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International Seminar on Forest Fire Prevention and Control in Warsaw

J. G. Goldammer

Forest Fire Specialist, Institute of Forest Zoology, Freiburg University, Freiburg, Federal Republic of Germany

On May 20–22, 1981, the Polish Government sponsored an international conference on forest fire prevention and control. This seminar was organized by the Food and Agriculture Organization of the United Nations (FAO), the Economic Commission for Europe (ECE), and the International Labour Organization (ILO) in cooperation with the International Union of Forestry Research Organizations (IUFRO), following a decision by the Joint FAO/ECE/ILO Committee on Forest Working Techniques and Training of Forest Workers at its twelfth session in 1978. The seminar was attended by representatives from 20 nations.[1]

The conference was concerned with the worldwide increase of forest fires, an increase in damaged areas, and the search for solutions to these problems. Within the ECE region particularly affected are the Mediterranean countries where recent forest fires in 1981 devastated large areas of Spain, Greece, and Portugal.

Forest fire statistics are now available that were collected by the Joint FAO/ECE working party on forest economics and statistics (*1*). Twenty-eight European countries, the United States, and Canada participated in the evaluation of these data. Since the data refer to different time spans, however, comparisons over periods longer than 10 years are not possible.

In Europe the strong effects of weather on the occurrence of wildfires during the fire season can be demonstrated with the Federal Republic of Germany. During the dry year 1975, a total of 8768 ha of forests was destroyed by fire, while in 1978 only 289 ha were burned.

Although 1978 was a year of low fire incidence in the Federal Republic of Germany, circumstances were critical in southern Europe. Spain, Italy, Portugal, France, and Greece alone reported fires from a total area of 726 916 ha. Among these, 354 469 ha were classified as forest and other wooded land.[2] The remainder included nonforested land such as the shrub type ("Macchia" or Chaparral plant communities), heather or grasslands. Spain reported the highest losses during the same year totalling 434 668 ha, from which 160 000 ha were high forests.

Tables 1 and 2 show data from the forest fire statistics for some European countries. These data indicate the area and number of fires from 1970 to 1979. Even

Table 1.—*Forest fire statistics for Europe, 1970–79* [1]

Country	Total forested area	Statistical period	Annual average number of forest fires	Annual average area burned
	1000 hectares			*hectares*
Sweden	27,301	1971–79	2,889	3,513
Finland	22,371	1970–79	544	952
France	16,600	1974–79	5,470	45,683
Spain	14,092	1970–79	4,195	[2] 156,672
Norway	9,242	1970–78	1,381	594
Poland	8,551	1970–79	1,910	2,613
Greece	8,460	1974–79	885	27,824
Italy	7,993	1970–79	6,426	[3] 87,009
Federal Republic of Germany	7,210	1970–79	2,050	2,806
Czechoslovakia	4,453	1972–79	835	1,002
Austria	3,675	1970–78	263	260
German Democratic Republic	2,953	1970–78	1,148	1,656

[1] Statistical information from: Economic Commission for Europe (ECE) and Food and Agriculture Organization (FAO). Forest fire statistics. Document TIM/EFC/WP.2/R.41. Warsaw, POLAND: ECE and FAO. 1981; Rico-Rico, F. Forest firefighting in Spain. Allg. Forst. Z. 36: 689–690. 1981.

[2] Total area burned. Other statistics from F. Rico-Rico's article show an annual average of 57,818 ha of burned forest and other wooded land from 1961 to 1978.

[3] Total area burned, including nonforest land. About 40% (34,803 ha) are classified "forest and other wooded land."

[1] Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, German Democratic Republic, Federal Republic of Germany, Hungary, Italy, Norway, Poland, Portugal, Republic of Korea, Spain, Sweden, Tunisia, USSR, and the United Kingdom.

though the statistical information may be incomplete and sometimes includes nonforested land damaged by fire, the tables show the gross differences between the Mediterranean and other European countries.

One measure of the relative seriousness of the forest fire problems in different countries is the area damaged by fire within a given year in relation to the total area of forest and other wooded land.[2] In Spain, for instance, the area burned in 1978 was 1.25 percent (tables 1 and 2). Portugal reported 1.87 percent burned in 1978.

The economic and ecological effects of the forest fires are particularly serious in the Mediterranean countries because fires jeopardize sustained yield policies and afforestation programs. In Spain, a comparison of waste land afforestation projects (which averaged 57 818 ha annually between 1940 and 1978) and the amount of forest land destroyed by fire (about 57 818 ha annually between 1969 and 1978) shows how strongly it would affect the success of afforestation efforts.

[2] Timber Committee, Economic Commission for Europe (ECE) and Food and Agriculture Organization (FAO). European timber trends and prospects, 1950 to 2000. Rome, ITALY: ECE and FAO; 1976. 308 p.

