

# Pregled literature na področju ES (za)varovanih območij

*1. delavnica projekta NatGuidES*

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ILONA RAC, BIOTEHNIŠKA FAKULTETA

8. marec 2022

# Sistematični pregled literature (prelim.)

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Web of Science<sup>1</sup> in Scopus<sup>2</sup>, 7. 12. 2021 -> Rezultati: 2370 oziroma 2736 zadetkov

Čiščenje na podlagi povzetkov: nerelevantno, preozko, nedostopno, ES samo omenjene, nespecifično itd. ...

Ostane ~560 objav

Grobe skupine glede na poudarke (možno prekrivanje!):

- Ekonomsko in ne-ekonomsko vrednotenje
- GIS, prostorski pristopi
- Percepcije, participativne metode (ankete, ekspertna mnenja)
- Družbena omrežja in slike
- Drugo (pregledi, opisni in konceptualni članki itd.)

<sup>1</sup> ("ecosystem service\*" OR "nature\* contribution\* to people" OR "benefit\* of nature") AND ("protected area\*" OR "Natura 2000" OR "natural heritage" OR "Strict nature reserve\*" OR "nature reserve\*" OR "wilderness area\*" OR "national park\*" OR "natural monument\*" OR "natural feature\*" OR "habitat management area\*" OR "species management area\*" OR "protected seascape\*" OR "Protected Area with sustainable use of natural resources" OR "habitat type\*")

<sup>2</sup> TITLE-ABS-KEY ({ecosystem services} OR {ecosystem service} OR {nature contribution to people} OR {benefits of nature})  
AND  
TITLE-ABS-KEY({protected area} OR {protected areas} OR {Natura 2000} OR {natural heritage} OR {Strict Nature Reserve} OR {Wilderness Area} OR {National Park} OR {Natural Monument} OR {Natural Feature} OR {Natura 2000} OR {Habitat Management Area} OR {Species Management Area} OR {Protected Landscape} OR {Protected Seascape} OR {Protected Area with sustainable use of natural resources} OR {habitat type} OR {habitat types})

# IZBRANE OBJAVE

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Na podlagi relevantnosti za NatGuidES:

- Celoviti (dovolj širok nabor ES)
- Prostorski pristop
- Primerjava ZO in ne-ZO
- Upoštevanje sinergij in kompromisov
- Metoda snežne kepe



<https://www.limelightonline.co.nz/blog/guide-selecting-preparing-images-your-website/>



# Pregledni članek: Hummel et al., 2019

Christiaan Hummel<sup>a,b,\*</sup>, Dimitris Poursanidis<sup>c</sup>, Daniel Orenstein<sup>d</sup>, Michael Elliott<sup>e</sup>, Mihai Cristian Adamescu<sup>f</sup>, Constantin Cazacu<sup>f</sup>, Guy Ziv<sup>g</sup>, Nektarios Chrysoulakis<sup>c</sup>, Jaap van der Meer<sup>b,h</sup>, Herman Hummel<sup>a</sup>

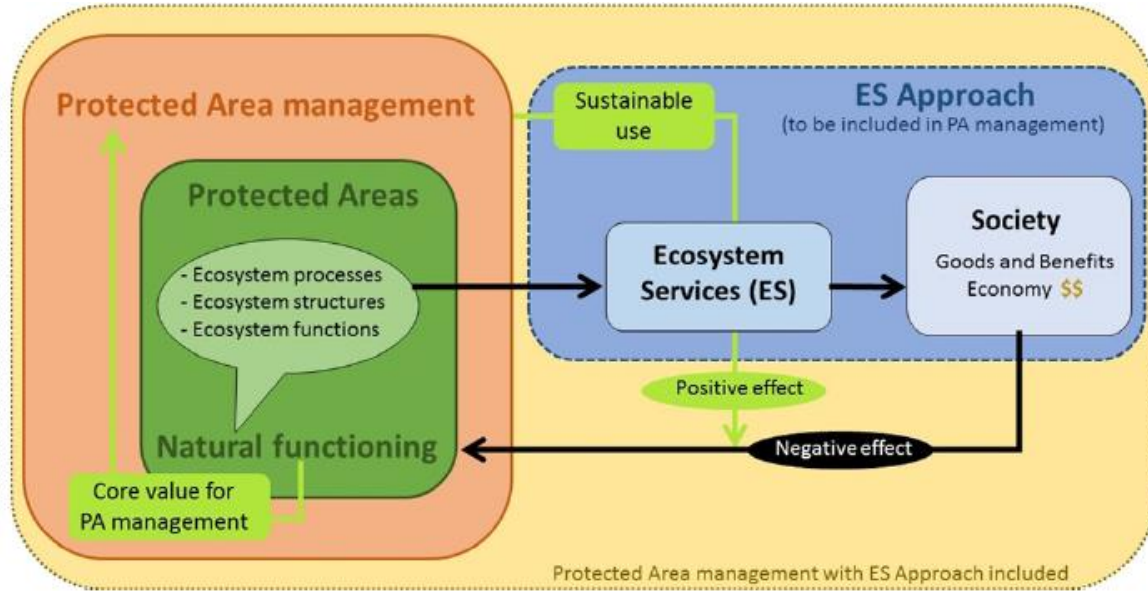


Table 3 Comparison of several different ways of classifying ES, and their links; italic headings are the terms used by the authors, green columns refer to Ecosystem Functions and structures, yellow columns refer to Regulating ES, orange columns refer to Provisioning ES, orange columns refer to Social and Cultural ES, if ES are not divided into different categories the colour greys

