sometimes quirky) sense of humour. Lewis lived for entomology and had an unusually profound understanding of the living blackfly. Diptera feature predominantly among his scientific publications but in later years a variety of insects such as the bristle-tails (*Thysanura*)

and carabid beetles were added to his research portfolio. His output on the Simuliidae, some thirty publications, demonstrates the breadth of his knowledge, for they embrace the fields of behaviour, ecology, evolution, morphology, physiology, taxonomy and trapping methods.

Lewis Davies - he had no ‘middle’ name - was Welsh and deeply proud of it, heaven forbid that he should ever be thought English - or Anglo-Saxon as he liked to call those unfortunate enough to come from the wrong side of Offa’s Dyke. He was born on 11th September 1924 in Llandudno, a town on the mid-north coast of Wales. He grew up in a Welsh-speaking home at Penmaenmawr, a quarrying village a little to the west of Llandudno. English was a foreign language that had to be learnt and he only began to acquire it while attending chapel Sunday school when he was five years old. He went to school in Llandudno and on to the University College of North Wales at Bangor, from where, in 1945, he graduated with First Class Honours in Zoology. It was not until he was at college at the age of nineteen, so he told me, that he felt completely in command of English. Welshness ran deep in him and he always considered Welsh to be his mother-tongue. He wrote it stylishly (so he said) and possessed a library of three hundred or more books in the Welsh language. He claimed - in jest I hope though one never knew with Lewis - that Welsh was superior to English because it manages with an alphabet of fewer letters and the adjective always follows the noun: free lessons in Welsh were always available from Lewis! He was a pillar of the Welsh community in Durham, the small cathedral and university city in northeast England where he lived most of his life, and he was sometimes called upon for a speech on St David’s Day - when he would describe himself as “the unpaid resident Durham bard”. Once, when Lewis had been back to Penmaenmawr and hobnobbed with a local farmer, he wrote to

years and life in among you Anglo Saxons slid away for a few minutes”. Important though they were, things Welsh took their place among Lewis’s many other non-entomological interests and activities. He was very well read, deeply interested in history, grew his own vegetables and was obsessed with railways, especially steam locomotives; he seemed to have all the British Rail routes and timetables in his head.

Lewis moved from North Wales in 1946 to take up a position as a research assistant in the Zoology Department at Durham and in 1949 was promoted to Lecturer in Zoology. Subsequent promotions took him to Senior Lecturer in 1961 and to a personal Readership in Entomology in 1965. In the pre-1950 years, Lewis’s research was devoted to the immature stages of calliphorids, especially those of *Lucilia sericata* responsible for ‘blowfly strike’ of sheep, and his Ph.D. - awarded to him by Durham in 1949 - was on these flies. Interestingly, Lewis never lost his love of maggots and, having done with simuliids quite decisively in 1980, he took up the blowflies again and published on them up to the year of his death. This late phase of his entomological research was conducted at his home in Durham, where he had set up a suitable laboratory soon after his official retirement in 1982.

Lewis’s entry into blackfly research arose from a specific event. In 1950 he participated in the Durham University Zoological Expedition to Norway, a “magnificent country” which instantly captivated him. Whilst there he spotted the potential of simuliids, underworked at the time, as a research group, and before long he had established that *Prosimulium ursinum* was almost certainly parthenogenetic. The hold that Norway exercised on Lewis was lasting and in later years he went there on family holidays and organized NATO-funded summer fieldwork (1967-1970) with Canadian colleagues, Murray Fallis and Doug Davies.

The planning and teaching of courses, supervision of students and the many other responsibilities shouldered by university lecturers, rarely left Lewis with as much time for research as he would have liked, but this is a common complaint in academe when teaching and research come into competition. He was not enthusiastic when occasionally he had to take over as departmental head, having little taste for administration *per se*. Organization was something else, and the blackfly colloquium that he planned and hosted at Durham, to follow the International Congress of Entomology in London in 1964, was a great success. Lewis’s students held him in much respect and affection, though for student and tutor to get at loggerheads was not unknown.

The continuum of Lewis’s association with Durham (1946-2006) was broken only once. In the summer of 1957 he quitted Durham and took a job with the Entomology Research Institute of the Canada Department of Agriculture in Ottawa. Blackflies were being intensively studied at this time in Canada and the Ottawa position enabled Lewis to occupy himself in research more or less full time. In Canada he produced papers on *Prosimulium* and became acquainted with *Gymnopsis* and

ideas about evolutionary relationships that sometimes failed to find support among his specialist colleagues. The Canadian spell was quite short and in November 1960 Lewis returned to Durham, resuming his lecturer position in the zoology department.

Lewis wasted no time after his return to England. He started almost at once on what proved to be a five-year project, the production of a new monograph to supersede the key-work on the British simuliid fauna issued by the Freshwater Biological Association (FBA) in 1944. The first essential was material, and Lewis spent half of July 1961 travelling by car for 1600 miles around England while collecting from 72 sites. (This does not sound much but Lewis was not and never became an enthusiast for the 'horseless carriage'.) The work to be done for the monograph was prodigious, especially as the project dealt equally with larvae, pupae and adults. It required a huge amount of basic description for both new and known species and the personal preparation of all the illustration. For 1962-65 the work was aided by a Science Research Council grant which enabled Lewis to employ R.W. Dunbar, a protégé of Klaus Rothfels with expertise in blackfly chromosomes. However, a cytological arm to the project was not fully achieved and Lewis's monograph had to be solely morphotaxonomic. It was published by the Royal Entomological Society of London in 1966. (Lewis was elected to Fellowship of this society in 1951 and belonged to it until his death.) The RESL was willing for a version of the monograph stripped down to keys and figures to be issued and this appeared under the FBA imprint in 1968 with the addition of distribution maps. Paradoxically, the FBA version became much better known than the original and through it Lewis's name became familiar in Europe where the FBA keys were widely used. (The material from Lewis's simuliid collection was donated to the Natural History Museum and is now incorporated into the British Diptera collection; the punch-card index is also in the Museum.)

