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Inga Hedberg (1927-2024) – inspirational driving force in tropical African botany for 60 years

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Docent, fil. dr. Inga Hedberg (Fig. 1) died in Uppsala on the 13th of January 2024, at the age of 96 years. Together with her husband, Olov Hedberg, she has been a central and tireless figure in a range of important international projects on African botany, probably with the Flora of Ethiopia and Eritrea (1980-2009) as the most remarkable.

Inga Hedberg (from birth Inga Maria Margareta Holmbäck) was born on the 18th of November 1927, in the town of Luleå at the Bothnian Bay in

Figure 1. Inga Hedberg in her home in Uppsala, October 2023. Photograph by Mariette Manktelow.

northern Sweden. Her parents were the managing forester and industrialist Bure Holmbäck and his wife Ellen Holmbäck, née Lindeberg (Uddling and Paabo 1993: 453). Manktelow in Lidén and Morrison (2016) have related how Inga developed an interest in biology, particularly genetics, from her teachers Maj (mathematics) and Kjell Fahlander (biology). The latter had taken his doctorate at Uppsala University in 1938, and the Fahlanders convinced Inga's parents that it was a good idea that Inga should study genetics in Uppsala. She arrived at Uppsala in the autumn of 1950, planning to study for a degree of fil. mag. (M.Sc.). A couple of years later she accepted a temporary position as a teacher in biology at Luleå Secondary School. After this stay back in Luleå, she returned to Uppsala to continue her studies with the aim of a degree of fil. dr. (Ph.D.) in genetics. During her first time in Uppsala, she heard about an Uppsala student of botany who had joined a Swedish zoological expedition in 1948. He had visited the high mountains of Uganda, Kenya, and Tanzania, stayed on in East Africa to visit more mountains after the other members of the expedition had returned to Sweden, and finally came back to Uppsala with an immense load of observations. This was Karl Olov Hedberg, born in 1923 in Västerås in central Sweden and with an interest in mountain and Arctic flora. Eventually, Olov and Inga met in the student circles of Uppsala, and they married in 1953. They had five children: Per, Bengt, Göran, Björn, and Maria, whom they brought into the field to give them a personal relationship with nature (Fig. 2) and took them to London to combine sightseeing with herbarium studies at Kew. This marked the beginning of a fruitful period of botany in Uppsala and elsewhere that has been called "the era of the Hedbergs". Here, we will try to follow Inga's role through the many projects and events during the Hedberg era.

Figure 2. Inga, Olov, and their son Bengt Hedberg at a flowering *Lobelia rhynchopetalum* on Mt. Gunna east of Lake Tana, Ethiopia, in 1986. Photograph by Mesfin Tadesse (reproduced from Symb. Bot. Upsal. 38 with permission).

Inga and Olov become "the Hedbergs" – cytology of grasses, Afroalpine flora, and engagement in AETFAT

It seems that it was Olov who suggested Inga Holmbäck to work on the cytology of the genus *Anthoxanthum* for her Ph.D. studies in genetics. From 1961 to 1994, Inga continued studying grass cytology on species from temperate and African countries, including her Ph.D. defended in 1970 (see publications in bibliography Genetical and taxonomic studies of grasses …).

Soon after their marriage, Inga and Olov went on a trip to England, spending time in Oxford where the second plenary meeting of AETFAT (Association pour l'Etude Taxonomique de la Flore d'Afrique Tropicale) was held during late September and early October 1953. Bentje (2008) cites how A.W. Exell, keeper of the herbarium at the British Museum (Natural History), in his introduction to the symposium mentioned that Olov had "made the utmost sacrifice to science by devoting part of his honeymoon to the congress", to which Inga has been reported to whisper: "And what about my honeymoon?" (Even the present authors have heard Inga telling this anecdote). Exell's bias was repeated later but resisted by Olov: when Addis Ababa University in Ethiopia asked Olov to receive an honorary doctorate, he refused to accept it without Inga, as she was his scientific partner and peer.

Olov had been a member of AETFAT since its founding in 1951. The proceedings of the meeting in Oxford were edited by R.E.G. Pichi Sermolli (1955) and contained a contribution by Olov on Afroalpine plants. Olov's first publication on East Africa dealt with the vegetation zonation on the high mountains (Hedberg

O 1951) and did not mention any collaboration with or input by Inga, but after that, Inga assisted Olov in all his ecological and floristic studies of the Afroalpine flora and vegetation, or she wrote or co-authored joint papers. Olov's Ph.D. thesis was based on results from the 1948 expedition and on visits to nearly all the European herbaria that housed collections from the Afroalpine zone in East Africa (Hedberg O 1957: 7). In this work, Olov acknowledged Inga's contribution: "From an early stage, she took a lion's share of the "donkey work" with annotation of specimens, typewriting, checking, drawing of illustrations, and, finally, proofreading [with] unfailing enthusiasm …" Similar acknowledgments appeared in a work on Afroalpine plant ecology (Hedberg O 1964). Olov and Inga later wrote joint papers on tropical alpine life forms, and Inga collaborated with others on the phytogeography of tropical alpine flora (see in the bibliography Ecology of African plants and phytogeography of plants of high altitudes).

