

WALES NATURAL ENVIRONMENT FRAMEWORK

Sample of the evidence base underpinning the framework

Work is ongoing to add to this list of literature and provide active links to as many of the reference sources as possible.

Reference materials

Miscellaneous

Reference list from Chapter 20 Wales of the UK National Ecosystem Assessment (NEA)

Status and changes in the UK's ecosystems and their services to society: a synthesis for Wales [Chapter 20.doc references.doc120811.pdf](#)

UK National Ecosystem Assessment (NEA) Progress -

Presentation given by Dr Shaun Russell (Wales Environment Research Hub, WERH) at The Natural Environment Framework - 2010 and beyond: Leading by Example Conference on 15th & 16th Sept. 2010 in Bangor, North Wales
<http://www.werh.org/documents/NEAProgress.pdf>

Generic

The Economics of Ecosystems and Biodiversity - www.teebweb.org

[TEEB synthesis report](#) The aim of this synthesis is to highlight and illustrate the approach adopted by TEEB: namely to show how economic concepts and tools can help equip society with the means to incorporate the values of nature into decision making at all levels. Applying economic thinking to the use of biodiversity.

[GLOBE International natural capital action plan](#)

The aim of the GLOBE Natural Capital Action Plan is to define a clear and targeted set of actions for legislators to ensure the true value of ecosystem services and natural capital is integrated into policy making.

Millennium Ecosystem Assessment -
www.millenniumassessment.org/en/Reports.aspx

UN Convention on Biological Diversity - <http://www.cbd.int>

UN Convention on Biological Diversity/International Year of Biodiversity -
<http://www.cbd.int/2010/welcome/>

UK National Ecosystem Assessment – <http://uknea.unep-wcmc.org>

UK Biodiversity Action Plan - <http://www.ukbap.org.uk/>

Wales Biodiversity Partnership - <http://www.biodiversitywales.org.uk/>

Countryside Survey/Results from Wales 2007 Survey -
<http://www.countryside-survey.org.uk/news.html#n18>

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National Museum of Wales/Biodiversity and Systematic Biology -

<http://www.museumwales.ac.uk/en/biosyb/>

Joint Nature Conservation Committee - <http://www.jncc.gov.uk/>

Joint Nature Conservation Committee/Marine conservation Zones Project -

<http://www.jncc.gov.uk/default.aspx?page=2409>

British Ecological Society -

<http://www.britishecologicalsociety.org/policy/biodiversity.php>

Countryside Council for Wales/Habitats and Species -

<http://www.ccw.gov.uk/landscape--wildlife/habitats--species.aspx>

Natural History Museum - <http://www.nhm.ac.uk/nature-online/biodiversity/>

Natural England -

<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/iyb/default.aspx>

Natural Environment Research Council/Biodiversity -

<http://www.nerc.ac.uk/research/issues/biodiversity/>

Specific

Sustainable development and policy analysis

UNEP (2011) *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy*

Green Economy promotes economic and social development*

Adopting the Green Economy approach will reap greater environmental, social and economic benefits, compared with a society that focuses on economic growth as the measure for future development, according to a recent UN report. Using two per cent of global GDP to 'green' key sectors could be enough to trigger the transition towards a green economy. <http://www.unep.org/greeneconomy/>

[How two per cent of global GDP can trigger greener, smarter growth while fighting poverty](#) UNEP - 21/02/2011

A new United Nations report concludes that the investment of only "two per cent of global GDP into ten key sectors" can start off the much needed transition from the current resource-depleting, carbon intensive economy to a new Green Economy, in which crises, scarcities and rising risks are significantly reduced. In this way the report challenges the common myth that environmental investments cause a reduction of economic growth whilst it emphasises the current "gross misallocation of capital". The report modelled a range of policies and their economic, environmental and social impacts and highlights the pivotal policy role of governments as vital to produce conditions that enable markets and private sector investments to invest in a Green Economy transition. Regulatory frameworks, prioritised government spending, taxation and public investments can help to push the right private sector investments, it suggests. The ten key sectors that need transforming on the way to a green

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economy are agriculture, buildings, energy supply, fisheries, forestry, industry including energy efficiency, tourism, transport, waste management and water. The authors further point out that globally we currently waste between one and two per cent of global GDP on a range of subsidies that often perpetuate unsustainable resources use in areas such as fossil fuels, agriculture, including pesticide subsidies, water and fisheries. Phasing these subsidies out would not only free up large sums of money, it would also stop many unsustainable practices. The report is divided into a range of subsections; a useful summary for policy makers is also available.

