

# Ancient Deforestation

The environmental impact  
in ancient Greece and Rome



# Why ancient Greece and Rome?

Two particularly instructive examples

- Both beset by deforestation
- Existence of written sources supplementing archeological evidence



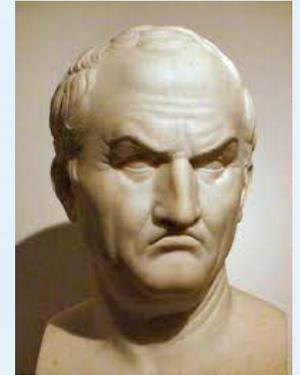
*Macchia* in Corsica (roman province during the republican and imperial periods)



A scene of total deforestation, viewed through the columns of the Temple of Apollo and Acrocorinthos at Corinth



Virgil (70 - 19 b.C.)



Cicero (106 - 43 b.C.)



# Causes of deforestation

Use of wood and its carbonized products as fuel

- Heating
- Ceramics
- Melting
- Roman baths

Use of wood as building material

- Housing
- Temples
- Theatres
- Basilicas

Use of wood for the creation of utensils

- Weapons
- Musical instruments

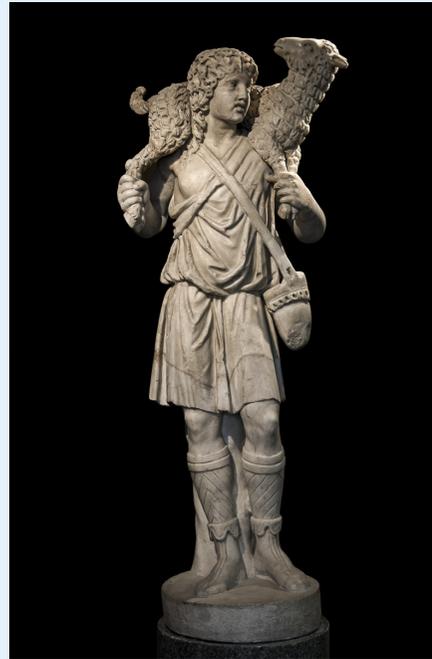
Use of wood for shipbuilding

Clearance of land for farming and grazing

Deforestation for urbanization purposes

*“My hearth is piled with branches of pitch-pine  
Free burns my faithful fire, and every hour  
My walls are black with smoke”*

Virgil



The good shepherd - 3<sup>rd</sup>/4<sup>th</sup> century



Reconstruction of a roman anchor



# Extension and environmental consequences of deforestation

## Extension

Classical writers left the impression that deforestation was severe

*"In those days, the Ciminian forest was more impassable and appalling than were lately the wooded defiles of Germany."*  
Livy (59 b.C. - 17 a.D.)

Exploitation begun in areas of greater demand

Different rainfall rates implied that

- Some areas had less forest to start with
- These same areas recovered more slowly from heavy use

