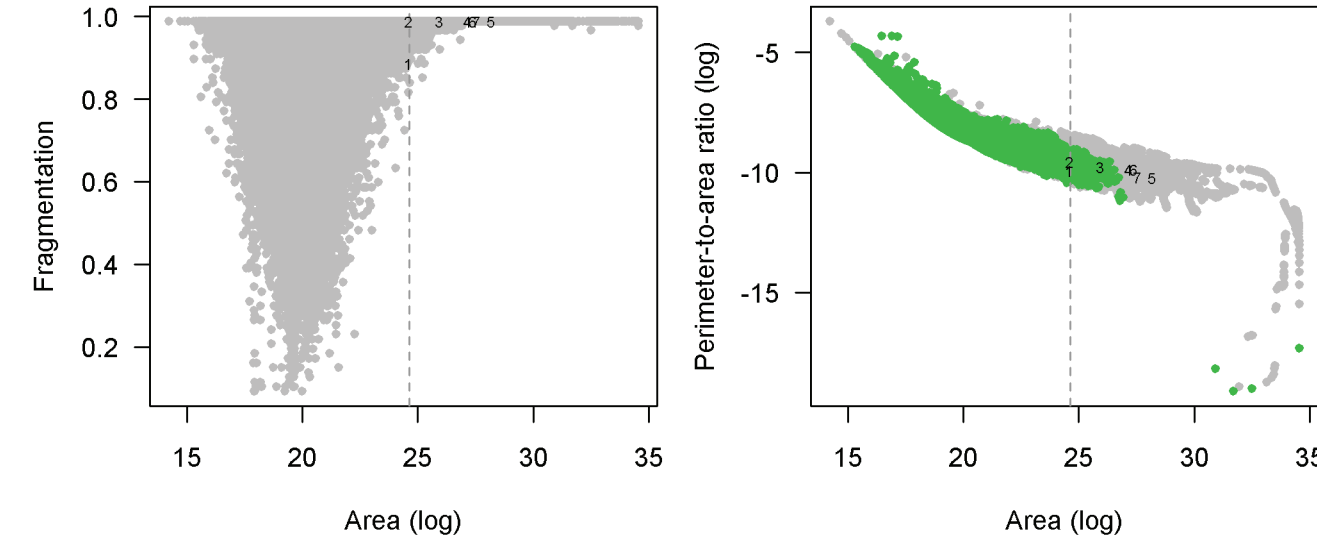




Barrier permeability as measured by fragmentation and shape. Left: barrier permeability (fragmentation) vs. size (area). Right: barrier permeability (shape as measured by the perimeter-to-area ratio) vs. size (area). Vertical lines identify barriers that are 50,000 km². Gray points identify all barriers on the planet, as defined by the topographic model. Green points identify barriers where fragmentation < 1. Numbers correspond to barriers associated with known ring taxa: (1) *Ensatina*: Central Valley, California, USA; (2) *Acacia*: Drakensberg Massif, South Africa; (3) *Larus*: Makarov Basin, Arctic Ocean; (4) *Phylloscopus*: Tibetan Plateau, Central Asia; (5) *Phylloscopus*: Takla Maka and Gobi Deserts, Central Asia; (6) *Larus*: Amundsen and Nansen Basins, Arctic Ocean; (7) *Larus*: Canada Basin, Arctic Ocean. Smaller perimeter-to-area ratios describe barriers that are more circular and compact.