Criteria for area prioritization, basic data collection and monitoring - case study from the eastern Adriatic coast

Sandro Bogdanović & Toni Nikolić

Faculty of Agriculture, University of Zagreb, Croatia
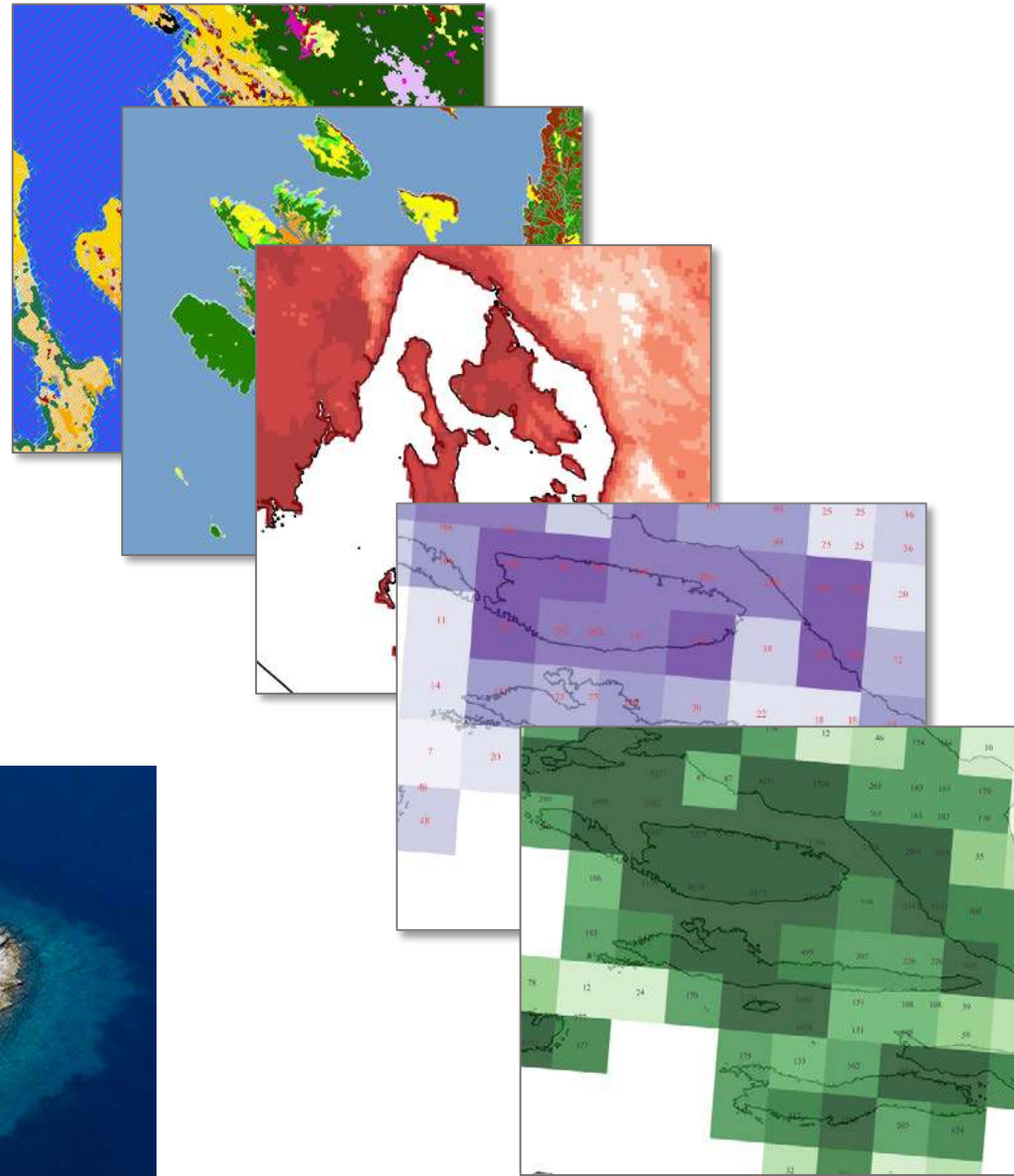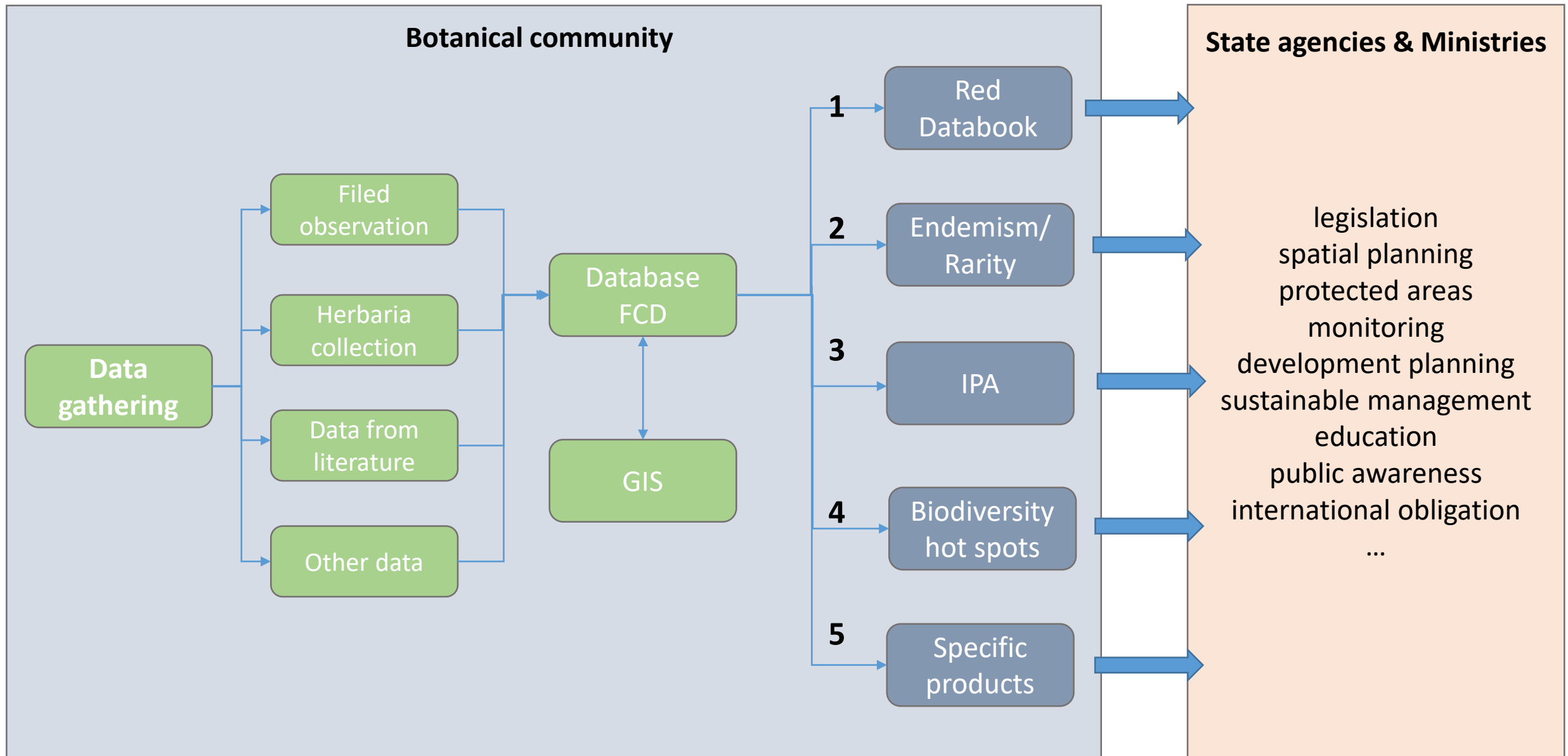Faculty of Science, University of Zagreb, Croatia

POSITION

- Adriatic sea:
- SE-NW direction
- Total lenght 783 km
- 200 km average bandwidth
- Cca 140.000 km2
- Depths up to 1233 m

