

## Information and people: Websites reference

Caner Kazanci: <http://alpha.math.uga.edu/~caner/>

Stuart Borrett: [https://uncw.edu/bio/faculty\\_borrett.html](https://uncw.edu/bio/faculty_borrett.html)

Brian Fath: <http://wp.towson.edu/bfath/>

## Analysis programs: software and websites

**Econet (C. Kazanci): web-based simulation and NEA analysis package**  
**<http://eco.engr.uga.edu>**

enaR (Borrett and Lau): R package for NEA and other network-based analysis  
<https://cran.r-project.org/src/contrib/Archive/enaR/>  
web-based tutorial for enaR: <http://198.199.73.21:3838/ena-tutorial/>

NEA.m (Fath and Borrett): Matlab function for NEA analysis  
<https://www.mathworks.com/matlabcentral/fileexchange/5261-nea-m>

## Reference list for NEA

### NEA theory

1. Patten, BC, Bosserman, RW, Finn, JT, and Cale, WG. 1976. Propagation of Cause in Ecosystems. in: *Systems Analysis and Simulation in Ecology*. Vol. 4. B. C. Patten (ed.). New York, Academic Press. pp.457-579.
1. Finn, JT. 1976. Measures of ecosystem structure and function derived from the analysis of flows. *J. Theor. Biol* 56:363-380
2. Patten, BC. 1978. Systems approach to the concept of the environment. *Ohio J. Science* 78:206-222
3. Patten, BC. 1985. Energy cycling the ecosystem. *Ecol. Mod.* 28:1-71.
4. Higashi, M. and Patten, BC. 1989. Dominance of indirect causality in ecosystems. *Am. Nat.* 133(2): 288-302.

5. Patten, BC. 1991. Network ecology: indirect determination of the life-environment relationship in ecosystems. In: Burns, TP and Higashi, M. (eds) Theoretical Studies of Ecosystems. Cambridge University Press, Cambridge, UK. pp.288-351.
6. Fath, BD and Patten, BC. 1999. Review of the foundations of network environ analysis. *Ecosystems* 2:167-179.
7. Fath, BD. 2007. Network mutualism: Positive community-level relations in ecosystems. *Ecological Modelling* 208:56-67.
8. Patten, BC. 2016. The cardinal hypotheses of Holoecology Facets for a general systems theory of the organism-environment relationship *Ecological Modelling* 319 (2016) 63–111

## NEA applications

1. Patten, BC and Auble, GT. 1981. System theory of the ecological niche *American Naturalist* 117(6):893-922.
2. Dame, RF and Patten, BC. 1981. Analysis of energy flows in an intertidal oyster reef. *Marine Ecology Progress Series* 5(2):115-124.
3. Patten, BC and Matis, JH. 1981. The water environs of Okefenokee Swamp: an application of static linear environ analysis. *Ecological Modelling* 16:1-50.
4. Whipple, SJ, Patten, BC, and Borrett, SR. 2014. Indirect effects and distributed control in ecosystems Comparative network environ analysis of a seven-compartment model of nitrogen storage in the Neuse River Estuary, USA: Time series analysis. *Ecological Modelling* 293: 161–186.

## NEA methods and software:

1. Kazanci, C. 2007. Econet: a new software for ecological modeling, simulation, and network analysis. *Ecological Modelling* 208(1):3-8.
2. Borrett, SR, and Lau, MK. 2014. enaR: an R package for ecosystem network analysis. *Methods in Ecology and Evolution* 5(11):1206-1213.
3. Fath, BD and Borrett, SR. 2006. A Matlab function for network environ analysis. *Environmental Modeling and Software* 21(3):375-405.