List of potential student degree projects within the NEO partnership

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This document contains a list of potential student topics within the frame of Navarino Environmental Observatory (NEO). Located at Costa Navarino, Messinia, Greece, NEO is a cooperation between Stockholm University, the Academy of Athens and TEMES S.A., dedicated to research and education on the climate and environment of the Mediterranean region. For more information about NEO see: www.navarinoneo.se

If you are interested in any of the topics proposed here, please contact one of the supervisors listed for the topic for further discussions. For budget considerations please consult with the supervisors, the director of studies at the relevant department and/or the NEO Director Karin Holmgren.

A complete list of supervisors, other key persons and their contact information is found at the end of this document (page 15).

A. Projects within Atmospheric Sciences

1) Analysis of measured atmospheric data for atmospheric composition
Level: Bachelor&MSc
Potential supervisors: A Kazantzidis, N Kalivitis, E Gerasopoulos, HC Hansson
The project: NEO atmospheric research station has been up and running since April 2011. A large data set of atmospheric aerosol physical and optical properties as well as ozone concentration is being collected on a regular basis. Students will be introduced in atmospheric measuring techniques and analyze the collected data.
Bachelor: Environmental or atmospheric physics, introduction in atmospheric composition measurement techniques and data analysis
MSc: Bachelor degree in Physics, Environmental Sciences, Geology or Chemistry, followed by courses related to the project
Suitable date: Any time.
Length of the study: 2 months

2) Estimation of the effect of chemical compounds and aerosols on solar radiation, based on NEO lab data
Level: Bachelor&MSc
Potential supervisors: A Kazantzidis, N Kalivitis, E Gerasopoulos, HC Hansson
The project: NEO atmospheric research station has been up and running since April 2011. A large data set of atmospheric aerosol physical and optical properties as well as ozone concentration is being collected on a regular basis. NEO spectroradiometric station has been up and running since June 2011 providing data on a regular basis. Students will analyze the collected data and will use them as input data to parameterize the effect of chemical compounds and aerosols on solar radiation.
Bachelor: Environmental or atmospheric physics, introduction in radiative transfer in atmospheres
MSc: Bachelor degree in Physics, Environmental Sciences, Geology or Chemistry, followed by courses related to the project
Suitable date: Any time
Length of the study: 2 months

3) Precipitation and their isotopic composition
Student Background: Natural Sciences
Level: MSc
Potential supervisors: K Holmgren, A Argyriou
The project: At the meteorological station of TEMES at Mouzaki, a rain sampler of ITM is installed. During the project, students will collect rain samples after single events to analyze the stable isotope composition. Rain samples will be collected for a given period of time and during different seasons of the year (autumn, winter, spring). Afterwards, sample analysis will take place at the laboratories of UoP and SU. The aim of the project is to analyse, and understand the causes behind, the grade of variability in the isotopic composition in rainwater due to different precipitation situations.
Student background: Bachelor degree in Physics, Environmental Sciences, Geology or Chemistry followed by courses related to the project.
Suitable date: The rainy season (November-February) would be preferable for the major field work. Prior to that the student can have theoretical studies and perform analysis of samples already collected.
Length of the study: depending on objectives.

4) Saharan dust influx and its composition and physical properties: intensive field campaigns
Level: MSc
Potential supervisors: A Kazantzidis, N Kalivitis, E Gerasopoulos, HC Hansson

The project: The physical properties of Saharan dust are still not fully understood. Due to the proximity of Peloponnese to N. Africa, when southern winds prevail (spring and autumn), vast amounts of dust are transported to the Eastern Mediterranean basin. The study of the characteristics and the dynamics of such events can give useful information about the properties of dust particles.
Student Background: Natural Sciences
MSc: Bachelor degree in Physics, Environmental Sciences, Geology or Chemistry followed by courses related to the project
Suitable date: Springtime
Length of the study: 2 months

5) Solar Atlas of Messinia
Level: MSc
Potential supervisors: A Kazantzidis
The project: A solar atlas of Global Horizontal and Direct Normal Irradiance will be provided, based on satellite estimations and validated with ground-based measurements at NEO
Student Background: Physics, Engineering
MSc: Bachelor degree in Physics, Environmental Sciences, followed by courses related to the project
Suitable date: Autumn

B. Projects within Marine Sciences

1) Climatic and environmental evolution of the Gialova Lagoon.

