

LESSONS LEARNED FROM THE DRAMATIC FIRES OF 2007 AND 2009 IN GREECE

XANTHOPOULOS, Gavriil¹

¹National Agricultural Research Foundation, Institute of Mediterranean Forest Ecosystems and Forest Products Technology, Terma Alkmanos, Ilisia, Athens 115 28, Greece. Telephone n^o: +30 2107793142, e-mail: gxnrta@fria.gr

The fire season of 2007 in Greece was the worst in the recent history of the country as it set new records in regard to damages and loss of life. An account of what happened and the reasons that led to the disaster, such as extreme conditions, fuel build-up, wildland-urban interface development, citizen indifference, and poor firefighting are presented. The failure to address these problems, as evidenced by a major 2009 wildfire that burned 20000 ha a few km NE from Athens, is also discussed, leading to lessons that should be learned in order to avoid repetition of such disasters in the future.

1. INTRODUCTION

The fire season of 2007 in Greece was the worst in recent history as it set new records in regard to damages and loss of life. A total of seventy eight people, mostly civilians, lost their lives. More than 270,000 hectares of vegetation burned and more than 110 villages were affected directly by the fire fronts (Xanthopoulos 2007). The number of totally destroyed or seriously damaged homes exceeded three thousand. This unparalleled fire disaster made the news worldwide and left people wondering about the causes and the circumstances that led to it. In the year that followed there were many efforts to learn from the disaster: to analyze the errors, to identify the weaknesses and to suggest corrective measures. This was done at many levels including the political, the Greek Fire Corps (GFC) which, since 1998, is responsible for forest firefighting in Greece, the fire research community (including Greek and international experts) and the mass media. Unfortunately, in 2009, a major conflagration, a few km NE of Athens, the capital of Greece, demonstrated that serious weaknesses continue to exist. This paper provides a brief overview of what happened and tries to offer an insight on the deeper causes of the disasters, from which useful lessons can be drawn by the Greek and international wildland fire management community.

2. THE 2007 FIRE SEASON

The 2007 fire season was very difficult. This was evident early on as snowfall in winter was deficient and rainfall was below normal. In response, the government added more contracted heavy lift helicopters to the already large state owned and private fleet of aerial firefighting resources operating every summer in Greece. However, this was not enough. In late June a heat wave with temperatures exceeding 40 °C contributed to an early start of the fire season. On June 27, in the evening, a fast moving fire, in the area of Agia on mount Ossa in middle Greece, claimed two civilian lives. Late on that same evening, sparks from an overloaded power-line started a fire near the village of Stefani in Viotia, 25 km NW from the center of Athens. The importance of the fire was initially underestimated and it was not fought aggressively as it was spreading quite slowly in shrublands and Aleppo pine forest. In the evening of June 28 it crossed a firebreak without resistance and reached the west slopes of mount Parnis, which forms the NW border of the basin of Athens. Entering the fir (*Abies cephalonica*) forest that forms the core of Parnis National Park, in canyon topography, the fire accelerated developing a strong convection column. In less than four

hours it reached the top of the mountain. It was controlled two days later as it was moving slowly downslope without wind. The burned area reached 5,600 ha, including 2.180 ha of fir forest.

Many fires continued to erupt around the country in the first 16 days of July and were fought with the help of the aerial means, but with an ever increasing difficulty. One of them, near the village of Doxaro in Crete, on July 11th, resulted in the death of three seasonal firefighters and serious injury of a fourth one. They were trapped in a “box-canyon” by a fast moving fire in relatively light fuels. This accident and a spectacular fire on July 16th at the base of mount Hymettus that forms the SE border of the basin of Athens kept the fires on the news. The latter was broadcasted live on TV and clearly showed the inability of ground forces to control the blaze when not supported by a large fleet of aerial resources: Fanned by a strong wind the fire moved unchecked for half an hour until the arrival of six Canadair water bombers and three heavy lift helicopters, which, taking advantage of the short distance (8 km) to the sea, controlled the spread of the fire in half an hour.

A second heat wave hit the country between July 17 and 26, and with it came the second round of disaster. Numerous fires erupted and among them many escaped initial attack and grew to large sizes, the worst being a fire that started on the 24th at Kounina, a village at the base of the steep mountains on the north coast of Peloponnese in the prefecture of Achaia. Initial attack from the air was delayed as there were other fires in progress. On July 25th, the fire accelerated, with the help of the slope and a strong wind, and burned, practically unobstructed, through the forests, agricultural fields and villages on the slopes of the mountains, until it reached the top. In three days it burned about 30,000 ha, destroyed more than 70 homes in nine villages and killed three citizens. Also, on July 23, a Canadair CL-415 water-bomber crashed near the town on Styra, on Evia island, while firefighting. The two pilots were killed. In addition to all these fires in southern Greece, a series of fires in the high elevation forests of the Greek north were attacked poorly, grew large and kept burning for more than ten days. Fortunately, the northern part of Greece received a significant amount of rain on August 5. With its help, these high elevation fires were brought under control. The rain also saved that part of the country from what was to follow.

