Impatto dello sprawl urbano sulle foreste

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"We're waiting for the city to come to us..."

- urban sprawl: un fenomeno percettibile e apparentemente inarrestabile...

Più lenta, ma comunque consistente, è l'espansione del bosco in aree abbandonate dall'agricoltura...
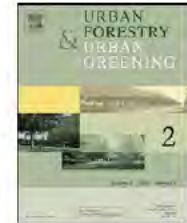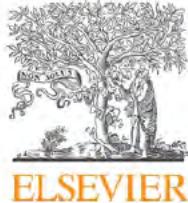
Natural forest expansion into suburban countryside: Gained ground for a green infrastructure?

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Urban sprawl

… rural lands
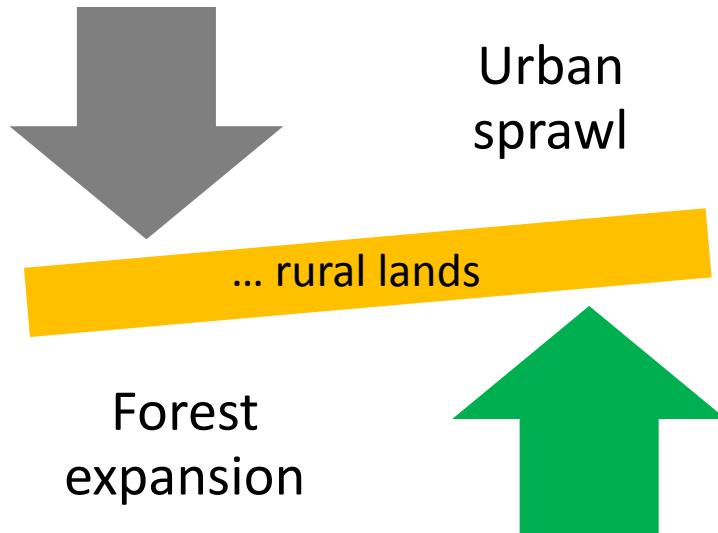
Forest expansion

- land-use change drivers leading to forest expansion in the examined period (1974–2008)
- Morphological Spatial Pattern Analysis (MSPA) → trends in the landscape pattern of forest cover
- nature protection measures or other environmental factors do favour forest expansion in suburban rural lands?

Area di studio

Digital Elevation Model

Tirreno Sea

0 5 10 20 30 40
Kilometers
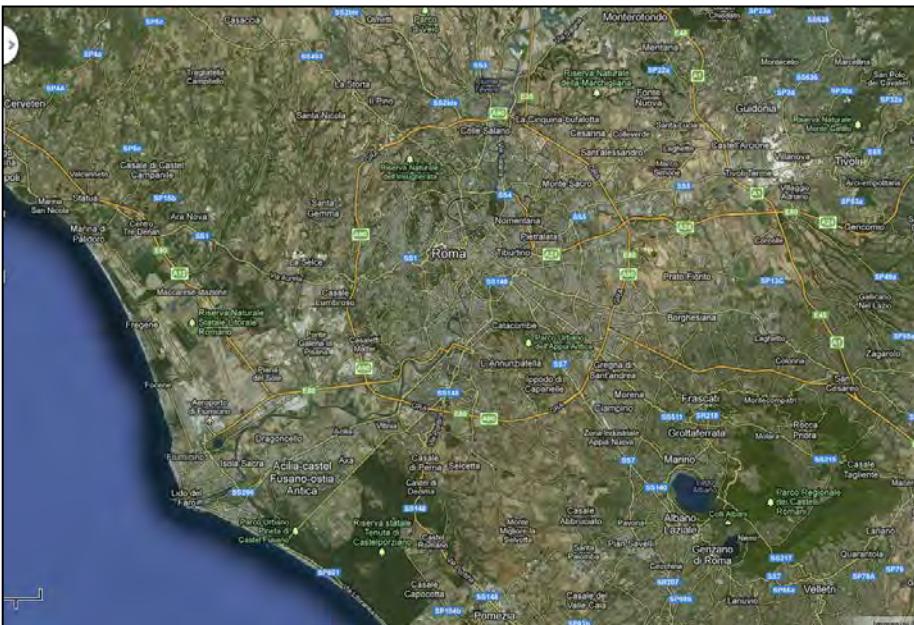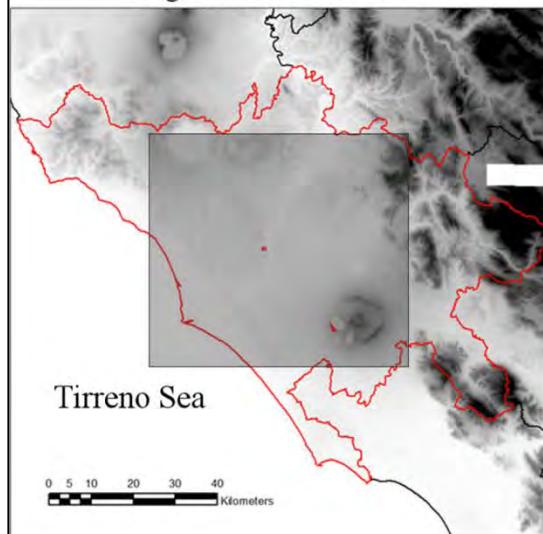
Legend