## Consequences

Significance of the Mediterranean ecosystem for stability

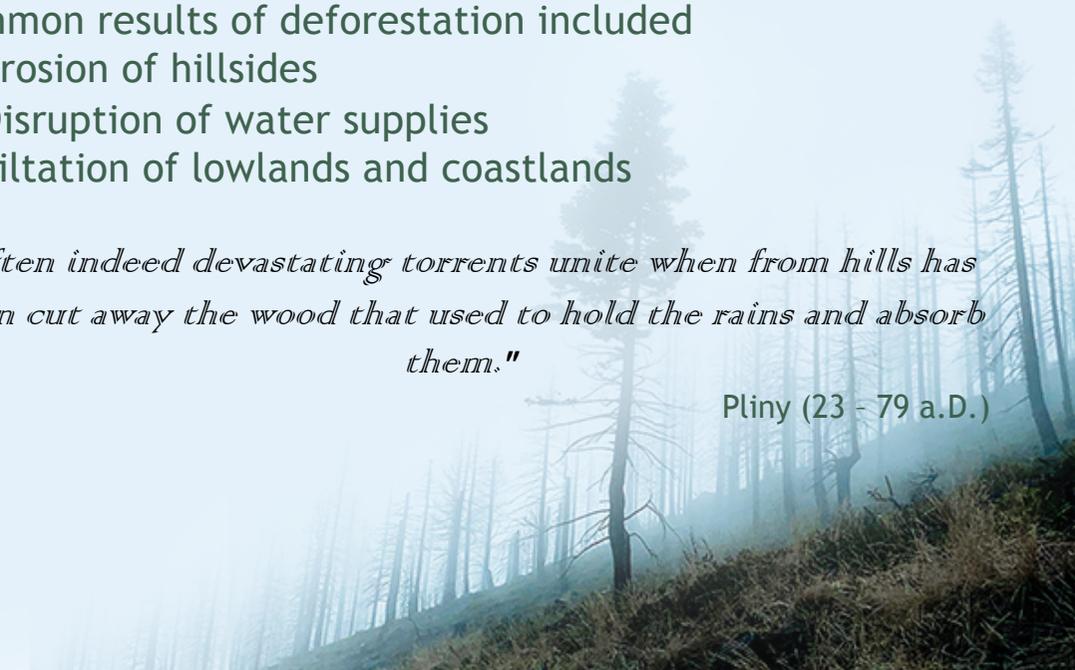
- Sparse rainfall coming mainly in few heavy winter storms
- If there are summer rains, these often come in violent thunderstorms

Common results of deforestation included

- Erosion of hillsides
- Disruption of water supplies
- Siltation of lowlands and coastlands

*"Often indeed devastating torrents unite when from hills has been cut away the wood that used to hold the rains and absorb them."*

Pliny (23 - 79 a.D.)



# Social consequences of deforestation (I)

## Agricultural productivity

- Particularly critical stage during and after the third century A.D., when the classical cultures were in decline.
- Failure of nature to support mankind, or failure of mankind to support nature?
- Health concerns



Gallo-Roman harvesting machine

## Trade

- Wood becoming rarer implied increasing need for importation
- Raising prices (goods, transportation)



Roman 4-wheeled chariot



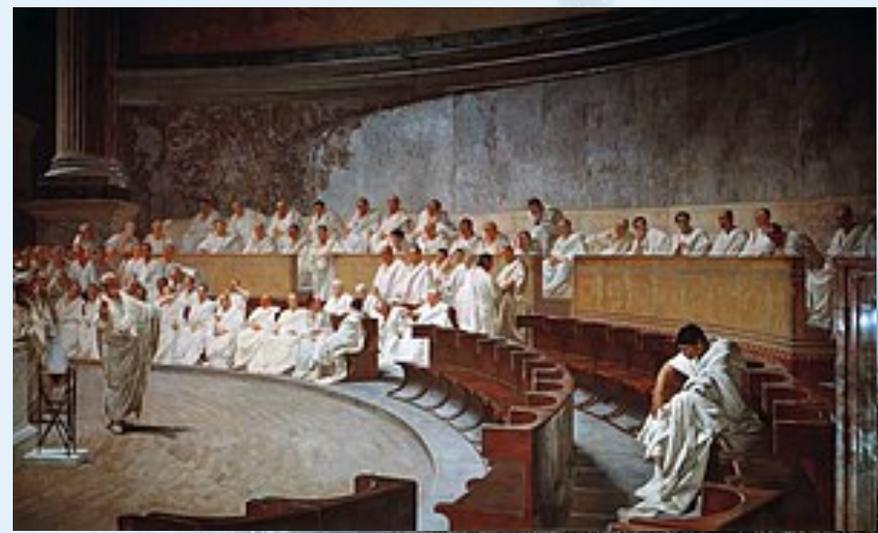
# Social consequences of deforestation (II)

## Warfare

- Timber supply as a major factor in determining naval strategies
- Conflicts aimed at conquering forests

## International diplomacy

- Short-lived treaties on exportation of wood existed



# Ancient deforestation revisited

“In classical times, harmony with nature was achieved in some cases, but violated in too many others.”