Authors	Year	Way of classifying	Classification categories	Ecosystem elements of societal use	Remarks										
De Groot et al.	2002	ES are classified on the basis of the type of benefits humans can obtain from nature	<table border="1"> <tr> <th>Regulating ES</th> <th>Provisioning ES</th> <th>Social and Cultural ES</th> </tr> <tr> <td>Abstract functions: values and reproductive habitat for wild plants and animals</td> <td>Production functions: Photosynthesis and nutrient uptake used by secondary producers to create living biomass</td> <td>Regulating functions: the capacity of ecosystems to regulate essential ecological processes and life support systems</td> </tr> </table>	Regulating ES	Provisioning ES	Social and Cultural ES	Abstract functions: values and reproductive habitat for wild plants and animals	Production functions: Photosynthesis and nutrient uptake used by secondary producers to create living biomass	Regulating functions: the capacity of ecosystems to regulate essential ecological processes and life support systems	<table border="1"> <tr> <th>Information functions</th> <th>Cultural services</th> </tr> <tr> <td>reflection, spiritual enrichment, cognitive development, recreation and aesthetic experience</td> <td>Cultural services: recreational benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experience</td> </tr> </table>	Information functions	Cultural services	reflection, spiritual enrichment, cognitive development, recreation and aesthetic experience	Cultural services: recreational benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experience	Services are not explicitly named as such in the classification system, the ES are classified by the functions they depend upon. In this way the ecosystem delivering certain services is of big importance to the classification of these services.
Regulating ES	Provisioning ES	Social and Cultural ES													
Abstract functions: values and reproductive habitat for wild plants and animals	Production functions: Photosynthesis and nutrient uptake used by secondary producers to create living biomass	Regulating functions: the capacity of ecosystems to regulate essential ecological processes and life support systems													
Information functions	Cultural services														
reflection, spiritual enrichment, cognitive development, recreation and aesthetic experience	Cultural services: recreational benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experience														
Millennium Ecosystem Assessment	2005	ES are classified on the basis of the type of benefits humans can obtain from nature	Supporting services: those that are necessary for the production of all other ES	Regulating services: benefits obtained from the regulatory role of ecosystem processes	Provisioning services: products obtained from ecosystems	Cultural services: recreational benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experience	ES are classified in more or less similar ways. De Groot et al. (2002) classified functions. Ecosystem functions and structures are named. Supporting services: those that support the delivery of all other services. Provisioning services are added to describe the way the products humans can get from ecosystems.								
Wallace	2007	ES are classified on the basis of the specific human values they represent	Adaptation/enrichment benefits that support the life of individuals	Design physical and chemical environment of ES that keep the human physical and chemical environment within the tolerance levels of humans	Protection from predators, diseases and parasites; the abundance of clean air and water; sufficient oxygen to breathe; sufficient water being available and structured	Socio-cultural: fulfilment of social positions including their related activities	The whole classification is more human oriented than previous systems.								
Fisher & Turner	2008	ES are categorized by the degree of connection to human welfare	Intermediate services: ecosystem structures and processes	Final services: services that humans utilize, but indirectly	Benefits and products of the ecosystem utilized by humans		Supporting services are split into two categories. All other services are grouped and named "benefits"								
TEEB (The Economics of Ecosystems and Biodiversity)	2010	ES are classified based on the direct or indirect benefits they provide to humans	Regulating services: the way in which ecosystems provide habitat, and gene pool protection	Regulating services: the services that ecosystems provide by acting as regulators	Provisioning services: ecosystem services that describe the material or energy outputs from ecosystems	Cultural services: benefits people obtain from ecosystems through spiritual enrichment, recreation, mental and physical health, tourism and aesthetic appreciation	Largely follows the Millennium Ecosystem Assessment. Supporting services are now called habitat or welfare to highlight the importance of ecosystems to provide habitats.								
Haines-Young & Pollock (ICES - the Common International Classification of Ecosystem Services)	2015, 2016	ES are classified by ecosystem, but also take into account the direct effects of human activities	Regulating and Maintenance services: services in which ecosystems control or modify biotic or abiotic parameters that affect the environment of people	Regulating and Maintenance services	Provisioning services: tangible things that can be exchanged or traded, or used as consumed or used directly by people in manufacture	Cultural and Social services: non-material ecosystem outputs that have symbolic, cultural or intellectual significance	Supporting services are not considered to be services, and left out of the classification. Regulating services are expanded to include maintenance services. Provisioning services category is expanded from goods to tangible things.								
Liquori et al.	2018	Classification largely follows ICES	Regulating and Maintenance services	Regulating and Maintenance services	Provisioning services	Cultural and Social services	No major changes								
Wardle (MESC)	2018	ES are classified by the way they affect human or animal welfare	Disturbance of aquatic life with similar biological characteristics that are located on or near the Earth's surface and their content or produce "end-product"	End-Products: biological arrangements of features that are directly used or appreciated by humans			Core ecosystem processes and some final ecosystem processes are grouped to disturbance. Benefits are named to End-Products, mostly being biological components that are appreciated								
Pearce et al. (IPRES)	2019	ES are called Nature's Contributions to People and classified accordingly	Regulating contributions: Functional and structural aspects of regulators and ecosystems that modify environmental conditions experienced by people	Regulating contributions: Functional and structural aspects of regulators and ecosystems that modify environmental conditions experienced by people	Material contributions: Material elements from nature that satisfy people's physical existence and infrastructure	Non-material contributions: Contributions to people's subjective or psychological quality of life	Although using different terminology, it largely resembles ICES								

Reduce taxonomisation of ES: Less emphasis on classifying and categorising ES, and more emphasis on developing (ecologically or socio-economically-based) methods to measure the proxies for a core-set of ES in a standardised way is needed.

Focus on a bottom-up approach on implementing the ES concept in PA management: A stronger bottom-up way of implementing an ES approach that is understood by PA management is needed. Conflicts will emerge when conservation strategies for PAs follow a top-down approach that excludes local practices or interests. The PA management community should be incorporated in implementing the ES approach in a way that is practical and suitable for their purposes.

Avoid too much distinction between ecosystem functions and services: There should be less emphasis on trying to find a distinction between ecosystem functions and services, as several functions are simultaneously services. Healthy ecosystem functions refer to a good status of the physical, chemical, and biological processes, and they all together contribute to the proper functioning of PAs and the sustainable maintenance of ES.

