



LIFE07NAT/GR/000296

"Actions for the conservation of coastal dunes with *Juniperus* spp. in Crete and the South Aegean (Greece)"

MINUTES OF THE SECOND SCIENTIFIC COMMITTEE MEETING IN CHANIA,
21/10/2010

The second scientific committee meeting of the Life+ Nature project (Life07/NAT/GR/000296-JUNICOAST) took place at the premises of the Mediterranean Agronomic Institute of Chania (MAICH), on the 21/10/2010.

Participants in the second scientific committee meeting were:

- Prof. Panagiotis Dimopoulos from University of Ioannina-Greece
- Prof. Costas Thanos from the National and Kapodistrian University of Athens-Greece
- Dr. Delipetrou Pinelopi from the National and Kapodistrian University of Athens-Greece
- Mr. George Kazakis (project coordinator), Mediterranean Agronomic Institute of Chania
- Mr. Dany Ghosn, Mediterranean Agronomic Institute of Chania
- Ms. Hlektra Remoundou, Mediterranean Agronomic Institute of Chania
- Ms. Christina Fournaraki, Mediterranean Agronomic Institute of Chania
- Mr. Panagiotis Nyktas from the University of Reading-England (external assistant)
- Dr. Xara Kariolaki, Director of the Forest Directorate of Chania
- Mr. Ioannis Rekatsinas, Forest Directorate of Chania
- Ms. Voula Noussia, Forest Directorate of Chania
- Mr. Dimos Dimitriou, Forest Directorate of Chania
- Ms. Manolia Stefanaki, Forest Directorate of Chania

Few days before the meeting, the following scientific committee members (Dr. Louis F Cassar, Prof. Kerry B. Godfrey, Mr. Antonio Vizcaino and Mr. Javier Jimenez Romo), canceled their participation in the meeting due to different professional reasons. Representatives from the Forest Directorate of Lassithi did not participate in the meeting due to similar reasons.

1. Presentation of the project progress

The project coordinator (Mr. George Kazakis) welcomed the participants and presented the time table of the project.

2. Presentation of the preparatory actions (P. Nyktas, G. Kazakis, C. Thanos, P. Delipetrou)

A round table discussion examining the progress, the materials and methods and the results of each action took place.

Action A.1 (presented by P. Nyktas)

Mr. Dimitriou asked if there is a relationship between the topography, the high depth of the sand and the dry Juniper trees in Sarakiniko. Mr. Nyktas mentioned that the trees got dry after 1998 (observation based on aerial photos), that the main reason is still unknown and that it might be due to the combination between the high depth of the sand and a long period of drought. Prof. Thanos mentioned that maybe we should look into the southern winds in the area throughout the whole year and not just during the summer period. Mr. Nyktas clarified that wind mostly affects sand dune habitats when the sand is dry, i.e. during the summer period. However, he added that it is interesting to look into the strong winds throughout the year. Mr. Kazakis stated that the available wind data shows the "average wind speed per day" and therefore we cannot depict the highest values of the winds.

Dr. Delipetrou asked if the dunes at Kedrodasos are topographical and what are the deepest ever found. Mr. Nyktas answered that the highest depth was 4 meters, adding that observations from the 1968 aerial photographs show that the beach front has increased, but the cover of trees seems to be the same. Dr. Delipetrou agreed that it takes lots of years to observe changes in the cover of the trees.

Action A.2 (presented by G. Kazakis)

Mr. Kazakis presented the sampling methodology, the data analysis and the results of this action. Dr. Delipetrou presented results obtained from the vegetation transects. She mentioned that grazing affected the vegetation in Kedrodasos and that vegetation plays an important role on embryonic dunes. Analysis of the vegetation transects showed that embryonic dunes are well developed on the west site of Chrysi and less developed on the east site. In Kedrodasos, front dunes are covered by low shrubs whereas in Gavdos front dunes are not well developed (in Sarakiniko a first flat zone is developed followed by dunes with phryganic species). Finally, she added that it would be interesting to take into account and try to correlate the vegetation data with the geomorphological data of action A.1.

