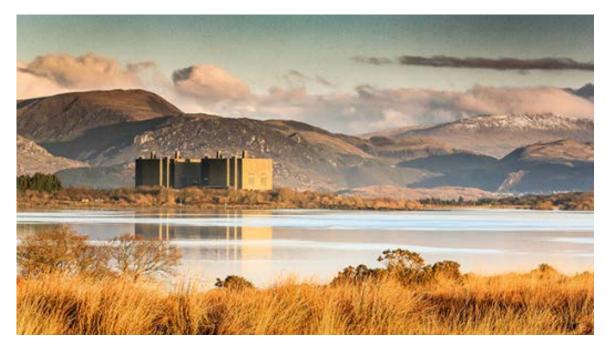
Testing a conceptual framework for modelling cultural services across four ecosystem service projects



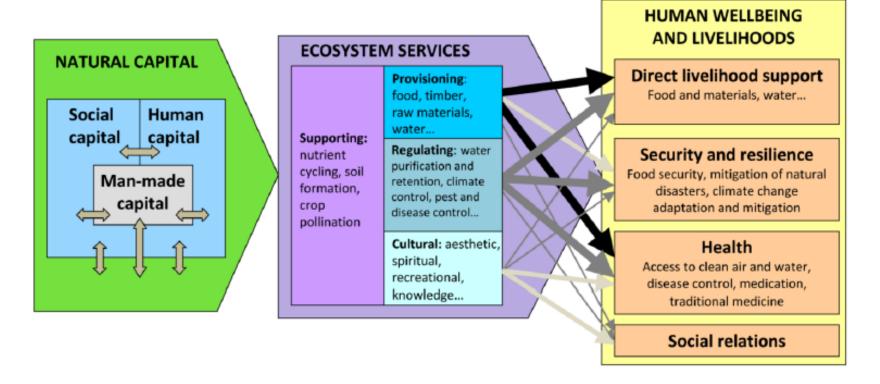
Laurence Jones, Anna Jorgensen, Ruth Waters, Piran White, James McGinlay, Mike Christie, Isabelle Durance, Dave Paterson, Dario Masante, Chris Short, Reto Schmucki, Hannah Curzon, Natalie Small, Karl Evans, Marco Boeri, Tim Stojanovic







The context

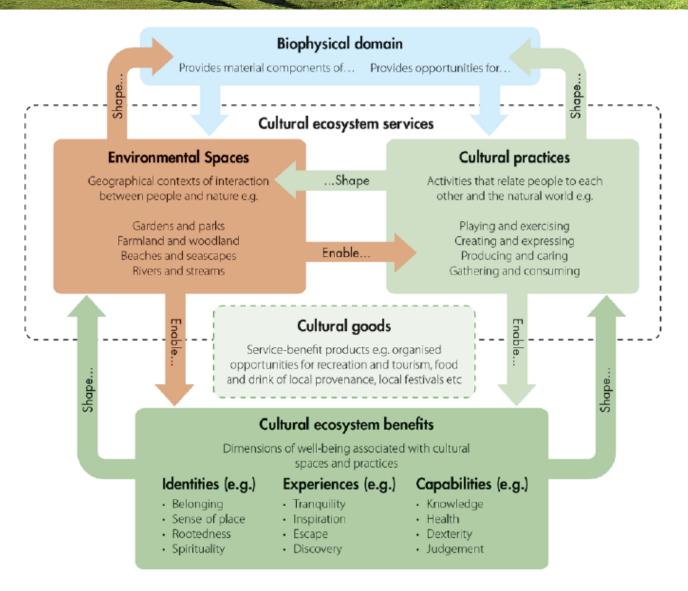


Where are *Cultural* and *Social* in Ecosystem Services? A Framework for Constructive Engagement

KAI M. A. CHAN, ANNE D. GUERRY, PATRICIA BALVANERA, SARAH KLAIN, TERRE SATTERFIELD, XAVIER BASURTO, ANN BOSTROM, RATANA CHUENPAGDEE, RACHELLE GOULD, BENJAMIN S. HALPERN, NEIL HANNAHS, JORDAN LEVINE, BRYAN NORTON, MARY RUCKELSHAUS, ROLY RUSSELL, JORDAN TAM, AND ULALIA WOODSIDE