Even though the monograph was dominant through the early 'sixties it was not all-absorbing and Lewis devoted considerable thought to more theoretical matters. A talk he gave at the RESL in mid-1961 on the structure of primitive simuliids and the probable affinities with chironomids was a warning shot that he would soon have more to say on this and related evolutionary questions. He did. The arguments are very complex and require an exceptional knowledge of head and mouthparts morphology in larvae of simuliids such as *Gymnopais* and *Simulium oviceps* before one can begin to assess what is ancestral and what derived but here it is necessary only to refer to *Crozetia*

*crozetensis*. This strange blackfly is endemic in Possession Island, one of the sub-Antarctic Crozet Islands some 2000 miles from the nearest landmass (South Africa). It was originally described in 1937 as *Simulium crozetense* and shown to have aberrant larvae. Lewis surmised that this very isolated species might shed light on simuliid evolution. He accordingly immersed himself in a critical study of the (very limited) material then available for examination, quickly confirming that the species is indeed a structural odd-ball - distinct enough from any other blackfly to rate a new genus of its



The only way for Lewis to advance his study of *Crozetia* was to visit the Crozets himself, quite an ambition given that these islands are part of the French sub-Antarctic Territories and uninhabited except for a French research team. The French would have to be Lewis's hosts, providing him with sea transport to and from the Crozets on one of their supply ships and taking care of his everyday needs whilst he was in residence for four or five months. But Lewis was very determined, visiting (? badgering) the right authorities in Paris, raising funds, getting leave of absence from Durham University, and learning French - fast.

A friendship he struck up with Loïc Matile, dipterist at the Paris Natural History Museum, seems to have helped his cause. As Lewis said, they were both Celts and shared the same name - Loïc being Lewis in Breton form. By the end of 1967 all was approved and Lewis ready for the first of what turned out to be three visits to the Crozets, each of a few months duration during the southern summer (December to April). The first was in 1968, the second in 1972/73 and the last in 1978/79. Each had a distinctly different main purpose. The first visit, when Lewis was in effect entering the unknown, was a huge simuliidological success story. Every tumbling stream on Possession Island was crowded with *Crozetia crozetensis* and Lewis was able to describe the morphology of the species in detail and discover a lot about its biology. Besides *Crozetia* he studied the terrestrial arthropods in general and published an overview of them in the *Journal of Natural History* (1973). On the 1972/73 visit he confined simuliid work to fixation of larvae for chromosomal investigation by Rothfels and devoted most of his time to the weevils and the carabid beetles. The carabid genus *Amblystogenium* Enderlein proved of special interest and a study of these beetles was a main theme during his last visit to the Crozets in 1978/79. On this last visit he was successful in obtaining the first-instar larva of *Crozetia* so that it could be studied by his colleague Doug Craig, of whom he was both a critic and an admirer - Doug's work on head-fan functioning "... is really very elegant is it not?"

The complications and discomforts of getting to and from the Crozets were not for the faint-hearted once the flying part was over. The following helped to make the problem come alive after his first visit: "...I did the 7000 mile trip incl. Crozets waters & the 900 mile stretch Crozets-Kerguelen in rough seas - I was convinced for the 1st 20 rolls or so that the old *Gallieni* [supply ship] would not roll back to even keel, but carry right on & capsize but after that I became convinced rapidly that it was normal - and throughout this I ate like a French matelot (& drank too) - and never felt sick at all, so I guess I'm a natural born Welsh Navigator". His bunk was athwart the ship and Lewis found that to sleep "you had to jam coat, pillows etc. behind your head & under your feet otherwise you had a sore head, and pyjamas round neck and tight ~~snatch~~ - viz. & vice versa" (two sketches accompanying). The advice if one did feel a bit queasy was "eat dry biscuits often, smoke pipe a lot [a habit of Lewis in those days] .. and send down to stomach 1 beer". Lewis's outline plan for the second trip to Crozet showed what a roudabout business it was to get there: "Leaving by plane for Jo'burg next Sunday - train from there 800 miles to Cape Town - ordinary train, not diesel flier ... then join [French supply] ship leaving Dec. 9 for Marion Is (S. Afr.) - then on to Crozets - there

via Kerguelen and New Amsterdam to La Reunion - plane back”.

Without a doubt the Crozet trips constituted for Lewis a truly memorable experience. It was just as well that he had given himself a crash programme in French. If he had not learnt it pretty well he would have had nobody to talk to but the penguins. Among the scientists and others on the base during the 1972-73 visit “not a one of the 33 chaps spoke any English beyond ‘OK’”. Still, living with these men continually improved his command and before long he was telling jokes in French - though whether they understood them he was never quite sure. His French companions seem to have enjoyed, perhaps they even relished, the extrovert side of Lewis. It would be difficult not to take to a man who, when pressed to give a song, stands up and renders ‘Men of Harlech’ (in Welsh). It was always a treat to hear Lewis expound his Crozet memories. My favourite was how the inquisitive penguins that wandered about the base pressed forwards to peer in at Lewis whenever he went to the john, cocking their heads side to side to get a better look!