A Long-Term Biodiversity, Ecosystem and Awareness Research Network [ALTERNet] <http://www.alter-net.info/default.asp>

Biodiversity Draft Chapter for the UK National Ecosystem Assessment (in Review) [\[www.uknea.unep-wcmc.org\]](http://www.uknea.unep-wcmc.org)

Blackstock, T. et al (2010). Habitats of Wales: a comprehensive field survey 1979-1997. University of Wales Press, Cardiff.

CCW reports on The economics of aquatic ecosystems and biodiversity

Countdown 2010 (2009) *The 2010 Biodiversity Challenge: Will the EU reach it? What future after 2010?* 13th February 2009. <http://www.countdown2010.net/article/the-2010-biodiversity-challenge-will-the-eu-reach-it-what-future-after-2010>

[DEFRA \(2009\). UK Biodiversity Indicators in Your Pocket 2009. London: Defra.](#)

http://www.defra.gov.uk/sustainable/government/progress/documents/SDIYP2009_a9.pdf

[DEFRA Securing a healthy natural environment: An action plan for embedding an ecosystems approach 2007](#)
<http://www.defra.gov.uk/environment/policy/natural-enviro/documents/eco-actionplan>.

[DEFRA update on its ecosystem approach action plan](#)

[Incorporating ecosystem services into policy appraisal](#)

[DEFRA guide on valuing nature](#)

First chapter of Defra's Ecosystems Approach Action Plan Update 'Delivering a healthy natural environment': Section 2 (pp 6-11) outlines how the ecosystems approach can be applied in the UK.
<http://www.defra.gov.uk/environment/policy/natural-enviro/documents/healthy-nat-enviro.PDF>

• Parliament's 'postnote' on ecosystem services: a 'layman's terms' introduction to the concept of ecosystem services.
<http://www.parliament.uk/documents/post/postpn281.pdf>

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- Defra's natural environment narrative: will give you the big picture on why the natural environment is important and what it does for our economic and social wellbeing. <http://www.defra.gov.uk/environment/policy/natural-environ/documents/narrative.pdf>
- First two chapters of 'An introductory guide to valuing ecosystem services': The first two chapters (pp 3 – 20) provide an overview of what valuation is, why it is useful and how environmental appraisal sits in the overall policy framework. <http://www.defra.gov.uk/environment/policy/natural-environ/documents/eco-valuing.pdf>

[EASAC, "Ecosystem services and biodiversity in Europe" \(European Academies Science Advisory Council, 2009\).](http://www.leopoldina-halle.de/cms/fileadmin/user_upload/leopoldina_downloads/Ecosystems_services_and_biodiversity_in_Europe_1_.pdf)

http://www.leopoldina-halle.de/cms/fileadmin/user_upload/leopoldina_downloads/Ecosystems_services_and_biodiversity_in_Europe_1_.pdf

[Environment Agency \(2004\) Otter Survey of Wales 2002. Bristol: Environment Agency.](http://www.bedslife.org.uk/documents/SAP%202007%20otter.pdf)

<http://www.bedslife.org.uk/documents/SAP%202007%20otter.pdf>

[EU Biodiversity Policy Development, Europa website](http://ec.europa.eu/environment/nature/biodiversity/policy/index_en.htm)

http://ec.europa.eu/environment/nature/biodiversity/policy/index_en.htm

[EU Council conclusions on biodiversity post-2010, Europa website](http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/113591.pdf)

http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/113591.pdf

[European Commission \(2009\). Responding to the Value of Nature European Environment Agency, Progress towards the European 2010 biodiversity target, EEA Report No 4/2009, 22 May 2009](http://www.eea.europa.eu/press/2009/05/22/2009052201)