Inga and Olov again attended the third AETFAT meeting in Paris in September 1957, the fourth in Lisbon and Coimbra in 1960, and the fifth in Genova and Firenze in September 1963, again with the proceedings edited by Pichi Sermolli (1965) and with contributions by Olov. At the Genova-Firenze meeting, Olov was elected the next General Secretary of AETFAT, the Secretariat moved to Uppsala, and Inga became listed as an AETFAT member (Hedberg O & Hedberg I 1966: 4). In September 1966, the fifth AETFAT Plenary Meeting was held in Uppsala on a subject of equal interest to Inga and Olov, the conservation of African vegetation. The accounts reported country by country on the state of conservation of the vegetation in Africa south of the Sahara. In Olov's foreword (Hedberg I & Hedberg O 1968), he acknowledged that the preparations for the symposium had been made by Inga, who also did the editing of the book. For many years, Inga and Olov continued to be regular visitors at AETFAT's meetings, and Inga continued to publish on plant conservation (see publications in bibliography Conservation of African Flora and Vegetation). From the 1966 AETFAT symposium, Inga and Olov developed a diplomatic relationship with the Swedish Agency for Research Cooperation with Developing Countries (Sida/SAREC), resulting in a large project in Tanzania, the Tanzanian-Swedish-Hungarian integrated Usambara rain forest project (1983 – 1991). This was successful in various ways: it produced proper inventories of the forests, made the case to the Tanzanian government for the proper conservation of the vital areas, and resulted in several Tanzanian researchers being trained both in the field and the herbarium.

Generally, Olov and Inga believed in training by doing. When Olov in 1958 began his teaching in plant taxonomy in Uppsala as a newly appointed docent, he organized the taxonomic course as a teamwork with Inga and his students to produce a taxonomic revision of the genus *Canarina*, a genus with two Afromontane forest species and one species with disjunct distribution in the Canary Islands. The revision was published in 1961 (Hedberg O et al. 1961). Inga and Olov later worked on several joint taxonomic papers, studying the genera *Colpodium*, *Dipsacus*, and *Callitriche* in Africa, as well as cytological studies of African plants (see publications in bibliography Genetical and taxonomic studies of grasses, and Taxonomic revision and cytology of African plants), and joint contributions to the Ethiopian Flora project (see publications in bibliography Flora accounts contributed to the Flora of Ethiopia and Eritrea).

Publicizing the importance of teaching and research in plant taxonomy ("the taxonomic impediment"); ethnobotany, useful and medicinal plants; the editor of the Symbolae Botanicae Upsalienses

Since their first works together, Inga and Olov had been convinced that the teaching of plant taxonomy was of basic importance for all botanical disciplines, including the study of useful plants and the conservation of species of plants and vegetation. In the 1990s, Inga began a sequence of lectures and papers advocating the teaching and study of plant taxonomy. She lectured on this topic at symposia (at the AETFAT conference in Malawi in 1991, at the Frank White Memorial Symposium in Oxford in 1996, at a conference on the conservation of European plants in 1998), and lately wrote about it in the preface to a volume dedicated to the Swedish botanist Vivi Täckholm, who spent her working life in Egypt.

Inga initiated the first courses of ethnobotany at Uppsala University and published on the subject either separately, with Olov, or with other botanists. (See publications in the bibliography Ethnobotany; medicinal and other useful plants).

Inga's meticulous work with written words, broad scientific knowledge, and excellent command of a wide vocabulary in English made her a highly suitable editor of the monograph series Symbolae Botanicae Upsalienses, a task on which she worked for more than 40 years, editing volumes on a wide range of subjects, including published Ph.D. theses (see publications in the bibliography Edited volumes on parasites, lichens and Linnaeus's Species plantarum in the series Symbolae Botanicae Upsalienses).

The biggest project, a Flora of Ethiopia and Eritrea – planning, negotiating, waiting, and organizing

Inga's most imposing achievement was undoubtedly her work for the Ethiopian Flora Project, which would not have been so successful without her deep-felt enthusiasm and never-failing energy. Gathering the family contributions, editing them, and organizing them for publication brought her in contact with 43 scientific institutions and 92 scientists from 18 different countries in Europe, Africa, and America (Tadesse 2011: Table 3).

The Ethiopian plant world, not studied in great detail before the beginning of the Ethiopian Flora Project, was an obvious subject of interest for the Hedbergs. Already in Afroalpine Vascular Plants (Hedberg O 1957), there were many references to the high mountain flora of Ethiopia, particularly plants collected by the German naturalist G. H. W. Schimper, who lived for more than 40 years in northern Ethiopia, and an early account on the Ethiopian flora was published in two volumes in 1847-1850 on collections made by Schimper and other early travellers. During the Scramble for Africa, Ethiopia largely managed to stay out of attempts at European colonization. Due to the nearness of the Italian colonies of Eritrea and Italian Somaliland, the Ethiopian flora had raised the interest of Italian botanists, not least during the Italian occupation of Ethiopia in 1936-1941. A comprehensive amount of Eritrean and Ethiopian plants, particularly from Eritrea and northern and central Ethiopia, had been gathered in the Erbario Tropicale (FT) in Firenze, which by then held a total of ca. 230,000 collections, mainly from the Horn of Africa (Moggi 1976; Baldini 2011). However, no typical "colonial flora" had been started or produced by Italian botanists, as had been done for nearly all other parts of Africa (Tadesse 2011: Table 1). So apart from Ethiopia's attraction as the country with Africa's largest area of high mountains, it was also tempting for the Hedbergs to work with the flora of a country with a highly diverse flora and a rich tradition for domesticating local plants. It may be of interest to note that a flora project for the only other non-colonized tropical country, the Flora of Thailand Project, has many similarities with the Flora of Ethiopia project, although they developed along completely separate lines. The Thai project was initiated in 1963 under joint Thai-Danish leadership and in collaboration with the Royal Botanic Gardens, Kew, and the Museum d'Histoire Naturelle, Paris, and is now near completion, being edited and published in Thailand.

