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Ebbe Schmidt Nielsen 7 June 1950 – 6 March 2001

„Whom the gods love dies young" is an ancient Greek saying that came to mind, as the news of Ebbe Nielsen's sudden passing spread through the global community of lepidopterists and biodiversity researchers. At age fifty his vigour and life style made him seem endowed with eternal youthfulness (although his heart had given him a serious warning in mid-1999), and numerous prestigious honours testified to his success as a scientist. By members of the *Societas Europaea Lepidopterologica* he will be remembered as one of the founders of the Society and, while he had moved to Australia almost two decades ago, he retained very close professional and personal links to colleagues in his native Denmark and in many other European countries.

Ebbe Schmidt Nielsen – just Ebbe to most lepidopterists worldwide – spent his childhood and youth in the countryside near Silkeborg in Central Jutland, one of the areas in Denmark where nature is at its most varied and attractive. His farmer/gardener parents instilled a general interest in natural history early in his life, and an enthusiasm for Lepidoptera developed during his secondary school days – along with an enthusiasm for literature and dance. This fascination with Lepidoptera was strongly nurtured by the inspiring books available to him (probably no other monograph of a national macro-moth fauna is at the same time as informative and entertaining as Skat Hoffmeyer's Danish-language trilogy *De Danske Spindere*, *De Danske Ugler* and *De Danske Målere*), as well as by interaction with other keen and knowledgeable Lepidoptera collectors, who met in *Århus Entomologklub*. Having finished school he spent his compulsory national service in the civil defence corps, where he rose to the rank of officer and acquired a familiarity with four-wheel-driver trucks, which he later put to good use during entomological expeditions to little-accessible parts of the globe.

In 1971 Ebbe enrolled as a biology student at Århus University, and he rapidly became a prominent member of the local entomological community; by 1973, for example he played a highly active role in the organising committee of the 16th Nordic Entomological Congress that was held in Århus under the joint sponsorship of the Århus Natural History Museum, the Århus University Zoology Institute, and the abovementioned *Entomologklub*. These were the years of the ambitious 'International Biological Programme', to which the Danish contribution was an in-depth investigation of a beech stand ecosystem ('Kalø Hestehave', E of Århus) led by Århus University biologists. Ebbe joined the team, and his inventory of the Kalø Lepidoptera and

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Neuroptera (another insect group in which he had taken an early interest) formed the basis of his *cand.scient.* (= M.Sc) thesis, completed in 1976. The inventory was largely based on an extensive light-trapping program, and some of the more interesting findings concerned the vertical stratification of the insects in question, as documented by material from traps located at different heights in the canopy. Unfortunately, only the smaller part of the study concerning the Neuroptera was published. Manuscripts based on the much larger Lepidoptera study were prepared, but remained uncompleted: Ebbe was always on the move, and his focus shifted to other facets of lepidopterology.

Biology at Århus University was still in a build-up phase in the mid-1970s, and the final courses for the *cand.scient.* degree had to be taken at the University in Copenhagen, to where Ebbe moved in 1974. Having already developed a taste for curation in the Århus Natural History Museum (which has very extensive holdings of Danish Lepidoptera, Macrolepidoptera in particular), he immediately started work in the Entomology Department of the Zoological Museum of Copenhagen University, and his and my previously peripheral acquaintance soon developed into a close and lasting friendship. Ebbe came to share my interest in 'Hennigian' phylogenetic systematics in general, and the evolution of the basal lepidopteran lineages in particular. In 1977 he became my first Ph.D. student, with a study program devoted to 'Nomenclatural, systematic and phylogenetic studies on Incurvariina'; the degree was awarded in 1980.

A glance at Ebbe's publication list reveals, however, that his thesis-related studies were far from his only entomological activities up to 1980. His broad interests in the Danish/N.European moth fauna led to a suite of noteworthy publications, largely written together with other workers. With his amateur lepidopterist friend Ole Karsholt he published in 1976 an annotated checklist of the Danish Lepidoptera, the first of several continental-European national Lepidoptera checklists that followed the Bradley/Fletcher/Whalley edition (1972) of the British *Kloet & Hincks* checklist. In the course of this collaboration the two developed an appreciation – very evident in their later activities – of the significance of this kind of publication and of the requirements for its production. They also jointly initiated the series of illustrated annual articles (published in *Entomologiske Meddelelser*) on findings of new, rare and/or little-known Danish micro-moths; these are continued as a genuine teamwork, and they have become models for similar publications in some other European countries. Further noteworthy joint articles by Ebbe and Ole Karsholt dealt with the nomenclatural significance of old N.European Lepidoptera collections (a line of work which in Ebbe's case culminated in his joint study with Gaden Robinson of the Linnean micro-moths), as well as with the peculiar *Ochsenheimeria* group of moths, then considered a family of its own. Ebbe also joined forces with the senior Danish amateur lepidopterist Ernst Traugott-Olsen, who had specialised in the *Elachista* group of genera – then one of the least accessible major groups of micro-moths in Europe. The profusely illustrated *Fauna Entomologica Scandinavica* monograph of its N.European members, which they published in 1977, proved to be a turning point in the study of the group, and it was followed by a number of joint articles on European elachistines. In the late 1970s Ebbe was instrumental in mediating contact and collaboration between the nepticulid workers in Sweden (Johansson, Gustafsson) and the nepticulid research group then

