

# Monitoring visitor-flows in Tuscany's forests: preliminary results and clues

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**Abstract** — In 2006, the Tuscany Region through its Agency for Agriculture and Forestry (ARSIA) has launched a tool supporting the process of planning and managing forest areas within the region: RAFT – “Rapporto sullo stato delle Foreste in Toscana” – Report on the status of Tuscany forests. The RAFT aims to monitor the status of forests and their main functions and services in relation to ecological and social aspects. This monitoring process has now reached its third year. Within the theme of “Environment and society”, the RAFT has analysed a number of indicators (following the P-S-R framework) related to the flows of visitors in Tuscany's forests. Analyses show the relevance of forest areas in the region especially within protected areas. In this paper, we report a brief description of the RAFT and the some preliminary results related to the analysis of past and current flows of visitors in protected areas and hunting sites. We discuss the main strengths and the weaknesses associated with the past and current policies for managing visitors' flows and propose new strategies to disseminate information and attract visitors during different seasons.

**Index Terms** — Protected area – Forest resources – Environmental indicators – Forest Information System – Tuscany Region

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## 1 INTRODUCTION

Since 2006, the Tuscany Region through the Agency for Agriculture and Forestry (ARSIA – Regione Toscana: <http://www.arsia.toscana.it>) has launched a tool supporting the process of planning and managing forests and protected areas within the region: RAFT *Rapporto sullo stato delle Foreste in Toscana – Report on the status of Tuscany forests*.

As a main goal the RAFT aims to monitor the status of forests and their functions and services in relation to ecological and social aspects. This monitoring process has now reached the third year and, for the first time in Italy, the RAFT has involved a wide range of stakeholders (160 people in total) coming from research, industry, policy, NGOs and co-operatives. In addition, the RAFT has allowed

promoting a multiple and sustainable use of forests, thus emphasizing the cultural heritage associated with these resources.

In the first issue, eleven working groups have been established on the basis of the following themes:

- Legislation and policy
- Regional forest programs
- Forest management
- Arboriculture
- Forest diseases
- Forest fires
- Industry and forest jobs
- Wood products
- Non-wood products
- Environment and society
- Regional forest information system.

Each theme has been analysed through various steps, such as:

- Brief introduction
- State of the art
- Comparison with the other regions
- Results of the previous forest policies

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- Current activities
- Main strengths and weaknesses.

In the second issue, the RAFT maintained the same approach and themes with few minor changes and improvements. The number of people involved in the definition of the various themes increased from 160 to 210.

## 2 VISITOR-FLOWS IN TUSCANY FOREST

### 2.1 Methods and statistics

Within the theme of “Environment and society”, the RAFT has considered some indicators related to visitor-flows in Tuscany forest. Specifically, the working group in charge of this task has set a number of requirements such as the need to select indicators describing the Status (S) of forest resources; the Pressures (P) placed by visitors on forest areas; and the Response (R) of the policy sector for preserving the current status of forests. This type of indicators system (P-S-R) is well known and widely used in the public sector, such as reports on the status of the environment.

As an additional requirement, the working group has discussed the need of communicating the status of Tuscany forests to visitors and (potential users).

One of the main indicators of Status is related to the protected areas in terms of number, extent and typology. [Tab. 1] This is because protected areas have been identified as one of the main attractors of visitor-flows. Besides protected areas a number of hunting sites have been included.

As for the indicators of Pressure, the working group has considered the number of people visiting protected areas and hunting sites per year [Tab. 2]. Another indicator of Pressure is the number of authorizations issued by the Tuscany Region to collect mushrooms and truffles [Tab. 3].

