

# Commemorating IUFRO's Centennial – A Brief History of Division 2

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## Summary

IUFRO Division 2 chose to focus its forest genetics sessions at the Centennial Celebration on four species, all conifers, that have a long history of cooperative research within the organization. It included invited papers by four European scientists and co-authors well-qualified to review the IUFRO work, a presentation honoring two former forest geneticists from eastern Germany, and papers by scientists from that region that cover east German research on these same species. All of the papers are presented in this issue of *Silvae Genetica*. In contrast to these specific reviews, this introductory paper takes an overall view by presenting a brief history of Division 2 as it evolved from its predecessors Section 22 and 24. It traces the development of the present system of Working Parties within Subject and Project Groups, explains how Division 2 came to include its current composition of disciplines, and mentions individuals who contributed to its development and accomplishments. The small groups and opportunities for the exchange of ideas among individual research workers worldwide are seen as the key to IUFRO's success.

*Key words:* IUFRO history, IUFRO Centennial, forest genetics, forest protection, conifer genetics, forest history.

## A special issue of *Silvae Genetica*

The IUFRO<sup>2)</sup> Centennial Meeting at Eberswalde and Berlin commemorates a long period of international cooperation in all aspects of forestry research. Of all fields, none has been the focus of more cooperative effort over IUFRO's existence than that related to forest tree improvement through provenance testing, breeding, and related biological research.

Cooperative research on the four species of conifers that were most important to IUFRO's European founders, including research on provenance selection and breeding, has a long history and is still an important IUFRO activity. IUFRO concern with these species can be attributed to (1) the long-standing importance of these species in European forest management, (2) early American attention to these species for forest planting that continues in the case of Douglas-fir, and 3) recognition of the fact that provenance testing benefits greatly from international cooperation.

It is appropriate in this commemorative year to recognize the accomplishments of IUFRO scientists who have made important contributions through their work with these conifers. For this reason, Division 2 decided to dedicate part of its program in the Centennial Meeting to IUFRO's role in research on Scots pine, Norway spruce, European larch and Douglas-fir by inviting reviews by four speakers. Each speaker is from Europe, where the cooperative work with these trees began, and each is

well-recognized for his IUFRO background in research on one of these four major conifers in IUFRO's history.

Division 2 also organized a Centennial session of papers focusing on important conifer genetics research in eastern Germany. Although IUFRO cooperation began in this region, it has been difficult for several decades because of constraints on collaboration with scientists in many western countries. It is, therefore, appropriate that all of us should be brought up to date on east German research progress in forest genetics and tree breeding. In connection with our focus on that part of Europe, we are recognizing and honoring two distinguished former research foresters from eastern Germany, now deceased, who played an important role in IUFRO forest tree improvement research before and after the second World War, and whose careers and lives were severely impacted during the former regime because of their personal and professional integrity.

The invited speakers in the genetics sessions of the Division 2 program were asked to prepare papers for publication as well as for oral presentation at the Centennial Meeting. Some of the papers have co-authors, who are also well-recognized for research on the species involved. Since it was not possible to publish Divisional papers in the Centennial Proceedings, except in abstract form, all of the papers on forest genetics are included in this special issue of *Silvae Genetica*.

## IUFRO Section 22

This introductory paper briefly traces the history of Division 2 and its predecessor Section 22 in this field, mainly during the last three decades. The earlier history of international efforts to organize and standardize provenance research within IUFRO and form working groups is outlined by GIERTYCH and OLEKSYN in their Scots pine review in this issue of *Silvae Genetica*. They also describe subsequent developments, especially as related to the international provenance tests. The establishment of Division 2, which from its beginning has also included the working groups concerned with forest protection, took place in 1971.

As IUFRO grew and was revitalized after the second World War, its widespread fields of interest were grouped into twelve subject matter areas called Sections, with a numbering system in which the first digit indicated the broad field and the second digit the specialization within the field. Thus the specialization dealing with forest tree selection and breeding research was called Section 22, while that concerned with forest insect and disease research was numbered Section 24.

