Laurence Alfred Mound and his contributions to our knowledge of the Thysanoptera

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Abstract

Laurence Alfred Mound became interested in taxonomy after two postgraduate periods at the British Museum of Natural History (now the Natural History Museum) in London where he discovered biological diversity and the endless variety of living things. While working in Nigeria and the Sudan, and studying variation in whitefly populations, he gained an appreciation for the great differences within species in behavior and morphology under varying environmental conditions. He was appointed to the British Museum of Natural History in 1964 where he worked on the taxonomy of thrips, whiteflies, and aphids until he retired as Keeper of Entomology in 1992. He now lives in Canberra, Australia, serving as an Honorary Research Fellow, CSIRO Ecosystem Sciences at the Black Mountain Campus. Driving questions motivate him and provide insight into his thinking of the natural world: Why are there so many species of insects, yet so few species of thrips? Why so many at one place but so few at another? Do environmental and host plant factors drive the astonishing levels of morphological variation seen in single species? If so why? Why do so few thrips vector plant viruses, but why are those few so successful? Why are so many thrips associated with Acacia trees in Australia but so few on other plants? To address these questions and as part of his ongoing efforts to document the biodiversity of thrips, Laurence Mound has established 90 new Thysanoptera genera, and described 641 new species of thrips. These taxonomic designations are new hypotheses inviting scrutiny and study. At the time this document was written Laurence’s research articles had been cited almost 1,300 times. Here we review Laurence Mound’s career to this point, and we discuss the quality and quantity of his remarkable accomplishments in taxonomy, as well as highlighting his distinctive personal characteristics.

Key words: Laurence Mound, biography, scientific contributions, Thysanoptera

The greatest discovery of modern science was of the dimensions, not of space and time, but of human ignorance.
Lewis Thomas (1913–1993), physician, poet, etymologist, essayist, administrator, educator, policy advisor, researcher

Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?
Thomas Stearns Eliot (1888–1965), poet, dramatist, literary critic

The difficulties in writing this biography became evident at the very beginning when trying to decide on a title. Laurence Mound cannot be labeled adequately as a taxonomist specializing on the Thysanoptera, even though his contributions encompass the worldwide fauna. His interests are eclectic, and his accomplishments range throughout the arts, science, technology, education, and administration. His contributions to taxonomy are not simply about describing species, they are essentially about understanding patterns of variation and the biological and ecological underpinnings responsible for what is observed. In addition to taxonomic and phylogenetic contributions to the Thysanoptera, Laurence has for decades contributed to our understanding of thrips behavior, life-histories, disease-vector ability, host-plant relationships, the biochemical and genetic makeup of thrips, and the propensity of a minority of species to behave as invasive pests. The Thysanoptera are included in the title because this is the group on which he has devoted most of his study. Without doubt, Laurence Mound is the doyen of this group of insects.
and his work has inspired many, including the authors, to work on thrips and to produce work of similar high standards.

A unique combination of characteristics combines to make Laurence Mound a highly unusual and transformative individual. He looks very closely, and he encourages others to look very closely. He has remarkable, almost tireless energy. His commitments to science are unwavering. As one would expect for someone with these attributes, he frequently is dismissive and always he is demanding. His expectations of colleagues encompass knowing what and how, working hard, publishing, and constantly asking why. The only way to establish a continuing scientific dialog with him is to earn his respect through informed thinking, by challenging his thinking, and by contributing. His mentoring has been a source of inspiration for the authors, and it has motivated us to a greater commitment to thrips, and to entomology and the scientific principle in general. Ultimately this inspiration has increased the quality and quantity of our research on thrips, which by extension has increased the quality and quantity of research of our colleagues and students.

Laurence Mound’s thought-provoking and inspiring lectures at the opening or closing of scientific meetings and international congresses are legendary. He was the 1998 Pioneer Lecture Honoree at the meeting of the Florida Entomological Society to commemorate the achievements of Wilmon Newell, an early pioneer in Florida, leading to eradication of the Mediterranean fruit fly and numerous other invasive pests. Newell’s scorched-earth approach was conducted without regard for the environment and at extreme economic loss to growers. His eradication methods highlighted one of the greatest problems associated with pest control — the view that it is actually possible to eradicate one type of organism without affecting the lives of other organisms. Laurence Mound emphasized that good integrated pest management demands that we learn all that we can about the biology of our target pests and their relationships to our crops, and that we also have a sound knowledge of the other organisms that are in and around these crops. Good integrated pest management recognizes that these different organisms are interdependent, and that disrupting one will have effects on others. Laurence was reluctant to publish his lecture in writing, even though it is traditional that the Pioneer Lectures are published in the Florida Entomologist. He pointed out that a lecture as an effective method of communication is structured very differently from written forms of communication. Eventually, a paper was published that captured the essence of the oral presentation, although the lecture was indeed more spell-binding and inspirational (Mound 2005a).

A similar effect was imparted in 1999, when Laurence Mound addressed an audience of extremely upset and uncertain avocado growers in Ventura County, California USA. The avocado industry had been ravaged for two consecutive years by the avocado thrips, Scirtothrips perseae, a species new to science at the time of its first detection in the USA. The impact this talk had cannot be underestimated — it challenged the fundamental pest and avocado tree management practices used in California, it alerted California’s growers to a much wider and growing problem, that of invasive species. The talk drew beautifully upon Civil War analogies to which most, if not all, meeting attendees, either native US citizens or those well versed in history, could relate. The crowning pieces in the lesson on how to prepare for, manage, and adapt to invasive thrips of agricultural importance were modified from The Art of War by Sun Tzu. This talk riveted and inspired one of the authors (MH) who decided Laurence Mound was someone from whom he wanted to learn and with whom he wanted to work.

Laurence delivered a plenary lecture at the 2009 German Entomological Society. In this he explored the view that the descriptive sciences of taxonomy, systematics, and morphology are widely viewed as un-intellectual, and not worthy of study. He used studies on the Thysanoptera as a basis for considering the origins of, and the measure of truth for these prevailing views. His argument is that the description of a new species is a new hypothesis that is available for testing. In practice, many descriptions are published to provide a name for a specimen, and in the absence of biological data, these hypotheses go untested. In the plenary lecture, he outlined an approach that society in his view has a right to expect from descriptive biologists — the development of sufficient understanding of natural history to facilitate maintenance of ecosystems on which mankind depends. This view was developed from a talk in Piraciacaba, Brazil in 1995 under the title "Is taxonomy boring — or is it just the taxonomists?" Another of his interests, effective communication, was emphasized when he gave the final plenary lecture at the International Congress of Entomology in Florence in 1996. He stressed the importance of electronic communication, not just in publishing scientific results but also in teaching students.

The lecture at the German Entomological Society focused on a single diverse lineage of Phlaeothripinae, known to feed exclusively on the foliage of Acacia species, a plant genus of around 1000 species across Australia. Mound’s (1970a, 1971a) earlier systematic research on Acacia thrips — the field work conducted for twelve
months in Australia while he was employed at the British Museum of Natural History (BMNH, now the Natural History Museum) — led to the remarkable behavioral studies by Crespi (1992a,b) and a resurgence of interest in the group. Laurence Mound has continued working with colleagues on the great diversity in structure, ecology, life history, and behavior of Australian Acacia thrips; the patterns in host-plant relationships; and the ways in which complex interdependences have driven patterns of insect diversity, behavior, and host-plant association. Over 235 thrips species associated with Acacia are named in Crespi et al. (2004) and 140 are described for the first time in this book; 58 were described by Mound and colleagues during the course of the project, prior to publication of the book. The taxonomy, including the species descriptions, are Part II of the book. Part I covered the ecology and evolution of Australian Acacia thrips. Together the authors pioneered a model clades approach for the analysis of behavior, ecology, and life-history of the Australian thrips associated with Acacia. A systematic, phylogenetic framework was developed from a robust taxonomy coupled with phylogenies at the species level and data on biogeography, behavior, ecology, life history, and other aspects of phenotype and genotype. This allowed for robust, multidisciplinary tests of hypotheses.

