

Birkbeck Public Lecture Series, Spring 2011

'World Biodiversity in Crisis?' Reading List for Lecture 1

The Evil Quartet, Dave Dawson 11th February 2011.

Core reading list.

Anon. 2008 *The invasive non-native species framework strategy for Great Britain*. Department for Environment, Food and Rural Affairs, London, 48pp.

Bowley, A. 2007 The Great Fen – a waterland for the future. *British Wildlife* 18(6):415-423.

Brooks, T.M. *et al.* 2006 Global biodiversity conservation priorities. *Science* 313:58-61.

Burney, D.A. & Flannery, T.F. 2005 Fifty millennia of catastrophic extinctions after human contact. *Trends in Ecology and Evolution* 20:395-401.

Costanza, R. *et al.* 1997 The value of the world's ecosystem services and natural capital. *Nature* 387:253-260.

Diamond, J.M. 1975 The island dilemma: lessons of modern biogeographic studies for the design of nature reserves. *Biological Conservation* 7: 129-146.

Diaz, S. *et al.* 2006 Biodiversity loss threatens human well-being. *PloS Biology* 4:1300-1305.

Fahrig, L. 2003 Effects of habitat fragmentation on biodiversity. *Annu. Rev. Ecol. Evol. Syst.* 34:487–515.

Game, M. & Peterken, G.F. 1984 Nature reserve selection strategies in the woodlands of central Lincolnshire, England. *Biological Conservation* 29:157-181.

Gaston, K.J. & Fuller, R.A. 2008 Commonness, population depletion and conservation biology. *Trends in Ecology and Evolution* 23:14-19.

Hardin, G. 1968 The tragedy of the commons. *Science* 162:1243-1248.

Hilton, G.M. & Cuthbert, R.J. 2010 The catastrophic impact of invasive mammalian predators on birds of the UK Overseas Territories; a review and synthesis. *Ibis* 152:443-458.

Hodgson, J.A. *et al.* 2009 Climate change, connectivity and conservation decision making: back to basics. *Journal of Applied Ecology* 46:964-969.

Krebs, J.R. 1999 The second silent spring? *Nature* 400:611-612.

Kümpel, N. 2005 The bushmeat trade. *Parliamentary Office of Science and Technology, Postnote* 236. www.parliament.uk/post/home.htm

Laurance, W.F. 2007 Have we overstated the tropical biodiversity crisis?

MacArthur, R.H. & Wilson, E.O. 1967 *The theory of island biogeography*. Princeton University Press, Princeton, NJ.

MacLeod, N., 2003, The causes of Phanerozoic extinctions, in Rothschild, L., and Lister, A., eds., *Evolution on Planet Earth*: London, Academic Press, pp. 253-277.

May, R.M. 2010 Ecological science and tomorrow's world. *Philosophical Transactions of the Royal Society B* 365:41-47.

- Menendez, R. *et al.* 2006 Species richness changes lag behind climate change. *Proceedings of the Royal Society B* 273:1465-1470.
- Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute, Washington, DC.
- Pearson, R.G. & Dawson, T.P. 2003 Predicting the impacts of climate change on the distribution of species: are bioclimate envelope models useful? *Global Ecology and Biogeography* 12:361-371.
- Ratcliffe, D.A. 1970 Changes Attributable to Pesticides in Egg Breakage Frequency and Eggshell Thickness in Some British Birds. *Journal of Applied Ecology* 7(1):67-115.
- Sax, D.F. & Gaines, S.D. 2008 Species invasions and extinction: the future of native biodiversity on islands. *Proceedings National Academy of Sciences* 105(suppl. 1):11490-11497.
- Van Vugt, M. 2010 Averting the tragedy of the commons. Using social psychological science to protect the environment. *Current Directions in Psychological Science* 18(3): 169-173.
- Van Vugt, M. 2009 Triumph of the commons. Seven billion people into one planet won't go unless we learn to harness our better nature, says social psychologist Mark Van Vugt. *New Scientist*, 22 August. 40-43.
- Vitousek, P.M., Mooney, H.A., Lubchenco, J. & Melillo, J.M. 1997a Human domination of earth's ecosystems. *Science* 277:494-499.

