THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

CARLO BLASI

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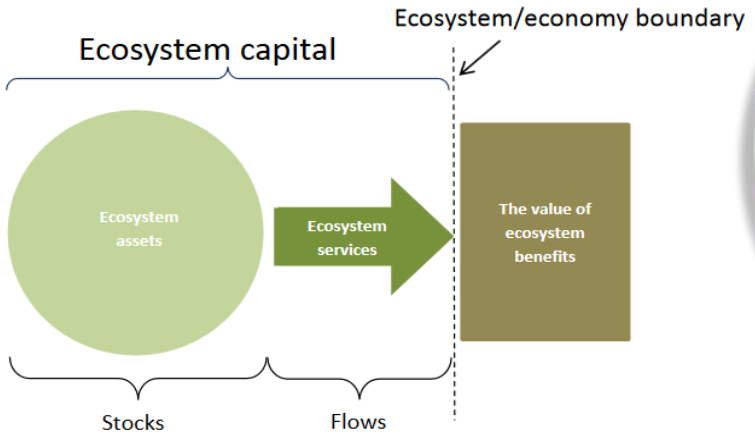
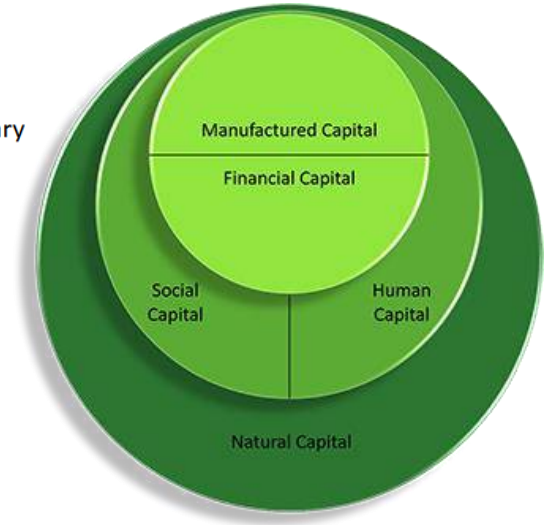
European Commission

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 CRUCIAL FOR SUSTAINABILITY



https://www.eld-initiative.org/en/what-we-do/sdg-159/

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Centro di Ricerca Interuniversitario Biodiversità, Servizi Ecosistemici e Sostenibilità
Sapienza Università di Roma

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

CARLO BLASI

ACCOUNTING/ ASSESSMENT
MAES in ITALY (MATTM, SBI, Sapienza University)
Annual Report on Land Consumption (ISPRA)
Italian Natural Capital Committee (MATTM)

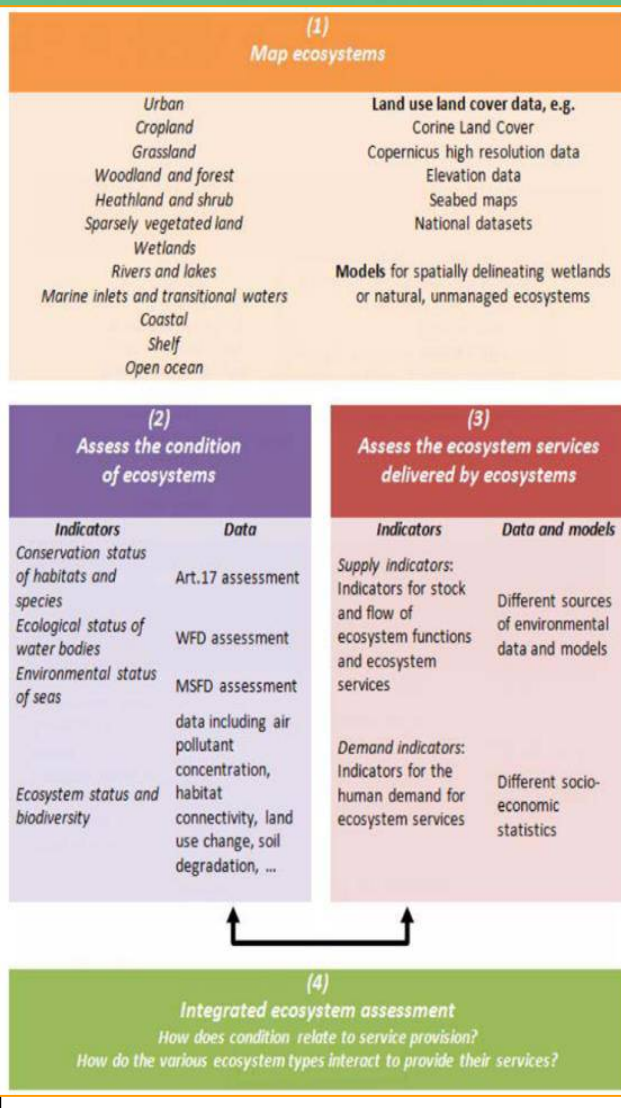
MAES
Mapping and Assessment of Ecosystems and their Services in Italy

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

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

Reports on the State of the Natural Capital in Italy

2017, 2018, 2019



THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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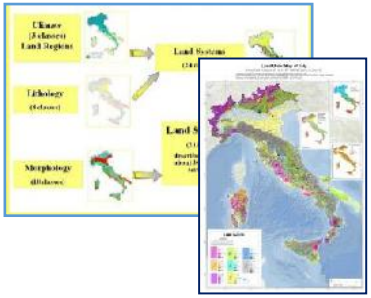
NATURAL CAPITAL ASSETS OF ITALY



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

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

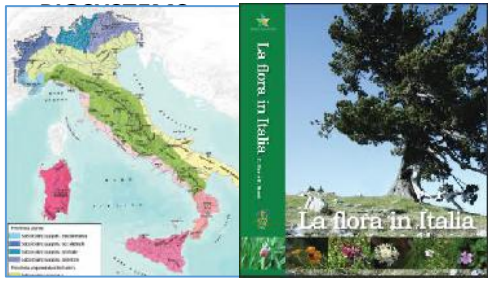
Bioclimate
State of Biodiversity in Italy, 2005

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

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

Old growth forests. Blasi et al 2010**, PLANT BIOSYSTEMS**

Habitats
Biondi E., C. 2012. **PLANT SOCIOLOGY**, 49(1), 5-37



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

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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)

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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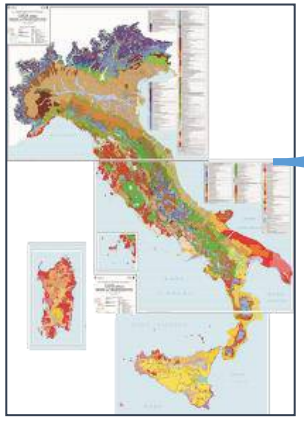
ASSESSMENT OF ECOSYSTEM CONDITION

<u>POTENTIAL NATURAL VEGETATION map</u> as a reliable baseline to assess the distance between current and potential ecosystems in terms of occurrence, coverage, composition, structure and spatial configuration **<u>(NATURAL REFERENCE CONDITIONS)</u>**