The background: The Gialova Lagoon is situated in the northern part of Navarino Bay, Ionian Sea. Today it covers an area of 2.5 km2, with a maximum depth of 1m, and communicates with Navarino Bay by means of a man-made canal 100 m long, 10 m wide and 1.2 m deep. Also there is a man-made dike at the perimeter of the lagoon and prevents from fresh water inflow. The sediments are muddy-sands in most parts of the lagoon, often covered with green algae and the eel grass *Cymodocea nodosa*. Locally, mud may be mixed with dead shells of bivalves. Through the history this lagoon has experienced changes with periods of massive influx of marine water as well as periods of more or less fresh water conditions. In addition to this has the evolution lagoon have had a significant anthropogenic impact, especially during the 20th century.
The project: By coring the sediments at strategic locations in the Gialova Lagoon the evolution of this lagoon could be deciphered. The plan is to core with a Russian Corer (5cm diameter) at least three cores in a more or less SW-NE transect – with one core at old natural inlet in the lagoon, one in the central parts, and one in the inner part, close to the fresh water inflow and springs. This project can preferable be done by a group of students, each student focusing on one of several proxies – sedimentology, benthic foraminifera, diatoms, pollen, isotopes and macrofauna (i.e. bivalves).
Number of students involved: Four to six – two at the time.
Level: B.Sc. – thesis projects
Potential supervisors: Otto Hermelin, Barbara Wohlfarth, Richard Gyllencreutz, Malin Kylander, Stefan Wastegård, G Papatheodorou, A-K Eriksson-Wiklund
Student background: Geology, Earth Science with for the different subprojects relevant courses in sedimentology, quaternary geology, micropaleontology and/or isotopes.
Suitable date: Whenever we have a group (≥ 2) students interested in the project.
Length of study at Navarino: 1-2 weeks for each student in order to get to know the area and to collect cores.

Other requirements: Small boat with central hole for the drilling. Transport of coring equipment to Navarino and cores back to Stockholm.

OBS! For any kind of coring two types of licences need to be applied for: 1) Poleodomia (authority for infrastructures) and 2) Archaeological authorities. According to TEMES these licenses can be obtained within a couple of weeks from submission of a formal request.

Approximate location of coring site of the Gialova Lagoon.

Budget; Flight 3000 SEK, per person, Car rental 3000 SEK, free accommodation at NEO research station in low season.

2) Multibeam and Sub-Bottom Profiling of the Navarino Bay, Greece
The background: Navarino Bay is a small, deep, and almost landlocked bay of the Ionian Sea in the southwestern Peloponnese. Known also as Pylos Bay after Homeric Pylos, the bay was the scene of a decisive battle in 1827 that consolidated the independence of Greece. Here, the combined fleets of Great Britain, France, and Russia destroyed the Ottoman fleet. The island of Sfaktiría, the Peloponnesian War, functioned as a giant breakwater for the bay's inner lagoon or shipping lane, leaving a broad channel on the south and the Sikiás Channel on the north. The bay is one of the safest anchorages in the Mediterranean. At Palaiókastron (Paleo Kastro) are the ruins of a Frankish castle built in 1278.
The project: The proposed project aims to map the seafloor and uppermost sediment stratigraphy of the Navarino Bay using the latest high resolution geophysical mapping technologies. This will provide first hand base information needed for further studies of the geological evolution of the Navarino Bay and the uplift of the island of Sfaktiría to the west. The geophysical mapping proposed includes multibeam swath bathymetry, side-scan sonar and sub-bottom profiling. These geophysical equipments have recently been acquired by the Marine Geological group at the Department of Geological Sciences for the purpose of mapping near shore areas around the Swedish coast and in lakes. The high resolution multibeam system (Kongsberg EM2040, 200/400 kHz) and Side-scan sonar (Klein 5000, 100/500 kHz) will, in addition to map geology, be used to identify objects on the seafloor, such as wrecks and other archeological remains. The resolution is dm-scale. Information about objects on the seafloor will constitute an added value to the project with potentials of contributing additional knowledge on the naval battle that took place here about 180 years ago as well as historical events prior to that.
Number of students involved: One to two.
Level: M.Sc. – thesis project
Potential supervisors: Otto Hermelin, Martin Jakobsson, G Papatheodorou
Student background: Geology, Earth Science with relevant courses in marine geology.
Suitable date: Off season
Length of study at Navarino: 2-3 weeks to collect data
Other requirements: Transport of equipment (approximately 300 kg) and one week use of suitable boat. Licenses needed from Archaeology Dep and the Coast guard, applications need to be written in Greek

