

Summary of WP7

Activities, Publications, and Conferences (January 2018)

Task 7.1 Assessment of the services of protected areas :

Deliverable 7.1 is in final preparations and will be submitted for review in February of 2018. This deliverable contains the outline of the methodology which is being used in the assessment of ESs within WP7 as well as an initial assessment of Ecosystem Services within the protected areas. Leeds is currently testing Google Vision API in order to do automated detection of cultural services arising from mined photos posted via online accounts on Flickr in the Camargue Protected Area.

Task 7.2 Conceptual Framework for valuation of Ecosystem Services in PAs :

Deliverable 7.2 is under preparation and set to be delivered to the CCT by the end of February. A literature review of frameworks has been completed and is included in this deliverable. Additionally, this task has utilized a collection of the framework identified and generated a particular framework which is applicable to the objectives of the project. This Step-wise Approach has been outlined in detail and provided to the working group and is also entered into the Deliverable. This approach includes the mind mapping exercises, linking of RS products, models, and in-situ data sets to services, as well as the identification of proxies and indicators for the various services that have been brought in line with GEOSS and GEOBON variables. Additionally, it details the connective pathway between assessment, modelling, and evaluation by stakeholders and PA managers in an iterative manner, along with identification of useful outputs such as maps and products required by end users for site application. The deliverable is being submitted for review to the CCT in February 2018 and will be ready for submission to the EU by March 2018. The deliverable is also distilled into a publication that will be submitted in February 2018.

Task 7.3 Generic Software Toolbox Development and proof of concept :

Deliverable 7.3 is under on-going development. A combination of Bayesian belief networks, serious games, and composite maps have been identified as useful products which can be combined into the final toolbox. Several cases are in the advanced development stage including the Swiss National Parks, Davos, The Wadden Sea, Curonian Lagoon, Danube Delta; development has begun in several other PAs including Sierra Nevada, Donana, the Pelagos Sanctuary, and others. Also to be included in this toolbox is a list of conceptual framework identified in Task 7.2 and the unique approach used within this project.

An online tool for spatially explicit BNs is under development, but already allows running inference with raster data over multiple time steps. Additional features, such as support for vector data and intermediate spatial calculations (e.g. including neighbourhood effects) are currently under development. The tool is available for ECOPOTENTIAL users at blumap.ethz.ch, and possibilities of integrating it with the Virtual Lab will be discussed with WP10 in the beginning of February.

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Task 7.4 Expanding to Pan-European and Future Protected Areas :

As This deliverable is a report documenting the prototypes and providing guidelines for the products and the methodological application to other PAs as well as the Pan-European scale, for each of the steps (Mind Mapping, Bayesian Belief Network Generation, Evaluation, etc.) a series of webinars has been produced and step-by-step instructions have also been generated, documenting the consortium's production methods and providing a how-to guide for the toolbox. Additionally, an explanation of possible application of the various identified conceptual frameworks, as well as the strengths and weaknesses, are outlined, these are drawn on from the review of materials presented in D 7.2. The method used to generate the products delivered through ECOPOTENTIAL are thoroughly explained as well, allowing for either a different application of other conceptual models, or the ability for end users to retrace the steps used in this project in order to update and reproduce the end products. As the production of new elements for the toolbox move forward, the processing techniques are recorded and also made generically applicable in order for other to be able to reproduce the outputs for other areas or at other scales.

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Publications Submitted or Published :

Drakou, E. G., Kermagoret, C., Liqueste, C., Ruiz-Frau, A., Burkhard, K., Lillebø, A. I., ... Peev, P. (2017). *Marine and coastal ecosystem services on the science–policy–practice nexus: challenges and opportunities from 11 European case studies*. International Journal of Biodiversity Science, Ecosystem Services & Management, 13(3), 51–67.
<https://doi.org/10.1080/21513732.2017.1417330>

Filipponi, F., Valentini, E., Taramelli, A., *Sea Surface Temperature changes analysis, an Essential Climate Variable for Ecosystem Services provisioning*. 978-1-5386-3327-4/17/\$31.00 ©2017 IEEE

Solveig Höfer Alex Ziemba, Ghada El Serafy. *A Bayesian Approach to Ecosystem Service Trade-Off Analysis: The case of the Curonian Lagoon in Lithuania*. **Under Review**

Sonja Wanke, Alex Ziemba, Ghada El Serafy. *Capturing Ecosystem Service Trade-offs in a Bayesian Belief Network: The Case of the Dutch Wadden Sea*. **Under Review**

Valentini, E., Filipponi, F., Nguyen Xuan, A., Passarelli, F.M., Taramelli, A., *Earth Observation for maritime spatial planning: measuring, observing and modeling marine environment to assess potential aquaculture sites*. Sustainability 2016, 8(6), 519. doi:10.3390/su8060519;

Constantin Cazacu, Relu Constantin Giuca, Tudor Constantin Racoviceanu, Mihai Cristian Adamescu, Using social-media to reveal cultural ecosystem services from the Danube Delta Biosphere Reserve, Romania

Mihai Cristian Adamescu, Relu Constantin Giuc, Tudor Constantin Racoviceanu, Constantin Cazacu, Relationships between Provisioning and Cultural Ecosystem Services in the Danube Delta Biosphere Reserve

