

# In memoriam Dries Touw, an extraordinary bryologist (31 March 1935 – 23 March 2021)

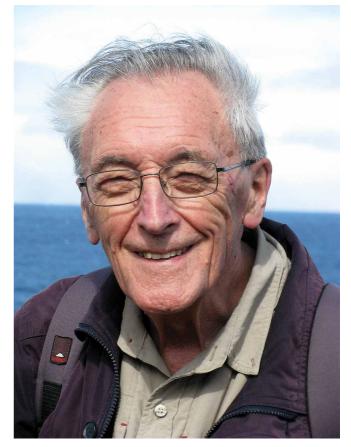
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Andries Touw - known as Dries for family, friends, and colleagues - passed away at home on 23 March 2021, at the age of nearly 86 after a period of a gradually deteriorating memory and health. Dries was an excellent bryologist and taxonomist with a great knowledge of Western European and Southeast Asian mosses. He was also an excellent field bryologist. He took part in several botanical expeditions in Southeast Asia and collected more than 25800 bryophytes during his expeditions, short trips, and holidays in Southeast Asia, Europe, and other parts of the world (Fig. 1). From 1987 onwards he usually travelled and collected together with his second wife Ria Snoek. His collections are preserved in the herbarium of Naturalis Biodiversity Center at Leiden, the Netherlands (L). Dries has authored several critical and thorough taxonomic revisions of moss taxa, among which regional revisions of the family Thuidiaceae and a worldwide revision of the Hypnodendraceae. For many bryologists, the latter has served as a classic example and template for preparing a taxonomic revision.

Dries was born and raised in Delft, the Netherlands, as a son of nature loving parents. From an early age, Dries was highly interested in nature as well. He was an active member of the Dutch Youth Association for Nature Study (NJN) from 1946 until 1960, where his interest in biology flourished and where he felt at home, maybe more so than at school. After high school (HBS-b), Dries studied biology at Leiden University from 1952 to 1961. Since his father passed away when he was only 15 years old, this was not self-evident. Fortunately, Dries' university study was made possible thanks to financial support from his father's former employer and funding from the foundation 'Fundatie van de Vrijvrouwe van Renswoude' at Delft.

Dries' later NJN years thus overlapped with his first years as a biology student, and in this period he developed a great interest in bryophytes, starting with an attempt to identify bryophytes growing in a swamp near Leiden. Jan Barkman – an eminent plant sociologist and ecologist with a phenomenal knowledge of Dutch mosses and other cryptogams (Touw 1991) and one of Dries' teachers at Leiden University – helped him with floras and a workspace at the Rijksherbarium, which was embedded in Leiden University. Barkman very much stimulated Dries'



**Fig. 1** Dries Touw, Tenerife, Canary Islands, Spain, 17 February 2015. Photo: Ria Snoek.

growing interest in bryophytes and continued to support him in the early years of his professional career.

Dries obtained his bachelor's degree (kandidaats) in 1956 and continued his study with the master's programme (doctoraal). From 1955 to 1961, he was a teaching assistant at the Department of Systematic Botany of Leiden University. For his master's projects, he studied the effects of culture temperature on the preferred temperature of the common woodlouse (*Oniscus asellus* Linnaeus, 1758), the stomach contents of a bovine that died around the start of the Common Era, several cryptogam communities of heaths and shifting sands in the Province of Drenthe, the Netherlands, the bryophytes and lichens of a few

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plant communities in southern France, and the wild Elms (*Ul-mus* species) occurring in the Netherlands. Most importantly, however, he revised the Asian and Pacific species of the moss genus *Neckeropsis* Reichardt (*Neckeraceae*), which marked the start of his professional bryological career. Dries graduated cum laude for his master's degree in 1961.

On 1 January 1962, after completing his military service, he was appointed as a scientific officer at the Laboratory for Plant Systematics and Plant Geography of the Landbouwuniversiteit Wageningen (now Wageningen University & Research), where he studied wild and cultivated forms of *Ulmus* species. In 1963 he switched to the Department of Vegetation Science, where he taught vegetation science for a short period of time. On 1 July 1963, he joined the staff of the Rijksherbarium in Leiden as a scientist, where he devoted himself to making taxonomic revisions of moss families and genera, initially focusing on taxa occurring in tropical Asia. He never left this institution again, which has undergone several changes through time due to merging processes with other institutions, in chronological order becoming Rijksherbarium/Hortus botanicus, National Herbarium of the Netherlands, and finally Naturalis Biodiversity Center. After Dries' early retirement in 1995, he remained an honorary staff member until 2016 (Fig. 2).

Originally, Dries was appointed as a bryotaxonomist to prepare taxonomic revisions of moss groups for Flora Malesiana (FM), Series 3. The plan for this series, however, was abandoned in 1966. It turned out to be impractical and inefficient since many bryophyte species are much more widely distributed than the FM area, and for a proper revision the study of specimens from a wider area would have been necessary (Touw 1979).