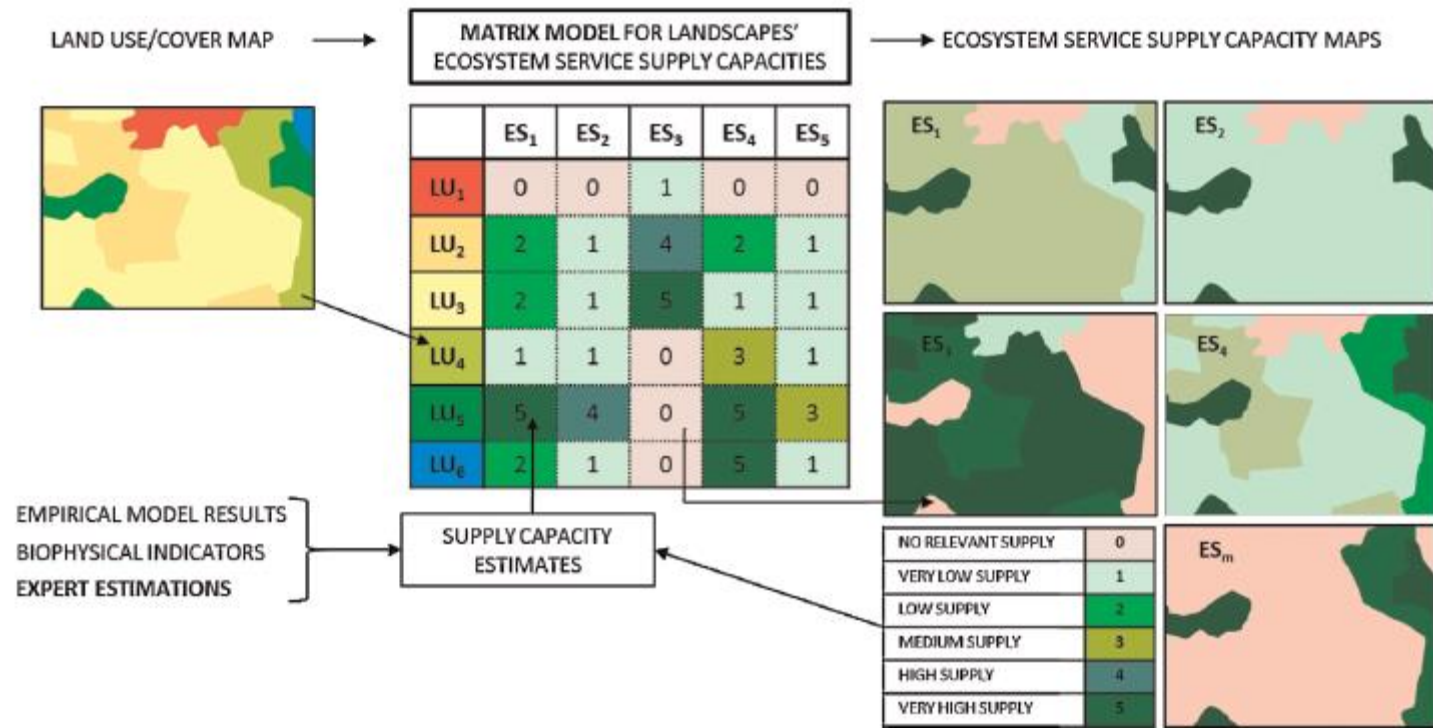
Develop a standardised set of indicators for ES - assessment in PA: A standardised set of indicators for ES should be developed, established at international and transboundary scale, using monetary and non-monetary ES assessment methods, together with measures of the related ecosystem functions and structures and relevant pressures in and on the system, that are for practitioners easy to measure and understandable to use.

# Matrični pristop: Jacobs et al. 2015

Review

'The Matrix Reloaded': A review of expert knowledge use for mapping ecosystem services

Sander Jacobs <sup>a,\*</sup>, Benjamin Burkhard <sup>b,c</sup>, Toon Van Daele <sup>a</sup>, Jan Staes <sup>d</sup>, Anik Schneiders <sup>a</sup>



- koristne definicije pojmov
- kartiranje ES prek land use/land cover matrike – eksperti kartirajo ES
- Razprava o potencialnih in dejanskih ES ter časovnih vidikih
- Pomen transparentnosti in poročanja verjetnosti ter iterativnih procesov

CONFIDENCE of FINDINGS	Limited evidence	Medium evidence	Robust evidence
High agreement	Medium	High	Very high
Medium agreement	Low	Medium	High
Low agreement	Very low	Low	Medium

# Nosilci ES: Luck et al. 2009

## Quantifying the Contribution of Organisms to the Provision of Ecosystem Services

GARY W. LUCK, RICHARD HARRINGTON, PAULA A. HARRISON, CLAIRE KREMEN, PAM M. BERRY, ROB BUGTER, TERENCE P. DAWSON, FRANCESCO DE BELLO, SANDRA DÍAZ, CHRISTIAN K. FELD, JOHN R. HASLETT, DANIEL HERING, ARETI KONTOGIANNI, SANDRA LAVOREL, MARK ROUNSEVELL, MICHAEL J. SAMWAYS, LEONARD SANDIN, JOSEF SETTELE, MARTIN T. SYKES, SYBILLE VAN DEN HOVE, MARIE VANDEWALLE, AND MARTIN ZOBEL

Table 2. Key examples from the literature of explicit or implicit links with ecosystem services.

Service	Ecosystem [level of organization]	Service provider [level of organization]	Service-provider characteristics	Supporting element	Response measure
Biological control	Agroecosystem [apple orchards]	Great tit [population]	Density of breeding pairs <sup>a</sup>	Density of nest boxes <sup>b</sup>	Caterpillar damage to apples
Biological control	Agroecosystem [coffee plantation]	Azteca ant	Green scale [population]	Activity level <sup>f</sup>	Shade trees <sup>d</sup> Number of scale <sup>e</sup>
Biological control	Agroecosystem [rice fields]	Egg parasitoids [functional group]	Abundance of predators and parasitoids <sup>h</sup>	Presence of parasitoid and absence of predator	Leaf and plant-hopper abundance
Pollination	Agroecosystem [watermelon crops]	Native bees <sup>j</sup> [functional group]	Functional group, species-specific visitation rates and efficiencies <sup>k</sup>	Upland habitat <sup>l</sup>	Pollen deposition <sup>m</sup>
Pollination	Agroecosystem [coffee plantation]	Native and exotic bees [functional group]	Functional group dynamics <sup>o</sup>	Tropical forest <sup>p</sup>	Seed mass, fruit set, peaberry frequency, pollen deposition (number of visits per flower), bee species richness
Pollination	Agroecosystem [atemoya crops]	Nitidulid beetles <sup>f</sup> [functional group]	Functional group dynamics <sup>q</sup>	Rainforest	Beetle species richness <sup>t</sup>
Pollination	Agroecosystem [canola fields]	Wild bees [functional group]	Functional group dynamics <sup>v</sup>	Uncultivated land <sup>w</sup>	Bee abundance, seed set
Waste decomposition	Agroecosystem [rice fields]	Mallard [population]	Population density <sup>r</sup>		Residual surface straw <sup>aa</sup> , structure of surface straw <sup>ab</sup> , chemical composition <sup>ac</sup>
Water regulation	Forest/terrestrial	Terrestrial vegetation [community]	Soil-slope-vegetation complex	Water regulation, hydroelectricity generation	
Water filtration	Freshwater	Forest [community]	Forest cover <sup>ap</sup>		Water and sediment nutrients
Seed dispersal	Oak forest	Eurasian jay [population]	Population abundance <sup>af</sup>	Oak and coniferous forest <sup>ag</sup>	Oak saplings
Seed dispersal	Tropical forest	Insular flying fox [population]	Flying fox abundance index <sup>ah</sup> = 0.77 to 0.81		Chewed diaspores <sup>ai</sup>

- »service providing units« - enote, ki zagotavljajo ES
- poudarja vlogo vrst in funkcionalne raznolikosti pri moduliranju ekosistemskih procesov, to razširi na ES
- povezuje populacije z ES in poudarja, da spremembe značilnosti populacije vplivajo na ES

# Ekspertna primerjava: Eastwood et al. 2016

Does nature conservation enhance ecosystem services delivery?