System of Environmental Economic Accounting

279 Vegetation Series of Italy (Actual NaturalVegetation and VNP)

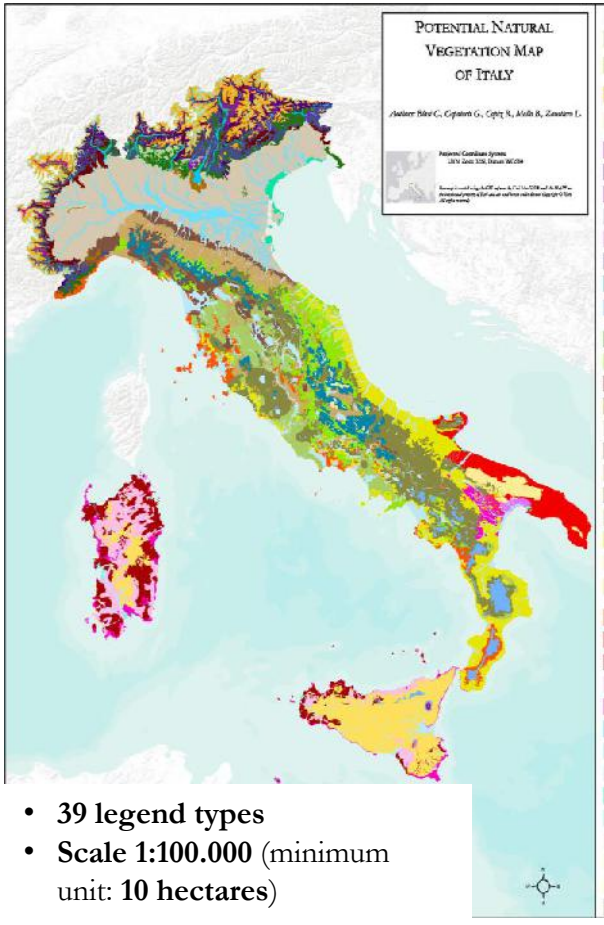


Biogeography

Bioclimate

Ecoregions

39 types of Potential Natural Vegetation



- **39 legend types**
- **Scale 1:100.000** (minimum unit: **10 hectares**)

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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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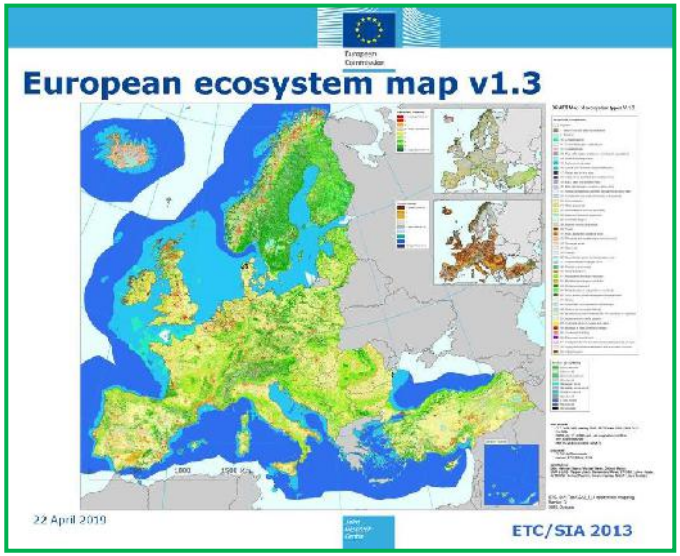
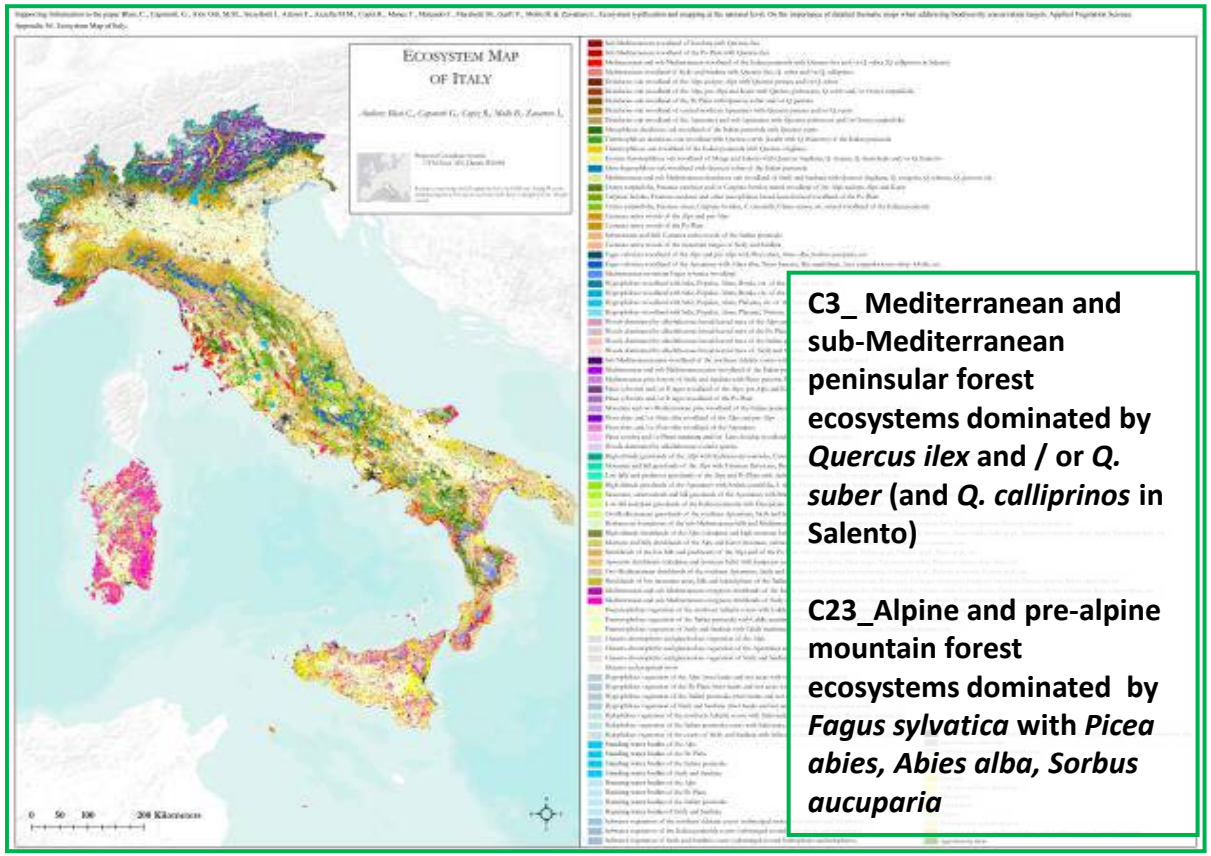
ECOSYSTEM ASSETS

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



G — Woodland, forest and other wooded land

- G1 Broadleaved deciduous woodland
- G2 Broadleaved evergreen woodland
- G3 Coniferous woodland
- G4 Mixed deciduous and coniferous woodland



C3_ Mediterranean and sub-Mediterranean peninsular forest ecosystems dominated by *Quercus ilex* and / or *Q. suber* (and *Q. calliprinos* in Salento)

C23_Alpine and pre-alpine mountain forest ecosystems dominated by *Fagus sylvatica* with *Picea abies, Abies alba, Sorbus aucuparia*

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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 ·