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thriving at the Vrije Universiteit in Amsterdam. He thereby established the team which much later (1990) succeeded in publishing the impressive two-volume *Fauna Entomologica Scandinavica* treatment of the N.European nepticuloids and, as I wrote in my editorial foreword to that work: its completion in spite of many adversities was „in no small measure due to the tenacity and enthusiasm of Dr. Nielsen".

Characteristically, Ebbe was also present – as the youngest of the attendees – in the small group of lepidopterists who met in Bonn in 1976 to found the *Societas Europaea Lepidopterologica*. Ebbe took part in the European Congresses of Lepidopterology until he emigrated downunder, and he had happily agreed to give one of the opening keynote talks at the 13th Congress in Denmark in 2002.

But proper phylogenetic-systematic studies must necessarily have a global scope, and Ebbe's interests were certainly not confined to just the European fauna. He and I had repeatedly talked about the strikingly poor representation of non-ditrysian moths then known from S.America, and we agreed that this fauna must simply have been inadequately sampled. Chances for doing better came in the late 1970s, when a group of Danish scientists (botanists and soil geographers) were planning a large-scale investigation in temperate Argentina and Chile. Ebbe joined the preparatory group at an early phase, and, thanks to his initiative, entomology came to figure prominently on the agenda of the *Mision Cientifica Danesa*, which operated in 1978-79 after considerable funding had been raised from public and private sources. Ebbe became a member of the leader team, and participated during the whole of the expedition. He was joined for periods by S. Langemark, O. Martin and B. W. Rasmussen, entomologists from the Copenhagen Zoological Museum, and he was also joined by Traugott-Olsen (participating at his own expense), who by then had settled in Marbella and was proficient in Spanish. The findings (and perhaps even more the non-findings!) of the *Mision* prompted Ebbe to organise yet another collecting trip to the same area in late 1981, after the completion of his Ph.D. On this second, and extremely successful tour he was accompanied by Ole Karsholt, who had then just been hired to an assistant curatorship in the Copenhagen Zoological Museum.

All the time and energy Ebbe invested in the *Mision* (and other activities) had to be taken from the preparation of his Ph.D. thesis, and when the latter was eventually submitted as the allotted time ran out (there are quite strict time limitations on theses in Denmark), parts of it were admittedly still in somewhat preliminary shape. And, again, complete publication of the thesis work fell by the wayside due to Ebbe's shifting priorities. In the following years he did publish a suite of sound revisionary treatments of selected incurvarioid genera (the most extensive being the 1985 review of *Nematopogon*), and the essentials of his analyses concerning incurvarioid high-level phylogeny appeared in the 1985 joint article with Don R. Davis, in which the first southern hemisphere prodoxid was described. However, substantial parts of his treatments of the individual incurvarioid families, with descriptions of interesting new genera (ironically some of them Australian) still remain unpublished.

But Ebbe had undoubtedly made the right choice in giving priority to the S.American initiative – it proved to be outstandingly fruitful for lepidopterology, and equally important for the development of his personal competences. The material gathered dur-

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ing the two expeditions have rendered the Copenhagen Museum holdings of temperate S.American micro-moths the most important worldwide along with those of the US National Museum of Natural History, which were built up at the same time by Davis and his staff. The two parties actually met and collected together briefly in 1981, and both subsequently drew extensively on the material collected by the other – in joint as well as in separate publications. Very important findings were made of Neopseustidae, Incurvariidae and the new family Palaephatidae described by Davis (1986). The huge amassed material of Hepialidae formed the basis of the 1983 book *Ghost Moths of Southern South America* co-authored by Ebbe and Gaden Robinson. Above all, the Danish expeditions both indirectly and directly led to the description of the Heterobathmiidae and the elucidation of their life history – unquestionably one of the most exciting discoveries in 20th century systematic lepidopterology, and one with a special history.

