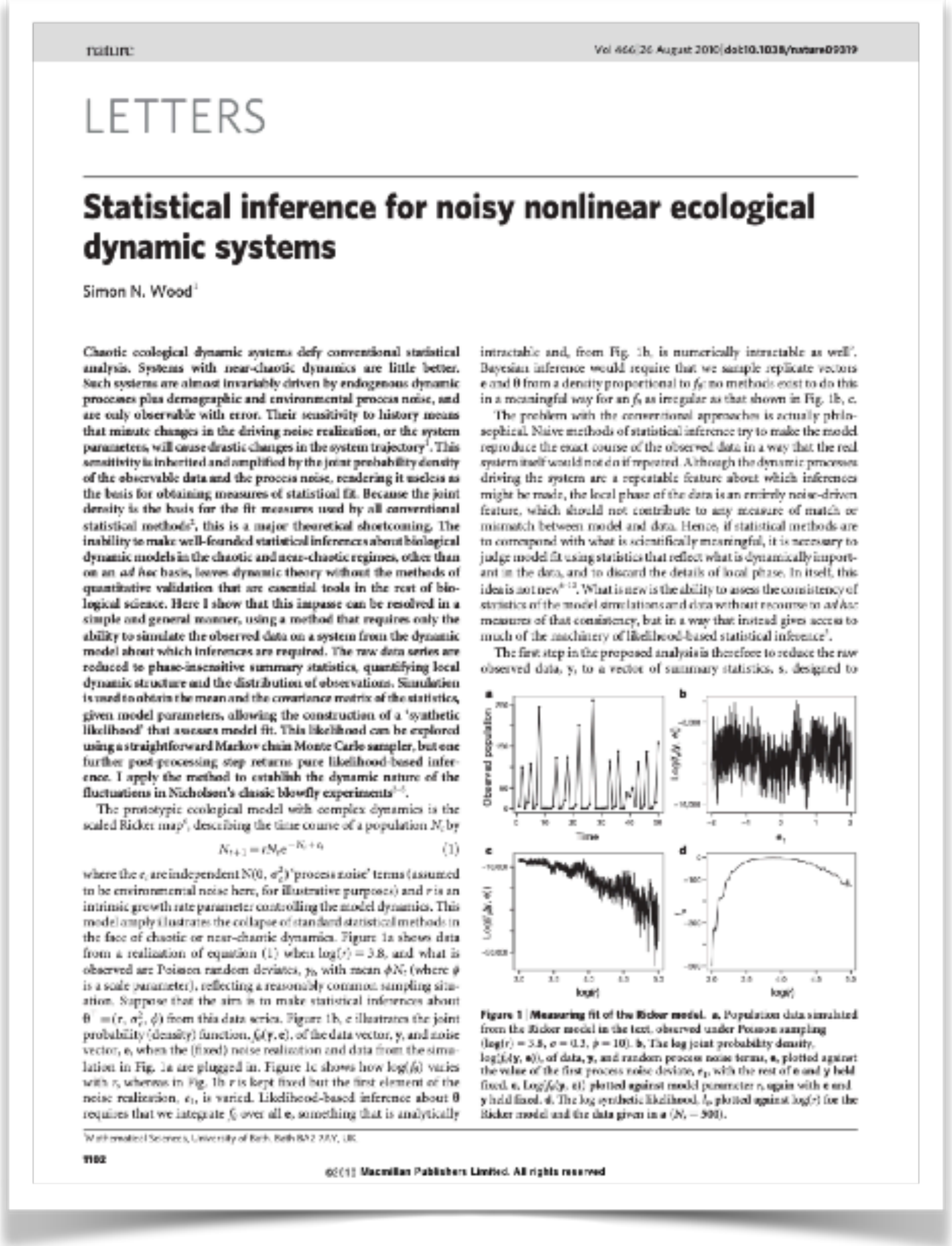
Likelihood-free Inference

What to do when observation is high dimensional?

- Use summary statistics
- Sufficient statistics generally not available
    - Strategies for automatic generation/selection
    - Often bespoke construction via domain/simulator expertise and prior simulations

Synthetic likelihood

- 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
- Naturally combines with e.g. MCMC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LETTERS

Statistical inference for noisy nonlinear ecological dynamic systems

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