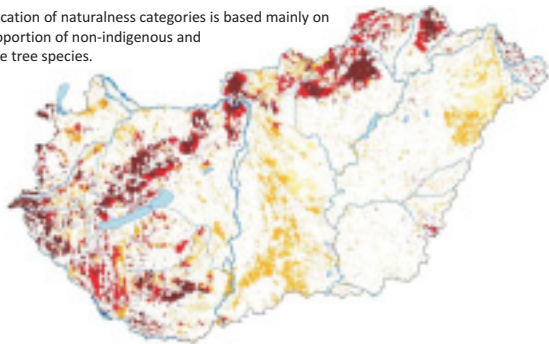


## Naturalness and nature conservation

Naturalness categories of forests	area (ha)
Natural and close to natural forests	462112
Semi-natural forests	561819
Transferred forests	126481
Semi-plantations	655780
Plantations	127412
<b>Total</b>	<b>1933604</b>

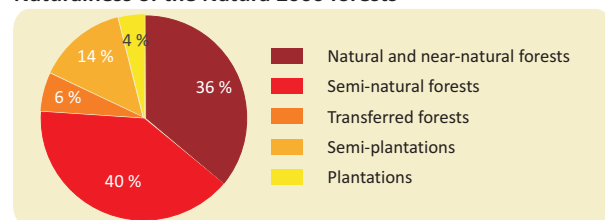
Classification of naturalness categories is based mainly on the proportion of non-indigenous and invasive tree species.



## Protected and Natura 2000 forests - area in hectares

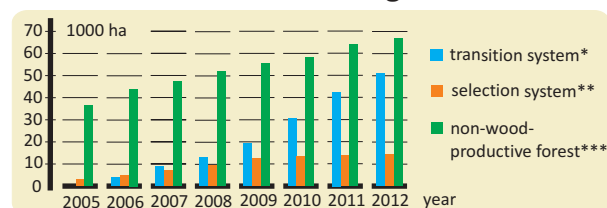
	Forest sub-compartment	Other type of subcomp.	Total
<b>Protected area</b>			
Strictly protected	66148	5977	72125
Protected	356303	25396	381699
Total	422451	31373	453824
<b>Natura 2000 sites</b>			
Protected and strictly protected	383831	28479	412310
Non-protected	386642	33899	420541
Total	770473	62378	832851
<b>Birds sites and habitats sites</b>			
Special Protection Area	466500	31932	498432
Special Area of Conservation	627261	55084	682345

## Naturalness of the Natura 2000 forests



Source: National Forestry Database, data of 1st Jan. 2013

## Close-to-nature forest management



\* The goal is to reach the selection system.  
 \*\* Individual trees or groups are harvested periodically and frequently.  
 \*\*\* The aim is to let natural processes to take their course. Fellings are possible only for scientific, protection or regeneration purposes.

Source: National Forestry Database, data of 1st Jan. 2013

## Forestation (regeneration and afforestation)

### Growing year 2011-2012, area in hectares

	State forests	Non-state forests	Total
<b>Successful initial stand establishment</b>			
Regeneration after clear-cutting	6793	7972	14765
<b>Initial planting</b>			
In afforestation	516	4021	4537
<b>Replacement planting</b>			
In regeneration	3050	786	3836
In afforestation	77	395	472
<b>Completed plantings</b>			
In regeneration, after clear-cutting	6298	4 892	11190
In regeneration, after shelterwood c.	1925	260	2185
In afforestation	342	4823	5165
<b>Terms of completion</b>	(year)		
In regeneration, after clear-cutting	7.2	6.7	7.0
In regeneration, after shelterwood c.	15.2	13.6	15.0
In afforestation	5.0	6.3	6.2