Laurence Mound's lectures often include constructive criticisms of his colleagues. At the international meetings of Thysanoptera and Tospoviruses, he has systematically urged researchers to look holistically at the plants, the thrips vectors, and the tospoviruses as interdependent, co-evolved organisms. He has remarked on several occasions that most virologists simply view thrips vectors as 'flying syringes.' He emphasizes that sound, ecologically-based, integrated pest management can only be derived by understanding the complex interdependencies in the biologies of all three components. Cross discipline studies are required if sustainable and effective strategies are to be developed, implemented, and adopted by end users.

While writing this manuscript in the office of Renato Ripa in La Cruz, Chile, one of the authors (JF) noticed a wall chart entitled 'Insect.' It was included in a book that Renato had purchased in California USA. At the time, Renato was unaware that the book's author was Laurence Mound. An internet search revealed that Mound has published several children's books on insects, some translated into several languages (Table 1). One of them, 'Megabugs, The Natural History Museum Book of Insects,' was based on the Megabugs exhibition at the Natural History Museum, London, UK. It looks 'deep into the mysterious world of these strange and fascinating creatures, and explains the work of scientists to understand them.'

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<td>Amazing Insects</td>
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The Megabugs exhibition was part of an initiative by the Museum's Board of Trustees to update the exhibitions and modify public perception of the Museum that led to a vast increase in visitor numbers (Fortey 2008). A 'business-first' philosophy was pressed upon public services during the Margaret Thatcher years. Many of the museum's scientists resented the change, but Laurence Mound welcomed the opportunities to educate the public. His interest in writing children's books is to motivate and educate a new generation to study insect diversity. A discussion with JF that occurred when LM visited Florida in 1998 revealed his intensity in educating children about biodiversity — my father encouraged me to think, to use my imagination, and to challenge the thinking of others. He facilitated my interest in natural history and, in particular, insects. When I told Laurence this, he jumped up excitedly exclaiming...
that, "Now it is YOUR TURN!" He left an autographed copy of *Megabugs, The Natural History Museum Book of Insects* as a house-guest gift, obviously intended for my young son and I to use upon his departure.

Laurence Alfred Mound was born in Willesden, London, England on 22 April 1934. During the war years, he was evacuated from London. He was awarded a scholarship to Warwick School, reputedly the second oldest public school in England, where he remained from 1945 to 1953. His earliest ambition was medical school, but no school accepted him since he was forced to admit during interviews that adherence to the Hippocratic Oath was not his ambition. Apparently, he was interested in understanding why we die. He attended Sir John Cass College, University of London from 1953 to 1957, specializing in marine biology. His interest was the cultivation and harvest of marine foods. He floated around for a different professional interest after becoming disillusioned with the practicality of the question, "Why can't we cultivate and harvest marine foods as we do terrestrial foods?" He accepted an offer from Her Majesty's Colonial Office to study agricultural entomology, and was awarded the Diploma of Imperial College, London in Economic Entomology in 1958 and the Diploma of Tropical Agriculture from the Imperial College in Tropical Agriculture in Trinidad in 1959. This training was rather broad including the physiology of insecticide resistance, the identification of tropical weeds and grasses, the problems of drying grain, the control of rats, the grafting of buds onto rubber plants, and the life history of whiteflies (Mound 2002a).

From 1959 to 1961, Laurence Mound was an entomologist with the Nigerian Federal Department of Agricultural Research, Ibadan, studying whitefly vectors of crop virus diseases (Fig. 1). Several of the locally grown crops were damaged by different-looking whiteflies. He conducted intensive studies on variation within and between populations, including mass rearing of inbred lines on different crops (Mound 1963). He cultivated his musical interests, playing the male lead, Danilov, in the *Merry Widow*, staged at the University of Ibadan in 1961. He also played the violin in the orchestra for other operettas such as *Lilac Time*. In 1961, he was awarded a Rockefeller Studentship to study whiteflies at the US National Museum in Washington and at agricultural research institutes in California. From 1961 to 1964, he was an entomologist with the Empire Cotton Growing Corporation studying whitefly effects on cotton lint in Sudan. Claims of stickiness on cotton lint resulted in him visiting cotton mills in Europe to assess the importance of the problem (Mound 1965a). His work in Sudan provided an appreciation of the
influence of environmental parameters on insect behavior (Mound 1962a). Two periods at the BMNH in London had resulted in development of an interest in biological diversity, the endless variety of living creatures, and this led to an interest in taxonomy (Mound 1965b). Furthermore, he came to understand that in dealing with variable pest species, taxonomy is not just about describing species, but more importantly, about understanding patterns of variation in morphology, behavior, life-histories, disease-vector ability, and host-plant relationships (Mound 2002c). His research on whiteflies was prescient to later understandings of biotypes and cryptic species as revealed by molecular biology (Perring et al. 2001). One can imagine what his aggie colleagues thought about his research on a pyralid moth in ant nests (Mound 1962b) or the role of extra-floral nectaries of cotton (Mound 1962c)!

The scientific community had taken notice of these insightful accomplishments. Laurence was appointed to the BMNH in London in 1964 as Senior Scientific Officer responsible for whitefly and thrips collections, but the clear focus of his research was the Thysanoptera. When questioned about this, he replies that he found thrips people more interesting than whitefly people! In 1969, he was promoted to Principal Scientific Officer, Head of Hemiptera Section. His early research was mostly on the taxonomy of thrips, but his journal publications included papers on whiteflies (Mound 1966a, 1967a) and aphids (Mound 1969a). The Thysanoptera were a poorly known and little understood group of insects — thrips were best known as the model organisms used by Andrewartha & Birch (1954) to support their ideology that regulation of animal populations was independent of population density. Only general information was available concerning thrips biology (Priesner 1965). Faunistic accounts were available for North America (Stannard 1957, 1968) and a checklist for South Africa (zur Strassen 1960), but the identification key to world genera by Priesner (1949) was seriously ineffective. Many species were described by authors who spent inadequate time in the field and who failed to appreciate the phenotypic plasticity within species, and taxonomic problems were aggravated by poor preparation of microscope slides. However, the unusual biology of the group was beginning to draw the interest of ecologists such as Trevor Lewis at the Rothamsted Experimental Station in Harpendon in the United Kingdom, who provided information about thrips and their biology to W. D. Hamilton at Imperial College. The thrips 'extraordinary sex ratios' were of great interest at the time in developing theories about kin and group selection (Hamilton 1967).

Laurence Mound began his museum career with an overview of the taxonomic work by the English specialist, R.S. Bagnall (Mound 1968c) whose collections were in London. But Laurence soon returned to travelling and field work: Australia, the USA, South Africa, and New Zealand in 1967 and 1968; the USA, Jamaica, and Trinidad in 1970; Malaya and Java in 1973. He studied thrips collections in 1966 at Frankfurt with Richard zur Strassen and at Linz with Herman Priesner (Fig. 2) and fulfilled administrative duties for international entomological organizations (Fig. 3). He studied numerous taxa of thrips during this period, including Hercinothrips (Mound 1966b), Taeniothrips (Mound 1966c), Thrips (Mound 1967b), the Australian Aeolothripidae (Mound 1967c, 1972a), Synaptothrips (Mound 1968a), Scirtothrips (Mound 1968b), Australian Phlaeothripidae (Mound 1969b), Heliothrips (Mound 1970b), Mecynothrips (Mound 1971b), Allothrips (Mound 1972b), Macrothripidae (Mound 1972c), Sedulothrips (Mound & O'Neill 1972), the Australian Chirothrips (Mound & Palmer 1972), and Nesothrips (Mound 1974a). He initiated SEM studies on the feeding stylets of thrips (Mound, 1971c), and the remarkable coiled stylets of Casuarina thrips (Mound, 1970c). The taxonomy of the Merothripidae (Mound & O'Neill 1974) was examined and he studied spore-feeding thrips (Mound 1974b). He published checklists, including a catalogue of the West African Thysanoptera (Pitkin and Mound 1973), the thrips of Lord Howe Island (Mound 1999a), the Soloman Islands (Mound 1970), Panama (Mound and Palmer 1992), and Heard Island (Green and Mound 1994).

lished papers on thrips biology including antennal aberrations (Mound & Walker 1982b), sub-social behavior (Mound & Palmer 1983), sexual dimorphism (Mound 1987), and secondary sexual character variation and fighting behavior (Mound 1991b). His long experience of museum work led to him being employed to advise on museum insect collections and identification services in several places, including Greece in 1974, India in 1979, and Taiwan in 1991.