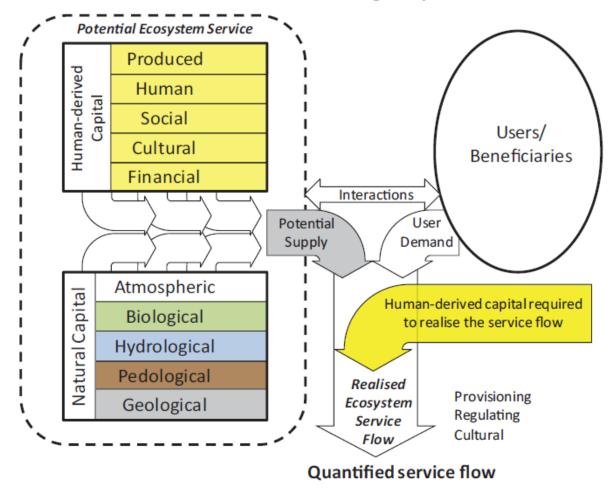
A focus on ecosystem services (ES) is seen as a means for improving decisionmaking. In the research to date, the valuation of the material contributions of ecosystems to human well-being has been emphasized, with less attention to important cultural ES and nonmaterial values. This gap

UK NEA Follow On – cultural services



Fish et al. (2016) Ecosystem services

Combined social-ecological system



Regulating service Capital which alters demand (e.g. Public awareness of e.g. Flood regulation flood risk areas: Institutional Potential Ecosystem Service Evapo- (mm/day) Users / Beneficiaries Interactions Properties, land or assets which benefit from User avoided flooding Soil water (g/cm3) (m3/day) Reduction in Discharge/ Flow apital required to realise the serv Overland exceeding channel capacity (m3/s) Produced Capital (e.g. Flood defences Financial Capital (e.g. Funding for flood defences) (e.g. Hydraulio conductivity, m/s) Valuation of Abstraction goods/benefits: (m3/day) Quantified service flow -Damage cost Reduced flood risk for human life, assets (e.g. No. homes no

Jones et al. (2016) Land Use Policy 52, 151–162

Why do we interact with the environment?



Conceptual development HDC that moderates individual-level capitals **HDC** that facilitates service production [Biophysical = **Cultural capital** The Personal views on value and use **Potential** User of the countryside environmental supply demand Relationship and sense of setting Types of attachment to landscape Interactions (NEAFO, 2014) (emotional) Indirect **User/ Beneficiary** Preferences about activities that Incidental -Residents interact with the landscape Intentional Preferences regarding -Commuters Playing and exercising landscape features -Local greenspace Creating and expressing Producing and caring Social capital users Gathering and consuming Membership of clubs & societies social networks **Demographics** • Socio-economic Human capital group Knowledge about the Job/Employment environment (cultural, Education historical and ecological) Personality type Ethnicity Sensory perception (visually • Religion oriented etc.) Emotive and spiritual aspects Gender of personality e.g. religiosity Age Physical health & mental condition Realised cultural service, Human well-being benefits defined as an interaction learning, mental development, aesthetic sense and pleasure, mental and physical restoration, sense of identify and place, social cohesion, spiritual and religious belief....

