**Please explain how this manuscript fits the goals of the journal or the specific section of the journal. The American Naturalist aims to publish papers that:**

**1. are of interest to the broad readership,**

**2. pose a new and significant problem or introduce a novel subject,**

**3. change the way people think about the topic of the manuscript, and/or**

**4. confirm or refute an unverified theoretical principle or a previously unsupported or weakly supported generalization.**

To:

Patricia Morse, Managing Editor

The American Naturalist

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Chicago, IL 60637

My name is Mannfred Boehm, writing from the Biodiversity Research Centre, UBC, with regards to submission of a manuscript under the category of **'Syntheses and Perspectives**".

**Proposed Title**: Plant-pollinator specialization: Origin and measurement of curvature.

**Premise**: The curvature of flowers and pollinators (e.g. hummingbird bills) along the dorsiventral plane is a widespread, convergent trait with important ecological and evolutionary implications. The synthetic field of pollination ecology frequently uses trait-matching between flowers and pollinators to measure or detect interaction strength, degree of specialization, co-evolution, competition, etc. While curvature is a single component of overall shape, this feature draws special attention partly because curvature appears to be a derived trait of highly specialized pollination systems experiencing competition for pollinators or floral resources. Yet, despite over 40 studies since 1978 focusing on the ecological significance of plant-pollinator curvature, there is a lack of consensus as to what ‘curvature’ means in a conceptual sense.

I am writing to propose a 'Syntheses and Perspectives' article that:

1. Summarizes and discusses why pollination ecologists are concerned with floral/pollinator curvature and what we have learned from its study,

2. Reviews the existing methods that have been developed to measure and quantify curvature,

3. Suggests a definition of curvature that is A) consistent with the definition used in the differential geometry literature and B) improves precision of measurement, and

4. Demonstrates the advantages of considering curvature as defined in (3) on a novel dataset of flower development in *Epimedium* (Berberidaceae).

This paper will be of general interest to researchers studying the evolutionary ecology and development of shape. For those implementing phenotyping protocols, this conceptualization of curvature will complement the widely-used ‘geometric morphometrics’ analyses, especially those that identify curvature as a component of interest.

Thank you for considering this proposal. If you have any questions, please do not hesitate to contact me at [mannfred.boehm@ubc.ca](mailto:mannfred.boehm@ubc.ca).

Best,

Mannfred

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