Supplementary references.

- Anon. 2010 *Wild bird populations: farmland birds in England 2009*. defra, 6pp.
- Arrhenius, O. 1921 Species and area. *Journal of Ecology*, 9(1):95-99.
- Báldi, A. 2008 Habitat heterogeneity overrides the species-area relationship. *Journal of Biogeography* 35:675-681
- Bauer, H-G. & Woog, F. 2011 On the 'invasiveness' of non-native bird species. *Ibis* 153:204-206.
- Brasier, C.M. 2008 The biosecurity threat to UK and global environment from international trade in plants. *Plant Pathology* 57:792-808.
- Brooks, T.M., Pimm, S.L. & Oyugi, J.O. 1999 Time lag between deforestation and bird extinction in tropical forest fragments. *Conservation Biology* 13:1140-1150.
- Bulman, C.R. *et al.* 2007 Minimum viable population size, extinction debt, and the conservation of a declining species. *Ecological Applications* 17:1460-1473.
- Burton, N.H.K. *et al.* (2010) The impacts of non-native species: a review of the British Ornithologists' Union's Autumn 2008 Scientific Meeting. *Ibis* 152:654-659.
- Castelletta, M. *et al.* 2000 Heavy extinctions of forest avifauna in Singapore: lessons for biodiversity conservation in Southeast Asia. *Conservation Biology* 1870-1880.
- Darlington, P.J. 1957 *Zoogeography*. John Wiley, New York.
- Dawson, D. 1994 *Are habitat corridors conduits for animals and plants in a fragmented landscape? A review of the scientific evidence*. English Nature Research Report 94, 88pp.
- Dawson, D. 2006 Ecological reserve design: what are the principles? in: *Designing nature into urban development and Regeneration, Proc 16th Conf. IEEM*, Newcastle:133-145.

- Dengler, J. 2009 Which function describes the species-area relationship best? A review and empirical evaluation. *Journal of Biogeography* 36:728-744.
- Didham, R.K., Tylianakis, J.M., Hutchison, M.A., Ewers, R.M. & Gemmill, N.J. 2005 Are invasive species the drivers of ecological change? *TREE* 20(9):470-474.
- Driscoll, D.A. *et al.* 2010 Classic metapopulations are rare among common beetle species from a naturally fragmented landscape. *Journal of Applied Ecology* 79:294-303.
- Dunn, R.R. *et al.* 2009 The sixth mass coextinction: are most endangered species parasites and mutualists? *Proceedings of the Royal Society B* 276:3037-3045.
- Ewers, R.M. & Didham, R.K. 2008 Pervasive impact of large-scale edge effects on a beetle community. *Proceedings of the National Academy of Science* 105(14): 5426–5429.
- Forman, R.T.T. 1997 *Land mosaics: the ecology of landscapes and regions*. Cambridge University Press, Cambridge.
- Game, M. 1980 Best *shape* for *nature reserves*. *Nature* 287,630-32.
- Gilbert-Norman, L. *et al.* 2010 A meta-analytic review of corridor effectiveness. *Conservation Biology* 24:660-668.
- Gregory, R.D., Noble, D.G. & Custance, J. 2004 The state of play of farmland birds: population trends and conservation status of lowland farmland birds in the United Kingdom. *Ibis* 146(Suppl.2):1-13.
- Grenyer, R. *et al.* (2006) Global distribution and conservation of rare and threatened vertebrates. *Nature* 444(2):93-96.
- Hamilton, G. 2011 Aliens to the rescue. *New Scientist* 209:34-37.
- Harrison, S. & Bruna, E. 1999 Habitat fragmentation and large-scale conservation: what do we know for sure? *Ecography* 22:225-232.
- Henle, K., Davies, K.F., Kleyer, M., Margules, C. & Settele, J. 2004 Predictors of species sensitivity to fragmentation. *Biodiversity and Conservation* 13:207-251.
- Hurlbert, A.H. & Jetz, W. 2007 Species richness, hotspots, and the scale dependence of range maps in ecology and conservation. *PNAS* 104(33): 13384–13389.
- Koh, L.P. *et al.* 2010 An overhaul of the species-area approach for predicting biodiversity loss: incorporating matrix and edge effects. *Journal of Applied Ecology* 47:1063-1070.
- Koh, L.P. & Ghazoul, J. 2010 A matrix-calibrated species-area model for predicting biodiversity losses due to land-use change. *Conservation Biology* 24:994-1001.
- Jones, C.G. *et al.* 2010 A framework for understanding physical ecosystem engineering by organisms. *Oikos* 119:1862-1869.
- Kupfer, J.A. *et al.* (2006) Not seeing the ocean for the islands: the mediating influence of matrix-based processes on forest fragmentation effects. *Global Ecology & Biogeography* 15:8-20.
- Lamoreaux, J.F. *et al.* (2006) Global tests of biodiversity concordance and the importance of endemism. *Nature* 440(9):212-214.
- Laurance, W.F. 2008 Theory meets reality. How habitat fragmentation research has transcended island biogeographic theory. *Biological Conservation* 141:1731-1744.
- Levin, S. 2010 Crossing scales, crossing disciplines: collective motion and collective action in the Global Commons. *Philosophical Transactions of the Royal Society B* 365:13-18.
- Lewis, O.T. 2006 Climate change, species-area curves and the extinction crisis. *Philosophical Transactions of the Royal Society B* 361:163-171.