FIGURE 2. Laurence Mound, a fresh and “larviform” thrips worker with Herman Priesner, at Priesner’s home in Linz, Austria, 1966.

FIGURE 3. Washington, D. C., 1976, just elected as Honorary Secretary/Treasurer of the Permanent Committee for International Congresses of Entomology. Mound seated at left with Paul Freeman, his predecessor; standing next to him Ray Smith (California, USA); seated at the right is Baccio Baccetti (Italy); Doug Waterhouse (Australia) standing in the center.
The practical applications of Laurence Mound's taxonomic work cannot be emphasized enough. His studies have helped with species identifications in important pest groups, especially Scirtothrips, a genus of notoriously difficult to identify pests with important quarantine implications when detected (Hoddle et al. 2008; a,b; Mound & Palmer 1981b; Rugman-Jones et al. 2006). Understanding and documenting the diversity of Scirtothrips has received considerable research attention because although this genus is reasonably speciose relatively few are pestiferous, and those that are pests may exhibit either polyphagy, oligophagy, or even monophagy (Hoddle & Mound 2003; Palmer & Mound 1983; Mound 2009c; 2010a; Mound and Stiller 2011). Similar taxonomic insight has been provided by work on Heliothrips species, especially *H. haemorrhoidalis* (Mound 1970b; 1976b; Mound & Monteiro 1998; Mound et al., 2001). Regulators, and quarantine and border inspection officials have benefited from surveys and identifications, as this rather “routine” work has alerted them to the arrival of new pest species (Houston et al. 1991; Mound 1998; Mound and Walker 1987; Mound et al. 1996), or potential new pests that could be moved on popular ornamental plants (Mound and Marullo 1994). Just as importantly, the absence of quarantine pests like Caliothrips fasciatus (Hoddle et al. 2006) has been determined for Australia through time spent in the field making systematic collections and for China by forensically unraveling identification and curation errors (Mound et al. 2011). Biological control programs have benefited from Laurence’s recent taxonomic work on predatory *Scolothrips* (Mound 2011; Mound et al. 2010a) and *Franklinothrips* (Mound and Reynaud 2005) and phytophagous thrips that have potential as weed biocontrol agents have been identified (Mound and Zapater 2003; Mound and Pereyra 2008; Mound et al. 2010b).

When thrips, whiteflies, and the viruses they vector emerged as great threats to global agriculture in the 1980s, Mound was recognized as a world authority on both groups. His pioneering research into patterns of variation in morphology, behavior, life-histories, disease-vector ability, and host-plant relationships was critical to understanding the difficulties of management and in shaping the world's response. Publications include Mound (1973), Mound & Halsey (1978), Mound (1983a), Bink-Moenen & Mound (1990), Mound & Teulon (1995), and Mound (1997). He became much sought after to provide direction and focus to problems in the taxonomy and management of these pests, and he has traveled throughout the world lecturing at universities, addressing professional organizations, conducting identification workshops, and visiting field sites. He enjoys learning about local cultures, and he has amassed decades of interesting experiences (Figs. 4, 5, 6, 7, 8). In 1993, he delivered the opening lectures at the Colombian Entomological Society in Cali (Mound 1993a, b). In between this activity and visiting greenhouses in the flower industry, he found himself traveling around Cali on a *chivas* with a bottle of *aguadiente* hanging around his neck. In 2000, he visited Chile to study the dynamics of global populations of *Frankliniella occidentalis* and the effects of this invasive flower thrips on the native species of flower thrips (Ripa et al. 2009). He was persuaded to climb La Campana mountain in Chile with JF on the same trail used by Darwin during the voyage of the *H. M. S.*

**FIGURE 4.** China, 1980; Mound being greeted in Shanghai as leader of delegation of entomologists from British Museum Natural History, London.

**FIGURE 5.** Smolenice, Czechoslovakia, 1985, Congress of European Thysanopterists. Laurence Mound with Jenny Palmer, Trevor Lewis, and Jaroslav Pelikan.
Beagle (Darwin 1937), and collected thrips near the summit (Fig. 9). On the way down, he somehow slipped on some loose gravel over a very steep and long cliff. Fortunately, he landed on a rock a number of meters below, but then, uncharitably, claimed that he was pushed. Certain Chilean government officials were horrified that such a famous scientist, scraped and bruised, nearly perished on a visit to their country. More recently on a visit to Germany, Laurence fell heavily while collecting thrips with Kambiz Minaei in the rockery of the botanic garden at Halle. Happily he was rescued by an attractive young lady, who not only called an ambulance but carefully carried his useless arm to the waiting stretcher.

In the 1980s and 1990s, thrips were still an obscure group of insects, but a growing number of scientists were becoming interested in studying them. The international trade in plants resulted in the emergence of a number of invasive species as pests; many of them were new species. This emergence necessitated the training of plant quarantine officials and management practitioners in their identification. The development of keys suitable for these users was a serious challenge that Laurence Mound has worked to rectify. Thrips are small, and their morphological characters are sometimes difficult to observe even with properly prepared specimens and high-quality microscopes. Palmer et al. (1989) and Mound and Kibby (1998) were the first illustrated guides to species of Thysanoptera for the practical user. The second was published to remove the problems posed by the first for some users in that it required fluency in English and familiarity with the use of dichotomous keys. Laurence Mound was quick to adopt the latest in computer technology (Lucid Technology), publishing Moritz & Mound (1996, 1998) and Moritz et al. (2001, 2004). The incompatibility of these cd-roms with the operating and security systems of many computers was a recurrent problem. Hoddle et al. (2008b), a key to the thrips of California, is fully and freely available on the internet, and overcame many of these end-user problems. The thrips of California is a multi-entry interactive key, which includes factsheets on over 200 species of native, exotic, and potentially invasive thrips of importance to California. The interactive thrips glossary is especially useful for the novice, and it is richly illustrated with Automontage photomicrographs of specimens.

FIGURE 8. Penny Gullan (left), Mark Hoddle, Peter Cranston, Alice Wells, and Laurence Mound (right) exploring Sequoia and Kings Canyon National Park in California, 2008 (photo by Christina Hoddle).
In 1975, Laurence Mound was appointed Deputy Keeper, Department of Entomology at the British Museum of Natural History, and promoted to Senior Principal Scientific Officer. Also in that year he was awarded the degree Doctor of Science by the University of London. In 1981, he was appointed Keeper of Entomology, as Deputy Chief Scientific Officer, and in 1990 he was appointed Honorary Professor, University of Wales in Cardiff. Outside entomology, through the 1970s and 1980s, he sang with various choirs in London that performed the usual choral repertoire from Faure and Verdi to Charles Ives.

