

EARLY SUCCESSION ON SUCCESSFULLY RESTORED AND RECREATED COASTAL HABITATS IN ŠKOCJAN INLET (NORTHER ADRIATIC SEA)

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1 Introduction

Main aims of the project HABIT-CHANGE are to evaluate, enhance and adapt existing management and conservation strategies in protected areas to pro-actively respond on likely influences of climate change as a threat to habitat integrity and diversity.

Restoration or creation of habitats lost, destroyed or substantially altered has become tools of many environmental agencies, parks, regions, states or NGOs. Nowadays it is possible to simulated many kinds of physical design or hydrogeomorphology, but the biological components usually takes much longer time frame to respond, mostly beyond the reasonable monitoring expectations. Halophyte vegetation on seacoast mudflats represents relatively simple systems, based on the presence of only a few highly specialized species. Species turnover on early succession was found to be very quick after creation of coastal mudflats in the Škocjan inlet nature reserve near Koper (Slovenia, northern Adriatic seaboard).

2 Aim

In this site, primary succession has been followed for four years after the creation of the artificial mudflats at different micro-elevations by means of habitat mapping.

3 Methods

- habitat mapping according to PHYSIS typology with a fine resolution of 1 m
- aggregating 29 habitat types to 13 habitat aggregates
- microelevation measurements with a high resolution GPS
- GIS approach

4 Results

4.2 Habitat transitions in the succession processes 4.1 Correlation between microelevation and habitat aggregates

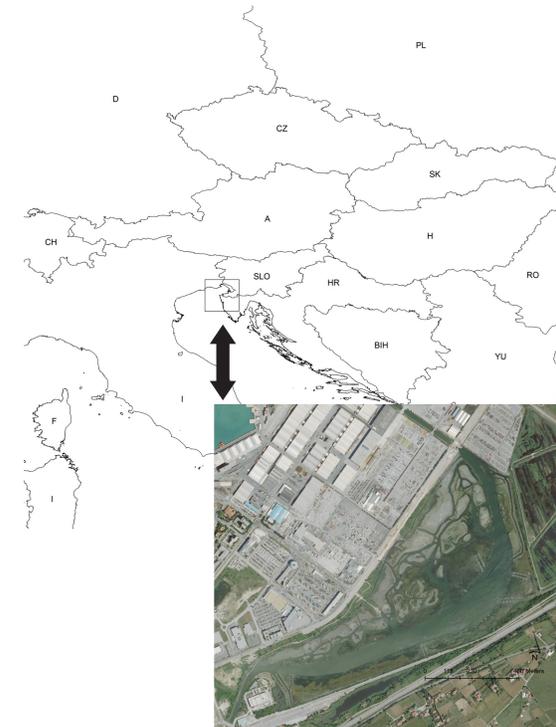


Figure 1: Škocjan inlet nature reserve near Koper (Slovenia).

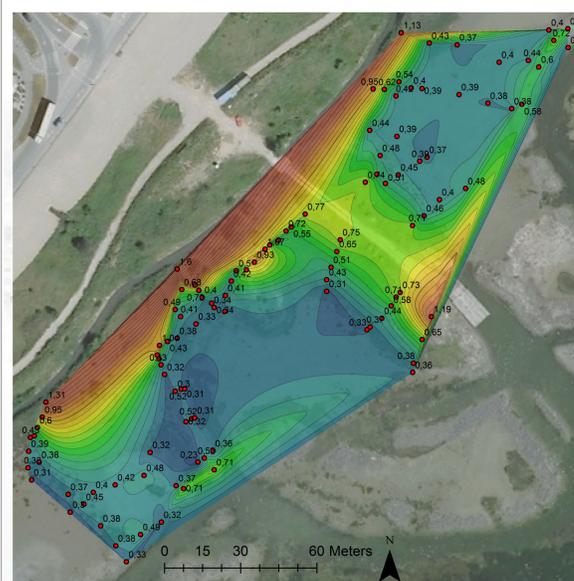
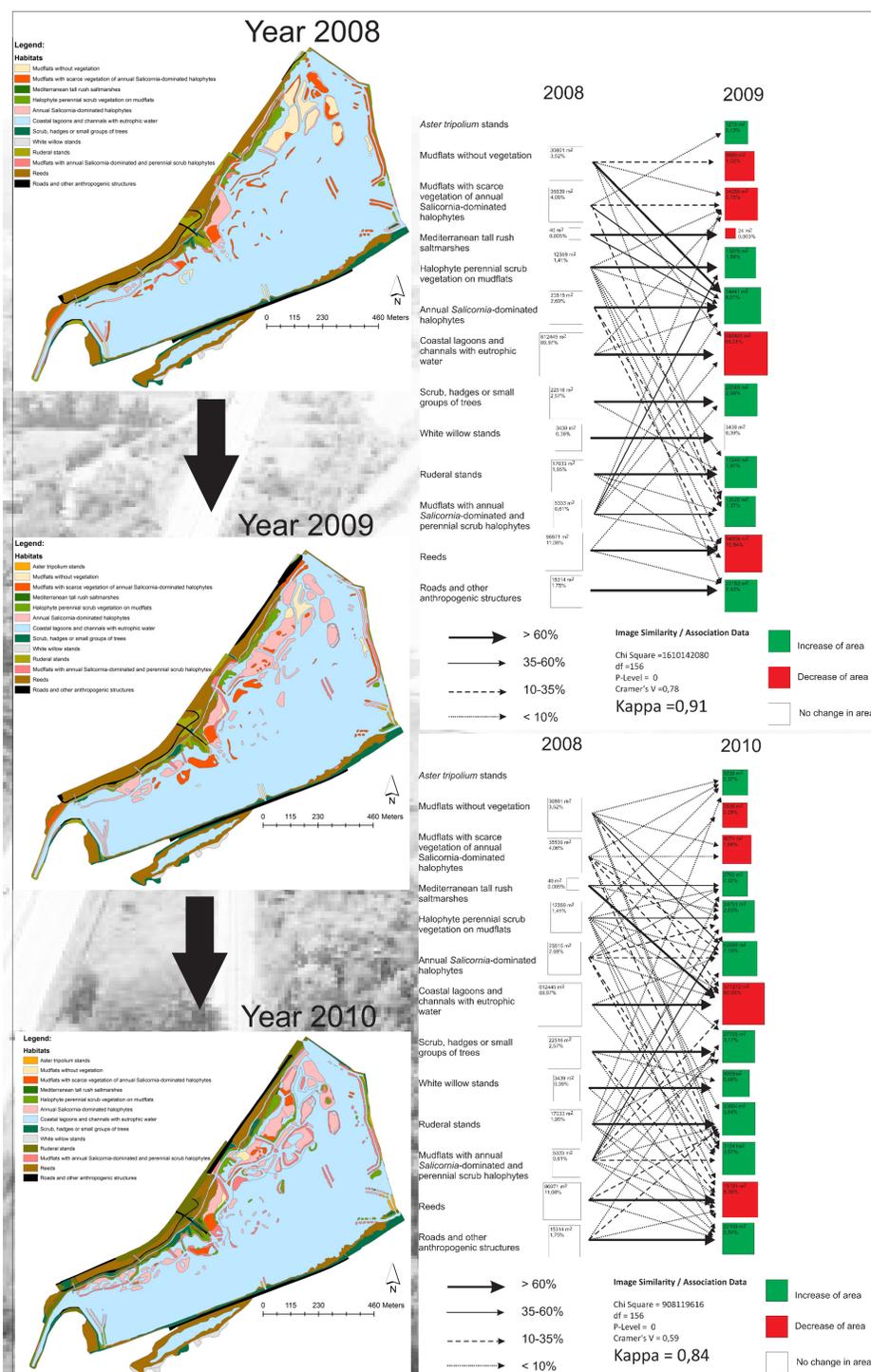


