

# In memoriam: Dr. J. (Hans) van den Assem (1930-2014)

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## KEY WORDS

Behavioral biology, Leiden University, *Nasonia*, parasitoid biology

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**On 11 April 2014 behavioral biologist Hans van den Assem passed away. As member of the Ethology group at the University of Leiden he has contributed significantly to the blossoming of the field of behavioral biology. Hans was a pioneer in the study of mating behavior of parasitoid wasps, contributed to the development of *Nasonia* as a hymenopteran model organism, and was among the first to show that parasitoids can adaptively adjust their progeny sex ratios. He has been an inspiring mentor and is best remembered as a 'scholar and gentleman'.**

Johannes (Hans) van den Assem (born 3 January 1930 in Rotterdam) passed away on 11 April 2014 at the age of 84. Hans was a very bright behavioral biologist and has been a strong positive influence on many careers in biology. Hans was a pioneer in studies of the courtship and reproductive behaviors of parasitoid wasps, mainly operating from Leiden University (figure 1). His work on behavior in *Nasonia* (the jewel wasp) still serves as the foundation for behavioral studies of this model parasitoid (Leonard & Boake 2006, Shuker *et al.* 2007, Ruther *et al.* 2007, 2014, Niehuis *et al.* 2013, Hoedjes & Smid 2014, Tsai *et al.* 2014). His work on sex ratio control by parasitoids with Eric Charnov provided compelling evidence that parasitoids can manipulate their offspring sex ratios in patterns predicted by evolutionary theory.

After Highschool (the HBS), Hans started his Biology studies in 1947 at Leiden University, and he received his Master's degree (doctoraal) in 1954. During his studies he already developed a keen interest in behavior. Master projects included host finding in the parasitoid *Choetospila* under the supervision of Prof. Kuenen, and reproductive behavior of the sandwich tern (*Thalasseus sandvicensis*) and orientation behavior of sand wasps under supervision of Prof. van Iersel. After finishing his studies he went in 1956, as part of fulfilling his military services, to Papua New Guinea with his wife to study malaria mosquitoes (*Anopheles*) in the rainforest. He published several articles on mosquito biology (Van den Assem 1958, Van den Assem & van Dijk 1958, Van den Assem & Bonne-Wepster 1964). Well known are his stories of this period on how he barely escaped from head-hunters while traveling in the inlands. During their return trip, Hans and his wife visited Japan. Hans recounted how, during a dinner in the countryside they began to eat the table ornaments (which to them looked much like the meal), which was greeted with polite amusement by the other restaurant patrons. Upon returning to The Netherlands in 1959, Hans was appointed as scientist at the Department of Experimental Zoology at Leiden University. He received his Ph.D. in 1967 on a study into the territorial behavior of the three-spined stickleback (*Gasterosteus aculeatus*) under the supervision of Prof. van Iersel. During his further career at Leiden he kept performing experiments himself and took much effort in avoiding unnecessary administrative tasks.

Hans' experimental work exemplifies elegance in simplicity. For instance, to demonstrate that chemical pheromones released from the male wasp's mouthparts were responsible for stimulating female receptivity, he lightly glued the mouthparts shut (to prevent pheromone release) or open (to allow it) (Van den Assem *et al.* 1980). To show that female dropping of her antennae was the proximate stimulus to indicate to the male her receptivity for mating, he designed with Frank Jachmann a simple 'robo wasp', composed of a dried female with two small wires for antennae that could be dropped with a lever. The male would court this mechanical female and dutifully back up to mate when the female's replacement antennae were dropped (Van den Assem & Jachmann 1982). He then went on to show that the male was only receptive to this simple signal at certain points in the courtship, revealing aspects of the 'black box' of courtship signaling (Jachmann & Van den Assem 1993, 1996). Hans' keen eye is revealed in the story of how he discovered that male jewel wasps chemically mark a territory where they first encounter a receptive female. During the visit of some dignitaries, Hans put on a little insect sex show on his window sill, where he presented a receptive female with a male to show their courtship and mating. He then forgot about this, but a few days later noticed that the male was still in the same location, circling about but returning to the same point, as if in search of another female. This led to his studies revealing a male territorial marking chemical that is released when a mate is found and that is attractive to females. Just last year, the actual genes involved in species differences in sex pheromones were revealed through detailed genetic studies and published in *Nature* (Niehuis *et al.* 2013). This is a fitting tribute to Hans' early work on parasitoid pheromones and sexual behavior.