C. Projects within long term landscape evolution and terrestrial paleoenvironments

1) Ancient Messini
Ancient Messene Environmental, Geoarchaeological and Material Studies

The proposed research aims at Natural and Human-made Landscape Evolution Interdisciplinary Studies focused at Ancient Messene inner- (archaeological/geoarchaeological, occupied and explored by human activities) and inter-regional (geomorphological) environment.

Within the study several theses can be proposed, but **the first study should include a thorough literature review and interviews with researchers that have engaged in previous studies of the site. This study must be done in collaboration with Greek-speaking students, since much of the literature is in Greek.** Potential studies that may arise from such a literature review include:

- Mapping the recent (20th to 21st centuries) geomorphological environment, using GIS, satellite images, aerial photos and last century drawings.

- Studies of soils and sediment accumulation, studies of the history of water resources and water management, studies of climate and environmental variability over the last millennia..

- Studies of lithic material, archaeological pottery and stone artefacts for analyses of technologies and provenance. The area can be divided in three units resulting at three theses.

- Studies of routes of trade from Ancient Messene to Messenia harbours (4th c. B.C. – 5th C. A.D.)

Potential supervisors depending on choice of study: P Themelis, N Zacharias, E Zimmi, M Xanthopoulou, I Borgström, K Holmgren, J Kleman, LO Westerberg.

Facilities offered at the Laboratory of Archaeometry, University of Peloponnese :

-Stereo and Optical microscopy, SEM/EDS, XRF, RAMAN
- Laboratory for sample preparation

Budget Issues

- Laboratory consumables for studies 4 and 5.

- Reimbursement (per-diem and traveling costs) for field trips and group meeting

2) Geomorphological mapping of fault system in Messenia.
Three projects in the same region

Candidate project at 30 hp or Master project at 60 hp.

The idle situation is to send a group of students working together with individual projects in the same region.

1.   Aim: To distinguish between transform and normal faults systems at a local scale. To compare with global scale tectonic of the Aegean region.

2.   Aim: Calculate uplift rate in Messenia.
3.   Aim: To estimate the rate that fault surfaces are modified by slope processes.

Methods: GIS analysis of slopes, analysis of satellite images, verification by field work, Relative or absolute dating?

Suitable date: Flexible start date

Students background requirements: Structural geology and/or geomorphology

Supervisor: Alasdair Skelton, The new structural geologist at IGV, Johan Kleman, Ingmar Borgström, Krister Jansson, Ioannis Antonopoulos

Budget; Flight 3000 SEK, per person, Car rental 3000 SEK, free accommodation at NEO research station in low season.

3) P-T-X (CO2) study of the carpholiteschists of the Tagyetos Mountains

Level: Candidate 15 of 30 hp project.

Aim: To determine the pressure and temperature of metamorphism for the carpholiteschists of the Tagyetos Mountains and to determine the fluid composition at the time of metamorphism.

Rationale: Knowing the fluid composition at the time of metamorphism makes it possible to convert a fluid flux to a carbon flux.

Method: Sampling, petrography analysis, modeling using THERMOCALC to calculate P, T and X(CO2).

Students background requirements: petrology.

Supervisor: Alasdair Skelton

Budget; Flight 3000 SEK, per person, Car rental 3000 SEK, free accommrndation at NEO research station in low season.

D. Projects within ecology and hydrology

1) The future of the African Chameleon in the dune systems of Navarino Bay, Greece
Master-project (30/60 hp)

Aims:

- To map the dynamics of the dune systems of the Golden Beach and Voidikilia Beach with the focus of Chameleon habitats.
- To analyse the impact of weather and hatching success and timing of hatching for the last 14 years based on data from the Hellenic Ornithological Society.
- To model habitats dynamics using different future scenarios (status quo, remove the road, more tourisms, climate change).
- Propose possible strategies to increase the success of the Chameleon.

