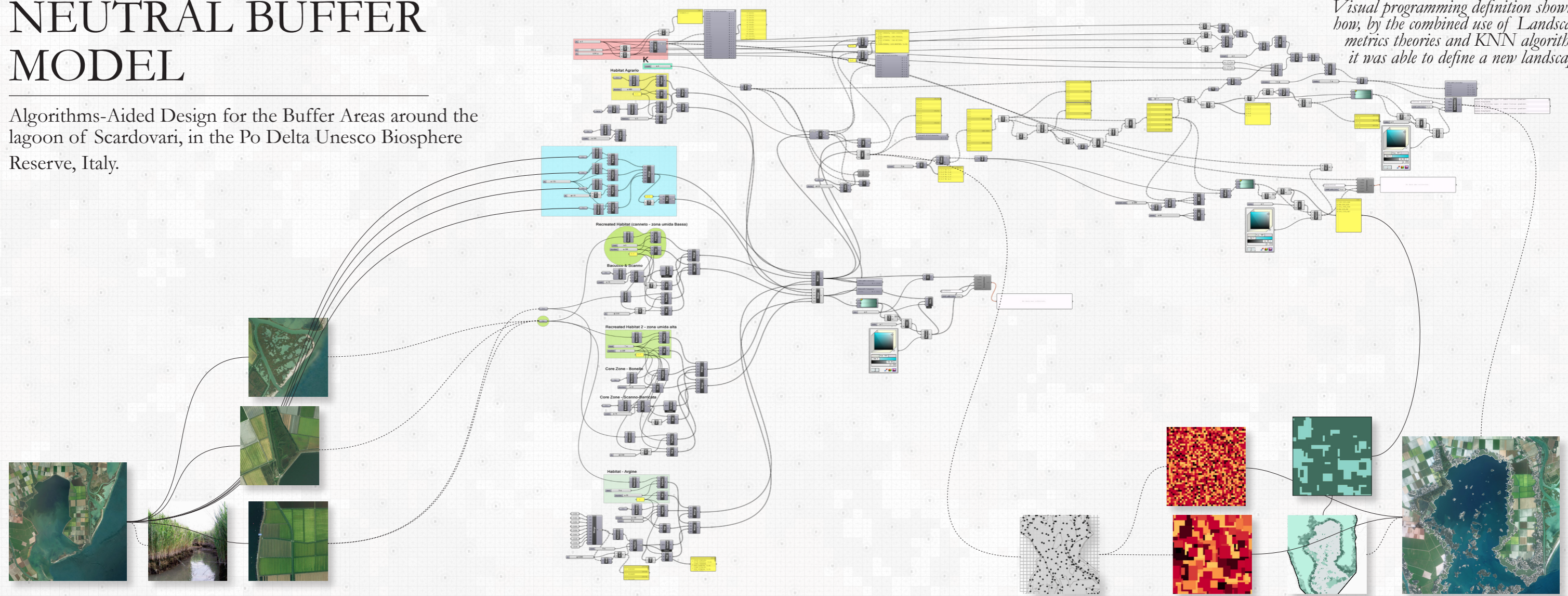


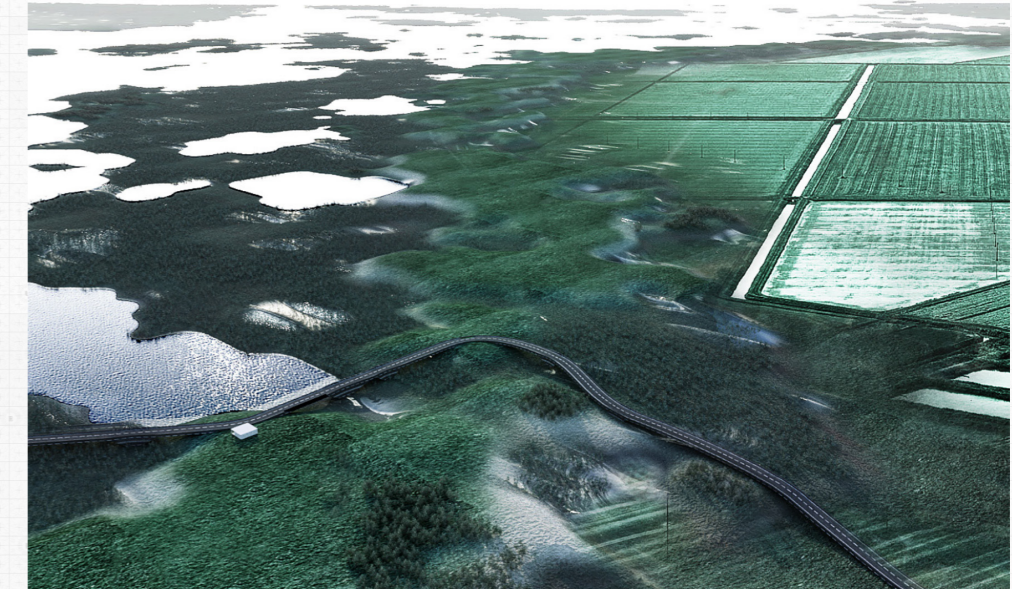
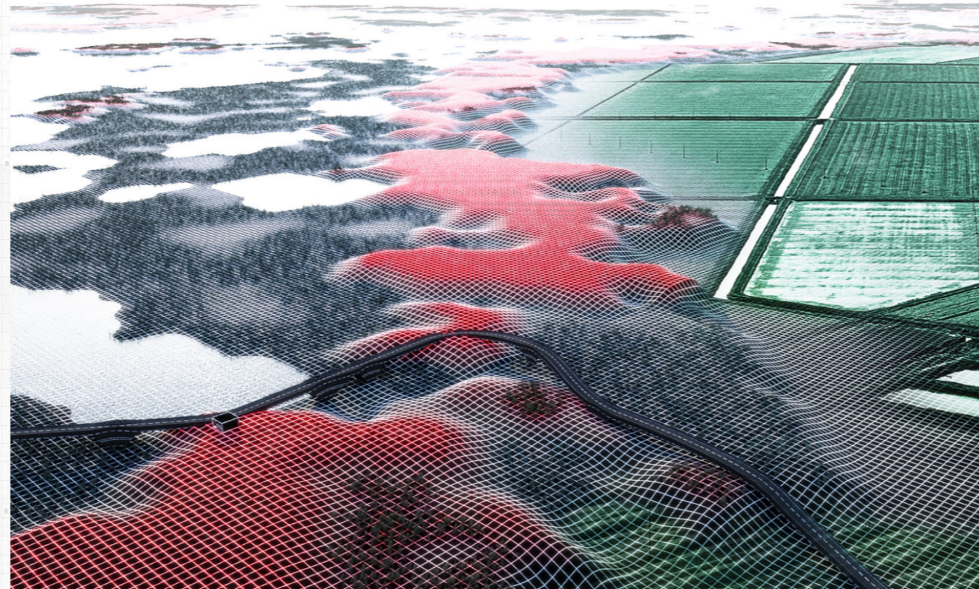
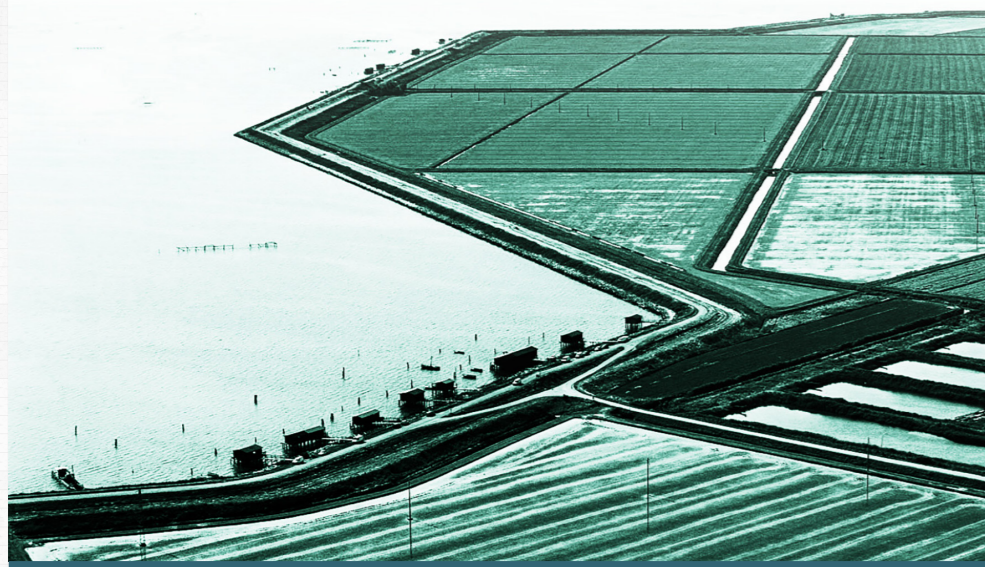
NEUTRAL BUFFER MODEL

Algorithms-Aided Design for the Buffer Areas around the lagoon of Scardovari, in the Po Delta Unesco Biosphere Reserve, Italy.

Visual programming definition showing how, by the combined use of Landscape metrics theories and KNN algorithm, it was able to define a new landscape.