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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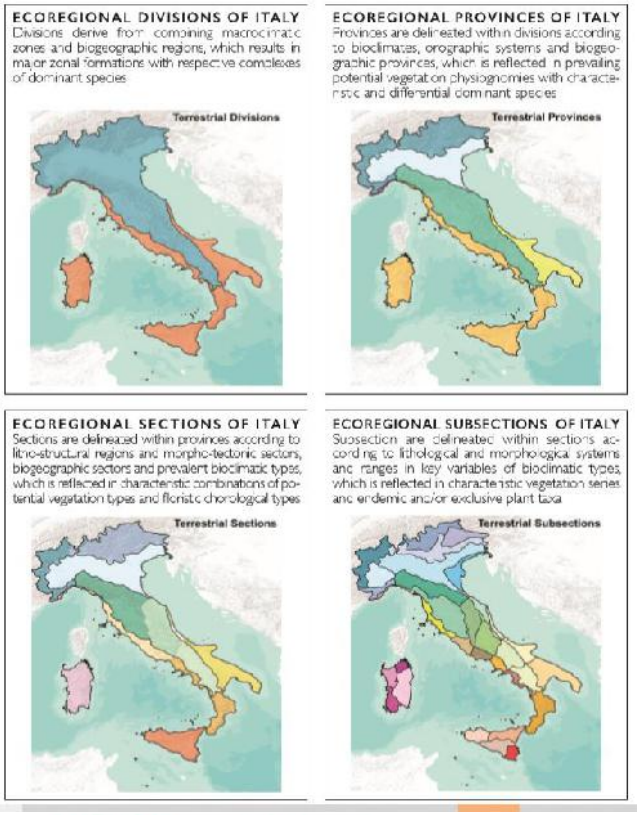
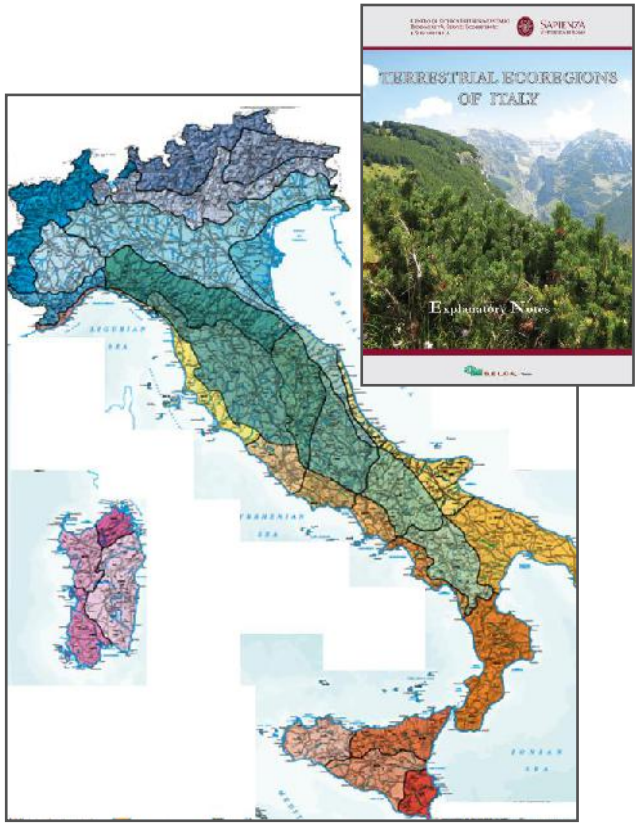
ECOSYSTEM ACCOUNTING AREAS

TERRESTIAL ECOREGIONS





Istat
Istituto Nazionale di Statistica

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

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https://www.researchgate.net/publication/337275982_Terrestrial_Ecoregions_of_Italy_explanatory_notes

https://www.researchgate.net/publication/337276053_Map_of_the_Terrestrial_Ecoregions_of_Italy_1_1_000_000

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

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

CARLO BLASI

WHEN ARE ECOSYSTEMS IN «GOOD» CONDITION?

"good condition - in relation to an ecosystem - means that the ecosystem is in good physical, chemical and biological condition or of a good **physical, chemical and biological quality** with self-reproduction or self-restoration capability, in which species **composition, ecosystem structure and ecological functions** are **not impaired**"

22.6.2020 | EN | Official Journal of the European Union | L 198/13

REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 18 June 2020

on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088

(Text with EEA relevance)

European Commission

JRC SCIENCE FOR POLICY REPORT

Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment

Joachim Maes, Anne Teller, Markus Erhard, Sophie Condé, Sara Vallecillo, José I. Barredo, Marta Luisa Paracchini, Dania Abdul Malak, Marco Trombetti, Olga Vigiak, Grazia Zulian, Anna M. Addamo, Bruna Grizzetti, Francesca Somma, Andrea Hagyo, Peter Vogt, Chiara Polce, Arwyn Jones, Ana I. Marin, Eva Ivits, Achille Mauri, Carlo Rega, Bálint Czúcz, Guido Ceccherini, Enrico Pisoni, Andrej Ceglar, Pierluca De Palma, Iacopo Cerrani, Michele Meroni, Giovanni Caudullo, Emanuele Lugato, Jürgen V. Vogt, Jonathan Spinoni, Carmelo Cammalleri, Annemarie Bastrup-Birk, Jesús San Miguel, Sonsoles San Román, Peter Kristensen, Trine Christiansen, Nihar Zal, Ad de Hoo, Ana Cristina Cardoso, Alberto Pistocchi, Irene Del Barrio Alvarellos, Konstantinos Tsiamis, Eugenio Gervasini, Ivan Deriu, Alessandra La Notte, Raul Abad Viñas, Matteo Vizzarri, Andrea Camia, Nicolas Robert, Georgia Kakoulaki, Eduardo Garcia Bendito, Panos Panagos, Cristiano Ballabio, Simone Scarpa, Luca Montanarella, Alberto Orgiazzi, Liliana Fernandez Ugalde, Fernando Santos-Martin

Joint Research Centre, European Environment Agency, DG Environment, European Topic Centre on Biological Diversity, European Topic Centre on Urban, Land and Soil Systems

2020

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September 2020

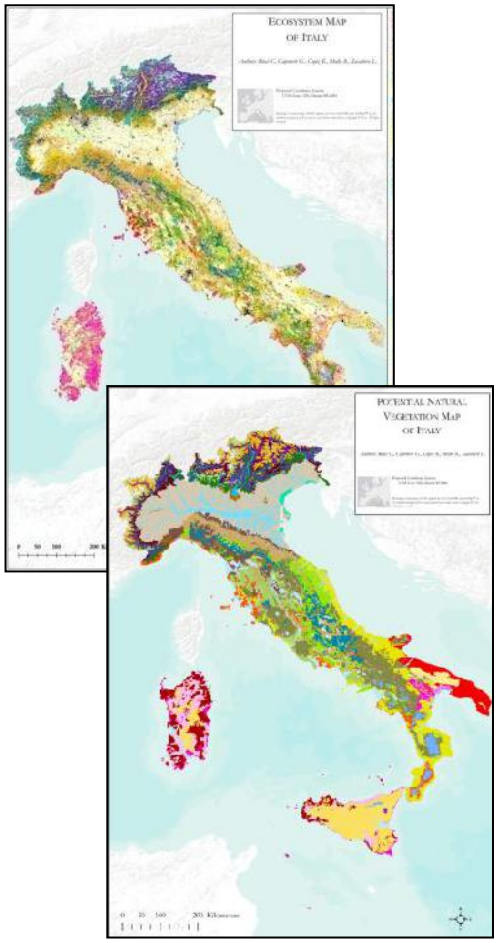
THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