Modern collecting activity – with cars on mud tracks or roads as the main tool – began in Ethiopia after WW2 (Friis 2011). The most prolific early collector from this period, and the founder of the Ethiopian National Herbarium (ETH), was the Irish-British forester H. F. Mooney, who was sent by the British Government as forest advisor to the Middle East in 1953, after having serviced in India. He arranged the Middle East to include Ethiopia and travelled in many parts of the country for nearly 11 years, having all duplicates of his collections sent to Kew, where they were named, labelled, and mounted, and one set sent back to Addis Ababa. (Unfortunately, this did not always happen; see Tadesse 1991). The Ethiopian National Herbarium was inaugurated in 1959, mainly based on the collections by Mooney. An Ethiopian keeper of the herbarium was trained in England and the Netherlands, but he left Ethiopia in 1963.

The first international steps towards an Ethiopian flora project were taken in mid-December 1967, when Olov returned to Uppsala from a three-and-a-half-month stay in East Africa and Ethiopia, carrying with him, *inter alia*, a request from the Faculty of Science in Addis Ababa for assistance in finding funds and scholars to produce a Flora of Ethiopia. However, mention must also be made that R.E.G. Pichi Sermolli, the General Secretary of AETFAT immediately before Olov, also intended to publish a flora of "Aethiopia" (a territory also including the former Italian colonies of Eritrea and Somalia, and the former French colony Djibouti). Pichi Sermolli wanted first to do a precursor for a monographic flora with careful nomenclatural and floristic documentation, published family by family under the common heading Adumbratio Florae Aethiopicae (Adumbratio meaning, "sketch, outline, or silhouette"). The family treatments for the Adumbratio were published in Webbia, beginning with an introduction by Chiarugi (1953). Other and different plans were drafted at the Agricultural University in Wageningen, the Netherlands; since 1965 Professor H.C.D. de Wit had been supporting the Alemaya College of Agriculture (now Harmaya University) near Lake Alemaya, in the Hararghe province of eastern Ethiopia. Scientific staff from Wageningen were sent as teachers and researchers of botany and agriculture to the college, to teach, organize fieldwork, and make collections for a herbarium at Alemaya (ACD), the National Herbarium in Addis Ababa (ETH), the herbarium in Wageningen (WAG), and elsewhere, where there was an interest in Ethiopian plants (van der Maesen and Wieringa 2011).

With three competing, but very different projects for an Ethiopian Flora underway, some diplomatic activities were necessary. Inga (Hedberg I 2001: 14) has written about this: "Because of the urgent need to produce a complete (as far as possible) Flora of Ethiopia in the shortest possible time both professor R.E.G. Pichi Ser-

molli and professor Hendrik C.D. de Wit gave their blessing to the enterprise. To settle potentially conflicting interests between the European partners, an informal meeting was arranged in Firenze in April 1968 between Pichi Sermolli, de Wit, and Inga and Olov Hedberg." According to the memory of one of us (Sebsebe Demissew), this did not finally settle the difficulties. De Wit continued with the plan to publish a Flora of Ethiopia and even raised some money for this, continuing with his plans until the money to the Addis Ababa-Uppsala project had been granted. According to Tadesse (2011: 7), some of the ideas in Wageningen were to focus on useful plants, perhaps even writing a separate flora of useful plants. De Wit had suggested to Tewolde Berhan Gebre Egziabher that mainly Dutch scientists should write the Flora, and that suggestion was rejected by Tewolde. Pichi Sermolli also continued with the Adumbratio, written mainly by Italians, and he argued that the family accounts of the Adumbratio would in any case be useful for a Flora of Ethiopia, as well as for floras for other parts of the Horn of Africa.

The ideas about an Ethiopian Flora were discussed in a broader setting at a mini-symposium at the seventh plenary meeting of AETFAT in Munich in 1970, with an introductory presentation by Michael G. Gilbert (1971). The meeting almost coincided with the publication of the final parts of an annotated checklist by Georg Cufodontis, Vienna (Cufodontis 1952-1972). Like Pichi Sermolli's Adumbratio, this checklist covered all species recorded from the entire Horn of Africa. At the AETFAT meeting in Munich, it was decided to set up a committee with members from Uppsala, Copenhagen, Addis Ababa, Kew, Genoa, Vienna, Wageningen, Nairobi, and St. Louis, to draft plans and guidelines. The detailed text of the committee's report was presented at the AETFAT meeting in Geneva in 1974, and a summary was published in the proceedings of the AETFAT meeting in Las Palmas in 1978 (Hedberg O et al. 1979).

However, during consultations with interested partners in Ethiopia, it was found that although the plans of the AETFAT committee counted on the Flora of Ethiopia to be written by an international team of specialists, it still focussed too much on the production of the printed work, and did not sufficiently involve the development of botany, teaching, and the future of scientific botanical work in Ethiopia. An Ethiopian ad-hoc committee representing a range of stakeholders from Ethiopia consisted of Zemede Worku, Seme Debela, and Sue Edwards from the Institute of Agricultural Research (IAR), Tadesse Ebba from the Plant Genetic Resource Centre for Ethiopia (PGRCE), Lemma Gebre Selassie from the State Forest Development Agency, Taye Bezuneh and Amare Getahun from Alemaya College of Agriculture, and Tewolde Berhan Gebre Egziabher, Getachew Aweke, Mesfin Tadesse, and Michael G. Gilbert from the Faculty of Science, Addis Ababa University (Tadesse 2011: 9-10; Demissew 2014: 6). This group redrafted and expanded the AETFAT proposal to include a strong component of botanical training and capacity building in Ethiopia, as well as the printing and publication of the Flora volumes in Addis Ababa.