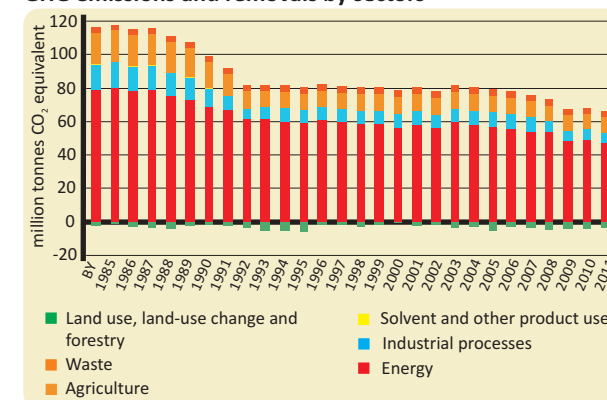
### Target stand types of forestations

	Successful initial stand establishment (ha)	Initial planting in afforestation (ha)
Oak	1864	2343
Turkey oak, other hard broadleaved	603	147
Beech	58	2
Black locust	7609	1011
Hybrid poplar and white willow	2016	172
Native poplar, other soft broadl.	2236	855
Coniferous	379	7
<b>Total</b>	<b>14765</b>	<b>4537</b>

Source: NFCSO "Report on Forestations and Fellings in 2012"

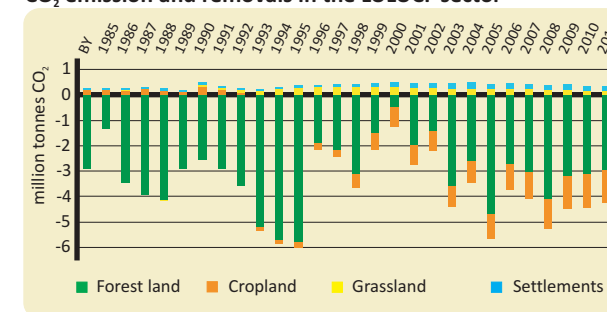
## The Kyoto Protocol and the forests

### GHG emissions and removals by sectors



By ratifying the Kyoto Protocol (KP, 1997), Hungary committed to reducing its GHG emissions by 6% compared to the base year (BY - the average of 1985-87). The country's emission reductions are mainly due to the decrease of the emissions in the energy, industry and agriculture sectors. Actual removals are produced only by the land use, land-use change and forestry (LULUCF) sector. (The positive values mean emission and negative values mean removal.)

### CO<sub>2</sub> emission and removals in the LULUCF sector



Forest management is the only major CO<sub>2</sub> sink in the GHG-balance sheet of the country

### GHG emissions and removals in the forestry sector in 2011

Forest management activities (afforestation, reforestation and deforestation since 1990) under Article 3.3 of the KP represented a net sink of 1.25 million tonnes CO<sub>2</sub>, while the activity under Article 3.4, i.e. forest management (FM), was also a net sink of 1.70 million tonnes CO<sub>2</sub>. The most efficient carbon sequestration can be reached by afforestation.

Source: NIR Hungary 2013, National Inventory Report for 1985-2011 Hungary, Hungarian Meteorological Service

## Annual gross felling volume in 2012

	State forests	Non-state forests	Total
<b>By felling types</b>	1000 gross m <sup>3</sup>		
Cleaning	168	126	294
Pre-commercial thinning	423	377	800
Commercial thinning	603	159	762
Final cutting	3022	2530	5552
Selection cutting	47	2	49
Stock maintenance	2	8	10
Sanitary cutting	124	49	173
Other fellings	62	30	92
<b>Total</b>	<b>4451</b>	<b>3281</b>	<b>7732</b>

<b>By tree species groups</b>	1000 gross m <sup>3</sup>		
Oak	831	224	1055
Turkey oak	704	175	879
Beech	582	116	698
Hornbeam	220	86	306
Black locust	555	1238	1793
Other hard broadleaved	179	74	253
Hybrid poplar	380	733	1113
Native poplar	127	98	225
Other soft broadleaved	193	152	345
Coniferous	680	385	1065
<b>Total</b>	<b>4451</b>	<b>3281</b>	<b>7732</b>

Source: NFCSO "Report on Forestations and Fellings in 2012"

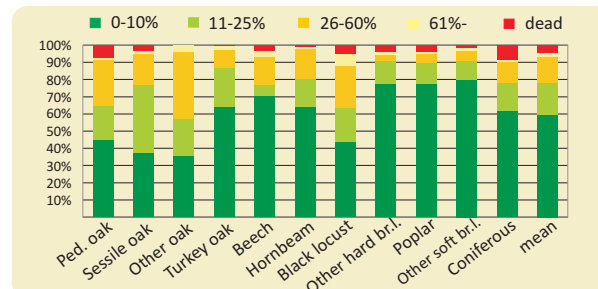
## Timber products in 2012

	total (net m <sup>3</sup> )	ratio in assortment composition (%)
Logs for panel products	201098	3.0
Sawlogs	994671	15.1
Other raw material for sawmilling	447550	6.8
Pitwood	12381	0.2
Pulpwood	579383	8.8
Bolt for panels	485895	7.3
Other industrial wood	258451	3.9
Technological chips	7768	0.1
<b>Total industrial wood</b>	<b>2987197</b>	<b>45.2</b>
<b>Fuelwood</b>	<b>3624288</b>	<b>54.8</b>
<b>Total removals</b>	<b>6611485</b>	<b>100.0</b>