CARLO BLASI

ASSESSMENT OF CONSERVATION STATUS

(National,Regional and Ecoregional scale)

PARAMETERS	METHODOLOGY
Actual versus potential cover of ecosystems	Ratio between cover of mature seral /substitute ecosystem types 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



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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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ASSESSMENT OF CONSERVATION STATUS

Actual *vs* potential cover of ecosystem types

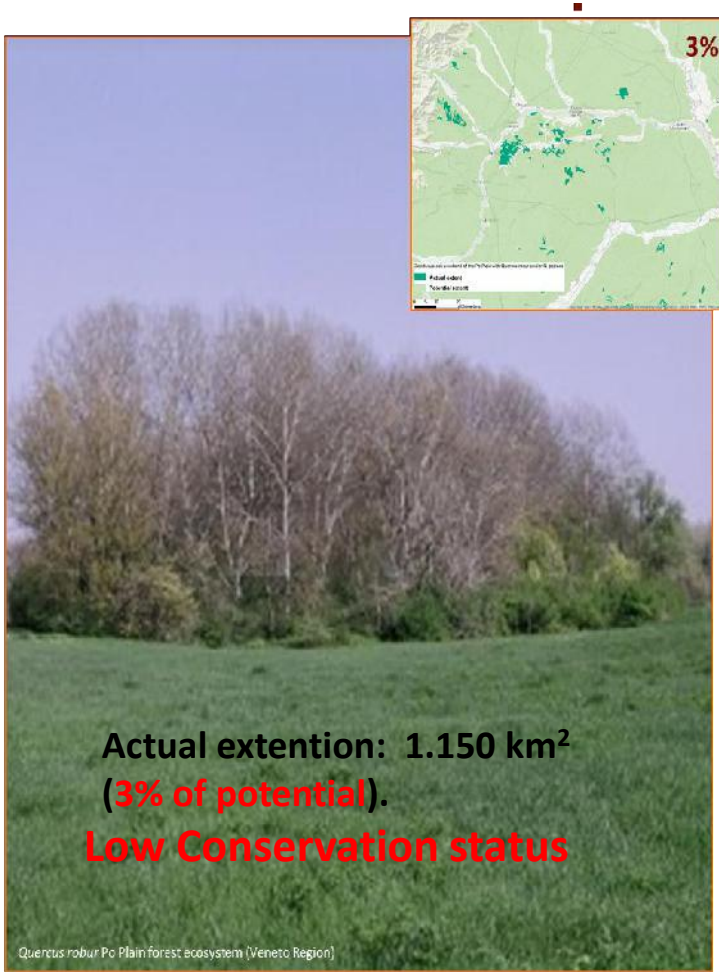
***Fagus sylvatica* Apennine ecosystem**

Ratio of actual/potential cover: 51%

High Conservation status

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

Potential extention: 38.500 km^2



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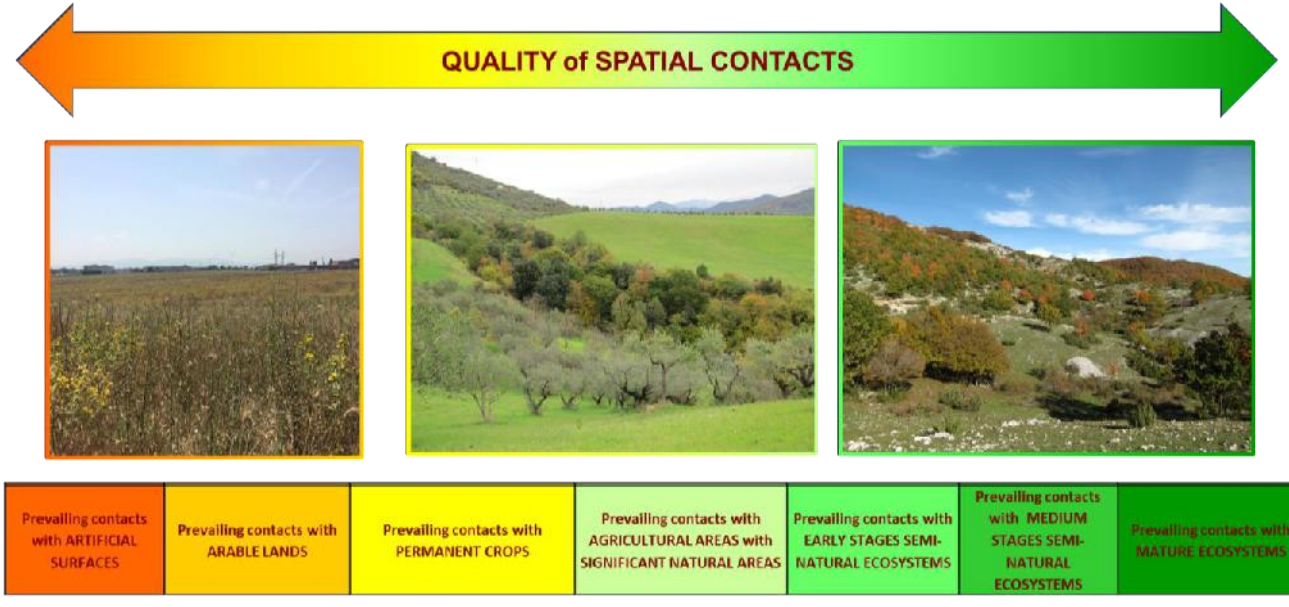
ASSESSMENT OF CONSERVATION STATUS

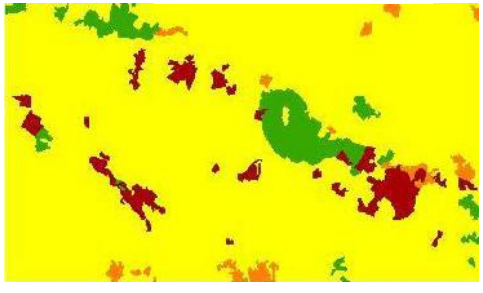
Quality of adjacencies among ecosystems or land cover types

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



Low quality



High quality

- Target ecosystem patch
- Natural and seminatural ecosystems
- Agricultural systems
- Artificial surfaces

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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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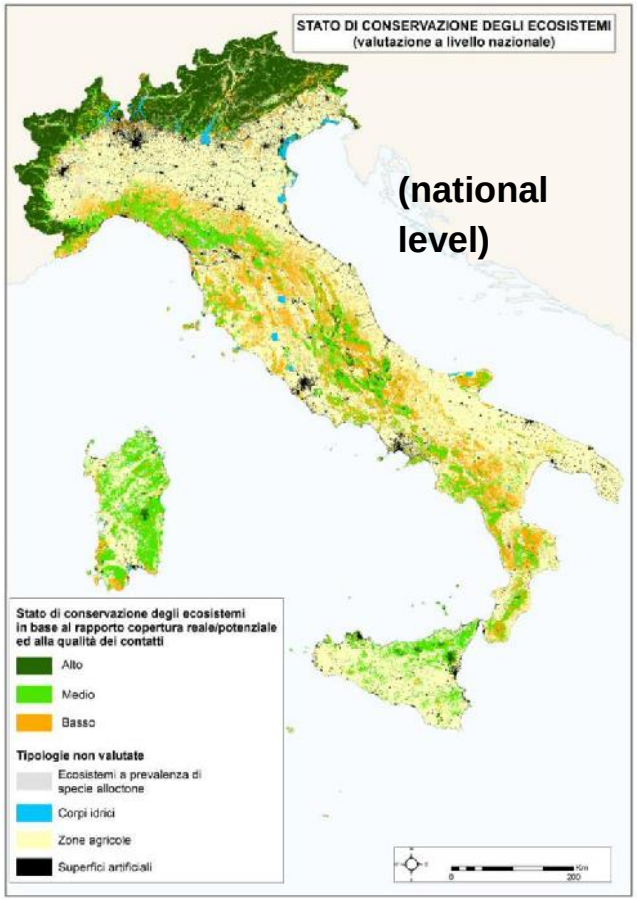