Prof. Thanos mentioned that some therophytes are not present in some of the samples since the sampling took place was in April-May. He also asked if characteristic plant species of the 2250* habitat other than the Juniperus species were found. Dr. Delipetrou replied that there are some species that are characteristic of each area and that they are related to biogeography. She added that focus should be on functional plant species rather than on characteristic species since that the latter might not play an important role in the habitat. Prof. Dimopoulos mentioned that there are typical species and plant communities which vary depending on the area. He also stressed that it is important to produce a list of characteristic species for each site which will be used to assess the conservation status of the 2250 * habitat in each area. Finally, he added that since this is LIFE project, we should focus on "typical plant species" that vary depending on the area rather than on functional groups of plant species. Through this list of typical habitat species, the conservation status of the habitat could be assessed not only for each study area but also for all habitats in Greece.

Action A.3 (presented by C. Thanos)

Prof. Thanos presented the methodology and the results of the male/female ratio between the *Juniperus oxycedrus* subsp. *macrocarpa* trees.

The only study area that seems to have a male/female ratio problem is the east site at Chrysi and should be enriched with female trees that would be produced from cuttings. He also

mentioned that natural regeneration is relatively low in all study areas except that of Lavrakas. He added that the strong presence of the human factor can influence the regeneration of the species and the results show that there is a need to protect young seedlings rather than planting new individuals. In Agios Ioannis, he noted that we could do pilot enrichment by planting young seedlings from cuttings or protecting already established ones thus effectively improving the male/female ratio. He mentioned that the age of sampled trees varied between 170 to 350 years; the correlation between age and breast height diameter (DBH) varies depending on the location and the soil conditions. He proposed to study the chronology of drought (by measuring rings) and try to correlate it with the local climatic conditions for the dried Juniper trees in Sarakiniko.

Actions **A.4, A.5, A.6, A.7, A.9** (presented by G. Kazakis)

Action A.4 (Habitat mapping) has been completed and the map of each study area has been presented. The comparison between the 1968 aerial photos and recent satellite images has not been completed yet. However, it seems that there is no reduction in the cover of trees but instead an increase in the crown covers. Actions A.5, A.6 and A.9 have been completed and their main results have been presented. Action A.7 will be completed soon. Selected indicators for monitoring the effectiveness of concrete conservation and dissemination actions and the content of the monitoring protocols have been presented.

Action **A.8** (presented by P. Delipetrou)

Dr. Delipetrou proposed to limit the use of the trails used as "roads" in Chrysi, especially those parallel to the sea and if possible to limit the use of off road vehicles (vehicle use control). She also added that wooden boardwalks could be placed on the main trails. She mentioned that an effort should be done in order to help restore embryonic dunes in east Chrysi and in Sarakiniko using mechanical means (fences for sand accumulation) and/or by planting keystone species. Prof. Dimopoulos mentioned that such interventions were applied in a similar LIFE project at Stofila. Dr. Kariolaki asked for clarifications on how these fences could be constructed.

Mr. Kazakis informed the attendant about the wood eaten insect (*Buprestis cupressi*) that was found in Kedrodasos and described its lifecycle. A short discussion on how to control it took place. Prof. Thanos asked if the secretion of resin from the trees is associated with the insect. He added that the appearance of the insect might be due to the reduction in the amount of rainfall and suggested to further investigate its life cycle. Everybody agreed not to apply chemical control but rather try to reduce the population of the insect by using "biological traps". Guidance on how to use biological traps would be provided by the Forest service.

3. Presentation and discussion of the concrete conservation actions (G. Kazakis)

Action C1: A discussion on how to demarcate the habitat took place. It was suggested not to create fences but rather to demarcate the habitat by placing wooden sticks every 40-50 m depending on the topography of the site (approximately 2m in height). Technical details of this action have been already discussed on site with the Forest Directorate of Chania.

It was suggested that wooden sticks with ropes will be used in Sarakiniko at the level of the road. In Agios Ioannis, demarcation will take place only at the eastern boundaries of the habitat whereas in Lavrakas, demarcation will be denser at the main entrances of the habitat. Prof. Thanos suggested fencing a section of the habitat in Falasarna in order to create a micro-reserve

or a "strongly protected" zone. Dr. Delipetrou suggested protecting the section of the Falasarna site which is farthest from the road. Ms. Stefanaki from the forest directorate of Chania suggested fencing the whole habitat in Falasarna. The risk of destroying the fence was pointed out.

Action C2: The need to implement this action in Chrysi and in Falasarna was pointed out.

Action C3:

It was decided that the Juniper population in Chrysi will be enriched by planting female trees of *Juniperus macrocarpa*. In Agios Ioannis, the population will be enriched by planting both male/female individuals. In Falasarna, there is no need to plant new individuals but rather to protect young seedlings. Prof. Thanos suggested protecting (fence) young seedlings (2 to 3 years old). He suggested moving and growing seedlings into the laboratory if seedling mortality is high and if seedlings are to not be able to survive onsite. Dr. Delipetrou and Mr. Kazakis mentioned that it is better to protect young seedlings onsite. Participants agreed to protect young seedlings (2 to 3 years old) onsite.