## Anthracology

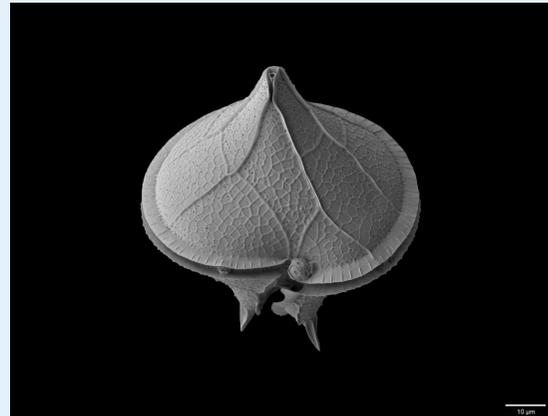


Longitudinal section of lime tree remains to identify carbons

Mainly ceramic industry and metallurgy

From 1<sup>st</sup> to 4<sup>th</sup> Century a.D. a Gallo-Roman workshop with fourteen kilns near today's Narbonne burnt thousands of cubic meters of wood, at a rate ranging between 132 m<sup>3</sup> to 360 m<sup>3</sup> per year.

## Palynology



Dinoflagellate *Protoperidinium divergens* and resting on it the coccolithophore *Emiliana huxleyi*

In a lagoon site near the French Mediterranean coast, studies show an increase in pollen of cultivated plants and a decrease in pollen of forest plants

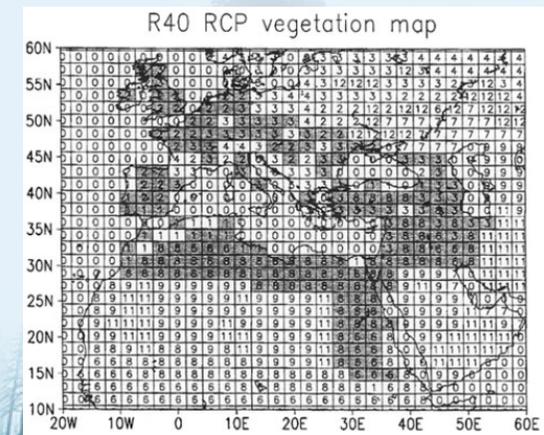
*“Into the forest hitherto unknown our axes came: we search out tables for our banquets from the end of the earth”*

Lucan (39-65 a.D.)

## Computer modeling

Oreste Reale of the Goddard Earth Sciences and Technology Center and associates

Purpose: “to construct a vegetation map around the Mediterranean Sea that is an accurate representation of conditions two millennia ago, and to use this data in general circulation model experiments to better understand historical climate and climate change”.



Roman Classical Period vegetation map

# Awareness

## Public and private effort to conserve forest resources

### Private

- Piece of land destined to forest in most farms
- Trees planted to mark fields and properties, and to protect from winds
- Privatization of certain forestlands for hunting purposes



Roman ruins in Ostia Antica

### Public

- Protection of sacred groves
- Widespread government supervision of government and watersheds
- Policies encouraging private exploitation of forests



Lucus Feroniae, an ancient sacred grove dedicated to Sabine goddess Feronia

# Bibliography

Hughes, J. Donald. "Ancient Deforestation Revisited." *Journal of the History of Biology*, vol. 44, no. 1, Springer, 2011, pp. 43-57

Hughes, J. Donald, and J. V. Thirgood. "Deforestation, Erosion, and Forest Management in Ancient Greece and Rome." *Journal of Forest History*, vol. 26, no. 2, [Forest History Society, American Society for Environmental History, Forest History Society and The American Society for Environmental History, Oxford University Press], 1982, pp. 60-75

## Thank you

Aldo Greco

Thakur Bijoy Al Asif