MAP OF THE STATE OF CONSERVATION STATUS OF ECOSYSTEMS

	Ratio between actual and potential cover of mature ecosystems		
Quality of adjacencies	**<10%**	**>10% and <25%**	**>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 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)

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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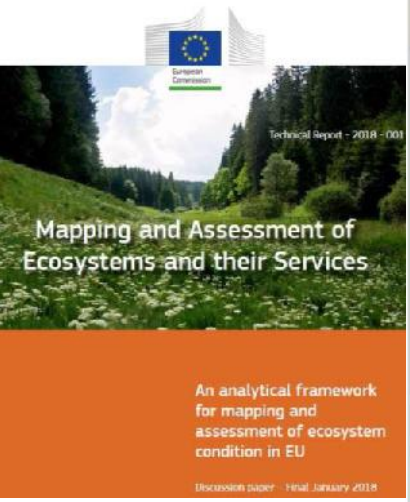
FROM THE NATIONAL TO THE REGIONAL LEVEL



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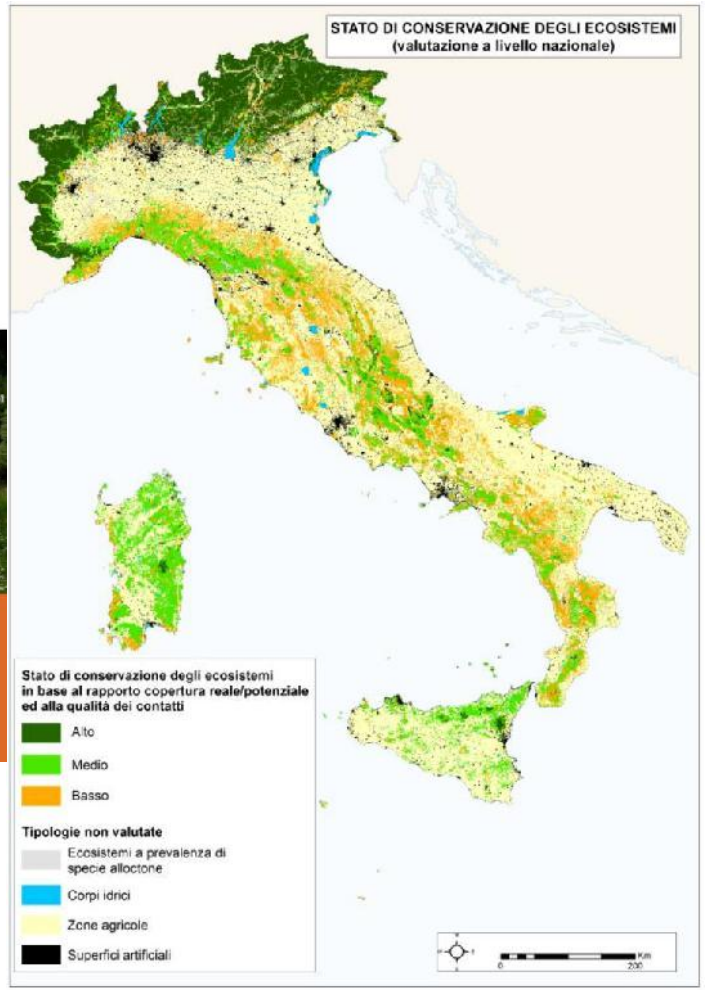

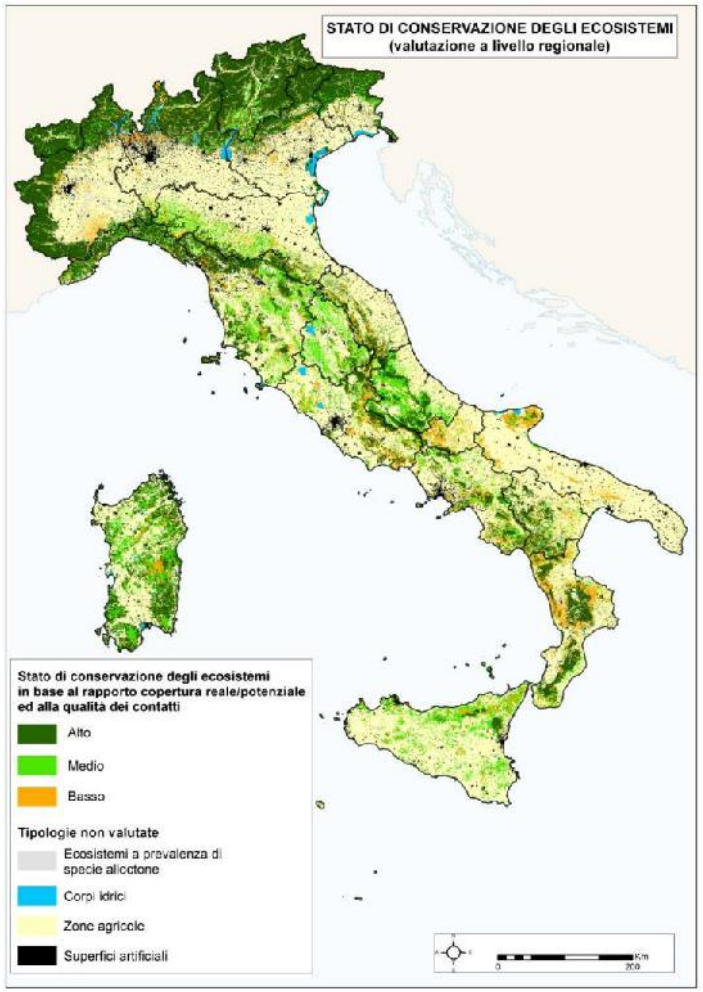

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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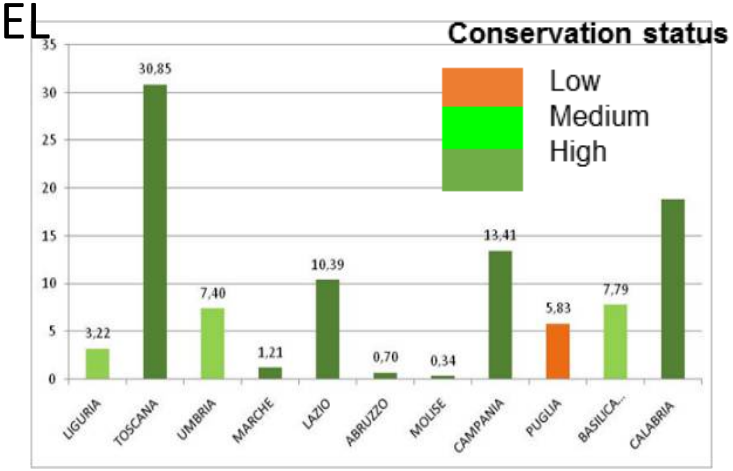
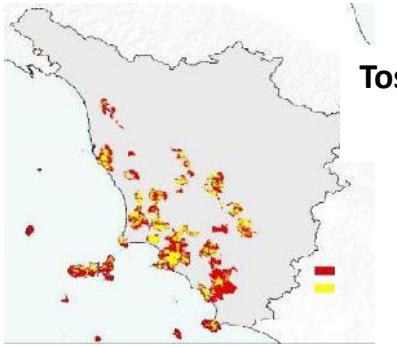
FROM THE NATIONAL TO THE REGIONAL LEVEL