A. Eastwood<sup>a,\*</sup>, R. Brooker<sup>a</sup>, R.J. Irvine<sup>a</sup>, R.R.E. Artz<sup>a</sup>, L.R. Norton<sup>b</sup>, J.M. Bullock<sup>c</sup>, L. Ross<sup>a</sup>, D. Fielding<sup>a</sup>, S. Ramsay<sup>a</sup>, J. Roberts<sup>d</sup>, W. Anderson<sup>e</sup>, D. Dugan<sup>d</sup>, S. Cooksley<sup>a</sup>, R.J. Pakeman<sup>a</sup>

ES	ES sub-category	Goods and Services	Key benefits	Reason for designation?	Assessor importance rating <sup>a</sup>	Ecosystem Services Delivery Rank <sup>b</sup>			
						Non-protected site	Protected site	Difference between delivery	Confidence in the evidence <sup>c</sup>
Cultural	Aesthetics <sup>d</sup>	Machair flowers; landscape, national and international important species and habitats	Biophilia, psychological and physical benefits	y	15	Med-low	Med-high	↑	Med
	Artistic Heritage	Inspiration for art Traditional knowledge, skills	Livelihood, inspiration Sense of place, heritage, social capital	n	3 18	Med-high Med-high	Med-high Med-high	→ →	Low Med
	Education	Education and research	Knowledge, cognitive development, self-esteem	n	5	Low	Med-high	↑	Med
	Stewardship	Volunteering, rare species conservation	Social capital, identity, existence	n	5	Med-low	Med-high	↑	Med
	Religious Tourism/ Recreation	Reserve for recreation	n/a Livelihood, heritage, artistic, material	n	0 12	Med-low Med-low	Med-low Med-high	→ ↑	Low Med
Provisioning	Energy Fibre	n/a Fleeces; wool, felt	n/a Livelihood, material wealth, inspiration	n	0 1	Low Med-low	Low Med-low	→ →	High Med
	Food Fresh water	Beef, lamb Water supply	Food, livelihood Aquatic habitats, psychological and physical benefits	n	1 5	Med-high Med-high	Med-high Med-high	→ →	High Med
	Genetic resources	Local landraces of oats/barley	Genetic pool for crop improvement, heritage	n	0	Med-high	Med-high	→	Med
	Raw materials	n/a	n/a	n	2	Low	Low	→	High
Regulating	Air quality	Gas regulation, air quality improvement	Health and well-being	n	0	High	High	→	Med
	Climate Hazard	Carbon sequestration Coastal defences, soil stabilisation	Climate change mitigation Flood risk mitigation, sand blow amelioration	n	0 12	Med-high Med-high	Med-low Med-high	↓ →	High Med
	Water quality	Filtering/buffering of agricultural pollutants	Fishing - recreation/food, aesthetics	n	3	Med-high	Med-high	→	Med
	Pollination	Pollination of wild species	Food source for great yellow bumblebee	n	3	Med-low	Med-high	↑	Med
	Pests/Diseases Soil quality	n/a Erosion prevention, nutrient retention	n/a Crop production, livelihoods, n	n	0 3	Low Med-high	Low Med-high	→ →	High Med
Supporting	Soil formation	Sand dune formation, organic matter acc.	Coastal defence, security, agri. production	n	3	Med-low	Med-low	→	High
	Nutrient cycling	Breakdown, assimilation and storage of organic matter	Fertile soils, decomposition of organic matter	n	2	Med-high	Med-high	→	Med
	Water cycling Primary production	Water cycling Silage, hay for livestock/food for wild species	Silage, hay, livelihoods	n	2 5	Med-low Med-high	Med-low Med-high	→ →	High High

Ocena vpliva ohranjanja narave na paket ES z uporabo strokovnega mnenja.

Category	Services	p-Value	Significance	Proportion of cases where service was a reason for designation	Mean confidence of assessors	
Cultural	Aesthetics	0.008	**	1.00	2.78	
	Artistic	0.025	*	0.11	1.67	
	Cultural heritage	1.000		0.22	2.00	
	Education	0.005	**	0.44	2.22	
	Religious	0.317		0.00	1.22	
	Stewardship	0.008	**	0.22	2.22	
	Tourism/ Recreation	0.059		0.11	2.22	
	Provisioning	Energy	0.157		0.00	2.33
		Fibre	0.317		0.11	2.22
		Food	0.564		0.11	2.33
Freshwater		0.083		0.00	1.89	
Genetic Resources		0.025	*	0.00	1.78	
Raw Materials		0.564		0.00	2.33	
Regulating		Air Quality	0.157		0.00	1.78
		Climate	0.103		0.11	2.22
		Diseases/ Pests	0.157		0.00	1.89
		Hazard	0.157		0.00	1.67
	Pollination	0.025	*	0.11	1.78	
	Soil Quality	0.025	*	0.11	2.11	
	Water Quality	0.045	*	0.00	1.89	
	Supporting	Nutrient Cycling	0.083		0.00	1.89
		Primary Production	0.564		0.11	2.11
		Soil Formation	0.157		0.00	2.22
Water Cycling		0.083		0.00	2.11	
Total	All Services	0.005	**	-	-	