One of Dries' tasks as a scientific officer was the curation of the Rijksherbarium's large bryophyte collection (Fig. 2), which increased from 130 000 specimens in 1963 to 210 000 speci-



**Fig. 2** Dries Touw in the Bryology collection of the Nationaal Herbarium Nederland, 2 March 2008, Van Steenis-building, Leiden, the Netherlands. Photo: Ria Snoek.

mens in 1978 (Touw 1979) and to well over 260 000 in 1995 when he retired. In addition, he arranged the shipment of nearly 40000 duplicates, often split off from his own collections, to various herbaria in the world. The curation of the main body of the collection from outside the Netherlands, with a focus on European and tropical Asian specimens, was quite overdue when Dries was appointed. It took him about a decade to make the collection easily accessible again by using an uniform entry nomenclature system, based on Index Muscorum (Van der Wijk et al. 1959–1969) for mosses and Index Hepaticarum (Bonner 1962–1990, Engel 1978–1993) for liverworts. Dries was very active and successful in acquiring new material from undercollected parts of the world, in particular Malesia (e.g., Papua New Guinea). With his approach to curation and exchange of duplicates with other herbaria, Dries has laid a solid foundation for collection-based bryological research.

Dries took part in three botanical expeditions to continental Southeast Asia and Malesia to collect and get to know the bryophytes in situ. Most important for Dries' development as a bryologist was the Thai-Dutch Botanical Expedition 1965/66 to Thailand (Fig. 3). The Thai cryptogam flora was up to then poorly known and Dries' collection of more than 4150 specimens was, for a long time, the most accessible collection of Thai bryophytes, also because of the 19000 duplicates that were made and were distributed to various herbaria all over the world. Together with his friend and colleague Jan-Frits Veldkamp, Dries also participated in botanical expeditions to the Star Mountains in Papua New Guinea in 1975 and, with the (British) Royal Geographical Society's Mulu Expedition, to the Gunung Mulu National Park in Sarawak, West Borneo, in 1978. Together with Ria Snoek, Dries visited several times on holidays the undercollected Lesser Sunda Islands (Nusa Tenggara), where he collected bryophytes in Bali, Lombok, Flores, and Lembata. The importance of bryological exploration of such undercollected areas is underlined by Dries' surprising discovery of a new species of the moss genus Bryowijkia Nog. (Bryowijkiaceae) – a genus of tall and beautiful plants with a striking appearance - during a vacation in Madagascar in 1992 (Touw 1993). Until Dries' short visit, this species had gone unnoticed in spite of the fact that the plants can easily be recognized from a distance.



Fig. 3 Dries Touw, near the Forest Station on Doi Suthep, Chiang Mai, Thailand, 25 December 1965. Photo: E. Hennipman.

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Shortly after his appointment as a scientific officer, Dries started with the preparation of a taxonomic revision of the *Hypnodendraceae* as subject of his study to obtain a doctoral degree. However, due to his curational work, the identification of the bryophyte material he collected in Thailand, and several other obligations, he made slow progress with this revision. In 1970 he was urged to complete his thesis in 1971. Luckily, he had almost finished the practical work and managed to do so, albeit under great stress. He successfully defended his excellent PhD thesis on 1 December 1971.

Due to the stress of writing his PhD thesis in a very short period of time, in combination with work and other (private) obligations, among which a position as interim treasurer of the national board of the Dutch Folk Dance Association, Dries developed symptoms of burnout. He only fully recovered a few years later, just a few days after the start of the expedition to the Star Mountains in 1975. In 1983 he got burned out again from which he partly recovered, but he kept symptoms of depression, which increased with time. Probably due to antidepressants he suffered severe memory loss in 1996, from which he fortunately recovered due to light therapy. However, he lost some of the recording ability of his memory, which sincerely hampered his microscopic work and in fact stopped him from continuing with his worldwide revision of the genus *Thuidium* (*Thuidiaceae*).

Dries played an important role in the Dutch bryological community. He became a member of the Dutch Bryological and Lichenological Society (Bryologische en Lichenologische Werkgroep, BLWG) in 1957; he was secretary from 1964 to 1970 and chairman from 1983 to 1989. In 1969, Dries supported the proposal of the Nordic Bryological Society (Nordisk Bryologisk Forening) to merge the journal of the BLWG, Buxbaumia, into a combined Nordic-Dutch international journal for bryology and lichenology. This proposal was accepted and the first issue of the new journal, Lindbergia, appeared in 1971. The editorial board, consisting of the Danish bryologists Kjeld Holmen and Esbern Warncke, and Dries himself, managed to produce issues with articles of high scientific quality. Unfortunately, Dries could only be editor for a short period of time due to his illness. Nevertheless, when Heinjo During took over his editorship in 1975, Lindbergia was already a well-established national and international journal.