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STATE OF KNOWLEDGE

- Vegetation maps 1:50.000
- Forest hab. maps 1:100.000
- Unforest hab. maps 1:25.000
- Natural & Potential veg.
- CORINE Landcover
- Climatic data (several variables)
- Digital ortophoto 1:5000
- DEM
- Pedological maps
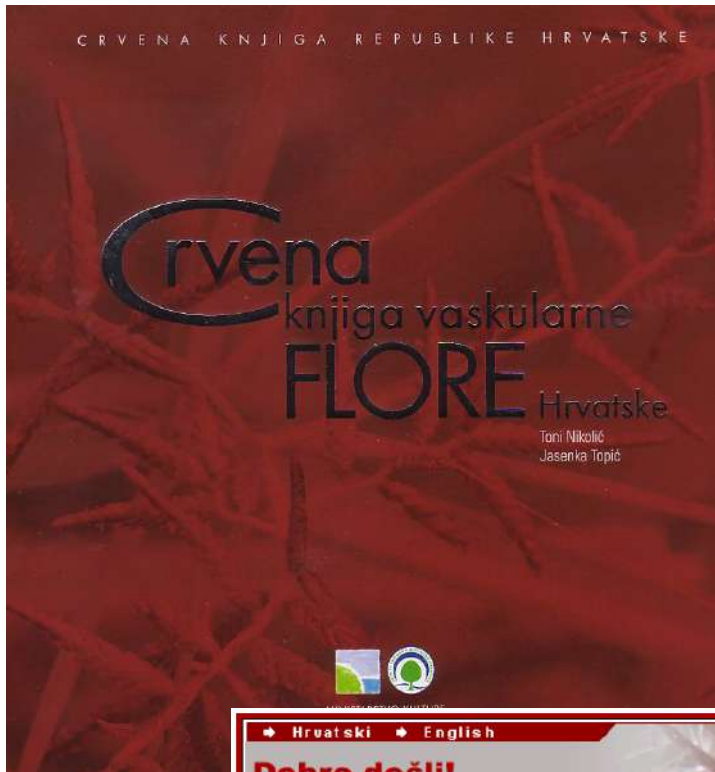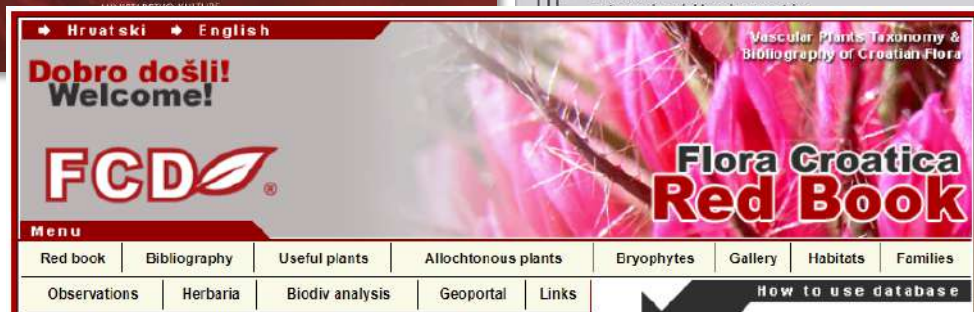- Geological maps
- Other …
- Realtime data about flora

Botanical community

State agencies & Ministries

Data gathering

- Filed observation
- Herbaria collection
- Data from literature
- Other data

Database FCD

GIS

1. Red Databook
2. Endemism/ Rarity
3. IPA
4. Biodiversity hot spots
5. Specific products

legislation
spatial planning
protected areas
monitoring
development planning
sustainable management
education
public awareness
international obligation
…

Red Databook

Figure 3. Standard elements in each taxon processing

- regional assessment
- population trend
- category and criteria
- common name(s)
- belong to order and family
- synonym(s)
- place of publishing

- latin name with authorisation
- distribution map using MTB squares
- conservation measures using authority file

Allium angulosum L.

- conservation measures
- habitats according CORINE and GLCC/SSC classification
- habitats

- taxon description

- localities
- distribution in Croatia
- other data about taxon
- figure

- assessor
- collaborator(s)
- author(s)
- references
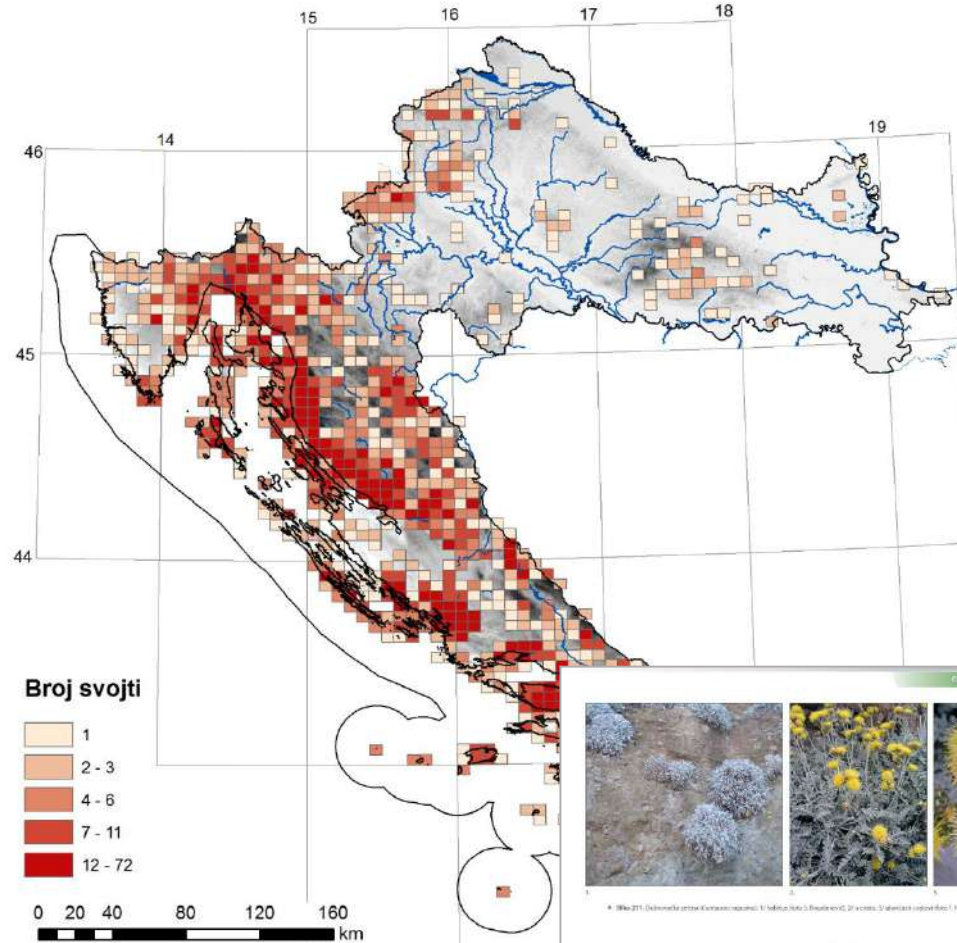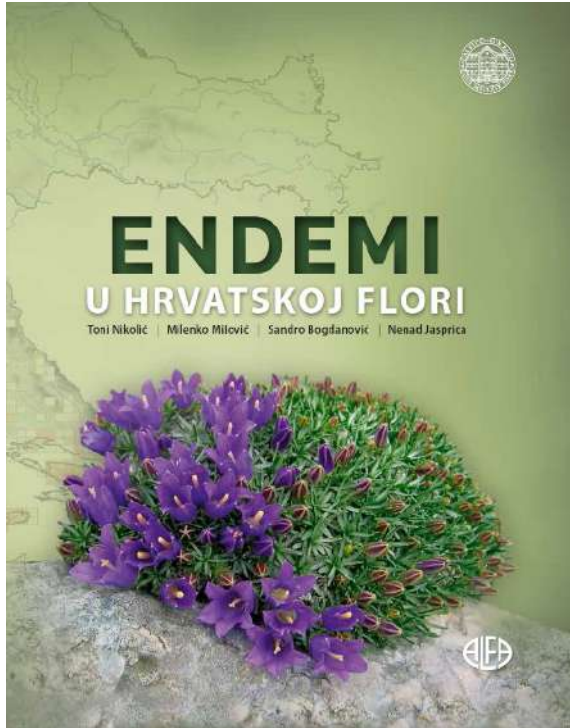- distribution in Europe

State agencies & Ministries

Legislation,
all taxa in categories EN, CR, VU protected by the law on all natural habitats spatial planning education public awareness
...

IPA

State agencies & Ministries

spatial planning
NATURA 2000
adjustments
sustainable
management
public awareness
...

Methodology according to PlantLife - A Site Selection Manual for Europe, and a basis for developing guidelines for other regions of the world, 99 IPAs in Croatia

Endemism/
Rarity

ENDEMI
U HRVATSKOJ FLORI
Toni Nikolić | Milenko Milović | Sandro Bogdanović | Nenad Jasprica

Broj svojti

	1
	2 - 3
	4 - 6
	7 - 11
	12 - 72

0 20 40   80   120   160
km

**State agencies
& Ministries**

protected areas
management
education
public awareness
Natura 2000, NN
144/22 from 2013
protect 273
endemics (71%)
...