Another tribute to Hans is the cadre of students whom he mentored through the years. Many undergraduate students spent time with him at Leiden where they honed their observational skills through learning from him how to observe and quantify behavior. For those students who continued on this scientific path, parasitoid wasps were the subject of many research projects and Ph.D. theses. As a Master student in 1986, one of us (Leo Beukeboom), was for the first time introduced into parasitoid biology, and is still working with them today. In these years Hans walked every day from Oegstgeest to



1. Hans van den Assem in his office at Leiden University around 1980. Photo kindly supplied by Frits van den Assem  
1. Hans van den Assem in zijn werkkamer van de Universiteit van Leiden rond 1980. Foto beschikbaar gesteld door Frits van den Assem

the Biology Department as he did not like to drive a car. Other memorable accounts from that time are the Friday afternoon visits to pub 't Kaisertje where many Kriek lambiek (a Belgian beer) were drunk and Hans always insisted to pay the bill. The other author of this tribute (Jack Werren) was a graduate student with Eric Charnov at the University of Utah when he came for a two month visit in 1978 to Hans in Leiden, to learn about the jewel wasp. This visit has determined Jack's career path since. Jack recalls strolling along the Kaiserstraat with Hans and two other scientists, one from France and the other from Germany. Hans, who was fluent in all three languages (as well as his native Dutch), seamlessly and unpretentiously translated for his less linguistically talented colleagues, during lively discussions about science and life.

Hans was not only an outstanding scientific mentor, but also a kind and considerate gentleman. We remember Hans as a person with humor and who took a lot of pleasure in work and life. The phrase 'scholar and gentleman' is a most fitting description of Hans. He loved to tell funny anecdotes. Once he was going to give a public presentation of sperm competition. Shortly before the lecture he was informed that Her Majesty the Queen was

going to be among his audience. When Hans mentioned that the topic of the lecture might not be appropriate, he was told that it would be fine as long as it would be purely scientific. Another often told story is that he once was lively discussing sperm competition with a colleague in the public bus and all of sudden noticed that all bus passengers were eagerly listening.

After his retirement in 1995 Hans returned to Rotterdam where he lived at the Boompjes along the river Maas, but he regularly travelled to Leiden for continuing behavioral research on parasitoids. Rotterdam was the city in which he was born, where he spent his youth and which he fled after the bombardments during the Second World War. Known are his accounts of how he walked for several days to Vriezenveen in the north of The Netherlands and how his parents did not know for a long time whether he had made it. The last years at his apartment in Rotterdam he was accompanied by his sister who took care of him.

With his passing away we have lost an erudite and internationally respected scientist and a very fine colleague and mentor.

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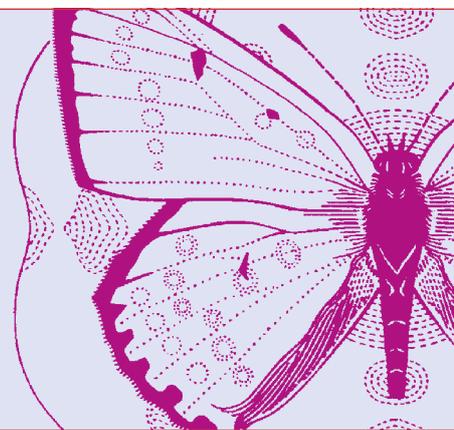
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## Samenvatting

### In memoriam Dr. J. (Hans) van den Assem (1930-2014)

Op 11 april 2014 is gedragsbioloog Hans van den Assem overleden. Hij maakte deel uit van de Ethologiegroep van de Universiteit van Leiden en heeft significant bijgedragen aan het tot bloei komen van de gedragsbiologie. Hans was een pionier in de studie van paargedrag van parasitoïde wespen, heeft bijgedragen aan de ontwikkeling van *Nasonia* als modelorganisme van de Hymenoptera, en was een van de eersten die liet zien dat parasitoïden de geslachtsverhouding (sekse ratio) van hun nakomelingschap adaptief kunnen regelen. Hij was een inspirerende mentor en kan het best worden herinnerd als een 'scholar en gentleman'.



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