Razlika med ZO in primerljivimi ne-ZO

	CULTURAL										PROVISIONING					REGULATING					SUPPORTING				
	AESTHETICS	ARTISTIC	CULTURAL HERITAGE	EDUCATION	SPIRITUAL/RELIGIOUS	STEWARDSHIP	TOURISM/RECREATION	ENERGY	FIBRE	FOOD	FRESHWATER	GENETIC RESOURCES	RAW MATERIALS	AIR QUALITY	CLIMATE	DISEASES/PESTS	HAZARD	POLLINATION	SOIL QUALITY	WATER QUALITY	NUTRIENT CYCLING	PRIMARY PRODUCTION	SOIL FORMATION	WATER CYCLING	
CULTURAL	AESTHETICS	-																							
	ARTISTIC	0.42	-																						
	CULTURAL HERITAGE	0.00	0.47	-																					
	EDUCATION	0.19	0.68	0.43	-																				
	SPIRITUAL/RELIGIOUS	0.44	0.32	0.75	0.07	-																			
	STEWARDSHIP	0.09	0.73	0.29	0.30	-0.07	-																		
	TOURISM/RECREATION	0.34	0.76	0.35	0.76	0.15	0.81	-																	
PROVISIONING	ENERGY	-0.27	0.06	0.57	0.65	0.19	0.44	0.17	-																
	FIBRE	-0.44	-0.32	-0.75	-0.07	1.00	0.07	-0.15	-0.19	-															
	FOOD	-0.25	-0.21	-0.44	0.34	-0.57	0.34	0.13	0.37	0.57	-														
	FRESHWATER	0.54	0.63	0.50	0.14	0.50	0.10	0.30	-0.19	0.50	0.71	-													
	GENETIC RESOURCES	0.46	0.31	0.48	0.73	0.36	0.73	0.61	0.22	-0.36	-0.22	0.53	-												
	RAW MATERIALS	-0.29	-0.21	0.00	-0.64	0.08	-0.48	-0.33	-0.55	-0.08	-0.68	0.05	-0.24	-											
	AIR QUALITY	0.66	0.00	0.13	-0.32	0.75	-0.40	-0.13	-0.28	-0.75	-0.42	0.25	0.06	0.12	-										
REGULATING	CLIMATE	0.66	0.58	0.00	0.41	0.31	0.41	0.33	0.00	-0.31	0.16	0.20	0.65	-0.51	0.46	-									
	DISEASES/PESTS	0.66	0.47	0.63	0.34	0.75	0.13	0.23	0.28	-0.75	-0.42	0.75	0.54	-0.37	0.50	0.46	-								
	HAZARD	0.28	0.48	0.57	0.38	0.66	0.33	0.57	0.29	-0.66	0.06	0.19	0.33	-0.43	0.46	0.43	-								
	POLLINATION	0.54	-0.19	0.25	-0.13	0.60	-0.26	-0.11	0.11	0.60	-0.32	0.30	-0.07	-0.15	0.65	0.10	0.65	0.17	-						
	SOIL QUALITY	0.34	0.19	0.25	0.06	0.60	0.05	0.13	0.11	0.60	0.03	0.30	0.16	-0.45	0.65	0.59	0.65	0.62	0.68	-					
	WATER QUALITY	0.28	0.39	0.61	-0.02	0.61	0.02	0.08	0.00	-0.61	-0.69	0.82	0.33	0.11	0.31	0.08	0.71	0.23	0.53	0.53	-				
SUPPORTING	NUTRIENT CYCLING	0.54	0.16	0.00	-0.05	0.50	-0.05	-0.05	-0.19	-0.50	-0.27	0.00	0.39	0.16	0.75	0.61	0.25	0.19	0.30	0.30	0.00	-			
	PRIMARY PRODUCTION	-0.01	0.21	-0.38	0.46	-0.66	0.50	0.36	0.12	0.66	0.72	-0.11	0.07	-0.70	-0.60	0.20	-0.16	-0.06	-0.39	-0.04	-0.31	-0.55	-		
	SOIL FORMATION	0.66	0.00	-0.50	-0.02	-0.19	-0.10	-0.13	-0.28	0.19	0.12	0.25	0.00	-0.48	0.22	0.46	0.34	-0.28	0.34	0.34	0.05	0.13	0.42	-	
	WATER CYCLING	0.88	0.26	0.16	0.07	0.57	-0.10	0.03	-0.06	-0.57	-0.32	0.60	0.34	-0.37	0.70	0.60	0.88	0.25	0.72	0.72	0.51	0.44	-0.10	0.70	-

Parne primerjave za izločitev vpliva prostorskega konteksta

ZO zagotavljajo višjo raven ES kot ne-ZO; glavne razlike v kulturnih in uravnavnih; ni bilo doslednega negativnega vpliva zaščite na proizvodne storitve.

# Prostorska ekonomska ocena: Marta-Pedroso et al. 2018

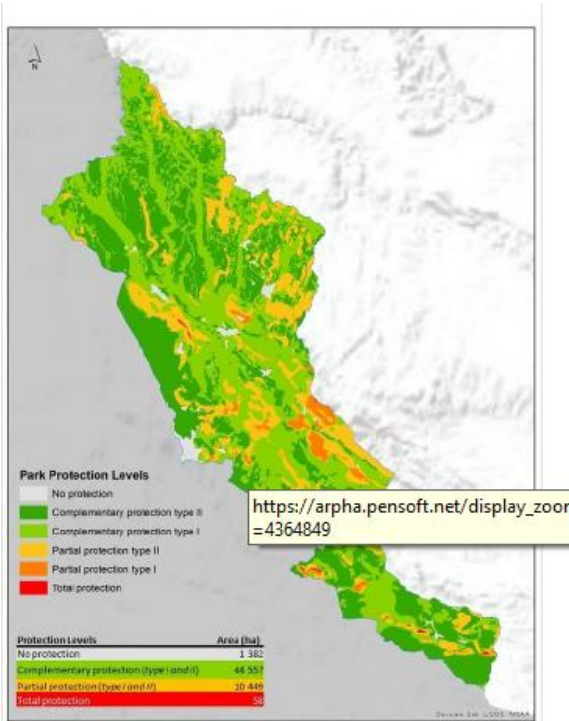


Figure 2.  
PNSSM protection levels.

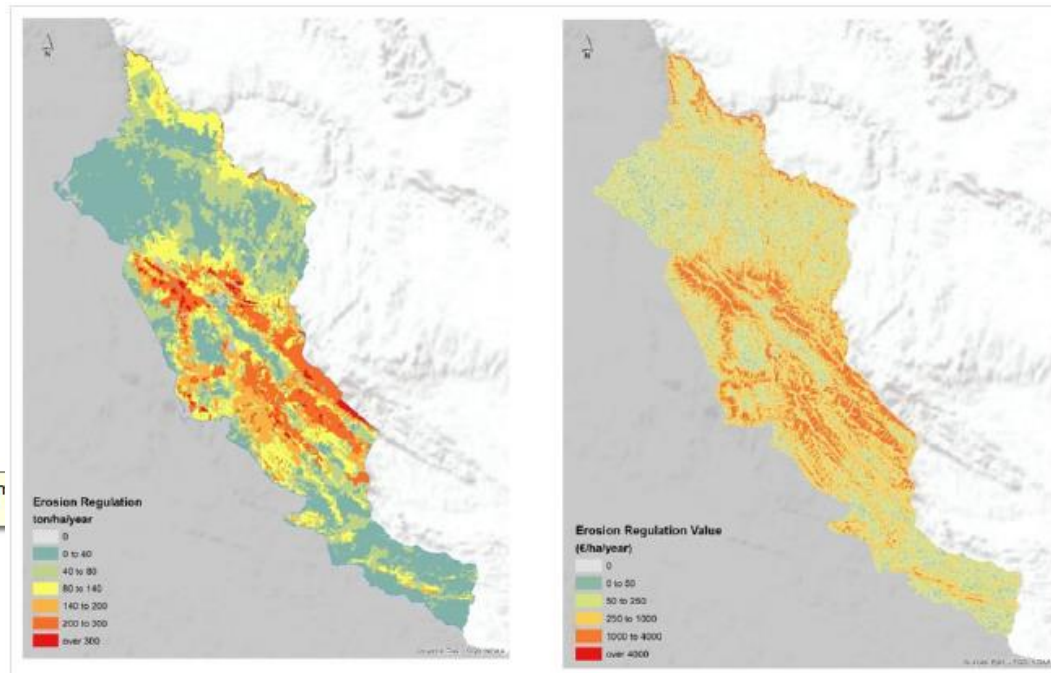


Figure 10.  
Spatial quantification (left) and economic valuation (right) of Erosion Regulation service [ 2.2.1.1 ] within PNSSM.