In the early days of the (now) Natural History Museum, collections of animals and plants were compiled or patronized by wealthy aristocrats and other wealthy dilettantes. A certain kind of contemporary recognition and future immortality could be ensured by compiling or endowing collections. This fashion was coupled with the expansion of the British Empire; the British thought they had a right and a duty to collect. The size and scope of the collections was a matter of pride, and a reflection of the might of the nation. Scientists were hired who spent their careers collecting representatives of a particular group. These specialists employed the most basic kind of description and naming with perhaps some systematic analysis and the construction of evolutionary trees. The fundamental science carried on behind the scenes eventually became the most difficult to fund (Fortey 2008), and this erudite and scholarly work contrasted markedly with hypothesis-driven research; the latter was regarded as real business. Early in his tenure at the Museum, Laurence Mound developed a document with Victor Eastop, the aphid specialist, "Why are we here?" Over a twenty year period the question this document posed became the focus of change. The situation at the Museum was akin to the situation when Francis Bacon, credited with the invention of the experimental method, was a student of philosophy at Trinity College, Cambridge. There was a need for a transformation in scholarly learning based on observation, experimental methods, and inductive reasoning (Ferris 2010). The Mound and Eastop document was a criticism of taxonomic practices generally, and formed the basis for many subsequent decisions on management of insect collections and on targeted research.
In 1981, the BMNH Entomology Department had about 25 million insects, an annual income equivalent to $US4 million, and an annual salary bill equivalent to $US3 million (Mound 2002a). As Keeper, Laurence Mound posed the following questions. What benefit did the taxpayer obtain from such a huge investment? What were the objectives of the department? Were cost-effective methods being employed to achieve the objectives? What impact did the studies have on British science and the Commonwealth in general? As a result, taxonomic studies were shifted to the needs of other members of the community, rather than the needs of other museums. This included crop protection, human and veterinary medicine, and nature conservation. Taxonomy was viewed as vital to address the biodiversity crisis (Gaston and Mound 1993). The responsibilities of the Museum changed and the possibilities that this change brought began to be explored (Mound 1992).

Ron Hedley, Director of the British Museum of Natural History from 1976 to 1988, was the last Director to be recruited from the ranks of museum scientists. Although he resisted the changes wrought by the Thatcher government, he made an administrative move that changed the way the museum was funded. Science had to pay its way, and so reform was at hand. The capacity to secure funding was regarded as a measure of success for the scientists, whereas in 1967 Laurence Mound had been instructed not to seek external funding; the Museum was considered financially self-sufficient; external funding might bring conflicts of interest. By the late 1980s it was very hard to win grants to support taxonomic studies (Fortey 2008), the lack of hypothesis testing being almost lethal to securing external funding. Further changes came under Neil Chalmers, former Dean of Science at the Open University, who was appointed Director by the Trustees in 1988. His appeal was as an administrator; scientific distinction or scholarship was regarded as less important. Soon began the 'night of the long knives.' Laurence had to reduce the entomology staff establishment by 30%, a challenge that was difficult, stressful, and caused great resentment amongst all involved.

Laurence Mound left London and retired from the Museum in 1992. During his "paid" career up to 1992, he published 94 refereed journal articles, 1 book, and 9 book chapters (not including the children's books). In the "retirement" period spanning 1992 to 2010, he published an additional 167 refereed journal articles, 3 books, and 12 book chapters (Fig. 10a). Some simple statistics summarize this productivity; from 1961 to 2010 Laurence has published an average of 6.06 ± 0.60 (± SE) documents per year. During the "paid" period 1961-1991 publications averaged 3.32 ± 0.40 per year, this rate trebled during the retirement period 1992-2010 with publications averaging 10.81 ± 0.58 per year! A Web of Science Citation Search indicates that between 1966 to 2010 Laurence’s research papers were cited at least 1,286 times, and 80% (i.e., 1,033) of these citations occurred after 1992, a four fold increase in the citation rate prior to 1992 (Fig. 10b). This level of productivity is truly astonishing, even more so when you consider the amount of time, energy, and money spent collecting material, preparing slides, traveling, giving professional talks, lecturing, reviewing and editing articles for colleagues and co-authors, running training and identification workshops, and studying the latest literature. So, why is Laurence still working despite being retired? He claims that the same driving questions remain to motivate him (Mound 2002a): Why are there so many species of insects, yet so few species of thrips? Why so many at one place but so few at another? Do environmental and host plant factors drive the astonishing levels of morphological variation seen in single species? If so why? Why are so few thrips vectors of plant viruses, but those few so successful? Why so many thrips on Acacia trees in Australia? These questions, despite being asked often over a considerable period of time have not been exhausted, and simple as they are, continue to offer rich and meaningful discoveries because they have deep underlying complexity. Most importantly, every day there is something new to discover.

In 1992, Laurence received a two-year research contract from the Natural History Museum, London that was intended to support an introduction to the Thysanoptera of Costa Rica. The geographical area covered was extended to review the Neotropical thrips fauna at family and genus level. Mound & Marullo (1996) was the resulting publication, the "go to and must have" book on thrips in this area of the world. This book includes keys to the species of many genera, derived from the available material and Laurence's experience. The recorded species are listed when keys were not possible. He studied the type material for almost all of the keyed species. Identification keys are provided to 92 genera of the Terebrantia and 135 genera of the Tubulifera. The number of species group names listed is 1,669. Taxa described included three new genera and 49 new species. Mound & Marullo (1996) was based on his field studies in Costa Rica, Panama, Jamaica, Trinidad, Colombia, and Brazil.

Upon the completion of this Central American project, much of Laurence Mound's attention was directed again at the Australian thrips fauna. He studied gall-inducing thrips in northern Australia in 1993 under a National Geographic Grant to B.J. Crespi, and in 1994 he contracted with the Australian Biological Resources Study to prepare...
a Thysanoptera catalogue for Australia (Mound 1996). Then, after a visit to the University of Sao Paulo at Piracicaba, Brazil, and a few months as a visiting scientist at the Taiwan Agricultural research Institute, he accepted in 1995 a 12-month CSIRO McMaster Fellowship in Canberra, eventually being named Honorary Research Fellow, CSIRO Division of Entomology, in 1996. He worked in the field in many parts of Australia from Melville Island to Tasmania and Lord Howe Island to the Pilbara in the far north west of the continent. This field work included a study on the pollination of the Central Australian cycad, *Macrozamia macdonelli*, by a basal clade thrips (Mound and Terry 2001).

**FIGURE 10.** (A) Publication and (B) citation data for Laurence Mound. A full list of Laurence Mound’s publications is available on the web: http://www.ento.csiro.au/thysanoptera/LAM_pubs.pdf
Laurence has lived in Australia for over fifteen years, working productively and generally collaboratively (Mound et al. 1996 — Phlaeothripidae; Marullo & Mound 1997 — Australothrips; Mound & Marullo 1998 — Aeolothripidae; (Mound & Morris 1999 — Carcinothripidae; Mound 1999 — Dendrothripinae; (Mound & Moritz 2000 — Corroboreothripidae; (Mound 2002b, 2008a — thrips and their host associations in Australia; Gillespie et al. 2002 — Parabaliothrips; Hoddle & Mound 2003 — Scirtothrips; Mound & Masumoto 2005 — Thrips; Mound & Minaei 2006, 2007 — fungus-feeding Phlaeothripinae; Mound 2007 — Idolothripinae; (Mound & Moritz 2000 — Corroboreothrips; Mound 2008 — Anaphothrips; Mound & Minaei 2006, 2007 — fungus-feeding Phlaeothripinae; Mound 2009 — Dendrothripinae; (Mound & Moritz 2000 — Corroboreothrips; Mound 2008 — Anaphothrips; Pereyra & Mound 2009 — Cranothrips; and Pereyra & Mound 2010 — Desmothrips. He continues to publish studies on insect diversity (Mound 2002a; Pinent et al. 2003; Mound 2004a,b; Mound & Reynaud 2005; Mound 2006; Goldarazena & Mound 2006) and this productivity is documented in the lists of genera and species he has described (see Tables 2 and 3). Many of these studies include aspects of the biology and behavior of thrips (e.g. Funderburk et al. 2008, Tyagi et al. 2008, Tree & Mound 2009). The latest examples of his contributions to checklists include Mound & Ng (2009), Minaei & Mound (2008), Diffie et al. (2008), Hoddle et al. (2004, 2008d), Hoddle and Mound (2011), and Tillekaratne et al. (2007). Laurence regards collaboration as a vital element in his productivity. Despite advice to the contrary, both from supervisors and other taxonomists, a high proportion of his publications have involved co-authorship. Laurence cheerfully acknowledges the debt he owes to the very large number of co-authors with whom he has worked, from Jenny Palmer, Brian Pitkin and Sheila Halsey in the 1960s and ’70s, to Masami Masumoto, Gerald Moritz, Desley Tree, Alice Wells and Hongrui Zhang in the most recent decade.

