Why statistics?

To answer questions like. . .

- what's the probability that something occurs?

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- what's the probability that something occurs?
- does X influence Y? How much?

To answer questions like...

- what's the probability that something occurs?
- does X influence Y? How much?
- can we predict Y knowing X, Z... How well?

To ensure correct inferences

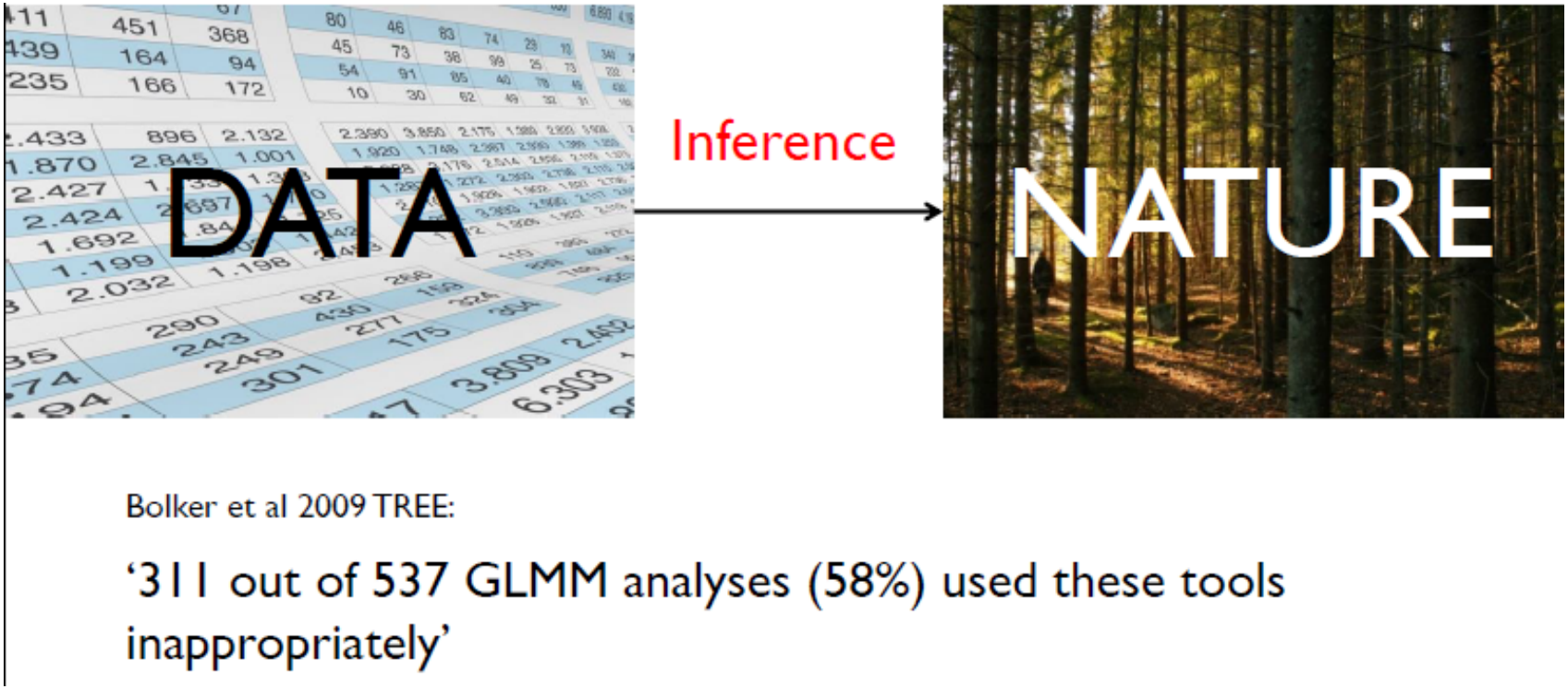

Figure 1:

To get answers to tough problems

For example...

