

# T N ANANTHAKRISHNAN

## INDIAN ENTOMOLOGIST PASSES AWAY



**1925–2015**

*Photo courtesy: M. Noble Morrison, CSRTI, Kolar*

Taracad Narayanan Ananthakrishnan [TNA], who contributed vastly to Indian biology in general and to Indian entomology in particular, passed away in New Jersey (U.S.A.) at 2.30 PM on Friday, 7 August 2015, leaving behind his wife Menaka, children Ranee and Ramdas, and their children, and us, his graduate students. A little more than 50 of us earned our PhD titles with him, when he was attached to Loyola College, Madras. Well known would be to Entomon readers that he is remembered all over the world for his contributions to Indian insects, especially to the poorly known agricultural and horticultural crop-damaging insects, the Thysanoptera.

Ananthakrishnan's journey with the Thysanoptera commenced in mid-1940s. T. V. Ramakrishna, living in retirement in Taracad in the 1940s advised TNA, then a young academic at Madras Christian College (Madras), to pursue Thysanoptera. M. S. Mani and Y. Ramachandra Rao had their shares of motivation showered on TNA. He first looked at the bionomics of *Arrhenothrips ramakrishnae*, a gall-inducing thrips living on *Mimusops elengi* (Sapotaceae). *Arrhenothrips ramakrishnae* was a natural choice of Ananthakrishnan in getting a grasp of Thysanoptera, because populations of *A. ramakrishnae* were readily and plentifully available in the campus of Loyola College, where he moved in 1948. However, his formal publications on *Rhipiphorotherips cruentatus* and a new species of *Ischyrothrips*, described as *menoni*, preceded his study of *A. ramakrishnae*, which appeared only in the mid-1950s.

In the late 1960s and 1970s, TNA led research in Loyola College passionately. With funding secured from the US PL-480, he travelled all over India, and shed light on hundreds of Thysanoptera, highlighting their criticality in the context of Indian agriculture, horticulture, and forestry.

Ananthakrishnan unravelled close to 400 new nominal taxa of Thysanoptera, which include 70-odd genera and 300-odd species. While analyzing hundreds of Thysanoptera, Ananthakrishnan was astonished at the phenotypic variations he saw in their populations. He first validated alary polymorphism among thrips in 1959. By the 1970s, he marshalled the concept of insect polymorphism, building on Ernst Mayr's thoughts on organic evolution. Using examples from Indian Thysanoptera, he characterized oedymorous and gynaekoid forms within single populations. The most remarkable element of these findings is that all of these observations and interpretations were made, when we

never knew of the term *Biological Diversity*. He cherished this evolutionary ecological principle until late in his life; he brought out a 200-odd page book *Insect Phenotypic Plasticity* along with Douglas Whitman (Illinois State University, Norman, Illinois) in 2005.

His interest into the ecology and evolution of animals was evolving in the 1960s and the most opportune moment came in early 1970s. His volume *General Animal Ecology* (1976) written with T. R. Viswanathan and published by Macmillan India is a popular textbook for both undergraduate and postgraduate students of biology in India, even today, since it uniquely incorporates ecological data and details of Indian animals.

Pertinent it would be to recall the warm professional association between TNA and K. Karunakaran Nayar of Trivandrum — the brain behind the creation of *Entomon*. The crowning event of Nayar—Ananthakrishnan friendship was the textbook *General and Applied Entomology*, which eventuated with the hard work put in by B. Vasantharaj David and published by Tata/McGraw-Hill New Delhi, in 1976.

Ananthakrishnan's interest shifted from the taxonomy of Thysanoptera to the ecology of various insect groups with the appearance of his book *General Animal Ecology*. He used to talk to me at length on the community and population dynamics of insects of different guilds in general and the Thysanoptera in particular. Variations in the guilds of Indian Thysanoptera not only stimulated him intellectually, but also challenged him. Consequently some of us pursued the physiology and ecology of predatory Thysanoptera, some others those of the mycophagous Thysanoptera, and a few others those of the gall-inducing and pollinating Thysanoptera. As a novice, I used marvel at the profundity and proficiency of his knowledge. Much inspiration to Ananthakrishnan in realigning his research interest from taxonomy to ecology of Thysanoptera, at this stage, came from the works of H. G. Andrewartha on the Australian rose-thrips *Thrips imaginis* and *The Ecological Web: More on the Distribution and Abundance of Animals* (1984) by Andrewartha and L. C. Birch.

