

Ecosystems and their services for human well-being

### Natural Capital in Italy and its conservation status

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# NATURAL CAPITAL

Natural capital is the most fundamental of the forms of capital since it provides the basic conditions for human existence, delivering food, clean water and air, and essential resources



# NATURAL CAPITAL IN ITALY

#### **Accounting/ Assessment**

MAES in ITALY (MATTM, SBI, Sapienza University)

Annual Report on Land Consumption (ISPRA)

Italian Natural Capital Committee (MATTM)

MAES Mapping and Assessment of Ecosystems and their Services in Italy

#### National Law 221/2015 Environmental measures for promoting green economy and limiting the excessive use of natural resources



**Reports on the** 

In Italy linked with the national law we have a **National Committee for Natural Capital** at the Ministry of the Environment (art. 67). The authority of the Commettee are biophysical and monetary, according to the UN and EU environmental economic accountability systems (**SEEA**, **MAES**)

State of the Natural Capital in Italy



2017, 2018, 2019







# NATURAL CAPITAL ASSETS OF ITALY



Landscape Units SMIRAGLIA D., et al 2013. JOURNAL OF MAPS



Important plant areas BLASI C. et al (2011). BIOLOGICAL CONSERVATION, vol. 144, p. 220-226



Vegetation Series BLASI C. Ed. (2010). Blasi et al . 2004 , FITOSOCIOLOGIA 41 (1), suppl. 1: 21-25

Old growth forests. Blasi et

al 2010, PLANT BIOSYSTEMS



**Bioclimate** State of Biodiversity in Italy, 2005





**Terrestial Ecoregion** Blasi et al., 2018 **PLANT BIOSYSTEMS** 



**La flora in Italia** Blasi C. & Biondi E. 2017. La flora in Italia. MATTM

The vascular flora is composed of more than 6,700 species (20.4% endemic, that is spontaneously present only in Italy) and account for half the species known in Europe. Fauna includes more than 58,000 species (30% endemic)

Habitats

Biondi E., C. 2012. PLANT

**SOCIOLOGY**, 49(1), 5-37

# ASSESSMENT OF ECOSYSTEM CONDITION

#### **Potential Natural Vegetation map** as a reliable baseline to assess the distance between current and potential ecosystems in terms of occurrence, coverage, composition, structure and spatial configuration (Natural reference conditions)



System of Environmental Economic Accounting

279 Vegetation Series of Italy (Actual NaturalVegetation and VNP)





**Biogeography** 

Bioclimate

Ecoregions

#### 39 types of Potential Natural Vegetation



### **ECOSYSTEM ASSETS**

European ecosystem map v1.3

G1 Broadleaved deciduous woodland G2 Broadleaved evergreen woodland

G4 Mixed deciduous and coniferous woodland

G3 Coniferous woodland

22 April 2019

#### 84 Natural and semi-natural ECOSYSTEMS 43 FOREST TYPES (compared to the 4 types codified at EU level)



Blasi et al. 2017 Ecosystem mapping for the implementation of the European Biodiversity Strategy at the national level: The case of Italy Environmental Science & Policy 78:173-184 ·

# ASSESSMENT OF CONSERVATION STATUS

### (National and Regional scale)

PARAMETERS	METHODOLOGY
Actual <i>versus</i> potential cover of ecosystems	Ratio between cover of <u>mature</u> <u>seral /substitute ecosystem types</u> and cover of corresponding PNV types
Quality of adjacencies among ecosystems or land cover types	For each ecosystem type: % of class (ecosystem type) edge adjacent to natural and seminatural areas, agricultural areas and artificial areas





### ASSESSMENT OF CONSERVATION STATUS

Actual vs potential cover of ecosystem types (No artificial surfaces or agricultural areas)

Fagus sylvatica Apennine ecosystem Ratio of actual/potential cover: 51% "High Conservation status "



### Quercus robur, Q.petraea and Carpinus betulus Po Valley ecosystem

Potential extention: 38.500 km<sup>2</sup> Actual extention: 1.150 km<sup>2</sup> (3% of potential). "Low Conservation status")



### ASSESSMENT OF CONSERVATION STATUS

(National and Regional scale)

#### **QUALITY of SPATIAL CONTACTS**



Assessment of the quality of the overall landscape mosaic by the estimation of the proportion of spatial contacts with different categories of artificial, agricultural and natural surfaces

Class	Quality of				
adjacency to	adjacencies				
natural areas					
(% edge)					
75-100	High				
25-75	Medium				
0-25	Low				



Natural and seminatural ecosystems
Agricultural systems
Artificial surfaces



### MAP OF THE STATE OF CONSERVATION STATUS OF ECOSYSTEMS



	Ratio between actual and potential cov				
	of mature ecosystems				
Quality of	<10%	>10% and	>25%		
adjacencies		<25%			
High	Low	Medium	High		
Medium	Low	Medium	High		
Low	Low	Low	Medium		