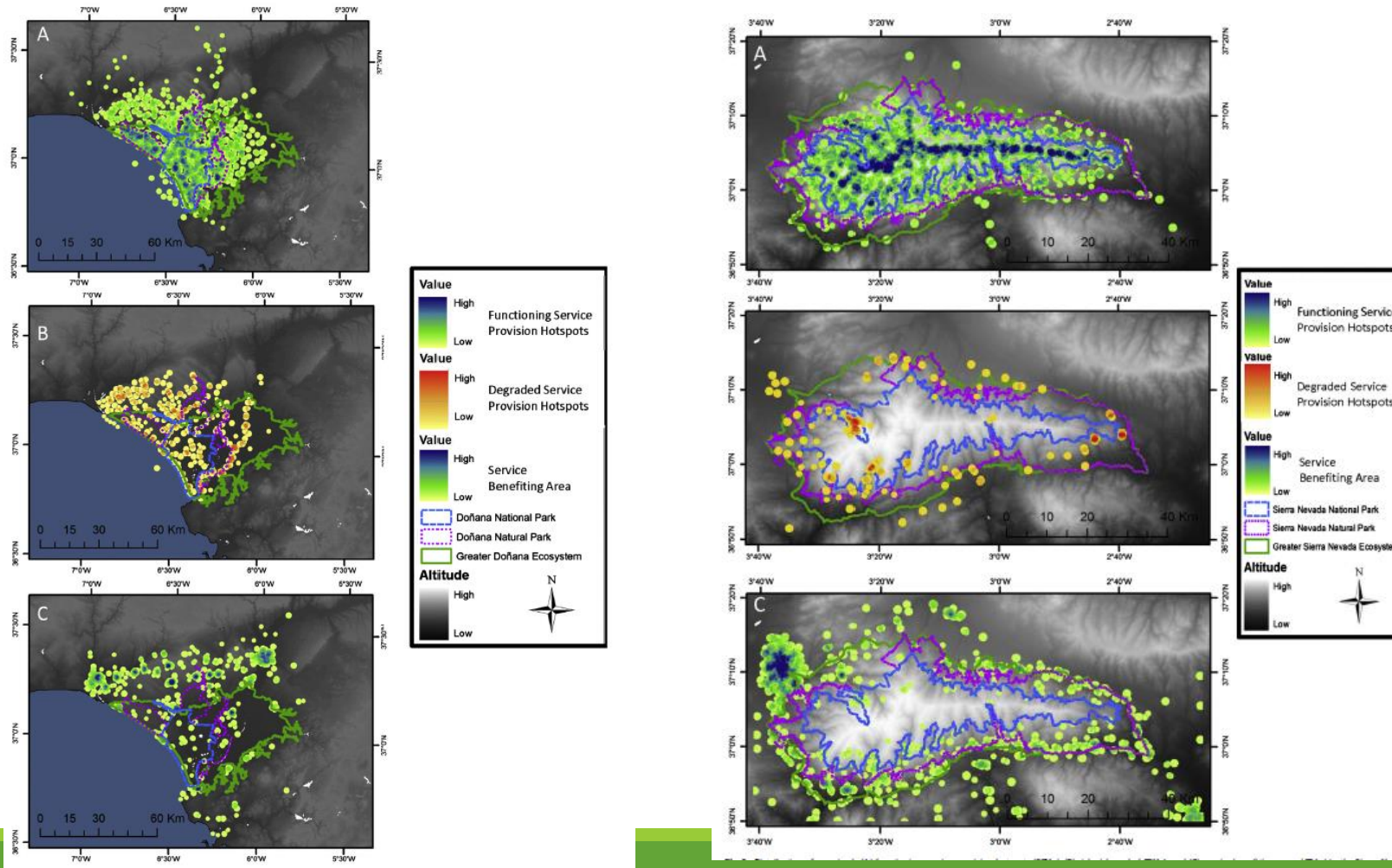
- popis ustreznih ES na podlagi ocene lokalnih deležnikov
- Biofizikalno kartiranje na podlagi dostopnih podatkov
- ocena in kartiranje ekonomske vrednosti ES na hektar glede na rabo tal
- Večinoma večja ekonomska vrednost sovpada z zavarovanjem, a le BD z najstrožjim



# Participatorno kartiranje: Palomo et al. 2013

National Parks, buffer zones and surrounding lands: Mapping ecosystem service flows

Ignacio Palomo<sup>a,\*1</sup>, Berta Martín-López<sup>a</sup>, Marion Potschin<sup>b</sup>, Roy Haines-Young<sup>b</sup>, Carlos Montes<sup>a</sup>

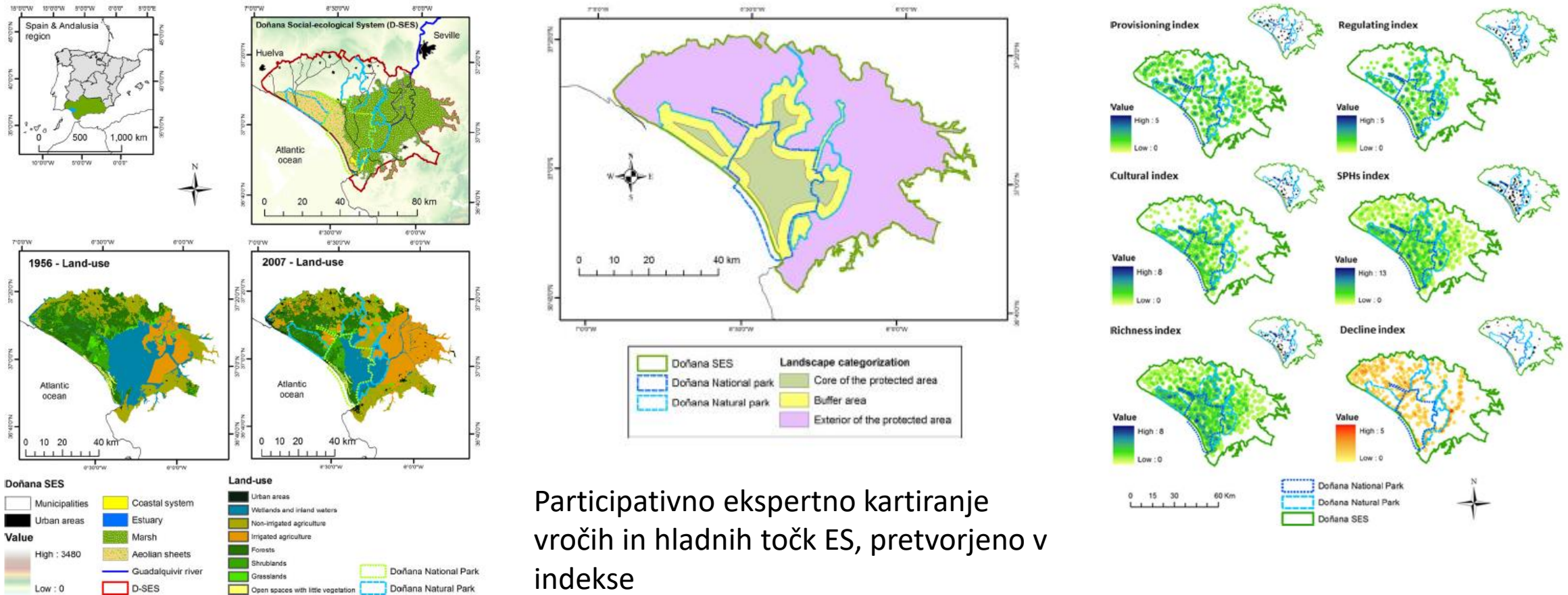


- Participativno ekspertno kartiranje vročih točk ES, degradiranih vročih točke ES in območij, kjer se ES koristijo (se po njih povprašuje).
- Izpostavijo odvisnost preference po ES od prostorskega ter socio-ekonomskega konteksta in statusa zavarovanja