While Ebbe was preparing for the first expedition to austral S.America, he mentioned the plans for this enterprise in a letter to the senior Austrian microlepidopterist Joseph Klimesch. Klimesch responded by saying that he had a material of S. American micros, which he had received several years earlier from a local collector (Shachovskoj) – there seemed to be some "Eriocraniidae" in it, so he would now send it to us: "perhaps we would find something of interest". Our first (1979) publication on these moths was, then, largely completed by myself during Ebbe's stay in S. America. But during this first expedition he did not find any new heterobathmiid material. Since we believed they were micropterigids, he probably had a wrong 'search image' (for a low-vegetation insect). It was not until he was in temperate S. America for the second time, jointly with Ole Karsholt, that they discovered the moths' association with *Nothofagus*, and found both adults and larvae in great abundance. Indeed, when they were for some time using the same accommodation as Ebbe had used on the first trip, they discovered that a *Nothofagus* tree under which he had often had meals on the previous occasion had lots of *Heterobathmia* mines on it (and most probably has so every year). It really was the finding of the immatures that led us to realise that *Heterobathmia* is an independent basal moth lineage.

After completing his Ph.D. Ebbe continued work in the Copenhagen Zoological Museum on a postdoctoral fellowship, but hopes to associate him permanently with this institution dwindled, as drastic budget cuts from the early 1980s onwards prevented the filling of vacant positions. He therefore had to look for a career elsewhere in the world, and a great challenge presented itself in the form of the Lepidoptera curatorship at the Australian National Insect Collection (ANIC, a part of the Entomology Division of the CSIRO), which became vacant upon the retirement of its previous holder Ian F. B. Common. The fact that many lepidopteran groups have particularly interesting members in Australia, coupled with Common's high international esteem, had made this position a very central one in the minds of systematic lepidopterists worldwide. Ebbe had an outstanding background for filling the position, with his documented knowledge of the order Lepidoptera in its entirety, combined with his extensive experience with planning and performing field work in areas that were difficult to access. His application was indeed successful, and his professional life in Canberra started in December 1982. His proven interest in southern hemisphere faunas was another strength in an Australian context. This interest eventually led him to found (jointly with the renowned US botanist Peter Raven) the successful *Southern Connections* association for systematists and ecologists concerned with Gondwana faunas and floras.

In Canberra Ebbe was fortunate to find a kindred spirit in E. D. ('Ted') Edwards, an ANIC assistant curator with an expert knowledge of the Australian Lepidoptera as

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well as of field work in the Australian bush. He was also fortunate to come together with the Swiss-born micro-moth specialist Marianne Horak, who worked as a postdoctoral fellow in the ANIC; the two had met briefly before and now developed a partnership, which became very important to both, and which (in spite of Ebbe never being a 'one woman man') proved to be a lasting one. Ebbe and Marianne also retained close personal links to Ian Common and his wife Jill, and Ebbe made every effort to ensure that the CSIRO continued to support Common's spectacularly successful retirement research.

In his own work on the Australian fauna Ebbe initially focussed on two of the region's most intriguing taxa of primitive Lepidoptera, about which he and I had often talked: the small 'eriocraniid-grade' family Lophocoronidae (described by Common in 1973), and *Fraus*, which is the only genus in the Hepialidae that includes members with a sizable proboscis remnant. He procured important new material of these taxa during field work in Western Australia (together with Edwards), and we started joint work on them in 1983. But both of us had many other commitments and it was 1989 and 1996, respectively, before the publications appeared; however, the long gestation time undoubtedly enhanced the substance of both. The *Fraus* memoir was published as the first volume in the book series *Monographs on Australian Lepidoptera* which Ebbe initiated, and which subsequently has served as outlet for some very important publications. Volume 2 was the generic revision of the Australian Tineidae which Ebbe prepared in joint authorship with Gaden Robinson, and which may serve as a model of how to get a handle on a major faunal component without becoming overwhelmed by masses of undescribed species.

From a very early stage in his Canberra position Ebbe saw the need for a compilation of an annotated checklist of the Australian Lepidoptera to be a top priority, and his closest collaborators as well as other lepidopterists from Australia and abroad were soon collaborating on the project. The work took much longer to complete than initially expected – the publication finally came out in 1996 – but again the long gestation period undoubtedly benefited its quality. The preparation of the list went hand in hand with extensive recuration of the ANIC Lepidoptera holdings, as well as with a major resource investment in photographic documentation of primary types of Australian Lepidoptera in museum collections worldwide. Not least, it sharpened Ebbe's interest in, and attention to, the ways in which information contained in biological research collections can be made accessible and useful to broader user groups. This interest was linked to a clear appreciation of the need for continued development of existing collections, and for several years Ebbe took an active part in collecting trips to inadequately inventoried parts of the Australian continent.