The indicators of Response have been defined in terms of infrastructures that support this type of tourism. In particular, the following indicators have been analysed:

- Regional hiking network (Rete Escursionistica Toscana - RET) in terms of extension (Km) and density [Tab. 4] [Tab. 5];
- Number of visitor centres of the protected areas [Tab. 6] [Tab. 7];
- Number of environmental education centres of the protected areas [Tab. 6] [Tab. 7];
- Number of environmental guides of the protected areas [Tab. 6] [Tab. 7];

The above mentioned information have been provided by the information centres or through the Tuscany Region. In the last few years, the Region has implemented a Geographic Information System (GIS) to collect and manage environmental data including those of public interest related to forest resources.

### 2.2 Preliminary results

The analysis of the two previous RAFT allows drawing a picture of the tourism in the Tuscany forests, with particular emphasis to protected areas. Statistics show the relevance of forest resources in terms of extension and numbers especially within protected areas.

TABLE 1

AREAS OF FOREST INTEREST WITHIN THE PROTECTED AREA SYSTEM IN TUSCANY

Protected area Cat.	Num.	Total Area		Forest areas	
		ha	ha	%	
National Parks	3	42.613	31.440	74,78	
Regional Parks	3	86.900 <sup>1</sup>	49.712	57,21	
Provincial Parks	3	9.183	8.720	94,95	
Provincial Reserve	41	30.874	20.525	66,48	
ANPIL	48	87.161	36.799	42,22	
<b>Total</b>	<b>98</b>	<b>256.731</b>	<b>147.196</b>	<b>57,33</b>	

**Note:** (1) Referred to RAFT 2005, the Regional Parks Area increased from 44.000 ha to 87.000 ha. In this number has been also counted the 40.000 ha of continuous land used to determine the forest areas.

TABLE 2

NUMBER OF OFFICIAL HUNTERS PER PROVINCE AND THEIR NUMERIC VARIATION IN 2005-2006

Province	Hunters 2005 (n.)	Hunters 2006 (n.)	Variation	
			n.	%
<b>Arezzo</b>	13.467	13.226	-241	-1,79
<b>Firenze</b>	30.256	26.556	-3.700	-12,23
<b>Grosseto</b>	10.664	12.057	1.393	13,06
<b>Livorno</b>	8.301	5.718	-2.583	-31,12
<b>Lucca</b>	10.957	9.333	-1.624	-14,82
<b>Massa-Carrara</b>	4.565	3.916	-649	-14,22
<b>Pisa</b>	12.682	14.399	1.717	13,54
<b>Pistoia</b>	8.616	7.072	-1.544	-17,92
<b>Siena</b>	12.385	14.431	2.046	16,52
<b>Total</b>	<b>111.893</b>	<b>106.708</b>	<b>-5.185</b>	<b>-4,63</b>

TABLE 3

MUSHROOMS AND TRUFFLE COLLECTION: ASSOCIATIONS AND MEMBERS

Activities	Associations (n.)		Members(n.)		Province members cards (n.)	
	2005	2006	2005	2006	2005	2006
Truffles collection	10	10	1.272	1.283	3.496	4.061

TABLE 4

"RET" DENSITY WITHIN FOREST AND NON-FOREST AREAS

Areas	Km	%	
<b>Forest areas</b>	Forest - Wood	5.336,38	89,00
	Assimilated area	123,38	2,05
	Total	5.459,77	91,05
<b>Non-forest areas</b>	536,40	8,95	
<b>RET - totals</b>	5.996,17	100,00	

TABLE 5

RET DENSITY PER TYPOLOGY OF PROTECTED AREA IN PARF

	Km	%	
<b>Protected area system</b>	National Parks	515,80	8,60
	Regional Parks	515,32	8,59
	Provincial Parks	4,63	0,08
	Provincial Reserve	144,89	2,42
	ANPIL	227,64	3,80
	Total	1.408,28	23,49
	<b>PAFR</b>	1.350,81	22,53
<b>Others protected areas</b>	2.391,84	39,89	
<b>Other</b>	845,24	14,09	
<b>Total development of the RET</b>	5.996,17	100,00	

The average percentage of forest within protected areas is 57.33% with peaks of 74.78 % in national parks and 94.95% in provincial parks. Of particular importance is the relation between RET and forests: the 91.05% of the hiking tracks is within forest areas. The Regional forest heritage is therefore of great importance and connected to the protection of the regional landscape.