Section 22 was called "Study of Forest Plants" and its scope was described as "tree physiology, genetics and breeding, and the anatomy, morphology and taxonomy of forest plants". The aim was "to exchange information about the characteristics and development of forest

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<sup>2)</sup> IUFRO is an acronym for the International Union of Forestry Research Organizations.

plants in the temperate, subtropical and tropical regions of the world" (IUFRO 1967). In retrospect, this seems to be a somewhat vague objective, but one intention may have been to stress the necessity for the scientific estimation of genotypes from their phenotypic responses, in view of the fact that C. SYRACH LARSEN of Denmark, a highly-respected pioneer in this field, was the first Section Leader.

The evolution of the present structure of Division 2 can be traced back to the Committee on Provenance Research, which was formed in 1959 within Section 22 with M. VYSKOT of Czechoslovakia as Chairman. In 1961, this committee became the Working Group on Provenance and Testing and JOHN MATTHEWS of Great Britain succeeded SYRACH LARSEN as Leader of Section 22 (IUFRO 1961, see also GIERTYCH and OLEKSYN in this issue). In 1965, ROBERT CALLAHAM of the USA became Deputy Leader and in 1967 he succeeded MATTHEWS as Section Leader after the 14th IUFRO World Congress. MAX HAGMAN of Finland was elected Deputy Leader.

There were a number of important developments in Section 22 in the 1960s. A significant addition to its breadth of activity was made at the FAO World Consultation on Forest Genetics and Tree Improvement, held at Stockholm in 1963, when the recommendation was made that IUFRO should establish a Working Group on Tree Physiology (FAO 1963). HARRY FOWELLS of the USA became the organizer and a program of work was initiated. Another important event was the Advanced Study Institute on Genetic Improvement for Disease and Insect Resistance of Forest Trees, organized by HENRY GERHOLD and held at the Pennsylvania State University in the USA in 1964. At this meeting, a resolution was passed to form an intersectional working group in IUFRO to bring together members of Sections 22 and 24 "to foster cooperation and exchange of information among geneticists, physiologists, pathologists and entomologists who investigate and breed for genetic resistance to insects and diseases" (GERHOLD et al. 1966).

These two events, i. e. (1) adding physiology as a field and (2) forming a working group that tied genetics to protection (IUFRO 1967), increased the scope of Section 22 beyond provenance testing, breeding and genetics and later provided the framework for the organization of Division 2.

During the early 1960s, foresters became concerned about the growing effects of air pollutants on the forest. A Working Group on Fume Damage was formed within Section 24, thus expanding the section's research activity within the field of forest protection. As of September 1992, specialists in this field have organized 15 international meetings.

Three productive Section 22 meetings were held in Europe as interest in forest biology and genetics drew more research workers into the field of tree improvement. One of the meetings, organized by PIERRE BOUVAREL and held at Pont-à-Mousson in France in 1965, placed some emphasis on the design of provenance tests and the evaluation of results, but was also concerned with clonal testing. Immediately following the meeting in France, 66 scientists, including many from eastern Europe, attended a tree improvement conference in Yugoslavia organized by MIRKO VIDAKOVIĆ that had a similar theme. The third meeting was a meeting and study tour organized by B. KERESZTESI in 1966 to discuss tree breeding in Hungary

in 1966. Thirty eight participants represented 15 countries.

In 1967, after the IUFRO World Congress held in Munich, Section 22 consisted of seven working groups, two of which were newly-established. The seven were:

- Provenance Research and Testing
- Tree Physiology (new)
- Quantitative Genetics (new)
- International Testing of Clones
- Procurement of Seed for Provenance Tests
- Intersectional Working Group on Genetic Resistance to Forest Diseases and Insects
- Terminology and Classification of Information

At the same time, Section 24, Forest Protection, of which A. BIRAGHI was Leader, had six working groups, including:

- Population dynamics [of insects]
- Mycorrhiza Research
- International Cooperation in Forest Disease Research
- International Cooperation in Forest Insect Research
- Fumes Damage
- Forest Fire Control

By the late 1960s, research activity in forest genetics had greatly increased. The Second World Consultation on Forest Tree Breeding, again sponsored by FAO with IUFRO support, was held in Washington in 1969. Participation included 212 scientists from 40 countries. A report of more than 1,600 pages, published by FAO (1970), included 125 technical papers.