Landscape transformation by the computed rules of artificial naturalness



Country / City	Italy, Ferrara
University / School	University of Ferrara
Academic year	2016/2017
Title of the project	NEUTRAL BUFFER MODEL. Algorithms-Aided Design for the Buffer Areas around the lagoon of Scardovari, in the Po Delta Unesco Biosphere Reserve, Italy.
Authors	Giuseppe Dotto





PERFORMATIVE NATURE

Barcelona International Landscape Architecture Biennial

September 2018 **Barcelona**

SCHOOL PRIZE

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Máster d'Arquitectura del Paisatge -DUOT - UPC
ETSAB- Escola Tècnica Superior
d'Arquitectura de Barcelona
Avenida Diagonal, 649 piso 5
08028 Barcelona-Spain

TECHNICAL DOSSIER

Title of the project	NEUTRAL BUFFER MODEL. Algorithms-Aided Design for the Buffer Areas around the lagoon of Scardovari, in the Po Delta Unesco Biosphere Reserve, Italy.
Authors	Giuseppe Dotto
Title of the course	Landscape architecture and infrastructures
Academic year	2016/2017
Teaching Staff	Luca Emanuelli, Gianni Lobosco, Massimo Tondello, André Turbay
Department/Section/Program of belonging	Architecture department - Sealine research centre
University/School	University of Ferrara

Written statement, short description of the project in English, no more than 250 words

The thesis investigates the potential of parametric modelling to assist the landscape scenarios' design in the so-called "Buffer Zones": which are peripheral to a specific protected area (i.e. "Core Zone") and surrounded by the "Transition Zone", where the artificial gradient is supposed to be higher. The project is developed in the Scardovari lagoon area in the Po Delta UNESCO Biosphere Reserve, recently referred to as Buffer Zone but never strengthened in that sense. At the moment, the strict and rigid arrangement of Buffer areas in the "Sacca" affects negatively the biodiversity rate of the Core Zone resulting also in a less resilient environment face to climate change forecasts.

Buffer zones' design and management is particularly interesting because, here, the limits of artificial and spontaneous landscape are blurred and difficult to detect. The design suggestion is to transfer and boost this ambiguity to the Buffer Zone typology reaching a more flexible and permeable model. The aim is to understand how the Buffer Zones' landscape and its ecological patterns could evolve following different future environmental conditions, maintaining at the same time their functional role for protected areas.

Under this premise, the thesis develops an algorithm (based on "Neutral Landscape Models") which allows to define, parametrically, different digital landscape scenarios starting from the existing situation. Each scenario is linked to measurable biotic variables (such as vegetation types and sea level variations) which give a feedback on the biological landscape value connected to that specific layout. Assisted by such instrument, the landscape design of Scardovari is carried on developing the solution which better seems to optimize "Core Zone" protection in a future perspective.