☐ Boundaries of Rome district
☐ Urban district
☐ Suburban district

Digital Elevation Model

2462 m

0
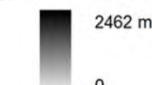
Urban and suburban municipalities

Tirreno Sea

0 10 20 40 60
Kilometers
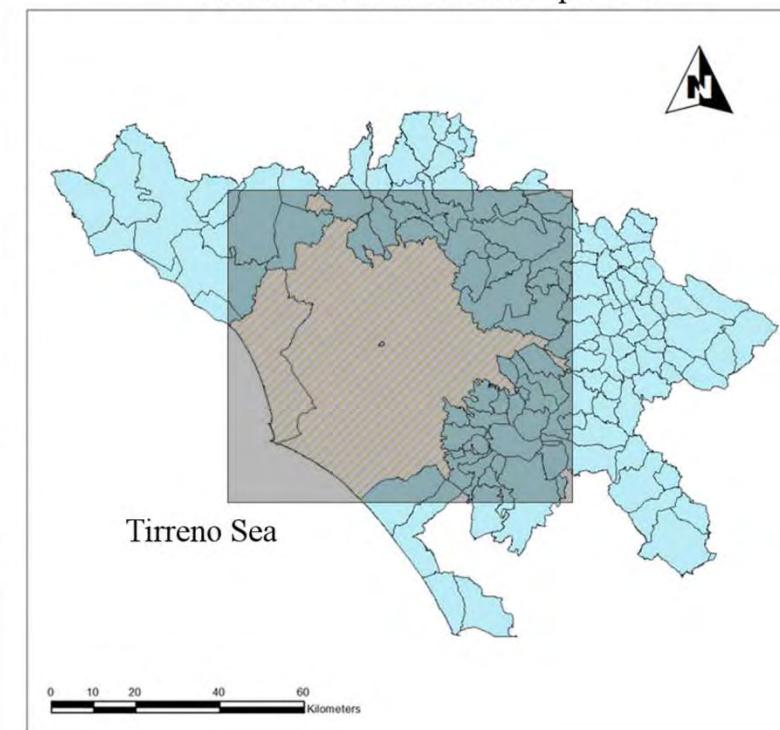
Forest expansion, evidente in 35 anni!