An increase in the number of meetings accompanied the expansion of research activity in field related to forest genetics. "Sexual Reproduction in Forest Trees" was the subject of a small Section 22 meeting on a specialized aspect of tree breeding organized by HAGMAN and held in Varparanta, Finland in 1970 (Finnish For. Res. Inst. 1970). On a larger scale, in 1971, at the 15th IUFRO World Congress in Gainesville, Florida, 19 working groups of Section 22 held meetings, of which three were held jointly with Section 24 (IUFRO 1971).

#### Establishment and Growth of Division 2

One of the actions at the 1967 IUFRO World Congress in Munich was the establishment of an Organization Committee to study and recommend changes in IUFRO's basic structure, which was by that time outdated (IUFRO 1967). Major changes were approved by the International Council in September, 1970 "after long and arduous debate", in the words of President JEMISON (IUFRO 1971). Among the changes were the replacement of the Permanent Committee by an Executive Board made up of regional representatives and technical program coordinators. Sections were replaced by Divisions, subdivided into Subject Groups and Project Groups, the latter to be concerned with fields that crossed Divisional lines. Provision was made for optional further subdivision into smaller "Working Parties" with specialized fields of interest, and all but one of the Subject and Project Groups in Division 2 were subdivided in this way. A Working Party is created or terminated by the Executive Board on the recommendation of the Division, but the initiative for starting a new Working Party usually comes from a group of research workers with common interest in a particular research field or tree species.

In the restructuring, the earlier efforts to promote cooperation and exchange of information among research workers of Sections 22 and 24 culminated in their merger into Division 2, called "Forest Plants and Forest Pro-

tection". Section 24's Working Group on Forest Fire Control was at the same time transferred into Division 1, where it became a Subject Group called "Forest Fire Research". The new Division 2, one of six, was by far IUFRO's largest, including 10 subject Groups and 4 Project Groups. Initially, there were 61 Working Parties, or 65 working groups including the four Project Groups, the latter functioning as working groups without subdivisions (IUFRO 1972).

The new structure facilitated a tremendous expansion of direct cooperation among research workers and initiation of Working Groups in new fields and new geographic regions, particularly in genetics and breeding. Some new activities included: a Working Party on "Biochemical genetics" in 1971 (S2.04-05, R. G. STANLEY, chair); our first specifically tropical Working Party, "Breeding tropical species", also in 1971 (S2.03-01, D. G. NIKLES and J. BURLEY co-chairs); and later, in 1981, "Cellular and developmental genetics" (S2.04-06, H. B. KRIEBEL, chair), which 3 years later was renamed "Molecular genetics". Some new fields other than genetics were "Population dynamics of forest insects", organized in 1981 (S2.07-06, A. A. BERRYMAN and J. T. STOKLEY, co-chairs), and "Whole tree physiology", started in 1984 (S2.01-15, R. J. LUXMOORE, P. HARI and J. J. LANDSBERG, co-chairs).

The rapid growth of Division 2 in diversity of activities and in the extent of scientist involvement is attributable in no small measure to the dynamic leadership of Coordinator BOB CALLAHAM, who served two terms and was succeeded in 1981 by EDWIN DONAUBAUER (IUFRO 1981). A high level of activity in forest genetics provided motivation for the organization of the Third World Consultation on Forest Tree Breeding, held in Canberra, Australia in 1977 (FAO 1978). By 1979, Division 2 had 70 Working Parties in 10 Subject Groups and 3 Project Groups, with a total of 74 working groups if we include those Subject and Project groups that had not been subdivided (IUFRO 1979). During the next few years, the number was reduced slightly by the elimination of a few inactive groups.

