

## Ecosystem Services and Pressures in European Protected Areas: Divergent Views of Environmental Scientists and Managers

Christiaan Hummel<sup>1,2,3</sup>, Yolande Boyer<sup>4</sup>, Matthias Jurek<sup>5</sup>, Per Magnus Andresen<sup>5</sup>, Johannes Kobler<sup>6</sup>, Carl Beierkuhnlein<sup>7</sup>, Antonello Provenzale<sup>8</sup>, Guy Ziv<sup>9</sup>, Marco Heurich<sup>10</sup>, Georgios Kordelas<sup>11</sup>, Rutger de Wit<sup>4</sup>, Ioannis Manakos<sup>11</sup>, Herman Hummel<sup>1,2</sup>

<sup>1</sup>Royal Netherlands Institute for Sea Research, Yerseke, Netherlands;

<sup>2</sup>Utrecht University, Netherlands; <sup>3</sup>VU University Amsterdam, Netherlands;

<sup>4</sup>MARBEC, University of Montpellier, France; <sup>5</sup>University of Vienna, Austria;

<sup>6</sup>Umweltbundesamt, Vienna, Austria; <sup>7</sup>BayCEER, University of Bayreuth, Germany;

<sup>8</sup>CNR, Rome, Italy; <sup>9</sup>Leeds University, UK, <sup>10</sup>Bavarian Forest National Park, Grafenau, Germany

<sup>11</sup>Centre for Research and Technology Hellas, Information Technologies Institute, Crete, Greece

### Keywords

Ecosystem services, protected areas, threats, environmental scientists, managers, abiotic, biotic, socio-economic, cultural, harmonization, effective management, remote sensing

### Summary

In the last decades intense anthropogenic pressure caused serious threats to ecosystems, leading to degradation of habitats and environmental quality, thereby increasing the risk of loss of ecosystem services (ES). Protected Areas (PA) may help to counterbalance degradation and associated loss of ES.

In the EcoPotential project the state-of-art view was surveyed among environmental scientists and managers of PAs regarding the importance of various ecological, environmental, and socio-economic indicators for ES and pressures in their PA. Therefore, eight European PAs in mountainous areas, e.g. Kalkalpen and Gran Paradiso, and for comparison a few coastal PAs, e.g. Wadden Sea, were selected.

Environmental scientists predominantly indicated abiotic and biotic factors as being most important for ES and pressures, whereas managers proportionally indicated socio-economic and cultural factors more often.

Therefore, socio-economic and cultural factors (emphasised by managers) and abiotic and biotic factors (emphasised by scientists) need to be more integrated. Methods used worldwide for assessing the effectiveness of management in PAs may inspire the design of such an integrated framework. Moreover, in order to come to a concise list of variables for use in stakeholder engagement (incl. managers and policy-makers) these variables should be harmonised and preferably easy to measure, e.g. through Remote Sensing (RS).

In our presentation we will show the different views of managers and scientists, how we may harmonise variables, and examples on how social (aesthetic) ES may be measured by RS.

### Acknowledgements

The EcoPotential project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 641762

### Contact

Herman Hummel

[herman.hummel@nioz.nl](mailto:herman.hummel@nioz.nl)

Royal Netherlands Institute for Sea Research

Korringaweg 7

4401 EA Yerseke

Netherlands

Phone: 00-31-113-577484 (300)

Fax: 00-31-113-573616