Besides the Lepidoptera series, Ebbe also initiated the *Monographs on Invertebrate Taxonomy* and for several years he chaired the Advisory Committee of the journal *Invertebrate Taxonomy*; he also served on the editorial panel of other periodicals including *Insect Systematics and Evolution* (formerly *Entomologica Scandinavica*) and *Biodiversity and Conservation*. In a general way Ebbe was very interested in issues concerning dissemination of scientific work, in print as well as in electronic format, and he served as an adviser to a number of publishing companies;

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it is in no small part due to him that *CSIRO Publications* owe their strong profile in entomology.

In 1990 Ebbe became 'Program leader' of the 'Biodiversity and Natural Resources Program' of CSIRO Entomology, as well as director of the ANIC. From then onwards his focus gradually shifted from Lepidoptera research to science policy – which I believe was the field in which laid his greatest talents. He was truly successful in conveying to decision makers at various levels the message about the value of research on biological diversity, and several important 'soft money'-funded projects in the ANIC were realised due to these skills. Much committed to the cause of ANIC and Australian science in general, he declined offers of highly prestigious leading positions at major museums elsewhere in the world. He received several honours for his achievements, including the Lepidopterists' Society's *Karl Jordan Medal* (1990), the Australian *Dave Rivett* and *Ian Mackerras* Medals and foreign memberships of the US National Academy of Science (1997 – a very rare distinction for a non-American!) and the Royal Danish Academy of Sciences and Letters (1998).

Problems arising because of Ebbe's occasional over-optimism about the rate of incoming external funds were probably behind his stepping down as program leader in the late 1990s, but he retained the ANIC directorship and grew into an even more prominent figure in international circles. He became a highly influential member of the Major Systematic Entomology Facilities Group (of which he had been a co-founder), and was much involved with activities under the International Convention on Biological Diversity. In 2000 he became Secretary/Treasurer of the Council of the International Congresses of Entomology – an office to which he was particularly happy to be elected. Most importantly, from his position as head of the Australian delegation to the OECD Megascience Forum Working Group on Biological Informatics he became one of the principal driving forces behind the establishment of the potentially very important 'Global Biodiversity Information Facility ' (GBIF). In fact, it was *en route* from Canberra to the Toronto meeting in March 2001 where the GBIF formally came into being that Ebbe died from a massive heart attack in California. The news of his death cast a dark shadow over the meeting, and a spontaneous decision was made by the delegates to establish within the GBIF budget an *Ebbe Nielsen Prize* – to be awarded annually to a young scientist for innovative merging of biodiversity research and IT technology. Ebbe had dearly hoped that Australia would become host country for the GBIF secretariat, and had invested much energy in making the Australian bid a strong one, which indeed it was. It is ironic that the majority of GBIF member countries a few months after his death nevertheless voted for his native Denmark to host the secretariat, but this outcome generated the feeling that Ebbe had thereby "come home", just as the bodily remains of this true cosmopolitan had come home to the family grave site in Jutland.

Ebbe was a forthright person. His outlook was genuinely international, and he spoke languages other than his native one with assertiveness. He was a renaissance figure, with an immense appetite for life and a great knack of enjoying its pleasures. He had an awe-inspiring working capacity so, his profound scientific commitment and all his achievements notwithstanding, he found time for pursuing his numerous other inter-

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ests: time for reading, for orienteering, for listening to music, for going to cinemas and theatres, for gourmet cooking, dining and wining. Above all, he had time for people – and people mattered to him. His extraordinary success as a scientist and a science politician was to a large extent due to his similarly extraordinary social intelligence. He was generous in dealing with fellow researchers – and fellow humans in general. It is no coincidence that almost all of his more significant publications appeared in joint authorship with other workers. Ebbe's own written contributions were in several cases minor ones, but his participation in the projects were often of very crucial importance for their initiation and/or completion. He benefited from the collaborations, his collaborators benefited, and science benefited.

Ebbe Schmidt Nielsen was for a quarter-century a very visible, active, joyful and stimulating player on the global scene of lepidopterology, museology and biodiversity research/policy. Life will be less hectic on that scene, now he has departed. It will also be less inspired – and much less fun.

Ted Edwards, Marianne Horak, Ole Karsholt and Gaden Robinson gave much appreciated assistance with the preparation of this obituary article. A complete list of Ebbe S. Nielsen's scientific publications will be published in a forthcoming special issue of *Invertebrate Taxonomy* dedicated to his memory.

Niels P. Kristensen

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