**TABLE 2.** List of 90 Thysanoptera genera described by Laurence Mound over the period December 1967 to December 2010.

<table>
<thead>
<tr>
<th>STENUROTHRIPIDAE</th>
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<tr>
<td>Heratythrips Mound &amp; Marullo, 1998: 88</td>
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<tr>
<th>FAURIELLIDAE</th>
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<tr>
<td>Andrewaria Mound,1967c: 47</td>
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<tr>
<td>Arcuthrips Mound, 1967c: 205 [= Gelothrips Bhatti]</td>
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<td>Cycadothrips Mound, 1991a: 649</td>
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<td>Desmidothrips Mound, 1977b: 149</td>
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<td>Erythridothrips Mound &amp; Marullo, 1993: 285</td>
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<td>Bhattithrips Mound, 1970: 44</td>
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<td>Hoodothripoides Mound, 1970: 54</td>
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<td>Stosicthrips Mound, 2009: 26</td>
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<td>Anaphrygmothrips Mound &amp; Walker, 1982: 53</td>
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<td>Brooksiathrips Retana &amp; Mound, 2005: 122</td>
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<td>Dikrothrips Mound &amp; Walker, 1982c: 64</td>
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<td>Dodonaeothrips Mound &amp; Masumoto, 2009: 59</td>
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<td>Gabanithrips Bhatti &amp; Mound, 1992: 175</td>
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<td>Karphothrips Mound &amp; Walker, 1982c: 57</td>
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<td>Kenyattathrips Mound, 2009c: 65</td>
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<tr>
<td>Labiothrips Bhatti &amp; Mound, 1994: 162 [= Scirtothrips Shull]</td>
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<td>Lomatothrips Mound &amp; Walker, 1982c: 67</td>
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<td>Nexothrips Marullo &amp; Mound, 2001: 232</td>
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<td>Rhamphiskothei Mound, 1990: 214</td>
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<td>Yaobinthrips Zhang, Mound &amp; Xie, 2010: 65</td>
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<td>Malesiathrips Palmer &amp; Mound, 1978: 196</td>
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<td>Minaeithrips Mound, 2007: 60</td>
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<td>Neatactothrips Mound &amp; Palmer, 1983: 85</td>
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<td>Akainothrips Mound, 1971a: 395</td>
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<td>Akthethrips Mound, 1970c: 452</td>
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<td>Andreothrips Mound, 1974a: 110</td>
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<td>Apostlethrips Mound &amp; Minaei, 2006: 2</td>
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<tr>
<td>Baphikothei Mound, 1970d: 90 [=Stigmaothrips Ananthakrishnan]</td>
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<td>Brakothrips Crespi, Morris &amp; Mound, 2004: 146</td>
</tr>
<tr>
<td>Callococcithrips Mound &amp; Wells, 2007: 58</td>
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### Table 3.
List of 641 Thysanoptera species described by Laurence Mound over the period December 1965 to April 2011.

<table>
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<tr>
<th>STENUROTHRIPIDAE</th>
<th>Desmothrips postlei Pereyra &amp; Mound, 2010: 316</th>
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<td>Heterothrips mimosae Mound &amp; Marullo, 1996: 65</td>
<td>THRIPIDAE-PANCHAEOTHRIPINAE</td>
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<td>MELANTHRIPTIDAE</td>
<td>Bhattithrips borealis Mound, 2009a: 31</td>
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<td>Cranothrips sititor Mound, 1972a: 44</td>
<td>Herciniothrips aethiopiae Mound, 1965c: 244</td>
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<td>Cranothrips symoni Mound, 1972a: 45</td>
<td>Hoodothrips braziliensis Mound, 1970b: 54 [=lineatus Hood]</td>
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<td>Dorythrips wallacei Mound, 1972a: 52</td>
<td>AEOLOTHRIPIDAE</td>
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<td>Cycadothrips albrechti Mound &amp; Terry, 2001: 150</td>
<td>Dendrothrips glynn Mound, 1999: 264</td>
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<td>Desmothrips barrowi Pereyra &amp; Mound, 2010: 315</td>
<td>Pseudodendrothrips alexei Mound &amp; Tree, 2007: 10</td>
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<td>Hydatothrips aliciae Mound &amp; Tree, 2009: 4</td>
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<td>Schwarzithrips Mound &amp; Morris, 2000: 135</td>
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Scirtothrips muggabii Mound, 2010a: 66
Scirtothrips pan Mound & Walker, 1982c: 46
Scirtothrips pilbara Hoddle & Mound, 2003: 27
Scirtothrips pteridis Mound & Marullo, 1996: 193
Scirtothrips quadriseta Hoddle & Mound, 2003: 29
Scirtothrips solus Hoddle & Mound, 2003: 30
Scirtothrips tenor Bhatti & Mound, 1994: 163
Scolothrips ochoa Mound, Tree & Goldarazena, 2010: 64
Thrips antiaropsidis Zerega, Mound & Weiblen, 2004: 1019
Thrips aspinus Mound & Masumoto, 2005: 15
Thrips austellus Mound, 1978: 618
Thrips crosasae Mound, 1978: 618
Thrips darwini Mound & Masumoto, 2005: 20
Thrips diana Mound & Masumoto, 2005: 22
Thrips excaeleus Mound & Masumoto, 2005: 23
Thrips hanifahi Mound & Azidah, 2009: 64
Thrips hoddlei Mound & Masumoto, 2005: 28
Thrips kurashishi Mound, 2010b: 9
Thrips martini Mound & Masumoto, 2005: 36
Thrips phormicola Mound, 1978: 620
Thrips razanii Ng, Eow & Mound, 2010: 65
Thrips safus Mound & Masumoto, 2005: 45
Thrips solari Mound, 2010b: 15
Thrips teneus Mound & Masumoto, 2005: 52
Thrips wellae Mound & Masumoto, 2005: 57
Trichromothrips versonae Mound & Masumoto, 2004: 68
Yaobinthrips yangtzei Zhang, Mound & Xie, 2010: 68

