

In Memoriam: Rudolf Herman Drent, 1937–2008

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IN MEMORIAM: RUDOLF HERMAN DRENT, 1937–2008

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Rudi Drent, 1937–2008

(During field work on geese at Kanin Peninsula, Russia, in June 2007. Photograph by Julia Karagicheva.)

Rudi Drent, a Member since 1959 and Honorary Fellow (1980), died on 9 September 2008 after a brief illness. Born in Los Angeles on 24 April 1937, Drent studied biology at the University of British Columbia, Canada, from 1954 to 1961. A master's project involved the breeding ecology of Pigeon Guillemots on Mandarte Island. In 1962, he moved to his father's homeland, The Netherlands, to study for a Ph.D. degree. Under the supervision of Gerard Baerends, he embarked on a functional analysis of incubation in Herring Gulls. In 1967, Drent returned to Vancouver with his degree and freshly married with Nel. He resumed his work on the Pigeon Guillemots to quantify diet and growth in greater detail.

During this time, he developed a close friendship with John Krebs, who had just finished his thesis on territory and breeding density in Great Tits. Both became associate professors of ecology at the University of British Columbia. Throughout their careers, Drent and Krebs shared an interest in foraging behavior. Eventually, Drent returned to Groningen as a lector in animal ecology (1972–1984) and later a full professor (1984–2003, with emeritus status since).

The biological station of the University of Groningen, “de Herdershut” on the island of Schiermonnikoog, provided an ideal venue for Drent's efforts to quantify the energy budgets of geese.

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He showed that it was possible to estimate daily food intake by combining observations throughout the day on foraging activity, bite frequency and size, estimates of dropping intervals, weights of fecal pellets, and analysis of indigestible markers in food and droppings. The work involved numerous students and accumulated massive amounts of data. In 1975, Serge Daan joined the research group. With a background in circadian rhythms, Daan contributed to the work on parental investment, and the two wrote the influential "The prudent parent: Energetic adjustments in avian breeding" (*Ardea* 68:225–252, 1980). This work provided empirical and theoretical insights into parental investment and is now one of the most highly cited papers in ornithology.

Working from the premises (1) that energy could be the relevant currency in birds' decision making and (2) that in the field it was possible to measure both energy income and expenditure, Drent embarked on a program of studies on goose energetics. This episode included summer expeditions to Spitsbergen that enabled him to participate in empirical work and escape the administrative burden of the university. The group's observations of known individuals along the flyways revealed that geese that headed to the Arctic with the greatest stores upon departure from The Netherlands were most likely to come back with offspring. Experimental work on family size also revealed that large families often fared better because of their competitive advantage over smaller families. Drent's group garnered evidence for the possibility that geese timed repeated foraging visits to a particular sward in order to maximize their own intake rate. Studies with the plant ecologist Jan P. Bakker on the availability and exploitation of vegetation as a food resource on the salt marshes of Schiermonnikoog showed strong interactions between goose and hare foraging. Hares facilitated goose feeding, yet they also competed for plant resources. As the research progressed, a more long-term view developed over how the salt marshes of Schiermonnikoog would change and how this would affect herbivore activity.

Research on the migration of birds in general, and of geese in particular, also became prominent in Drent's later years. Inspired by the research findings by Thomas Alerstam and his group in Lund, Sweden, Drent became more and more interested in the energetics of migration. This work eventually included collection of data with satellite transmitters and geolocators and involved several summer expeditions to the Russian Arctic. Drent's research interests went well beyond goose studies, and with time members of his group investigated waterbird and shorebird foraging and distributional ecology, shorebird breeding and migration energetics, and songbird population biology.

Drent was active in the management of the University of Groningen. He led the Animal Ecology Group (1972–2002) and was director of the Centre for Ecological and Evolutionary Studies (1993–2002). His stimulating views on science, education, and human nature made him a much appreciated colleague. When there were differences of opinion, he devoted considerable time and energy to convincing his colleagues and reaching consensus. Drent valued ornithology in the widest possible sense. He was responsible for the monthly bird counts in the Lauwersmeer (1973–2008) and the Dollard (1972–2008). He was chairman of the Netherlands Ornithological Union during his entire career (1974–2003), encouraging amateurs and professionals alike to participate at meetings. The way he led these meetings was masterful, and his enthusiastic and concise summaries of the day's research findings became famous. Drent realized the importance of both a local (*Limosa*) and an international ornithological journal (*Ardea*) to the development of ornithology in The Netherlands. He was also involved in the activities of many working groups and committees.

When the number of students awarded the Ph.D. under Drent's supervision reached 40, his students assembled a compilation of his research reviews as a book, in Dutch. In appreciation, Drent assumed the task of translating the book into English. It was published in 2005 as *Seeking Nature's Limits: Ecologists in the Field*, with chapters added by his newer Ph.D. students. All this time, Drent remained modest, inviting foreign visitors and students to his home where he and his wife provided a warm welcome and a perfect ambiance for discussion of work and other matters. He read widely and was a great admirer of Goethe. He loved to visit museums and could tell fascinating stories about the paintings he saw.

As a teacher, Rudi Drent was unexcelled. He combined his vast knowledge with friendliness, commitment, and wit. His lectures and talks were unprecedented in combining a clear overall line of thought with concise wording, clear graphics, and enjoyable artwork. In the field, he guided students through how to collect and interpret data. Rudi's influence in both The Netherlands and beyond was enormous. He inspired people all over the world through sparkling lectures and his open and personal approach. With his sharp insight, intelligence, and what seemed to be a complete grasp of over a century of ornithological and ecological writing, he educated several cohorts of bird ecologists. He used his enthusiasm to stimulate students in ecology to contribute to this fascinating field.

A comprehensive memorial was published in 2009 in *Ardea* (97:1–6), and an expanded version is online at nou.natuurinfo.nl/website/downloads/bibliographydrent.pdf.