While all this was being discussed, Ib Friis continued with fieldwork in southwestern Ethiopia, closely consulting Inga, Olov, and Michael G. Gilbert. One field trip was organized in 1970 with senior lecturer K. Jakobsen, Copenhagen, and Asfaw Hunde, who was by then studying in Copenhagen. Another and longer field trip was carried out in 1972-1973 with Michael G. Gilbert and Getachew Aweke from Addis Ababa University, and Kaj Vollesen and Finn Rasmussen, students from Copenhagen. Both trips were financed by the Carlsberg Foundation, as was nearly everything that Copenhagen contributed to the Ethiopian Flora Projects and associated projects. The floristic and ecological results of these two periods of fieldwork were published as a short monograph of observations on floristics and vegetation (Friis et al. 1982). This led later to works on a map and classification of Ethiopian vegetation (Friis et al. 2010) and a monograph of the western woodlands of Ethiopia (Friis et al. 2022).

However, from about 1974 Ethiopia endured a period of severe unrest and was agonized by a brutal military government and civil wars in the 1980s. In 1974, a provisional committee of Ethiopian soldiers known as the Derg seized power and executed many members of the former governments, including the Emperor himself. In July 1977, the army of Somalia invaded eastern Ethiopia, but with military assistance from the Soviet Union and Cuba, the Somali army was driven back. Gradually, the situation under the Derg became more established, and the country converted into an autocratic socialist state. Due to strong resistance groups established in Tigray and Eritrea, the regime of the Derg finally collapsed in 1991, and a transitional government of Ethiopia was established, leading to the two present states, Ethiopia and Eritrea. During this development, the collaboration between Ethiopian scientists at the country's few academic institutions and the European and American scientists interested in Ethiopia was not easily maintained, and only in certain areas travelling and fieldwork was possible. Tadesse (2011: 10) commented on the period ending in 1978: "Not much could be accomplished during [these] intervening years, [in this] one of the most difficult times in Ethiopia's political history … a new

[Ethiopian] committee [for the plans for the Flora] was reconstituted … to study the proposal ['plan' according to the European committee] and to modify it to safeguard Ethiopia's interest and solicit its acceptance by the Ethiopian Government. The committee came up with a revised proposal in 1979, and it was communicated to the Ethiopian Science and Technology Commission through the Addis Ababa University for funding."

The plans were eventually approved by the Ethiopian Science and Technology Commission, and – amazingly, considering the political situation in Ethiopia – initial funding was secured from the Swedish Agency for Research Cooperation with Developing Countries (Sida/SAREC) to be given to Ethiopia via the Ethiopian Science and Technology Commission. In retrospect, one must admire the diplomatic skills of Tewolde, Olov, and Inga. The leadership of the project was established at the University of Addis Ababa and the University of Uppsala. In Ethiopia, the project should be led by Tewolde Berhan Gebre Egziabher, and in Sweden by a "secretariat based at Uppsala University, Sweden, under the general guidance of the European coordinator, Professor Olov Hedberg, and co-editor, Dr. Inga Hedberg." (Tadesse 2011: 10). Two editors should be appointed, one in Uppsala and one in Addis Ababa, and the text should be written either by volunteering scientists with specialist knowledge about particular groups in the flora of tropical Africa or Ethiopia, by qualified Ethiopians or Ethiopian Ph.D. students or by two scientists employed by the project and based primarily at the Royal Botanic Gardens, Kew.

During this phase of the Ethiopian Flora Project, Mats Thulin, Uppsala, after his Ph.D. on the genus *Wahlenbergia* (Thulin 1975), took on the task to prepare an account of the Leguminosae of Ethiopia. Mats had in 1971 worked in Ethiopia on a project on legumes with the Swedish-sponsored Chilalo Agricultural Development Project in the Arsi region of Ethiopia. This account of the Legumes of Ethiopia was to serve as a pilot project for the planned flora and try out what had been accepted of the AETFAT plan for the flora. The task could be coordinated with the preparation of the Leguminosae for the Flora of Tropical East Africa by a team at Kew and in Nairobi. From the staff at Kew, Inga (Hedberg I 2001: 14) has mentioned Roger M. Polhill as the longest supporter of the Ethiopian Flora Project. However, working with Polhill at Kew on the flora of tropical East Africa was an encouraging group of botanists that also included Bernard Verdcourt, Gerald Wickens, Charles Jeffrey, the retired botanist Jan B. Gillett, and the keeper of the Herbarium, Grenville Lucas, who all supported Inga and Olov and the Ethiopian Flora Project. This laid the foundation for a close collaboration between Flora of Tropical East Africa and the Ethiopian Flora Project. The account of the Ethiopian Leguminosae was prepared by Mats Thulin, Asfaw Hunde (both Uppsala), and Roger M. Polhill, and was published separately as a monograph (Thulin 1983).

Applying the style of the Ethiopian Flora Project and with the support of Sida/SAREC, Mats carried out the huge task of writing and editing the Flora of Somalia during the years from 1988 to 2006, a work in many ways comparable to the Ethiopian Flora Project, but different from it concerning the possibilities for capacity building in Somalia. The Somali Flora appeared in four volumes and covered more than 3000 species. As for the Ethiopian project, Mats's work included extensive fieldwork and herbarium studies. However, in Somalia it had neither been possible to publish the Flora of Somalia in the country, nor to associate the project with extensive training of Somali students. The Somali botanist Ahmed Mumin Warfa got his Ph.D. in 1989, but, unlike in Ethiopia the civil war that gradually developed in Somalia during the 1980s changed the conditions, and the herbarium in Mogadishu (MOG) was destroyed in 1991, instead of developing into a national institution.