The endemic and range restricted vascular plants of Croatia: diversity,
distribution patterns and their conservation status

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Zagreb, Croatia.
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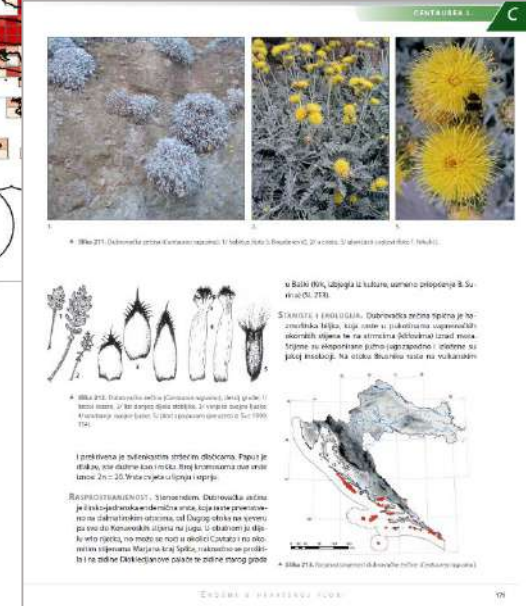
Biodiversity hot spots

Plant Biosystems - An International Journal Dealing with all Aspects of Plant Biology
Official Journal of the Societa Botanica Italiana

ISSN: 1126-3504 (Print) 1724-5575 (Online) Journal homepage: http://www.tandfonline.com/loi/tplb20

Diversity, knowledge and spatial distribution of the vascular flora of Croatia

T. Nikolić, B. Mitić, M. Ruščić & B. Milašinović
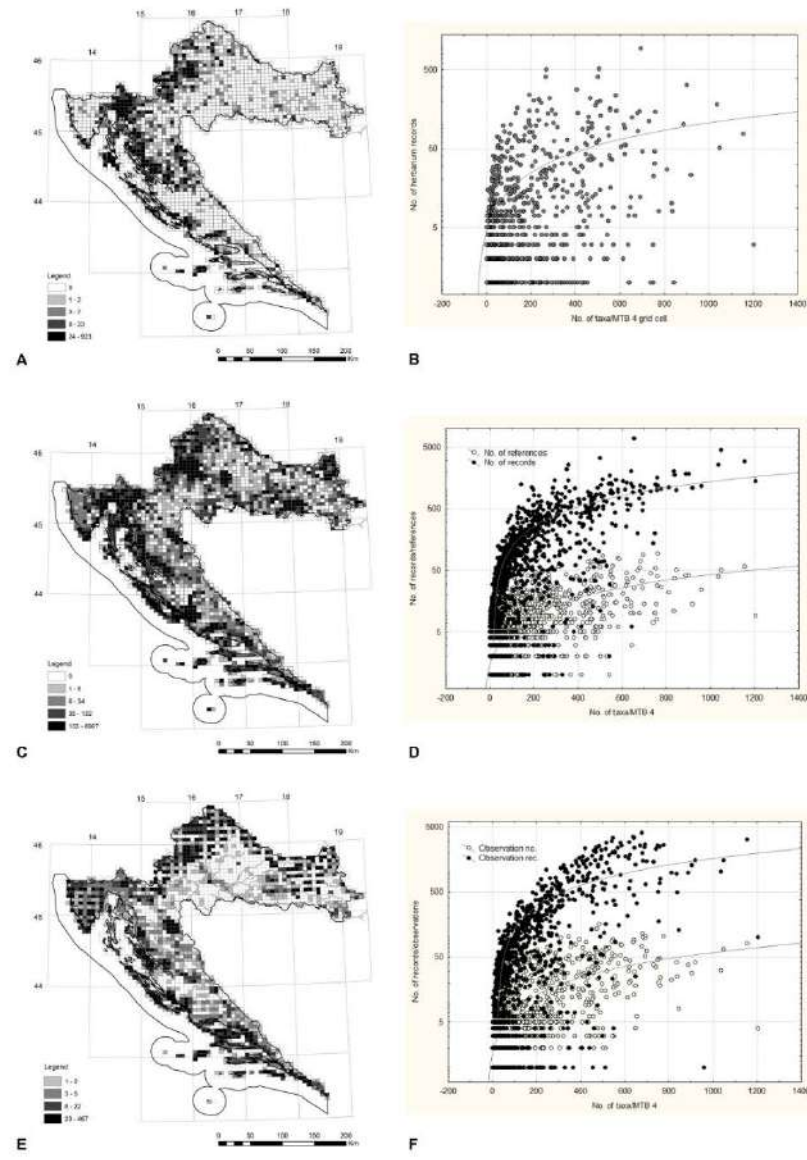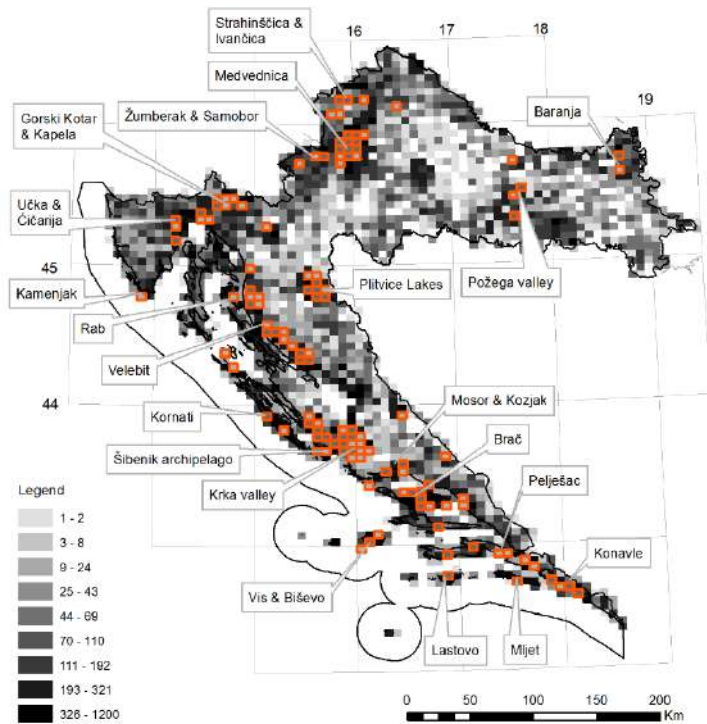
State agencies & Ministries

spatial planning
protected areas
management
education
public awareness
...

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UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

Table 2. Summary of data used in surrogate approach in Coast project area biodiversity analysis

No.	Criteria	Comment
1	Endemicity	Distribution of endemic taxa of vascular flora and fauna and frequency were analyzed
2	Threatenes	Number of threatened taxa of flora and fauna were used on some or all levels separately, using IUCN categorization ver. 3.1 (EX, RE, CR, EN and VU) to recline to national Red Books (finished and in up growth) and international red listing initiative (IUCN 2003, http://www. iucnredlist.org/)
3	Rarity	The rarity was defined and rarity index calculated for each spatial unit, separately for flora, fauna and habitats
4	Isolated taxa presence	Mostly isolated geographically leading in population or on higher level of isolation. Rarity index, mentioned above take care about isolation effect
5	Indicator taxa	Not analyzed separately, but discussed and mentioned on several occasion
6	Wilderness	Indirectly included in habitat analysis
7	General and known species richness	α diversity used but not in final decision making because of mostly uneven data distribution – could lead to un appropriate spatial evaluation
8	Ecosystem diversity	Indirectly included in habitat analysis
9	Landscape diversity	in progress, not finished jet
10	Habitat diversity	Diversity on habitats, number of defined habitats types per square unit, uniqueness analyzed for whole area. Special important data because it is only full spatial covering data set
11	Conservation importance (using other or above criteria)	According to the regional / national / local priorities especially regarding Habitat directive and internationally designated sites
12	Habitat with important species richness	Indirectly included in habitat analysis
13	Selected taxa richness	Related to special types habitats, especially small water courses, ridges cliffs and caves
14	Specific a biotic elements	Used as directly connected with biodiversity and unique taxa composition (topographic strangeness, altitude, exposition, slope, etc.)
15	Natural Heritage	Used national resources on already established values as an integral part of national network of protected areas/sites or national / international ecological networks (area recognized as nature parks, national parks, strict reserves, Ramsar sites, parts of PEEN, Emerald, etc.)
16	etc.	Distribution models for slack known taxa (i.e. Posidonia oceanica), free expert judgment (i.e. some maritime areas), etc.