For further information

Máster d'Arquitectura del Paisatge -DUOT - UPC

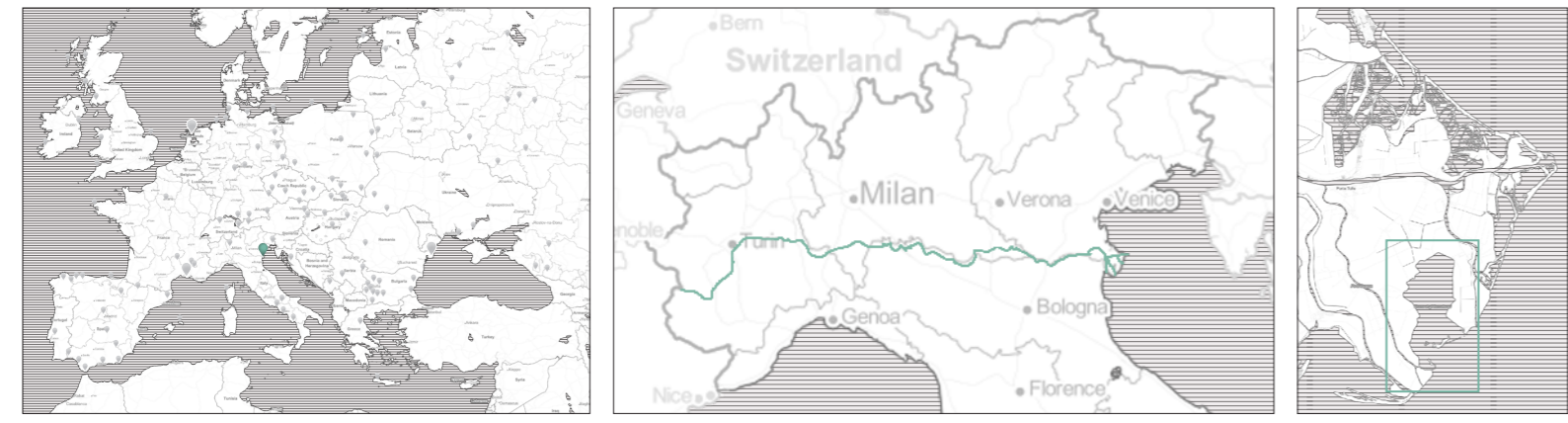
T: + 34 93 401 64 11 / +34 93 552 0842

Contact via email at: biennial.paisatge@upc.edu

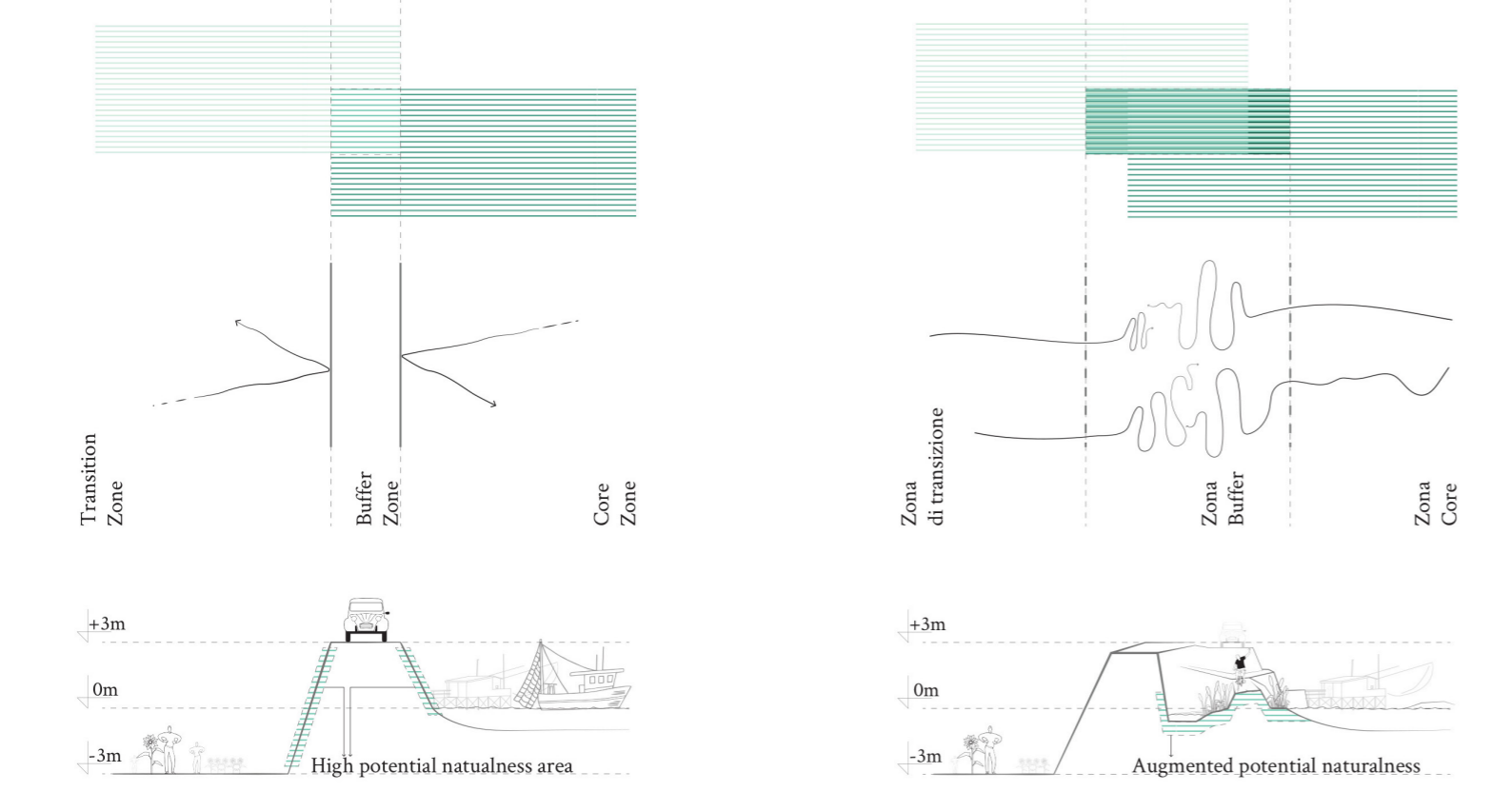
Consult the web page <http://landscape.coac.net/>