[Failing, L. and Gregory R. \(2003\) Ten common mistakes in designing biodiversity indicators for forest policy. *Journal of Environmental Management* 68 121–132.](http://www.journalofenvironmentalmanagement.com/issue/68/121-132)

Green Infrastructure Wiki <http://www.greeninfrastructurewiki.com/page/GI+Benefits>
Halting Biodiversity Loss: Progress Made May 2010-09-09. Welsh Government, Members Research Service (Emily Angharad Brown) Paper Number 10/054

Hockley, N., Farrar, J., Gibbons, J. M., Hearn, S. M., Jones, J. P. G., and Kaiser, M. (2009). *Biodiversity Indicators for Wales*. Cardiff: Welsh Assembly Government.

http://www.assemblywales.org/bus-home/bus-committees/bus-committees-scrutiny-committees/bus-committees-third-sc-home/bus-committees-third-sc-agendas/sc_3_11-10_paper_3_annex_1_-_hockley_indicators_final_draft_tnr1.pdf?langoption=3&ttl=SC%283%29-11-10%20%3A%20Paper%203%2C%20Annex%201%20%3A%20Scrutiny%20of%20Environment%20Strategy%20-%20Hockley%20Indicators%20%28PDF%2C%202-54MB%29

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[Land use and environmental services. Environment Agency Resource Efficiency Science Programme Report SC080014/SR1 \(2009\)](#)

<http://publications.environment-agency.gov.uk/pdf/SCHO1009BRDG-e-e.pdf>

[Land Use Climate Change Report](#). Welsh Government, March 2010-09-09
<http://wales.gov.uk/about/cabinet/cabinetstatements/2010/100623ccr/?lang=en>

[Litovsky A and Elkington J \(2010\). The Biosphere Economy: Natural limits can spur creativity, innovation and growth. Volans Ventures Ltd, London](#)
<http://www.volans.com/wp-content/uploads/2010/03/The-Biosphere-Economy1.pdf>

[Smart, S.M. et al 2009. Countryside Survey: Wales Results from 2007. NERC/Centre for Ecology & Hydrology, Welsh Assembly Government, Countryside Council for Wales, 94pp. \(CEH Project Number: C03259\)](#)

SNH (2009) Scotland's Biodiversity Indicators.
<http://www.snh.gov.uk/publications-data-and-research/trends/scotlands-indicators/biodiversity-indicators>

[Statistical Directorate \(2009\) State of the Environment, 2008. Cardiff: Welsh Assembly Government.](#)

[The Pan-European Biological and Landscape Diversity Strategy, Council of Europe website](#)
<http://www.pebls.org>

[WG \(2006a\) Environment Strategy for Wales. Cardiff: Welsh Government.](#)
<http://wales.gov.uk/topics/statistics/headlines/env2008/hdw20080724/?lang=en>

[WG \(2006b\) Environment Strategy for Wales: First Action Plan. Cardiff: Welsh Government.](#)
<http://wales.gov.uk/topics/environmentcountryside/epq/envstratforwales/actionplans/2ndactionplan/?lang=en>

[WG \(2008\) Environment Strategy Action Plan 2008-2011. Cardiff: Welsh Assembly Government.](#)
<http://wales.gov.uk/desh/publications/enviroprotect/environmentstrategy/environmentactionplan/esap0811e.pdf?lang=en>

[Wales Biodiversity Partnership, The Delivery of UK Biodiversity Priority Habitats and Species Actions in Wales, August 2009](#)
<http://www.biodiversitywales.org.uk>

[Wales Biodiversity Strategy Actions – 19 actions, BARS website](#)
<http://www.ukbap-reporting.org.uk>