In 1978, Pichi Sermolli decided to publish the last issue of the Adumbratio Florae Aethiopicae. This issue was No. 32, Nephrolepidaceae, again published in Webbia (Pichi Sermolli 1978). Thus, the accounts in the Adumbratio were discontinued before all families of ferns and fern allies had been dealt with. Fortunately, an arrangement between the Ethiopian Flora Project and Pichi Sermolli had been reached earlier, and Pichi Sermolli had promised to provide accounts of the families of ferns and fern allies to Vol. 1 of the Flora of Ethiopia and Eritrea.

In 1984, still five years before the publication of the first volume of the Flora of Ethiopia, Inga and Olov organized the first international symposium in Uppsala on the Ethiopian Flora (Hedberg I 1986). In 1986, the Uppsala symposium was followed by a symposium in Addis Ababa, organized by Mesfin Tadesse (Tadesse et al. 1986), then keeper of the Ethiopian National Herbarium. Finally, in 1999, near the end of the 20 years after the Flora Project had been launched, a third International Flora of Ethiopia and Eritrea symposium was held in Copenhagen, organized by Ib Friis and Olof Ryding (Friis and Ryding 2001).

The realization of a Flora of Ethiopia and Eritrea

After most of a decade of politically turbulent years, the Ethiopian Flora Project was formally launched in 1980. However, the start was not without practical com-

plications, for example, the partitioned distribution of the grant from SAREC to all recipients in the Project. The grant had to come via the Science and Technology Commission in Addis Ababa to the staff at Kew, where initially Kaj Vollesen and Michael G. Gilbert had to wait for a very long time for their salaries because money did not travel easily to and from Ethiopia. Inga also suffered bureaucratic problems with her appointment as editor and has related (Hedberg I 2014: 32) that "once in the 1990's I had to wait for the contract for about nine months!" Eventually, Inga and Sue Edwards were appointed as the chief editors in Uppsala and Addis Ababa. The Flora office for Sue Edwards in Addis Ababa had a larger assistant staff but had also the responsibility for the printing of the Flora volumes and their sale within Ethiopia. The Ethiopian office was established at the National Herbarium with the Addis Ababa University. The smaller office in Uppsala, with a part-time assistant for Inga, was set up at the Department of Systematic Botany in Uppsala. Inga (Hedberg I 2001) pointed out that some of the more difficult problems during the project arose in early 1984, when the Ethiopian project leader, Tewolde Berhan Gebre Egziabher, and the Ethiopian editor, Sue Edwards, had to move to Asmara University, to which Tewolde was seconded. This meant that equipment, etc., had to be bought for a third office, causing expenses that were not budgeted for. However, with the complete independence of Eritrea from Ethiopia in 1993, the Ethiopian Flora office had to move back from Asmara to Addis Ababa and was again given a room near the Ethiopian National Herbarium at Addis Ababa University. While Tewolde was at Asmara, Mesfin Tadesse, keeper of the Ethiopian National Herbarium 1990-1993, functioned as the Ethiopian leader of the Flora Project.

For some volumes, assistant editors were listed on the covers of the Flora volumes: Vol. 1: Inga Hedberg, Ib Friis, and Eva Persson. Vol. 2(1): Sue Edwards, Mesfin Tadesse, Sebsebe Demissew and Inga Hedberg. Vol. 2(2): Sue Edwards, Mesfin Tadesse and Inga Hedberg. Vol. 3: Inga Hedberg & Sue Edwards. Vol. 4(1): Inga Hedberg, Sue Edwards and Sileshi Nemomissa. Vol. 4(2): Inga Hedberg, Ib Friis, and Sue Edwards. Vol. 5: Inga Hedberg, Ensermu Kelbessa, Sue Edwards, Sebsebe Demissew, and Eva Persson. Vol. 6: Sue Edwards, Sebsebe Demissew, and Inga Hedberg. Vol. 7: Inga Hedberg, and Sue Edwards. Vol. 8: Inga Hedberg, Ib Friis, and Eva Persson.

The first Editorial Board was established during the preparations for Vol. 3 and consisted of Tewolde Berhan Gebre Egziabher, Olov Hedberg, Mesfin Tadesse, Ib Friis, Inga Hedberg, Sue Edwards, from ca. 1990 also Sebsebe Demissew, and from Vol. 4 and 5 also Ensermu Kelbessa, who took responsibility on the Editorial Board after Mesfin Tadesse had moved to the USA (Fig. 3). Otherwise, the Board remained largely the same for all volumes. As far as possible, all members of the Board met regularly at alternative years in Addis Ababa or Uppsala during the 1990s. The manuscripts were edited, and they were checked against the material at the Ethiopian National Herbarium. Ib Friis read all manuscripts to check the nomenclature and citation of type material. A detailed list of the editors, the editorial boards, and the editorial teams, which included the editorial assistants, is given by Tadesse (2011: Table 4) together with more information about the international contribution to the family treatments to the Flora.

Figure 3. Inga Hedberg in the Editorial Board of the Flora of Ethiopia and Eritrea, photographed on the stairs of the National Herbarium, Addis Ababa, 1998. From left to right: Tewolde Berhan Gebre Egziabher, Sue Edwards, Ensermu Kelbessa, Inga Hedberg, Olov Hedberg, Ib Friis, and Sebsebe Demissew. Photograph by Ib Friis.