In 1976, the Rijksherbarium started with a project to update the knowledge of the Dutch moss flora by means of a critical revision of specimens preserved in the institutional and larger private herbaria in the Netherlands. This large project was based on Dries' original plan to update the knowledge of the entire Dutch bryoflora, which in cooperation with other Dutch bryologists got its final shape in 1973, when it was decided to separately revise the liverworts and the genus Sphagnum L. Dries supervised the moss flora project (excluding *Sphagnum*) and Wim Rubers was appointed to do most of the actual revision of the mosses. However, Dries' direct involvement increased gradually because the project made less progress than expected. With Dries' direct involvement (almost fulltime from 1980 to 1983) and the help of twelve master's students and a few members of the BLWG, the project was finally successfully completed. The new Dutch moss flora, De Nederlandse Bladmossen, was published in 1989 (Touw & Rubers 1989).

From 1977 to close to his retirement, Dries organized bryology courses for students in the Biology education program of Leiden University. He was able to make many students enthusiastic about bryophytes. His courses were based on a learning-bydoing principle, by which he was inspired by Kjeld Holmen, and, in turn, inspired his two PhD students, Hans Kruijer and Niels Klazenga, and his successor Michael Stech.

In 1988 and 1993 the director of the Rijksherbarium offered Dries the opportunity to create two PhD positions for bryology.

As subjects for these PhD positions, Dries came up with the idea of taxonomic revisions of the moss family *Hypoptery-giaceae* for the first position and of the Malesian species of the moss genus *Dicranoloma* (Renauld) Renauld (*Dicranaceae*) for the second position. These projects were completed by his PhD students Hans Kruijer (Kruijer 2002) and Niels Klazenga (Klazenga 1999), respectively.

Dries identified countless bryophytes of an increasing number of new acquisitions, often consisting of material collected in the 2nd half of the 20th century, among which the bryophytes he collected himself. He helped many persons from over the world with the identification of bryophytes and other bryological questions. He had contacts with bryologists worldwide due to the congresses he attended and his herbarium visits, among which visits to the Herbarium Bogoriense in Cibinong, Indonesia (BO), The Natural History Museum in London, United Kingdom (BM), the University of Helsinki, Finland (H), the Muséum National d'Histoire Naturelle in Paris, France (PC), and various herbaria in China, Japan, and the USA. As a taxonomist, Dries was very precise and thorough. He examined herbarium specimens very accurately and he had a good eye for the microscopic features and the habit of the specimens he examined. When studying herbarium material, he always tried to visualize the specimens' presence in their natural habitat, hereby benefiting from his extensive field experience. In his taxonomical work, he searched for patterns, but he always kept a keen eye for variation, collecting bias, and the limitations in bryological knowledge. His phenomenal knowledge of bryology and bryological literature, in combination with his accuracy and creativity made him an eminent bryologist.

While curating the bryophyte collection in the early years of his career, Dries obtained a life-long fascination for the 19th century Dutch bryologists, their artists, and their bryological works, among which Bryologia Javanica (Dozy & Molkenboer 1854–1861, Van den Bosch & Van der Sande Lacoste 1861–1870). In his later years, he combined his interest in people and bryology by studying the life and works of these 19th century Dutch bryologists, which resulted in a few publications on the original material and the typification of the South American and Asian species they described. Only Dries was able to do this, because no one else had such a great knowledge of the 19th century moss specimens preserved in the collection of the Rijksherbarium.

Dries loved to be in the field and to travel. He very much enjoyed his expeditions and holiday travels, not just to be in nature, but also to meet other people and to come into contact with other cultures. His interest in people and culture is one of the reasons he considered the World Conference of Bryology in Tokyo, Japan, and the subsequent herbarium visit to the Hattori Botanical Laboratory in Obi (NICH; Glime & Wagner 2017: f. 1, p. 2-1-2) in 1983 to be the pinnacle of his bryological career.

Dries was a gentle and kind man and he was very interested in people and their well-being. In the herbarium community he was a very helpful colleague. Unfortunately, every now and then he faced difficulties with social interactions and it was a relief to him that late in his life he was diagnosed with Asperger syndrome, an autism spectrum disorder, which explained to him most of the problems he had with social contacts during his life and why he often felt like a loner. Nevertheless, he was quite capable in overcoming his limitations. We, anyway, never noticed them. Dries was very active as a folk dancer and he had a great interest in folk dance, which he took just as seriously as bryology. Several times he surprised bryologists from abroad with his great knowledge of the local folk dances of their home country.

Dries leaves behind three children from his first marriage, one grandchild, and his wife Ria Snoek. His kind and helpful personality and his great bryological expertise will be greatly missed by the bryological community in the Netherlands and abroad.

This obituary is based on Dries' works, the cited references, our own memories, and especially the chapter 'Mossenman bij het Rijksherbarium' in Dries' unpublished autobiography written for his family (Touw 2018).

An obituary focusing on Dries' impact on bryology and bryological research in the Netherlands has been published in Buxbaumiella, the journal of the Dutch Bryological and Lichenological Society (During & Van Melick 2021).

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