Kuwait Arid Ecosystem

Can the Vetiver System Have a Niche?

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Introduction

- The arid nature of the soil and the high rates of evaporation led to salinization and lower productivity.
- Flood irrigation, perhaps was one of man's greatest inventions, but it was also the main reason for the collapse of the old irrigation based civilization.
- Irrigation practices is a major source of desertification in arid regions of the world.
- Stalinization is one (significant) form of desertification, which may be simply defined as deterioration of the terrestrial ecosystem, including degradation of various forms of vegetation and destruction of the biological potential of the ecosystem.

Introduction…(Cont'd)

- Soil erosion, soil fragmentation and loss of plant cover does not only mean increasing the levels of suspended dust and particulate matter and drifting sands but also means an increase in the rates of organic matter decay.

- In Kuwait, meteorological factors, the highly susceptibility of the soil and limited biological stabilization make the eolian process very active.

- War has had an added impact reaching catastrophic levels on the environment in Kuwait.

- The average rate of desertification in Kuwait has been estimated at 285 km^2.

Control of Desertification

- **Mechanical methods**
  - ➢Fencing are often used to control the movement of sand sheets.
- **Chemical stabilization including:**
  - ➢Low gravity asphaltic oil
  - ➢High gravity oils
  - ➢Use of chemicals polymers / binding agents
- **Shelter belts have been proposed to constrain and manage large-scale of sand movement.**

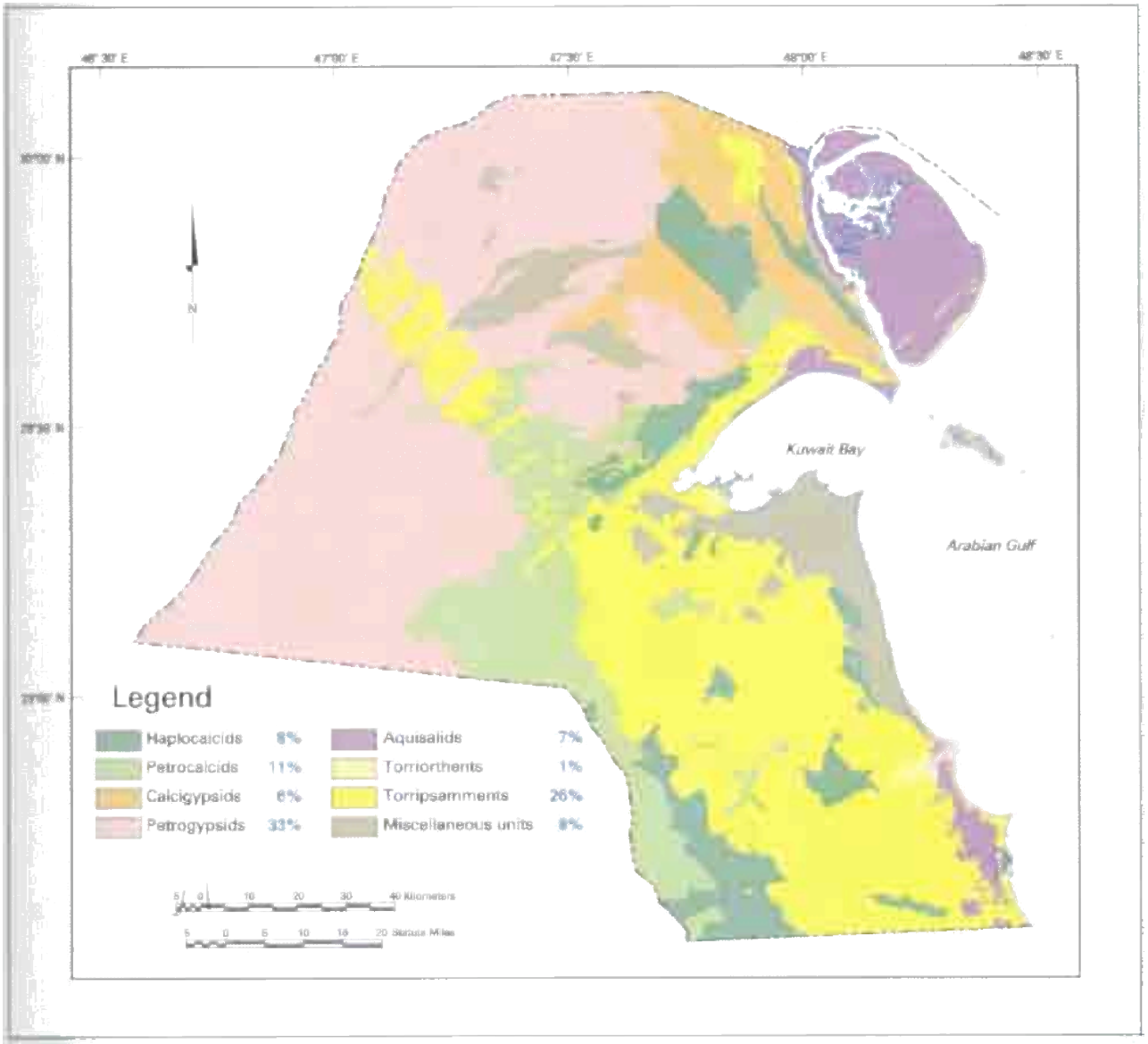
The Challenges

- Can a preventive approach be developed and adopted to prevent, attenuate the rates of desertification?