PROJECT TARGET

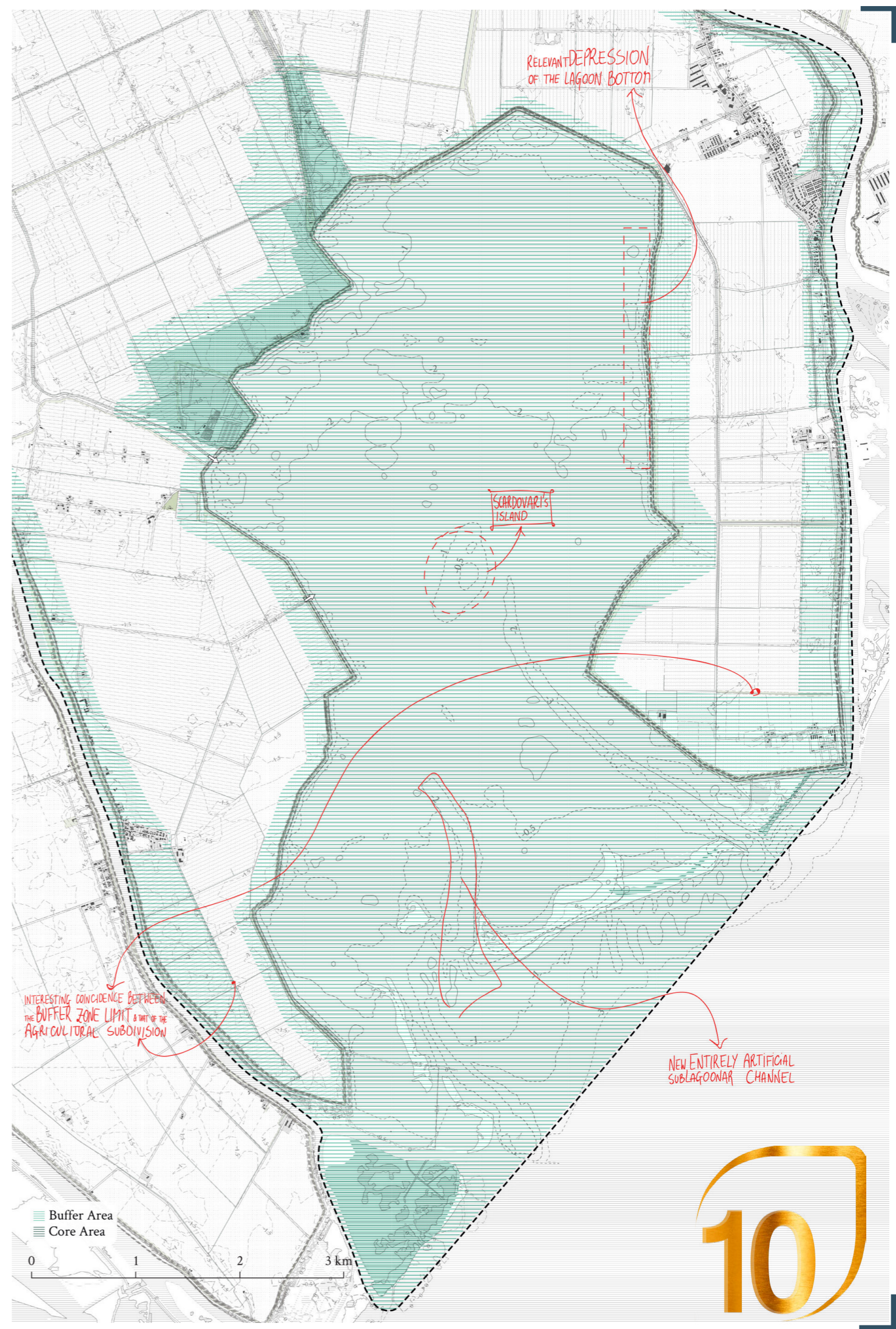
LOCALIZATION between the european biosphere reserves