Methods:

- Literature review and interviews with key persons from the Hellenic Herpetological Society and the Hellenic Ornithological Society.
- Map habitats and potential habitats (for restoration) including the mapping of open sand areas, paths, tree height and cover.
- Assess the impact of tourisms and other activities such as motor cross on the dune system.
- Statistical analyses of hatching data (number of hatchings and abundance of "nests") in relation to habitat quality and meteorological data.
- Model the future of the Chameleon using scenarios.

Brief project description:

The only recorded findings of the African Chameleon in Europe are from the dune systems (Golden Beach and Voidokilia Bay) along Navarino Bay. The species is one of the most endangered species in Europe because of its restricted presence and because of habitat change. The Chameleon needs a mixed habitat with open sunlit sand areas for egg-laying and shrubs for feeding and cover. For example, there are no Chameleons close to the Paleokastro hill because of the shadow from the hill. The eggs have a long hatching time (11 months) and the timing of hatching is weather dependent. It is also possible that the success of hatching is weather dependent. Hellenic Ornithological Society (HOS) has mapped the success of hatchings during the last 14 years. Threats to the Chameleon are several; habitat change because of an increasing number of tourists coming to the beaches, erosion of the sand dunes caused by motorcycles and illegal collection of animals. Because of the threat to the Chameleon the data is sensitive thus no habitats can be disclosed in the thesis.

The project will be carried out in collaboration with Hellenic Herpetological Society (HHS).

Student requirements: Biology or Biogeo with the advanced course in Landscape Ecology

Time: can be carried out at any time of year. However, if the consequences of tourism are to be mapped it is necessary to do the thesis during the peak season or shortly afterwards. The project would be an excellent possibility to be carried out by one of the Natura Hall volunteers.

Budget: no special budget requirements beside travel costs. Bicycle?

Supervisor: **Cousins, plus person at the HHS and the HOS**

2) Understanding the impact of landscape context on the population dynamics of the long-lived tuberous perennial *Cyclamen graecum*
Master-project (30/60 hp), supervised by Dr. J. Plue and Prof. Dr. S. Cousins

Aim:

- Identifying how populations of *Cyclamen graecum* respond to human changes to their natural habitat

Methods:

- Identifying ten (preferably) large populations of *Cyclamen graecum* in three contrasting landscapes, 1) their natural environment, namely Mediterranean maquis vegetation, 2) in old

olive groves established prior to 1945 and 3) in more recent olive groves established after 1945. Make vegetation releves at each population site.

- Record population characteristics in each population (e.g. number of individuals, flowers per individual, diameter in individuals, number of leaves, etc.) and gather environmental data (stoniness of soil profile, exposure, soil depth, soil pH, slope, etc.).
- Statistical analyses of the population parameters in relation to habitat characteristics and landscape context.

Brief project description:

Cyclamen sp. is a genus of herbaceous species known as a common garden plant in many countries as it is in Sweden. However, their native range is largely situated in the Mediterranean. The Peloponnese in Greece is home to no less than four different *Cyclamen sp.*, one of which is endemic. This project will focus on *Cyclamen graecum* subsp. *graecum*, a species of a semi-arid Mediterranean climate restricted to Greece, Crete and the Aegean islands. The species survives in a wide range of conditions, thriving on very rocky substrates or steep slopes. As a long-lived tuberous perennial, many individual species may grow to a great age. Unfortunately, being a popular garden plant, many species have greatly declined in the wild (some even to the brink of extinction) because of non-sustainable harvesting from the wild populations.

Within this project, we will sample populations of the species in a range of natural to man-made habitats, comparing basic descriptive population characteristics. This will unveil whether or not populations of *Cyclamen graecum* have found a suitable new environment holding large viable populations in the typical olivegroves which have only in the last decades started to dominate the landscape in Messinia. That way, we may understand whether populations of *Cyclamen graecum* may have a viable future in the highly anthropogenous landscape of Messinia.

Student requirements: Biology or Biogeo with the advanced course in Landscape Ecology

Timing: As *Cyclamen graecum* flowers in autumn (obtober-november), fieldwork needs to be carried out during that period. The thesis starts one month before fieldwork, to allow fieldwork preparation.

Budget: Travel costs. Car hire if populations prove to be distant from one another.

