

# Fallow deer of Rhodes: an ongoing, comprehensive study about ecology, genetics and conservation

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## Let's get acquainted with fallow deer of Rhodes:

- ? It is the only wild population of fallow deer in Greece and law protects it.
- ? It is considered to be the only free-ranging population of ancient origin that survived on a Mediterranean island.
- ? Even if its presence on the island is attributable to prehistoric Man, there is no evidence that it was domesticated (at least not for any prolonged period), as occurred with fallow deer of Europe.
- ? It has a significant cultural value for the island of Rhodes: it is the symbol of the island.

Despite a thorough bibliographic approach (Masseti, 2002), no systematic field research had ever been conducted. However, many questions needed answers ... Department of Biology (University of Athens) and Aethrea, a Rhodian NGO, address these questions on this ongoing study.



## 1. Distribution and Habitat: What tracks reveal?

- ? Local people, young and old, of each village of Rhodes were interviewed about past and present distribution of deer.
- ? A track survey along forest roads of 1km<sup>2</sup> was conducted for three consecutive years, in both rainy and dry seasons.
- ? Habitat elements of past and present distribution have also been determined based on past and present aerial photos.



Fallow deer habitat is heterogeneous, comprising forestland (*Pinus brutia*), rangeland (*phrygana* and *maquis*) and agricultural land (*olive trees* and *wheat*). The available water is a determinant factor of its distribution during the dry season.

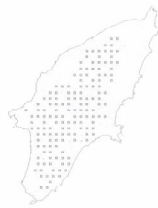
The Golden Age: Tracks are everywhere ...

The Dramatic Decrease: Tracks get faded and disappeared ...

The Great Return: Tracks are back again ...



Distribution of fallow deer during the late Italian Occupancy (1940) up to 1960.



Intensive poaching and big fires limited distribution and severely decreased population, especially during late 1980s late 90s.



Fallow deer present distribution based on information from local people, and track survey.

## 2. Feeding ecology: What feces reveal?

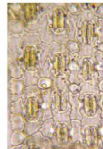
- ? Assessment of forage availability of each of the three habitats types (forestland, rangeland and agricultural land) of the study area and feces collection took place in winter, spring and summer.
- ? A reference collection of plant epidermis of more than 130 plant taxa has been created.
- ? Microhistological fecal analysis is in process.



Herbaceous vegetation and twigs are abundant during late winter.



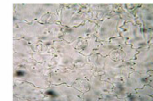
At the end of the dry season food becomes scarce.



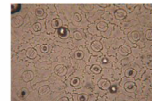
Family Graminae



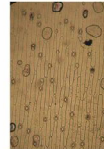
Family Compositae



Family Leguminosae



Family Myrtaceae



Family Liliaceae

Epidermis of Families of Mediterranean plants.

## 3. Use of habitat/movements: How to survive in a Mediterranean region?

- ? An ongoing pilot radiotracking project was begun in autumn of 2005. Two adult females were fitted with collars, however only one of the collars worked at the end.
- ? First results show that:
  - Winter movement may be up to km, grazing on the agricultural fields in the night, back to forest in daylight.
  - Movement during lactation period is limited and occurs mainly within forest patches.
- ? Let's see how Eleftheria will be adapted during the dry season.



Pen trap

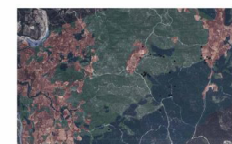


Simone Ciuti and Paolo Bonzi were volunteered to assist in a tying-up experiment!



Employees of Forest Department of Dodecanese constructed the pen traps and participated in the first and ongoing deer captures.

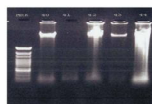
Due to lack of previous experience in capturing and immobilizing wild deer in Greece, two alliances were achieved: Greek- Italian: Marco Apollonio sponsored the participation of his colleagues, Simone Ciuti and Paolo Bongi, in the capture and immobilization of the deer. Greek-New Zealand: Graham Nugent offered detailed information on the pen traps construction.



Eleftheria's movements during winter time (December 2005) and early lactation (June-July 2006)

## 4. Genetics: A fallow deer population with a genetic signature?

- ? Genetic analysis of mtDNA from an enclosed Rhodian fallow deer population derived from few founders showed a distinct genetic structure (Masseti, 2002).
- ? Genetic analysis of free-ranging population has begun: DNA has been extracted successfully from recent and older shed antlers, and amplification of mtDNA D-Loop control region as well as of 10 microsatellite loci has been tested.



Gel electrophoresis of total DNA



Extraction of antler powder.

This research project (PENED) is co-financed by EU-European Social Fund (75%) and the Greek Ministry of Development-GSRT (25%).

## 5. Conservation measures: How is keeping a summer crop with deer lurking behind the fence?

- ? After many decades, fallow deer are back to their favorable summer crops.
- ? Based on the record of damages which occurred the last two years in summer crops, deer prefer:



Beans definitely



Watermelons as a dessert



Eggplants? No thank you!



How do farmers react?



By fencing

By applying methods of sense terror



By asking help: Fallow deer are welcome, but in our summer crops!

A detailed documentation of these damages was produced and was addressed to Greek authorities. The creation of a compensation system is in process and measures for preventing future damages to family gardens are under consideration.

## 6. Future goals: What is next?

- ? The creation of a population monitoring system and the expansion of radiotracking project.
- ? The implementation of an environmental education program.
- ? The creation of Action Plan for fallow deer

### Acknowledgements

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### References

Masseti M. Ed. 2002. 'Island of deer. Natural history of the Fallow Deer of Rhodes and the vertebrates of the Dodecanese (Greece)'. City of Rhodes, Environment Organization. Mertzani D. 2005. Damages caused by Fallow Deer to crops on the island of Rhodes. Aethrea: Agro-Environmental Research and Action Team.