[WWF, Biodiversity and the EU Budget](#), Making the case for conserving biodiversity in the context of the EU Budget Review November 2009
http://wwf.panda.org/about_our_earth/all_publications/?180121/Biodiversity%2520the-EU-Budget-Making-the-case-for-conserving-biodiversity-in-the-context-of-the-EU-Budget-Review

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[The Economic and Social Aspects of Biodiversity](#)

[Benefits and Costs of Biodiversity in Ireland](#)

<http://www.environ.ie/en/Heritage/PublicationsDocuments/FileDownload,17321,en.pdf#>

Literature searches conducted by the Welsh Assembly Members Research Service:

Ecosystems and Health

BeWEL Report – ‘Personal wellbeing and interactions with nature’

The BeWEL (Behaviour for Well-being, Environment and Life) project sought to explore potential links between the tendency to undertake pro-environmental behaviours and: (a) the ways in which people interact with nature; (b) how exposure to forms of sensory contact with nature influence brain function and feelings of personal wellbeing; and (c) age-related changes in brain function and how emotional responses operate. The project team has recently published the first State of Understanding report, which presents a review of the evidence about the relationship between personal, subjective (mental) wellbeing and nature interactions. An initial exploration of the concept of personal wellbeing is followed by an examination of the various dimensions of personal wellbeing involved in human interactions with nature, focusing on positively and negatively evaluated experiences, and direct and mediated experiences. The report concludes by outlining key areas for future research. [More...](#)

Expert views on biodiversity conservation in an era of climate change

Global Environmental Change, Volume 20, Issue 1, February 2010, Pages 192-207

Shannon Hagerman, Hadi Dowlatabadi, Terre Satterfield, Tim McDaniels

http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6VfV-4XNVTB4-2-5&_cdi=6020&_user=4596862&_pii=S0959378009000909&_orig=search&_coverDate=02%2F28%2F2010&_sk=999799998&_view=c&_wchp=dGLbVtz-zSkWA&_md5=1aa31985edfdde10badeb3b2eab13232&_ie=/sdarticle.pdf

Niche construction, co-evolution and biodiversity

Ecological Economics, Volume 69, Issue 4, 15 February 2010, Pages 731-736

Kevin N. Laland, Neeltje J. Boogert

Modelling the likely impact of healthy eating guidelines on agricultural production and land use in England and Wales

Land Use Policy, In Press, Corrected Proof, Available online 29 March 2010

M.H. Arnoult, P.J. Jones, R.B. Tranter, R. Tiffin, W.B. Traill, J. Tzanopoulos

http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6VB0-4YR4B0V-1-H&_cdi=5912&_user=4596862&_pii=S0264837710000086&_orig=search&_coverDate=03%2F29%2F2010&_sk=999999999&_view=c&_wchp=dGLbVtz-zSkzV&_md5=3d6eb862502830a29ec5e64a766343fa&_ie=/sdarticle.pdf

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Climate change, economics and Buddhism — Part 1: An integrated environmental analysis framework

Ecological Economics, Volume 69, Issue 5, 15 March 2010, Pages 952-961

Peter L. Daniels

http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6VDY-4Y64M2M-1-C&_cdi=5995&_user=4596862&_pii=S0921800909005035&_orig=search&_coverDate=03%2F15%2F2010&_sk=999309994&_view=c&_wchp=dGLzVzz-zSkWb&_md5=056f93467dd6f006fffc94bb0f17d71c&_ie=/sdarticle.pdf

Climate change, economics and Buddhism — Part 2: New views and practices for sustainable world economies

Ecological Economics, Volume 69, Issue 5, 15 March 2010, Pages 962-972

Peter L. Daniels

http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6VDY-4YHFWNH-1-7&_cdi=5995&_user=4596862&_pii=S0921800910000376&_orig=search&_coverDate=03%2F15%2F2010&_sk=999309994&_view=c&_wchp=dGLbVzW-zSkWb&_md5=adca2c197d439ceb374b7be42e370ab6&_ie=/sdarticle.pdf