1974

2008
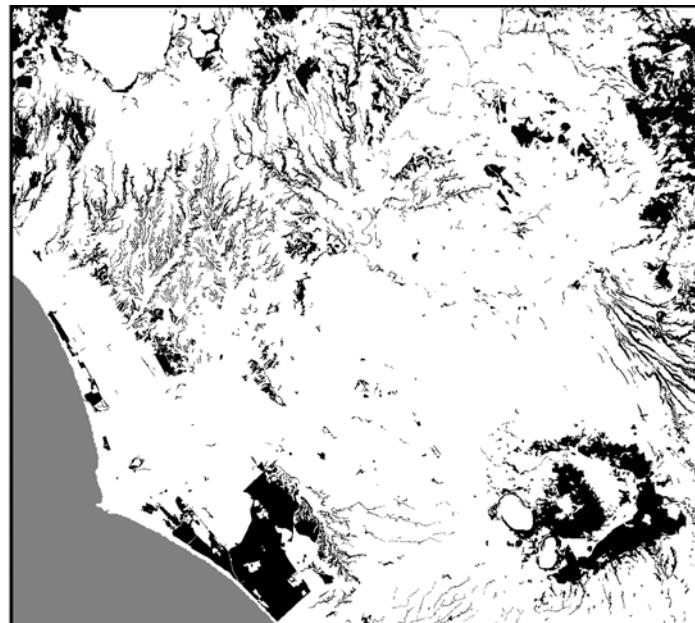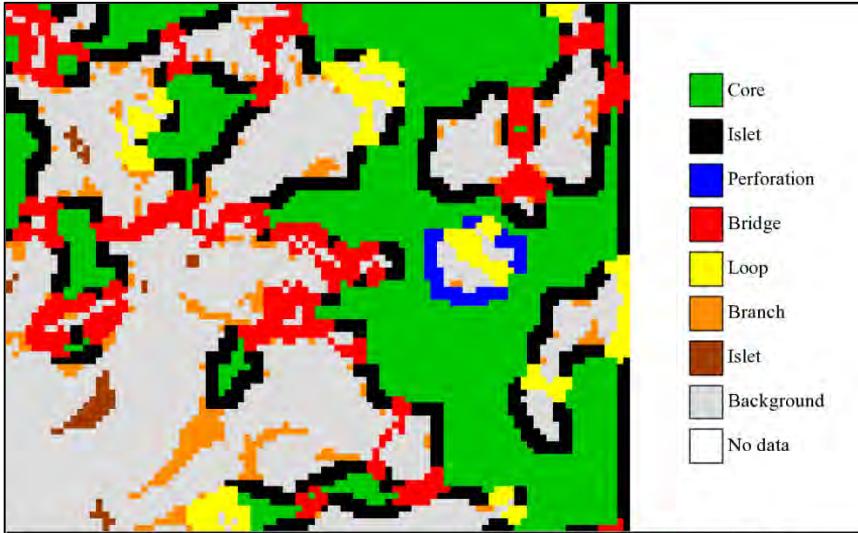
| | | Core |
		Islet
		Perforation
		Bridge
		Loop
		Branch
		Islet
		Background
		No data

MSPA class	Classification rule	Ecological implications for habitat provision/species dispersal
Core	Forest pixels whose distance to non-forested areas > edge width	Core habitat areas, potentially suitable for specialist interior species
Edge	Set of forest pixels whose distance to the patch edge < edge width (outer boundary of a core area)	Habitat provision for edge dependant and/or invasive species
Perforation	Similar to edge but corresponding to the inner boundary of a core area	Introduces edge effects deeper into inner core forest
Bridge	Sets of contiguous forest pixels that connect at least two different core areas	Makes reachable a higher amount of habitat for those organisms that dwell in any of the two linked cores and that can effectively disperse through these corridors
Loop	Similar to bridges but connecting different parts of the same core area	Facilitates organism dispersal within the same core area
Branch	Sets of contiguous forest pixels that emanate from a forest area and that do not reach any other forest area at the other end	-
Islet	Isolated forest patches that are too small to contain core pixels	Limited number of species and dimension of populations supported, influencing gene flow and short- to long-term population fitness and evolutionary potential

