Past episodes of human-induced landscape transformation and abandonment can provide valuable "experiments" that allow an assessment to be made of
- how quickly degraded landscapes can recover,
- to what state they will return,
- what controls the recovery process.

This poster reports the results of multi-disciplinary field research in Central and Southwest Turkey that links archaeological and historical surveys to analyses of palaeoecology, palaeoclimatology and erosion history (Fig.1). Integrated field programmes have ensured a close spatial congruence between these different data sets (Fig.2). The study region incorporates both the mountain and basin terrains of the Ýzmir Lake District, and the drier, low-relief landscapes of the Anatolian plateau (Figs.3a-c).

Fig.1 Location of study area, including archaeological survey areas, and pollen sites

Fig.2 Lake Gobirbas, showing pollen core site and adjacent archaeological settlement (Sinda)

Fig.3a) Badland eroded in volcanic ignimbrite, Cappadocia
b) Lake Burdur in the Ýzmir lake district
 c) Classical city of Sagalassus

Fig.4 Summary Late Quaternary pollen diagram from Sögüt

While there is very close correspondence between the dates for the end of the long Hellenistic-Roman-Early Byzantine (archaeological) and Beyşehir Occupation (pollen) phases at around 680 BC, this is not true for the timing of the onset of the cultural landscape period (Fig.6). Pollen evidence indicates that large-scale human landscape transformation started between ~1200 and ~600 BC, whereas the Iron Age period (1200-334 BC) has low archaeological visibility. This difference may be partly explained by pre-Hellenistic site loss through erosion/burial; at Gravgaz, for example, there was rapid stripping of limestone soils during the 8th century BC (Fig.7). Alluvial histories further downstream have aggregated changes over large catchment areas and have also been modified by delivery ratios and upstream sediment storage, but none the less show a shift from bedrock to topsoil erosion during the Late Holocene (Fig.8). The Holocene does not provide direct analogues for future landscape recovery but it can highlight potential landscape recovery times (typically decadal) and trajectories. Across the study region, the erosional response to human disturbance appears more heterogeneous than either land use or settlement, because of spatial variations in bedrock lithology and soil erodibility. Due to intervening non-reversible ecosystem changes, of which soil loss is particularly critical, pre-disturbance landscape states may not represent appropriate future restoration targets in regions such as the Mediterranean.

Fig.6 Archaeological settlement numbers in the territory of Sagalassus, vs pollen record for the start and end dates of the Beyşehir Occupation phase (in pink, means and ranges)

Fig.7 Envision history of the Gravgaz basin from multiple dated sediment cores

Fig.8 Alluvial stratigraphy on the Çanázamba fan, Kenya. The Upper Alluvial unit has a higher silt content, lower organic matter content and higher magnetic susceptibility, consistent with a shift from bedrock to topsoil erosion

Fig.9 Schematic changes in human land-use intensity, forest cover and erosion in SW Turkey during the Late Holocene