National distribution calculated on the basis of statistical sampling. Source: NFCSO

## Forest health condition in 2012

### Defoliation measured by the ICP Forests Monitoring System

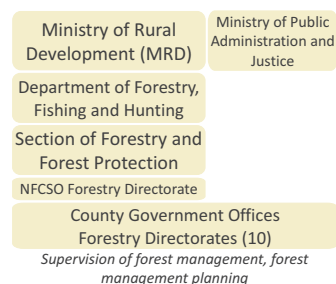


Forest health condition is still good. In the year 2012 there was a slight deterioration in respect of defoliation. Average level of defoliation was 17.9%, which is higher than in 2011 (15.8%). The categories of "Other soft broadleaved", Poplar and Beech were in the best conditions. In these cases the proportion of asymptomatic trees exceeded 70%. The worst health condition was shown by the Oak and Black locust, where the proportion of asymptomatic trees remain below 45%.

Source: NFCSO Health Condition Database, data of 1st Jan. 2013

## Organisational structure

### Forest administration:



### Forest research:

Forest Research Institute (FRI), Sárvár  
University of West Hungary (UWH), Sopron

### Professional training:

Higher education: University of West Hungary, Sopron  
Secondary schools: Barcs, Mátrafüred, Sopron, Szeged  
Trade schools: Ásotthalom, Miskolc, Piliscsaba, Somogyisítf-Szőcsénypuszta

Executive publisher: Márton Oravecz president, National Food Chain Safety Office  
Compiled by: Károly Wisnovszky, director, NFCSO Forestry Directorate  
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# Forest resources and forest management in Hungary

Budapest, 2013

National Food Chain Safety Office  
Forestry Directorate



Comprehensive facts



Source: Hungarian Central Statistical Office (HCSO) 2012; National Forestry Database, data of 1st Jan. 2013; NFCSO "Report on Forestations and Fellings in 2012"

The history of modern forestry in Hungary

1791

The Parliament enacted the first feudal act.

1879

Enactment of the first modern forest act.

1920

As a result of a peace-treaty closing the World War, Hungary lost 84% of its forests, and forest cover decreased from 26% to 12%.

1935

The Act Nr. IV of 1935 was a forest act adjusted to the new geographical conditions of the country, and also covered nature conversation.

1936

Hungary hosted the second World Forestry Congress and the 9th Congress of IUFRO.

1945

Private forest holdings exceeding 58 hectares were nationalized, properties of 6 to 58 hectares were taken into state management.

1959

Forest joint tenures were cut back, about 30% of the forests were assigned to agricultural cooperatives.

1961

Enactment of the Act Nr. VII of 1961 on forests and wildlife mangement based on the socialist ownership structure.

1996

As a result of the change of political system, about 40% of forests were privatised. The legislative control for multiple-use and sustainable forestry is provided in ACT Nr. LIV of 1996 on forests and protection of forests.

2009

One main aim of the Act Nr. XXXVII of 2009 is to get forests closer to their natural conditions. On one hand, the act defines the ‘quantitative naturalness’ and prescribes that it must not decrease due to mana-gement activities. On the other hand, the act makes it obligatory to apply continuous cover forestry methods on a pre-determined area of state-owned forests. Furthermore, it ensures that the NGOs can take part in forest planning to a certain extent.

Main objectives

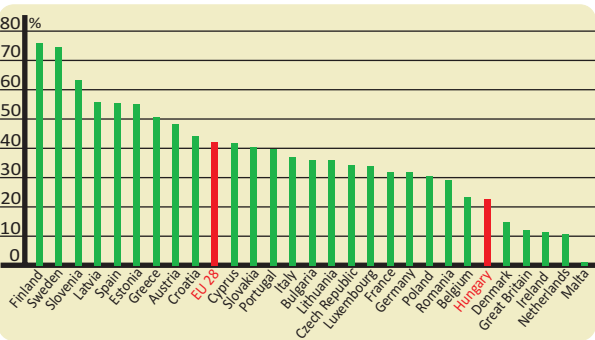
To ensure long-term environmental, economic and social services of forests by sustainable multiple-purpose forest management.