DONAUBAUER's expertise was forest pathology and his succession kept Division 2 leadership in the hands of an active research worker. JEFFERY BURLEY became Coordinator after the 18th World Congress in Ljubljana in 1986. BURLEY brought to Division 2 a wide first-hand familiarity with forestry research in the tropical countries that helped to increase our group activities in these countries and strengthen IUFRO participation by their research workers. He was succeeded in 1991 by H. B. KRIEBEL, a forest geneticist who had been officer in various capacities since the Division was established.

By 1986, it was clear that Subject Groups 2.02 and 2.03 were to a great extent repetitive. S2.02 had "Species, Provenances and Gene Resources" as its title and S2.03 was labeled "Breeding". However, virtually all geneticists in the single-species Working Parties were concerned with both provenances and breeding, and many attended meetings of both of the paired Working Parties, such as S2.02-10 "Poplar Provenances" and S2.03-07 "Breeding Poplars". These paired groups were, therefore, combined.

Although the number of Working Parties was reduced by the mergers, several new ones have been added since 1986, including: "Legislation of Forest Reproductive Material" (S2.02-21, H.-J. MUHS and P. KRUTZSCH, co-chairs) and "Genetics of *Quercus*" (S2.02-22, A. KREMER and P. SAVILL, co-chairs) in Subject Group 2; "Somatic Cell Ge-

netics" (S2.04-07, M. R. AHUJA, chair) and "Cytogenetics" (S2.04-08, S. E. SCHLARBAUM and Z. BORZAN, co-chairs) in Subject Group 4; and "Diseases and Insects in Nurseries" (S2.07-09, J. R. SUTHERLAND and B. BROWN, initial co-chairs) in Subject Group 7. In addition, the former Working Party "Xylem Physiology" (S2.01-10) has recently been reactivated on the initiative of N. SUDACHKOVA. Thus, even after consolidation, we still have 64 Working Parties in 8 Subject and Project Groups, and one Project Group ("Seed Problems") without subdivisions.

### Some Division 2 Activities

The number of Division 2 meetings increased from 47 in the four years 1982—1985 (IUFRO 1986) to 67 in the four years 1986—1989 that included meetings at the 1986 World Congress (IUFRO 1990). Currently, excluding 1990 Congress meetings, we are averaging about 16 meetings per year. Meetings have been held in all parts of the world, varying in size from small meetings of a single Working Party with attendance of as few as 20 or 30 to combined meetings of several Working Parties or of an entire Subject or Project Group, often with 200 or more persons in attendance (IUFRO 1988, 1989, 1990a, 1991). Many of the larger meetings have been co-sponsored with other organizations. An example of a small but productive meeting was the 3rd conference of Working Party S2.07-01, "Cone and Seed Insects", held in 1988 with 23 participants and 23 papers, which produced a 242 page Proceedings (MILLER 1989). At the other extreme, Project Group 2.04, "Productivity of Nitrogen-fixing Trees", is a group inseparable from the Nitrogen Fixing Tree Association. Its meetings are large and frequent.

There have been many well-organized and well-documented meetings in fields of interest to readers of *Silvae Genetica*. Only a few can be mentioned along with their supporting agencies, without which the organization of a meeting and publication of the proceedings are impossible.

One of the last meetings in its field that took place within the former Section 22 was the NATO-IUFRO Advanced Study Institute "Biology of Rust Resistance in Forest Trees", held in Moscow, Idaho, USA in 1969. Organized by RICHARD T. BINGHAM, it included 56 speakers, many of whom were active members of IUFRO Sections 22 and 24, and was followed by a 681 page Proceedings (BINGHAM et al. 1972).

The IUFRO Working Parties on "Population Genetics", "Breeding Theory", and "Progeny Testing" held a joint meeting of about 70 scientists in Stockholm in 1974 and published a 500-page Proceedings (ANDERSSON 1974). Two years later, the three groups and Working Party S2.04-05 "Biochemical Genetics" held another joint meeting on "Advanced Generation Breeding" in Bordeaux (ARBEZ 1976).