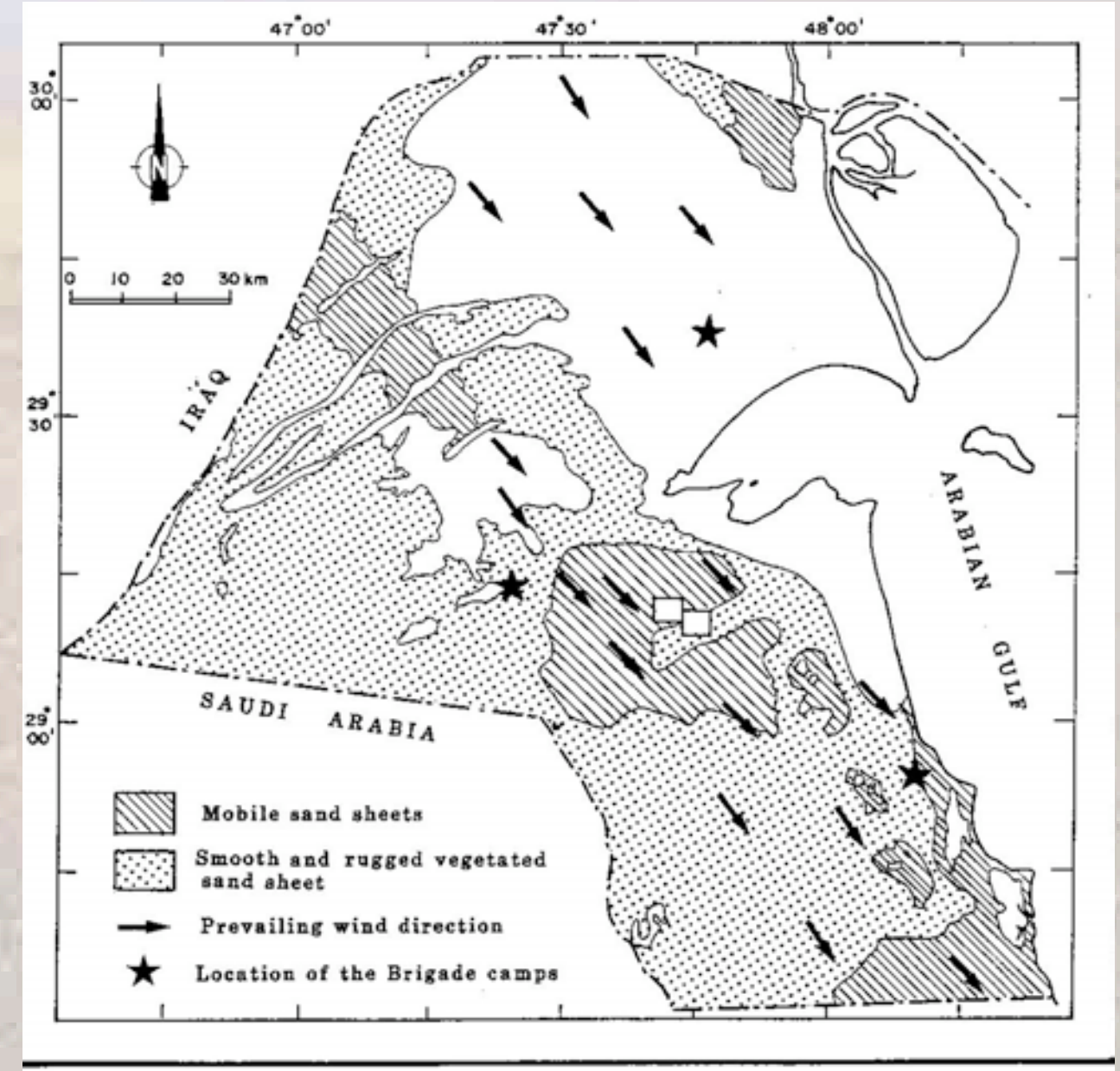
- Can we develop a strategy for the control of desertification, reduction of soil erosion and sand sheet movement that depends on biological and cost effective methods?

Our principle tasks includes:

- Understanding the nature, physiology and requirements for introducing the Vetiver system.
- Understanding the ecological consequences of introducing this plant.
- Proposing areas of possible application
- Discussing methods and requirements of propagation
- Developing precautionary measures and a monitoring system to ensure that the plant would not become invasive or have adverse effects on native vegetation.



General distribution of soils in Kuwait



Distribution of sand sheet areas in Kuwait.
(after Foda et al.,1984 with modifications).

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Examples of Human Activities Leading to Desertification in Kuwait

Examples of Human Activities Leading to Desertification in Kuwait .. (Cont'd)

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Thank You