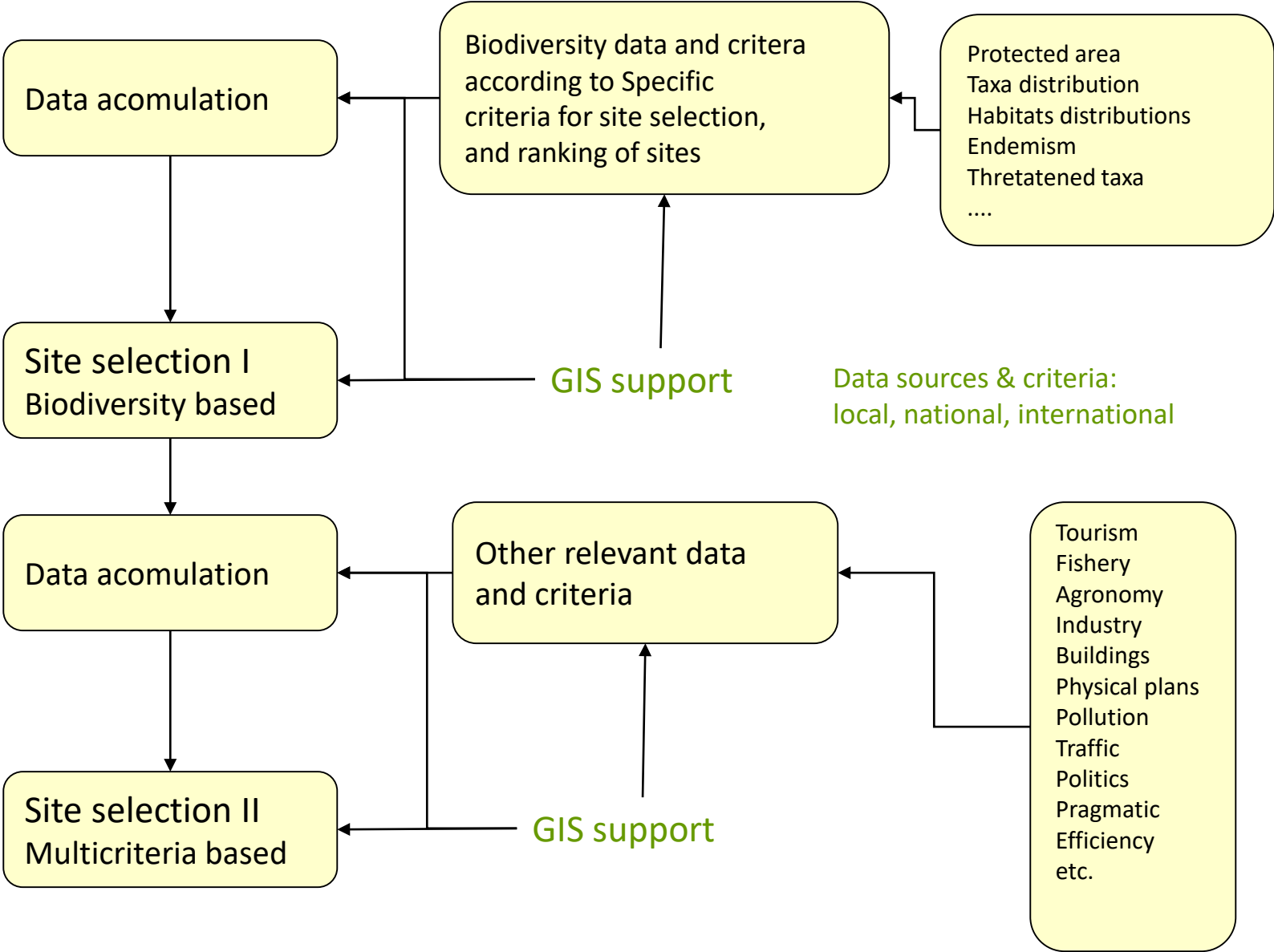**State agencies & Ministries**

county spatial planning
sustainable tourism development
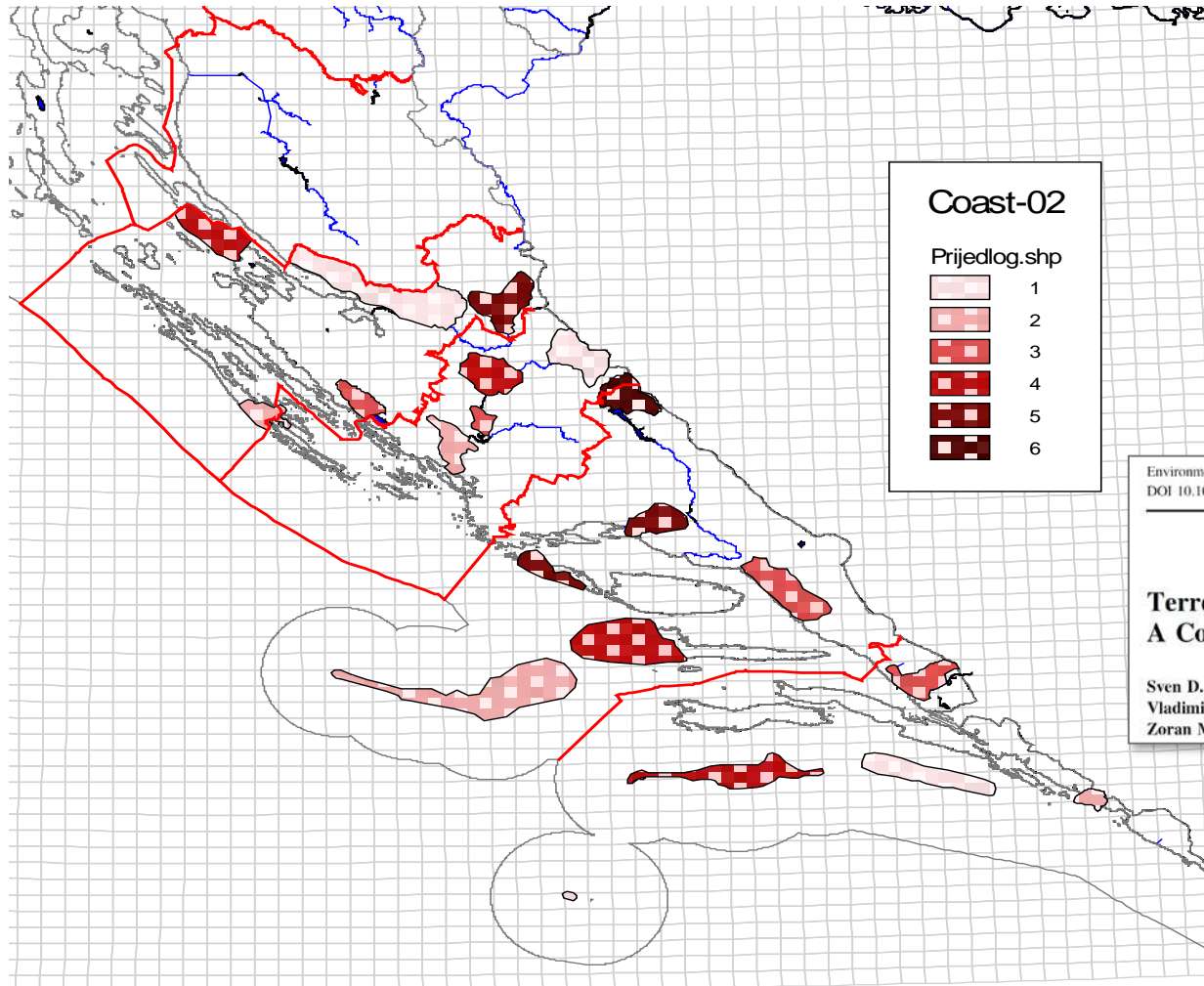monitoring

public education
awareness
...

Specific products

UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

Data acomulation

Biodiversity data and critera according to Specific criteria for site selection, and ranking of sites

Protected area
Taxa distribution
Habitats distributions
Endemism
Thretatened taxa
....

Site selection I
Biodiversity based

GIS support

Data sources & criteria:
local, national, international

Data acomulation

Other relevant data and criteria

Tourism
Fishery
Agronomy
Industry
Buildings
Physical plans
Pollution
Traffic
Politics
Pragmatic
Efficiency
etc.