A joint meeting on "Flowering and Seed Development in Trees" was held by Working Parties S2.01-05 "Reproductive Processes", S2.01-06 "Seed Problems", and S2.07-01 "Cone and Seed Insects" in Mississippi, USA in 1978. There were 87 participants in attendance representing 13 countries. A 380-page proceedings was published by the USDA Forest Service (BONNER 1979).

The Working Parties on "Poplar Provenances" and "Breeding Poplars", then still separated, held a joint meeting in Canada in 1984 that included both breeding and clonal propagation and had its papers published by the government of New Zealand (National Plant Mate-

rials Centre 1984).

By 1984, the Working Party on "Seed Problems" had become a Project Group. Its meeting in Zimbabwe in 1987 was attended by only 48 scientists, but they came from 24 countries and 40 were from the developing countries of Africa and Asia. A 400-page Proceedings was published by the Swedish University of Agricultural Sciences (KAMRA and AYLING 1987).

The first IUFRO publication on the molecular genetics of forest trees was the proceedings of the second workshop on this subject, held in Canada in 1987 by Working Party S2.04-06, "Molecular Genetics" (CHELIAK and YAPA 1988). This Working Party, which is concerned with a rapidly-advancing technology, has held 5 workshops in 4 countries in 7 years.

Two Division 2 meetings held in the former USSR in 1989 were: (1) "Forest Insect Guilds: Patterns of Interaction with Host Trees", organized by four S2.07 Working Parties and S2.05-06 ("Mechanisms of Tree Resistance to Insects"), and supported by the USSR Academy of Sciences, its State Forest Committee, and the U. S. Forest Service (BARANCHIKOV et al. 1991); (2) "Forest Genetics, Breeding and Physiology of Woody Plants", sponsored jointly by the State Forest Committee and IUFRO Division 2 (PETROV 1989).

Division 2 continues to play a major role in the IUFRO World Congresses. At the 19th World Congress in Montreal in 1990, Division 2 organized 21 technical sessions, four business meetings, one subplenary session and one interdivisional meeting on the challenge of air pollution to forest science (IUFRO 1990). The Congresses have the advantage over Working Party meetings of permitting informal interchange among scientists with a wider range of interests. This has proved to be a stimulating source of new ideas, information and contacts. On the other hand, Working Party meetings usually have been able to devote more time to a specific subject. Often, they also facilitate a combination of technical sessions and field trips to relevant experimental areas.

Table 1, adapted from BURLEY (1990), summarizes officer representation and activities of the Subject and Project Groups of Division 2 during the period 1986-1989, inclusive.

Table 1. — Number of officers, number of countries represented and activities of Division 2 during the period 1986-1989 (adapted from BURLEY 1990).

Group	No. of Officers	No. of Countries	No. of Meetings/Publications 1986-1989	
			Meetings	Publications
S2.00	4	4	-	-
S2.01	21	11	12	7
S2.02	57	25	9	12
S2.04	11	5	8	2
S2.05	9	5	4	0
S2.06	18	10	12	10
S2.07	22	14	13	21
P2.02	8	7	1	0
P2.04	3	3	3	2
P2.05	25	15	5	4
<b>Total</b>	<b>178</b>	<b>37</b>	<b>67</b>	<b>58</b>

Most of the publications in Table 1 are proceedings of meetings and newsletters. However, we also have produced publications that were special projects. One was the series of 15 monographs by 23 authors on the genetics of important forest trees of Europe, published by the Yugoslav Academy of Sciences and Arts (VIDAKOVIĆ, Editor, 1974, 1975, 1976, 1978, 1981, 1982) in accord with the resolutions of the World Consultation on Forest Genetics and Tree Improvement at Stockholm in 1963 and the Second World Consultation on Forest Tree Breeding at Washington, D. C., USA in 1969. Division 2 Working Party S2.02-03 ("Species Monographs") undertook the preparation of the manuscripts under the leadership of VIDAKOVIĆ. A more comprehensive monograph on Scots pine was prepared recently by 24 authors from 9 countries and published by Elsevier (GIERTYCH and MÁTYÁS 1991).