The four BESS projects



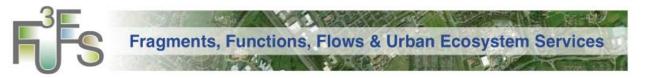
Wessex BESS, Lowland chalk

DURESS, Upland catchments, Wales



F3UES, Urban meadows

CBESS, Saltmarsh





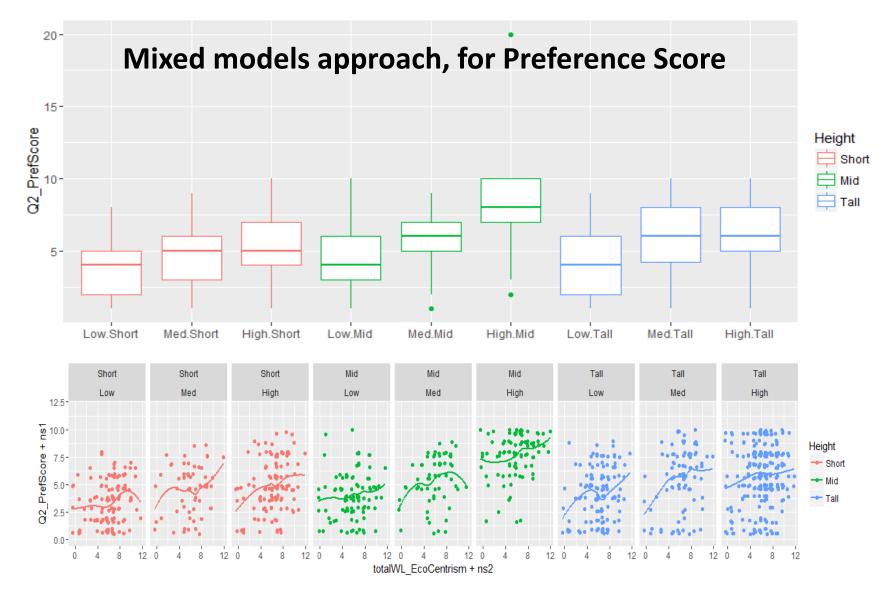
Urban meadows as a case study



With thanks to the F3UES team for sharing data...

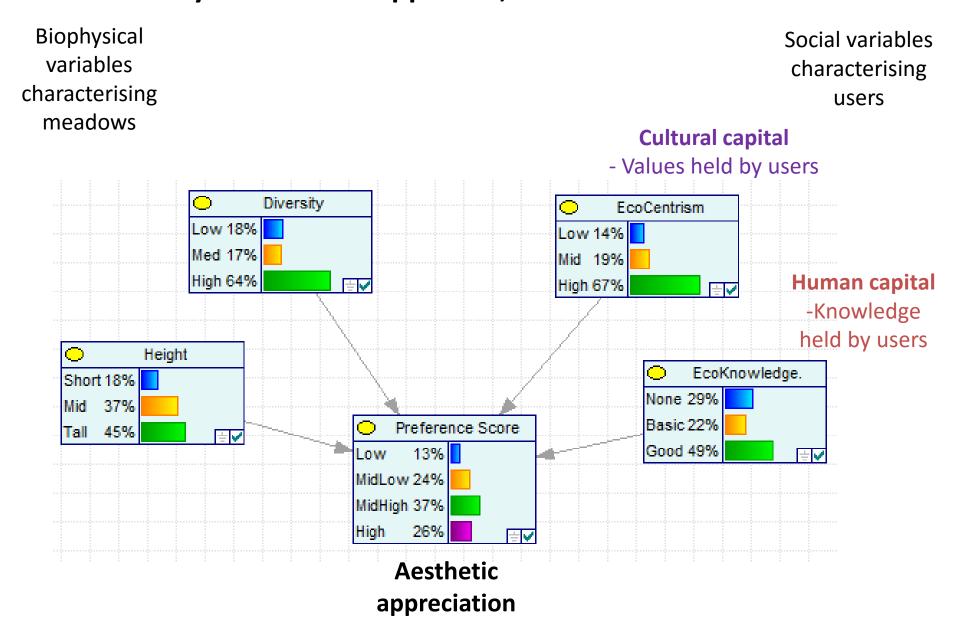
See also: Southon et al (2017) Landscape and Urban Planning 158, 105-118

Urban meadows - Aesthetic appreciation, Potential Ecosystem Service full conceptual model Weather & **HDC** that moderates Climate individual-level capitals (e.g. Days Stock of **HDC** that sunshine/yr) attractive flowers facilitates service production **Characteristics Characteristics** (Dead material Types of **Cultural capital** (Height) in winter) User/ -Eco-centricity **Beneficiary Characteristics** -Residents User (Diversity) Potential Potential Demand -Commuters Supply **Characteristics** -Local (Structure) Social greenspace capital users **Interactions** Stock of **≻**Indirect planted **Demographics** meadows **Human capital ≻**Incidental Age, income, etc. Stock of nectar -Ecological **≻**Intentional feeding insects knowledge and pollinators (identifying plants) Degree of Access **Realised cultural** visibility service, defined Human well-being benefits as an interaction