PHLAEOTHRIPIDAE-IDOLOTHRIPINAE
Actinothrips apithanus Mound, 1991b: 941
Actinothrips retiniae Mound, 1991b: 939
Allothrips bournieri Mound, 1972b: 35
Allothrips greensladei Mound, 1972b: 30
Allothrips hamideae Mound, 2007: 59
Allothrips prolixus Mound, 1972b: 30
Allothrips stannardi Mound, 1972b: 31
Anactinothrips gustavi Mound & Palmer, 1983b: 792
Anaglyptothrips dugdalei Mound & Palmer, 1983b: 35
Azeugmatothrips rectus Mound & Palmer, 1983b: 82
Bacillothrips bagnalli Mound & Palmer, 1983b: 72
Bacillothrips pitkini Mound & Palmer, 1983b: 74
Bolothrips italicus Mound, 1974b: 122
Carientohtips acr Mound, 1974b: 25
Carientohtips capricornis Mound, 1974b: 23
Carientohtips cassarinae Mound, 1974b: 26
Carientohtips grayi Mound, 1974b: 129
Carientohtips lothi Mound, 1974b: 29
Carientohtips magnetis Mound, 1974b: 30
Carientohtips miskoi Mound, 1974b: 31
Carientohtips pedicillii Mound, 1974b: 32
Carientohtips pictilis Mound, 1974b: 33
Carientohtips reedi Mound, 1974b: 34
Carientohtips vesper Mound, 1974b: 35
Celldothrips lawrencei Mound, 1970b: 122
Cryptothrips amneus Mound, 1974b: 42
Cryptothrips okiviensis Mound & Walker, 1986: 22
Diceratothrips bennetti Mound & Palmer, 1983b: 44
Dichaetothrips okajimai Mound & Palmer, 1983b: 53
Dichaetothrips secutor Mound & Palmer, 1983b: 53
Ecacleistothrips glorius Mound, 2007: 55
Emprosthiothrips bogon Mound, 1969b: 185
Emprosthiothrips brimblecombei Mound, 1974b: 51
Emprosthiothrips brittoni Mound, 1969b: 186
Emprosthiothrips csiro Mound, 1969b: 185
Emprosthiothrips epallatus Mound, 1974b: 52
Ehirothrips barreti Mound, 1974b: 94
Ehirothrips distans Mound, 1974b: 97
Ehirothrips sybarita Mound, 1974b: 100
Heptathrips coccieri Mound & Walker, 1986: 24
Heptathrips cumberi Mound & Walker, 1986: 25
Heptathrips kuscheli Mound & Walker, 1986: 26
Heptathrips tillyardi Mound & Walker, 1986: 27
Holurothrips collesi Mound, 1974b: 58
Machatothrips decorus Palmer & Mound, 1978: 193
Machatothrips dentus Palmer & Mound, 1978: 194
Malesiathrips australis Mound, 2007: 66
Malesiathrips guamensis Palmer & Mound, 1978: 196
Malesiathrips malayensis Palmer & Mound, 1978: 198
Malesiathrips solomoni Mound, 1970b: 116
Mecynothrips kraussi Palmer & Mound, 1978: 205
Mecynothrips priesneri Mound, 1971b: 281
Mecynothrips minor Mound, 1971b: 282 [= priesneri Mound]
Megalothrips andrei Mound & Palmer, 1983: 78
Mineaethrips aliciae Mound, 2007: 61
Mineaethrips drieseni Mound, 2007: 61
Neosmerinthothrips hamiltoni Mound & Palmer, 1983: 46
Nesothrips alexandriae Mound & Walker, 1986: 29
Nesothrips aoristus Mound, 1974a: 68
Nesothrips carverae Mound, 1974a: 71
Nesothrips douli Mound, 1974a: 171
Nesothrips eunoto Mound, 1974a: 173
Nesothrips fodiae Mound, 1974a: 163
Nesothrips hemidiscus Mound, 1974a: 71
Nesothrips leveri Mound, 1974a: 175
Nesothrips malacca Mound, 1974a: 164
Nesothrips melinus Mound, 1974a: 72
Nesothrips pintadas Mound & Walker, 1986: 31
Nesothrips rangi Mound & Palmer, 1983: 48
Nesothrips yanchepi Mound, 1974a: 75
Nesothrips zonangi Mound, 1974a: 174
Ozothrips eurys Mound & Palmer, 1983: 25
Ozothrips janus Mound & Palmer, 1983: 26
Ozothrips priscus Mound & Palmer, 1983: 26
Ozothrips tabulatus Mound & Walker, 1986: 37
Ozothrips vagus Mound & Walker, 1986: 38
Paractinothrips peratus Mound & Palmer, 1983: 86
Pelinothrips brochotus Mound, 1974a: 76
Pellarothrips insolitus Mound & Palmer, 1983: 60
Phaulothrips amici Mound, 1974a: 82
Phaulothrips barreti Mound, 1974a: 83
Phaulothrips sibylla Mound, 1974b: 84
Phaulothrips uptoni Mound, 1974b: 85
Polytrichothrips geoffri Mound, 2007: 64
Priesneriella gnomus Mound & Palmer, 1983: 33
Pyggothrips pygus Mound, 1974b: 43
Tarassothrips akritus Mound & Palmer, 1983: 61
Zeugmatothrips bennetti Mound & Palmer, 1986: 586
PHLAEOTHRIPIDAE-PHLEOTHRIPINAE
Adraneothrips acutulus
Grypothrips cambagei Crespi, Morris & Mound, 2004: 194
Grypothrips darlingi Crespi, Morris & Mound, 2004: 196
Grypothrips okrius Crespi, Morris & Mound, 2004: 197
Grypothrips papyrocarpe Crespi, Morris & Mound, 2004: 197
Hansonthrips drymus Mound & Marullo, 1996: 280
Hansonthrips selvae Mound & Marullo, 1996: 281
Haplothrips acacia Mound & Minaei, 2007: 2944
Haplothrips angusi Mound & Minaei, 2007: 2946
Haplothrips avius Mound & Minaei, 2007: 2946
Haplothrips bellisi Mound & Minaei, 2007: 2947
Haplothrips collyrae Mound & Walker, 1986: 40
Haplothrips dicksoniae Mound & Minaei, 2007: 2950
Haplothrips fici Mound & Minaei, 2007: 2952
Haplothrips gahniae Mound & Minaei, 2007: 2953
Haplothrips haideae Mound & Minaei, 2007: 2956
Haplothrips howei Mound & Minaei, 2007: 2957
Haplothrips lyndi Mound & Minaei, 2007: 2959
Haplothrips (Trybomiella) driesenii Mound & Minaei, 2007: 2951
Haplothrips (Trybomiella) gomphrenae Mound & Minaei, 2007: 2954
Haplothrips (Trybomiella) heliotropica Mound & Zapater, 2003: 438
Haplothrips (Trybomiella) ordi Mound & Minaei, 2007: 2960
Haplothrips (Trybomiella) salicorniae Mound & Walker, 1986: 54
Haplothrips (Trybomiella) timori Mound & Minaei, 2007: 2962
Heligmorthris elietus Mound, 1970c: 458
Heligmorthris frickeri Mound, 1970c: 460
Heptakidothrips thallas Crespi, Morris & Mound, 2004: 198
Hexakidothrips dalbyi Crespi, Morris & Mound, 2004: 199
Hindsothrips navarrensis Goldarazena & Mound, 1998: 319
Holopothrips carolinae Mound & Marullo, 1996: 295
Holopothrips mariae Mound & Marullo, 1996: 298
Holopothrips paulus Mound & Marullo, 1996: 299
Holopothrips porrosati Mound & Marullo, 1996: 301
Holopothrips stannardi Mound & Marullo, 1996: 302
Holopothrips tillandiae Mound & Marullo, 1996: 303
Holothrips adelos Mound, 1968c: 146
Holothrips australis Mound, 1974b: 12
Hoplandrothrips choritus Mound & Walker, 1986: 56
Hoplandrothrips enginosus Mound & Walker, 1986: 57
Hoplandrothrips versus Mound & Walker, 1986: 57
Hoplothrips anobii Mound & Walker, 1986: 59
Hoplothrips kea Mound & Walker, 1986: 60
Hoplothrips owens Mound & Walker, 1986: 62
Iotathothrips crozieri Mound & Crespi, 1992: 401
Iotathothrips kranzae Mound, Crespi & Tucker, 1998: 11
Jacotia glyptus Mound, 1995b: 91
Jacotia idaeus Mound, 1995b: 93
Jacotia palmerae Mound, 1995b: 93
Jacotia rhodorus Mound & Minaei, 2006: 11
Katothrips argenteus Crespi, Morris & Mound, 2004: 202
Katothrips biconus Crespi, Morris & Mound, 2004: 203
Katothrips brigalowi Crespi, Morris & Mound, 2004: 205
Katothrips duplex Mound, 1971a: 413 [=brunneicorpus Girault]
Katothrips capitatus Crespi, Morris & Mound, 2004: 206
Katothrips dampieri Crespi, Morris & Mound, 2004: 207
Katothrips diamantinus Crespi, Morris & Mound, 2004: 207
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Katothrips glandis Crespi, Morris & Mound, 2004: 210
Katothrips grasyi Crespi, Morris & Mound, 2004: 211
Katothrips hamersleyi Crespi, Morris & Mound, 2004: 211
Katothrips hoarei Crespi, Morris & Mound, 2004: 212
Katothrips hyrsum Mound, 1971a: 414
Katothrips mackeyanae Crespi, Morris & Mound, 2004: 213
Katothrips maslini Crespi, Morris & Mound, 2004: 213
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Katothrips michelli Crespi, Morris & Mound, 2004: 215
Katothrips neottus Crespi, Morris & Mound, 2004: 216
Katothrips nodus Crespi, Morris & Mound, 2004: 216
Katothrips ononius Crespi, Morris & Mound, 2004: 217
Katothrips papulus Crespi, Morris & Mound, 2004: 217
Katothrips pendulae Mound, 1971a: 414
Katothrips patus Crespi, Morris & Mound, 2004: 219
Katothrips sifrus Crespi, Morris & Mound, 2004: 220
Katothrips spinosissimus Crespi, Morris & Mound, 2004: 221
Katothrips spinosus Crespi, Morris & Mound, 2004: 221
Katothrips stuarti Crespi, Morris & Mound, 2004: 222
Katothrips tagacis Crespi, Morris & Mound, 2004: 223
Katothrips unicus Crespi, Morris & Mound, 2004: 225
Katothrips yamma Mound, 1971a: 416
Kellyia bagnalli Crespi, Morris & Mound, 2004: 228
Kellyia biadenes Mound, 1971a: 418
Kellyia froggatti Crespi, Morris & Mound, 2004: 229
Kellyia giraulti Crespi, Morris & Mound, 2004: 230
Kellyia karnyi Crespi, Morris & Mound, 2004: 231
Kellyia moultoni Crespi, Morris & Mound, 2004: 232
Kellyia palmerae Crespi, Morris & Mound, 2004: 233
Kellyia priesneri Crespi, Morris & Mound, 2004: 234
Kellyia stannardi Crespi, Morris & Mound, 2004: 235
Kellyia wilsoni Crespi, Morris & Mound, 2004: 236
Kladothrips arorum Mound, 1971a: 447
Kladothrips ellobus Mound, 1971a: 424
Kladothrips habrus Mound, 1971a: 442
Kladothrips hamiltoni Mound & Crespi, 1995: 148
Kladothrips harpophyllae Mound, Crespi & Kranz, 1996: 1179
Kladothrips kinchega Wills, Chapman, Mound et al., 2004: 171
Kladothrips maslini Mound, Crespi & Kranz, 1996: 1181
Kladothrips morrissi Mound, Crespi & Kranz, 1996: 1185
Kladothrips nicolsoni Mcleish, Chapman & Mound, 2006: 561
Kladothrips pilbara Mound, Crespi & Kranz, 1996: 1194
Kladothrips schwarzi Mound, Crespi & Kranz, 1996: 1187
Kladothrips sternii Mound, Crespi & Kranz, 1996: 1189
Kladothrips torus Mound, Crespi & Kranz, 1996: 1191
Kladothrips waterhousei Mound & Crespi, 1995: 152
Kladothrips xiphius Mound, Crespi & Kranz, 1996: 1182
Kladothrips yalgoo Mound, Crespi & Mound, 2004: 253
Kladothrips zygus Mound, Crespi & Kranz, 1996: 1196
Klambothrips myopori Mound & Morris, 2007b: 43
Leeuwenia polyosmae
Leeuwenia dioospri Mound, 2004b: 34
Leeuwenia polyosmae Mound, 2004b: 35
Leeuwenia scolopiae Mound, 2004b: 36
Leeuwenia tetrastigmae Mound, 2004b: 36
Lichanothrips albus Mound, 1971a: 437
Lichanothrips calcis Crespi, Morris & Mound, 2004: 260
Lichanothrips curvatus Crespi, Morris & Mound, 2004: 261
Lichanothrips magnificus Mound, 1971a: 437
Lichanothrips metopus Crespi, Morris & Mound, 2004: 262
Lichanothrips pastinus Crespi, Morris & Mound, 2004: 263
Lichanothrips triquetrus Crespi, Morris & Mound, 2004: 266
Liothrips neosmerinthi Mound & Palmer, 1992: 332
Liothrips tractabilis Mound & Pereyra, 2008: 64
Lissothrips clayae Mound, 1989: 8
Lissothrips dentatus Mound & Walker, 1986: 66
Lissothrips dudgalei Mound & Walker, 1986: 67
Lissothrips gersoni Mound & Walker, 1986: 68
Lissothrips okajimai Mound, 1989: 9
Litotetothrips shoreae Mound, 1983c: 14
Macrophthalmothrips heinzei Mound, 1972c: 85
Macrophthalmothrips kiesleri Mound, 1987: 281
Majerthrips barrowi Mound & Minaei, 2006: 8
Malacothrips canepile Mound & Marullo, 1996: 331
Malacothrips tunapuna Mound & Marullo, 1996: 333
Maxillata trimblayi Mound & Marullo, 1996: 335
Mixothrips nakaharae Mound & Marullo, 1996: 339
Murphythrips legalis Mound & Palmer, 1983: 422
Mystrothrips dilatus Mound, 1970d: 100
Neohoodiaella jennibeariae Mound & Williams, 2002: 18
Ostlingothrips corini Crespi, Morris & Mound, 2004: 267
Ostlingothrips pastus Crespi, Morris & Mound, 2004: 267
Paracholeothrips calcicola Crespi, Morris & Mound, 2004: 270
Paracholeothrips gracilis Crespi, Morris & Mound, 2004: 272
Paracholeothrips mulgae Crespi, Morris & Mound, 2004: 273
Phalothrips houstoni Mound & Crespi, 1992: 403
Podothrips anomalus Mound & Minaei, 2007: 2967
Podothrips ardis Mound & Minaei, 2007: 2969
Podothrips barrowi Mound & Minaei, 2007: 2970
Podothrips orarius Mound & Walker, 1986: 71
Podothrips regina Mound & Minaei, 2007: 2971
Podothrips ritchiei Mound & Minaei, 2007: 2972
Podothrips turangi Mound & Walker, 1986: 72
Podothrips websteri Mound & Minaei, 2007: 2972
Priesneria peronis Mound & Minaei, 2007: 2974
Prisothrips pellustos Mound & Marullo, 1996: 349
Psalidothrips grandis Mound, 1970d: 103
Psalidothrips minor Mound, 1970d: 103
Psalidothrips moeone Mound & Walker, 1986: 74
Psalidothrips tane Mound & Walker, 1986: 75
Psalidothrips taylori Mound & Walker, 1986: 76
Pseudophilothrips didymopanicos Del-Claro & Mound, 1995: 194