Already before the formal launching of the Ethiopian Flora Project in 1980, foreign students, mostly African, but also some Scandinavian had come to study tropical African botany with Olov and Inga under other projects (Nordal 2011). In 1969, just before Olov's appointment as professor, Inger Nordal had come from Oslo (then Inger Bjørnstad, defended her thesis in Uppsala in 1977) and Ib Friis from the University of Copenhagen (defended his thesis in Uppsala in 1985 and – for the degree of Dr. Scient. – in Copenhagen in 1992), while Mats Thulin was a student from the "home university" of Uppsala and defending his thesis in Uppsala in 1975. Asfaw Hunde, Ethiopian, but living in Uppsala, having moved there from Copenhagen, defended his thesis in Uppsala in 1982 with Mats as his supervisor. John Kokwaro (from Kenya) studied Ethiopian and East African Valerianaceae, Geraniaceae, Rutaceae, and Anacardiaceae at Uppsala and defended his Ph.D. there in 1968. William Mziray (from Tanzania) defended his

thesis in Uppsala in 1992. Pius Temu (from Tanzania) defended his thesis in Uppsala in 1990 with Mats as his supervisor. In 1980, the first students sponsored by the Ethiopian Flora Project began to arrive in Uppsala, the first being Mesfin Tadesse, who defended his thesis in Uppsala in 1984, Sebsebe Demissew, who defended his thesis in Uppsala in 1985, Ensermu Kelbessa, who defended his thesis in Uppsala in 1990, and Ghebrehiwet Medhanie from Eritrea, who defended his thesis in Uppsala in 1999. They all had Mats as supervisor, as had Ahmed Mumin Warfa from Somalia, who defended his thesis in Uppsala in 1989 (although printed in 1988). Zemede Asfaw, who defended his thesis in Uppsala in 1989, had studied the infraspecific taxonomy and land races of barley partly at the Carlsberg Laboratory in Copenhagen and partly at the University of Svalöv near Lund and had supervisors from outside the Department of Systematic Botany in Uppsala. Inga (Hedberg I 2001) has stated that receiving the Ethiopian students was probably the most stimulating and uncomplicated part of the Flora Project, but she also soon realized that living in a foreign country, under a different culture, and spending long periods far from home might cause problems. Nevertheless, the Flora Project students were all successful in their studies, and they have provided Ethiopia with excellent botanists.

Mats and Ib tried to follow the ideas of Inga and Olov about bringing African students to their university and sending European students to Africa to meet the African students in Africa. Ib managed during the politically most difficult period in Ethiopia to get external funding for a twinned Ph.D. project on the ecology of Ethiopian plantations and natural forests. This involved the Ethiopian Ph.D. student Lisanework Nigatu (now at Harmaya University) and the Danish Anders Michelsen (now professor of ecology at the University of Copenhagen), and later another pair of students on the ecology of grass fires in Ethiopia. However, the most successful in attracting and providing for African students was Inger Nordal who, with the help of a generous Norwegian program for foreign Ph.D. students managed to provide seven Ph.D. scholarships to work in Oslo on African monocotyledons and African ecology, four from Ethiopia (Fikre Dessalegn, Tilahun Teklehaymanot, Wendawek Abebe, Tesfaye Awas), three from Zimbabwe (Shakkie Kativu, Clemence Zimudzi, Ezekiel Kwembeya), one from Kenya (Emily Wabuyele), and one from Malawi (Elizabeth Mwafongo) (Nordal 2011).

At this time, the Ethiopian National Herbarium had grown from about 16,000 to more than 70,000 specimens (now it includes more than 100,000 specimens), partly due to the fieldwork of Ib Friis, which after 1980 continued with more than 25 trips thanks to the generous funding for this activity from the Carlsberg Foundation, and for many years in collaboration with Sally Bidgood (Kew). However, the growth was also due to many Ethiopian and visiting botanists associated with the Flora Project, and also a growing number of independent Ethiopian student-projects. During the early years of the Flora Project, particularly Mesfin Tadesse and Sebsebe Demissew went on long collecting trips. Currently, more room for the Ethiopian National Herbarium (ETH) is being provided to fit the collections, and Addis Ababa University has generously provided grants for refurbishment.

At around 1984, Sida/SAREC felt concerned and warned that nothing had as yet been published of the planned Flora. Unfortunately, another five years were to pass before the first volume was published. This was vol. 3, published in 1989, of which the text for the Leguminosae by Mats Thulin, Asfaw Hunde, and Roger M. Polhill had already been published as a monograph, which could now be updated. The editing of the remaining and rather numerous families in that volume, many of which had been worked up by Michael G. Gilbert and Kaj Vollesen, was mainly done at Uppsala. Although a number of these families were small, others were larger and some quite sizeable (Crassulaceae by Michael G. Gilbert, Urticaceae and Moraceae by Ib Friis), Celastraceae by Norman Robson (London) and Sebsebe Demissew, Burseraceae by Kaj Vollesen, and the Anacardiaceae by Michael G. Gilbert. Because of the independence of Eritrea in 1993, the title of all the volumes appearing after Vol. 3 was altered to Flora of Ethiopia and Eritrea, but the flora continued to cover the same area.