Stritih, A., Bebi, P., Grêt-Regamey, A. Quantifying uncertainties in EO-based ecosystem service assessments. Environmental Modelling and Software (**submitted**)

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Publications Under Preparation :

El Serafy, Ziemba, Boon, van der Meulen, Adamescu, Ziv, Domingo, Provenzale, Hummel H, Hummel CA, Stritih, Grêt-Regamey, Orenstein, Amber Himes-Cornell, Cazacu, Markovic, Schulz, Drakou, Carvalho-Santos, Ricardo Moreno, Francisco Bonet, contd. *Applied framework towards utilization of ecosystem services for optimization of protected area management strategies. In Preparation - Submission March 1, 2018.*

Carvalho-Santos C, Portela P, Monteiro AT, Greifeneder F, Lange M, Doktor D, Marcos B, Arenas-Castro S, Honrado JP. *Ecosystem services provision in a protected mountain range of Portugal: satellite-based products for current state and trend analysis. In preparation - Submission April 2018.*

Balvanera et al. *Essential Ecosystem Services Variables. In preparation - Submission April 2018*

Orenstein, D.E., Porat, I, and Tsalyuk, M. *Correlations between landscape preferences environmental values and demographic characteristics in an arid ecosystem. In preparation - submission April 2018.*

Moreno, R., Herrero, J., Bonet-García, F. J., Millares, A. Temporal evolution of ecosystem services in Sierra Nevada for informing land-use decisions. **In preparation - submission May 2018.**

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Conferences Attended :

Ziemba A. and El Serafy G., *Bridging the Information Gap : Water Quality Assessments of Aquaculture Infrastructure in the North Sea Through Ecological Models to Determine Scenario Based Ecosystem Service Trade-Offs*, MARE conference, Amsterdam, The Netherlands, June 2017

El Serafy, G., Boon, A., Ziemba, A., van der Muelen, M., Schulz, J., Ziv, G., Provenza, A., Giamberini, S., Stritih, A., Applying ecosystem services to optimize protected area management, European Ecosystem Services Conference, Antwerp, Belgium, 19–23 September 2016

Moreno-Llorca, R., Herrero, J., Pérez-Palazón, M.J., María, J., Bonet García, F.J., Ziemba, A., *Temporal evolution of ecosystem services in Sierra Nevada (Spain)*, European Ecosystem Services Conference, Antwerp, Belgium, September 2016.

El Serafy, G., Applying ecosystem services concept to optimize protected area management and the issue of inherent uncertainty in future predictions, “LIFE-ECOPOTENTIAL” MEETING, Irvine, California, USA, November 15-17-2016

El Serafy, G., Utilizing Earth Observation to quantify and map Ecosystem Services; Case Study : The Wadden Sea, GEO BON Open Science Conference & All Hands Meeting, Leipzig, Germany, 4-8 July, 2016

Valentini, E., Filipponi, F., Nguyen Xuan, A., Passarelli, F.M., Taramelli, A. (2016). Marine food provision ecosystem services assessment using EO products. In Proceedings of ESA Living Planet Symposium 2016, Prague, Czech Republic, 9–13 May 2016, ESA SP-740 (CD-ROM). Stritih, A., Grêt-Regamey, A. Bayesian modelling of ecosystem services using Earth Observation: A prototype for avalanche protection. GEO BON Open Science Conference & All Hands Meeting, Leipzig, Germany, 4-8 July, 2016

El Serafy, G. took seat in the steering committee of GEO BON and Geijzendorffer, I.R. chairing the GEO BON working group on ecosystem services.

Geijzendorffer, I.R. “Bon in a box : an outils pour des sites d’observation de la biodiversité et, bientôt, les variables essentiels des services écosystémiques” ECOSCOPE, Paris, 11th of December 2017.

Tsalyuk, M., Orenstein, D.E. and Porat, I. 2017. *Perceptions of landscapes, nature and environment among residents and tourists in the Negev Highlands*. Annual Conference of the Israel Society of Ecology and Environmental Science. 10-11 July, 2017. Herzlia, Israel.

Orenstein, D.E. 2017. *Nature, Landscapes and Biodiversity: What do the 99% (non-ecologists) think?* International Long-Term Ecological Research Network & Zones Ateliers Network & Critical Zone Observatories Joint Conference. 2-4 October, 2017. Nantes, France.

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Valentini, E., Nguyen, Xuan, A., Filipponi F. & Taramelli, A. Italy in US - INGV, ISPRA, and USGS science exchange in Louisiana (2017). Ecosystem services for coastal protection using EO: flood regulation and erosion prevention studies & notes. Lafayette & New Orleans 8-9/12/2017

Valentini E., Filipponi F., Nguyen Xuan, A., Taramelli A., (2014). Demonstration of SST value as EBVs descriptor in the Mediterranean Sea, AGU Fall Meeting, New Orleans (USA) 11-15/12/2017, GC11C-0747: poster

The ISPRA team coordinated and realized the panel for Mediterranean the photo exhibition also supporting the marine panels' realization. The team joined the conference and the spaced workshop