To harmonize the interest of the society in sustainable forest management with the interests of owners and managements.

To increase the forest area by afforestation up to 26-27% share on land.

To maintain natural or close-to-natural forest stands composed by indigenous tree species and extend their area in accordance with prevailing site conditions.

Forest cover in the EU countries



Source: State of Europe's Forests 2011

Forest land according to the National Forestry Database

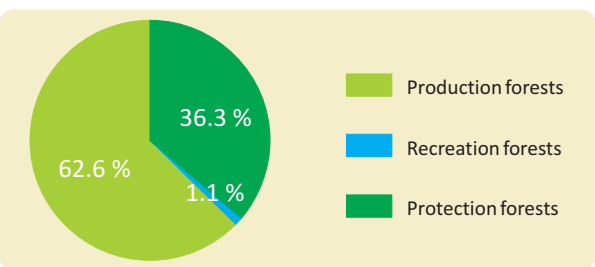
data of 1st Jan. 2013	1000 ha	ratio (%)
Forest land (covered by tree stands or earmarked for plantation)	1933.6	20.8
Other wooded lands (nurseries, rides, permanent clearings, roads)	122.0	1.3
Total area of land in forestry use	2055.6	22.1

Forest land area and ownership categories

County	Area (km <sup>2</sup> )	Forest l. area (km <sup>2</sup> )	Forest ratio (%)	In forestry use (km <sup>2</sup> )	State (%)	Com-munal (%)	Priva-te (%)	Mixed (%)
Pest incl. Budapest	6918	1704	24.6	1799	60.8	2.4	35.6	1.2
Fejér	4359	543	12.5	606	75.1	2.8	21.3	0.8
Komárom-Esztergom	2265	616	27.2	660	81.5	1.1	17.2	0.2
Veszprém	4493	1348	30.0	1542	65.6	0.4	33.1	0.8
Győr-Moson-Sopron	4208	814	19.4	900	71.1	0.5	28.4	0.1
Vas	3336	941	28.2	986	51.4	0.4	48.2	0.0
Zala	3784	1192	31.5	1258	52.9	0.6	42.6	3.9
Baranya	4429	1114	25.1	1167	54.9	1.5	42.1	1.5
Somogy	6036	1787	29.6	1908	56.5	0.8	41.4	1.2
Tolna	3704	662	17.9	708	57.5	0.5	41.1	0.8
Borsod-Abaúj-Zemplén	7250	2083	28.7	2167	60.1	1.3	37.6	0.8
Heves	3637	883	24.3	914	59.1	0.3	40.2	0.4
Nógrád	2545	991	38.9	1028	55.4	0.2	44.0	0.3
Hajdú-Bihar	6210	689	11.1	731	47.4	0.6	51.5	0.6
Jász-Nagykun-Szolnok	5582	326	5.8	353	45.4	2.9	51.1	0.6
Szabolcs-Szatmár-Bereg	5937	1245	21.0	1288	27.1	1.2	71.4	0.3
Bács-Kiskun	8444	1761	20.9	1862	47.4	0.7	50.7	1.2
Békés	5630	260	4.6	282	62.5	3.7	32.1	1.7
Csongrád	4263	377	8.9	397	49.3	1.5	49.1	0.1
Total	93030	19336	20.8	20556	55.7	1.2	42.1	1.0

Source: National Forestry Database, data of 1st Jan. 2013  
Mixed means the forest property is divided among state, private and community. Before the transition of the political system the share of private forest was below 1%.

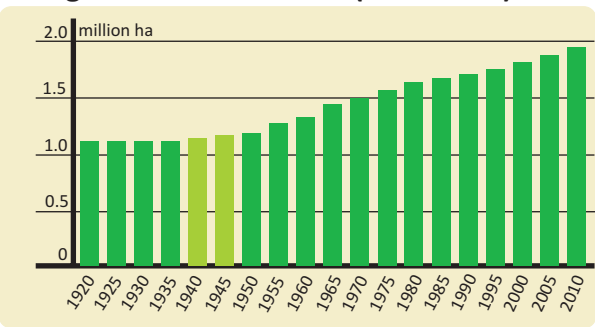
Distribution of forests by primary function



Protection forests include protective forests (soil, water, settlement protection, etc.) and protected forests (i.e. in protected natural areas). Their share has been increasing for decades.