- McGarigal, K. & Cushman, S.A. 2002 Comparative evaluation of experimental approaches to the study of habitat fragmentation effects. *Ecological Applications* 12(2): 335-345.
- Morteilliti, A, Amori, G., Capizzi, D., Cervone, C., Fagiani, S. Pollini, B. & Boitani, L. 2011 Independent effects of habitat loss, habitat fragmentation and structural connectivity on the distribution of two arboreal rodents. *Journal of Applied Ecology* 48:153-162.
- Mittermeier, R.A., Myers, N. & Mittermeier, C.G. 2000 *Hotspots: Earth's biologically richest and most endangered terrestrial ecoregions*. Conservation International.
- Nasi, R., Brown, D., Wilkie, D., Bennett, E., Tutin, C., van Tol, G., and Christophersen, T. (2008). *Conservation and use of wildlife-based resources: the bushmeat crisis*. Secretariat of the Convention on Biological Diversity, Montreal, and Center for International Forestry Research (CIFOR), Bogor. Technical Series no. 33, 50 pp.
- Olden, J.D. & Rooney, T.P. 2006 On defining and quantifying biotic homogenisation. *Global Ecology and Biogeography* 15:113-120.
- Pearce, F. 2010 Price tags for planet earth. *New Scientist* 16th Oct:9-9.
- Peres, C.A. 2001 Synergistic effects of subsistence hunting and habitat fragmentation on Amazonian forest vertebrates. *Conservation Biology* 15:1490-1505.
- Preston, F.W. 1962 The canonical distribution of commonness and rarity. *Ecology* 43(3):185-215, 410-432.
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- Rodrigues, A.S.L *et al.* 2004 Effectiveness of the global protected area network in representing species diversity. *Nature* 428:640-643.
- Smith, A.B. 2010 Caution with curves: caveats for using the species-area relationship in conservation. *Biological Conservation* 143:555-564.
- Smith, R.K. *et al.* 2010 Effectiveness of predator removal for enhancing bird populations. *Conservation Biology* 24:820-829.
- Stork, N.E. 2010 Re-assessing current extinction rates. *Biological Conservation* 19:357-371.
- Vitousek, P.M., D'Antonio, C.M., Loope, L.L., Rejmanek, M. & Westbrooks, R. 1997 introduced species: a significant component of human-caused global change. *New Zealand Journal of Ecology* 21(1):1-16.
- Walker, L.A. *et al.* 2008 The Predatory Bird Monitoring Scheme: Identifying Chemical Risks to Top Predators in Britain. *Ambio* 37(6):466-471.
- Whittaker, R.J., Araujo, M.B., Jepson, P., Ladle, R.J., Watson, J.E.M. & Willis, K.J. 2005 Conservation biogeography: assessment and prospect. *Diversity and Distributions* 11:3-23.
- Williams, F.E. *et al.* 2010 The economic cost of invasive non-native species on Great Britain. CABI, Wallingford, 199pp.
- Wright, S.J. & Muller-Landau, H.C. 2006 The future of tropical forest species. *Biotropica* 38:287-301.