Specialized directories of research workers have been the sole project of two Working Parties, S2.01-08, "World Directory of Tree Physiologists" and S2.02-07, "World Directory of Forest Geneticists and Tree Breeders". Project Group 2.04, Seed Problems, also publishes a World Directory of Tree Seed Workers. These directories are maintained in computer database form and reissued periodically. The database makes access possible at other times by specific request to the working group leader.

### Recognitions

The Statutes and Internal Regulations of IUFRO provide for the recognition of individual members who contribute significantly to advancing its aims or to advancing forestry research (IUFRO 1990b). Its Scientific Achievement Award, first presented in 1971, recognizes distinguished scientific achievement within fields covered by IUFRO. Awards are made at each IUFRO World Congress to IUFRO scientists not over age 45; 34 Scientific Achievement Awards have been made to date. Division 2 scientists have received 13 of these (Table 2).

The IUFRO Distinguished Service Award, which may be made at any time, is presented to recognize those whose work has substantially furthered the aims of IUFRO. It was initiated in 1979 and 22 Awards have been made to date. Table 3 lists the awardees from Division 2.

Table 2. — Division 2 scientists who have received the IUFRO Scientific Achievement Award since its inception in 1971 (IUFRO 1990c).

Name and Country	Award Year
Edwin Donaubaueer, Austria	1971
Francis D. Podger, Australia	1971
Gene Namkoong, USA	1971
Alexander S. Isaev, USSR	1976
Alphonse V.J.G. Nanson, Belgium	1976
Wladyslaw Chalupka, Poland	1986
Jacqueline Robertson, USA	1986
Roger Sands, Australia	1986
Tho Yow Pong, Malaysia	1986
René I. Alfaro, Canada	1990
Reinhart Ceulemans, Belgium	1990
Ross McMurtrie, Australia	1990
Jacek Oleksyn, Poland	1990

Table 3. — Division 2 recipients of the IUFRO Distinguished Service Award. The award was initiated in 1979 and is presented to recognize those whose work has substantially furthered the aims of IUFRO (IUFRO 1990c).

Name and Country	Award Year
Helmuth von Barner, Denmark	1983
Frank G. Hawksworth, USA	1986
Chris W. S. van Kraayenoord, New Zealand	1988
S. P. Raychaudhuri, India	1989
Jan Materna, Czechoslovakia	1990
Oscar Sziklai, Canada	1990
Mirko Vidaković, Yugoslavia	1990

### Collegiality and Cooperation

IUFRO is by definition a union of research organizations, a "non-profit, non-governmental scientific organization open to organizations and individuals involved in forestry research". Its main aim is "to promote international cooperation in scientific studies embracing the whole field of research related to forestry". One of its stated ways of doing this is "by facilitating throughout the world exchanges of ideas among individual research workers" (IUFRO 1990b). Our system of working groups, especially the Working Parties, has been an effective vehicle for the exchange of ideas, but the key phrase is "among individual research workers". Without the personal contacts and friendships that our structure allows, we would be a far less effective organization. The success of IUFRO is due to the efforts of many individuals who have been committed to scientific integrity, an open exchange of ideas and information, and a willingness to take the time and initiative needed to make the organization worthwhile.

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## In Memory of Hans Schönbach and Otto Schröck

By H.-F. JOACHIM\*

(Received 1st July 1992)

Today we would like to honor 2 forest geneticists, who after the Second World War laid the foundation for forest tree breeding in East Germany. In addition, they have made valuable contributions in different areas of forestry.

HANS SCHÖNBACH worked near Dresden, at Tharandt — the old forestry university town —, and also at Graupa. OTTO SCHRÖCK worked at Waldsiedersdorf, near Eberswalde, the other centre for forestry teaching and research. HANS SCHÖNBACH and OTTO SCHRÖCK had early in their life turned to breeding activities, and with their knowledge, ability and energy faced up to pressing post-war issues.

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