Site selection II
Multicriteria based

GIS support

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Coast-02

Prijedlog.shp
1
2
3
4
5
6

Environmental Management (2010) 45:616–625
DOI 10.1007/s00267-010-9437-y

Author's personal copy

Terrestrial Biodiversity Analyses in Dalmatia (Croatia): A Complementary Approach Using Diversity and Rarity

Sven D. Jelaska · Toni Nikolić · Lucija Šerić Jelaska ·
Vladimir Kušan · Hrvoje Peternel · Goran Gužvica ·
Zoran Major

20 sites with greatest overall biodiversity importance in Coast project area with priority codes (1-max, 6-min) for each county separately

UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

The number of different habitats per square unit (MTB ¼) listed in Habitats Directive (92/43/EEC). Source of data: Map of habitats (mmu 9 ha) – Ministry of Environmental Protection, Physical Planning and Construction
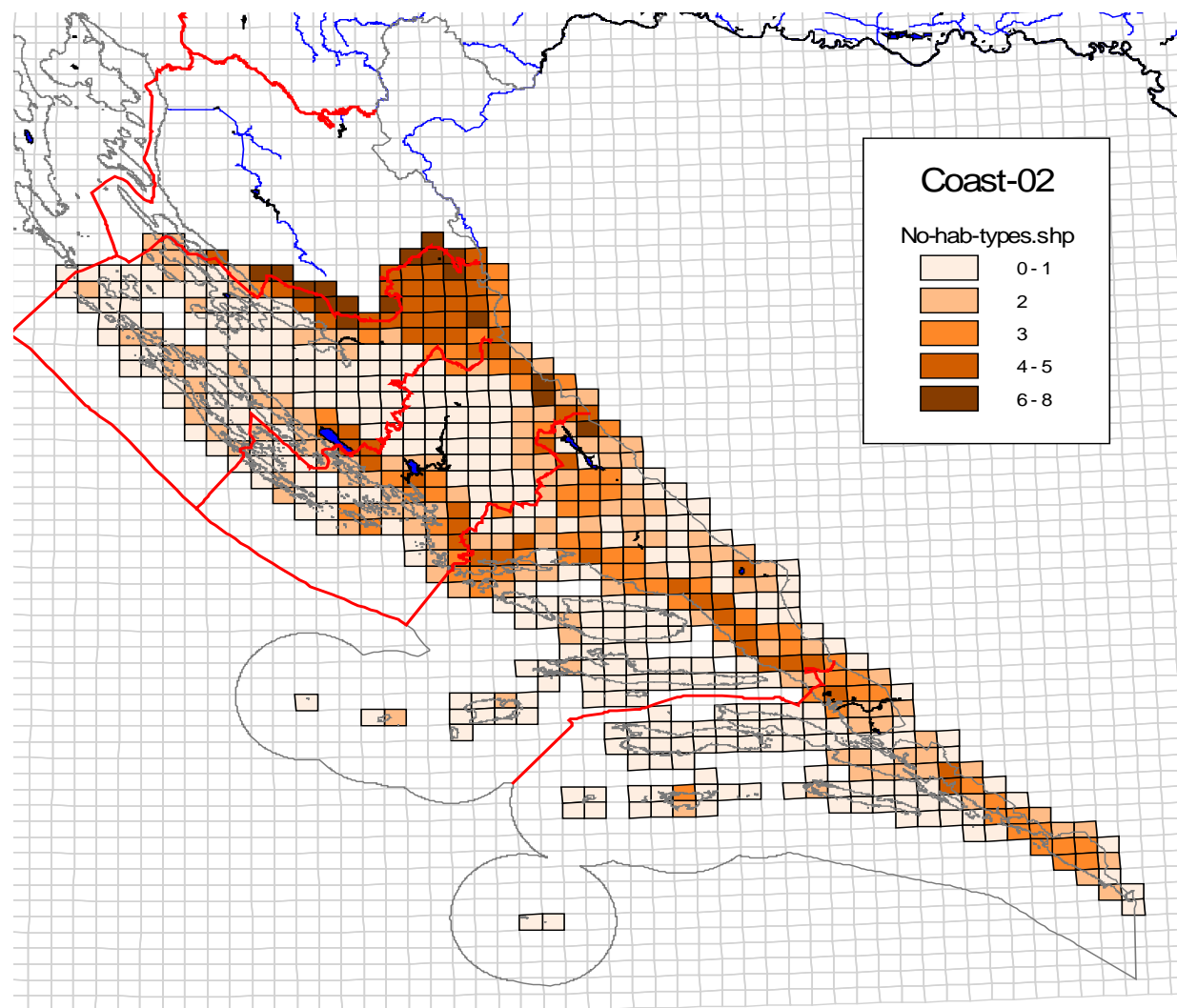
Coast-02

No-hab-types.shp

- 0 - 1
- 2
- 3
- 4 - 5
- 6 - 8

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Specific products

UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

Distribution and number of fauna taxa per square unit
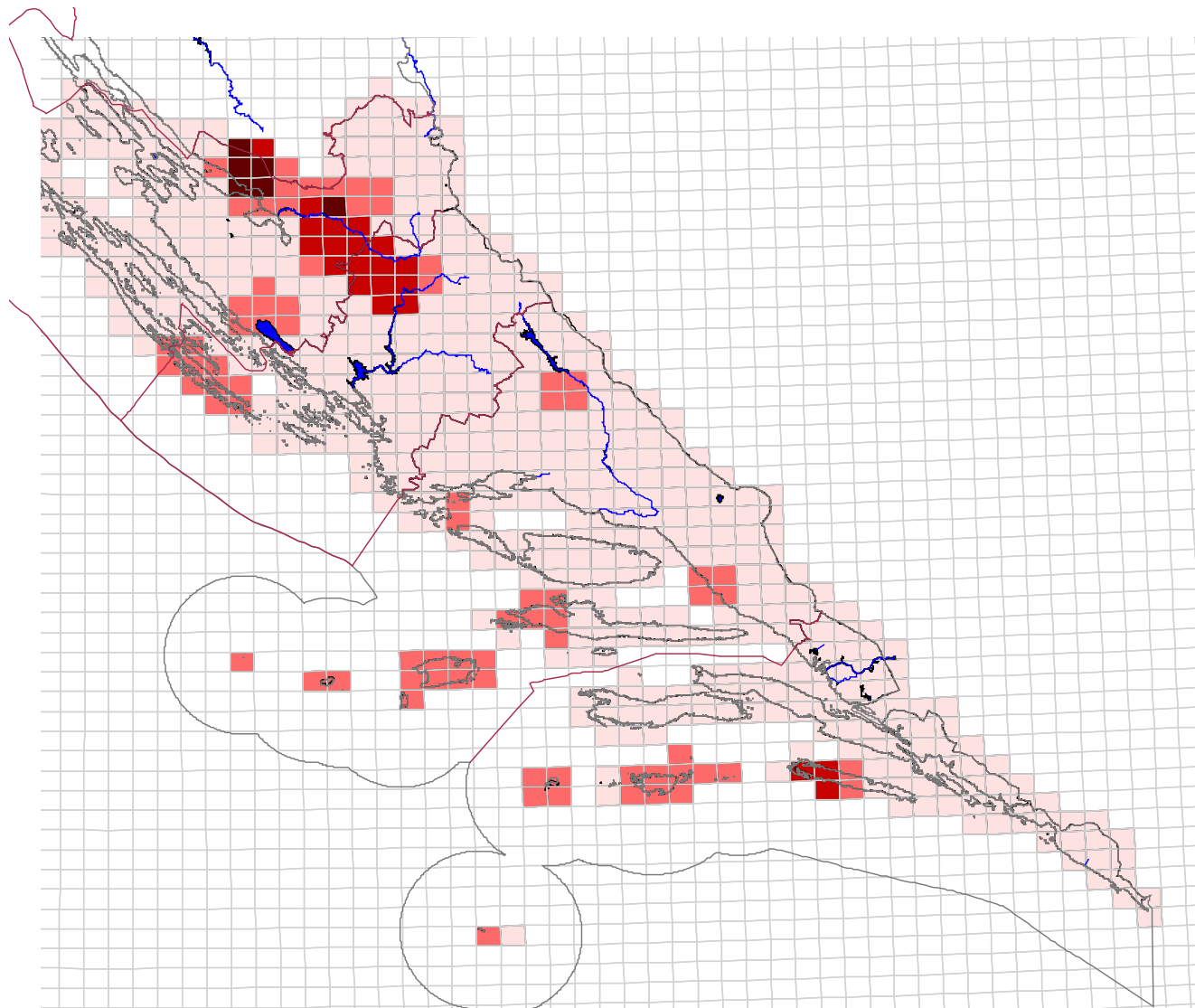
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Eg. number of small aquatic habitats per unit field as particularly significant habitats, number of speleological objects or eg total number of natural habitats per unit field on land
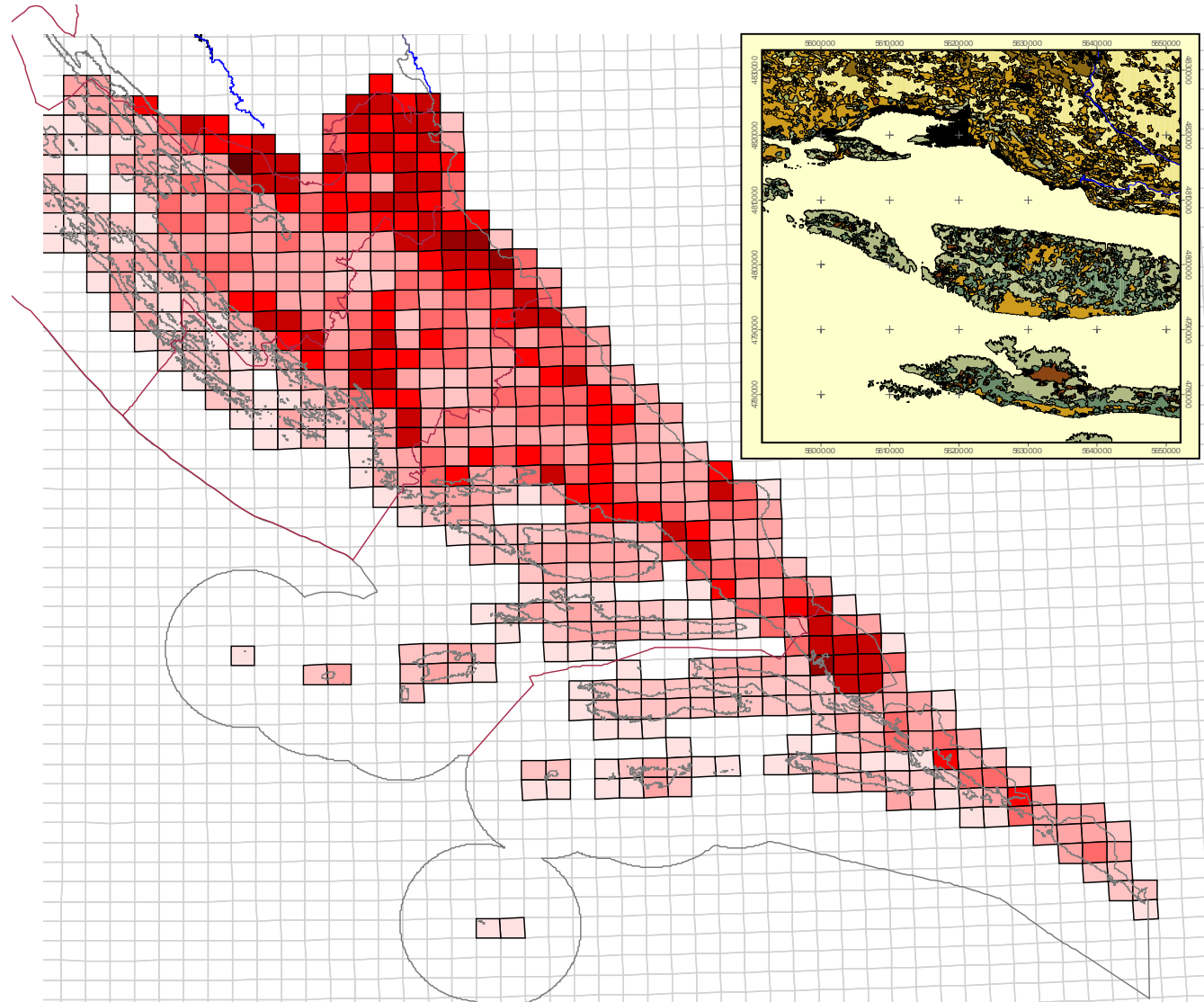
UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