Pseudophilothrips gandolfi Mound, Wheeler & Williams, 2010: 62
Rhopalothripoides colus Crespi, Morris & Mound, 2004: 276
Rhopalothripoides disbamatus Crespi, Morris & Mound, 2004: 276
Rhopalothripoides lateus Crespi, Morris & Mound, 2004: 277
Rhopalothripoides pickardi Crespi, Morris & Mound, 2004: 278
Rhopalothripoides victoriae Crespi, Morris & Mound, 2004: 279
Sacothrips catheter Mound, 1971d: 94
Sacothrips corycids Mound, 1971d: 94
Sacothrips galbus Mound, 1971d: 95
Sacothrips ingens Mound, 1971d: 95
Sacothrips milvus Mound, 1971d: 96
Sartrithrips arecius Crespi, Morris & Mound, 2004: 281
Sartrithrips bapto Mound & Morris, 2001: 415
Sartrithrips lactator Mound & Morris, 2001: 415
Sartrithrips mars Mound & Morris, 2001: 416
Sartrithrips popinator Mound & Morris, 2001: 416
Sartrithrips pyctus Mound & Morris, 2001: 417
Sartrithrips vesper Mound & Morris, 2001: 417
Sartrithrips zephyrus Mound & Morris, 2000: 135
Sartrithrips zammit Mound & Morris, 2000: 135
Sonithrips psomus Mound & Minaei, 2006: 10
Solomonothrips fimbrii Mound, 1970d: 110
Solomonothrips greensladei Mound, 1970d: 107
Solomonothrips intermedius Mound, 1970d: 110
Solomonothrips setifer Mound, 1970d: 111
Solomonothrips striatus Mound, 1970d: 113
Sophikothrips malaiiae Mound, 1970d: 114
Sophikothrips aleurodisci Mound & Walker, 1982a: 349
Sophikothrips boltoni Mound, 1977c: 178
Sophikothrips devali Mound & Walker, 1982a: 352
Sophikothrips greensladei Mound & Walker, 1982a: 352
Sophikothrips kibbyi Mound, 1977c: 179
Stephanothrips barrettii Mound, 1972d: 100
Stephanothrips ferrari Mound, 1972d: 100
Stigmatothrips antennatus Mound, 1970d: 93
Stigmatothrips coloratus Mound, 1970d: 91
Stomothrips moultoni Mound & Minaei, 2006: 14
Streptothrips tribulatus Mound & Minaei, 2006: 15
Suocraterithrips linguis Mound & Marullo, 1994: 96
Tolmetothrips granti Mound, 1970d: 114
Triadothrips arckaringa Crespi, Morris & Mound, 2004: 290
Triadothrips briga Crespi, Morris & Mound, 2004: 290
Triadothrips hessmus Crespi, Morris & Mound, 2004: 290
Truncatothrips terrae Crespi, Morris & Mound, 2004: 291
Turmathrips apistus Crespi, Morris & Mound, 2004: 294
Turmathrips dypistus Crespi, Morris & Mound, 2004: 294
Vicinothrips bullatus Mound & Morris, 2000: 136
Walkerthrips neatus Mound & Walker, 1986: 45
Warithrips aridum Crespi, Morris & Mound, 2004: 297
Warithrips maezleri Mound, 1971a: 456
Warithrips polydens Crespi, Morris & Mound, 2004: 299
Warithrips polysensori Crespi, Morris & Mound, 2004: 299
Williamsiella jacoti Mound, 1977c: 184
Williamsiella johnseni Mound, 1977c: 184
To this end, international collaborative research efforts with colleagues allowed Laurence to reach non-English speaking scientists by producing publications on thrips in Chinese (Wang & Mound 1996), Spanish (Maes & Mound 1993; Mound et al. 1994; Mound & Isaza 1994; Goldarazena & Mound 1997), Portuguese (Monteiro et al. 1995), Italian (Marullo and Mound 1996), and German (Tschuh et al., 2006).