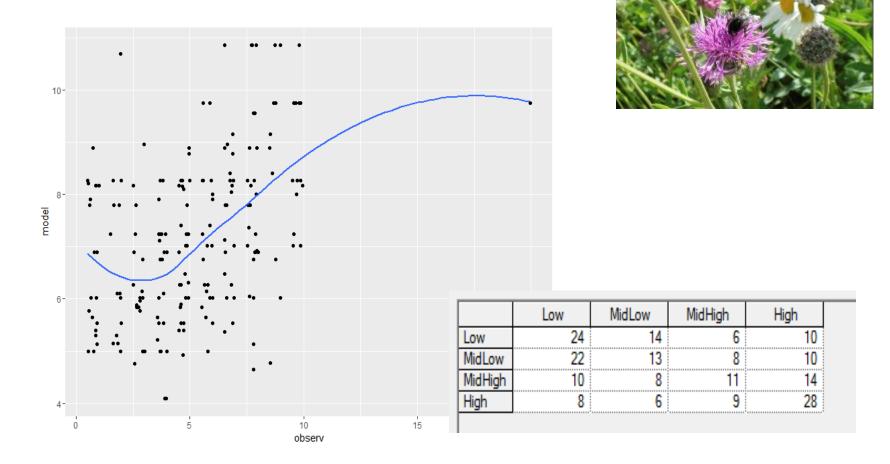


- 4 variables (Diversity, Height, EcoCentrism, Ecoknowledge)
- Most parsimonius model excludes EcoKnowledge (i.e. only 3 variables)
- R2 only 23%
- Need to better capture variability in responses

Bayesian model approach, for Preference Score

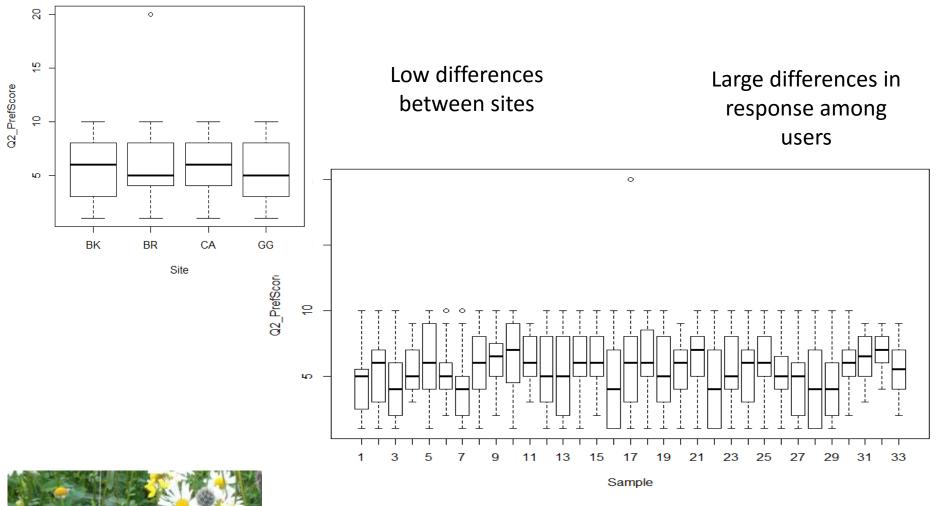


Urban meadows



- Match is pretty low on discretised data (38% catch)
- Right trend, but lots of scatter, overprediction at lower values
- Less sensitive to EcoKnowledge, other variables were more or less equal (with Diversity slightly prevailing)

Urban meadows – uncharacterised variation (so far)





 'Typical' explanatory variables: socioeconomic status, age, gender, ethnicity have little explanatory power for Preference Score

Conclusions

- Progress in developing flexible conceptual framework for CES
- Incorporates stocks and flows
- Multiple modelling approaches possible
- Characterising users is the main challenge









Thank-you!
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