Action C4:

This action includes: 1) planting male or female individuals of *Juniperus macrocarpa*, 2) planting characteristic or typical habitat species and 3) removal of invasive or alien species.

- 1) Planting of female individuals will take place at Chrysi and at Sarakiniko
- 2) Prof. Dimopoulos suggested mentioning that the habitat plant communities have a favorable conservation status in well conserved sites, i.e., there is a complete list of plant species.
- 3) A habitat assessment protocol that includes three parameters (site, typical species and pressure) should be developed and carried out.

Dr. Delipetrou mentioned that this action could be implemented only on specific sites since the number of nitrophilous or alien species is low.

It was agreed that this action could include other actions that will indirectly help improve the status of the habitat.

Action C5: This action will be implemented in the east site of Chrysi. Dr. Delipetrou suggested implementing it in Sarakiniko as well.

Action C6: Discussion on the technical aspects of this action which has been already discussed onsite with the Forest Directorate of Chania took place. More specifically, in Kedrodasos, the main trails will be improved and the E4 path will be better demarcated. Rubbish bins will be placed outside of the habitat at location selected by the municipality. A small wooden boardwalk and rubbish bins will be placed in Sarakiniko. In Agios Ioannis, the main trail leading to the habitat will be improved and demarcated. In Lavrakas, the main trail starting from "Xamourio" and leading to the habitat will be demarcated.

Action C7: Educational and information signs will be posted at the main entrances and along the main trails at all sites.

Action C8 (presented by Ms. Fournaraki)

A discussion on what is a "keystone species" took place. Dr. Delipetrou suggested selecting front

dunes species and other species from the habitat (e.g. *Elytrigia juncea* and *Helianthemum stipulatum* from Chrysi and *Medicago marina* and *Silene succulenta* from Gavdos). Prof. Thanos proposed to collect cuttings only from study sites where the male/female ratio should be improved. He added that female cuttings from Chrysi and Sarakiniko should be collected.

4. Presentation and discussion of the public awareness and dissemination actions (G. Kazakis)

The terminology used in the content of the dissemination material (brochures, leaflets, signs, etc.) and the language (Greek/English) for the T-shirts were discussed. Prof. Thanos suggested using the Greek language for the T-shirts. Finally, it was decided to produce T-shirts in English and in Greek. Dr. Delipetrou suggested inserting into Google-earth photographs from each study area. Mr. Kazakis informed the participants about the expansion of the pine species in Gavdos. This issue was raised repeatedly by the Community and the inhabitants of the island and is presented as a "problem" which should be tackled as soon as possible especially in the area of Lavrakas. Dr. Delipetrou mentioned that the expansion of pine is due not only to the natural regeneration of the species but also to human activities such as the abandonment of old fields used for agriculture. When asked if the pine species was introduced by man to Gavdos, Prof. Thanos argued that the pine species exist in Crete and was established naturally in Gavdos. Therefore, the species should be considered as a natural element of the island. Based on observations during field work, it was noticed that the expansion of pine is not intense in the 2250* habitat where the sand is deep. The pine appears in transition zones between the 2250* habitat and the habitat of the pine forest at positions adjacent to abandoned terraces and along streams where the soil is favorable to its growth. Dr. Kariolaki mentioned that any attempt to remove pine trees from the habitat requires a detailed study and an approval from the competent authority as by law, it is forbidden to cut trees. Prof. Dimopoulos added that the magnitude of this threat (pine expansion) should be evaluated before taking any action. Since the expansion of pine occurs only on places where conditions are favorable for its development and is not observed on sand dunes dominated by *Juniperus macrocarpa* therefore, the threat is considered small. Dr. Delipetrou asked if there is a possibility to look into old aerial photos to investigate the expansion of pine. Mr. Ghosn mentioned that a severe expansion of the species occurs on the island of Gavdos but is not so intense on the 2250* habitat.

Implementation of management measures to address the expansion of pine is ecologically not sound, and any other measures might not succeed because the pine will be established again after few years.

Finally, the project coordinator thanked all the participants for their collaboration and suggested that the third meeting of the scientific committee will be held on the island of Gavdos if the weather conditions are favorable.