On August 16, it was the turn of Penteli, the mountain forming the NE boundary of the basin of Athens, to experience disaster. A fire that started around 10:30 am on the SE slope of the mountain quickly reached the suburbs of Vrilisia, Nea Penteli and Kifisia. By the end of the day the fire was partially controlled, after burning tens of houses and destroying about 900 ha of precious regenerating forest. Again, all this was reported live on TV making people wonder publicly about the capacity of the fire suppression mechanism to protect them. Then, with the third heat wave of that summer, starting on Friday, August 24, 2007 and continuing until August 28, a series of fires in Peloponnese and on Evia island burned fiercely destroying huge areas and claiming tens of lives. Organized firefighting, especially on the ground, practically collapsed for nearly three days, as a result of extreme fire behavior, low morale and poor coordination of forces. In some cases citizens, with the help of Forest Service officers, self-organized to protect their villages, often using backfiring or burning out techniques. After the second day, significant international help, mainly aerial resources, arrived and helped in bring the fires under control, but this was only possible when the weather conditions improved. The final damages were beyond imagination.

2.1. Reasons for the disaster

The disaster has been attributed to many different reasons depending on the viewpoints of those trying to draw conclusions. The term “climate change” became a buzzword in many press articles and appeared as a convenient explanation to many of those carrying

responsibilities for the fire management policies in the country. However, many in-depth analyses identified some more important factors. They were:

- Fuel accumulation as a result of abandonment of mountainous and rural areas in the last decades, reduced use of forest biomass for animal feed and energy production, and a steep decline in active forest management due to the weakening of the Forest Service after it lost responsibility for forest firefighting in 1998.
- Development of wildland-urban (WUI) and rural-urban interface areas in the last decades, with poor planning and little preparation for fire.
- Reduced capability and interest of the citizens to help with preparation of their fields (fuel reduction) and with fire control, as a result of increasing average age, especially in the villages, loss of fire knowledge and reflexes for firefighting, and a more “urban mentality” cultivated to a large extent by the mass media (Xanthopoulos 2008).
- Poor firefighting. In the years since 1998 the GFC gradually developed a firefighting doctrine that suits its urban firefighting mentality. It can be summarized as “quick and massive aerial initial attack” to control fire spread and then securing the fire perimeter with the ground forces. In easy fire seasons (such as those between 2001 and 2005) the results are very good. On the negative side, the ground crews have become relatively relaxed and reluctant to spend extra effort (e.g. leaving the roads, climbing uphill, creating long hose-lays, etc.) to minimize the chance of a fire escaping initial attack. Furthermore, there is often inadequate knowledge about the forest fuels and the forest road network in the area of responsibility. As a result, in difficult fire seasons (2000, end of 2006, 2007, 2009) when some aggressive fires escape initial attack, the weaknesses manifest themselves: Extended attack on those fires requires heavy aerial support so there are not adequate aerial resources for attacking other starting fires. The chance of initial attack failure increases dramatically and soon the number of medium to large fires increases. Then a second weakness becomes apparent: The GFC works very little with indirect attack. Use of fire as a firefighting tool is not in its official procedures. Under such conditions, there are few options other than allowing the fire to burn until it gets to areas with fewer fuels or until the weather conditions change.

3. THE NEXT TWO FIRE SEASONS

Recognition of the true causes of the 2007 disaster unfortunately was incomplete or even selective at the level where decisions are made (political, GFC). Lessons were not learned and sweeping changes to solve the roots of the problems were not applied. For example, the Forest Service remained in an inactive underfunded condition, and efforts to improve fire prevention were few and uncoordinated. The most visible change was a new increase in the number of contracted heavy lift helicopters. Ground suppression remained practically unchanged. The next fire season (2008) had some large fires away from Athens, the worst being on the island of Rhodes where a fire burned more than 10,000 ha in a week under less than extreme conditions. Again the “message” was ignored.

The summer of 2009 started with some serious fires in June, before the arrival of the contracted helicopters. Once they arrived in July, fires started being extinguished quickly. By mid-August there was a feeling that it would be a successful fire season. However, vegetation water stress measurements of the Institute of Mediterranean Forest Ecosystems and Forest Products Technology showed that vegetation water stress conditions were approaching the levels of August 2007. A warning was issued to the General Secretariat for Civil Protection to be taken into consideration in the daily fire danger prediction map of the country. On August 21, a fire that started in the night, 35 km NE of Athens, was not

attacked effectively. The growth potential of the fire was underestimated and it was not attacked in full force in the morning of the 22nd. When the NE “meltemi” wind started blowing the fire accelerated and started hitting one WUI area after the other. This created havoc. Massive firefighting efforts from the air, having poor support from the ground, did little to stop the fire. Within four days it burned approximately 20,000 hectares of pine forest, olive groves, shrub land and farmland, affecting 15 municipalities and communities, destroying 60 homes and damaging another 150. This fire demonstrated once more that without learning from the mistakes of the past, and initiating science based changes that will bring balance between prevention and suppression and complementarity between aerial and ground firefighting resources, and will match well trained firefighters with effective coordinating officers, the potential for more fire disasters will remain unacceptably high.

Acknowledgements

The work presented here, especially in regard to the fire of 2009 in NE Attica, was carried out in the context of a project titled «Linking civil protection and planning by agreement on objectives» (INCA), which is funded by the Civil Protection Financial Instrument of the European Commission and has NE Attica as one of its study areas.

Bibliography

XANTHOPOULOS, G. 2007. Olympic Flames. Wildfire. 16(5):10-18.

XANTHOPOULOS, G. 2008. People and the Mass Media during the fire disaster days of 2007 in Greece. pp. 494-506. In proceedings of the International Bushfire Research Conference on “Fire, Environment and Society” of the Bushfire Cooperative Research Centre and the Australasian Fire Emergency Service Authorities Council (AFAC), September 1-3, 2008, Adelaide, Australia. 570 p.