3) Land use change and the effect on biodiversity in the catchment area of Navarino Bay, Greece
1-4 Master-project (30/60 hp)

Aims:

- To map and analyse land cover pattern from 1945 to today within the catchment area of Navarino Bay
- To identify key habitats important for biodiversity
- To analyse biodiversity patterns in relation to land use patterns using the concept "space for time".
- To model effects on biodiversity using plausible future land use scenarios

Methods:

- Aerial photo interpretation of land covers from 1945 to today
- GIS modelling
- Species inventories in key habitats/land covers
- Statistical analyses

Brief project description:

This project describes several different master-projects. The baseline would be land use change analyses and some general biodiversity inventories to identify key habitats. This project would also put forward possible future scenarios in a GIS for modelling effects on biodiversity in general. As a next step, other projects would focus on different target habitats, for example wet meadows or semi-natural forests patches, and analyse the land cover patterns over time. These projects need to identify effects of habitat loss, fragmentation or habitat degradation on different organisms as biodiversity is a broad concept. Different organisms react differently to land use change and fragmentation of habitats, thus different project might focus on either mobile species such as birds or insects or more sessile organisms such as plants. Depending on target species and habitat the area where the studies are conducted might vary in size.

Few studies in around the Mediterranean have used methods for field inventories suitable for statistical analyses. All projects aim is to explore processes for understanding relationship between landscape context and species diversity. This is some of the key issues within conservation and management of biodiversity.

Budget: no special budget requirements beside travel costs. GPS, Bicycle?

Possible help with the identification of species.

Student requirements: Biology or Biogeo with the advanced course in Landscape Ecology

Supervisor: S **Cousins**, R Lindborg, H Skånes, J Plue…

4) Holding on or letting go? Secondary succession on degraded hillslopes in Messinia, Greece
Master-project (30/60 hp), supervised by Dr. J. Plue and Prof. Dr. S. Cousins

Aims:

- Mapping of persistently degraded hillslopes, successfully recolonized hillslopes as well as hillslopes where degradation has increased compared to areal photographs of 1945.

- Identifying which environmental factors promote or deter the success of secondary succession on degraded hillslopes.

Methods:

- Comparing recent satellite imagery (2007) with aerial photographs from 1945 and 1967 will allow us to map four hillslope categories using 1945 as reference state of the landscape: 1) Persistently degraded hillslopes, 2) naturally, seemingly unexploited vegetated hillslopes, 3) hillslopes where degradation has increased and 4) hillslopes which have been successfully recolonized by natural vegetation. After mapping, ca. 10 slopes per category will be selected.

- Detailed description of the slopes in terms of exposure, slope and a rough description of the soil profile. If a slope has a complex structure with multiple inclinations, multiple vegetation releves should be carried out as a function of the slope structure.

- Statistical analyses of the vegetation data in relation to environmental factors such as slope, slope structure or exposure. Identification of key species which facilitate recolonization of degraded slopes or counteract further slope degradation by comparison of the vegetation data between the various sampled hillslope categories.

Brief project description:

Where- and whenever landscapes are (over)intensively used by humans to sustain their livelihoods through agriculture, wood- and timber harvesting or grazing, the landscape and natural environment suffers. The ancient landscapes of Messinia in the southwest of the Greek Peloponnese, intensively used by humans since antiquity, form no exeption. During WOII, a wave of deforestations swept to Messinia, resulting in numerous hillslopes being severly degraded, i.e. hillslopes were the topsoil has been completely eroded and the vegetation is at most highly sparse. To the present date, some of these hillslopes have been successfully recolonized whereas degradation has worsened on others. Ideally, we want to understand through this study which environmental factors steer further degradation and/or successful recolonization. If we manage to identify key species which actively contribute to preventing further degradation and facilitate recolonization on degraded hillslopes, this project might provide a tool to environmental agencies to actively thwart future degradation by replanting degraded hillslopes.

Student requirements:

Biology or Biogeo with the advanced course in Landscape Ecology. Good botanical skills will be crucial to adequate data collection.

Timing: Spring, when flowering in the Mediterranean is at its peak to facilitate plant identification.

Budget: Travel costs. Car hire if necessary.

5) Topics suitable for NATURA HALL volunteers
Title: **Description of the different (typical!) ecosystems/vegetation types within the region**.

The outcome should include descriptions on:

- some typical species associated to the vegetation type (plants, animals),
- biodiversity
- conservation status/sensitivity
- geological and topographical associations (bedrock, soil classification, slope)
- history (grazing, fire, succession...)

Student requirement: biology, biogeo

Supervisor: **Cousins**, Hermelin, Holmgren, greek botanist?

