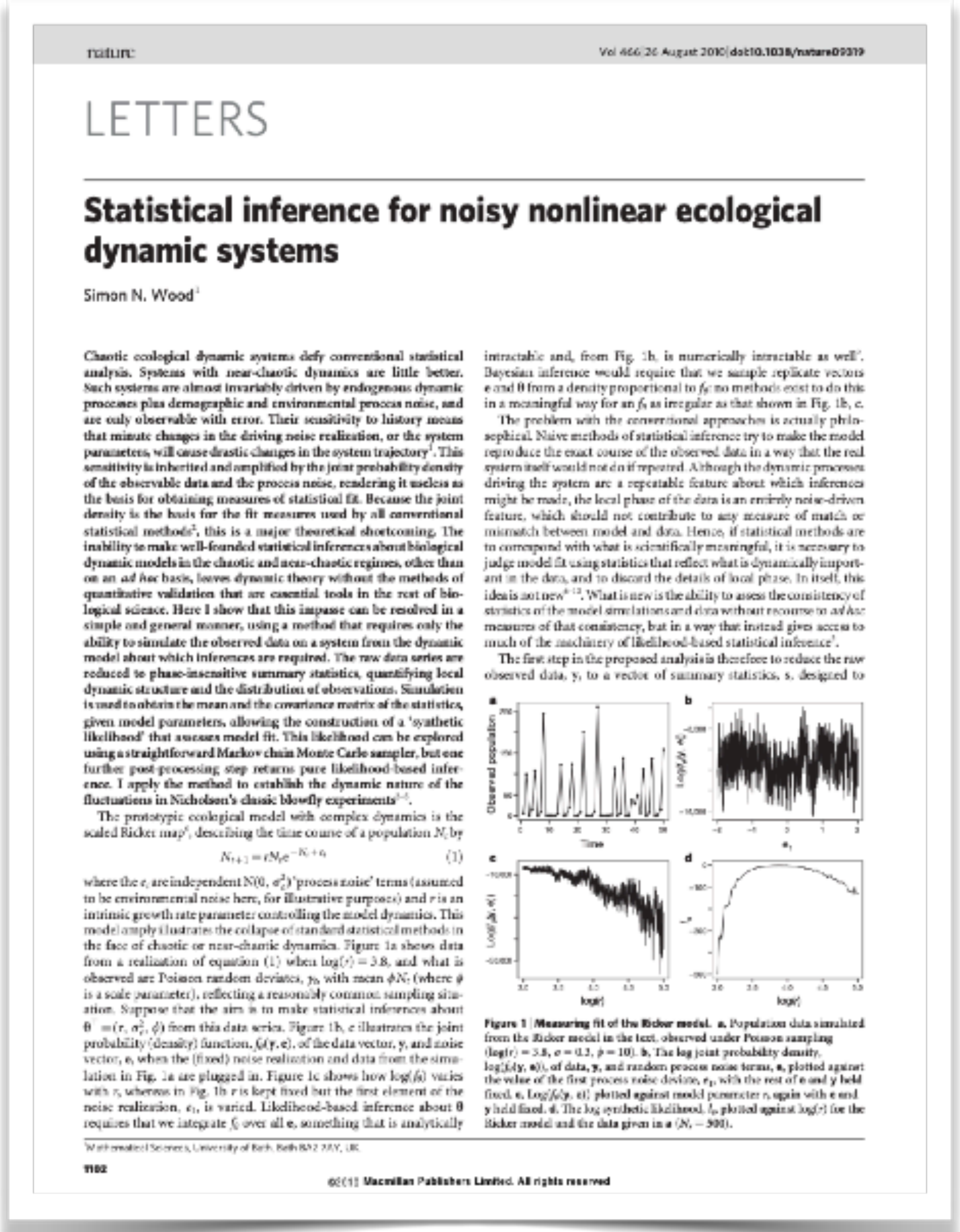
Surrogate models

- Alternative approach to likelihood-free inference is to construct surrogate models for various parts of the system
    - Synthetic likelihood is one of the first surrogate methods
    - At θ approximate $p(x \mid \theta) \approx \text{Normal}(x \mid \hat{\mu}_N(\theta), \hat{\Sigma}_N(\theta))$ with an sample of size N drawn from the model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LETTERS

Statistical inference for noisy nonlinear ecological dynamic systems

Simon N. Wood[1]

Example

- Construct approximate likelihood at an arbitrary parameter value