PetersonC, ParkN, SeligmanME (2005). **Orientations to happiness and life satisfaction: The full life versus the empty life.** Journal of Happiness Studies, 6, 25–41. <http://www.springerlink.com/content/mlk44462538x1366/fulltext.pdf>

Ussher MH, Owen CG, Cook DG et al (2007). **The relationship between physical activity, sedentary behavior and psychological wellbeing among adolescents.** Social Psychiatry and Psychiatric Epidemiology, 42, 851–856. <http://www.springerlink.com/content/60n465651452mx25>

Restorative qualities of favourite places

KALEVI Korpela, Terry Hartig, Journal of Environmental Psychology

Volume 16, Issue 3, September 1996, Pages 221-233

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WJ8-45MGXB1-H&_user=899436&_coverDate=09%2F30%2F1996&_rdoc=1&_fmt=high&_orig=search&_origin=search&_sort=d&_docanchor=&_view=c&_searchStrId=1467127457&_rerunOrigin=google&_acct=C000047645&_version=1&_urlVersion=0&_userid=899436&_md5=74bb0f4f5ac36511cc01b8edca3eb7c6&_searchtype=a

Healthy Places: Exploring the Evidence

Howard Frumkin, September 2003, Vol 93, No. 9 | American Journal of Public Health 1451-1456

<http://ajph.aphapublications.org/cgi/content/full/93/9/1451>

Biodiversity passes the taste test and is healthier too

University of Exeter

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<http://www.exeter.ac.uk/research/excellence/keythemes/climate/news/title,2268.en.html>

Rural/non-rural differences in rates of common mental disorders in Britain Prospective multilevel cohort study

SCOTT WEICH, The British Journal of Psychiatry (2006) 188: 51-57

<http://bjp.rcpsych.org/cgi/content/full/188/1/51?maxtoshow=&hits=10&RESULTFOR MAT=&fulltext=Scott+Weich+&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>

Green Exercise and Green Care: Evidence, Cohorts, Lifestyles and Health Outcomes: Summary of Research Findings

Jo Barton, Rachel Hine and Jules Pretty

Centre for Environment and Society, Department of Biological Sciences,
University of Essex, 2009

<http://www.essex.ac.uk/bs/staff/barton/details.shtm#res>

(See "Green Exercise" for further information and references)

Nature, Childhood, Health and Life Pathways

Jules Pretty, Caroline Angus, Madeleine Bain, Jo Barton,
Valerie Gladwell, Rachel Hine, Sarah Pilgrim, Gavin
Sandercock and Martin Sellens

Interdisciplinary Centre for Environment and Society (iCES), University of Essex, 2009

Occasional Paper 2009-2

<http://www.essex.ac.uk/ces/occasionalpapers/Nature%20Childhood%20and%20Health%20iCES%20Occ%20Paper%202009-2%20FINAL.pdf>

Global Biodiversity Outlook 3

United Nations 10/05/10

<http://gbo3.cbd.int/>

Climate change and Mental health links

Department of Health 04/05/10

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114774

Securing good health for the whole population: Final report - February 2004

Derek Wanless.

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4074426

Natural Heritage — a pathway to health

Countryside Council for Wales, January 2008

<http://www.irh.ac.uk/publications/research-publications.php#naturalheritage>

(Further references at the end of the document)

Link to papers and reports on Green exercise:

http://www.greenexercise.org/Papers_Reports.html

Slow Travel

The Slow Movement: Making a Connection

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<http://www.slowmovement.com/>

Dorset's Natural Health Service 3 March 2009

http://www.naturalengland.org.uk/regions/south_west/press_releases/2009/030309.aspx

After a decade of the green Gym Natural England looks for a natural health service

11 March 2008

http://www.naturalengland.org.uk/about_us/news/2008/110308.aspx

Dr. William Bird

Strategic Health Advisor to Natural England

GP, Health Walking, Green Gym

<http://www.outdoorshealthnetwork.co.uk/researchers/william-bird>

Natural Thinking

A Report by Dr William Bird,

for the Royal Society for the Protection of Birds,

Investigating the links between the Natural Environment, Biodiversity and Mental Health

http://www.rspb.org.uk/Images/naturalthinking_tcm9-161856.pdf

The Blue Gym with William Bird

<http://www.bluegym.org.uk/>

The Blue Gym will create an information hub and showcase to encourage activities and usage of the coastline and inland waters. It will help make water accessible and relevant to everyone.