Mound and Teulon (1995) developed the concept of Thysanoptera as phytophagous opportunists; that is, their ability to exploit transient and ephemeral environments and the resources they hold. The habits and life-history strategies of thrips were put into an evolutionary perspective. Mound (1997) further explored the evolutionary radiation of the Thysanoptera and their systematic and biological diversity, including numbers of species and feeding associations. Both Mound & Teulon (1995) and Mound (1997) helped develop a basis for the modern-day research into the ecology and invasion biology of thrips (Morse & Hoddle 2006). Mound (2005b) pointed out that established views of the role of density-dependent factors on thrips populations were deeply flawed (Andrewartha & Birch 1954), but that research on the importance of natural enemies recently had led to the development of ecologically based, sustainable management approaches for dealing with pest species (e.g. Funderburk et al. 2000).

Mound (2005b) observed that transfer between plant hosts for polyphagous thrips species was sometimes asymmetric, that polyphagous species sometimes produce localized strains feeding on a particular plant species, and that apparently monophagous species sometimes have different host associations in different parts of their geographic ranges. Morphology had proved limited in resolving issues of strains and cryptic species that were indicated by such differences in behavior and biology. Crespi et al. (2004) embraced the potentialities of molecular research to resolve questions in taxonomy, but urged taking a judicial consensus of both morphological and molecular data, and producing hypotheses of identity and group membership that can be tested with additional data. Mound and Morris (2007a) emphasized that a phylogenetic (i.e. systematic) classification that incorporates predictions concerning evolutionary relationships that are important in biological studies. The available phenetic systems for Thysanoptera stress the importance of differences that serve no broader purpose in biology; they noted that some groups of taxa are well resolved with recent molecular data, but the deeper relationships within the Thysanoptera remain unclear. To that end, Hoddle et al. (2008a) used molecular and morphological data to examine the relationships between species of Scirtothrips, and Hoddle et al. (2008c) used molecular techniques to demonstrate the synonymy of Scirtothrips species described from avocados (Persea americana) in Mexico and to develop a molecular key to identify these species (Rugman-Jones et al. 2006). Mound et al. (2010b) resolved cryptic species in the genus Pseudophilothrips using morphology and DNA. This unique combination of using morphology and genetics to unravel seemingly intractable problems in thrips studies has thrown wide open the doors to addressing not only questions pertaining to curious ecological questions, but is also of immense importance in tackling the difficult problems associated with pest identifications, especially border interceptions that require rapid and accurate identity determinations — a fact recently illustrated by the realization that the Western Flower Thrips, Frankliniella occidentalis, is actually a complex of two morphologically inseparable species (Rugman-Jones et al. 2010).

Laurence Mound lives in Canberra (Fig. 11), where he works at CSIRO in his custom-designed office/lab, with his back facing the door. His slide collection is kept in custom-built cabinets outside of the office. Exclamations of “fiddle-sticks” may erupt occasionally as he works in Photoshop, or looks at poorly mounted thrips! Conversations in the lab about thrips are intense and probing. Laurence is soft-spoken so discussions are typically quiet, but often punctuated by a knee slap, hand clap, a giggling outburst, or cupped hands held to the cheeks or mouth. Trips to the field are characterized by the donning of a broad brimmed sunhat and long-sleeved shirt, the wearing of a cheap backpack holding the classic white Aussie BBQ tray for catching thrips beaten from foliage with a stainless steel garden trowel, an old hanky for wiping the tray clean, plastic centrifuge vials with 95% ethanol, the note book with rip-out labels for the vials, and the fine paint brush lodged behind one ear. The scenery, collecting, and conversa-
tions on these trips are always memorable. A home-prepared lunch is taken daily at the Botanic Gardens next to CSIRO, and this is a great opportunity to admire and learn about the amazing plant diversity of Australia and the extensive bird life. Laurence has produced and maintains websites on identification and resources of the Thysanoptera (Mound 2009b) as well as the extremely important and highly useful world catalogue of the Thysanoptera (Mound 2008b). Together with Desley Tree he is producing an ambitious Lucid identification and information system to the thrips of Australia, and a parallel system to the thrips of New Zealand is also in preparation. He considers taxonomy an integral part of biology, and he continues in his commitment to weave information across disciplines on sociality, ecology, and host relationships into the species that are recognized. He finds taxonomy a demanding and frustrating, yet deeply satisfying, pursuit. Laurence Mound continues to look forward, and has accurately identified the greatest challenge facing all of us — the recruitment and training of the next generation of thysanopterologists. We need to be investing in this talent now, so that the forward global momentum that the discipline is enjoying, owed in large part to Laurence’s efforts, does not wane.

FIGURE 11. Laurence Mound at 76 years of age. (Photo by Kambiz Minaei).

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(Aeolothripidae). Zootaxa, 864, 1–16.

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