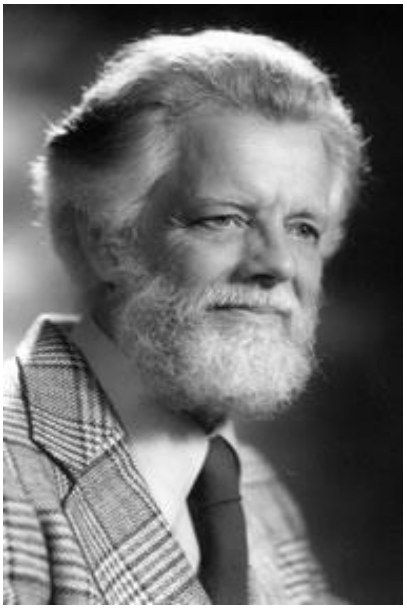
Professor Philip Corbet: Entomologist whose work revolutionised the field of dragonfly studies

Reprinted by permission from the Independent, Obituaries, 28 February 2008. Philip received the ESC's Gold Medal Award in 1974.



Philip Corbet was a world expert on dragonflies, which he studied first in England and later in tropical Africa, Canada and New Zealand. He was the author of books which have become entomological classics and are read throughout the English-speaking world. Few have done more to establish the present-day science of odonatology and the popularity of dragonflies as "birdwatcher's insects". To borrow the name of his favourite insect, in the dragonfly world Corbet was an Emperor.

He was also an authority on aquatic insects more generally, including mayflies, caddis-flies and, especially, mosquitoes. He became a strong advocate for biological control, using natural insect predators, instead of chemicals, to suppress pests. And, wearing his broader zoological hat, he repeatedly warned of the consequences of the human population exceeding its biological "carrying capacity". The biological principles which govern the size of animal populations apply inescapably, in Corbet's view, to human beings.

When Corbet began to study the life-cycles of British dragonflies in the early 1950s, very little was known about them. With Norman Moore, he was the first to glimpse their inner lives by acute observation in the field allied to well-designed experiments in the laboratory. His PhD thesis, published in 1953, showed that British dragonflies can be divided into two groups. One, including the Emperor dragonfly, complete their growth as larvae in the autumn and all emerge at about the same time in the spring. The other group overwinter as larvae at various stages of growth and the adults emerge in ones and twos over many weeks.

Corbet was a patient and astute insect-watcher. To observe dragonflies as they emerged from the pond, he would make his way to the waterside in total darkness. Hence he was the first person to describe a mass emergence of Emperors. By shining his torch, he found "the branches and trunks of trees thickly festooned with motionless dragonflies, each with its glistening wings folded over its back". An hour before sunrise, they simultaneously began to rustle and vibrate their wings with an eerie whirring sound; and, still before the sun rose, "the air seemed filled with ghost-like dragonflies, rising up into the mist and flying away out of sight".

Such intimate glimpses of the dragonfly's world gave the young Corbet an intuitive sense of it must be like to be one. "I find it a stirring thought", he wrote, "that each day of a dragonfly's life it must repeatedly choose how it will spend its precious time and energy." Over a lifetime he seems to have read every significant paper on dragonfly biology the world over, and his amazing memory enabled him to roam over current topics with familiarity. His writings managed to leaven scientific rigour with an obvious enthusiasm for, and delight in, his winged subjects.

Corbet will be remembered above all for his books on dragonflies. The first, called simply Dragonflies, and written with Norman Moore and Cynthia Longfield, is a volume in the celebrated Collins New Naturalist library. In the spirit of that series it successfully married traditional natural history with challenging science on growth, regulation and migration. Ahead of its time in 1960, it is now seen as a classic; a reprint in 1985 sold out within a month.

His subsequent book A Biology of Dragonflies (1962), published in Britain and America, drew on Corbet's experience in Africa, as well as Britain, and established him as a worldwide authority on dragonflies. When the opportunity came to revise it, in 1999, Corbet produced what is effectively a new book, *Dragonflies: behaviour and ecology of Odonata*. At 830 pages, and including 4,000 references, it is one of the most authoritative monographs on any group of insects. The book was widely praised. "Before 1999", wrote one reviewer, "it was difficult to imagine the science of odonatology without Philip Corbet. Now it is impossible." Another said that dragonfly study would never be the same again: Corbet's book had "revolutionised the field". Few doubted that it would be the standard work on the subject for years to come.
Corbet died while completing the final stages of a new book, *Dragonflies*, which he co-authored with Stephen Brooks. The book is expected to go on sale in the spring.

Philip Corbet was born in 1929 in Kuala Lumpur, Malaya where his father, Alexander Steven Corbet, worked as a microbiologist for the Rubber Research Institute. His home life was pervaded by his father's love of natural history, and both Philip and his sister Sarah were to become distinguished entomologists. Father and son were separated for five years during the Second World War when Philip left for New Zealand with his mother, Irene, while Steven Corbet watched for fires on the roof of the Natural History Museum where he worked as Deputy Keeper of Entomology. The family was reunited in 1945, but Philip's father died three years later.

Philip attended Nelson Boys' School in New Zealand and completed his schooling at Dauntsey's in Wiltshire. He went on to read Zoology at Reading University where, despite having had only a year's formal schooling in biology, he passed with first-class honours and was awarded the Colin Morley Prize for Zoology. Corbet went on to study for a doctorate at Gonville and Caius College, Cambridge where he chose "the seasonal ecology of dragonflies" as his research topic.
Between 1954 and 1962, Corbet was employed as an entomologist by the East African High Commission in Uganda where he studied food-chains in Lake Victoria and later specialised in the behaviour and ecology of mosquitoes. There he led the field team that detected the insect vector, a mosquito, which caused the epidemic of O'nyong-nyong Fever in Uganda and Kenya.