Campaign for Greener Healthcare

<http://www.greenerhealthcare.org/events/2010/05/integrating-health-and-sustainability>

Ecosystems and Climate Change

Climate and weather

[Reframing climate change as a public health issue: an exploratory study of public reactions](#)

Climate change is taking a toll in human health, and some leaders in the public health community have urged their colleagues to give voice to its health implications. Previous research has shown that Americans are only dimly aware of the health implications of climate change, yet the literature on issue framing suggests that providing a novel frame - such as human health - may be potentially useful in enhancing public engagement. We conducted an exploratory study in the United States of people's reactions to a public health-framed short essay on climate change.

Population and migration

[The Royal Society - 12/07/2010](#)

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The Royal Society has launched a two year project [Does population matter?](#) that will investigate the global population rise and its impacts on the environment and sustainable development; a call for views has been issued to help inform the study.

[Demographic change and the environment](#)

[The Royal Commission on Environmental Pollution - 16/02/2011](#)

The government needs to better understand how the countrys changing demographics will impact the environment in order to avoid costly problems emerging in the future, according to a new report from The Royal Commission on Environmental Pollution.

[The Research Council of Norway - 24/02/2011](#)

[The Nordic social model: Sustainable prosperity and welfare?](#)

An interesting presentation on an alternative model of capitalism, prosperity and welfare helps to understand why specific environmental issues like acid rain are easier to tackle in Nordic countries but complex problems such as climate change are not; making use of the positive aspects of the system could benefit England and Wales.

Renewable energy

[EurekAlert! - 15/07/2010](#)

[Reports detail global investment and other trends in green energy](#)

In 2009, 60% of Europes new energy capacity came from renewables and it is expected that new capacity will be globally dominated by renewables, rather than conventional energy, in 2010 or 2011.

Countryside conservation

[European Commission - 22/07/2010](#)

[Forward-looking approach needed to conserve biodiversity corridors](#)

The study focuses on habitat connectivity, an important concept in biodiversity

[UK Research Council - 01/02/2011](#)

[Farm diversification into energy production by anaerobic digestion](#)

On farm anaerobic digesters could increase farm profits while reducing environmental impacts, according to a Rural Economy and Land Use Programme research project.

Web-based tools

Soilscapes: <http://www.landis.org.uk/soilscapes/>

Soilscapes is a 1:250,000 scale, simplified soils dataset covering England and Wales. It was created from the more detailed National Soil Map (NATMAPVector) with the purpose of effectively communicating a general understanding of the variations which occur between soil types, and how soils affect the environment.

Spatial data management system (Alaska, National System of Public Lands):

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<http://sdms.ak.blm.gov/isdms/imf.jsp?site=sdms>

The Spatial Data Management System (SDMS) website is a one-stop tool for accessing geospatial data. You can view, research, print and download information such as, surveyed lands, mining claims and BLM land record documents, all from one easy to use site. SDMS is an evolving product as new geospatial data layers and capabilities are periodically added. The data presented here is GIS data that has been “published”, meaning the data meets certain criteria for accuracy, completeness, maintainability, documentation and relevance. Please note that the on-line data and documents available through this site do not constitute nor replace official legal records, documents or case files. Refer to specific records on file at BLM for official record information.

Metropolitan council: land use in the twin cities region (Minnesota, USA):

<http://gis.metroc.state.mn.us/landuse/map.asp?c=1>

The purpose of the Maps web pages on the Metropolitan Council’s website is to improve access to maps and information about the 7-county Twin Cities metropolitan region. The Maps pages at www.metrocouncil.org offer tools and applications that make it possible for users, both novices and seasoned Geographic Information Systems professionals, to: quickly profile any community in the Metro at the click of a button, explore land use and demographic changes for communities, sub regions, and the entire 7-county area, find and print pre-made maps from the Map Gallery, which is stocked with more than 1000 maps, make a custom map suitable for printing with access to over 100 data layers, and a suite of mapping tools.