Between the first and second Crozet trips, in 1971, Lewis devoted much of his time and that of a research assistant to developing his ‘van-trap’, as it came to be called for simplicity. This was an ingenious trap comprising a net mounted on a motor-vehicle with associated devices to measure the volume of filtered air as the vehicle moved along and to segregate specimen catches into timed units. As a tool for research on simuliid flight activity it had the merit of being non-attractant and therefore free from the bias attaching to most other kinds of experimental trap. Results from the ‘test site’, the Eden valley in Cumbria, were extremely encouraging and suggested that the trap might be of service to the medical entomologists working on onchocerciasis research and vector control in Africa - especially to the OCP (Onchocerciasis Control Programme) in West Africa when it ran into vector migration problems. Possible use of a ‘van-trap’ in OCP was mooted in London at meetings Lewis attended but there was no outcome and Lewis himself never visited West Africa - or any other part of the tropics.

The nearest Lewis came to tropical experience was visiting La Réunion, the island in the southern Indian Ocean which was the supply ship base for the French sub-Antarctic islands. He made the few days he was obliged to spend on La Réunion during the Crozet trips sound like a kind of purgatory and wrote me a sympathy note for all the medical entomologists who had worked in West Africa and had had to put up with the high temperatures and uncomfortable humidities! The cool temperate latitudes were Lewis’s domain, Norway rather than Nigeria, St Kilda rather than La Réunion. He was fond of Scotland and in July 1970 spent two weeks on St Kilda sampling the Diptera and proving that blackflies are absent (his visit to Kerguelen had shown they were also absent from there). A strong affection for Canada always remained from his three years there and in 1999, at the age of 75, he revisited Ottawa and was photographed at his old desk. It was in Ottawa in the fall of 1958 that I first met Lewis and we fell into a congenial friendship. Coming from Nigeria, I was visiting Canada for

Ottawa he introduced me to Bob Peterson and Doug Peterson before chauffeuring me about Ontario in an ultra-long Government Chevrolet sedan to meet Doug Davies, Al West, A.W.A. Brown and others. I soon discovered his sense of humour and the readiness with which he made his knowledge available to all.

Always a kind and generous host, Lewis invited me to stay with his family while I was in Ottawa, enabling me to meet Alice - a girl from a mining village near Durham whom he married in 1949. Soon after the family was back in England the chance arose of a collecting trip from their Durham home to the northern Pennines, one of Lewis's favourite areas, and it was here that he showed me how to recognize the pupal masses of *Prosimulium*. (I knew Lewis almost fifty years and saw him last in June 2004 when his eightieth birthday was approaching. We had not met for a while and I thought it would be nice if my wife Peggy and I could rendezvous with Lewis and

Alice while we were en route home from Scotland. We met at a country inn in Co. Durham and it was delightful to have Lewis pick up the blackfly thread once more. He was still wanting a satisfactory answer to a question he had asked me half a century ago in Ottawa! How is that the medical entomologists concerned with *Simulium damnosum* don't distinguish between landing rate and biting rate?)

Lewis was very social among his entomological friends and when he had company would sit up half the night helping the wine go down, especially if there was something disputatious to argue about. He loved a "good argy-bargy", as he wrote to Bob Peterson when sending in a contentious article for Bob's *Simuliidologist's Newsletter*. When Dick Vockerth, his closest friend from Canada days, visited his home they sat up all night and Lewis reported "... what with Dick's fags and my pipe Alice complained next morning that the place stank like a pub". Decidedly left-wing, he relished a political argument. He had acquired the notion that I was arch-Conservative so when we did a trip together in southern England I played up to that. The trip was Lewis's idea. He was into research on *Petrobius* bristle-tails, little thysanurans that inhabit rocky coasts, but had failed to find any records from the Humber to the Isle of White. The plan was for us to spend a week searching for *Petrobius* at suitable coastal spots, combining this with prospecting for blackflies in near-coastal streams. The trip was a great success as we found both *Petrobius brevistylis* and *P. maritimus* at many points from St Margaret's Bay to Portland Bill. The blackfly highlight was the collection of *Metacnephia amphora* in the Lavant, a winterbourne near Chichester; this was a considerable surprise as Ladle and his team at the FBA River Laboratory had only recently found this new species in Dorset. The Saturday night of the trip we were at Folkestone and treated to a pub brawl. While drinking down our second (or it may have been third) pint a fight broke out in which the glass of the pub's door was smashed to smithereens. Lewis and I were impressed. The landlord threw the ruffians out, swept up, and boarded up the opening in no time at all, leaving us to presume this was a usual Saturday night event. Lewis conceded that it was a fair tease - "I thought this sort of thing only happened in Durham". Any entomologist who entered into correspondence with Lewis was soon aware of one of his most attractive idiosyncrasies - his habit of embellishing each communication with a disquisition on one (usually

point. All the letters were in his diminutive handwriting and one didn't mind if this was at times a little hard to decipher because the asides were almost always entertaining. The mystery was how he found time to write to his colleagues so generously. The 'extras' range from the whimsical to the waspish, the staid to the racy, the amusing (how many 'O' levels does the Queen have?) to the instructional (remember, Welsh is strictly phonetic). Sometimes a flourish is provided by the rendering of a comment in French. Lewis paid no regard to how different topics were sequenced and a gem letter among the two hundred I have from him has Brigitte Bardot given a slot between the Reverend Ian Paisley and the Common Market. His letters show that he was originally hostile to the close integration with Europe but that when Edward Heath took Britain into the EEC he had the mortifying experience of approving something done by a Conservative prime minister! Lewis's political streak, as he admitted, could sometimes carry him too far into the realm of argy-bargy and he once had to rescue an old friendship with one of his early mentors after he had incautiously praised Harold Wilson too effusively and attacked Ian Smith (of UDI fame) too vigorously during the Rhodesia crisis. Lewis's letters help one not only to recall events like this but to know how he felt about them: they are in effect a kind of memorial to him. Re-reading them has reminded me of what I owe to Lewis for the knowledge he imparted to me in the early days. Peggy and I remember the sheer pleasure of his company when he stayed over with us from time to time in London. In one of his letters in 1965 he wrote to me a piece that he called a 'Philological lecture'. He explained that in Welsh 'bach' means 'little' but that when put with somebody's name it is 'a term of gentle endearment'. I was fond of Lewis and 'Lewis bach, thank you' seems a fitting conclusion to this short remembrance of him.