EXAMPLE: Mediterranean and subMediterranean forests of the Peninsula with *Quercus ilex* and/or *Q. suber* (and *Q. calliprinos* in Salento) **Medium conservation status in Italy**





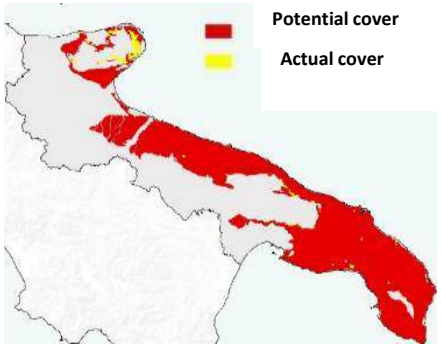
Toscana

Regional level
Actual/potential cover:
37.8% (high)

	% edge adjacent with :			Quality of adjacencies
	natural and seminatural ecosystems	agricultural areas	artificial surfaces	
Toscana	64	31	5	**High**
Puglia	35	63	2	**Medium Low**

Puglia

Regional level
Actual/potential cover:
1.12 % (low)



The methodology has pointed out the capability of two indicators:

- actual vegetation compared with its potential cover,
- quality of adjacencies for ecosystem type.

For more detailed analysis it is need to introduce the map of vegetation series with knowledge about flora and plant communities (plantsociology)

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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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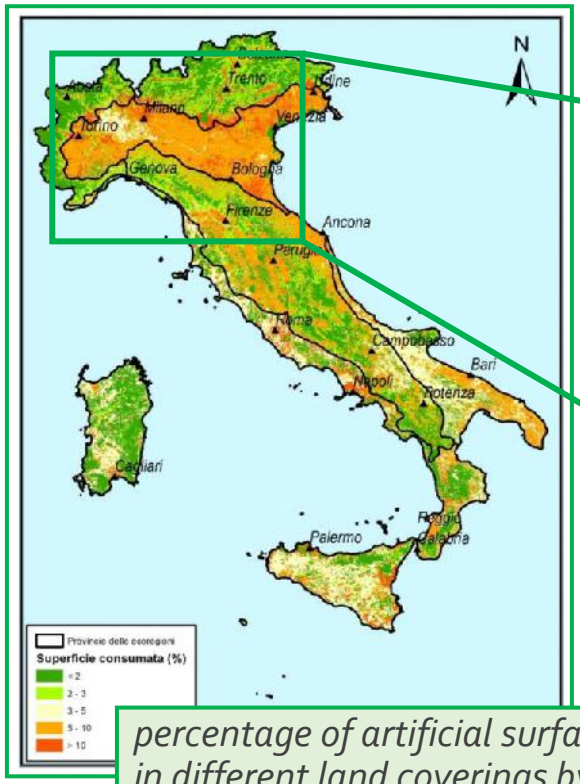
THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS (National and Ecoregional scale)



*percentage of artificial surface in ecosystems and in different land coverings by **ecoregion***

Alpine Ecoregion 5,0%

Po Ecoregion 14,5%

Apennine Ecoregion 5,4%

Thyrrenian Ecoregion 7,2%

Adriatic Ecoregion 7,8%

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

ISPRA
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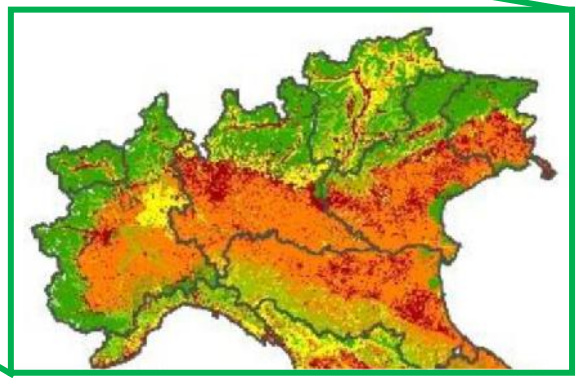

*percentage of artificial surface in ecosystems and in different land coverings **by administrative region***

Lombardia	12,9
Veneto	12,1
Campania	10,7
Emilia-Romagna	9,7
Friuli Venezia Giulia	8,8
Lazio	8,2
Puglia	8,2
Liguria	8,1
Sardegna	7,1
Sicilia	7,1
Marche	7,1
Toscana	7,1
Piemonte	6,9
Umbria	5,6
Calabria	5,1
Abruzzo	5,0
P.A. Bolzano	5,0
P.A. Trento	4,2
Molise	4,0
Basilicata	3,3
Valle D'Aosta	2,9

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

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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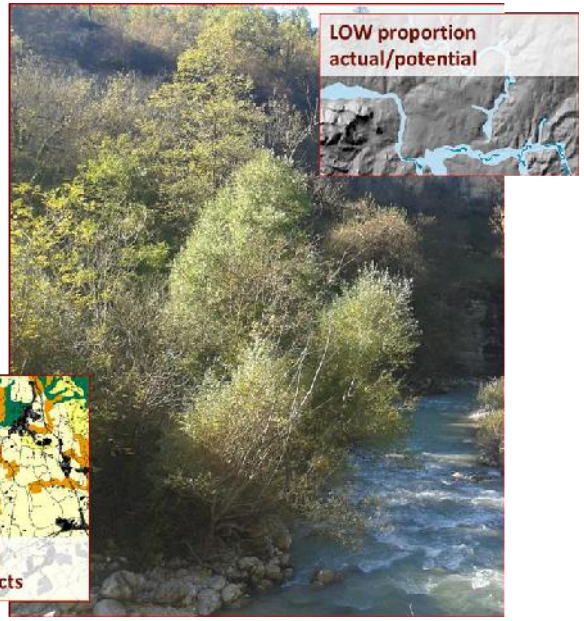
THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS
(National and Ecoregional scale)

Hygrophilous woodland ecosystems with *Salix, Populus, Alnus* of the Apennines **C28**

Built Up: **2.8%**



ECOYSTEMS	Italia	1A	1B	1C	2B	2C
C16-Alpine, prealpine and Karst area forest ecosystems dominated by Ostrya carpinifolia, Fraxinus excelsior e/o Carpinus betulus	3%	2,7	**5,6**	0,5	2,6	
C17-Po plain forest dominated by Carpinus betulus, Fraxinus excelsior and other mesophilic broad-leaf	4%	**5,0**	2,9			
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,
C26- Alpine and prealpine hygrophilous forest ecosystems dominated by Salix, Populus, Alnus, Betula, ecc.	5%	**4,9**	1,6			
C27-Alpine and prealpine hygrophilous forest ecosystems of the Po plain dominated by Salix, Populus, Alnus, ecc.	3%	3,2	3,4			
C28-Peninsular forest hygrophilous dominated by Salix, Populus, Alnus, Platanus, ecc.	3%		**4,5**	2,8	2,1	2,2