Birkbeck Public Lecture Series, Spring 2011

'World Biodiversity in Crisis?' Reading List – individual lectures

NB the references below are entered as received from the speakers and reflect a variety of styles. Your own assignments need to select one particular style and apply this consistently.

11 February 'The Evil Quartet' Dr Dave Dawson,

See general list (1)

18 February 'Protecting the best areas' Charles Besançon,

- Butchart, Stuart H and et al (44 other authors!), 2010. *Global Biodiversity: Indicators of Recent Declines*. Science 328. 1164 - 1168.
- *Despite Progress, Biodiversity Declines*, 2010. Science 329. 10 September: 1272-1273
- Danielsen, Finn et al., 2010. *Environmental monitoring: the scale and speed of implementation varies according to the degree of peoples involvement*. Journal of Applied Ecology doi: 10.1111/j.1365-2664.2010.01874.x.
- Danielsen, Finn and et al (17 others), 2010. *At the heart of REDD+: a role for local people in monitoring forests?* Conservation Letters doi: 10.1111/j.1755-263X.2010.00159.x. 1-10.

Pdfs of all the above are downloadable from the ECSS webpages

25 February 'Making Space for Nature' Prof. Sir John Lawton

"I think all the references students will need, will be available in the report, which is on the web. [this contains a large number of detailed [references](#) for terrestrial space. Students may need some guidance here?]

- Professor Sir John Lawton (Chair) Making Space for Nature: A review of England's Wildlife Sites and Ecological Network Report Submitted to the Secretary of State, the Department for Environment, Food and Rural Affairs on 16 September 2010 www.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf

4 March 'Agri-environment schemes' Dr Nigel Boatman,

- Agri-environment schemes in England 2009: *A review of results and effectiveness. A report by Natural England*. <http://www.naturalengland.org.uk/ourwork/farming/funding/aesiereport.aspx>
The Natural England website also contains full details of Environmental Stewardship (the current English agri-environment scheme).
- Boatman, N., Green, M., Holland, J., Marshall, J., Renwick, A., Siriwardena, G., Smith, B. & de Snoo, G. Eds. (2010) Agri-environment schemes – what have they achieved and where do we go from here? *Aspects of Applied Biology* 100. available from the Association of Applied Biologists <http://www.aab.org.uk/contentok.php?id=117>. List of contents at

<http://www.aab.org.uk/images/0%20AES%20TITLE%20INTRO%20and%20CONTENTS.pdf>

- Boatman N, Ramwell CT, Parry H, Jones N, Bishop J, Gaskell P, Short C, Mills J & Dwyer J (2008). A review of environmental benefits supplied by agri-environment schemes. LUPG Report contract No. FST20/79/041
<http://www.lupg.org.uk/Default.aspx?page=143>
This website also contains a number of other reports and conference proceedings of interest
- Donald, P.F. & Evans, A.D. (2006) Habitat connectivity and matrix restoration: the wider implications of agri-environment schemes. *Journal of Applied Ecology* 43, 209-218
- Kleijn, D. and W. J. Sutherland (2003). "How effective are European agri-environment schemes in conserving and promoting biodiversity?" *Journal of Applied Ecology* 40: 947-969.
- Whittingham, M.J. (2007). Will agri-environment schemes deliver substantial biodiversity gain, and if not why not? *Journal of Applied Ecology* 44, 1-5
- Cooper, T., Hart, K. And Baldock, D. (2009). *The provision of public goods through agriculture in the European Union*. Report prepared for DG Agriculture and Rural Development, congreac no. 30-CE-0233091/00-28, Institute for European Environmental Policy, London.

There are many other documents and reports on European Environmental policy available through the IEEP website: <http://www.ieep.eu/>

11 March ‘Towards fair and sustainable fisheries’ Aniol Esteban and Rupert Crilly

“Please find below a list of articles / literature on fisheries that you might suggest for your students.