# Deliberative mapping of ecosystem services within and around Doñana National Park (SW Spain) in relation to land use change

Ignacio Palomo · Berta Martín-López ·  
Pedro Zorrilla-Miras · David García Del Amo ·  
Carlos Montes

## Dinamično participatorno kartiranje: Palomo et al. 2014

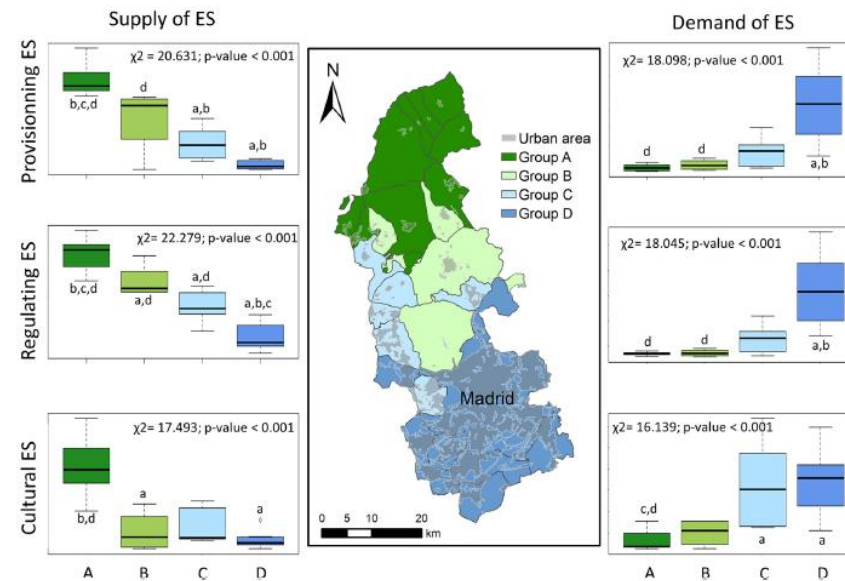
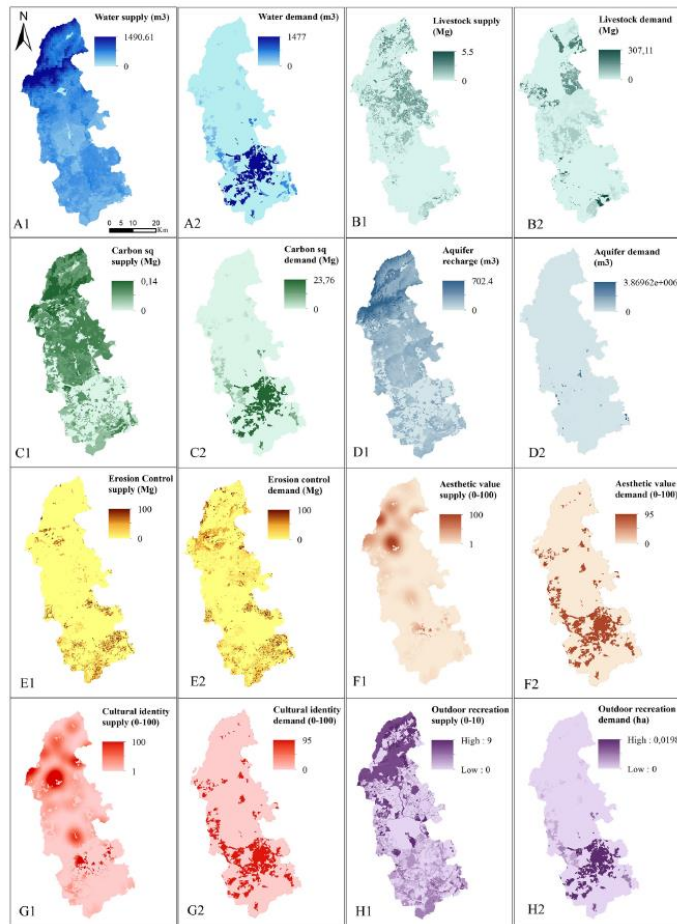


Participativno ekspertno kartiranje vročih in hladnih točk ES, pretvorjeno v indekse

# Biodiversity and ecosystem services mapping: Can it reconcile urban and protected area planning?

Alberto González-García <sup>a,\*</sup>, Ignacio Palomo <sup>b,c</sup>, José A. González <sup>a,d</sup>, Víctor García-Díez <sup>a</sup>, Marina García-Llorente <sup>a,d</sup>, Carlos Montes <sup>a,d</sup>