Source: National Forestry Database, date of 1st Jan. 2013

Changes of the forest area (1920-2010)



The share of the forest area between 1920 and 2010 increased from 11.8% to 20.7%, due to the afforestation programs subsidized by the state and after the transition of the political system mainly implemented by private forest owners.

Data of 1940 and 1945 are missing. The light green clounms show estimated data.  
Source: National Forestry Database.

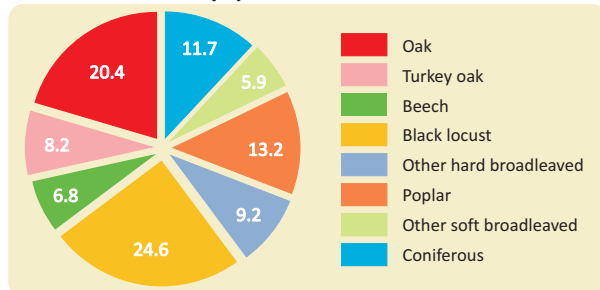
Afforestations in hectares (initial plantings)

Growing year	State forests	Non-state forests	Total
2004-2005	628	7029	7657
2005-2006	770	13219	13989
2006-2007	512	18436	18948
2007-2008	391	6941	7332
2008-2009	791	4377	5168
2009-2010	1084	4012	5096
2010-2011	143	2660	2803
2011-2012	516	4021	4537

Source: NFCSO "Report on Forestations and Fellings in 2012"

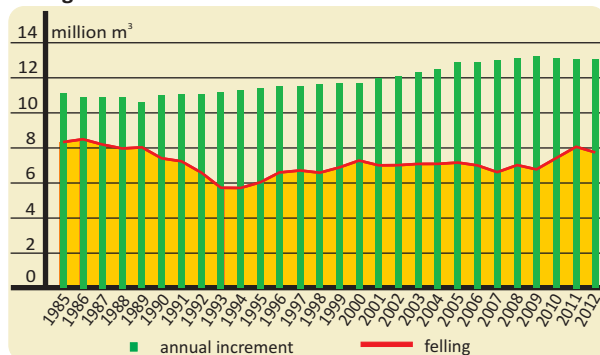
## Annual increment, fellings and growing stock

### Current increment by species

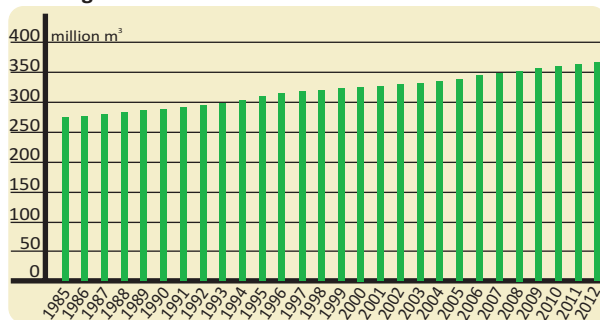


The gross annual increment is **13 million gross m³** per year. It is **0.413 gross m³** per sec, equal to the volume of a cube of 74.5 cm ledge.

### Felling and annual increment



### Growing stock

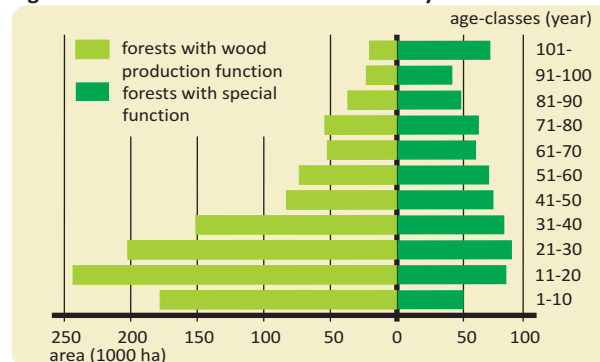


Growing stock has been steadily increasing since in each year the annual increment has been higher than the volume of felling and mortality.