In this context visitor-flows are growing consistently mainly within protected areas of national, regional, and provincial relevance. Visitor-flows demonstrate the existence of a specialised tourism that is alternative to the conventional one that is mainly concentrated on cities of art, coastal zones, and thermal baths. On the other side the number of visitors of hunting sites is decreasing as it is occurring at national scale.

TABLE 6

RESPONSE AND PRESSURES INDICATORS: THEIR VARIATION IN TUSCANY PARKS

Company	Visitor Centre (n.)	Environmental Education Centre (n.)	Environmental Guides (n.)	Visitors (n.)		
				2005	2006	Variation
<b>NATIONAL PARKS</b>						
Foreste Casentinesi Monte Falterona e Campigna (Tuscan side)	6 (13 total)	2	20 <sup>(1)</sup>	30.134 (55.683 total)	22.919 (45.060 total)	- 7.215 (- 10.623 total)
Arcipelago Toscano	3	1 <sup>(2)</sup>	10	Not registered	Not registered	Not registered
Appennino Tosco-Emiliano	3	2	12	23.000	30.000	+ 7.000
<b>REGIONAL PARKS</b>						
Maremma	3	1	30	64.810	64.058	- 752
Migliarino San Rosore Massaciuccoli	6	1 <sup>(3)</sup>	37	18.259	49.000	+ 30.741
Alpi Apuane	3	1	46	15.378	82.000 <sup>(4)</sup>	+ 66.622

**Notes:** (1) Park Official guides and GAE guides; (2) work in progress; (3) both Environmental Education Centre and Visitor Centre; (4) This Park does not have an access ticket or neither access point. Visitors can be divided as: "Centro Visite di Castelnuovo": 17.000 visitors; "Grotta del Vento" 50.000 visitors; "L'Antro del Corchia" 15.000 visitors even though these numbers are not officials.

TABLE 7

RESPONSE AND PRESSURES INDICATORS AND THEIR VARIATION IN TUSCANY AREAS MANAGED BY LIPU 2006 (ITALIAN ASSOCIATION FOR BIRDS PRESERVATION)

Protected Area	LIPU Oasi's	Visitor Centre (n.)	Environmental Education Centre (n.)	Environmental Guides - permanent + seasonal (n.)	Visitors (n.)		
					2005	2006	Variation
Natural reserve of Chiarone	Massaciuccoli (LU)	1	1(1)	3+13	11.100	26.500	15.400
Natural reserve of Lago di Montepulciano	Montepulciano (SI)	1	1(1)	1+1	2.500	2.000	-500
Natural reserve of Lago di Santa Luce	Santa Luce (PI)	1	1(1)	2+1	3.400	1.450	-1.950
Natural reserve of Monte Roccandagia	Campocatino (LU)	1	1(1)	1+3	1.200	3.500 (estimated)	2.300

**Note:** (1) Within the Visitor Centre.

### 3 CONCLUSIONS

These preliminary results do not consider data coming from some of the protected areas (of local interest) because of the absence of a monitoring system. Other tourism typologies (such as cycling tourism – mountain-biking) have been considered in just few protected areas. From the above, the Tuscany forest heritage appears as a fundamental resource for tourism attracting a wide range of visitor-flows over the year and through the seasons. At the same time the RAFT allowed highlighting some points of weakness such as:

- An heterogeneous distribution of visitor within the protected areas (few areas attract the largest portion of flows);
- A limited dissemination of data and information.

Another consideration could be made on the way these resources are promoted within the tourism network (National and European). This problem becomes relevant when comparing Tuscany forests with other European regions where promotion and dissemination are part of the management system i.e. the ASTA database in Finland. [4]

For this reason, the upcoming issue of the

RAFT (2007) will consider new themes related to the promotion, and dissemination of forest data and statistics on the basis of the European experience in the sector.

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