

Replicability and Reproducibility in Movement Ecology

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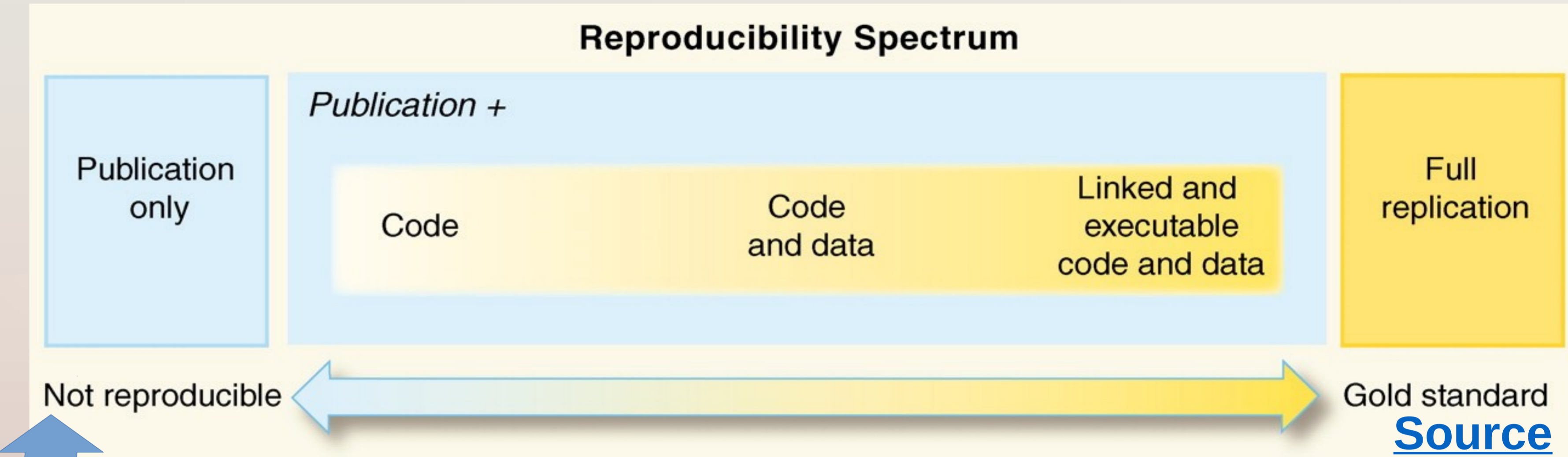
Replicability means obtaining consistent results across studies aimed at answering the same scientific question. It involves new data collection and similar methods used in previous studies.

Reproducibility meaning obtaining consistent computational results using the same input data, computational steps, methods, codes and conditions of analysis

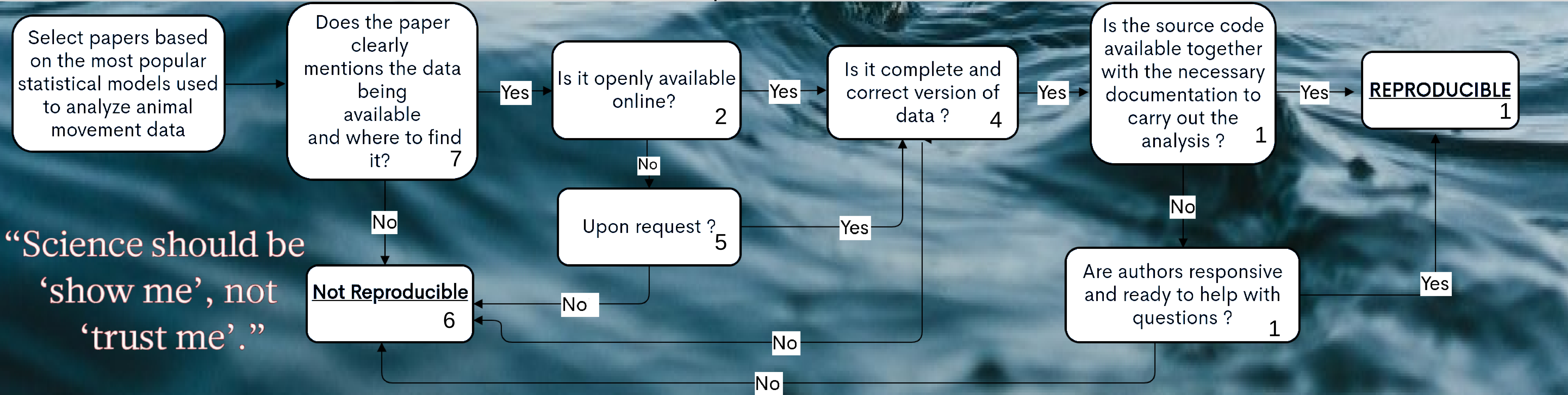
BUT...

How does one determine the extent to which a replication and reproducible attempt has been successful?

Replicability may not be generally feasible in ecology, but a reasonable partial test of the repeatability of studies in this field is reproducibility. There is a whole spectrum between a study being more or less reproducible.



Nowadays the level of statistical analysis in ecology journals has been catalyzed by our enhanced ability to track animal movements, developing and applying numerous models for animal movement data, particularly to identify behavioral patterns through movement. Thus, with a variety of models to study animal movement, we revisited the most popular methods used to identify behavioral patterns in animal movement. We selected frequently cited papers applying these methods, for which the data was publicly available to assess the correctness of the statistical models. Below, a representation of my experience so far.



“Science should be ‘show me’, not ‘trust me’.”

The number at the bottom of the boxes represent the number of papers that made it through the steps and eventually was reproducible. Moreover where authors mentioned making data available upon request, in some cases there were no responds from the authors despite several contact attempt. There is a general need to improve communication among wildlife professionals. Although additional training in data management and documentation would certainly help advance reproducibility, it may not be enough to resolve the reproducibility crisis without a stronger commitment to data sharing.



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