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## Lewis Davies's Publications on Diptera

Note. Davies's doctoral thesis, not strictly speaking published, is included. The authors of any joint publication are named after the bibliographic reference.

1. 1947 Sweating in sheep. *Nature* 159: 34-35. [Joint: Cragg, J. B. & Davies, L.]
2. 1948a Laboratory studies on the egg of the blowfly *Lucilia sericata* (Mg.). *Journal of Experimental Biology* 25: 71-85.
3. 1948b Observations on the development of *Lucilia sericata* (Mg.) eggs in sheep fleeces. *Journal of Experimental Biology* 25: 86-102.
4. 1949 *The temperature and humidity relations of various stages in the life history of some calliphorine flies*. Doctoral thesis, University of Durham. [Copy in University of Durham main library at shelf mark Thesis+ Ph.D.S.14]
5. 1950 The hatching mechanism of muscid eggs (Diptera). *Journal of Experimental*

6. 1951 Some field observations on Simuliidae (Diptera) at Holandsfjord, Norway. *Oikos* 3: 193-199.
7. 1953 Some Diptera collected at Holandsfjord, Norway. *Norsk Entomologisk Tidsskrift* 9: 71-72.
8. 1954a Observations on *Prosimulium ursinum* Edw. at Holandsfjord, Norway. *Oikos* 5: 94-98.
9. 1954b *Prosimulium hirtipes* Fries (Dipt., Simuliidae) in England and Wales. *Entomologist's Monthly Magazine* 90: 253.
10. 1955 Behaviour of young and old females of the black-fly, *Simulium ornatum* Mg. *Nature* 176: 979-980.
11. 1957a A new *Prosimulium* species from Britain, and a re-examination of *P. hirtipes* Fries from the Holarctic region (Diptera: Simuliidae). *Proceedings of the Royal Entomological Society of London (B)* 26:1-10.
12. 1957b A study of the blackfly, *Simulium ornatum* Mg. (Diptera), with particular reference to its activity on grazing cattle. *Bulletin of Entomological Research* 48: 407-424.
13. 1957c A study of the age of females of *Simulium ornatum* Mg. (Diptera) attracted to cattle. *Bulletin of Entomological Research* 48: 535-552.
14. 1958 The distribution and growth of *Prosimulium* larvae (Diptera: Simuliidae) in hill streams in northern England. *Journal of Animal Ecology* 27: 335-348. [Joint: Davies, L. & Smith, C.D.]
15. 1959 Gonotrophic patterns in Canadian pest black flies (Diptera: Simuliidae). *Proceedings of the Royal Entomological Society of London (C)* 24: 30 and 36.
16. 1960 The first-instar larva of a species of *Prosimulium* (Diptera: Simuliidae) *Canadian Entomologist* 92: 81-84.
17. 1961a Ecology of two *Prosimulium* species (Diptera) with reference to their ovarian cycles. *Canadian Entomologist* 93: 1113-1140.
18. 1961b Preliminary remarks on the structure of primitive Simuliidae and the probable affinities of the family with Chironomidae. *Proceedings of the Royal Entomological Society of London (C)* 26 (4) : 13/26 (5) : 18-19.
19. 1962a Studies on black flies (Diptera: Simuliidae) taken in a light trap in Scotland. I. Seasonal distribution, sex ratio and internal condition of catches. *Transactions of the Royal Entomological Society of London* 114: 1-20. [Joint: Davies, L. & Williams, C.B.]
20. 1962b Studies on black flies (Diptera: Simuliidae) taken in a light trap in Scotland. II. Blood-meal identification by precipitin tests. *Transactions of the Royal Entomological Society of London* 114 : 21-27. [Joint: Davies, L., Downe , A.E.R., Weitz, B. & Williams, C.B. ]
21. 1963 Seasonal and diurnal changes in the age-composition of adult *Simulium venustum* Say (Diptera) populations near Ottawa. *Canadian Entomologist* 95: 654-667.
22. 1965a On spermatophores in Simuliidae (Diptera). *Proceedings of the Royal Entomological Society of London (A)* 40: 30-34 + 1 plate.
23. 1965b The structure of certain atypical Simuliidae (Diptera) in relation to evolution