Morphological Spatial Pattern Analysis (MSPA)

Different MSPA structures can be used to identify elements that make up a green infrastructure and related underlying functional processes

GUIDOS software
(http://forest.jrc.ec.europa.eu/download/software/guidos)

Key findings



Urban sprawl + 10%

rural lands

Forest expansion (+4%)
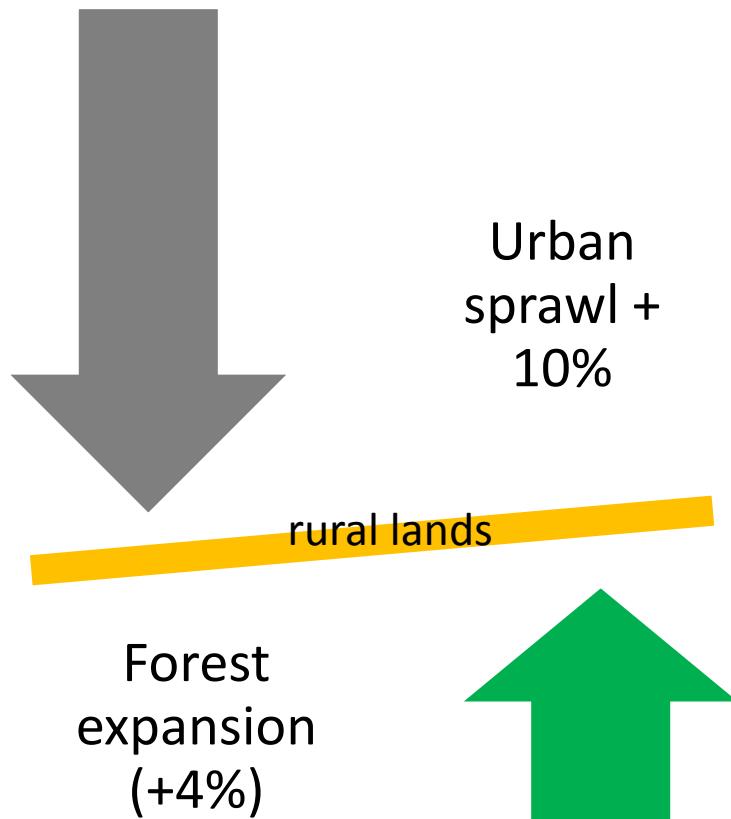
1. forest land uptake exceeds 4% of total study area, but clearly has a slower pace than the urban areas growth (10%)