Food and Agricultural Organization of the UN: land resources, management, planning and use:

<http://www.fao.org/nr/land/en/>

Provides information on land degradation, sustainable land management, and land policy and planning. Provides links to various databases on land use, soils management and agro-ecological zoning. Coverage is global.

Alaska Shore Zone Coastal mapping and imagery:

<http://mapping.fakr.noaa.gov/Website/ShoreZone/viewer.htm>

ShoreZone is a coastal habitat mapping and classification system in which georeferenced aerial imagery is collected specifically for the interpretation and integration of geological and biological features of the intertidal zone and nearshore environment.

The land-sea interface is a crucial realm for terrestrial and marine organisms, human activities, and dynamic processes. ShoreZone is a coastal habitat mapping and classification system that specializes in the collection and interpretation of spatially-referenced aerial imagery of the intertidal zone and nearshore environment. Its objective is to produce an integrated, searchable inventory of geomorphic and biological features which can be used as a tool for science, education, management, and environmental hazard mitigation.

Further information and instructions:

<http://www.shorezone.org/index.html>

<http://alaskafisheries.noaa.gov/habitat/shorezone/szintro.htm>

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Marinemap (California): <http://marinemap.org/>

MarineMap is a web-based decision support tool for open and participatory spatial planning in the marine environment. MarineMap offers a simple, flexible and powerful means of gathering expertise from resource managers, scientists, stakeholders and public in a process of collaborative decision making. The MarineMap Consortium brings together personnel and skills from UC Santa Barbara, Ecotrust, and The Nature Conservancy. We create open-source spatial tools that integrate and illuminate the human dimensions of marine science and policy.

Wetlands Mapper (US fish and wildlife service):

http://wetlandsfws.er.usgs.gov/imf/imf.jsp?site=NWI_CONUS

The development of the new Wetlands Mapper stems from the U.S. Fish and Wildlife Service's (Service) need to expand and improve the availability of digital wetlands data. The Service's strategic plan for digital wetland data is focused on the development, revision, and dissemination of wetlands data and information to Service resource managers and the public. The present goal of the Service is to provide the citizens of the United States and its Trust Territories with current geospatially referenced information on the status, extent, characteristics and functions of wetlands, riparian, deepwater and related aquatic habitats in priority areas to promote the understanding and conservation of these resources. The revision of Wetlands Mapper is in direct response to the need to integrate digital map data with other resource information to produce timely and relevant management and decision support tools.

Further information and user guide: <http://www.fws.gov/wetlands/Data/Mapper.html>

Community Mapping Network (British Columbia):

<http://www.shim.bc.ca/mapbuilder/default.cfm>

The main objective of the CMN is to promote planning sustainable communities. Many sensitive habitats such as urban and smaller rural watercourses, eelgrass beds, riparian areas and wetlands remain unknown, poorly understood, and suffer from impacts of human development. Methods provided through CMN reflect a novel set of tools to explore and promote awareness of these habitats by mapping their location and inventorying their attributes. The awareness and commitment to local watercourses and other sensitive habitats is an important process created through co-operation of local communities, First Nations, municipalities, planners, and managers. Community mapping methods comprise a set of tools and methods that can be used to help conserve fisheries, wildlife and aquatic habitat resources throughout British Columbia.

Further information and instructions:

<http://www.shim.bc.ca/newsupdates/updates.cfm>

Metro habitat tool (Oregon): <http://www.oregonmetro.gov/index.cfm/go/by.web/id=8385>

Summary: Metro's habitat inventory identified 80,000 acres of significant natural areas and an online tool can be used to see if a property is included in the inventory and view and print maps of any location in the region. These show habitat protection as recommended by the Metro Council; inventories of regionally significant habitat; water, flood, slope, vegetation and forest data used by Metro to determine habitat designation and protection levels.