- within the family, and the erection of a new genus for the Crozet Island black-fly. *Proceedings of the Linnean Society of London* 176: 159-180.
24. 1966 The taxonomy of British black-flies (Diptera: Simuliidae). *Transactions of the Royal Entomological Society of London* 118: 413-506 [sic, not 511].
  25. 1967a *Simulium (Eusimulium) cambriense* nom. n., a replacement name for *S. (E.) celticum* Davies, 1966. *Proceedings of the Royal Entomological Society of London (B)* 36: 33.
  26. 1967b [Untitled.] *Simuliidologist's Newsletter* 10: 1-4. [The item when submitted to the *Newsletter* editor on 12 January 1967 had Davies's title "An ordinary Simuliidologist's comments on the cytologists' works and conclusions" but there was no title when distributed on 31 March 1967.]
  27. 1968 A key to the British species of Simuliidae (Diptera) in the larval, pupal and adult stages. *Freshwater Biological Association Scientific Publication* 24: 1- 126.
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  33. 1979b Scuttle flies (Diptera: Phoridae) from St Kilda. *Glasgow Naturalist* 19: 485-488. [Joint: Disney, R. H. L. & Davies, L.]
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  40. 1994b Development rates of some pre-adult stages in blowflies with reference to low temperatures. *Medical and Veterinary Entomology* 8: 245-254. [Joint: Davies, L. & Ratcliffe, G.G.]
  41. 1995 Diptera caught with a vehicle-mounted net in the Vale of Eden, Cumbria. *Vasculum* 80: 50-54. [All families except Simuliidae, for that family see entry number 34.]
  42. 1998a Delayed egg production and a possible group effect in the blowfly *Calliphora vicina*. *Medical and Veterinary Entomology* 12: 339-344.
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  44. 1999 Seasonal and spatial changes in blowfly production from small and large carcasses at Durham in lowland northeast England. *Medical and Veterinary Entomology* 13: 245-251.
  45. 2006 Lifetime reproductive output of *Calliphora vicina* and *Lucilia sericata* in outdoor caged and field populations; flight vs. egg production? *Medical and Veterinary Entomology* 20: 453-458.
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## Recollections of Lewis Davies

Lewis is remembered with admiration and affection by those who worked with him, and some have written in with their memories, which include mention of his passion for steam locomotives and the Welsh language.

Doug Craig, University of Alberta, Canada, remembers visiting Lewis at Durham (in Canada their paths did not cross), and says:

When I visited Lewis in Durham briefly decades ago - can't even recall when, but it was at Halgath Street (?), we would sit around in the evenings and drink cider and listen to vinyl records of train noises. Lewis could recognize each and every type of train. He also had quite a collection of paper memorabilia that he had, literally, lifted from abandoned stations from the Beecham [sic] years - was it? A small crow bar was an indispensable item, so I gather.

Jon Bass recalls that:

Lewis had a mercurial streak that saw him alternately driven and driving. Tackle him on the wrong day and you could be given short shrift. I first met him after he





Lewis at his old desk in Ottawa during a visit in April 1999 (photograph Jim O'Hara).





Lewis entertaining his Crozet Islands colleagues in 1968 with a spirited rendering of “Rhyfelgyrch Gwyf Harlech” (Men of Harlech). Photo given to RWC and labelled in Lewis’s handwriting “Crozet 1968 – after dinner ‘entertainment’ (Not an S. E. M. picture)”.

finished working with blackflies and was visiting the Dorset coast to seek out primitive wingless bristletails. He was accompanied by a French colleague and they were very affable. A few years later the Freshwater Biological Association queried whether he would update his key to British blackflies. His reply remained lost for several years at the Windermere Laboratory, only re-surfacing when someone retired and their desk was cleared. Lewis suggested that I revise his key, which was flattering at the time because we had exchanged very little correspondence and I was surprised he was willing to entrust me with the job. Another decade passed before the revised key (this time without a guide to the adult fly stage) was published and I sent Lewis a copy with a covering note. I was quite taken aback by his generous and humble comments, interspersed by a couple of jibes. Was this typical of the man? I don't feel qualified to judge, but others will have their own recollections and views of a strong character who contributed a great deal to our knowledge of British blackflies and blackflies in some more exotic places.

Extracts from a letter from Lewis Davies to Jon Bass (June 1998)

“When I left blackflies in 1980 (not having done much for the previous few years) I felt that I couldn't add much and that you would face a pretty difficult task in taking the state of knowledge further – Well – you did face a difficult task – and you have succeeded in taking things long way further forward. Of course there are unresolved problems - particularly the ‘*vernum complex*’ and the ‘*ornatum – trifasciatum*’ siblings – and the next generation of blackfly specialists will need a lot of energy and cooperation of various workers to push the situation further forward again.

I was much aware that my work and publications had many defects, deficiencies, mistakes and outright errors, try though I did to correct those deficiencies that I could detect. Throughout your publication you give me full and accurate credit where I was right, and I can thank you for that (not all do), and further thank you for letting me down courteously and diplomatically where I was inaccurate, to put it mildly, as in the the ‘*naturale*’ case (pupal gill filaments) where upper and lower common stalk lengths were not ‘2-3x’ as I stated.

I am sure that Roger Crosskey's work and cooperation has been a big help to you in the laborious work that you have done, but I do think he and other ‘older’ taxonomists of Diptera have been a bit too keen in trying to bring order into the names, to resuscitate older names, and drop older names too, on what at times have been no better than informed guesses. But I am very much a ghost from a vanished past – and looking at your bibliography emphasizes that. Such a lot of work has been done since I departed to return to blowflies – bigger smellier and far easier to study than blackflies! But I still cannot cross a stony stream without turning a stone or 2 over to see what is there. There are so few blowfly species too! – dead easy to separate them!

So I would not deny indeed the charm of blackfly adults (under a binoc.) nor the larvae and pupae with their strange charm, and hope too that you will have the remit

to continue work on them in the River Lab, if that is what you want or are happy doing.”

Lewis supervised several Ph.D.'s on the subject of *Simulium* as Roger Wootton recalls: I had great respect and affection for him. We weren't really speaking towards the end of my Ph.D. and that probably reflects our common ability to be a bit difficult at times. We never did keep in touch and that is rather sad.