Figure 2: Digital elevation model based on the high resolution GPS measurements.

It exist a high positive correlation between the microelevation zones and habitats (Cramers's V=0,44). They are following in the next order, according to the rising gradient of elevation:

- Mudflats without vegetation
- Mudflats with scarce vegetation of annual *Salicornia*-dominated halophytes
- Annual *Salicornia*-dominated halophytes
- Mudflats with annual *Salicornia*-dominated and perennial scrub halophytes
- Ruderal stands
- Halophyte perennial scrub vegetation on mudflats
- Reeds
- Scrub, hadges or small groups of trees

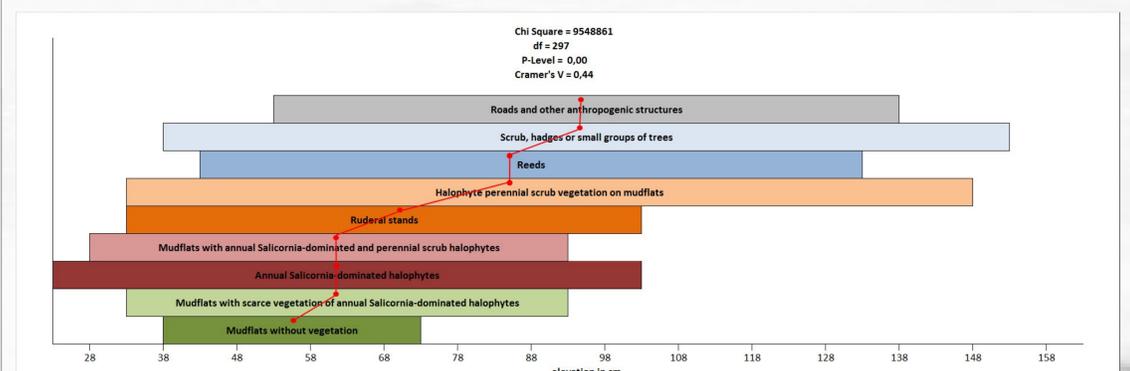


Figure 3: Appearance of habitat aggregates in the microelevation zones.

5 Discussion and conclusions

Species turnover on early succession was found to be very quick after creation of coastal mudflats in the Škocjan inlet nature reserve near Koper (Slovenia, northern Adriatic seaboard). **It could be concluded that 9% of the total surface changed in only 1 year ; furthermore, in two years, the proportion of habitat types changed for 16% due to primary succession processes.** The results show that mudflats not covered by vegetation declined substantially (from 3,5 to 0,3%) in three years. We detected an increase of *Salicornia*-dominated annuals colonizing mud from 2008 to 2010 for 4,5%, followed by a decline due to increase of cover of halophytic scrubs. In the 3rd year, halophyte perennials started to establish at the sites of appropriate micro-altitude. Surface covered by lagoon seawater declined in favour of the surface covered with vegetation – hence achieving one of the targets of the habitat restoration intervention.

Figure 4: Habitat transitions from year 2008 to 2010.