2. forest gains → forest sprawl in the form of islets, that leap-frog over marginal rural lands along the stream network after farmland abandonment
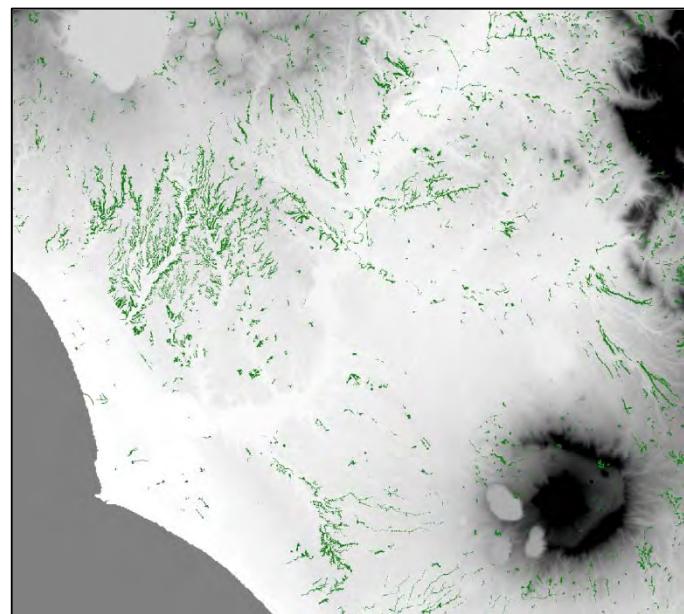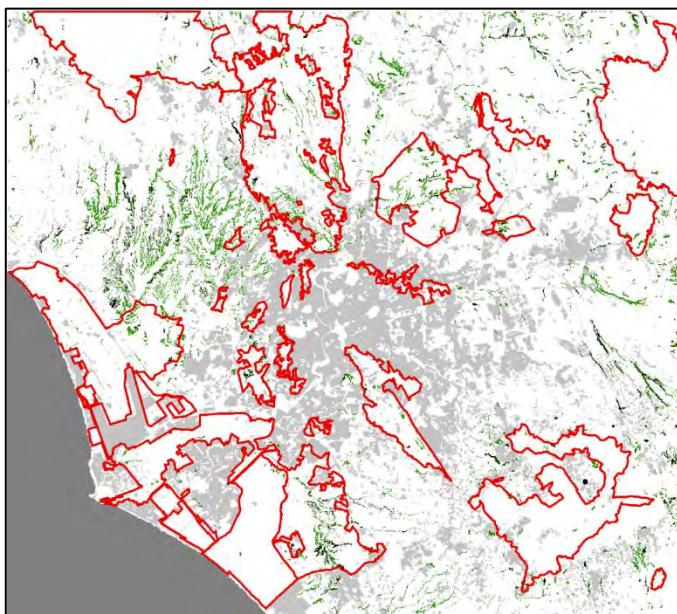
3. the network of protected areas nearby Rome has played a **key role for the conservation/expansion of core areas**
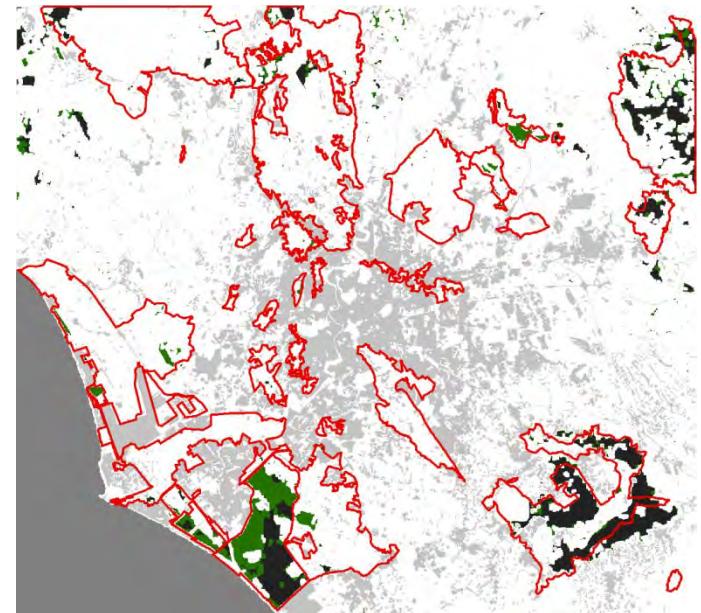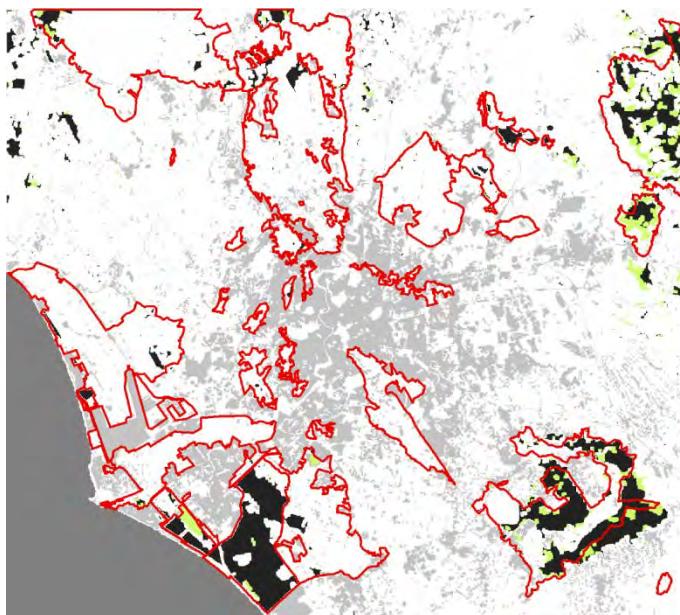