BUFFER ZONE TYPOLOGIES AND PROPOSED CONCEPT

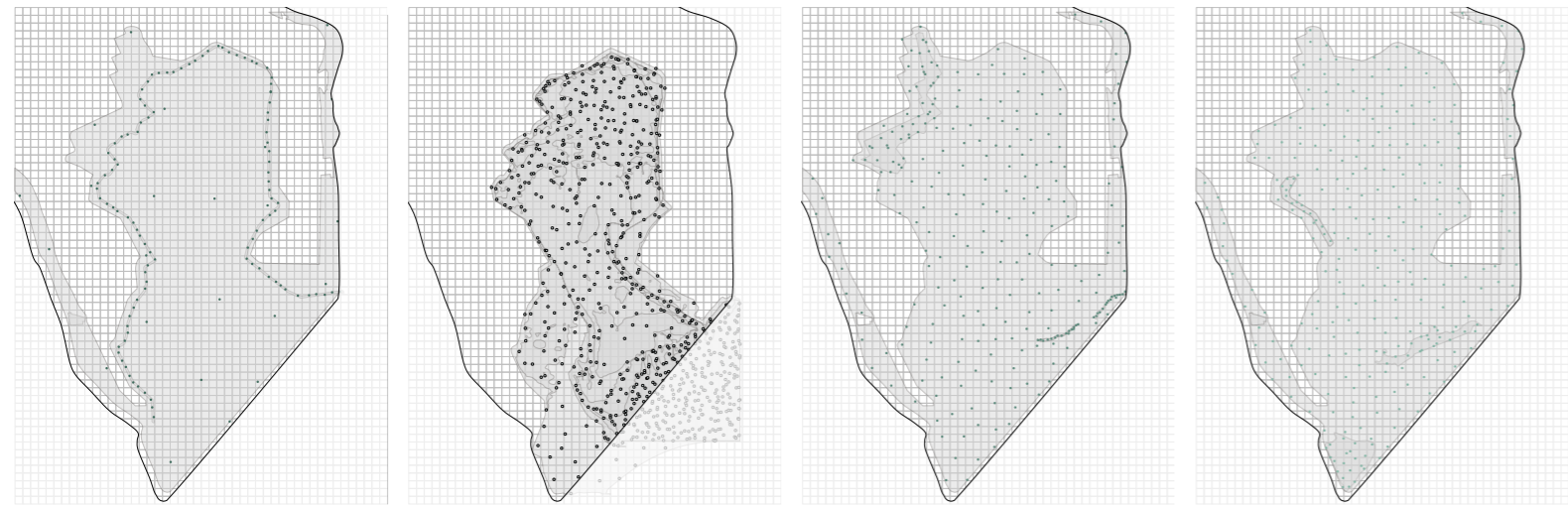


ACTUAL SITUATION OF SACCA DEGLI SCARDOVARI



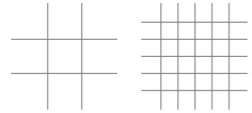
DEVELOPED TOOL FOR THE PROJECT REALIZATION

POPULATION DIAGRAMS



ESSENTIAL PARAMETERS DURING THE CREATION OF THE PARAMETRIC HABITAT SCENARIOS

1. Cell dimentions



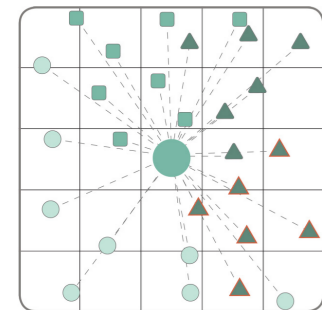
2. K Value



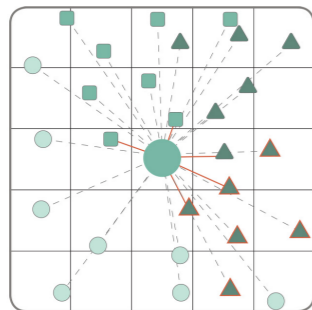
3. Stakeholder quantity and density



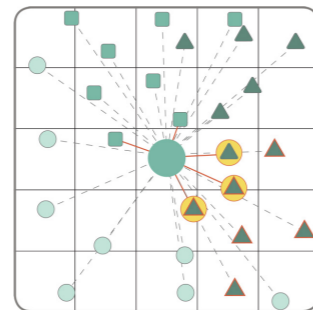
KNN ALGORITHM (How it works)



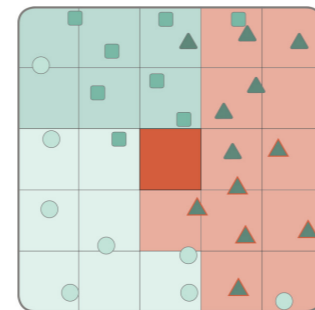
Step 1. Distances calculation between examined landscape cell and the stakeholder populating the digital model



Step 2. Identification of the K stakeholder Nearest Neighbor. (K=5)