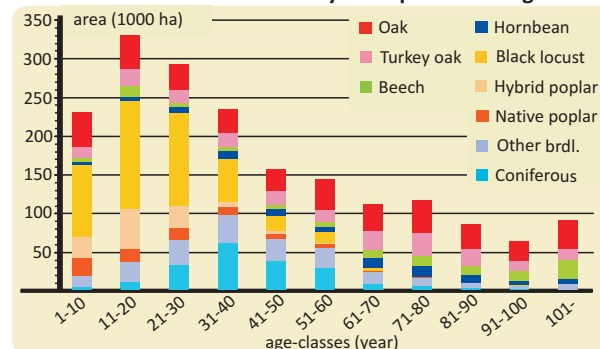
Source: NFCSO "Report on Forestations and Fellings in 2012" and National Forestry Database, data of 1st Jan. 2013

## Tree species and age-class distribution

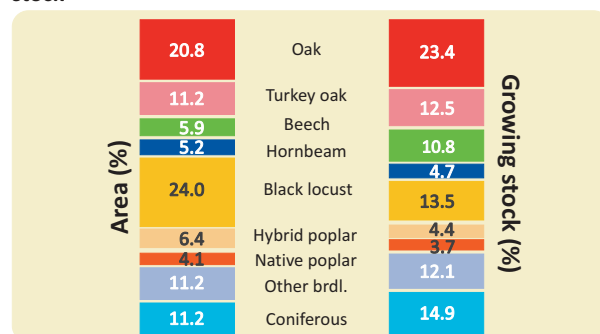
### Age-class distribution of the forest area by function



### Distribution of the forest area by tree species and age



### Tree species distribution of the forest area and the growing stock



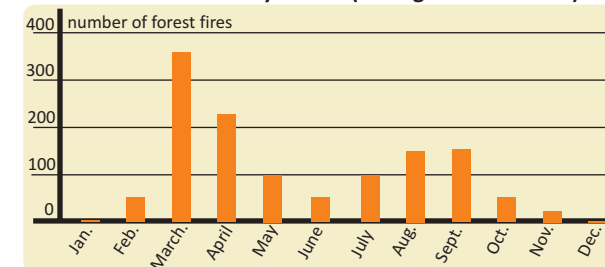
63% of the forest area is covered by indigenous species and 37% by alien or naturalized (Black locust, Red oak, coniferous), or cloned species (Hybrid poplar).

Source: National Forestry Database, data of 1st Jan. 2013

## Forest fires

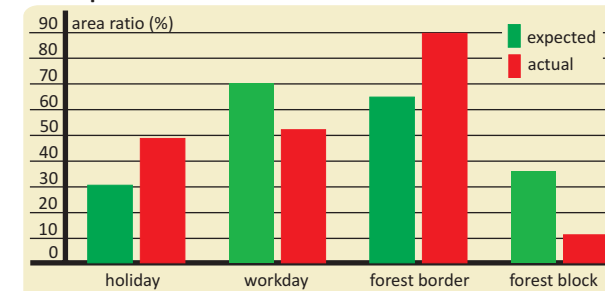
In Hungary, thousands of forest and vegetation fires break out yearly. In the extremely drought year of 2012 nearly 2700 of 21000 vegetation fires affected the forest or other wooded land.

### Number of forest fires by month (average of 2008-2012)



Analyzing the average data of the past 5 years of forest and vegetation fires, a revolving tendency stands out, that there are two highly dangerous periods during the year. Surprisingly, the most dangerous period starts immediately after the snow melting and ends with the leafing, when the vegetation grows green. The spring forest and vegetation fires give nearly 60% of the whole number of fires. These fires break out mainly in northern Hungary and in the southern part of Pest County. The second dangerous period is in July and August. In these hot summer months mainly the coniferous trees of the Great Hungarian Plain are exposed to the danger of forest fires.

### The expected and actual distribution of forest fires



Due to climate and vegetation circumstances, naturally induced forest fires are of no account in Hungary. 99% of forest fires are human induced (negligence or arson).

It is statistically proven, that forest fires occur more than expected during holidays as on workdays. It can be observed, that the area of fires inside the forest block are smaller, and on the border of the forest are larger than expected. This is due to fires coming from agricultural areas. The fewer number of fires within the forest block suggests that the majority of forest fires are not naturally induced.

Source: NFCSO Forest Fire Information System 2012