6) The future of the Loggerhead Sea Turtle (Caretta caretta) in Messinia, Greece
Bachelor-project (15 hp)

Aims:

- To identify the interactions between land use and habitats necessary for the turtles to lay their eggs along the coast from Pylos to Kyparissia.
- To analyze the impact of increasing tourism on egg laying and hatching success.
- To explore different alternatives, and analyze the consequences, where and how beaches can be protected for the Sea Turtles.
- Propose possible strategies to increase the success of the Sea Turtle in Messinia.

Methods:

- Interviews with representatives of Archelon and visit to the rescue centre in Athens and in Kyparissia.
- Review the literature on successful projects on 'turtle nurseries'.
- Map habitats, using existing data, and potential habitats as 'turtle nurseries'.
- Assess the impact of tourisms and other activities on the beaches and the timing for egg laying and hatching.

Brief project description:

The Loggerhead Sea Turtle (Caretta caretta), is one of the seven species of sea turtles found in the world and it is listed in the International Red Book as endangered species. Sea turtles are marine animals but return to beaches to lay their eggs. Once the eggs are hatched the turtle move straight into the sea, only to return when mature. The turtle is 'programmed' to return to the exact beach where it hatched, thus if the beach is destroyed or the disturbance on the beach is too great the turtle will never produce off-spring. It is estimated that only 1 of 100 baby turtles survive to maturity. One of the keys to the future success of the Caretta caretta is their breeding grounds which in this case are the beaches around Messinia. The turtle prefer sandy beaches with gentle slopes without barriers and where the sand has the appropriate characteristics. Temperature and humidity are essential elements to the incubation and hatching success.

The turtle return to the beach in Spring and the eggs are hatched two months later, between July and August 70% of the eggs will hatch (which is peak of tourist season). As the turtle return to its 'birth-beach' it is not possible to restore or protect other beaches, as turtles are not imprinted on those beaches. One possibility is to move eggs from disturbed beaches to more secluded ones, thus creating 'turtle nurseries'. The turtles hatching from the 'nursery' would, when mature, return to the 'nursery-beach'. However, it needs to be reviewed and analysed if there is a need for such transfer and if there are possibilities to create 'nurseries' along the coast. There are also legal implications of moving eggs from protected species thus it is necessary to work in close collaboration with the protection agencies in Greece. (It should be noted that the student is not going to move eggs within the project).

The project will be carried out in collaboration with protection agencies responsible for turtle protection.

Student requirements: Biology, Environmental protection or Biogeo

Time: This could be carried out as a 'home-project' at any time of year. This could also be part of one of the Natura Hall volunteers as a more applied project to find possible nursery beaches.

Budget: no special budget

Supervisor: Prof. Sara Cousins, (Dr M. Tedengren –systems ecology?)

E. Projects within environmental issues and geographical perspectives

1) Causes and effects of changes in abundance of migratory bird populations at Gialova lagoon

This project would fall under the theme of biodiversity and conservation.

Aim: See title and Methods

Methods (suggested): Check for existing monitoring data (Hel. Orn. Soc.), and collate and analyse this data. Potentially interview local people about observed changes (and local causes). Identify specific changes to specific species or species groups (partly by discussing with expertise from Hel OrnSoc). Literature review of relevant population ecology. Exploration and analysis of potential causes for identified changes. [If it is a longer project the aims can be enlarged to include local ecological effects of the identified change, plus potentially mitigating effects (i.e. if a negative change has been identified.]

Potential supervisor: B Eknert, A Dahlberg, S Cousins, R Lindborg, H Skånes, I Stjernqvist, P Schlyter

Date and length: Any season, but preferably spring or autumn. Length should be 3-6 weeks in the field, and could be suitable for either a BSc or a MSc.

Student background: BioGeo, Geography, Env Science

Other requirements: Local supervisor/contact at Hel OrnSoc (incl access to statistics of bird counts), accommodation, local transport (minimum)

Budget: Nothing extra (i.e. apart from journey Sweden-study area, accommodation (free), some local transport)

2) Literature review to collate existing knowledge of relevance to future research in the study area: Ecological studies incl biological inventories

Aim: Collate existing scientific knowledge and potentially also analyse sources in terms of different quality aspects (methods, data sources, age, coverage, etc) and provide a synthesis.