WALES NATURAL ENVIRONMENT FRAMEWORK

Sample of the evidence base underpinning the framework

InfoNatura : <http://www.natureserve.org/infonatura/>

InfoNatura is a conservation and educational resource on the animals, and ecosystems of Latin America and the Caribbean. You can use InfoNatura to learn about more than 8,500 common, rare and endangered species and 788 ecosystems. Developed by NatureServe, collaborators from the region, and The Nature Conservancy, this classification is a systematic way of describing and assessing ecological diversity. It fills the need for national and international classification standards for ecological communities, while allowing for classification at a scale fine enough to be used to understand, manage, and protect natural resources on a site-by-site basis. Although the standards can be applied to define terrestrial ecological communities anywhere in the world, the classification serviced through InfoNatura currently consists of vegetation types that occur in the countries of Latin America and the Caribbean.

SERVIR: <http://maps.cathalac.org/Portal/ptk>

SERVIR is the map-server for Meso-America. Through the internet, its purpose is to provide information to many users that will assist the protection of natural resources and biodiversity in Central America. From maps of ecosystems throughout the Central American region, the map-server can be used to provide information in formats understandable to key decision-makers, as well as the needs of project analysts and researchers.

Web based GIS to support citizen interaction in land use planning

Authors: Kari Mikkonen, Samuli Alppi

Proceedings of the 23rd annual ESRI User Conference

Interactive planning is an important trend in most developed countries. The idea is to encourage citizens to participate planning of their society and environment. In Finland the principle of interaction is written in the legislation of land use planning.

The paper describes an ArcIMS based feedback system used for regional planning in Finland. The system is used to publish the draft of a regional plan. It offers the citizens a chance to enter a comment attached to a location or geographic feature. The administrator's interface supports handling and analysis of the received comments.

[Full text](#)

Various EU commission communications

Options for an EU vision and target for biodiversity beyond 2010

http://ec.europa.eu/environment/nature/biodiversity/policy/pdf/communication_2010_0004.pdf

Analytical techniques.

Forum for the Future. Parrett Catchment:

<http://www.forumforthefuture.org/library/The-Parrett-catchment-project>

<http://www.geog.mcgill.ca/faculty/peterson/PDF-myfiles/BioDEcoFn.pdf>

WALES NATURAL ENVIRONMENT FRAMEWORK

Sample of the evidence base underpinning the framework

Riddler, B. (2008). Questioning the ecosystem services argument for biodiversity conservation. *Biodiversity & Conservation*, 17: 781-790.

<http://ec.europa.eu/environment/integration/research/newsalert/pdf/20si.pdf>

Evidence from N America shows 90% decrease in tree regeneration 10 years after the loss of Wolves due to higher levels of herbivory and 99% decrease in 50 years (Beschta and Ripple)

Research shows pike can facilitate a shift from phytoplankton-dominated algal soup to clear water conditions dominated by pond weeds and other plants (Moss et al 1996)

<http://www.ieem.net/ieemspringconference2010.asp>

In Practice: [Bulletin of the Institute of Ecology and Environmental Management](#). Number 68. June 2010

[Diana Pound of Dialogue Matters 'The Eco- What Approach?'](#) (conf presentation)

[Valuing and Using Ecosystem Services in Practice: 'Findings from the East of England Pilot Studies'](#) Peter Glaves and Dave Egan. In Practice: Bulletin of the Institute of Ecology and Environmental Management. Number 68. June 2010

[Ecosystem Services: From Theory to Application. Stewart Clarke](#). In Practice: Bulletin of the Institute of Ecology and Environmental Management. Number 68. June 2010

[The Economic Value of Natural Capital and Ecosystem Services. John Box](#). In Practice: Bulletin of the Institute of Ecology and Environmental Management. Number 68. June 2010

[Valuing Ecosystem Services. Bruce Howard](#). In Practice: Bulletin of the Institute of Ecology and Environmental Management. Number 68. June 2010

[Wales Environment Research Hub website](#)