#### High conservation status for 19 ecosystems

(12 % of national extent)

Medium conservation status for 18 ecosystems (14% of national extent)

Low conservation status for 36 ecosystems (14%), including:

Forest ecosystems with different physiognomies of the Po valley

**Ecosystems of coastal** and sub-coastal areas, major islands and North-Adriatic sector

**Hygrophilous ecosystems** in all biogeographic sectors with different structure and physiognomy

**Forest ecosystems** with prevalence of deciduous oaks in the plains and on the hill (Alps, Pre-Alps, peninsula)



FROM THE NATIONAL TO THE REGIONAL LEVEL

30.85

Ecosystem : Mediterranean and subMediterranean forests of the Peninsula

with *Quercus ilex* and/or *Q. suber* (and *Q. calliprinos* in Salento)



### **ECOSYSTEM ACCOUNTING AREAS**

### **TERRESTIAL ECOREGIONS**

ECOREGIONAL DIVISIONS OF ITALY Divisions derive from combining macroclimatic zones and biogeographic regions, which results in major zonal formations with respective complexes of dominant species



ECOREGIONAL SECTIONS OF ITALY Sections are delineated within provinces according to litho-structural regions and morpho-tectonic sectors biogeographic sectors and prevalent bioclimatic types which is reflected in characteristic combinations of potential vegetation types and floristic chorological types



ECOREGIONAL PROVINCES OF ITALY Provinces are delineated within divisions according to bioclimates, orographic systems and biogeographic provinces, which is reflected in prevailing potential vegetation physiognomies with characteristic and differential dominant species



ECOREGIONAL SUBSECTIONS OF ITALY Subsection are delineated within sections ac-cording to lithological and morphological systems and ranges in key variables of bioclimatic types, which is reflected in characteristic vegetation series and endemic and/or exclusive plant taxa





https://www.researchgate.net/publication/337275982 Terrestr ial Ecoregions of Italy explanatory notes

https://www.researchgate.net/publication/337276053 Map of the Terrestrial Ecoregions of Italy 1 1 000 000



Classification of Municipalities based on **Italian Ecoregions** (Italian National Institute of Statistics (ISTAT)

Istituto Nazionale di Statistica



https://www.istat.it/it/archivio/224780.

# THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS (National and Ecoregional scale)

#### National average of artificial surface: 7,7%



National soil consumption map (year 2018), with resolution 10 m, elaborated by ISPRA

#### THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS (National and Ecoregional scale)



### National average of artificial surface: 7,7%



Psammophilous ecosystems	Italia	<b>1</b> A	1B	1C	<b>2</b> B	2C
F1-Psammophilous ecosystems of the northern Adriatic coasts with Cakile						
maritima, Elymus farctus, Ammophila arenaria, Crucianella maritima	15%		14,7			
F2-Psammophilous ecosystems of the peninsula with Cakile maritima,						
Elymus farctus, Ammophila arenaria, Crucianella maritima	17%			20,5	18,5	12,8
F3-Psammophilous ecosystems of the coast and major islands with Cakile						
maritima, Elymus farctus, Ammophila arenaria, Crucianella maritima,	9%				9%	

### THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS (National Parks)



### THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS (National Parks)

% Built-up	legend
0	Absent
0.01 - 0.5	Almost absent
0.51 - 1	Very very low
1.01 - 1.5	Very low
1.51 - 2	Low
> 2	Medium-low to high



### THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS

Cilento NP : Built –up 3.8% - Cilento NP: Built –up in the natural Ecosystems , 1.4%

	Italy	1A	1B	1C	2B	2C
C18 - Peninsular, plain and submonantane dominated by Ostrya						
carpinifolia, Fraxinus ornus, Carpinus betulus, C. orientalis, Ulmus minor,						
ecc.	2%	3,6		1,6	1,4	1,1



#### CONCLUSIONS

Italy is one of the most advanced countries to adopt the European Green Deal and the new biodiversity strategy oriented to have more protected areas and more green infrastructure

Some ongoing projects:

"The Red List of the Ecosystems of Italy" (conclusion by 2020)









According to the global standard for risk assessment for all ecosystems in the world by 2025. In Italy by2020



"More Nature in the city and more cities in inland areas".

The first project of this ambitious program is a "National Green Urban Infrastructure" to connect all the metropolitan areas using the urban forest by planting 50 million native trees and shrubs.

Centro di Ricerca Interuniversitario Biodiversità, Servizi Ecosistemici e Sostenibilità

**IUCN** 



IUCN

SAPIENZA UNIVERSITÀ DI ROMA

CEM Red List of Ecosystems