Lewis came from Penmaenmawr in North Wales and English was very much a second language when he was very young. As you know, this small seaside town is on the LNWR/LMS main line to Holyhead and this must have inspired his interest in steam railway engines about which he was as expert as he was about blackflies. I think he obtained his first degree at Bangor and his Ph.D. was from Durham (awarded 1949?). I don't know the subject but I am fairly sure it was on the eggs of *Lucilia* and he published two papers on his work in the Journal of Experimental Biology 25: 71-85 and 25: 86-102. He was supervised by J.B. Cragg (I think) with whom he wrote a paper with the dream title “Sweating in sheep”

Also from Rory Post:

I met Lewis in 1976 while I was starting my Ph.D. at the University of East Anglia on the cytotaxonomy of British blackflies. Lewis was very encouraging and gave me a lot of his time to take me into the field and show me how to collect blackflies. He undoubtedly set me on the right track, and I have always felt indebted to him. I have no entertaining or instructive anecdotes, but he impressed me and I remember some of his stories. We were standing in a river in biting cold wind that was freezing the acetic acid for the Carnoy's (not to mention our wet fingers) and he was telling me about sweeping away the snow, then breaking the ice to get to Canadian blackflies in Winter. the story was meant to encourage me, and it did.

He was of course very enthusiastic about complementing the morphotaxonomic work on British blackflies with cytotaxonomy, and he got some money to employ Bob Dunbar in Durham. Bob did collect material and made some sort of contribution (I have been visiting old Dunbar sites in UK to try to find some of the cytospecies), but he sent most of his material over to Toronto where it was examined by various of Rothfels' people. Bob turned his attention to *S. damnosum* (on the strength of getting ODA to buy him a microscope - which is now at NHM), and the rest, as they say is history. Eventually I came on the scene to continue the British blackfly cytotaxonomy, although it has taken me 30 years to get round to writing up the major set of results on the *S. ornatum* group (which I am only now doing!). Lewis provided me with about 1/3 of the material I used, and he must have ended up with a rather rum view of cytotaxonomists.

published in the July 2007 *Antenna*, 31 (3) 137-138. We thank him for a preview of the manuscript and for additional information about Lewis, his life and family.

Roger Crosskey and I on behalf of our members, wish to express our condolences and sympathy to his three children and wife, Alice, and thank her for providing information for this obituary.

**John B. Davies, Editor**

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## MEMBERSHIP NOTICES

Trefor Williams, who was one of the founder members of the British Simuliid Group and was editor of all the Newsletters and Bulletins Nos. 1 to 3 has indicated that his interests have moved so far away from the Simuliidae that he wants to be removed from our circulation list.

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# *Simulium sirbanum* at a site in SE Nigeria

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## Introduction

Nigeria has about 40% of the World's cases of blindness due to onchocerciasis (WHO, 1995) and the disease is currently being controlled by Community Directed Treatment with Ivermectin in collaboration with the WHO African Programme for Onchocerciasis Control (<http://www.apoc.bf/>). Crosskey (1981) recognised five fairly distinct zones of onchocerciasis endemism in Nigeria with a sixth 'zone' consisting of a ragbag of foci strung out along the Niger-Benue basin. He listed one of these foci in SE Nigeria centred on the river Oji, SW of Enugu (zone 6d), and this has been the subject of a number of studies (see Okonkwo et al., 1991). He also listed a few blackfly breeding sites further north in the guinea savanna in the Anambra river basin (zone 6c) (between the Udi plateau and the Niger river, in an area known to geographers as the Scarplands-Iloeje, 1981), and listed some old records of onchocerciasis. The presence of a savanna-type disease epidemiology has been confirmed by Ubachukwu (2004), who also studied blackfly biting near a breeding site on the Adada river in Uzo-Uwani Local government area (Ubachukwu & Anya, 2001). However, entomological aspects of parasite transmission are poorly understood in Nigeria with relatively few publications. In particular, studies of the different cytotypes and cytospecies have been very sparse. Mafuyai et al. (1996) reviewed all the published data, and since then the only notable studies have been those of Bassey (1998) and Ibeh et al. (2006), both of whom included identifications from SE Nigeria, but none from the Scarplands. The purpose of this study is to provide the first identifications of cytospecies breeding throughout the year in the Eshi river (in an area of savanna-type onchocerciasis in the Scarplands), and to report the annual cycle of physico-chemical conditions associated with the breeding site.

## Materials & Methods

Two localities were sampled a short distance apart on the river Eshi near Ogurugu in Ogboli district of Uzo-Uwani local government area in Enugu State (Lat. 06 °45'N - Long. 06°57'E). The area is guinea savanna, and site A was a man-made rapid at the culvert under the road bridge and site B was a natural rapid. The locality was visited monthly from June 2006 to March 2007, and larvae were fixed in the field in Carnoy's or absolute

ethanol (depending upon availability) and transferred to Carnoy's at a later date.

All the water samples and/or measurements of physico-chemical characteristics were taken between 10.00am and 11.00am on each visit. Water temperature was measured using a mercury-bulb thermometer as near as possible to the place where larvae were found. The thermometer was submerged in the water for two minutes before readings were taken. Water transparency was measured as an average of two readings using a Secchi-Disc, which lowered into the water until it disappeared from sight, and the depth recorded.

Current velocity was measured by throwing a light object in the water and the time taken for the object to cover a measured distance was recorded. For pH, the Digital Eu-Tech pH meter was used. The Petra-Court Flame photometer was used in measuring sodium ion and potassium ion concentrations. Rainwater and Thatcher's method was used for determining dissolved oxygen.