In the early 1990s, when only one volume had been published, SAREC again warned about the lack of printed output. However, by then the manuscripts for vols. 6 – the monocots except for the grasses, Vol. 7 with the grasses, and Vol. 2(2) – a large number of dicotyledonous families – were well underway. The grass specialist, Sylvia Phillips (Kew, UK), wrote the text for Vol. 7, which was edited in Uppsala and published in 1995. A change in the Ethiopian leadership occurred in 1996 when Sebsebe Demissew became the Ethiopian leader of the Ethiopian Flora Project and remained in that position until the end of the project in 2009. The first volume edited in Addis Ababa was 2(2) that appeared in 1995 with many small or moderately-sized families, of which the larger ones were Cucurbitaceae by Charles Jeffrey (Kew), Myrtaceae by Ib Friis (although with few indigenous species, Ethiopia has many introduced species of *Eucalyptus*), Combretaceae by Kaj Vollesen, Tiliaceae by Kaj Vollesen and Sebsebe Demissew, Malvaceae by Kaj

Vollesen and finally the large family Euphorbiaceae by Michael G. Gilbert.

One of the non-Swedish Scandinavians, Inger Nordal (whose Ph.D. thesis and many other works dealt with monocotyledons), and two Ethiopians (Sebsebe Demissew and Ensermu Kelbessa) worked hard on Vol. 6, the Monocotyledons. Inger Nordal wrote the accounts of the Hypoxidaceae, Anthericaceae, Asphodelaceae (with Sebsebe Demissew), and the Amaryllidaceae, while of other families Sebsebe Demissew wrote the Dioscoreaceae (with Jacques Miège, Geneva, Switzerland), Asparagaceae, and Aloaceae (with Michael G. Gilbert). Ensermu Kelbessa wrote the Commelinaceae with Robert B. Faden, Smithsonian Institution, Washington, USA). Contributions of two other particularly large and difficult families were also provided by European contributors: Cyperaceae by Kåre A. Lye (Ås, Norway) and Orchidaceae by Phillip J. Cribb and Sarah Thomas (Kew, UK). The volume was edited in Addis Ababa and published in 1997.

The occasional complaints from SAREC about the slow rate of publication continued, and sometimes even amounted to threats to close the project. Inga (Hedberg I 2011: 22-23) quoted a sentence from a letter from SAREC, written in 1999: "I suggest funding for two more years according to the budget. The Flora must be completed now and SAREC will not consider any more funds when these two years have passed." The need to finish the project within a time limit of fairly close to 20 years caused the distribution of the editing to be redistributed between Addis Ababa and Uppsala so that the editing of Vol. 4 was moved to Uppsala, while Addis finished the work on Vol. 2(1). Like in Vol. 2(2), Vol. 2(1), which appeared in 2000, was to contain many small and fewer moderately sized or larger families, for example, Ranunculaceae by Demel Teketay (at times associated with the Agricultural University in Wageningen; now in Botswana), Capparidaceae by Lars E. Kers (Bergius Botanical Garden, Stockholm), Brassicaceae by Bengt Jonsell (Uppsala), Polygalaceae by Michael G. Gilbert, Resedaceae by H.C.D. de Wit (Wageningen), Caryophyllaceae by Michael G. Gilbert, Amaranthaceae by Clifford C. Townsend (Kew, UK), and Flacourtiaceae by Kaj Vollesen. At Uppsala, the editing of Vol. 4 was divided into two parts, of which Vol. 4(1) was published in 2003, with larger families by Inga and Olov (Apiaceae), Focke Albers, Michael G. Gilbert, David Goyder, Sigrid Liede, and Johannes T. Venter (Asclepiadaceae), and Christian Puff (Vienna, Rubiaceae). Volume 4(2) was entirely dedicated to the Asteraceae, which Mesfin Tadesse studied during a long stay at Kew, and which was published in 2004.

In 2000, it was 20 years since the Flora Project had been launched, and this had in 1979 been stipulated as the project period. By then three volumes were left to do (vols. 5, 1, and 8), all to be edited from Uppsala. Vol. 5 was published in 2006 with contributions of large families by H. Riedl in Vienna and Sue Edwards (Boraginaceae), Sebsebe Demissew (Convolvulaceae and Verbenaceae), Ensermu Kelbessa (Acanthaceae), Mats Thulin (Lobeliaceae, Campanulaceae), Ib Friis (Solanaceae), and Olof Ryding (Lamiaceae). For detailed information on the publication of the individual volumes, see publications in bibliography Reports on the progress and history of the Ethiopian Flora Project. Due to unpredicted complications, Vol. 1 and 8 were only published in 2009 (see further below).

Table 1. Year of publication for the Flora volumes within the 20 years project period from 1980, as initially estimated by the Editorial Board, and the actual year of publication (from Hedberg I 2011: Table 1).

Volume	Estimated year	Actual year
3	1989	1989
7	1994	1995
2(1)	1994	2000
2(2)	1994	1995
6	1995	1997
4(1)	1996	2003
4(2)	1996	2004
1	1996	2009
5	1997	2006
8	1998	2009

Later years; the conclusion of the Ethiopian Flora Project after Olov's death in 2007

Retirement did not slow down the pace for Inga and Olov. However, Olov passed away in 2007 after some months of illness. Inga bravely continued with the characteristic "Hedberg engagement", now as a senior researcher at the Department. However, she was deeply affected by her experiences during Olov's final five weeks of illness and death in a Swedish hospital in 2007, and she published in 2017 a case study of Olov's treatment under the Swedish health care. The book had the title of *Så kan det vara: en fallstudie av svensk sjukvård* (in English: That is how it can be: a case study of Swedish health care. Recito Förlag; 85 pp). The book describes not least the unsatisfactory communication between elderly patients and the health staff.