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

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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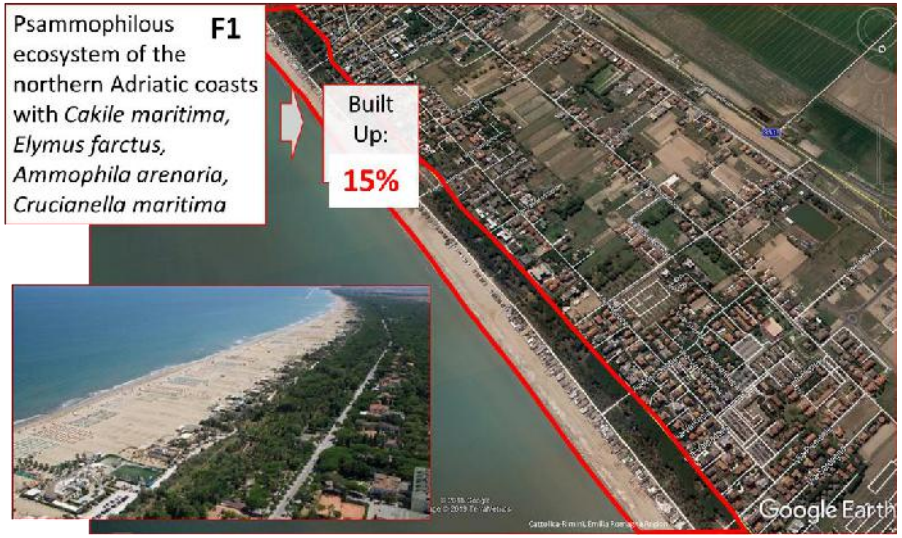
THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS (National and Ecoregional scale)

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



Psammophilous ecosystems	Italia	1A	1B	1C	2B	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%	

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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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

Third Report on the State of Natural Capital

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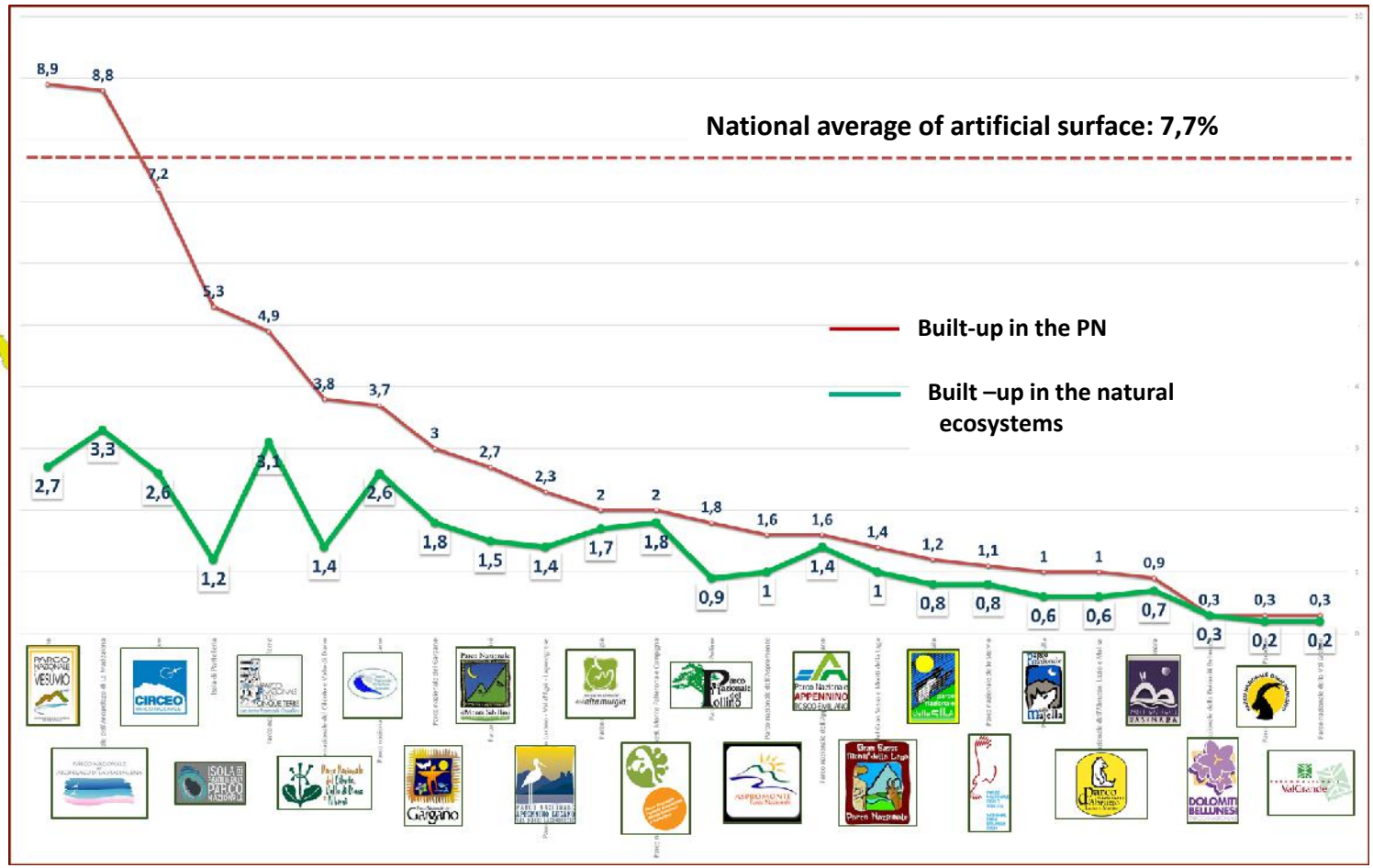

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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