### **Cytotaxonomic Results & Discussion**

A total of 109 larvae were identified (Table 1) and all of them were *Simulium sirbanum*, except three specimens of *Simulium squamosum* identified from site A in August 2006 (which is the month of the 'short break' in the middle of the rainy season). The different cytotypes within *S. squamosum* can only be separated by sex-linked heterozygosity in IC or IS of males (Traore-Lamizana et al., 2001; Mustapha et al., 2004). It was not possible to determine the sex of any of the three specimens from the river Eshi, but none of them was heterozygous in IS or IC and if any of them were males this would identify them as *S. squamosum* 'C', which is the common cytotype in SE Nigeria (Ibeh et al., 2006). It was possible to determine the IS-3 karyotype of five homozygous specimens of *S. sirbanum*, and all five were homozygous IS-3/3, which would identify them as the sudanense form of *S. sirbanum* (Vajime, 1989). Since these five specimens were found in both sites A and B, and throughout the year (June, August, October, December and January) it is likely that *S. sirbanum* is represented at this locality predominantly or entirely by the sudanense form and not the sirba (=typical) form.

It was a surprise to find *S. sirbanum* breeding and predominating throughout the year so far south in Nigeria. Boakye et al. (1998) noted that there were sites in the guinea savanna (in Sierra Leone, Guinea, Côte d'Ivoire, Togo and Benin for example) where it bred throughout the year, but there was also a strong seasonal shift towards the north in the rainy season. Ibeh et al. (2006) and Bassey (1998) did not record it for SE Nigeria, although Mafuyai et al (1996) reported one previous record from the Oji river. It is not clear whether the small number of larvae of *S. squamosum* collected from site A in August

**Table 1:** Cytoform identifications and physico-chemical characteristics of monthly samples from river Eshi at Ogurugu.

Site-Date-Season	Cytoform ID	Temp °C	Velocity m/s	Turbidity cm	pH	Oxygen mg/l	K mg/l	Na mg/l
A -June 06 -R	13 si	29.0	1.20	55	5.75	-	-	-
A -July 06 -R	5 si	28.0	1.18	75	5.66	-	-	-
A -Aug 06 -R	2 si + 3 squ	25.0	1.24	65	5.70	-	-	-
A -Sep 06 -R	5 si	26.0	1.21	70	5.60	-	-	-
A -Oct 06 -R	8 si	26.5	1.22	75	5.55	-	-	-
A -Nov 06 -D	5 si	22.0	1.05	60	5.62	-	-	-
A -Dec 06 -D	2 si	18.0	0.98	60	5.70	9.40	3.0	4.0
A -Jan 06 -D	4 si	26.5	0.90	30	5.78	3.50	1.0	0.0
A -Feb 06 -D	3 si	27.5	1.0	50	5.70	8.50	3.1	3.0
A -Mar 06 -D	2 si	28.0	1.06	50	5.80	3.10	1.0	1.0
B -June 06 -R	12 si	29.0	0.70	60	5.75	-	-	-
B -July 06 -R	8 si	30.0	0.72	75	5.78	-	-	-
B -Aug 06 -R	5 si	26.0	0.60	70	5.72	-	-	-
B -Sep 06 -R	1 si	27.0	0.71	70	5.70	-	-	-
B -Oct 06 -R	7 si	28.0	0.62	80	5.70	-	-	-
B -Nov 06 -D	8 si	24.0	0.90	75	5.75	-	-	-
B -Dec 06 -D	7 si	21.0	0.58	60	5.80	9.60	3.0	1.0
B -Jan 06 -D	5 si	27.0	0.55	45	5.88	3.00	0.5	1.0
B -Feb 06 -D	4 si	28.0	0.98	30	5.80	8.20	3.0	1.0
B -Mar 06 -D	-	28.5	0.90	30	5.80	3.00	0.5	1.0

## Physico-Chemical Results & Discussion

The monthly results of the physico-chemical measurements are shown in Table 1. They are largely within the ranges previously described for *S. sirbanum* in particular or *S. damnosum* complex in general. Quillévére et al. (1977) concluded that in Côte d'Ivoire the only physico-chemical factor which separated the different cytospecies throughout the whole year was pH, whereas Grunewald (1981) considered that water velocity, temperature, pH and conductivity were all important when considering the whole complex.

Water temperature ranged between 18-30°C in the river Eshi, which covers the whole range of temperatures found in the old OCP area by Ocran et al. (1982) (18.3-31.8 °C), and the pattern of variation also corresponded with the annual cycle of water temperature which Ocran et al. (1982) also described (coolest in Dec-Feb, and warmest



the start of the rains). The lowest temperature at which *S. damnosum* complex members have been found breeding is 16.8°C for Sanje in East Africa (Grunewald, 1981). Quillévére et al. (1977) found *S. sirbanum* breeding at temperatures 25-33

C in Côte d'Ivoire.

Water velocity is not generally considered to be characteristic for the different cytospecies, but it does seem to set lower and upper limits for the complex as a whole (0.4-2.4 m/sec – Grunewald, 1981). The river Eshi data (range 0.55-1.24 m/sec) are within these limits.

*Simulium sirbanum* is normally considered to belong to a group of cytospecies which prefer a near-neutral pH (Grunewald, 1981) ranging between 6.2-7.9 (Quillévére et al., 1977; Grunewald, 1977), and Mafuyai (1992) and Bassey (1998) reported measurements within this range for *S. sirbanum* in Nigeria. The pH range for the river Eshi (5.6-5.9) was therefore unusually acid for *S. sirbanum*, although not exceptional for the *S. damnosum* complex as a whole (*S. yahense* and *S. sanctipauli* having been found at pH 5.1 and 5.5 for example – Grunewald, 1976).