Methods: Interviews with academic staff (at different universities in Greece, mainly regional), library searches, search for inventories and other data at local and regional organizations (such as conservation organizations and others).

Supervisors: There are here many potential supervisors, depending on subject to be covered.

Date / length: Any time of the year (when university staff and libraries are accessible); should be max a 15hp project (i.e. a BSc).

Student background: BioGeo, Geography, etc (depending on subject to be covered)

Other requirements: A Greek assistant (to locate and translate texts in Greek), preferably a local student. Also good with a local supervisor who can help with introductions, access to libraries etc (i.e. established cooperation with regional universities).

Budget: Flight, accommodation (when not at NEO), salary for student assistant, local transport (if not by buses).

3) Protection of ecological sensitive features such as coastal dunes.

Aim: See theme above

Methods and research questions: Mapping of coastal dunes and changes and changes such as location, height and vegetation cover, e.g. by using aerial photos and own detailed mapping (plus field checks) in the field. Investigate risks (existing and potential) especially (but not exclusively) related to increased tourism. Identify potential mitigating actions and potentially also design these (e.g. signs). Investigate local acceptance of suggested mitigating actions (interviews/observations)

- This mapping could potentially be done by course students over a number of years and thus form the base for a future individual MSc (or BSc) thesis.

Supervisor: B Eknert, I Borgström, J Kleman,, LO Westerberg

Student background: Geoscience, BioGeo, Geography.

Date and length: Any time of year; Could be either a BSc or MSc project (15-30hp). If a larger (longer) study is suggested comparative aspects with other countries could be included as a substantial part; alternatively include several study sites in Greece.

Budget: Access to aerial photos, local transport (if a larger project), accommodation (free), material for making e.g. signs if this is the conclusion (perhaps sponsored by Temes)

Other requirements: In cooperation with Temes and hotel (so as to create mitigating actions realistic and acceptable). Interpreter to interview local people, and perhaps Greek tourists to assess acceptability and understanding for suggested mitigating actions.

4) Overall theme Ethnobotany, within which several projects could be formulated, e.g.: Causes and effects of change in use and knowledge of "wild" (non-cultivated) plant species in the Messinia region.

Aim: To ascertain present use and assess sustainability of harvesting levels in relation to changes in knowledge, use and availability. [This can be divided into several projects with main focus on such different (but related) issues as sustainability, conservation, knowledge transfer, commercialization, etc). Also, focus could be general (all / most used species; or look at a specific species group or species harvested for one specific purpose (e.g. medicinal plants).]

Methods: Interviews (local people /experts), transect walks, observation, species sampling (if allowed) and identification, mapping of change in location and abundance.

Supervisors: A Dahlberg, B Eknert, S Cousins, R Lindborg, H Skånes, L Börjeson, P Kinlund (depending on focus)

Date / length: Spring or autumn depending on focus in relation to harvesting time for different species. Only MSc should be considered since the topic is interdisciplinary and will require long time in the field.

Student background: BioGeo, Geography, perhaps Env Science

Other requirements: Local interpreter (for interviews), local supervisor (or contact person), permit to collect samples, help with species identification (local expert, herbarium).

Budget: Local transport, salary for interpreter, potentially to pay for species identification.

5) Impact of tourism development on land use and landscape in the Messinia region (could have a social or ecological focus, or aim to include both equally).

Aim: As title (tourism and sustainable regional development)

Research questions: Land use/landscape pattern before and after resort developments along the coast from Pylos to Kyparissia. Investigate direct and indirect effects, including local attitudes towards past, ongoing and planned changes.

Methods: Mainly aerial photos, maps, ground-truthing and interviews. Geographical delimitation needs to be determined (could be either local and detailed, or regional with less detail).

Supervisor: A Dahlberg, LO Westerberg, P Kinlund, L Börjeson, S Cousins, R Lindborg + GIS expertise

Date / length: Not in the heat of summer, suitable for MSc level only (due to complexity and length of time needed in the field).

Student background: Geography (potentially also others)

Other requirements: Local interpreter, local supervisor, air photos (satellite imagery?), maps, GIS

Budget: Salary to local interpreter, access to air photos and other material

F. List of supervisors and their contact addresses

<u>Supervisors from Stockholm University</u>

INK=Department of Physical Geography and Quaternary Geology
IGV=Department of Geological Sciences
ITM=Department of Applied Environmental Science
KG=Department of Human Geography

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