We might refer to some of them in our presentation; and will be happy to answer questions related to the presentation; but can’t respond about the contents of all articles below. “

Articles:

- Jackson, J. B. C. *et al.* (2001) Historical overfishing and the recent collapse of coastal ecosystems. *Science*, **293**, 629-638.
- Myers, R. A., Hutchings, J. H. & Barrowman, N. J. (1997) Why do fish stocks collapse? The example of cod in Atlantic Canada. *Ecol. Applic.*, **7**, 91-106.
- Myers, R. A. & Worm, B. (2003) Rapid worldwide depletion of predatory fish communities. *Nature*, **423**, 280-283.
- Pauly, D., Christensen, V., Dalsgaard, J., Froese, R. & Torres, F. C. Jr. (1998) Fishing down marine food webs. *Science*, **279**, 860-863.
- Roberts, C.M. & Hawkins, J.P. (1999) Extinction risk in the sea. *Trends in Ecology and Evolution*, **14**(6), 241–246.

Background:

- Pauly, D., Christensen, V., Guenette, S., Pitcher, T., Sumaila, U. R., Walters, C., Watson, R. & Zeller, D. (2002) Toward sustainability in world fisheries. *Nature*, 418, 689-695.

- Roberts, C.M. (2003) Our shifting perspectives on the oceans. *Oryx*, 37(2), 166-177.

Further reading:

- Casey, J.M. and Myers, R.A. (1998) Near extinction of a large, widely distributed fish. *Science*, 281, 690-692.
- Dulvy, N. K., Sadovy, Y. & Reynold, J. D. (2003) Extinction vulnerability in marine populations. *Fish and Fisheries*, 4, 25-64.
- Ludwig, D., Hilborn, R. & Walters, C. (1993) Uncertainty, resource exploitation and conservation: lessons from history. *Science* 260, 17-36.
- Macinko, S. & Bromley, D. W. (2002) *Who owns America's fisheries?* Washington, DC: Island Press.
- Myers, R. A. & Worm, B. (2005) Extinction, survival, or recovery of large predatory fishes. *Phil. Trans. R. Soc. B.*, 360, 13-20.
- Pauly, D. (1995) Anecdotes and the shifting baseline syndrome of fisheries. *Trends Ecol. Evol.*, 10, 430.
- Pauly, D., Alder, J., Bennett, E., Christensen, V., Tyedmers, P. & Watson, R. (2003) *World The future for fisheries.* *Science*, 302, 1359-1361.
- Pauly, D., Watson, R. & Alder, J. (2005) Global trends in world fisheries: impacts on marine ecosystems and food security. *Phil. Trans. R. Soc. B.*, 360, 5-12.
- Roberts, R. G. et al., (2001) New ages for the last Australian megafauna: continental-wide extinction about 46 000 years ago. *Science*, 292, 1888-1892.

18 March 'Island Invaders: Dr Richard Cuthbert

- Hilton, G.M. and Cuthbert, R.J. (2010) The catastrophic impact of invasive mammalian predators on birds of the UK Overseas Territories: A review and synthesis. *Ibis* 152: 443-458.
- Wanless, R.M., Ryan, P.G., Altwegg, R., Angel, A., Cooper, J. Cuthbert, R. and Hilton, G.M. (2009). From both sides: dire demographic consequences of carnivorous mice and longlining for the Critically Endangered Tristan Albatrosses on Gough Island. *Biological Conservation* 142: 1710-1718.
- Cuthbert, R. and Hilton, G. (2004). Introduced House Mice *Mus musculus*: a significant predator of endangered and endemic birds on Gough Island, South Atlantic Ocean? *Biological Conservation* 117: 483-489.
- Howald, G., Donlan, C. J., Galvan, J.P., Russell, J.C., Parkes, J., Samaniego, A., Wang, Y., Veitch, D., Genovesi, P., Pascal, M., Saunders, A. and Tershy, B. (2007). Invasive rodent eradication on islands. *Conservation Biology* 21, 1258–1268