With career prospects for expatriates diminished by Uganda's independence in 1962, he accepted the offer of a research post in Canada. There he led the team that diagnosed and subsequently suppressed the biting insect nuisance on St Lawrence River that had threatened the viability of the World Exhibition (Expo 1967) at Montreal.

His career as a full-time research entomologist effectively ended that year when he was appointed Director of the Canada Agriculture Research Institute at Belleville, Ontario. In Canada, and later in New Zealand and Scotland, Corbet served as an expert on numerous advisory bodies to do with public health, pest management, nuclear energy and nature conservation.

His personal priorities were by this time shifting from pest management to the environment; as an ecologist he saw the driving role of human population pressure in destabilising natural ecosystems and precipitating pest outbreaks. He used his opportunities as a speaker to call for a human population policy. This culminated in 1971 in an open letter to the Canadian Prime Minister, signed by 25 senior biologists, though it failed to generate any tangible response.
From 1971, Corbet held a succession of senior university appointments, first at Waterloo University, Ontario, where he served as Professor of Zoology for three years, and next in New Zealand where he simultaneously directed the Centre for Environmental Sciences at Canterbury University and Lincoln Agricultural College. There he set up an innovative two-year MSc course in resource management which supplied a stream of well-trained graduates to influential positions in government and land-use agencies. However, finding his position insufficiently scientific for his taste, he resigned to take up the Chair of Zoology at Canterbury.

Having become the parents of a daughter in 1978, Corbet and his second wife decided to return to Europe. He accepted the foundation Chair of Zoology at Dundee University where he was head of department from 1983 to 1986. During this time Corbet served on the Nature Conservancy Council's Scotland committee and the scientific committee of the Scottish Wildlife Trust. In 1983 he was elected first president of the British Dragonfly Society.

In 1990, Corbet resigned from university administration though he continued to work on entomology at Edinburgh University, where he was appointed Honorary Professor in 1996. In that year he retired to Cornwall where he bought a converted water mill with a dragonfly pond, worked on his books, and served on the council of the Cornwall Wildlife Trust. He also loved music and played the clarinet.

Corbet's research on dragonflies and mosquitoes led to the award of doctorates from the universities of Reading, Cambridge, Edinburgh and Dundee. He was elected a Fellow of the Royal Society of Edinburgh in 1987 and awarded its Neill Medal in 2002. He also held the Entomological Society of Canada's gold medal for outstanding achievement. From 2001 to 2003 he was president of the Worldwide Dragonfly Association.

- Peter Marren

Philip Steven Corbet, entomologist: born Kuala Lumpur, Malaya 21 May 1929; invertebrate biologist, East African Freshwater Fisheries Research Organisation, Jinja, Uganda 1954-57; invertebrate biologist, East African Virus Research Institute, Entebbe 1957-62; research entomologist, Entomology Research Institute, Ottawa, Canada 1962-67; director, Canada Department of Agriculture Research Institute, Belleville, Ontario 1967-71; Professor of Biology, Waterloo University, Ontario 1971-74; Professor and Director, Joint Centre for Environmental Studies and Lincoln Agricultural College, Canterbury, New Zealand 1974-78; Professor of Zoology, University of Canterbury 1978-80; Professor of Zoology, Dundee University 1980-90 (Emeritus); three times married (one daughter); died Truro, Cornwall 13 February 2008.

Additional information on Philip Corbet

The excellent obituary published in The Independent presents a worldly picture of this eminent scientist, though omits some important information on Philip's time and accomplishments while in Canada.

After arriving in Canada in 1962, Philip continued his work on mosquitoes, studying those of the Canadian high arctic. He focused on their taxonomy, reproduction and phenology, observing that some species practice facultative autogeny, a form of ovarian development that appears to be an adaptation to the intermittent shortage of vertebrate hosts. He also observed that temperature is a critical cue for high arctic mosquito oviposition patterns. For egg laying, females select the first sites to become snow-free, hence warm up the most rapidly, leading to early hatching and maximum development over the short arctic summer. It was this work, and his more general interest in aquatic entomology, that led to Philip's appointment as leader of the research team that advised Expo 67 on, and conducted management strategies for, biting flies and nuisance insects (shadflies) in the St. Lawrence River. While in Canada, Philip's research on Odonata was placed somewhat 'on the back burner' due to his other commitments. However, he did find the time and energy to complete Volume Three of E.M. Walker's 'The Odonata of Canada and Alaska' (University of Toronto Press, 1974). Philip was a member of the Governing Board of the Entomological Society of Canada from 1969 to 1973, serving as President in 1971-72. As President, he was a strong, dynamic leader. He was a vigorous proponent on the Society's 1970 resolution on population limitation and resource use. As

well, in 1971, he was responsible for preparation of the Society's publication 'Pesticides and the Environment'. These two statements are regarded as landmarks in the development of the Society's role in Canadian society. In addition to receiving the Society's Gold medal in 1974, Philip was elected a Fellow of the Society in 1977.

During his Canadian tenure, Philip served on many major government committees, including the Ontario Department of Agriculture and Food Pesticide Advisory Committee, the Defence Research Board of Canada Advisory Committee on Entomological Research, the Canada Committee on Biting Flies, and the Population Task Force of the Canadian Council of Resource and Environmental Ministers.

For additional biographic information, see Bull. E.S.C. 6: 66-68 (1974), 12:38 (1980), and 22:210-211 (1990).

- Cedric Gillott (Saskatoon), Chair, Heritage Committee