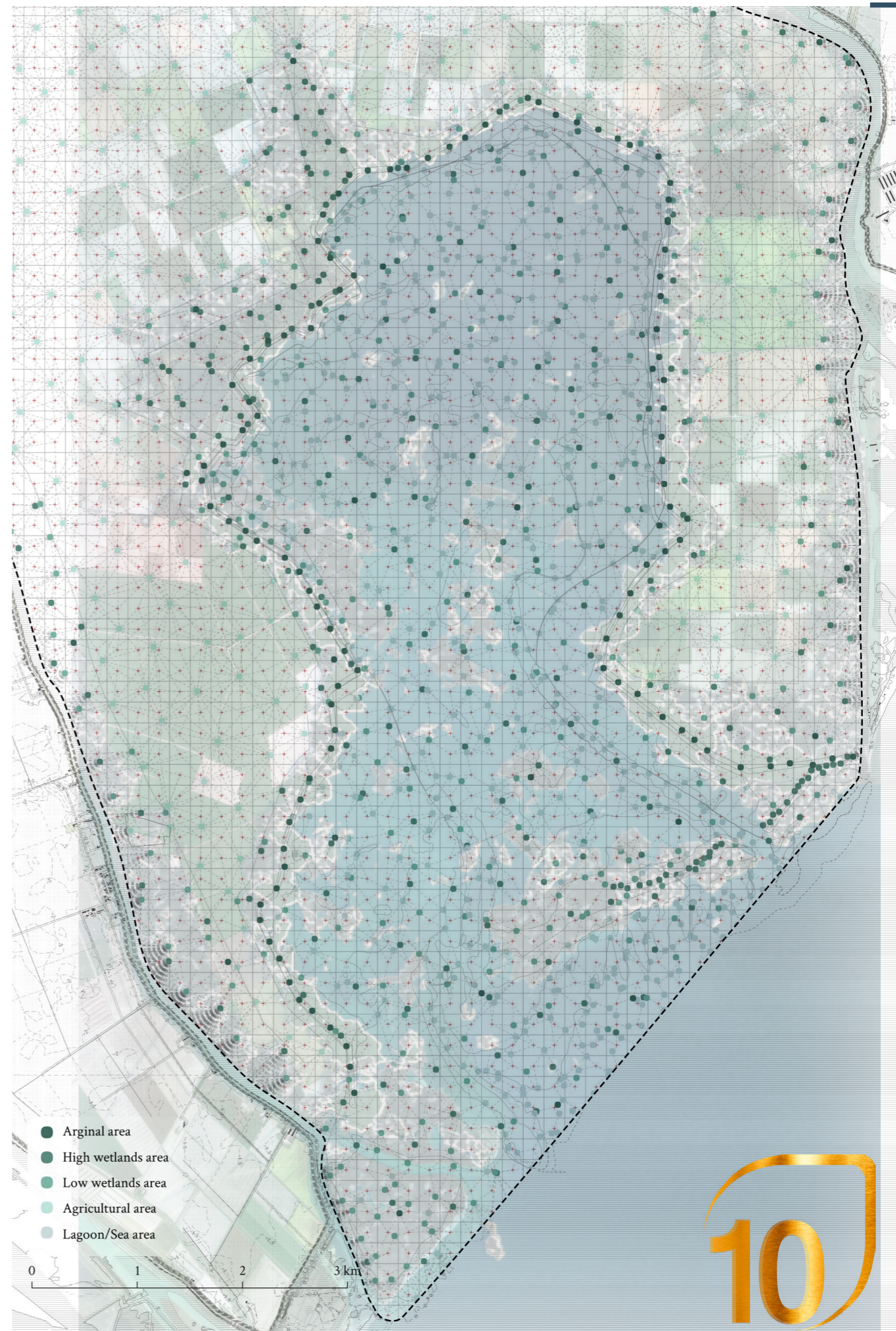


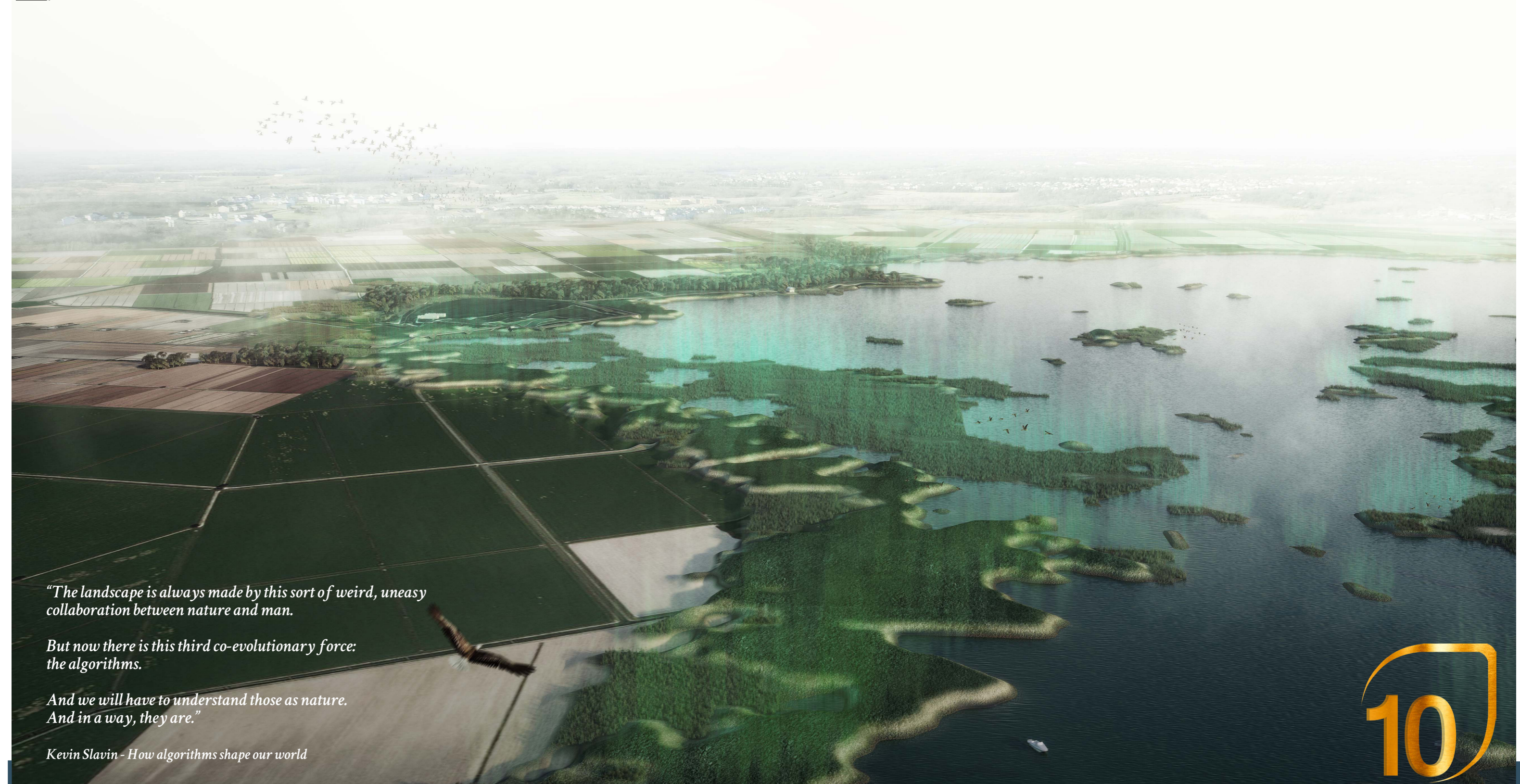
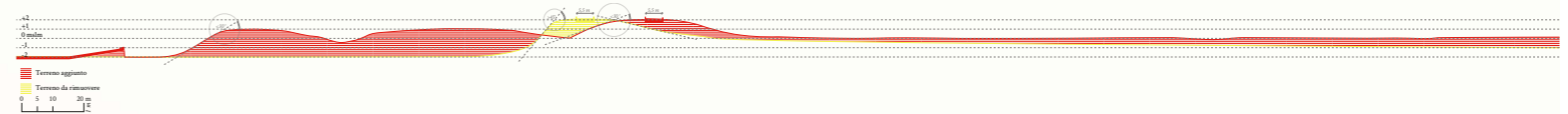
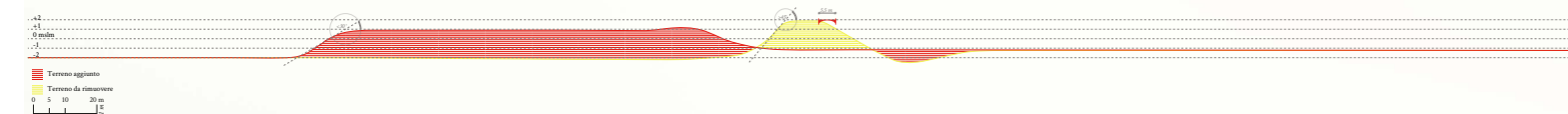
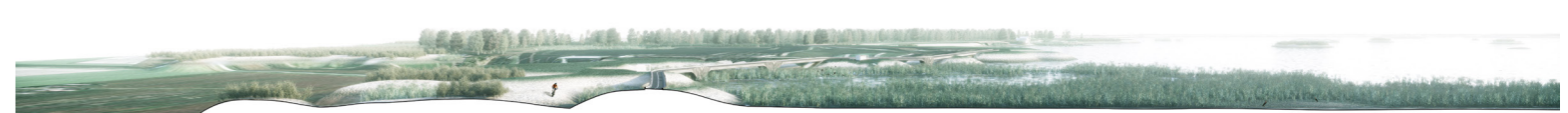
Step 3. Recognition of quantities and identification of the majority frequency votes



Step 4. Examined cell coloration and iterative repetition for all the cell in studied landscape

INTERMEDIATE SITUATION OF SACCA DEGLI SCARDOVARI, WHILE ALGORITHMS ARE CALCULATING





"The landscape is always made by this sort of weird, uneasy collaboration between nature and man.

But now there is this third co-evolutionary force: the algorithms.

And we will have to understand those as nature. And in a way, they are."

Kevin Slavin - How algorithms shape our world