however, local loss of 1974 core areas stocks in a few protected areas seems to indicate **need of further law enforcement**

Per il futuro...

Può la Rete Ecologica del Comune essere uno strumento efficace per la conservazione/espansione delle superfici forestali?
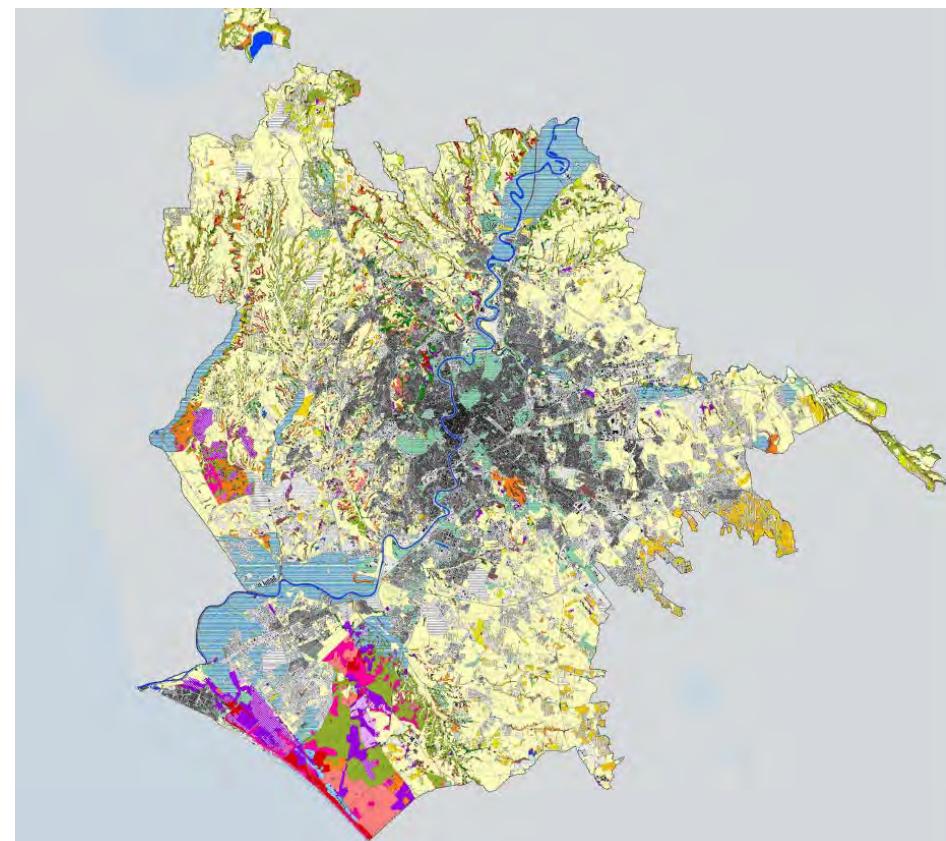
Reticolo idrografico+islet+aree agricole limitrofe= Componenti primarie

Azioni previste: ***tutela e salvaguardia degli ecosistemi:***

Esempio misure
 - tutelare e ampliare le aree di vegetazione naturale
- manutenzione o rinaturalizzazione dei corsi d'acqua e del relativo contesto