Oxygen, potassium and sodium concentrations are not generally considered to be significantly different in the breeding sites of different cytospecies (Quillévére et al., 1977; Grunewald, 1981). Oxygen concentration in the Eshi river ranged between 3.0-9.6 mg/l, which compares with a lower limit of 6.00 mg/l listed by Grunewald (1981) for *S. sirbanum* and 2.5 mg/l for *S. yahense*. The range of sodium and potassium ion concentrations in the river Eshi (0.0-4.0 and 0.5-3.1 mg/l respectively) is slightly lower than that recorded by Quillévére et al. (1977) for *S. sirbanum* (approx 2.0-8.0 and 1.5-8.8 mg/l respectively) and for the *S. damnosum* complex as a whole (approx 1.3-12.7 and 0.8-8.8 mg/l respectively).

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## NOTES, VIEWS & CORRESPONDENCE

### RECOGNITION AT LAST!

From the Weekend Financial Times of 16 June 2007 Polymath Crossword No. 401 set by Armonie

*Clue 29 down - A small but very troublesome Amazonian biting fly (4) (last letter "M")*

If you need help with this name it can be found on the Blackfly Vernacular Names website at:

<http://www.blackflies.objectis.net/NamesZW/>

### THE PLAGUE IN SPAIN ...

From the Guardian, Monday 25 June 2007

#### Spain hit by plague of blood-sucking black flies

Dale Fuchs, Madrid.

A plague of black flies has prompted authorities in north-eastern Spain to issue warnings on TV and fliers advising people to cover-up and avoid riverside areas in the early morning and dusk.

The insect has been quickly breeding-and sucking blood-along the rivers and reservoirs of Catalonia and Aragon, causing alarm in small towns.

Only two to three millimeters long, fly is much smaller and harder to spot than most mosquitoes, but its voracious bite sent more than 2,000 people to hospital last year in Catalonia alone. Its vigorous jaw, which releases a cocktail of chemicals, can produce allergic reactions.

"If the mosquito is a neurosurgeon that bites with a probe, the black fly is a butcher that scratches the skin and makes you bleed," Raul Escosa, member of an Ebro river environmental board, told El Pais.

"We had to take my 18 year old daughter to dermatologist and the allergist, she had a dozen swellings most of 8 to 10 centimeters," said Jesus Llop, a town council member in the town of Mequinza.

The black fly, umbrella term for several *Simulium* species was first detected in the region in 1997, and has been making its annoying presence increasingly felt. Unlike the mosquito, it breeds in clean river water. Regional experts believe the current outbreak stems from improvements in water quality and new irrigation channels, which created a new habitat.

The insect injects an anesthetic, an anti-clotting agent and a vasodilator into the skin of its host, belatedly notices the damage after the fly has moved on. In Switzerland an attacking swarm reportedly killed a calf.

Does anyone know the identity of this

# THE BRITISH SIMULIID GROUP

## 28<sup>th</sup> Annual Meeting 2007

The British Simuliid Group 28th Annual Meeting will be held in the lecture theatre of the Oxford University Museum of Natural History on **Wednesday 12th September 2007**, the meeting will open at 10.00 am and close at 4.30 pm. Members are invited to present novel work which will be published in abstract form in the British Simuliid Group Bulletin later in the year.

### Presentations

Oral presentations will be allocated a 30 minute slot, with a maximum of 20 minutes for presentation, followed by 5 minutes for questions. Powerpoint presentations are encouraged, but slide and overhead projectors will also be available. Poster presentations should be designed to fit poster boards of 2x 1 m, in a portrait format. It would help if presenting authors register, supplying a full title as soon as possible to John B. Davies (contact details below). Abstracts and short papers should also be provided as soon as possible, or brought to the meeting. Provisional presentations include:

- 'A BAC Library from *Simulium squamosum*' by Lee Crainey, Mike Wilson & Rory Post
- 'The Simuliidae of Lithuania' by Rasa Bernotienė
- 'The Simuliidae of the Doi Inthanon National Park, Thailand and Nahuel Huapi National Park, Patagonia, Argentina.' by Luis Hernandez

### Dinner

Adrian Pont will be arranging an informal dinner prior to the meeting on the 11 th September 2007. The meal will be at the Chiang Mai Kitchen, a very popular venue in Oxford. Those wishing to attend should contact Adrian via Email: [pont.muscidae@btinternet.com](mailto:pont.muscidae@btinternet.com) as soon as possible in order to secure a table.

### Enquiries

All enquiries regarding the Annual Meeting should be directed to John B. Davies, 57 North Parade, Hoylake, Wirral, CH47 3AL, UK. E-mail: [daviesjb@liv.ac.uk](mailto:daviesjb@liv.ac.uk)



## Meeting 2008 – Preliminary Notice

The 3rd International Simuliidae Symposium, including the 29th meeting of the British Simuliid Group and the 7th European Simuliidae Symposium will be held in Vilnius in 9-12 September, 2008. The Symposium will be held at the Academy of Sciences, Gediminas Ave. 3, in the center of Vilnius, the capital of Lithuania. Lithuania has been a member of EU since 2004. The Symposium will embrace all areas of black fly research. The official language of the Symposium is English. The first official announcement will be sent out in the autumn of 2007. For more general information consult the web pages at [www.travel.lt](http://www.travel.lt) and [www.vilnius2009.lt](http://www.vilnius2009.lt)

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