Table 2.—*1978 fire year in Europe* [1]

Country	Total forested area	Forested area burned	Percentage of total forested area burned	Value of losses
	1000 hectares	*hectares*		*1,000 U.S. dollars*
Sweden	27,301	1,591	0.006	760
Finland	22,371	801	0.004	728
France	16,600	46,701	0.34	100,796
Spain	14,092	[2] 175,631	1.25	350,156
Norway	9,242	[2] 141	0.15	144
Poland	8,551	2,054	0.02	1,500
Greece	8,460	19,972	0.24	60
Italy	7,993	44,000	0.55	16,288
Federal Republic of Germany	7,210	289	0.004	592
Czechoslovakia	4,453	339	0.008	210
Austria	3,675	135	0.004	299
German Democratic Republic	2,953	631	0.02	574

[1] Statistical information from: Economic Commission for Europe (ECE) and Food and Agriculture Organization (FAO). Forest fire statistics. Document TIM/EFC/WP.2/R.41. Warsaw, POLAND: ECE and FAO. 1981.
[2] Total includes forest and nonforest land.

The causes of forest fires in different countries also varied a great deal in comparison with the causes of those in Germany (table 3). For instance, the percentage of unknown causes is very high compared to the unknown causes in Germany. The current information listed in the ECE/FAO statistics for 1978 and contributed by 20 European countries is strongly influenced by the Mediterranean countries. Among known causes of forest fires in 1978, arson counted for 68 percent in Portugal, 70 percent in Spain and 50 percent in Italy. Reasons for the enormous increase in fires caused by arson are to be looked for in social, economic and political areas. In Spain, arson often results from (*2*): the opposition of animal raisers and shepherds to afforestation activities; dissatisfaction with hunting yields; political opposition of people against the administration; and attempts to intimidate and damage the government.

The effects of politically motivated arson were demonstrated in

Table 3.—*Causes of forest fires in Europe and the Federal Republic of Germany*

Causes	Europe 1978	Germany (1972-78)
	Percent	
Unknown	46	32
Negligence	20	39
Arson	28	12
Lightning	1	1
Other	5	16

Greece when in the beginning of August 1981, forest fires were set all over the country at one time.

International Topics of Interest

The conference focused on the need for education and new developments in techniques and equipment for forest firefighting. Fundamentals in silviculture and forest ecology and the need for basic research were also discussed. The need for better mutual information in Europe is clearly recognized, perhaps the reason being that the activities in research, development, and education within Europe have been strongly dissipated. This, unfortunately, has also led to an obvious isolation from the development in North America.

International cooperation. Participants at the symposium demanded better information exchange and more cooperation, and recommended the formation of a committee of experts from the FAO/ECE/ILO work with IUFRO: to collect and disseminate information on the organizational structures and division of responsibilities in participating countries for forest fire control; to prepare a bibliography on selected studies and articles relating to forest fire prevention and control; to prepare a directory of research institutes and other bodies or individuals concerned with research on forest fires (in collaboration with IUFRO); to prepare internationally accepted warning signs and symbols about forest fires because of the growth of international tourism; to organize a systematic arrangement for the exchange of information between countries on new developments in ground and airborne equipment for protection against fires; and to collect and disseminate information on methods of and material used for informing the public about forest fires.

Fire research. The conference participants recommended concentrating research on: the influence of silvicultural methods on forest fire behavior and forest fire danger; the impact of fire on the forest ecosystem; methods for mapping forest fire risks and the relationship between such maps and other ecological mapping; developing models for predicting forest fire danger; and developing models of fire behavior and prediction of fire behavior in both natural and manmade forests.

The Polish Forest Research Institute suggested a dictionary in four languages (English, French, Polish, Russian) in order to emphasize a stronger East-West cooperation (*3*). For the central and south European region and simultaneously for North and South America a glossary in four languages is being prepared (English, French, Spanish, German). This glossary was recommended by the North American Forestry Commission. It will be based on the updated forest fire glossary of the USDA Forest Service, and the USDA Forest Service will act as secretary. Also the Forest Service of Spain (ICONA), the Station de Silviculture Méditerranéenne in Avignon, France, and the University of Freiburg, Federal Republic of Germany, will participate.

Technology transfer. Opportunities for a more intensive European cooperation in technology transfer are now possible through the third program cycle of the United Nations Development Program Regional Programs for Europe (1982–86). The UNDP/ECE included a project on forest fire control in May 1981.

The attention of the ECE countries will also be directed to the necessity of technology transfer in countries belonging to other regions, especially developing nations. The replacement of natural vegetation types by pine plantations and other afforestation efforts creates new forest fire problems in those regions. At the seminar, a German research and development project in South America was described (*4*).

Germany: Research and Development

Heavy wildfires in 1975–76 provided an opportunity to investigate the ecological effects of forest fires in the burned areas. In 1975, research projects were begun in the Eschede area (Lower Saxony, northern Germany) with several institutions of the Gottingen University and the Forest Research and Experimental Station of Lower Saxony participating. The research concentrated on a burned site of Scots pine forest. Special observations were made on the effects of the fire on the soil complex and the successional development following the fire (*5*).

A working group in fire ecology was established within the German Society of Ecology to pursue fundamental research on fire ecology. In 1977 a symposium on fire ecology, sponsored by the Volkswagen Foundation, was held at the Freiburg University. Results of research projects, domestic and foreign, are now published (*6*).

The firefighting kit for the TRANSALL aircraft, which was commissioned by the German Federal Minister for Research and Technology, has been improved in its efficiency and safety (Fire Management Notes, Volume 40, No. 4, 1979). This project was presented in 1980 at the Symposium on Airborne Firefighting in Hannover (*7*). The proceedings of that international conference are already published in German and will soon be available in English.

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