Categorised land use
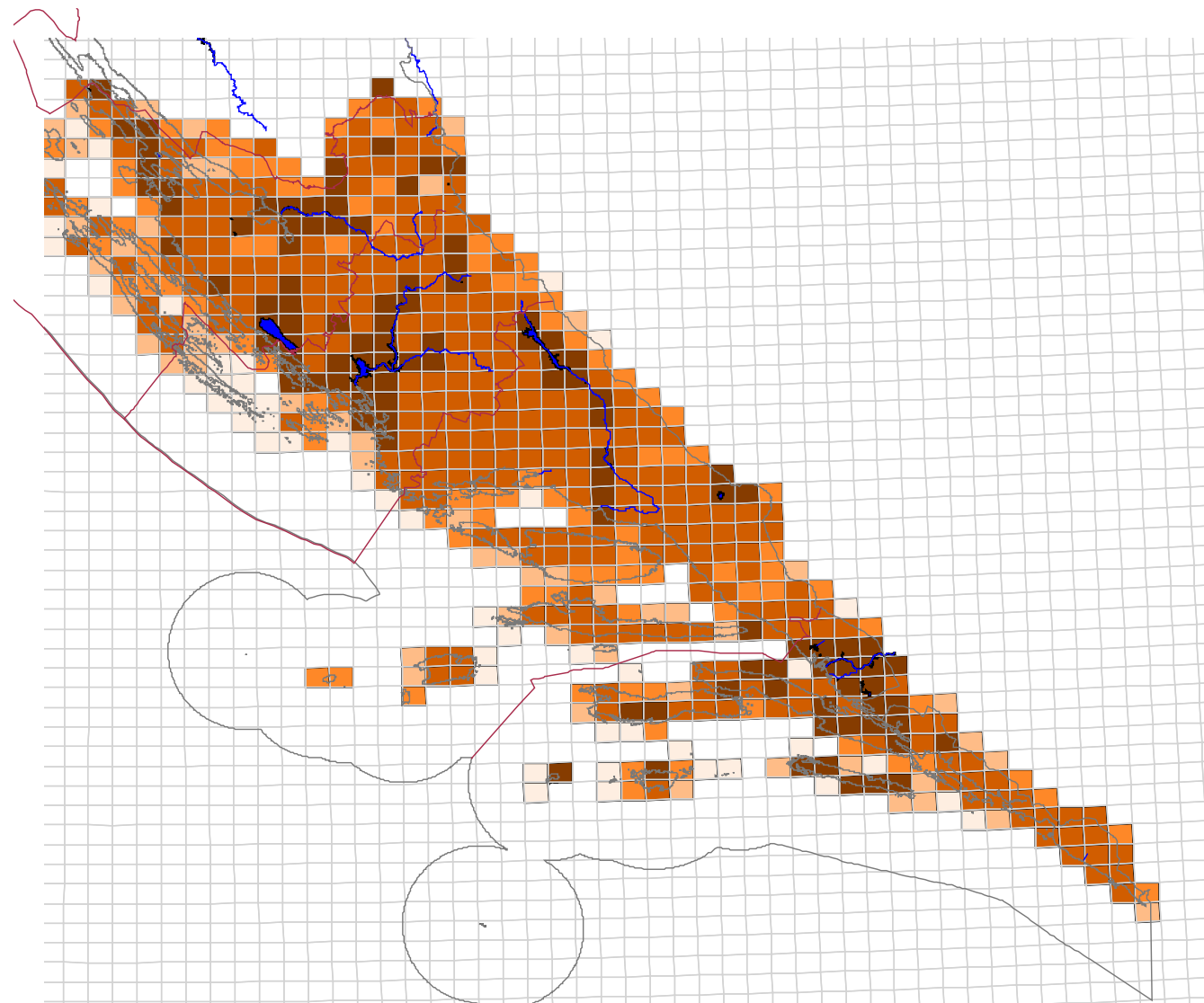
Specific products
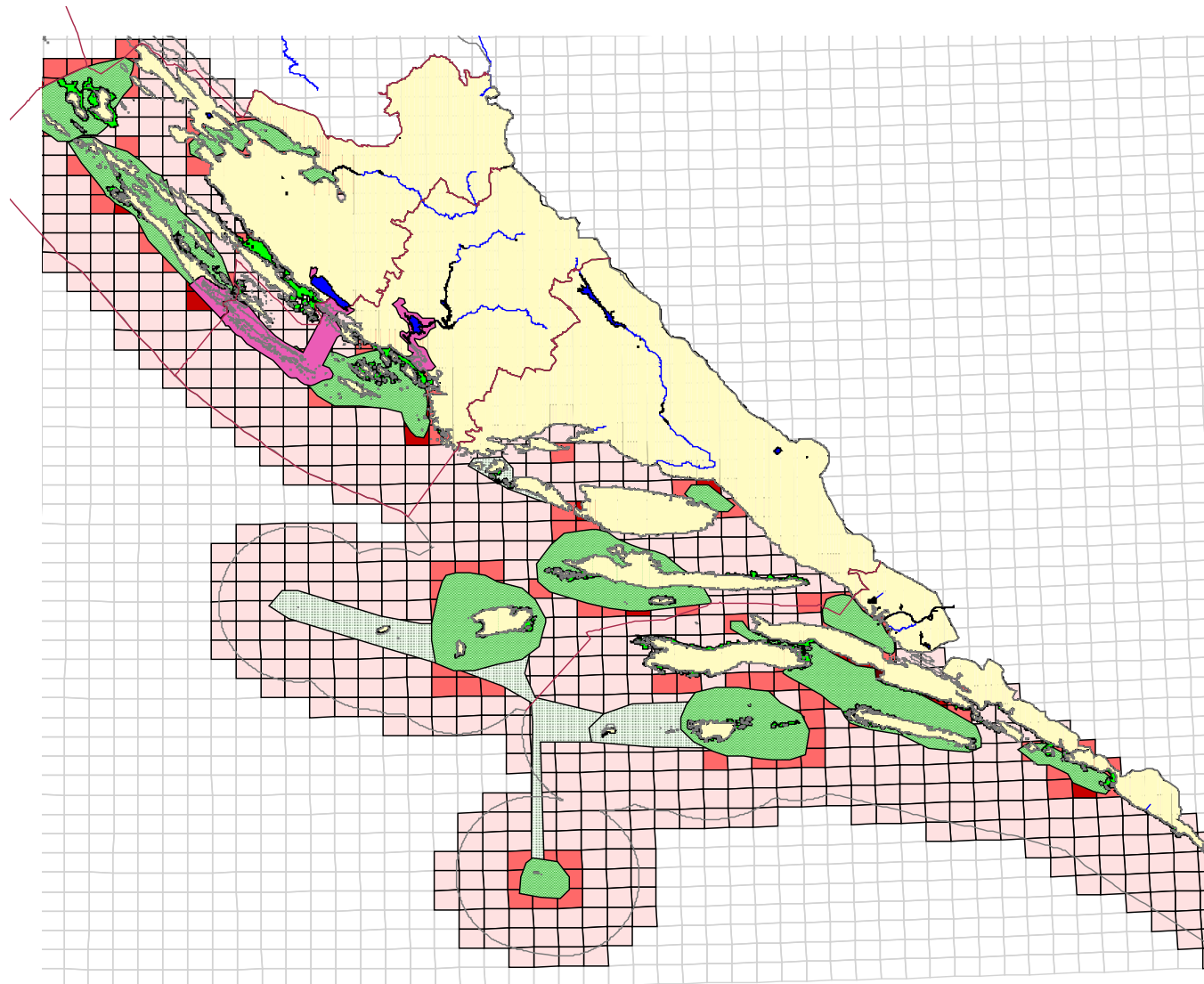
UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