## Kartiranje S in D v ZO in ne-ZO: González-García et al. 2022

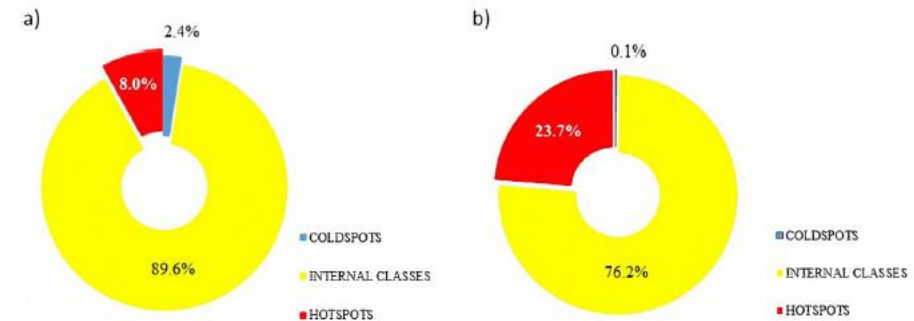
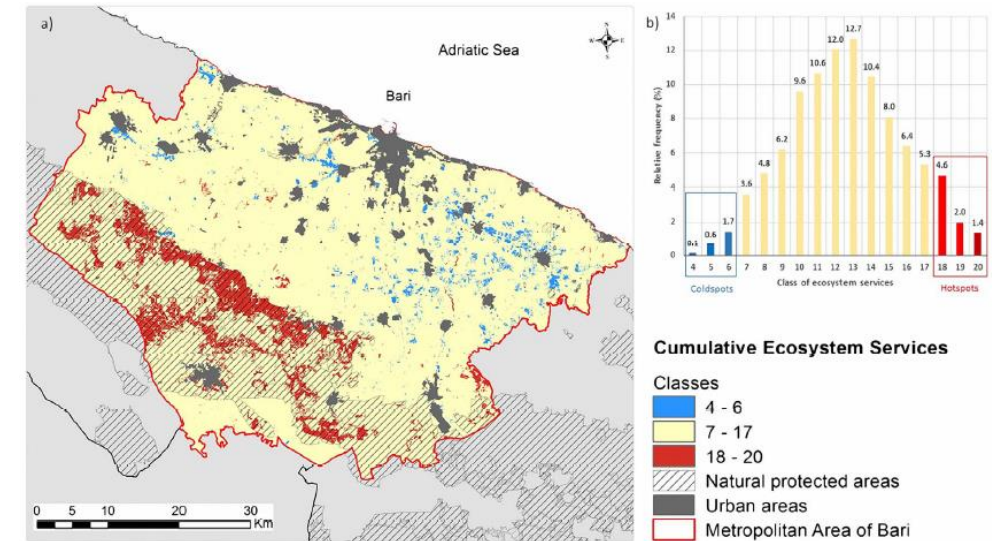
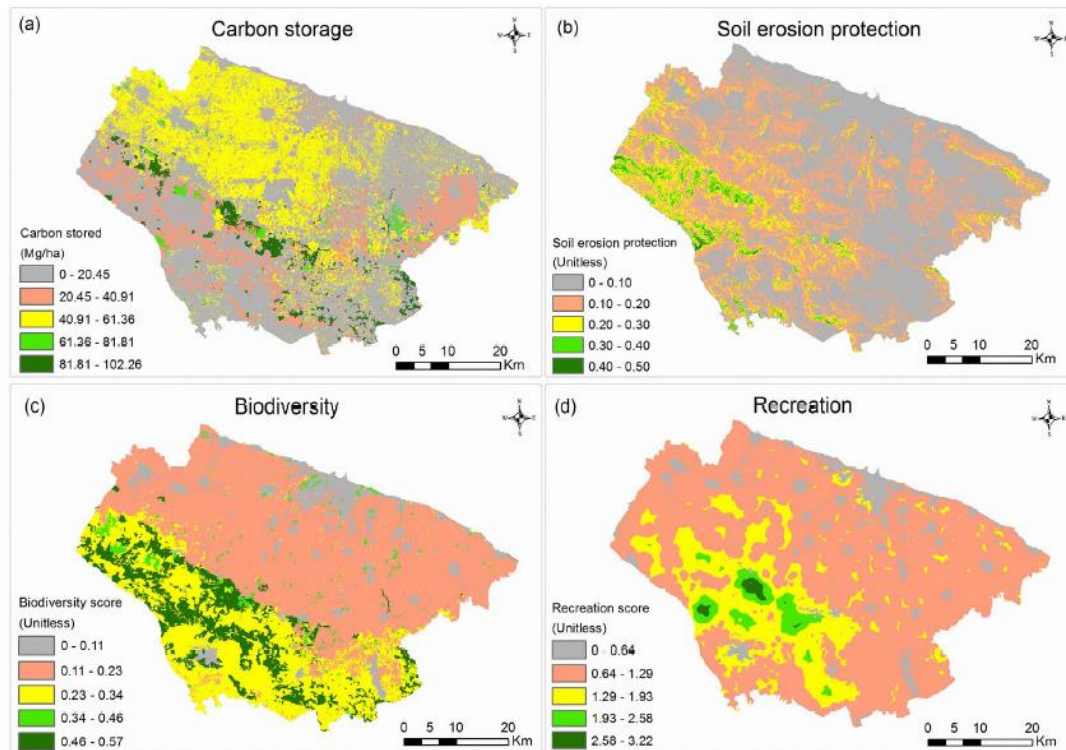


- kvantitativno kartiranje (večinoma modeli) BD ter S in D po osmih ES vzdolž gradienta urbano-podeželsko;
- grupiranje občin na podlagi njihove skupne BD, S in D.
- občine z močno povezano S in D so na visokogorskih območjih, ki sovpadajo z ZO, v urbanih območjih povpraševanje presega ponudbo.

# Hot- in coldspots – kartiranje: Spanò et al. 2017

Are ecosystem service hotspots located in protected areas? Results from a study in Southern Italy

Marinella Spanò<sup>a,\*</sup>, Vincenzo Leronni<sup>a</sup>, Raffaele Laforteza<sup>a,b</sup>, Francesco Gentile<sup>a</sup>



# SKLEPI

- Top-down in bottom-up pristopi
- Pogledi: ES kot odvisna spremenljivka, neodvisna spremenljivka, samo korelacije z zavarovanjem
- Raba različnih proxy-jev, raba dostopnih podatkov; različne klasifikacije ali celo brez
- Standardizacija v. lokalna relevantnost
- NatGuidES: *Navezava na EU okvir in primerljivost*

<b>SLOVENIJA – ES IN NPO (projekti)</b>
NATREG Študija: Ekonomsko vrednotenje ekosistemskih storitev Lovrenških jezer Smernice za ekonomsko vrednotenje ekosistemskih storitev na VO
Life to grasslands Ocena učinkov projekta na funkcije ekosistemov
LIFE Kočevsko Izhodiščna študija socioekonomskega stanja območja Natura 2000 Kočevsko
AdriaWet Ekosistemske storitve naravnega rezervata Škocjanski zatok - Ohranjanje in povečevanje ekosistemskih storitev naravnega rezervata Škocjanski zatok kljub urbanim pritiskom (delovno gradivo)
IMPREGO: Common strategies and best practices to IMProve the transnational PROtection of ECOsystem integrity and services – IMPREGO; INTERREG ADRION
ECO KARST (Ekosistemske storitve kraških zavarovanih območij – gonilne sile za trajnostni razvoj na lokalni ravni)
Protected Areas for a Living Planet – Dinaric Arc Eco-region Project. Ecosystem services evaluation in the Škocjan caves regional park
AlpES: Kartiranje, ohranjanje in upravljanje ekosistemskih storitev v alpskem prostoru; Interreg Alpine Space
ECO-SMART - Tržišče ekosistemskih storitev za napredno politiko zaščite območij NATURA2K
NAT2CARE - Spodbujanje skupnosti za ohranjanje in obnavljanje čezmejnih območij Natura 2000; Engagement of Citizens for the Restoration and Conservation of cross-border N2K areas "NA2CARE"; SLO-IT Interreg
Posodobitev začetne presoje stanja morskih voda v pristojnosti Republike Slovenije za Socio-ekonomsko analizo uporabe morskih voda in stroškov poslabšanja morskega okolja