In the 1960s, he established the Entomology Research Unit, the research wing of the Department of Zoology, in Loyola College. By the late 1970s and early-1980s, Ananthakrishnan gradually tapered his earlier passion for the taxonomy of thrips. Occasionally one or two of us pursued insect taxonomy, while most others — including myself — explored the physiology and ecology of plant-feeding and predatory Thysanoptera and Hemiptera. He directed us to investigate the population dynamics and physiology of feeding by the hemipteroids (the Thysanoptera and Hemiptera in particular), since he was keen to know more about their ecology and evolution than other insects. A clear sense of purpose existed in this thinking. He used to talk to me often that a book on the Indian hemipteroids was badly required, which were gaining greater recognition as insects of economic importance, although, unfortunately, this dream project never materialized until his end. He led his research group with an open mind and encouraged us to explore the bionomics and nutritional physiology of economically important Acridoidea, Coleoptera (Curculionidae), and the Eriophyoidea (Acarina) as well, although most of us studied either the Thysanoptera or the Hemiptera. I vividly remember that at the instance of Vulimiri Ramalingaswamy, then Director-General of Indian Council of Medical Research, I & 2 colleagues of mine pursued the role of urban-house infesting Blattodea in transmitting typhus bacillus. From 1977 to 1980 he directed the Zoological Survey of India ([ZSI], Calcutta), the most exalting position an Indian zoologist could ever dream of. In this role, he realigned the research directions at ZSI, from a taxonomical approach to population-ecology based approach in animal systematics. He

inspirationally led the scientific staff of ZSI by urging them to follow contemporary methods in animal systematics, such as patterning isozymes, for example.

TNA studied and explained the bionomics of Indian Thysanoptera, from the free-living and polyphagous to the gall-inducing and monophagous species, offering exciting insights into their physiological ecology, especially focussing on their nutritional and reproductive ecology. His investigations on the Thysanoptera that inhabited the weeds along the edges of crop vegetation and how the weeds enabled the movements of pestiferous thrips in and out of the crop ecosystem made vivid impacts in understanding of crop husbandry. His paper on the bionomics of thrips in the *Annual Review of Entomology* in the 1990s is an impressive summary of the state-of-the-art knowledge of the Thysanoptera of the world, and this paper is the jewel in his crown of academic achievement and recognition by the world. He is one of the few in the world, who was invited to contribute articles twice by the Annual Reviews (Palo Alto, California). To me, this is the most extraordinary recognition than many other awards he gained in his lifetime, which I have listed in my article published elsewhere in 2014. In short, he richly and worthily fulfilled the hard dictate of lifting knowledge of Indian Thysanoptera to new heights, which Ramakrishna handed to him in the 1940s.

Having been associated with him for a little more than 25 years, I could go on speaking on his life of perseverance, commitment, and hard work. The most significant message he left for us is that quality science can be done anywhere and with minimal financial investment. This he demonstrated brilliantly by his simple but elegant work done in a ‘small’ educational institution such as Loyola.

TNA was a brilliant speaker and a fascinating writer. He was a stupendous master, who inspired us at every level of the training he offered us, by his versatility and comprehensive knowledge. His demands were indeed high and we struggled to meet his expectations. However, looking back, I can confidently say that every one of us thinks of him with profound gratitude for the skills and capabilities he has painstakingly embedded in us by awakening the joy of exploration and thus kindling the desire in us to know more.

He was heroic and adventurous. He was attached to a college and not to either a research institution or a university. The limitations were daunting and overwhelming. In spite of the immensity of limitations, he has left *dessins indélébiles* in the pages of Indian and world entomology, by investing hard work with a clear sense of direction and purpose. He craved for excellence in achievement and performance. To us, his students, his life and actions are the inspiring messages. He lived a sophisticated life of academic class and grandeur. In the arena of Indian biology he strode like a colossus.

Verse 6 in the *Advayataraka Upanicat* clarifies the etymology of *guru*: *gu* — shadow, darkness, *ru* — one who quells. Complying with this *Upanicat*-ic clarification, in every imaginable sense, TNA quelled darkness, enabling flawless dazzling light to stream into our heads.

‘*Tamaso Ma Jyotir Gamaya:*’ — *Brihitaranyaka Upanicat* (Verse 1.2.28).

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