Areas particularly important for the conservation of marine biodiversity

Specific products

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Areas particularly important for the conservation of marine biodiversity
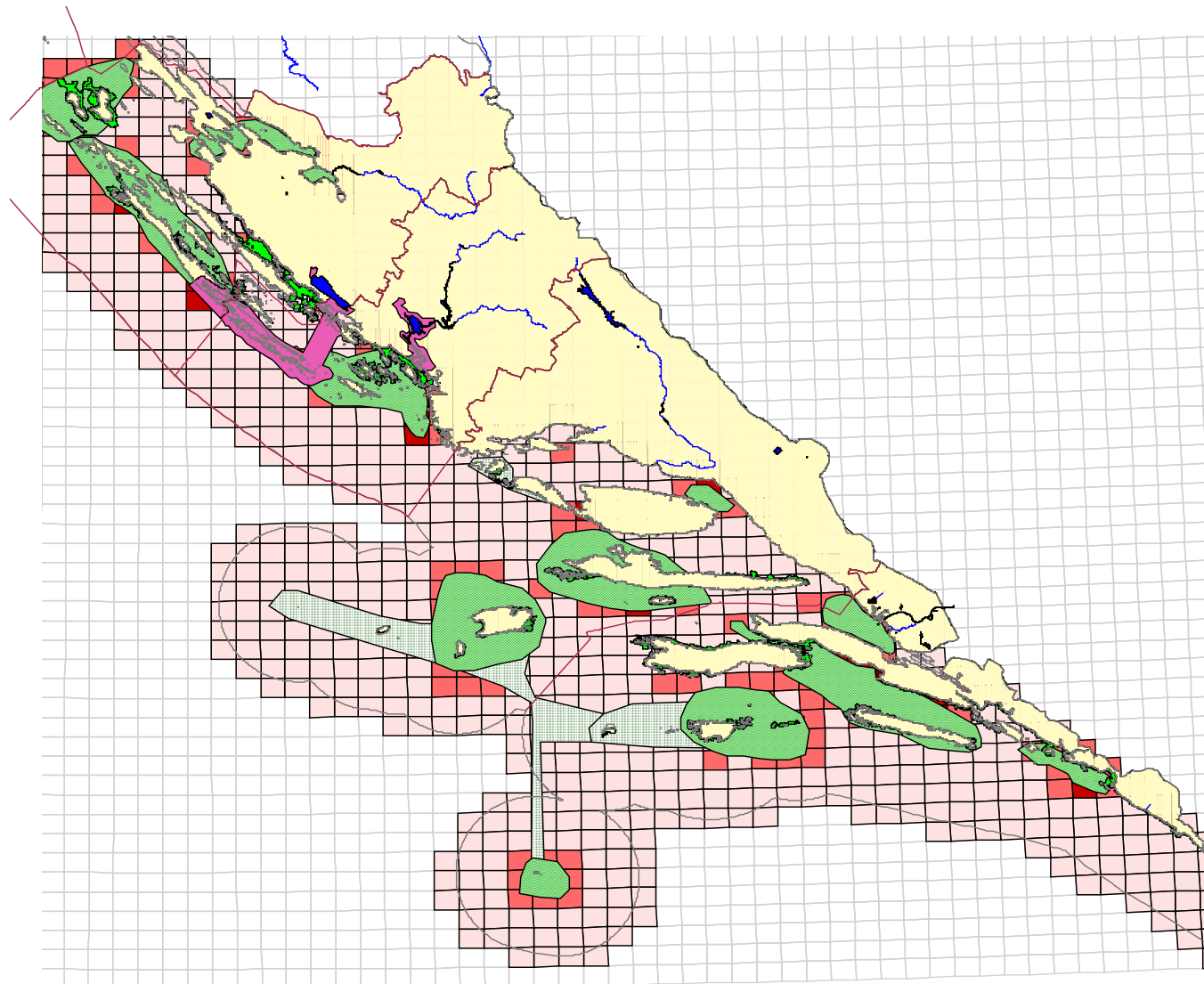
UNDP/GEF "COAST" PROJECT Conservation and Sustainable Use of Biodiversity in the Dalmatian Coast through Greening Coastal Development

An example of a conflict of interest

Overlap of construction and tourist areas with areas important for biodiversity conservation.