Figure 2:

Inferring tree fecundity

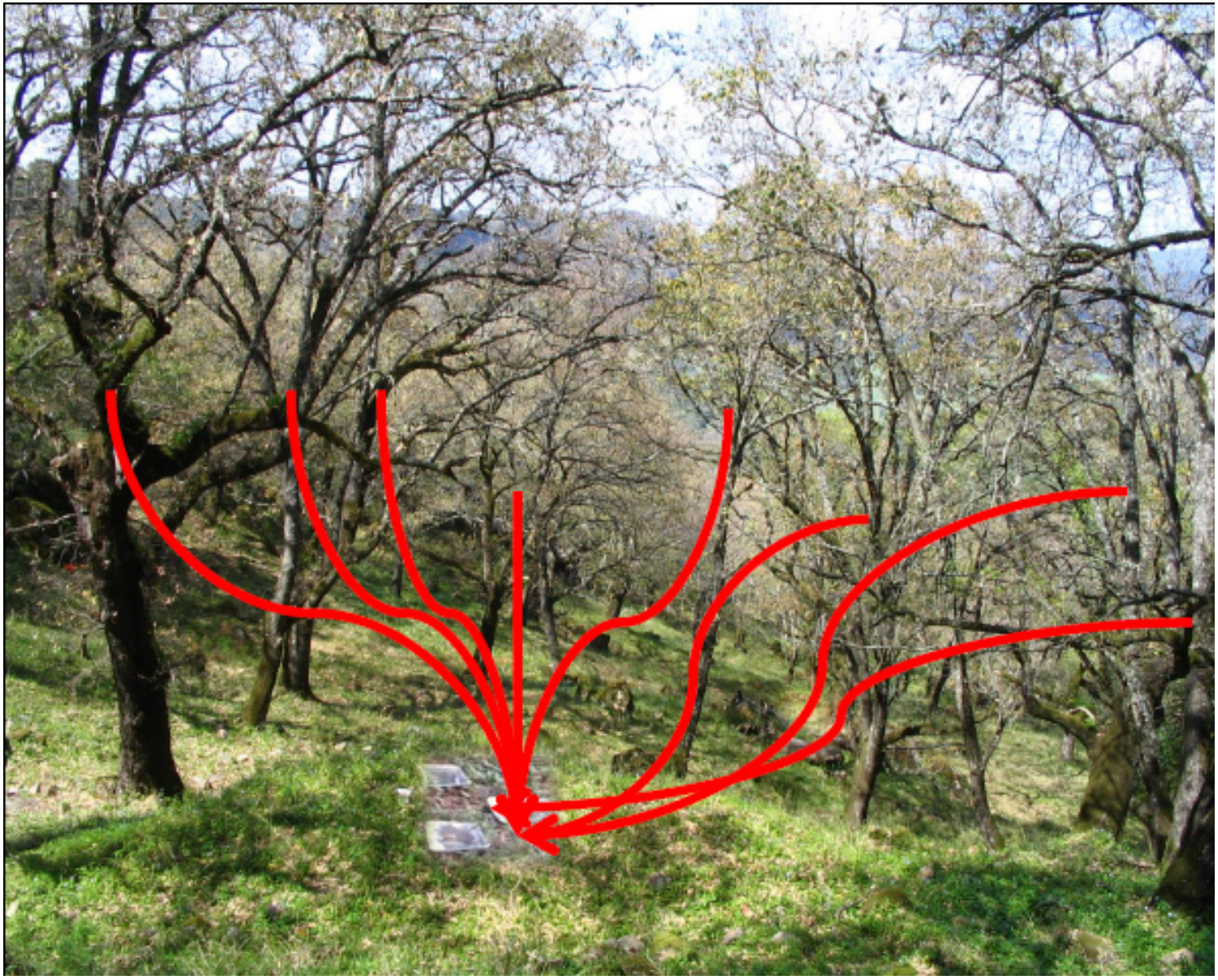

Figure 3:

Course goals

- **Understand** statistical inference

Course goals

- **Understand** statistical inference
- Avoid **misconceptions**

Course goals

- **Understand** statistical inference
- Avoid **misconceptions**
- Promote **good practices**

The purpose of models is not to fit data but to sharpen thinking

Sam Karlin

Topics

- Descriptive statistics

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- Graphics

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- Graphics
- Sampling

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- Experimental design

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- Model selection