Preface

Sexual selection is currently the target of multiple and controversial theoretical and experimental studies. Selection on mating and post-mating patterns can result from several mechanisms, including sperm competition, extreme sexual conflict (i.e., sexual coercion and/or sexually antagonistic coevolution), cryptic female choice, or a combination of them. More than 30 years have passed since Randy Thornhill proposed that processes occurring after copulation has began and that are under direct female control can influence male chances of paternity. The cornerstone book by Eberhard (1996) compiled impressive evidence regarding the many possible mechanisms of female control of paternity. During the last decades, much subsequent research focused on female roles during and after mating, documenting the importance of female decisions for male reproductive success. Discrimination among males during or after copulation is called cryptic female choice because it occurs after intromission, the event that was formerly used as the definitive criterion of male reproductive success. As in most cases mechanisms of cryptic female choice occur inside the female, this phenomenon is usually difficult to detect and confirm. Because it sequentially follows intra- and intersexual interactions that occur before copulation, cryptic female choice has the power to alter or negate precopulatory sexual selection.

However, though female roles in biasing male paternity after copulation have been proposed for a number of species distributed in many animal groups, cryptic female choice continues to be sometimes underestimated. Furthermore, during recent years, the concept of sexual conflict has been frequently misused linking it irrevocably with sexual coercion and sexually antagonistic coevolution in opposition to sexual selection by cryptic female choice, without exploring other alternatives.

The present book revisits cryptic female choice in arthropods through detailed contributions from across the world to answer key behavioral, ecological, and evolutionary questions. The reader will find a critical summary of major breakthroughs in taxon-oriented chapters, offering many new perspectives and cases to explore, sometimes sharing unpublished data. The choice of focusing this book in arthropods was not deliberate, but we based our decision in the demonstrated

value of this group for sexual selection studies. The possibility of cryptic female choice is explored in many groups of arthropods such as spiders, harvestmen, flies, butterflies, crickets, earwigs, beetles, eusocial insects, and crustaceans.

The book includes 18 chapters written by researchers from areas related to animal behavior, behavioral ecology, and evolution. We start with a prologue written by Randy Thornhill, which is followed by a first chapter that provides a baseline introduction to cryptic female choice concepts by William G. Eberhard. The following chapters provide a survey of the research done on cryptic female choice during the last decades on different model organisms, always within arthropods. The results of each chapter are discussed giving final remarks and suggesting directions for future research.

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We hope that the book provides a source for the discussion of ideas and avenues for future research on sexual selection, transmitting our passion for this astonishing animal group.

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