Use of other data collected by the BD team as well as other sectors

Managament plans for 20 priority sites
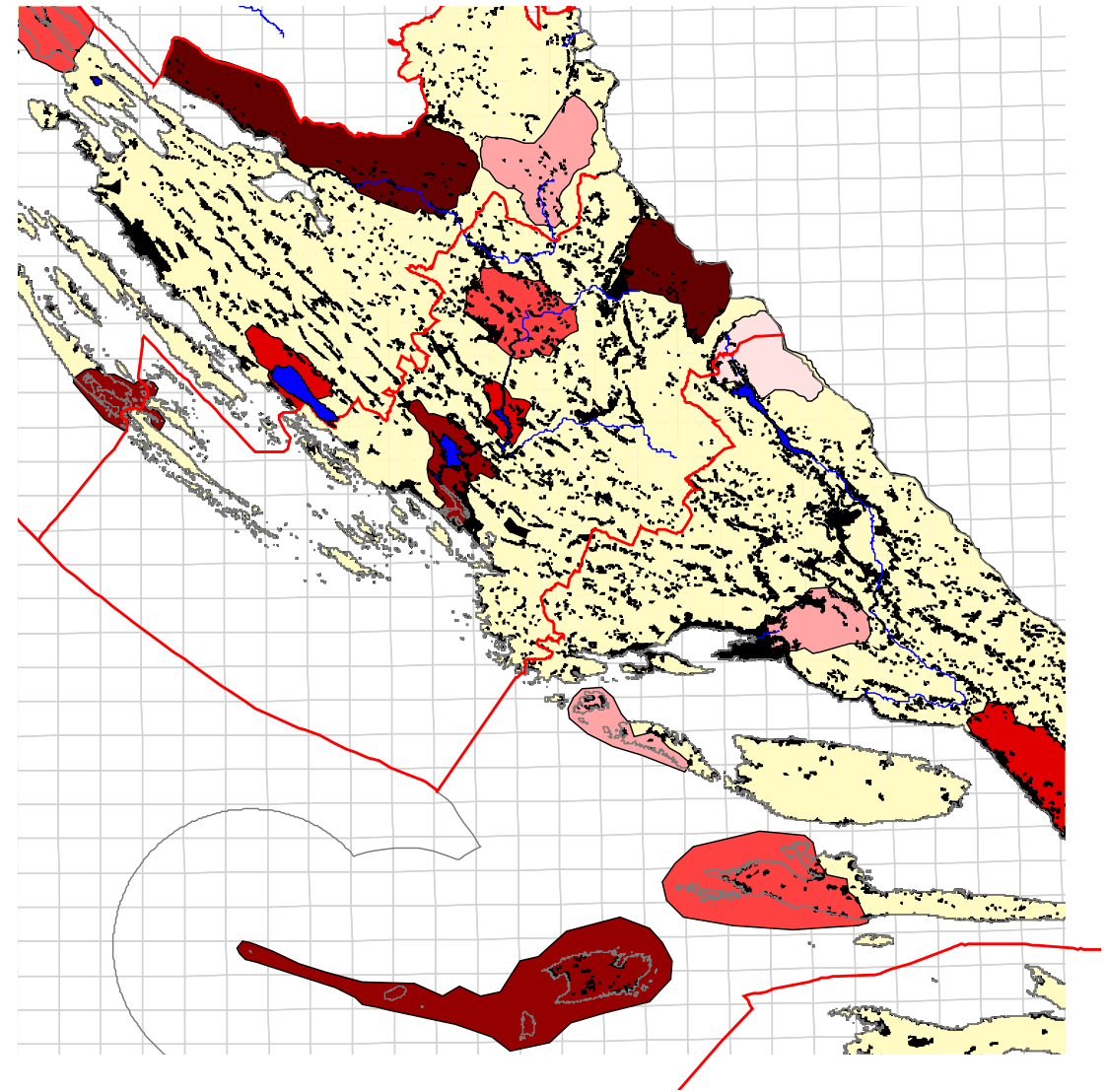
Specific products

Strengthening the capacity for environmentally sensitive beach management

Guidelines and priority actions for sustainable beach management in Croatia
United Nations Development Program (UNDP)

1. detecting all sandy shore localities based on remote sensing data
2. field inventory of all target habitats
3. flora inventory, full census
4. habitat threats assesment
5. management proposals
6. demonstration practical application at 3 localities
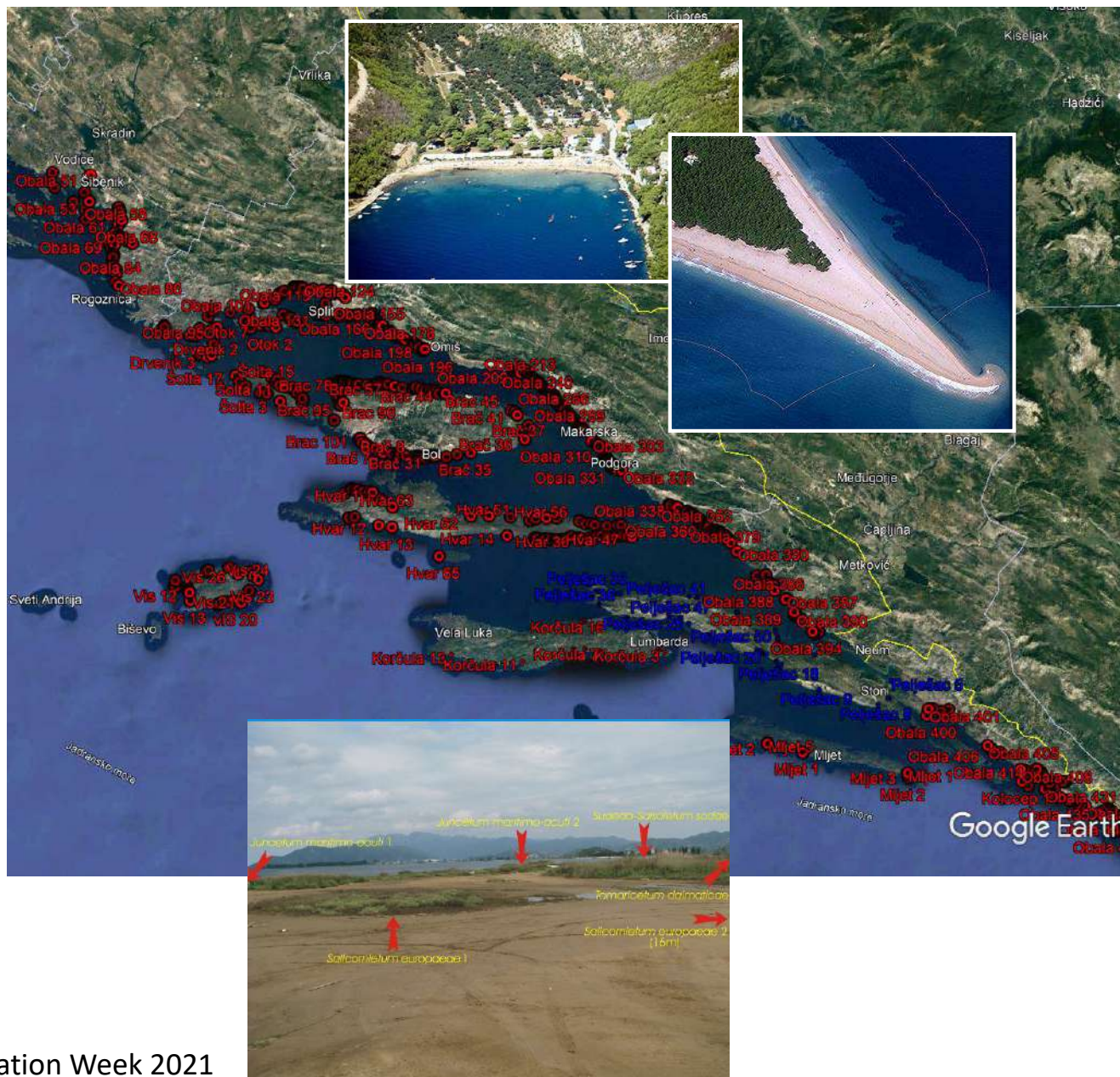
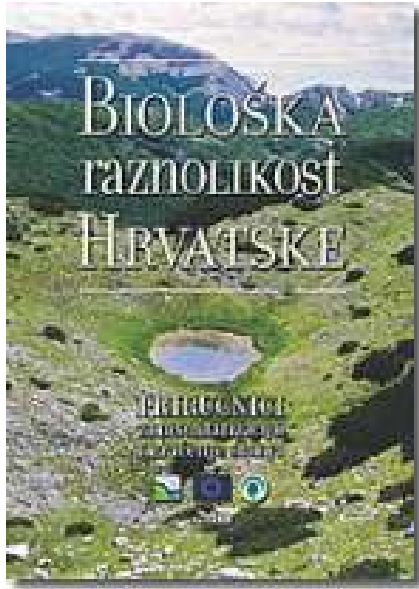**State agencies & Ministries**

site spatial planning
sustainable tourism development
monitoring
education
public awareness
...

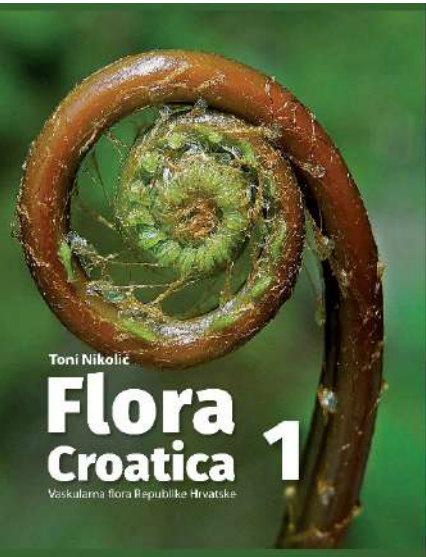3rd Mediterranean Plant Conservation Week 2021

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Specific products

State agencies & Ministries

education
public awareness
...

Thank you for your attention ☺

Sandro Bogdanović & Toni Nikolić

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Faculty of Science, University of Zagreb, Croatia, toni.nikolic@biol.pmf.hr