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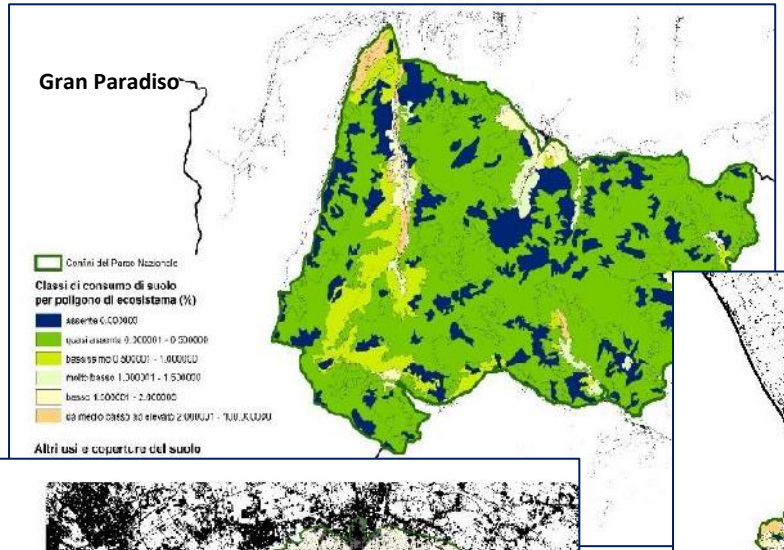
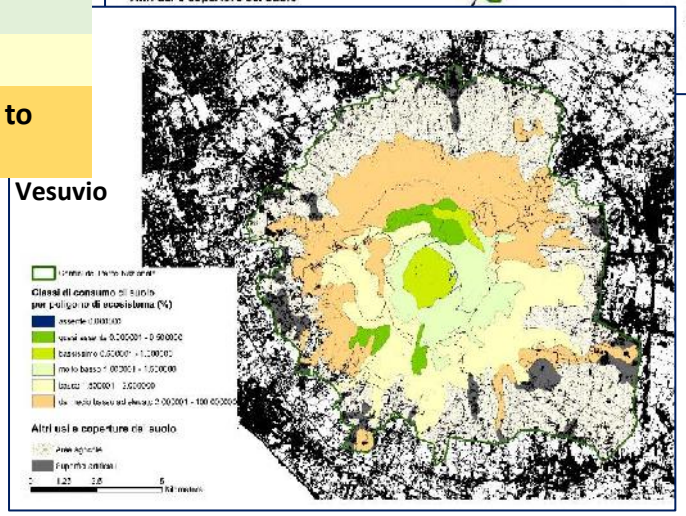
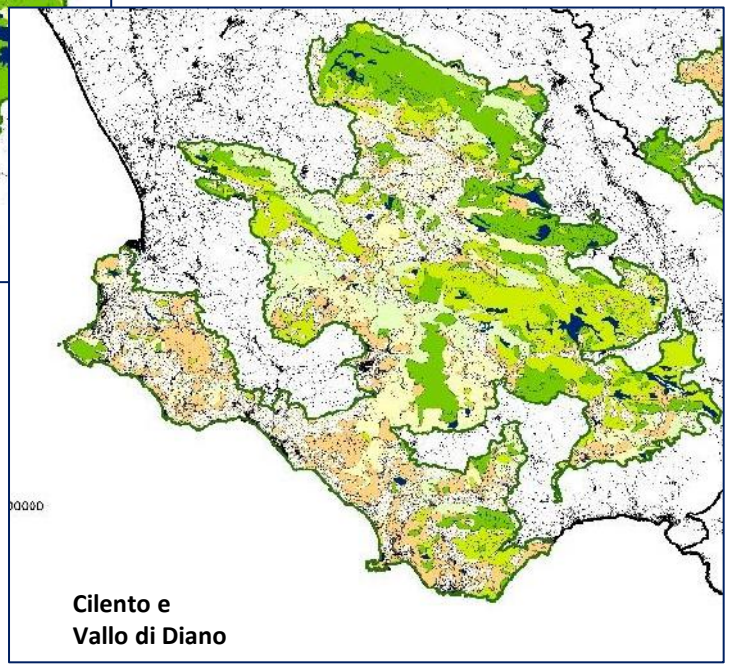
% Built-up	legend
0	Absent
0.01 - 0.5	Almost absent
0.51 - 1	Very very low
1.01 - 1.5	Very low
1.51 - 2	Low
> 2	Medium-low to high







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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

CARLO BLASI

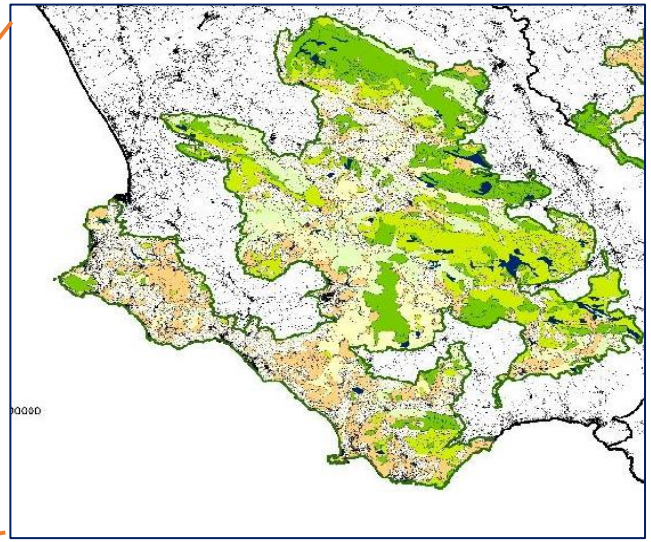
THE IMPACT OF BUILT-UP SURFACES ON NATURAL ECOSYSTEMS

Cilento NP : Built –up 3.8%

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

ECOSYSTEM	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

Cilento National Parks **(C18) 1.1%**
Num tot polygons 82
0 built-up in **6** pol.
> 0,5 % 21 pol.
Between 0,5 and 1% 13 pol.



NO built-up in the rocky habitat (F5).
No built-up occurs in many polygons relating to 16 different types of ecosystems (mostly D5, E6, C18 e E7).

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THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

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MAIA -ESMERALDA-

Working Group MAES, 16 September 2020

ESMERALDA / MAIA MAES -INCA Barometer (Burkhard et al. 2020)

MAIA is a Horizon 2020 project aimed at promoting and developing the **System of Environmental Economic Accounting** in the EU and associated countries (2018-2022).

PER ACCOUNTS: WHO DID WHAT?

Extent Accounts

Scale	Ecosystems	Country	
National		Bulgaria	S. Tsonev., I. Rangelov, L. Yaneva, Pilot test of ecosystem extent and condition account in physical unit. (2019)
National		Germany	K. Grunewald et al., Germany's Ecosystem Services – State of the Indicator Development for a Nationwide Assessment and Monitoring. One Ecosystem 3: e14931 (2017).
National		Italy	report - papers
National		Italy	Blasi C. et al 2017 - ecosystem mapping for the implementation of the European Biodiversity Strategy at the national level: The case of Italy - 10.1016/j.envsci.2017.09.002
Regional		Italy	Corona et al. 2012 - 10.3832/ifor0625-005 (National, regional - forest)

Condition Accounts

Scale	Ecosystems	Country	
National	Forest and water bodies	Italy	Second Report on the State of Natural Capital in Italy, The Natural Capital Committee.
National		Italy	Blasi C. et al 2017 - ecosystem mapping for the implementation of the European Biodiversity Strategy at the national level: The case of Italy - 10.1016/j.envsci.2017.09.002
National		Netherlands	Leeuwen et al 2017; Lof et al 2019; Lof et al. 2017

Ecosystem Services Accounts

Scale	Ecosystems	Biophysic ES	Economic ES	Country	
National - local		yes	yes	Austria	Klug, Jenewein 2010 - 10.1016/j.ecocom.2009.12.005 (local, cropland and rivers and lakes - not noted as SEEA)
National		yes		Denmark	Vind, I, 2018. Developing Ecosystem Services Accounts from Land Accounts. Final report Statistics Denmark (2018)
National		yes		Italy	Second Report on the State of Natural Capital in Italy, The Natural Capital Committee. https://

THE CONSERVATION STATUS OF ITALIAN ECOSYSTEMS

CARLO BLASI

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 by 2020

IUCN CEM IUCN Red List of Ecosystems

IUCN

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

The first project of this ambitious program is a "National Green Urban Infrastructure" promoting by the Ministry of the Environment to connect all the metropolitan areas using *resilient urban forest for the well being of citizen.*

CENTRO DI RICERCA INTERUNIVERSITARIO BIODIVERSITÀ, SERVIZI ECOSISTEMICI E SOSTENIBILITÀ

SAPIENZA UNIVERSITÀ DI ROMA