In 2007, only Vol. 1 and 8 of the Flora of Ethiopia and Eritrea remained to be published, but the volumes

were to include the ferns, fern allies, and gymnosperms, plus several chapters with supplementary material and indices to be completed. The health of R.E.G. Pichi Sermolli, the planned main contributor to Vol. 1, had been failing for several years, and he died in 2005 without submitting a draft manuscript of the ferns and fern allies. Yet, he had produced a carefully prepared checklist of these groups, had published accounts of a number of the families in the Adumbratio, and had continued to gather well-prepared material of Ethiopian ferns in his private herbarium. Another complication with Vol. 1 – previously overlooked by the Editorial Board – was that the numbering system for the dicotyledonous families covered in Vol. 2(1) to 5, was based on the first of two family classifications by John Hutchinson (1926), and the numbering of that classification began with family no. 1, Magnoliaceae. This had also been used in the Ethiopian Flora, but not accounting for the families of ferns, fern allies, or gymnosperms, the numbering of which was unknown when the project began.

Inga was deeply concerned about the absence of manuscripts for the ferns and fern allies (Hedberg I 2014: 31): "I have a feeling that [Pichi Sermolli's] intention might have been not to send anything until all his families were written up. Anyhow, when he died, we had virtually nothing on the ferns, and the suggestion that we could publish his material posthumously did not appeal to his wife. A colleague at Kew then suggested to me that we should just leave out the ferns … This would have been an option, had the fern volume been the last one in number. But, because of their systematic position, they had been planned for Volume 1 …" The Editorial Board decided to distribute the task of drafting accounts of the ferns, the fern allies, and gymnosperms to Dr. Jacobus P. Roux, South Africa, a fern specialist from the Compton Herbarium who accounted for 16 families, some of them large and difficult, Sebsebe Demissew and Ensermu Kelbessa, who each accounted for eight families, Ib Friis, who accounted for six families, and jointly to Ensermu Kelbessa and Henk Bentje for one family, jointly to Roux and Ensermu Kelbessa for one family, and jointly to Sebsebe Demissew and Ib Friis for one family. Because of the problem with the numbering of Hutchinson's families, it was decided to start an independent numbering system from family no. 1 (Lycopodiaceae) to family no. 41 (Cupressaceae). To honour Pichi Sermolli, his family classification, and checklist should be followed as far as possible. All Ethiopian material in his private fern herbarium should be utilized for the accounts. By then, Pichi Sermolli's private fern herbarium was in the process of being transferred as a closed historical herbarium to the Natural History Museum in Firenze as FI-PS. To include the observations from this herbarium FI-PS, Ib Friis worked in Firenze with the preliminary manuscripts for Vol. 1 and communicated with Roux, Sebsebe Demissew, and Ensermu Kelbessa about the observations. Finally, Vol. 1 and 8 of the Flora of Ethiopia and Eritrea, were edited by Inga, Ib Friis, and Eva Persson and published as the last parts of the entire flora in 2009 (Fig. 4).

Inga was highly active in organizing the concluding international Flora of Ethiopia symposium held in Uppsala in 2009 (Friis 2009) and in the publication of the proceedings (Hedberg I and Persson 2011). Inga also contributed to a final workshop in 2010 in Addis Ababa to celebrate the completion of the Ethiopian Flora project, the growth of the National Herbarium of Ethiopia, and the establishment of the Gullele Botanic Garden (Tadesse 2011; Demissew and Kelbessa 2014a, 2014b; Hedberg I 2014).

With the death of Olov in 2007, Ensermu Kelbessa in 2016, Sue Edwards in 2018, Tewolde in 2023, and now Inga, major actors in the Ethiopian Flora Project are gone. Jacobus Roux was tragically killed by a hit-and-run car in 2013 while out cycling. John Kokwaro from Kenya died in 2019, and Ahmed Mumin Warfa from Somalia in 2021. During years, some for 30 years, these people have worked with Inga on the Ethiopian Flora Project.

About working with other people on the project, Inga said (Hedberg I 2011) that apart from the difficulty of keeping the speed wanted by the sponsors (SAREC originally wanted the Ethiopian Flora to be written in fifteen years), "other problems have been relatively few and often fairly easy to solve." She (Hedberg I 2014: 30) also named the main reason for the delays: "The decision, though well founded, to publish [the Flora] not family by family but in volumes covering up to 59 families, often caused considerable and unforeseen delays … This meant that some manuscripts had to wait for about ten years before all contributions for the relevant volume had arrived and were ready for printing, ..." Inga may here have overlooked that the highly useful training of Ethiopian botanists and capacity building in Ethiopia has also slowed down the project. The production of volumes might have been faster if the project had not involved so many other activities both in the North and in the South. But then the project and SAREC's funding would not have left such a profound positive impact on the scientific environment in Ethiopia. Many of these time-consuming, but worthwhile factors have caused much of the inspiration the Flora project has given to other Ethiopian projects (Demissew et al. 2011).

For all that have been involved, professors, lecturers, editors, Europeans and Africans, Inga's and Olov's

Figure 4. Inga in her home in Uppsala with six Ethiopian Flora volumes: blackish blue: Vol. 2(2); lighter blue: Vol. 2(1); pale blue: Vol. 1; green: Vol. 3; yellow: Vol. 4(2); red: Vol. 5. Photo by Maria Hedberg; taken soon after completion of the Flora.

work on African biodiversity and conservation and their enthusiasm for collaboration between botanists in North and South, have been an invaluable inspiration, and should indeed remain so for all future botanists, may they live and work in the North or in the South, and may we and coming generations of botanists continue to possess the good spirit that prevailed during the Ethiopian Flora Project with Inga as a central character.

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